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Public Citizen's Solar Austin Campaign: Livable City "Vision Award"
Interstate Renewable Energy Council "Innovation Award"
2004 Austin Chronicle Best of Austin "Best Grassroots Effort"
Texas Renewable Energy Industries Association "Special Recognition Award"

To: Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration, Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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From: Public Citizen, Texas Office
1002 West Ave, Suite 300
Austin, TX 78701

Re: Comments on the Environmental Impacts of the Application for STP Units 3 and 4
Federal Register/ Vol.72, No. 245/ Friday, December 21, 2007/Notices Page 72775

18 February 2008

To Whom It May Concern:

Attached please find comments submitted on behalf of Public Citizen's Texas Office, as well as 4 reports referenced in the comments. The reports are:

- Role of Energy Efficiency and Onsite Renewables in Meeting Energy and Environmental Needs in the Dallas/Fort Worth and Houston/Galveston Metro Areas. R. Neal Elliott and Maggie Eldridge. American Council for an Energy-Efficient Economy, September 2007. Report Number E078.
- Power to Save in Texas, by Optimal Energy, Inc. *Prepared for* Natural Resources Defense Council and Ceres, January, 2007.
- Western Governor's Association Policy Recommendations for Energy Efficient Buildings, January 2008.
- City Public Service Technical and Economic Energy Efficiency Potential Study, prepared for City Public Service, KEMA, Inc. 2004.

Thank you.

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Add = C. Guerrero (CXG3)
P. Kallan (PBK1)

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Comments on the Environmental Impacts in the Application for the South Texas Nuclear Plant Submitted to the NRC By Public Citizen's Texas Office and the SEED Coalition on February 18th 2008

There are many significant environmental impacts that we suggest the NRC ask to have evaluated in the Environmental Impact Statement on the proposed South Texas Project Units 3 & 4.

1. Local Economy

Tax abatements for NRG will mean the community will bear costs in higher taxes. The community will have to come up with funds to build more public infrastructure. The new plant will require:

1. New roads, new schools, a new hospital, and a paid fire department.
2. How high will local cities have to raise taxes in order to build this infrastructure?

2. Employment

While the company postulates that it will need between 5000-6000 construction workers, how many of them can be found locally or in the region with other major power plants being proposed or under construction? There hasn't been a new reactor ordered in the US for decades. The knowledge and skill to build the reactor design is in Japan.

1. Who will NRG hire to build and operate the new plant?
2. Will they have to rely on international labor?

3. Health

More radiation means bigger risk of cancer. The EIS should include an analysis of the impact on humans and other living systems of an increase in radiation levels as a result of 4 operating reactors at STP.

1. According to Joseph Mangano of the Radiation and Public Health Project, the cancer death rate in the three counties closest to STNP was 4.5% below the statewide rate before STNP began operating. Sixteen years later, the rate in the three counties is 7.2% higher than the state rate. While the state rate rose 3.8% in those years, the three counties' rate went up 16.55%.
2. The National Academy of Sciences concluded that radiation is dangerous even at low levels (BEIR VII study).

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3. While low-level radiation exposure is not as damaging as high-level radiation on a short-term basis, prolonged exposure to low-level can be just as damaging to humans. Research has shown an increase in cancer rates around nuclear plants.
4. Will the two new reactors increase the amount of low-level radiation exposure to surrounding populations?

4. Water

This new plant will use 4,000 gallons of water per minute. The plant is also authorized to use both river and groundwater water. The plant is authorized to use up to 102 acre feet of river water per year, and use about half of that annually for STNP 1 & 2.

1. If the plant uses its full allotment, will there be adequate water for the new reservoir?
2. The **LCRA-SAWS Water Project (LSWP)** is based on a Definitive Agreement between
   SAWS and LCRA, signed in 2002, for the purchase of up to 150,000 acre ft/yr of surface
   water from the Lower Colorado River Basin at Bay City. If the plant takes its full 102 acre feet, will there be enough water for San Antonio to meet its water needs?
3. The consumptive or evaporative use is about 240 gallons per minute (gpm) per unit. The overall flow is over 1.2 billion gpm per unit. Groundwater is projected to be the main source of makeup water for the STP 3 & 4 Ultimate Heat Sink, condensate makeup, radwaste and fire protection systems and the source of potable water for STP 3 & 4. These systems are predicted to require a typical groundwater consumption rate of approximately 1,738 acre-ft per year (1,077 gpm), whereas the peak consumption (i.e., outages) is expected to be as great as 3935 gpm. STPNOC is currently permitted to use up to 3,000 acre-ft of groundwater. Current annual groundwater use by STP 1 & 2 is between 1,200 and 1,300 acre-feet. Therefore, over 1,700 acre-ft (1050 gpm) of groundwater could be available for use by STP 3 & 4. Water demand could be met by increasing the yield of the existing wells or installing new wells with the objective that total STP use would not exceed the 3,000 acre-ft per year permitted amount.
4. If it takes its full allotment of 3,935 gallons per minute will there be adequate water for rice farmers and others?

5. Global Warming

If global warming is occurring and as severe as we anticipate:

- Will there be enough water for cooling decline if a 25% decrease in river flows occurs?
- Will groundwater decline?
- Will the cooling water be cool enough to allow the plant to operate?
- If the plant adds approximately 14.3°F to the water temperature, and the current intake temperature has been as high as 95.6°F, can the plant operate safely with a predicted 3-10° temperature increase due to global warming by 2100?

Table 3.4-3
Average Predicted Monthly MCR Temperature for 2003–2005
(Based on 4-Unit Operation)

	CWS Intake Average Monthly Temperature (°F)				CWS Discharge Average Monthly Temperature (°F)		
	Year				Year		
Month	2003	2004	2005	Month	2003	2004	2005
Jan	70.00	71.3	71.7	Jan	88.4	89.7	90.0
Feb	70.82	69.9	72.0	Feb	89.2	88.3	90.4
Mar	75.38	78.1	76.7	Mar	93.7	96.5	95.1
Apr	80.51	81.8	81.0	Apr	97.4	98.7	97.9
May	88.17	85.9	85.8	May	104.6	102.3	102.2
Jun	93.57	92.2	92.2	Jun	110.0	108.6	108.6
Jul	95.88	95.0	94.4	Jul	112.3	111.4	110.8
Aug	95.23	94.0	95.0	Aug	111.6	110.4	111.4
Sep	91.67	91.8	92.8	Sep	108.1	108.1	109.2
Oct	85.80	87.4	85.3	Oct	103.3	104.9	102.8
Nov	79.99	78.8	78.7	Nov	98.3	97.1	97.0
Dec	71.62	71.3	68.1	Dec	90.0	89.7	86.4

- Plants in Germany, France and the Southeastern United States had to shut down operations the last several summers due to high temperatures and drought.
- If global warming increases sea level rise by 7 meters – will STNP be within the storm surge zone?

6. Hurricanes

Exelon considered building a new nuclear plant on the shore, but ended up choosing Victoria as their site in order to prepare for a 20-30 ft. storm surge, yet NRG still plans to add more units to STP.

1. There is no threat assessment for Category 4 or 5 hurricanes.
2. What would happen if a hurricane were to hit? Could the reservoir walls crumble and cause a flooding of the reactor? Could evacuation roads be flooded?
3. Hurricane Carla, which struck Texas in 1961, was at one point a category 5 hurricane.
   - Although it struck the Texas coast as a Category 4 hurricane, it was one of the most powerful storms ever to strike the United States.
   - During the hurricane, rainfall amounts were heaviest from Port Lavaca up the coast to Galveston and within 50 miles inland, ranging from 10" to 16". One report out of Port Lavaca had a tide level 18.5" above normal.
4. Hurricane Claudette made landfall along the middle Texas coast near Port O'Connor on Tuesday, July 15, 2003. Coastal roads and roads along the west side of Galveston Bay were underwater due to tidal flooding between 5 and 8 ft. above mean low water (NOAA). Claudette was just a category 1 hurricane.
5. What would happen to Route 61 or Route 35, which are emergency evacuation routes, if an evacuation was ordered in the aftermath of a hurricane?
6. Could emergency personal enter the grounds?

7. Evacuation plans

STPNOC needs to prepare the community for action in the event of an accident or disaster. Yet readiness will always be an issue.

1. If there is an accident, will the community be able to evacuate?
2. Rita demonstrated how quickly and completely the area can become congested.
3. If there is an accident, who will distribute potassium iodide (KI)? According to NRC rules, residents near nuclear plants must receive potassium iodide tablets in case of emergency.

8. Credible Accidents

The last analysis of a credible accident was the CRAC II study done while STNP was still under construction. The STNP estimates were:

1. 15,200 early deaths (25 mile radius around plant)
2. 8,770 early injuries (35 mile radius)
3. $112 billion (1980 dollars)

With nearly 25 years of sustained population growth in the region, it is certain that these impacts need to be updated. The review in the application is inadequate to inform citizens of the threat.

9. Endangered Species

There are Kemp Ridley sea turtles and whooping cranes in the vicinity.

1. How will construction and operation of the new reactors affect their habitats?
2. What is the effect of low-level radiation over prolonged periods on wildlife in the area?
3. What other species will be affected?

10. Waste: No high or low level site has yet been permitted

Recognizing that generating nuclear energy produces tons of high and low-level radioactive waste that remains dangerous to living systems for tens of thousands of years, and radioactive and toxic waste is produced at every stage of the fuel cycle, including plant operations, the EIS should address waste issues thoroughly.

1. The TCEQ has said the application for a low-level waste site is incomplete.
2. The contractor at Yucca Mountain has announced layoffs. Ken Ritter of the Associated Press wrote: "The Energy Department is cutting operations and the chief contractor is laying off its staff at the desert site where the government plans to build a national nuclear waste repository..." Jan 8, 2008.

11. Need for Power: The need has not been demonstrated

NRG has to prove there is a need for new energy. Their assessment of need is based on ERCOT projections of future energy demand in Texas. But,

1. The application ignores the effect energy efficiency and renewable energy will have in the future on demand.
2. Recent studies have shown that we could meet between 75-100% of Texas's growth in demand using efficiency and renewable energy. [1]

---

[1] "Role of Energy Efficiency and Onsite Renewables in Meeting Energy and Environmental Needs in the Dallas/Fort Worth and Houston/Galveston Metro Areas". R. Neal Elliott and Maggie Eldridge. American Council for an Energy-Efficient Economy, September 2007 Report Number E078;

3. Federal and state-mandated energy efficiency and renewable energy goals do not appear to be factored into the energy needs assessment. The EPACT of 2007 mandated a ban on incandescent bulbs, increased air conditioning efficiency standards and standards of other appliances, and other efficiency reductions that are not counted in NRG's analysis of need. Nor are the provisions of HB 3693, passed by the Texas Legislature in 2007, factored into the energy needs assessment. The bill doubled the goal of the state of reducing by 10% per year the growth in demand for electricity to a minimum of 20%. A study completed during licensing period showed efficiency may result in as much as 50% of the growth in demand.
4. As to CPS's need for power the analysis contains an interesting logical flaw. It claims that an analysis of need is required for traditional utilities, such as CPS, but not for merchant companies such as NRG. It then further claims that since CPS has sold power at wholesale, and will continue to do so in the future, it does not have to do a needs analysis. This logic is imperfect. CPS is a municipal utility, and has not opted into competition, and is limited to incidental sales to customers beyond its traditional service area, so it should have completed a need for power analysis. CPS ignores the study done by KEMA in 2004[2] for CPS San Antonio that shows that over 1220 MW of baseload savings could be obtained at costs less than 2 cents per kilowatt hour (pg 3.1) or far less than the 6.5 cents per kilowatt than the cost of building and operating the plant.

Figure 3-1
Technical and Economic Potential
Demand Savings, 2014

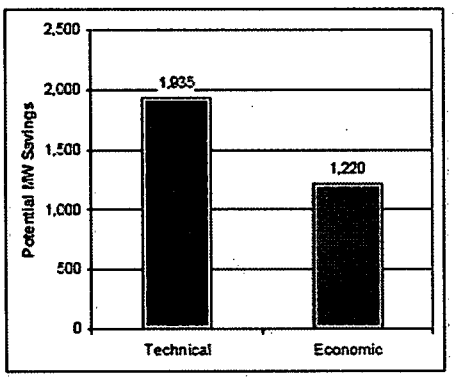
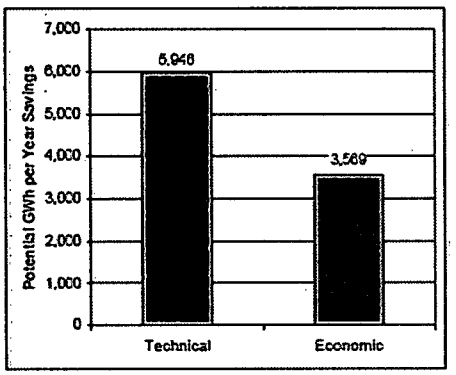


Figure 3-2
Technical and Economic Potential
Energy Savings, 2014



Power to Save in Texas, by Optimal Energy, Inc. *Prepared for* Natural Resources Defense Council and Ceres, January, 2007; Western Governor's Association Policy Recommendations for Energy Efficient Buildings, January 2008. See Attachments

[2] City Public Service Technical and Economic Energy Efficiency Potential Study, prepared for City Public Service, KEMA, Inc. 2004. See Attachments.

12. Contamination from Uranium

Mining and enriching uranium results in radioactive contamination of the environment and risks to public health. Exposure to radon has been shown to cause kidney failure, chronic lung disease, and tumors for the brain, bone, lung, and nasal passage. The EIS needs to assess the impact of uranium mining in the regions from where STP 3 and 4 will derive its fuel.

1. In the last ten years, the Texas Department of Health Services has cited several instances of radioactive waste spills by uranium mining companies, including Cogema Inc.'s 1998 spill of over 20,000 gallons of radioactive solution in Bruni, Texas.
2. The Environmental Protection Agency has warned residents of Kleberg County that their groundwater currently contains unsafe levels of uranium, and strongly advises against drinking it.
3. Residents of Goliad and Kleberg counties have both publicly opposed the continued operations of mining companies in their communities.
4. The aquifer below Karnes County has been contaminated by uranium mill tailings. The Department of Energy estimates clean up will cost $348 million but, according to a Texas Department of Agriculture report, will not implement the clean up plan.

Attachments:

- Role of Energy Efficiency and Onsite Renewables in Meeting Energy and Environmental Needs in the Dallas/Fort Worth and Houston/Galveston Metro Areas. R. Neal Elliott and Maggie Eldridge. American Council for an Energy-Efficient Economy, September 2007. Report Number E078.
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Role of Energy Efficiency and Onsite Renewables in Meeting Energy and Environmental Needs in the Dallas/Fort Worth and Houston/Galveston Metro Areas

R. Neal Elliott and Maggie Eldridge
American Council for an Energy-Efficient Economy

September 2007

Report Number E078

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We also acknowledge the invaluable contributions to this report that we received from our ACEEE colleagues John "Skip" Laitner, Vanessa McKinney, and Renee Nida.

ABOUT THE AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY (ACEEE)

ACEEE is a nonprofit organization dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection. For more information, see http://www.aceee.org. ACEEE fulfills its mission by:

- Conducting in-depth technical and policy assessments
- Advising policymakers and program managers
- Working collaboratively with businesses, public interest groups, and other organizations
- Organizing conferences and workshops
- Publishing books, conference proceedings, and reports
- Educating consumers and businesses

Projects are carried out by staff and selected energy efficiency experts from universities, national laboratories, and the private sector. Collaboration is key to ACEEE's success. We collaborate on projects and initiatives with dozens of organizations including federal and state agencies, utilities, research institutions, businesses, and public interest groups.

Support for our work comes from a broad range of foundations, governmental organizations, research institutes, utilities, and corporations.

EXECUTIVE SUMMARY

The state of Texas is rapidly growing, with population rising at an annual rate of 1.8% and the economy expanding at an annual rate of 3.8% from 2000 to 2006. About half of the state's population and a similar share of electricity consumption and peak demand are concentrated in the state's two largest metropolitan regions, the greater Houston and Dallas/Fort Worth (DFW) areas. These regions are also among the fastest-growing in the state. Unfortunately, these regions also face significant environmental challenges, in part because of the concentration of economic activity and population. If the growth in these regions continues, new resources will be needed to meet the surging demand for electricity without worsening their environmental challenges.

A recent American Council for an Energy-Efficient Economy (ACEEE) report showed that energy efficiency, onsite renewable energy, and expanded demand response can meet all of Texas' new needs for electricity over the next 15 years. The statewide report proposed a suite of policy recommendations to realize this potential. In this follow-up analysis, we explore how these policies can contribute to meeting the energy needs of the DFW and Houston metro regions.

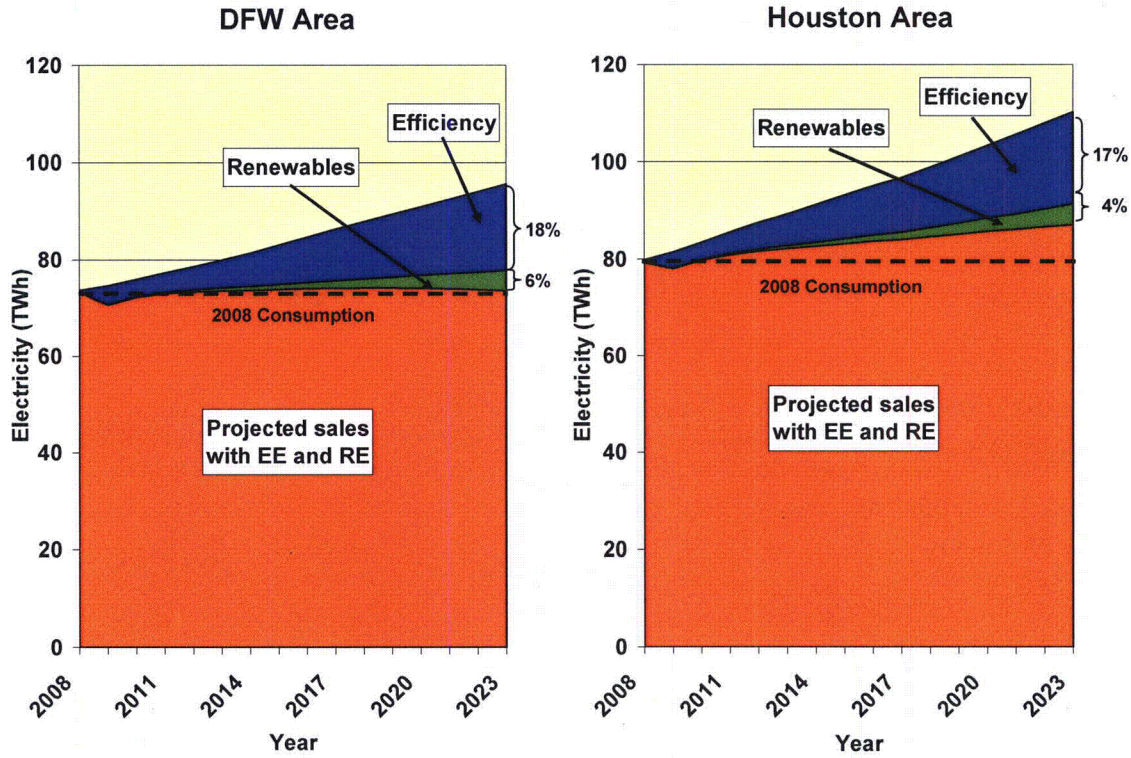
Policy Impacts

This analysis estimates local energy savings, emissions reductions, and economic impacts from both local and statewide investment in energy efficiency and renewable energy. We assess the impacts of the nine policies below, which were outlined in the statewide energy policy and economic potential analysis, by apportioning the results from the statewide analysis to the greater Houston/Galveston and Dallas/Fort Worth metro areas using regional electricity use and demographic data. The nine policies are:

1. Expanded Utility-Based Energy Efficiency Improvement Program
2. New State-Level Appliance and Equipment Standards
3. More Stringent Building Energy Codes
4. Advanced Energy-Efficient Building Program
5. Energy-Efficient State and Municipal Buildings Program
6. Short-Term Public Education and Rate Incentives
7. Increased Demand Response Programs
8. Combined Heat and Power (CHP) Capacity Target
9. Onsite Renewable Energy Incentives

The suite of policies analyzed for this study has the ability to meet 101% of the total electricity load growth in the DFW Metro Area and 76% in the greater Houston metro area over the next 15 years, reducing forecasted electricity use by over 24% and 21% by 2023 in DFW and Houston, respectively (see Figure ES-1).

Figure ES-1. Effect of Policies on Electricity Consumption in the Metro Regions



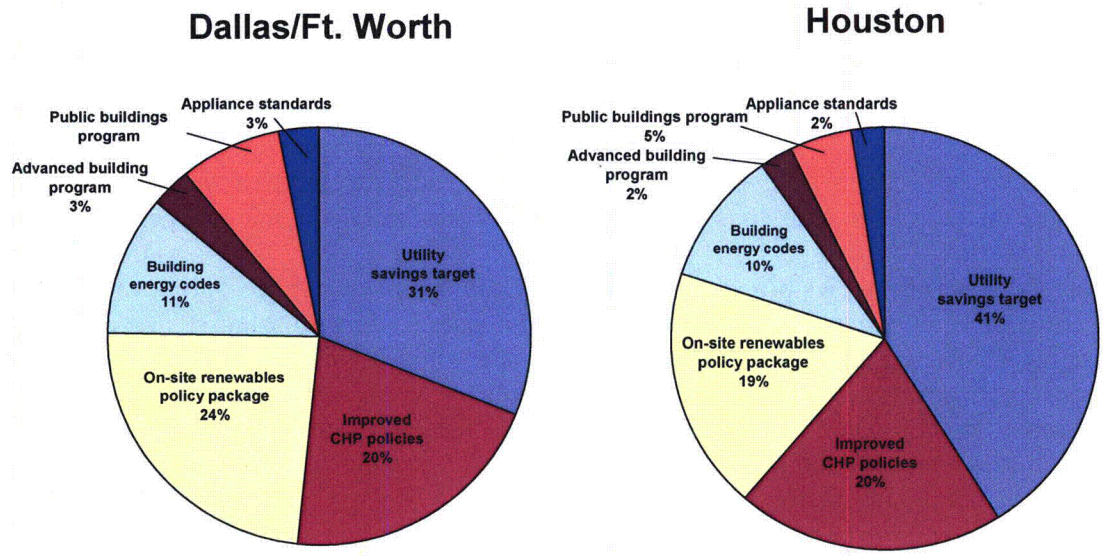
The energy efficiency and onsite renewable policies reduce peak demand by 23% for DFW and 20% for Houston by 2023 compared to forecasts. Peak demand can be further reduced through the deployment of expanded demand response programs, which provide an additional 14% demand reduction in DFW and 11% in Houston. Combined, these policies would reduce peak demand in DFW by 38% and in Houston by 31% in 2023.

As can be seen in Figure ES-2, the major electricity savings come from five major bundles of policies:

1. Utility savings targets—this assumes 50% of load growth and applies to all transmission and distribution utilities statewide
2. Expanded CHP—policies that encourage expanded CHP in industrial, commercial, and institutional markets
3. Onsite renewable energy
4. Efficient buildings—energy codes, advanced buildings, and public buildings
5. Appliance savings

While all of these policies or bundles can be implemented at the state level (indeed, some were partially established by the 80th Texas Legislature), two-thirds of the energy savings (all but the utility savings targets, which are the purview of state regulators) can be enabled at the local level, and in some cases can be even more effectively driven by local governments.

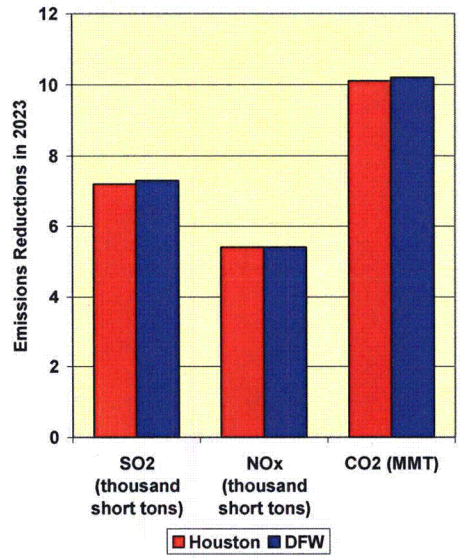
Figure ES-2. Distribution of Electricity Savings in the Metro Regions



The policies analyzed in this report would significantly reduce customer expenditures for electricity. Over the next 15 years, consumers and businesses in the Houston metro area would save almost a net $10 billion, while customers in the DFW Metro Area would also save almost a net $10 billion. The investments required to realize these savings would stimulate the local economies and create new jobs. Our analysis suggests that full implementation of these policies over the 15-year study period would result in the creation of approximately 11,100 net new jobs in the Houston area and 11,700 net new jobs in the DFW area by 2023.

Because a large portion of pollutant emissions in the Houston and DFW metro areas come from mobile sources, energy efficiency and onsite renewable energy resources by themselves will not solve the region's pollution challenges. These clean energy resources can, however, help meet the growing demand for electricity in the region without worsening its environmental problems. This suite of policies is a cost-effective means to avoid emissions, and we estimate that they could result in avoided emissions as indicated in Figure ES-3. These emissions reductions are based on statewide emissions rates in 2005, and thus may underestimate the savings that would result in the region because we don't capture the higher emissions rates from peaking units in the region, or may overestimate them due to emissions reductions resulting due to current and future regulations.

Figure ES-3. Emissions Reductions from Policies



Summary and Conclusions

Expanded energy efficiency, demand response, and onsite renewable energy resources represent the best opportunity for the greater Houston/Galveston and Dallas/Fort Worth metro areas to meet projected growth in electricity demand while helping improve the regions' air quality. Greater reliance on these clean energy resources would support the robust economic health of these two regions, which account for half the population and economic output of the state, thus sustaining Texas' long-term economic prosperity.

While the suite of policies proposed in this report can be enacted at the state level, and local governments should encourage the Legislature and state leadership to move aggressively on these provisions, up to two-thirds of the savings suggested in this analysis could be realized through local government action. In particular, policies to encourage expanded use of onsite renewable energy and CHP and to improve efficiency in buildings represent key opportunities for local action. Aggressive local policies could in fact achieve even greater savings than is suggested here.

ACEEE's analysis leads us to conclude that expanded investment in energy efficiency, demand response, and onsite renewable energy resources should be the foundation of policies to sustain the economic engines of the Dallas/Fort Worth and Houston metro areas.

INTRODUCTION

The state of Texas is rapidly growing, with population rising at an annual rate of 1.8% and the economy expanding at an annual rate of 3.8% from 2000 to 2006. About half of the state's population and a similar share of electricity consumption and peak demand are concentrated in the state's two largest metropolitan regions, the greater Houston and Dallas/Fort Worth areas. These regions are also among the fastest-growing in the state. Unfortunately, these regions also face significant environmental challenges, in part because of the concentration of economic activity and population. If the growth in these regions continues, new resources will be needed to meet the surging demand for electricity without worsening their environmental challenges.

A recent American Council for an Energy-Efficient Economy report (Elliott et al. 2007) showed that energy efficiency, onsite renewable energy and expanded demand response can meet much of Texas' needs for electricity over the next 15 years. The statewide report proposed a suite of policy recommendations that would help to realize this potential. In this follow-up report, we explore how these policies can contribute to meeting the energy needs of the DFW and Houston metro regions of the state. We will identify steps that local governments can take to complement the statewide policy recommendation and how these policies can contribute to the economic and environmental health of these metro areas.

Summary of ACEEE Statewide Analysis

Over the next 15 years, it is projected that Texas' population growth will continue at an annual rate of 1.7% through 2023, with the state's economy projected to grow at an annual rate of 3.2%. Accompanying this rapid population and economic growth is rapid growth in electricity needs and peak demand. Peak demand growth is the most pressing short-term policy concern in Texas. The Electric Reliability Council of Texas reported that peak demand increased by about 2.5% per year between 1990 and 2006. The current forecast is for peak demand to increase by 2.3% annually from 2007 through 2012. ERCOT predicted that the state might be without sufficient generation capacity for peak demands beginning in 2009. As a result of Texas' rapidly growing peak electric demand and electricity consumption, ERCOT and electric generating companies have called for the construction of new fossil-fueled and nuclear power plants to meet growing needs.

ACEEE's study (Elliott et al. 2007) suggested that, beyond just conventional supply resources, expanded demand-side energy efficiency (including CHP and recycled energy) and onsite renewable resources should be considered as the state develops its near- and long-term energy plans. Energy efficiency, demand response, and onsite renewable energy generation can meet the growing demand for electricity in Texas. Expanded demand response with efficiency and renewable energy resources can meet 107% of growth in summer peak demand in Texas by 2013. By expanding the utilization of these "clean tech" resources, Texas can prevent the forecasted reserve margin crisis and reduce overall summer peak demand, resulting in cost saving for consumers. Additionally, demand response, efficiency, and renewable energy resources are a lower cost alternative to construction of conventional generation resources while enhancing energy security and economic growth within Texas.

Some of these policy proposals were implemented by the last legislative session in various pieces of legislation, including House Bill 3693 (Texas Legislature 2007). A more detailed discussion of this topic is included later in this report.

Challenges Facing Metropolitan Areas

The Texas economy has shown great strength. Job growth and real GDP for the years 2005–2006 have topped the national average, with predictions for this trend to continue (Bryson 2006). The two major metropolitan areas of Dallas/Fort Worth and Houston/Galveston contribute significantly to Texas' overall economic health. The Dallas/Fort Worth metro area has a population of 6 million while the greater Houston metro area has a population of 5.5 million (U.S. Census Bureau 2006).[1] Combined, these two metro areas comprise about 50% of the state's population, and a comparable fraction of the state's energy needs.

However, the economic contribution of these metro areas may be limited in the future by growing energy needs and limitations placed on energy production by existing environmental quality conditions. This triple challenge of the economy, environment, and growing energy needs requires new policy solutions if these economic engines are to continue to expand. For continued economic viability in Texas, energy efficiency provides least-cost resources to meet future growth in energy needs while at the same time reducing the impacts of volatile energy prices (Elliot 2007). Accordingly, energy efficiency improves local air quality by reducing overall energy needs and the use of fossil fuels for electricity generation with their associated emissions.

The Dallas/Fort Worth metropolitan statistical area contributes $265 billion to the GDP of the Texas economy (City of Dallas 2007). Electricity use in this region is more concentrated in the commercial sector than in the state as a whole (see Figure 1). As a center for technology industries, the industrial electricity use is less significant than the state as a whole. Designated as a nonattainment area for ozone, the DFW metropolitan area's air quality threatens its future economic growth and electric reliability (TCEQ 2007a).

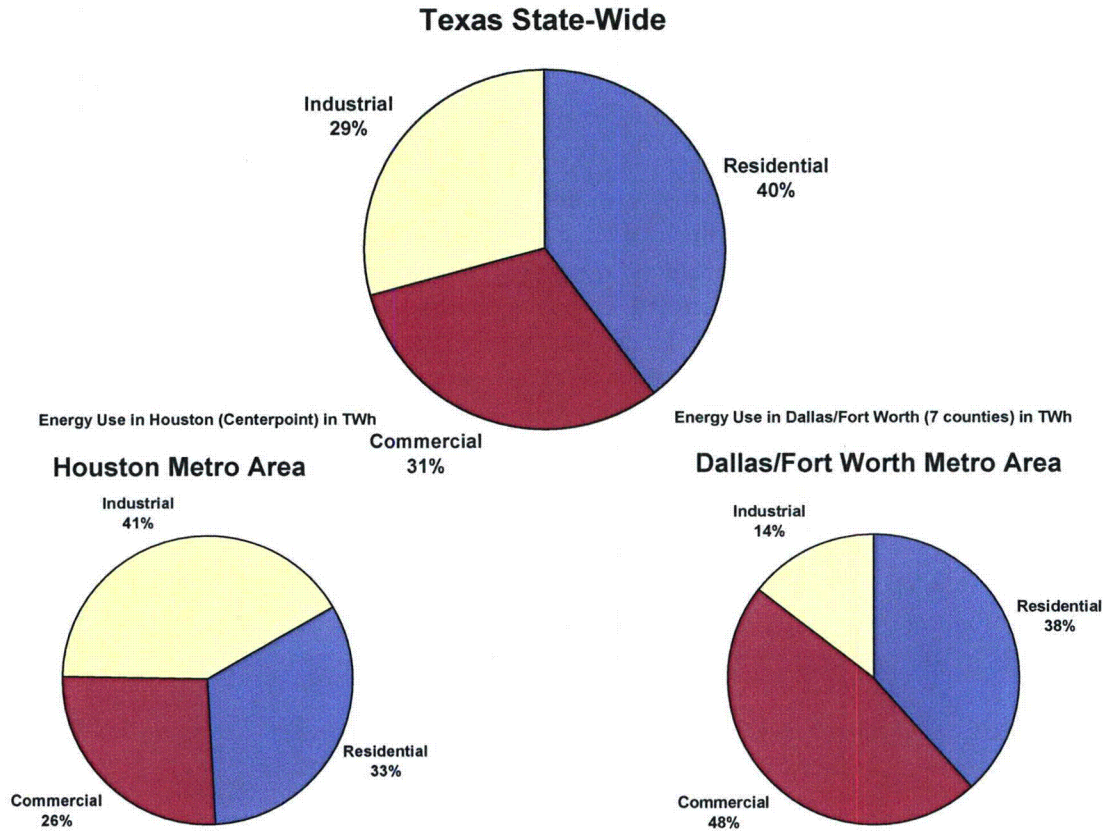
The Houston/Galveston/Brazoria metropolitan area (HGB)[2] is a center for energy-intensive manufacturing, particularly petroleum and chemicals, which accounts for the largest share of electricity consumption (see Figure 1), while the commercial sector consumes a lower fraction of total electricity consumption than in the state as a whole. Energy efficiency has been incorporated into the State Implementation Plan to address the specific needs of the HGB metropolitan area's non-attainment zone (TCEQ 2007b). The HGB metropolitan area

[1] The U.S. Census Bureau classifies the Dallas and Houston Metropolitan Statistical Areas (MSA) as Dallas-Fort Worth-Arlington, a 12-county region, and Houston-Sugar Land-Baytown, a 10-county region (U.S. Census Bureau 2006). Population data is reported here for these U.S. Census Bureau MSAs. For purposes of this energy efficiency, renewable energy, and demand response policy analysis, however, we designate a 7-county region for Dallas/Fort Worth, and for the Houston metro area we use data from Centerpoint Energy, the transmission and distribution utility (TDU) that serves the roughly 8-county Houston/Galveston area. For the economic analysis, we estimate employment impacts on the U.S. Census Bureau's slightly larger Dallas and Houston MSAs for data purposes.

[2] Houston/Galveston/Brazoria is the greater Houston designated nonattainment area classified by the U.S. Environmental Protection Agency.

is designated as a nonattainment area for ozone. By employing energy efficiency methods, the HGB area will prevent detrimental affects to the economy and improve air quality throughout the metropolitan area.

Figure 1. Distribution of Electricity Consumption by End-Use Sector for the State of Texas and Two Major Metro Areas



REGIONAL POLICY IMPACTS

To estimate the potential impacts of expanded energy efficiency, demand response, and onsite renewable energy resources, we used the results of our previous statewide analysis (Elliott et al. 2007) to estimate the impact on the two major metropolitan areas. We also explored the interaction between statewide policies and policies that could be enacted by local governments.

Methodology and Approach

To estimate the impacts of energy efficiency, demand response, and onsite renewable policies on the energy use, environment, and economy of the Houston and Dallas/Ft. Worth metro areas, we drew upon the results from our previous statewide analysis (Elliott et al. 2007) apportioning the results to the regions. To do this, we used the following methodology:

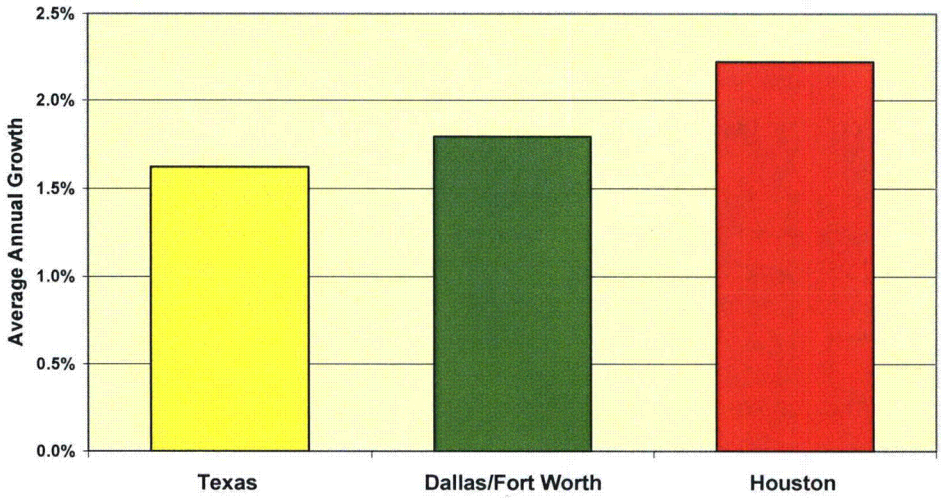
- Characterized demographics of current and forecasted electricity consumption in each metro region;
- Apportioned statewide policy electric savings based on the demographics of electricity consumption characterized above;
- Apportioned demand reductions based on electricity consumption demographics; and
- Apportioned impacts of statewide policies on emissions and economic indicators based on electricity savings.

Energy Demand Reference Case

The distribution of electricity consumption and demand in the two metro areas is significantly different from each other, and different from the state as a whole (see Figure 1). We developed electricity sales forecasts, disaggregated by sector, for the two metro areas using various data sources as discussed in the appendix. For the greater Houston metro region, we used the available electricity sales data for Centerpoint Energy (PUCT 2007a), the transmission and distribution utility that serves this area, as a proxy for total sales in the region, with sector sales estimates derived by apportioning 2000 sectoral data to current total electric sales (PUCT 2000). Oncor (formerly known as TXU Delivery), the TDU that serves the Dallas/Fort Worth metro area, provided electricity sales data specific to the metro region (Stockard 2007).

We estimate that electricity consumption and demand will grow more rapidly in these two metro areas than in the state as a whole. Figure 2 shows the statewide forecast along with our estimates for electricity consumption growth in the two regions.

Figure 2. Relative Electricity Consumption Growth Rates for Texas and Two Major Metro Areas (2008–2023, projected)



Policy Scenario

This analysis estimates local energy savings, emissions reductions, and economic impacts from both local and statewide investment in energy efficiency and renewable energy. We assess the impacts of the nine policies below, which were outlined in the statewide energy policy and economic potential analysis, by apportioning the results from the statewide analysis to the Houston and Dallas/Fort Worth metro areas using regional electricity use and demographic data. The nine policies are:

1. Expanded Utility-Sector Energy Efficiency Improvement Program
2. New State-Level Appliance and Equipment Standards
3. More Stringent Building Energy Codes
4. Advanced Energy-Efficient Building Program
5. Energy-Efficient State and Municipal Buildings Program
6. Short-Term Public Education and Rate Incentives
7. Increased Demand Response Programs
8. Combined Heat and Power Capacity Target
9. Onsite Renewable Energy Incentives

For a more detailed discussion of the policies, see the statewide report (Elliott et al 2007). The methodology of apportioning the electricity impacts to the regions from each policy is discussed in the appendix.

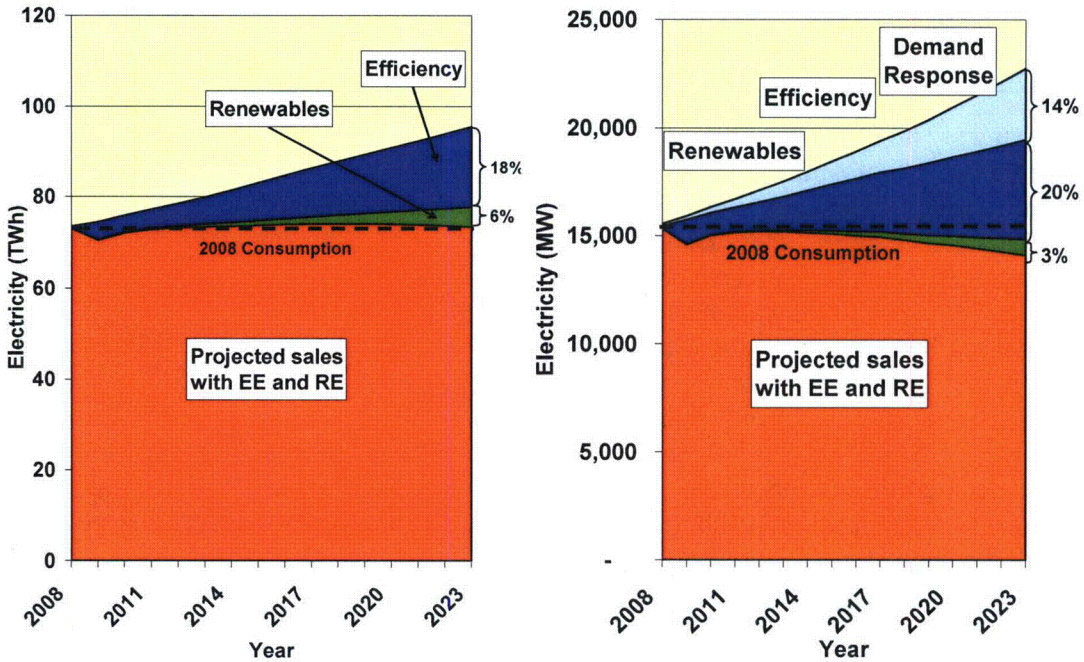
Economic and Environmental Impacts

ACEEE assessed the economic and environmental impacts of the policy scenario outlined above (Laitner, Eldridge, and Elliott 2007). Results from that report, which uses an economic assessment model called DEEPER—or the Dynamic Energy Efficiency Policy Evaluation Routine—suggest that cost-effective investments in the combination of energy efficiency and alternative generation technologies can actually reduce overall electricity costs, boost net employment, and reduce air pollutants within the state. For this analysis, we apportioned net employment gains from the statewide analysis to the metro regions based on personal income data and average electricity prices. For emissions impacts, we used statewide average emission rates to determine emissions reductions from lowered electricity demands. For a detailed discussion of the methodology, see the technical appendix.

Results for Dallas/Fort Worth Metro Area

The suite of policies analyzed for this study has the ability to meet 101% of the load growth in the DFW Metro Area over the next 15 years, reducing electricity use by over 24% in 2023 (see Figure 3). The energy efficiency and onsite renewable policies reduce the region's peak summer demand by 23% by 2023 (see Figure 3). Peak demand can be further reduced through the deployment of expanded demand response programs, which provide an additional 14% demand reduction in DFW. Combined, these policies would reduce peak demand in DFW by 38%, or roughly 6,700 MW by 2023 (see Table 1).

Figure 3. Impact of Policies on Electric Consumption and Peak Demand in DFW Area



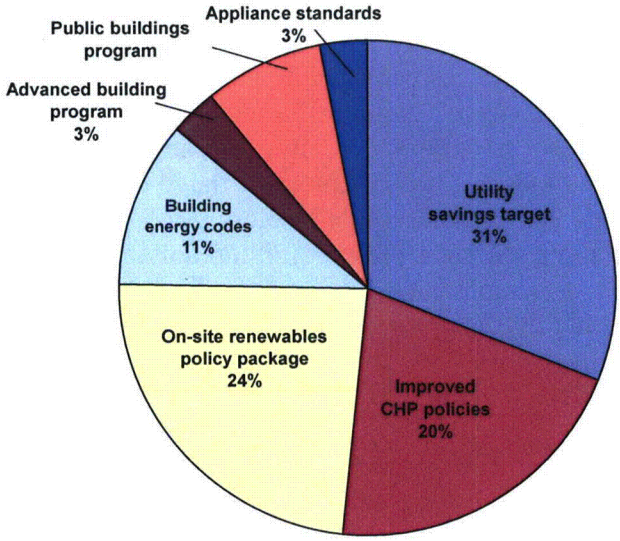
As can be seen in Table 1 and
Figure **4**, the greatest electricity savings come from five major bundles of policies:

1. utility savings targets
2. expanded CHP
3. onsite renewable energy
4. efficient buildings—energy codes, advanced buildings, and public buildings
5. appliance savings

Table 1. Annual Electricity Savings by Policy in Dallas/Fort Worth

	Annual Energy Savings			
	2013		2023	
Policies	Demand Savings (MW)	Electricity Savings (million kWh)	Demand Savings (MW)	Electricity Savings (million kWh)
Utility savings target	170	2,247	251	7,282
Improved CHP policies	227	1,790	606	4,772
Onsite renewables policy package	81	803	736	5,528
More stringent building codes	123	568	570	2,524
Advanced building program	23	105	155	689
Public buildings program	132	603	422	1,798
Appliance & equipment standards	352	377	606	737
Short-term public ed. & rate incentives	50	168	0	0
Expanded demand-response programs	700	NA	3,266	NA
Total (GWH)	**1,858**	**6,660**	**6,610**	**23,330**

Figure 4. Electricity Savings by Policy in Dallas/Fort Worth in 2023



While all of these policy areas can be driven from the state level, two-thirds of the energy savings (all but the utility savings targets and the appliance standards) can be facilitated at the local level, and in some cases even more effectively driven by local governments.

As the statewide report (Elliott et al. 2007) indicated, Texas is the leading state for CHP, with much of the existing capacity in the manufacturing sector. Our analysis suggests that a significant share of the remaining potential exists in the commercial and institutional sectors, which are also where we see the potential in the DFW area. The significant fraction of the potential in the DFW area for onsite renewables also lies in the commercial and institutional sector, with much of the remainder in the residential sector dominated by solar hot water heating.

Because of the rapid pace of new construction in the region, energy efficient buildings represent another important opportunity for the region. Because buildings typically have long lifetimes, and retrofitting to incorporate efficiency after construction is costly, efficiency is best incorporated at the time of construction. Both local building energy codes as well as enhanced enforcement represent an important policy to lock in energy efficiency for the future. Local programs that build on a state-advanced buildings effort and federal tax credits —as discussed in the statewide report (Elliott et al. 2007)—have the potential to encourage construction to go beyond code. Similarly, local governments can demonstrate leadership by expanding energy efficiency efforts in public buildings, while also reducing energy expenditures, thus helping local budgets.

Economic Impacts of Policies

The policies analyzed here will significantly reduce customer expenditures for electricity. Over the next five years customers would save over $3 billion on energy expenditures and almost $22 billion over the next 15 years (see Table 3).[3] After taking into account energy efficiency investments, including program costs and customer investments, total net cumulative savings are nearly $10 billion over the next 15 years.

Generally, we find that cost-effective investments in the combination of energy efficiency and alternative generation technologies can actually boost net employment. As discussed in the earlier ACEEE economic analysis (Laitner, Eldridge, and Elliott 2007), much of the job creation from energy efficiency programs is derived by the difference between jobs within the utility supply sectors and jobs that are supported by the re-spending of energy bill savings in other sectors of the economy, such as manufacturing. Whereas Texas' electric utility industry provides, for example, only 2.4 jobs per million dollars of revenues that it receives, one million dollars spent in manufacturing supports 6.7 jobs, both directly and indirectly (Laitner, Eldridge, and Elliott 2007). We estimate that by 2023 (the last year of this analysis), as a result of greater energy productivity, the DFW metro area will show a net employment increase of about 11,700 jobs (see Table 3). This is roughly equivalent to the employment that would be directly and indirectly supported by the construction and operation of an additional 100 average manufacturing plants within Texas.

[3] Savings are based on estimates of regional energy prices as discussed in the appendix. Net savings, which take into account consumer investments in efficiency measures and program and administrative costs, are a rough estimate. The estimates do not take into account any price reductions that would result from reduced electric demand and avoided supply-side investments.

Table 2. Customer Savings in Electricity Expenditures in the DFW Area (cumulative from 2008)

Policies	(million 2005$)	
	2013	2023
Energy Efficiency	2,776	17,947
Renewables	270	3,840
Total	3,046	21,787
Net Savings	**363**	**9,829**

Table 3. Net Economic Impacts in DFW Area for Benchmark Years

Category of Impact	2008	2013	2018	2023
Jobs (Actual)	1,697	3,184	6,963	11,657

Environmental Impacts of Policies

Because the majority of ozone pollution in DFW comes from mobile sources and by regional transport from upwind areas inside and outside of Texas, expanding energy efficiency and onsite renewable energy resources will not alone solve the pollution challenges facing the region. These resources can, however, help to meet the growing demand for electricity in the region without further exacerbating existing air pollution problems. We estimate that the suite of policies could prevent emissions in the region as indicated in Table 4. These emissions reductions are based on statewide emissions rates and thus may underestimate the saving that would result in the region, because we don't capture the higher emissions rates from peaking units in the region, or overestimate them due to emissions reductions due to current and future regulations.

Table 4. Estimate of Avoided Air Emissions Resulting from Expanded Efficiency and Renewable Measures in the DFW Area

Category of Pollutant	2008	2013	2018	2023
SO_2 (thousand short tons)	0.4	3.0	4.9	7.3
NOx (thousand short tons)	0.2	1.9	3.6	5.4
CO_2 (million metric tons)	0.3	3.3	6.6	10.2

Note: Emissions are based on state average rather than marginal emission rates.

Discussion and Local Policy Recommendations

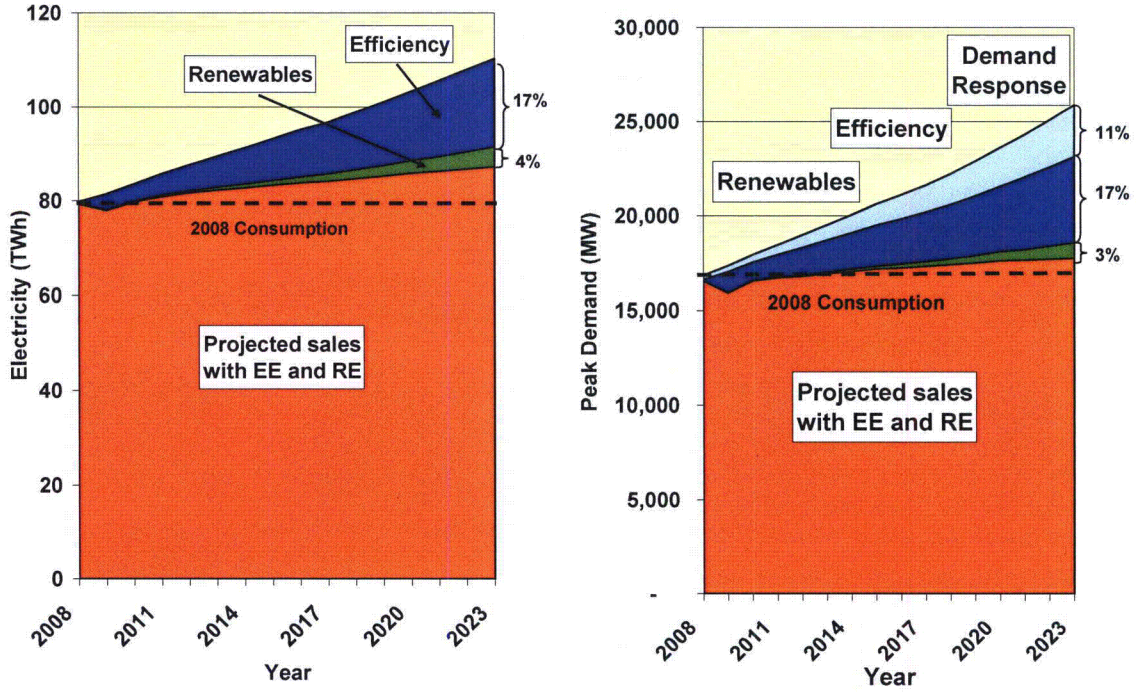
The suite of statewide policies analyzed in this report can represent an important contribution to meeting future electricity needs in the DFW area without exacerbating the current environmental problems that exist in the region. As a result, local governments in the region should advocate for strong implementation of these state policies. In addition, local governments can move beyond just advocating these state policies by promoting complementary policies that can facilitate achieving these impacts, which could expand the savings beyond what is estimated here. In particular, local leadership on CHP, onsite

renewables, and building policy recommendations represent significant opportunities. Frameworks already exist at the state level for these policy areas so all that is required is a commitment at the local level.

Results for Houston/Galveston Metro Area

The greater Houston area faces perhaps the greatest energy challenges of any of the other regions in Texas because electricity consumption is projected to grow at an annual average of 2.2% over the next 15 years compared with 1.6% per year statewide. The suite of policies analyzed for this study has the ability to meet 76% of the load growth in the greater Houston metro area over the next 15 years, reducing electricity use by 21% by 2023 (see Figure 5). The energy efficiency and onsite renewable policies also reduce the region's peak summer demand by 20% by reducing overall electricity consumption (see Figure 5). Peak demand can be further reduced through the deployment of expanded demand response programs, which would provide an additional 11% demand reduction in DFW. Combined, these policies would reduce peak demand in the Houston area by 33%, or roughly 5,600 MW by 2023 (see Table 5).

Figure 5. Impact of Policies on Electricity Consumption and Peak Demand in the Houston Metro Area



As can be seen in Table 5 and Figure 6, the big electricity savings come from major five bundles of policies:

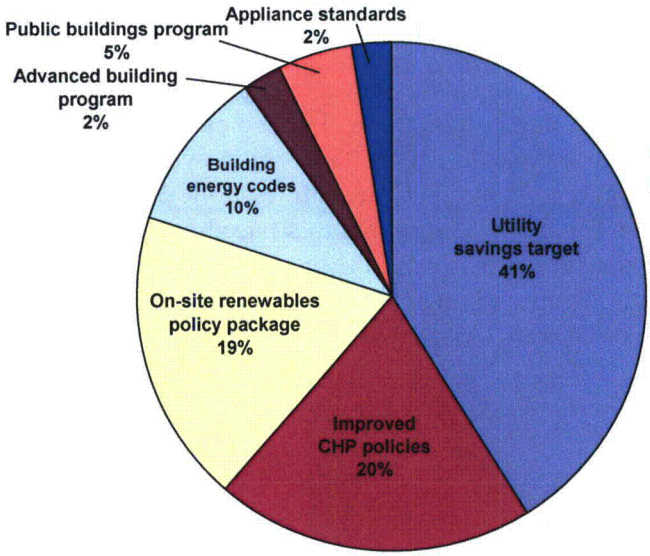
1. utility savings targets
2. expanded CHP

3. onsite renewable energy
4. efficient buildings—energy codes, advanced buildings, and public buildings
5. appliance savings

Table 5. Annual Energy Savings by Policy in the Houston Area

Policies	Annual Energy Savings			
	2013		Policies	
	Demand Savings (MW)	Electricity Savings (million kWh)	Demand Savings (MW)	Electricity Savings (million kWh)
Utility savings target	210	3,278	324	9,515
Improved CHP policies	223	1,758	595	4,689
Onsite renewables policy package	91	612	838	4,304
More stringent building codes	141	650	539	2,390
Advanced building program	20	93	130	577
Public buildings program	81	370	265	1,126
Appliance & equipment standards	295	287	156	574
Short-term public ed. & rate incentives	54	128	0	0
Expanded demand-response programs	801	NA	2,797	NA
Total	**1,916**	**7,177**	**5,643**	**23,174**

Figure 6. Electricity Savings by Policy in 2023 in Houston Area



Economic Impacts of Policies

The policies analyzed in this report would significantly reduce customer expenditures for electricity. Over the next five years, the policies would result in nearly $3 billion in

electricity expenditure savings and nearly $21 billion over the next 15 years.[4] After taking into account energy efficiency investments, including program costs and customer investments, total net savings are nearly $10 billion over the next 15 years (see Table 6). Net employment would be boosted, for reasons aforementioned in the DFW results, by about 11,100 net new jobs by 2023 (see Table 7). This is the equivalent of jobs in an additional 100 average manufacturing plants.

Table 6. Customer Savings in Electricity Expenditures in the Houston Area (cumulative from 2008)

Policies	(million 2005$)	
	2013	2023
Energy Efficiency	2,795	18,145
Renewables	197	2,836
Total	2,991	20,981
Net Total Savings	292	9,979

Table 7. Net Economic Impacts in the Houston Area for Benchmark Years

Category of Impact	2008	2013	2018	2023
Jobs (Actual)	1,621	3,041	6,651	11,135

Environmental Impacts of Policies

Because the majority of pollutant emissions in the Houston metro area come from mobile and area sources, energy efficiency and onsite renewable energy resources by themselves will not solve the pollution challenges facing the region. These clean resources can, however, help to meet the growing demand for electricity in the region without further exacerbating the environmental problems. We estimate that the suite of policies would prevent emissions in the region as indicated in Table 8. This estimate is based on statewide emissions rates and thus may underestimate the saving that would result in the region, because we don't capture the higher emissions rates from peaking units in the region, or overestimate them due to emissions reductions resulting from current and future regulations.

Table 8. Estimate of Avoided Air Pollutants in the Houston Area

Category of Pollutant	2008	2013	2018	2023
SO_2 (thousand short tons)	0.4	3.3	4.9	7.2
NOx (thousand short tons)	0.3	2.1	3.5	5.4
CO_2 (million metric tons)	0.3	3.5	6.5	10.1

Note: Emissions are based on state average rather than marginal emission rates.

[4] Savings are based on estimates of regional energy prices as discussed in the appendix. Net savings, which take into account consumer investments in efficiency measures and program and administrative costs, are a rough estimate. The estimates do not take into account any price reductions that would result from reduced electric demand and avoided supply-side investments.

Discussion and Policy Recommendations

The suite of statewide policies analyzed in this report can represent an important contribution to meeting future electricity needs in the Houston Metro area without exacerbating the current environmental problems that exist in the region. While all of these policy areas can be driven from the state level, up to two-thirds of the energy savings (all but the utility savings and demand response) can be facilitated at the local level, and in some cases even more effectively driven by local government. Local governments in the region should both advocate for strong implementation of these state policies as well as promote complementary policies that can facilitate achieving these impacts, expanding the savings beyond what is estimated here. In particular, local leadership on CHP, onsite renewables, and buildings represent significant opportunities. Frameworks already exist at the state level for these policy areas, so all that is required is a commitment at the local level. In particular, many of the large industrial firms in the region may be important allies as they can provide both important energy efficiency opportunities and support for local policies that help ensure adequate electricity supplies, contain future electricity cost increases, and reduce environmental pressures.

IMPACTS OF RECENT TEXAS LEGISLATION

In the 80th Texas Legislature, several bills were passed that established some elements of the state policies recommended in our statewide report (Elliott et al. 2007). Most significant of these was House Bill 3693 (Texas Legislature 2007). This act in part implemented two of our recommended policies, and somewhat addressed building codes.

- The act increased the EEIP target from 10% to 20% of load growth, and directed the PUCT to study whether the target could be raised to 50%, which was what we had recommended. The provision, however, reduced the coverage from total load to just residential and commercial loads, excluding industrial load. While the details of implementation are a subject of PUCT proceedings, taken together these represent a modest increase in the savings levels, though only a fraction of our recommendation.
- The act includes several provisions that expand energy efficiency in public facilities, including energy-efficient product purchasing requirements and setting of targets for energy savings in government and public school facilities. The additions represent a significant expansion of the state's efforts in this area, though no additional funding was provided to assist in the implementation. Current state policy assumes financing to be available through energy savings performance contracts. Local innovation may be needed in budget policy or utility partnerships to spur public sector success in leading efficiency improvements by example.
- The act directs the Texas State Energy Conservation Office (SECO) along with the Texas A&M University's Energy Systems Laboratory (ESL) to regularly evaluate (every three years) new versions of the IECC building energy codes and to adopt them if assessed to save more energy than the current version (BCAP 2007). The advisory committee will release a draft of possible code updates to go out for public review in October 2007, with a code update possible in 2008.

POLICIES AND OPPORTUNITIES FOR LOCAL IMPLEMENTATION

As noted at the end of the previous sections, most of the policies can be complemented and/or implemented at the local level. In this section, we describe each policy recommendation and explore local implementation approaches for each measure. With the next opportunity for legislation not occurring until 2009, implementation at the local level represents an important opportunity for Texas metro regions to take immediate actions to improve energy efficiency.

Expanded Utility-Sector Energy Efficiency Improvement Program (EEIP)

In 1999, at the time of deregulation of its electric industry, the Texas legislature mandated the state's investor-owned utilities (IOUs) to meet 10% of their annual growth in electricity demand with energy efficiency. In recent years, load growth in Texas has averaged about 2% per year, and thus the current requirement means savings of about 0.2% of demand annually. By comparison, several leading states have achieved annual savings on the order of 1–2%. In 2006, the nine Texas IOUs exceeded their statewide legislative energy efficiency goals for the fourth straight year, specifically exceeding the peak demand goal by 27% (Frontier Associates 2007). The EEIP along with demand response are the two policy recommendations that must be addressed at the state level. IOUs in the metro regions will significantly contribute to overall state efficiency savings; however, local governments do not have authority to preempt state goals.

New State-Level Appliance and Equipment Standards

State-level appliance and equipment standards establish minimum efficiency requirements for specific products, eliminating the most inefficient models from the market. Efficiency standards are recommended for 10 products in the Texas statewide analysis, of which one or more product standards have already been established by eight other states. Efficiency standards could also be implemented at the local level by ordinance. For example, New York City implemented standards on plumbing fixtures in the 1980s (Osann 2007). Municipalities in Texas could undertake similar efficiency requirements for some or all of these identified products. One possibility is for these to be implemented through amended building codes, which jurisdictions in Texas have the authority to update. Another possibility is for local governments to adopt appliance efficiency standards as part of their clean air strategies as a means to avoid pollutant emissions.

More Stringent Building Energy Codes

In HB 2129, the 79th Texas Legislature (Texas Legislature 2005) required Texas A&M University's Energy Systems Laboratory to identify alternative methods for updating residential and commercial building codes that could reduce energy use by 15%. Because of the rapid pace of new building construction in the Dallas/Ft. Worth and Houston metro areas, which are growing faster than the rest of the state, building code improvements would result in significant energy savings in these regions. Because implementation of building energy codes and code enforcement ultimately occur at the local level, and because jurisdictions in Texas have the authority to adopt a more stringent code than the statewide code, action by

local government represents an important contributor to lock in energy efficiency for the future.

Advanced Energy-Efficient Building Program

The statewide analysis identified an economic potential to reduce energy use in new Texas homes and commercial buildings by around 50%, as new technologies make these savings realistic in the next few years. If updated state building codes improve efficiency by 15%, this leaves an additional 35% energy savings still to be captured. One way to capture some of these savings is to offer an advanced building program that combines training and technical assistance for architects, engineers, and builders on ways to achieve the savings at modest cost, with financial incentives to help defray the extra costs. Local governments are uniquely positioned to encourage advanced buildings through their zoning power and ability to influence builders. Local governments are also uniquely positioned to work with the local lending community to encourage favorable loan terms for energy-efficient properties. With guidelines available for what constitutes "efficient" from such programs such as ENERGY STAR®,[5] LEED,[6] and the New Buildings Institute,[7] it has become easier to identify best practices. In addition, local governments can offer favorable permitting and fee treatment for qualifying advanced energy-efficient buildings, further encouraging builders to implement these designs.

Energy-Efficient State and Municipal Buildings Program

A state and municipal buildings program is a significant way for state and local governments to lead by example by adopting energy efficiency measures while saving money on energy bills. Texas is operating a major program, Texas *LoanSTAR*, to assist state and municipal facilities to undertake energy-saving investments. The heart of the *LoanSTAR* program is a $95 million revolving loan fund that is used to finance efficiency improvements. Because this loan fund has been fully utilized in recent years and a waiting list has developed, our statewide report recommends that funds be expanded so that half of all eligible facilities can receive assistance over the next 15 years. As noted in the previous section, legislation enacted in 2007 expands these state programs and encourages government entities to set energy savings targets. Local governments should consider going beyond these state efforts to assess how far they can go in implementing energy efficiency in local public facilities. Energy efficiency is prudent management, because energy has become one of the fastest growing line-items in local governments' budgets. Implementing energy efficiency does not have to mean spending money. Local governments can seek energy savings performance contracts (ESPC) from energy efficiency service providers in the state. The federal government and many state and municipalities have successfully used these instruments to reduce energy expenditures without spending tax dollars.

By becoming energy efficiency leaders, local governments can both show fiduciary responsibility with taxpayers' dollars, while at the same time setting an example for

[5] See http://www.energystar.gov/index.cfm?c=new_homes.hm_index
[6] See http://www.usgbc.org.
[7] See http://www.newbuildings.org

individual consumers and business to step up to the plate in adopting energy efficiency practices. Guidelines and examples of success are available from ICLEI,[8] an organization of more than 500 cities, towns, counties, and villages that supports sustainable policies in local governments, as well as from the State Energy Conservation Office.[9]

Short-Term Public Education and Rate Incentives

Public education and incentives are a means to increase public awareness and ease financial barriers for consumers, which can jumpstart demand savings in the short term and allow time for long-term policies to mature. Public education campaigns in California and elsewhere have been shown to produce lasting demand reductions. Similarly, local leaders can mobilize their citizens to implement energy efficiency through educational efforts in conjunction with schools and local media, and incentives like a sales tax holiday on energy-efficient products such as compact fluorescent lamps and ENERGY STAR appliances.

Combined Heat and Power Capacity Target

Texas has been a leader in implementing utility and environmental regulatory policies that create a favorable environment for CHP (Brown and Elliott 2003). The state's leadership has been rewarded with continued growth in the installed CHP capacity and the fraction of electricity generated by CHP, as was discussed in our earlier report (Elliott et al. 2007). More importantly for the DFW and Houston areas, CHP facilities can be particularly important players in peak demand management efforts because most CHP responds to market price signals, and when located in urban load centers, will improve capacity and energy delivery by reducing line losses and supporting voltage in those load centers.

At the state level, the regulatory roadmap is in place for expanded CHP (Brooks, Elswick and Elliott 2006). What is needed is a commitment by the state to promote new installations that allow the state to benefit from the capabilities of CHP systems. Therefore, we proposed that the state establish a target of 250 MW per year of new CHP capacity for the next 15 years. While this target has not implemented at the state level, local governments should take steps to encourage the location of CHP in their communities, such as providing favorable treatment of siting permit requests. They may also want to consider favorable tax treatments of CHP facilities, such as has been done with emissions control investments. It is also important to note that a significant portion of the new CHP potential exists in public institutions such as education, healthcare, and government facilities, so local governments have both control and can directly reap the benefits of expanded CHP.

Increased Demand Response Programs

Statewide increased demand response programs have value to moderate high energy prices or fuel shortages, and particularly as an operational reliability tool to remedy the imbalance between electricity demand and supply in peak hours or shoulder periods, or during extreme weather events, generation outages, transmission and generation contingencies, and

[8] http://www.iclei.org/
[9] http://www.seco.cpa.state.tx.us/TEP_Production/index.html

erroneous load forecasts. Demand response can also contribute toward addressing temporary air quality problems or fuel delivery interruptions. The statewide analysis (Elliott 2007) made several recommendations to increase demand response programs, including smart, programmable thermostats for all new residential and commercial buildings plus raising the MW requirement for Load Acting as a Resource (LaaR). The analysis also assumed that all Texas retail electric providers and utilities (including munis and coops) meet a Demand Response Portfolio Requirement, achieving no less than 3% of peak load from demand response resources by 2011, ramping up to 10% by 2023. This again represents a measure that local governments have limited ability to influence since it is administered at the state level by PUCT and ERCOT.

Onsite Renewable Energy Incentives

The broad range of renewable energy resources in Texas, including wind, PV, solar hot water heating, and biomass, calls for a suite of policies to accelerate their market acceptance and utilization. Three types of policy options were outlined in the statewide analysis:

1. *Supply-Side Incentives:* to make the renewable energy production more cost competitive (e.g., tax credits, a "buy down" incentive such as standard offer payments and rebates, low-interest financing).
2. *Demand-Side Policies:* examples include mandates (e.g., Renewable Portfolio Standards that may include set-asides) and "must buy" policies (e.g., standard offer contracts, feed-in laws) and building codes.
3. *Enabling Policies:* to prepare the market to succeed (e.g., installer training and certification, interconnection requirements, competitive wholesale markets, retail real-time pricing, net metering, zoning and insurance guidelines).

The set of statewide recommended policies to stimulate onsite renewable generation in Texas draws on all three types of policy approaches and is described in detail in the statewide report (Elliott et al. 2007). These recommendations build upon programs already in use in Texas for which onsite renewables qualify, and provide added stimulus. As with CHP, local government can encourage implementation by their treatment of permitting requests and property taxes.

SUMMARY AND CONCLUSIONS

Expanded energy efficiency, demand response, and onsite renewable energy resources represent the best opportunities for the greater Houston and Dallas/Fort Worth metro areas to meet surging electricity demand without further compromising the region's environmental quality. Greater reliance on these clean energy resources would help to support the robust economic health of these two regions, which account for half of the population and economic output of the state, thus sustaining Texas' long-term economic prosperity.

While the suite of policies proposed in this report can be enacted at the state level, and local governments should encourage Austin to move aggressively on these provisions, up to two-thirds of the savings suggested in this analysis could be realized with local action. In particular, policies to encourage expanded use of CHP and onsite renewable energy, and

improving the energy efficiency of buildings represent key opportunities for local action. Aggressive local policies could in fact achieve even greater savings than is suggested in this analysis.

These policies can not only meet most of the projected growth in electricity needs over the next 15 years, but can result in net consumer electricity expenditure savings of $20 billion over that period. The investments required to realize these savings along with the consumer bill savings would be recycled into the local economy, creating new jobs. Our analysis suggests that full implementation of the policies would result in the creation of nearly 23,000 net new jobs in 2023 in these regions.

Expanded energy efficiency, demand response, and onsite renewable energy resources should be the foundation of policies to sustain the economic engines that are the Dallas/Fort Worth and Houston metro areas.

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TECHNICAL APPENDIX

Detailed current disaggregated electricity data and forecasts are largely unavailable for the metro areas studied in this report. In part, this lack of data results from the shift that has occurred over the past decade as the state has deregulated its electricity sector and the various entities have been absolved of much of their public reporting obligations. As a result, the authors were forced to use various proxies to develop estimates of electricity consumption, demand, and prices for the regions. We thus drew upon a wide variety of data sources and experts to develop our estimates for the metro areas. This challenge was further complicated by the varying geographic definitions of the regions. Because we did not have sufficient data to better disaggregate the regions, we were forced to ignore the differences between the varying regional geographic boundaries. While this is perhaps less than ideal, for broad policy purposes these estimates should serve as a first-order approximation.

Metro Area Forecasts

We first developed electricity sales forecasts, disaggregated by sector, for the two major Texas metro areas using several data sources. The Public Utility Commission of Texas provides monthly aggregate electricity sales data and disaggregated data for the residential and small commercial sectors for each utility (PUCT 2007a). Highly disaggregated utility electric sales data and forecasts for all sectors, however, are no longer maintained by the PUCT.

For the Houston metro region, we used the available PUCT electricity sales data for Centerpoint Energy, the transmission and distribution utility that services this area, as an indicator of total sales in the region. Disaggregated sector sales data were derived by applying the percent of electricity sales by sector in 2000 to current total electric sales (PUCT 2000). TXU Delivery (now Oncor Electric Delivery), the TDU which serves the Dallas/Fort Worth metro area, provided electricity sales data specific to the metro region for a seven-county region (Stockard 2007).

To forecast electricity sales through the year 2023 using current sales data, we applied growth rates from ERCOT forecasts by weather zone (ERCOT 2007). The North Central weather zone growth trend was applied to DFW data and the Coastal zone growth trend was applied to the Houston metro area data. Only aggregate regional electricity sales forecasts were available, so we were limited to use the same growth trend for each sector.

Peak demand forecasts were developed using forecasted ERCOT ratios of peak energy demand to electricity sales and applying those to forecasted regional electricity sales. Regional peak demand forecasts and growth rates are shown in Tables A-1 and A-2.

Metro region electricity sales and peak demand forecasts for benchmark years 2008, 2013, and 2023 are also shown in Tables A-1 and A-2, as are the average growth rates during the 15-year study period. In 2008, the Dallas/Fort Worth metro area will consume about 74,000 million kWh, or 20.5% of the state's electricity sales. Forecasted electricity sales in the Houston metro area for the same year are approximately 80,000 million kWh, or 22% of the state's electricity sales. Average growth rates for each region exceed that of total ERCOT

electricity sales, with electricity consumption for DFW and Houston growing at an average rate of 1.8% and 2.2%, respectively, compared to 1.6% for total ERCOT sales. In 2023, because the metro areas are growing faster than the state, the regional share of total state electricity sales rises to 21.5% for DFW and 24% for Houston.

Table A-1. Dallas/Fort Worth Reference Case Electricity Consumption and Demand Forecast

	2008	2013	2023	Average Growth Rate
Peak Summer Demand—All Sectors (MW)	15,530	17,492	22,731	2.36%
Residential	7,277	8,136	10,508	
Commercial	8,075	9,028	11,660	
Industrial	1,358	1,519	1,961	
Electricity Consumption—All Sectors (million kWh)	73,570	80,119	96,767	1.8%
Residential	28,821	31,662	38,037	
Commercial	35,119	39,578	50,067	
Industrial	10,158	10,520	12,107	

Table A-2. Houston Metro Area Reference Case Electricity Consumption and Demand Forecast

	2008	2013	2023	Average Growth Rate
Peak Summer Demand—All Sectors (MW)	16,848	19,517	25,903	2.79%
Residential	6,694	7,698	10,154	
Commercial	4,816	5,537	11,660	
Industrial	4,265	4,904	1,961	
Electricity Consumption—All Sectors (million kWh)	79,811	89,394	110,272	2.2%
Residential	25,944	29,314	35,967	
Commercial	20,943	24,276	31,364	
Industrial	31,895	33,973	39,933	

Retail Electricity Price Assumptions

There are two components of electricity rates in Texas—the energy rate plus the transmission and distribution rate. The energy rates vary by weather zones and the transmission and distribution rates vary by the utilities' service territories. The wholesale energy rates can be affected by the congestion or inadequate capacity of the transmission lines. If a specific line is too congested to allow for the transmission from a lower cost generator, a higher cost generator may come online and increase the price to the retail electric provider, which is then

passed on to the retail customers. These congestion costs are uplifted by weather zone and, as a result, the prices may increase for all customers. Obtaining accurate energy rate data, however, is difficult because the PUCT has not collected pricing data for all customer classes since restructuring.

Residential Prices

Current Dallas/Ft. Worth and Houston residential electricity prices were obtained by utilizing residential data available from PUCT (PUCT 2007b). For Dallas/Ft. Worth, we used retail electricity price data for customers within the Oncor (formally TXU Electric Delivery) service area. For Houston, we used data for customers within the CenterPoint Energy service area. We used retail prices for customers using 1000 kWh per month, which Frontier Associates indicated is an appropriate indicator of electricity consumption in these metro areas. Because there are many retail electric providers (REPs) offering different prices within each TDU service area, we calculated a weighted average of residential prices (cents per kWh) assuming that 40% of customers contracted for competitive pricing and 60% of customers purchased from the affiliated provider (TXU Energy for Dallas/Ft. Worth and Reliant Energy for Houston). We used this monthly REP-weighted average of residential prices combined with monthly average residential kWh usage data (PUCT 2007b) to obtain a "2006 Weighted Average of Residential Rate" for DFW and Houston.

Commercial and Industrial Prices

Commercial and industrial price data are not available for any geographic subregion of ERCOT from any public source. As a result, we resorted to using the average retail electricity price data for Texas from the Energy Information Administration (EIA 2007) and weighting it by the ratio of residential rates to statewide residential rates to obtain Dallas/Ft. Worth and Houston 2006 commercial and industrial electricity prices. A ratio of "Texas Commercial Rates in 2006" to "Texas Residential Rates in 2006" was computed and multiplied by the "2006 Weighted Average of Residential Rates" for DFW and Houston to obtain an estimate of "2006 Weighted Average of Commercial Rates" for DFW and Houston. Similarly, a ratio of "Texas Industrial Rates in 2006" to "Texas Residential Rates in 2006" was computed and multiplied by the "2006 Weighted Average of Residential Rates" for DFW and Houston to obtain estimates of "2007 Weighted Average of Industrial Rates" for DFW and Houston. The commercial pricing data was cross-checked with a proprietary database maintained by a private consultant and was found to be reasonable in the Oncor service territory but about one cent too high in the CenterPoint service territory. The CenterPoint commercial price was adjusted based on this data, and the industrial price was also adjusted downward the same fraction based on expert judgment.

All Sectors Average

We calculated an average price for "All Sectors" for each region using a weighted average of electricity consumption and prices in each sector. Data reported by the EIA is used for an "All Sectors" average for the state of Texas. In our analysis, we use the "All Sectors" regional average prices to calculate the cost of saved energy.

In Table A-3 a comparison of 2006 statewide average electricity prices and the calculated electricity prices for the metro areas is shown. 2006 residential electricity prices for Dallas/Ft. Worth and Houston are 15% and 25%, respectively, higher than current statewide average prices. The same ratio for Dallas/Ft. Worth applies to the commercial and industrial sectors. The "All Sectors" average for Dallas/Ft. Worth and Houston, weighted by consumption in each sector, is approximately 18% and 14% higher, respectively, than the statewide average.

Table A-33. Statewide and Regional Retail Electricity Prices in Texas (¢/kWh)

	Texas	Dallas/ Ft. Worth	Houston
Residential	12.7	14.6	15.8
Commercial	9.73	11.2	11.1
Industrial	7.77	8.95	8.81
All Sectors	10.3	12.2	11.7

Methodology for Apportioning Individual Policies

Expanded Utility-Sector Energy Efficiency Improvement Program

In 1999, at the time of deregulation of its electric industry, the Texas legislature mandated the state's investor-owned utilities to meet 10% of their annual growth in electricity demand with energy efficiency. In recent years, load growth in Texas has averaged about 2% per year, and thus the current requirement means savings of about 0.2% of demand annually. By way of comparison, several leading states have achieved annual savings on the order of 1–2%. The Texas IOUs have met the energy efficiency goals for four straight years and have even exceeded the goals. In 2006, the utilities exceeded the peak demand goal by 27%. In 2007, the Texas legislature passed HB 3693, which expands energy efficiency goals for residential and commercial customers to 15% of forecast demand growth by 2008 and 20% by 2009 (Fitzpatrick 2007).

Based on state experience elsewhere, we believe it is reasonable to increase the Texas target to 50% of load growth for all sectors, which is the assumption used in our statewide analysis. We assumed the same efficiency targets for utilities in the metro areas. Energy demand in the Houston and DFW metro areas is growing faster than the rest of the state, making these areas a key resource for meeting the energy efficiency targets.

New State-Level Appliance and Equipment Standards

State-level appliance and equipment standards establish minimum efficiency requirements for specific products, eliminating the most inefficient models from the market. Efficiency standards are recommended for 10 products in the Texas statewide analysis, of which one or more product standards have already been established by eight other states (AZ, CA, MA, NY, OR, RI, VT, and WA). Estimated savings in the Houston and DFW metro areas were apportioned based on residential and commercial electricity sales in these regions relative to

statewide residential and commercial sales, which is an appropriate indicator of appliance and equipment sales.

More Stringent Building Energy Codes

Updated residential and commercial building codes could reduce energy use by 15% according to the Texas A&M Energy Systems Laboratory. Our statewide estimates for building codes assumed 15% savings relative to current code beginning in 2009, and 30% savings relative to current code beginning in 2020. The Dallas/Ft. Worth and Houston metro areas are growing faster than the rest of the state and as a result, building code improvements will result in significant savings in these regions. According to the U.S. Census, the Dallas/Ft. Worth metro area represents 26% of the housing permits in the state and the Houston–Sugar Land–Baytown (the U.S. Census Bureau's 10-county Greater Houston classification) represents 33% of the state's housing permits (U.S. Census 2007). We apportioned the statewide energy savings estimates to the metro areas based on the ratio of new residential and commercial electricity sales each year to total new electricity sales in the state of Texas.

Advanced Energy-Efficient Building Program

The statewide analysis identified an economic potential to reduce energy use in new Texas homes and commercial buildings by around 50%, as new technologies make these savings realistic in the next few years. If updated state building codes improve efficiency by 15%, this leaves an additional 35% energy savings still to be captured. One way to capture some of these savings is to offer an advanced building program that combines training and technical assistance for architects, engineers, and builders on ways to achieve the savings at modest cost, with financial incentives to help defray the extra costs, particularly on the first homes and buildings an architect or builder designs. To estimate local savings, we used the same methodology as that of new building codes. We used the statewide estimates and apportioned energy savings for each metro region based on its contribution to the state's annual growth in residential and commercial electricity sales

Energy-Efficient State and Municipal Buildings Program

A state and municipal buildings program is a significant way for state and local governments to lead by example by adopting energy efficiency measures while saving money on energy bills. Texas is operating a major program, Texas *LoanSTAR*, to assist state and municipal facilities to undertake energy-saving investments. Nearly 200 facilities have received funding, with energy savings averaging about 15% (Sifuentes 2007). The heart of the *LoanSTAR* program is a $95 million revolving loan fund that is used to finance efficiency improvements. Because this loan fund has been fully utilized in recent years and a waiting list has developed, our statewide report recommends that funds be expanded so that half of all eligible facilities can receive assistance over the next 15 years. This metro region analysis apportioned statewide energy savings by commercial electricity sales, an appropriate indicator of public building electricity use.

Short-Term Public Education and Rate Incentives

Public education and incentives are a means to increase public awareness and ease financial barriers for consumers, which can jumpstart demand savings in the short term and allow time for long-term policies to mature. Public education campaigns in California and elsewhere have been shown to produce lasting demand reductions. Our statewide analysis assumed that a Texas energy education program will produce 3% energy savings and 5% peak demand savings at half the cost of California's program. Savings in the metro region were apportioned by electricity sales in the residential and commercial sector.

Combined Heat and Power Capacity Target

In our statewide analysis (Elliott et al. 2007), an estimate was made of the achievable potential for CHP. Since that study was released, the Houston Advanced Research Center (HARC) has undertaken an assessment of the potential for CHP in the Houston/Galveston/Brazoria metropolitan area. The results of this preliminary analysis (Lami and Bullock 2007) suggests the technical potential for CHP in the commercial & institutional (C&I) and industrial sectors for the HGB region, and their analysis suggests that HGB represents about 21% of the statewide potential. Comparing the HARC technical potential with the statewide achievable estimates from our previous report suggests that the achievable numbers represents about 25% of the potential for 2020 estimate. We thus estimated HGB CHP impacts to be 21% of the statewide economic potential as reported in the overall analysis. Maintaining a consistent ratio of CHP to C&I and industrial load, we estimated that DFW would be about 21% of the state potential, with the potential much more heavily weighted toward C&I than industrial.

Increased Demand Response Programs

Statewide increased demand response programs have value to moderate high energy prices or fuel shortages, and particularly as an operational reliability tool to remedy the imbalance between electricity demand and supply in peak hours or shoulder periods, or during extreme weather events, generation outages, transmission and generation contingencies, and erroneous load forecasts. Demand response can also contribute toward addressing temporary air quality problems or fuel delivery interruptions. The statewide analysis made several recommendations to increase demand response programs, including smart, programmable thermostats for all new residential and commercial buildings plus raising the MW requirement for Load Acting as a Resource. The analysis also assumed that all Texas retail electric providers and utilities (including munis and coops) meet a Demand Response Portfolio Requirement, achieving no less than 3% of peak load from demand response resources by 2011, 6% by 2017, and 10% by 2023. We apportioned the statewide peak demand savings to the Houston and Dallas/Ft. Worth metro areas using the ratio of summer peak demand in the metro areas to the statewide summer peak demand.

Onsite Renewable Energy Incentives

The broad range of renewable energy resources in Texas calls for a suite of policies to accelerate their market acceptance and utilization. Three types of policy options were outlined in the statewide analysis:

1. *Supply-Side Incentives:* to make the renewable energy production more cost competitive (e.g., tax credits, a "buy down" incentive such as standard offer payments and rebates, low-interest financing).
2. *Demand-Side Policies:* examples include mandates (e.g., Renewable Portfolio Standards that may include set-asides) and "must buy" policies (e.g., standard offer contracts, feed-in laws) and building codes.
3. *Enabling Policies:* to prepare the market to succeed (e.g., installer training and certification, interconnection requirements, competitive wholesale markets, retail real-time pricing, net metering, zoning and insurance guidelines).

The set of statewide recommended policies to stimulate onsite renewable generation in Texas draws on all three types of policy approaches and is described in detail in the statewide report. These recommendations build upon programs already in use in Texas for which onsite renewables qualify, and provide added stimulus. For the metro areas, we apportioned statewide electricity savings from renewables based on the ratio of total electric sales in each region to statewide electric sales.

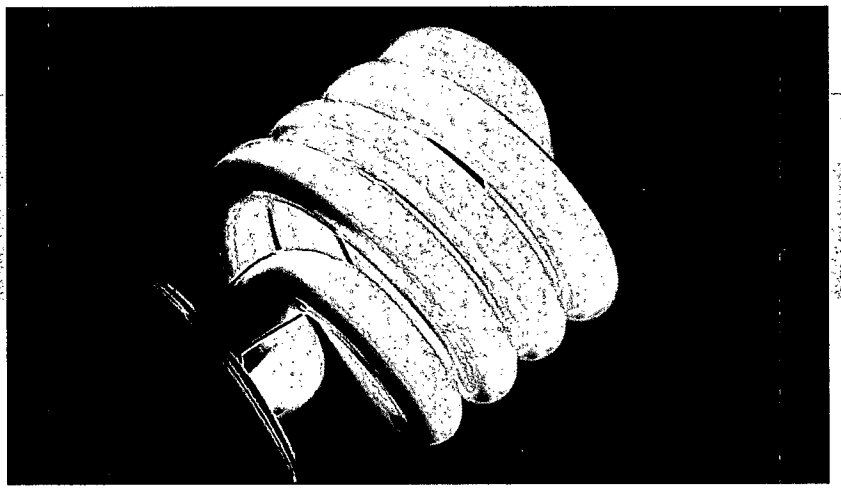
Methodology for Apportioning Macroeconomic Results

To estimate net employment impacts on the metro regions, we apportioned results from the statewide analysis, which used an economic assessment model called DEEPER—or the Dynamic Energy Efficiency Policy Evaluation Routine (Laitner 2007)—to estimate employment impacts. These estimates were based on a top-down apportionment of results from the statewide analysis and should be used only as a rough approximation of job impacts.

To apportion employment impacts by region, we first assume the regional share of personal income as a starting point for apportionment of job impacts (Houston and DFW represent 28% and 29%, respectively, of statewide personal income [BEA 2007]). [10] Then, because higher electricity prices are likely to generate somewhat higher levels of efficiency savings and jobs, and prices are higher in the metro regions, we adjusted these regional shares to reflect varying regional electricity prices using a price indicator. The regional price indexes (regional price divided by state average; see Table A-3 above for prices) are 1.1236 for Houston and 1.184 for Dallas. Assuming a price-based elasticity of 0.33 to adjust for the responsiveness to electricity prices, the new index (price index raised to the elasticity) are 1.043 for Houston and 1.057 for Dallas. We then multiplied the new indices by the regional shares of personal income, with results constrained to 100%, which generated regional shares of job impacts for Houston and DFW of roughly 29% and 30%, respectively. These regional

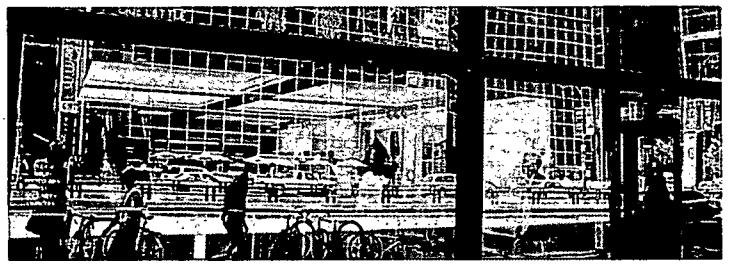
[10] For the employment impacts assessment, we used U.S. Census Bureau's MSA regions for Houston and Dallas, which are the same regions the Bureau of Economic Analysis uses to report personal income data.

shares are then multiplied by the statewide net employment impacts for the benchmark years to produce regional employment impacts.



POWER TO SAVE

AN ALTERNATIVE PATH TO MEET ELECTRIC NEEDS IN TEXAS



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POWER TO SAVE

An Alternative Path to Meet Electric Needs in Texas

by Optimal Energy, Inc.

Prepared for
Natural Resources Defense Council and Ceres

January, 2007

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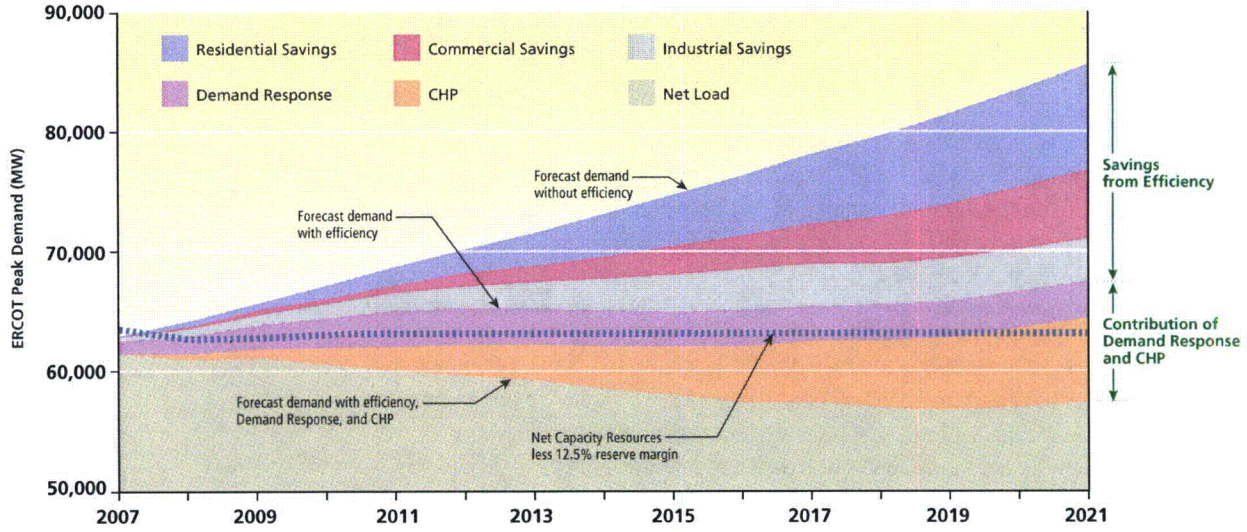
EXECUTIVE SUMMARY

The demand for electricity in Texas has grown significantly over the last several years as a result of robust economic growth, new building construction, and increasing energy use in existing buildings. Continued growth in electricity demand (often called "load growth") is expected to strain existing generation capacity in the near future. The Electric Reliability Council of Texas (ERCOT), which accounts for 85% of the state's electricity demand, estimates that available generation capacity will drop below the minimum level required to maintain reliability by 2008.[1] As a result of these trends and recent volatility in natural gas prices, some utilities have called for massive investment in new coal-fired power plants.

This study finds that a comprehensive effort to promote efficiency and other cost-saving demand reduction measures can meet Texas' electricity needs more reliably, at a lower cost and at a tremendous net economic benefit compared to building a new fleet of expensive and heavily polluting power plants. Over the next 15 years, boosting markets for more efficient products, lighting, cooling, heating and industrial processes can eliminate over 80% of forecast growth in electricity demand, while lowering consumer's energy bills. With additional measures to further reduce electricity demand and enhance reliability, Texas can completely eliminate its "load growth," resulting in a gradual *decline* in total electricity demand to more than 9% below current levels by 2021. Figure ES-1 provides a graphic representation of how reliability can be maintained without the need for large investments in new power plants.

Figure ES-1: Effect of Demand-Side Resources on ERCOT Forecast and Reserve Margin



ERCOT requires a reserve margin of 12.5%, which means that the available generation capacity should be equal to or greater than the actual peak energy load plus 12.5%. The dashed line represents ERCOT's estimated available capacity after allowing for the 12.5% reserve margin. The colored bands show the energy forecast and the effects of efficiency in the three major consuming sectors (residential, commercial, and industrial) and of Demand Response and CHP.

This approach also offers substantial economic and environmental benefits for Texas. The efficiency potential described in this report would provide $49 billion in economic benefits over the next 15 years, resulting in lower electricity bills for customers and reduced spending on electricity generation and transmission capacity by utilities. These benefits would be generated by

an $11 billion investment in proven programs and policies focused on more efficient appliances, heating and cooling systems, and office equipment and improved building codes, resulting in *net benefits* to the Texas economy of $38 billion. Compared with the proposed $10 billion cost of just 11 new coal-fired generating plants (out of a total of 19 proposed), this investment comes with less risk and greater environmental and economic benefits for Texas.[2] Studies also show that investment in energy efficiency helps the local economy. Instead of importing fuel from outside the state, energy efficiency relies on local companies and retailers to provide energy management services and energy-saving products.[3]

Summary of Findings

Capturing the energy efficiency potential estimated in this report would:

- Eliminate the need to invest in thousands of megawatts of new power plants by reducing electricity demand by 0.5% per year, when pursued with other measures cited below.
- Generate $38 billion in net benefits for the Texas economy. For every dollar invested in efficiency measures, Texas would recoup approximately $4.40 in economic benefits in the form of lower costs to consumers and savings for utilities from reduced electric generation and delivery costs.
- Save 20,700 gigawatt-hours (GWh) of electricity each year by 2011, enough energy to power nearly 1.9 million households. By 2021, over 80,000 GWh would be saved annually, enough for more than 7 million households. These energy savings cost just 1.8 cents per kilowatt-hour (kWh), compared to over 7 cents per kilowatt-hour for the alternative of supplying energy from current generating plants. Compared to current projections for 2021, this translates into a 20% reduction in electric energy use.
- Reduce peak electric demand in Texas by almost 4,000 megawatts (MW) by 2011 and 18,500 MW by 2021 (equivalent to the output of 20 large power plants). Reducing the high demand for electricity on the hottest summer days provides dramatic savings in total generation costs, because maintaining the capacity and generating electricity to meet the peak demand is very expensive.
- Prevent 52 million metric tons of carbon dioxide (CO_2) emissions annually by 2021, over 20% of Texas' current emissions associated with electricity use. This is the equivalent to the annual emissions from 10 million cars. In contrast, TXU's plan to build 11 new power plants would double its CO_2 emissions.[4] Total CO_2 emission reductions over the life of the efficiency improvements would be 400 million metric tons. Concurrent reductions in sulfur dioxide and nitrogen oxides emissions would also help the three-quarters of all Texans who live in areas where these pollutants contribute to high ozone levels.

While this study focuses on energy efficiency, it also provides a preliminary look at the potential for additional strategies to contribute to load reduction and reliability.

- An estimated 20,000 megawatts of potential combined heat and power (CHP) capacity exists in Texas. Combined heat and power refers to the generation of both electricity and useful heat energy, usually by an industrial energy consumer for use at their own facility. This reduces the consumer's need to purchase power from a utility.

- Peak demand could be further reduced by approximately 3,200 MW of Demand Response capacity. "Demand Response" refers to technologies that enable a utility to remotely reduce the power consumption of their customers during times of high demand, for example by raising the set-point of thermostats to reduce the electricity consumed by air conditioning units.

As described in the report, combining ambitious energy efficiency actions with these strategies can eliminate load growth in Texas for many years. These findings are in line with those reported by the Western Governor's Association 2006 Energy Efficiency Task Force, which found that adoption of best practice policies and programs for just energy efficiency could reduce load growth by approximately 75% over the next 15 years.

Recommendations

For Texas to capture the efficiency resources identified in this analysis, multiple strategies must be pursued. Chief among them, we recommend:

- Increasing the state's efficiency resource standard (ERS) from 10% of load growth to at least 50% and preferably to 75% as described by the Western Governor's Association.
- Expanding investment in energy efficiency programs, such as is occurring in Vermont, Massachusetts, California, and numerous other states. Simply bringing all utility efficiency efforts in line with the performance of the City of Austin's municipal electric utility would meet over one-third of new load growth.
- Adopting higher efficiency standards for appliances such as DVD players/recorders and residential pool pumps, as has been done in several states.
- Updating commercial and residential building codes to at least 15% above the current codes, as with the successful code adopted by Frisco, Texas.
- Requiring electric utilities to invest in all cost-effective efficiency resources, removing utility financial disincentives to utility investment in efficiency, and allowing them the flexibility to design and deliver programs in response to customer and market needs.
- Requiring the Public Utility Commission of Texas (PUCT) to review the potential for energy efficiency and demand-side management and update efficiency goals and programs every two years.

This report uses regional and national studies to estimate the potential for energy efficiency in Texas. It is the first of several reports to be released over the next several months examining the potential for energy efficiency and demand-side investments in Texas. Subsequent reports prepared by the American Council for an Energy-Efficient Economy (ACEEE) will examine the efficiency potential in greater detail and make specific policy recommendations for Texas. In addition, these ACEEE studies will also explore the potential for demand response, combined heat and power, and on-site renewables and estimate the macroeconomic impacts of these policies.

1 INTRODUCTION & SUMMARY OF FINDINGS

1.1 Context and Scope

Texas electric loads have grown significantly over the last several years resulting from robust economic growth, new building construction and greater energy intensity in existing building stock. Forecasts for the Electric Reliability Council of Texas (ERCOT) network are for annual electricity use to continue to grow at an average of 1.9%/yr through 2020.[5] ERCOT's summer peak demand is expected to grow even more, at 2.3%/yr for the same period.[6] This rapid growth is expected to strain existing generation capacity. ERCOT estimates that available capacity margins will drop below their 12.5 percent minimum target level by 2008.[7]

Partly as a result of these needs, some utilities have called for massive investment in new coal-fired power plants to maintain reliability. This study identifies an alternative path, one that offers substantially lower load growth, increased reliability, lower consumer energy bills, substantial environmental benefits, and provides the Texas economy with nearly $38 billion dollars in present value net benefits over the next 15 years. It analyzes the cost-effective achievable efficiency opportunities in the ERCOT region from a combination of enhanced efficiency programs for residential, commercial and industrial electricity users, adoption of appliance standards and enhanced building codes, and other policy initiatives from 2007 to 2021.

1.2 Summary of findings

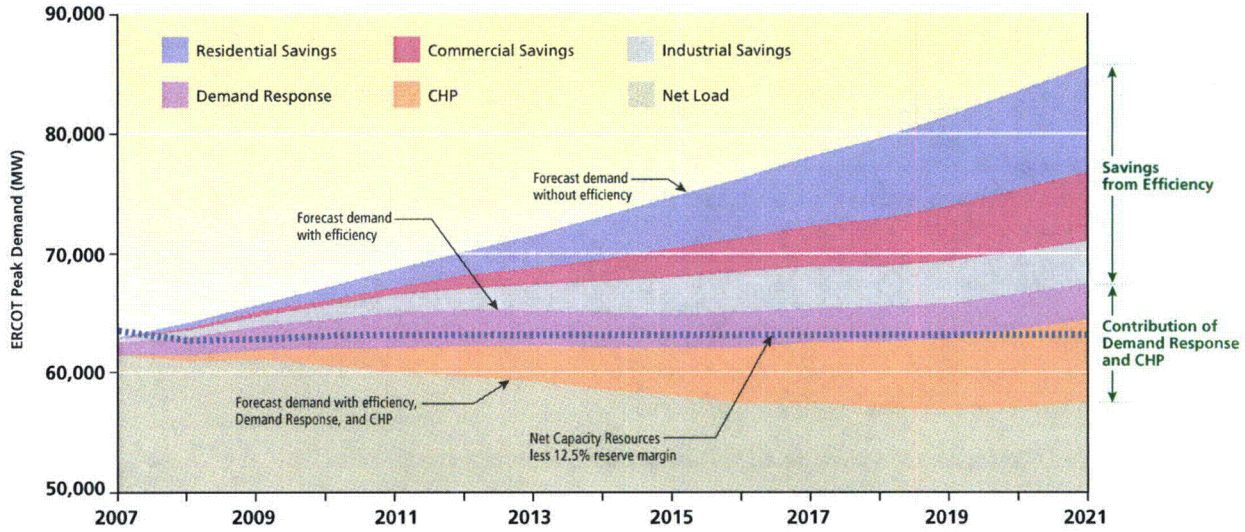
Pursuit of ambitious energy efficiency actions can, over the next 15 years, eliminate over 80% of forecast electric *load growth* at costs substantially cheaper than new electric supply. We estimate total cost-effective achievable efficiency potential of 18,500 megawatts (MW) and 80,700 gigawatt-hours (GWh) by 2021, enough energy to power 7 million households. This represents 22% and 20% of forecast peak *total* load and annual energy consumption, respectively. Capturing this efficiency resource would meet 81% of forecasted peak demand load growth and 87% of annual energy load growth. Total peak demand annual load growth would drop from a projected 2.3% to only 0.6%. For annual energy usage, average annual load growth would go from 1.9% to only 0.4%.

Substantial emissions reduction would accompany these energy savings. By 2021, they would eliminate 52 million metric tons of carbon dioxide (CO_2) (over 20% of Texas' current emissions from electricity generation), 30,000 tons of nitrogen oxides (NOx), and nearly 90,000 tons of sulfur dioxide (SO_2)[8]

Capture of this achievable efficiency potential alone will alleviate the current reliability concerns to some extent. When this energy efficiency potential is combined with additional strategies to provide additional capacity, the result is a complete elimination of load growth and an average annual *decline* in peak load of 0.5%. Over 1,100 MW of demand response capacity already exists in Texas, which allows utilities to control certain customers' energy consumption during peak energy use periods; just six years ago there was approximately 3,200 MW of demand response capacity.[9] A ramp up to historic levels of demand response capacity would defer the reliability need to 2020, even assuming no additional capacity became available from other sources, such as renewables. Furthermore, while there are over 10,000 MW of generation capacity currently available from combined heat and power (CHP) installations, where customers

generate both electricity and useful heat energy at their facilities for their own use or sale back to the electric utility, twice that amount of undeveloped CHP capacity in the state is estimated to be achievable within 10 years.[10] Figure 1 shows that tapping these resources in addition to investments in energy efficiency would forestall the need for new generating capacity to meet required reserve margins far into the future. This analysis focuses on the efficiency potential portion of these demand-side resources.

Figure 1: Effect of Demand-Side Resources on ERCOT Forecast and Reserve Margin



ERCOT requires a reserve margin of 12.5%, which means that the available generation capacity should be equal to or greater than the actual peak energy load plus 12.5%. The dashed line represents ERCOT's estimated available capacity after allowing for the 12.5% reserve margin. The colored bands show the energy forecast and the effects of efficiency in the three major consuming sectors (residential, commercial, and industrial) and of Demand Response and CHP.

Pursuit of efficiency resources would not only defer the need for aggressive investment in new generating capacity, but would also provide Texans with substantial environmental and economic benefits. Estimated total *net* benefits returned to the Texas economy would be $38 billion over the next 15 years — benefits derived from lower utility bills for customers and reduced spending on electricity generation and transmission capacity by utilities. This would be captured with an overall benefit-cost ratio of 4.4. In other words, for every dollar invested in efficiency, Texas would recoup $4.40 in savings. In addition, efficiency investments tend to retain the economic benefits within the Texas economy rather than going toward importing coal from outside the state.

1.3 Summary of Recommendations

Capturing the efficiency resource will require a redoubling of efficiency efforts. Texas should increase its current efficiency resource standard (ERS) from its current 10% of load growth (equal to just 0.23% of total current load) to at least 50% and preferably to 75%. Simply bringing investor-owned utility efficiency efforts in line with the performance of the City of Austin's municipal electric utility would meet over one-third of new load growth.[11] In addition, Texas

should direct its utilities to invest in all cost effective efficiency resources identified through a planning process that considers supply and demand-side resources on an equal footing, remove current disincentives to utility investment in efficiency, and allow them the flexibility to design and deliver programs in response to customer and market needs. In conjunction with these expanded efficiency program efforts, Texas should update its current building codes and adopt effective appliance standards such as California has done. Pursuit of the above actions can avoid a risky and environmentally damaging investment in new coal fired power generation.

Consumers face many barriers to investment in energy efficiency improvements. These include:

- Difficulty in acquiring or lack of information about energy efficiency for consumers;
- Perceived risk of investing in less-familiar technologies and products;
- Split incentives, where the party investing in energy-using equipment and systems does not pay energy-related operating costs, such as in rented apartments and leased commercial space;
- Lack of capital to invest in the efficiency improvements or added incremental cost of higher efficiency products
- Lack of ability, and associated costs related to understanding and analyzing efficiency options when making decisions about energy-using equipment.

These and other barriers conspire to cause energy users to focus on the purchase costs of new equipment (which are typically higher for efficiency equipment) rather than striving to minimize their total costs associated with both purchasing and operating energy-using equipment and systems over their lifetime.

Proven strategies to overcome the many barriers to optimal energy efficiency investment have been used to varying degrees throughout North America over the past several decades. For Texas to capture the efficiency resources identified in this analysis, multiple strategies must be pursued. Chief among them, we recommend:

- Significant expansion of investment in energy efficiency programs, such as those in place in Vermont, Massachusetts, California, and numerous other states;
- Adoption of higher efficiency standards for appliances such as DVD players/recorders and residential pool pumps, as has been done in several states;
- Updating commercial and residential building codes to at least 15% above the current codes, as with the successful code adopted by Frisco, Texas;
- Removing utility financial disincentives for ambitious pursuit of efficiency by ensuring transmission and distribution utility's profits are not hurt by reduced sales from efficiency and rewarding them for exemplary performance; and
- Requiring the Public Utility Commission of Texas (PUCT) to review the potential for energy efficiency and demand-side management and update efficiency goals and programs every two years.

The remainder of this report provides more detail on the approach and assumptions used to estimate the size and value of the electric efficiency resource, detailed findings, and policy and program recommendations for Texas to capture achievable efficiency opportunities.

2 ELECTRIC EFFICIENCY ACHIEVABLE POTENTIAL

2.1 Current ERCOT Efficiency Efforts

In 1999 Texas passed legislation requiring investor-owned utilities (IOUs) to meet a minimum of 10% of electric load growth from efficiency resources.[12] With growth running at approximately 2.3% per year, this implies a target of 0.23% of total load. In 2005, this translated to a goal of 142 MW of peak demand reduction. Texas IOUs surpassed this goal, capturing 181 MW of peak demand reduction (0.3% of total 2005 peak) and 509 GWh of energy savings (0.2% of 2005 electric energy use). This was accomplished with utility investment of $80 million, or 0.4% of these utilities' 2004 revenue. Since electric utility restructuring in Texas, total savings have reached 592 MW peak load reduction (0.95% of load) and cumulative energy savings of 1,639 GWh.[13]

While these efforts are commendable, much more can be accomplished. For example, the City of Austin's municipal electric utility has been capturing *new savings* of approximately 0.8% of *total electric load each year* through efficiency efforts (more than three times as much than the Texas IOUs), spending about 3% of its revenues (roughly 7.5 times the proportional spending by the Texas IOUs).[14] California's current utility program efficiency goals are approximately 1% of load annually.[15] Vermont is poised to lead the nation in efficiency programs, with annual targets of approximately 2% of total electric load.[16] Leading jurisdictions are also investing a substantially larger portion of utility revenue on efficiency than Texas. For example, Massachusetts' spending is about 3.3% of revenue.[17] Vermont is phasing in funding increases over two years; 2008 funding will be 4.7% of revenue.[18]

Efficiency programs can capture efficiency resources far more cheaply than traditional supply alternatives even when they are pursued more ambitiously. For example, the Western Governor's Association estimated in 2006 that the total societal costs for expanded efficiency programs in its 18 state region (which includes Texas) that would reduce load growth by 75% would provide savings at a cost of 2.5 cents/kWh, or roughly a third of Texas' current avoided costs.[19]

2.2 Methodology

This analysis relied on a number of studies to estimate efficiency opportunities in Texas. The Southwest Energy Efficiency Partnership (SWEEP) estimated in 2002 that achievable electric efficiency potential over an 18 year period in a 6-state southwestern U.S. region was 33% of forecast load by 2020.[20] For Arizona and New Mexico, savings were estimated at 34% and 36%, respectively.[21] The SWEEP analysis considered opportunities from efficiency programs, building codes and appliance standards, and other policy reforms similar to those recommended here. In 2006 the Western Governor's Association's (WGA) Energy Efficiency Task Force developed an estimate for an 18-state Western U.S. region by reviewing seven major efficiency potential studies completed since 2001 for western states, including the SWEEP study. Some of these studies addressed areas like California and the Pacific Northwest, where ambitious efficiency efforts have been in existence since the 1980's. The WGA had previously set a goal equivalent to a reduction in electric usage of 1.4% per year.[22] WGA states:

> ***We conclude that widespread adoption of best practice policies and programs would not eliminate all load growth over the next 15 years, but it would reduce it by about three-quarters.***

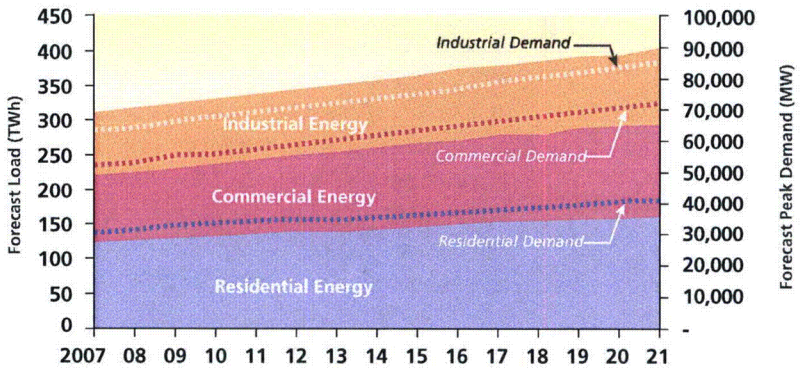
The Best Practices scenario reduces electricity consumption in 2020 by 20% relative to that in the Reference scenario, or the equivalent of electricity supply by 100 baseload power plants. Thus we conclude it is possible to achieve the energy efficiency goal enunciated in the WGA Clean and Diversified Energy Resolution, namely realizing 20% electricity savings by 2020. Moreover, even greater electricity savings may be possible through adoption of other strategies not included in our Best Practices scenario, such as R&D, technology transfer, or pricing initiatives.[23]

Our analysis applied data from these and other studies to current and forecast ERCOT loads to develop an efficiency potential estimate for ERCOT. We estimate significantly less potential than SWEEP, although in line with WGA. Various changes since the SWEEP study, the greater efficiency efforts in Texas than some of the Southwestern states, and other inputs resulted in our estimate on the lower side of recent available research in the area. We also modified the ramp up of activity in recognition that Texas efficiency efforts are currently substantially below maximum achievable levels. We applied savings from these studies to EIA's reference case ERCOT electric demand forecasts, broken out by sector. The residential and commercial sectors were further broken out by building type. For the industrial analysis, we relied on a study of industrial efficiency potential in New York State, making adjustments for the relative mix of industrial sector activity in New York and Texas. The sections below provide more detail on the methodology.

2.2.1 ERCOT Base Case Load Forecast

The starting point for the analysis is the "base case" forecast. This is an estimate of future electricity demand assuming "business as usual," including the current utility efficiency efforts. To determine the base case for the years 2007 through 2015 we rely on ERCOT's own energy forecast.[24] From 2015 through 2021 we increase the ERCOT forecast by the growth rates found in the U.S. Energy Information Administration (EIA) 2006 energy forecast for ERCOT which projects average annual load growth of 1.7% per year through 2021. EIA also forecasts peak demand growth of 2.3% per year through 2010. ERCOT's own peak demand forecast has growth slowing slightly in the longer-term, averaging 2.2% through 2021. The higher peak demand estimate reflects a decreasing load factor, which continues a trend in Texas that is presumably due to higher penetration of air conditioning and other weather-related end uses that disproportionately affect summer peak demand. Figure 2 shows the energy and demand forecasts by sector.

Figure 2: ERCOT Energy and Peak Demand Forecast through 2021



2.2.2 Efficiency Potential Analysis

We applied estimated efficiency savings as a percentage of load by year, sector and building type to sector-level energy forecasts. The efficiency savings are based on review of other regional potential studies and do not rely directly on detailed building and equipment

data in Texas. For the residential analysis, we estimate potential separately for single and multifamily buildings. For the commercial analysis, four primary building types are analyzed — offices, retail, education, and food service. For each of these six total building types, savings are further broken out into existing and new construction. We assumed 80% of load growth was due to new construction, with the remaining due to growth in consumption in existing buildings. For residential buildings, we allocated 73% of energy use to single-family buildings, based on sales data from the SWEEP study. For commercial buildings, we allocated energy use based on data from the Commercial Building Energy Survey (CBECS) for the West South Central region, of which Texas represents a large fraction.[25]

The industrial analysis began with an estimate of the savings potential for several electrical energy end-uses (e.g., motors, process heating, lighting, etc.) in industrial facilities.[26] The savings potential for each of nine major manufacturing sectors was calculated using data from the U.S. Energy Information Administration on the distribution of energy consumption across these end-uses for each industry.[27] We then calculated a weighted average savings potential for the industrial sector in ERCOT from the actual 2004 electrical energy use and the total savings potential for each sector.

For the residential and commercial potential, the starting point is the total achievable energy potential by building type and year estimated for Arizona and New Mexico.[28] This potential was applied to the Texas building type loads, separately for existing and new construction. Penetration factors were then applied to reflect likely penetrations given reasonable but ambitious efficiency efforts, based on past experience with leading programs in North America. In general, maximum penetrations by 2021 were around 60% of the eligible efficiency opportunities.[29]

Residential and commercial peak demand savings associated with the energy reductions assumed similar efficiency load factors to those currently achieved by the Texas investor-owned utilities in 2005.[30] The industrial analysis assumes a load factor consistent with industrial consumption.

2.2.3 Economic Effects and Emission Reductions

To estimate the costs of achieving the estimated efficiency potential in the residential sector we implicitly adopted the costs from the SWEEP study by scaling their reported total program costs to our savings levels. For commercial, we estimate costs commensurate with the experience of other ambitious efficiency efforts and other studies. Industrial costs were estimated based on the mix of industry sectors and technologies assumed. In addition to the incremental costs incurred to invest in more efficient equipment, we also estimated the administrative, marketing and other costs to deliver ambitious programs to capture the efficiency. We assume program budgets of 30% of incremental efficiency costs for the residential and commercial sectors, and 15% for the industrial sector.

To estimate emissions reductions from efficiency investments, we apply emissions factors for Texas generation to our energy savings estimates. The factors for 2021 assume 12,000 new megawatts of coal-fired generation, with the balance of any needed capacity coming from non-carbon fuels (e.g., wind, nuclear).[31]

2.2.4 Additional Demand-Side Resources

We relied on past results to estimate the potential for additional demand-side resources in Texas. According to ERCOT, there is currently 1,112 MW of available demand response capacity.[32] As recently as 2000, there was 3,200 MW of demand response capacity.[33] We assume that this capacity could be regained over 5 years at approximately 500 MW per year. For combined heat and power (CHP), the American Council for an Energy Efficiency Economy estimates the potential to achieve 20,000 MW of additional capacity, in addition to the 10,000 MW installed circa 1999.[34] We assumed that this potential could also be tapped at the rate of 500 MW per year, beginning in 2008.

2.3 Detailed Results

2.3.1 Overall Findings

By 2021, we estimate overall reductions of 20% in forecast energy load and 22% in forecast peak demand. This translates into average annual load decreases of 1.5% and 1.7% for energy and demand, respectively. As a result, ambitious efficiency policies and programs can limit growth in energy usage to just one-fifth of the forecast growth over the next 15 years. This would provide $38 billion of net benefits to the Texas economy.[35] Nearly 400 million tons of CO_2 emissions would be avoided over the life of the measures.

2.3.2 Efficiency Potential

Total electric efficiency potential by sector and year is shown in Table 1. Because Texas already has a history of successful efficiency programs, immediate actions can be taken to begin to capture this potential right away. The modeled efficiency potential assumes a ramp up of activities, with full scale deployment within about 5 years.

Table 1: Energy Efficiency Potential by Sector and Year

	Energy Savings (gigawatt-hours)				Peak Demand Reduction (megawatts)			
Year	Residential	Commercial	Industrial	Total	Residential	Commercial	Industrial	Total
2007	710	618	2,406	3,734	228	151	305	685
2008	1,322	1,132	4,823	7,277	424	277	612	1,314
2009	1,965	1,758	7,248	10,970	631	431	919	1,981
2010	3,203	2,881	9,771	15,855	1,028	706	1,239	2,973
2011	4,379	3,952	12,409	20,741	1,406	968	1,574	3,948
2012	6,222	5,557	14,998	26,777	1,997	1,362	1,902	5,261
2013	8,553	7,672	17,838	34,063	2,746	1,880	2,263	6,888
2014	11,047	9,810	20,670	41,527	3,546	2,404	2,622	8,572
2015	13,541	11,991	23,610	49,142	4,347	2,938	2,995	10,280
2016	15,887	14,030	26,686	56,603	5,100	3,438	3,385	11,923
2017	18,219	16,214	27,014	61,446	5,849	3,973	3,426	13,248
2018	21,333	18,903	27,422	67,658	6,849	4,631	3,478	14,958
2019	23,683	21,581	27,651	72,915	7,603	5,288	3,507	16,398
2020	25,646	23,809	27,597	77,052	8,233	5,833	3,500	17,567
2021	27,306	25,289	28,118	80,714	8,766	6,196	3,566	18,529

Total cost-effective achievable efficiency potential by 2021 is approximately 18,500 MW and approximately 80,700 GWh. Capture of this efficiency resource would meet 81% of forecast peak demand load growth and 87% of annual energy load growth. Total peak demand annual load growth would drop from a projected 2.3% to only 0.6%. Annual energy load growth would drop to only 0.4%.

2.3.3 Economic Effects

The annual stream of efficiency savings were analyzed for cost-effectiveness based on the estimated value of marginal reductions in ERCOT electric loads, from ERCOT hub forward energy prices.[36] Total net benefits to the Texas economy from capture of efficiency resources would be $38 billion (present value, 2006$). In other words, from reduced investment in electric supply resources, the net wealth of Texas society would increase by this amount, while still meeting its energy needs at similar levels of service. An investment of $11 billion (present value, 2006$) would return $4.40 to the Texas economy for every dollar invested (a 4.4 benefit/cost ratio). The levelized cost of saved energy for efficiency resources would be $0.018/kWh, approximately 25% of estimated ERCOT avoided electric supply costs for 2007. Table 2 shows economic impacts from pursuit of the potential efficiency resources.

Table 2: Present Value Benefits and Costs of Efficiency Investments

	Benefits	Cost	Net Benefits	Benefit-Cost Ratio
Residential	16,791	4,800	11,991	3.5
Commercial	15,548	4,493	11,055	3.5
Industrial	16,666	1,757	14,909	9.5
Total	**49,005**	**11,050**	**37,955**	**4.4**

2.3.4 Emissions

In addition to providing billions of dollars to the Texas economy, reductions of greenhouse gases and other pollutants are substantial. Total CO_2 reductions would be nearly 400 million metric tons, with an annual reduction in 2021 equivalent to 14% of forecast Texas electric power generation emissions. Put another way, by 2021 the annual reductions would be equivalent to taking 10 million vehicles off the road. Table 3 shows emissions reductions.

Table 3: Emissions Reductions from Efficiency Efforts (metric tons)

	Annual (2021)	Cumulative
Carbon Dioxide (CO_2)	52,100,000	395,000,000
Sulfur Dioxide (SO_2)	87,100	660,000
Nitrogen Oxides (NOx)	30,800	233,000

3 POLICY AND PROGRAM RECOMMENDATIONS

3.1 Increase Efficiency Resource Standard and Expand Ratepayer Funded Efficiency Programs

The WGA notes, "leading utilities such as California's investor-owned utilities, Austin Energy... are spending at least 2% of their revenues on energy efficiency and load management programs. These programs are cutting electricity use by 0.8-1.0% per year."[37] Texas currently requires its investor-owned utilities to meet a minimum 10% of new load growth with efficiency, or approximately 0.23% of loads based on the forecast growth. Even just bringing investor-owned utility efficiency efforts in line with the performance of the City of Austin's municipal electric utility would meet over one third of new load growth. Texas should follow other leading states and increase this standard to at least 50% of load growth, and preferably to 75%. Massachusetts and Connecticut have both taken recent steps to set goals to *completely eliminate all load growth from efficiency.* For example, the Massachusetts Division of Energy Resources on December 21, 2006 petitioned the Department of Telecommunications and Energy to develop an Efficiency Performance Standard that, combined with current MA utility efficiency programs, would eliminate 100% of load growth.[38] Similarly, the Connecticut Energy Conservation Management Board is pursuing a zero load growth scenario for energy efficiency in response to a directive from the Public Utility Commission.[39]

In addition, utilities should be directed to invest in all cost effective efficiency resources that are cheaper than new generation supply (see discussion of integrated least-cost resource planning below).

Texas investor-owned utilities (IOUs) spent $80 million on efficiency and load management programs in 2005, approximately 0.4% of their revenue. Vermont currently leads the nation with 2008 spending established at 4.7% of utility revenue. Massachusetts spends about 3.3% of revenue. Other leading states (particularly on the West Coast and in the Northeast) are spending well over 2%. Austin Energy (the City of Austin's municipal electric utility) currently spends 3% of its revenue.[40] Texas should significantly expand its investment to at least 3% of revenue. An increase to 3% of revenue would translate to roughly 7.5 times the current investor-owned utility spending, bringing them up the level of Austin Energy and putting Texas on a par with other leading states. Spending of approximately 4% of revenue would be necessary to achieve the potential estimated here.

These expanded efficiency programs would provide very cheap resources. WGA notes:

> ***"DSM programs typically save electricity at a total cost of $0.02 – 0.03/per kWh (utility plus participant costs), meaning that improving end-use efficiency is the least expensive electricity resource...Also, many DSM programs reduce peak power demand more than they reduce electricity consumption in percentage terms, meaning the programs also improve the load factor for the utility system and improve system reliability."*** [41]

Programs should address all cost-effective opportunities within the buildings sector, and all utility customers should be eligible to participate. Numerous examples of leading programs exist throughout North America and should be looked to for guidance on program design. In addition, a number of constraints currently applied to Texas investor-owned utility efficiency programs should be modified:

- **Remove the limit on financial incentives for projects in the C&I sector.** Currently, commercial and industrial customers may receive no more than 35% of the value of the energy saved from efficiency improvements as an incentive to make these investments.[42] In some cases, this is not sufficient and the investment is not made. In fact, incentive funds went partially unspent last year, in part because not enough customers felt that the efficiency investment was financially feasible. Program administrators should have flexibility to design programs to capture maximum cost-effective potential, and design incentive strategies necessary to do that, up to covering the full incremental costs of cost-effective efficiency measures in some cases.

- **Allow programs to demonstrate that they are cost-effective over the long-term.** Multiyear plans and funding commitments are necessary to enable program administrators to effectively plan long-term efficiency strategies and for their customers and equipment manufactures and vendors to effectively plan and respond to efficiency programs. Unfortunately, Texas requires that all efficiency programs be cost-effective (that is, generate more economic benefits than their cost) in all years.[43] Ambitious programs, especially those that attempt to transform markets for particular products to make higher efficiency units commonplace over time, often require initial efforts and costs to work with market participants that bear fruit long term. During this time, costs are incurred but large measurable savings have not yet accrued, making the program appear to be non-cost-effective in the short term. Again, program administrators need flexibility in program design.

- **Remove the cap on program administrative costs.** Program administrators should be subject to stringent performance criteria. However, with proper financial incentives and criteria, they should be allowed latitude to pursue efficiency based on an understanding of their customers and national best practices. Texas limits administrative spending to 10% of total costs.[44] Experience suggests that this is too low for an ambitious efficiency program. Administrative costs need not be capped when programs are subject to ambitious and measurable performance criteria and incentives. Under this approach, program administrators have every incentive to minimize unproductive spending and maximize program cost-effectiveness. This flexibility allows administrators the ability to trade-off spending among different budget line items while focusing on overall cost minimization.

- **Provide program administrators flexibility to design and deliver a portfolio of exemplary programs.** In general, the Texas programs are subject to many constraints that limit the available approaches. For example, all programs must be "standard offer" or "market transformation." While standard offer programs can be very effective at capturing inexpensive resources in the short term, they do not succeed in all markets, and rarely capture comprehensive savings within the markets they do target. Utilities may also not market the programs, instead leaving all services to be delivered by energy efficiency service providers.

3.2 Improve building codes

Texas currently has building codes that set the "floor" for energy efficiency in new construction. This code was passed in 2001 to help reduce emissions from electric utilities. The goal was to reduce energy use by 15%. Although the code exceeded that goal, it is now

out of date and should be modified based on the latest standards, with mechanisms for timely automatic updates when new standards are developed. For example, current commercial building codes require buildings to comply with ASHRAE 90.1 2001 or the 2001 International Energy Conservation Code (IECC). These should be upgraded to the latest 2004 standards, as some states have already done. In addition, adopting innovative features that go beyond these standards should be considered, as appropriate for Texas. The city of Frisco, Texas adopted higher standards for new homes and commercial construction that have increased code-related savings to 30% within that community. We note that ambitious code training and technical assistance for architects and engineers, along with effective enforcement, is necessary for building codes to be fully effective.

3.3 Adopt appliance standards

Several states have adopted efficiency standards for appliances not covered by federal efficiency regulation, including Arizona, Oregon and New York.[45]

The WGA notes:

> ***California is leading the nation in developing and enacting minimum efficiency standards on appliances that are not regulated by the federal government. Other western states including Arizona, Oregon, and Washington have adopted appliance efficiency standards on some of the same products regulated by California. These standards are very cost-effective with energy bill savings paying back any additional first cost in two years or less in most cases.***[46]

Texas should follow other states' lead and adopt ambitious appliance standards, where appropriate.[47]

3.4 Create Incentives and Remove Disincentives for Utility Least Cost Planning

Texas relies on electric utilities to administer efficiency programs. This model has proven effective, along with other models. To improve effectiveness, however, Texas should reform its regulatory structure in two ways. First, it should remove disincentives for ambitious pursuit of efficiency by ensuring that transmission and distribution utilities' financial bottom line is not hurt by sales lost to efficiency. Second, it should require utilities to do integrated resource planning and to pursue the long term least-cost solutions to providing energy services, considering both demand- and supply-side resource alternatives on an equal footing.

From the utilities' perspective, even the most cost-effective efficiency (or distributed generation) resources installed on the customer side of the meter produce the same effect – a reduction in sales and, as a result, reduced revenues and profits until the next rate case. Changing the regulatory structure for transmission and distribution utilities can remove this disincentive to ambitious efficiency investment. Texas can ensure that utilities deliver reliable least-cost energy services to customers by adopting alternative regulation. This would remove both the incentive to increase electricity sales and the disincentive to run effective energy efficiency programs or invest in other activities that can reduce energy use.

In addition, the PUC should require utilities to review the potential for energy efficiency and demand-side management and revise goals and programs every two years. These goals should encourage maximum investment in demand-side resources and consider all alternatives to generation-based supply of energy services.

Finally, the PUC should establish a process where T&D utilities can recover the cost of their investments in energy over the life of the resource and without a rate case. This will minimize any short-term rate impacts from new resources.

4 CONCLUSIONS

Texas is faced with the need to expand electric resources to meet reliability needs. Investment in efficiency resources to meet most of this reliability need offers a cost effective solution, and along with relying on other demand-side resources such as demand response and combined heat and power, can effectively push out reliability concerns to beyond 2021. Capturing the efficiency resource will require a redoubling of efficiency efforts. Texas should increase its current efficiency resource standard (ERS) from its current 10% of load growth to at least 50%, and preferably to 75%. In addition, Texas should direct its utilities to invest in all cost effective efficiency resources identified through an integrated resource planning process, remove current disincentives to utility investment in efficiency, and allow them the flexibility to design and deliver programs in response to customer and market needs. In conjunction with these expanded efficiency program efforts, Texas should update its current building codes and adopt effective appliance standards. These actions can avoid a risky and environmentally damaging investment in new coal fired power generation.

Endnotes

1. *Report on the Capacity, Demand, and Reserves in the ERCOT Region.* ERCOT, June 2006. ERCOT includes 75% of the land area in Texas and most of the major population centers, including Houston, Dallas-Fort Worth, San Antonio, and Austin. In this report, although our analytical results are based on an analysis of the efficiency potential and loads in ERCOT, we often refer to policies, actions, and comparative results from Texas for ease of understanding.
2. TXU has proposed building 11 new power plants at an estimated cost of $10 billion. Other power producers have also proposed an additional 8 power plants.
3. *Energy Efficiency: Reduce Energy Bills, Protect the Environment.* Prepared by the National Action Plan for Energy Efficiency, www.epa.gov/cleanenergy/eeactionplan.htm.
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8. Eldridge, M., A. deLaski, and S. Nadel Opportunities for Appliance and Equipment Efficiency Standards in Texas, ACEEE Report Number ACEEE-A063, September 2006. Emissions factors for 2021 assume 12,000 new megawatts of coal-fired generation, with the balance of any needed capacity coming from non-carbon fuels (e.g., wind, nuclear).
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15. Ibid., p. 40
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17. Massachusetts' system benefits charge of 0.25 cents/kWh averaged 3.3% of revenue during its first 4 years, MA Division of Energy Resources.
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28. SWEEP, *Op. Cit.*
29. This results in relatively conservative estimates, significantly lower than the SWEEP estimates but fairly consistent with the WGA estimates.
30. Frontier Associates LLC, *op. cit.* These were developed by weighting the current mix of programs to more closely represent that likely to be pursued in an expanded portfolio of efficiency efforts. We assume a proportionately lower emphasis on load response efforts that Texas currently pursues. In addition, we also estimate a substantially lower ratio of peak demand savings from residential efficiency than that captured in 2005 by the IOUs given the heavy emphasis on peak loads.
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32. *Report on the Capacity, Demand, and Reserves in the ERCOT Region.* ERCOT, June 2006.
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34. Elliott, R.N. and B. Hedman, *The Role of CHP in Addressing Texas' Need for Pollution Reduction*, ACEEE Report IE011, 2001.
35. Present value, 2006$.
36. ERCOT hub on-peak forward energy prices were used from 2007-2009. For 2010-2011 we assume decreases of 5% annually based on gas forward prices (electric price trends tend to follow gas trends closely), and constant avoided costs in real terms thereafter. While these marginal avoided costs are higher than those for baseload capacity, efficiency savings will tend to offset the higher cost units operating at any given time.
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44. *Ibid.* Section 25.181(i).
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46. Western Governors' Association, *Op. Cit.*, p. vii.
47. For an estimate of efficiency savings and costs associated with adoption of appliance efficiency standards in Texas, see Eldridge, M, et al. *Op. Cit.*

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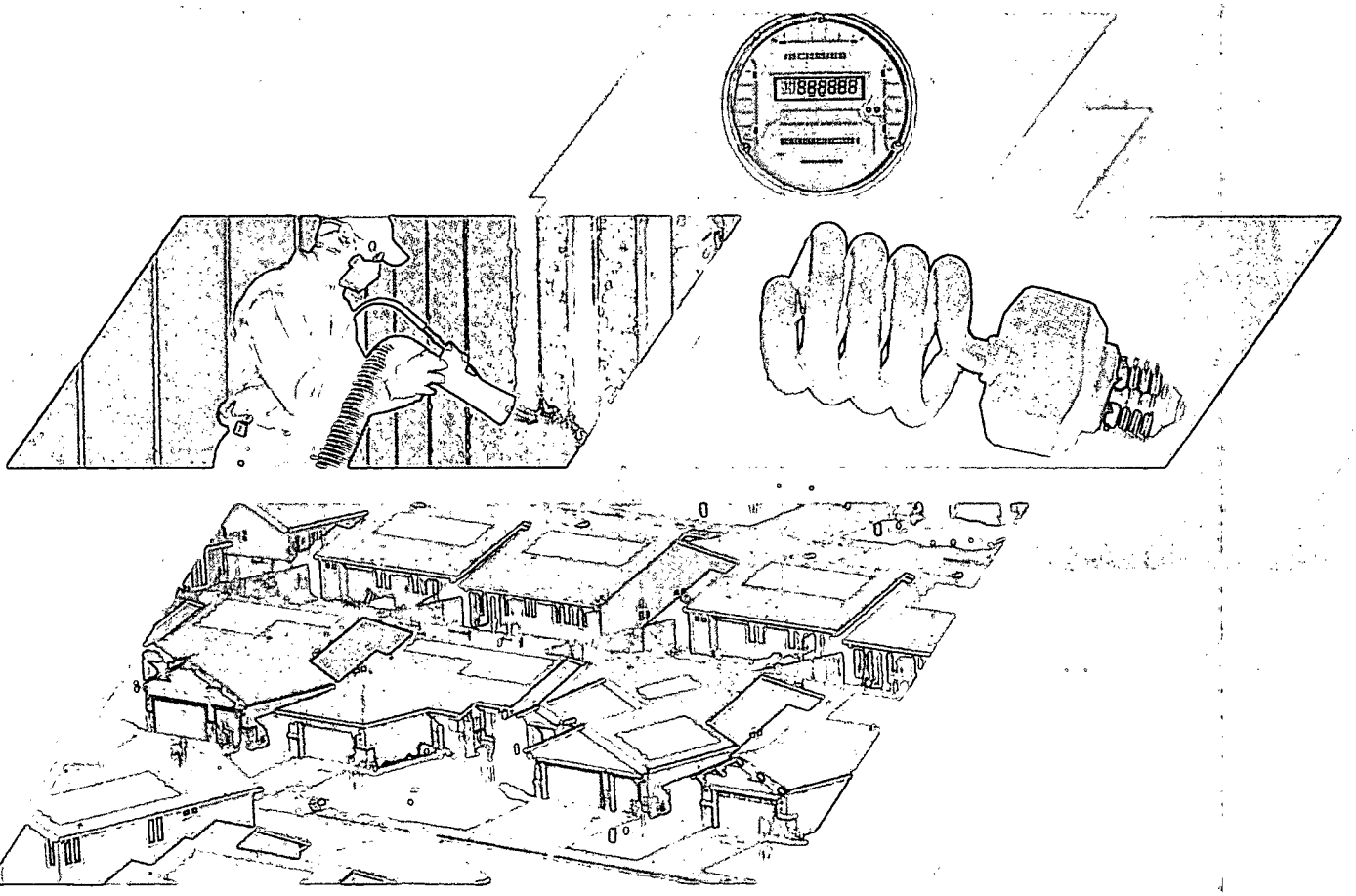
Building An Energy-Efficient Future



Western Governors' Association

Policy Recommendations for Energy Efficient Buildings

January 2008

January 2008

Dear Stakeholders in the West:

Energy efficiency and conservation represent a vast and still underutilized domestic energy resource. In fact, it is often said that the cheapest and cleanest watt is the one that we never have to produce.

With the adoption of the Clean and Diversified Energy report in 2006, the Western Governors' Association emphasized its commitment to providing its citizens with an abundant, affordable and environmentally friendly energy future. In that report, we demonstrated that adopting "best practices" for energy efficiency could reduce the need to construct new generating facilities by 48,000 megawatts in the West over the next 15 years. Over that same time period, we could save 1.8 trillion gallons of water and create a regional economic gain of $53 billion.

In July 2007, the WGA convened an energy efficient buildings workshop with experts from the building industries, utilities, public interest groups, all levels of government and energy service companies. We asked these experts to discuss and provide recommendations on how the West could achieve a 30 percent improvement over the current International Energy Conservation Codes. The result of that work is contained in this document, "Building an Energy Efficient Future: Policy Recommendations for Energy Efficient Buildings."

The report focuses on the energy efficiency categories with the greatest potential to cost-effectively generate energy savings: information and education, stronger code performance, incentives for energy efficiency practices, removing impediments for utilities to aggressively promote efficiency and conservation, and use of innovative financing programs. We commend the report to our constituents, colleagues and all those working to ensure that we have an abundant, affordable and environmentally friendly energy future. We are sure you will find it to be a valuable tool for crafting larger and more effective efficiency and conservation programs.

Dave Freudenthal
Governor of Wyoming
WGA Chairman

Jon M. Huntsman, Jr.
Governor of Utah
WGA Vice Chairman

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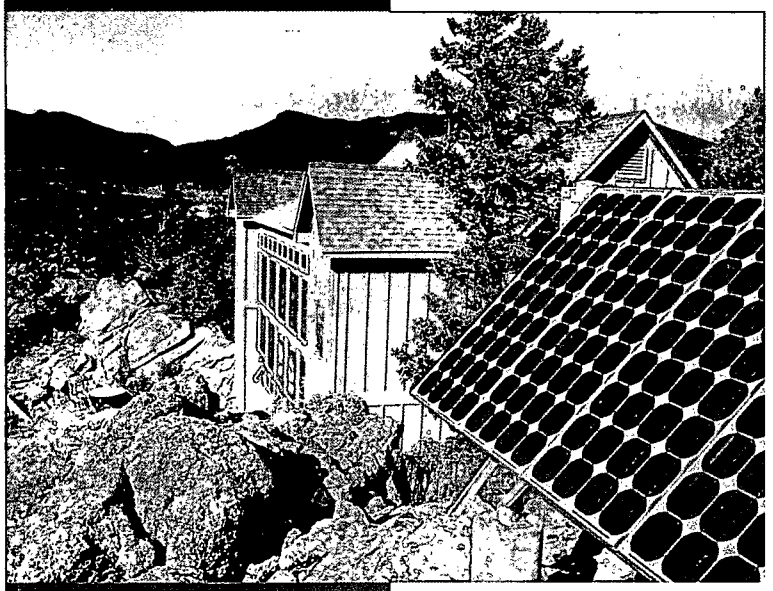
Executive Summary



Energy conservation improvements in homes and public buildings are the foundation of an energy-efficient future in the West.

In an era of rising energy prices and increasing concerns about the adverse effects rising energy demand could have on the environment, there are tremendous opportunities in energy efficiency and conservation. Efficiency and conservation represent vast and relatively untapped domestic energy resources capable of reducing the need for more costly production-side expansions in electricity generation. In transitioning to a new energy economy, the Western states can take the leading role by promoting energy efficiency to create even stronger economies, greener communities and a healthier environment.

Energy efficiency truly represents an undiscovered gold mine of energy and cost savings across the West. The best practice scenarios for energy efficiency elucidated in the Western Governors' Association's 2006 report on Clean and Diversified Energy illustrate that the savings potential is enormous. If every Western state adopted these energy efficiency best practices, the need for new generating facilities in the region could be reduced by as much as 75 percent over the next 15 years, the equivalent of 100 new large power-generating facilities. Estimates project a regional net economic gain of $53 billion from these energy efficiency practices, along with improved air quality, water savings and reductions in regional greenhouse gas emissions.

When improved and widely implemented, energy efficiency and conservation practices provide a successful formula for producing immeasurable benefits that Western states will enjoy for generations to come. Public and residential buildings offer energy-saving opportunities because they represent roughly one-third of all energy consumption in the U.S. Homes and public buildings serve as foundations upon which the West can begin to build an energy-efficient future.

In July 2007, the Western Governors' Association convened expert stakeholders from building and energy industries, government, public interest groups and utilities to discuss the best practices for generating greater returns on energy savings in homes and public buildings. Their policy recommendations focus broadly on improvement areas that endeavor to make the region a leader in energy efficiency by exceeding International Energy Conservation Codes (IECC) by at least 30 percent. Key recommendations include:

1. Improve energy efficiency education

The importance of energy efficiency cannot be overemphasized to consumers. Labeling and outreach campaigns, such as Leadership in Energy and Environmental Design (LEED), ENERGY STAR for Homes and BUILT-GREEN, showcase above-code performance on the market and convey necessary steps for making improvements with results-oriented information and brand-name marketability.

Educational efforts can focus on bringing awareness of energy conservation to people of all ages by integrating energy efficiency into primary school curriculums, generating enthusiasm for careers in the green technology sector and establishing a public service advertisement campaign to endorse energy efficiency as a healthy and patriotic lifestyle choice.

Educational outreach programs have enjoyed growing success in Western states and should be embraced or expanded to promote knowledge of energy conservation practices and lifestyles.

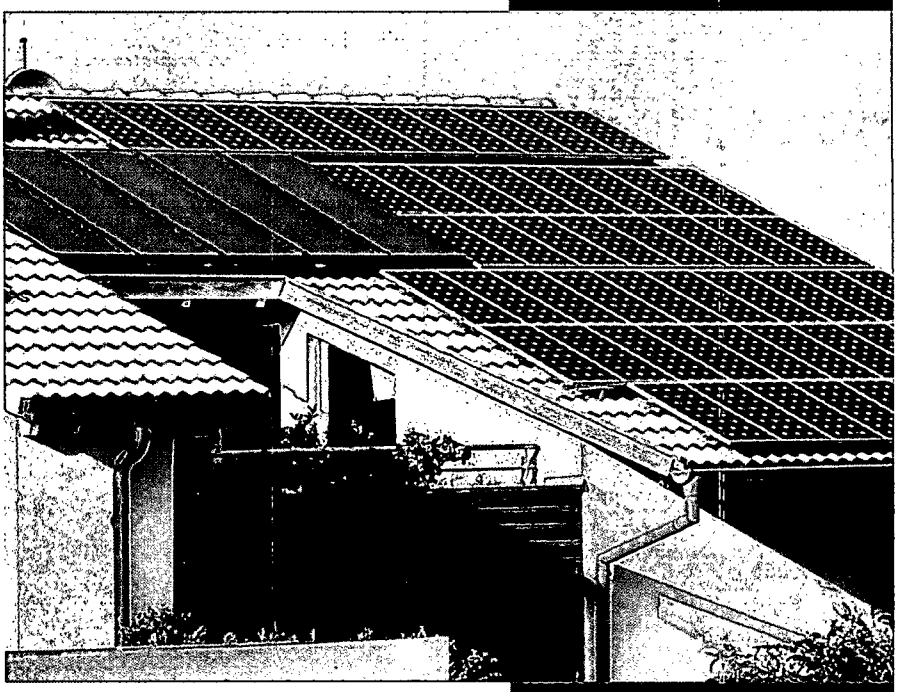
2. Strengthen code performance

The Western states show a patchwork of residential building energy codes that vary between local jurisdictions and statewide standards, with some states having more stringent codes than others. An increasing number of states are beginning to implement minimum codes in accordance with the latest version of the IECC, but the region still lacks consistency between statewide and local adoption of building codes.

Form a regional code collaborative of state and local leadership to discuss adopting the most recent version of IECC and coordinating educational efforts.

3. Use incentives to reward energy-efficient practices

In order to reform bad habits and reinforce the best energy-saving practices, offering more robust incentive packages is a sensible way to drive the market toward meeting energy efficiency goals. The possibility of future climate change regulation also offers a unique opportunity to send clear market signals to stimulate investments in energy efficiency.



There are countless opportunities to offer compelling incentive options. The federal government and many states currently award tax incentives for energy-efficient home features and upgrades. State and local governments could offer more incentives for near-zero energy homes and streamline plan review for the most efficient homes or LEED certified buildings, appealing to builders because of an expedited time of sale. An increasing number of utilities offer low-interest loan programs for retrofits and economic incentives for energy saving equipment.

The federal government, states, local jurisdictions and utilities should increase the number of incentive options available to consumers and builders who make energy-efficient choices.

4. Decouple rates and take on regulatory restructuring to remove utility impediments

Since profits for investor-owned utilities are directly tied to electricity sales, it is important to provide those utilities with rewards or incentives for promoting programs that will reduce energy consumption. State public utility commissions can encourage utilities to invest in energy efficiency and conservation programs by removing disincentives, for example, allowing the "decoupling" of total electricity sales and revenues. Such decoupling gives utilities the opportunity to compensate for lost sales through rate adjustments. In some states, public benefits funds have been successful in allowing utilities to levy small per-kilowatt hour surcharges that

create a funding source for large-scale energy efficiency programs that serve the public interest.

Decoupling and public benefits charges should be considered as mechanisms to fund large-scale energy efficiency programs in all Western states.

5. Expand demand-side management programs for energy efficiency results

Saving energy is a dynamic between utilities and consumers made possible by intersecting their abilities to manage energy demand on both ends of the transmission line. Upgrades to improve energy efficiency in new and existing homes can serve as first-line targets in demand-side management.

Further advances in smart infrastructure are emerging as demand-side management options that better analyze and control the demand for energy. These include technological advances increasingly being applied across the West, such as smart meters that detail energy use, complemented by time-of-use rates to reduce demand pressures during peak hours.

Develop demand-side management tools, such as near-zero energy use in homes, energy efficiency improvements in older homes, energy-saving programs offered through utilities and smart infrastructure across the grid.

6. Use innovative financing for public building projects

Public buildings must set a model example in energy-efficient and green building designs. Given the long, but often-tight financing schedules for public buildings, there are tremendous opportunities to utilize performance-based financing mechanisms that fund and service buildings with long-term energy savings that accumulate throughout the lifetime of a building. They offer a win-win scenario: performance-based contracts pay for themselves and often achieve 25 percent or greater energy savings than conventional construction projects.

States and local governments are encouraged to use performance contracting and energy service companies to finance public building projects that have the ability to recoup costs with energy savings.

Introduction

Energy efficiency has long been an underutilized resource, ripe for development in every state and community throughout the West. With that in mind, the Western Governors' Association convened a broad range of stakeholders for an Energy Efficient Buildings Workshop in July 2007 to develop recommendations on ways public and residential building practices could conserve 30 percent more energy than is required by the International Energy Conservation Codes (IECC).

Among the workshop participants were representatives from government, home builders, the building industry, public interest groups and utilities. Their comprehensive policy recommendations and best practices are presented in this report.

Public and residential buildings are good targets for improved energy efficiency because they represent roughly one-third of national energy consumption. Buildings of all types are the single largest contributor of greenhouse gases, which total nearly half of all U.S. emissions. These numbers demonstrate how buildings serve as a logical starting point for reducing energy demand and improving environmental quality.

While there were a variety of opinions on the ideal course of action, participants generally agreed that the following categories of recommended actions had the greatest potential to generate energy efficiency gains:

- Improving energy efficiency education
- Strengthening code performance
- Rewards and incentives for energy-efficient practices
- Manage energy demand for efficiency results
- Decoupling and regulatory restructuring to remove utility impediments
- Innovative financing for public building projects

The multifaceted approach outlined in this report will help guide policymakers as they continue to make strides toward greater savings with energy efficiency.

"The cheapest watt of energy is one that isn't consumed at all."

– Colorado Governor Bill Ritter

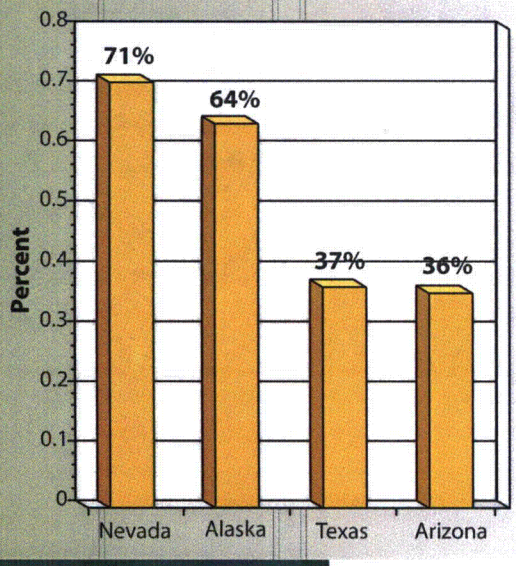
Colorado Gov. Bill Ritter (right) accepts on behalf of WGA the Alliance to Save Energy's Charles H. Percy Award for Public Service. Colorado Sen. Ken Salazar presented the award, which recognized WGA's work on energy efficiency.

Improving Energy Efficiency Education

In a September 2007 American Institute of Architects survey, 91 percent of U.S. voters said they would be willing to pay an additional $5,000 for an energy-efficient home. However, a Shelton Group poll taken just two years earlier found that only 48 percent of U.S. consumers knew whether their local home builders or architects included energy efficiency features, and only nine percent of recent homebuyers had purchased an energy-efficient home.

Focused regional and national educational efforts are the cornerstone for energy efficiency practices to gain wider acceptance and to make energy efficiency more accessible to homeowners. Educational outreach has the ability to strengthen vital partnerships between sectors and shape consumer behavior to be mindful of conservation. Governors, energy offices, state agencies and regulatory commissions are encouraged to strengthen outreach and education programs.

Increasing Participation in ENERGY STAR® for Homes



Three of the top five fastest growing states in 2006 - Arizona, Nevada and Texas - plus Alaska had the greatest market penetration nationally for Energy Star Homes for that year.

Energy Star: A National Program for Energy Efficiency Outreach

The Energy Star® program for energy efficiency outreach and education is a joint effort between the U.S. Department of Energy and U.S. Environmental Protection Agency. Initiated 15 years ago, the program is preparing to surpass one million labeled homes nationally by the end of 2007. ENERGY STAR® has enjoyed success in many Western states, serving as a voluntary, market-based program for motivating builders to strive for above-code results. Boosting the energy efficiency awareness of consumers and builders is an important benefit of the ENERGY STAR® label.

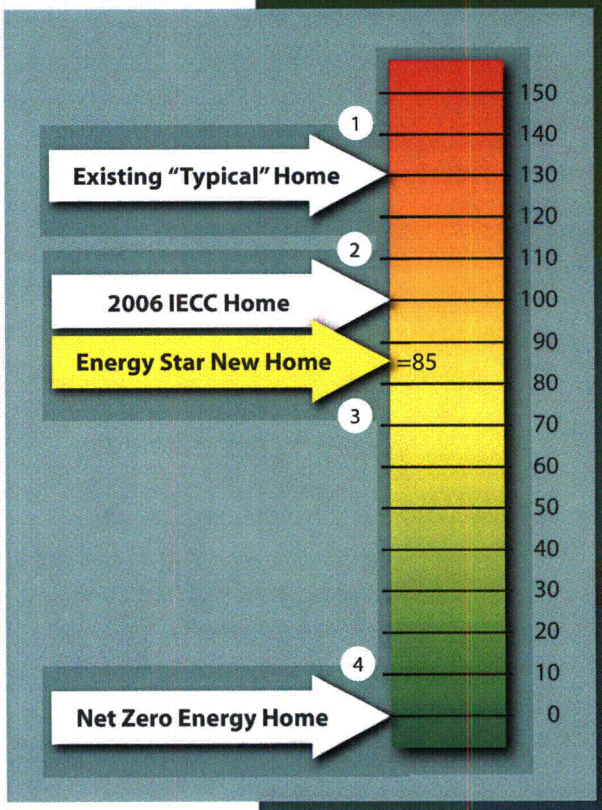
Homes that qualify for the ENERGY STAR® label have superior energy efficiency performance compared to standard homes by going at least 15 percent over the 2004 International Residential Code. They have the potential to exceed conventional home performance by 20 to 30 percent by encouraging builders to install high performing insulation, heating and cooling systems, windows and appliances with an ENERGY STAR® label. The program also offers extensive outreach by connecting homeowners and builders with third-party home energy inspectors, qualified lenders offering mortgages for energy-efficient buildings and a wealth of online educational resources.

The penetration of Energy Star labels into Western housing markets is a promising sign that energy-efficient home building is becoming more common. In 2006, seven WGA states (Alaska, Arizona, California, Hawaii, Nevada, Texas and Utah) were among the 15 leading states certifying the highest percentage of newly constructed homes with ENERGY STAR® ratings for superior energy efficiency performance. Nevada - consistently ranked among the fastest growing states in the country - led the nation by qualifying 71 percent of its new homes. Alaska followed close behind with 64 percent. Since 2001, utility-sponsored new-home programs in Texas have supported the construction of more than 60,000 ENERGY STAR® Homes with a statewide market penetration rate of 37 percent. By building on the success of ENERGY STAR® in the West and encouraging high involvement from all levels of government, the home building industry and utilities could continue improving the adoption of energy efficient building practices in the marketplace for new homes.

Home Energy Rating Systems

Educational outreach could focus on expanding the existing home energy-rating systems to showcase above-code performance of homes on the market. New and existing homes could use energy ratings for code compliance and as an educational tool for improving the energy efficiency market.

Workshop participants agreed that state and local governments could accelerate energy efficiency gains by supporting measures to expand the Home Energy Rating System and other programs that label new or existing homes with valuable energy efficiency information. As an objective measure of home energy efficiency, home energy rating systems represent tangible education-based efforts that are easily expandable. The benefits of home energy rating systems are manifold: raising consumer awareness, encouraging above-code compliance and rewarding builders and homeowners with market incentives.



A number of states have instituted HERS programs that reveal to consumers the energy efficiency performance ratings of new homes. Third-party professionals typically conduct HERS ratings by measuring home energy efficiency performance in various construction features and translating the overall efficiency performance into numerical scores. These ratings rank homes on a scale ranging from 100 to 0, ranging from a model 2006 IECC home (100) to a net-zero home (0). The lower the score, the more efficient the home; each point reduction reflects a 1 percent reduction in energy consumption compared to that of the model home. ENERGY STAR® homes require a minimum HERS certification of 85 in warmer climate zones or 80 in colder climates.

As of 2007, 16 states nationwide have approved a HERS component for new home construction to comply with energy building codes. In a model piece of legislation passed in June 2007, New Mexico approved a residential green building tax credit that requires a HERS rating of 60 or lower for buildings to qualify.

The following recommendations outline priority education and outreach actions using rating and labeling systems for energy efficient homes:

- Expand the use of labeling systems, such as ENERGY STAR, LEED, or BUILT GREEN, to provide consumers with information about the energy features and benefits of highly efficient homes, thus enabling the consumer to differentiate energy efficiencies and comprehensive total operating costs of various homes on the market.
- Expand the Home Energy Rating System Program infrastructure and encourage involvement of the National Association of Building Inspectors to provide extensive educational resources for consumers to determine energy efficiency performance of new homes.
- Develop technical college programs to expand the HERS network and increase the number of inspectors.
- Expand the scope of national programs, such as ENERGY STAR, to provide essential educational outreach to meet the concerns of consumers in the market for a new home.
- Encourage more involvement, funding and training opportunities for energy efficiency from the federal government.

The Educational Role of Local Governments and Home Builders

As local governments exercise their ability to send strong messages and form partnerships to promote energy efficiency, it leads to energy-saving practices. Local jurisdictions hold the key to achieving greater energy efficiency because of their unique ability to collaborate with local home builders, home buyers and utilities. In conjunction with home builders and utilities, county and municipal governments serve important roles in spearheading educational efforts tailored to their constituencies.

The benefits of energy efficiency reach far and wide across the community spectrum. Local government officials could highlight the array of benefits coming from energy-efficient practices by actively enlisting residents and home builders in grassroots energy-saving initiatives. To broaden its appeal, energy efficiency can also be emphasized as an element of home safety and comfort. Utilities can contribute to these efforts by using demand-side management as an educational tool to promote energy-saving practices around the home. This is discussed in greater detail in a later section of this report.

Home builders and local governments should continue to form more collaborative partnerships to expand the use of energy efficiency. A recent National Association of Home Builders study showed 90 percent of home builders are now practicing elements of green building construction, the cornerstone of which is energy efficiency. The NAHB is expected to launch new national green building standards and guidelines in February of 2008. Additionally, many state and local home builders associations have highly marketable, voluntary programs and labels they award to industry leaders in green building. These programs serve as market drivers and create a valuable nexus between the home building industry and public sector in pursuing an above-code performance level.

Information disclosure about home energy profiles is a vital asset for promoting consumer awareness. State and local governments could require mortgage lenders or realtors to provide point-of-sale disclosure of home energy-use. This action codifies energy efficiency education by making energy use information readily available to those in the market for a new home and creates a strong selling point for energy-efficient homes. An example of this action is a new requirement for realtors and home builders in Kansas to complete energy efficiency disclosure forms at the point of sale for potential homebuyers.

The following recommendations outline priority energy efficiency education actions for local governments and cross-sector partnerships to pursue:

- Illustrate to builders and sales staff the potential for profitability and competitive advantages that could be harnessed by implementing energy efficiency measures.
- Disclose energy costs at the point of sale by requiring mortgage lenders to inform potential homebuyers about energy efficiency benefits before new home purchases are made and reducing mortgage rates for energy-efficient homes.

Model State Green Building Programs

BUILT GREEN®, Colorado started in 1995 and is now the largest green building program in the nation with over 100 builder members. The program encourages green building practices by offering a checklist of guidelines for constructing energy-efficient homes, reducing water usage and promoting conservation of natural resources. The program offers numerous opportunities for technical support and builder training.

Washington California, Hawaii, Nevada, New Mexico and Utah also have high participation in their voluntary, market-based green building programs. Some of these programs, such as those in Washington's King and Snohomish Counties, offer valuable star-rating scales that differentiate more efficient homes from others, and require independent verifications for higher star designations.

For more information on these programs visit www.builtgreen.org (Colorado) or www.builtgreen.net (King and Snohomish Counties, Washington).

Education for a New Generation of Energy Efficiency

University of Colorado House on the National Mall
The University of Colorado team, winner of the first two Solar Decathlon events, showcased its house on the National Mall at the 2007 competition. The house will be developed further by team sponsor Xcel Energy as a demonstration facility to educate customers about energy efficiency and demonstrate new technologies.
(Photo courtesy: University of Colorado)

Energy efficiency should broadly appeal to the next generation of stakeholders in the new energy economy. Primary and secondary educational efforts could be designed to instruct energy-efficient habits to children, while also generating enthusiasm for subject areas and careers that relate to the green technology sector. A public service announcement campaign could be established as way to broadly advertise energy efficiency as an integral part of a patriotic and healthy lifestyle choice for people of all ages.

The following recommendations create a launching point for energy efficiency education for present and future generations:

- Establish funding for a message campaign that highlights energy efficiency as part of a patriotic, healthier and greener lifestyle choice.
- Boost K-12 educational efforts that instruct energy-efficient behavior and generate enthusiasm for careers in sustainable technology.
- Host science fairs and secure the funding necessary to implement winning ideas.
- Create a coordinated research agenda to help recognize existing resources and to prioritize information needs to fuel innovation in "green" technology.
- Host future educational conferences that contribute tangible improvements in energy-efficient home building or best practices during meetings as a way to set an example for energy efficiency efforts.

Western Universities Fuel Bright Energy Efficiency Ideas

Innovation in energy-efficient building begins with bright young minds at top research universities. The U.S. Department of Energy promotes such innovation through its Solar Decathlon, first held in 2002. Teams of engineering students from across the world – and the West – compete to build innovative solar-powered homes. Homes are built along the National Mall in Washington, D.C., and teams compete in categories that include architecture, comfort, lighting and market viability. The Solar Decathlon provides a powerful public demonstration of energy efficiency, with over 100,000 people walking through home displays during the event.

The West was well represented in the 2007 Solar Decathlon with participation from public universities, such as the University of Colorado, University of Kansas, Kansas State University, Texas A&M University and the University of Texas. The winning ideas at the Solar Decathlon have attracted investments and donations from utilities and home builders, while also helping structure collaborative research agendas.

Strengthening Code Performance

States Requiring LEED Certification (2007)

Arizona	New Mexico
California	Oregon
Colorado	Utah
Hawaii	Washington
Nevada	

Given differences in geography, climate and lifestyle, it is not surprising that building codes differ among local jurisdictions and across state lines. Workshop participants recommended that governmental leaders at the regional, state and local levels work together to advance building codes and strengthen enforcement. Coordinated code enforcement is seen as a key component for encouraging construction that meets above-code levels of energy efficiency performance.

On a state level, "greening of government" initiatives continue to demonstrate how executive, legislative and local government actions can substantially raise the energy code standard in publicly funded buildings. Many federal agencies have followed suit by implementing their own strategic plans for green buildings and energy conservation in new and existing buildings. These initiatives serve as a valuable model for energy efficiency practices in buildings of all types.

Many Western states have approved policies requiring state agency buildings to meet green building standards through the use of energy efficient technologies. These policies could be encouraged in states where they have not yet been implemented. California, New Mexico, Colorado, Utah, Arizona, Nevada, Washington, Oregon and Hawaii have explicit directives that require state buildings be constructed to meet – and in some cases to exceed - the Leadership in Energy and Environmental Design (LEED) certifications. The U.S. Environmental Protection Agency and Department of Agriculture, federal agencies with a strong presence in the West, both require LEED silver certification for all major building projects.

Efforts should be made to reach a regional and/or statewide consensus for minimum building code mandates. The International Code Council is a non-governmental organization that assembles sets of model home-building standards for adoption by local and state governments. Many states have codified mandatory statewide building standards in accordance with the most recent version of the IECC energy codes, last updated in 2006. Some states do not have statewide standards, but they have overseen promising jurisdictional improvements in building codes. In home-rule states, where building codes are adopted and enforced by local jurisdictions, special attention could be given to bringing codes up to standards that meet or exceed IECC.

Taking the LEED: Leadership in Energy and Environmental Design

The U.S. Green Building Council administers the Leadership in Energy and Environmental Design (LEED) rating system for buildings. The program began in 1999 and certified its one-thousandth building in the summer of 2007.

LEED ratings take a holistic approach and serve as a valuable measuring stick in assessing the environmental performance of buildings, including site development, water savings, energy efficiency, construction materials and a healthy indoor environment.

Many cities and counties in the West offer incentives for LEED certified buildings, such as expedited plan review, grants and density bonuses. Long-term energy savings, often achieved through performance contracting, can quickly pay off up-front costs.

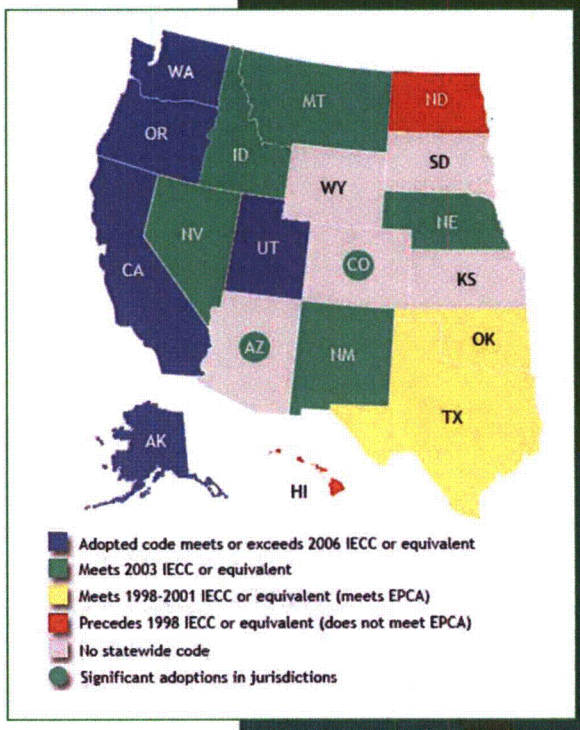
Residential Code Status across the Western States

A map of WGA states reveals a patchwork of vastly different state residential building energy codes across the region. In states where minimum codes are out of date or voluntary, state legislation or local actions will be needed to achieve higher performing standards.

Washington, California, Oregon, Idaho, Alaska and Utah require compliance with mandatory, statewide minimum residential building energy-code standards that meet the highest current standard, 2006 IECC or equivalent. In April 2007, Alaska approved a state-sponsored building code based on the 2006 IECC. The three West Coast states lead the region with their own versions of advanced, statewide building codes that well exceed the 2006 IECC.

Montana, Nevada, Nebraska, Texas and New Mexico have statewide minimum residential codes that meet the 2003 IECC. Oklahoma has a statewide minimum of the 2003 International Residential Code.

Colorado and Arizona have historically been "home rule" states, where codes often differ among local jurisdictions. In July 2007, Colorado passed legislation that requires 2003 IECC at minimum within any jurisdiction that has adopted building codes.



Source: Building Codes Assistance Project www.bcap-energy.org

There was broad sentiment among the workshop participants that a regional code collaborative should be established to develop a comprehensive long-term strategy for updating building energy codes. In many cases, local jurisdictions have not kept up with the latest changes in the IECC. The regional-code collaborative could regularly convene key stakeholders for discussions about the best methods for updating jurisdictional standards. It could also serve as a good sharing opportunity for states and municipalities to learn the best methods of code enforcement and effective approaches to energy efficiency education.

Following is a summary of recommended actions and initiatives to make code performance consistent and comparable across all Western states.

- Form a Western Regional Code Coalition to seek uniformity, where appropriate, in building code performance among the states. The coalition could:
  - Serve as a collaborative body to gather input on successful strategies for beyond-code energy efficiency. It would also provide a sharing opportunity for the states to learn from each other and collectively update building codes.
  - Consider actions states may want to take collectively on energy-efficient building design standards, in addition to promoting best conservation practices and sponsoring educational efforts to improve compliance throughout the Western region.
  - Collectively influence the IECC development process to improve energy efficiency.
- Governors' can consider executive orders should be considered to raise state building performance standards.
- State legislatures can consider laws that will raise minimum energy efficiency building code levels and promote cooperation with local jurisdictions to ensure consistent code enforcement.
- Above-code performance standards for state and public buildings should be sought.
- The Governors and state legislatures are encouraged to lead by example with "greening of government" initiatives and especially require the use of the most efficient equipment in public buildings.

The Role of Local Governments and Home Energy Audits

The more local jurisdictions can mobilize organized, well-funded and technologically equipped audit inspection programs to actively pursue above-code levels of energy efficiency performance, the more likely it is energy efficiency gains will accelerate across the West. More emphasis on home energy audits as part of code enforcement programs at a local level may coax greater investment in energy efficiency improvements for existing homes.

Thermal Infrared image of residential inspection energy audit. Note the cold air infiltrating (Black/blue areas)

Image courtesy of SPI CORP www.imaging1.com

First among important monitoring tools to ensure greater code compliance within local jurisdictions is home energy auditing. It enables homeowners and inspectors to evaluate energy-efficiency performance of home features and identify appropriate improvement measures. Information for do-it-yourself audits is often available on the Internet, which empowers homeowners to identify simple home improvements that save energy. Professional audits and energy ratings performed by third-party contractors provide more detailed calculations of building energy-efficiency data.

Finding ways to offer simple energy audits for free or at a low cost will make information readily available to help local jurisdictions properly enforce the code and create cost saving opportunities for homeowners. This is especially effective when complimented by a full host of incentives for translating audit information into improvements. An example of this is a state-sponsored program for residents of Oregon offering free energy audits for homeowners who wish to take advantage of a statewide energy tax credit. Home reviewers scope the features of single and multi-family homes for eligibility and make suggestions for improvements. This audit program is cost effective because it focuses on a basic level of home improvement without requiring more expensive analysis.

Professional audits that go a step further by using the best available technology, such as infrared cameras, can reveal startling energy losses and moisture problems in buildings, and have the ability to translate this information into effective solutions for improving home energy efficiency. Audits can also utilize a "blower door test" to measure air infiltration of the home envelope. Home ownership transfers and weatherization programs can require validation from more advanced energy audits. Experience has shown that audit-only weatherization programs must be combined with financial incentives to increase the probability that homeowners follow through with improvements.

Following these steps could make available a vast wealth of site-specific energy efficiency information in a cost-effective manner and establish improved compliance assistance within local jurisdictions:

- Amplify appropriate energy conservation messages at the local level by interpreting the constructive intent of codes for builders and homeowners.
- Prioritize energy efficiency in code enforcement and as a way to boost the health and safety performance of codes.
- Fully fund building code programs to ensure that requirements are enforced and properly implemented.
- Conduct more detailed, voluntary or mandatory energy audits to provide energy efficiency information for all potential home transfers.
- Offer cost-free, energy audits as opportunities to provide advice for improving home energy efficiency performance.

- Initiate a utility-backed audit program for collaborating with local governments to seek above-code, energy-saving performance in existing buildings and homes.
- Promote use of advanced technology in home energy audits, such as infrared cameras that pinpoint deficiencies in the thermal envelope.

Rewards and Incentives to Builders and Consumers for Energy-Efficient Practices

Cost effectiveness is clearly one of the most important factors for selecting measures that lead to more energy-efficient buildings. Economic incentives often shift the preferences of consumers, builders and utilities. Many home builders are equally or even more interested in incentives that expedite time of sale. Prospecting for greater cost effectiveness and other incentive-based tools makes the practice of energy efficiency far more attractive for all stakeholders.

Advanced insulation technologies enable builders to prevent heat sinks and produce long term energy savings.
Photo: Johns Manville

Utilities should be encouraged to offer a series of rebates, incentives and programs for customer or builder energy-efficiency improvements. Many utilities offer low-interest loan programs or rebates to residential customers when they make energy-efficient improvements to their homes; examples include rebate credits for new high-efficiency water heaters or heat pumps. Incentives are often offered for improvements in new construction projects and retrofits in low income, multifamily residential buildings.

Many utilities now offer incentive programs for improving the efficiency profile of the home. For example, Rocky Mountain Power in Utah offers financial incentives to builders who qualify for ENERGY STAR® certifications with $350 per single-family home, and $250 per multifamily home. The program provides additional advertising and marketing support to participating builders, along with training programs to educate staff, realtors and home-buyers about the features and benefits of ENERGY STAR® homes.

Municipal and Cooperative Utility Rebate and Incentive Programs

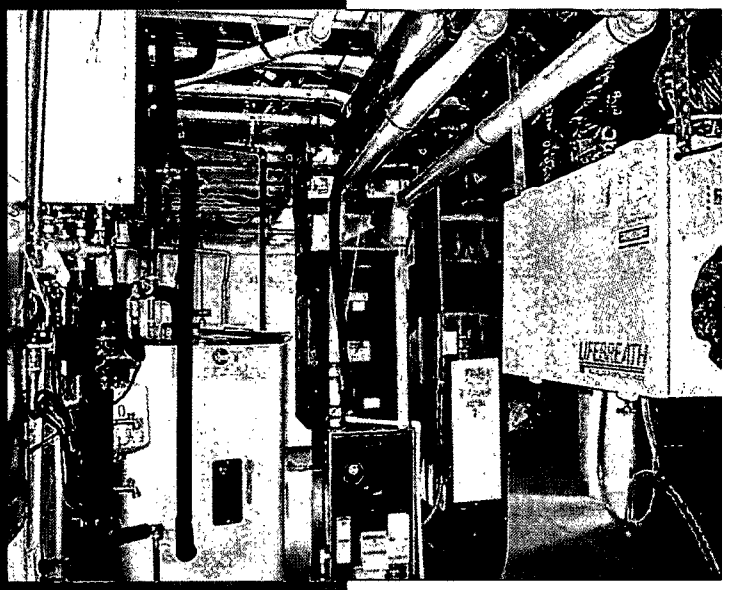
Several municipal and cooperative utilities around the country have demonstrated forward thinking with their rebate and incentive programs, especially for tailoring them to a local customer base.

Austin Energy (Texas) is a publicly owned municipal utility that offers a full slate of energy conservation programs, including free insulation, basic repairs of air distribution systems, caulking around plumbing fixtures and weather stripping around doors for qualifying low-to-moderate income homes. Austin Energy also offers low-cost diagnostic tests to spot

poor home air distribution, programmable thermostats for participation in AC cycling programs, and cash incentives for safely disposing and recycling of inefficient refrigerators. They also operate the oldest and one of the most successful voluntary residential green building programs in the country.

Another municipal utility with an exemplary energy conservation program is Seattle City Light (Washington). Their BUILT SMART program offers incentives for home upgrades that systematically push the level of performance above the state minimum building energy code. Incentives are offered for a variety of home efficiency features, such as highly efficient heating and cooling systems, insulated walls, windows and ceilings and energy-saving lighting. Seattle City Light also offers free insulation and window improvements as part of energy efficiency retrofits for qualifying low-income, multi-family residential buildings.

For more information visit: www.austinenergy.com; www.seattle.gov/light



Builders can get a $2,000 tax credit for homes that consume 50 percent less energy than those built to IECC standards.

State Tax Credits and Loan Incentives for Energy Efficiency Performance

States and the federal government can offer more robust tax incentive packages to drive the market toward energy efficiency and conservation. To help establish a baseline incentive for above-code energy efficiency improvements, the WGA has encouraged the the federal government to extend federal energy-efficiency tax credits. Tax credits expiring at the end of 2007 cover up to 10 percent of home improvement costs for insulation, roofing or windows. Through 2008, builders are offered a $2,000 tax credit, for constructing homes that consume 50 percent less energy than homes built to IECC code standards.

Aiming to utilize an abundance of solar energy resources, an increasing number of public utilities commissions across the West have authorized net metering as an incentive for home installations of solar energy systems. For Example, in Colorado a net metering rule was enacted in 2005 to credit or compensate customers of investor-owned utilities for loading renewable energy onto the grid. Net metering backs a state renewable portfolio standard that requires four percent of state renewable output from solar energy, half of which is expected to come directly from net metering in home PV installations. Montana, Wyoming, New Mexico, Utah, Nevada, Washington, Oregon, Idaho and California have also adopted net-metering policies for varying kilowatt loads and utility types.

Various states across the West offer good examples of add-on incentives or tax credits available to builders and homeowners who opt for installations of energy-efficient features:

- In Montana, home improvement investments that promote energy efficiency and conservation are awarded tax deductions up to $1800 per residence.
- Legislation passed in April 2007 now offers New Mexico home builders a tax credit for sustainable buildings, scaling the amount of credit given per building to the level of efficiency achieved.
- The owners of new Arizona homes that exceed the 1995 model energy code by at least 50 percent receive an income tax deduction equal to five percent of the home sale price, capped at $5,000.

- Idaho homes built before 1976 qualify for a 100 percent income tax deduction for homeowners who install additional insulation. The state also offers loan options that include low-interest loan programs for insulation and heating system upgrades.
- Oregon offers a wide variety of tax incentives for appliances and heating and cooling systems that maximize efficiency. Homeowners using fossil fuels to heat their homes can participate in a weatherization program that awards rebates for energy conservation improvements in the home. The state also has a no maximum low-interest loan program available for small-scale energy efficiency improvements in buildings of all types.

For more information about state incentives visit the Database of State Incentives for Renewables and Efficiency at www.dsireusa.org.

Expedited plan or permit review for energy-efficient homes can reward builders with faster sales and a competitive edge in the housing market.

Photo: Harvard Communities, Denver Near-zero energy home

Incentive-based Regulatory Mechanisms

State and local governments are encouraged to formulate incentive-based regulatory mechanisms that favor homeowners and builders who make energy-efficient choices. Many home builders have a high interest in expedited plan review that reduces the time of sale. Local jurisdictions and states aiming for greater gains in energy efficiency can also capitalize on consumer and builder preferences for sustainable home designs.

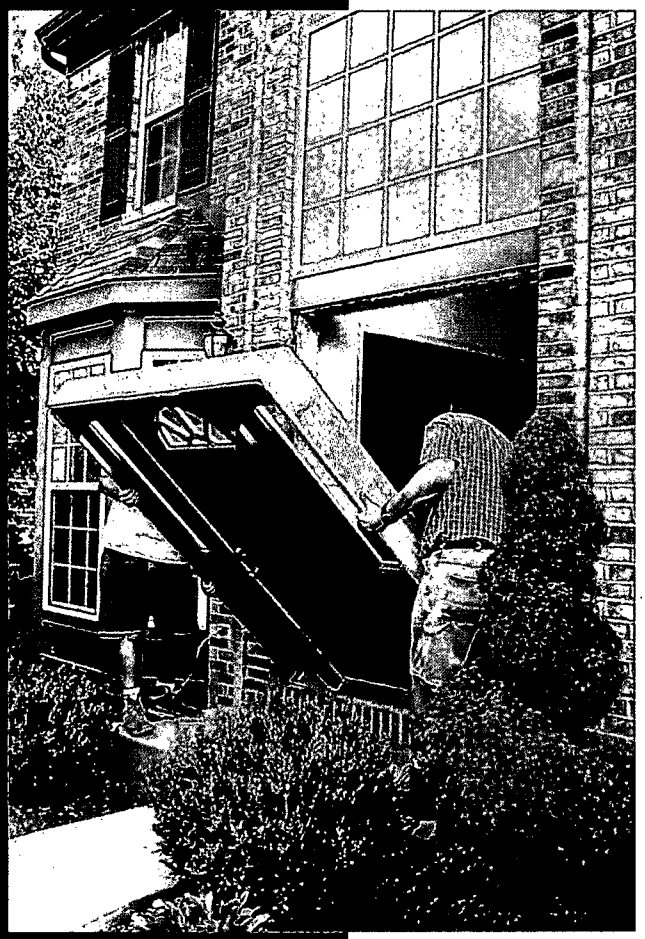
Local building officials have the power to prioritize plan review for homes with the most energy efficiency potential. In turn, home builders are rewarded with faster sales and given positive market signals for building the most efficient buildings on the market.

An expedited permitting process at a statewide or local level has shown to be instrumental for advancements in energy-efficient homebuilding. A recently enacted provision in Hawaii streamlines building permit applications that feature home designs with a LEED silver or equivalent rating. Municipalities throughout the West have also taken a lead by offering expedited plan review for green buildings. Some of the largest cities in California (Los Angeles, San Diego, Sacramento and San Francisco) have adopted model expedited permitting processes for buildings that qualify with sufficient LEED certifications.

Climate Change and Energy Efficiency

The possibility of future climate change regulation could serve as an incentive for greater investment in energy-efficient infrastructure today. In a poll published in September of 2007 by the American Institute of Architects, just seven percent of U.S. voters knew that buildings contributed the most to national greenhouse gas emissions. Greater educational efforts and more visible market signals could have an enormous impact on public perception and, in turn, spur far greater investment in energy efficiency.

Potential climate-change regulation presents an opportunity for energy efficiency measures to be integrated into any future, carbon-constrained economy. The systems under consideration to regulate carbon dioxide emissions could use energy efficiency as



One approach for making energy efficiency more affordable is for state and local governments to partner in offering financial incentives.

a mitigation strategy for lowering greenhouse gas emissions by tying energy efficiency gains in buildings with a carbon dioxide footprint. Signaling this in the near future could offer a new set of incentives for home builders and utilities to undertake broader-scale energy efficiency initiatives.

The following recommendations summarize actions that could be taken by federal, state and local governments to devise an incentive-based approach for making gains in energy efficiency:

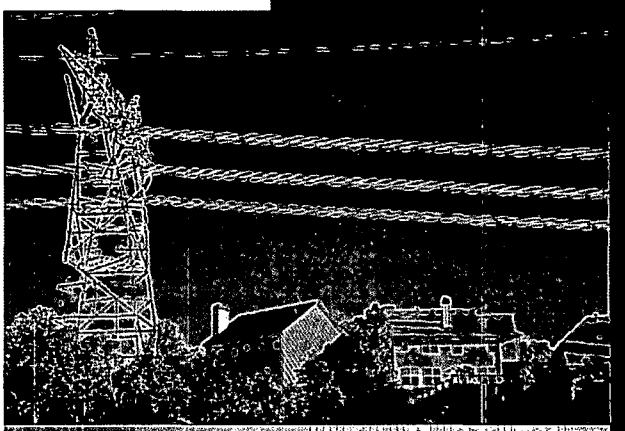
- States can encourage utilities to establish a reward mechanism for lowering utility bills with positive incentives for high performance or additional payments for homes that are highly efficient.
- The federal government should be encouraged to extend the federal energy efficiency tax credit for new net-zero or energy-efficient homes.
- States or local jurisdictions can encourage commitments from builders or lenders to offer market-based initiatives, such as:
  - Reduced interest rate mortgages
  - Low-interest micro-loans
- States or local jurisdictions can consider offsetting builder costs for upgraded energy efficiency upgrades by reducing or delaying home hook-up fees.
- Local jurisdictions can make energy efficiency more affordable for homeowners by reducing property taxes for energy efficient homes, and in partnership with state government leadership, offering financial incentives for energy efficiency.
- Formulate regulatory mechanisms and other incentives at the appropriate level that encourage builders to construct highly efficient or near-zero homes, which could include:
  - An expedited plan review schedule, including reviewing the most energy-efficient homes first
  - Education to boost demand
  - Fee deferral
  - Reduced fees
  - Local public relations recognition
  - Business energy tax credits
  - Rebate the cost of energy ratings
  - Density bonuses

Decoupling and Regulatory Restructuring to Overcome Utility Impediments

Traditionally, utilities' profits are coupled with total sales of electricity or natural gas. Under this fixed revenue structure, it is especially difficult for investor-owned utilities to encourage energy efficiency while maintaining returns for their shareholders. States can remove this disincentive to utility investment in energy efficiency by establishing ratemaking policies that decouple utility revenues from sales volume and provide a positive incentive mechanism for exceeding efficiency savings targets.

Current ratemaking schemes pose a barrier to using some of the most valuable kilowatts in the West - those not used at all due to energy efficiency improvements. State legislatures and public utilities commissions could establish policies and incentives that allow utilities to earn a fair return for investing in energy efficiency, and not merely for expanding supply-side generation, transmission and distribution resources. The regulatory paradigm could make a dramatic shift by including new concepts, such as "negawatts," to represent energy saved.

Making energy efficiency programs more practical and profitable for utilities should become a priority issue for public utilities commissions and state legislatures. Cost-effective rate adjustments with "decoupling" and integrating performance-based factors in the regulatory structure are essential to incentivize more energy efficiency actions by utilities. Frequent rate cases by public utilities commissions could establish a review schedule more favorable to cost recovery and less susceptible to price swings. Additionally, weatherization programs can offer rebates to utilities funding energy efficiency upgrades.



Decoupling in California

A few Western states have experimented with decoupling mechanisms, led by the efforts of California. After an earlier decoupling stint and before a wave of deregulation in the mid-nineties, the California PUC implemented a mechanism to replace 10-year forecasts of electricity sales in establishing rates with actual electricity sales in 2001. This shift in the ratemaking formula has opened opportunities for California investor-owned utilities to support massive-scale energy efficiency gains through demand-side management programs. The adoption of energy efficiency goals for investor-owned utilities are expected to cut the growth of electricity and natural gas consumption in California by more than half by 2013, with net savings of $10 billion.

Progress with Decoupling in Western States

Decoupling utility sales from revenues has high potential to stimulate utility investment in energy efficiency programs and demand-side management. Many Western states have experienced progress toward an implementation phase for decoupling mechanisms. Arizona, Colorado, California, Idaho, New Mexico and Nevada are considering the removal of disincentives for utilities, but decoupling still needs more attention from PUCs in every Western state.

Several states are already implementing decoupling mechanisms, including California, Oregon, Utah and Washington. In 2002, Oregon implemented a partial decoupling mechanism for one of its utilities, Northwest Natural Gas. The program showcases the energy efficiency gains that are made possible by decoupling, without shareholders sustaining losses from lower generating outputs.

Utah recently began a three-year pilot program with Questar Natural Gas Production Company to activate a conservation-enabling tariff that decouples volume of natural gas sales from sales revenues. Similarly, a tariff rider mechanism enables the lone investor-owned utility in the state, Rocky Mountain Power, to receive dollar-for-dollar cost recovery for its DSM programs.

The Oregon Energy Trust

The Oregon Energy Trust, an innovative example of a state public benefits fund, finances energy efficiency, conservation, and renewable projects across the state with a budget of $52 million.

The trust provides a wide array of incentives to residential customers for energy efficiency. Free home energy audits are performed to determine which features are incentive-worthy and to recommend areas of improvement, while installing up to four free compact fluorescent light bulbs per home. Incentives include rebate offers for a multitude of energy-efficient features and appliances.

The passage of the Oregon Renewable Energy Act in 2007 enables utilities to collect fees beyond the standard 3 percent public benefits surcharge to fund renewable energy. This will re-channel $10-15 million in additional funds to projects dedicated solely to energy efficiency.

Washington is in the process of launching a decoupling mechanism. Two decoupling pilots for natural gas utilities have been authorized by the state PUC and are currently in the development phase.

Public Benefits Charges

Public benefits charges, also referred to as system benefits charges, could be considered by Western states as a funding mechanism to support energy efficiency projects. Small fees are levied on consumer electricity bills in per kilowatt-hour surcharges that reduce the financial burdens utilities must face in funding public interest energy efficiency projects. Public benefits charges could also be considered as a financial transition point to back state efficiency goals by having the option to expire once goals are met. Three WGA states currently have noteworthy examples of public benefits systems:

- The Oregon PUC collects a three percent public benefit charge on electricity sales of the state's two largest utilities to fund energy the efficiency and renewable energy programs statewide. A nonprofit organization, the Oregon Energy Trust, was set up to distribute these funds in 2002, and it allocates $52 million annually to support a variety of energy efficiency programs.
- The New Mexico legislature approved the Efficient Use of Energy Act in 2005, charging a public benefit tariff of no more than 1.5 percent of commercial, industrial and residential energy bills to fund statewide energy conservation programs.
- The California PUC directs three of its largest investor-owned utilities to collect a public benefits surcharge on electricity sales that totals $228 million annually to fund energy efficiency programs. These funds create an array of incentive packages in energy efficiency plans that utilities are required to draft on an annual basis.

The following recommendations could reduce disincentives for utility investment in energy efficiency programs:

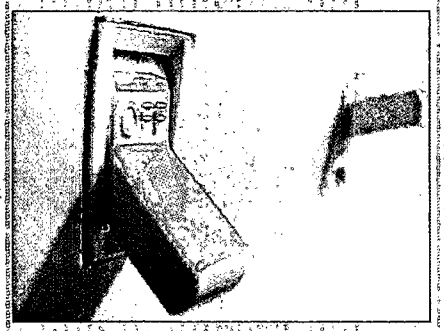
- Develop an electric rate adjustment mechanism (ERAM) using the total resource cost test to encourage greater energy savings.
- Initiate weatherization programs that offer rebates to the utilities that pay for upgrades.
- Allow and encourage the consideration of social and environmental benefits in the rate structure.
- Encourage PUCs to overcome regulatory lag by doing the following:
  - Developing rates based on foresight of future test years.
  - Encouraging public utilities to increase the number of rate cases and conduct the regulatory review process more frequently.
  - Allowing greater cost recovery for utilities by charging new rates while plants are being constructed, rather than after their completion, enabling utilities to pay for projects with an ongoing balance.
  - Considering different requirements for different classes of customers to differentiate between industrial and residential customers.
  - Developing and expand public benefits charges by setting a state energy efficiency goal that could have the option of dropping once a goal is met; use these funds for audits and marketing.

Managing Energy Demand for Efficiency Results

Energy use patterns are based fundamentally upon consumer behavior. Enhancing the ability of electric and gas utilities to shape consumer energy consumption and use the most efficient equipment on both ends of the transmission line could create an effective energy-saving dynamic. With an added boost from decoupling mechanisms, demand-side management (DSM) can serve as a vehicle to reduce strains on the grid during peak demand and advance energy efficiency goals across the West.

Encouraging utilities to draft comprehensive plans for demand-side management and energy efficiency programs could stimulate greater regional savings. In a region where the demand for energy outpaces population growth rates in some areas, an increasing number of utilities are actively pursuing demand-side management programs to reduce load growth. For example, in the high growth state of Arizona, the Arizona Public Service Company proposed to offset 20% of anticipated load growth with DSM programs. With the aid of a cost-recovery mechanism and incentives for exceeding goals, legislation passed in Texas requires utilities to save 20% of residential demand growth by 2009 with DSM programs.

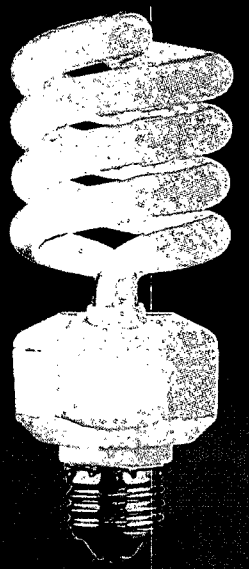
Turning off Incandescent Lights



In 2007, Nevada Governor Jim Gibbons signed into law a bill (AB 178) to phase out the use of incandescent light bulbs across the state. The law represents the first in the country that effectively bans incandescent light bulbs. The Southwest Energy Efficiency Project estimates the Nevada law will generate 1,200 gigawatts in saved energy and $1.3 billion in total net economic benefits for Nevadans and a reduction in CO_2 emissions equal to removing 160,000 passenger cars from the road.

Replacing inefficient incandescent light bulbs with compact fluorescent lights (CFL's) is one of the simplest methods for improving the home energy efficiency profile. CFL's use a fraction of the electricity consumed by incandescent light bulbs and last ten times longer, saving money on energy bills and reducing greenhouse gas emissions.

The first, most basic steps in demand-side management involve measures to improve the home energy efficiency profile. These steps could include retrofits to existing homes that install high performance appliances and cooling equipment, and high-efficiency lighting, windows or thoroughly sealed thermal envelopes. There are excellent opportunities for homeowners to receive incentives or loan options from state governments and utilities for these and other types of energy efficiency upgrades. Builders have opportunities to adopt near-zero energy homebuilding techniques that achieve 50 percent or greater reductions in home energy demand. Advances in smart infrastructure also are emerging as a DSM practice for utilities and consumers to better analyze and control energy demand.



Compact fluorescent lights are a bright idea.

Chilling Demand for Air Conditioning with Evaporative Cooling

In the hot, dry West, air conditioning is the single largest contributor to summer electricity demand. Newer evaporative cooling technologies offer a sensible demand-side management approach for reducing residential energy consumption across the region. Advanced evaporative cooling units are a perfect fit for arid climates because they use the power of evaporation to cool air, often with less water usage and one-fourth the energy required to operate a central-air conditioning system.

Indirect or direct evaporative cooling systems have yet to capture a substantial share of the air conditioning market across the Western states due to policy, consumer and builder preferences favoring traditional AC systems. The market for these emerging evaporative cooling technologies could be expanded by providing incentives to further reduce their cost, boosting certification programs and making more inclusive building codes. See the Southwest Energy Efficiency Project's report on evaporative cooling by visiting: www.swenergy.org

Near-zero Energy Homebuilding

Near-zero energy homes are built, operated and maintained to achieve at least a 50 percent or greater improvement in energy performance over conventionally built homes through a combination of energy efficiency improvements and the use of on-site renewable energy systems, such as photovoltaic (PV) panels and solar thermal hot water systems to produce as much energy as the home consumes on an annual basis. They feature comfortable and traditional-looking home designs that perform well and require only standard maintenance.

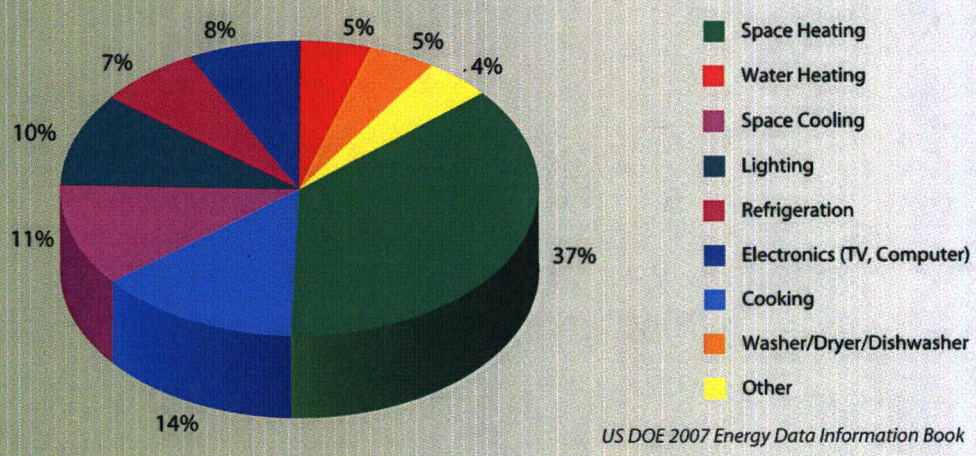
In 2004, The Sacramento Municipal Utility District partnered with Premier Homes to construct a community featuring near-zero energy production homes.

Near-zero energy homes are growing in their potential to become more cost-effective for homeowners. PV panels often present a significantly higher initial cost by adding up to $25,000 to the price of a new home. However, according to the Building Industry Research Alliance, near-zero homes have demonstrated energy savings that reduced homeowner utility bills by 60 percent or more, offsetting higher mortgage payments. In Arizona, California, New Mexico, Oregon and Utah state tax credits and utility incentives are available to reduce the initial cost of efficiency features and renewable energy systems for builders and/or homeowners. To encourage greater investment and savings returns in near-zero homes, states can offer compelling incentive options to stimulate investment in near-zero energy homebuilding.

Smart Infrastructure

Smart meter devices are emerging as a demand-side management method to motivate energy-saving behavior. These devices are installed into home electricity systems, giving utilities and customers the ability to analyze and control electricity consumption around the home. More advanced in-home smart meters show displays with detailed, real-time home energy use information. In some cases, these devices can show itemized energy-use details for individual appliances and associated carbon footprints.

2005 Residential Energy End-Use Expenditures



US DOE 2007 Energy Data Information Book

Concentrated efforts should be encouraged to develop smarter infrastructure across the grid. The number of smart meter installations is on the rise nationally, but the technology still remains vastly underutilized. An assessment by the Federal Energy Regulatory Commission in 2006 estimated that while only six percent of meters nationwide were advanced metering devices, some of the highest, advanced-meter market penetration was occurring in the WGA states of Idaho and Kansas. Having a greater number of smart meters in operation could benefit utilities and influence consumer energy use when combined with programs that charge time-of-use rates. The added awareness of personal energy-use trends from in-home meters would also help consumers form better habits.

The benefits of smart metering are twofold: consumers save money and demand pressures on the grid are eased, directly reducing the likelihood of blackouts. Utilities are able to better predict consumer demands and have the ability to remotely pinpoint and control individual connections to the grid. With expanded projects to increase demand for smart meters, long-term savings on energy bills could easily cover up-front unit costs.

Near-Zero Energy Communities

Several near-zero home communities have been built in cooperation with the Department of Energy's Building America Program. State and local governments that participate in the program assist in marketing those developments that consume 30 to 90 percent less energy than a standard development.

A large-scale, near-zero energy home development project opened in 2004 in a Sacramento area community. The 99 homes with highly efficient designs and 2 kW PV systems were built by Premier Homes in partnership with the Sacramento Municipal Utility District (SMUD). The community is the first of its kind to feature all near-zero production homes priced as part of the standard package for entry-level homebuyers.

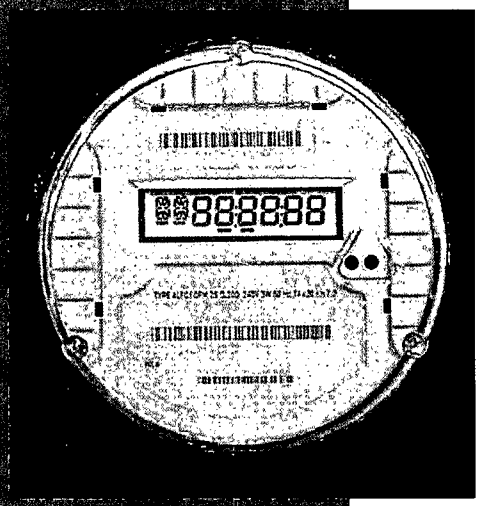
SMUD has partnered with builders to construct over 1,900 solar-powered and energy-efficient homes in the Sacramento area by offering buy-down programs for energy efficiency equipment that maintains lower home costs, saving nearly 3 megawatts of electricity during peak demand.

A Smarter Approach to Energy Savings

Smart meters are proliferating as a technology to monitor energy conservation across Western states. To complement its successful decoupling mechanism, the California PUC approved $2 billion in expenditures and cost recovery between 2006-2008 to support a variety of demand-side management and energy efficiency programs for the state's four largest investor-owned utilities. As a component of these DSM measures, some major utilities across the state are in planning phases or currently have large-scale, smart-metering initiatives.

Southern California Edison has proposed outfitting homes and businesses with 5.3 million meters, which would alleviate 1,000 megawatts of electricity demand. Pacific Gas and Electric Company, serving the San Francisco Bay Area, is currently equipping many of its customers with a total of 5.1 million smart meters. Approximately 16.5 million new meter installations are projected statewide by 2012.

Smart infrastructure could be expanded to create a positive rate impact. In cases where utilities have the ability to charge time-of-use rates, many smart meters determine real-time price peaks, allowing residential customers to adjust their energy use to off-peak hours. An increasing number of utilities also offer voluntary "cycling" programs that deactivate electricity transmission to air-conditioning units by remote control as a way for customers to save energy during periods of peak energy demand without affecting home comfort. Time-of-use rate programs are encouraged to complement smart meter use.



Smart Meter
Smart meters are emerging as a useful tool to monitor home energy use and apply time-of-use rate structures

The following tools and actions could encourage building occupants to capture greater energy savings from demand-side management programs:

- Employ greater use of smart infrastructure and metering to shape consumer awareness of electricity consumption.
- Expand smart infrastructure to serve as the price driver, charging time-of-use or off-peak pricing and installing new meters to have a rate impact.
- Allow demand-side management to be utilized to the fullest extent possible by including it in the rate base.
- Meet long-term demand needs by including DSM considerations as an integral component of energy portfolios.
- Encourage utilities to write comprehensive energy efficiency plans.
- Create a report card of utility EE best practices to determine what programs are working and collaboratively develop a matrix for effective program delivery and evaluation.
- Formulate a simple, efficient and consistent method of tracking energy efficiency, such as quantifying DSM efforts in KWH per unit over time.
- Encourage utilities to put more energy efficiency information on utility bills to serve as important educational tools by including suggestions for reducing customer demand or statistics comparing electricity consumption to neighboring homes or normalized use.
- Include state energy efficiency goals as part of state renewable portfolio standards (RPS).
- Develop pilot programs within local governments that initiate and showcase construction efforts for near-zero homebuilding.

Innovative Financing for Public Building Projects

New and existing public buildings are often required to set the standard in sustainability while operating under limited financial resources. Bonds that are commonly used to fund energy efficiency improvements can move slowly. Government contracts that have low-bid requirements can create serious stumbling blocks for public buildings seeking higher performance. Performance-based funding mechanisms for public buildings result in much greater energy efficiency returns because of their long-term financing schedules and long building life.

Performance contracting is a funding mechanism that accounts for energy efficiency performance in a full range of building features, such as lighting, heating and air conditioning. Public building projects could greatly benefit from performance-based financing by contracting through energy service companies (ESCO's). ESCO's offer servicing for efficiency performance, technical expertise and maintenance needs of buildings during longer-term financing schedules that guarantee greater savings from start to finish. Projects typically pay for themselves, because funds normally spent on utility bills are able to subsidize energy efficiency improvements through lease-purchase agreements; and ESCO's are contractually bound to achieve energy savings benchmarks.

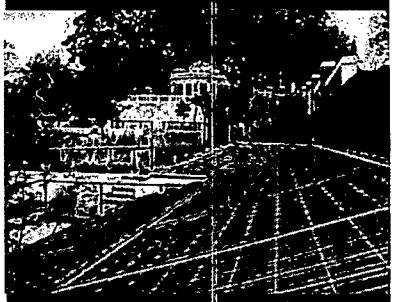
State and local governments should consider using performance contracting and energy service companies to finance public building projects. The National Association of Energy Service Companies has an accredited membership of 85 companies nationwide that offer performance contracts. One performance contract can often cover multiple building projects, and energy savings are often 25 percent higher than conventional construction projects.

Performance Contracting for the State Capitol

Renovations to the Colorado State Capitol Complex included a $13.6 million investment in energy efficiency improvements. The project, financed through performance contracting with an energy service company, installed upgraded systems into the 16-building complex.

The project improvements focused on installations of new lighting, heating and cooling and energy management systems. The performance contract used to finance improvements in these buildings emphasized comfort, water and energy savings and reduced maintenance costs over the project timeline.

The efficiency upgrades resulted in a 25 to 30 percent drop in energy costs, for an annual savings of $800,000. These cost-savings, projected to total $20 million over the next two decades, also helped fund the installation of a 10-kilowatt photovoltaic solar system in the Governor's mansion.



Solar Panels at the Colorado Governors' Office
Energy savings from a performance contract for the Colorado State Capitol complex helped fund the installation of a solar PV system in the Colorado Governor's Office.
Photo : Bellah Energy

The following recommendations could encourage greater use of performance contracting:

- Develop an extensive information network to advance performance contracting and highlight the benefits of working with energy service companies.
- Require school districts to be transparent about their energy use and consider how to reduce this demand through financing tools, such as performance contracts.
- Encourage financial institutions to consider the benefits of energy efficiency for stimulating more loans that subsidize energy efficiency improvements.
- Create statewide directives for using the most efficient equipment and energy service companies.

Leadership for an Energy-Efficient Future

Energy efficiency practices could become much more visible and common practice under the guidance of a highly visible, collaborative partnership organized by leaders of government, industry and public interest groups. The region is making progress, but much more can be done to make energy efficiency a more valued energy resource.

The following are recommended best practices and next steps for achieving greater energy efficiency results in the Western states:

- Formal endorsement by state and local governments of best practices outlined in the National Action Plan for Energy Efficiency.
- Convene leaders and key stakeholders at a high-level executive summit to discuss market-based incentives that can guide the business model for energy efficiency practices across the Western states.
- Establish the Western Regional Code Coalition to coordinate state and local building codes, clarify standards and promote energy efficiency education.
- Lead by example with executive orders and legislation that require energy-efficient and green-building standards for public facilities.
- Encourage extensions or expansions of federal tax credits for energy efficiency and solar photovoltaic systems.
- Improve coordination and use of labeling systems and home energy audits.
- Support greater investment in energy efficiency by electric and natural gas utilities through changes in ratemaking practices, such as decoupling.

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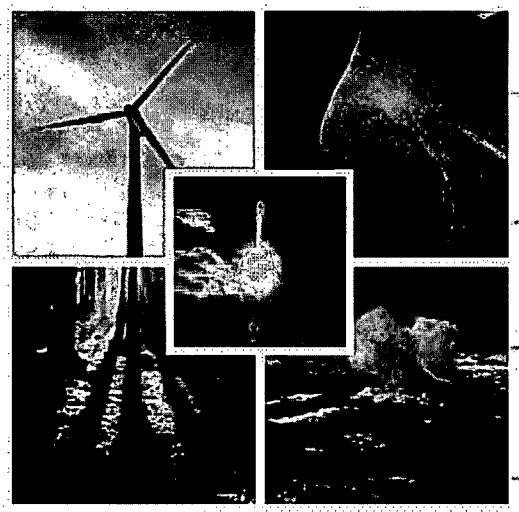

City Public Service Technical and Economic Energy Efficiency Potential Study

PO No. 2039851 / CA-OCT03031

Prepared for

City Public Service
San Antonio, Texas

Prepared by

KEMA Inc.
Madison, Wisconsin

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1 INTRODUCTION AND STUDY OBJECTIVE

1.1 OVERVIEW

City Public Service (CPS), an electric and gas utility serving San Antonio and some surrounding areas, is conducting an energy efficiency study. The objective of the study is to develop a comprehensive energy efficiency plan for the utility. A consulting team, headed by KEMA Inc. that includes Quantum Consulting (QC) and Economic Development Research Group (EDRG), was hired to conduct the energy efficiency study under the direction of CPS staff and with input from a citizen oversight committee.

The first step in the process is the determination of the technical, economic, and market potential for energy efficiency in the CPS service territory. This document reports the results of the energy efficiency potential study.

1.2 APPROACH

The objective of the potential study is to determine the potential savings from the implementation of energy efficiency measures in the CPS service territory. We estimated the technical and economic potential for the residential, commercial, and industrial sectors. For both the residential and commercial sectors, we looked at potential in the existing building stock and new construction. In the commercial sector, we looked at the 10 building types.

We used the KEMA DSM ASSYST™ model to estimate conservation potential, building up from a technology basis using five steps discussed in Section 2. We developed baseline energy-usage characteristics by sector, building type, and end use. This characterization allowed us to identify the types and approximate sizes of the various market segments that are the most likely sources of energy efficiency potential. These characteristics then served as inputs to a modeling process that incorporated CPS energy cost parameters and specific energy efficiency measure characteristics (such as costs, savings, and existing penetration estimates) to provide more detailed potential estimates.

1.3 USE OF THE STUDY'S FINDINGS

We will use the results of this study to inform the development of an integrated roadmap for the implementation of energy efficiency programs in the CPS service territory. We will work with CPS to determine the best use of the energy efficiency budget. This will involve taking into consideration the potential from individual measures, the likelihood of success of specific program approaches, and CPS experience from past and current program efforts. Once the program concepts are developed, we will conduct Best Practices analysis to determine how best

to design the program and bundle measures to efficiently obtain energy efficiency in the CPS service territory.

1.4 LAYOUT OF THE REPORT

Section 2 discusses the methodology and concepts used to develop the technical and economic potential estimates. Section 3 discusses the results of the analysis by sector and over time.

The report contains multiple appendices.

- Appendix A: Development of Baseline and Energy Efficiency Data – Describes the baseline and energy efficiency data used in the development of the model estimates provided in Appendices C through E.
- Appendix B: Detailed Methodology and Model Description – Further detail of what was discussed in Section 2.
- Appendix C: Economic Inputs – Avoided costs, electric rates, discount rates, inflation rates, and loss factors.
- Appendix D: Building and TOU Factor Inputs – Shows the base household counts and square footage estimates for commercial building types. Also includes time-of-use factors by sector and end-use.
- Appendix E: Measure Inputs – Lists the measures included in the model with the costs, estimated savings, applicability, and penetration factors.
- Appendix F: Non-Additive Measure Level Results – Shows energy efficiency potential for each measure independent of any other measure.
- Appendix G: Supply Curve Data – Shows the data behind the energy supply curves provided in Section 3 of the report.
- Appendix H: Achievable Potential Scenarios – Summarizes all achievable potential scenarios.

2 METHODS AND SCENARIOS

In this chapter, we give a brief overview of the concepts, methods, and scenarios used to conduct this study. Additional methodological details are provided in Appendix B.

2.1 CHARACTERIZING THE ENERGY EFFICIENCY RESOURCE

Energy efficiency has been characterized for some time now as an alternative to energy supply options, such as conventional power plants that produce electricity from fossil or nuclear fuels. In the early 1980s, researchers developed and popularized the use of a conservation supply curve paradigm to characterize the potential costs and benefits of energy conservation and efficiency. Under this framework, technologies or practices that reduced energy use through efficiency were characterized as "liberating 'supply' for other energy demands" and could therefore be thought of as a resource and plotted on an energy supply curve. The energy efficiency resource paradigm argued simply that the more energy efficiency or "nega-watts" produced, the fewer new plants would be needed to meet end users' power demands.

2.1.1 Defining Energy Efficiency Potential

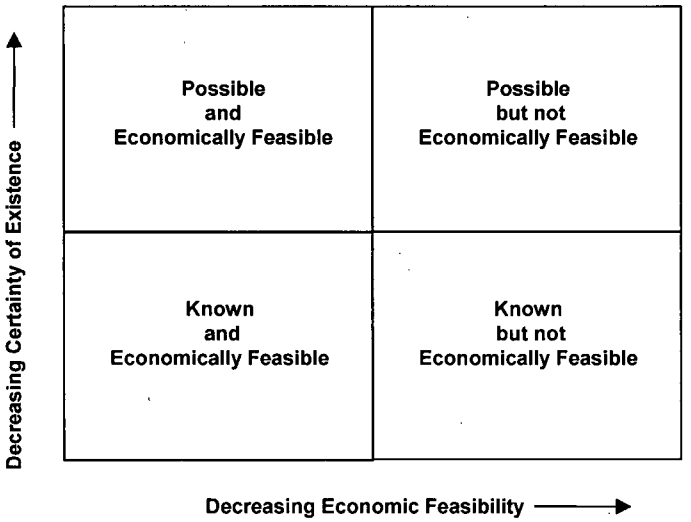
Energy efficiency potential studies were popular throughout the utility industry from the late 1980s through the mid 1990s. This period coincided with the advent of what was called least-cost or integrated resource planning (IRP). Energy efficiency potential studies became one of the primary means of characterizing the resource availability and value of energy efficiency within the overall resource planning process.

Like any resource, there are a number of ways in which the energy efficiency resource can be estimated and characterized. Definitions of energy efficiency potential are similar to definitions of potential developed for finite fossil fuel resources, like coal, oil, and natural gas. For example, fossil fuel resources are typically characterized along two primary dimensions: the degree of geological certainty with which resources may be found and the likelihood that extraction of the resource will be economic. This relationship is shown conceptually in Figure 2-1.

Somewhat analogously, this energy efficiency potential study defines several different *types* of energy efficiency *potential*; namely, technical, economic, achievable program, and naturally occurring. These potentials are shown conceptually in Figure 2-2 and described below.

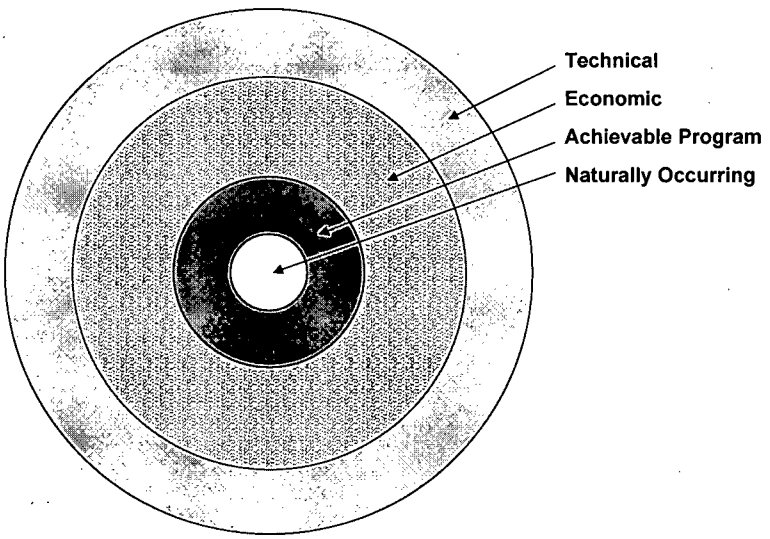
- **Technical potential** is defined in this study as the *complete* penetration of all measures analyzed in applications where they were deemed *technically* feasible from an *engineering* perspective.
- **Economic potential** refers to the *technical potential* of those energy conservation measures that are cost-effective when compared to supply-side alternatives.

Figure 2-1
Conceptual Framework for Estimates of Fossil Fuel Resources



- **Achievable program potential** refers to the amount of savings that would occur in response to specific program funding and measure incentive levels. Savings associated with program potential are savings that are projected beyond those that would occur naturally in the absence of any market intervention.
- **Naturally occurring potential** refers to the amount of savings estimated to occur as a result of normal market forces; that is, in the absence of any utility or governmental intervention.

Figure 2-2
Conceptual Relationship Among Energy Efficiency Potential Definitions



2.2 SUMMARY OF ANALYTICAL STEPS USED IN THIS STUDY

The crux of this study involves carrying out a number of basic analytical steps to produce estimates of the energy efficiency potentials introduced above. The basic analytical steps for this study are shown in relation to one another in Figure 2-3. The bulk of the analytical process for this study was carried out in a model developed by KEMA for conducting energy efficiency potential studies. Details on the steps employed and analyses conducted are described in Appendix B. The model used, DSM ASSYST™, is a Microsoft Excel®-based model that integrates technology-specific engineering and customer behavior data with utility market saturation data, load shapes, rate projections, and marginal costs into an easily updated data management system. The key steps implemented in this study are:

Step 1: Develop Initial Input Data

- Develop list of energy efficiency measure opportunities to include in scope.
- Gather and develop technical data (costs and savings) on efficient measure opportunities.
- Gather, analyze, and develop information on building characteristics, including total square footage or total number of households, electricity consumption and intensity by end use, end-use consumption load patterns by time of day and year (i.e., load shapes), market shares of key electric consuming equipment, and market shares of energy efficiency technologies and practices.

Step 2: Estimate Technical Potential and Develop Supply Curves

- Match and integrate data on efficient measures to data on existing building characteristics to produce estimates of technical potential and energy efficiency supply curves.

Step 3: Estimate Economic Potential

- Gather economic input data, such as current and forecasted retail electric prices and current and forecasted costs of electricity generation, along with estimates of other potential benefits of reducing supply, such as the value of reducing environmental impacts associated with electricity production.
- Match and integrate measure and building data with economic assumptions to produce indicators of costs from different viewpoints (e.g., societal and consumer).
- Estimate total economic potential.

Step 4: Estimate Achievable Program and Naturally Occurring Potentials

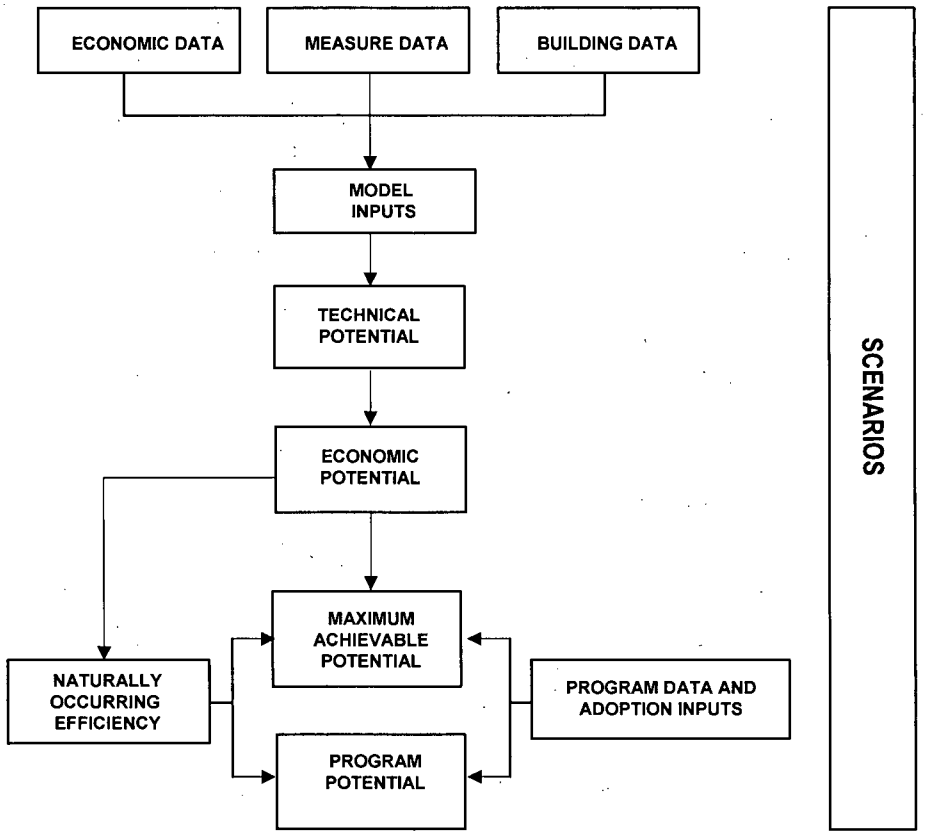
- Gather and develop estimates of program costs (e.g., for administration and marketing) and historic program savings.

- Develop estimates of customer adoption of energy efficiency measures as a function of the economic attractiveness of the measures, barriers to their adoption, and the effects of program intervention.
- Estimate achievable program and naturally occurring potentials.

Step 5: Scenario Analyses

- Recalculate potentials under alternate program scenarios.

Figure 2-3
Conceptual Overview of Study Process



2.3 SCENARIO ANALYSIS

Scenario analysis is a tool commonly used to structure the uncertainty and examine the robustness of projected outcomes to changes in key underlying assumptions. This section describes the alternative scenarios under which energy efficiency potential is estimated in this study. We developed these scenarios of energy efficiency potential for two key reasons:

1. Our estimates of potential depend on future adoptions of energy efficiency measures that are a function of data inputs and assumptions that are themselves forecasts. For example, our projections depend on estimates of measure availability, measure costs, measure savings, measure saturation levels, retail rates, and avoided costs. Each of the inputs to our analysis is subject to some degree of uncertainty.
2. The ultimate achievable energy efficiency potential depends, by definition, on policy choices—including the level of resources and strategies used to increase measure adoption.

The cost components of program funding that vary under each scenario include:

Marketing Expenditures

- Customers must be aware of efficiency measures and associated benefits in order to adopt those measures. In our analysis, program marketing expenditures are converted to increases in awareness. Thus, under higher levels of marketing expenditures, higher levels of awareness are achieved.

Incentives and Direct Implementation Expenditures

- The higher the percentage of measure costs paid by the program, the higher the participants' benefit-cost ratios and, consequently, the number of measure adoptions.

Administration Expenditures

- Purely administrative costs, though necessary and important to the program process, do not directly lead to adoptions; however, they have been included in the program funding because they are an input to program benefit-cost tests.

Base Efficiency Funding Scenario

Our Base Efficiency Funding Scenario is tied, generally, on the current CPS program budget levels. The total incentives dollars were estimated directly in our model as a function of predicted adoptions. What was specified in the model was the percentage of incremental measure cost paid by the program. We attempted to set these percentages at levels that are typical for standard energy efficiency programs.

In the Business-as-Usual Scenario, total marketing costs increase by inflation over the analysis period. Program administration costs vary slightly over time as a function of program activity levels. The percent of incremental measure costs paid over time was held constant.

Advanced-efficiency Funding Scenario

The Advanced-efficiency Funding Scenario represents a significant increase in funding from the Business-as-Usual Scenario. We increased funding levels by raising both the total marketing

expenditures and the per-unit incentive levels. Administration levels increased as a function of greater program activity. Overall, we increased program expenditures by about 80 percent in this scenario.

Summary of Scenarios

Table 2-1 shows average spending for each of the scenarios for the 2005-2014 forecast period.

Table 2–1
Scenario Average Spending During 2005–2014 Forecast Period

Funding Level	Market Segment	Cost Components				% Incremental Measure Cost Paid
		Admin	Marketing	Incentives	Total	
Base	Res Retrofit	$487	$400	$586	$1,473	50%
	Res New Construction	$305	$75	$90	$470	60%
	Nonres Retrofit	$273	$405	$376	$1,054	33%
	Nonres New Construction	$146	$163	$112	$422	45%
	Total	$1,211	$1,044	$1,165	$3,419	
Advanced	Res Retrofit	$777	$450	$1,338	$2,565	65%
	Res New Construction	$465	$100	$307	$872	75%
	Nonres Retrofit	$478	$552	$1,065	$2,095	50%
	Nonres New Construction	$195	$218	$289	$702	60%
	Total	$1,915	$1,320	$2,998	$6,234	

3 ENERGY EFFICIENCY RESULTS

In this section, we present estimates of energy efficiency potential. First, we present technical and economic potential results. We then present estimates of achievable program potential under the Base and Advanced-efficiency Funding Scenarios.

3.1 TECHNICAL AND ECONOMIC POTENTIAL

Estimates of overall energy efficiency *technical* and *economic* potential are discussed in Section 3.1.1. More detail on these potentials is presented in Section 3.1.2. Energy efficiency supply curves are shown in Section 3.1.3.

3.1.1 Overall Technical and Economic Potential

Figures 3-1 and 3-2 present our overall estimates of total technical and economic potential for peak demand and electrical energy in CPS territory. *Technical potential* represents the sum of all savings from all of the measures deemed applicable and technically feasible. *Economic potential* is based on efficiency measures that are cost-effective based on the total resource cost (TRC) test—a benefit-cost test that compares the value of avoided energy production and power plant construction to the costs of energy efficiency measures and program activities necessary to deliver them. The values of both energy savings and peak demand reductions are incorporated into the TRC test.

Peak Demand Savings. If all of the measures analyzed in this study were implemented whenever technically feasible, technical potential would be roughly 1,935 MW by 2014. If only the measures that pass the TRC test were implemented, economic potential would be 1,220 MW. These savings correspond to the equivalent of four and three mid-sized (500-MW) power plants, respectively.

Energy Savings. Technical potential is estimated at about 5,900 GWh per year and economic potential at 3,600 GWh per year by 2014 (about 23 and 14 percent of forecasted 2014 usage, respectively).

Figure 3-1
Technical and Economic Potential
Demand Savings, 2014

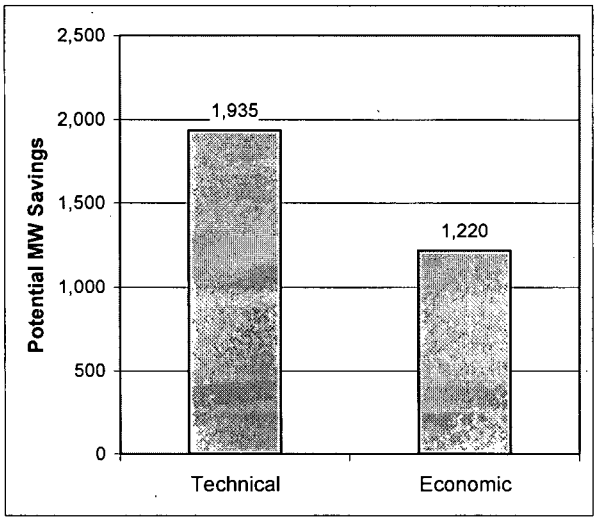
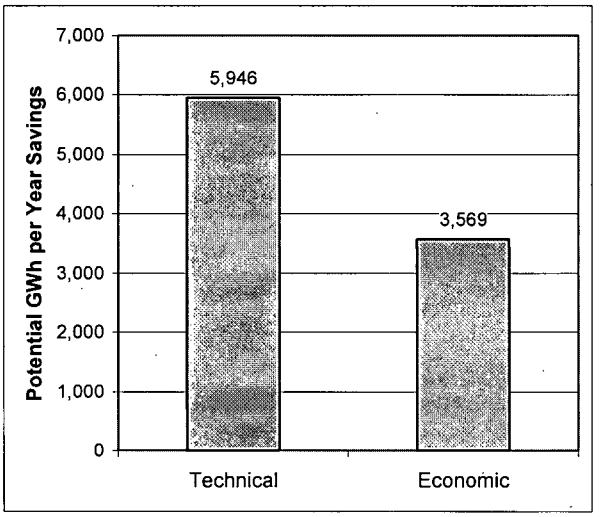


Figure 3-2
Technical and Economic Potential
Energy Savings, 2014



3.1.2 Technical and Economic Potential Detail

In this subsection, we explore technical and economic potential in more detail, looking at potentials by sector and by end use.

Potentials by Sector

Figures 3-3 and 3-4 show estimates of technical and economic demand by sector. Figures 3-5 and 3-6 show the same potentials as a percentage of 2014 forecast peak demand and forecast energy use.

The residential sector provides the largest contribution to both technical and economic potential for peak demand savings, accounting for over three-fourths of these potentials. The commercial sector accounts for just over 20 percent of the technical and economic peak demand potential. As shown below, the large contribution of air conditioning measures in the residential sectors is the reason for the larger peak demand potentials.

The residential sector also contributes most to the technical and economic potential for energy savings, though the differences between the residential and nonresidential sectors are not as pronounced as for peak demand. The residential sector accounts for about 55 percent of the energy savings potentials, while the commercial sector accounts for just over 40 percent of these potentials.

Figure 3-3
Technical and Economic Potential (2014)
Demand Savings by Sector—MW

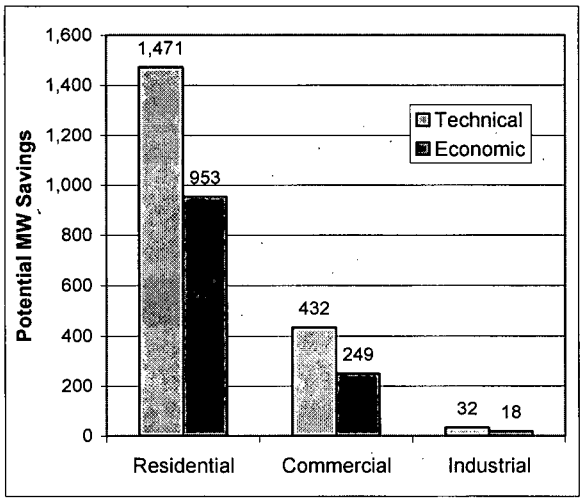
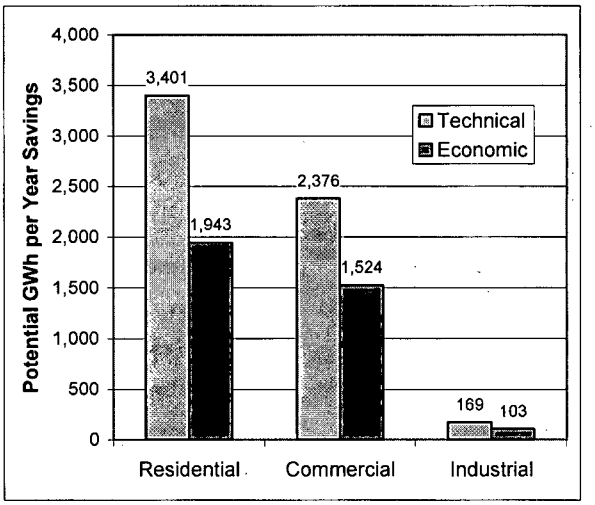


Figure 3-4
Technical and Economic Potential (2014)
Energy Savings by Sector—GWh per Year



As shown in Figures 3-5 and 3-6, the residential sector also has the higher savings potential fractions in relation to base energy use. Again, much of this potential is attributable to the space-cooling end use.

Figure 3-5
Technical and Economic Potential (2014)
Percentage of Forecast Peak Demand

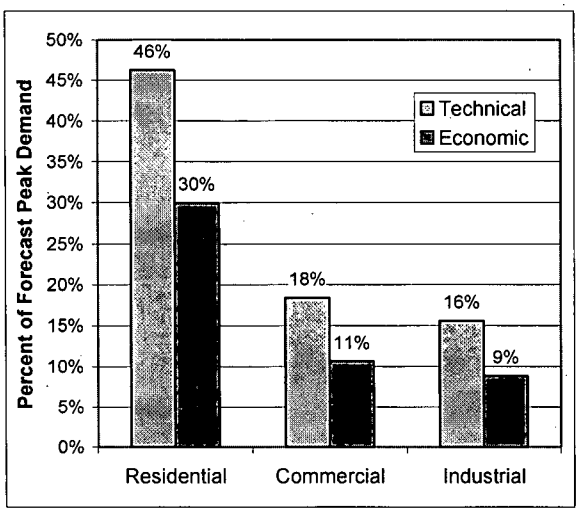
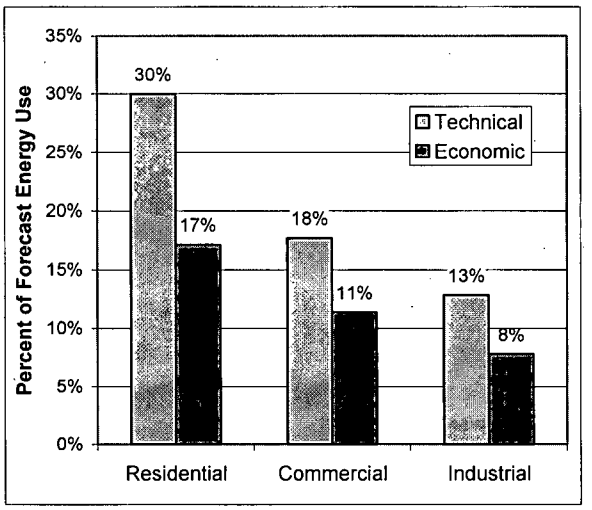


Figure 3-6
Technical and Economic Potential (2014)
Percentage of Forecast Energy Use



Potentials by End Use

Figures 3-7 and 3-8 show the end-use breakdown of economic potential in the residential sector. Potential savings is dominated by HVAC, with space-cooling measures contributing most to peak demand and both cooling and heating measures affecting energy consumption. Key space-cooling measures include high-performance windows and window film, air conditioner maintenance, attic venting, and programmable thermostats. The key water heating measure is the ENERGY STAR® clothes washer, which uses less hot water than standard washers. The key lighting measures are compact fluorescent light bulbs (CFLs). Appliances include ENERGY STAR refrigerators, freezers, and dishwashers.

Figure 3-7
Residential Economic Demand Savings Potential by End Use (2014)

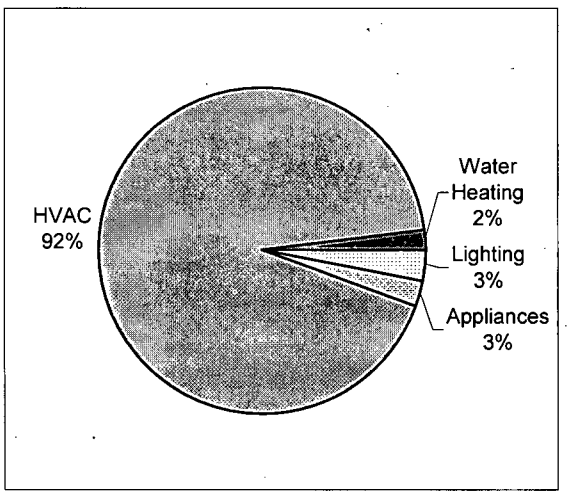
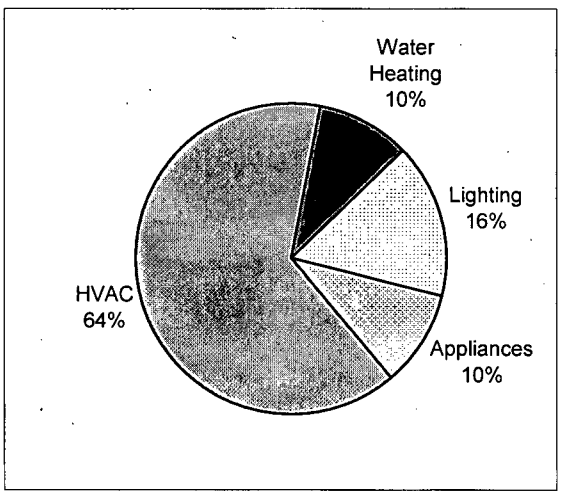


Figure 3-8
Residential Economic Energy Savings Potential by End Use (2014)



Figures 3-9 and 3-10 show the end-use breakdown of commercial economic potential. The lighting end use is the largest contributor to both peak and energy savings potential, with CFLs and T8 lamps with electronic ballast being the key measures. Key HVAC measures include high-efficiency chillers and DX air conditioners, HVAC controls, and more efficient ventilation motors.

Figure 3-9
Commercial Economic Demand Savings Potential by End Use (2014)

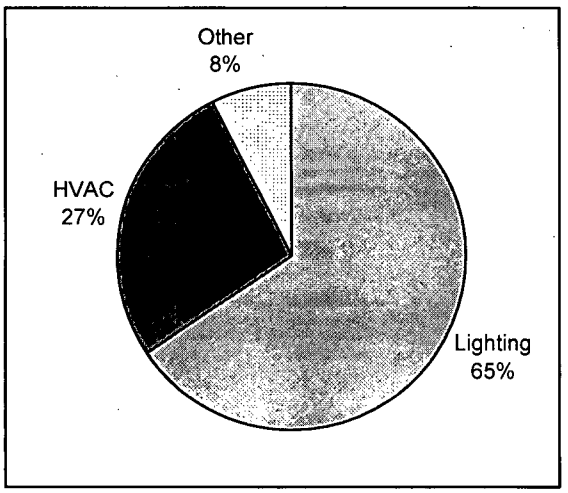
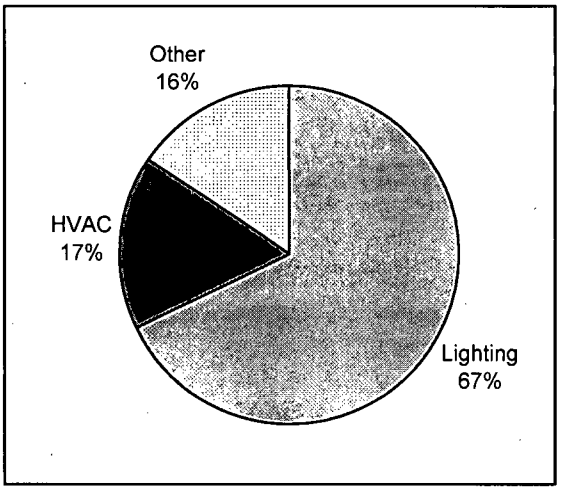


Figure 3-10
Commercial Economic Energy Savings Potential by End Use (2014)



As shown in Figures 3-11 and 3-12, economic potential in the industrial sector is spread fairly evenly across end uses. Lighting and cooling measures are similar to those employed in the commercial sector. Motor measures include installation of high-efficiency motors and implementation of efficient motors practices, such as improved maintenance and more efficient design of machine drive systems. Process and compressed air measures also include improved maintenance and design practices.

Figure 3-11
Industrial Economic Demand Savings Potential by End Use (2014)

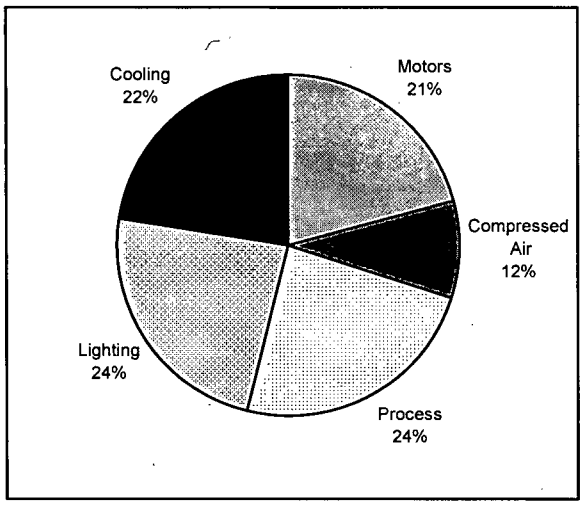
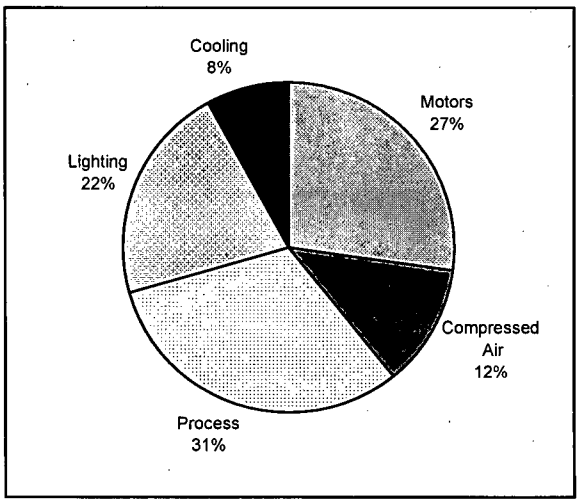


Figure 3-12
Industrial Economic Energy Savings Potential by End Use (2014)

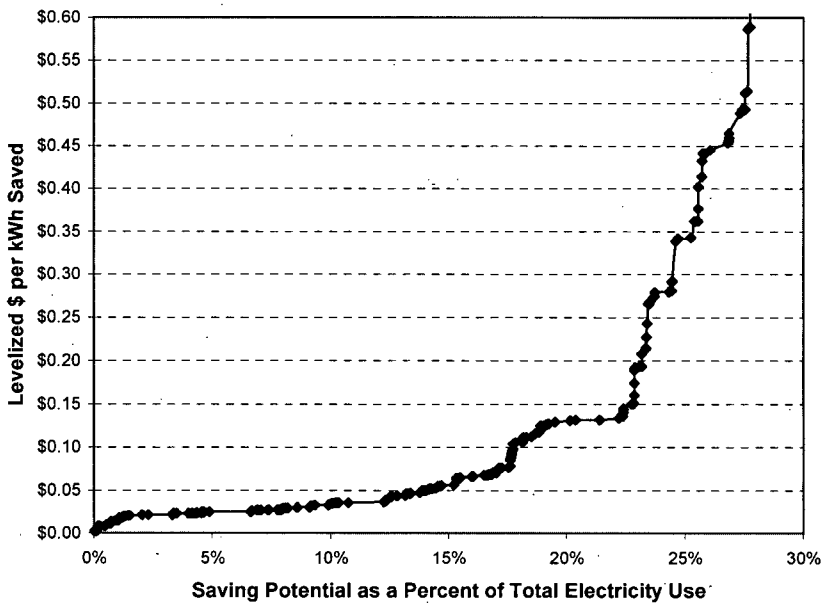


3.1.3 Energy Efficiency Supply Curves

A common way to illustrate the amount of energy savings per dollar spent is to construct an energy efficiency supply curve. A supply curve typically is depicted on two axes—one captures the cost per unit of saved electricity (e.g., levelized $/kWh saved) and the other shows energy savings at each level of cost. Measures are sorted on a least-cost basis, and total savings are calculated incrementally with respect to measures that precede them. The costs of the measures are levelized over the life of the savings achieved.

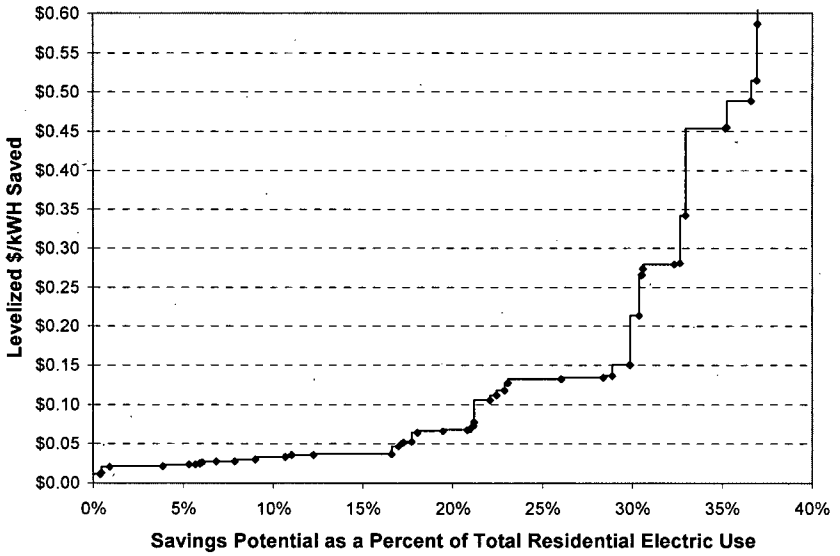
Figures 3-13 through 3-16 present the energy efficiency supply curves constructed for this study for the overall market and by sector (residential, commercial, and industrial). Each curve represents energy savings as a percentage of total energy. Savings potentials and levelized costs for the individual measures that comprise the supply curve are provided in Appendix G.

Figure 3-13
Total Electric Supply Curve—Potential in 2014*



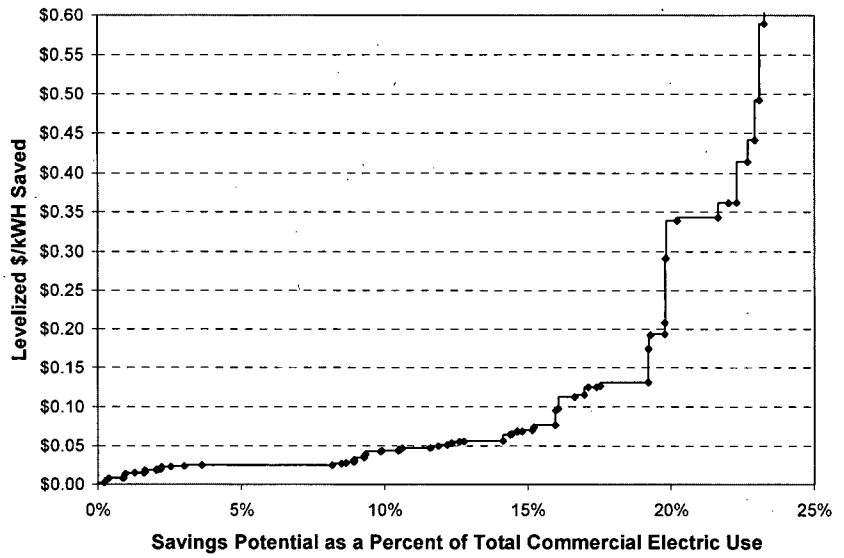
*Levelized cost per kWh saved is calculated using a 10.6 percent nominal discount rate.

Figure 3-14
Residential Electric Supply Curve—Potential in 2014*



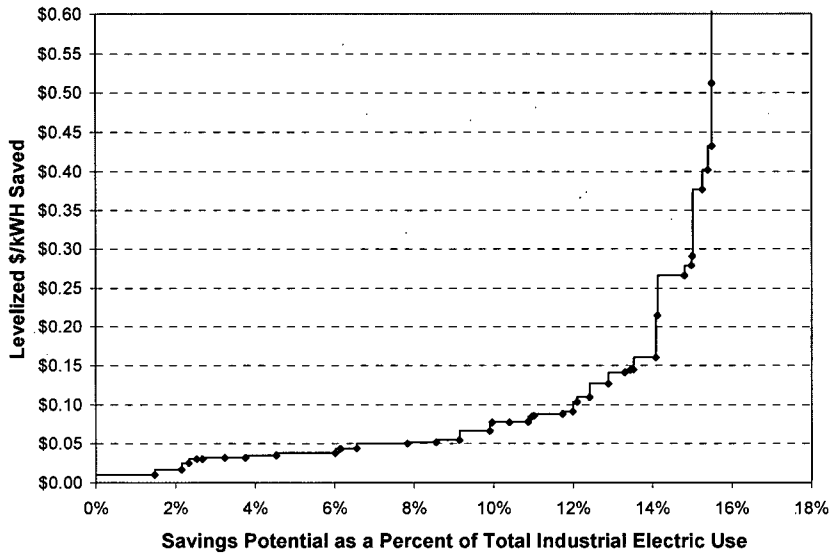
*Levelized cost per kWh saved is calculated using a 10.6 percent nominal discount rate.

Figure 3-15
Commercial Electric Supply Curve—Potential in 2020*



*Levelized cost per kWh saved is calculated using a 10.6 percent nominal discount rate.

Figure 3-16
Industrial Commercial Electric Supply Curve—Potential in 2020*



*Levelized cost per kWh saved is calculated using a 10.6 percent nominal discount rate.

3.2 ACHIEVABLE (PROGRAM) POTENTIAL

In contrast to technical and economic potential estimates, achievable potential estimates take into account market and other factors that affect adoption of efficiency measures. Our method of estimating measure adoption takes into account market barriers and reflects actual consumer- and business-implicit discount rates. This section presents overall results for achievable potential.

Achievable potential refers to the amount of savings that would occur in response to one or more specific program interventions. *Net* savings associated with program potential are savings that are projected beyond those that would occur naturally in the absence of any market intervention. Because achievable potential depends on the type and degree of intervention applied, we developed potential estimates under alternative funding scenarios: Base and Advanced efficiency. The Base Efficiency Funding Scenario reflects funding levels similar to CPS's current program budgets. The Advanced Efficiency Funding Scenario represents a significant increase in funding as compared to the Base Efficiency Funding Scenario, with an increase in budgets of approximately 80 percent.

We forecasted program energy and peak demand savings under each scenario for the 2005–2014 period. KEMA's energy efficiency adoption model was calibrated to CPS program budgets, and adjustments in predicted savings were made such that the forecasts of program costs per net kWh saved were in a range that is similar to other energy efficiency programs around the U.S.

Figures 3-17 and 3-18 show our estimates of achievable potential savings and their effect on projected demand and energy consumption. As shown in Figure 3-17, by 2014 *net*[1] peak demand savings are projected to be roughly 38 MW under Base Efficiency and 73 MW under Advanced Efficiency. Figure 3-18 depicts projected net energy savings of 138 GWh under Base Efficiency and 268 GWh under Advanced Efficiency.

Figure 3-17
Achievable Peak Demand Savings

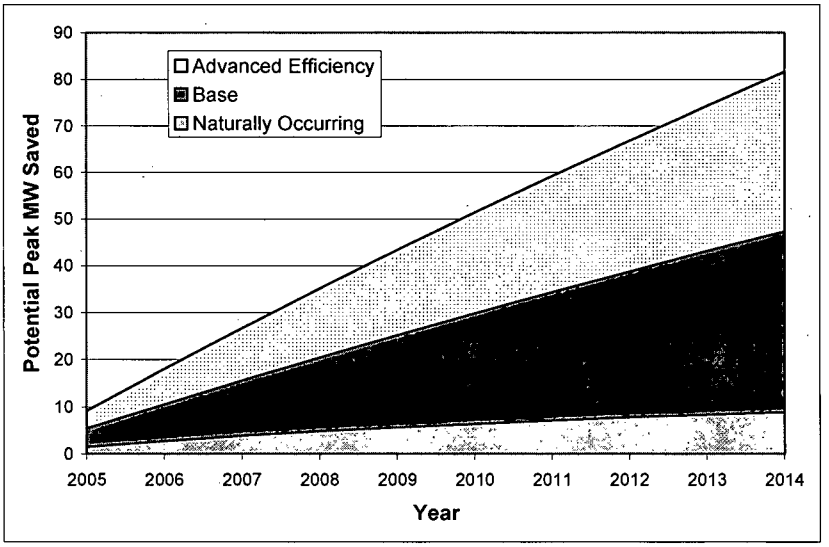
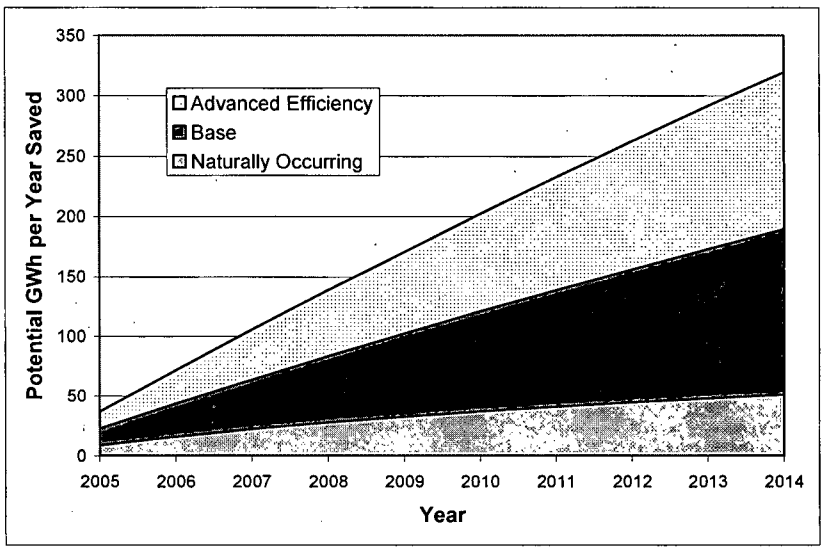


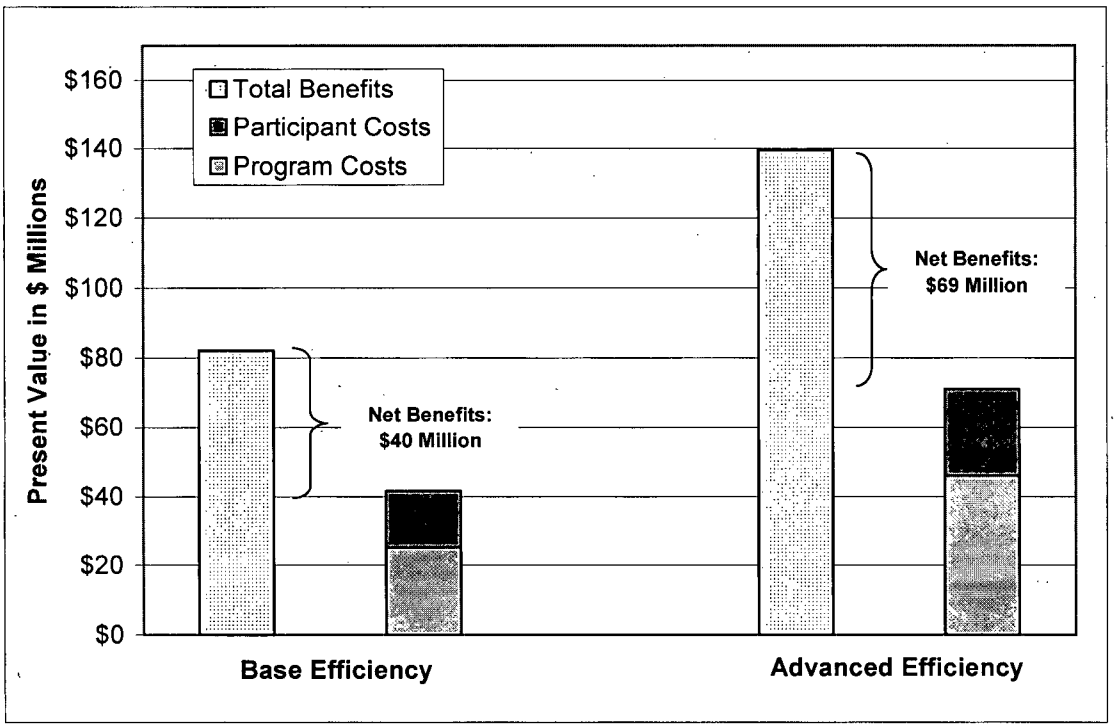
Figure 3-18
Achievable Energy Savings



[1] Again, throughout this section, *net* refers to savings beyond those estimated to be naturally occurring; that is, from customer adoptions that would occur in the absence of any programs or standards.

Figure 3-19 depicts costs and benefits under each funding scenario from 2005 to 2014. The present value of program costs (including administration, marketing, and incentives) is $25 million under Base Efficiency and $46 million under Advanced Efficiency. The present value of total avoided-cost benefits is $82 million under Base Efficiency and $140 million under Advanced Efficiency. The present value of net avoided-cost benefits, i.e., the difference between total avoided-cost benefits and total resource costs (which include participant costs in addition to program costs), is $40 million under Business-as-Usual and $69 million under Advanced Efficiency.

Figure 3-19
Benefits and Costs of Energy Efficiency Savings—2004–2014*



* Present value of benefits and costs over normalized 20-year measure lives; nominal discount rate is 10.6 percent, inflation rate is 3 percent.

All of the funding scenarios are cost-effective based on the TRC test, which is the principal test used to determine program cost-effectiveness. The TRC benefit-cost ratios are 1.97 and 1.96 for the Base Efficiency and Advanced Efficiency Funding Scenarios, respectively. This indicates that program cost-effectiveness remains fairly constant over the scenarios addressed in the analysis. Key results of our efficiency scenario forecasts from 2005 to 2014 are summarized in Table 3-1.

Table 3–1
Summary of Net Achievable Potential Results—2004–2014

Total	Base Efficiency	Advanced Efficiency
Program Costs	$25 Mil.	$46 Mil.
Participant Costs	$16 Mil.	$25 Mil.
Total Costs	$42 Mil.	$71 Mil.
Benefits	$82 Mil.	$140 Mil.
Net Energy Savings	138 GWh	268 GWh
Net Peak-Demand Savings	38 MW	73 MW
Program TRC	1.97	1.96

Present value of benefits and costs is calculated over a 20-year normalized measure life for 2004–2014 program years, nominal discount rate = 10.6 percent, inflation rate = 3 percent; GWh and MW savings are cumulative through 2014.

3.2.1 Breakdown of Achievable Potential

Net achievable potential estimates by customer class for the period 2005–2014 are presented in Figures 3-20 and 3-21. These figures show results for both the Base Efficiency and Advanced Efficiency Funding Scenarios. The residential and commercial sectors share the bulk of the potential energy savings under both scenarios, while the residential sectors contribute most to peak demand savings. These results are similar to other warm weather areas where residential air conditioning contributes most to peak demand, and measures affecting residential air conditioning contribute most to peak-demand savings.

Figure 3-20
Net Achievable Peak Demand Savings (2014) by Sector—MW

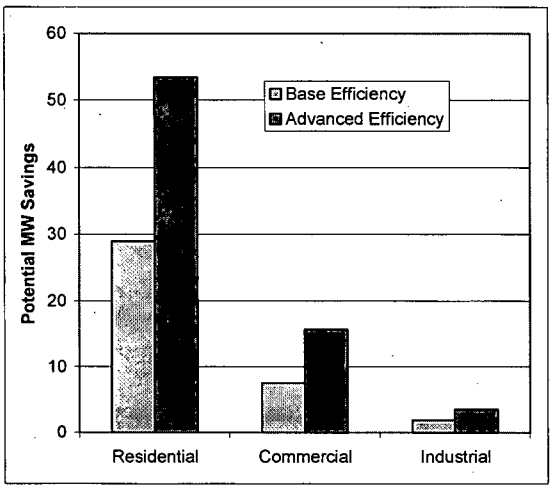
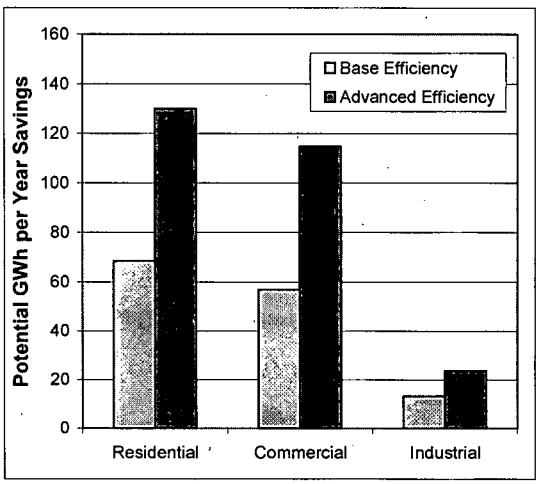


Figure 3-21
Net Achievable Energy Savings (2014) by Sector—GWh per Year



In Figures 3-22 and 3-23, we summarize the relative share of potential accounted for by retrofit measures versus new construction measures over the 2005–2014 period. New construction represents roughly 20 percent of the estimated potential.

Figure 3-22
Potential Peak-Demand Savings by Vintage (2014)—MW

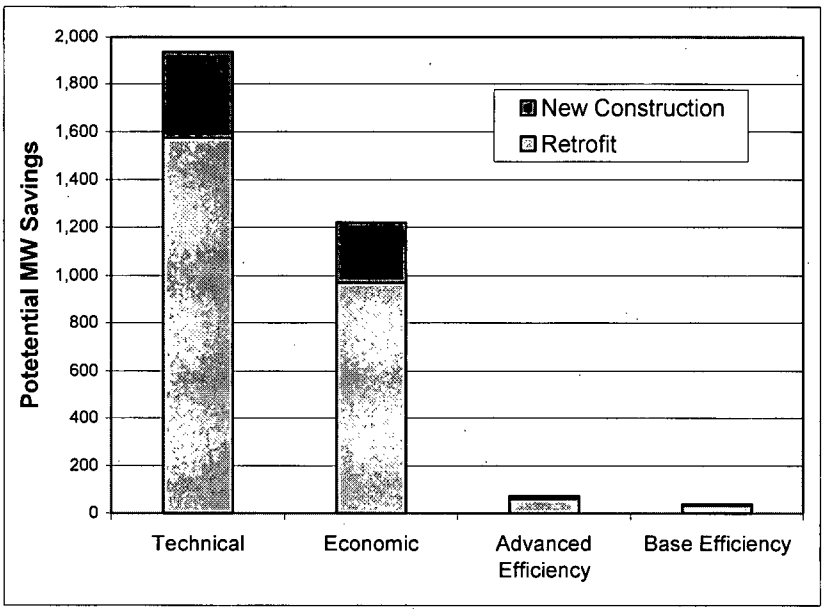
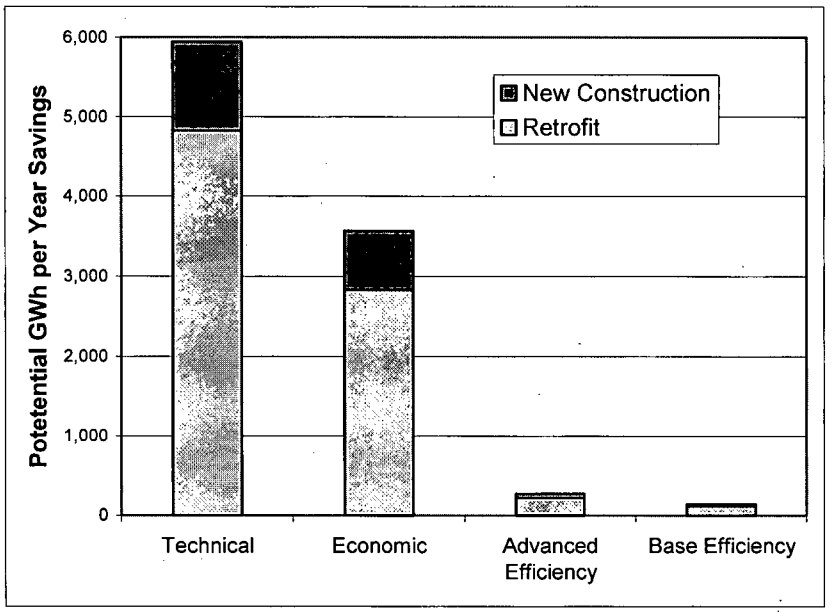


Figure 3-23
Potential Energy Savings by Vintage (2014)—GWh



3.2.2 Peak Saver Demand Control Program

CPS asked KEMA consulting to include an estimate of the savings and cost effectiveness of its Peak Saver program. We report this program was not included in the technical and achievable potential analysis conducted earlier in this section because demand control programs are not considered energy efficiency programs.

CPS began offering the program in late 2003. This residential program provides for the installation of Honeywell ExpressStat programmable thermostats in return for customers agreeing to allow CPS to cycle their central air conditioner (CAC). The CAC's compressor (but not the fan) may be controlled for a maximum of 20 minutes per half-hour between 3 p.m. and 7 p.m., Monday through Friday in May through September. Participating customers must stay in the program for a minimum of two years.

Calculating Peak Demand Savings

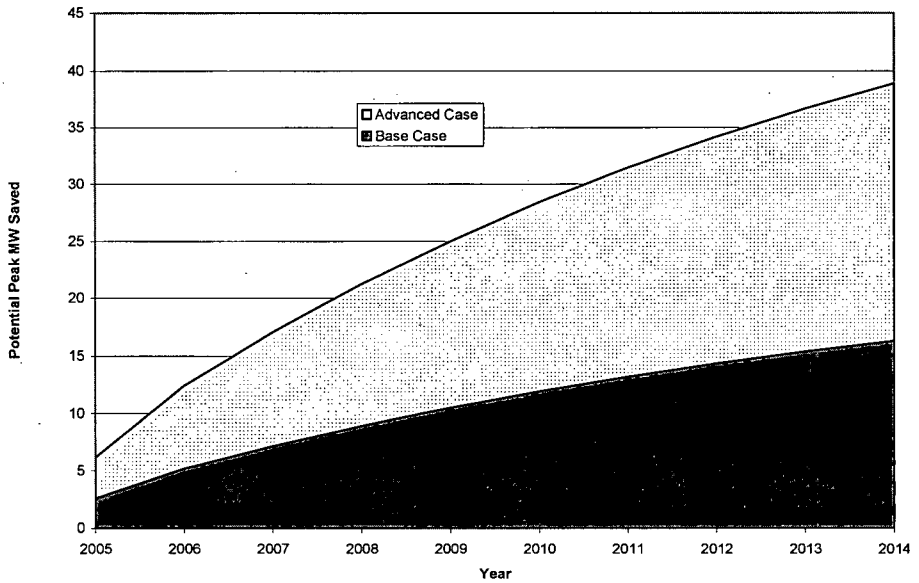
CPS estimates that each installed programmable thermostat saves 1 kW in peak demand (on the generator side of the meter) each summer peak period for at least two years.

We estimated program savings over a ten-year period (2005–2014). To make these estimates we included additional assumptions regarding program attrition. They are:

- *Initial Program Attrition.* After the first two years with a thermostat, 25 percent of the participants will opt out of the program.
- *Ongoing Attrition.* Every year 10 percent of the participants in the program for three or more years will drop out of the program for various reasons.

Figure 3-24 below shows the estimated peak Megawatts saved under two scenarios. In the Base Case, 2,600 thermostats are installed per year for the 10-year program period. In the Advanced Case, 3,600 thermostats are installed per year for the 10-year program period.

Figure 3-24
Peak Saver Program Demand Savings



Total Resource Test Analysis

We calculated a Total Resource Cost Test Ratio (TRC) of 1.02 for both the Base and Advanced Case scenarios for the Peak Saver Program. We based the analysis on the following assumptions:

- Program costs provided by CPS for 2004 reflect on-going program costs
- 3 percent inflation rate
- 10.6 percent discount rate
- $74 per kW avoided cost (2004 dollars)
- Every year 1 percent of the units would need to be serviced at $75 per unit
- Attrition assumptions as stated below.

Table 3-2
Peak Saver Program Scenarios

Peak Saver Program		
	Base Case	**Advanced Case**
Units Installed per year	2,600	3,600
Analysis Horizon (years)	10	10
Attrition Rate after first 2 cycles	25%	25%
Attrition Rate for all installations (3 or more cycles)	10%	10%
Costs 2005		
Annual Administrative	$51,500	$66,950
Installation Cost	$409,439	$566,916
Materials	$427,355	$591,723
Marketing	$41,200	$56,650
Maintenance	$1,950	$2,700
Total 2005 costs	**$931,445**	**$1,284,939**
Total Resource Cost Test	1.02	1.02

The TRC Test does not change across the two scenarios because the great majority of program costs are per unit costs. The only way to substantially change the TRC results is to reduce the costs per installation.

A

DEVELOPMENT OF BASELINE AND ENERGY EFFICIENCY DATA

This appendix describes the baseline and energy efficiency measure data used in the study.

A.1 BASELINE DATA

The principal baseline data used in this study consist of end use and technology specific data as well as economic data (avoided costs and electricity rates).

A.1.1 End Use and Technology Specific Data

Estimating the potential for energy efficiency improvements requires a comparison of the energy impacts of standard efficiency technologies with those of alternative high efficiency equipment. This, in turn, dictates a relatively detailed understanding of the energy characteristics of the marketplace. Data that were required for each studied market segment included:

- Total count of energy-consuming units (floor space of commercial buildings, number of residential dwellings, and the base kWh-consumption of industrial facilities)
- Annual energy consumption for each end use studied (both in terms of total consumption in GWh and normalized for intensity on a per-unit basis, e.g., kWh/ft^2)
- End-use load shapes (that describe the amount of energy used or power demand over certain times of the day and days of the year)
- The saturation of electric end uses (for example, the fraction of total commercial floor space with electric air conditioning)
- The market share of each base equipment type (for example, the fraction of total commercial floor space served by 4-foot fluorescent lighting fixtures [CFLs])
- Market share for each energy efficiency measure in scope (for example, the fraction of total commercial floor space already served by CFLs).

These key data elements are discussed below, by sector.

Residential Sector Baseline Data

For the residential sector, customer counts were provided by CPS. Dwellings were split into single-family and multi-family components using splits developed from the CPS Residential Appliance Saturation Study (RASS, April 2004).

End-use saturations were developed using both the RASS and end use splits utilized in the CPS energy forecasting process (Forecast of Customer Requirements, November 2003).

UECs (Unit Energy Consumption in kWh per home per year) were developed from the CPS energy forecasting process and adjusted for single-family and multi-family levels using the U.S. DOE Residential Energy Consumption Survey (RECS) data for Texas homes.

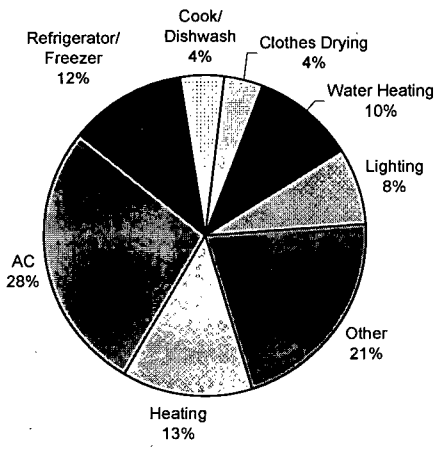
Load shape data from KEMA end-use databases were utilized to allocate annual energy usage to CPS time-of-use (TOU) periods. Peak period usage, developed on a sector specific and end use basis, was calibrated to equal the CPS summer peak.

Table A-1 summarizes the residential baseline energy consumption results developed for the study. Overall end use splits for energy and peak demand are shown in Figure A-1.

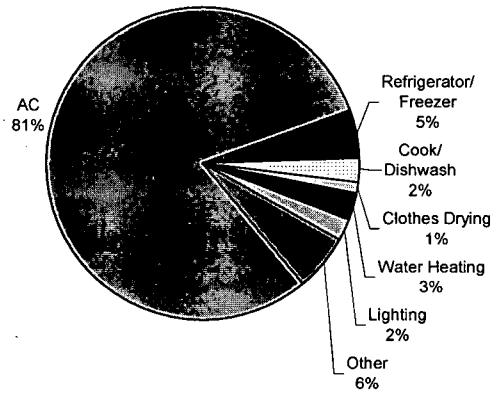
Table A-1
Residential Baseline Consumption Summary

Dwelling Type	End Use	Homes	UEC (kWh)	Saturation	Annual GWh	Peak MW to GWh Ratio	Peak MW
Single-family	Central AC	406,325	5,933	0.61	1,471	0.948	1,395
	Room AC	406,325	2,812	0.19	217	0.948	206
	Heating	406,325	4,504	0.43	787	0.000	0
	Refrigerator	406,325	1,181	1.25	600	0.136	82
	Freezer	406,325	1,117	0.31	143	0.138	20
	Range/Oven	406,325	631	0.55	141	0.229	32
	Dishwasher	406,325	555	0.50	114	0.125	14
	Water Heater	406,325	3,571	0.38	551	0.087	48
	Clothes Dryer	406,325	884	0.71	255	0.112	29
	Lighting	406,325	1,152	1.00	468	0.088	41
	Pools	406,325	2,700	0.05	55	0.093	5
	Miscellaneous	406,325	3,332	1.00	1,354	0.088	119
	Total SF				6,155		1,990
Multi-family	Central AC	130,032	3,210	0.77	321	0.948	305
	Room AC	130,032	1,521	0.10	20	0.948	19
	Heating	130,032	1,695	0.79	174	0.000	0
	Refrigerator	130,032	807	1.05	110	0.136	15
	Freezer	130,032	663	0.10	9	0.138	1
	Range/Oven	130,032	449	0.79	46	0.229	11
	Dishwasher	130,032	303	0.53	21	0.125	3
	Water Heater	130,032	2,020	0.76	200	0.087	17
	Clothes Dryer	130,032	553	0.44	31	0.112	4
	Lighting	130,032	864	1.00	112	0.088	10
	Pools	130,032	0	0.00	0	0.093	0
	Miscellaneous	130,032	1,307	1.00	170	0.088	15
	Total MF				1,215		399
Total Residential					7,370		2,389

Figure A-1
Residential End Use Composition



Energy (~7,370 GWh/Year)



Peak Demand (~2,389 MW)

Commercial Sector Baseline Data

The primary sources of commercial data for the CPS area were the U.S. DOE Commercial Building Energy Consumption Survey (CBECS) and CPS billed consumption data.

CBECS data for the West South Central Region were used to develop end use saturation and EUI (Energy Utilization Indices in kWh per square foot) data as well as whole building EUI estimates.

For the commercial sector, no estimates of consuming units (square feet of commercial space by building type) were available for the CSP area. Square footage estimates were developed for each key building type by dividing CPS energy consumption (kWh) by whole building EUIs (kWh per square foot).

Load shape data from KEMA end-use databases were utilized to allocate annual energy usage to CPS TOU periods. Peak period usage, developed on a sector specific and end use basis, was calibrated to equal the CPS summer peak.

Tables A-2 and A-3 summarize the commercial baseline energy consumption results developed for the study. Overall end use splits for energy and peak demand are shown in Figure A-2.

Table A-2
Commercial Baseline Consumption Summary

Saturation	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other
Cooking	0.24	0.33	0.27	0.41	0.01	0.26	0.53	0.22	0.10	0.10
Cooling	0.97	1.00	0.99	0.96	0.74	0.78	0.97	0.96	0.83	0.83
Heating	0.47	0.47	0.50	0.57	0.34	0.25	0.46	0.22	0.27	0.27
Indoor Lighting	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Outdoor Lighting	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Miscellaneous	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Office Equipment	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Refrigeration	0.89	1.00	0.97	1.00	0.96	0.99	0.99	1.00	0.83	0.83
Ventilation	1.00	1.00	1.00	1.00	0.81	1.00	1.00	1.00	0.93	0.93
Water Heating	0.50	0.26	0.52	0.46	0.48	0.18	0.36	0.06	0.29	0.29

EUI = kWh per Sqft	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other
Cooking	0.1	3.5	0.3	0.7	0.0	0.1	0.2	0.6	0.8	0.8
Cooling	3.3	9.1	2.7	5.7	0.5	2.5	4.5	4.0	3.1	3.1
Heating	0.5	1.8	1.2	2.1	0.2	0.7	1.5	0.4	1.4	1.4
Indoor Lighting	7.0	6.5	4.2	6.0	2.7	4.8	9.6	8.4	4.5	4.5
Outdoor Lighting	1.5	3.9	1.2	1.9	0.2	0.7	0.3	0.6	1.1	1.1
Miscellaneous	1.4	4.5	0.6	1.5	0.9	0.4	3.2	1.9	0.9	0.9
Office Equipment	4.3	0.6	0.6	0.3	1.5	0.6	4.2	1.4	0.8	0.8
Refrigeration	0.1	10.4	0.2	27.3	0.2	0.4	1.2	0.8	0.4	0.4
Ventilation	1.7	2.2	0.7	1.3	0.1	0.9	2.0	0.7	1.1	1.1
Water Heating	0.3	3.4	0.2	1.2	0.2	0.9	1.5	8.7	0.4	0.4
Total EUI	19.7	40.1	11.0	45.8	6.1	10.1	26.2	18.5	11.7	11.7

	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other	Total
Square Footage Estimate (1000s)	131,365	14,347	64,990	8,659	60,749	82,768	19,319	20,141	47,581	85,009	534,927

MWh (Sat*EUI*Sqft/1,000)	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other	Total
Cooking	4,484	16,869	4,430	2,505	1	2,917	1,759	2,636	3,689	6,590	45,882
Cooling	418,973	130,330	172,952	47,245	21,715	161,718	84,939	76,996	123,163	220,045	1,458,075
Heating	32,320	12,135	38,707	10,125	4,972	13,966	13,615	1,666	17,974	32,113	177,594
Indoor Lighting	914,985	92,809	271,899	52,100	166,154	400,655	184,604	169,499	212,670	379,958	2,845,333
Outdoor Lighting	195,684	56,399	80,111	16,691	12,033	58,986	6,730	12,673	50,447	90,129	579,883
Miscellaneous	187,988	63,912	40,812	12,678	52,972	29,338	61,509	38,922	40,790	72,877	601,797
Office Equipment	571,190	8,829	38,023	2,791	90,047	46,858	82,075	27,701	36,937	65,991	970,442
Refrigeration	15,816	148,593	14,245	236,317	10,488	33,032	22,160	16,239	17,032	30,430	544,353
Ventilation	229,601	32,165	47,362	11,475	4,117	71,179	38,938	14,215	47,961	85,688	582,701
Water Heating	17,310	12,729	7,904	4,714	4,967	14,435	10,178	11,447	5,324	9,511	98,519
Total	2,588,352	574,769	716,446	396,642	367,465	833,084	506,507	371,993	555,987	993,333	7,904,578

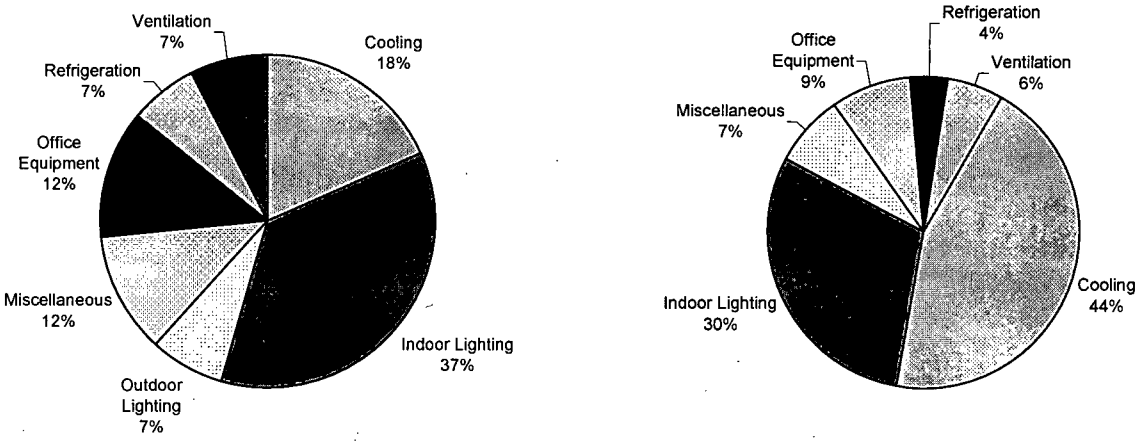
Table A-3
Commercial Peak Demand Estimates

GWh (Sat*EUI*Sqft/1,000,000)	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other	Total
Cooking	4	17	4	3	0	3	2	3	4	7	46
Cooling	419	130	173	47	22	162	85	77	123	220	1,458
Heating	32	12	39	10	5	14	14	2	18	32	178
Indoor Lighting	915	93	272	52	166	401	185	169	213	380	2,845
Outdoor Lighting	196	56	80	17	12	59	7	13	50	90	580
Miscellaneous	188	64	41	13	53	29	62	39	41	73	602
Office Equipment	571	9	38	3	90	47	82	28	37	66	970
Refrigeration	16	149	14	236	10	33	22	16	17	30	544
Ventilation	230	32	47	11	4	71	39	14	48	86	583
Water Heating	17	13	8	5	5	14	10	11	5	10	99
Total	2,588	575	716	397	367	833	507	372	556	993	7,905

Peak MW to GWh Ratio	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other	Total
Cooking	0.171	0.116	0.136	0.100	0.177	0.137	0.135	0.090	0.140	0.140	0.128
Cooling	0.422	0.251	0.320	0.358	0.318	0.545	0.377	0.601	0.470	0.470	0.423
Heating	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Indoor Lighting	0.171	0.116	0.136	0.100	0.177	0.137	0.135	0.090	0.140	0.140	0.146
Outdoor Lighting	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Miscellaneous	0.171	0.116	0.136	0.100	0.177	0.137	0.135	0.090	0.140	0.140	0.145
Office Equipment	0.121	0.131	0.126	0.100	0.139	0.109	0.121	0.094	0.125	0.125	0.122
Refrigeration	0.097	0.099	0.098	0.096	0.099	0.087	0.098	0.093	0.096	0.096	0.096
Ventilation	0.126	0.148	0.161	0.088	0.179	0.154	0.147	0.086	0.149	0.149	0.139
Water Heating	0.171	0.116	0.136	0.100	0.177	0.137	0.135	0.090	0.140	0.140	0.135

Peak MW Estimates	Office	Restaurant	Retail	Food Store	Warehouse	Education	Health	Lodging	Military	Other	Total
Cooking	0.8	2.0	0.6	0.3	0.0	0.4	0.2	0.2	0.5	0.9	6
Cooling	176.7	32.7	55.4	16.9	6.9	88.2	32.0	46.3	57.9	103.5	616
Heating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Indoor Lighting	156.6	10.8	36.9	5.2	29.3	54.9	24.9	15.3	29.7	53.1	417
Outdoor Lighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Miscellaneous	32.2	7.4	5.5	1.3	9.4	4.0	8.3	3.5	5.7	10.2	87
Office Equipment	68.9	1.2	4.8	0.3	12.5	5.1	9.9	2.6	4.6	8.3	118
Refrigeration	1.5	14.7	1.4	22.7	1.0	2.9	2.2	1.5	1.6	2.9	52
Ventilation	28.8	4.8	7.6	1.0	0.7	11.0	5.7	1.2	7.2	12.8	81
Water Heating	3.0	1.5	1.1	0.5	0.9	2.0	1.4	1.0	0.7	1.3	13
Total	468.4	74.9	113.4	48.1	60.8	168.4	84.7	71.7	108.0	193.0	1,391

Figure A-2
Commercial End Use Composition



Energy (~ 7,905 GWh/Year) **Peak Demand (~1,391 MW)**

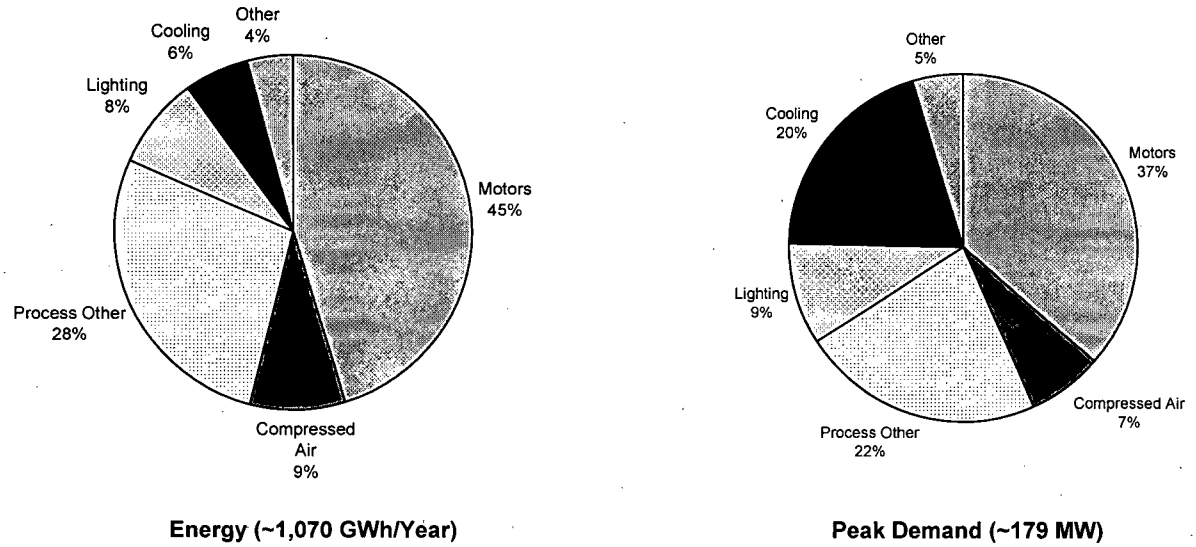
In addition to end-use level data, additional technology-level splits were required for several end uses. For space cooling the split between chillers and DX air conditioning systems was obtained from the CBECS data. For lighting, the split between fluorescent tube lighting, incandescent/ CFL lighting, and HID lighting was also developed from CBECS data. For ventilation, the distribution of fan motor sizes was estimated by building type using data from California commercial end use survey data. Finally, disaggregation of office equipment used into various components (computers, monitors, printers, and copiers) was performed using California commercial survey data and an LBNL (Lawrence Berkeley National Laboratory) office equipment analysis (*Electricity Used by Office Equipment and Network Equipment in the U.S.*, LBNL, February 2001).

Industrial Sector Baseline Data

Data on the industrial sector consisted of CPS billing data and end-use consumption data at the national level developed as part of the U.S. DOE Manufacturing Energy Consumption Survey (MECS). The motors end use was further disaggregated using national level data developed by KEMA as part of a U.S. Motors Assessment Study conducted for DOE in 1998. Given the relatively small size of the CPS industrial sector relative to the residential and commercial sectors, it was determined that aggregate national level data was sufficient for the CPS industrial baseline work. Similar to the residential and commercial sectors, industrial peak demand estimates were calibrated to ensure that they were consistent with CPS system peak demand.

Figure A-3 summarizes industrial end use consumption.

Figure A-3
Industrial End Use Composition



A.1.2 Energy Cost and Rates Data

This subsection outlines the basis for assumptions for avoided costs and electricity rates.

Avoided-energy cost estimates were provided by CPS for the current year. They were escalated at a 3 percent rate for the forecast horizon. Avoided costs were allocated to 4 TOU periods: summer peak, summer off-peak, winter peak, and winter off-peak. Table A-4 summarizes the TOU periods and associated avoided cost estimates.

Table A-4
TOU Periods and Avoided Energy Costs

TOU Period	Definition	Annual Hours	Avoided Cost ($/kWh)
Summer On-Peak	1pm–9pm weekdays	688	$0.057
Summer Off-Peak	10pm–1pm weekdays and all weekdays and holidays	2,240	$0.029
Winter On-Peak	10am–10pm weekdays	1,992	$0.042
Winter Off-Peak	10pm–10am weekdays and all weekdays and holidays	3,864	$0.023

Summer: June through September
Winter: October through May

CPS also provided an estimate of base-year avoided-capacity cost that was also escalated at 3 percent over the forecast horizon. The avoided-cost standard is based on the estimated cost of a new gas turbine at $400/kW. Taking into account a 30-year life, 10 percent discount rate and a 3 percent inflation rate, the annualized capacity cost is $66/kW. To this value, there has been added reserve margins at 12 percent: ($66) (1+12%) = **$73.92/kW**. Note: CPS also included an adder for line losses that wasn't included in this cost estimate because line losses were addressed separately in the analysis by adjusted peak impacts to the generation level.

Electricity rates for each key sector were developed as average rates by taking electric revenues divided by electric sales. The rates were analyzed by facility type and not by rate schedule. The rates were also escalated at an inflation rate of 3 percent per year over the forecast horizon. Table B-5 summarizes the base year rates.

Table A-5
Base Year Electricity Rates

Sector	Rate ($/kWh)
Residential	$0.078
Commercial	$0.061
Industrial	$0.052

A.2 ENERGY EFFICIENCY MEASURE DATA

This subsection presents information on the energy efficiency measures included in the study. Cost and savings fraction sources are listed and measure descriptions are provided.

A.2.1 Measures Included

The set of measures included in this potential study is shown in Tables A-6 through A-8 below. In reviewing this list, readers should be aware of the following:

- Measures are generally organized around base case technologies. These base case technologies are intentional aggregations of the wide variety of actual base case technologies in the market. Thus, the measure list for the potential study is not as detailed as measure lists that are necessary for actual program implementation.
  - For example, we use the three most common fluorescent fixtures (4-foot, 4-lamp; 4-foot, 2-lamp; and 8-foot, 2-lamp to represent the base case energy for fluorescent lighting. The square footage and base case energy for other types of fluorescent systems are mapped into one of these three types.
- Additional measure detail is provided in Appendix E.

Table A-6
Residential Sector Energy Efficiency Measures

End Use	Measure
Cooling	16 SEER Central AC
	Ceiling Fans
	Whole House Fans
	Attic Venting
	Window Film
	High Performance Windows (Low E)
	Radiant Barriers
	Basic HVAC Diagnostic Testing And Repair
	Duct Diagnostics and Repair
	ENERGY STAR Room Air Conditioner
Heating	Heat Pump Space Heater
	Geothermal Heat Pump
Cooling/Heating	Programmable Thermostat
	Ceiling Insulation
	Wall Insulation
	Infiltration Reduction
Water Heating	Heat Pump Water Heater
	High Efficiency Water Heater
	Solar Water Heat
	Low Flow Showerhead
	Faucet Aerators
	Pipe Wrap
	Water Heater Blanket
	ENERGY STAR Clothes Washer
Lighting	CFLs
	T8 with Electronic Ballast Lighting
	Fluorescent Torchiere
Refrigeration	HE Refrigerator – ENERGY STAR
	HE Freezer
Dishwashing	ENERGY STAR Dishwasher
Pools	High Efficiency Pool Pump and Motor

Table A-7
Commercial Sector Energy Efficiency Measures

End Use	Measure
Indoor Lighting	Premium T8s with Electronic Ballast
	T8 with Electronic Ballast with Reflectors
	Occupancy Sensors
	Continuous Dimming Controls
	T5 High Output with Electronic Ballast
	Lighting Control Tune-ups
	CFLs
	Halogen PAR Flood Lighting
	Metal Halides
Outdoor Lighting	Outdoor T8 with Electronic Ballast
	High Pressure Sodium Lamps
	Outdoor Lighting Controls
Cooling	Centrifugal Chiller, 0.51 kW/ton, 500 tons
	Window Film
	EMS
	Cool Roofs
	Chiller Tune-up/Diagnostics
	Cooling Circ. Pumps – VSD
	EMS Optimization
	DX Tune-up/Advanced Diagnostics
	DX Packaged System, EER=10.9, 10 tons
	Evaporative Pre-Cooler
	Programmable Thermostat
	Optimize Controls – DX
Ventilation	HE Vent Fan Motors
	Fan Variable Speed Drive Controls
	Air Handler Optimization
Refrigeration	High-efficiency refrigerator fan motors
	Strip curtains for walk-ins
	Night covers for display cases
	Evaporator fan controller for MT walk-ins
	Efficient compressor motor
	Compressor VSD retrofit
	Floating head pressure controls
	Refrigeration Commissioning
	Demand Hot Gas Defrost
	Demand Defrost Electric
	Anti-sweat (humidistat) controls
Office Equipment	Power Management Enabling – PC
	Purchase LCD monitor
	Power Management Enabling – Monitor
	Network Power Management Enabling – Monitor
	External hardware control – Monitor
	Power Management Enabling – Copier
	External hardware control – Printer
	Nighttime shutdown – Printer

Table A-8
Industrial Sector Energy Efficiency Measures

End Use	Measure
Motors	Premium Efficiency Motors
	VSD on Motors
	Motor Practices Level 1 (Lower Payback)
	Motor Practices Level 2 (Higher Payback)
Compressed Air	CAS Level 1 (Lower relative cost)
	CAS Level 2 (Medium relative cost)
	CAS Level 3 (Higher relative cost)
Other Process	Process Level 1 (Lower relative cost)
	Process Level 2 (Medium relative cost)
	Process Level 3 (Higher relative cost)
Lighting	T8 Lighting with Electronic Ballast
	Occupancy Sensors
	Continuous Dimming Controls
	CFLs
	Metal Halides
Cooling	Centrifugal Chiller, 0.51 kW/ton
	Window Film
	EMS
	Cool Roof
	Chiller Tune-up/Diagnostics
	Cooling Circ. Pumps – VSD
	DX Tune-up/Advanced Diagnostics
	DX Packaged System, EER=10.9
	Evaporative Pre-Cooler
	Programmable Thermostat

A.2.2 Measure Cost and Savings Sources

Most of the measure cost data for this study were developed as part of the California DEER 2001 Update study. Part of that study involved collection and analysis of residential and commercial measure cost data. Additional industrial cost data was developed from work conducted by LBNL on the industrial sector and by KEMA as part of the DOE U.S. Motors Assessment Study. For ENERGY STAR® equipment, information for the ENERGY STAR website (www.energystar.gov) was utilized.

Measure savings were developed from a variety of sources, including: standard engineering calculations, the building simulation studies, a comprehensive LBNL refrigeration study, the ENERGY STAR website, and recent utility program filings. All measure cost and savings estimates are shown in Appendix E.

A.2.3 Existing Energy-Efficient Measure Saturations

In order to assess the amount of energy efficiency savings available, estimates of the current saturation of energy-efficient measures were developed from available data sources. In some cases, judgmental adjustments to these saturation estimates were required to bring them up to

date because the available sources were several years old. Much of the saturation data from recent California studies was utilized for the analysis, but was adjusted downward to reflect an understanding that energy-efficient measure saturations were generally lower in the San Antonio area, partly reflecting lower prevailing energy costs. Appendix E shows the assumptions regarding measure "not complete" factors that are defined as one minus the measure saturation.

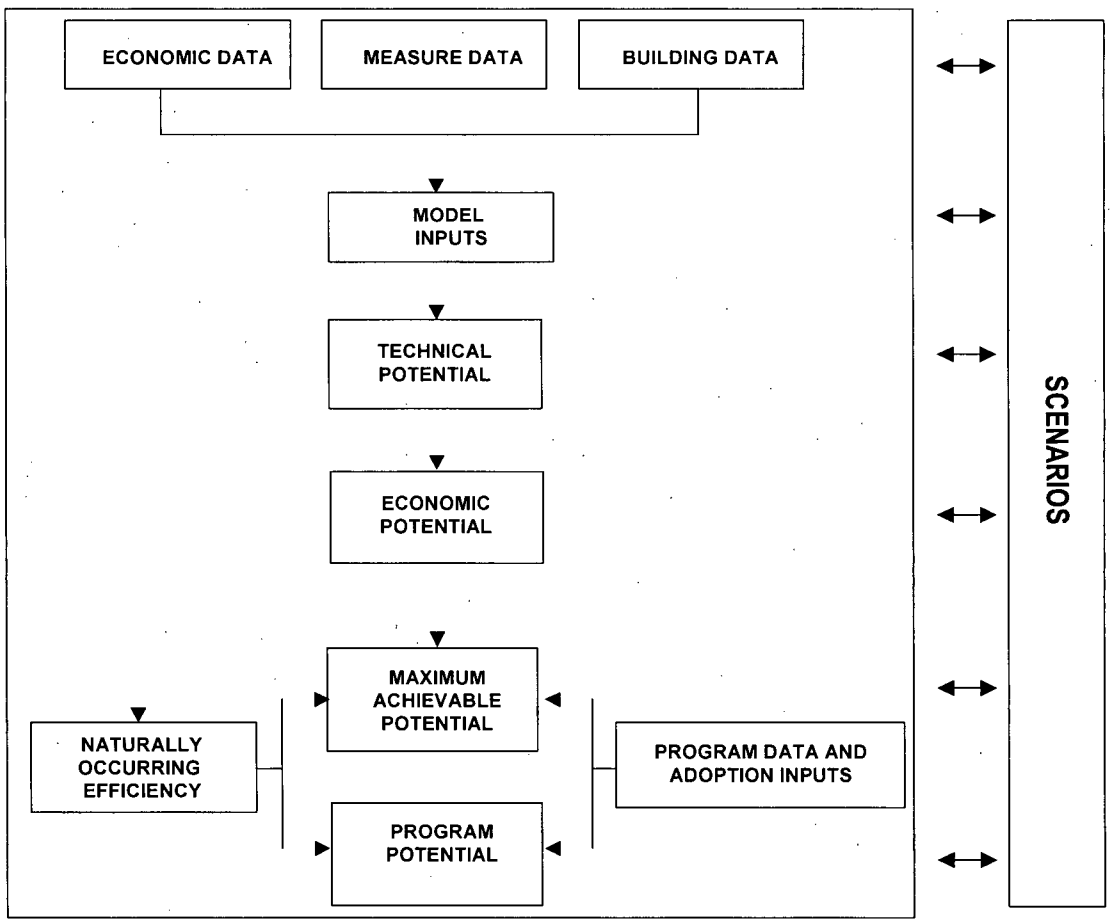
B DETAILED METHODOLOGY AND MODEL DESCRIPTION

In this appendix we present and discuss our basic methodology for conducting market potential studies. We also present an overview of DSM ASSYST™, our model used to develop market potential estimates. Information presented here has been extracted from several recent energy efficiency potential reports.

B.1 OVERVIEW OF DSM FORECASTING METHOD

The crux of any DSM forecasting process involves carrying out a number of systematic analytical steps that are necessary to produce accurate estimates of energy efficiency (EE) effects on system load. A simplified overview of these basic analytical steps is shown in Figure B-1.

Figure B-1
Simplified Conceptual Overview of Modeling Process



Developing a DSM forecast is viewed by KEMA as a five-step process. The steps include:

Step 1: Develop Initial Input Data

- Develop list of EE measure opportunities to include in scope.
- Gather and develop technical data (costs and savings) on efficient measure opportunities.
- Gather, analyze, and develop information on building characteristics, including total square footage and households, electricity consumption and intensity by end use, end-use consumption load patterns by time of day and year (i.e., load shapes), market shares of key electric consuming equipment, and market shares of EE technologies and practices.

Step 2: Estimate Technical Potential and Develop Supply Curves

- Match and integrate data on efficient measures to data on existing building characteristics to produce estimates of technical potential and EE supply curves.

Step 3: Estimate Economic Potential

- Gather economic input data such as current and forecasted retail electric prices and current and forecasted costs of electricity generation, along with estimates of other potential benefits of reducing supply, such as the value of reducing environmental impacts associated with electricity production.
- Match and integrate measure and building data with economic assumptions to produce indicators of costs from different viewpoints (e.g., utility, societal, and consumer).
- Estimate total economic potential using supply curve approach.

Step 4: Estimate Maximum Achievable, Program, and Naturally Occurring Potentials

- Gather and develop estimates of program costs (e.g., for administration and marketing) and historic program savings.
- Develop estimates of customer adoption of EE measures as a function of the economic attractiveness of the measures, barriers to their adoption, and the effects of program intervention.
- Estimate maximum achievable, program, and naturally occurring potentials; calibrate achievable and naturally occurring potential to recent program and market data.
- Develop alternative economic estimates associated with alternative future scenarios.

Step 5: Scenario Analyses and Resource Planning Inputs

- Recalculate potentials under alternate economic scenarios and deliver data in format required for resource planning.

Provided below is additional discussion of KEMA's modeling approaches for technical, economic, and achievable DSM forecasts.

B.1.2 Estimate Technical Potential and Develop Energy-Efficiency Supply Curves

Technical potential refers to the amount of energy savings or peak demand reduction that would occur with the *complete* penetration of all measures analyzed in applications where they were deemed *technically* feasible from an *engineering* perspective. Total technical potential is developed from estimates of the technical potential of individual measures as they are applied to discrete market segments (commercial building types, residential dwelling types, etc.).

Core Equation

The core equation used to calculate the energy technical potential for each individual efficiency measure, by market segment, is shown below (using a commercial example)[1]:

$$\text{Technical Potential of Efficient Measure} = \text{Total Square Feet} \times \text{Base Case Equipment EUI} \times \text{Applicability Factor} \times \text{Not Complete Factor} \times \text{Feasibility Factor} \times \text{Savings Factor}$$

where:

- **Square feet** is the total floor space for all buildings in the market segment. For the residential analysis, the **number of dwelling units** is substituted for square feet.
- **Base-case equipment EUI** is the energy used per square foot by each base-case technology in each market segment. This is the consumption of the energy-using equipment that the efficient technology replaces or affects. For example, if the efficient measure were a CFL, the base EUI would be the annual kWh per square foot of an equivalent incandescent lamp. For the residential analysis, unit energy consumption (UEC), energy used per dwelling, are substituted for EUIs.
- **Applicability factor** is the fraction of the floor space (or dwelling units) that is applicable for the efficient technology in a given market segment; for the example above, the percentage of floor space lit by incandescent bulbs.
- **Not complete factor** is the fraction of applicable floor space (or dwelling units) that has not yet been converted to the efficient measure; that is, (1 minus the fraction of floor space that already has the EE measure installed).
- **Feasibility factor** is the fraction of the applicable floor space (or dwelling units) that is technically feasible for conversion to the efficient technology from an *engineering* perspective.

[1] Note that stock turnover is not accounted for in our estimates of technical and economic potential, stock turnover *is accounted for* in our estimates of achievable potential. Our definition of technical potential assumes instantaneous replacement of standard-efficiency with high-efficiency measures.

- **Savings factor** is the reduction in energy consumption resulting from application of the efficient technology.

Technical potential for peak demand reduction is calculated analogously.

An example of the core equation is shown in Table B-1 for the case of a prototypical 75-Watt incandescent lamp, which is replaced by an 18-Watt CFL in the office segment of a large utility service territory.

Table B-1
Example of Technical Potential Calculation—Replace 75-W Incandescent with 18-W CFL in the Office Segment of a Utility Service Territory

Technical Potential of Efficient Measure	=	Total # of Dwellings	×	Base Case Equipment UEC	×	Applicability Factor	×	Not Complete Factor	×	Feasibility Factor	×	Savings Factor
7.7 million kWh		471 million		11.4		0.011		0.20		0.90		0.72

Technical EE potential is calculated in two steps. In the first step, all measures are treated *independently*; that is, the savings of each measure are not marginalized or otherwise adjusted for overlap between competing or synergistic measures. By treating measures independently, their relative economics are analyzed without making assumptions about the order or combinations in which they might be implemented in customer buildings. However, the total technical potential across measures cannot be estimated by summing the individual measure potentials directly. The cumulative savings cannot be estimated by adding the savings from the individual savings estimates because some savings would be double counted. For example, the savings from a measure that reduces heat gain into a building, such as window film, are partially dependent on other measures that affect the efficiency of the system being used to cool the building, such as a high-efficiency chiller; the more efficient the chiller, the less energy saved from the application of the window film.

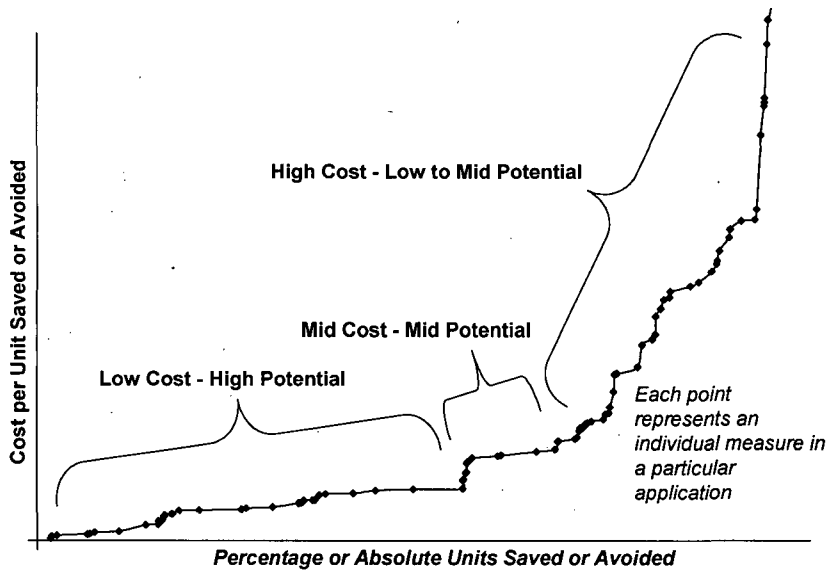
Use of Supply Curves

In the second step, cumulative technical potential is estimated using an EE supply curve approach.[2] This method eliminates the double-counting problem. In Figure B-2, we present a generic example of a supply curve. As shown in the figure, a supply curve typically consists of two axes—one that captures the cost per unit of saving a resource or mitigating an impact (e.g., $/kWh saved or $/ton of carbon avoided) and the other that shows the amount of savings or

[2] This section describes conservation supply curves as they have been defined and implemented in numerous studies. Readers should note that Stoft 1995 describes several technical errors in the definition and implementation of conservation supply curves in the original and subsequent conservation supply curve studies. Stoft concludes that conservation supply curves are not "true" supply curves in the standard economic sense but can still be useful (albeit with his recommended improvements) for their intended purpose (demonstration of cost-effective conservation opportunities).

mitigation that could be achieved at each level of cost. The curve is typically built up across individual measures that are applied to specific base-case practices or technologies by market segment. Savings or mitigation measures are sorted on a least-cost basis, and total savings or impacts mitigated are calculated incrementally with respect to measures that precede them. Supply curves typically, but not always, end up reflecting diminishing returns, i.e., as costs increase rapidly and savings decrease significantly at the end of the curve.

Figure B-2
Generic Illustration of EE Supply Curve



As noted above, the cost dimension of most EE supply curves is usually represented in dollars per unit of energy savings. Costs are usually annualized (often referred to as "levelized") in supply curves. For example, EE supply curves usually present levelized costs per kWh or kW saved by multiplying the initial investment in an efficient technology or program by the "capital recovery rate" (CRR):

$$\text{CRR} = \frac{d}{1-(1+d)^{-n}}$$

where d is the real discount rate and n is the number of years over which the investment is written off (i.e., amortized).

Thus,

Levelized Cost per kWh Saved = Initial Cost x CRR/Annual Energy Savings

Levelized Cost per kW Saved = Initial Cost x CRR/Peak Demand Savings

The levelized cost per kWh and kW saved are useful because they allow simple comparison of the characteristics of EE with the characteristics of energy supply technologies. However, the levelized cost per kW saved is a biased indicator of cost-effectiveness because all of the efficiency measure costs are arbitrarily allocated to peak savings.

Returning to the issue of EE supply curves, Table B-2 shows a simplified numeric example of a supply curve calculation for several EE measures applied to commercial lighting for a hypothetical population of buildings. What is important to note is that in an EE supply curve, the measures are sorted by relative cost—from least to most expensive. In addition, the energy consumption of the system being affected by the efficiency measures goes down as each measure is applied. As a result, the savings attributable to each subsequent measure decrease if the measures are interactive. For example, the occupancy sensor measure shown in Table B-2 would save more at less cost per unit saved if it were applied to the base-case consumption before the T8 lamp and electronic ballast combination. Because the T8 electronic ballast combination is more cost-effective, however, it is applied first, reducing the energy savings potential for the occupancy sensor. Thus, in a typical EE supply curve, the base-case end-use consumption is reduced with each unit of EE that is acquired. Notice in Table B-2 that the total end-use GWh consumption is recalculated after each measure is implemented, thus reducing the base energy available to be saved by the next measure.

Table B-2 shows an example that would represent measures for one base-case technology in one market segment. These calculations are performed for all of the base-case technologies, market segments, and measure combinations in the scope of a study. The results are then ordered by levelized cost and the individual measure savings are summed to produce the EE potential for the entire sector.

In the next subsection, we discuss how economic potential is estimated as a subset of the technical potential.

Table B-2
Sample Technical Potential Supply Curve Calculation for Commercial Lighting
(Note: Data are illustrative only)

Measure	Total End Use Consumption of Population (GWh)	Applicable, Not Complete and Feasible (1000s of ft^2)	Average kWh/ft^2 of population	Savings %	GWh Savings	Levelized Cost ($/kWh saved)
Base Case: T12 lamps with Magnetic Ballast	425	100,000	4.3	N/A	N/A	N/A
1. T8 w/Elec. Ballast	425	100,000	4.3	21%	89	$0.04
2. Occupancy Sensors	336	40,000	3.4	10%	13	$0.11
3. Perimeter Dimming	322	10,000	3.2	45%	14	$0.25
With all measures	309		3.1	27%	116	

B.1.3 Estimation of Economic Potential

Economic potential is typically used to refer to the *technical potential* of those energy conservation measures that are cost effective when compared to either supply-side alternatives or the price of energy. Economic potential takes into account the fact that many EE measures cost more to purchase initially than do their standard-efficiency counterparts. The incremental costs of each efficiency measure are compared to the savings delivered by the measure to produce estimates of energy savings per unit of additional cost. These estimates of EE resource costs can then be compared to estimates of other resources such as building and operating new power plants.

Cost Effectiveness Tests

To estimate economic potential, it is necessary to develop a method by which it can be determined that a measure or program is *economic*. There is a large body of literature that debates the merits of different approaches to calculating whether a public purpose investment in EE is cost effective (Chamberlin and Herman 1993, RER 2000, Ruff 1988, Stoft 1995, and Sutherland 2000). We usually adopt the cost-effectiveness criteria used by the CPUC in its decisions regarding the cost-effectiveness of EE programs funded under the State's public goods charge. The CPUC uses the total resource cost (TRC) test, as defined in the California Standard Practice Manual (CASPM 2001), to assess cost effectiveness. The TRC is a form of societal benefit-cost test. Other tests that have been used in analyses of program cost-effectiveness by EE analysts include the utility cost, ratepayer impact measure (RIM), and participant tests. These tests are discussed in detail the CASPM.

Before discussing the TRC test and how it is often used in our DSM forecasts, we present below a brief introduction to the basic tests as described in the CASPM[3]:

- **Total Resource Cost Test**—The TRC test measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. The test is applicable to conservation, load management, and fuel substitution programs. For fuel substitution programs, the test measures the net effect of the impacts from the fuel not chosen versus the impacts from the fuel that is chosen as a result of the program. TRC test results for fuel substitution programs should be viewed as a measure of the economic efficiency implications of the total energy supply system (gas and electric). A variant on the TRC test is the societal test. The societal test differs from the TRC test in that it includes the effects of externalities (e.g., environmental, national security), excludes tax credit benefits, and uses a different (societal) discount rate.
- **Participant Test**—The participant test is the measure of the quantifiable benefits and costs to the customer due to participation in a program. Since many customers do not base their decision to participate in a program entirely on quantifiable variables, this test cannot be a complete measure of the benefits and costs of a program to a customer.

[3] These definitions are direct excerpts from the California Standard Practice Manual, October 2001.

- **Utility (Program Administrator) Test**—The program administrator cost test measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant. The benefits are similar to the TRC benefits. Costs are defined more narrowly.
- **Ratepayer Impact Measure Test**—The ratepayer impact measure (RIM) test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program. Rates will go down if the change in revenues from the program is greater than the change in utility costs. Conversely, rates or bills will go up if revenues collected after program implementation are less than the total costs incurred by the utility in implementing the program. This test indicates the direction and magnitude of the expected change in customer bills or rate levels.

The key benefits and costs of the various cost-effectiveness tests are summarized in Table B-3.

Table B-3
Summary of Benefits and Costs of California Standard Practice Manual Tests

Test	Benefits	Costs
TRC Test	Generation, transmission, and distribution savings Participants avoided equipment costs (fuel switching only)	Generation costs Program costs paid by the administrator Participant measure costs
Participant Test	Bill reductions Incentives Participants avoided equipment costs (fuel switching only)	Bill increases Participant measure costs
Utility (Program Administrator) Test	Generation, transmission, and distribution savings	Generation costs Program costs paid by the administrator Incentives
Ratepayer Impact Measure Test	Generation, transmission, and distribution savings Revenue gain	Generation costs Revenue loss Program costs paid by the administrator Incentives

Generation, transmission, and distribution savings (hereafter, energy benefits) are defined as the economic value of the energy and demand savings stimulated by the interventions being assessed. These benefits are typically measured as induced changes in energy consumption, valued using some mix of avoided costs. Statewide values of avoided costs are prescribed for use in implementing the test. Electricity benefits are valued using three types of avoided electricity costs: avoided distribution costs, avoided transmission costs, and avoided electricity generation costs.

Participant costs are comprised primarily of incremental measure costs. Incremental measure costs are essentially the costs of obtaining EE. In the case of an add-on device (say, an adjustable-speed drive or ceiling insulation), the incremental cost is simply the installed cost of the measure itself. In the case of equipment that is available in various levels of efficiency (e.g., a central air conditioner), the incremental cost is the excess of the cost of the high-efficiency unit over the cost of the base (reference) unit.

Administrative costs encompass the real resource costs of program administration, including the costs of administrative personnel, program promotions, overhead, measurement and evaluation, and shareholder incentives. In this context, administrative costs are not defined to include the costs of various incentives (e.g., customer rebates and salesperson incentives) that may be offered to encourage certain types of behavior. The exclusion of these incentive costs reflects the fact that they are essentially transfer payments. That is, from a societal perspective they involve offsetting costs (to the program administrator) and benefits (to the recipient).

Use of the Total Resource Cost to Estimate Economic Potential

We often use the TRC test in two ways in our model. First, we develop an estimate of economic potential by calculating the TRC of individual measures and applying the methodology described below. Second, we develop estimates of whether different program scenarios are cost effective.

Economic potential can be defined either inclusively or exclusively of the costs of programs that are designed to increase the adoption rate of EE measures. *In many of our projects, we define economic potential to* ***exclude*** *program costs.* We do so primarily because program costs are dependent on a number of factors that vary significantly as a function of program delivery strategy. There is no single estimate of program costs that would accurately represent such costs across the wide range of program types and funding levels possible. Once an assumption is made about program costs, one must also link those assumptions to expectations about market response to the types of interventions assumed. Because of this, we believe it is more appropriate to factor program costs into our analysis of *maximum achievable* and *program potential.* Thus, our definition of *economic potential* is that portion of the technical potential that passes our economic screening test (described below) exclusive of program costs. Economic potential, like technical potential, is a theoretical quantity that will exceed the amount of potential we estimate to be achievable through current or more aggressive program activities.

As implied in Table B-3 and defined in the CASPM 2001, the TRC focuses on resource savings and counts benefits as utility-avoided supply costs and costs as participant costs and utility program costs. It ignores any impact on rates. It also treats financial incentives and rebates as transfer payments; i.e., the TRC is not affected by incentives. The somewhat simplified benefit and cost formulas for the TRC are presented in Equations B-1 and B-2 below.

$$\text{Benefits} = \sum_{t=1}^{N} \frac{\text{Avoided Costs of Supply}_{p,t}}{(1+d)^{t-1}} \qquad \textbf{Eqn. B-1}$$

$$\text{Costs} = \sum_{t=1}^{N} \frac{\text{Program Cost}_t + \text{Participant Cost}_t}{(1+d)^{t-1}} \qquad \textbf{Eqn. B-2}$$

where

d = the discount rate
p = the costing period
t = time (in years)
n = 20 years

A nominal discount rate of 8 percent is used, as required by the CPUC for program filings by major IOUs in 2001.[4] We use a *normalized* measure life of 20 years to capture the benefit of long-lived measures. Measures with measure lives shorter than 20 years are "re-installed" in our analysis as many times as necessary to reach the normalized 20-year life of the analysis.

The avoided costs of supply are calculated by multiplying measure energy savings and peak demand impacts by per-unit avoided costs by costing period. Energy savings are allocated to costing periods and peak impacts estimated using load shape factors.

As noted previously, in the *measure-level* TRC calculation used to estimate economic potential, program costs are excluded from Equation B-2. Using the supply curve methodology discussed previously, measures are ordered by TRC (highest to lowest) and then the *economic* potential is calculated by summing the energy savings for all of the technologies for which the marginal TRC test is greater than 1.0. In the example in Table B-4, the economic potential would include the savings for measures 1 and 2, but exclude saving for measure 3 because the TRC is less than 1.0 for measure 3. The supply curve methodology, when combined with estimates of the TRC for individual measures, produces estimates of the economic potential of efficiency improvements. By definition and intent, this estimate of economic potential is a theoretical quantity that will exceed the amount of potential we estimate to be achievable through program activities in the final steps of our analyses.

[4] We recognize that the 8-percent discount is much lower than the implicit discount rates at which customers are observed to adopt efficiency improvements. This is by intent since we seek at this stage of the analysis to estimate the potential that is cost-effective from primarily a societal perspective. The effect of implicit discount rates is incorporated into our estimates of program and naturally occurring potential.

Table B-4
Sample Use of Supply Curve Framework to Estimate Economic Potential
(Note: Data are illustrative only)

Measure	Total End Use Consumption of Population (GWh)	Applicable, Not Complete and Feasible Sq.Feet (000s)	Average kWh/ft^2 of population	Savings %	GWh Savings	Total Resource Cost Test	Savings Included in Economic Potential?
Base Case: T12 lamps with Magnetic Ballast	425	100,000	4.3	N/A	N/A	N/A	N/A
1. T8 w/Elec. Ballast	425	100,000	4.3	21%	89	2.5	Yes
2. Occupancy Sensors	336	40,000	3.4	10%	13	1.3	Yes
3. Perimeter Dimming	322	10,000	3.2	45%	14	0.8	No
Technical Potential w. all measures				27%	116		
Economic Potential w. measures for which TRC >1.0				24%	102		

B.1.4 Estimation of Maximum Achievable, Program, and Naturally Occurring Potentials

In this section we present the method we employ to estimate the fraction of the market that adopts each EE measure in the presence and absence of EE programs. We define:

- **Maximum achievable potential** as the amount of economic potential that could be achieved over time under the most aggressive program scenario possible
- **Program potential** as the amount of savings that would occur in response to one or more specific market interventions
- **Naturally occurring potential** as the amount of savings estimated to occur as a result of normal market forces, that is, in the absence of any utility or governmental intervention.

Our estimates of program potential are typically the most important results of the modeling process. Estimating technical, economic, and maximum achievable potentials are necessary steps in the process from which important information can be obtained; however, the end goal of the process is better understanding how much of the remaining potential can be captured in programs, whether it would be cost-effective to increase program spending, and how program costs may be expected to change in response to measure adoption over time.

According to our definitions and the method described in this section, maximum achievable potential is really a type of program potential that defines the upper limit of savings from market interventions. Therefore, in the remainder of this section, we will often discuss our general method using the term "program potential" to represent both program and maximum achievable potential.

Adoption Method Overview

We use a method of estimating adoption of EE measures that applies equally to be our program and naturally occurring analyses. Whether as a result of natural market forces or aided by a program intervention, the rate at which measures are adopted is modeled in our method as a function of the following factors:

- The availability of the adoption opportunity as a function of capital equipment turnover rates and changes in building stock over time
- Customer awareness of the efficiency measure
- The cost-effectiveness of the efficiency measure
- Market barriers associated with the efficiency measure.

The method we employ is executed in the measure penetration module of KEMA's DSM ASSYST model.

In many of our projects, only measures that pass the measure-level TRC test are put into the penetration module for estimation of customer adoption.

Availability

A crucial part of the model is a stock accounting algorithm that handles capital turnover and stock decay over a period of up to 20 years. In the first step of our achievable potential method, we calculate the number of customers for whom each measure will apply. The input to this calculation is the total floor space available for the measure from the technical potential analysis, i.e., the total floor space multiplied by the applicability, not complete, and feasibility factors described previously. We call this the *eligible* stock. The stock algorithm keeps track of the amount of floor space available for each efficiency measure in each year based on the total eligible stock and whether the application is new construction, retrofit, or replace-on-burnout.[5]

Retrofit measures are available for implementation by the entire eligible stock. The eligible stock is reduced over time as a function of adoptions[6] and building decay.[7] Replace-on-burnout measures are available only on an annual basis, approximated as equal to the inverse of the service life.[8] The annual portion of the eligible market that does not accept the replace-on-burnout measure does not have an opportunity again until the end of the service life.

[5] Replace-on-burnout measures are defined as the efficiency opportunities that are available only when the base equipment turns over at the end of its service life. For example, a high-efficiency chiller measure is usually only considered at the end of the life of an existing chiller. By contrast, retrofit measures are defined to be constantly available, for example, application of a window film to existing glazing.

[6] That is, each square foot that adopts the retrofit measure is removed from the eligible stock for retrofit in the subsequent year.

[7] Buildings do not last forever. An input to the model is the rate of decay of the existing floor space. Floor space typically decays at a very slow rate.

[8] For example, a base-case technology with a service life of 15 years is only available for replacement to a high-efficiency alternative each year at the rate of 1/15 times the total eligible stock. For example, the fraction of the

New construction applications are available for implementation in the first year. Those customers that do not accept the measure are given subsequent opportunities corresponding to whether the measure is a replacement or retrofit-type measure.

Awareness

In our modeling framework, customers cannot adopt an efficient measure merely because there is stock available for conversion. Before they can make the adoption choice, they must be aware and informed about the efficiency measure. Thus, in the second stage of the process, the model calculates the portion of the available market that is *informed.* An initial user-specified parameter sets the initial level of awareness for all measures. Incremental awareness occurs in the model as a function of the amount of money spent on awareness/information building and how well those information-building resources are directed to target markets. User-defined program characteristics determine how well information-building money is targeted. Well-targeted programs are those for which most of the money is spent informing only those customers that are in a position to implement a particular group of measures. Untargeted programs are those in which advertising cannot be well focused on the portion of the market that is available to implement particular measures. The penetration module in DSM ASSYST has a target effectiveness parameter that is used to adjust for differences in program advertising efficiency associated with alternative program types.

The model also controls for information retention. An information decay parameter in the model is used to control for the percentage of customers that will retain program information from one year to the next. Information retention is based on the characteristics of the target audience and the temporal effectiveness of the marketing techniques employed.

Adoption

The portion of the total market that is available and informed can now face the choice of whether or not to adopt a particular measure. Only those customers for whom a measure is available for implementation (stage 1) and, of those customers, only those who have been informed about the program/measure (stage 2), are in a position to make the implementation decision.

In the third stage of our penetration process, the model calculates the fraction of the market that adopts each efficiency measure as a function of the participant test. The participant test is a benefit-cost ratio that is generally calculated as follows:

$$\text{Benefits} = \sum_{t=1}^{N} \frac{\text{Customer Bill Savings (\$)}_t}{(1+d)^{t-1}} \qquad \textbf{Eqn. B-3}$$

market that does not adopt the high-efficiency measure in year *t* will not be available to adopt the efficient alternative again until year *t* + 15.

$$\text{Costs} = \sum_{t=1}^{N} \frac{\text{Participant Costs (\$)}_t}{(1+d)^{t-1}} \qquad \textbf{Eqn. B-4}$$

where

d = the discount rate
t = time (in years)
n = 20 years

We use a *normalized* measure life of 20 years in order to capture the benefits associated with long-lived measures. Measures with lives shorter than 20 years are "re-installed" in our analysis as many times as necessary to reach the normalized 20-year life of the analysis.

The bill reductions are calculated by multiplying measure energy savings and customer peak demand impacts by retail energy and demand rates.

The model uses measure implementation curves to estimate the percentage of the informed market that will accept each measure based on the participant's benefit-cost ratio. The model provides enough flexibility so that each measure in each market segment can have a separate implementation rate curve. The functional form used for the implementation curves is:

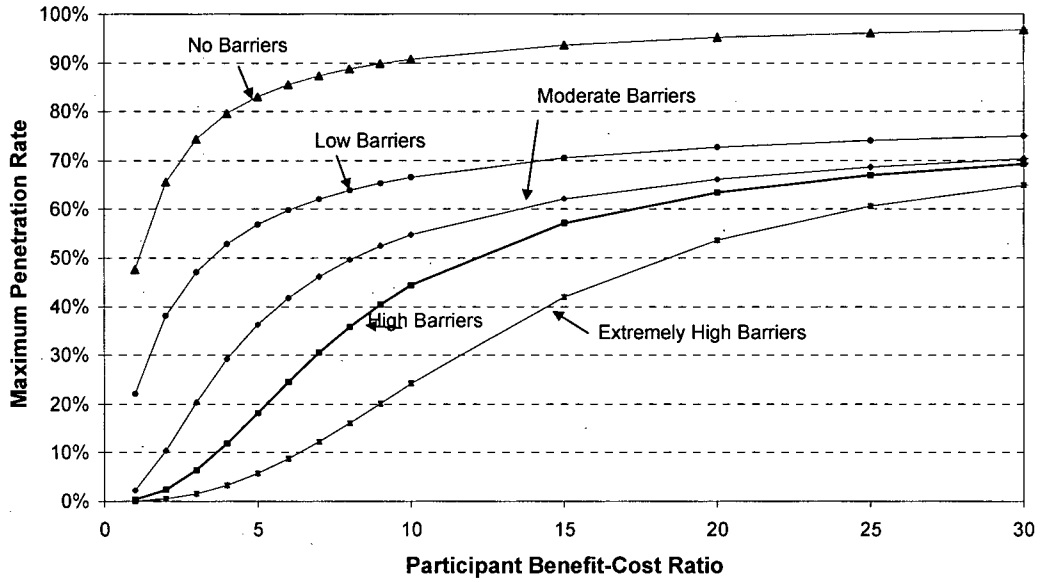
$$y = \frac{a}{\left(1+e^{-\ln\frac{x}{4}}\right) \times \left(1+e^{-c\ln(bx)}\right)}$$

where:

y = the fraction of the market that installs a measure in a given year from the pool of informed applicable customers;
x = the customer's benefit-cost ratio for the measure;
a = the maximum annual acceptance rate for the technology;
b = the inflection point of the curve. It is generally 1 over the benefit-cost ratio that will give a value of 1/2 the maximum value; and
c = the parameter that determines the general shape (slope) of the curve.

The primary curves utilized in our model are shown in Figure B-3. These curves produce base year program results that are calibrated to actual measure implementation results associated with major IOU commercial efficiency programs over the past several years. Different curves are used to reflect different levels of market barriers for different efficiency measures. A list of market barriers is shown in Table B-5. It is the existence of these barriers that necessitates program interventions to increase the adoption of EE measures. (For more information on market barriers see Eto, Prahl, Schlegel 1997; Golove and Eto 1996; DeCanio 2000; DeCanio 1998.)

Figure B-3
Primary Measure Implementation Curves Used in Adoption Model



Note that for the moderate, high barrier, and extremely high curves, the participant benefit-cost ratios have to be very high before significant adoption occurs. This is because the participant benefit-cost ratios are based on a 15-percent discount rate. This discount rate reflects likely adoption if there were no market barriers or market failures, as reflected in the no-barriers curve in the figure. Experience has shown, however, that actual adoption behavior correlates with implicit discount rates several times those that would be expected in a perfect market.[9]

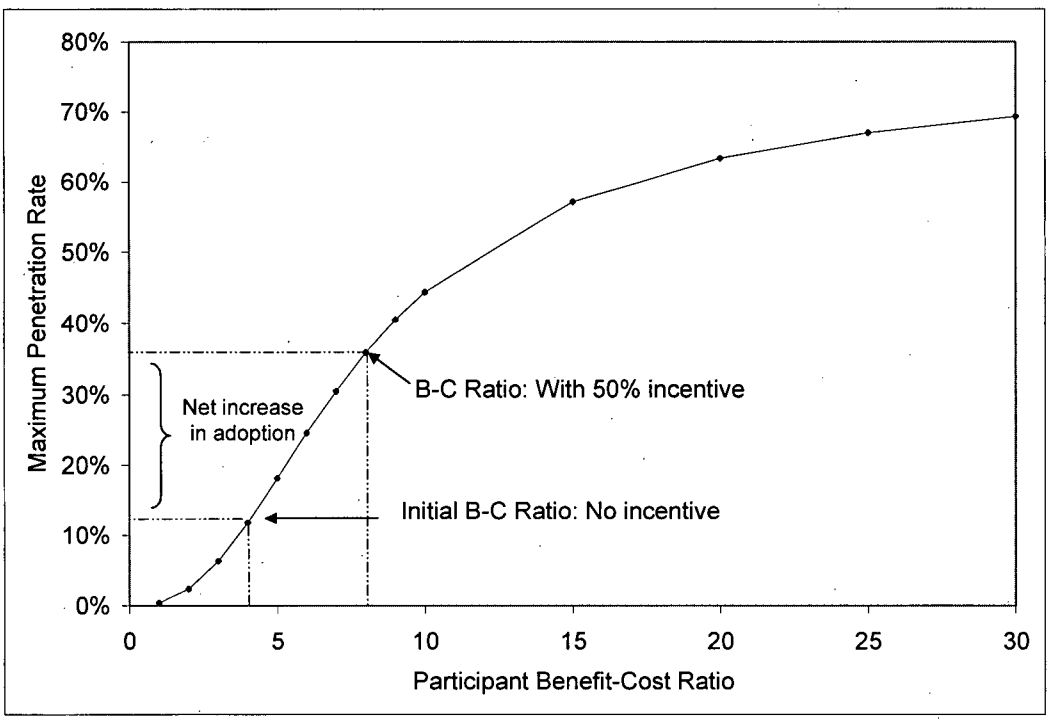
The model estimates adoption under both naturally occurring and program intervention situations. There are only two differences between the naturally occurring and program analyses. First, in any program intervention case in which measure incentives are provided, the participant benefit-cost ratios are adjusted based on the incentives. Thus, if an incentive that pays 50 percent of the incremental measure cost is applied in the program analysis, the participant benefit-cost ratio for that measure will double (since the costs have been halved). The effect on the amount of adoption estimated will depend on where the pre- and post-incentive benefit-cost ratios fall on the curve. This effect is illustrated in Figure B-4.

[9] For some, it is easier to consider adoption as a function of simple payback. However, the relationship between payback and the participant benefit-cost ratio varies depending on measure life and discount rate. For a long-lived measure of 15 years with a 15-percent discount rate, the equivalent payback at which half of the market would adopt a measure is roughly 6 months, based on the high barrier curve in Figure 2-3. At a 1-year payback, one-quarter of the market would adopt the measure. Adoption reaches near its maximum at a 3-month payback. The curves reflect the real-world observation that implicit discount rates can average up to 100 percent.

Table B-5
Summary Description of Market Barriers from Eto, Prahl, Schlegel 1997

Barrier	Description
Information or Search Costs	The costs of identifying energy-efficient products or services or of learning about energy-efficient practices, including the value of time spent finding out about or locating a product or service or hiring someone else to do so.
Performance Uncertainties	The difficulties consumers face in evaluating claims about future benefits. Closely related to high search costs, acquiring the information needed to evaluate claims regarding future performance is rarely costless.
Asymmetric Information and Opportunism	The tendency of sellers of energy-efficient products or services to have more and better information about their offerings than do consumers, which, combined with potential incentives to mislead, can lead to sub-optimal purchasing behavior.
Hassle or Transaction Costs	The indirect costs of acquiring EE, including the time, materials, and labor involved in obtaining or contracting for an energy-efficient product or service. (Distinct from search costs in that it refers to what happens once a product has been located.)
Hidden Costs	Unexpected costs associated with reliance on or operation of energy-efficient products or services, for example, extra operating and maintenance costs.
Access to Financing	The difficulties associated with the lending industry's historic inability to account for the unique features of loans for energy savings products (i.e., that future reductions in utility bills increase the borrower's ability to repay a loan) in underwriting procedures.
Bounded Rationality	The behavior of an individual during the decision-making process that either seems or actually is inconsistent with the individual's goals.
Organization Practices or Customs	Organizational behavior or systems of practice that discourage or inhibit cost-effective EE decisions, for example, procurement rules that make it difficult to act on EE decisions based on economic merit.
Misplaced or Split Incentives	Cases in which the incentives of an agent charged with purchasing EE are not aligned with those of the persons who would benefit from the purchase.
Product or Service Unavailability	The failure of manufacturers, distributors, or vendors to make a product or service available in a given area or market. May result from collusion, bounded rationality, or supply constraints.
Externalities	Costs that are associated with transactions, but are not reflected in the price paid in the transaction.
Non-externality Pricing	Factors other than externalities that move prices away from marginal cost. An example arises when utility commodity prices are set using ratemaking practices based on average (rather than marginal) costs.
Inseparability of Product Features	The difficulties consumers sometimes face in acquiring desirable EE features in products without also acquiring (and paying for) additional undesired features that increase the total cost of the product beyond what the consumer is willing to pay.
Irreversibility	The difficulty of reversing a purchase decision in light of new information that may become available, which may deter the initial purchase, for example, if energy prices decline, one cannot resell insulation that has been blown into a wall.

Figure B-4
Illustration of Effect of Incentives on Adoption Level as Characterized in Implementation Curves



In many of our projects achievable potential EE forecasts are developed for several scenarios, ranging from base levels of program intervention, through moderate levels, up to an aggressive EE acquisition scenario. Uncertainty in rates and avoided costs are often characterized in alternate scenarios. The final results produced are annual streams of achievable program impacts (energy and demand by time-of-use period) and all societal and participant costs (program costs plus end-user costs).

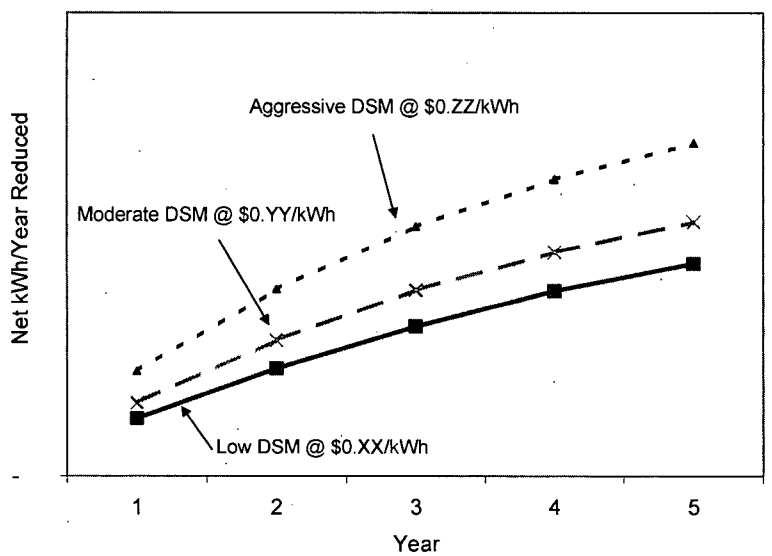
B.1.5 Scenario Analyses

Achievable potential forecasts can be developed for multiple scenarios. For example, program savings can be modeled under low levels of program intervention, through moderate levels, up to an aggressive DSM acquisition scenario. Uncertainty in rates and avoided costs can be characterized in alternate scenarios as well. The final results produced will be annual streams of achievable DSM program impacts (energy and demand by time-of-use period) and all societal and participant costs. An example of the types of outputs that have been produced for similar studies in the past is shown in Table B-6 and Figure B-5.

Table B-6
Example Format of DSM ASSYST Achievable Potential Outputs

DSM ASSYST Program Output	2002	2003	2004	etc.
Annual Energy Savings (kWh)				
Summer Period Energy Savings (kWh)				
Non Summer Period Energy Savings (kWh)				
Net Annual Energy Savings (kWh)				
Summer Period Net Energy Savings (kWh)				
Non Summer Period Net Energy Savings (kWh)				
Peak Demand Savings (kW)				
Net Peak Demand Savings (kW)				
Annual Program Costs				
Supplemental Customer Costs				

Figure B-5
Example of DSM Scenario Outputs



B.1.6 Measure "Bundles" for Complex End Uses

Although potential can be estimated through measure-specific analyses for many sectors and end uses, there are some cases where the measure-specific approach becomes problematic because of the complexity or heterogeneity of the base-case energy systems being addressed. Two key examples are industrial processes and some aspects of residential and commercial new construction.

In the industrial case, there may be dozens or even hundreds of individual measures that can be applied to industrial processes throughout the population of industrial facilities in a service territory; however, analyzing each of these opportunities, though possible, is impractical within a resource- and time-constrained study such as this one.

In the case of new construction, the problem is sometimes that an equipment substitution paradigm does not fit the real-world circumstances in which efficiency levels are improved. For example, in commercial lighting, virtually all new buildings tend to have electronic ballasts and T-8 lamps as well as CFLs and other high-efficiency components. These high-efficiency components are generally needed to meet Title 24 efficiency requirements; however, the overall lighting system efficiency can often be increased by using these same components in smarter design configurations or by combining with other features such as daylighting.

For both of these situations, our approach on recent related work has been to bundle multiple individual efficiency measures into somewhat simplified efficiency levels. For example, lighting levels for commercial new construction might be set at 10- and 20-percent improvement over Title 24 standards (as they are often specified in the Savings by Design program planning documents). Similarly, for industrial compressed air systems, we have bundled savings opportunities into three levels where both savings and costs increase with each level. We then estimate an incremental cost for achieving each of the efficiency levels. An example of these results developed in a recent study for industrial motors, compressed air, and processes in California is shown in Table B-7.

Once the levels efficiency are specified in terms of costs and savings, they are run through the modeling system as if they were individual measures. Thus, cost-effectiveness indicators are calculated for each level, those that pass the TRC are included in the achievable potential forecasting, and adoption is modeled using the same process as described above. Although we recommend using this approach for complex end uses in the proposed study because it creates a manageable forecasting process, care must be taken in developing the levels and recognizing that this approach results in some aggregation bias.

B.2 DSM ASSYST™ MODEL DESCRIPTION

DSM ASSYST™ (Demand-Side Management Technology Assessment System) is a tool developed to assess the technical, economic, and market potential of DSM technologies in the residential, commercial, and industrial sectors. Based on user-specified information about base technologies, conservation technologies, load shapes, utility avoided costs, utility service rates, and economic parameters, DSM ASSYST yields numeric data for a variety of criteria. The user can then evaluate and compare technologies. DSM ASSYST allows the user to analyze each DSM technology in multiple combinations of building types, market segments, end uses, and vintages both individually and compared to other DSM technology options.

Table B-7
Example of Industrial Efficiency Levels Developed for a Recent California Potential Study

DSM ASSYST ADDITIVE SUPPLY ANALYSIS		Vintage: Existing Sector: Industrial Scenario: Base	Year	2011			
End Use	Measure Number	Measure	GWH Savings	MW Savings	Levelized Cost per KWh Saved $/kWH	Levelized Cost per KW Saved $/kW	Total Resource Cost Test TRC
Motors	101	Replace 1-5 HP Motor	248.7	34.1	$0.10	$698	0.8
Motors	102	Add 1-5 HP VSD	447.1	61.3	$0.14	$1,019	0.6
Motors	103	Motor Practices Level 1	607.0	83.2	$0.06	$440	1.3
Motors	104	Motor Practices Level 2	539.1	73.9	$0.24	$1,764	0.3
Motors	121	Replace 21-50 HP Motor	78.1	10.7	$0.09	$661	0.9
Motors	122	Add 21-50 HP VSD	319.0	43.7	$0.04	$278	2.1
Motors	123	Motor Practices Level 1	404.3	55.4	$0.03	$211	2.7
Motors	124	Motor Practices Level 2	361.9	49.6	$0.12	$840	0.7
Motors	151	Replace 201-500 HP Motor	143.5	19.7	$0.03	$201	2.8
Motors	152	Add 201-500 HP VSD	516.6	70.8	$0.01	$106	5.4
Motors	153	Motor Practices Level 1	598.6	82.0	$0.02	$152	3.7
Motors	154	Motor Practices Level 2	554.9	76.0	$0.08	$586	1.0
Compressed Air	202	CAS Level 1	433.9	59.5	$0.02	$168	3.4
Compressed Air	203	CAS Level 2	453.6	62.2	$0.05	$362	1.6
Compressed Air	204	CAS Level 3	325.5	44.6	$0.13	$936	0.6
Other Process	301	Process Level 1	1,031.8	141.4	$0.03	$190	3.0
Other Process	302	Process Level 2	1,219.7	167.1	$0.05	$345	1.7
Other Process	303	Process Level 3	767.3	105.1	$0.25	$1,831	0.3

The current version of DSM ASSYST uses a combination of Microsoft Excel spreadsheets and Visual Basic (VB) programming software. All input and output data are stored in spreadsheets. The VB modules read input data from various spreadsheets, perform the various analyses, and store output results into spreadsheets.

There are three major VB analysis modules: Basic, Supply, and Penetration. Figure B-6 provides an overview of the model process and key inputs. Each module is briefly described below.

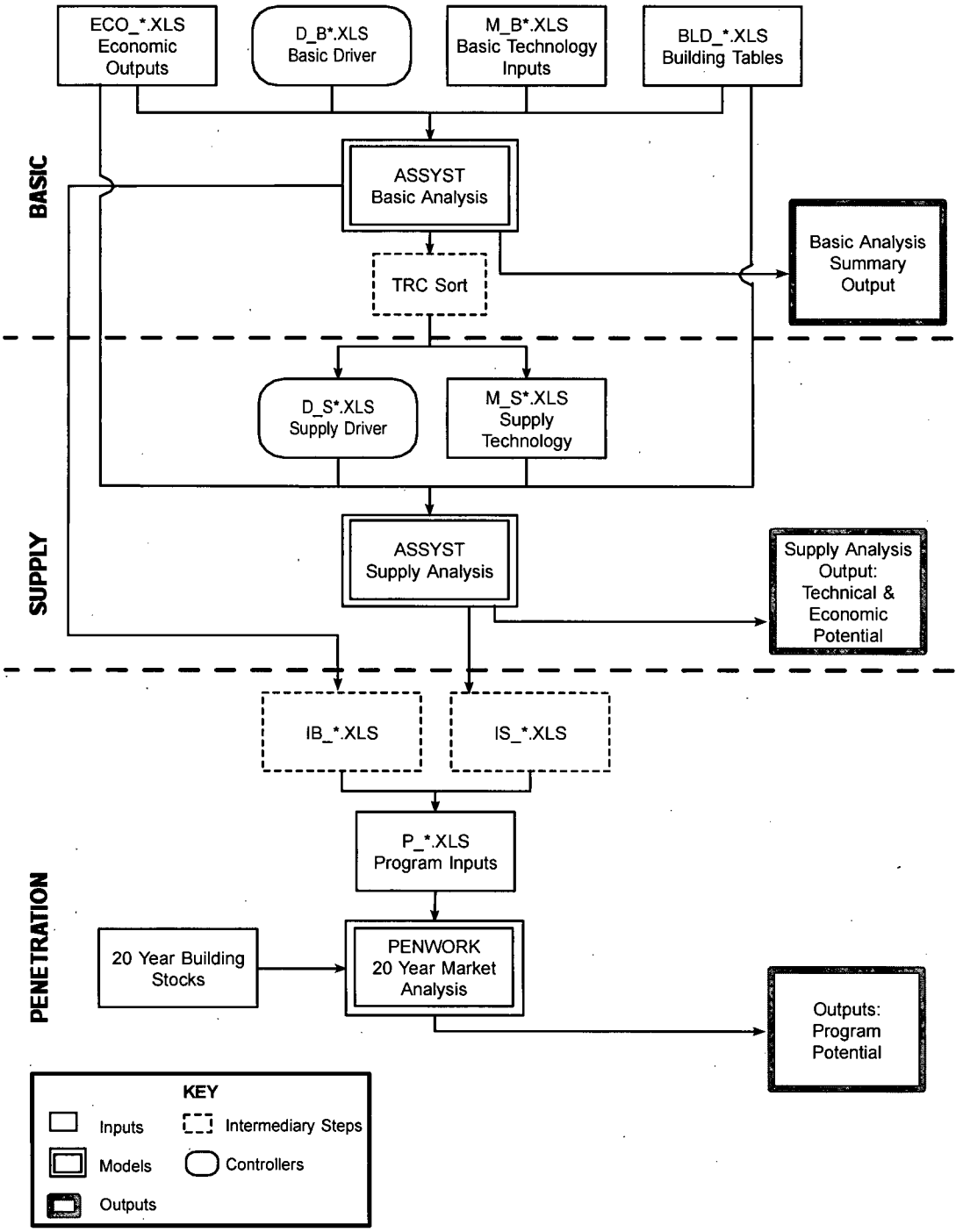
B.2.1 Basic Module

In the Basic module, each technology is assessed individually by comparing it to a base case. Comparisons are made at a high degree of segmentation. The segmentation may include, but is not limited to, sector, building type, end use, vintage, and geographic area.

The Basic module reads four types of information, contained within four spreadsheet files. These files include:

- **Economic**: containing utility rates paid by customers, discount rates, avoided costs, and other utility-specific economic parameters
- **Building**: containing square footage or number of households and load shape data
- **Measure**: containing technology based inputs for the Basic Analysis
- **Driver**: containing information that drives the analysis process.

Figure B-6
DSM ASSYST Analytic Flow



The output files produced by the Basic module include a Summary Basic Output file that contains an assessment of how much energy and demand each technology will save relative to the base case within each segment. In addition, the summary contains cost data, savings fractions, before and after EUIs or UECs, service life, the levelized costs of implementing the technology, and results of economic tests including the TRC test, participant test, and customer payback.

This module also produces a second file that contains all the measures that were assessed in the Basic Analysis sorted in the highest to lowest TRC order within each market segment and end use. This file serves as an input file for the Supply module.

B.2.2 Supply Module

In the Supply module, each technology within each market segment is stacked or implemented such that all energy savings are realized from preceding technologies prior to the implementation of all subsequent technologies. The stacking order generally follows the TRC sort order, highest to lowest, resulting from the Basic module.

The Supply module requires two input files: a Driver file and a modified output file from the Basic module. As in the Basic module, the Driver file contains instructions for the analysis process. The output file from the basic analysis must be modified in Excel to address overlapping measures, such as different SEER levels or measures that are direct substitutes for each other.

Output from the Supply module contains the technical and economic potential plus energy and demand supply curves. The Supply module produces measure-level information that can be incorporated into the input file for the Penetration module

B.2.3 Penetration Module

The Penetration (or Program Potential) module of ASSYST is designed to calculate the costs and net energy and demand savings from DSM programs under a variety of marketing scenarios. This module estimates the net impact and cost of a program over time by forecasting the naturally occurring penetration of each measure as well as the penetration of each measure given the program activities (i.e., incentives and awareness-building).

Using a stock accounting algorithm over a period of 20 years, this module first calculates the number of customers for whom the measure will apply. Second, the model calculates the number of informed customers based on the amount of money spent on advertising. Third, the model calculates the number of customers who will implement the technology based on their benefit/cost ratio. Finally, the model compares the number of customers that implement the technology due to the program with those who would take the technology anyway (naturally occurring). Per-unit energy and demand savings are applied to the net number of customers (total minus naturally occurring) over the 20-year period. After completing the analysis, the results are automatically summed across measures to provide program-level costs and savings for 20 years, and formatted for input into Integrated Resource Planning models.

A program input file is used to define a program and provide the building stock forecast. The program characterization variables include:

- Incentive Levels
- Incentive Budget Constraints
- Yearly Incentive Adjuster
- Technology Acceptance Curve Parameters
- Administration Budgets
- Advertising Budgets
- Awareness Decay Rate
- Target Effectiveness
- Advertising Effective Ratio.

C

ECONOMIC INPUTS

ECONOMIC PARAMETERS

UTILITY NAME	CPS
SECTOR	RES
BATCH #	1
UTILITY DISCOUNT RATE	10.60%
CUSTOMER DISCOUNT RATE	15.0%
GENERAL INFLATION RATE	3.0%
BASE YEAR	2005
START YEAR	2005
DIFFERENCE	0
UTILITY LINE LOSS RATE	5.25%

RATE/TIME PERIODS

	1	2	3	4	5	6	
Name	Summer On-Peak	Summer Partial-Peak	Summer Off-Peak	Winter On-Peak	Winter Partial-Peak	Winter Off-Peak	
Abbreviation	SOP	SPP	SOFF	WOP	WPP	WOFF	TOTAL
Hours	688	0	2240	1992	0	3840	8760

ENERGY COSTS AND RATES

	AVOIDED ENERGY COSTS BY TIME PERIOD						AVOIDED DEMAND COSTS BY TIME PERIOD						Electricity Rates		
Year	SOP $/kWh	SPP $/kWh	SOFF $/kWh	WOP $/kWh	WPP $/kWh	WOFF $/kWh	SOP $/kW	SPP $/kW	SOFF $/kW	WOP $/kW	WPP $/kW	WOFF $/kW	Residential $/kWh	Commercial $/kWh	Industrial $/kWh
2005	0.057		0.029	0.042		0.023	73.92						0.078	0.061	0.052
2006	0.059		0.029	0.043		0.023	76.14						0.080	0.063	0.054
2007	0.061		0.030	0.044		0.024	78.42						0.082	0.065	0.055
2008	0.063		0.031	0.046		0.025	80.77						0.085	0.067	0.057
2009	0.064		0.032	0.047		0.025	83.20						0.087	0.069	0.059
2010	0.066		0.033	0.048		0.026	85.69						0.090	0.071	0.061
2011	0.068		0.034	0.050		0.027	88.26						0.093	0.073	0.062
2012	0.070		0.035	0.051		0.028	90.91						0.095	0.075	0.064
2013	0.073		0.036	0.053		0.029	93.64						0.098	0.078	0.066
2014	0.075		0.037	0.054		0.029	96.45						0.101	0.080	0.068
2015	0.077		0.038	0.056		0.030	99.34						0.104	0.082	0.070
2016	0.079		0.039	0.058		0.031	102.32						0.107	0.085	0.072
2017	0.082		0.041	0.059		0.032	105.39						0.110	0.087	0.075
2018	0.084		0.042	0.061		0.033	108.55						0.114	0.090	0.077
2019	0.087		0.043	0.063		0.034	111.81						0.117	0.093	0.079
2020	0.089		0.044	0.065		0.035	115.16						0.121	0.096	0.081
2021	0.092		0.046	0.067		0.036	118.62						0.124	0.098	0.084
2022	0.095		0.047	0.069		0.037	122.18						0.128	0.101	0.086
2023	0.097		0.049	0.071		0.038	125.84						0.132	0.104	0.089
2024	0.100		0.050	0.073		0.040	129.62						0.136	0.107	0.092

D

BUILDING AND TOU FACTOR INPUTS

Residential Building Stock Table

Units: Number of Dwellings		
Segment	SF	MF
Existing	406,325	130,032
New Construction	10,647	3,407

End Use Definition	
End Use	End Use Definition
1	Space Cooling
2	Lighting
3	Refrigeration
4	Freezer
5	Water Heating
6	Clothes Washer
7	Clothes Dryer
8	Dishwashers
9	Pool Pump
10	Space Heating
11	Cooking
12	Miscellaneous

End Use Load Shape Table
Fraction of Annual Use in Cost Period

Building	End Use 1				End Use 2				End Use 3				End Use 4			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
SF	0.397	0.513	0.052	0.038	0.082	0.215	0.293	0.410	0.092	0.272	0.227	0.409	0.093	0.271	0.214	0.422
MF	0.397	0.513	0.052	0.038	0.082	0.215	0.293	0.410	0.092	0.272	0.227	0.409	0.093	0.271	0.214	0.422

Building	End Use 5				End Use 6				End Use 7				End Use 8			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
SF	0.071	0.200	0.305	0.424	0.096	0.237	0.363	0.305	0.092	0.203	0.385	0.320	0.119	0.181	0.390	0.309
MF	0.071	0.200	0.305	0.424	0.096	0.237	0.363	0.305	0.092	0.203	0.385	0.320	0.119	0.181	0.390	0.309

Building	End Use 9				End Use 10				End Use 11				End Use 12			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
SF	0.085	0.279	0.297	0.338	0.000	0.000	0.222	0.779	0.132	0.168	0.386	0.313	0.082	0.215	0.293	0.410
MF	0.085	0.279	0.297	0.338	0.000	0.000	0.222	0.779	0.132	0.168	0.386	0.313	0.082	0.215	0.293	0.410

Peak To Energy Relationship Table (Utility Coincidence)
Peak = Average kW * Factor

Building	End Use 1				End Use 2				End Use 3				End Use 4			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
SF	1.645	1.000	1.000	1.000	0.743	2.294	1.409	0.901	1.017	1.080	1.040	0.924	1.019	1.014	1.012	1.007
MF	1.645	1.000	1.000	1.000	0.743	2.294	1.409	0.901	1.017	1.080	1.040	0.924	1.019	1.014	1.012	1.007

Building	End Use 5				End Use 6				End Use 7				End Use 8			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
SF	0.838	1.034	0.978	1.285	0.838	0.791	0.435	1.986	0.838	1.242	0.666	1.248	0.718	1.712	1.210	1.845
MF	0.838	1.034	0.978	1.285	0.838	0.791	0.435	1.986	0.838	1.242	0.666	1.248	0.718	1.712	1.210	1.845

Building	End Use 9				End Use 10				End Use 11				End Use 12			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
SF	0.745	0.072	0.190	2.356	1.000	1.000	1.000	1.000	1.188	0.593	1.757	1.560	0.743	2.294	1.409	0.901
MF	0.745	0.072	0.190	2.356	1.000	1.000	1.000	1.000	1.188	0.593	1.757	1.560	0.743	2.294	1.409	0.901

Commecial Building Stock Table

Units: Square Feet

Segment	Office	Restaurant	Retail	FoodStore	Warehouse	Education	Health	Hotel	Military	Miscellaneous
Existing	131,364,654	14,346,665	64,989,817	8,658,665	60,749,196	82,767,812	19,319,418	20,140,731	47,581,106	85,008,965
New	4,860,318	530,807	2,404,533	320,359	2,247,636	3,062,294	714,792	745,179	1,760,435	3,145,214

End Use Definition

End Use	End Use Definition
1	Indoor Lighting
2	Outdoor Lighting
3	Cooling
4	Ventilation
5	Refrigeration
6	Office Equipment
7	Cooking
8	Water Heating
9	Miscellaneous
10	Heating

End Use Load Shape Table
Fraction of Annual Use in Cost Period

Building Type	End Use 1				End Use 2				End Use 3				End Use 4			
	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Office	0.143	0.189	0.376	0.292	0.016	0.307	0.111	0.566	0.234	0.279	0.291	0.196	0.111	0.204	0.313	0.373
Restaurant	0.103	0.235	0.278	0.384	0.038	0.295	0.144	0.523	0.165	0.368	0.193	0.275	0.124	0.213	0.320	0.343
Retail	0.120	0.214	0.323	0.344	0.037	0.296	0.143	0.524	0.205	0.342	0.238	0.215	0.136	0.204	0.349	0.311
FoodStore	0.092	0.241	0.259	0.408	0.037	0.296	0.140	0.527	0.188	0.374	0.183	0.256	0.082	0.255	0.227	0.436
Warehouse	0.144	0.192	0.370	0.294	0.036	0.297	0.138	0.529	0.234	0.316	0.272	0.178	0.142	0.182	0.385	0.291
Education	0.134	0.186	0.390	0.289	0.037	0.296	0.140	0.527	0.308	0.275	0.317	0.100	0.145	0.171	0.430	0.254
Health	0.115	0.227	0.299	0.360	0.039	0.294	0.146	0.521	0.186	0.326	0.228	0.260	0.117	0.221	0.301	0.362
Hotel	0.082	0.261	0.223	0.434	0.037	0.295	0.142	0.525	0.211	0.442	0.159	0.189	0.079	0.254	0.222	0.445
Military	0.119	0.214	0.319	0.348	0.037	0.296	0.143	0.524	0.242	0.305	0.267	0.186	0.122	0.209	0.321	0.348
Miscellaneous	0.119	0.214	0.319	0.348	0.037	0.296	0.143	0.524	0.242	0.305	0.267	0.186	0.122	0.209	0.321	0.348

Building Type	End Use 5				End Use 6				End Use 7				End Use 8			
	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Office	0.088	0.247	0.240	0.425	0.106	0.224	0.289	0.381	0.143	0.189	0.376	0.292	0.143	0.189	0.376	0.292
Restaurant	0.087	0.256	0.230	0.427	0.112	0.231	0.290	0.367	0.103	0.235	0.278	0.384	0.103	0.235	0.278	0.384
Retail	0.086	0.257	0.228	0.428	0.112	0.220	0.303	0.365	0.120	0.214	0.323	0.344	0.120	0.214	0.323	0.344
FoodStore	0.085	0.256	0.228	0.431	0.092	0.239	0.258	0.411	0.092	0.241	0.259	0.408	0.092	0.241	0.259	0.408
Warehouse	0.087	0.261	0.226	0.426	0.118	0.217	0.313	0.352	0.144	0.192	0.370	0.294	0.144	0.192	0.370	0.294
Education	0.083	0.246	0.235	0.436	0.115	0.207	0.333	0.345	0.134	0.186	0.390	0.289	0.134	0.186	0.390	0.289
Health	0.088	0.255	0.234	0.423	0.103	0.238	0.271	0.388	0.115	0.227	0.299	0.360	0.115	0.227	0.299	0.360
Hotel	0.085	0.253	0.234	0.428	0.085	0.257	0.229	0.430	0.082	0.261	0.223	0.434	0.082	0.261	0.223	0.434
Military	0.087	0.253	0.233	0.427	0.107	0.227	0.289	0.377	0.119	0.214	0.319	0.348	0.119	0.214	0.319	0.348
Miscellaneous	0.087	0.253	0.233	0.427	0.107	0.227	0.289	0.377	0.119	0.214	0.319	0.348	0.119	0.214	0.319	0.348

Building Type	End Use 9				End Use 10			
	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Office	0.143	0.189	0.376	0.292	0.000	0.000	0.500	0.500
Restaurant	0.103	0.235	0.278	0.384	0.000	0.000	0.500	0.500
Retail	0.120	0.214	0.323	0.344	0.000	0.000	0.500	0.500
FoodStore	0.092	0.241	0.259	0.408	0.000	0.000	0.500	0.500
Warehouse	0.144	0.192	0.370	0.294	0.000	0.000	0.500	0.500
Education	0.134	0.186	0.390	0.289	0.000	0.000	0.500	0.500
Health	0.115	0.227	0.299	0.360	0.000	0.000	0.500	0.500
Hotel	0.082	0.261	0.223	0.434	0.000	0.000	0.500	0.500
Military	0.119	0.214	0.319	0.348	0.000	0.000	0.500	0.500
Miscellaneous	0.119	0.214	0.319	0.348	0.000	0.000	0.500	0.500

Peak To Energy Relationship Table (Utility Coincidence)
Peak = Average kW * Factor

Building Type	End Use 1				End Use 2				End Use 3				End Use 4			
	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Office	0.916	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.238	1.000	1.000	1.000	0.867	1.000	1.000	1.000
Restaurant	0.857	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.046	1.000	1.000	1.000	0.908	1.000	1.000	1.000
Retail	0.867	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.077	1.000	1.000	1.000	0.904	1.000	1.000	1.000
FoodStore	0.829	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.309	1.000	1.000	1.000	0.822	1.000	1.000	1.000
Warehouse	0.941	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.166	1.000	1.000	1.000	0.962	1.000	1.000	1.000
Education	0.779	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.219	1.000	1.000	1.000	0.814	1.000	1.000	1.000
Health	0.899	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.392	1.000	1.000	1.000	0.964	1.000	1.000	1.000
Hotel	0.837	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.965	1.000	1.000	1.000	0.835	1.000	1.000	1.000
Military	0.896	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.335	1.000	1.000	1.000	0.935	1.000	1.000	1.000
Miscellaneous	0.896	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.335	1.000	1.000	1.000	0.935	1.000	1.000	1.000

Building Type	End Use 5				End Use 6				End Use 7				End Use 8			
	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Office	0.841	1.000	1.000	1.000	0.871	1.000	1.000	1.000	0.916	1.000	0.000	1.000	0.916	1.000	0.000	1.000
Restaurant	0.871	1.000	1.000	1.000	0.896	1.000	1.000	1.000	0.857	1.000	0.000	1.000	0.857	1.000	0.000	1.000
Retail	0.871	1.000	1.000	1.000	0.866	1.000	1.000	1.000	0.867	1.000	0.000	1.000	0.867	1.000	0.000	1.000
FoodStore	0.867	1.000	1.000	1.000	0.832	1.000	1.000	1.000	0.829	1.000	0.000	1.000	0.829	1.000	0.000	1.000
Warehouse	0.872	1.000	1.000	1.000	0.900	1.000	1.000	1.000	0.941	1.000	0.000	1.000	0.941	1.000	0.000	1.000
Education	0.805	1.000	1.000	1.000	0.720	1.000	1.000	1.000	0.779	1.000	0.000	1.000	0.779	1.000	0.000	1.000
Health	0.854	1.000	1.000	1.000	0.899	1.000	1.000	1.000	0.899	1.000	0.000	1.000	0.899	1.000	0.000	1.000
Hotel	0.834	1.000	1.000	1.000	0.846	1.000	1.000	1.000	0.837	1.000	0.000	1.000	0.837	1.000	0.000	1.000
Military	0.848	1.000	1.000	1.000	0.893	1.000	1.000	1.000	0.896	1.000	0.000	1.000	0.896	1.000	0.000	1.000
Miscellaneous	0.848	1.000	1.000	1.000	0.893	1.000	1.000	1.000	0.896	1.000	0.000	1.000	0.896	1.000	0.000	1.000

Building Type	End Use 9				End Use 10			
	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Office	0.916	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Restaurant	0.857	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Retail	0.867	1.000	0.000	1.000	1.000	1.000	1.000	1.000
FoodStore	0.829	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Warehouse	0.941	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Education	0.779	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Health	0.899	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Hotel	0.837	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Military	0.896	1.000	0.000	1.000	1.000	1.000	1.000	1.000
Miscellaneous	0.896	1.000	0.000	1.000	1.000	1.000	1.000	1.000

Industrial Building Stock Table

Units: kWh/Year	
Segment	Industrial
Existing	1,069,866,021

End Use Definition	
End Use	End Use Definition
1	Motors
2	Compressed Air
3	Process Other
4	Lighting
5	Cooling
6	Other

End Use Load Shape Table
Fraction of Annual Use In Cost Period

Building	End Use 1				End Use 2				End Use 3			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Industrial	0.092	0.258	0.242	0.407	0.092	0.258	0.242	0.407	0.092	0.258	0.242	0.407

Building	End Use 4				End Use 5				End Use 6			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Industrial	0.132	0.228	0.311	0.330	0.244	0.488	0.130	0.137	0.132	0.228	0.311	0.330

Peak To Energy Relationship Table (Utility Coincidence)
Peak = Average kW * Factor

Building	End Use 1				End Use 2				End Use 3			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Industrial	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Building	End Use 4				End Use 5				End Use 6			
Type	SP	SOP	WP	WOP	SP	SOP	WP	WOP	SP	SOP	WP	WOP
Industrial	1.000	1.000	1.000	1.000	1.600	1.000	1.000	1.000	1.000	1.000	1.000	1.000

E

MEASURE INPUTS

DSM TECHNOLOGY INPUT TABLES

UTILITY:	CPS	BATCH:	1
SECTOR:	Residential	ANALYSIS:	Basic
SEGMENT:	All Electric	VINTAGE:	All

MEASURE COSTS

Segment	Measure #	Measure Description	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Cost Units per Savings Unit	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SP	SPP	SOP	WP	WPP	WOP	End Use	Implementa Type 1=1 time 2=ROB
Existing	100	Base, 13 SEER Central AC	home	unit	$1,404.00	$1,060.00		$2,464.00	1	18	0	0	$2,464.00	1.00	1.00	1.00	0.00	1.00	1.00	1	2
Existing	101	16 SEER Central AC	home	unit	$2,412.00	$1,060.00		$3,472.00	1	18	0	0	$3,472.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
Existing	102	Programmable Thermostat	home	unit	$23.20	$16.00		$39.20	1	12	1	1	$39.20	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	103	Ceiling Fans	home	unit	$80.00	$40.00		$120.00	1	10	1	1	$120.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	104	Whole House Fans	home	unit	$122.00	$100.00		$222.00	1	10	1	1	$222.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	105	Attic Venting	home	unit	$41.00	$100.00		$141.00	1	10	1	1	$141.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	106	Window Film	home	square foot	$3.30			$3.30	1	20	1	1	$3.30	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	107	High Performance Windows	home	square foot	$0.50			$0.50	1	40	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	1	2
Existing	108	Radiant Barrier	home	square foot	$0.33			$0.33	1	20	1	1	$0.33	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	109	Ceiling Insulation R-11 to R-30	home	square foot	$0.18			$0.18	1	20	1	1	$0.18	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	110	Wall Insulation R-0 to R-13	home	square foot	$0.45			$0.45	1	20	1	1	$0.45	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	111	Infiltration Reduction	home	home	$141.50			$141.50	1	10	1	1	$141.50	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	112	Basic HVAC Diagnostic Testing And Repair	home	unit	$100.00			$100.00	1	10	1	1	$100.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	113	Duct Diagnostics and Repair	home	unit	$225.00			$225.00	1	20	1	1	$225.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	140	Base Room Air Conditioner	home	unit	$0.00			$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
Existing	141	ENERGY STAR Room Air Conditioner	home	unit	$30.00			$30.00	1	15	0	0	$30.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
Existing	142	Programmable Thermostat	home	unit	$23.20	$16.00		$39.20	1	12	1	1	$39.20	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	143	Ceiling Fans	home	unit	$80.00	$40.00		$120.00	1	10	1	1	$120.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	144	Whole House Fans	home	unit	$122.00	$100.00		$222.00	1	10	1	1	$222.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	145	Attic Venting	home	unit	$41.00	$100.00		$141.00	1	10	1	1	$141.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	146	Window Film	home	square foot	$3.30			$3.30	1	20	1	1	$3.30	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	147	High Performance Windows	home	square foot	$0.50			$0.50	1	40	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	1	2
Existing	149	Ceiling Insulation R-11 to R-30	home	square foot	$0.18			$0.18	1	20	1	1	$0.18	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	150	Wall Insulation R-0 to R-13	home	square foot	$0.45			$0.45	1	20	1	1	$0.45	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	151	Infiltration Reduction	home	home	$141.50			$141.50	1	10	1	1	$141.50	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	152	Basic HVAC Diagnostic Testing And Repair	home	unit	$100.00			$100.00	1	10	1	1	$100.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
Existing	180	Resistance Space Heating	home	Unit	$0.00			$0.00	1	18	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
Existing	181	Heat Pump Space Heater	home	unit	$941.00			$941.00	1	18	1	1	$941.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
Existing	182	Geothermal Heat Pump	home	unit	$6,300.00			$6,300.00	1	18	1	1	$6,300.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
Existing	183	Programmable Thermostat	home	unit	$29.00	$20.00		$49.00	1	12	1	1	$49.00	1.00	1.00	1.00	1.00	1.00	1.00	10	1
Existing	186	Ceiling Insulation R-11 to R-30	home	square foot	$0.18			$0.18	1	20	1	1	$0.18	1.00	1.00	1.00	1.00	1.00	1.00	10	1
Existing	187	Wall Insulation R-0 to R-13	home	square foot	$0.45			$0.45	1	20	1	1	$0.45	1.00	1.00	1.00	1.00	1.00	1.00	10	1
Existing	188	Infiltration Reduction	home	home	$141.50			$141.50	1	10	1	1	$141.50	1.00	1.00	1.00	1.00	1.00	1.00	10	1
Existing	200	Base 40 gal. Water Heating	unit	unit	$0.00	$0.00		$0.00	1	13	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
Existing	201	Heat Pump Water Heater	unit	unit	$1,550.00	$0.00		$1,550.00	1	13	1	1	$1,550.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
Existing	202	HE Water Heater	unit	unit	$50.00	$0.00		$50.00	1	13	1	1	$50.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
Existing	203	Solar Water Heat	unit	unit	$4,000.00	$0.00		$4,000.00	1	13	1	1	$4,000.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
Existing	204	Low Flow Showerhead	unit	unit	$20.00	$10.00		$30.00	1	10	1	1	$30.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
Existing	205	Faucet Aerators	unit	unit	$4.82	$10.00		$14.82	1	10	1	1	$14.82	1.00	1.00	1.00	1.00	1.00	1.00	5	1
Existing	206	Pipe Wrap	unit	linear foot	$0.27	$0.27		$0.54	1	13	1	1	$0.54	1.00	1.00	1.00	1.00	1.00	1.00	5	1
Existing	207	Water Heater Blanket	unit	unit	$14.00	$10.00		$24.00	1	13	1	1	$24.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
Existing	208	ENERGY STAR Clothes Washer	unit	unit	$300.00	$0.00	($213.10)	$300.00	1	13	1	1	$86.90	1.00	1.00	1.00	1.00	1.00	1.00	6	2
Existing	300	Base Lighting, 0.5 hr/hday	lamp	lamp	$0.50	$0.00		$0.50	1	1,000	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	301	CFL, 0.5 hr/day	lamp	lamp	$8.00	$0.00		$8.00	1	10,000	1	1	$8.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	310	Base Lighting, 2.5 hr/hday	lamp	lamp	$0.50	$0.00		$0.50	1	1,000	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	311	CFL, 2.5 hr/day	lamp	lamp	$8.00	$0.00		$8.00	1	10,000	1	1	$8.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	320	Base Lighting, 6.0 hr/hday	lamp	lamp	$0.50	$0.00		$0.50	1	1,000	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	321	CFL, 6.0 hr/day	lamp	lamp	$8.00	$0.00		$8.00	1	10,000	1	1	$8.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	fixture	fixture	$12.00	$40.00		$52.00	1	45,000	1	1	$52.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
Existing	331	ROB 2L4'T8, 1EB	fixture	fixture	$20.00	$40.00		$60.00	1	70,000	0	0	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2
Existing	340	Base Torchiere	fixture	fixture	$0.00	$0.00		$0.00	1	9	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2
Existing	341	Fluorescent Torchiere	fixture	fixture	$11.50	$0.00		$11.50	1	9	1	1	$11.50	1.00	1.00	1.00	1.00	1.00	1.00	2	2
Existing	400	Base Refrigerator	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	3	2
Existing	401	HE Refrigerator - ENERGY STAR	unit	unit	$36.00	$0.00		$36.00	1	15	0	0	$36.00	1.00	1.00	1.00	1.00	1.00	1.00	3	2
Existing	450	Base Freezer	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	4	2
Existing	451	HE Freezer	unit	unit	$33.00	$0.00		$33.00	1	15	0	0	$33.00	1.00	1.00	1.00	1.00	1.00	1.00	4	2
Existing	500	Base Dishwasher	unit	unit	$0.00	$0.00		$0.00	1	13	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	8	2
Existing	501	ENERGY STAR Dishwasher	unit	unit	$50.00	$0.00		$50.00	1	13	0	0	$50.00	1.00	1.00	1.00	1.00	1.00	1.00	8	2
Existing	600	Base Pool Pump and Motor	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	9	2
Existing	601	High Efficiency Pool Pump and Motor	unit	unit	$332.00	$0.00		$332.00	1	15	0	0	$332.00	1.00	1.00	1.00	1.00	1.00	1.00	9	2
Existing	700	Base Cooking	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	11	2
Existing	800	Base Clothes Drying	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	7	2
Existing	900	Base Miscellaneous	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	12	2
New	100	Base, 13 SEER Central AC	home	unit	$1,404.00	$1,060.00		$2,464.00	1	18	0	0	$2,464.00	1.00	1.00	1.00	0.00	1.00	1.00	1	2
New	101	16 SEER Central AC	home	unit	$2,412.00	$1,060.00		$3,472.00	1	18	0	0	$3,472.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2

MEASURE COSTS

Segment	Measure #	Measure Description	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Cost Units per Savings Unit	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SP	SPP	SOP	WP	WPP	WOP	End Use	Implementa Type 1=1 time 2=ROB
New	102	Programmable Thermostat	home	unit	$23.20	$16.00		$39.20	1	12	1	1	$39.20	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	103	Ceiling Fans	home	unit	$80.00	$40.00		$120.00	1	10	1	1	$120.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	104	Whole House Fans	home	unit	$122.00	$100.00		$222.00	1	10	1	1	$222.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	105	Attic Venting	home	unit	$41.00	$100.00		$141.00	1	10	1	1	$141.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	106	Window Film	home	square foot	$3.30			$3.30	1	20	1	1	$3.30	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	108	Radiant Barrier	home	square foot	$0.23			$0.23	1	20	1	1	$0.23	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	109	Ceiling Insulation R-30 to R-38	home	square foot	$0.04			$0.04	1	20	1	1	$0.04	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	110	Wall Insulation R-11 to R-19	home	square foot	$0.12			$0.12	1	20	1	1	$0.12	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	111	Infiltration Reduction	home	home	$141.50			$141.50	1	10	1	1	$141.50	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	112	Basic HVAC Diagnostic Testing And Repair	home	unit	$100.00			$100.00	1	10	1	1	$100.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	113	Duct Diagnostics and Repair	home	unit	$225.00			$225.00	1	20	1	1	$225.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	140	Base Room Air Conditioner	home	unit	$0.00			$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
New	141	ENERGY STAR Room Air Conditioner	home	unit	$30.00			$30.00	1	15	0	0	$30.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
New	142	Programmable Thermostat	home	unit	$23.20	$16.00		$39.20	1	12	1	1	$39.20	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	143	Ceiling Fans	home	unit	$80.00	$40.00		$120.00	1	10	1	1	$120.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	144	Whole House Fans	home	unit	$122.00	$100.00		$222.00	1	10	1	1	$222.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	145	Attic Venting	home	unit	$41.00	$100.00		$141.00	1	10	1	1	$141.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	146	Window Film	home	square foot	$3.30			$3.30	1	20	1	1	$3.30	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	149	Ceiling Insulation R-30 to R-38	home	square foot	$0.04			$0.04	1	20	1	1	$0.04	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	150	Wall Insulation R-11 to R-19	home	square foot	$0.12			$0.12	1	20	1	1	$0.12	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	151	Infiltration Reduction	home	home	$141.50			$141.50	1	10	1	1	$141.50	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	152	Basic HVAC Diagnostic Testing And Repair	home	unit	$100.00			$100.00	1	10	1	1	$100.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
New	180	Resistance Space Heating	home	Unit	$0.00			$0.00	1	18	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
New	181	Heat Pump Space Heater	home	unit	$941.00			$941.00	1	18	1	1	$941.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
New	182	Geothermal Heat Pump	home	unit	$6,300.00			$6,300.00	1	18	1	1	$6,300.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
New	183	Programmable Thermostat	home	unit	$29.00	$20.00		$49.00	1	12	1	1	$49.00	1.00	1.00	1.00	1.00	1.00	1.00	10	1
New	186	Ceiling Insulation R-30 to R-38	home	square foot	$0.04			$0.04	1	20	1	1	$0.04	1.00	1.00	1.00	1.00	1.00	1.00	10	1
New	187	Wall Insulation R-11 to R-19	home	square foot	$0.12			$0.12	1	20	1	1	$0.12	1.00	1.00	1.00	1.00	1.00	1.00	10	1
New	188	Infiltration Reduction	home	home	$141.50			$141.50	1	10	1	1	$141.50	1.00	1.00	1.00	1.00	1.00	1.00	10	1
New	200	Base 40 gal. Water Heating	unit	unit	$0.00	$0.00		$0.00	1	13	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
New	201	Heat Pump Water Heater	unit	unit	$1,550.00	$0.00		$1,550.00	1	13	1	1	$1,550.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
New	202	HE Water Heater	unit	unit	$50.00	$0.00		$50.00	1	13	1	1	$50.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
New	203	Solar Water Heat	unit	unit	$4,000.00	$0.00		$4,000.00	1	13	1	1	$4,000.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
New	206	Pipe Wrap	unit	linear foot	$0.27	$0.27		$0.54	1	13	1	1	$0.54	1.00	1.00	1.00	1.00	1.00	1.00	5	1
New	207	Water Heater Blanket	unit	unit	$14.00	$10.00		$24.00	1	13	1	1	$24.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
New	208	ENERGY STAR Clothes Washer	unit	unit	$300.00	$0.00	($213.10)	$300.00	1	13	1	1	$86.90	1.00	1.00	1.00	1.00	1.00	1.00	6	2
New	300	Base Lighting, 0.5 hr/hday	lamp	lamp	$0.50	$0.00		$0.50	1	1,000	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	301	CFL, 0.5 hr/day	lamp	lamp	$8.00	$0.00		$8.00	1	10,000	1	1	$8.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	310	Base Lighting, 2.5 hr/hday	lamp	lamp	$0.50	$0.00		$0.50	1	1,000	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	311	CFL, 2.5 hr/day	lamp	lamp	$8.00	$0.00		$8.00	1	10,000	1	1	$8.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	320	Base Lighting, 6.0 hr/hday	lamp	lamp	$0.50	$0.00		$0.50	1	1,000	1	1	$0.50	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	321	CFL, 6.0 hr/day	lamp	lamp	$8.00	$0.00		$8.00	1	10,000	1	1	$8.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	fixture	fixture	$12.00	$40.00		$52.00	1	45,000	1	1	$52.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
New	331	RET 2L4'T8, 1EB	fixture	fixture	$20.00	$40.00		$60.00	1	70,000	0	0	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2
New	340	Base Torchiere	fixture	fixture	$0.00	$0.00		$0.00	1	9	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2
New	341	Fluorescent Torchiere	fixture	fixture	$11.50	$0.00		$11.50	1	9	1	1	$11.50	1.00	1.00	1.00	1.00	1.00	1.00	2	2
New	400	Base Refrigerator	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	3	2
New	401	HE Refrigerator - ENERGY STAR	unit	unit	$36.00	$0.00		$36.00	1	15	0	0	$36.00	1.00	1.00	1.00	1.00	1.00	1.00	3	2
New	450	Base Freezer	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	4	2
New	451	HE Freezer	unit	unit	$33.00	$0.00		$33.00	1	15	0	0	$33.00	1.00	1.00	1.00	1.00	1.00	1.00	4	2
New	500	Base Dishwasher	unit	unit	$0.00	$0.00		$0.00	1	13	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	8	2
New	501	ENERGY STAR Dishwasher	unit	unit	$50.00	$0.00		$50.00	1	13	0	0	$50.00	1.00	1.00	1.00	1.00	1.00	1.00	8	2
New	600	Base Pool Pump and Motor	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	9	2
New	601	High Efficiency Pool Pump and Motor	unit	unit	$332.00	$0.00		$332.00	1	15	0	0	$332.00	1.00	1.00	1.00	1.00	1.00	1.00	9	2
New	700	Base Cooking	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	11	2
New	800	Base Clothes Drying	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	7	2
New	900	Base Miscellaneous	unit	unit	$0.00	$0.00		$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	61.0%	77.0%
Existing	101	16 SEER Central AC	61.0%	77.0%
Existing	102	Programmable Thermostat (0.4)	61.0%	77.0%
Existing	103	Ceiling Fans	61.0%	77.0%
Existing	104	Whole House Fans	61.0%	77.0%
Existing	105	Attic Venting	61.0%	77.0%
Existing	106	Window Film	61.0%	77.0%
Existing	107	High Performance Windows	61.0%	77.0%
Existing	108	Radiant Barrier	61.0%	77.0%
Existing	109	Ceiling Insulation R-11 to R-30	61.0%	77.0%
Existing	110	Wall Insulation R-0 to R-13	61.0%	77.0%
Existing	111	Infiltration Reduction	61.0%	77.0%
Existing	112	Basic HVAC Diagnostic Testing And Repair	61.0%	77.0%
Existing	113	Duct Diagnostics and Repair	61.0%	77.0%
Existing	140	Base Room Air Conditioner	19.0%	10.0%
Existing	141	ENERGY STAR Room Air Conditioner	19.0%	10.0%
Existing	142	Programmable Thermostat	19.0%	10.0%
Existing	143	Ceiling Fans	19.0%	10.0%
Existing	144	Whole House Fans	19.0%	10.0%
Existing	145	Attic Venting	19.0%	10.0%
Existing	146	Window Film	19.0%	10.0%
Existing	147	High Performance Windows	19.0%	10.0%
Existing	149	Ceiling Insulation R-11 to R-30	19.0%	10.0%
Existing	150	Wall Insulation R-0 to R-13	19.0%	10.0%
Existing	151	Infiltration Reduction	19.0%	10.0%
Existing	152	Basic HVAC Diagnostic Testing And Repair	19.0%	10.0%
Existing	180	Resistance Space Heating	43.0%	79.0%
Existing	181	Heat Pump Space Heater	43.0%	79.0%
Existing	182	Geothermal Heat Pump	43.0%	79.0%
Existing	183	Programmable Thermostat	43.0%	79.0%
Existing	186	Ceiling Insulation R-11 to R-30	43.0%	79.0%
Existing	187	Wall Insulation R-0 to R-13	43.0%	79.0%
Existing	188	Infiltration Reduction	43.0%	79.0%
Existing	200	Base 40 gal. Water Heating	38.0%	76.0%
Existing	201	Heat Pump Water Heater	38.0%	76.0%
Existing	202	HE Water Heater	38.0%	76.0%
Existing	203	Solar Water Heat	38.0%	76.0%
Existing	204	Low Flow Showerhead	38.0%	76.0%
Existing	205	Faucet Aerators	38.0%	76.0%
Existing	206	Pipe Wrap	38.0%	76.0%
Existing	207	Water Heater Blanket	38.0%	76.0%
Existing	208	ENERGY STAR Clothes Washer	35.7%	44.1%
Existing	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%
Existing	301	CFL, 0.5 hr/day	100.0%	100.0%
Existing	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
Existing	311	CFL, 2.5 hr/day	100.0%	100.0%
Existing	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
Existing	321	CFL, 6.0 hr/day	100.0%	100.0%
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	60.0%	60.0%
Existing	331	ROB 2L4'T8, 1EB	60.0%	60.0%
Existing	340	Base Torchiere	33.0%	33.0%

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	341	Fluorescent Torchiere	33.0%	33.0%
Existing	400	Base Refrigerator	100.0%	100.0%
Existing	401	HE Refrigerator - ENERGY STAR	100.0%	100.0%
Existing	450	Base Freezer	31.5%	10.5%
Existing	451	HE Freezer	31.5%	10.5%
Existing	500	Base Dishwasher	19.1%	40.6%
Existing	501	ENERGY STAR Dishwasher	19.1%	40.6%
Existing	600	Base Pool Pump and Motor	5.0%	0.0%
Existing	601	High Efficiency Pool Pump and Motor	5.0%	0.0%
Existing	700	Base Cooking	54.8%	78.6%
Existing	800	Base Clothes Drying	71.0%	43.6%
Existing	900	Base Miscellaneous	100.0%	100.0%
New	100	Base, 13 SEER Central AC	61.0%	77.0%
New	101	16 SEER Central AC	61.0%	77.0%
New	102	Programmable Thermostat (0.4)	61.0%	77.0%
New	103	Ceiling Fans	61.0%	77.0%
New	104	Whole House Fans	61.0%	77.0%
New	105	Attic Venting	61.0%	77.0%
New	106	Window Film	61.0%	77.0%
New	108	Radiant Barrier	61.0%	77.0%
New	109	Ceiling Insulation R-30 to R-38	61.0%	77.0%
New	110	Wall Insulation R-11 to R-19	61.0%	77.0%
New	111	Infiltration Reduction	61.0%	77.0%
New	112	Basic HVAC Diagnostic Testing And Repair	61.0%	77.0%
New	113	Duct Diagnostics and Repair	61.0%	77.0%
New	140	Base Room Air Conditioner	19.0%	10.0%
New	141	ENERGY STAR Room Air Conditioner	19.0%	10.0%
New	142	Programmable Thermostat	19.0%	10.0%
New	143	Ceiling Fans	19.0%	10.0%
New	144	Whole House Fans	19.0%	10.0%
New	145	Attic Venting	19.0%	10.0%
New	146	Window Film	19.0%	10.0%
New	149	Ceiling Insulation R-30 to R-38	19.0%	10.0%
New	150	Wall Insulation R-11 to R-19	19.0%	10.0%
New	151	Infiltration Reduction	19.0%	10.0%
New	152	Basic HVAC Diagnostic Testing And Repair	19.0%	10.0%
New	180	Resistance Space Heating	43.0%	79.0%
New	181	Heat Pump Space Heater	43.0%	79.0%
New	182	Geothermal Heat Pump	43.0%	79.0%
New	183	Programmable Thermostat	43.0%	79.0%
New	186	Ceiling Insulation R-30 to R-38	43.0%	79.0%
New	187	Wall Insulation R-11 to R-19	43.0%	79.0%
New	188	Infiltration Reduction	43.0%	79.0%
New	200	Base 40 gal. Water Heating	38.0%	76.0%
New	201	Heat Pump Water Heater	38.0%	76.0%
New	202	HE Water Heater	38.0%	76.0%
New	203	Solar Water Heat	38.0%	76.0%
New	206	Pipe Wrap	38.0%	76.0%
New	207	Water Heater Blanket	38.0%	76.0%
New	208	ENERGY STAR Clothes Washer	35.7%	44.1%
New	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	100.0%	100.0%
New	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
New	311	CFL, 2.5 hr/day	100.0%	100.0%
New	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
New	321	CFL, 6.0 hr/day	100.0%	100.0%
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	60.0%	60.0%
New	331	ROB 2L4'T8, 1EB	60.0%	60.0%
New	340	Base Torchiere	33.0%	33.0%
New	341	Fluorescent Torchiere	33.0%	33.0%
New	400	Base Refrigerator	100.0%	100.0%
New	401	HE Refrigerator - ENERGY STAR	100.0%	100.0%
New	450	Base Freezer	31.5%	10.5%
New	451	HE Freezer	31.5%	10.5%
New	500	Base Dishwasher	19.1%	40.6%
New	501	ENERGY STAR Dishwasher	19.1%	40.6%
New	600	Base Pool Pump and Motor	5.0%	0.0%
New	601	High Efficiency Pool Pump and Motor	5.0%	0.0%
New	700	Base Cooking	54.8%	78.6%
New	800	Base Clothes Drying	71.0%	43.6%
New	900	Base Miscellaneous	100.0%	100.0%

BASE TECHNOLOGY UECs
(kWh/home)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	5,933	3,210
Existing	140	Base Room Air Conditioner	2,812	1,521
Existing	180	Resistance Space Heating	4,504	1,695
Existing	200	Base 40 gal. Water Heating	3,571	2,020
Existing	300	Base Lighting, 0.5 hr/hday	107	81
Existing	310	Base Lighting, 2.5 hr/hday	513	385
Existing	320	Base Lighting, 6.0 hr/hday	315	236
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	200	150
Existing	340	Base Torchiere	270	203
Existing	400	Base Refrigerator	1,476	847
Existing	450	Base Freezer	1,117	663
Existing	500	Base Dishwasher	555	303
Existing	600	Base Pool Pump and Motor	2,700	0
Existing	700	Base Cooking	631	449
Existing	800	Base Clothes Drying	884	553
Existing	900	Base Miscellaneous	3,332	1,307
New	100	Base, 13 SEER Central AC	5,933	3,210
New	140	Base Room Air Conditioner	2,812	1,521
New	180	Resistance Space Heating	4,504	1,695
New	200	Base 40 gal. Water Heating	3,571	2,020
New	300	Base Lighting, 0.5 hr/hday	107	81
New	310	Base Lighting, 2.5 hr/hday	513	385
New	320	Base Lighting, 6.0 hr/hday	315	236
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	200	150
New	340	Base Torchiere	270	203
New	400	Base Refrigerator	1,476	847
New	450	Base Freezer	1,117	663
New	500	Base Dishwasher	555	303
New	600	Base Pool Pump and Motor	2,700	0
New	700	Base Cooking	631	449
New	800	Base Clothes Drying	884	553
New	900	Base Miscellaneous	3,332	1,307

ENERGY SAVINGS
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	0.0%	0.0%
Existing	101	16 SEER Central AC	18.8%	18.8%
Existing	102	Programmable Thermostat (0.4)	5.0%	5.0%
Existing	103	Ceiling Fans	5.0%	5.0%
Existing	104	Whole House Fans	9.1%	9.1%
Existing	105	Attic Venting	11.0%	11.0%
Existing	106	Window Film	20.5%	20.5%
Existing	107	High Performance Windows	15.2%	15.2%
Existing	108	Radiant Barrier	10.0%	10.0%
Existing	109	Ceiling Insulation R-11 to R-30	6.5%	6.5%
Existing	110	Wall Insulation R-0 to R-13	11.4%	11.4%
Existing	111	Infiltration Reduction	2.0%	2.0%
Existing	112	Basic HVAC Diagnostic Testing And Repair	12.6%	12.6%
Existing	113	Duct Diagnostics and Repair	8.1%	8.1%
Existing	140	Base Room Air Conditioner	0.0%	0.0%
Existing	141	ENERGY STAR Room Air Conditioner	12.1%	12.1%
Existing	142	Programmable Thermostat	5.0%	5.0%
Existing	143	Ceiling Fans	5.0%	5.0%
Existing	144	Whole House Fans	9.1%	9.1%
Existing	145	Attic Venting	11.0%	11.0%
Existing	146	Window Film	20.5%	20.5%
Existing	147	High Performance Windows	15.2%	15.2%
Existing	149	Ceiling Insulation R-11 to R-30	6.5%	6.5%
Existing	150	Wall Insulation R-0 to R-13	11.4%	11.4%
Existing	151	Infiltration Reduction	2.0%	2.0%
Existing	152	Basic HVAC Diagnostic Testing And Repair	12.6%	12.6%
Existing	180	Resistance Space Heating	0.0%	0.0%
Existing	181	Heat Pump Space Heater	60.0%	60.0%
Existing	182	Geothermal Heat Pump	76.0%	76.0%
Existing	183	Programmable Thermostat	5.0%	5.0%
Existing	186	Ceiling Insulation R-11 to R-30	9.8%	9.8%
Existing	187	Wall Insulation R-0 to R-13	33.9%	33.9%
Existing	188	Infiltration Reduction	3.0%	3.0%
Existing	200	Base 40 gal. Water Heating	0.0%	0.0%
Existing	201	Heat Pump Water Heater	70.0%	70.0%
Existing	202	HE Water Heater	5.4%	5.4%
Existing	203	Solar Water Heat	80.0%	80.0%
Existing	204	Low Flow Showerhead	7.5%	7.5%
Existing	205	Faucet Aerators	3.0%	3.0%
Existing	206	Pipe Wrap	2.0%	2.0%
Existing	207	Water Heater Blanket	10.0%	10.0%
Existing	208	ENERGY STAR Clothes Washer	13.8%	13.8%
Existing	300	Base Lighting, 0.5 hr/hday	0.0%	0.0%
Existing	301	CFL, 0.5 hr/day	70.0%	70.0%
Existing	310	Base Lighting, 2.5 hr/hday	0.0%	0.0%
Existing	311	CFL, 2.5 hr/day	70.0%	70.0%
Existing	320	Base Lighting, 6.0 hr/hday	0.0%	0.0%
Existing	321	CFL, 6.0 hr/day	70.0%	70.0%
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	0.0%	0.0%
Existing	331	ROB 2L4'T8, 1EB	28.0%	28.0%
Existing	340	Base Torchiere	0.0%	0.0%

ENERGY SAVINGS
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	341	Fluorescent Torchiere	72.0%	72.0%
Existing	400	Base Refrigerator	0.0%	0.0%
Existing	401	HE Refrigerator - ENERGY STAR	15.0%	15.0%
Existing	450	Base Freezer	0.0%	0.0%
Existing	451	HE Freezer	10.0%	10.0%
Existing	500	Base Dishwasher	0.0%	0.0%
Existing	501	ENERGY STAR Dishwasher	23.4%	23.4%
Existing	600	Base Pool Pump and Motor	0.0%	0.0%
Existing	601	High Efficiency Pool Pump and Motor	49.0%	49.0%
Existing	700	Base Cooking	0.00%	0.00%
Existing	800	Base Clothes Drying	0.00%	0.00%
Existing	900	Base Miscellaneous	0.00%	0.00%
New	100	Base, 13 SEER Central AC	0.0%	0.0%
New	101	16 SEER Central AC	18.8%	18.8%
New	102	Programmable Thermostat (0.4)	5.0%	5.0%
New	103	Ceiling Fans	5.0%	5.0%
New	104	Whole House Fans	9.1%	9.1%
New	105	Attic Venting	11.0%	11.0%
New	106	Window Film	20.5%	20.5%
New	108	Radiant Barrier	6.0%	6.0%
New	109	Ceiling Insulation R-30 to R-38	2.0%	2.0%
New	110	Wall Insulation R-11 to R-19	4.0%	4.0%
New	111	Infiltration Reduction	2.0%	2.0%
New	112	Basic HVAC Diagnostic Testing And Repair	12.6%	12.6%
New	113	Duct Diagnostics and Repair	8.1%	8.1%
New	140	Base Room Air Conditioner	0.0%	0.0%
New	141	ENERGY STAR Room Air Conditioner	12.1%	12.1%
New	142	Programmable Thermostat	5.0%	5.0%
New	143	Ceiling Fans	5.0%	5.0%
New	144	Whole House Fans	9.1%	9.1%
New	145	Attic Venting	11.0%	11.0%
New	146	Window Film	20.5%	20.5%
New	149	Ceiling Insulation R-30 to R-38	2.0%	2.0%
New	150	Wall Insulation R-11 to R-19	4.0%	4.0%
New	151	Infiltration Reduction	2.0%	2.0%
New	152	Basic HVAC Diagnostic Testing And Repair	12.6%	12.6%
New	180	Resistance Space Heating	0.0%	0.0%
New	181	Heat Pump Space Heater	60.0%	60.0%
New	182	Geothermal Heat Pump	76.0%	76.0%
New	183	Programmable Thermostat	5.0%	5.0%
New	186	Ceiling Insulation R-30 to R-38	3.5%	3.5%
New	187	Wall Insulation R-11 to R-19	20.0%	20.0%
New	188	Infiltration Reduction	3.0%	3.0%
New	200	Base 40 gal. Water Heating	0.0%	0.0%
New	201	Heat Pump Water Heater	70.0%	70.0%
New	202	HE Water Heater	5.4%	5.4%
New	203	Solar Water Heat	80.0%	80.0%
New	206	Pipe Wrap	2.0%	2.0%
New	207	Water Heater Blanket	10.0%	10.0%
New	208	ENERGY STAR Clothes Washer	13.8%	13.8%
New	300	Base Lighting, 0.5 hr/hday	0.0%	0.0%

ENERGY SAVINGS
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	70.0%	70.0%
New	310	Base Lighting, 2.5 hr/hday	0.0%	0.0%
New	311	CFL, 2.5 hr/day	70.0%	70.0%
New	320	Base Lighting, 6.0 hr/hday	0.0%	0.0%
New	321	CFL, 6.0 hr/day	70.0%	70.0%
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	0.0%	0.0%
New	331	ROB 2L4'T8, 1EB	28.0%	28.0%
New	340	Base Torchiere	0.0%	0.0%
New	341	Fluorescent Torchiere	72.0%	72.0%
New	400	Base Refrigerator	0.0%	0.0%
New	401	HE Refrigerator - ENERGY STAR	15.0%	15.0%
New	450	Base Freezer	0.0%	0.0%
New	451	HE Freezer	10.0%	10.0%
New	500	Base Dishwasher	0.0%	0.0%
New	501	ENERGY STAR Dishwasher	23.4%	23.4%
New	600	Base Pool Pump and Motor	0.0%	0.0%
New	601	High Efficiency Pool Pump and Motor	49.0%	49.0%
New	700	Base Cooking	0.00%	0.00%
New	800	Base Clothes Drying	0.00%	0.00%
New	900	Base Miscellaneous	0.00%	0.00%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	84.6%	84.6%
Existing	101	16 SEER Central AC	84.6%	84.6%
Existing	102	Programmable Thermostat (0.4)	100.0%	100.0%
Existing	103	Ceiling Fans	100.0%	100.0%
Existing	104	Whole House Fans	100.0%	100.0%
Existing	105	Attic Venting	100.0%	100.0%
Existing	106	Window Film	100.0%	100.0%
Existing	107	High Performance Windows	100.0%	100.0%
Existing	108	Radiant Barrier	100.0%	100.0%
Existing	109	Ceiling Insulation R-11 to R-30	100.0%	100.0%
Existing	110	Wall Insulation R-0 to R-13	100.0%	100.0%
Existing	111	Infiltration Reduction	100.0%	100.0%
Existing	112	Basic HVAC Diagnostic Testing And Repair	100.0%	100.0%
Existing	113	Duct Diagnostics and Repair	100.0%	100.0%
Existing	140	Base Room Air Conditioner	96.9%	96.9%
Existing	141	ENERGY STAR Room Air Conditioner	96.9%	96.9%
Existing	142	Programmable Thermostat	100.0%	100.0%
Existing	143	Ceiling Fans	100.0%	100.0%
Existing	144	Whole House Fans	100.0%	100.0%
Existing	145	Attic Venting	100.0%	100.0%
Existing	146	Window Film	100.0%	100.0%
Existing	147	High Performance Windows	100.0%	100.0%
Existing	149	Ceiling Insulation R-11 to R-30	100.0%	100.0%
Existing	150	Wall Insulation R-0 to R-13	100.0%	100.0%
Existing	151	Infiltration Reduction	100.0%	100.0%
Existing	152	Basic HVAC Diagnostic Testing And Repair	100.0%	100.0%
Existing	180	Resistance Space Heating	100.0%	100.0%
Existing	181	Heat Pump Space Heater	100.0%	100.0%
Existing	182	Geothermal Heat Pump	100.0%	100.0%
Existing	183	Programmable Thermostat	100.0%	100.0%
Existing	186	Ceiling Insulation R-11 to R-30	100.0%	100.0%
Existing	187	Wall Insulation R-0 to R-13	100.0%	100.0%
Existing	188	Infiltration Reduction	100.0%	100.0%
Existing	200	Base 40 gal. Water Heating	100.0%	100.0%
Existing	201	Heat Pump Water Heater	100.0%	100.0%
Existing	202	HE Water Heater	100.0%	100.0%
Existing	203	Solar Water Heat	100.0%	100.0%
Existing	204	Low Flow Showerhead	100.0%	100.0%
Existing	205	Faucet Aerators	100.0%	100.0%
Existing	206	Pipe Wrap	100.0%	100.0%
Existing	207	Water Heater Blanket	100.0%	100.0%
Existing	208	ENERGY STAR Clothes Washer	72.5%	72.5%
Existing	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%
Existing	301	CFL, 0.5 hr/day	100.0%	100.0%
Existing	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
Existing	311	CFL, 2.5 hr/day	100.0%	100.0%
Existing	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
Existing	321	CFL, 6.0 hr/day	100.0%	100.0%
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	100.0%	100.0%
Existing	331	ROB 2L4'T8, 1EB	100.0%	100.0%
Existing	340	Base Torchiere	100.0%	100.0%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	341	Fluorescent Torchiere	100.0%	100.0%
Existing	400	Base Refrigerator	100.0%	100.0%
Existing	401	HE Refrigerator - ENERGY STAR	56.7%	56.7%
Existing	450	Base Freezer	78.7%	78.7%
Existing	451	HE Freezer	78.7%	78.7%
Existing	500	Base Dishwasher	88.7%	88.7%
Existing	501	ENERGY STAR Dishwasher	88.7%	88.7%
Existing	600	Base Pool Pump and Motor	90.7%	90.7%
Existing	601	High Efficiency Pool Pump and Motor	90.7%	90.7%
Existing	700	Base Cooking	100.0%	100.0%
Existing	800	Base Clothes Drying	100.0%	100.0%
Existing	900	Base Miscellaneous	100.0%	100.0%
New	100	Base, 13 SEER Central AC	84.6%	84.6%
New	101	16 SEER Central AC	84.6%	84.6%
New	102	Programmable Thermostat (0.4)	100.0%	100.0%
New	103	Ceiling Fans	100.0%	100.0%
New	104	Whole House Fans	100.0%	100.0%
New	105	Attic Venting	100.0%	100.0%
New	106	Window Film	100.0%	100.0%
New	108	Radiant Barrier	100.0%	100.0%
New	109	Ceiling Insulation R-30 to R-38	100.0%	100.0%
New	110	Wall Insulation R-11 to R-19	100.0%	100.0%
New	111	Infiltration Reduction	100.0%	100.0%
New	112	Basic HVAC Diagnostic Testing And Repair	100.0%	100.0%
New	113	Duct Diagnostics and Repair	100.0%	100.0%
New	140	Base Room Air Conditioner	96.9%	96.9%
New	141	ENERGY STAR Room Air Conditioner	96.9%	96.9%
New	142	Programmable Thermostat	100.0%	100.0%
New	143	Ceiling Fans	100.0%	100.0%
New	144	Whole House Fans	100.0%	100.0%
New	145	Attic Venting	100.0%	100.0%
New	146	Window Film	100.0%	100.0%
New	149	Ceiling Insulation R-30 to R-38	100.0%	100.0%
New	150	Wall Insulation R-11 to R-19	100.0%	100.0%
New	151	Infiltration Reduction	100.0%	100.0%
New	152	Basic HVAC Diagnostic Testing And Repair	100.0%	100.0%
New	180	Resistance Space Heating	100.0%	100.0%
New	181	Heat Pump Space Heater	100.0%	100.0%
New	182	Geothermal Heat Pump	100.0%	100.0%
New	183	Programmable Thermostat	100.0%	100.0%
New	186	Ceiling Insulation R-30 to R-38	100.0%	100.0%
New	187	Wall Insulation R-11 to R-19	100.0%	100.0%
New	188	Infiltration Reduction	100.0%	100.0%
New	200	Base 40 gal. Water Heating	100.0%	100.0%
New	201	Heat Pump Water Heater	100.0%	100.0%
New	202	HE Water Heater	100.0%	100.0%
New	203	Solar Water Heat	100.0%	100.0%
New	206	Pipe Wrap	100.0%	100.0%
New	207	Water Heater Blanket	100.0%	100.0%
New	208	ENERGY STAR Clothes Washer	72.5%	72.5%
New	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	100.0%	100.0%
New	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
New	311	CFL, 2.5 hr/day	100.0%	100.0%
New	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
New	321	CFL, 6.0 hr/day	100.0%	100.0%
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	100.0%	100.0%
New	331	ROB 2L4'T8, 1EB	100.0%	100.0%
New	340	Base Torchiere	100.0%	100.0%
New	341	Fluorescent Torchiere	100.0%	100.0%
New	400	Base Refrigerator	100.0%	100.0%
New	401	HE Refrigerator - ENERGY STAR	56.7%	56.7%
New	450	Base Freezer	78.7%	78.7%
New	451	HE Freezer	78.7%	78.7%
New	500	Base Dishwasher	88.7%	88.7%
New	501	ENERGY STAR Dishwasher	88.7%	88.7%
New	600	Base Pool Pump and Motor	90.7%	90.7%
New	601	High Efficiency Pool Pump and Motor	90.7%	90.7%
New	700	Base Cooking	100.0%	100.0%
New	800	Base Clothes Drying	100.0%	100.0%
New	900	Base Miscellaneous	100.0%	100.0%

FEASIBILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	100%	100%
Existing	101	16 SEER Central AC	100%	100%
Existing	102	Programmable Thermostat (0.4)	85%	85%
Existing	103	Ceiling Fans	100%	100%
Existing	104	Whole House Fans	80%	80%
Existing	105	Attic Venting	80%	80%
Existing	106	Window Film	100%	100%
Existing	107	High Performance Windows	100%	100%
Existing	108	Radiant Barrier	80%	80%
Existing	109	Ceiling Insulation R-11 to R-30	80%	80%
Existing	110	Wall Insulation R-0 to R-13	80%	80%
Existing	111	Infiltration Reduction	100%	100%
Existing	112	Basic HVAC Diagnostic Testing And Repair	100%	100%
Existing	113	Duct Diagnostics and Repair	100%	100%
Existing	140	Base Room Air Conditioner	100%	100%
Existing	141	ENERGY STAR Room Air Conditioner	100%	100%
Existing	142	Programmable Thermostat	85%	85%
Existing	143	Ceiling Fans	100%	100%
Existing	144	Whole House Fans	80%	80%
Existing	145	Attic Venting	80%	80%
Existing	146	Window Film	100%	100%
Existing	147	High Performance Windows	100%	100%
Existing	149	Ceiling Insulation R-11 to R-30	80%	80%
Existing	150	Wall Insulation R-0 to R-13	80%	80%
Existing	151	Infiltration Reduction	100%	100%
Existing	152	Basic HVAC Diagnostic Testing And Repair	100%	100%
Existing	180	Resistance Space Heating	100%	100%
Existing	181	Heat Pump Space Heater	70%	70%
Existing	182	Geothermal Heat Pump	25%	25%
Existing	183	Programmable Thermostat	85%	85%
Existing	186	Ceiling Insulation R-11 to R-30	80%	80%
Existing	187	Wall Insulation R-0 to R-13	100%	100%
Existing	188	Infiltration Reduction	100%	100%
Existing	200	Base 40 gal. Water Heating	100.0%	100.0%
Existing	201	Heat Pump Water Heater	50.0%	50.0%
Existing	202	HE Water Heater	100.0%	100.0%
Existing	203	Solar Water Heat	50.0%	50.0%
Existing	204	Low Flow Showerhead	80.0%	80.0%
Existing	205	Faucet Aerators	80.0%	80.0%
Existing	206	Pipe Wrap	50.0%	50.0%
Existing	207	Water Heater Blanket	50.0%	50.0%
Existing	208	ENERGY STAR Clothes Washer	100.0%	100.0%
Existing	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%
Existing	301	CFL, 0.5 hr/day	66.0%	66.0%
Existing	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
Existing	311	CFL, 2.5 hr/day	66.0%	66.0%
Existing	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
Existing	321	CFL, 6.0 hr/day	66.0%	66.0%
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	100.0%	100.0%
Existing	331	ROB 2L4'T8, 1EB	100.0%	100.0%
Existing	340	Base Torchiere	100.0%	100.0%

FEASIBILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	66.0%	66.0%
New	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
New	311	CFL, 2.5 hr/day	66.0%	66.0%
New	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
New	321	CFL, 6.0 hr/day	66.0%	66.0%
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	100.0%	100.0%
New	331	ROB 2L4'T8, 1EB	100.0%	100.0%
New	340	Base Torchiere	100.0%	100.0%
New	341	Fluorescent Torchiere	100.0%	100.0%
New	400	Base Refrigerator	100.0%	100.0%
New	401	HE Refrigerator - ENERGY STAR	100.0%	100.0%
New	450	Base Freezer	100.0%	100.0%
New	451	HE Freezer	100.0%	100.0%
New	500	Base Dishwasher	100.0%	100.0%
New	501	ENERGY STAR Dishwasher	100.0%	100.0%
New	600	Base Pool Pump and Motor	100.0%	100.0%
New	601	High Efficiency Pool Pump and Motor	100.0%	100.0%
New	700	Base Cooking	100.0%	100.0%
New	800	Base Clothes Drying	100.0%	100.0%
New	900	Base Miscellaneous	100.0%	100.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	100.0%	100.0%
Existing	101	16 SEER Central AC	89.0%	89.0%
Existing	102	Programmable Thermostat	86.0%	86.0%
Existing	103	Ceiling Fans	72.0%	72.0%
Existing	104	Whole House Fans	97.0%	97.0%
Existing	105	Attic Venting	94.0%	94.0%
Existing	106	Window Film	80.0%	80.0%
Existing	107	High Performance Windows	90.0%	90.0%
Existing	108	Radiant Barrier	95.0%	95.0%
Existing	109	Ceiling Insulation R-11 to R-30	70.0%	70.0%
Existing	110	Wall Insulation R-0 to R-13	33.0%	33.0%
Existing	111	Infiltration Reduction	40.0%	40.0%
Existing	112	Basic HVAC Diagnostic Testing And Repair	50.0%	50.0%
Existing	113	Duct Diagnostics and Repair	72.0%	72.0%
Existing	140	Base Room Air Conditioner	100.0%	100.0%
Existing	141	ENERGY STAR Room Air Conditioner	90.0%	90.0%
Existing	142	Programmable Thermostat	86.0%	86.0%
Existing	143	Ceiling Fans	72.0%	72.0%
Existing	144	Whole House Fans	97.0%	97.0%
Existing	145	Attic Venting	94.0%	94.0%
Existing	146	Window Film	80.0%	80.0%
Existing	147	High Performance Windows	90.0%	90.0%
Existing	149	Ceiling Insulation R-11 to R-30	70.0%	70.0%
Existing	150	Wall Insulation R-0 to R-13	33.0%	33.0%
Existing	151	Infiltration Reduction	40.0%	40.0%
Existing	152	Basic HVAC Diagnostic Testing And Repair	50.0%	50.0%
Existing	180	Resistance Space Heating	100.0%	100.0%
Existing	181	Heat Pump Space Heater	57.4%	57.4%
Existing	182	Geothermal Heat Pump	100.0%	100.0%
Existing	183	Programmable Thermostat	86.0%	86.0%
Existing	186	Ceiling Insulation R-11 to R-30	70.0%	70.0%
Existing	187	Wall Insulation R-0 to R-13	33.0%	33.0%
Existing	188	Infiltration Reduction	40.0%	40.0%
Existing	200	Base 40 gal. Water Heating	100.0%	100.0%
Existing	201	Heat Pump Water Heater	99.0%	99.0%
Existing	202	HE Water Heater	95.0%	95.0%
Existing	203	Solar Water Heat	98.0%	98.0%
Existing	204	Low Flow Showerhead	20.0%	20.0%
Existing	205	Faucet Aerators	25.0%	25.0%
Existing	206	Pipe Wrap	70.0%	70.0%
Existing	207	Water Heater Blanket	70.0%	70.0%
Existing	208	ENERGY STAR Clothes Washer	97.0%	97.0%
Existing	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%
Existing	301	CFL, 0.5 hr/day	99.0%	99.0%
Existing	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
Existing	311	CFL, 2.5 hr/day	90.0%	90.0%
Existing	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
Existing	321	CFL, 6.0 hr/day	90.0%	90.0%
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	100.0%	100.0%
Existing	331	ROB 2L4'T8, 1EB	94.0%	94.0%
Existing	340	Base Torchiere	100.0%	100.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	341	Fluorescent Torchiere	95.0%	95.0%
Existing	400	Base Refrigerator	100.0%	100.0%
Existing	401	HE Refrigerator - ENERGY STAR	95.0%	95.0%
Existing	450	Base Freezer	100.0%	100.0%
Existing	451	HE Freezer	90.0%	90.0%
Existing	500	Base Dishwasher	100.0%	100.0%
Existing	501	ENERGY STAR Dishwasher	88.0%	88.0%
Existing	600	Base Pool Pump and Motor	100.0%	100.0%
Existing	601	High Efficiency Pool Pump and Motor	99.0%	99.0%
Existing	700	Base Cooking	100.0%	100.0%
Existing	800	Base Clothes Drying	100.0%	100.0%
Existing	900	Base Miscellaneous	100.0%	100.0%
New	100	Base, 13 SEER Central AC	100.0%	100.0%
New	101	16 SEER Central AC	89.0%	89.0%
New	102	Programmable Thermostat	86.0%	86.0%
New	103	Ceiling Fans	72.0%	72.0%
New	104	Whole House Fans	97.0%	97.0%
New	105	Attic Venting	94.0%	94.0%
New	106	Window Film	80.0%	80.0%
New	108	Radiant Barrier	90.0%	90.0%
New	109	Ceiling Insulation R-30 to R-38	70.0%	70.0%
New	110	Wall Insulation R-11 to R-19	90.0%	90.0%
New	111	Infiltration Reduction	40.0%	40.0%
New	112	Basic HVAC Diagnostic Testing And Repair	50.0%	50.0%
New	113	Duct Diagnostics and Repair	72.0%	72.0%
New	140	Base Room Air Conditioner	100.0%	100.0%
New	141	ENERGY STAR Room Air Conditioner	90.0%	90.0%
New	142	Programmable Thermostat	86.0%	86.0%
New	143	Ceiling Fans	72.0%	72.0%
New	144	Whole House Fans	97.0%	97.0%
New	145	Attic Venting	94.0%	94.0%
New	146	Window Film	80.0%	80.0%
New	149	Ceiling Insulation R-30 to R-38	70.0%	70.0%
New	150	Wall Insulation R-11 to R-19	90.0%	90.0%
New	151	Infiltration Reduction	40.0%	40.0%
New	152	Basic HVAC Diagnostic Testing And Repair	50.0%	50.0%
New	180	Resistance Space Heating	100.0%	100.0%
New	181	Heat Pump Space Heater	57.4%	57.4%
New	182	Geothermal Heat Pump	100.0%	100.0%
New	183	Programmable Thermostat	86.0%	86.0%
New	186	Ceiling Insulation R-30 to R-38	70.0%	70.0%
New	187	Wall Insulation R-11 to R-19	90.0%	90.0%
New	188	Infiltration Reduction	40.0%	40.0%
New	200	Base 40 gal. Water Heating	100.0%	100.0%
New	201	Heat Pump Water Heater	99.0%	99.0%
New	202	HE Water Heater	95.0%	95.0%
New	203	Solar Water Heat	98.0%	98.0%
New	206	Pipe Wrap	70.0%	70.0%
New	207	Water Heater Blanket	70.0%	70.0%
New	208	ENERGY STAR Clothes Washer	97.0%	97.0%
New	300	Base Lighting, 0.5 hr/hday	100.0%	100.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	99.0%	99.0%
New	310	Base Lighting, 2.5 hr/hday	100.0%	100.0%
New	311	CFL, 2.5 hr/day	90.0%	90.0%
New	320	Base Lighting, 6.0 hr/hday	100.0%	100.0%
New	321	CFL, 6.0 hr/day	90.0%	90.0%
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	100.0%	100.0%
New	331	ROB 2L4'T8, 1EB	94.0%	94.0%
New	340	Base Torchiere	100.0%	100.0%
New	341	Fluorescent Torchiere	95.0%	95.0%
New	400	Base Refrigerator	100.0%	100.0%
New	401	HE Refrigerator - ENERGY STAR	95.0%	95.0%
New	450	Base Freezer	100.0%	100.0%
New	451	HE Freezer	90.0%	90.0%
New	500	Base Dishwasher	100.0%	100.0%
New	501	ENERGY STAR Dishwasher	88.0%	88.0%
New	600	Base Pool Pump and Motor	100.0%	100.0%
New	601	High Efficiency Pool Pump and Motor	99.0%	99.0%
New	700	Base Cooking	100.0%	100.0%
New	800	Base Clothes Drying	100.0%	100.0%
New	900	Base Miscellaneous	100.0%	100.0%

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC	1.0	0.7
Existing	101	16 SEER Central AC	1.0	0.7
Existing	102	Programmable Thermostat	1.0	1.0
Existing	103	Ceiling Fans	2.3	1.5
Existing	104	Whole House Fans	1.0	1.0
Existing	105	Attic Venting	1.0	1.0
Existing	106	Window Film	254.0	85.0
Existing	107	High Performance Windows	339.0	113.0
Existing	108	Radiant Barrier	1,450.0	610.0
Existing	109	Ceiling Insulation R-11 to R-30	1,450.0	610.0
Existing	110	Wall Insulation R-0 to R-13	1,850.0	550.0
Existing	111	Infiltration Reduction	1.0	1.0
Existing	112	Basic HVAC Diagnostic Testing And Repair	1.0	1.0
Existing	113	Duct Diagnostics and Repair	1.0	1.0
Existing	140	Base Room Air Conditioner	2.0	1.3
Existing	141	ENERGY STAR Room Air Conditioner	2.0	1.3
Existing	142	Programmable Thermostat	1.0	1.0
Existing	143	Ceiling Fans	2.3	1.5
Existing	144	Whole House Fans	1.0	1.0
Existing	145	Attic Venting	1.0	1.0
Existing	146	Window Film	254.0	85.0
Existing	147	High Performance Windows	339.0	113.0
Existing	149	Ceiling Insulation R-11 to R-30	1,450.0	610.0
Existing	150	Wall Insulation R-0 to R-13	1,850.0	550.0
Existing	151	Infiltration Reduction	1.0	1.0
Existing	152	Basic HVAC Diagnostic Testing And Repair	1.0	1.0
Existing	180	Resistance Space Heating	1.0	0.7
Existing	181	Heat Pump Space Heater	1.0	0.7
Existing	182	Geothermal Heat Pump	1.0	0.7
Existing	183	Programmable Thermostat	1.0	1.0
Existing	186	Ceiling Insulation R-11 to R-30	1,450.0	610.0
Existing	187	Wall Insulation R-0 to R-13	1,850.0	550.0
Existing	188	Infiltration Reduction	1.0	1.0
Existing	200	Base 40 gal. Water Heating	1.0	1.0
Existing	201	Heat Pump Water Heater	1.0	1.0
Existing	202	HE Water Heater	1.0	1.0
Existing	203	Solar Water Heat	1.0	1.0
Existing	204	Low Flow Showerhead	1.3	1.0
Existing	205	Faucet Aerators	2.3	2.0
Existing	206	Pipe Wrap	10.0	10.0
Existing	207	Water Heater Blanket	1.0	1.0
Existing	208	ENERGY STAR Clothes Washer	1.0	1.0
Existing	300	Base Lighting, 0.5 hr/hday	10.7	7.1
Existing	301	CFL, 0.5 hr/day	10.7	7.1
Existing	310	Base Lighting, 2.5 hr/hday	10.2	6.8
Existing	311	CFL, 2.5 hr/day	10.2	6.8
Existing	320	Base Lighting, 6.0 hr/hday	2.6	1.7
Existing	321	CFL, 6.0 hr/day	2.6	1.7
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	1.8	1.0
Existing	331	ROB 2L4'T8, 1EB	1.8	1.0
Existing	340	Base Torchiere	2.0	1.3

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	341	Fluorescent Torchiere	2.0	1.3
Existing	400	Base Refrigerator	1.0	1.0
Existing	401	HE Refrigerator - ENERGY STAR	1.0	1.0
Existing	450	Base Freezer	1.0	1.0
Existing	451	HE Freezer	1.0	1.0
Existing	500	Base Dishwasher	1.0	1.0
Existing	501	ENERGY STAR Dishwasher	1.0	1.0
Existing	600	Base Pool Pump and Motor	1.0	1.0
Existing	601	High Efficiency Pool Pump and Motor	1.0	1.0
Existing	700	Base Cooking	1.0	1.0
Existing	800	Base Clothes Drying	1.0	1.0
Existing	900	Base Miscellaneous	1.0	1.0
New	100	Base, 13 SEER Central AC	1.0	0.7
New	101	16 SEER Central AC	1.0	0.7
New	102	Programmable Thermostat	1.0	1.0
New	103	Ceiling Fans	2.3	1.5
New	104	Whole House Fans	1.0	1.0
New	105	Attic Venting	1.0	1.0
New	106	Window Film	254.0	85.0
New	108	Radiant Barrier	1,450.0	610.0
New	109	Ceiling Insulation R-30 to R-38	1,450.0	610.0
New	110	Wall Insulation R-11 to R-19	1,850.0	550.0
New	111	Infiltration Reduction	1.0	1.0
New	112	Basic HVAC Diagnostic Testing And Repair	1.0	1.0
New	113	Duct Diagnostics and Repair	1.0	1.0
New	140	Base Room Air Conditioner	2.0	1.3
New	141	ENERGY STAR Room Air Conditioner	2.0	1.3
New	142	Programmable Thermostat	1.0	1.0
New	143	Ceiling Fans	2.3	1.5
New	144	Whole House Fans	1.0	1.0
New	145	Attic Venting	1.0	1.0
New	146	Window Film	254.0	85.0
New	149	Ceiling Insulation R-30 to R-38	1,450.0	610.0
New	150	Wall Insulation R-11 to R-19	1,850.0	550.0
New	151	Infiltration Reduction	1.0	1.0
New	152	Basic HVAC Diagnostic Testing And Repair	1.0	1.0
New	180	Resistance Space Heating	1.0	0.7
New	181	Heat Pump Space Heater	1.0	0.7
New	182	Geothermal Heat Pump	1.0	0.7
New	183	Programmable Thermostat	1.0	1.0
New	186	Ceiling Insulation R-30 to R-38	1,450.0	610.0
New	187	Wall Insulation R-11 to R-19	1,850.0	550.0
New	188	Infiltration Reduction	1.0	1.0
New	200	Base 40 gal. Water Heating	1.0	1.0
New	201	Heat Pump Water Heater	1.0	1.0
New	202	HE Water Heater	1.0	1.0
New	203	Solar Water Heat	1.0	1.0
New	206	Pipe Wrap	10.0	10.0
New	207	Water Heater Blanket	1.0	1.0
New	208	ENERGY STAR Clothes Washer	1.0	1.0
New	300	Base Lighting, 0.5 hr/hday	10.7	7.1

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	10.7	7.1
New	310	Base Lighting, 2.5 hr/hday	10.2	6.8
New	311	CFL, 2.5 hr/day	10.2	6.8
New	320	Base Lighting, 6.0 hr/hday	2.6	1.7
New	321	CFL, 6.0 hr/day	2.6	1.7
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	1.8	1.0
New	331	ROB 2L4'T8, 1EB	1.8	1.0
New	340	Base Torchiere	2.0	1.3
New	341	Fluorescent Torchiere	2.0	1.3
New	400	Base Refrigerator	1.0	1.0
New	401	HE Refrigerator - ENERGY STAR	1.0	1.0
New	450	Base Freezer	1.0	1.0
New	451	HE Freezer	1.0	1.0
New	500	Base Dishwasher	1.0	1.0
New	501	ENERGY STAR Dishwasher	1.0	1.0
New	600	Base Pool Pump and Motor	1.0	1.0
New	601	High Efficiency Pool Pump and Motor	1.0	1.0
New	700	Base Cooking	1.0	1.0
New	800	Base Clothes Drying	1.0	1.0
New	900	Base Miscellaneous	1.0	1.0

Hour Adjustment For Lighting (Hours/year)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	100	Base, 13 SEER Central AC		
Existing	101	16 SEER Central AC		
Existing	102	Programmable Thermostat		
Existing	103	Ceiling Fans		
Existing	104	Whole House Fans		
Existing	105	Attic Venting		
Existing	106	Window Film		
Existing	107	High Performance Windows		
Existing	108	Radiant Barrier		
Existing	109	Ceiling Insulation R-11 to R-30		
Existing	110	Wall Insulation R-0 to R-13		
Existing	111	Infiltration Reduction		
Existing	112	Basic HVAC Diagnostic Testing And Repair		
Existing	113	Duct Diagnostics and Repair		
Existing	140	Base Room Air Conditioner		
Existing	141	ENERGY STAR Room Air Conditioner		
Existing	142	Programmable Thermostat		
Existing	143	Ceiling Fans		
Existing	144	Whole House Fans		
Existing	145	Attic Venting		
Existing	146	Window Film		
Existing	147	High Performance Windows		
Existing	149	Ceiling Insulation R-11 to R-30		
Existing	150	Wall Insulation R-0 to R-13		
Existing	151	Infiltration Reduction		
Existing	152	Basic HVAC Diagnostic Testing And Repair		
Existing	180	Resistance Space Heating		
Existing	181	Heat Pump Space Heater		
Existing	182	Geothermal Heat Pump		
Existing	183	Programmable Thermostat		
Existing	186	Ceiling Insulation R-11 to R-30		
Existing	187	Wall Insulation R-0 to R-13		
Existing	188	Infiltration Reduction		
Existing	200	Base 40 gal. Water Heating		
Existing	201	Heat Pump Water Heater		
Existing	202	HE Water Heater		
Existing	203	Solar Water Heat		
Existing	204	Low Flow Showerhead		
Existing	205	Faucet Aerators		
Existing	206	Pipe Wrap		
Existing	207	Water Heater Blanket		
Existing	208	ENERGY STAR Clothes Washer		
Existing	300	Base Lighting, 0.5 hr/hday	183	183
Existing	301	CFL, 0.5 hr/day	183	183
Existing	310	Base Lighting, 2.5 hr/hday	913	913
Existing	311	CFL, 2.5 hr/day	913	913
Existing	320	Base Lighting, 6.0 hr/hday	2,190	2,190
Existing	321	CFL, 6.0 hr/day	2,190	2,190
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	1,460	1,460
Existing	331	ROB 2L4'T8, 1EB	1,460	1,460
Existing	340	Base Torchiere	730	730

Hour Adjustment For Lighting
(Hours/year)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
Existing	341	Fluorescent Torchiere	730	730
Existing	400	Base Refrigerator		
Existing	401	HE Refrigerator - ENERGY STAR		
Existing	450	Base Freezer		
Existing	451	HE Freezer		
Existing	500	Base Dishwasher		
Existing	501	ENERGY STAR Dishwasher		
Existing	600	Base Pool Pump and Motor		
Existing	601	High Efficiency Pool Pump and Motor		
Existing	700	Base Cooking		
Existing	800	Base Clothes Drying		
Existing	900	Base Miscellaneous		
New	100	Base, 13 SEER Central AC		
New	101	16 SEER Central AC		
New	102	Programmable Thermostat		
New	103	Ceiling Fans		
New	104	Whole House Fans		
New	105	Attic Venting		
New	106	Window Film		
New	108	Radiant Barrier		
New	109	Ceiling Insulation R-30 to R-38		
New	110	Wall Insulation R-11 to R-19		
New	111	Infiltration Reduction		
New	112	Basic HVAC Diagnostic Testing And Repair		
New	113	Duct Diagnostics and Repair		
New	140	Base Room Air Conditioner		
New	141	ENERGY STAR Room Air Conditioner		
New	142	Programmable Thermostat		
New	143	Ceiling Fans		
New	144	Whole House Fans		
New	145	Attic Venting		
New	146	Window Film		
New	149	Ceiling Insulation R-30 to R-38		
New	150	Wall Insulation R-11 to R-19		
New	151	Infiltration Reduction		
New	152	Basic HVAC Diagnostic Testing And Repair		
New	180	Resistance Space Heating		
New	181	Heat Pump Space Heater		
New	182	Geothermal Heat Pump		
New	183	Programmable Thermostat		
New	186	Ceiling Insulation R-30 to R-38		
New	187	Wall Insulation R-11 to R-19		
New	188	Infiltration Reduction		
New	200	Base 40 gal. Water Heating		
New	201	Heat Pump Water Heater		
New	202	HE Water Heater		
New	203	Solar Water Heat		
New	206	Pipe Wrap		
New	207	Water Heater Blanket		
New	208	ENERGY STAR Clothes Washer		
New	300	Base Lighting, 0.5 hr/hday	183	183

Hour Adjustment For Lighting
(Hours/year)

Segment	Measure #	Measure Description	Single Family Building Type 1	Multifamily Building Type 2
New	301	CFL, 0.5 hr/day	183	183
New	310	Base Lighting, 2.5 hr/hday	913	913
New	311	CFL, 2.5 hr/day	913	913
New	320	Base Lighting, 6.0 hr/hday	2,190	2,190
New	321	CFL, 6.0 hr/day	2,190	2,190
New	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	1,460	1,460
New	331	ROB 2L4'T8, 1EB	1,460	1,460
New	340	Base Torchiere	730	730
New	341	Fluorescent Torchiere	730	730
New	400	Base Refrigerator		
New	401	HE Refrigerator - ENERGY STAR		
New	450	Base Freezer		
New	451	HE Freezer		
New	500	Base Dishwasher		
New	501	ENERGY STAR Dishwasher		
New	600	Base Pool Pump and Motor		
New	601	High Efficiency Pool Pump and Motor		
New	700	Base Cooking		
New	800	Base Clothes Drying		
New	900	Base Miscellaneous		

DSM TECHNOLOGY INPUT TABLES

UTILITY:	CPS	BATCH:	1
SECTOR:	COM	ANALYSIS:	Basic
SEGMENT:	All Electric	VINTAGE:	E

MEASURE COSTS

Segment	Measure #	Measure Description	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Cost Units per Savings Unit	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SP	Relative Energy Reduction Factors SPP	SOP	WP	WPP	WOP	End Use	Implementa Type 1=1 time 2=ROB
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	fixture	fixture	$27.00	$15.00	$0.00	$42.00	1	45,000	0	0	$42.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	111	ROB 4L4' Premium T8, 1EB	fixture	fixture	$35.00	$15.00	$0.00	$50.00	1	70,000	0	0	$50.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	112	ROB 2L4' Premium T8, 1EB, Reflector	fixture	fixture	$52.00	$15.00	$0.00	$67.00	1	70,000	0	0	$67.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	113	RET 4L4' Premium T8, 1EB	fixture	fixture	$35.00	$15.00	$0.00	$50.00	1	70,000	1	0	$50.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	114	RET 2L4' Premium T8, 1EB, Reflector	fixture	fixture	$52.00	$15.00	$0.00	$67.00	1	70,000	1	0	$67.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	fixture	fixture	$24.50	$3.15	$0.00	$27.65	1	40,000	1	1	$27.65	1.00	1.00	0.50	1.00	1.00	0.50	1	1
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	fixture	fixture	$180.63	$107.27	$0.00	$287.90	1	50,000	1	1	$287.90	1.00	1.00	0.00	1.00	1.00	0.00	1	1
1	117	RNV 2L4'T5HO, 1EB	fixture	fixture	$187.47	$62.52	$0.00	$249.99	1	70,000	1	0	$249.99	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	118	Lighting Control Tune-up	sqft	sqft		$0.01		$0.01	1	6	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	fixture	fixture	$14.00	$9.40	$0.00	$23.40	1	45,000	0	0	$23.40	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	131	ROB 2L4' Premium T8, 1EB	fixture	fixture	$25.00	$9.40	$0.00	$34.40	1	70,000	0	0	$34.40	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	132	RET 2L4' Premium T8, 1EB	fixture	fixture	$25.00	$9.40	$0.00	$34.40	1	70,000	1	0	$34.40	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	fixture	fixture	$41.00	$7.80	$0.00	$48.80	1	70,000	1	0	$48.80	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	fixture	fixture	$12.25	$1.58	$0.00	$13.83	1	40,000	1	1	$13.83	1.00	1.00	0.50	1.00	1.00	0.50	1	1
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	fixture	fixture	$90.31	$53.64	$0.00	$143.95	1	50,000	1	1	$143.95	1.00	1.00	0.00	1.00	1.00	0.00	1	1
1	136	RNV 1L4'T5HO, 1EB	fixture	fixture	$173.24	$62.52	$0.00	$235.76	1	70,000	1	0	$235.76	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	137	Lighting Control Tune-up	sqft	sqft		$0.01		$0.01	1	6	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	fixture	fixture	$36.00	$17.00	$0.00	$53.00	1	45,000	0	0	$53.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	151	ROB 2L8'T12, 60W, 1EB	fixture	fixture	$48.00	$17.00	$0.00	$65.00	1	70,000	0	0	$65.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	fixture	fixture	$72.00	$17.00	$0.00	$89.00	1	70,000	0	0	$89.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	153	RET 2L8'T12, 60W, 1EB	fixture	fixture	$48.00	$17.00	$0.00	$65.00	1	70,000	1	0	$65.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	154	RET 1L8'T12, 60W, 1EB, Reflector	fixture	fixture	$72.00	$17.00	$0.00	$89.00	1	70,000	1	0	$89.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	fixture	fixture	$24.50	$3.15	$0.00	$27.65	1	40,000	1	1	$27.65	1.00	1.00	0.50	1.00	1.00	0.50	1	1
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	fixture	fixture	$180.62	$107.00	$0.00	$287.62	1	50,000	1	1	$287.62	1.00	1.00	0.00	1.00	1.00	0.00	1	1
1	165	Base Incandescent Flood, 75W	fixture	fixture	$1.70	$4.10	$0.00	$5.80	1	2,000	0	0	$5.80	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	166	CFL Screw-in, Modular 18W	fixture	fixture	$22.00	$5.00	($8.41)	$27.00	1	20,000	1	0	$18.59	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	175	Base Incandescent Flood, 150W PAR	fixture	fixture	$2.90	$5.00	$0.00	$7.90	1	2,000	0	0	$7.90	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	176	Halogen PAR Flood, 90W	fixture	fixture	$7.00	$5.00	$0.00	$12.00	1	2,000	1	0	$12.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	177	Metal Halide, 50W	fixture	fixture	$227.00	$60.00	$0.00	$287.00	1	24,000	1	0	$287.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	180	Base 4L4'T8, 1EB	fixture	fixture	$0.00	$0.00	$0.00	$0.00	1	70,000	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	181	ROB 4L4' Premium T8, 1EB	fixture	fixture	$7.00	$0.00	$0.00	$7.00	1	70,000	1	1	$7.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	fixture	fixture	$24.50	$3.15	$0.00	$27.65	1	40,000	1	1	$27.65	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	183	Lighting Control Tune-up	sqft	sqft		$0.01		$0.01	1	6	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	185	Base 2L4'T8, 1EB	fixture	fixture	$0.00	$0.00	$0.00	$0.00	1	70,000	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	186	ROB 2L4' Premium T8, 1EB	fixture	fixture	$5.00	$0.00	$0.00	$5.00	1	70,000	1	1	$5.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	fixture	fixture	$12.25	$1.58	$0.00	$13.83	1	40,000	1	1	$13.83	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	188	Lighting Control Tune-up	sqft	sqft		$0.01		$0.01	1	6	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	fixture	fixture	$14.00	$9.00	$0.00	$23.00	1	45,000	0	0	$23.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2
1	211	RET 2L4'T8, 1EB	fixture	fixture	$20.00	$9.40	$0.00	$29.40	1	70,000	1	0	$29.40	1.00	1.00	1.00	1.00	1.00	1.00	2	2
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	fixture	fixture	$51.00	$57.00	$0.00	$108.00	1	45,000	1	1	$108.00	0.00	1.00	1.00	1.00	1.00	1.00	2	1
1	220	Base Mercury Vapor 400W Lamp	fixture	fixture			$0.00	$0.00	1	24,000	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	2	2
1	221	High Pressure Sodium 250W Lamp	fixture	fixture	$89.00	$60.00	$0.00	$149.00	1	24,000	1	1	$149.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	fixture	fixture	$51.00	$57.00	$0.00	$108.00	1	24,000	1	1	$108.00	0.00	1.00	1.00	1.00	1.00	1.00	2	1
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	$/ton	$/ton	$241.14		$0.00	$241.14	1	20	0	0	$241.14	1.00	1.00	1.00	1.00	1.00	1.00	3	2
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	$/ton	$/ton	$262.28		$0.00	$262.28	1	20	0	0	$262.28	1.00	1.00	1.00	1.00	1.00	1.00	3	2
1	302	Window Film (Standard)	$/sf-window	$/sf-window	$3.07		$0.00	$3.07	1	10	1	1	$3.07	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	303	EMS - Chiller	$/ton	$/ton	$60.00		$0.00	$60.00	1	10	1	1	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	304	Cool Roof - Chiller	$/sf-roof	$/sf-roof	$0.21		$0.00	$0.21	1	10	1	1	$0.21	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	305	Chiller Tune-up/Diagnostics	$/ton	$/ton		$16.67	$20.91	$16.67	1	10	1	1	$37.58	1.00	0.50	0.00	1.00	0.00	0.00	3	1
1	306	Cooling Circ. Pumps - VSD	$/ton	$/ton	$65.04		$0.00	$65.04	1	15	1	1	$65.04	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	307	EMS Optimization	sqft	sqft	$0.00	$0.01		$0.01	1	5	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	310	Base DX Packaged System, EER=10.3, 10 tons	$/ton	$/ton	$672.40		$0.00	$672.40	1	15	0	0	$672.40	1.00	1.00	1.00	1.00	1.00	1.00	3	2
1	311	DX Tune-up/ Advanced Diagnostics	$/ton	$/ton		$65.04	$0.00	$65.04	1	3	1	1	$65.04	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	312	DX Packaged System, EER=10.9, 10 tons	$/ton	$/ton	$724.00		$0.00	$724.00	1	15	0	0	$724.00	1.00	1.00	1.00	1.00	1.00	1.00	3	2
1	313	Window Film (Standard)	$/sf-window	$/sf-window	$3.07		$0.00	$3.07	1	10	1	1	$3.07	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	314	Evaporative Pre-Cooler	$/ton	$/ton	$133.33	$160.00	$0.00	$293.33	1	10	1	1	$293.33	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	315	Programmable Thermostat - DX	$/ton	$/ton	$5.50	$15.00	$0.00	$20.50	1	10	1	1	$20.50	0.25	1.00	1.00	1.00	1.00	1.00	3	1
1	316	Cool Roof - DX	$/sf-roof	$/sf-roof	$0.21		$0.00	$0.21	1	10	1	1	$0.21	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	317	Optimize Controls	sqft	sqft		$0.01		$0.01	1	5	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	$/HP	$/HP	$91.20		$0.00	$91.20	1	15	0	0	$91.20	1.00	1.00	1.00	1.00	1.00	1.00	4	2
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	$/HP	$/HP	$114.60		$0.00	$114.60	1	15	0	0	$114.60	1.00	1.00	1.00	1.00	1.00	1.00	4	2
1	402	Variable Speed Drive Control, 5 HP	$/HP	$/HP	$214.00	$171.00	$0.00	$385.00	1	15	1	1	$385.00	0.25	1.00	1.00	1.00	1.00	1.00	4	1
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	$/HP	$/HP	$72.20		$0.00	$72.20	1	15	0	0	$72.20	1.00	1.00	1.00	1.00	1.00	1.00	4	2
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	$/HP	$/HP	$76.27		$0.00	$76.27	1	15	0	0	$76.27	1.00	1.00	1.00	1.00	1.00	1.00	4	2
1	412	Variable Speed Drive Control, 15 HP	$/HP	$/HP	$129.00	$102.00	$0.00	$231.00	1	15	1	1	$231.00	0.25	1.00	1.00	1.00	1.00	1.00	4	1
1	413	Air Handler Optimization, 15 HP	sqft	sqft	$0.00	$0.05	$0.00	$0.05	1	5	1	1	$0.05	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	$/HP	$/HP	$60.08		$0.00	$60.08	1	15	0	0	$60.08	1.00	1.00	1.00	1.00	1.00	1.00	4	2
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	$/HP	$/HP	$75.58		$0.00	$75.58	1	15	0	0	$75.58	1.00	1.00	1.00	1.00	1.00	1.00	4	2
1	422	Variable Speed Drive Control, 40 HP	$/HP	$/HP	$120.00	$37.00	$0.00	$157.00	1	15	1	1	$157.00	0.25	1.00	1.00	1.00	1.00	1.00	4	1

MEASURE COSTS

Segment	Measure #	Measure Description	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Cost Units per Savings Unit	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SP	Relative Energy Reduction Factors SPP	SOP	WP	WPP	WOP	End Use	Implementa Type 1=1 time 2=ROB
1	423	Air Handler Optimization, 40 HP	sqft	sqft	$0.00	$0.05	$0.00	$0.05	1	5	1	1	$0.05	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	500	Base Refrigeration System	10,000 sqft stor	40,000 sqft stor	$0.00	$0.00	$0.00	$0.00	1	10	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
1	501	*High-efficiency fan motors*	*10,000 sqft stor*	*40,000 sqft stor*	*$46,429.20*	*$0.00*	*$0.00*	*$46,429.20*	*1*	*16*	*1*	*1*	*$46,429.20*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*5*	*1*
1	502	Strip curtains for walk-ins	10,000 sqft stor	40,000 sqft stor	$1,995.00	$0.00	$0.00	$1,995.00	1	4	1	1	$1,995.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	503	Night covers for display cases	linear ft. display	linear ft. display	$9.25	$0.00	$0.00	$9.25	1	4.8	1	1	$9.25	0.00	1.00	1.00	0.00	1.00	1.00	5	1
1	504	Evaporator fan controller for MT walk-ins	controller	controller	$300.00	$0.00	$0.00	$300.00	1	5	1	1	$300.00	0.00	1.00	1.00	0.00	1.00	1.00	5	1
1	505	Efficient compressor motor	10,000 sqft stor	40,000 sqft stor	$3,510.00	$0.00	$0.00	$3,510.00	1	10	1	1	$3,510.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
1	506	Compressor VSD retrofit	10,000 sqft stor	40,000 sqft stor	$16,200.00	$0.00	$0.00	$16,200.00	1	10	1	1	$16,200.00	0.50	1.00	1.00	0.50	1.00	1.00	5	1
1	507	Floating head pressure controls	10,000 sqft stor	40,000 sqft stor	$4,995.00	$0.00	$0.00	$4,995.00	1	14	1	1	$4,995.00	0.00	1.00	1.00	0.00	1.00	1.00	5	1
1	508	Refrigeration Commissioning	Ton of Load	Ton of Load	$113.00	$0.00	$0.00	$113.00	1	3	1	1	$113.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	509	Demand Hot Gas Defrost	HP	HP	$25.00	$0.00	$0.00	$25.00	1	10	1	1	$25.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	510	Demand Defrost Electric	HP	HP	$25.00	$0.00	$0.00	$25.00	1	10	1	1	$25.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	511	Anti-sweat (humidistat) controls	10,000 sqft stor	40,000 sqft stor	$6,450.40	$0.00	$0.00	$6,450.40	1	12	1	1	$6,450.40	0.50	1.00	1.00	1.00	1.00	1.00	5	1
1	600	Base Heating	sqft	sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
1	700	Base Cooking		sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	7	2
1	800	Base Water Heating		sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	8	2
1	900	Base Miscellaneous		sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	9	2
1	910	Base Desktop PC	PC	PC			$0.00	$0.00	1	4	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
1	911	Power Management Enabling	PC	PC		$14.00	$0.00	$14.00	1	4	1	0	$14.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
1	920	Base Display Monitor	Monitor	Monitor	$100.00		$0.00	$100.00	1	4	0	0	$100.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
1	921	Purchase LCD monitor	Monitor	Monitor	$450.00		$0.00	$450.00	1	4	0	0	$450.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
1	922	Power Management Enabling	Monitor	Monitor		$8.00	$0.00	$8.00	1	4	1	1	$8.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
1	923	Network Power Management Enabling	Monitor	Monitor		$4.00	$0.00	$4.00	1	4	1	1	$4.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
1	924	External hardware control	Monitor	Monitor	$62.00	$33.00	$0.00	$95.00	1	4	1	1	$95.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
1	930	Base Copier	Copier	Copier				$0.00	1	4	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
1	931	Power Management Enabling	Copier	Copier		$45.00	$0.00	$45.00	1	4	1	1	$45.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
1	940	Base Laser Printer	Printer	Printer			$0.00	$0.00	1	4	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
1	941	External hardware control	Printer	Printer	$140.00	$33.00	$0.00	$173.00	1	4	1	1	$173.00	0.50	1.00	1.75	0.50	1.00	1.75	6	1
1	942	Nighttime shutdown	Printer	Printer			$556.67	$0.00	1	4	1	1	$556.67	0.50	1.00	1.75	0.50	1.00	1.75	6	1
2	100	Base Lighting	$/ft2	$/ft2				$0.00	1	20	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
2	101	10% More Efficient Design (Lighting)	$/ft2	$/ft2	$0.10			$0.10	1	20	1	1	$0.10	1.00	1.00	1.00	1.00	1.00	1.00	1	2
2	102	20% More Efficient Design (Lighting)	$/ft2	$/ft2	$0.24			$0.24	1	20	1	1	$0.24	1.00	1.00	1.00	1.00	1.00	1.00	1	2
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	$/ton	$/ton	$241.14		$0.00	$241.14	1	20	0	0	$241.14	1.00	1.00	1.00	1.00	1.00	1.00	3	2
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	$/ton	$/ton	$262.28		$0.00	$262.28	1	20	0	0	$262.28	1.00	1.00	1.00	1.00	1.00	1.00	3	2
2	302	Window Film (Standard)	$/sf-window	$/sf-window	$3.07		$0.00	$3.07	1	10	1	1	$3.07	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	303	EMS - Chiller	$/ton	$/ton	$60.00		$0.00	$60.00	1	10	1	1	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	304	Cool Roof - Chiller	$/sf-roof	$/sf-roof	$0.21		$0.00	$0.21	1	10	1	1	$0.21	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	305	Chiller Tune-up/Diagnostics	$/ton	$/ton		$16.67	$20.91	$16.67	1	10	1	1	$37.58	1.00	0.50	0.00	1.00	0.00	0.00	3	1
2	306	Cooling Circ. Pumps - VSD	$/ton	$/ton	$65.04		$0.00	$65.04	1	15	1	1	$65.04	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	307	EMS Optimization	sqft	sqft	$0.00	$0.01		$0.01	1	5	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	310	Base DX Packaged System, EER=10.3, 10 tons	$/ton	$/ton	$672.40		$0.00	$672.40	1	15	0	0	$672.40	1.00	1.00	1.00	1.00	1.00	1.00	3	2
2	311	DX Tune-up/ Advanced Diagnostics	$/ton	$/ton		$65.04	$0.00	$65.04	1	3	1	1	$65.04	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	312	DX Packaged System, EER=10.9, 10 tons	$/ton	$/ton	$724.00		$0.00	$724.00	1	15	0	0	$724.00	1.00	1.00	1.00	1.00	1.00	1.00	3	2
2	313	Window Film (Standard)	$/sf-window	$/sf-window	$3.07		$0.00	$3.07	1	10	1	1	$3.07	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	314	Evaporative Pre-Cooler	$/ton	$/ton	$133.33	$160.00	$0.00	$293.33	1	10	1	1	$293.33	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	315	Programmable Thermostat - DX	$/ton	$/ton	$5.50	$15.00	$0.00	$20.50	1	10	1	1	$20.50	0.25	1.00	1.00	1.00	1.00	1.00	3	1
2	316	Cool Roof - DX	$/sf-roof	$/sf-roof	$0.21		$0.00	$0.21	1	10	1	1	$0.21	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	317	Optimize Controls	sqft	sqft		$0.01		$0.01	1	5	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	3	1
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	$/HP	$/HP	$91.20		$0.00	$91.20	1	15	0	0	$91.20	1.00	1.00	1.00	1.00	1.00	1.00	4	2
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	$/HP	$/HP	$114.60		$0.00	$114.60	1	15	0	0	$114.60	1.00	1.00	1.00	1.00	1.00	1.00	4	2
2	402	Variable Speed Drive Control, 5 HP	$/HP	$/HP	$214.00	$171.00	$0.00	$385.00	1	15	1	1	$385.00	0.25	1.00	1.00	1.00	1.00	1.00	4	1
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	$/HP	$/HP	$72.20		$0.00	$72.20	1	15	0	0	$72.20	1.00	1.00	1.00	1.00	1.00	1.00	4	2
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	$/HP	$/HP	$76.27		$0.00	$76.27	1	15	0	0	$76.27	1.00	1.00	1.00	1.00	1.00	1.00	4	2
2	412	Variable Speed Drive Control, 15 HP	$/HP	$/HP	$129.00	$102.00	$0.00	$231.00	1	15	1	1	$231.00	0.25	1.00	1.00	1.00	1.00	1.00	4	1
2	413	Air Handler Optimization, 15 HP	sqft	sqft	$0.00	$0.05	$0.00	$0.05	1	5	1	1	$0.05	1.00	1.00	1.00	1.00	1.00	1.00	4	1
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	$/HP	$/HP	$60.08		$0.00	$60.08	1	15	0	0	$60.08	1.00	1.00	1.00	1.00	1.00	1.00	4	2
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	$/HP	$/HP	$75.58		$0.00	$75.58	1	15	0	0	$75.58	1.00	1.00	1.00	1.00	1.00	1.00	4	2
2	422	Variable Speed Drive Control, 40 HP	$/HP	$/HP	$120.00	$37.00	$0.00	$157.00	1	15	1	1	$157.00	0.25	1.00	1.00	1.00	1.00	1.00	4	1
2	423	Air Handler Optimization, 40 HP	sqft	sqft	$0.00	$0.05	$0.00	$0.05	1	5	1	1	$0.05	1.00	1.00	1.00	1.00	1.00	1.00	4	1
2	500	Base Refrigeration System	10,000 sqft stor	40,000 sqft stor	$0.00	$0.00	$0.00	$0.00	1	10	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
2	501	High-efficiency fan motors	10,000 sqft stor	40,000 sqft stor	$46,429.20	$0.00	$0.00	$46,429.20	1	16	1	1	$46,429.20	1.00	1.00	1.00	1.00	1.00	1.00	5	1
2	502	Strip curtains for walk-ins	10,000 sqft stor	40,000 sqft stor	$1,995.00	$0.00	$0.00	$1,995.00	1	4	1	1	$1,995.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
2	503	Night covers for display cases	linear ft. display	linear ft. display	$9.25	$0.00	$0.00	$9.25	1	4.8	1	1	$9.25	0.00	1.00	1.00	0.00	1.00	1.00	5	1
2	504	Evaporator fan controller for MT walk-ins	controller	controller	$300.00	$0.00	$0.00	$300.00	1	5	1	1	$300.00	0.00	1.00	1.00	0.00	1.00	1.00	5	1
2	505	Efficient compressor motor	10,000 sqft stor	40,000 sqft stor	$3,510.00	$0.00	$0.00	$3,510.00	1	10	1	1	$3,510.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
2	506	Compressor VSD retrofit	10,000 sqft stor	40,000 sqft stor	$16,200.00	$0.00	$0.00	$16,200.00	1	10	1	1	$16,200.00	0.50	1.00	1.00	0.50	1.00	1.00	5	1
2	507	Floating head pressure controls	10,000 sqft stor	40,000 sqft stor	$4,995.00	$0.00	$0.00	$4,995.00	1	14	1	1	$4,995.00	0.00	1.00	1.00	0.00	1.00	1.00	5	1
2	508	Refrigeration Commissioning	Ton of Load	Ton of Load	$113.00	$0.00	$0.00	$113.00	1	3	1	1	$113.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
2	509	Demand Hot Gas Defrost	HP	HP	$25.00	$0.00	$0.00	$25.00	1	10	1	1	$25.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1

MEASURE COSTS

Segment	Measure #	Measure Description	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Cost Units per Savings Unit	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SP	Relative Energy Reduction Factors SPP	SOP	WP	WPP	WOP	End Use	Implementa Type 1=1 time 2=ROB
2	510	Demand Defrost Electric	HP	HP	$25.00	$0.00	$0.00	$25.00	1	10	1	1	$25.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
2	511	Anti-sweat (humidistat) controls	10,000 sqft stor	40,000 sqft stor	$6,450.40	$0.00	$0.00	$6,450.40	1	12	1	1	$6,450.40	0.50	1.00	1.00	1.00	1.00	1.00	5	1
2	600	Base Heating	sqft	sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	10	2
2	700	Base Cooking		sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	7	2
2	800	Base Water Heating		sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	8	2
2	900	Base Miscellaneous		sqft	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	9	2
2	910	Base Desktop PC	PC	PC			$0.00	$0.00	1	4	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
2	911	Power Management Enabling	PC	PC		$14.00	$0.00	$14.00	1	4	1	0	$14.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
2	920	Base Display Monitor	Monitor	Monitor	$100.00		$0.00	$100.00	1	4	0	0	$100.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
2	921	Purchase LCD monitor	Monitor	Monitor	$450.00		$0.00	$450.00	1	4	0	0	$450.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
2	922	Power Management Enabling	Monitor	Monitor		$8.00	$0.00	$8.00	1	4	1	1	$8.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
2	923	Network Power Management Enabling	Monitor	Monitor		$4.00	$0.00	$4.00	1	4	1	1	$4.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
2	924	External hardware control	Monitor	Monitor	$62.00	$33.00	$0.00	$95.00	1	4	1	1	$95.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
2	930	Base Copier	Copier	Copier				$0.00	1	4	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
2	931	Power Management Enabling	Copier	Copier		$45.00	$0.00	$45.00	1	4	1	1	$45.00	0.50	1.00	1.20	0.50	1.00	1.20	6	1
2	940	Base Laser Printer	Printer	Printer			$0.00	$0.00	1	4	0	0	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	6	1
2	941	External hardware control	Printer	Printer	$140.00	$33.00	$0.00	$173.00	1	4	1	1	$173.00	0.50	1.00	1.75	0.50	1.00	1.75	6	1
2	942	Nighttime shutdown	Printer	Printer			$556.67	$0.00	1	4	1	1	$556.67	0.50	1.00	1.75	0.50	1.00	1.75	6	1

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	111	ROB 4L4' Premium T8, 1EB	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	112	ROB 2L4' Premium T8, 1EB, Reflector	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	113	RET 4L4' Premium T8, 1EB	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	114	RET 2L4' Premium T8, 1EB, Reflector	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	117	RNV 2L4'T5HO, 1EB	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	118	Lighing Control Tune-up	24.3%	14.2%	6.0%	2.6%	13.0%	13.6%	17.0%	1.2%	10.7%	10.7%
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	131	ROB 2L4' Premium T8, 1EB	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	132	RET 2L4' Premium T8, 1EB	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	136	RNV 1L4'T5HO, 1EB	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	137	Lighing Control Tune-up	18.1%	10.8%	3.7%	5.4%	7.2%	23.0%	38.3%	33.6%	14.8%	14.8%
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	151	ROB 2L8'T12, 60W, 1EB	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	153	RET 2L8'T12, 60W, 1EB	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	154	RET 1L8'T12, 60W, 1EB, Reflector	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	13.4%	36.1%	40.6%	66.0%	33.2%	15.1%	2.6%	3.5%	20.4%	20.4%
1	165	Base Incandescent Flood, 75W	14.6%	32.8%	30.2%	1.2%	4.9%	14.9%	12.4%	46.6%	28.6%	28.6%
1	166	CFL Screw-in, Modular 18W	14.6%	32.8%	30.2%	1.2%	4.9%	14.9%	12.4%	46.6%	28.6%	28.6%
1	175	Base Incandescent Flood, 150W PAR	3.5%	4.6%	10.2%	8.3%	37.9%	4.5%	2.9%	4.9%	16.0%	16.0%
1	176	Halogen PAR Flood, 90W	3.5%	4.6%	10.2%	8.3%	37.9%	4.5%	2.9%	4.9%	16.0%	16.0%
1	177	Metal Halide, 50W	3.5%	4.6%	10.2%	8.3%	37.9%	4.5%	2.9%	4.9%	16.0%	16.0%
1	180	Base 4L4'T8, 1EB	15.1%	0.9%	5.8%	5.3%	2.4%	10.7%	8.4%	0.4%	4.0%	4.0%
1	181	ROB 4L4' Premium T8, 1EB	15.1%	0.9%	5.8%	5.3%	2.4%	10.7%	8.4%	0.4%	4.0%	4.0%
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	15.1%	0.9%	5.8%	5.3%	2.4%	10.7%	8.4%	0.4%	4.0%	4.0%
1	183	Lighing Control Tune-up	15.1%	0.9%	5.8%	5.3%	2.4%	10.7%	8.4%	0.4%	4.0%	4.0%
1	185	Base 2L4'T8, 1EB	10.9%	0.7%	3.5%	11.1%	1.3%	18.1%	18.4%	9.9%	5.4%	5.4%
1	186	ROB 2L4' Premium T8, 1EB	10.9%	0.7%	3.5%	11.1%	1.3%	18.1%	18.4%	9.9%	5.4%	5.4%
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	10.9%	0.7%	3.5%	11.1%	1.3%	18.1%	18.4%	9.9%	5.4%	5.4%
1	188	Lighing Control Tune-up	10.9%	0.7%	3.5%	11.1%	1.3%	18.1%	18.4%	9.9%	5.4%	5.4%
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	8.2%	62.8%	42.6%	16.0%	3.6%	4.0%	8.6%	14.2%	0.8%	0.8%
1	211	RET 2L4'T8, 1EB	8.2%	62.8%	42.6%	16.0%	3.6%	4.0%	8.6%	14.2%	0.8%	0.8%
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	8.2%	62.8%	42.6%	16.0%	3.6%	4.0%	8.6%	14.2%	0.8%	0.8%
1	220	Base Mercury Vapor 400W Lamp	91.8%	37.2%	57.4%	84.0%	96.4%	96.0%	91.4%	85.8%	99.2%	99.2%
1	221	High Pressure Sodium 250W Lamp	91.8%	37.2%	57.4%	84.0%	96.4%	96.0%	91.4%	85.8%	99.2%	99.2%
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	91.8%	37.2%	57.4%	84.0%	96.4%	96.0%	91.4%	85.8%	99.2%	99.2%
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	302	Window Film (Standard)	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	303	EMS - Chiller	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	304	Cool Roof - Chiller	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	305	Chiller Tune-up/Diagnostics	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	306	Cooling Circ. Pumps - VSD	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	307	EMS Optimization	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
1	310	Base DX Packaged System, EER=10.3, 10 tons	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	311	DX Tune-up/ Advanced Diagnostics	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	312	DX Packaged System, EER=10.9, 10 tons	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	313	Window Film (Standard)	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	314	Evaporative Pre-Cooler	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	315	Programmable Thermostat - DX	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	316	Cool Roof - DX	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	317	Optimize Controls - DX	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	20.7%	100.0%	57.7%	50.9%	61.7%	64.8%	37.4%	73.4%	64.3%	64.3%
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	20.7%	100.0%	57.7%	50.9%	61.7%	64.8%	37.4%	73.4%	64.3%	64.3%
1	402	Variable Speed Drive Control, 5 HP	20.7%	100.0%	57.7%	50.9%	61.7%	64.8%	37.4%	73.4%	64.3%	64.3%
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
1	412	Variable Speed Drive Control, 15 HP	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
1	413	Air Handler Tune-ups	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
1	422	Variable Speed Drive Control, 40 HP	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
1	423	Air Handler Tune-ups	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
1	500	Base Refrigeration System	89.2%	100.0%	97.2%	100.0%	96.4%	99.4%	98.8%	100.0%	82.9%	82.9%
1	501	High-efficiency fan motors				100.0%						
1	502	Strip curtains for walk-ins				100.0%						
1	503	Night covers for display cases				100.0%						
1	504	Evaporator fan controller for MT walk-ins				100.0%						
1	505	Efficient compressor motor retrofit				100.0%						
1	506	Compressor VSD retrofit				100.0%						
1	507	Floating head pressure controls				100.0%						
1	508	Refrigeration Commissioning				100.0%						
1	509	Demand Hot Gas Defrost				95.9%						
1	510	Demand Defrost Electric				95.9%						
1	511	Anti-sweat (humidistat) controls				100.0%						
1	600	Base Heating	46.5%	46.5%	50.0%	56.5%	33.8%	24.6%	46.0%	22.3%	27.4%	27.4%
1	700	Base Cooking	23.7%	33.2%	26.9%	41.0%	0.7%	26.4%	53.0%	21.9%	10.1%	10.1%
1	800	Base Water Heating	49.6%	26.0%	51.9%	45.8%	47.7%	18.4%	36.2%	6.5%	29.3%	29.3%
1	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	911	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	921	Purchase LCD monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	922	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	923	Network Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	924	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	931	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	941	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	942	Nighttime shutdown	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	100	Base Lighting	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	101	10% More Efficient Design (Lighting)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	102	20% More Efficient Design (Lighting)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	302	Window Film (Standard)	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	303	EMS - Chiller	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	304	Cool Roof - Chiller	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	305	Chiller Tune-up/Diagnostics	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	306	Cooling Circ. Pumps - VSD	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	307	EMS Optimization	31.8%	7.0%	13.6%		1.1%	21.0%	35.8%	28.9%	5.6%	5.6%
2	310	Base DX Packaged System, EER=10.3, 10 tons	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	311	DX Tune-up/ Advanced Diagnostics	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	312	DX Packaged System, EER=10.9, 10 tons	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	313	Window Film (Standard)	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	314	Evaporative Pre-Cooler	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	315	Programmable Thermostat - DX	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	316	Cool Roof - DX	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	317	Optimize Controls - DX	52.7%	90.0%	83.8%	91.8%	71.6%	46.9%	44.0%	50.6%	66.2%	66.2%
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	20.7%	100.0%	57.7%	50.9%	61.7%	64.8%	37.4%	73.4%	64.3%	64.3%
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	20.7%	100.0%	57.7%	50.9%	61.7%	64.8%	37.4%	73.4%	64.3%	64.3%
2	402	Variable Speed Drive Control, 5 HP	20.7%	100.0%	57.7%	50.9%	61.7%	64.8%	37.4%	73.4%	64.3%	64.3%
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
2	412	Variable Speed Drive Control, 15 HP	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
2	413	Air Handler Tune-ups	26.7%		22.9%	49.1%	19.5%	28.5%	36.8%	19.3%	22.4%	22.4%
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
2	422	Variable Speed Drive Control, 40 HP	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
2	423	Air Handler Tune-ups	52.6%		19.4%			6.7%	25.8%	7.3%	5.9%	5.9%
2	500	Base Refrigeration System	89.2%	100.0%	97.2%	100.0%	96.4%	99.4%	98.8%	100.0%	82.9%	82.9%
2	501	High-efficiency fan motors				100.0%						
2	502	Strip curtains for walk-ins				100.0%						
2	503	Night covers for display cases				100.0%						
2	504	Evaporator fan controller for MT walk-ins				100.0%						
2	505	Efficient compressor motor retrofit				100.0%						
2	506	Compressor VSD retrofit				100.0%						
2	507	Floating head pressure controls				100.0%						
2	508	Refrigeration Commissioning				100.0%						
2	509	Demand Hot Gas Defrost				95.9%						
2	510	Demand Defrost Electric				95.9%						
2	511	Anti-sweat (humidistat) controls				100.0%						
2	600	Base Heating	46.5%	46.5%	50.0%	56.5%	33.8%	24.6%	46.0%	22.3%	27.4%	27.4%
2	700	Base Cooking	23.7%	33.2%	26.9%	41.0%	0.7%	26.4%	53.0%	21.9%	10.1%	10.1%
2	800	Base Water Heating	49.6%	26.0%	51.9%	45.8%	47.7%	18.4%	36.2%	6.5%	29.3%	29.3%
2	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	911	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPLICABILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	921	Purchase LCD monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	922	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	923	Network Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	924	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	931	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	941	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	942	Nighttime shutdown	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

BASE TECHNOLOGY EUIs
(kWh/square foot)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	6.75	5.13	3.12	5.08	1.35	4.71	9.03	4.89	2.19	2.19
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	6.75	5.13	3.12	5.08	1.35	4.71	9.03	4.89	2.19	2.19
1	*150*	*Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG*	*6.16*	*5.10*	*2.99*	*4.83*	*1.32*	*4.25*	*8.25*	*4.60*	*2.09*	*2.09*
1	165	Base Incandescent Flood, 75W	10.60	8.76	5.96	17.34	4.62	7.30	16.75	12.01	7.42	7.42
1	175	Base Incandescent Flood, 150W PAR	10.60	8.76	5.96	17.34	4.62	7.30	16.75	12.01	7.42	7.42
1	180	Base 4L4'T8, 1EB	4.90	3.73	2.27	3.69	0.98	3.42	6.57	3.55	1.59	1.59
1	185	Base 2L4'T8, 1EB	4.90	3.73	2.27	3.69	0.98	3.42	6.57	3.55	1.59	1.59
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	1.49	3.93	1.23	1.93	0.20	1.17	0.26	0.35	0.63	1.06
1	220	Base Mercury Vapor 400W Lamp	1.49	3.93	1.23	1.93	0.20	1.17	0.26	0.35	0.63	1.06
1	300	Centrifugal Chiller, 0.58 kW/ton, 500 tons	2.26	5.42	1.64	3.29	0.28	1.65	3.23	2.72	1.87	1.87
1	310	DX Packaged System, EER=10.3, 10 tons	3.92	9.39	2.85	5.70	0.48	2.86	5.60	4.72	3.24	3.24
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	1.87	2.24	0.75	1.37	0.09	0.88	2.12	0.72	1.12	1.12
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	1.73	2.08	0.70	1.27	0.08	0.82	1.97	0.67	1.03	1.03
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	1.71	2.04	0.69	1.25	0.08	0.81	1.93	0.66	1.02	1.02
1	500	Base Refrigeration System	0.13	10.36	0.23	27.29	0.18	0.40	1.16	0.81	0.43	0.43
1	600	Heating	0.53	1.82	1.19	2.07	0.24	0.69	1.53	0.37	1.38	1.38
1	700	Cooking	0.14	3.54	0.25	0.71	0.00	0.13	0.17	0.60	0.77	0.77
1	800	Water Heating	0.27	3.42	0.23	1.19	0.17	0.95	1.45	8.75	0.38	0.38
1	900	Miscellaneous	4.19	4.84	1.06	1.38	2.21	0.81	7.12	2.79	1.53	1.55
1	910	Desktop PC - Base	0.60	0.06	0.04	0.11	0.05	0.03	0.10	0.14	0.02	0.03
1	920	Display Monitor	0.58	0.06	0.04	0.11	0.05	0.03	0.10	0.13	0.02	0.02
1	930	Copier	0.19	0.06	0.03	0.10	0.03	0.03	0.05	0.13	0.05	0.03
1	940	Laser Printer	0.21	0.06	0.04	0.09	0.03	0.02	0.06	0.12	0.01	0.01
2	100	Base Lighting	8.45	10.40	5.42	7.94	2.93	5.55	9.90	9.04	5.53	5.53
2	300	Centrifugal Chiller, 0.58 kW/ton, 500 tons	2.26	5.42	1.64	3.29	0.28	1.65	3.23	2.72	1.87	1.87
2	310	DX Packaged System, EER=10.3, 10 tons	3.92	9.39	2.85	5.70	0.48	2.86	5.60	4.72	3.24	3.24
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	1.87	2.24	0.75	1.37	0.09	0.88	2.12	0.72	1.12	1.12
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	1.73	2.08	0.70	1.27	0.08	0.82	1.97	0.67	1.03	1.03
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	1.71	2.04	0.69	1.25	0.08	0.81	1.93	0.66	1.02	1.02
2	500	Base Refrigeration System	0.13	10.36	0.23	27.29	0.18	0.40	1.16	0.81	0.43	0.43
2	600	Heating	0.53	1.82	1.19	2.07	0.24	0.69	1.53	0.37	1.38	1.38
2	700	Cooking	0.14	3.54	0.25	0.71	0.00	0.13	0.17	0.60	0.77	0.77
2	800	Water Heating	0.27	3.42	0.23	1.19	0.17	0.95	1.45	8.75	0.38	0.38
2	900	Miscellaneous	4.19	4.84	1.06	1.38	2.21	0.81	7.12	2.79	1.53	1.55
2	910	Desktop PC - Base	0.60	0.06	0.04	0.11	0.05	0.03	0.10	0.14	0.02	0.03
2	920	Display Monitor	0.58	0.06	0.04	0.11	0.05	0.03	0.10	0.13	0.02	0.02
2	930	Copier	0.19	0.06	0.03	0.10	0.03	0.03	0.05	0.13	0.05	0.03
2	940	Laser Printer	0.21	0.06	0.04	0.09	0.03	0.02	0.06	0.12	0.01	0.01

ENERGY SAVINGS (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG										
1	111	ROB 4L4' Premium T8, 1EB	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%
1	112	ROB 2L4' Premium T8, 1EB, Reflector	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%
1	113	RET 4L4' Premium T8, 1EB	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%
1	114	RET 2L4' Premium T8, 1EB, Reflector	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%	65.7%
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	30.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	117	RNV 2L4'T5HO, 1EB	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%
1	118	Lighing Control Tune-up	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG										
1	131	ROB 2L4' Premium T8, 1EB	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%
1	132	RET 2L4' Premium T8, 1EB	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%	31.4%
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	64.3%	64.3%	64.3%	64.3%	64.3%	64.3%	64.3%	64.3%	64.3%	64.3%
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	30.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	136	RNV 1L4'T5HO, 1EB	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%
1	137	Lighing Control Tune-up	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG										
1	151	ROB 2L8'T12, 60W, 1EB	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%
1	153	RET 2L8'T12, 60W, 1EB	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%	21.6%
1	154	RET 1L8'T12, 60W, 1EB, Reflector	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%	60.4%
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	30.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	165	Base Incandescent Flood, 75W										
1	166	CFL Screw-in, Modular 18W	72.0%	72.0%	72.0%	72.0%	72.0%	72.0%	72.0%	72.0%	72.0%	72.0%
1	175	Base Incandescent Flood, 150W PAR										
1	176	Halogen PAR Flood, 90W	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
1	177	Metal Halide, 50W	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%	58.0%
1	180	Base 4L4'T8, 1EB										
1	181	ROB 4L4' Premium T8, 1EB	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	30.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	183	Lighing Control Tune-up	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
1	185	Base 2L4'T8, 1EB										
1	186	ROB 2L4' Premium T8, 1EB	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%	17.2%
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	30.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	188	Lighing Control Tune-up	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG										
1	211	RET 2L4'T8, 1EB	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%
1	220	Base Mercury Vapor 400W Lamp										
1	221	High Pressure Sodium 250W Lamp	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons										
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%
1	302	Window Film (Standard)	9.3%	10.3%	2.5%	9.4%	12.4%	3.9%	1.2%	7.0%	2.5%	2.5%
1	303	EMS - Chiller	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
1	304	Cool Roof - Chiller	1.8%	6.9%	13.0%	15.5%	18.4%	3.7%	0.6%	0.4%	13.0%	13.0%
1	305	Chiller Tune-up/Diagnostics	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%

ENERGY SAVINGS (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	306	Cooling Circ. Pumps - VSD	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
1	307	EMS Optimization	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
1	310	Base DX Packaged System, EER=10.3, 10 tons										
1	311	DX Tune-up/ Advanced Diagnostics	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
1	312	DX Packaged System, EER=10.9, 10 tons	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
1	313	Window Film (Standard)	9.3%	10.3%	2.5%	9.4%	12.4%	3.9%	1.2%	7.0%	2.5%	2.5%
1	314	Evaporative Pre-Cooler	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
1	315	Programmable Thermostat - DX	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
1	316	Cool Roof - DX	1.8%	6.9%	13.0%	15.5%	18.4%	3.7%	0.6%	0.4%	13.0%	13.0%
1	317	Optimize Controls - DX	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%										
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
1	402	Variable Speed Drive Control, 5 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%										
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
1	412	Variable Speed Drive Control, 15 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
1	413	Air Handler Tune-ups	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%										
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
1	422	Variable Speed Drive Control, 40 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
1	423	Air Handler Tune-ups	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	500	Base Refrigeration System										
1	501	High-efficiency fan motors				12.0%						
1	502	Strip curtains for walk-ins				4.0%						
1	503	Night covers for display cases				5.8%						
1	504	Evaporator fan controller for MT walk-ins				0.6%						
1	505	Efficient compressor motor retrofit				6.8%						
1	506	Compressor VSD retrofit				6.2%						
1	507	Floating head pressure controls				6.8%						
1	508	Refrigeration Commissioning				5.0%						
1	509	Demand Hot Gas Defrost				2.5%						
1	510	Demand Defrost Electric				7.8%						
1	511	Anti-sweat (humidistat) controls				5.0%						
1	600	Base Heating										
1	700	Base Cooking										
1	800	Base Water Heating										
1	900	Base Miscellaneous										
1	910	Base Desktop PC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	911	Power Management Enabling	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%
1	920	Base Display Monitor										
1	921	Purchase LCD monitor	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	922	Power Management Enabling	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%
1	923	Network Power Management Enabling	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%
1	924	External hardware control	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%
1	930	Base Copier	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	931	Power Management Enabling	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
1	940	Base Laser Printer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	941	External hardware control	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%
1	942	Nighttime shutdown	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%

ENERGY SAVINGS
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	100	Base Lighting										
2	101	10% More Efficient Design (Lighting)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
2	102	20% More Efficient Design (Lighting)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons										
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%	12.1%
2	302	Window Film (Standard)	9.3%	10.3%	2.5%	9.4%	12.4%	3.9%	1.2%	7.0%	2.5%	2.5%
2	303	EMS - Chiller	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
2	304	Cool Roof - Chiller	1.8%	6.9%	13.0%	15.5%	18.4%	3.7%	0.6%	0.4%	13.0%	13.0%
2	305	Chiller Tune-up/Diagnostics	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
2	306	Cooling Circ. Pumps - VSD	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
2	307	EMS Optimization	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
2	310	Base DX Packaged System, EER=10.3, 10 tons										
2	311	DX Tune-up/ Advanced Diagnostics	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
2	312	DX Packaged System, EER=10.9, 10 tons	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%
2	313	Window Film (Standard)	9.3%	10.3%	2.5%	9.4%	12.4%	3.9%	1.2%	7.0%	2.5%	2.5%
2	314	Evaporative Pre-Cooler	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
2	315	Programmable Thermostat - DX	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
2	316	Cool Roof - DX	1.8%	6.9%	13.0%	15.5%	18.4%	3.7%	0.6%	0.4%	13.0%	13.0%
2	317	Optimize Controls - DX	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%										
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
2	402	Variable Speed Drive Control, 5 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%										
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
2	412	Variable Speed Drive Control, 15 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
2	413	Air Handler Tune-ups	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%										
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%	1.2%
2	422	Variable Speed Drive Control, 40 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
2	423	Air Handler Tune-ups	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
2	500	Base Refrigeration System										
2	501	High-efficiency fan motors				12.0%						
2	502	Strip curtains for walk-ins				4.0%						
2	503	Night covers for display cases				5.8%						
2	504	Evaporator fan controller for MT walk-ins				0.6%						
2	505	Efficient compressor motor retrofit				6.8%						
2	506	Compressor VSD retrofit				6.2%						
2	507	Floating head pressure controls				6.8%						
2	508	Refrigeration Commissioning				5.0%						
2	509	Demand Hot Gas Defrost				2.5%						
2	510	Demand Defrost Electric				7.8%						
2	511	Anti-sweat (humidistat) controls				5.0%						
2	600	Base Heating										
2	700	Base Cooking										
2	800	Base Water Heating										
2	900	Base Miscellaneous										
2	910	Base Desktop PC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	911	Power Management Enabling	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%	41.0%
2	920	Base Display Monitor										

ENERGY SAVINGS
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	921	Purchase LCD monitor	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	922	Power Management Enabling	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%
2	923	Network Power Management Enabling	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%
2	924	External hardware control	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%	73.0%
2	930	Base Copier	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	931	Power Management Enabling	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
2	940	Base Laser Printer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	941	External hardware control	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%
2	942	Nighttime shutdown	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	111	ROB 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	112	ROB 2L4' Premium T8, 1EB, Reflector	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	113	RET 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	114	RET 2L4' Premium T8, 1EB, Reflector	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	117	RNV 2L4'T5HO, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	118	Lighing Control Tune-up	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	131	ROB 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	132	RET 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	136	RNV 1L4'T5HO, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	137	Lighing Control Tune-up	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	151	ROB 2L8'T12, 60W, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	153	RET 2L8'T12, 60W, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	154	RET 1L8'T12, 60W, 1EB, Reflector	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	165	Base Incandescent Flood, 75W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	166	CFL Screw-in, Modular 18W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	175	Base Incandescent Flood, 150W PAR	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	176	Halogen PAR Flood, 90W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	177	Metal Halide, 50W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	180	Base 4L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	181	ROB 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	183	Lighing Control Tune-up	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	185	Base 2L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	186	ROB 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	188	Lighing Control Tune-up	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	211	RET 2L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	220	Base Mercury Vapor 400W Lamp	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	221	High Pressure Sodium 250W Lamp	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%
1	302	Window Film (Standard)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	303	EMS - Chiller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	304	Cool Roof - Chiller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	305	Chiller Tune-up/Diagnostics	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	306	Cooling Circ. Pumps - VSD	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	307	EMS Optimization	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	310	Base DX Packaged System, EER=10.3, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	311	DX Tune-up/ Advanced Diagnostics	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	312	DX Packaged System, EER=10.9, 10 tons	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%
1	313	Window Film (Standard)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	314	Evaporative Pre-Cooler	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	315	Programmable Thermostat - DX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	316	Cool Roof - DX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	317	Optimize Controls - DX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	402	Variable Speed Drive Control, 5 HP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	412	Variable Speed Drive Control, 15 HP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	413	Air Handler Tune-ups	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	422	Variable Speed Drive Control, 40 HP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	423	Air Handler Tune-ups	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	500	Base Refrigeration System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	501	High-efficiency fan motors				100.0%						
1	502	Strip curtains for walk-ins				100.0%						
1	503	Night covers for display cases				100.0%						
1	504	Evaporator fan controller for MT walk-ins				100.0%						
1	505	Efficient compressor motor retrofit				100.0%						
1	506	Compressor VSD retrofit				100.0%						
1	507	Floating head pressure controls				100.0%						
1	508	Refrigeration Commissioning				100.0%						
1	509	Demand Hot Gas Defrost				100.0%						
1	510	Demand Defrost Electric				100.0%						
1	511	Anti-sweat (humidistat) controls				100.0%						
1	600	Base Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	700	Base Cooking	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	800	Base Water Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	911	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	921	Purchase LCD monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	922	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	923	Network Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	924	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	931	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	941	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	942	Nighttime shutdown	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	100	Base Lighting	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%
2	101	10% More Efficient Design (Lighting)	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%
2	102	20% More Efficient Design (Lighting)	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%	84.6%
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%	89.2%
2	302	Window Film (Standard)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	303	EMS - Chiller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	304	Cool Roof - Chiller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	305	Chiller Tune-up/Diagnostics	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	306	Cooling Circ. Pumps - VSD	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	307	EMS Optimization	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	310	Base DX Packaged System, EER=10.3, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	311	DX Tune-up/ Advanced Diagnostics	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	312	DX Packaged System, EER=10.9, 10 tons	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%	86.4%
2	313	Window Film (Standard)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	314	Evaporative Pre-Cooler	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	315	Programmable Thermostat - DX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	316	Cool Roof - DX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	317	Optimize Controls - DX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	402	Variable Speed Drive Control, 5 HP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	412	Variable Speed Drive Control, 15 HP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	413	Air Handler Tune-ups	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	422	Variable Speed Drive Control, 40 HP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	423	Air Handler Tune-ups	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	500	Base Refrigeration System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	501	High-efficiency fan motors				100.0%						
2	502	Strip curtains for walk-ins				100.0%						
2	503	Night covers for display cases				100.0%						
2	504	Evaporator fan controller for MT walk-ins				100.0%						
2	505	Efficient compressor motor retrofit				100.0%						
2	506	Compressor VSD retrofit				100.0%						
2	507	Floating head pressure controls				100.0%						
2	508	Refrigeration Commissioning				100.0%						
2	509	Demand Hot Gas Defrost				100.0%						
2	510	Demand Defrost Electric				100.0%						
2	511	Anti-sweat (humidistat) controls				100.0%						
2	600	Base Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	700	Base Cooking	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	800	Base Water Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	911	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Standards Adjustment Factor (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	921	Purchase LCD monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	922	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	923	Network Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	924	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	931	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	941	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	942	Nighttime shutdown	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

FEASIBILITY FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	111	ROB 4L4' Premium T8, 1EB	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
1	112	ROB 2L4' Premium T8, 1EB, Reflector	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	113	RET 4L4' Premium T8, 1EB	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
1	114	RET 2L4' Premium T8, 1EB, Reflector	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	40.0%	10.0%	10.0%	10.0%	20.0%	50.0%	50.0%	20.0%	20.0%	20.0%
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	40.0%	50.0%	12.0%	26.0%	40.0%	30.0%	10.0%	30.0%	30.0%	30.0%
1	117	RNV 2L4'T5HO, 1EB	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
1	118	Lighing Control Tune-up	8.8%					5.0%	6.0%	6.0%		
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	131	ROB 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	132	RET 2L4' Premium T8, 1EB	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	40.0%	10.0%	10.0%	10.0%	20.0%	50.0%	50.0%	20.0%	20.0%	20.0%
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	40.0%	50.0%	12.0%	26.0%	40.0%	30.0%	10.0%	30.0%	30.0%	30.0%
1	136	RNV 1L4'T5HO, 1EB	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
1	137	Lighing Control Tune-up	8.8%					5.0%	6.0%	6.0%		
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	151	ROB 2L8'T12, 60W, 1EB	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	153	RET 2L8'T12, 60W, 1EB	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
1	154	RET 1L8'T12, 60W, 1EB, Reflector	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	40.0%	10.0%	10.0%	10.0%	20.0%	50.0%	50.0%	20.0%	20.0%	20.0%
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	40.0%	50.0%	12.0%	26.0%	40.0%	30.0%	10.0%	30.0%	30.0%	30.0%
1	165	Base Incandescent Flood, 75W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	166	CFL Screw-in, Modular 18W	90.0%	50.0%	50.0%	90.0%	90.0%	90.0%	90.0%	70.0%	90.0%	90.0%
1	175	Base Incandescent Flood, 150W PAR	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	176	Halogen PAR Flood, 90W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	177	Metal Halide, 50W	90.0%	50.0%	50.0%	90.0%	90.0%	90.0%	90.0%	70.0%	90.0%	90.0%
1	180	Base 4L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	181	ROB 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	40.0%	10.0%	10.0%	10.0%	20.0%	50.0%	50.0%	20.0%	20.0%	20.0%
1	183	Lighing Control Tune-up	8.8%					5.0%	6.0%	6.0%		
1	185	Base 2L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	186	ROB 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	40.0%	10.0%	10.0%	10.0%	20.0%	50.0%	50.0%	20.0%	20.0%	20.0%
1	188	Lighing Control Tune-up	8.8%					5.0%	6.0%	6.0%		
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	211	RET 2L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
1	220	Base Mercury Vapor 400W Lamp	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	221	High Pressure Sodium 250W Lamp	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	302	Window Film (Standard)	75.0%	75.0%	50.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	303	EMS - Chiller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	304	Cool Roof - Chiller	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	305	Chiller Tune-up/Diagnostics	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%

FEASIBILITY FACTOR (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	306	Cooling Circ. Pumps - VSD	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	307	EMS Optimization	35.0%					20.0%	24.0%	24.0%		
1	310	Base DX Packaged System, EER=10.3, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	311	DX Tune-up/ Advanced Diagnostics	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	312	DX Packaged System, EER=10.9, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	313	Window Film (Standard)	75.0%	75.0%	50.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	314	Evaporative Pre-Cooler	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
1	315	Programmable Thermostat - DX	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	316	Cool Roof - DX	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	317	Optimize Controls - DX	35.0%					20.0%	24.0%	24.0%		
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	402	Variable Speed Drive Control, 5 HP	23.9%		19.0%		6.0%	30.9%	17.9%	3.7%	10.4%	10.4%
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	412	Variable Speed Drive Control, 15 HP	70.7%		18.6%		55.5%	88.1%	85.7%	6.5%	34.8%	34.8%
1	413	Air Handler Tune-ups	35.0%					20.0%	24.0%	24.0%		
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	422	Variable Speed Drive Control, 40 HP	86.9%	0.0%	68.4%	0.0%	0.0%	90.0%	88.2%	30.4%	55.0%	55.0%
1	423	Air Handler Tune-ups	35.0%					20.0%	24.0%	24.0%		
1	500	Base Refrigeration System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	501	High-efficiency fan motors				100.0%						
1	502	Strip curtains for walk-ins				100.0%						
1	503	Night covers for display cases				50.0%						
1	504	Evaporator fan controller for MT walk-ins				100.0%						
1	505	Efficient compressor motor retrofit				100.0%						
1	506	Compressor VSD retrofit				50.0%						
1	507	Floating head pressure controls				100.0%						
1	508	Refrigeration Commissioning				100.0%						
1	509	Demand Hot Gas Defrost				100.0%						
1	510	Demand Defrost Electric				100.0%						
1	511	Anti-sweat (humidistat) controls				100.0%						
1	600	Base Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	700	Base Cooking	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	800	Base Water Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	911	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	921	Purchase LCD monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	922	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	923	Network Power Management Enabling	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
1	924	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	931	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	941	External hardware control	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
1	942	Nighttime shutdown	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

FEASIBILITY FACTOR (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	100	Base Lighting	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	101	10% More Efficient Design (Lighting)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	102	20% More Efficient Design (Lighting)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	302	Window Film (Standard)	75.0%	75.0%	50.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
2	303	EMS - Chiller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	304	Cool Roof - Chiller	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	305	Chiller Tune-up/Diagnostics	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
2	306	Cooling Circ. Pumps - VSD	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
2	307	EMS Optimization	35.0%					20.0%	24.0%	24.0%		
2	310	Base DX Packaged System, EER=10.3, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	311	DX Tune-up/ Advanced Diagnostics	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
2	312	DX Packaged System, EER=10.9, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	313	Window Film (Standard)	75.0%	75.0%	50.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
2	314	Evaporative Pre-Cooler	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
2	315	Programmable Thermostat - DX	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
2	316	Cool Roof - DX	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	317	Optimize Controls - DX	35.0%					20.0%	24.0%	24.0%		
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	402	Variable Speed Drive Control, 5 HP	23.9%		19.0%		6.0%	30.9%	17.9%	3.7%	10.4%	10.4%
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	412	Variable Speed Drive Control, 15 HP	70.7%		18.6%		55.5%	88.1%	85.7%	6.5%	34.8%	34.8%
2	413	Air Handler Tune-ups	35.0%					20.0%	24.0%	24.0%		
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	422	Variable Speed Drive Control, 40 HP	86.9%	0.0%	68.4%	0.0%	0.0%	90.0%	88.2%	30.4%	55.0%	55.0%
2	423	Air Handler Tune-ups	35.0%					20.0%	24.0%	24.0%		
2	500	Base Refrigeration System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	501	High-efficiency fan motors				100.0%						
2	502	Strip curtains for walk-ins				100.0%						
2	503	Night covers for display cases				50.0%						
2	504	Evaporator fan controller for MT walk-ins				100.0%						
2	505	Efficient compressor motor retrofit				100.0%						
2	506	Compressor VSD retrofit				50.0%						
2	507	Floating head pressure controls				100.0%						
2	508	Refrigeration Commissioning				100.0%						
2	509	Demand Hot Gas Defrost				100.0%						
2	510	Demand Defrost Electric				100.0%						
2	511	Anti-sweat (humidistat) controls				100.0%						
2	600	Base Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	700	Base Cooking	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	800	Base Water Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	911	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

FEASIBILITY FACTOR (percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	921	Purchase LCD monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	922	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	923	Network Power Management Enabling	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
2	924	External hardware control	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	931	Power Management Enabling	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	941	External hardware control	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
2	942	Nighttime shutdown	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	*Office* Building Type 1	*Restaurant* Building Type 2	*Retail* Building Type 3	*Food Store* Building Type 4	*Warehouse* Building Type 5	*Educ* Building Type 6	*Health* Building Type 7	*Lodging* Building Type 8	*Military* Building Type 9	*Miscellaneous* Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	111	ROB 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	112	ROB 2L4' Premium T8, 1EB, Reflector	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	113	RET 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	114	RET 2L4' Premium T8, 1EB, Reflector	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	86.3%	100.0%	100.0%	100.0%	97.5%	91.8%	100.0%	100.0%	99.8%	99.8%
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	96.4%	100.0%	100.0%	100.0%	100.0%	100.0%
1	117	RNV 2L4'T5HO, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	118	Lighing Control Tune-up	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	131	ROB 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	132	RET 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	86.7%	100.0%	100.0%	100.0%	97.6%	92.0%	100.0%	100.0%	99.8%	99.8%
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	96.4%	100.0%	100.0%	100.0%	100.0%	100.0%
1	136	RNV 1L4'T5HO, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	137	Lighing Control Tune-up	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	151	ROB 2L8'T12, 60W, 1EB	93.3%	100.0%	67.0%	52.5%	57.1%	43.2%	100.0%	100.0%	90.8%	90.8%
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	93.3%	100.0%	67.0%	52.5%	57.1%	43.2%	100.0%	100.0%	90.8%	90.8%
1	153	RET 2L8'T12, 60W, 1EB	93.3%	100.0%	67.0%	52.5%	57.1%	43.2%	100.0%	100.0%	90.8%	90.8%
1	154	RET 1L8'T12, 60W, 1EB, Reflector	93.3%	100.0%	67.0%	52.5%	57.1%	43.2%	100.0%	100.0%	90.8%	90.8%
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	86.8%	100.0%	100.0%	100.0%	97.6%	92.1%	100.0%	100.0%	99.8%	99.8%
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	100.0%	100.0%	100.0%	100.0%	96.4%	100.0%	100.0%	100.0%	100.0%	100.0%
1	165	Base Incandescent Flood, 75W	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	166	CFL Screw-in, Modular 18W	20.0%	20.0%	27.6%	72.0%	69.1%	20.0%	28.6%	44.7%	70.8%	70.8%
1	175	Base Incandescent Flood, 150W PAR	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	176	Halogen PAR Flood, 90W	15.4%	29.8%	24.3%	20.0%	98.2%	60.2%	100.0%	93.2%	89.7%	89.7%
1	177	Metal Halide, 50W	15.4%	29.8%	24.3%	20.0%	98.2%	60.2%	100.0%	93.2%	89.7%	89.7%
1	180	Base 4L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	181	ROB 4L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	86.3%	100.0%	100.0%	100.0%	97.5%	91.8%	100.0%	100.0%	99.8%	99.8%
1	183	Lighing Control Tune-up	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	185	Base 2L4'T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	186	ROB 2L4' Premium T8, 1EB	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	86.7%	100.0%	100.0%	100.0%	97.6%	92.0%	100.0%	100.0%	99.8%	99.8%
1	188	Lighing Control Tune-up	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	211	RET 2L4'T8, 1EB	59.0%	99.1%	89.8%	90.9%	98.0%	66.0%	17.9%	100.0%	98.5%	98.5%
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	15.3%	51.7%	27.3%	22.7%	13.1%	17.2%	22.8%	3.1%	30.4%	30.4%
1	220	Base Mercury Vapor 400W Lamp	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	221	High Pressure Sodium 250W Lamp	15.0%	25.5%	21.9%	16.2%	10.1%	27.4%	11.5%	25.2%	19.4%	19.4%
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	15.3%	51.7%	27.3%	22.7%	13.1%	17.2%	22.8%	3.1%	30.4%	30.4%
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	302	Window Film (Standard)	24.7%	30.7%	34.3%	100.0%	76.3%	23.8%	2.5%	71.2%	63.3%	63.3%
1	303	EMS - Chiller	54.1%	90.5%	24.5%	100.0%	72.3%	38.7%	83.9%	91.4%	50.1%	50.1%
1	304	Cool Roof - Chiller	34.2%	77.9%	34.4%	100.0%	83.1%	82.2%	69.6%	69.0%	61.6%	61.6%
1	305	Chiller Tune-up/Diagnostics	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	306	Cooling Circ. Pumps - VSD	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
1	307	EMS Optimization	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	310	Base DX Packaged System, EER=10.3, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	311	DX Tune-up/ Advanced Diagnostics	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	312	DX Packaged System, EER=10.9, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	313	Window Film (Standard)	40.0%	54.5%	75.1%	69.1%	21.4%	54.1%	41.9%	83.7%	56.0%	56.0%
1	314	Evaporative Pre-Cooler	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
1	315	Programmable Thermostat - DX	28.7%	68.6%	43.3%	72.0%	61.9%	42.2%	63.7%	80.8%	63.8%	63.8%
1	316	Cool Roof - DX	56.5%	80.2%	54.4%	58.1%	66.5%	65.6%	55.5%	85.8%	61.8%	61.8%
1	317	Optimize Controls - DX	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	402	Variable Speed Drive Control, 5 HP	92.0%	0.0%	37.6%	0.0%	100.0%	94.6%	100.0%	100.0%	93.6%	93.6%
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	412	Variable Speed Drive Control, 15 HP	85.0%	0.0%	41.9%	0.0%	100.0%	91.8%	86.8%	100.0%	83.8%	83.8%
1	413	Air Handler Tune-ups	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	422	Variable Speed Drive Control, 40 HP	50.7%	0.0%	70.8%	0.0%	0.0%	36.5%	70.7%	100.0%	68.3%	68.3%
1	423	Air Handler Tune-ups	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
1	500	Base Refrigeration System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	501	High-efficiency fan motors				95.0%						
1	502	Strip curtains for walk-ins				30.0%						
1	503	Night covers for display cases				95.0%						
1	504	Evaporator fan controller for MT walk-ins				80.0%						
1	505	Efficient compressor motor retrofit				81.0%						
1	506	Compressor VSD retrofit				95.0%						
1	507	Floating head pressure controls				51.0%						
1	508	Refrigeration Commissioning				50.0%						
1	509	Demand Hot Gas Defrost				30.0%						
1	510	Demand Defrost Electric				95.0%						
1	511	Anti-sweat (humidistat) controls				90.0%						
1	600	Base Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	700	Base Cooking	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	800	Base Water Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	911	Power Management Enabling	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
1	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	921	Purchase LCD monitor	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%
1	922	Power Management Enabling	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
1	923	Network Power Management Enabling	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
1	924	External hardware control	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
1	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	931	Power Management Enabling	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
1	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
1	941	External hardware control	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
1	942	Nighttime shutdown	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	100	Base Lighting	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	101	10% More Efficient Design (Lighting)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	102	20% More Efficient Design (Lighting)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	302	Window Film (Standard)	24.7%	30.7%	34.3%	100.0%	76.3%	23.8%	2.5%	71.2%	63.3%	63.3%
2	303	EMS - Chiller	54.1%	90.5%	24.5%	100.0%	72.3%	38.7%	83.9%	91.4%	50.1%	50.1%
2	304	Cool Roof - Chiller	34.2%	77.9%	34.4%	100.0%	83.1%	82.2%	69.6%	69.0%	61.6%	61.6%
2	305	Chiller Tune-up/Diagnostics	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	306	Cooling Circ. Pumps - VSD	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
2	307	EMS Optimization	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	310	Base DX Packaged System, EER=10.3, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	311	DX Tune-up/ Advanced Diagnostics	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	312	DX Packaged System, EER=10.9, 10 tons	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	313	Window Film (Standard)	40.0%	54.5%	75.1%	69.1%	21.4%	54.1%	41.9%	83.7%	56.0%	56.0%
2	314	Evaporative Pre-Cooler	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
2	315	Programmable Thermostat - DX	28.7%	68.6%	43.3%	72.0%	61.9%	42.2%	63.7%	80.8%	63.8%	63.8%
2	316	Cool Roof - DX	56.5%	80.2%	54.4%	58.1%	66.5%	65.6%	55.5%	85.8%	61.8%	61.8%
2	317	Optimize Controls - DX	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	402	Variable Speed Drive Control, 5 HP	92.0%	0.0%	37.6%	0.0%	100.0%	94.6%	100.0%	100.0%	93.6%	93.6%
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	412	Variable Speed Drive Control, 15 HP	85.0%	0.0%	41.9%	0.0%	100.0%	91.8%	86.8%	100.0%	83.8%	83.8%
2	413	Air Handler Tune-ups	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	422	Variable Speed Drive Control, 40 HP	50.7%	0.0%	70.8%	0.0%	0.0%	36.5%	70.7%	100.0%	68.3%	68.3%
2	423	Air Handler Tune-ups	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
2	500	Base Refrigeration System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	501	High-efficiency fan motors				95.0%						
2	502	Strip curtains for walk-ins				30.0%						
2	503	Night covers for display cases				95.0%						
2	504	Evaporator fan controller for MT walk-ins				80.0%						
2	505	Efficient compressor motor retrofit				81.0%						
2	506	Compressor VSD retrofit				95.0%						
2	507	Floating head pressure controls				51.0%						
2	508	Refrigeration Commissioning				50.0%						
2	509	Demand Hot Gas Defrost				30.0%						
2	510	Demand Defrost Electric				95.0%						
2	511	Anti-sweat (humidistat) controls				90.0%						
2	600	Base Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	700	Base Cooking	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	800	Base Water Heating	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	900	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	910	Base Desktop PC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	911	Power Management Enabling	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%	65.0%
2	920	Base Display Monitor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	921	Purchase LCD monitor	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%
2	922	Power Management Enabling	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
2	923	Network Power Management Enabling	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
2	924	External hardware control	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
2	930	Base Copier	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	931	Power Management Enabling	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
2	940	Base Laser Printer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
2	941	External hardware control	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
2	942	Nighttime shutdown	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	111	ROB 4L4' Premium T8, 1EB	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	112	ROB 2L4' Premium T8, 1EB, Reflector	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	113	RET 4L4' Premium T8, 1EB	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	114	RET 2L4' Premium T8, 1EB, Reflector	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	117	RNV 2L4'T5HO, 1EB	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	118	Lighing Control Tune-up	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	131	ROB 2L4' Premium T8, 1EB	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	132	RET 2L4' Premium T8, 1EB	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	136	RNV 1L4'T5HO, 1EB	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	137	Lighing Control Tune-up	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	151	ROB 2L8'T12, 60W, 1EB	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	153	RET 2L8'T12, 60W, 1EB	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	154	RET 1L8'T12, 60W, 1EB, Reflector	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	0.01277	0.01601	0.01125	0.01272	0.00434	0.01281	0.01229	0.00667	0.00776	0.00776
1	165	Base Incandescent Flood, 75W	0.08372	0.10650	0.07134	0.08423	0.02894	0.07116	0.08419	0.04744	0.05606	0.05606
1	166	CFL Screw-in, Modular 18W	0.08372	0.10650	0.07134	0.08423	0.02894	0.07116	0.08419	0.04744	0.05606	0.05606
1	175	Base Incandescent Flood, 150W PAR	0.03484	0.03807	0.03047	0.06274	0.01137	0.01509	0.02045	0.01485	0.02355	0.02355
1	176	Halogen PAR Flood, 90W	0.03484	0.03807	0.03047	0.06274	0.01137	0.01509	0.02045	0.01485	0.02355	0.02355
1	177	Metal Halide, 50W	0.03484	0.03807	0.03047	0.06274	0.01137	0.01509	0.02045	0.01485	0.02355	0.02355
1	180	Base 4L4'T8, 1EB	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	181	ROB 4L4' Premium T8, 1EB	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	0.01229	0.01396	0.01032	0.01170	0.00354	0.01093	0.01184	0.00619	0.00712	0.00712
1	183	Lighing Control Tune-up	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	185	Base 2L4'T8, 1EB	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	186	ROB 2L4' Premium T8, 1EB	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	0.02386	0.02780	0.01998	0.02250	0.00700	0.02100	0.02306	0.01216	0.01396	0.01396
1	188	Lighing Control Tune-up	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	0.00507	0.01248	0.00398	0.00621	0.00063	0.00250	0.00128	0.00200	0.00337	0.00337
1	211	RET 2L4'T8, 1EB	0.00507	0.01248	0.00398	0.00621	0.00063	0.00250	0.00128	0.00200	0.00337	0.00337
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	0.00127	0.00312	0.00099	0.00155	0.00016	0.00062	0.00032	0.00050	0.00084	0.00084
1	220	Base Mercury Vapor 400W Lamp	0.00105	0.00265	0.00085	0.00136	0.00014	0.00050	0.00025	0.00043	0.00074	0.00074
1	221	High Pressure Sodium 250W Lamp	0.00105	0.00265	0.00085	0.00136	0.00014	0.00050	0.00025	0.00043	0.00074	0.00074
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	0.00026	0.00066	0.00021	0.00034	0.00004	0.00012	0.00006	0.00011	0.00018	0.00018
1	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	302	Window Film (Standard)	0.08770	0.04600	0.02844	0.04090	0.01707	0.04338	0.02012	0.09450	0.02844	0.02844
1	303	EMS - Chiller	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	304	Cool Roof - Chiller	0.50000	1.00000	1.00000	1.00000	1.00000	0.46667	0.33333	0.08333	1.00000	1.00000
1	305	Chiller Tune-up/Diagnostics	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	306	Cooling Circ. Pumps - VSD	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	307	EMS Optimization	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	310	Base DX Packaged System, EER=10.3, 10 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	311	DX Tune-up/ Advanced Diagnostics	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	312	DX Packaged System, EER=10.9, 10 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	313	Window Film (Standard)	0.08770	0.04600	0.02844	0.04090	0.01707	0.04338	0.02012	0.09450	0.02844	0.02844
1	314	Evaporative Pre-Cooler	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	315	Programmable Thermostat - DX	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
1	316	Cool Roof - DX	0.50000	1.00000	1.00000	1.00000	1.00000	0.46667	0.33333	0.08333	1.00000	1.00000
1	317	Optimize Controls - DX	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	401	Fan Motor, 5hp, 1800rpm, 89.5%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	402	Variable Speed Drive Control, 5 HP	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	411	Fan Motor, 15hp, 1800rpm, 92.4%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	412	Variable Speed Drive Control, 15 HP	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	413	Air Handler Tune-ups	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	421	Fan Motor, 40hp, 1800rpm, 94.1%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	422	Variable Speed Drive Control, 40 HP	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
1	423	Air Handler Tune-ups	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	500	Base Refrigeration System	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
1	501	High-efficiency fan motors				0.00002						
1	502	Strip curtains for walk-ins				0.00002						
1	503	Night covers for display cases				0.01111						
1	504	Evaporator fan controller for MT walk-ins				0.00014						
1	505	Efficient compressor motor retrofit				0.00002						
1	506	Compressor VSD retrofit				0.00002						
1	507	Floating head pressure controls				0.00002						
1	508	Refrigeration Commissioning				0.00140						
1	509	Demand Hot Gas Defrost				0.00117						
1	510	Demand Defrost Electric				0.00117						
1	511	Anti-sweat (humidistat) controls				0.00002						
1	600	Base Heating	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	700	Base Cooking	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	800	Base Water Heating	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	900	Base Miscellaneous	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1	910	Base Desktop PC	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	911	Power Management Enabling	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	920	Base Display Monitor	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	921	Purchase LCD monitor	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	922	Power Management Enabling	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	923	Network Power Management Enabling	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	924	External hardware control	0.00183	0.00015	0.00030	0.00012	0.00099	0.00074	0.00111	0.00010	0.00145	0.00145
1	930	Base Copier	0.00017	0.00003	0.00006	0.00006	0.00011	0.00005	0.00020	0.00001	0.00021	0.00021
1	931	Power Management Enabling	0.00017	0.00003	0.00006	0.00006	0.00011	0.00005	0.00020	0.00001	0.00021	0.00021
1	940	Base Laser Printer	0.00052	0.00010	0.00018	0.00006	0.00031	0.00021	0.00056	0.00005	0.00053	0.00053
1	941	External hardware control	0.00052	0.00010	0.00018	0.00006	0.00031	0.00021	0.00056	0.00005	0.00053	0.00053
1	942	Nighttime shutdown	0.00052	0.00010	0.00018	0.00006	0.00031	0.00021	0.00056	0.00005	0.00053	0.00053

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	100	Base Lighting	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	101	10% More Efficient Design (Lighting)	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	102	20% More Efficient Design (Lighting)	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	302	Window Film (Standard)	0.08770	0.04600	0.02844	0.04090	0.01707	0.04338	0.02012	0.09450	0.02844	0.02844
2	303	EMS - Chiller	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	304	Cool Roof - Chiller	0.50000	1.00000	1.00000	1.00000	1.00000	0.46667	0.33333	0.08333	1.00000	1.00000
2	305	Chiller Tune-up/Diagnostics	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	306	Cooling Circ. Pumps - VSD	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	307	EMS Optimization	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	310	Base DX Packaged System, EER=10.3, 10 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	311	DX Tune-up/ Advanced Diagnostics	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	312	DX Packaged System, EER=10.9, 10 tons	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	313	Window Film (Standard)	0.08770	0.04600	0.02844	0.04090	0.01707	0.04338	0.02012	0.09450	0.02844	0.02844
2	314	Evaporative Pre-Cooler	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	315	Programmable Thermostat - DX	0.00244	0.00443	0.00203	0.00208	0.00061	0.00276	0.00187	0.00459	0.00128	0.00128
2	316	Cool Roof - DX	0.50000	1.00000	1.00000	1.00000	1.00000	0.46667	0.33333	0.08333	1.00000	1.00000
2	317	Optimize Controls - DX	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	401	Fan Motor, 5hp, 1800rpm, 89.5%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	402	Variable Speed Drive Control, 5 HP	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	411	Fan Motor, 15hp, 1800rpm, 92.4%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	412	Variable Speed Drive Control, 15 HP	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	413	Air Handler Tune-ups	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	421	Fan Motor, 40hp, 1800rpm, 94.1%	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	422	Variable Speed Drive Control, 40 HP	0.00070	0.00076	0.00018	0.00025	0.00008	0.00054	0.00069	0.00013	0.00208	0.00125
2	423	Air Handler Tune-ups	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	500	Base Refrigeration System	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
2	501	High-efficiency fan motors				0.00002						
2	502	Strip curtains for walk-ins				0.00002						
2	503	Night covers for display cases				0.01111						
2	504	Evaporator fan controller for MT walk-ins				0.00014						
2	505	Efficient compressor motor retrofit				0.00002						
2	506	Compressor VSD retrofit				0.00002						
2	507	Floating head pressure controls				0.00002						
2	508	Refrigeration Commissioning				0.00140						
2	509	Demand Hot Gas Defrost				0.00117						
2	510	Demand Defrost Electric				0.00117						
2	511	Anti-sweat (humidistat) controls				0.00002						
2	600	Base Heating	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	700	Base Cooking	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	800	Base Water Heating	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	900	Base Miscellaneous	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	910	Base Desktop PC	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015
2	911	Power Management Enabling	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015
2	920	Base Display Monitor	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	921	Purchase LCD monitor	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015
2	922	Power Management Enabling	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015
2	923	Network Power Management Enabling	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015
2	924	External hardware control	0.0018	0.0001	0.0003	0.0001	0.0010	0.0007	0.0011	0.0001	0.0015	0.0015
2	930	Base Copier	0.0002	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002	0.0000	0.0002	0.0002
2	931	Power Management Enabling	0.0002	0.0000	0.0001	0.0001	0.0001	0.0000	0.0002	0.0000	0.0002	0.0002
2	940	Base Laser Printer	0.0005	0.0001	0.0002	0.0001	0.0003	0.0002	0.0006	0.0001	0.0005	0.0005
2	941	External hardware control	0.0005	0.0001	0.0002	0.0001	0.0003	0.0002	0.0006	0.0001	0.0005	0.0005
2	942	Nighttime shutdown	0.0005	0.0001	0.0002	0.0001	0.0003	0.0002	0.0006	0.0001	0.0005	0.0005

Hour Adjustment For Lighting
(Hours/year)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	111	ROB 4L4' Premium T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	112	ROB 2L4' Premium T8, 1EB, Reflector	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	113	RET 4L4' Premium T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	114	RET 2L4' Premium T8, 1EB, Reflector	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	116	Continuous Dimming, 5L4' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	117	RNV 2L4'T5HO, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	118	Lighing Control Tune-up										
1	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	131	ROB 2L4' Premium T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	132	RET 2L4' Premium T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	133	RET 1L4' Premium T8, 1EB, Reflector OEM	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	135	Continuous Dimming, 10L4' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	136	RNV 1L4'T5HO, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	137	Lighing Control Tune-up										
1	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	151	ROB 2L8'T12, 60W, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	152	ROB 1L8'T12, 60W, 1EB, Reflector	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	153	RET 2L8'T12, 60W, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	154	RET 1L8'T12, 60W, 1EB, Reflector	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	156	Continuous Dimming, 5L8' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	165	Base Incandescent Flood, 75W	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	166	CFL Screw-in, Modular 18W	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	175	Base Incandescent Flood, 150W PAR	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	176	Halogen PAR Flood, 90W	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	177	Metal Halide, 50W	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	180	Base 4L4'T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	181	ROB 4L4' Premium T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	183	Lighing Control Tune-up										
1	185	Base 2L4'T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	186	ROB 2L4' Premium T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	188	Lighing Control Tune-up										
1	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	211	RET 2L4'T8, 1EB	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	212	Outdoor Lighting Controls (Photocell/Timeclock)	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	220	Base Mercury Vapor 400W Lamp	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	221	High Pressure Sodium 250W Lamp	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	222	Outdoor Lighting Controls (Photocell/Timeclock)	4,358	2,847	3,113	6,055	3,212	2,101	5,999	2,666	1,951	1,951
1	210	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons										
1	211	RET 2L4'T8, 1EB										
1	212	Outdoor Lighting Controls (Photocell/Timeclock)										
1	213	Base Mercury Vapor 400W Lamp										
1	214	High Pressure Sodium 250W Lamp										
1	215	Outdoor Lighting Controls (Photocell/Timeclock)										
1	216	Centrifugal Chiller, 0.58 kW/ton, 500 tons										

Hour Adjustment For Lighting
(Hours/year)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
1	217	EMS Optimization										
1	301	Base DX Packaged System, EER=10.3, 10 tons										
1	302	Window Film (Standard)										
1	303	EMS - Chiller										
1	304	Cool Roof - Chiller										
1	305	Chiller Tune-up/Diagnostics										
1	306	Cooling Circ. Pumps - VSD										
1	307	DX Packaged System, EER=10.3, 10 tons										
1	308	Optimize Controls - DX										
1	311	DX Tune Up/ Advanced Diagnostics										
1	312	DX Packaged System, EER=10.9, 10 tons										
1	313	Window Film (Standard)										
1	314	Evaporative Pre-Cooler										
1	315	Programmable Thermostat - DX										
1	316	Cool Roof - DX										
1	413	Air Handler Tune-ups										
1	400	Base Fan Motor, 5hp, 1800rpm, 87.5%										
1	401	Fan Motor, 5hp, 1800rpm, 89.5%										
1	402	Variable Speed Drive Control, 5 HP										
1	423	Air Handler Tune-ups										
1	410	Base Refrigeration System										
1	411	Fan Motor, 15hp, 1800rpm, 92.4%										
1	412	Variable Speed Drive Control, 15 HP										
1	413	Base Fan Motor, 40hp, 1800rpm, 93.0%										
1	414	Fan Motor, 40hp, 1800rpm, 94.1%										
1	415	Variable Speed Drive Control, 40 HP										
1	416	Base Refrigeration System										
1	417	High-efficiency fan motors										
1	418	Strip curtains for walk-ins										
1	419	Night covers for display cases										
1	420	Evaporator fan controller for MT walk-ins										
1	421	Efficient compressor motor retrofit										
1	600	Base Heating										
1	700	Base Cooking										
1	800	Base Water Heating										
1	900	Base Miscellaneous										
1	506	Base Desktop PC										
1	507	Floating head pressure controls										
1	508	Base Display Monitor										
1	509	Demand Hot Gas Defrost										
1	510	Demand Defrost Electric										
1	511	Anti-sweat (humidistat) controls										
1	910	Desktop PC - Base										
1	911	Base Copier										
1	920	Display Monitor										
1	921	Base Laser Printer										
1	922	Power Management Enabling										
1	923	Network Power Management Enabling										
2	100	Base Lighting										
2	101	10% More Efficient Design (Lighting)										

Hour Adjustment For Lighting
(Hours/year)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	102	20% More Efficient Design (Lighting)										
2	210	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons										
2	211	RET 2L4'T8, 1EB										
2	212	Outdoor Lighting Controls (Photocell/Timeclock)										
2	213	Base Mercury Vapor 400W Lamp										
2	214	High Pressure Sodium 250W Lamp										
2	215	Outdoor Lighting Controls (Photocell/Timeclock)										
2	216	Centrifugal Chiller, 0.58 kW/ton, 500 tons										
2	217	EMS Optimization										
2	301	Base DX Packaged System, EER=10.3, 10 tons										
2	302	Window Film (Standard)										
2	303	EMS - Chiller										
2	304	Cool Roof - Chiller										
2	305	Chiller Tune Up/Diagnostics										
2	306	Cooling Circ. Pumps - VSD										
2	307	DX Packaged System, EER=10.3, 10 tons										
2	308	Optimize Controls - DX										
2	311	DX Tune Up/ Advanced Diagnostics										
2	312	DX Packaged System, EER=10.9, 10 tons										
2	313	Window Film (Standard)										
2	314	Evaporative Pre-Cooler										
2	315	Programmable Thermostat - DX										
2	316	Cool Roof - DX										
2	413	Air Handler Tune-ups										
2	400	Base Fan Motor, 5hp, 1800rpm, 87.5%										
2	401	Fan Motor, 5hp, 1800rpm, 89.5%										
2	402	Variable Speed Drive Control, 5 HP										
2	423	Air Handler Tune-ups										
2	410	Base Refrigeration System										
2	411	Fan Motor, 15hp, 1800rpm, 92.4%										
2	412	Variable Speed Drive Control, 15 HP										
2	413	Base Fan Motor, 40hp, 1800rpm, 93.0%										
2	414	Fan Motor, 40hp, 1800rpm, 94.1%										
2	415	Variable Speed Drive Control, 40 HP										
2	416	Base Refrigeration System										
2	417	High-efficiency fan motors										
2	418	Strip curtains for walk-ins										
2	419	Night covers for display cases										
2	420	Evaporator fan controller for MT walk-ins										
2	421	Efficient compressor motor retrofit										
2	600	Base Heating										
2	700	Base Cooking										
2	800	Base Water Heating										
2	900	Base Miscellaneous										
2	506	Base Desktop PC										
2	507	Floating head pressure controls										
2	508	Base Display Monitor										
2	509	Demand Hot Gas Defrost										
2	510	Demand Defrost Electric										
2	511	Anti-sweat (humidistat) controls										

Hour Adjustment For Lighting
(Hours/year)

Segment	Measure #	Measure Description	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Food Store Building Type 4	Warehouse Building Type 5	Educ Building Type 6	Health Building Type 7	Lodging Building Type 8	Military Building Type 9	Miscellaneous Building Type 10
2	910	Desktop PC - Base										
2	911	Base Copier										
2	920	Display Monitor										
2	921	Base Laser Printer										
2	922	Power Management Enabling										
2	923	Network Power Management Enabling										
1	924	External hardware control										
1	930	Copier										
1	931	Power Management Enabling										
1	940	Laser Printer										
1	941	External hardware control										
1	942	Nighttime shutdown										

DSM TECHNOLOGY INPUT TABLES

UTILITY:	CPS	BATCH:	1
SECTOR:	IND	ANALYSIS:	Basic
SEGMENT:	All Electric	VINTAGE:	E

MEASURE COSTS

Segment	Measure #	Measure Description	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Cost Units per Savings Unit	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SP	Relative Energy Reduction Factors SPP	SOP	WP	WPP	WOP	End Use	Implementa Type 1=1 time 2=ROB
1	100	1-5 HP Motor	$/HP	$/HP	$0.00	$0.00	$0.00	$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	101	Replace 1-5 HP Motor	$/HP	$/HP	$23.40	$0.00	$0.00	$23.40	1	15	1	1	$23.40	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	102	Add 1-5 HP VSD	$/HP	$/HP	$214.00	$171.00	$0.00	$385.00	1	15	1	1	$385.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	103	Motor Practices Level 1	$/HP	$/HP	$30.00	$0.00	$0.00	$30.00	1	10	1	1	$30.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	104	Motor Practices Level 2	$/HP	$/HP	$90.00	$0.00	$0.00	$90.00	1	10	1	1	$90.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	120	21-50 HP Motor (6 -100HP Market)	$/HP	$/HP	$0.00	$0.00	$0.00	$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	121	Replace 21-50 HP Motor	$/HP	$/HP	$15.50	$0.00	$0.00	$15.50	1	15	1	1	$15.50	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	122	Add 21-50 HP VSD	$/HP	$/HP	$113.00	$33.50	$0.00	$146.50	1	15	1	1	$146.50	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	123	Motor Practices Level 1	$/HP	$/HP	$20.00	$0.00	$0.00	$20.00	1	10	1	1	$20.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	124	Motor Practices Level 2	$/HP	$/HP	$60.00	$0.00	$0.00	$60.00	1	10	1	1	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	150	201-500 HP Motor (>100HP Market)	$/HP	$/HP	$0.00	$0.00	$0.00	$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	151	Replace 201-500 HP Motor	$/HP	$/HP	$9.00	$0.00	$0.00	$9.00	1	15	1	1	$9.00	1.00	1.00	1.00	1.00	1.00	1.00	1	2
1	152	Add 201-500 HP VSD	$/HP	$/HP	$76.00	$8.00	$0.00	$84.00	1	15	1	1	$84.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	153	Motor Practices Level 1	$/HP	$/HP	$30.00	$0.00	$0.00	$30.00	1	10	1	1	$30.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	154	Motor Practices Level 2	$/HP	$/HP	$60.00	$0.00	$0.00	$60.00	1	10	1	1	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	1	1
1	200	Compressed Air Systems	$/kWh	$/kWh	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	2	1
1	202	CAS Level 1	$/kWh	$/kWh	$0.02	$0.00	$0.00	$0.02	1	10	1	1	$0.02	1.00	1.00	1.00	1.00	1.00	1.00	2	1
1	203	CAS Level 2	$/kWh	$/kWh	$0.03	$0.00	$0.00	$0.03	1	10	1	1	$0.03	1.00	1.00	1.00	1.00	1.00	1.00	2	1
1	204	CAS Level 3	$/kWh	$/kWh	$0.05	$0.00	$0.00	$0.05	1	10	1	1	$0.05	1.00	1.00	1.00	1.00	1.00	1.00	2	1
1	300	Process Other	$/kWh	$/kWh	$0.000	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	301	Process Level 1	$/kWh	$/kWh	$0.006	$0.00	$0.00	$0.01	1	10	1	1	$0.01	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	302	Process Level 2	$/kWh	$/kWh	$0.058	$0.00	$0.00	$0.06	1	15	1	1	$0.06	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	303	Process Level 3	$/kWh	$/kWh	$0.109	$0.00	$0.00	$0.11	1	15	1	1	$0.11	1.00	1.00	1.00	1.00	1.00	1.00	3	1
1	400	Base Fluorescent Fixture, 2L4'T12, 34W, 1:	fixture	fixture	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	401	RET 2L4' Premium T8, 1EB	fixture	fixture	$25.00	$9.40	$0.00	$34.40	1	15	1	1	$34.40	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	402	Occupancy Sensor, 4L4' Fluorescent Fixtur	fixture	fixture	$12.25	$1.58	$0.00	$13.83	1	9	1	1	$13.83	1.00	1.00	0.50	1.00	1.00	0.50	4	1
1	403	Continuous Dimming, 5L4' Fluorescent Fixt	fixture	fixture	$70.31	$44.24	$0.00	$114.55	1	11	1	1	$114.55	1.00	0.50	0.00	0.75	0.75	0.00	4	1
1	410	Base Fluorescent Fixture, 2L8'T12, 60W, 1:	fixture	fixture	$0.00	$0.00	$0.00	$0.00	1	10	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	411	RET 2L8'T12, 60W, 1EB	fixture	fixture	$48.00	$17.00	$0.00	$65.00	1	15	1	1	$65.00	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	412	Occupancy Sensor, 4L8' Fluorescent Fixtur	fixture	fixture	$24.50	$3.15	$0.00	$27.65	1	9	1	1	$27.65	1.00	1.00	0.50	1.00	1.00	0.50	4	1
1	413	Continuous Dimming, 5L8' Fluorescent Fixt	fixture	fixture	$132.62	$90.00	$0.00	$222.62	1	11	1	1	$222.62	1.00	0.50	0.00	0.75	0.75	0.00	4	1
1	420	Incandescent/Mercury Vapor 150W	fixture	fixture	$2.30	$4.55	$0.00	$6.85	1	1	1	1	$6.85	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	421	CFL Hardwired, Modular 36W	fixture	fixture	$44.00	$20.00	($8.41)	$64.00	1	4	1	1	$55.59	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	422	Metal Halide, 50W	fixture	fixture	$227.00	$60.00	$0.00	$287.00	1	5	1	1	$287.00	1.00	1.00	1.00	1.00	1.00	1.00	4	1
1	500	Centrifugal Chiller, 0.58 kW/ton, 500 tons	$/ton	$/ton	$0.00			$0.00	1	20	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
1	501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	$/ton	$/ton	$21.14			$21.14	1	20	1	1	$21.14	1.00	1.00	1.00	1.00	1.00	1.00	5	2
1	502	Window Film (Standard)	$/sf-window	$/sf-window	$3.07			$3.07	1	10	1	1	$3.07	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	503	EMS - Chiller	$/ton	$/ton	$60.00			$60.00	1	10	1	1	$60.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	504	Cool Roof - Chiller	$/sf-roof	$/sf-roof	$0.47			$0.47	1	10	1	1	$0.47	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	505	Chiller Tune-up/Diagnostics	$/ton	$/ton	$16.67		$20.91	$16.67	1	10	1	1	$37.58	1.00	0.50	0.00	0.00	0.00	0.00	5	1
1	506	Cooling Circ. Pumps - VSD	$/ton	$/ton	$65.04			$65.04	1	15	1	1	$65.04	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	510	DX Packaged System, EER=10.3, 10 tons	$/ton	$/ton	$0.00			$0.00	1	15	1	1	$0.00	1.00	1.00	1.00	1.00	1.00	1.00	5	2
1	511	DX Tune-up/Advanced Diagnostics	$/ton	$/ton	$78.00			$78.00	1	3	1	1	$78.00	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	512	DX Packaged System, EER=10.9, 10 tons	$/ton	$/ton	$51.60			$51.60	1	15	1	1	$51.60	1.00	1.00	1.00	1.00	1.00	1.00	5	2
1	513	Window Film (Standard)	$/sf-window	$/sf-window	$3.07			$3.07	1	10	1	1	$3.07	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	514	Evaporative Pre-Cooler	$/ton	$/ton	$133.33	$160.00		$293.33	1	10	1	1	$293.33	1.00	1.00	1.00	1.00	1.00	1.00	5	1
1	515	Programmable Thermostat - DX	$/ton	$/ton	$5.50	$15.00		$20.50	1	10	1	1	$20.50	0.25	1.00	1.00	1.00	1.00	1.00	5	1
1	516	Cool Roof - DX	$/sf-roof	$/sf-roof	$0.47			$0.47	1	10	1	1	$0.47	1.00	1.00	1.00	1.00	1.00	1.00	5	1

BASE TECHNOLOGY EUIs
(kWh/base kWh)

Segment	Measure #	Measure Description	Building Type 1
1	100	1-5 HP Motor	1
1	120	21-50 HP Motor (6 -100HP Market)	1
1	150	201-500 HP Motor (>100HP Market)	1
1	200	Compressed Air Systems	1
1	300	Process Other	1
1	400	Base Fluorescent Fixture, 2L4'T12, 34W, 1STD MAG	1
1	410	Base Fluorescent Fixture, 2L8'T12, 60W, 1STD MAG	1
1	420	Incandescent/Mercury Vapor	1
1	500	Centrifugal Chiller, 0.58 kW/ton, 500 tons	1
1	510	DX Packaged System, EER=10.3, 10 tons	1

ENERGY SAVINGS (percent)

Segment	Measure #	Measure Description	Building Type 1
1	100	1-5 HP Motor	0.0%
1	101	Replace 1-5 HP Motor	2.2%
1	102	Add 1-5 HP VSD	25.0%
1	103	Motor Practices Level 1	6.0%
1	104	Motor Practices Level 2	5.0%
1	120	21-50 HP Motor (6 -100HP Market)	0.0%
1	121	Replace 21-50 HP Motor	1.2%
1	122	Add 21-50 HP VSD	25.0%
1	123	Motor Practices Level 1	6.0%
1	124	Motor Practices Level 2	5.0%
1	150	201-500 HP Motor (>100HP Market)	0.0%
1	151	Replace 201-500 HP Motor	1.6%
1	152	Add 201-500 HP VSD	25.0%
1	153	Motor Practices Level 1	6.0%
1	154	Motor Practices Level 2	5.0%
1	200	Compressed Air Systems	0.0%
1	202	CAS Level 1	10.0%
1	203	CAS Level 2	10.0%
1	204	CAS Level 3	7.0%
1	300	Process Other	0.0%
1	301	Process Level 1	10.5%
1	302	Process Level 2	19.4%
1	303	Process Level 3	19.4%
1	400	Base Fluorescent Fixture, 2L4'T12, 34W, 1STD MAG	0.0%
1	401	RET 2L4'T8, 1EB	31.4%
1	402	Occupancy Sensor, 4L4' Fluorescent Fixtures	20.0%
1	403	Continuous Dimming, 5L4' Fluorescent Fixtures	65.8%
1	410	Base Fluorescent Fixture, 2L8'T12, 60W, 1STD MAG	0.0%
1	411	RET 2L8'T12, 60W, 1EB	23.9%
1	412	Occupancy Sensor, 4L8' Fluorescent Fixtures	20.0%
1	413	Continuous Dimming, 5L8' Fluorescent Fixtures	67.1%
1	420	Incandescent/Mercury Vapor 150W	0.0%
1	421	CFL Screw-in, Modular 36W	72.0%
1	422	Metal Halide, 50W	58.0%
1	500	Centrifugal Chiller, 0.58 kW/ton, 500 tons	0.0%
1	501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	12.1%
1	502	Window Film (Standard)	10.3%
1	503	EMS - Chiller	10.0%
1	504	Cool Roof - Chiller	9.6%
1	505	Chiller Tune-up/Diagnostics	8.0%
1	506	Cooling Circ. Pumps - VSD	6.0%
1	510	DX Packaged System, EER=10.3, 10 tons	0.0%
1	511	DX Tune-up/Advanced Diagnostics	10.0%
1	512	DX Packaged System, EER=10.9, 10 tons	5.5%
1	513	Window Film (Standard)	10.3%
1	514	Evaporative Pre-Cooler	10.0%
1	515	Programmable Thermostat - DX	10.0%
1	516	Cool Roof - DX	9.6%

DSM ASSYST SUMMARY — COMMERCIAL — Year 2005

Vintage E, Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Hotel	21%	0%	0.05	0.46	0.36	0.00	17	0.01	0.00	0.07	N/A	0.52	0.88	9.43	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Hotel	0%	0%	0.00	0.37	0.37	0.00	9	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	*221*	*High Pressure Sodium 250W Lamp*	*Hotel*	*35%*	*35%*	*0.06*	*0.50*	*0.32*	*0.00*	*9*	*0.76*	*0.00*	*0.07*	*N/A*	*0.54*	*0.97*	*6.25*	*0.63*
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Hotel	21%	0%	0.01	0.46	0.36	0.00	9	0.05	0.00	0.02	N/A	1.63	3.05	1.99	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Hotel	0%	0%	0.00	2.87	2.87	1.73	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Hotel	12%	12%	0.10	2.56	2.26	1.36	20	1.80	1.08	0.04	63.84	2.82	1.58	5.40	1.78
Existing	302	Window Film (Standard)	Hotel	7%	7%	0.29	2.93	2.73	1.64	10	0.64	0.39	0.26	426.96	0.42	0.26	24.24	1.78
Existing	303	EMS - Chiller	Hotel	10%	10%	0.28	2.90	2.61	1.57	10	1.54	0.93	0.17	288.37	0.62	0.39	16.37	1.78
Existing	304	Cool Roof - Chiller	Hotel	0%	0%	0.02	2.88	2.87	1.72	10	0.02	0.00	0.28	N/A	0.38	0.24	26.68	1.78
Existing	305	Chiller Tune-up/Diagnostics	Hotel	3%	8%	0.17	2.92	2.83	1.61	10	0.06	0.10	0.37	224.35	0.63	0.19	34.49	3.81
Existing	306	Cooling Circ. Pumps - VSD	Hotel	6%	6%	0.30	2.92	2.74	1.65	15	0.57	0.34	0.23	387.01	0.46	0.27	29.38	1.78
Existing	307	EMS Optimization	Hotel	5%	5%	0.01	2.95	2.80	1.68	5	0.10	0.06	0.03	45.49	3.95	2.67	1.52	1.78
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Hotel	0%	0%	0.00	4.98	4.98	2.99	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Hotel	10%	10%	0.30	5.24	4.72	2.84	3	2.00	1.20	0.27	456.89	0.39	0.28	9.81	1.78
Existing	312	DX Packaged System, EER=10.9, 10 tons	Hotel	6%	6%	0.24	4.30	4.07	2.45	15	2.41	1.45	0.14	226.85	0.79	0.47	17.22	1.78
Existing	313	Window Film (Standard)	Hotel	7%	7%	0.29	5.04	4.69	2.82	10	2.26	1.36	0.15	248.53	0.72	0.45	14.11	1.78
Existing	314	Evaporative Pre-Cooler	Hotel	10%	10%	1.35	5.01	4.51	2.71	10	1.21	0.73	0.49	816.28	0.22	0.14	46.34	1.78
Existing	315	Programmable Thermostat - DX	Hotel	8%	3%	0.09	5.06	4.64	2.97	10	2.63	0.47	0.04	225.63	1.50	1.68	3.80	1.00
Existing	316	Cool Roof - DX	Hotel	0%	0%	0.02	4.98	4.97	2.98	10	0.09	0.00	0.16	N/A	0.66	0.42	15.40	1.78
Existing	317	Optimize Controls	Hotel	5%	5%	0.01	5.11	4.85	2.92	5	0.31	0.19	0.02	26.24	6.85	4.63	0.88	1.78
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Hotel	0%	0%	0.00	0.76	0.76	0.07	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Hotel	2%	2%	0.00	0.76	0.74	0.07	15	0.25	0.02	0.03	261.76	2.06	2.54	3.16	0.85
Existing	402	Variable Speed Drive Control, 5 HP	Hotel	28%	8%	0.05	0.76	0.55	0.07	15	0.12	0.00	0.03	1,283.21	1.30	1.95	4.11	0.70
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Hotel	0%	0%	0.00	0.70	0.70	0.07	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Hotel	2%	2%	0.00	0.70	0.69	0.07	15	0.04	0.00	0.01	72.38	7.45	9.18	0.87	0.85
Existing	412	Variable Speed Drive Control, 15 HP	Hotel	28%	8%	0.03	0.70	0.51	0.06	15	0.05	0.00	0.02	830.59	2.01	3.01	2.66	0.70
Existing	413	Air Handler Optimization, 15 HP	Hotel	20%	20%	0.05	0.78	0.63	0.06	5	0.07	0.01	0.09	994.18	0.54	0.77	5.27	0.85
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Hotel	0%	0%	0.00	0.69	0.69	0.07	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Hotel	1%	1%	0.00	0.69	0.69	0.07	15	0.01	0.00	0.03	363.60	1.48	1.83	4.39	0.85
Existing	422	Variable Speed Drive Control, 40 HP	Hotel	28%	8%	0.02	0.69	0.50	0.06	15	0.09	0.00	0.01	574.03	2.90	4.35	1.84	0.70
Existing	423	Air Handler Optimization, 40 HP	Hotel	20%	20%	0.05	0.77	0.62	0.06	5	0.03	0.00	0.10	1,010.93	0.53	0.76	5.36	0.85
Existing	500	Base Refrigeration System	Hotel	0%	0%	0.00	0.85	0.85	0.09	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Hotel	0%	0%	0.00	0.39	0.39	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Hotel	0%	0%	0.00	0.63	0.63	0.06	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Hotel	0%	0%	0.00	9.23	9.23	0.92	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Hotel	0%	0%	0.00	2.94	2.94	0.29	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Hotel	0%	0%	0.00	0.15	0.15	0.02	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Hotel	40%	21%	0.00	0.17	0.10	0.01	4	0.90	0.05	0.01	138.48	5.91	10.13	0.34	0.72
Existing	920	Base Display Monitor	Hotel	0%	0%	0.00	0.14	0.14	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Hotel	50%	50%	0.03	0.17	0.08	0.01	4	1.18	0.12	0.15	1,467.54	0.35	0.49	7.01	0.87
Existing	922	Power Management Enabling	Hotel	72%	37%	0.00	0.25	0.07	0.02	4	1.43	0.08	0.00	30.65	26.69	45.78	0.07	0.72
Existing	923	Network Power Management Enabling	Hotel	72%	37%	0.00	0.25	0.07	0.02	4	1.29	0.07	0.00	15.33	53.38	91.56	0.04	0.72
Existing	924	External hardware control	Hotel	72%	37%	0.01	0.25	0.07	0.02	4	1.43	0.08	0.02	363.99	2.25	3.85	0.89	0.72
Existing	930	Base Copier	Hotel	0%	0%	0.00	0.14	0.14	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Hotel	63%	32%	0.00	0.24	0.09	0.02	4	1.01	0.05	0.00	27.39	29.87	51.23	0.07	0.72
Existing	940	Base Laser Printer	Hotel	0%	0%	0.00	0.12	0.12	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Hotel	73%	27%	0.01	0.12	0.03	0.01	4	1.25	0.05	0.04	969.89	1.10	2.01	1.70	0.67
Existing	942	Nighttime shutdown	Hotel	73%	27%	0.03	0.16	0.04	0.01	4	1.61	0.06	0.09	2,451.46	0.43	0.79	4.31	0.67
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Military	0%	0%	0.00	2.31	2.31	0.36	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Military	31%	31%	0.06	2.31	1.59	0.25	36	2.96	0.46	0.01	55.06	6.41	6.30	1.35	1.02
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Military	66%	66%	0.18	2.31	0.79	0.12	36	1.55	0.24	0.01	82.29	4.29	4.22	2.02	1.02
Existing	113	RET 4L4' Premium T8, 1EB	Military	31%	31%	0.36	2.31	1.59	0.25	36	2.96	0.46	0.05	344.13	1.03	1.01	8.45	1.02
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Military	66%	66%	0.48	2.31	0.79	0.12	36	1.55	0.24	0.03	220.54	1.60	1.57	5.42	1.02
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Military	14%	20%	0.20	2.32	1.98	0.29	21	0.34	0.07	0.07	337.77	0.98	0.82	10.42	1.20
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Military	33%	75%	2.05	2.31	1.55	0.09	26	1.16	0.41	0.31	881.45	0.29	0.18	47.06	1.61

DSM ASSYST SUMMARY — COMMERCIAL — Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Miscellaneous	21%	0%	0.02	1.31	1.03	0.00	12	6.49	0.00	0.01	N/A	3.40	6.10	1.19	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Miscellaneous	0%	0%	0.00	1.97	1.97	0.93	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Miscellaneous	12%	12%	0.03	1.76	1.55	0.73	20	1.01	0.47	0.02	33.15	6.30	3.88	2.19	1.62
Existing	302	Window Film (Standard)	Miscellaneous	2%	2%	0.09	1.99	1.94	0.91	10	0.11	0.05	0.32	689.55	0.30	0.21	30.62	1.62
Existing	303	EMS - Chiller	Miscellaneous	10%	10%	0.08	2.07	1.87	0.88	10	0.49	0.23	0.07	143.51	1.45	1.00	6.37	1.62
Existing	304	Cool Roof - Chiller	Miscellaneous	13%	13%	0.21	2.07	1.81	0.85	10	0.39	0.19	0.14	303.03	0.69	0.48	13.46	1.62
Existing	305	Chiller Tune-up/Diagnostics	Miscellaneous	4%	8%	0.05	2.01	1.93	0.87	10	0.05	0.05	0.11	115.84	1.48	0.63	10.10	2.62
Existing	306	Cooling Circ. Pumps - VSD	Miscellaneous	6%	6%	0.08	2.00	1.88	0.88	15	0.32	0.15	0.09	200.98	1.04	0.67	11.94	1.62
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Miscellaneous	0%	0%	0.00	3.42	3.42	1.61	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Miscellaneous	10%	10%	0.08	3.60	3.24	1.52	3	7.59	3.57	0.11	237.27	0.88	0.68	3.99	1.62
Existing	312	DX Packaged System, EER=10.9, 10 tons	Miscellaneous	6%	6%	0.07	2.95	2.79	1.31	15	9.14	4.30	0.06	117.81	1.77	1.15	7.00	1.62
Existing	313	Window Film (Standard)	Miscellaneous	2%	2%	0.09	3.45	3.37	1.58	10	2.01	0.95	0.19	397.10	0.53	0.36	17.64	1.62
Existing	314	Evaporative Pre-Cooler	Miscellaneous	10%	10%	0.38	3.43	3.09	1.45	10	4.59	2.16	0.20	423.91	0.49	0.34	18.83	1.62
Existing	315	Programmable Thermostat - DX	Miscellaneous	8%	3%	0.03	3.52	3.23	1.61	10	7.75	1.11	0.02	115.57	3.60	4.08	1.57	0.99
Existing	316	Cool Roof - DX	Miscellaneous	13%	13%	0.21	3.59	3.13	1.47	10	8.10	3.81	0.08	174.87	1.19	0.82	7.77	1.62
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Miscellaneous	0%	0%	0.00	1.18	1.18	0.20	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Miscellaneous	2%	2%	0.03	1.18	1.15	0.19	15	1.44	0.24	0.15	914.02	0.41	0.42	19.14	1.04
Existing	402	Variable Speed Drive Control, 5 HP	Miscellaneous	27%	8%	0.48	1.20	0.87	0.18	15	1.74	0.08	0.20	4,402.29	0.24	0.32	25.37	0.79
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Miscellaneous	0%	0%	0.00	1.09	1.09	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Miscellaneous	2%	2%	0.01	1.09	1.07	0.18	15	0.31	0.05	0.04	252.74	1.50	1.51	5.29	1.04
Existing	412	Variable Speed Drive Control, 15 HP	Miscellaneous	27%	8%	0.29	1.14	0.83	0.18	15	1.72	0.08	0.13	2,772.00	0.38	0.50	15.97	0.79
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Miscellaneous	0%	0%	0.00	1.07	1.07	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Miscellaneous	1%	1%	0.02	1.07	1.06	0.18	15	0.06	0.01	0.21	1,269.61	0.30	0.30	26.58	1.04
Existing	422	Variable Speed Drive Control, 40 HP	Miscellaneous	27%	8%	0.20	1.17	0.85	0.18	15	0.61	0.03	0.08	1,830.94	0.57	0.76	10.55	0.79
Existing	500	Base Refrigeration System	Miscellaneous	0%	0%	0.00	0.46	0.46	0.05	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Miscellaneous	0%	0%	0.00	1.45	1.45	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Miscellaneous	0%	0%	0.00	0.81	0.81	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Miscellaneous	0%	0%	0.00	0.40	0.40	0.06	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Miscellaneous	0%	0%	0.00	1.63	1.63	0.25	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Miscellaneous	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Miscellaneous	38%	21%	0.02	0.03	0.02	0.00	4	0.64	0.05	0.66	8,744.85	0.07	0.11	30.30	0.78
Existing	920	Base Display Monitor	Miscellaneous	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Miscellaneous	50%	50%	0.51	0.03	0.01	0.00	4	0.90	0.13	12.77	91,780.32	0.00	0.01	586.92	0.97
Existing	922	Power Management Enabling	Miscellaneous	67%	37%	0.01	0.04	0.01	0.00	4	0.98	0.07	0.15	2,002.79	0.31	0.49	6.94	0.78
Existing	923	Network Power Management Enabling	Miscellaneous	67%	37%	0.01	0.04	0.01	0.00	4	0.88	0.07	0.08	1,001.40	0.62	0.98	3.47	0.78
Existing	924	External hardware control	Miscellaneous	67%	37%	0.14	0.04	0.01	0.00	4	0.98	0.07	1.79	23,783.17	0.03	0.04	82.42	0.78
Existing	930	Base Copier	Miscellaneous	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Miscellaneous	59%	32%	0.01	0.04	0.02	0.00	4	0.73	0.05	0.14	1,845.02	0.34	0.53	6.39	0.78
Existing	940	Base Laser Printer	Miscellaneous	0%	0%	0.00	0.01	0.01	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Miscellaneous	68%	27%	0.09	0.01	0.00	0.00	4	0.57	0.03	3.54	63,874.44	0.01	0.02	162.68	0.72
Existing	942	Nighttime shutdown	Miscellaneous	68%	27%	0.29	0.02	0.01	0.00	4	0.72	0.04	9.14	164,848.46	0.00	0.01	419.86	0.72

DSM ASSYST SUMMARY			COMMERCIAL				Year	2005										
Vintage	E																	
Batch	1			Energy	Peak	Total			Peak		Technical	System Peak Tech.	Levelized Cost of Conserved	Levelized Cost of Avoided	Total Resource		Customer	
	Measure		Building	Savings	Reduction	Costs/	Base		Watts/	Service	Potential	Potential	Energy	Peak Capacity	Cost Test	Participant	Payback	Revenue
Segment	Number	Measure	Type	Fraction	Fraction	Sq Ft	EUI	EUI	Sq Ft	Life (yrs)	GWH	MW	$/kWH	$/kW	(TRC)	Test	(Years)	Test
Existing	305	Chiller Tune-up/Diagnostics	Education	5%	8%	0.10	1.79	1.70	0.90	10	0.19	0.17	0.21	242.26	0.73	0.32	19.97	2.54
Existing	306	Cooling Circ. Pumps - VSD	Education	6%	6%	0.18	1.77	1.66	0.91	15	1.04	0.57	0.23	422.29	0.48	0.28	29.09	1.81
Existing	307	EMS Optimization	Education	5%	5%	0.01	1.79	1.70	0.93	5	0.16	0.08	0.05	82.60	2.44	1.62	2.50	1.81
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Education	0%	0%	0.00	3.02	3.02	1.65	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Education	10%	10%	0.18	3.18	2.86	1.56	3	4.64	2.53	0.27	498.54	0.40	0.28	9.71	1.81
Existing	312	DX Packaged System, EER=10.9, 10 tons	Education	6%	6%	0.14	2.61	2.47	1.35	15	5.59	3.05	0.14	247.53	0.81	0.47	17.05	1.81
Existing	313	Window Film (Standard)	Education	4%	4%	0.13	3.08	2.96	1.61	10	1.90	1.04	0.20	368.22	0.55	0.34	18.97	1.81
Existing	314	Evaporative Pre-Cooler	Education	10%	10%	0.81	3.04	2.74	1.49	10	2.80	1.53	0.49	890.69	0.23	0.14	45.88	1.81
Existing	315	Programmable Thermostat - DX	Education	8%	3%	0.06	3.16	2.92	1.68	10	2.99	0.53	0.04	239.12	1.57	1.60	4.00	1.10
Existing	316	Cool Roof - DX	Education	4%	4%	0.10	3.06	2.95	1.61	10	1.46	0.80	0.16	285.47	0.71	0.44	14.70	1.81
Existing	317	Optimize Controls	Education	5%	5%	0.01	3.10	2.95	1.61	5	0.60	0.33	0.03	47.65	4.22	2.81	1.44	1.81
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Education	0%	0%	0.00	0.93	0.93	0.16	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Education	2%	2%	0.01	0.93	0.91	0.16	15	1.12	0.19	0.08	483.11	0.81	0.77	10.43	1.10
Existing	402	Variable Speed Drive Control, 5 HP	Education	27%	8%	0.21	0.95	0.69	0.15	15	3.97	0.19	0.11	2,333.82	0.46	0.57	14.13	0.85
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Education	0%	0%	0.00	0.86	0.86	0.15	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Education	2%	2%	0.00	0.86	0.85	0.15	15	0.31	0.05	0.02	133.59	2.93	2.78	2.89	1.10
Existing	412	Variable Speed Drive Control, 15 HP	Education	27%	8%	0.12	0.88	0.65	0.14	15	4.50	0.22	0.07	1,499.17	0.71	0.88	9.08	0.85
Existing	413	Air Handler Optimization, 15 HP	Education	20%	20%	0.05	0.96	0.77	0.13	5	0.45	0.08	0.08	453.05	0.86	0.94	4.30	1.10
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Education	0%	0%	0.00	0.85	0.85	0.15	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Education	1%	1%	0.01	0.85	0.84	0.14	15	0.05	0.01	0.11	671.06	0.58	0.55	14.49	1.10
Existing	422	Variable Speed Drive Control, 40 HP	Education	27%	8%	0.08	1.02	0.75	0.16	15	0.50	0.02	0.04	879.56	1.21	1.50	5.33	0.85
Existing	423	Air Handler Optimization, 40 HP	Education	20%	20%	0.05	0.94	0.76	0.13	5	0.10	0.02	0.08	460.68	0.85	0.93	4.37	1.10
Existing	500	Base Refrigeration System	Education	0%	0%	0.00	0.42	0.42	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Education	0%	0%	0.00	0.72	0.72	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Education	0%	0%	0.00	0.14	0.14	0.02	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Education	0%	0%	0.00	1.00	1.00	0.15	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Education	0%	0%	0.00	0.85	0.85	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Education	0%	0%	0.00	0.04	0.04	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Education	36%	21%	0.01	0.04	0.03	0.00	4	0.80	0.05	0.26	3,828.63	0.18	0.29	11.98	0.78
Existing	920	Base Display Monitor	Education	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Education	50%	50%	0.26	0.04	0.02	0.00	4	1.18	0.14	4.82	39,943.61	0.01	0.02	221.58	0.96
Existing	922	Power Management Enabling	Education	65%	37%	0.01	0.06	0.02	0.00	4	1.20	0.08	0.06	894.86	0.78	1.22	2.80	0.78
Existing	923	Network Power Management Enabling	Education	65%	37%	0.00	0.06	0.02	0.00	4	1.08	0.07	0.03	447.43	1.56	2.44	1.40	0.78
Existing	924	External hardware control	Education	65%	37%	0.07	0.06	0.02	0.00	4	1.20	0.08	0.72	10,626.43	0.07	0.10	33.25	0.78
Existing	930	Base Copier	Education	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Education	57%	32%	0.00	0.04	0.02	0.00	4	0.66	0.05	0.03	460.41	1.51	2.37	1.44	0.78
Existing	940	Base Laser Printer	Education	0%	0%	0.00	0.02	0.02	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Education	64%	27%	0.04	0.02	0.01	0.00	4	0.82	0.04	0.93	18,315.38	0.05	0.08	42.67	0.72
Existing	942	Nighttime shutdown	Education	64%	27%	0.11	0.03	0.01	0.00	4	1.02	0.05	2.43	47,874.59	0.02	0.03	111.52	0.72
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Health	0%	0%	0.00	9.53	9.53	1.43	8	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Health	31%	31%	0.09	9.53	6.54	0.98	12	7.87	1.18	0.01	33.99	11.84	12.94	0.56	1.00
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Health	66%	66%	0.30	9.53	3.27	0.49	12	4.11	0.62	0.01	50.80	7.92	8.66	0.84	1.00
Existing	113	RET 4L4' Premium T8, 1EB	Health	31%	31%	0.59	9.53	6.54	0.98	12	7.87	1.18	0.03	173.01	2.33	2.37	3.50	1.00
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Health	66%	66%	0.79	9.53	3.27	0.49	12	4.11	0.62	0.02	117.29	3.43	3.57	2.24	1.00
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Health	14%	20%	0.33	9.53	8.19	1.14	7	2.21	0.47	0.06	282.45	1.19	1.18	4.39	1.18
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Health	31%	75%	3.41	9.53	6.58	0.36	8	0.97	0.35	0.23	643.23	0.42	0.30	19.04	1.63
Existing	117	RNV 2L4'T5HO, 1EB	Health	24%	24%	2.96	9.53	7.28	1.09	12	1.85	0.28	0.20	1,361.38	0.30	0.32	23.27	1.00
Existing	118	Lighting Control Tune-up	Health	3%	3%	0.01	9.68	9.39	1.41	6	0.03	0.00	0.01	87.70	4.59	5.46	0.85	1.00
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Health	0%	0%	0.00	9.53	9.53	1.43	8	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Health	31%	31%	0.25	9.53	6.54	0.98	12	22.16	3.33	0.01	91.05	4.42	4.83	1.50	1.00
Existing	132	RET 2L4' Premium T8, 1EB	Health	31%	31%	0.79	9.53	6.54	0.98	12	19.95	2.99	0.04	241.93	1.66	1.72	4.69	1.00
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Health	64%	64%	1.13	9.53	3.41	0.51	12	4.53	0.68	0.03	176.55	2.28	2.40	3.25	1.00
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Health	14%	20%	0.32	9.53	8.19	1.14	7	4.98	1.06	0.06	275.11	1.22	1.21	4.28	1.18
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Health	31%	75%	3.32	9.53	6.58	0.36	8	2.19	0.79	0.23	626.51	0.43	0.31	18.54	1.63
Existing	136	RNV 1L4'T5HO, 1EB	Health	24%	24%	5.44	9.53	7.28	1.09	12	4.16	0.62	0.38	2,540.55	0.16	0.17	42.76	1.00

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	100	Base Lighting		0%	0%	0.00	7.55	7.55	1.44	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	7.55	6.80	1.29	20	3.67	0.70	0.02	85.20	4.16	3.74	2.28	1.11
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	7.55	6.04	1.15	20	7.34	1.40	0.02	102.25	3.47	3.12	2.74	1.11
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	2.39	2.39	1.01	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.05	2.13	1.87	0.79	20	0.40	0.17	0.02	58.23	3.80	2.47	3.46	1.54
NC	302	Window Film (Standard)		9%	9%	0.27	2.56	2.33	0.98	10	0.07	0.03	0.21	490.42	0.45	0.33	19.53	1.54
NC	303	EMS - Chiller		10%	10%	0.15	2.50	2.25	0.95	10	0.21	0.09	0.11	253.12	0.87	0.63	10.08	1.54
NC	304	Cool Roof - Chiller		2%	2%	0.10	2.41	2.37	1.00	10	0.01	0.00	0.44	1,041.01	0.21	0.15	41.45	1.54
NC	305	Chiller Tune-up/Diagnostics		4%	8%	0.09	2.44	2.33	0.95	10	0.02	0.02	0.16	203.34	0.89	0.42	15.41	2.41
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.16	2.42	2.28	0.96	15	0.13	0.05	0.15	353.01	0.63	0.43	18.80	1.54
NC	307	EMS Optimization		5%	5%	0.01	2.45	2.32	0.98	5	0.03	0.01	0.03	78.14	2.83	2.22	1.83	1.54
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	4.13	4.13	1.74	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.16	4.35	3.92	1.65	3	0.42	0.18	0.18	416.76	0.53	0.43	6.28	1.54
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.13	3.57	3.38	1.42	15	0.50	0.21	0.09	206.93	1.07	0.73	11.02	1.54
NC	313	Window Film (Standard)		9%	9%	0.27	4.38	3.97	1.68	10	0.31	0.13	0.12	287.24	0.77	0.56	11.44	1.54
NC	314	Evaporative Pre-Cooler		10%	10%	0.72	4.16	3.74	1.58	10	0.25	0.11	0.31	744.57	0.30	0.22	29.65	1.54
NC	315	Programmable Thermostat - DX		8%	3%	0.05	4.39	4.03	1.81	10	0.20	0.03	0.03	196.89	2.32	2.69	2.38	0.97
NC	316	Cool Roof - DX		2%	2%	0.10	4.17	4.09	1.73	10	0.05	0.02	0.25	603.03	0.37	0.27	24.01	1.54
NC	317	Optimize Controls		5%	5%	0.01	4.24	4.03	1.70	5	0.09	0.04	0.02	45.08	4.91	3.85	1.06	1.54
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	1.97	1.97	0.28	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.02	1.97	1.93	0.27	15	0.04	0.01	0.05	360.23	1.18	1.26	6.35	0.98
NC	402	Variable Speed Drive Control, 5 HP		28%	8%	0.27	2.02	1.46	0.26	15	0.12	0.00	0.07	1,727.06	0.70	0.97	8.30	0.76
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	1.83	1.83	0.26	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.00	1.83	1.80	0.25	15	0.04	0.01	0.01	99.61	4.27	4.56	1.76	0.98
NC	412	Variable Speed Drive Control, 15 HP		28%	8%	0.16	1.91	1.38	0.25	15	0.41	0.02	0.04	1,095.76	1.11	1.52	5.27	0.76
NC	413	Air Handler Optimization, 15 HP		20%	20%	0.05	2.03	1.63	0.23	5	0.09	0.01	0.04	262.10	1.62	2.00	2.03	0.98
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	1.80	1.80	0.25	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.01	1.80	1.78	0.25	15	0.05	0.01	0.07	500.37	0.85	0.91	8.82	0.98
NC	422	Variable Speed Drive Control, 40 HP		28%	8%	0.11	2.08	1.51	0.27	15	0.65	0.02	0.03	682.77	1.78	2.44	3.28	0.76
NC	423	Air Handler Optimization, 40 HP		20%	20%	0.05	2.00	1.60	0.22	5	0.18	0.02	0.04	266.52	1.60	1.97	2.07	0.98
NC	500	Base Refrigeration System		0%	0%	0.00	0.14	0.14	0.02	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	0.56	0.56	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.15	0.15	0.03	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	0.28	0.28	0.05	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	4.42	4.42	0.84	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.64	0.64	0.09	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		38%	21%	0.03	0.73	0.46	0.08	4	0.88	0.06	0.03	475.19	1.36	2.16	1.58	0.77
NC	920	Base Display Monitor		0%	0%	0.00	0.61	0.61	0.08	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.64	0.72	0.36	0.05	4	1.24	0.17	0.67	4,988.04	0.09	0.11	30.71	0.96
NC	922	Power Management Enabling		67%	37%	0.01	1.03	0.33	0.09	4	1.35	0.10	0.01	108.77	5.93	9.42	0.36	0.77
NC	923	Network Power Management Enabling		67%	37%	0.01	1.03	0.33	0.09	4	1.21	0.09	0.00	54.38	11.87	18.85	0.18	0.77
NC	924	External hardware control		67%	37%	0.17	1.03	0.33	0.09	4	1.35	0.10	0.09	1,291.64	0.50	0.79	4.31	0.77
NC	930	Base Copier		0%	0%	0.00	0.20	0.20	0.03	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		59%	32%	0.01	0.34	0.14	0.03	4	0.32	0.02	0.01	198.79	3.25	5.16	0.66	0.77
NC	940	Base Laser Printer		0%	0%	0.00	0.22	0.22	0.03	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		68%	27%	0.09	0.23	0.07	0.02	4	0.52	0.03	0.22	4,105.01	0.20	0.34	10.05	0.71
NC	942	Nighttime shutdown		68%	27%	0.29	0.28	0.09	0.03	4	0.65	0.03	0.56	10,590.68	0.08	0.13	25.94	0.71
NC	100	Base Lighting		0%	0%	0.00	9.29	9.29	1.20	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	9.29	8.36	1.08	20	0.49	0.06	0.01	102.26	4.35	4.60	1.85	0.95
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	9.29	7.43	0.96	20	0.99	0.13	0.02	122.71	3.62	3.83	2.22	0.95
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	5.72	5.72	1.43	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.09	5.10	4.48	1.13	20	0.02	0.01	0.02	74.19	3.83	3.25	2.62	1.18

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	302	Window Film (Standard)		1%	1%	0.06	3.45	3.41	1.28	10	0.00	0.00	0.28	739.54	0.31	0.24	26.30	1.41
NC	303	EMS - Chiller		10%	10%	0.11	3.47	3.12	1.18	10	0.07	0.03	0.06	156.85	1.44	1.15	5.58	1.41
NC	304	Cool Roof - Chiller		1%	1%	0.07	3.42	3.40	1.28	10	0.00	0.00	0.59	1,560.19	0.15	0.12	55.48	1.41
NC	305	Chiller Tune-up/Diagnostics		3%	8%	0.07	3.47	3.35	1.20	10	0.00	0.00	0.11	122.74	1.40	0.61	10.54	2.59
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.12	3.46	3.26	1.23	15	0.03	0.01	0.08	212.12	1.07	0.79	10.09	1.41
NC	307	EMS Optimization		5%	5%	0.01	3.50	3.32	1.25	5	0.01	0.00	0.02	61.17	3.71	3.17	1.28	1.41
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	5.91	5.91	2.23	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.12	6.23	5.60	2.11	3	0.07	0.03	0.09	250.43	0.91	0.80	3.37	1.41
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.10	5.11	4.83	1.82	15	0.09	0.03	0.05	124.34	1.82	1.36	5.91	1.41
NC	313	Window Film (Standard)		1%	1%	0.06	5.96	5.89	2.22	10	0.01	0.00	0.16	428.65	0.53	0.42	15.24	1.41
NC	314	Evaporative Pre-Cooler		10%	10%	0.55	5.94	5.35	2.01	10	0.04	0.02	0.17	447.41	0.51	0.40	15.91	1.41
NC	315	Programmable Thermostat - DX		9%	3%	0.04	6.11	5.58	2.24	10	0.08	0.01	0.01	121.78	4.04	5.09	1.26	0.89
NC	316	Cool Roof - DX		1%	1%	0.07	5.93	5.89	2.22	10	0.00	0.00	0.34	899.30	0.25	0.20	31.98	1.41
NC	317	Optimize Controls		5%	5%	0.01	6.07	5.76	2.17	5	0.01	0.00	0.01	35.29	6.42	5.50	0.74	1.41
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	2.24	2.24	0.37	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.02	2.24	2.19	0.36	15	0.01	0.00	0.04	270.38	1.40	1.44	5.58	1.02
NC	402	Variable Speed Drive Control, 5 HP		27%	8%	0.27	2.24	1.63	0.34	15	0.03	0.00	0.06	1,325.46	0.79	1.07	7.50	0.78
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	2.07	2.07	0.34	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	DX Tune-up/Advanced Diagnostics		2%	2%	0.00	2.07	2.04	0.33	15	0.01	0.00	0.01	74.76	5.06	5.19	1.54	1.02
NC	412	Variable Speed Drive Control, 15 HP		27%	8%	0.16	2.15	1.56	0.33	15	0.12	0.01	0.04	826.98	1.27	1.71	4.68	0.78
NC	413	Air Handler Optimization, 15 HP		20%	20%	0.05	2.31	1.84	0.30	5	0.01	0.00	0.03	197.44	1.92	2.27	1.79	1.02
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	2.04	2.04	0.33	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.01	2.04	2.02	0.33	15	0.00	0.00	0.06	375.57	1.01	1.03	7.75	1.02
NC	422	Variable Speed Drive Control, 40 HP		27%	8%	0.11	2.22	1.61	0.34	15	0.07	0.00	0.02	545.35	1.92	2.60	3.08	0.78
NC	423	Air Handler Optimization, 40 HP		20%	20%	0.05	2.27	1.81	0.30	5	0.01	0.00	0.03	200.77	1.88	2.23	1.82	1.02
NC	500	Base Refrigeration System		0%	0%	0.00	1.23	1.23	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	1.62	1.62	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.18	0.18	0.03	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	1.54	1.54	0.23	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	7.51	7.51	1.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		38%	21%	0.02	0.13	0.08	0.01	4	0.02	0.00	0.12	1,662.35	0.39	0.62	5.48	0.77
NC	920	Base Display Monitor		0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.39	0.12	0.06	0.01	4	0.03	0.00	2.35	17,491.17	0.02	0.03	108.19	0.95
NC	922	Power Management Enabling		68%	37%	0.01	0.18	0.06	0.02	4	0.04	0.00	0.03	377.40	1.71	2.75	1.24	0.77
NC	923	Network Power Management Enabling		68%	37%	0.00	0.18	0.06	0.02	4	0.03	0.00	0.01	188.70	3.43	5.49	0.62	0.77
NC	924	External hardware control		68%	37%	0.11	0.18	0.06	0.02	4	0.04	0.00	0.32	4,481.64	0.14	0.23	14.78	0.77
NC	930	Base Copier		0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		60%	32%	0.01	0.09	0.03	0.01	4	0.01	0.00	0.06	892.91	0.72	1.16	2.94	0.77
NC	940	Base Laser Printer		0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		69%	27%	0.10	0.06	0.02	0.01	4	0.02	0.00	0.80	15,314.03	0.05	0.09	36.92	0.71
NC	942	Nighttime shutdown		69%	27%	0.31	0.08	0.02	0.01	4	0.03	0.00	2.06	39,309.27	0.02	0.04	94.78	0.71
NC	100	Base Lighting		0%	0%	0.00	8.08	8.08	0.81	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	8.08	7.27	0.73	20	0.60	0.06	0.02	151.23	3.45	4.00	2.13	0.86
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	8.08	6.46	0.65	20	1.20	0.12	0.02	181.48	2.87	3.33	2.56	0.86
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	2.87	2.87	1.73	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.10	2.56	2.26	1.36	20	0.07	0.04	0.04	63.84	2.82	1.58	5.40	1.78
NC	302	Window Film (Standard)		7%	7%	0.29	2.93	2.73	1.64	10	0.02	0.01	0.26	426.96	0.42	0.26	24.24	1.78
NC	303	EMS - Chiller		10%	10%	0.28	2.90	2.61	1.57	10	0.06	0.03	0.17	288.37	0.62	0.39	16.37	1.78
NC	304	Cool Roof - Chiller		0%	0%	0.02	2.88	2.87	1.72	10	0.00	0.00	0.28	N/A	0.38	0.24	26.68	1.78
NC	305	Chiller Tune-up/Diagnostics		3%	8%	0.17	2.92	2.83	1.61	10	0.00	0.00	0.37	224.35	0.63	0.19	34.49	3.81
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.30	2.92	2.74	1.65	15	0.02	0.01	0.23	387.01	0.46	0.27	29.38	1.78

INCOMPLETE FACTOR
(percent)

Segment	Measure #	Measure Description	Building Type 1
1	100	1-5 HP Motor	100.0%
1	101	Replace 1-5 HP Motor	93.0%
1	102	Add 1-5 HP VSD	89.0%
1	103	Motor Practices Level 1	80.0%
1	104	Motor Practices Level 2	95.0%
1	120	21-50 HP Motor (6 -100HP Market)	100.0%
1	121	Replace 21-50 HP Motor	87.0%
1	122	Add 21-50 HP VSD	95.0%
1	123	Motor Practices Level 1	80.0%
1	124	Motor Practices Level 2	95.0%
1	150	201-500 HP Motor (>100HP Market)	100.0%
1	151	Replace 201-500 HP Motor	88.0%
1	152	Add 201-500 HP VSD	96.0%
1	153	Motor Practices Level 1	80.0%
1	154	Motor Practices Level 2	95.0%
1	200	Compressed Air Systems	100.0%
1	202	CAS Level 1	80.0%
1	203	CAS Level 2	90.0%
1	204	CAS Level 3	100.0%
1	300	Process Other	100.0%
1	301	Process Level 1	62.3%
1	302	Process Level 2	59.7%
1	303	Process Level 3	76.4%
1	400	Base Fluorescent Fixture, 2L4'T12, 34W, 1STD MAG	100.0%
1	401	RET 2L4'T8, 1EB	84.0%
1	402	Occupancy Sensor, 4L4' Fluorescent Fixtures	80.0%
1	403	Continuous Dimming, 5L4' Fluorescent Fixtures	90.0%
1	410	Base Fluorescent Fixture, 2L8'T12, 60W, 1STD MAG	100.0%
1	411	RET 2L8'T12, 60W, 1EB	84.0%
1	412	Occupancy Sensor, 4L8' Fluorescent Fixtures	80.0%
1	413	Continuous Dimming, 5L8' Fluorescent Fixtures	90.0%
1	420	Incandescent/Mercury Vapor 150W	100.0%
1	421	CFL Screw-in, Modular 36W	58.0%
1	422	Metal Halide, 50W	58.0%
1	500	Centrifugal Chiller, 0.58 kW/ton, 500 tons	100.0%
1	501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100.0%
1	502	Window Film (Standard)	50.5%
1	503	EMS - Chiller	63.2%
1	504	Cool Roof - Chiller	58.7%
1	505	Chiller Tune-up/Diagnostics	50.0%
1	506	Cooling Circ. Pumps - VSD	75.0%
1	510	DX Packaged System, EER=10.3, 10 tons	0.0%
1	511	DX Tune-up/Advanced Diagnostics	50.0%
1	512	DX Packaged System, EER=10.9, 10 tons	100.0%
1	513	Window Film (Standard)	30.7%
1	514	Evaporative Pre-Cooler	95.0%
1	515	Programmable Thermostat - DX	45.3%
1	516	Cool Roof - DX	61.5%

TECHNOLOGY SATURATION
(units/square foot)

Segment	Measure #	Measure Description	Building Type 1
1	100	1-5 HP Motor	0.000777
1	101	Replace 1-5 HP Motor	0.000777
1	102	Add 1-5 HP VSD	0.000777
1	103	Motor Practices Level 1	0.000777
1	104	Motor Practices Level 2	0.000777
1	120	21-50 HP Motor (6 -100HP Market)	0.000560
1	121	Replace 21-50 HP Motor	0.000560
1	122	Add 21-50 HP VSD	0.000560
1	123	Motor Practices Level 1	0.000560
1	124	Motor Practices Level 2	0.000560
1	150	201-500 HP Motor (>100HP Market)	0.000389
1	151	Replace 201-500 HP Motor	0.000389
1	152	Add 201-500 HP VSD	0.000389
1	153	Motor Practices Level 1	0.000389
1	154	Motor Practices Level 2	0.000389
1	200	Compressed Air Systems	1.000000
1	202	CAS Level 1	1.000000
1	203	CAS Level 2	1.000000
1	204	CAS Level 3	1.000000
1	300	Process Other	1.000000
1	301	Process Level 1	1.000000
1	302	Process Level 2	1.000000
1	303	Process Level 3	1.000000
1	400	Base Fluorescent Fixture, 2L4'T12, 34W, 1STD MAG	0.003723
1	401	RET 2L4'T8, 1EB	0.003723
1	402	Occupancy Sensor, 4L4' Fluorescent Fixtures	0.003723
1	403	Continuous Dimming, 5L4' Fluorescent Fixtures	0.003723
1	410	Base Fluorescent Fixture, 2L8'T12, 60W, 1STD MAG	0.002259
1	411	RET 2L8'T12, 60W, 1EB	0.002259
1	412	Occupancy Sensor, 4L8' Fluorescent Fixtures	0.002259
1	413	Continuous Dimming, 5L8' Fluorescent Fixtures	0.002259
1	420	Incandescent/Mercury Vapor 150W	0.002706
1	421	CFL Screw-in, Modular 36W	0.002706
1	422	Metal Halide, 50W	0.002706
1	500	Centrifugal Chiller, 0.58 kW/ton, 500 tons	0.001225
1	501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	0.001225
1	502	Window Film (Standard)	0.015430
1	503	EMS - Chiller	0.001225
1	504	Cool Roof - Chiller	0.271854
1	505	Chiller Tune-up/Diagnostics	0.001225
1	506	Cooling Circ. Pumps - VSD	0.001225
1	510	DX Packaged System, EER=10.3, 10 tons	0.000714
1	511	DX Tune-up/Advanced Diagnostics	0.000714
1	512	DX Packaged System, EER=10.9, 10 tons	0.000714
1	513	Window Film (Standard)	0.009001
1	514	Evaporative Pre-Cooler	0.000714
1	515	Programmable Thermostat - DX	0.000714
1	516	Cool Roof - DX	0.158582

DSM ASSYST SUMMARY RESIDENTIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	600	Base Pool Pump and Motor	Single Family	0%	0%	0.00	2586	2586	239	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	601	High Efficiency Pool Pump and Motor	Single Family	49%	49%	332.00	2598	1325	123	15	25.61	2.37	0.04	383.90	1.51	1.87	4.28	0.84
Existing	700	Base Cooking	Single Family	0%	0%	0.00	666	666	152	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Clothes Drying	Single Family	0%	0%	0.00	933	933	105	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Single Family	0%	0%	0.00	3516	3516	309	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	100	Base, 13 SEER Central AC	Multifamily	0%	0%	0.00	2867	2867	2718	18	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	101	16 SEER Central AC	Multifamily	19%	19%	675.36	2927	2378	2255	18	48.91	46.38	0.16	163.61	0.96	0.49	17.17	2.00
Existing	102	Programmable Thermostat	Multifamily	5%	5%	39.20	3412	3241	3073	12	12.49	11.84	0.04	38.05	4.14	2.26	3.21	2.00
Existing	103	Ceiling Fans	Multifamily	5%	5%	180.00	3436	3264	3095	10	12.39	11.74	0.19	201.45	0.78	0.44	14.62	2.00
Existing	104	Whole House Fans	Multifamily	9%	9%	222.00	3397	3087	2927	10	24.14	22.89	0.13	137.38	1.15	0.64	9.97	2.00
Existing	105	Attic Venting	Multifamily	11%	11%	141.00	3411	3034	2877	10	28.33	26.86	0.07	72.05	2.18	1.22	5.23	2.00
Existing	106	Window Film	Multifamily	21%	21%	280.50	3533	2808	2663	20	58.08	55.08	0.05	49.89	3.15	1.58	5.40	2.00
Existing	107	High Performance Windows	Multifamily	15%	15%	56.50	3440	2916	2765	40	47.23	44.79	0.01	12.27	11.32	5.67	1.50	2.00
Existing	109	Ceiling Insulation R-11 to R-30	Multifamily	6%	7%	106.75	3455	3231	3064	20	12.59	11.94	0.06	61.30	2.57	1.29	6.63	2.00
Existing	110	Wall Insulation R-0 to R-13	Multifamily	11%	11%	247.50	3668	3250	3082	20	11.06	10.49	0.07	76.27	2.06	1.03	8.25	2.00
Existing	111	Infiltration Reduction	Multifamily	2%	2%	141.50	3429	3361	3187	10	2.75	2.60	0.38	396.70	0.40	0.22	28.79	2.00
Existing	112	Basic HVAC Diagnostic Testing and Repair	Multifamily	13%	13%	100.00	3616	3160	2997	10	22.79	21.61	0.04	42.24	3.73	2.09	3.07	2.00
Existing	113	Duct Diagnostics and Repair	Multifamily	8%	8%	225.00	3467	3185	3020	20	20.36	19.31	0.10	102.73	1.53	0.77	11.11	2.00
Existing	140	Base Room Air Conditioner	Multifamily	0%	0%	0.00	1556	1556	1476	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	141	ENERGY STAR Room Air Conditioner	Multifamily	12%	12%	39.00	1575	1384	1312	15	2.24	2.12	0.03	29.29	5.37	2.82	2.84	2.00
Existing	142	Programmable Thermostat	Multifamily	5%	5%	39.20	1617	1536	1457	12	0.77	0.73	0.08	80.27	1.96	1.07	6.77	2.00
Existing	143	Ceiling Fans	Multifamily	5%	5%	180.00	1629	1547	1467	10	0.76	0.72	0.40	425.02	0.37	0.21	30.85	2.00
Existing	144	Whole House Fans	Multifamily	9%	9%	222.00	1610	1463	1387	10	1.49	1.41	0.27	289.84	0.54	0.30	21.04	2.00
Existing	145	Attic Venting	Multifamily	11%	11%	141.00	1617	1438	1364	10	1.74	1.65	0.14	152.01	1.04	0.58	11.03	2.00
Existing	146	Window Film	Multifamily	21%	21%	280.50	1675	1331	1262	20	3.58	3.39	0.10	105.27	1.50	0.75	11.39	2.00
Existing	147	High Performance Windows	Multifamily	15%	15%	56.50	1631	1382	1311	40	2.91	2.76	0.02	25.88	5.37	2.69	3.17	2.00
Existing	149	Ceiling Insulation R-11 to R-30	Multifamily	6%	7%	106.75	1638	1531	1452	20	0.78	0.74	0.12	129.34	1.22	0.61	13.99	2.00
Existing	150	Wall Insulation R-0 to R-13	Multifamily	11%	11%	247.50	1739	1540	1461	20	0.68	0.65	0.15	160.91	0.98	0.49	17.41	2.00
Existing	151	Infiltration Reduction	Multifamily	2%	2%	141.50	1625	1593	1510	10	0.17	0.16	0.79	836.97	0.19	0.11	60.74	2.00
Existing	152	Basic HVAC Diagnostic Testing and Repair	Multifamily	13%	13%	100.00	1714	1498	1420	10	1.40	1.33	0.08	89.11	1.77	0.99	6.47	2.00
Existing	180	Resistance Space Heating	Multifamily	0%	0%	0.00	1789	1789	0	18	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	Heat Pump Space Heater	Multifamily	60%	60%	658.70	2403	961	0	18	59.55	0.00	0.06	N/A	0.63	0.99	8.50	0.65
Existing	182	Geothermal Heat Pump	Multifamily	76%	76%	4410.00	1789	429	0	18	34.92	0.00	0.41	N/A	0.09	0.14	60.31	0.65
Existing	183	Programmable Thermostat	Multifamily	5%	5%	49.00	1802	1712	0	12	6.77	0.00	0.09	N/A	0.42	0.72	10.11	0.65
Existing	186	Ceiling Insulation R-11 to R-30	Multifamily	10%	10%	106.75	1843	1663	0	20	10.39	0.00	0.07	N/A	0.50	0.78	10.99	0.65
Existing	187	Wall Insulation R-0 to R-13	Multifamily	34%	34%	247.50	2314	1531	0	20	26.55	0.00	0.04	N/A	0.94	1.45	5.88	0.65
Existing	188	Infiltration Reduction	Multifamily	3%	3%	141.50	1822	1767	0	10	2.25	0.00	0.47	N/A	0.08	0.13	48.14	0.65
Existing	200	Base 40 gal. Water Heating	Multifamily	0%	0%	0.00	2132	2132	185	13	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	201	Heat Pump Water Heater	Multifamily	70%	70%	1550.00	2147	644	56	13	73.50	6.39	0.15	1,760.90	0.34	0.43	17.45	0.84
Existing	202	HE Water Heater	Multifamily	5%	5%	50.00	2137	2022	176	13	10.79	0.94	0.06	742.79	0.81	1.03	7.36	0.84
Existing	203	Solar Water Heat	Multifamily	80%	80%	4000.00	2166	433	38	13	83.92	7.30	0.34	3,940.19	0.15	0.19	39.06	0.84
Existing	204	Low Flow Showerhead	Multifamily	8%	8%	30.00	2268	2098	182	10	2.69	0.23	0.03	369.93	1.62	2.14	2.98	0.84
Existing	205	Faucet Aerators	Multifamily	3%	3%	29.64	2181	2115	184	10	1.29	0.11	0.08	950.19	0.63	0.83	7.67	0.84
Existing	206	Pipe Wrap	Multifamily	2%	2%	5.40	2144	2102	183	13	1.48	0.13	0.02	214.93	2.78	3.55	2.13	0.84
Existing	207	Water Heater Blanket	Multifamily	10%	10%	24.00	2197	1978	172	13	7.60	0.66	0.02	186.44	3.21	4.09	1.85	0.84
Existing	208	ENERGY STAR Clothes Washer	Multifamily	14%	14%	86.90	1551	1337	157	13	11.90	1.39	0.06	514.26	0.96	1.12	6.73	0.92
Existing	300	Base Lighting, 0.5 hr/hday	Multifamily	0%	0%	3.55	85	85	7	5	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	CFL, 0.5 hr/day	Multifamily	70%	70%	56.80	86	26	2	55	5.09	0.45	0.10	1,150.54	0.45	0.53	15.96	0.84
Existing	310	Base Lighting, 2.5 hr/hday	Multifamily	0%	0%	3.40	406	406	36	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	CFL, 2.5 hr/day	Multifamily	70%	70%	54.40	437	131	12	11	23.61	2.08	0.03	341.07	1.75	2.29	3.00	0.84
Existing	320	Base Lighting, 6.0 hr/hday	Multifamily	0%	0%	0.85	249	249	22	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	321	CFL, 6.0 hr/day	Multifamily	70%	70%	13.60	268	80	7	5	14.50	1.28	0.02	279.55	2.13	3.05	1.33	0.84
Existing	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEMAG	Multifamily	0%	0%	52.00	158	158	14	31	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	331	ROB 2L4'T8, 1EB	Multifamily	28%	28%	8.00	161	116	10	48	3.31	0.29	0.02	215.67	2.41	2.86	2.98	0.84
Existing	340	Base Torchiere	Multifamily	0%	0%	0.00	214	214	19	9	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	341	Fluorescent Torchiere	Multifamily	72%	72%	15.33	222	62	5	9	6.51	0.57	0.02	212.07	2.81	3.77	1.61	0.84
Existing	400	Base Refrigerator	Multifamily	0%	0%	0.00	894	894	122	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	HE Refrigerator - ENERGY STAR	Multifamily	15%	15%	36.00	511	435	59	15	9.47	1.29	0.06	470.46	0.88	1.04	7.71	0.89

DSM ASSYST SUMMARY RESIDENTIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	450	Base Freezer	Multifamily	0%	0%	0.00	550	550	76	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	451	HE Freezer	Multifamily	10%	10%	33.00	556	500	69	15	0.68	0.09	0.08	585.30	0.70	0.82	9.73	0.89
Existing	500	Base Dishwasher	Multifamily	0%	0%	0.00	284	284	35	13	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	501	ENERGY STAR Dishwasher	Multifamily	23%	23%	50.00	292	224	28	13	3.18	0.40	0.11	869.97	0.55	0.62	12.23	0.97
Existing	700	Base Cooking	Multifamily	0%	0%	0.00	474	474	109	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Clothes Drying	Multifamily	0%	0%	0.00	583	583	65	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Multifamily	0%	0%	0.00	1379	1379	121	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY RESIDENTIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	100	Base, 13 SEER Central AC	Single Family	0%	0%	0.00	5299	5299	5024	18	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	16 SEER Central AC	Single Family	19%	19%	1008.00	5410	4396	4168	18	5.86	5.56	0.13	132.12	1.19	0.61	13.87	2.00
NC	102	Programmable Thermostat	Single Family	5%	5%	39.20	6306	5991	5681	12	1.50	1.42	0.02	20.58	7.65	4.17	1.73	2.00
NC	103	Ceiling Fans	Single Family	5%	5%	276.00	6351	6033	5721	10	1.48	1.41	0.16	167.11	0.94	0.53	12.13	2.00
NC	104	Whole House Fans	Single Family	9%	9%	222.00	6279	5705	5410	10	2.89	2.74	0.07	74.32	2.12	1.19	5.39	2.00
NC	105	Attic Venting	Single Family	11%	11%	141.00	6304	5608	5318	10	3.40	3.22	0.04	38.98	4.04	2.26	2.83	2.00
NC	106	Window Film	Single Family	21%	21%	838.20	6530	5190	4921	20	6.96	6.60	0.08	80.67	1.95	0.98	8.73	2.00
NC	108	Radiant Barrier	Single Family	6%	6%	326.25	6300	5922	5615	20	1.77	1.68	0.11	111.32	1.41	0.71	12.04	2.00
NC	109	Ceiling Insulation R-30 to R-38	Single Family	2%	2%	58.00	6300	6174	5854	20	0.46	0.43	0.06	59.37	2.65	1.33	6.42	2.00
NC	110	Wall Insulation R-11 to R-19	Single Family	4%	4%	222.00	6287	6036	5723	20	1.18	1.12	0.11	113.86	1.38	0.69	12.32	2.00
NC	111	Infiltration Reduction	Single Family	2%	2%	141.50	6338	6211	5890	10	0.33	0.31	0.20	214.63	0.73	0.41	15.58	2.00
NC	112	Basic HVAC Diagnostic Testing and Repair	Single Family	13%	13%	100.00	6683	5841	5539	10	2.73	2.59	0.02	22.85	6.89	3.86	1.66	2.00
NC	113	Duct Diagnostics and Repair	Single Family	8%	8%	225.00	6408	5886	5582	20	2.44	2.32	0.05	55.58	2.83	1.42	6.01	2.00
NC	140	Base Room Air Conditioner	Single Family	0%	0%	0.00	2876	2876	2727	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	141	ENERGY STAR Room Air Conditioner	Single Family	12%	12%	60.00	2912	2558	2426	15	0.64	0.61	0.02	24.38	6.46	3.39	2.37	2.00
NC	142	Programmable Thermostat	Single Family	5%	5%	39.20	2989	2840	2693	12	0.22	0.21	0.04	43.43	3.62	1.98	3.66	2.00
NC	143	Ceiling Fans	Single Family	5%	5%	276.00	3010	2860	2712	10	0.22	0.21	0.33	352.58	0.45	0.25	25.59	2.00
NC	144	Whole House Fans	Single Family	9%	9%	222.00	2976	2704	2564	10	0.43	0.41	0.15	156.81	1.00	0.56	11.38	2.00
NC	145	Attic Venting	Single Family	11%	11%	141.00	2988	2658	2521	10	0.50	0.48	0.08	82.24	1.91	1.07	5.97	2.00
NC	146	Window Film	Single Family	21%	21%	838.20	3095	2460	2333	20	1.03	0.97	0.16	170.19	0.92	0.46	18.41	2.00
NC	149	Ceiling Insulation R-30 to R-38	Single Family	2%	2%	58.00	2986	2926	2775	20	0.07	0.06	0.12	125.27	1.26	0.63	13.55	2.00
NC	150	Wall Insulation R-11 to R-19	Single Family	4%	4%	222.00	2980	2861	2713	20	0.17	0.16	0.23	240.22	0.66	0.33	25.99	2.00
NC	151	Infiltration Reduction	Single Family	2%	2%	141.50	3004	2944	2792	10	0.05	0.05	0.43	452.82	0.35	0.19	32.86	2.00
NC	152	Basic HVAC Diagnostic Testing and Repair	Single Family	13%	13%	100.00	3168	2769	2625	10	0.40	0.38	0.05	48.21	3.26	1.83	3.50	2.00
NC	180	Resistance Space Heating	Single Family	0%	0%	0.00	4754	4754	0	18	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	181	Heat Pump Space Heater	Single Family	60%	60%	941.00	6384	2553	0	18	7.05	0.00	0.03	N/A	1.17	1.84	4.57	0.65
NC	182	Geothermal Heat Pump	Single Family	76%	76%	6300.00	4754	1141	0	18	4.14	0.00	0.22	N/A	0.16	0.26	32.43	0.65
NC	183	Programmable Thermostat	Single Family	5%	5%	49.00	4787	4548	0	12	0.80	0.00	0.03	N/A	1.13	1.90	3.81	0.65
NC	186	Ceiling Insulation R-30 to R-38	Single Family	4%	4%	58.00	4804	4636	0	20	0.43	0.00	0.04	N/A	0.86	1.33	6.41	0.65
NC	187	Wall Insulation R-11 to R-19	Single Family	20%	20%	222.00	4851	3881	0	20	4.00	0.00	0.03	N/A	1.29	2.00	4.26	0.65
NC	188	Infiltration Reduction	Single Family	3%	3%	141.50	4841	4696	0	10	0.27	0.00	0.18	N/A	0.20	0.35	18.12	0.65
NC	200	Base 40 gal. Water Heating	Single Family	0%	0%	0.00	3769	3769	328	13	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	201	Heat Pump Water Heater	Single Family	70%	70%	1550.00	3795	1139	99	13	5.32	0.46	0.09	995.93	0.60	0.77	9.87	0.84
NC	202	HE Water Heater	Single Family	5%	5%	50.00	3779	3576	311	13	0.78	0.07	0.04	420.11	1.42	1.81	4.16	0.84
NC	203	Solar Water Heat	Single Family	80%	80%	4000.00	3830	766	67	13	6.07	0.53	0.19	2,228.50	0.27	0.34	22.09	0.84
NC	206	Pipe Wrap	Single Family	2%	2%	5.40	3792	3716	323	13	0.11	0.01	0.01	121.56	4.92	6.27	1.20	0.84
NC	207	Water Heater Blanket	Single Family	10%	10%	24.00	3885	3497	304	13	0.55	0.05	0.01	105.45	5.67	7.23	1.05	0.84
NC	208	ENERGY STAR Clothes Washer	Single Family	14%	14%	86.90	2743	2364	277	13	1.40	0.16	0.03	290.86	1.70	1.98	3.81	0.92
NC	300	Base Lighting, 0.5 hr/hday	Single Family	0%	0%	5.35	113	113	10	5	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	CFL, 0.5 hr/day	Single Family	70%	70%	85.60	114	34	3	55	0.56	0.05	0.11	1,300.44	0.40	0.47	18.04	0.84
NC	310	Base Lighting, 2.5 hr/hday	Single Family	0%	0%	5.10	541	541	48	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	CFL, 2.5 hr/day	Single Family	70%	70%	81.60	582	175	15	11	2.58	0.23	0.03	383.71	1.55	2.03	3.37	0.84
NC	320	Base Lighting, 6.0 hr/hday	Single Family	0%	0%	1.30	332	332	29	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	321	CFL, 6.0 hr/day	Single Family	70%	70%	20.80	357	107	9	5	1.58	0.14	0.03	320.66	1.86	2.66	1.53	0.84
NC	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEM/	Single Family	0%	0%	95.01	211	211	19	31	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	331	RET 2L4'T8, 1EB	Single Family	28%	28%	14.62	215	155	14	48	0.36	0.03	0.03	295.54	1.76	2.09	4.08	0.84
NC	340	Base Torchiere	Single Family	0%	0%	0.00	285	285	25	9	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	341	Fluorescent Torchiere	Single Family	72%	72%	23.00	296	83	7	9	0.71	0.06	0.02	238.57	2.50	3.36	1.81	0.84
NC	400	Base Refrigerator	Single Family	0%	0%	0.00	1558	1558	212	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	HE Refrigerator - ENERGY STAR	Single Family	15%	15%	36.00	890	757	103	15	1.35	0.18	0.04	270.06	1.54	1.81	4.42	0.89
NC	450	Base Freezer	Single Family	0%	0%	0.00	927	927	128	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	451	HE Freezer	Single Family	10%	10%	33.00	937	843	116	15	0.28	0.04	0.05	347.36	1.18	1.39	5.78	0.89
NC	500	Base Dishwasher	Single Family	0%	0%	0.00	519	519	65	13	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	501	ENERGY STAR Dishwasher	Single Family	23%	23%	50.00	534	409	51	13	0.22	0.03	0.06	475.91	1.01	1.13	6.69	0.97
NC	600	Base Pool Pump and Motor	Single Family	0%	0%	0.00	2586	2586	239	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	601	High Efficiency Pool Pump and Motor	Single Family	49%	49%	332.00	2598	1325	123	15	0.67	0.06	0.04	383.90	1.51	1.87	4.28	0.84
NC	700	Base Cooking	Single Family	0%	0%	0.00	666	666	152	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Clothes Drying	Single Family	0%	0%	0.00	933	933	105	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY RESIDENTIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	900	Base Miscellaneous	Single Family	0%	0%	0.00	3516	3516	309	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	100	Base, 13 SEER Central AC	Multifamily	0%	0%	0.00	2867	2867	2718	18	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	16 SEER Central AC	Multifamily	19%	19%	675.36	2927	2378	2255	18	1.28	1.22	0.16	163.61	0.96	0.49	17.17	2.00
NC	102	Programmable Thermostat	Multifamily	5%	5%	39.20	3412	3241	3073	12	0.33	0.31	0.04	38.05	4.14	2.26	3.21	2.00
NC	103	Ceiling Fans	Multifamily	5%	5%	180.00	3436	3264	3095	10	0.32	0.31	0.19	201.45	0.78	0.44	14.62	2.00
NC	104	Whole House Fans	Multifamily	9%	9%	222.00	3397	3087	2927	10	0.63	0.60	0.13	137.38	1.15	0.64	9.97	2.00
NC	105	Attic Venting	Multifamily	11%	11%	141.00	3411	3034	2877	10	0.74	0.70	0.07	72.05	2.18	1.22	5.23	2.00
NC	106	Window Film	Multifamily	21%	21%	280.50	3533	2808	2663	20	1.52	1.44	0.05	49.89	3.15	1.58	5.40	2.00
NC	109	Ceiling Insulation R-30 to R-38	Multifamily	2%	2%	24.40	3408	3340	3167	20	0.10	0.09	0.04	46.17	3.41	1.71	4.99	2.00
NC	110	Wall Insulation R-11 to R-19	Multifamily	4%	4%	66.00	3402	3265	3096	20	0.26	0.24	0.06	62.57	2.52	1.26	6.77	2.00
NC	111	Infiltration Reduction	Multifamily	2%	2%	141.50	3429	3361	3187	10	0.07	0.07	0.38	396.70	0.40	0.22	28.79	2.00
NC	112	Basic HVAC Diagnostic Testing and Repair	Multifamily	13%	13%	100.00	3616	3160	2997	10	0.60	0.57	0.04	42.24	3.73	2.09	3.07	2.00
NC	113	Duct Diagnostics and Repair	Multifamily	8%	8%	225.00	3467	3185	3020	20	0.53	0.51	0.10	102.73	1.53	0.77	11.11	2.00
NC	140	Base Room Air Conditioner	Multifamily	0%	0%	0.00	1556	1556	1476	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	141	ENERGY STAR Room Air Conditioner	Multifamily	12%	12%	39.00	1575	1384	1312	15	0.06	0.06	0.03	29.29	5.37	2.82	2.84	2.00
NC	142	Programmable Thermostat	Multifamily	5%	5%	39.20	1617	1536	1457	12	0.02	0.02	0.08	80.27	1.96	1.07	6.77	2.00
NC	143	Ceiling Fans	Multifamily	5%	5%	180.00	1629	1547	1467	10	0.02	0.02	0.40	425.02	0.37	0.21	30.85	2.00
NC	144	Whole House Fans	Multifamily	9%	9%	222.00	1610	1463	1387	10	0.04	0.04	0.27	289.84	0.54	0.30	21.04	2.00
NC	145	Attic Venting	Multifamily	11%	11%	141.00	1617	1438	1364	10	0.05	0.04	0.14	152.01	1.04	0.58	11.03	2.00
NC	146	Window Film	Multifamily	21%	21%	280.50	1675	1331	1262	20	0.09	0.09	0.10	105.27	1.50	0.75	11.39	2.00
NC	149	Ceiling Insulation R-30 to R-38	Multifamily	2%	2%	24.40	1615	1583	1501	20	0.01	0.01	0.09	97.41	1.62	0.81	10.54	2.00
NC	150	Wall Insulation R-11 to R-19	Multifamily	4%	4%	66.00	1612	1548	1468	20	0.02	0.02	0.13	132.00	1.19	0.60	14.28	2.00
NC	151	Infiltration Reduction	Multifamily	2%	2%	141.50	1625	1593	1510	10	0.00	0.00	0.79	836.97	0.19	0.11	60.74	2.00
NC	152	Basic HVAC Diagnostic Testing and Repair	Multifamily	13%	13%	100.00	1714	1498	1420	10	0.04	0.03	0.08	89.11	1.77	0.99	6.47	2.00
NC	180	Resistance Space Heating	Multifamily	0%	0%	0.00	1789	1789	0	18	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	181	Heat Pump Space Heater	Multifamily	60%	60%	658.70	2403	961	0	18	1.56	0.00	0.06	N/A	0.63	0.99	8.50	0.65
NC	182	Geothermal Heat Pump	Multifamily	76%	76%	4410.00	1789	429	0	18	0.92	0.00	0.41	N/A	0.09	0.14	60.31	0.65
NC	183	Programmable Thermostat	Multifamily	5%	5%	49.00	1802	1712	0	12	0.18	0.00	0.09	N/A	0.42	0.72	10.11	0.65
NC	186	Ceiling Insulation R-30 to R-38	Multifamily	4%	4%	24.40	1808	1745	0	20	0.10	0.00	0.05	N/A	0.77	1.19	7.17	0.65
NC	187	Wall Insulation R-11 to R-19	Multifamily	20%	20%	66.00	1826	1460	0	20	0.88	0.00	0.02	N/A	1.64	2.54	3.36	0.65
NC	188	Infiltration Reduction	Multifamily	3%	3%	141.50	1822	1767	0	10	0.06	0.00	0.47	N/A	0.08	0.13	48.14	0.65
NC	200	Base 40 gal. Water Heating	Multifamily	0%	0%	0.00	2132	2132	185	13	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	201	Heat Pump Water Heater	Multifamily	70%	70%	1550.00	2147	644	56	13	1.93	0.17	0.15	1,760.90	0.34	0.43	17.45	0.84
NC	202	HE Water Heater	Multifamily	5%	5%	50.00	2137	2022	176	13	0.28	0.02	0.06	742.79	0.81	1.03	7.36	0.84
NC	203	Solar Water Heat	Multifamily	80%	80%	4000.00	2166	433	38	13	2.20	0.19	0.34	3,940.19	0.15	0.19	39.06	0.84
NC	206	Pipe Wrap	Multifamily	2%	2%	5.40	2144	2102	183	13	0.04	0.00	0.02	214.93	2.78	3.55	2.13	0.84
NC	207	Water Heater Blanket	Multifamily	10%	10%	24.00	2197	1978	172	13	0.20	0.02	0.02	186.44	3.21	4.09	1.85	0.84
NC	208	ENERGY STAR Clothes Washer	Multifamily	14%	14%	86.90	1551	1337	157	13	0.31	0.04	0.06	514.26	0.96	1.12	6.73	0.92
NC	300	Base Lighting, 0.5 hr/hday	Multifamily	0%	0%	3.55	85	85	7	5	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	CFL, 0.5 hr/day	Multifamily	70%	70%	56.80	86	26	2	55	0.13	0.01	0.10	1,150.54	0.45	0.53	15.96	0.84
NC	310	Base Lighting, 2.5 hr/hday	Multifamily	0%	0%	3.40	406	406	36	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	CFL, 2.5 hr/day	Multifamily	70%	70%	54.40	437	131	12	11	0.62	0.05	0.03	341.07	1.75	2.29	3.00	0.84
NC	320	Base Lighting, 6.0 hr/hday	Multifamily	0%	0%	0.85	249	249	22	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	321	CFL, 6.0 hr/day	Multifamily	70%	70%	13.60	268	80	7	5	0.38	0.03	0.02	279.55	2.13	3.05	1.33	0.84
NC	330	Base Fluorescent Fixture, 2L4'T12, 40W, 1EEM/	Multifamily	0%	0%	52.00	158	158	14	31	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	331	RET 2L4'T8, 1EB	Multifamily	28%	28%	8.00	161	116	10	48	0.09	0.01	0.02	215.67	2.41	2.86	2.98	0.84
NC	340	Base Torchiere	Multifamily	0%	0%	0.00	214	214	19	9	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	341	Fluorescent Torchiere	Multifamily	72%	72%	15.33	222	62	5	9	0.17	0.02	0.02	212.07	2.81	3.77	1.61	0.84
NC	400	Base Refrigerator	Multifamily	0%	0%	0.00	894	894	122	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	HE Refrigerator - ENERGY STAR	Multifamily	15%	15%	36.00	511	435	59	15	0.25	0.03	0.06	470.46	0.88	1.04	7.71	0.89
NC	450	Base Freezer	Multifamily	0%	0%	0.00	550	550	76	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	451	HE Freezer	Multifamily	10%	10%	33.00	556	500	69	15	0.02	0.00	0.08	585.30	0.70	0.82	9.73	0.89
NC	500	Base Dishwasher	Multifamily	0%	0%	0.00	284	284	35	13	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	501	ENERGY STAR Dishwasher	Multifamily	23%	23%	50.00	292	224	28	13	0.08	0.01	0.11	869.97	0.55	0.62	12.23	0.97
NC	700	Base Cooking	Multifamily	0%	0%	0.00	474	474	109	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Clothes Drying	Multifamily	0%	0%	0.00	583	583	65	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous	Multifamily	0%	0%	0.00	1379	1379	121	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

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Vintage Batch Segment	E 1 Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Office	0%	0%	0.00	7.12	7.12	1.35	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	10% More Efficient Design (Lighting)	Office	31%	31%	0.10	7.12	4.88	0.93	16	57.16	10.87	0.01	30.40	11.67	10.85	0.75	1.11
Existing	112	20% More Efficient Design (Lighting)	Office	66%	66%	0.31	7.12	2.44	0.46	16	29.88	5.68	0.01	45.43	7.81	7.26	1.13	1.11
Existing	113	RET 4L4' Premium T8, 1EB	Office	31%	31%	0.61	7.12	4.88	0.93	16	57.16	10.87	0.03	178.15	1.99	1.80	4.71	1.11
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Office	66%	66%	0.82	7.12	2.44	0.46	16	29.88	5.68	0.02	116.10	3.05	2.78	3.02	1.11
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Office	23%	30%	0.34	7.35	5.68	0.98	9	18.46	4.62	0.04	154.38	2.02	1.78	3.42	1.29
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Office	39%	75%	3.54	7.12	4.35	0.34	11	35.39	12.97	0.21	561.26	0.48	0.33	21.07	1.63
Existing	117	RNV 2L4'T5HO, 1EB	Office	24%	24%	3.07	7.12	5.44	1.03	16	13.42	2.55	0.24	1,248.60	0.28	0.26	31.33	1.11
Existing	118	Lighting Control Tune-up	Office	3%	3%	0.01	7.23	7.01	1.33	6	0.30	0.06	0.02	92.72	3.82	4.08	1.14	1.11
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Office	0%	0%	0.00	7.12	7.12	1.35	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Office	31%	31%	0.26	7.12	4.88	0.93	16	53.31	10.14	0.02	81.16	4.37	4.06	2.01	1.11
Existing	132	RET 2L4' Premium T8, 1EB	Office	31%	31%	0.82	7.12	4.88	0.93	16	47.98	9.12	0.05	241.03	1.47	1.34	6.29	1.11
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Office	64%	64%	1.16	7.12	2.54	0.48	16	10.90	2.07	0.03	169.78	2.09	1.91	4.36	1.11
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Office	23%	30%	0.33	7.34	5.67	0.98	9	13.83	3.46	0.04	150.06	2.08	1.83	3.33	1.29
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Office	39%	75%	3.43	7.12	4.35	0.34	11	26.41	9.68	0.20	544.96	0.49	0.34	20.46	1.63
Existing	136	RNV 1L4'T5HO, 1EB	Office	24%	24%	5.62	7.12	5.44	1.03	16	10.01	1.90	0.44	2,298.49	0.15	0.14	57.38	1.11
Existing	137	Lighting Control Tune-up	Office	3%	3%	0.01	7.23	7.01	1.33	6	0.23	0.04	0.02	92.72	3.82	4.08	1.14	1.11
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Office	0%	0%	0.00	6.50	6.50	1.24	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Office	22%	22%	0.15	6.60	5.17	0.98	16	18.74	3.56	0.01	74.27	4.77	4.44	1.84	1.11
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Office	60%	60%	0.46	6.78	2.68	0.51	16	13.44	2.56	0.01	77.67	4.57	4.25	1.92	1.11
Existing	153	RET 2L8'T12, 60W, 1EB	Office	22%	22%	0.83	6.60	5.17	0.98	16	18.74	3.56	0.07	378.01	0.94	0.85	9.97	1.11
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Office	60%	60%	1.14	6.78	2.68	0.51	16	13.44	2.56	0.03	183.55	1.93	1.76	4.76	1.11
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	23%	30%	0.35	6.70	5.18	0.89	9	9.32	2.33	0.04	175.93	1.77	1.56	3.90	1.29
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Office	39%	75%	3.67	6.50	3.97	0.31	11	17.80	6.52	0.23	638.21	0.42	0.29	23.96	1.63
Existing	165	Base Incandescent Flood, 75W	Office	0%	0%	0.00	11.18	11.18	2.13	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Office	72%	72%	1.56	26.37	7.39	1.40	5	65.74	12.50	0.02	118.13	3.00	3.16	1.54	1.11
Existing	175	Base Incandescent Flood, 150W PAR	Office	0%	0%	0.00	11.18	11.18	2.13	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Office	40%	40%	0.42	16.90	10.14	1.93	1	4.78	0.91	0.07	384.34	0.92	1.03	2.32	1.11
Existing	177	Metal Halide, 50W	Office	58%	58%	10.00	21.95	9.22	1.75	6	8.10	1.54	0.22	1,177.07	0.30	0.32	14.73	1.11
Existing	180	Base 4L4'T8, 1EB	Office	0%	0%	0.00	5.18	5.18	0.98	16	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Office	16%	16%	0.09	5.18	4.36	0.83	16	16.20	3.08	0.01	72.82	4.87	4.53	1.80	1.11
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Office	30%	30%	0.34	5.40	3.78	0.72	9	11.08	2.11	0.04	210.20	1.69	1.72	3.54	1.11
Existing	183	Lighting Control Tune-up	Office	3%	3%	0.01	5.26	5.10	0.97	6	0.14	0.03	0.02	127.54	2.78	2.96	1.57	1.11
Existing	185	Base 2L4'T8, 1EB	Office	0%	0%	0.00	5.18	5.18	0.98	16	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Office	17%	17%	0.12	5.18	4.28	0.81	16	12.83	2.44	0.02	92.51	3.83	3.57	2.29	1.11
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Office	30%	30%	0.33	5.39	3.77	0.72	9	8.07	1.53	0.04	204.39	1.74	1.77	3.44	1.11
Existing	188	Lighting Control Tune-up	Office	3%	3%	0.01	5.26	5.10	0.97	6	0.10	0.02	0.02	127.54	2.78	2.96	1.57	1.11
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Office	0%	0%	0.00	1.57	1.57	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Office	17%	17%	0.15	1.69	1.41	0.00	16	1.80	0.00	0.07	N/A	0.56	0.93	9.09	0.60
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Office	22%	0%	0.14	1.93	1.51	0.00	10	0.63	0.00	0.06	N/A	0.63	1.18	5.42	0.59
Existing	220	Base Mercury Vapor 400W Lamp	Office	0%	0%	0.00	1.57	1.57	0.00	6	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Office	35%	35%	0.16	2.24	1.45	0.00	6	14.15	0.00	0.06	N/A	0.63	1.24	3.76	0.60
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Office	22%	0%	0.03	1.93	1.51	0.00	6	6.98	0.00	0.02	N/A	1.84	3.68	1.27	0.59
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	0%	0%	0.00	2.39	2.39	1.01	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	12%	12%	0.05	2.13	1.87	0.79	20	10.74	4.53	0.02	58.23	3.80	2.47	3.46	1.54
Existing	302	Window Film (Standard)	Office	9%	9%	0.27	2.56	2.33	0.98	10	1.84	0.78	0.21	490.42	0.45	0.33	19.53	1.54
Existing	303	EMS - Chiller	Office	10%	10%	0.15	2.50	2.25	0.95	10	5.65	2.38	0.11	253.12	0.87	0.63	10.08	1.54
Existing	304	Cool Roof - Chiller	Office	2%	2%	0.10	2.41	2.37	1.00	10	0.31	0.13	0.44	1,041.01	0.21	0.15	41.45	1.54
Existing	305	10% More Efficient Design (Lighting)	Office	4%	8%	0.09	2.44	2.33	0.95	10	0.54	0.43	0.16	203.34	0.89	0.42	15.41	2.41
Existing	306	20% More Efficient Design (Lighting)	Office	6%	6%	0.16	2.42	2.28	0.96	15	3.42	1.44	0.15	353.01	0.63	0.43	18.80	1.54
Existing	307	EMS Optimization	Office	5%	5%	0.01	2.45	2.32	0.98	5	0.89	0.38	0.03	78.14	2.83	2.22	1.83	1.54
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Office	0%	0%	0.00	4.13	4.13	1.74	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Office	10%	10%	0.16	4.35	3.92	1.65	3	11.29	4.76	0.18	416.76	0.53	0.43	6.28	1.54
Existing	312	DX Packaged System, EER=10.9, 10 tons	Office	6%	6%	0.13	3.57	3.38	1.42	15	13.60	5.74	0.09	206.93	1.07	0.73	11.02	1.54
Existing	313	Window Film (Standard)	Office	9%	9%	0.27	4.38	3.97	1.68	10	8.41	3.55	0.12	287.24	0.77	0.56	11.44	1.54

DSM ASSYST SUMMARY — COMMERCIAL — Year 2005

Vintage Batch Segment	E 1 Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	314	Evaporative Pre-Cooler	Office	10%	10%	0.72	4.16	3.74	1.58	10	6.83	2.88	0.31	744.57	0.30	0.22	29.65	1.54
Existing	315	Programmable Thermostat - DX	Office	8%	3%	0.05	4.39	4.03	1.81	10	5.39	0.69	0.03	196.89	2.32	2.69	2.38	0.97
Existing	316	Cool Roof - DX	Office	2%	2%	0.10	4.17	4.09	1.73	10	1.47	0.62	0.25	603.03	0.37	0.27	24.01	1.54
Existing	317	Optimize Controls	Office	5%	5%	0.01	4.24	4.03	1.70	5	2.57	1.08	0.02	45.08	4.91	3.85	1.06	1.54
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	0%	0%	0.00	1.97	1.97	0.28	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2%	2%	0.02	1.97	1.93	0.27	15	1.20	0.17	0.05	360.23	1.18	1.26	6.35	0.98
Existing	402	Variable Speed Drive Control, 5 HP	Office	28%	8%	0.27	2.02	1.46	0.26	15	3.32	0.13	0.07	1,727.06	0.70	0.97	8.30	0.76
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	0%	0%	0.00	1.83	1.83	0.26	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2%	2%	0.00	1.83	1.80	0.25	15	0.97	0.14	0.01	99.61	4.27	4.56	1.76	0.98
Existing	412	Variable Speed Drive Control, 15 HP	Office	28%	8%	0.16	1.91	1.38	0.25	15	11.05	0.42	0.04	1,095.76	1.11	1.52	5.27	0.76
Existing	413	Air Handler Optimization, 15 HP	Office	20%	20%	0.05	2.03	1.63	0.23	5	2.49	0.35	0.04	262.10	1.62	2.00	2.03	0.98
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	0%	0%	0.00	1.80	1.80	0.25	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Office	1%	1%	0.01	1.80	1.78	0.25	15	1.46	0.20	0.07	500.37	0.85	0.91	8.82	0.98
Existing	422	Variable Speed Drive Control, 40 HP	Office	28%	8%	0.11	2.08	1.51	0.27	15	17.44	0.66	0.03	682.77	1.78	2.44	3.28	0.76
Existing	423	Air Handler Optimization, 40 HP	Office	20%	20%	0.05	2.00	1.60	0.22	5	4.84	0.68	0.04	266.52	1.60	1.97	2.07	0.98
Existing	500	Base Refrigeration System	Office	0%	0%	0.00	0.14	0.14	0.02	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Office	0%	0%	0.00	0.56	0.56	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Office	0%	0%	0.00	0.15	0.15	0.03	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Office	0%	0%	0.00	0.28	0.28	0.05	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Office	0%	0%	0.00	4.42	4.42	0.84	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Office	0%	0%	0.00	0.64	0.64	0.09	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Office	38%	21%	0.03	0.73	0.46	0.08	4	23.72	1.72	0.03	475.19	1.36	2.16	1.58	0.77
Existing	920	Base Display Monitor	Office	0%	0%	0.00	0.61	0.61	0.08	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Office	50%	50%	0.64	0.72	0.36	0.05	4	33.40	4.48	0.67	4,988.04	0.09	0.11	30.71	0.96
Existing	922	Power Management Enabling	Office	67%	37%	0.01	1.03	0.33	0.09	4	36.43	2.64	0.01	108.77	5.93	9.42	0.36	0.77
Existing	923	Network Power Management Enabling	Office	67%	37%	0.01	1.03	0.33	0.09	4	32.79	2.38	0.00	54.38	11.87	18.85	0.18	0.77
Existing	924	External hardware control	Office	67%	37%	0.17	1.03	0.33	0.09	4	36.43	2.64	0.09	1,291.64	0.50	0.79	4.31	0.77
Existing	930	Base Copier	Office	0%	0%	0.00	0.20	0.20	0.03	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Office	59%	32%	0.01	0.34	0.14	0.03	4	8.59	0.62	0.01	198.79	3.25	5.16	0.66	0.77
Existing	940	10% More Efficient Design (Lighting)	Office	0%	0%	0.00	0.22	0.22	0.03	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	20% More Efficient Design (Lighting)	Office	68%	27%	0.09	0.23	0.07	0.02	4	13.92	0.74	0.22	4,105.01	0.20	0.34	10.05	0.71
Existing	942	Nighttime shutdown	Office	68%	27%	0.29	0.28	0.09	0.03	4	17.54	0.93	0.56	10,590.68	0.08	0.13	25.94	0.71
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Restaurant	0%	0%	0.00	5.41	5.41	0.70	16	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Restaurant	31%	31%	0.11	5.41	3.71	0.48	25	2.77	0.36	0.01	59.73	7.02	7.42	1.15	0.95
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Restaurant	66%	66%	0.35	5.41	1.86	0.24	25	1.45	0.19	0.01	89.27	4.70	4.97	1.72	0.95
Existing	113	RET 4L4' Premium T8, 1EB	Restaurant	31%	31%	0.70	5.41	3.71	0.48	25	2.77	0.36	0.05	373.31	1.12	1.19	7.18	0.95
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Restaurant	66%	66%	0.94	5.41	1.86	0.24	25	1.45	0.19	0.03	239.24	1.75	1.85	4.60	0.95
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Restaurant	14%	20%	0.39	5.41	4.67	0.56	14	0.15	0.03	0.07	390.62	0.93	0.88	8.85	1.12
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Restaurant	29%	75%	4.02	5.41	3.87	0.17	18	1.57	0.53	0.34	992.96	0.29	0.18	45.79	1.58
Existing	117	RNV 2L4'T5HO, 1EB	Restaurant	24%	24%	3.49	5.41	4.14	0.53	25	0.65	0.08	0.32	2,484.44	0.17	0.18	47.78	0.95
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Restaurant	0%	0%	0.00	5.41	5.41	0.70	16	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Restaurant	31%	31%	0.31	5.41	3.71	0.48	25	2.63	0.34	0.02	163.55	2.56	2.71	3.15	0.95
Existing	132	RET 2L4' Premium T8, 1EB	Restaurant	31%	31%	0.96	5.41	3.71	0.48	25	2.36	0.30	0.07	511.45	0.82	0.87	9.84	0.95
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Restaurant	64%	64%	1.36	5.41	1.93	0.25	25	0.54	0.07	0.05	354.71	1.18	1.25	6.82	0.95
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Restaurant	14%	20%	0.38	5.41	4.67	0.56	14	0.12	0.02	0.07	388.94	0.94	0.89	8.81	1.12
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Restaurant	29%	75%	4.00	5.41	3.87	0.17	18	1.19	0.40	0.33	988.65	0.29	0.18	45.59	1.58
Existing	136	RNV 1L4'T5HO, 1EB	Restaurant	24%	24%	6.55	5.41	4.14	0.53	25	0.49	0.06	0.60	4,665.80	0.09	0.10	89.74	0.95
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Restaurant	0%	0%	0.00	5.38	5.38	0.69	16	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Restaurant	22%	22%	0.19	5.38	4.21	0.54	25	4.82	0.62	0.02	150.26	2.79	2.95	2.89	0.95
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Restaurant	60%	60%	0.58	5.38	2.13	0.27	25	3.36	0.43	0.02	161.39	2.60	2.75	3.10	0.95
Existing	153	RET 2L8'T12, 60W, 1EB	Restaurant	22%	22%	1.04	5.38	4.21	0.54	25	4.82	0.62	0.10	813.93	0.52	0.54	15.65	0.95
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Restaurant	60%	60%	1.42	5.38	2.13	0.27	25	3.36	0.43	0.05	399.00	1.05	1.11	7.67	0.95
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Restaurant	14%	20%	0.44	5.38	4.63	0.55	14	0.38	0.07	0.08	451.13	0.81	0.76	10.22	1.12
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Restaurant	29%	75%	4.60	5.38	3.84	0.17	18	3.98	1.34	0.39	1,145.63	0.25	0.16	52.83	1.58
Existing	165	Base Incandescent Flood, 75W	Restaurant	0%	0%	0.00	9.25	9.25	1.19	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY — COMMERCIAL — Year 2005

Vintage Batch Segment	E 1 Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	166	CFL Screw-in, Modular 18W	Restaurant	72%	72%	1.98	21.81	6.11	0.79	7	7.40	0.95	0.03	195.18	2.28	2.73	2.16	0.95
Existing	175	Base Incandescent Flood, 150W PAR	Restaurant	0%	0%	0.00	9.25	9.25	1.19	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Restaurant	40%	40%	0.46	12.86	7.72	0.99	1	1.01	0.13	0.07	532.45	0.84	1.10	2.18	0.95
Existing	177	Metal Halide, 50W	Restaurant	58%	58%	10.93	15.60	6.55	0.84	8	0.89	0.11	0.24	1,857.42	0.24	0.29	19.74	0.95
Existing	180	Base 4L4'T8, 1EB	Restaurant	0%	0%	0.00	3.94	3.94	0.51	25	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Restaurant	16%	16%	0.10	3.94	3.31	0.43	25	0.08	0.01	0.02	143.10	2.93	3.10	2.75	0.95
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Restaurant	20%	20%	0.39	3.94	3.15	0.41	14	0.01	0.00	0.07	537.34	0.83	0.93	8.41	0.95
Existing	185	Base 2L4'T8, 1EB	Restaurant	0%	0%	0.00	3.94	3.94	0.51	25	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Restaurant	17%	17%	0.14	3.94	3.26	0.42	25	0.07	0.01	0.02	186.41	2.25	2.38	3.59	0.95
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Restaurant	20%	20%	0.38	3.94	3.15	0.41	14	0.01	0.00	0.07	535.02	0.83	0.93	8.37	0.95
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Restaurant	0%	0%	0.00	4.15	4.15	0.00	16	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Restaurant	17%	17%	0.37	4.16	3.46	0.00	25	6.18	0.00	0.06	N/A	0.58	0.92	9.28	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	21%	0%	0.34	4.63	3.64	0.00	16	4.14	0.00	0.05	N/A	0.81	1.37	5.95	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Restaurant	0%	0%	0.00	4.15	4.15	0.00	8	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Restaurant	35%	35%	0.40	5.61	3.65	0.00	8	2.67	0.00	0.04	N/A	0.95	1.73	3.29	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	21%	0%	0.07	4.63	3.64	0.00	8	2.45	0.00	0.01	N/A	2.54	4.80	1.18	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	0%	0%	0.00	5.72	5.72	1.43	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	10% More Efficient Design (Lighting)	Restaurant	12%	12%	0.09	5.10	4.48	1.13	20	0.62	0.16	0.02	74.19	3.83	3.25	2.62	1.18
Existing	302	20% More Efficient Design (Lighting)	Restaurant	10%	10%	0.14	6.16	5.52	1.39	10	0.15	0.04	0.04	161.47	1.76	1.67	3.83	1.18
Existing	303	EMS - Chiller	Restaurant	10%	10%	0.27	5.77	5.19	1.30	10	0.53	0.13	0.08	334.82	0.85	0.81	7.93	1.18
Existing	304	Cool Roof - Chiller	Restaurant	7%	7%	0.21	5.80	5.40	1.36	10	0.16	0.04	0.10	380.09	0.75	0.71	9.01	1.18
Existing	305	Chiller Tune-up/Diagnostics	Restaurant	3%	8%	0.17	5.80	5.63	1.34	10	0.02	0.01	0.18	260.85	0.74	0.37	17.28	2.25
Existing	306	Cooling Circ. Pumps - VSD	Restaurant	6%	6%	0.29	5.80	5.45	1.37	15	0.20	0.05	0.11	449.77	0.63	0.56	14.25	1.18
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	0%	0%	0.00	9.91	9.91	2.49	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Restaurant	10%	10%	0.29	10.43	9.39	2.36	3	5.05	1.27	0.13	530.99	0.53	0.57	4.76	1.18
Existing	312	DX Packaged System, EER=10.9, 10 tons	Restaurant	6%	6%	0.23	8.56	8.09	2.03	15	6.08	1.53	0.07	263.64	1.08	0.96	8.35	1.18
Existing	313	Window Film (Standard)	Restaurant	10%	10%	0.14	10.40	9.32	2.34	10	5.66	1.42	0.02	95.62	2.97	2.82	2.27	1.18
Existing	314	Evaporative Pre-Cooler	Restaurant	10%	10%	1.30	9.96	8.96	2.25	10	3.05	0.77	0.24	948.66	0.30	0.28	22.48	1.18
Existing	315	Programmable Thermostat - DX	Restaurant	9%	3%	0.09	10.19	9.30	2.49	10	5.93	0.42	0.02	259.19	2.64	3.65	1.75	0.81
Existing	316	Cool Roof - DX	Restaurant	7%	7%	0.21	10.05	9.35	2.35	10	3.60	0.90	0.06	219.64	1.29	1.23	5.20	1.18
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	0%	0%	0.00	2.37	2.37	0.39	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2%	2%	0.02	2.37	2.31	0.38	15	0.76	0.12	0.05	280.51	1.36	1.38	5.82	1.04
Existing	500	Base Refrigeration System	Restaurant	0%	0%	0.00	10.93	10.93	1.20	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Restaurant	0%	0%	0.00	1.92	1.92	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Restaurant	0%	0%	0.00	3.74	3.74	0.48	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Restaurant	0%	0%	0.00	3.61	3.61	0.46	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Restaurant	0%	0%	0.00	5.11	5.11	0.66	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Restaurant	0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Restaurant	38%	21%	0.00	0.07	0.05	0.01	4	0.26	0.02	0.03	344.40	1.75	2.73	1.25	0.79
Existing	920	Base Display Monitor	Restaurant	0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Restaurant	50%	50%	0.05	0.07	0.04	0.01	4	0.37	0.05	0.52	3,612.35	0.11	0.14	24.12	0.98
Existing	922	Power Management Enabling	Restaurant	67%	37%	0.00	0.10	0.03	0.01	4	0.40	0.03	0.01	79.05	7.64	11.89	0.29	0.79
Existing	923	Network Power Management Enabling	Restaurant	67%	37%	0.00	0.10	0.03	0.01	4	0.36	0.03	0.00	39.52	15.28	23.79	0.14	0.79
Existing	924	External hardware control	Restaurant	67%	37%	0.01	0.10	0.03	0.01	4	0.40	0.03	0.07	938.71	0.64	1.00	3.41	0.79
Existing	930	Base Copier	Restaurant	0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Restaurant	59%	32%	0.00	0.10	0.04	0.01	4	0.27	0.02	0.01	95.66	6.31	9.83	0.35	0.79
Existing	940	Base Laser Printer	Restaurant	0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Restaurant	67%	27%	0.02	0.06	0.02	0.01	4	0.40	0.02	0.17	2,860.63	0.26	0.45	7.65	0.73
Existing	942	Nighttime shutdown	Restaurant	67%	27%	0.06	0.07	0.02	0.01	4	0.50	0.03	0.43	7,392.78	0.10	0.17	19.77	0.73
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Retail	0%	0%	0.00	3.29	3.29	0.50	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Retail	31%	31%	0.08	3.29	2.26	0.34	22	3.23	0.49	0.01	61.59	6.41	6.34	1.34	1.01
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Retail	66%	66%	0.26	3.29	1.13	0.17	22	1.69	0.25	0.01	92.05	4.29	4.24	2.01	1.01
Existing	113	RET 4L4' Premium T8, 1EB	Retail	31%	31%	0.52	3.29	2.26	0.34	22	3.23	0.49	0.06	384.95	1.03	1.02	8.40	1.01
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Retail	66%	66%	0.69	3.29	1.13	0.17	22	1.69	0.25	0.04	246.70	1.60	1.58	5.38	1.01
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Retail	14%	20%	0.29	3.29	2.82	0.40	13	0.19	0.04	0.09	431.53	0.80	0.72	10.46	1.19

DSM ASSYST SUMMARY			COMMERCIAL				Year	2005										
Vintage Batch Segment	E 1 Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Retail	33%	75%	2.97	3.29	2.20	0.12	16	0.51	0.17	0.36	1,050.09	0.27	0.18	46.61	1.59
Existing	117	RNV 2L4'T5HO, 1EB	Retail	24%	24%	2.58	3.29	2.51	0.38	22	0.76	0.11	0.39	2,561.89	0.15	0.15	55.90	1.01
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Retail	0%	0%	0.00	3.29	3.29	0.50	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Retail	31%	31%	0.22	3.29	2.26	0.34	22	2.49	0.38	0.02	164.01	2.41	2.38	3.58	1.01
Existing	132	10% More Efficient Design (Lighting)	Retail	31%	31%	0.69	3.29	2.26	0.34	22	2.24	0.34	0.08	512.91	0.77	0.76	11.19	1.01
Existing	133	20% More Efficient Design (Lighting)	Retail	64%	64%	0.97	3.29	1.18	0.18	22	0.51	0.08	0.05	355.72	1.11	1.10	7.76	1.01
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Retail	14%	20%	0.28	3.29	2.82	0.40	13	0.11	0.02	0.09	417.86	0.82	0.75	10.13	1.19
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Retail	33%	75%	2.88	3.29	2.20	0.12	16	0.32	0.11	0.35	1,016.82	0.28	0.18	45.13	1.59
Existing	136	RNV 1L4'T5HO, 1EB	Retail	24%	24%	4.71	3.29	2.51	0.38	22	0.47	0.07	0.71	4,679.10	0.08	0.08	102.09	1.01
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Retail	0%	0%	0.00	3.15	3.15	0.48	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Retail	22%	22%	0.13	3.39	2.66	0.40	22	10.40	1.57	0.02	141.89	2.78	2.75	3.10	1.01
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Retail	60%	60%	0.40	3.94	1.56	0.23	22	8.43	1.27	0.02	131.41	3.01	2.97	2.87	1.01
Existing	153	RET 2L8'T12, 60W, 1EB	Retail	22%	22%	0.73	3.39	2.66	0.40	22	10.40	1.57	0.12	768.56	0.51	0.51	16.77	1.01
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Retail	60%	60%	1.00	3.94	1.56	0.23	22	8.43	1.27	0.05	324.88	1.22	1.20	7.09	1.01
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	14%	20%	0.31	3.15	2.70	0.38	13	1.20	0.25	0.10	491.41	0.70	0.63	11.91	1.19
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Retail	33%	75%	3.23	3.15	2.10	0.12	16	3.32	1.13	0.41	1,194.63	0.24	0.15	53.02	1.59
Existing	165	Base Incandescent Flood, 75W	Retail	0%	0%	0.00	6.29	6.29	0.95	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Retail	72%	72%	1.33	13.13	3.68	0.55	6	25.59	3.86	0.03	191.98	2.12	2.41	2.26	1.01
Existing	175	Base Incandescent Flood, 150W PAR	Retail	0%	0%	0.00	6.29	6.29	0.95	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Retail	40%	40%	0.37	9.02	5.41	0.82	1	5.78	0.87	0.09	567.41	0.72	0.88	2.72	1.01
Existing	177	Metal Halide, 50W	Retail	58%	58%	8.74	11.21	4.71	0.71	8	5.21	0.79	0.29	1,931.29	0.21	0.24	24.03	1.01
Existing	180	Base 4L4'T8, 1EB	Retail	0%	0%	0.00	2.39	2.39	0.36	22	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Retail	16%	16%	0.07	2.39	2.02	0.30	22	1.43	0.22	0.02	147.56	2.68	2.65	3.22	1.01
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Retail	20%	20%	0.29	2.39	1.91	0.29	13	0.18	0.03	0.09	593.60	0.68	0.73	10.38	1.01
Existing	185	Base 2L4'T8, 1EB	Retail	0%	0%	0.00	2.39	2.39	0.36	22	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Retail	17%	17%	0.10	2.39	1.98	0.30	22	0.93	0.14	0.03	186.94	2.11	2.09	4.08	1.01
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Retail	20%	20%	0.28	2.39	1.91	0.29	13	0.11	0.02	0.09	574.80	0.71	0.75	10.05	1.01
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Retail	0%	0%	0.00	1.30	1.30	0.00	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Retail	17%	17%	0.12	1.32	1.10	0.00	22	5.49	0.00	0.06	N/A	0.60	0.95	8.93	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	21%	0%	0.11	1.54	1.21	0.00	14	2.24	0.00	0.04	N/A	0.82	1.44	5.44	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Retail	0%	0%	0.00	1.30	1.30	0.00	8	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Retail	35%	35%	0.13	1.79	1.16	0.00	8	5.13	0.00	0.04	N/A	0.87	1.58	3.59	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	21%	0%	0.02	1.54	1.21	0.00	8	3.01	0.00	0.02	N/A	2.42	4.59	1.24	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	0%	0%	0.00	1.73	1.73	0.56	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	12%	12%	0.04	1.55	1.36	0.44	20	1.65	0.53	0.03	87.57	2.89	2.16	3.95	1.34
Existing	302	Window Film (Standard)	Retail	2%	2%	0.09	1.76	1.72	0.55	10	0.07	0.02	0.37	1,142.67	0.22	0.19	34.57	1.34
Existing	303	EMS - Chiller	Retail	10%	10%	0.12	1.87	1.69	0.54	10	0.41	0.13	0.12	368.89	0.69	0.57	11.16	1.34
Existing	304	Cool Roof - Chiller	Retail	13%	13%	0.21	1.89	1.65	0.53	10	0.37	0.12	0.16	487.05	0.52	0.43	14.73	1.34
Existing	305	Chiller Tune-up/Diagnostics	Retail	4%	8%	0.08	1.76	1.70	0.52	10	0.07	0.05	0.22	306.85	0.62	0.31	20.97	2.28
Existing	306	Cooling Circ. Pumps - VSD	Retail	6%	6%	0.13	1.76	1.65	0.53	15	0.53	0.17	0.17	530.92	0.48	0.37	21.48	1.34
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Retail	0%	0%	0.00	3.00	3.00	0.96	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Retail	10%	10%	0.13	3.16	2.85	0.91	3	6.46	2.07	0.20	626.79	0.40	0.38	7.17	1.34
Existing	312	DX Packaged System, EER=10.9, 10 tons	Retail	6%	6%	0.10	2.60	2.45	0.79	15	7.78	2.49	0.10	311.21	0.81	0.64	12.59	1.34
Existing	313	Window Film (Standard)	Retail	2%	2%	0.09	3.02	2.95	0.94	10	1.53	0.49	0.21	665.98	0.38	0.32	20.15	1.34
Existing	314	10% More Efficient Design (Lighting)	Retail	10%	10%	0.59	3.02	2.72	0.87	10	3.91	1.25	0.36	1,119.81	0.23	0.19	33.88	1.34
Existing	315	20% More Efficient Design (Lighting)	Retail	8%	3%	0.04	3.16	2.89	0.99	10	4.72	0.45	0.03	299.51	1.88	2.39	2.68	0.88
Existing	316	Cool Roof - DX	Retail	13%	13%	0.21	3.19	2.78	0.89	10	6.13	1.96	0.09	288.94	0.87	0.73	8.74	1.34
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	0%	0%	0.00	0.80	0.80	0.14	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2%	2%	0.00	0.80	0.78	0.14	15	0.67	0.12	0.03	181.97	2.01	1.95	4.12	1.08
Existing	402	Variable Speed Drive Control, 5 HP	Retail	27%	8%	0.07	0.96	0.70	0.16	15	0.69	0.03	0.04	742.16	1.33	1.71	4.68	0.81
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	0%	0%	0.00	0.74	0.74	0.13	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2%	2%	0.00	0.74	0.73	0.13	15	0.17	0.03	0.01	50.32	7.26	7.04	1.14	1.08
Existing	412	Variable Speed Drive Control, 15 HP	Retail	27%	8%	0.04	0.87	0.64	0.14	15	0.27	0.01	0.02	487.07	2.02	2.61	3.07	0.81
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	0%	0%	0.00	0.73	0.73	0.13	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	1%	1%	0.00	0.73	0.72	0.13	15	0.11	0.02	0.05	252.76	1.45	1.40	5.72	1.08

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	422	Variable Speed Drive Control, 40 HP	Retail	27%	8%	0.03	0.79	0.58	0.13	15	1.30	0.06	0.02	367.64	2.68	3.46	2.32	0.81
Existing	500	Base Refrigeration System	Retail	0%	0%	0.00	0.24	0.24	0.03	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Retail	0%	0%	0.00	1.26	1.26	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Retail	0%	0%	0.00	0.27	0.27	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Retail	0%	0%	0.00	0.25	0.25	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Retail	0%	0%	0.00	1.12	1.12	0.17	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Retail	0%	0%	0.00	0.04	0.04	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Retail	37%	21%	0.00	0.05	0.03	0.01	4	0.81	0.06	0.08	1,079.23	0.57	0.89	3.83	0.79
Existing	920	Base Display Monitor	Retail	0%	0%	0.00	0.04	0.04	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Retail	50%	50%	0.11	0.05	0.03	0.00	4	1.16	0.16	1.59	11,302.18	0.04	0.05	72.92	0.98
Existing	922	Power Management Enabling	Retail	66%	37%	0.00	0.07	0.02	0.01	4	1.23	0.09	0.02	249.04	2.48	3.87	0.88	0.79
Existing	923	Network Power Management Enabling	Retail	66%	37%	0.00	0.07	0.02	0.01	4	1.11	0.09	0.01	124.52	4.97	7.74	0.44	0.79
Existing	924	External hardware control	Retail	66%	37%	0.03	0.07	0.02	0.01	4	1.23	0.09	0.23	2,957.35	0.21	0.33	10.49	0.79
Existing	930	Base Copier	Retail	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Retail	58%	32%	0.00	0.05	0.02	0.00	4	0.63	0.05	0.03	424.95	1.46	2.27	1.51	0.79
Existing	940	Base Laser Printer	Retail	0%	0%	0.00	0.04	0.04	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Retail	67%	27%	0.03	0.04	0.01	0.00	4	1.18	0.07	0.44	7,644.69	0.10	0.17	20.02	0.73
Existing	942	Nighttime shutdown	Retail	67%	27%	0.10	0.05	0.02	0.01	4	1.48	0.08	1.13	19,822.29	0.04	0.07	51.91	0.73
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	FoodStore	0%	0%	0.00	5.36	5.36	0.60	7	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	FoodStore	31%	31%	0.09	5.36	3.68	0.41	12	0.30	0.03	0.01	81.42	6.03	7.29	0.99	0.90
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	FoodStore	66%	66%	0.29	5.36	1.84	0.20	12	0.16	0.02	0.01	121.68	4.03	4.88	1.48	0.90
Existing	113	RET 4L4' Premium T8, 1EB	FoodStore	31%	31%	0.59	5.36	3.68	0.41	12	0.30	0.03	0.05	414.38	1.18	1.34	6.21	0.90
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	FoodStore	66%	66%	0.78	5.36	1.84	0.20	12	0.16	0.02	0.03	280.92	1.75	2.01	3.98	0.90
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	FoodStore	14%	20%	0.32	5.36	4.64	0.48	7	0.02	0.00	0.11	676.51	0.58	0.64	8.15	1.07
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	FoodStore	26%	75%	3.37	5.36	3.95	0.15	8	0.08	0.03	0.49	1,540.62	0.19	0.14	39.78	1.54
Existing	117	RNV 2L4'T5HO, 1EB	FoodStore	24%	24%	2.92	5.36	4.10	0.46	12	0.07	0.01	0.36	3,260.72	0.15	0.18	41.30	0.90
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	FoodStore	0%	0%	0.00	5.36	5.36	0.60	7	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	FoodStore	31%	31%	0.25	5.36	3.68	0.41	12	0.79	0.09	0.02	215.28	2.28	2.76	2.63	0.90
Existing	132	RET 2L4' Premium T8, 1EB	FoodStore	31%	31%	0.77	5.36	3.68	0.41	12	0.71	0.08	0.06	572.03	0.86	0.98	8.21	0.90
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	FoodStore	64%	64%	1.10	5.36	1.92	0.21	12	0.16	0.02	0.05	417.44	1.18	1.37	5.69	0.90
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	FoodStore	14%	20%	0.31	5.36	4.64	0.48	7	0.03	0.01	0.11	650.49	0.60	0.66	7.83	1.07
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	FoodStore	26%	75%	3.24	5.36	3.95	0.15	8	0.17	0.05	0.47	1,481.35	0.20	0.15	38.25	1.54
Existing	136	RNV 1L4'T5HO, 1EB	FoodStore	24%	24%	5.30	5.36	4.10	0.46	12	0.15	0.02	0.67	6,007.01	0.08	0.10	74.91	0.90
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	FoodStore	0%	0%	0.00	5.10	5.10	0.57	7	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	FoodStore	22%	22%	0.15	5.68	4.45	0.49	12	2.95	0.33	0.02	182.06	2.69	3.26	2.22	0.90
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	FoodStore	60%	60%	0.46	7.15	2.83	0.31	12	2.59	0.29	0.02	155.34	3.16	3.82	1.89	0.90
Existing	153	10% More Efficient Design (Lighting)	FoodStore	22%	22%	0.83	5.68	4.45	0.49	12	2.95	0.33	0.09	808.43	0.61	0.69	12.03	0.90
Existing	154	20% More Efficient Design (Lighting)	FoodStore	60%	60%	1.13	7.15	2.83	0.31	12	2.59	0.29	0.04	333.49	1.47	1.70	4.68	0.90
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	FoodStore	14%	20%	0.35	5.10	4.41	0.45	7	0.39	0.06	0.13	774.10	0.51	0.56	9.32	1.07
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	FoodStore	26%	75%	3.66	5.10	3.75	0.14	8	2.00	0.63	0.56	1,761.13	0.17	0.13	45.47	1.54
Existing	165	Base Incandescent Flood, 75W	FoodStore	0%	0%	0.00	18.31	18.31	2.04	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	FoodStore	72%	72%	1.57	22.92	6.42	0.71	3	1.10	0.12	0.03	286.57	1.71	2.31	1.48	0.90
Existing	175	Base Incandescent Flood, 150W PAR	FoodStore	0%	0%	0.00	18.31	18.31	2.04	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	FoodStore	40%	40%	0.75	26.92	16.15	1.80	1	1.55	0.17	0.11	1,032.17	0.48	0.65	3.65	0.90
Existing	177	Metal Halide, 50W	FoodStore	58%	58%	18.01	34.15	14.34	1.60	4	2.57	0.29	0.34	3,034.12	0.16	0.22	15.80	0.90
Existing	180	Base 4L4'T8, 1EB	FoodStore	0%	0%	0.00	3.90	3.90	0.43	12	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	FoodStore	16%	16%	0.08	3.90	3.28	0.36	12	0.28	0.03	0.02	195.06	2.52	3.04	2.38	0.90
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	FoodStore	20%	20%	0.32	3.90	3.12	0.35	7	0.04	0.00	0.10	930.61	0.53	0.68	7.57	0.90
Existing	185	Base 2L4'T8, 1EB	FoodStore	0%	0%	0.00	3.90	3.90	0.43	12	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	FoodStore	17%	17%	0.11	3.90	3.23	0.36	12	0.65	0.07	0.03	245.37	2.00	2.42	2.99	0.90
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	FoodStore	20%	20%	0.31	3.90	3.12	0.35	7	0.07	0.01	0.10	894.82	0.55	0.71	7.28	0.90
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	FoodStore	0%	0%	0.00	2.03	2.03	0.00	7	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	FoodStore	17%	17%	0.18	2.07	1.72	0.00	12	0.43	0.00	0.07	N/A	0.53	0.87	9.47	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	FoodStore	21%	0%	0.17	2.44	1.92	0.00	7	0.15	0.00	0.07	N/A	0.52	0.99	5.22	0.61
Existing	220	Base Mercury Vapor 400W Lamp	FoodStore	0%	0%	0.00	2.03	2.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	221	High Pressure Sodium 250W Lamp	FoodStore	35%	35%	0.20	2.88	1.87	0.00	4	1.19	0.00	0.08	N/A	0.50	0.98	3.48	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	FoodStore	21%	0%	0.04	2.44	1.92	0.00	4	0.78	0.00	0.03	N/A	1.38	2.80	1.22	0.61
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	FoodStore	0%	0%	0.00	6.02	6.02	2.15	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	FoodStore	10%	10%	0.14	6.33	5.70	2.04	3	1.89	0.68	0.10	287.48	0.80	0.73	3.68	1.37
Existing	312	DX Packaged System, EER=10.9, 10 tons	FoodStore	6%	6%	0.11	5.20	4.91	1.76	15	2.28	0.81	0.05	142.74	1.62	1.24	6.46	1.37
Existing	313	Window Film (Standard)	FoodStore	9%	9%	0.13	6.20	5.62	2.01	10	2.39	0.86	0.04	110.20	2.10	1.72	3.73	1.37
Existing	314	Evaporative Pre-Cooler	FoodStore	10%	10%	0.61	6.05	5.44	1.95	10	1.14	0.41	0.18	513.61	0.45	0.37	17.37	1.37
Existing	315	Programmable Thermostat - DX	FoodStore	9%	3%	0.04	6.16	5.64	2.15	10	2.27	0.24	0.01	140.83	3.57	4.62	1.39	0.87
Existing	316	Cool Roof - DX	FoodStore	15%	15%	0.21	6.43	5.44	1.95	10	2.30	0.82	0.04	107.52	2.15	1.76	3.64	1.37
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	FoodStore	0%	0%	0.00	1.45	1.45	0.14	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	FoodStore	2%	2%	0.01	1.45	1.42	0.14	15	0.14	0.01	0.03	254.57	2.08	2.53	3.16	0.86
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	FoodStore	0%	0%	0.00	1.34	1.34	0.13	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	FoodStore	2%	2%	0.00	1.34	1.32	0.13	15	0.09	0.01	0.01	70.39	7.53	9.17	0.87	0.86
Existing	500	Base Refrigeration System	FoodStore	0%	0%	0.00	28.80	28.80	3.08	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	501	High-efficiency fan motors	FoodStore	12%	12%	1.05	28.98	25.51	2.72	16	28.55	3.05	0.04	373.63	1.33	1.57	5.20	0.88
Existing	502	Strip curtains for walk-ins	FoodStore	4%	4%	0.05	29.64	28.45	3.04	4	3.10	0.33	0.01	132.57	3.75	5.25	0.65	0.88
Existing	503	Night covers for display cases	FoodStore	4%	0%	0.10	28.86	27.71	3.08	5	4.73	0.00	0.03	N/A	1.21	2.64	1.54	0.55
Existing	504	Evaporator fan controller for MT walk-ins	FoodStore	0%	0%	0.04	28.83	28.72	3.08	5	0.76	0.00	0.12	N/A	0.29	0.63	6.42	0.55
Existing	505	Efficient compressor motor	FoodStore	7%	7%	0.08	29.18	27.19	2.90	10	13.98	1.49	0.01	67.91	7.32	9.34	0.68	0.88
Existing	506	Compressor VSD retrofit	FoodStore	5%	3%	0.37	28.88	27.37	2.99	10	6.21	0.39	0.04	697.46	1.02	1.54	4.17	0.74
Existing	507	Floating head pressure controls	FoodStore	5%	0%	0.11	29.48	28.10	3.15	14	6.11	0.00	0.01	N/A	2.90	5.56	1.40	0.55
Existing	508	Refrigeration Commissioning	FoodStore	5%	5%	0.16	29.54	28.07	3.00	3	6.40	0.68	0.05	483.49	1.03	1.47	1.84	0.88
Existing	509	Demand Hot Gas Defrost	FoodStore	3%	3%	0.03	29.32	28.58	3.05	10	1.83	0.20	0.01	68.01	7.31	9.33	0.69	0.88
Existing	510	Demand Defrost Electric	FoodStore	8%	8%	0.03	28.92	26.67	2.85	10	17.71	1.89	0.00	22.26	22.33	28.50	0.22	0.88
Existing	511	Anti-sweat (humidistat) controls	FoodStore	5%	2%	0.15	28.94	27.56	3.01	12	10.78	0.60	0.02	296.44	2.81	3.99	1.81	0.77
Existing	600	Base Heating	FoodStore	0%	0%	0.00	2.18	2.18	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	FoodStore	0%	0%	0.00	0.74	0.74	0.08	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	FoodStore	0%	0%	0.00	1.25	1.25	0.14	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	10% More Efficient Design (Lighting)	FoodStore	0%	0%	0.00	1.45	1.45	0.16	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	20% More Efficient Design (Lighting)	FoodStore	0%	0%	0.00	0.12	0.12	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	FoodStore	39%	21%	0.00	0.14	0.08	0.01	4	0.30	0.02	0.01	194.68	3.92	6.54	0.52	0.73
Existing	920	Base Display Monitor	FoodStore	0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	FoodStore	50%	50%	0.04	0.13	0.07	0.01	4	0.41	0.05	0.23	2,054.12	0.24	0.32	10.52	0.90
Existing	922	Power Management Enabling	FoodStore	70%	37%	0.00	0.20	0.06	0.01	4	0.48	0.03	0.00	43.77	17.42	29.10	0.12	0.73
Existing	923	Network Power Management Enabling	FoodStore	70%	37%	0.00	0.20	0.06	0.01	4	0.43	0.03	0.00	21.88	34.84	58.20	0.06	0.73
Existing	924	External hardware control	FoodStore	70%	37%	0.01	0.20	0.06	0.01	4	0.48	0.03	0.03	519.76	1.47	2.45	1.39	0.73
Existing	930	Base Copier	FoodStore	0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	FoodStore	61%	32%	0.00	0.18	0.07	0.01	4	0.31	0.02	0.01	163.52	4.66	7.79	0.44	0.73
Existing	940	Base Laser Printer	FoodStore	0%	0%	0.00	0.09	0.09	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	FoodStore	71%	27%	0.01	0.10	0.03	0.01	4	0.40	0.02	0.06	1,383.51	0.71	1.27	2.70	0.69
Existing	942	Nighttime shutdown	FoodStore	71%	27%	0.03	0.12	0.03	0.01	4	0.52	0.02	0.15	3,530.13	0.28	0.50	6.89	0.69
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Warehouse	0%	0%	0.00	1.42	1.42	0.28	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Warehouse	31%	31%	0.03	1.42	0.98	0.19	22	2.83	0.56	0.01	38.79	8.68	7.74	1.10	1.12
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Warehouse	66%	66%	0.09	1.42	0.49	0.10	22	1.48	0.29	0.01	57.98	5.81	5.18	1.65	1.12
Existing	113	RET 4L4' Premium T8, 1EB	Warehouse	31%	31%	0.18	1.42	0.98	0.19	22	2.83	0.56	0.05	242.47	1.39	1.24	6.88	1.12
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Warehouse	66%	66%	0.24	1.42	0.49	0.10	22	1.48	0.29	0.03	155.39	2.17	1.93	4.41	1.12
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Warehouse	15%	20%	0.10	1.43	1.21	0.22	12	0.33	0.09	0.07	264.45	1.15	0.96	7.52	1.30
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Warehouse	39%	75%	1.02	1.44	0.89	0.07	16	1.70	0.65	0.25	652.24	0.40	0.25	32.47	1.66
Existing	117	RNV 2L4'T5HO, 1EB	Warehouse	24%	24%	0.89	1.42	1.09	0.21	22	0.66	0.13	0.32	1,613.67	0.21	0.19	45.82	1.12
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Warehouse	0%	0%	0.00	1.42	1.42	0.28	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Warehouse	31%	31%	0.08	1.42	0.98	0.19	22	1.95	0.38	0.02	105.50	3.19	2.85	3.00	1.12
Existing	132	RET 2L4' Premium T8, 1EB	Warehouse	31%	31%	0.24	1.42	0.98	0.19	22	1.76	0.34	0.06	329.93	1.02	0.91	9.37	1.12
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Warehouse	64%	64%	0.34	1.42	0.51	0.10	22	0.40	0.08	0.04	228.82	1.47	1.31	6.50	1.12
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Warehouse	15%	20%	0.10	1.43	1.21	0.22	12	0.18	0.05	0.07	261.54	1.16	0.97	7.43	1.30
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Warehouse	39%	75%	1.01	1.44	0.89	0.07	16	0.94	0.36	0.25	644.98	0.41	0.25	32.10	1.66

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	136	RNV 1L4'T5HO, 1EB	Warehouse	24%	24%	1.65	1.42	1.09	0.21	22	0.37	0.07	0.59	3,009.81	0.11	0.10	85.45	1.12
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Warehouse	0%	0%	0.00	1.40	1.40	0.27	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Warehouse	22%	22%	0.05	1.54	1.21	0.24	22	3.07	0.60	0.02	95.59	3.52	3.14	2.71	1.12
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Warehouse	60%	60%	0.16	1.89	0.75	0.15	22	2.62	0.51	0.02	83.81	4.02	3.58	2.38	1.12
Existing	153	RET 2L8'T12, 60W, 1EB	Warehouse	22%	22%	0.28	1.54	1.21	0.24	22	3.07	0.60	0.10	517.80	0.65	0.58	14.70	1.12
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Warehouse	60%	60%	0.39	1.89	0.75	0.15	22	2.62	0.51	0.04	207.19	1.63	1.45	5.88	1.12
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	15%	20%	0.12	1.40	1.19	0.22	12	0.84	0.22	0.09	329.84	0.92	0.77	9.38	1.30
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Warehouse	39%	75%	1.25	1.42	0.87	0.07	16	4.24	1.62	0.31	812.61	0.32	0.20	40.45	1.66
Existing	165	Base Incandescent Flood, 75W	Warehouse	0%	0%	0.00	4.87	4.87	0.96	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Warehouse	72%	72%	0.54	6.27	1.75	0.34	6	8.44	1.66	0.03	129.34	2.68	2.74	1.98	1.12
Existing	175	Base Incandescent Flood, 150W PAR	Warehouse	0%	0%	0.00	4.87	4.87	0.96	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Warehouse	40%	40%	0.14	4.91	2.94	0.58	1	44.41	8.71	0.06	308.50	1.12	1.24	1.92	1.12
Existing	177	Metal Halide, 50W	Warehouse	58%	58%	3.26	4.92	2.07	0.41	7	58.14	11.41	0.25	1,267.08	0.27	0.28	18.43	1.12
Existing	180	Base 4L4'T8, 1EB	Warehouse	0%	0%	0.00	1.03	1.03	0.20	22	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Warehouse	16%	16%	0.02	1.03	0.87	0.17	22	0.24	0.05	0.02	92.95	3.62	3.23	2.64	1.12
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Warehouse	20%	20%	0.10	1.04	0.83	0.16	12	0.06	0.01	0.07	363.33	0.95	0.93	7.82	1.12
Existing	185	Base 2L4'T8, 1EB	Warehouse	0%	0%	0.00	1.03	1.03	0.20	22	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Warehouse	17%	17%	0.04	1.03	0.86	0.17	22	0.14	0.03	0.02	120.25	2.80	2.50	3.41	1.12
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Warehouse	20%	20%	0.10	1.04	0.83	0.16	12	0.03	0.01	0.07	359.35	0.96	0.94	7.73	1.12
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Warehouse	0%	0%	0.00	0.21	0.21	0.00	14	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	10% More Efficient Design (Lighting)	Warehouse	17%	17%	0.02	0.21	0.17	0.00	22	0.07	0.00	0.06	N/A	0.58	0.93	9.21	0.63
Existing	212	20% More Efficient Design (Lighting)	Warehouse	21%	0%	0.02	0.26	0.20	0.00	14	0.01	0.00	0.04	N/A	0.84	1.47	5.33	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Warehouse	0%	0%	0.00	0.21	0.21	0.00	7	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Warehouse	35%	35%	0.02	0.31	0.20	0.00	7	0.63	0.00	0.04	N/A	0.87	1.61	3.23	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Warehouse	21%	0%	0.00	0.26	0.20	0.00	7	0.38	0.00	0.02	N/A	2.36	4.56	1.14	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	0%	0%	0.00	0.29	0.29	0.12	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Warehouse	12%	12%	0.01	0.26	0.23	0.09	20	0.02	0.01	0.05	126.04	1.81	1.21	7.05	1.50
Existing	302	Window Film (Standard)	Warehouse	12%	12%	0.05	0.30	0.27	0.11	10	0.01	0.01	0.25	640.07	0.36	0.27	24.00	1.50
Existing	303	EMS - Chiller	Warehouse	10%	10%	0.04	0.30	0.27	0.11	10	0.01	0.01	0.22	558.41	0.41	0.31	20.94	1.50
Existing	304	Cool Roof - Chiller	Warehouse	18%	18%	0.21	0.30	0.25	0.10	10	0.01	0.01	0.69	1,726.20	0.13	0.10	64.73	1.50
Existing	305	Chiller Tune-up/Diagnostics	Warehouse	4%	8%	0.02	0.30	0.29	0.11	10	0.00	0.00	0.35	440.50	0.42	0.20	32.65	2.39
Existing	306	Cooling Circ. Pumps - VSD	Warehouse	6%	6%	0.04	0.30	0.28	0.11	15	0.01	0.00	0.30	764.13	0.30	0.21	38.32	1.50
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	0%	0%	0.00	0.51	0.51	0.20	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Warehouse	10%	10%	0.04	0.54	0.48	0.19	3	0.88	0.35	0.36	902.11	0.25	0.21	12.79	1.50
Existing	312	DX Packaged System, EER=10.9, 10 tons	Warehouse	6%	6%	0.03	0.44	0.42	0.17	15	1.06	0.42	0.18	447.91	0.51	0.36	22.46	1.50
Existing	313	Window Film (Standard)	Warehouse	12%	12%	0.05	0.57	0.50	0.20	10	0.49	0.19	0.14	343.45	0.67	0.50	12.88	1.50
Existing	314	Evaporative Pre-Cooler	Warehouse	10%	10%	0.18	0.51	0.46	0.18	10	0.53	0.21	0.64	1,611.69	0.14	0.11	60.44	1.50
Existing	315	Programmable Thermostat - DX	Warehouse	8%	3%	0.01	0.53	0.48	0.20	10	0.88	0.11	0.05	438.59	1.09	1.28	4.99	0.95
Existing	316	Cool Roof - DX	Warehouse	18%	18%	0.21	0.54	0.44	0.18	10	1.44	0.57	0.38	964.53	0.24	0.18	36.17	1.50
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	0%	0%	0.00	0.09	0.09	0.02	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2%	2%	0.00	0.09	0.09	0.02	15	0.08	0.01	0.12	608.66	0.57	0.52	15.29	1.13
Existing	402	Variable Speed Drive Control, 5 HP	Warehouse	27%	8%	0.03	0.09	0.07	0.02	15	0.05	0.00	0.17	2,983.76	0.31	0.38	20.98	0.84
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	0%	0%	0.00	0.08	0.08	0.02	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Warehouse	2%	2%	0.00	0.08	0.08	0.02	15	0.01	0.00	0.03	168.30	2.04	1.90	4.23	1.13
Existing	412	Variable Speed Drive Control, 15 HP	Warehouse	27%	8%	0.02	0.08	0.06	0.02	15	0.15	0.01	0.11	1,931.30	0.47	0.59	13.58	0.84
Existing	500	Base Refrigeration System	Warehouse	0%	0%	0.00	0.19	0.19	0.02	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Warehouse	0%	0%	0.00	0.26	0.26	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Warehouse	0%	0%	0.00	0.00	0.00	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Warehouse	0%	0%	0.00	0.18	0.18	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Warehouse	0%	0%	0.00	2.33	2.33	0.46	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Warehouse	0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Warehouse	37%	21%	0.01	0.06	0.04	0.01	4	0.83	0.07	0.25	2,870.66	0.20	0.30	11.36	0.81
Existing	920	Base Display Monitor	Warehouse	0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Warehouse	50%	50%	0.34	0.06	0.03	0.00	4	1.20	0.19	4.64	30,007.71	0.01	0.02	213.27	1.01
Existing	922	Power Management Enabling	Warehouse	66%	37%	0.01	0.08	0.03	0.01	4	1.25	0.11	0.06	666.54	0.85	1.30	2.64	0.81

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	923	Network Power Management Enabling	Warehouse	66%	37%	0.00	0.08	0.03	0.01	4	1.13	0.10	0.03	333.27	1.71	2.59	1.32	0.81
Existing	924	External hardware control	Warehouse	66%	37%	0.09	0.08	0.03	0.01	4	1.25	0.11	0.68	7,915.14	0.07	0.11	31.31	0.81
Existing	930	Base Copier	Warehouse	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Warehouse	57%	32%	0.00	0.04	0.02	0.00	4	0.51	0.04	0.07	823.99	0.69	1.05	3.26	0.81
Existing	940	Base Laser Printer	Warehouse	0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Warehouse	65%	27%	0.05	0.03	0.01	0.00	4	0.81	0.05	1.06	16,624.38	0.04	0.07	48.75	0.74
Existing	942	Nighttime shutdown	Warehouse	65%	27%	0.18	0.04	0.01	0.00	4	1.01	0.06	2.76	43,274.11	0.02	0.03	126.89	0.74
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Education	0%	0%	0.00	4.97	4.97	0.76	21	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	10% More Efficient Design (Lighting)	Education	31%	31%	0.09	4.97	3.41	0.52	33	14.05	2.14	0.01	40.11	9.37	8.92	0.96	1.05
Existing	112	20% More Efficient Design (Lighting)	Education	66%	66%	0.27	4.97	1.70	0.26	33	7.35	1.12	0.01	59.95	6.27	5.97	1.43	1.05
Existing	113	RET 4L4' Premium T8, 1EB	Education	31%	31%	0.55	4.97	3.41	0.52	33	14.05	2.14	0.04	250.70	1.50	1.43	5.97	1.05
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Education	66%	66%	0.73	4.97	1.70	0.26	33	7.35	1.12	0.02	160.67	2.34	2.23	3.83	1.05
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Education	15%	20%	0.30	5.03	4.26	0.61	19	3.96	0.79	0.05	244.39	1.49	1.25	6.77	1.20
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Education	39%	75%	3.15	4.97	3.01	0.19	24	6.60	1.91	0.19	651.84	0.46	0.30	27.96	1.50
Existing	117	RNV 2L4'T5HO, 1EB	Education	24%	24%	2.73	4.97	3.79	0.58	33	3.30	0.50	0.25	1,668.49	0.23	0.21	39.75	1.05
Existing	118	Lighting Control Tune-up	Education	3%	3%	0.01	5.04	4.89	0.74	6	0.04	0.01	0.03	166.10	2.52	2.84	1.64	1.05
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Education	0%	0%	0.00	4.97	4.97	0.76	21	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Education	31%	31%	0.23	4.97	3.41	0.52	33	29.68	4.52	0.02	105.95	3.55	3.38	2.52	1.05
Existing	132	RET 2L4' Premium T8, 1EB	Education	31%	31%	0.72	4.97	3.41	0.52	33	26.71	4.06	0.05	331.34	1.13	1.08	7.89	1.05
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Education	64%	64%	1.02	4.97	1.77	0.27	33	6.07	0.92	0.03	229.79	1.63	1.56	5.47	1.05
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Education	15%	20%	0.29	5.03	4.26	0.61	19	6.71	1.34	0.05	234.83	1.56	1.30	6.51	1.20
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Education	39%	75%	3.02	4.97	3.01	0.19	24	11.15	3.23	0.18	626.07	0.48	0.32	26.85	1.50
Existing	136	RNV 1L4'T5HO, 1EB	Education	24%	24%	4.95	4.97	3.79	0.58	33	5.57	0.85	0.46	3,022.65	0.12	0.12	72.00	1.05
Existing	137	Lighting Control Tune-up	Education	3%	3%	0.01	5.04	4.89	0.74	6	0.07	0.01	0.03	166.10	2.52	2.84	1.64	1.05
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Education	0%	0%	0.00	4.48	4.48	0.68	21	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Education	22%	22%	0.15	5.11	4.00	0.61	33	4.77	0.73	0.02	99.51	3.78	3.60	2.37	1.05
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Education	60%	60%	0.46	6.83	2.70	0.41	33	4.45	0.68	0.01	80.00	4.70	4.47	1.91	1.05
Existing	153	RET 2L8'T12, 60W, 1EB	Education	22%	22%	0.83	5.11	4.00	0.61	33	4.77	0.73	0.08	539.04	0.70	0.66	12.84	1.05
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Education	60%	60%	1.14	6.83	2.70	0.41	33	4.45	0.68	0.03	197.79	1.90	1.81	4.71	1.05
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Education	15%	20%	0.35	4.54	3.84	0.55	19	3.98	0.79	0.06	317.51	1:15	0.96	8.80	1.20
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Education	39%	75%	3.68	4.48	2.72	0.17	24	6.61	1.92	0.25	845.67	0.35	0.24	36.27	1.50
Existing	165	Base Incandescent Flood, 75W	Education	0%	0%	0.00	7.71	7.71	1.17	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Education	72%	72%	1.32	18.18	5.09	0.77	10	29.09	4.43	0.02	114.20	3.66	3.80	1.83	1.05
Existing	175	Base Incandescent Flood, 150W PAR	Education	0%	0%	0.00	7.71	7.71	1.17	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Education	40%	40%	0.18	9.17	5.50	0.84	1	8.31	1.26	0.03	184.87	2.26	2.67	0.89	1.05
Existing	177	Metal Halide, 50W	Education	58%	58%	4.33	10.02	4.21	0.64	11	11.85	1.80	0.12	786.57	0.53	0.56	12.35	1.05
Existing	180	Base 4L4'T8, 1EB	Education	0%	0%	0.00	3.61	3.61	0.55	33	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Education	16%	16%	0.08	3.61	3.04	0.46	33	5.06	0.77	0.01	96.10	3.91	3.72	2.29	1.05
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Education	20%	20%	0.30	3.67	2.94	0.45	19	2.99	0.46	0.05	334.85	1.25	1.20	7.08	1.05
Existing	183	Lighting Control Tune-up	Education	3%	3%	0.01	3.67	3.56	0.54	6	0.02	0.00	0.03	228.49	1.83	2.07	2.25	1.05
Existing	185	Base 2L4'T8, 1EB	Education	0%	0%	0.00	3.61	3.61	0.55	33	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Education	17%	17%	0.11	3.61	2.99	0.45	33	9.35	1.42	0.02	120.76	3.11	2.96	2.88	1.05
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Education	20%	20%	0.29	3.67	2.94	0.45	19	5.07	0.77	0.05	321.79	1.30	1.25	6.80	1.05
Existing	188	Lighting Control Tune-up	Education	3%	3%	0.01	3.67	3.56	0.54	6	0.04	0.01	0.03	228.49	1.83	2.07	2.25	1.05
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Education	0%	0%	0.00	1.23	1.23	0.00	21	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Education	17%	17%	0.07	1.31	1.09	0.00	33	0.47	0.00	0.04	N/A	0.94	1.48	5.74	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Education	21%	0%	0.07	1.50	1.18	0.00	21	0.16	0.00	0.02	N/A	1.46	2.40	3.55	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Education	0%	0%	0.00	1.23	1.23	0.00	11	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Education	35%	35%	0.07	1.65	1.07	0.00	11	12.62	0.00	0.02	N/A	1.85	3.25	2.11	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Education	21%	0%	0.01	1.50	1.18	0.00	11	3.94	0.00	0.01	N/A	5.44	9.91	0.69	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Education	0%	0%	0.00	1.74	1.74	0.95	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Education	12%	12%	0.06	1.56	1.37	0.75	20	3.27	1.78	0.04	69.66	2.89	1.59	5.35	1.81
Existing	302	Window Film (Standard)	Education	4%	4%	0.13	1.80	1.73	0.94	10	0.22	0.12	0.34	630.50	0.32	0.20	32.47	1.81
Existing	303	EMS - Chiller	Education	10%	10%	0.17	1.86	1.67	0.91	10	1.25	0.68	0.16	297.92	0.68	0.42	15.34	1.81
Existing	304	Cool Roof - Chiller	Education	4%	4%	0.10	1.76	1.69	0.92	10	0.47	0.26	0.27	497.92	0.40	0.25	25.65	1.81

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	137	Lighting Control Tune-up	Health	3%	3%	0.01	9.68	9.39	1.41	6	0.06	0.01	0.01	87.70	4.59	5.46	0.85	1.00
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Health	0%	0%	0.00	8.71	8.71	1.31	8	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Health	22%	22%	0.15	8.71	6.83	1.02	12	0.77	0.12	0.01	84.15	4.78	5.23	1.39	1.00
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Health	60%	60%	0.44	8.71	3.45	0.52	12	0.54	0.08	0.01	90.38	4.45	4.87	1.49	1.00
Existing	153	RET 2L8'T12, 60W, 1EB	Health	22%	22%	0.80	8.71	6.83	1.02	12	0.77	0.12	0.06	373.66	1.08	1.10	7.50	1.00
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Health	60%	60%	1.09	8.71	3.45	0.52	12	0.54	0.08	0.03	194.03	2.07	2.16	3.68	1.00
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	14%	20%	0.34	8.71	7.48	1.05	7	0.31	0.07	0.07	320.99	1.05	1.04	4.99	1.18
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Health	31%	75%	3.53	8.71	6.01	0.33	8	0.14	0.05	0.27	730.27	0.37	0.26	21.62	1.63
Existing	165	Base Incandescent Flood, 75W	Health	0%	0%	0.00	17.68	17.68	2.65	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Health	72%	72%	1.57	36.39	10.19	1.53	3	16.12	2.42	0.02	132.45	3.04	3.71	0.93	1.00
Existing	175	Base Incandescent Flood, 150W PAR	Health	0%	0%	0.00	17.68	17.68	2.65	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Health	40%	40%	0.25	17.68	10.61	1.59	1	4.02	0.60	0.06	376.03	1.07	1.33	1.79	1.00
Existing	177	Metal Halide, 50W	Health	58%	58%	5.87	17.68	7.43	1.11	4	5.24	0.79	0.21	1,402.28	0.29	0.35	9.85	1.00
Existing	180	Base 4L4'T8, 1EB	Health	0%	0%	0.00	6.93	6.93	1.04	12	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Health	16%	16%	0.08	6.93	5.84	0.88	12	1.77	0.27	0.01	81.44	4.94	5.40	1.34	1.00
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Health	20%	20%	0.33	6.93	5.54	0.83	7	1.12	0.17	0.06	388.54	1.04	1.21	4.27	1.00
Existing	183	Lighting Control Tune-up	Health	3%	3%	0.01	7.04	6.83	1.02	6	0.01	0.00	0.02	120.63	3.34	3.97	1.17	1.00
Existing	185	Base 2L4'T8, 1EB	Health	0%	0%	0.00	6.93	6.93	1.04	12	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Health	17%	17%	0.12	6.93	5.74	0.86	12	4.25	0.64	0.02	103.78	3.88	4.24	1.71	1.00
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Health	20%	20%	0.32	6.93	5.54	0.83	7	2.46	0.37	0.06	378.45	1.06	1.25	4.16	1.00
Existing	188	Lighting Control Tune-up	Health	3%	3%	0.01	7.04	6.83	1.02	6	0.02	0.00	0.02	120.63	3.34	3.97	1.17	1.00
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Health	0%	0%	0.00	0.27	0.27	0.00	8	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Health	17%	17%	0.04	0.31	0.26	0.00	12	0.02	0.00	0.10	N/A	0.40	0.64	12.74	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Health	21%	0%	0.03	0.32	0.26	0.00	8	0.02	0.00	0.11	N/A	0.33	0.62	9.17	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Health	0%	0%	0.00	0.27	0.27	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Health	35%	35%	0.04	0.39	0.26	0.00	4	0.28	0.00	0.10	N/A	0.38	0.73	4.68	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Health	21%	0%	0.01	0.32	0.26	0.00	4	0.25	0.00	0.04	N/A	1.01	2.03	1.68	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	0%	0%	0.00	3.41	3.41	1.28	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Health	12%	12%	0.04	3.04	2.68	1.01	20	2.54	0.96	0.01	34.99	6.48	4.60	1.85	1.41
Existing	302	Window Film (Standard)	Health	1%	1%	0.06	3.45	3.41	1.28	10	0.01	0.00	0.28	739.54	0.31	0.24	26.30	1.41
Existing	303	EMS - Chiller	Health	10%	10%	0.11	3.47	3.12	1.18	10	2.01	0.76	0.06	156.85	1.44	1.15	5.58	1.41
Existing	304	Cool Roof - Chiller	Health	1%	1%	0.07	3.42	3.40	1.28	10	0.05	0.02	0.59	1,560.19	0.15	0.12	55.48	1.41
Existing	305	Chiller Tune-up/Diagnostics	Health	3%	8%	0.07	3.47	3.35	1.20	10	0.10	0.09	0.11	122.74	1.40	0.61	10.54	2.59
Existing	306	Cooling Circ. Pumps - VSD	Health	6%	6%	0.12	3.46	3.26	1.23	15	0.81	0.30	0.08	212.12	1.07	0.79	10.09	1.41
Existing	307	EMS Optimization	Health	5%	5%	0.01	3.50	3.32	1.25	5	0.15	0.05	0.02	61.17	3.71	3.17	1.28	1.41
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Health	0%	0%	0.00	5.91	5.91	2.23	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Health	10%	10%	0.12	6.23	5.60	2.11	3	1.99	0.75	0.09	250.43	0.91	0.80	3.37	1.41
Existing	312	DX Packaged System, EER=10.9, 10 tons	Health	6%	6%	0.10	5.11	4.83	1.82	15	2.39	0.90	0.05	124.34	1.82	1.36	5.91	1.41
Existing	313	Window Film (Standard)	Health	1%	1%	0.06	5.96	5.89	2.22	10	0.19	0.07	0.16	428.65	0.53	0.42	15.24	1.41
Existing	314	Evaporative Pre-Cooler	Health	10%	10%	0.55	5.94	5.35	2.01	10	1.20	0.45	0.17	447.41	0.51	0.40	15.91	1.41
Existing	315	Programmable Thermostat - DX	Health	9%	3%	0.04	6.11	5.58	2.24	10	2.14	0.23	0.01	121.78	4.04	5.09	1.26	0.89
Existing	316	Cool Roof - DX	Health	1%	1%	0.07	5.93	5.89	2.22	10	0.09	0.03	0.34	899.30	0.25	0.20	31.98	1.41
Existing	317	Optimize Controls	Health	5%	5%	0.01	6.07	5.76	2.17	5	0.31	0.12	0.01	35.29	6.42	5.50	0.74	1.41
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	0%	0%	0.00	2.24	2.24	0.37	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2%	2%	0.02	2.24	2.19	0.36	15	0.36	0.06	0.04	270.38	1.40	1.44	5.58	1.02
Existing	402	Variable Speed Drive Control, 5 HP	Health	27%	8%	0.27	2.24	1.63	0.34	15	0.79	0.04	0.06	1,325.46	0.79	1.07	7.50	0.78
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	0%	0%	0.00	2.07	2.07	0.34	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2%	2%	0.00	2.07	2.04	0.33	15	0.22	0.04	0.01	74.76	5.06	5.19	1.54	1.02
Existing	412	Variable Speed Drive Control, 15 HP	Health	27%	8%	0.16	2.15	1.56	0.33	15	3.12	0.14	0.04	826.98	1.27	1.71	4.68	0.78
Existing	413	Air Handler Optimization, 15 HP	Health	20%	20%	0.05	2.31	1.84	0.30	5	0.39	0.06	0.03	197.44	1.92	2.27	1.79	1.02
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	0%	0%	0.00	2.04	2.04	0.33	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Health	1%	1%	0.01	2.04	2.02	0.33	15	0.12	0.02	0.06	375.57	1.01	1.03	7.75	1.02
Existing	422	Variable Speed Drive Control, 40 HP	Health	27%	8%	0.11	2.22	1.61	0.34	15	1.89	0.08	0.02	545.35	1.92	2.60	3.08	0.78
Existing	423	Air Handler Optimization, 40 HP	Health	20%	20%	0.05	2.27	1.81	0.30	5	0.27	0.04	0.03	200.77	1.88	2.23	1.82	1.02
Existing	500	Base Refrigeration System	Health	0%	0%	0.00	1.23	1.23	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	600	Base Heating	Health	0%	0%	0.00	1.62	1.62	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Health	0%	0%	0.00	0.18	0.18	0.03	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Health	0%	0%	0.00	1.54	1.54	0.23	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Health	0%	0%	0.00	7.51	7.51	1.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Health	0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Health	38%	21%	0.02	0.13	0.08	0.01	4	0.62	0.04	0.12	1,662.35	0.39	0.62	5.48	0.77
Existing	920	Base Display Monitor	Health	0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Health	50%	50%	0.39	0.12	0.06	0.01	4	0.85	0.11	2.35	17,491.17	0.02	0.03	108.19	0.95
Existing	922	Power Management Enabling	Health	68%	37%	0.01	0.18	0.06	0.02	4	0.95	0.07	0.03	377.40	1.71	2.75	1.24	0.77
Existing	923	Network Power Management Enabling	Health	68%	37%	0.00	0.18	0.06	0.02	4	0.86	0.06	0.01	188.70	3.43	5.49	0.62	0.77
Existing	924	External hardware control	Health	68%	37%	0.11	0.18	0.06	0.02	4	0.95	0.07	0.32	4,481.64	0.14	0.23	14.78	0.77
Existing	930	Base Copier	Health	0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Health	60%	32%	0.01	0.09	0.03	0.01	4	0.33	0.02	0.06	892.91	0.72	1.16	2.94	0.77
Existing	940	Base Laser Printer	Health	0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Health	69%	27%	0.10	0.06	0.02	0.01	4	0.60	0.03	0.80	15,314.03	0.05	0.09	36.92	0.71
Existing	942	Nighttime shutdown	Health	69%	27%	0.31	0.08	0.02	0.01	4	0.76	0.04	2.06	39,309.27	0.02	0.04	94.78	0.71
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Hotel	0%	0%	0.00	5.16	5.16	0.52	17	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Hotel	31%	31%	0.05	5.16	3.54	0.35	26	0.31	0.03	0.00	34.53	14.12	16.38	0.52	0.86
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Hotel	66%	66%	0.15	5.16	1.77	0.18	26	0.16	0.02	0.01	51.61	9.45	10.96	0.78	0.86
Existing	113	RET 4L4' Premium T8, 1EB	Hotel	31%	31%	0.31	5.16	3.54	0.35	26	0.31	0.03	0.02	215.80	2.26	2.62	3.25	0.86
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Hotel	66%	66%	0.41	5.16	1.77	0.18	26	0.16	0.02	0.01	138.30	3.53	4.09	2.09	0.86
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Hotel	13%	20%	0.17	5.16	4.48	0.41	15	0.03	0.01	0.03	225.76	1.80	1.83	4.37	1.03
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Hotel	23%	75%	1.78	5.16	3.98	0.13	19	0.09	0.03	0.19	577.66	0.50	0.32	26.29	1.56
Existing	117	RNV 2L4'T5HO, 1EB	Hotel	24%	24%	1.55	5.16	3.94	0.39	26	0.07	0.01	0.14	1,436.21	0.34	0.39	21.65	0.86
Existing	118	Lighting Control Tune-up	Hotel	3%	3%	0.01	5.24	5.08	0.51	6	0.00	0.00	0.02	243.10	2.15	2.95	1.58	0.86
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Hotel	0%	0%	0.00	5.16	5.16	0.52	17	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Hotel	31%	31%	0.13	5.16	3.54	0.35	26	10.97	1.10	0.01	93.29	5.23	6.06	1.41	0.86
Existing	132	RET 2L4' Premium T8, 1EB	Hotel	31%	31%	0.42	5.16	3.54	0.35	26	9.87	0.99	0.03	291.74	1.67	1.94	4.40	0.86
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Hotel	64%	64%	0.59	5.16	1.84	0.18	26	2.24	0.22	0.02	202.33	2.41	2.79	3.05	0.86
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Hotel	13%	20%	0.17	5.16	4.48	0.41	15	0.91	0.14	0.03	221.80	1.83	1.87	4.30	1.03
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Hotel	23%	75%	1.75	5.16	3.98	0.13	19	2.40	0.79	0.19	567.52	0.51	0.33	25.83	1.56
Existing	136	RNV 1L4'T5HO, 1EB	Hotel	24%	24%	2.87	5.16	3.94	0.39	26	2.06	0.21	0.27	2,661.42	0.18	0.21	40.13	0.86
Existing	137	Lighting Control Tune-up	Hotel	3%	3%	0.01	5.24	5.08	0.51	6	0.03	0.00	0.02	243.10	2.15	2.95	1.58	0.86
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Hotel	0%	0%	0.00	4.86	4.86	0.49	17	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Hotel	22%	22%	0.08	4.86	3.81	0.38	26	0.59	0.06	0.01	86.08	5.66	6.57	1.30	0.86
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Hotel	60%	60%	0.24	4.86	1.92	0.19	26	0.41	0.04	0.01	92.46	5.27	6.12	1.39	0.86
Existing	153	RET 2L8'T12, 60W, 1EB	Hotel	22%	22%	0.43	4.86	3.81	0.38	26	0.59	0.06	0.05	466.29	1.05	1.21	7.03	0.86
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Hotel	60%	60%	0.59	4.86	1.92	0.19	26	0.41	0.04	0.02	228.58	2.13	2.47	3.45	0.86
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Hotel	13%	20%	0.18	4.86	4.23	0.39	15	0.09	0.01	0.04	258.38	1.57	1.60	5.01	1.03
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Hotel	23%	75%	1.92	4.86	3.75	0.12	19	0.24	0.08	0.22	660.49	0.44	0.28	30.06	1.56
Existing	165	Base Incandescent Flood, 75W	Hotel	0%	0%	0.00	12.67	12.67	1.27	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Hotel	72%	72%	0.88	21.07	5.90	0.59	8	44.48	4.45	0.01	113.57	4.59	5.94	1.07	0.86
Existing	175	Base Incandescent Flood, 150W PAR	Hotel	0%	0%	0.00	12.67	12.67	1.27	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Hotel	40%	40%	0.18	13.03	7.82	0.78	1	4.79	0.48	0.02	246.93	2.11	3.04	0.79	0.86
Existing	177	Metal Halide, 50W	Hotel	58%	58%	4.26	13.19	5.54	0.55	9	4.93	0.49	0.11	1,069.84	0.49	0.64	9.59	0.86
Existing	180	Base 4L4'T8, 1EB	Hotel	0%	0%	0.00	3.75	3.75	0.38	26	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Hotel	16%	16%	0.04	3.75	3.16	0.32	26	0.04	0.00	0.01	82.72	5.89	6.84	1.25	0.86
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Hotel	20%	20%	0.17	3.75	3.00	0.30	15	0.01	0.00	0.03	310.55	1.68	2.04	3.93	0.86
Existing	183	Lighting Control Tune-up	Hotel	3%	3%	0.01	3.81	3.69	0.37	6	0.00	0.00	0.03	334.41	1.56	2.15	2.17	0.86
Existing	185	Base 2L4'T8, 1EB	Hotel	0%	0%	0.00	3.75	3.75	0.38	26	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Hotel	17%	17%	0.06	3.75	3.10	0.31	26	1.28	0.13	0.01	106.33	4.59	5.32	1.60	0.86
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Hotel	20%	20%	0.17	3.75	3.00	0.30	15	0.30	0.03	0.03	305.11	1.71	2.08	3.86	0.86
Existing	188	Lighting Control Tune-up	Hotel	3%	3%	0.01	3.81	3.69	0.37	6	0.01	0.00	0.03	334.41	1.56	2.15	2.17	0.86
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Hotel	0%	0%	0.00	0.37	0.37	0.00	17	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Hotel	17%	17%	0.06	0.37	0.31	0.00	26	0.18	0.00	0.11	N/A	0.33	0.52	16.32	0.63

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	117	RNV 2L4'T5HO, 1EB	Military	24%	24%	1.78	2.31	1.77	0.27	36	0.70	0.11	0.36	2,290.24	0.15	0.15	56.25	1.02
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Military	0%	0%	0.00	2.31	2.31	0.36	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Military	31%	31%	0.15	2.31	1.59	0.25	36	5.12	0.80	0.02	148.44	2.38	2.34	3.65	1.02
Existing	132	RET 2L4' Premium T8, 1EB	Military	31%	31%	0.48	2.31	1.59	0.25	36	4.61	0.72	0.07	464.21	0.76	0.75	11.40	1.02
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Military	64%	64%	0.68	2.31	0.83	0.13	36	1.05	0.16	0.05	321.95	1.10	1.08	7.91	1.02
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Military	14%	20%	0.19	2.32	1.98	0.29	21	0.47	0.10	0.07	331.13	1.00	0.83	10.22	1.20
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Military	33%	75%	2.01	2.31	1.55	0.09	26	1.61	0.57	0.31	864.11	0.30	0.18	46.14	1.61
Existing	136	RNV 1L4'T5HO, 1EB	Military	24%	24%	3.29	2.31	1.77	0.27	36	0.96	0.15	0.66	4,234.81	0.08	0.08	104.01	1.02
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Military	0%	0%	0.00	2.21	2.21	0.34	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Military	22%	22%	0.09	2.25	1.76	0.27	36	3.44	0.53	0.02	134.39	2.63	2.58	3.30	1.02
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Military	60%	60%	0.28	2.34	0.92	0.14	36	2.49	0.39	0.02	139.09	2.54	2.50	3.42	1.02
Existing	153	RET 2L8'T12, 60W, 1EB	Military	22%	22%	0.50	2.25	1.76	0.27	36	3.44	0.53	0.11	727.97	0.48	0.48	17.88	1.02
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Military	60%	60%	0.69	2.34	0.92	0.14	36	2.49	0.39	0.05	343.86	1.03	1.01	8.45	1.02
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Military	14%	20%	0.21	2.21	1.89	0.27	21	0.62	0.13	0.08	386.17	0.86	0.72	11.92	1.20
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Military	33%	75%	2.23	2.21	1.48	0.09	26	2.11	0.75	0.36	1,006.76	0.26	0.16	53.75	1.61
Existing	165	Base Incandescent Flood, 75W	Military	0%	0%	0.00	7.83	7.83	1.22	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Military	72%	72%	1.04	9.92	2.78	0.43	10	62.00	9.63	0.02	149.92	2.64	2.83	2.45	1.02
Existing	175	Base Incandescent Flood, 150W PAR	Military	0%	0%	0.00	7.83	7.83	1.22	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Military	40%	40%	0.28	8.17	4.90	0.76	1	22.29	3.46	0.05	294.35	1.35	1.64	1.45	1.02
Existing	177	Metal Halide, 50W	Military	58%	58%	6.76	8.33	3.50	0.54	12	29.67	4.61	0.21	1,370.19	0.29	0.31	23.48	1.02
Existing	180	Base 4L4'T8, 1EB	Military	0%	0%	0.00	1.68	1.68	0.26	36	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Military	16%	16%	0.05	1.68	1.42	0.22	36	0.51	0.08	0.02	131.92	2.67	2.63	3.24	1.02
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Military	20%	20%	0.20	1.68	1.35	0.21	21	0.13	0.02	0.07	464.57	0.84	0.83	10.31	1.02
Existing	185	Base 2L4'T8, 1EB	Military	0%	0%	0.00	1.68	1.68	0.26	36	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Military	17%	17%	0.07	1.68	1.39	0.22	36	0.75	0.12	0.03	169.19	2.09	2.05	4.16	1.02
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Military	20%	20%	0.19	1.68	1.35	0.21	21	0.17	0.03	0.07	455.44	0.86	0.84	10.11	1.02
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Military	0%	0%	0.00	0.66	0.66	0.00	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Military	17%	17%	0.10	0.67	0.55	0.00	36	0.04	0.00	0.10	N/A	0.35	0.55	15.42	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Military	21%	0%	0.09	0.78	0.61	0.00	23	0.02	0.00	0.06	N/A	0.55	0.91	9.36	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Military	0%	0%	0.00	0.66	0.66	0.00	12	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Military	35%	35%	0.11	0.93	0.60	0.00	12	2.96	0.00	0.05	N/A	0.74	1.27	5.68	0.63
Existing	222	Outdoor Lighting Controls (Photocell/Timeclock)	Military	21%	0%	0.02	0.78	0.61	0.00	12	2.16	0.00	0.02	N/A	2.02	3.62	2.00	0.61
Existing	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Military	0%	0%	0.00	1.97	1.97	0.93	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Military	12%	12%	0.03	1.76	1.55	0.73	20	0.57	0.27	0.02	33.15	6.30	3.88	2.19	1.62
Existing	302	Window Film (Standard)	Military	2%	2%	0.09	1.99	1.94	0.91	10	0.06	0.03	0.32	689.55	0.30	0.21	30.62	1.62
Existing	303	EMS - Chiller	Military	10%	10%	0.08	2.07	1.87	0.88	10	0.28	0.13	0.07	143.51	1.45	1.00	6.37	1.62
Existing	304	Cool Roof - Chiller	Military	13%	13%	0.21	2.07	1.81	0.85	10	0.22	0.10	0.14	303.03	0.69	0.48	13.46	1.62
Existing	305	Chiller Tune-up/Diagnostics	Military	4%	8%	0.05	2.01	1.93	0.87	10	0.03	0.03	0.11	115.84	1.48	0.63	10.10	2.62
Existing	306	Cooling Circ. Pumps - VSD	Military	6%	6%	0.08	2.00	1.88	0.88	15	0.18	0.08	0.09	200.98	1.04	0.67	11.94	1.62
Existing	310	Base DX Packaged System, EER=10.3, 10 tons	Military	0%	0%	0.00	3.42	3.42	1.61	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	311	DX Tune-up/Advanced Diagnostics	Military	10%	10%	0.08	3.60	3.24	1.52	3	4.25	2.00	0.11	237.27	0.88	0.68	3.99	1.62
Existing	312	DX Packaged System, EER=10.9, 10 tons	Military	6%	6%	0.07	2.95	2.79	1.31	15	5.12	2.41	0.06	117.81	1.77	1.15	7.00	1.62
Existing	313	Window Film (Standard)	Military	2%	2%	0.09	3.45	3.37	1.58	10	1.13	0.53	0.19	397.10	0.53	0.36	17.64	1.62
Existing	314	Evaporative Pre-Cooler	Military	10%	10%	0.38	3.43	3.09	1.45	10	2.57	1.21	0.20	423.91	0.49	0.34	18.83	1.62
Existing	315	Programmable Thermostat - DX	Military	8%	3%	0.03	3.52	3.23	1.61	10	4.34	0.62	0.02	115.57	3.60	4.08	1.57	0.99
Existing	316	Cool Roof - DX	Military	13%	13%	0.21	3.59	3.13	1.47	10	4.53	2.13	0.08	174.87	1.19	0.82	7.77	1.62
Existing	400	Base Fan Motor, 5hp, 1800rpm, 87.5%	Military	0%	0%	0.00	1.18	1.18	0.20	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	401	Fan Motor, 5hp, 1800rpm, 89.5%	Military	2%	2%	0.05	1.18	1.15	0.19	15	0.80	0.13	0.25	1,521.91	0.25	0.25	31.87	1.04
Existing	402	Variable Speed Drive Control, 5 HP	Military	27%	8%	0.80	1.20	0.87	0.18	15	0.97	0.04	0.33	7,330.14	0.14	0.19	42.24	0.79
Existing	410	Base Fan Motor, 15hp, 1800rpm, 91.0%	Military	0%	0%	0.00	1.09	1.09	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	411	Fan Motor, 15hp, 1800rpm, 92.4%	Military	2%	2%	0.01	1.09	1.07	0.18	15	0.18	0.03	0.07	420.82	0.90	0.91	8.81	1.04
Existing	412	Variable Speed Drive Control, 15 HP	Military	27%	8%	0.48	1.14	0.83	0.18	15	0.96	0.04	0.21	4,615.58	0.23	0.30	26.59	0.79
Existing	420	Base Fan Motor, 40hp, 1800rpm, 93.0%	Military	0%	0%	0.00	1.07	1.07	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	421	Fan Motor, 40hp, 1800rpm, 94.1%	Military	1%	1%	0.03	1.07	1.06	0.18	15	0.04	0.01	0.35	2,113.99	0.18	0.18	44.27	1.04
Existing	422	Variable Speed Drive Control, 40 HP	Military	27%	8%	0.33	1.17	0.85	0.18	15	0.34	0.02	0.14	3,048.65	0.34	0.46	17.57	0.79

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Vintage Batch Segment	E 1 Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
Existing	500	Base Refrigeration System	Military	0%	0%	0.00	0.46	0.46	0.05	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	600	Base Heating	Military	0%	0%	0.00	1.45	1.45	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	700	Base Cooking	Military	0%	0%	0.00	0.81	0.81	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	800	Base Water Heating	Military	0%	0%	0.00	0.40	0.40	0.06	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	900	Base Miscellaneous	Military	0%	0%	0.00	1.62	1.62	0.25	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	910	Base Desktop PC	Military	0%	0%	0.00	0.02	0.02	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	911	Power Management Enabling	Military	38%	21%	0.02	0.02	0.01	0.00	4	0.27	0.02	0.87	11,488.12	0.05	0.09	39.81	0.78
Existing	920	Base Display Monitor	Military	0%	0%	0.00	0.02	0.02	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	921	Purchase LCD monitor	Military	50%	50%	0.51	0.02	0.01	0.00	4	0.38	0.05	16.78	120,572.00	0.00	0.00	771.04	0.97
Existing	922	Power Management Enabling	Military	67%	37%	0.01	0.03	0.01	0.00	4	0.42	0.03	0.20	2,631.07	0.24	0.37	9.12	0.78
Existing	923	Network Power Management Enabling	Military	67%	37%	0.01	0.03	0.01	0.00	4	0.38	0.03	0.10	1,315.54	0.48	0.75	4.56	0.78
Existing	924	External hardware control	Military	67%	37%	0.14	0.03	0.01	0.00	4	0.42	0.03	2.36	31,244.01	0.02	0.03	108.27	0.78
Existing	930	Base Copier	Military	0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	931	Power Management Enabling	Military	59%	32%	0.01	0.09	0.04	0.01	4	0.83	0.06	0.07	903.65	0.69	1.09	3.13	0.78
Existing	940	Base Laser Printer	Military	0%	0%	0.00	0.01	0.01	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	941	External hardware control	Military	68%	27%	0.09	0.01	0.00	0.00	4	0.30	0.02	3.71	66,937.95	0.01	0.02	170.49	0.72
Existing	942	Nighttime shutdown	Military	68%	27%	0.29	0.02	0.01	0.00	4	0.38	0.02	9.58	172,754.85	0.00	0.01	440.00	0.72
Existing	110	Base Fluorescent Fixture, 4L4'T12, 34W, 2EEMAG	Miscellaneous	0%	0%	0.00	2.31	2.31	0.36	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	111	ROB 4L4' Premium T8, 1EB	Miscellaneous	31%	31%	0.06	2.31	1.59	0.25	36	5.29	0.82	0.01	55.06	6.41	6.30	1.35	1.02
Existing	112	ROB 2L4' Premium T8, 1EB, Reflector	Miscellaneous	66%	66%	0.18	2.31	0.79	0.12	36	2.77	0.43	0.01	82.29	4.29	4.22	2.02	1.02
Existing	113	RET 4L4' Premium T8, 1EB	Miscellaneous	31%	31%	0.36	2.31	1.59	0.25	36	5.29	0.82	0.05	344.13	1.03	1.01	8.45	1.02
Existing	114	RET 2L4' Premium T8, 1EB, Reflector	Miscellaneous	66%	66%	0.48	2.31	0.79	0.12	36	2.77	0.43	0.03	220.54	1.60	1.57	5.42	1.02
Existing	115	Occupancy Sensor, 4L4' Fluorescent Fixtures	Miscellaneous	14%	20%	0.20	2.32	1.98	0.29	21	0.60	0.13	0.07	337.77	0.98	0.82	10.42	1.20
Existing	116	Continuous Dimming, 5L4' Fluorescent Fixtures	Miscellaneous	33%	75%	2.05	2.31	1.55	0.09	26	2.08	0.74	0.31	881.45	0.29	0.18	47.06	1.61
Existing	117	RNV 2L4'T5HO, 1EB	Miscellaneous	24%	24%	1.78	2.31	1.77	0.27	36	1.24	0.19	0.36	2,290.24	0.15	0.15	56.25	1.02
Existing	130	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Miscellaneous	0%	0%	0.00	2.31	2.31	0.36	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	131	ROB 2L4' Premium T8, 1EB	Miscellaneous	31%	31%	0.15	2.31	1.59	0.25	36	9.15	1.42	0.02	148.44	2.38	2.34	3.65	1.02
Existing	132	RET 2L4' Premium T8, 1EB	Miscellaneous	31%	31%	0.48	2.31	1.59	0.25	36	8.24	1.28	0.07	464.21	0.76	0.75	11.40	1.02
Existing	133	RET 1L4' Premium T8, 1EB, Reflector OEM	Miscellaneous	64%	64%	0.68	2.31	0.83	0.13	36	1.87	0.29	0.05	321.95	1.10	1.08	7.91	1.02
Existing	134	Occupancy Sensor, 8L4' Fluorescent Fixtures	Miscellaneous	14%	20%	0.19	2.32	1.98	0.29	21	0.84	0.18	0.07	331.13	1.00	0.83	10.22	1.20
Existing	135	Continuous Dimming, 10L4' Fluorescent Fixtures	Miscellaneous	33%	75%	2.01	2.31	1.55	0.09	26	2.87	1.02	0.31	864.11	0.30	0.18	46.14	1.61
Existing	136	RNV 1L4'T5HO, 1EB	Miscellaneous	24%	24%	3.29	2.31	1.77	0.27	36	1.72	0.27	0.66	4,234.81	0.08	0.08	104.01	1.02
Existing	150	Base Fluorescent Fixture, 2L8'T12, 60W, 1EEMAG	Miscellaneous	0%	0%	0.00	2.21	2.21	0.34	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	151	ROB 2L8'T12, 60W, 1EB	Miscellaneous	22%	22%	0.09	2.25	1.76	0.27	36	6.14	0.95	0.02	134.39	2.63	2.58	3.30	1.02
Existing	152	ROB 1L8'T12, 60W, 1EB, Reflector	Miscellaneous	60%	60%	0.28	2.34	0.92	0.14	36	4.45	0.69	0.02	139.09	2.54	2.50	3.42	1.02
Existing	153	RET 2L8'T12, 60W, 1EB	Miscellaneous	22%	22%	0.50	2.25	1.76	0.27	36	6.14	0.95	0.11	727.97	0.48	0.48	17.88	1.02
Existing	154	RET 1L8'T12, 60W, 1EB, Reflector	Miscellaneous	60%	60%	0.69	2.34	0.92	0.14	36	4.45	0.69	0.05	343.86	1.03	1.01	8.45	1.02
Existing	155	Occupancy Sensor, 4L8' Fluorescent Fixtures	Miscellaneous	14%	20%	0.21	2.21	1.89	0.27	21	1.10	0.24	0.08	386.17	0.86	0.72	11.92	1.20
Existing	156	Continuous Dimming, 5L8' Fluorescent Fixtures	Miscellaneous	33%	75%	2.23	2.21	1.48	0.09	26	3.78	1.34	0.36	1,006.76	0.26	0.16	53.75	1.61
Existing	165	Base Incandescent Flood, 75W	Miscellaneous	0%	0%	0.00	7.83	7.83	1.22	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	166	CFL Screw-in, Modular 18W	Miscellaneous	72%	72%	1.04	9.92	2.78	0.43	10	110.77	17.21	0.02	149.92	2.64	2.83	2.45	1.02
Existing	175	Base Incandescent Flood, 150W PAR	Miscellaneous	0%	0%	0.00	7.83	7.83	1.22	1	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	176	Halogen PAR Flood, 90W	Miscellaneous	40%	40%	0.28	8.17	4.90	0.76	1	39.82	6.19	0.05	294.35	1.35	1.64	1.45	1.02
Existing	177	Metal Halide, 50W	Miscellaneous	58%	58%	6.76	8.33	3.50	0.54	12	53.00	8.23	0.21	1,370.19	0.29	0.31	23.48	1.02
Existing	180	Base 4L4'T8, 1EB	Miscellaneous	0%	0%	0.00	1.68	1.68	0.26	36	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	181	ROB 4L4' Premium T8, 1EB	Miscellaneous	16%	16%	0.05	1.68	1.42	0.22	36	0.91	0.14	0.02	131.92	2.67	2.63	3.24	1.02
Existing	182	Occupancy Sensor, 4L4' Fluorescent Fixtures	Miscellaneous	20%	20%	0.20	1.68	1.35	0.21	21	0.23	0.04	0.07	464.57	0.84	0.83	10.31	1.02
Existing	185	Base 2L4'T8, 1EB	Miscellaneous	0%	0%	0.00	1.68	1.68	0.26	36	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	186	ROB 2L4' Premium T8, 1EB	Miscellaneous	17%	17%	0.07	1.68	1.39	0.22	36	1.34	0.21	0.03	169.19	2.09	2.05	4.16	1.02
Existing	187	Occupancy Sensor, 8L4' Fluorescent Fixtures	Miscellaneous	20%	20%	0.19	1.68	1.35	0.21	21	0.31	0.05	0.07	455.44	0.86	0.84	10.11	1.02
Existing	210	Base Fluorescent Fixture, 2L4'T12, 34W, 1EEMAG	Miscellaneous	0%	0%	0.00	1.12	1.12	0.00	23	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	211	RET 2L4'T8, 1EB	Miscellaneous	17%	17%	0.10	1.12	0.93	0.00	36	0.13	0.00	0.06	N/A	0.59	0.93	9.15	0.63
Existing	212	Outdoor Lighting Controls (Photocell/Timeclock)	Miscellaneous	21%	0%	0.09	1.31	1.03	0.00	23	0.05	0.00	0.04	N/A	0.93	1.53	5.56	0.61
Existing	220	Base Mercury Vapor 400W Lamp	Miscellaneous	0%	0%	0.00	1.12	1.12	0.00	12	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
Existing	221	High Pressure Sodium 250W Lamp	Miscellaneous	35%	35%	0.11	1.56	1.01	0.00	12	8.92	0.00	0.03	N/A	1.25	2.15	3.37	0.63

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Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	302	DX Tune-up/Advanced Diagnostics		10%	10%	0.14	6.16	5.52	1.39	10	0.01	0.00	0.04	161.47	1.76	1.67	3.83	1.18
NC	303	EMS - Chiller		10%	10%	0.27	5.77	5.19	1.30	10	0.02	0.00	0.08	334.82	0.85	0.81	7.93	1.18
NC	304	Cool Roof - Chiller		7%	7%	0.21	5.80	5.40	1.36	10	0.01	0.00	0.10	380.09	0.75	0.71	9.01	1.18
NC	305	Chiller Tune-up/Diagnostics		3%	8%	0.17	5.80	5.63	1.34	10	0.00	0.00	0.18	260.85	0.74	0.37	17.28	2.25
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.29	5.80	5.45	1.37	15	0.01	0.00	0.11	449.77	0.63	0.56	14.25	1.18
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	9.91	9.91	2.49	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.29	10.43	9.39	2.36	3	0.19	0.05	0.13	530.99	0.53	0.57	4.76	1.18
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.23	8.56	8.09	2.03	15	0.23	0.06	0.07	263.64	1.08	0.96	8.35	1.18
NC	313	Window Film (Standard)		10%	10%	0.14	10.40	9.32	2.34	10	0.21	0.05	0.02	95.62	2.97	2.82	2.27	1.18
NC	314	Evaporative Pre-Cooler		10%	10%	1.30	9.96	8.96	2.25	10	0.11	0.03	0.24	948.66	0.30	0.28	22.48	1.18
NC	315	Programmable Thermostat - DX		9%	3%	0.09	10.19	9.30	2.49	10	0.22	0.02	0.02	259.19	2.64	3.65	1.75	0.81
NC	316	Cool Roof - DX		7%	7%	0.21	10.05	9.35	2.35	10	0.13	0.03	0.06	219.64	1.29	1.23	5.20	1.18
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	2.37	2.37	0.39	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.02	2.37	2.31	0.38	15	0.03	0.00	0.05	280.51	1.36	1.38	5.82	1.04
NC	500	Base Refrigeration System		0%	0%	0.00	10.93	10.93	1.20	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	1.92	1.92	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	3.74	3.74	0.48	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	3.61	3.61	0.46	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	5.11	5.11	0.66	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		38%	21%	0.00	0.07	0.05	0.01	4	0.01	0.00	0.03	344.40	1.75	2.73	1.25	0.79
NC	920	Base Display Monitor		0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.05	0.07	0.04	0.01	4	0.01	0.00	0.52	3,612.35	0.11	0.14	24.12	0.98
NC	922	Power Management Enabling		67%	37%	0.00	0.10	0.03	0.01	4	0.01	0.00	0.01	79.05	7.64	11.89	0.29	0.79
NC	923	Network Power Management Enabling		67%	37%	0.00	0.10	0.03	0.01	4	0.01	0.00	0.00	39.52	15.28	23.79	0.14	0.79
NC	924	External hardware control		67%	37%	0.01	0.10	0.03	0.01	4	0.01	0.00	0.07	938.71	0.64	1.00	3.41	0.79
NC	930	Base Copier		0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		59%	32%	0.00	0.10	0.04	0.01	4	0.01	0.00	0.01	95.66	6.31	9.83	0.35	0.79
NC	940	Base Laser Printer		0%	0%	0.00	0.06	0.06	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		67%	27%	0.02	0.06	0.02	0.01	4	0.01	0.00	0.17	2,860.63	0.26	0.45	7.65	0.73
NC	942	Nighttime shutdown		67%	27%	0.06	0.07	0.02	0.01	4	0.02	0.00	0.43	7,392.78	0.10	0.17	19.77	0.73
NC	100	Base Lighting		0%	0%	0.00	4.84	4.84	0.73	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	4.84	4.35	0.66	20	1.16	0.18	0.03	167.71	2.42	2.40	3.56	1.01
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	4.84	3.87	0.58	20	2.33	0.35	0.03	201.25	2.02	2.00	4.27	1.01
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	1.73	1.73	0.56	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.04	1.55	1.36	0.44	20	0.06	0.02	0.03	87.57	2.89	2.16	3.95	1.34
NC	302	Window Film (Standard)		2%	2%	0.09	1.76	1.72	0.55	10	0.00	0.00	0.37	1,142.67	0.22	0.19	34.57	1.34
NC	303	EMS - Chiller		10%	10%	0.12	1.87	1.69	0.54	10	0.02	0.00	0.12	368.89	0.69	0.57	11.16	1.34
NC	304	Cool Roof - Chiller		13%	13%	0.21	1.89	1.65	0.53	10	0.01	0.00	0.16	487.05	0.52	0.43	14.73	1.34
NC	305	Chiller Tune-up/Diagnostics		4%	8%	0.08	1.76	1.70	0.52	10	0.00	0.00	0.22	306.85	0.62	0.31	20.97	2.28
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.13	1.76	1.65	0.53	15	0.02	0.01	0.17	530.92	0.48	0.37	21.48	1.34
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	3.00	3.00	0.96	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.13	3.16	2.85	0.91	3	0.24	0.08	0.20	626.79	0.40	0.38	7.17	1.34
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.10	2.60	2.45	0.79	15	0.29	0.09	0.10	311.21	0.81	0.64	12.59	1.34
NC	313	Window Film (Standard)		2%	2%	0.09	3.02	2.95	0.94	10	0.06	0.02	0.21	665.98	0.38	0.32	20.15	1.34
NC	314	Evaporative Pre-Cooler		10%	10%	0.59	3.02	2.72	0.87	10	0.14	0.05	0.36	1,119.81	0.23	0.19	33.88	1.34
NC	315	Programmable Thermostat - DX		8%	3%	0.04	3.16	2.89	0.99	10	0.17	0.02	0.03	299.51	1.88	2.39	2.68	0.88
NC	316	Cool Roof - DX		13%	13%	0.21	3.19	2.78	0.89	10	0.23	0.07	0.09	288.94	0.87	0.73	8.74	1.34
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	0.80	0.80	0.14	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.00	0.80	0.78	0.14	15	0.02	0.00	0.03	181.97	2.01	1.95	4.12	1.08
NC	402	Variable Speed Drive Control, 5 HP		27%	8%	0.07	0.96	0.70	0.16	15	0.03	0.00	0.04	742.16	1.33	1.71	4.68	0.81
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	0.74	0.74	0.13	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.00	0.74	0.73	0.13	15	0.01	0.00	0.01	50.32	7.26	7.04	1.14	1.08
NC	412	Variable Speed Drive Control, 15 HP		27%	8%	0.04	0.87	0.64	0.14	15	0.01	0.00	0.02	487.07	2.02	2.61	3.07	0.81
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	0.73	0.73	0.13	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.00	0.73	0.72	0.13	15	0.00	0.00	0.05	252.76	1.45	1.40	5.72	1.08
NC	422	Variable Speed Drive Control, 40 HP		27%	8%	0.03	0.79	0.58	0.13	15	0.05	0.00	0.02	367.64	2.68	3.46	2.32	0.81
NC	500	Base Refrigeration System		0%	0%	0.00	0.24	0.24	0.03	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	1.26	1.26	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.27	0.27	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	0.25	0.25	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	1.12	1.12	0.17	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.04	0.04	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		37%	21%	0.00	0.05	0.03	0.01	4	0.03	0.00	0.08	1,079.23	0.57	0.89	3.83	0.79
NC	920	Base Display Monitor		0%	0%	0.00	0.04	0.04	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.11	0.05	0.03	0.00	4	0.04	0.01	1.59	11,302.18	0.04	0.05	72.92	0.98
NC	922	Power Management Enabling		66%	37%	0.00	0.07	0.02	0.01	4	0.05	0.00	0.02	249.04	2.48	3.87	0.88	0.79
NC	923	Network Power Management Enabling		66%	37%	0.00	0.07	0.02	0.01	4	0.04	0.00	0.01	124.52	4.97	7.74	0.44	0.79
NC	924	External hardware control		66%	37%	0.03	0.07	0.02	0.01	4	0.05	0.00	0.23	2,957.35	0.21	0.33	10.49	0.79
NC	930	Base Copier		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		58%	32%	0.00	0.05	0.02	0.00	4	0.02	0.00	0.03	424.95	1.46	2.27	1.51	0.79
NC	940	Base Laser Printer		0%	0%	0.00	0.04	0.04	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		67%	27%	0.03	0.04	0.01	0.00	4	0.04	0.00	0.44	7,644.69	0.10	0.17	20.02	0.73
NC	942	Nighttime shutdown		67%	27%	0.10	0.05	0.02	0.01	4	0.05	0.00	1.13	19,822.29	0.04	0.07	51.91	0.73
NC	100	Base Lighting		0%	0%	0.00	7.09	7.09	0.79	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	7.09	6.39	0.71	20	0.23	0.03	0.02	155.00	3.16	3.51	2.43	0.90
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	7.09	5.68	0.63	20	0.45	0.05	0.02	186.00	2.64	2.93	2.91	0.90
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	6.02	6.02	2.15	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.14	6.33	5.70	2.04	3	0.07	0.03	0.10	287.48	0.80	0.73	3.68	1.37
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.11	5.20	4.91	1.76	15	0.08	0.03	0.05	142.74	1.62	1.24	6.46	1.37
NC	313	Window Film (Standard)		9%	9%	0.13	6.20	5.62	2.01	10	0.09	0.03	0.04	110.20	2.10	1.72	3.73	1.37
NC	314	Evaporative Pre-Cooler		10%	10%	0.61	6.05	5.44	1.95	10	0.04	0.02	0.18	513.61	0.45	0.37	17.37	1.37
NC	315	DX Tune-up/Advanced Diagnostics		9%	3%	0.04	6.16	5.64	2.15	10	0.08	0.01	0.01	140.83	3.57	4.62	1.39	0.87
NC	316	Cool Roof - DX		15%	15%	0.21	6.43	5.44	1.95	10	0.08	0.03	0.04	107.52	2.15	1.76	3.64	1.37
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	1.45	1.45	0.14	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.01	1.45	1.42	0.14	15	0.01	0.00	0.03	254.57	2.08	2.53	3.16	0.86
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	1.34	1.34	0.13	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.00	1.34	1.32	0.13	15	0.00	0.00	0.01	70.39	7.53	9.17	0.87	0.86
NC	500	Base Refrigeration System		0%	0%	0.00	28.80	28.80	3.08	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	501	High-efficiency fan motors		12%	12%	1.05	28.98	25.51	2.72	16	1.06	0.11	0.04	373.63	1.33	1.57	5.20	0.88
NC	502	Strip curtains for walk-ins		4%	4%	0.05	29.64	28.45	3.04	4	0.11	0.01	0.01	132.57	3.75	5.25	0.65	0.88
NC	503	Night covers for display cases		4%	0%	0.10	28.86	27.71	3.08	5	0.18	0.00	0.03	N/A	1.21	2.64	1.54	0.55
NC	504	Evaporator fan controller for MT walk-ins		0%	0%	0.04	28.83	28.72	3.08	5	0.03	0.00	0.12	N/A	0.29	0.63	6.42	0.55
NC	505	Efficient compressor motor		7%	7%	0.08	29.18	27.19	2.90	10	0.52	0.06	0.01	67.91	7.32	9.34	0.68	0.88
NC	506	Compressor VSD retrofit		5%	3%	0.37	28.88	27.37	2.99	10	0.23	0.01	0.04	697.46	1.02	1.54	4.17	0.74
NC	507	Floating head pressure controls		5%	0%	0.11	29.48	28.10	3.15	14	0.23	0.00	0.01	N/A	2.90	5.56	1.40	0.55
NC	508	Refrigeration Commissioning		5%	5%	0.16	29.54	28.07	3.00	3	0.24	0.03	0.05	483.49	1.03	1.47	1.84	0.88
NC	509	Demand Hot Gas Defrost		3%	3%	0.03	29.32	28.58	3.05	10	0.07	0.01	0.01	68.01	7.31	9.33	0.69	0.88
NC	510	Demand Defrost Electric		8%	8%	0.03	28.92	26.67	2.85	10	0.66	0.07	0.00	22.26	22.33	28.50	0.22	0.88
NC	511	Anti-sweat (humidistat) controls		5%	2%	0.15	28.94	27.56	3.01	12	0.40	0.02	0.02	296.44	2.81	3.99	1.81	0.77
NC	600	Base Heating		0%	0%	0.00	2.18	2.18	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.74	0.74	0.08	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	1.25	1.25	0.14	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	1.45	1.45	0.16	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	910	Base Desktop PC		0%	0%	0.00	0.12	0.12	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		39%	21%	0.00	0.14	0.08	0.01	4	0.01	0.00	0.01	194.68	3.92	6.54	0.52	0.73
NC	920	Base Display Monitor		0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.04	0.13	0.07	0.01	4	0.02	0.00	0.23	2,054.12	0.24	0.32	10.52	0.90
NC	922	Power Management Enabling		70%	37%	0.00	0.20	0.06	0.01	4	0.02	0.00	0.00	43.77	17.42	29.10	0.12	0.73
NC	923	Network Power Management Enabling		70%	37%	0.00	0.20	0.06	0.01	4	0.02	0.00	0.00	21.88	34.84	58.20	0.06	0.73
NC	924	External hardware control		70%	37%	0.01	0.20	0.06	0.01	4	0.02	0.00	0.03	519.76	1.47	2.45	1.39	0.73
NC	930	Base Copier		0%	0%	0.00	0.11	0.11	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		61%	32%	0.00	0.18	0.07	0.01	4	0.01	0.00	0.01	163.52	4.66	7.79	0.44	0.73
NC	940	Base Laser Printer		0%	0%	0.00	0.09	0.09	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		71%	27%	0.01	0.10	0.03	0.01	4	0.01	0.00	0.06	1,383.51	0.71	1.27	2.70	0.69
NC	942	Nighttime shutdown		71%	27%	0.03	0.12	0.03	0.01	4	0.02	0.00	0.15	3,530.13	0.28	0.50	6.89	0.69
NC	100	Base Lighting		0%	0%	0.00	2.62	2.62	0.51	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	2.62	2.36	0.46	20	0.59	0.12	0.05	237.98	1.46	1.30	6.57	1.12
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	2.62	2.10	0.41	20	1.18	0.23	0.06	285.58	1.21	1.08	7.89	1.12
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	0.29	0.29	0.12	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.01	0.26	0.23	0.09	20	0.00	0.00	0.05	126.04	1.81	1.21	7.05	1.50
NC	302	Window Film (Standard)		12%	12%	0.05	0.30	0.27	0.11	10	0.00	0.00	0.25	640.07	0.36	0.27	24.00	1.50
NC	303	EMS - Chiller		10%	10%	0.04	0.30	0.27	0.11	10	0.00	0.00	0.22	558.41	0.41	0.31	20.94	1.50
NC	304	Cool Roof - Chiller		18%	18%	0.21	0.30	0.25	0.10	10	0.00	0.00	0.69	1,726.20	0.13	0.10	64.73	1.50
NC	305	Chiller Tune-up/Diagnostics		4%	8%	0.02	0.30	0.29	0.11	10	0.00	0.00	0.35	440.50	0.42	0.20	32.65	2.39
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.04	0.30	0.28	0.11	15	0.00	0.00	0.30	764.13	0.30	0.21	38.32	1.50
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	0.51	0.51	0.20	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.04	0.54	0.48	0.19	3	0.03	0.01	0.36	902.11	0.25	0.21	12.79	1.50
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.03	0.44	0.42	0.17	15	0.04	0.02	0.18	447.91	0.51	0.36	22.46	1.50
NC	313	Window Film (Standard)		12%	12%	0.05	0.57	0.50	0.20	10	0.02	0.01	0.14	343.45	0.67	0.50	12.88	1.50
NC	314	Evaporative Pre-Cooler		10%	10%	0.18	0.51	0.46	0.18	10	0.02	0.01	0.64	1,611.69	0.14	0.11	60.44	1.50
NC	315	Programmable Thermostat - DX		8%	3%	0.01	0.53	0.48	0.20	10	0.03	0.00	0.05	438.59	1.09	1.28	4.99	0.95
NC	316	Cool Roof - DX		18%	18%	0.21	0.54	0.44	0.18	10	0.05	0.02	0.38	964.53	0.24	0.18	36.17	1.50
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	0.09	0.09	0.02	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.00	0.09	0.09	0.02	15	0.00	0.00	0.12	608.66	0.57	0.52	15.29	1.13
NC	402	Variable Speed Drive Control, 5 HP		27%	8%	0.03	0.09	0.07	0.02	15	0.00	0.00	0.17	2,983.76	0.31	0.38	20.98	0.84
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	0.08	0.08	0.02	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.00	0.08	0.08	0.02	15	0.00	0.00	0.03	168.30	2.04	1.90	4.23	1.13
NC	412	Variable Speed Drive Control, 15 HP		27%	8%	0.02	0.08	0.06	0.02	15	0.01	0.00	0.11	1,931.30	0.47	0.59	13.58	0.84
NC	500	Base Refrigeration System		0%	0%	0.00	0.19	0.19	0.02	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	0.26	0.26	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.00	0.00	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	0.18	0.18	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	2.33	2.33	0.46	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		37%	21%	0.01	0.06	0.04	0.01	4	0.03	0.00	0.25	2,870.66	0.20	0.30	11.36	0.81
NC	920	Base Display Monitor		0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.34	0.06	0.03	0.00	4	0.04	0.01	4.64	30,007.71	0.01	0.02	213.27	1.01
NC	922	Power Management Enabling		66%	37%	0.01	0.08	0.03	0.01	4	0.05	0.00	0.06	666.54	0.85	1.30	2.64	0.81
NC	923	Network Power Management Enabling		66%	37%	0.00	0.08	0.03	0.01	4	0.04	0.00	0.03	333.27	1.71	2.59	1.32	0.81
NC	924	External hardware control		66%	37%	0.09	0.08	0.03	0.01	4	0.05	0.00	0.68	7,915.14	0.07	0.11	31.31	0.81
NC	930	Base Copier		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		57%	32%	0.00	0.04	0.02	0.00	4	0.02	0.00	0.07	823.99	0.69	1.05	3.26	0.81
NC	940	Base Laser Printer		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	DX Tune-up/Advanced Diagnostics		65%	27%	0.05	0.03	0.01	0.00	4	0.03	0.00	1.06	16,624.38	0.04	0.07	48.75	0.74
NC	942	Nighttime shutdown		65%	27%	0.18	0.04	0.01	0.00	4	0.04	0.00	2.76	43,274.11	0.02	0.03	126.89	0.74

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	100	Base Lighting		0%	0%	0.00	4.96	4.96	0.75	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	4.96	4.46	0.68	20	1.52	0.23	0.02	162.11	2.58	2.46	3.47	1.05
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	4.96	3.97	0.60	20	3.04	0.46	0.03	194.53	2.15	2.05	4.17	1.05
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	1.74	1.74	0.95	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.06	1.56	1.37	0.75	20	0.12	0.07	0.04	69.66	2.89	1.59	5.35	1.81
NC	302	Window Film (Standard)		4%	4%	0.13	1.80	1.73	0.94	10	0.01	0.00	0.34	630.50	0.32	0.20	32.47	1.81
NC	303	EMS - Chiller		10%	10%	0.17	1.86	1.67	0.91	10	0.05	0.03	0.16	297.92	0.68	0.42	15.34	1.81
NC	304	Cool Roof - Chiller		4%	4%	0.10	1.76	1.69	0.92	10	0.02	0.01	0.27	497.92	0.40	0.25	25.65	1.81
NC	305	Chiller Tune-up/Diagnostics		5%	8%	0.10	1.79	1.70	0.90	10	0.01	0.01	0.21	242.26	0.73	0.32	19.97	2.54
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.18	1.77	1.66	0.91	15	0.04	0.02	0.23	422.29	0.48	0.28	29.09	1.81
NC	307	EMS Optimization		5%	5%	0.01	1.79	1.70	0.93	5	0.01	0.00	0.05	82.60	2.44	1.62	2.50	1.81
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	3.02	3.02	1.65	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.18	3.18	2.86	1.56	3	0.17	0.09	0.27	498.54	0.40	0.28	9.71	1.81
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.14	2.61	2.47	1.35	15	0.21	0.11	0.14	247.53	0.81	0.47	17.05	1.81
NC	313	Window Film (Standard)		4%	4%	0.13	3.08	2.96	1.61	10	0.07	0.04	0.20	368.22	0.55	0.34	18.97	1.81
NC	314	Evaporative Pre-Cooler		10%	10%	0.81	3.04	2.74	1.49	10	0.10	0.06	0.49	890.69	0.23	0.14	45.88	1.81
NC	315	Programmable Thermostat - DX		8%	3%	0.06	3.16	2.92	1.68	10	0.11	0.02	0.04	239.12	1.57	1.60	4.00	1.10
NC	316	Cool Roof - DX		4%	4%	0.10	3.06	2.95	1.61	10	0.05	0.03	0.16	285.47	0.71	0.44	14.70	1.81
NC	317	Optimize Controls		5%	5%	0.01	3.10	2.95	1.61	5	0.02	0.01	0.03	47.65	4.22	2.81	1.44	1.81
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	0.93	0.93	0.16	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.01	0.93	0.91	0.16	15	0.04	0.01	0.08	483.11	0.81	0.77	10.43	1.10
NC	402	Variable Speed Drive Control, 5 HP		27%	8%	0.21	0.95	0.69	0.15	15	0.15	0.01	0.11	2,333.82	0.46	0.57	14.13	0.85
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	0.86	0.86	0.15	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.00	0.86	0.85	0.15	15	0.01	0.00	0.02	133.59	2.93	2.78	2.89	1.10
NC	412	Variable Speed Drive Control, 15 HP		27%	8%	0.12	0.88	0.65	0.14	15	0.17	0.01	0.07	1,499.17	0.71	0.88	9.08	0.85
NC	413	Air Handler Optimization, 15 HP		20%	20%	0.05	0.96	0.77	0.13	5	0.02	0.00	0.08	453.05	0.86	0.94	4.30	1.10
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	0.85	0.85	0.15	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.01	0.85	0.84	0.14	15	0.00	0.00	0.11	671.06	0.58	0.55	14.49	1.10
NC	422	Variable Speed Drive Control, 40 HP		27%	8%	0.08	1.02	0.75	0.16	15	0.02	0.00	0.04	879.56	1.21	1.50	5.33	0.85
NC	423	Air Handler Optimization, 40 HP		20%	20%	0.05	0.94	0.76	0.13	5	0.00	0.00	0.08	460.68	0.85	0.93	4.37	1.10
NC	500	Base Refrigeration System		0%	0%	0.00	0.42	0.42	0.04	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	0.72	0.72	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.14	0.14	0.02	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	1.00	1.00	0.15	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	0.85	0.85	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.04	0.04	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		36%	21%	0.01	0.04	0.03	0.00	4	0.03	0.00	0.26	3,828.63	0.18	0.29	11.98	0.78
NC	920	Base Display Monitor		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.26	0.04	0.02	0.00	4	0.04	0.01	4.82	39,943.61	0.01	0.02	221.58	0.96
NC	922	Power Management Enabling		65%	37%	0.01	0.06	0.02	0.00	4	0.04	0.00	0.06	894.86	0.78	1.22	2.80	0.78
NC	923	Network Power Management Enabling		65%	37%	0.00	0.06	0.02	0.00	4	0.04	0.00	0.03	447.43	1.56	2.44	1.40	0.78
NC	924	External hardware control		65%	37%	0.07	0.06	0.02	0.00	4	0.04	0.00	0.72	10,626.43	0.07	0.10	33.25	0.78
NC	930	Base Copier		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		57%	32%	0.00	0.04	0.02	0.00	4	0.02	0.00	0.03	460.41	1.51	2.37	1.44	0.78
NC	940	Base Laser Printer		0%	0%	0.00	0.02	0.02	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		64%	27%	0.04	0.02	0.01	0.00	4	0.03	0.00	0.93	18,315.38	0.05	0.08	42.67	0.72
NC	942	Nighttime shutdown		64%	27%	0.11	0.03	0.01	0.00	4	0.04	0.00	2.43	47,874.59	0.02	0.03	111.52	0.72
NC	100	Base Lighting		0%	0%	0.00	8.84	8.84	1.33	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	8.84	7.96	1.19	20	0.63	0.09	0.01	92.12	4.37	4.38	1.95	1.00
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	8.84	7.08	1.06	20	1.26	0.19	0.02	110.55	3.64	3.65	2.34	1.00
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	3.41	3.41	1.28	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.04	3.04	2.68	1.01	20	0.09	0.04	0.01	34.99	6.48	4.60	1.85	1.41

DSM ASSYST SUMMARY COMMERCIAL Year 2005
Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	307	EMS Optimization		5%	5%	0.01	2.95	2.80	1.68	5	0.00	0.00	0.03	45.49	3.95	2.67	1.52	1.78
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	4.98	4.98	2.99	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.30	5.24	4.72	2.84	3	0.07	0.04	0.27	456.89	0.39	0.28	9.81	1.78
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.24	4.30	4.07	2.45	15	0.09	0.05	0.14	226.85	0.79	0.47	17.22	1.78
NC	313	Window Film (Standard)		7%	7%	0.29	5.04	4.69	2.82	10	0.08	0.05	0.15	248.53	0.72	0.45	14.11	1.78
NC	314	Evaporative Pre-Cooler		10%	10%	1.35	5.01	4.51	2.71	10	0.04	0.03	0.49	816.28	0.22	0.14	46.34	1.78
NC	315	Programmable Thermostat - DX		8%	3%	0.09	5.06	4.64	2.97	10	0.10	0.02	0.04	225.63	1.50	1.68	3.80	1.00
NC	316	Cool Roof - DX		0%	0%	0.02	4.98	4.97	2.98	10	0.00	0.00	0.16	N/A	0.66	0.42	15.40	1.78
NC	317	Optimize Controls		5%	5%	0.01	5.11	4.85	2.92	5	0.01	0.01	0.02	26.24	6.85	4.63	0.88	1.78
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	0.76	0.76	0.07	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.00	0.76	0.74	0.07	15	0.01	0.00	0.03	261.76	2.06	2.54	3.16	0.85
NC	402	Variable Speed Drive Control, 5 HP		28%	8%	0.05	0.76	0.55	0.07	15	0.00	0.00	0.03	1,283.21	1.30	1.95	4.11	0.70
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	0.70	0.70	0.07	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.00	0.70	0.69	0.07	15	0.00	0.00	0.01	72.38	7.45	9.18	0.87	0.85
NC	412	Variable Speed Drive Control, 15 HP		28%	8%	0.03	0.70	0.51	0.06	15	0.00	0.00	0.02	830.59	2.01	3.01	2.66	0.70
NC	413	Air Handler Optimization, 15 HP		20%	20%	0.05	0.78	0.63	0.06	5	0.00	0.00	0.09	994.18	0.54	0.77	5.27	0.85
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	0.69	0.69	0.07	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.00	0.69	0.69	0.07	15	0.00	0.00	0.03	363.60	1.48	1.83	4.39	0.85
NC	422	Variable Speed Drive Control, 40 HP		28%	8%	0.02	0.69	0.50	0.06	15	0.00	0.00	0.01	574.03	2.90	4.35	1.84	0.70
NC	423	Air Handler Optimization, 40 HP		20%	20%	0.05	0.77	0.62	0.06	5	0.00	0.00	0.10	1,010.93	0.53	0.76	5.36	0.85
NC	500	Base Refrigeration System		0%	0%	0.00	0.85	0.85	0.09	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	0.39	0.39	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.63	0.63	0.06	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	9.23	9.23	0.92	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	2.94	2.94	0.29	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.15	0.15	0.02	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		40%	21%	0.00	0.17	0.10	0.01	4	0.03	0.00	0.01	138.48	5.91	10.13	0.34	0.72
NC	920	Base Display Monitor		0%	0%	0.00	0.14	0.14	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.03	0.17	0.08	0.01	4	0.04	0.00	0.15	1,467.54	0.35	0.49	7.01	0.87
NC	922	Power Management Enabling		72%	37%	0.00	0.25	0.07	0.02	4	0.05	0.00	0.00	30.65	26.69	45.78	0.07	0.72
NC	923	Network Power Management Enabling		72%	37%	0.00	0.25	0.07	0.02	4	0.05	0.00	0.00	15.33	53.38	91.56	0.04	0.72
NC	924	External hardware control		72%	37%	0.01	0.25	0.07	0.02	4	0.05	0.00	0.02	363.99	2.25	3.85	0.89	0.72
NC	930	Base Copier		0%	0%	0.00	0.14	0.14	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		63%	32%	0.00	0.24	0.09	0.02	4	0.04	0.00	0.00	27.39	29.87	51.23	0.07	0.72
NC	940	Base Laser Printer		0%	0%	0.00	0.12	0.12	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		73%	27%	0.01	0.12	0.03	0.01	4	0.05	0.00	0.04	969.89	1.10	2.01	1.70	0.67
NC	942	Nighttime shutdown		73%	27%	0.03	0.16	0.04	0.01	4	0.06	0.00	0.09	2,451.46	0.43	0.79	4.31	0.67
NC	100	Base Lighting		0%	0%	0.00	4.94	4.94	0.77	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	4.94	4.44	0.69	20	0.87	0.14	0.02	159.43	2.49	2.45	3.49	1.02
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	4.94	3.95	0.61	20	1.74	0.27	0.03	191.31	2.07	2.04	4.18	1.02
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	1.97	1.97	0.93	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.03	1.76	1.55	0.73	20	0.02	0.01	0.02	33.15	6.30	3.88	2.19	1.62
NC	302	Window Film (Standard)		2%	2%	0.09	1.99	1.94	0.91	10	0.00	0.00	0.32	689.55	0.30	0.21	30.62	1.62
NC	303	EMS - Chiller		10%	10%	0.08	2.07	1.87	0.88	10	0.01	0.00	0.07	143.51	1.45	1.00	6.37	1.62
NC	304	Cool Roof - Chiller		13%	13%	0.21	2.07	1.81	0.85	10	0.01	0.00	0.14	303.03	0.69	0.48	13.46	1.62
NC	305	Chiller Tune-up/Diagnostics		4%	8%	0.05	2.01	1.93	0.87	10	0.00	0.00	0.11	115.84	1.48	0.63	10.10	2.62
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.08	2.00	1.88	0.88	15	0.01	0.00	0.09	200.98	1.04	0.67	11.94	1.62
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	3.42	3.42	1.61	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.08	3.60	3.24	1.52	3	0.16	0.07	0.11	237.27	0.88	0.68	3.99	1.62
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.07	2.95	2.79	1.31	15	0.19	0.09	0.06	117.81	1.77	1.15	7.00	1.62
NC	313	Window Film (Standard)		2%	2%	0.09	3.45	3.37	1.58	10	0.04	0.02	0.19	397.10	0.53	0.36	17.64	1.62
NC	314	DX Tune-up/Advanced Diagnostics		10%	10%	0.38	3.43	3.09	1.45	10	0.10	0.04	0.20	423.91	0.49	0.34	18.83	1.62

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	315	Programmable Thermostat - DX		8%	3%	0.03	3.52	3.23	1.61	10	0.16	0.02	0.02	115.57	3.60	4.08	1.57	0.99
NC	316	Cool Roof - DX		13%	13%	0.21	3.59	3.13	1.47	10	0.17	0.08	0.08	174.87	1.19	0.82	7.77	1.62
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	1.18	1.18	0.20	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.05	1.18	1.15	0.19	15	0.03	0.00	0.25	1,521.91	0.25	0.25	31.87	1.04
NC	402	Variable Speed Drive Control, 5 HP		27%	8%	0.80	1.20	0.87	0.18	15	0.04	0.00	0.33	7,330.14	0.14	0.19	42.24	0.79
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	1.09	1.09	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.01	1.09	1.07	0.18	15	0.01	0.00	0.07	420.82	0.90	0.91	8.81	1.04
NC	412	Variable Speed Drive Control, 15 HP		27%	8%	0.48	1.14	0.83	0.18	15	0.04	0.00	0.21	4,615.58	0.23	0.30	26.59	0.79
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	1.07	1.07	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.03	1.07	1.06	0.18	15	0.00	0.00	0.35	2,113.99	0.18	0.18	44.27	1.04
NC	422	Variable Speed Drive Control, 40 HP		27%	8%	0.33	1.17	0.85	0.18	15	0.01	0.00	0.14	3,048.65	0.34	0.46	17.57	0.79
NC	500	Base Refrigeration System		0%	0%	0.00	0.46	0.46	0.05	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	1.45	1.45	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.81	0.81	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	0.40	0.40	0.06	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	1.62	1.62	0.25	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.02	0.02	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		38%	21%	0.02	0.02	0.01	0.00	4	0.01	0.00	0.87	11,488.12	0.05	0.09	39.81	0.78
NC	920	Base Display Monitor		0%	0%	0.00	0.02	0.02	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.51	0.02	0.01	0.00	4	0.01	0.00	16.78	120,572.00	0.00	0.00	771.04	0.97
NC	922	Power Management Enabling		67%	37%	0.01	0.03	0.01	0.00	4	0.02	0.00	0.20	2,631.07	0.24	0.37	9.12	0.78
NC	923	Network Power Management Enabling		67%	37%	0.01	0.03	0.01	0.00	4	0.01	0.00	0.10	1,315.54	0.48	0.75	4.56	0.78
NC	924	External hardware control		67%	37%	0.14	0.03	0.01	0.00	4	0.02	0.00	2.36	31,244.01	0.02	0.03	108.27	0.78
NC	930	Base Copier		0%	0%	0.00	0.05	0.05	0.01	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		59%	32%	0.01	0.09	0.04	0.01	4	0.03	0.00	0.07	903.65	0.69	1.09	3.13	0.78
NC	940	Base Laser Printer		0%	0%	0.00	0.01	0.01	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		68%	27%	0.09	0.01	0.00	0.00	4	0.01	0.00	3.71	66,937.95	0.01	0.02	170.49	0.72
NC	942	Nighttime shutdown		68%	27%	0.29	0.02	0.01	0.00	4	0.01	0.00	9.58	172,754.85	0.00	0.01	440.00	0.72
NC	100	Base Lighting		0%	0%	0.00	4.94	4.94	0.77	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	101	10% More Efficient Design (Lighting)		10%	10%	0.10	4.94	4.44	0.69	20	1.55	0.24	0.02	159.43	2.49	2.45	3.49	1.02
NC	102	20% More Efficient Design (Lighting)		20%	20%	0.24	4.94	3.95	0.61	20	3.11	0.48	0.03	191.31	2.07	2.04	4.18	1.02
NC	300	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons		0%	0%	0.00	1.97	1.97	0.93	20	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	301	Centrifugal Chiller, 0.51 kW/ton, 500 tons		12%	12%	0.03	1.76	1.55	0.73	20	0.04	0.02	0.02	33.15	6.30	3.88	2.19	1.62
NC	302	Window Film (Standard)		2%	2%	0.09	1.99	1.94	0.91	10	0.00	0.00	0.32	689.55	0.30	0.21	30.62	1.62
NC	303	EMS - Chiller		10%	10%	0.08	2.07	1.87	0.88	10	0.02	0.01	0.07	143.51	1.45	1.00	6.37	1.62
NC	304	Cool Roof - Chiller		13%	13%	0.21	2.07	1.81	0.85	10	0.01	0.01	0.14	303.03	0.69	0.48	13.46	1.62
NC	305	Chiller Tune-up/Diagnostics		4%	8%	0.05	2.01	1.93	0.87	10	0.00	0.00	0.11	115.84	1.48	0.63	10.10	2.62
NC	306	Cooling Circ. Pumps - VSD		6%	6%	0.08	2.00	1.88	0.88	15	0.01	0.01	0.09	200.98	1.04	0.67	11.94	1.62
NC	310	Base DX Packaged System, EER=10.3, 10 tons		0%	0%	0.00	3.42	3.42	1.61	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	311	DX Tune-up/Advanced Diagnostics		10%	10%	0.08	3.60	3.24	1.52	3	0.28	0.13	0.11	237.27	0.88	0.68	3.99	1.62
NC	312	DX Packaged System, EER=10.9, 10 tons		6%	6%	0.07	2.95	2.79	1.31	15	0.34	0.16	0.06	117.81	1.77	1.15	7.00	1.62
NC	313	Window Film (Standard)		2%	2%	0.09	3.45	3.37	1.58	10	0.07	0.04	0.19	397.10	0.53	0.36	17.64	1.62
NC	314	Evaporative Pre-Cooler		10%	10%	0.38	3.43	3.09	1.45	10	0.17	0.08	0.20	423.91	0.49	0.34	18.83	1.62
NC	315	Programmable Thermostat - DX		8%	3%	0.03	3.52	3.23	1.61	10	0.29	0.04	0.02	115.57	3.60	4.08	1.57	0.99
NC	316	Cool Roof - DX		13%	13%	0.21	3.59	3.13	1.47	10	0.30	0.14	0.08	174.87	1.19	0.82	7.77	1.62
NC	400	Base Fan Motor, 5hp, 1800rpm, 87.5%		0%	0%	0.00	1.18	1.18	0.20	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	401	Fan Motor, 5hp, 1800rpm, 89.5%		2%	2%	0.03	1.18	1.15	0.19	15	0.05	0.01	0.15	914.02	0.41	0.42	19.14	1.04
NC	402	Variable Speed Drive Control, 5 HP		27%	8%	0.48	1.20	0.87	0.18	15	0.06	0.00	0.20	4,402.29	0.24	0.32	25.37	0.79
NC	410	Base Fan Motor, 15hp, 1800rpm, 91.0%		0%	0%	0.00	1.09	1.09	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	411	Fan Motor, 15hp, 1800rpm, 92.4%		2%	2%	0.01	1.09	1.07	0.18	15	0.01	0.00	0.04	252.74	1.50	1.51	5.29	1.04
NC	412	Variable Speed Drive Control, 15 HP		27%	8%	0.29	1.14	0.83	0.18	15	0.06	0.00	0.13	2,772.00	0.38	0.50	15.97	0.79
NC	420	Base Fan Motor, 40hp, 1800rpm, 93.0%		0%	0%	0.00	1.07	1.07	0.18	15	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A

DSM ASSYST SUMMARY COMMERCIAL Year 2005

Vintage E
Batch 2

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
NC	421	Fan Motor, 40hp, 1800rpm, 94.1%		1%	1%	0.02	1.07	1.06	0.18	15	0.00	0.00	0.21	1,269.61	0.30	0.30	26.58	1.04
NC	422	Variable Speed Drive Control, 40 HP		27%	8%	0.20	1.17	0.85	0.18	15	0.02	0.00	0.08	1,830.94	0.57	0.76	10.55	0.79
NC	500	Base Refrigeration System		0%	0%	0.00	0.46	0.46	0.05	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	600	Base Heating		0%	0%	0.00	1.45	1.45	0.00	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	700	Base Cooking		0%	0%	0.00	0.81	0.81	0.13	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	800	Base Water Heating		0%	0%	0.00	0.40	0.40	0.06	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	900	Base Miscellaneous		0%	0%	0.00	1.63	1.63	0.25	10	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	910	Base Desktop PC		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	911	Power Management Enabling		38%	21%	0.02	0.03	0.02	0.00	4	0.02	0.00	0.66	8,744.85	0.07	0.11	30.30	0.78
NC	920	Base Display Monitor		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	921	Purchase LCD monitor		50%	50%	0.51	0.03	0.01	0.00	4	0.03	0.00	12.77	91,780.32	0.00	0.01	586.92	0.97
NC	922	Power Management Enabling		67%	37%	0.01	0.04	0.01	0.00	4	0.04	0.00	0.15	2,002.79	0.31	0.49	6.94	0.78
NC	923	Network Power Management Enabling		67%	37%	0.01	0.04	0.01	0.00	4	0.03	0.00	0.08	1,001.40	0.62	0.98	3.47	0.78
NC	924	External hardware control		67%	37%	0.14	0.04	0.01	0.00	4	0.04	0.00	1.79	23,783.17	0.03	0.04	82.42	0.78
NC	930	Base Copier		0%	0%	0.00	0.03	0.03	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	931	Power Management Enabling		59%	32%	0.01	0.04	0.02	0.00	4	0.03	0.00	0.14	1,845.02	0.34	0.53	6.39	0.78
NC	940	Base Laser Printer		0%	0%	0.00	0.01	0.01	0.00	4	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
NC	941	External hardware control		68%	27%	0.09	0.01	0.00	0.00	4	0.02	0.00	3.54	63,874.44	0.01	0.02	162.68	0.72
NC	942	Nighttime shutdown		68%	27%	0.29	0.02	0.01	0.00	4	0.03	0.00	9.14	164,848.46	0.00	0.01	419.86	0.72

DSM ASSYST SUMMARY — INDUSTRIAL — Year 2005 — Vintage E — Batch 1

Segment	Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Base kW	Base EUI	EUI	Peak Watts/ Base kW	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	System Second Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
All	100	1-5 HP Motor	All Industrial	0%	0%	0.00	1.06	1.06	0.14	15	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	101	10% More Efficient Design (Lighting)	All Industrial	2%	2%	0.02	1.06	1.03	0.14	15	3.54	0.48	0.00	0.10	780.86	0.54	0.52	15.54	1.10
All	102	*20% More Efficient Design (Lighting)*	*All Industrial*	*25%*	*25%*	0.30	1.09	0.81	0.11	15	6.48	0.87	0.00	0.15	1,118.54	0.38	0.36	22.26	1.10
All	103	Motor Practices Level 1	All Industrial	6%	6%	0.02	1.07	1.00	0.13	10	8.25	1.11	0.00	0.07	493.46	0.85	0.87	7.34	1.10
All	104	Motor Practices Level 2	All Industrial	5%	5%	0.07	1.06	1.01	0.14	10	8.09	1.09	0.00	0.24	1,793.53	0.23	0.24	26.68	1.10
All	120	21-50 HP Motor (6 -100HP Market)	All Industrial	0%	0%	0.00	1.06	1.06	0.14	15	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	121	Replace 21-50 HP Motor	All Industrial	1%	1%	0.01	1.06	1.04	0.14	15	1.19	0.16	0.00	0.10	712.00	0.59	0.57	14.17	1.10
All	122	Add 21-50 HP VSD	All Industrial	25%	25%	0.08	1.07	0.80	0.11	15	4.69	0.63	0.00	0.04	311.20	1.35	1.29	6.19	1.10
All	123	Motor Practices Level 1	All Industrial	6%	6%	0.01	1.07	1.00	0.13	10	5.69	0.76	0.00	0.03	236.88	1.78	1.82	3.52	1.10
All	124	Motor Practices Level 2	All Industrial	5%	5%	0.03	1.06	1.01	0.14	10	5.57	0.75	0.00	0.12	860.96	0.49	0.50	12.81	1.10
All	150	201-500 HP Motor (>100HP Market)	All Industrial	0%	0%	0.00	1.06	1.06	0.14	15	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	151	Replace 201-500 HP Motor	All Industrial	2%	2%	0.00	1.06	1.04	0.14	15	2.20	0.30	0.00	0.03	216.11	1.95	1.86	4.30	1.10
All	152	Add 201-500 HP VSD	All Industrial	25%	25%	0.03	1.07	0.80	0.11	15	7.29	0.98	0.00	0.02	124.39	3.38	3.24	2.48	1.10
All	153	Motor Practices Level 1	All Industrial	6%	6%	0.01	1.07	1.00	0.13	10	8.76	1.18	0.00	0.03	247.07	1.70	1.74	3.68	1.10
All	154	Motor Practices Level 2	All Industrial	5%	5%	0.02	1.06	1.01	0.14	10	8.59	1.15	0.00	0.08	598.67	0.70	0.72	8.91	1.10
All	200	Compressed Air Systems	All Industrial	0%	0%	0.00	1.06	1.06	0.14	10	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	202	CAS Level 1	All Industrial	10%	10%	0.02	1.08	0.97	0.13	10	6.03	0.81	0.00	0.03	235.53	1.79	1.83	3.50	1.10
All	203	CAS Level 2	All Industrial	10%	10%	0.03	1.07	0.96	0.13	10	6.72	0.90	0.00	0.05	381.70	1.10	1.13	5.68	1.10
All	204	CAS Level 3	All Industrial	7%	7%	0.05	1.06	0.98	0.13	10	5.17	0.70	0.00	0.12	918.00	0.46	0.47	13.66	1.10
All	300	Process Other	All Industrial	0%	0%	0.00	1.06	1.06	0.14	10	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	301	Process Level 1	All Industrial	10%	10%	0.01	1.10	0.98	0.13	10	15.97	2.15	0.00	0.01	74.21	5.67	5.80	1.10	1.10
All	302	Process Level 2	All Industrial	19%	19%	0.06	1.14	0.92	0.12	15	16.94	2.28	0.00	0.04	265.61	1.59	1.52	5.29	1.10
All	303	Process Level 3	All Industrial	19%	19%	0.11	1.11	0.89	0.12	15	5.16	0.69	0.00	0.07	513.48	0.82	0.78	10.22	1.10
All	400	Base Fluorescent Fixture, 2L4'T12, 34W, 1STD MAG	All Industrial	0%	0%	0.00	1.06	1.06	0.20	10	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	401	RET 2L4' Premium T8, 1EB	All Industrial	31%	31%	0.13	1.11	0.76	0.15	15	13.70	2.62	0.00	0.05	261.06	1.31	1.08	7.40	1.27
All	402	Occupancy Sensor, 4L4' Fluorescent Fixtures	All Industrial	14%	20%	0.05	1.09	0.93	0.17	9	1.30	0.35	0.00	0.06	240.29	1.22	0.92	6.63	1.51
All	403	Continuous Dimming, 5L4' Fluorescent Fixtures	All Industrial	24%	66%	0.43	1.08	0.82	0.07	11	3.64	1.91	0.00	0.28	525.60	0.42	0.21	33.13	2.25
All	410	Base Fluorescent Fixture, 2L8'T12, 60W, 1STD MAG	All Industrial	0%	0%	0.00	1.06	1.06	0.20	10	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	411	RET 2L8'T12, 60W, 1EB	All Industrial	24%	24%	0.15	1.10	0.83	0.16	15	5.30	1.02	0.00	0.08	398.30	0.86	0.71	11.29	1.27
All	412	Occupancy Sensor, 4L8' Fluorescent Fixtures	All Industrial	14%	20%	0.06	1.09	0.93	0.17	9	0.67	0.18	0.00	0.08	291.56	1.01	0.76	8.04	1.51
All	413	Continuous Dimming, 5L8' Fluorescent Fixtures	All Industrial	24%	67%	0.50	1.08	0.82	0.07	11	1.91	1.00	0.00	0.32	607.40	0.36	0.18	38.29	2.25
All	420	Incandescent/Mercury Vapor 150W	All Industrial	0%	0%	0.02	1.06	1.06	0.20	1	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	421	CFL Hardwired, Modular 36W	All Industrial	72%	72%	0.15	1.51	0.42	0.08	4	7.80	1.49	0.00	0.05	270.19	1.27	1.23	2.79	1.27
All	422	Metal Halide, 50W	All Industrial	58%	58%	0.78	1.40	0.59	0.11	5	4.51	0.86	0.00	0.30	1,553.51	0.22	0.21	19.36	1.27
All	500	Centrifugal Chiller, 0.58 kW/ton, 500 tons	All Industrial	0%	0%	0.00	1.06	1.06	0.60	20	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	All Industrial	12%	12%	0.03	0.94	0.83	0.47	20	1.72	0.98	0.00	0.03	49.12	3.80	1.85	4.60	2.05
All	502	Window Film (Standard)	All Industrial	10%	10%	0.05	1.11	1.00	0.57	10	0.66	0.37	0.00	0.08	133.04	1.40	0.77	8.35	2.05
All	503	EMS - Chiller	All Industrial	10%	10%	0.07	1.10	0.99	0.56	10	1.05	0.59	0.00	0.12	215.57	0.87	0.47	13.53	2.05
All	504	Cool Roof - Chiller	All Industrial	10%	10%	0.13	1.10	0.99	0.56	10	0.47	0.27	0.00	0.22	389.32	0.48	0.26	24.44	2.05
All	505	Chiller Tune-up/Diagnostics	All Industrial	2%	8%	0.05	1.07	1.05	0.56	10	0.04	0.09	0.00	0.40	173.50	0.77	0.14	44.66	5.99
All	506	Cooling Circ. Pumps - VSD	All Industrial	6%	6%	0.08	1.07	1.01	0.57	15	0.55	0.31	0.00	0.17	297.79	0.63	0.32	25.00	2.05
All	510	DX Packaged System, EER=10.3, 10 tons	All Industrial	0%	0%	0.00	1.06	1.06	0.60	15	0.00	0.00	0.00	N/A	N/A	N/A	N/A	N/A	N/A
All	511	DX Tune-up/Advanced Diagnostics	All Industrial	10%	10%	0.06	1.11	1.00	0.57	3	2.12	1.20	0.00	0.24	426.30	0.44	0.27	10.12	2.05
All	512	DX Packaged System, EER=10.9, 10 tons	All Industrial	6%	6%	0.04	0.91	0.86	0.49	15	2.55	1.45	0.00	0.10	176.49	1.06	0.54	14.82	2.05
All	513	Window Film (Standard)	All Industrial	10%	10%	0.03	1.14	1.02	0.58	10	1.37	0.78	0.00	0.04	75.94	2.46	1.34	4.77	2.05
All	514	Evaporative Pre-Cooler	All Industrial	10%	10%	0.21	1.06	0.95	0.54	10	1.28	0.73	0.00	0.36	635.07	0.29	0.16	39.86	2.05
All	515	Programmable Thermostat - DX	All Industrial	8%	3%	0.01	1.10	1.01	0.61	10	1.56	0.27	0.00	0.03	170.45	2.04	1.95	3.27	1.17
All	516	Cool Roof - DX	All Industrial	10%	10%	0.07	1.10	0.99	0.56	10	1.64	0.93	0.00	0.13	227.75	0.82	0.45	14.30	2.05

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SUPPLY CURVE DATA

Energy Supply Curve	RESIDENTIAL EXISTING CONSTRUCTION				
Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Percent Savings	Levelized Energy Cost $/kWH
207	Water Heater Blanket	28.60	28.60	0.4%	$0.011
206	Pipe Wrap	5.38	33.98	0.5%	$0.013
341	Fluorescent Torchiere	33.62	67.60	0.9%	$0.021
107	High Performance Windows - CAC	216.10	283.69	3.9%	$0.021
401	HE Refrigerator - ENERGY STAR	107.58	391.28	5.3%	$0.023
141	ENERGY STAR Room Air Conditioner	26.82	418.09	5.7%	$0.024
331	ROB 2L4'T8, 1EB	17.08	435.18	5.9%	$0.025
204	Low Flow Showerhead	9.68	444.86	6.1%	$0.026
102	Programmable Thermostat - CAC	57.43	502.30	6.8%	$0.027
321	CFL, 6.0 hr/day	74.89	577.18	7.9%	$0.028
208	ENERGY STAR Clothes Washer	84.99	662.17	9.0%	$0.030
311	CFL, 2.5 hr/day	121.98	784.15	10.7%	$0.033
601	High Efficiency Pool Pump and Motor	25.61	809.76	11.0%	$0.036
112	Basic HVAC Diagnostic Testing and Repair -	89.14	898.90	12.2%	$0.036
181	Heat Pump Space Heater	320.10	1,219.00	16.6%	$0.037
147	High Performance Windows - RAC	28.99	1,247.99	17.0%	$0.046
451	HE Freezer	11.47	1,259.46	17.1%	$0.050
142	Programmable Thermostat - RAC	7.84	1,267.30	17.2%	$0.052
202	HE Water Heater	34.00	1,301.30	17.7%	$0.053
183	Programmable Thermostat - SpHt	24.36	1,325.66	18.0%	$0.064
187	Wall Insulation R-0 to R-13 - SpHt	104.69	1,430.36	19.5%	$0.066
105	Attic Venting - CAC	99.63	1,529.98	20.8%	$0.068
152	Basic HVAC Diagnostic Testing and Repair -	12.00	1,541.98	21.0%	$0.069
501	ENERGY STAR Dishwasher	11.75	1,553.73	21.1%	$0.073
205	Faucet Aerators	3.87	1,557.60	21.2%	$0.077
113	Duct Diagnostics and Repair - CAC	65.31	1,622.92	22.1%	$0.106
301	CFL, 0.5 hr/day	26.30	1,649.22	22.4%	$0.112
186	Ceiling Insulation R-11 to R-30 - SpHt	32.17	1,681.39	22.9%	$0.118
145	Attic Venting - RAC	13.68	1,695.07	23.1%	$0.127
201	Heat Pump Water Heater	218.45	1,913.52	26.0%	$0.132
106	Window Film - CAC	172.00	2,085.52	28.4%	$0.134
109	Ceiling Insulation R-11 to R-30 - CAC	37.00	2,122.52	28.9%	$0.136
104	Whole House Fans - CAC	72.78	2,195.30	29.9%	$0.150
108	Radiant Barrier - CAC	37.44	2,232.74	30.4%	$0.214
144	Whole House Fans - RAC	10.66	2,243.40	30.5%	$0.266
149	Ceiling Insulation R-11 to R-30 - RAC	5.25	2,248.66	30.6%	$0.273
101	16 SEER Central AC	127.49	2,376.15	32.3%	$0.279
146	Window Film - RAC	23.82	2,399.96	32.7%	$0.281
110	Wall Insulation R-0 to R-13 - CAC	21.83	2,421.79	33.0%	$0.342
203	Solar Water Heat	162.37	2,584.17	35.2%	$0.454
188	Infiltration Reduction - SpHt	6.29	2,590.46	35.2%	$0.455
182	Geothermal Heat Pump	100.28	2,690.74	36.6%	$0.488
103	Ceiling Fans - CAC	22.06	2,712.80	36.9%	$0.514
150	Wall Insulation R-0 to R-13 - RAC	3.72	2,716.51	37.0%	$0.586
111	Infiltration Reduction - CAC	4.71	2,721.23	37.0%	$0.762
143	Ceiling Fans - RAC	4.00	2,725.22	37.1%	$0.776
151	Infiltration Reduction - RAC	0.85	2,726.08	37.1%	$1.090

Capacity Supply Curve	RESIDENTIAL EXISTING CONSTRUCTION				
Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Percent Savings	Levelized Capacity Cost $/kW
107	High Performance Windows - CAC	204.91	204.91	9.2%	$22.59
141	ENERGY STAR Room Air Conditioner	25.43	230.34	10.4%	$24.79
102	Programmable Thermostat - CAC	54.46	284.81	12.8%	$28.75
112	Basic HVAC Diagnostic Testing and Repair -	84.53	369.33	16.6%	$37.53
147	High Performance Windows - RAC	27.49	396.82	17.9%	$48.83
142	Programmable Thermostat - RAC	7.43	404.26	18.2%	$54.60
105	Attic Venting - CAC	94.47	498.73	22.5%	$71.21
152	Basic HVAC Diagnostic Testing and Repair -	11.38	510.11	23.0%	$72.25
113	Duct Diagnostics and Repair - CAC	61.93	572.04	25.8%	$111.33
207	Water Heater Blanket	2.49	574.53	25.9%	$126.97
145	Attic Venting - RAC	12.97	587.50	26.4%	$134.40
106	Window Film - CAC	163.09	750.60	33.8%	$141.49
109	Ceiling Insulation R-11 to R-30 - CAC	35.09	785.68	35.4%	$143.64
206	Pipe Wrap	0.47	786.15	35.4%	$151.86
104	Whole House Fans - CAC	69.01	855.16	38.5%	$158.38
401	HE Refrigerator - ENERGY STAR	14.64	869.80	39.2%	$170.85
108	Radiant Barrier - CAC	35.50	905.30	40.8%	$225.32
341	Fluorescent Torchiere	2.96	908.26	40.9%	$233.44
208	ENERGY STAR Clothes Washer	9.96	918.22	41.3%	$254.39
331	ROB 2L4'T8, 1EB	1.50	919.72	41.4%	$280.08
144	Whole House Fans - RAC	10.11	929.83	41.9%	$280.24
149	Ceiling Insulation R-11 to R-30 - RAC	4.98	934.81	42.1%	$288.37
101	16 SEER Central AC	120.89	1,055.70	47.5%	$294.66
146	Window Film - RAC	22.58	1,078.29	48.5%	$296.16
204	Low Flow Showerhead	0.84	1,079.13	48.6%	$303.35
321	CFL, 6.0 hr/day	6.59	1,085.72	48.9%	$312.70
110	Wall Insulation R-0 to R-13 - CAC	20.70	1,106.42	49.8%	$360.50
451	HE Freezer	1.58	1,108.01	49.9%	$361.52
311	CFL, 2.5 hr/day	10.74	1,118.74	50.4%	$375.46
601	High Efficiency Pool Pump and Motor	2.37	1,121.11	50.5%	$383.90
103	Ceiling Fans - CAC	20.92	1,142.03	51.4%	$542.39
501	ENERGY STAR Dishwasher	1.46	1,143.49	51.5%	$582.65
202	HE Water Heater	2.96	1,146.45	51.6%	$603.90
150	Wall Insulation R-0 to R-13 - RAC	3.52	1,149.97	51.8%	$618.47
111	Infiltration Reduction - CAC	4.47	1,154.44	52.0%	$803.39
143	Ceiling Fans - RAC	3.79	1,158.23	52.1%	$818.80
205	Faucet Aerators	0.34	1,158.57	52.2%	$888.69
151	Infiltration Reduction - RAC	0.81	1,159.38	52.2%	$1,149.05
301	CFL, 0.5 hr/day	2.31	1,161.70	52.3%	$1,271.42
201	Heat Pump Water Heater	18.99	1,180.69	53.2%	$1,518.24
203	Solar Water Heat	14.12	1,194.80	53.8%	$5,217.99
181	Heat Pump Space Heater	0.00	1,194.80	53.8%	N/A
182	Geothermal Heat Pump	0.00	1,194.80	53.8%	N/A
183	Programmable Thermostat - SpHt	0.00	1,194.80	53.8%	N/A
186	Ceiling Insulation R-11 to R-30 - SpHt	0.00	1,194.80	53.8%	N/A
187	Wall Insulation R-0 to R-13 - SpHt	0.00	1,194.80	53.8%	N/A
188	Infiltration Reduction - SpHt	0.00	1,194.80	53.8%	N/A

Energy Supply Curve	RESIDENTIAL NEW CONSTRUCTION				
Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Percent Savings	Levelized Energy Cost $/kWH
207	Water Heater Blanket	0.75	0.75	0.4%	$0.011
206	Pipe Wrap	0.14	0.89	0.5%	$0.013
341	Fluorescent Torchiere	0.88	1.77	0.9%	$0.021
401	HE Refrigerator - ENERGY STAR	2.82	4.59	2.4%	$0.023
141	ENERGY STAR Room Air Conditioner	0.70	5.29	2.7%	$0.024
331	RET 2L4'T8, 1EB	0.45	5.74	3.0%	$0.025
102	Programmable Thermostat - CAC	1.54	7.28	3.8%	$0.027
187	Wall Insulation R-11 to R-19 - SpHt	4.88	12.17	6.3%	$0.027
321	CFL, 6.0 hr/day	1.96	14.13	7.3%	$0.028
208	ENERGY STAR Clothes Washer	2.26	16.38	8.5%	$0.029
112	Basic HVAC Diagnostic Testing and Repair - CAC	2.71	19.10	9.9%	$0.031
311	CFL, 2.5 hr/day	3.20	22.29	11.6%	$0.033
601	High Efficiency Pool Pump and Motor	0.67	22.97	11.9%	$0.036
181	Heat Pump Space Heater	7.01	29.97	15.6%	$0.044
451	HE Freezer	0.30	30.27	15.7%	$0.050
142	Programmable Thermostat - RAC	0.21	30.48	15.8%	$0.051
202	HE Water Heater	0.90	31.38	16.3%	$0.052
105	Attic Venting - CAC	3.03	34.41	17.9%	$0.058
152	Basic HVAC Diagnostic Testing and Repair - RAC	0.37	34.78	18.1%	$0.059
501	ENERGY STAR Dishwasher	0.31	35.09	18.2%	$0.073
186	Ceiling Insulation R-30 to R-38 - SpHt	0.31	35.39	18.4%	$0.074
183	Programmable Thermostat - SpHt	0.54	35.93	18.7%	$0.076
109	Ceiling Insulation R-30 to R-38 - CAC	0.38	36.31	18.9%	$0.080
113	Duct Diagnostics and Repair - CAC	2.00	38.31	19.9%	$0.090
145	Attic Venting - RAC	0.42	38.72	20.1%	$0.110
301	CFL, 0.5 hr/day	0.69	39.41	20.5%	$0.112
106	Window Film - CAC	5.33	44.74	23.2%	$0.113
201	Heat Pump Water Heater	5.83	50.58	26.3%	$0.130
104	Whole House Fans - CAC	2.20	52.78	27.4%	$0.130
149	Ceiling Insulation R-30 to R-38 - RAC	0.05	52.83	27.4%	$0.163
110	Wall Insulation R-11 to R-19 - CAC	0.73	53.56	27.8%	$0.196
108	Radiant Barrier - CAC	0.69	54.25	28.2%	$0.209
144	Whole House Fans - RAC	0.32	54.58	28.3%	$0.231
101	16 SEER Central AC	3.97	58.55	30.4%	$0.235
146	Window Film - RAC	0.74	59.29	30.8%	$0.236
150	Wall Insulation R-11 to R-19 - RAC	0.10	59.39	30.8%	$0.400
103	Ceiling Fans - CAC	0.71	60.10	31.2%	$0.421
203	Solar Water Heat	4.34	64.44	33.5%	$0.445
188	Infiltration Reduction - SpHt	0.16	64.60	33.5%	$0.459
182	Geothermal Heat Pump	2.60	67.20	34.9%	$0.493
111	Infiltration Reduction - CAC	0.15	67.36	35.0%	$0.624
143	Ceiling Fans - RAC	0.13	67.48	35.0%	$0.648
151	Infiltration Reduction - RAC	0.03	67.51	35.1%	$0.910

Capacity Supply Curve	RESIDENTIAL NEW CONSTRUCTION				
Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Percent Savings	Levelized Capacity Cost $/kW
141	ENERGY STAR Room Air Conditioner	0.67	0.67	1.1%	$24.79
102	Programmable Thermostat	1.46	2.13	3.7%	$28.03
112	Basic HVAC Diagnostic Testing and Repair - CAC	2.57	4.70	8.1%	$32.30
142	Programmable Thermostat - RAC	0.20	4.90	8.4%	$53.96
105	Attic Venting - CAC	2.87	7.77	13.4%	$61.32
152	Basic HVAC Diagnostic Testing and Repair - RAC	0.35	8.12	14.0%	$62.19
109	Ceiling Insulation R-30 to R-38 - CAC	0.36	8.48	14.6%	$84.60
113	Duct Diagnostics and Repair - CAC	1.89	10.37	17.8%	$95.40
145	Attic Venting - RAC	0.39	10.77	18.5%	$115.71
106	Window Film - CAC	5.06	15.82	27.2%	$119.58
207	Water Heater Blanket	0.07	15.89	27.3%	$126.97
104	Whole House Fans	2.09	17.98	30.9%	$137.04
206	Pipe Wrap	0.01	17.99	30.9%	$151.86
401	HE Refrigerator - ENERGY STAR	0.38	18.37	31.6%	$170.85
149	Ceiling Insulation R-30 to R-38 - RAC	0.05	18.42	31.7%	$171.93
110	Wall Insulation R-11 to R-19 - CAC	0.69	19.11	32.8%	$206.50
108	Radiant Barrier - CAC	0.66	19.77	34.0%	$220.63
341	Fluorescent Torchiere	0.08	19.85	34.1%	$233.44
144	Whole House Fans - RAC	0.31	20.15	34.6%	$243.29
101	16 SEER Central AC	3.77	23.92	41.1%	$247.77
146	Window Film - RAC	0.70	24.62	42.3%	$249.18
208	ENERGY STAR Clothes Washer	0.26	24.89	42.8%	$251.15
331	RET 2L4'T8, 1EB	0.04	24.93	42.8%	$280.08
321	CFL, 6.0 hr/day	0.17	25.10	43.1%	$312.70
451	HE Freezer	0.04	25.14	43.2%	$361.52
311	CFL, 2.5 hr/day	0.28	25.42	43.7%	$375.46
601	High Efficiency Pool Pump and Motor	0.06	25.48	43.8%	$383.90
150	Wall Insulation R-11 to R-19 - RAC	0.10	25.58	44.0%	$421.85
103	Ceiling Fans	0.67	26.25	45.1%	$443.94
501	ENERGY STAR Dishwasher	0.04	26.29	45.2%	$582.65
202	HE Water Heater	0.08	26.37	45.3%	$596.19
111	Infiltration Reduction - CAC	0.14	26.51	45.6%	$657.56
143	Ceiling Fans - RAC	0.12	26.63	45.8%	$683.75
151	Infiltration Reduction - RAC	0.03	26.66	45.8%	$959.52
301	CFL, 0.5 hr/day	0.06	26.72	45.9%	$1,271.42
201	Heat Pump Water Heater	0.51	27.23	46.8%	$1,489.66
203	Solar Water Heat	0.38	27.60	47.4%	$5,119.76
181	Heat Pump Space Heater	0.00	27.60	47.4%	N/A
182	Geothermal Heat Pump	0.00	27.60	47.4%	N/A
183	Programmable Thermostat - SpHt	0.00	27.60	47.4%	N/A
186	Ceiling Insulation R-30 to R-38 - SpHt	0.00	27.60	47.4%	N/A
187	Wall Insulation R-11 to R-19 - SpHt	0.00	27.60	47.4%	N/A
188	Infiltration Reduction - SpHt	0.00	27.60	47.4%	N/A

Energy Supply Curve	COMMERCIAL EXISTING CONSTRUCTION				
Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Percent Savings	Levelized Energy Cost $/kWH
510	Demand Defrost Electric	17.71	17.71	0.2%	$0.002
505	Efficient compressor motor	12.98	30.70	0.4%	$0.008
923	Network Power Management Enabling - Monitor	40.30	71.00	0.9%	$0.008
509	Demand Hot Gas Defrost	1.61	72.60	0.9%	$0.008
507	Floating head pressure controls	5.25	77.85	1.0%	$0.013
222	Outdoor Lighting Controls HID	26.48	104.33	1.3%	$0.015
181	ROB 4L4' Premium T8, 1EB	26.53	130.86	1.6%	$0.015
502	Strip curtains for walk-ins	2.70	133.56	1.6%	$0.016
118	10% More Efficient Design (Lighting)	0.37	133.93	1.6%	$0.018
186	ROB 2L4' Premium T8, 1EB	31.59	165.52	2.0%	$0.018
137	Lighting Control Tune-up - 2L4' T12	0.39	165.91	2.0%	$0.019
317	Optimize Controls - DX	3.79	169.70	2.1%	$0.019
511	Anti-sweat (humidistat) controls	9.04	178.75	2.2%	$0.020
411	Fan Motor, 15hp, 1800rpm, 92.4%	2.30	181.05	2.2%	$0.022
301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	24.88	205.93	2.5%	$0.023
315	20% More Efficient Design (Lighting)	38.69	244.62	3.0%	$0.024
114	RET 2L4' Premium T8, 1EB, Reflector	50.55	295.17	3.6%	$0.025
166	CFL Screw-in, Modular 18W	370.74	665.91	8.2%	$0.025
922	Power Management Enabling - Monitor	26.51	692.42	8.5%	$0.027
931	Power Management Enabling - Copier	13.88	706.30	8.7%	$0.028
422	Variable Speed Drive Control, 40 HP	22.15	728.45	8.9%	$0.029
183	Lighting Control Tune-up - 4L4' T8	0.14	728.60	8.9%	$0.030
188	Lighting Control Tune-up - 2L4' T8	0.14	728.74	8.9%	$0.032
133	RET 1L4' Premium T8, 1EB, Reflector OEM	28.26	756.99	9.3%	$0.035
307	EMS Optimization	1.15	758.15	9.3%	$0.037
503	Night covers for display cases	3.36	761.51	9.3%	$0.039
154	RET 1L8'T12, 60W, 1EB, Reflector	42.78	804.29	9.9%	$0.043
413	Air Handler Optimization, 15 HP	3.36	807.65	9.9%	$0.043
221	High Pressure Sodium 250W Lamp	46.75	854.40	10.5%	$0.044
423	Air Handler Optimization, 40 HP	4.50	858.91	10.5%	$0.044
212	Outdoor Lighting Controls - Fluorescent	7.41	866.32	10.6%	$0.047
113	RET 4L4' Premium T8, 1EB	79.97	946.28	11.6%	$0.047
501	High-efficiency refrig fan motors	22.91	969.19	11.9%	$0.050
134	Occupancy Sensor, 8L4' Fluorescent Fixtures	25.02	994.21	12.2%	$0.051
182	Occupancy Sensor, 4L4' Fluorescent Fixtures	13.33	1,007.54	12.3%	$0.053
115	Occupancy Sensor, 4L4' Fluorescent Fixtures	21.10	1,028.65	12.6%	$0.055
187	Occupancy Sensor, 8L4' Fluorescent Fixtures	13.73	1,042.38	12.8%	$0.056
132	RET 2L4' Premium T8, 1EB	110.20	1,152.58	14.1%	$0.056
412	Variable Speed Drive Control, 15 HP	20.89	1,173.47	14.4%	$0.064
506	Compressor VSD retrofit	4.22	1,177.69	14.4%	$0.065
155	Occupancy Sensor, 4L8' Fluorescent Fixtures	16.21	1,193.90	14.6%	$0.068
211	RET 2L4'T8, 1EB	13.68	1,207.58	14.8%	$0.069
911	Power Management Enabling - PC	29.14	1,236.72	15.2%	$0.070
508	Refrigeration Commissioning	4.46	1,241.18	15.2%	$0.074
312	DX Packaged System, EER=10.9, 10 tons	60.75	1,301.93	16.0%	$0.077
421	Fan Motor, 40hp, 1800rpm, 94.1%	1.53	1,303.47	16.0%	$0.095
401	Fan Motor, 5hp, 1800rpm, 89.5%	6.82	1,310.29	16.1%	$0.098
153	RET 2L8'T12, 60W, 1EB	47.45	1,357.73	16.6%	$0.112
316	Cool Roof - DX	26.84	1,384.58	17.0%	$0.115
402	Variable Speed Drive Control, 5 HP	11.41	1,395.98	17.1%	$0.125
313	Window Film (Standard) - DX	23.84	1,419.83	17.4%	$0.125
303	EMS - Chiller	10.58	1,430.41	17.5%	$0.127
176	Halogen PAR Flood, 90W	136.77	1,567.18	19.2%	$0.131
504	Evaporator fan controller for MT walk-ins	0.50	1,567.68	19.2%	$0.174
306	Cooling Circ. Pumps - VSD	5.76	1,573.44	19.3%	$0.192
311	10% More Efficient Design (Lighting)	40.21	1,613.65	19.8%	$0.194
305	Chiller Tune-up/Diagnostics	0.91	1,614.56	19.8%	$0.208
302	Window Film (Standard) - Chiller	2.44	1,617.00	19.8%	$0.291
304	Cool Roof - Chiller	1.62	1,618.62	19.8%	$0.292
135	20% More Efficient Design (Lighting)	30.77	1,649.40	20.2%	$0.339
177	Metal Halide, 50W	116.35	1,765.75	21.6%	$0.343
116	Continuous Dimming, 5L4' Fluorescent Fixtures	30.25	1,796.00	22.0%	$0.362
314	Evaporative Pre-Cooler	23.20	1,819.19	22.3%	$0.362
156	Continuous Dimming, 5L8' Fluorescent Fixtures	32.10	1,851.29	22.7%	$0.414
941	External hardware control - Printer	20.27	1,871.55	22.9%	$0.441
117	RNV 2L4'T5HO, 1EB	11.97	1,883.52	23.1%	$0.493
924	External hardware control - Monitor	14.50	1,898.02	23.3%	$0.589
136	RNV 1L4'T5HO, 1EB	14.48	1,912.50	23.4%	$0.819
942	Nighttime shutdown - Printer	13.42	1,925.92	23.6%	$2.166
921	Purchase LCD monitor	7.28	1,933.20	23.7%	$7.671

Capacity Supply Curve	COMMERCIAL EXISTING CONSTRUCTION				
Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Percent Savings	Levelized Capacity Cost $/kW
510	Demand Defrost Electric	1.89	1.89	0.1%	$22.26
317	Optimize Controls - DX	1.72	3.61	0.2%	$42.85
301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	10.96	14.56	1.0%	$52.37
505	Efficient compressor motor	1.39	15.95	1.1%	$73.11
509	Demand Hot Gas Defrost	0.17	16.12	1.1%	$77.56
307	EMS Optimization	0.52	16.64	1.1%	$82.60
181	ROB 4L4' Premium T8, 1EB	4.65	21.28	1.4%	$84.65
118	Lighting Control Tune-up - 4L4' T12	0.07	21.35	1.4%	$99.65
923	Network Power Management Enabling - Monitor	2.91	24.27	1.6%	$111.08
137	Lighting Control Tune-up - 2L4' T12	0.07	24.33	1.6%	$111.54
186	ROB 2L4' Premium T8, 1EB	5.20	29.53	2.0%	$111.72
114	RET 2L4' Premium T8, 1EB, Reflector	8.84	38.38	2.5%	$142.90
411	Fan Motor, 15hp, 1800rpm, 92.4%	0.35	38.73	2.6%	$146.89
502	Strip curtains for walk-ins	0.29	39.02	2.6%	$152.30
166	CFL Screw-in, Modular 18W	57.23	96.24	6.4%	$162.17
183	Lighting Control Tune-up - 4L4' T8	0.03	96.27	6.4%	$165.49
312	DX Packaged System, EER=10.9, 10 tons	25.43	121.70	8.1%	$183.07
188	Lighting Control Tune-up - 2L4' T8	0.02	121.72	8.1%	$185.39
315	Programmable Thermostat - DX	4.84	126.56	8.4%	$190.26
133	RET 1L4' Premium T8, 1EB, Reflector OEM	4.59	131.16	8.7%	$213.61
134	Occupancy Sensor, 8L4' Fluorescent Fixtures	5.68	136.84	9.1%	$225.97
115	Occupancy Sensor, 4L4' Fluorescent Fixtures	5.06	141.90	9.4%	$229.39
305	Chiller Tune-up/Diagnostics	0.80	142.70	9.5%	$237.46
154	RET 1L8'T12, 60W, 1EB, Reflector	6.94	149.64	9.9%	$263.11
113	RET 4L4' Premium T8, 1EB	13.93	163.57	10.8%	$270.83
303	EMS - Chiller	4.68	168.25	11.1%	$286.49
316	Cool Roof - DX	10.68	178.93	11.9%	$288.24
155	Occupancy Sensor, 4L8' Fluorescent Fixtures	3.72	182.64	12.1%	$298.11
413	Air Handler Optimization, 15 HP	0.49	183.13	12.1%	$298.39
182	Occupancy Sensor, 4L4' Fluorescent Fixtures	2.38	185.51	12.3%	$298.86
313	Window Film (Standard) - DX	9.50	195.01	12.9%	$313.49
423	Air Handler Optimization, 40 HP	0.64	195.65	13.0%	$314.48
187	Occupancy Sensor, 8L4' Fluorescent Fixtures	2.32	197.97	13.1%	$328.94
132	RET 2L4' Premium T8, 1EB	17.85	215.83	14.3%	$348.72
511	Anti-sweat (humidistat) controls	0.50	216.33	14.3%	$353.48
922	Power Management Enabling - Monitor	1.92	218.25	14.5%	$374.94
931	Power Management Enabling - Copier	1.00	219.24	14.5%	$388.78
306	Cooling Circ. Pumps - VSD	2.54	221.78	14.7%	$435.85
311	DX Tune-up/Advanced Diagnostics	16.77	238.56	15.8%	$463.87
501	High-efficiency refrig fan motors	2.45	241.00	16.0%	$465.67
401	Fan Motor, 5hp, 1800rpm, 89.5%	1.09	242.09	16.0%	$612.02
302	Window Film (Standard) - Chiller	1.12	243.21	16.1%	$635.72
421	Fan Motor, 40hp, 1800rpm, 94.1%	0.22	243.43	16.1%	$654.18
304	Cool Roof - Chiller	0.69	244.12	16.2%	$674.27
153	RET 2L8'T12, 60W, 1EB	7.69	251.82	16.7%	$693.27
508	Refrigeration Commissioning	0.48	252.29	16.7%	$693.64
422	Variable Speed Drive Control, 40 HP	0.88	253.17	16.8%	$728.99
176	Halogen PAR Flood, 90W	22.79	275.97	18.3%	$787.09
314	Evaporative Pre-Cooler	9.68	285.64	18.9%	$868.60
911	Power Management Enabling - PC	2.11	287.75	19.1%	$970.40
135	Continuous Dimming, 10L4' Fluorescent Fixtures	10.62	298.37	19.8%	$982.36
116	Continuous Dimming, 5L4' Fluorescent Fixtures	10.73	309.10	20.5%	$1,021.28
506	Compressor VSD retrofit	0.27	309.36	20.5%	$1,026.94
156	Continuous Dimming, 5L8' Fluorescent Fixtures	11.13	320.49	21.2%	$1,193.96
412	Variable Speed Drive Control, 15 HP	0.88	321.38	21.3%	$1,522.01
177	Metal Halide, 50W	19.41	340.79	22.6%	$2,055.77
402	Variable Speed Drive Control, 5 HP	0.51	341.30	22.6%	$2,817.60
117	RNV 2L4'T5HO, 1EB	2.08	343.38	22.7%	$2,831.51
136	RNV 1L4'T5HO, 1EB	2.33	345.71	22.9%	$5,079.08
924	External hardware control - Monitor	1.05	346.76	23.0%	$8,133.21
941	External hardware control - Printer	1.07	347.83	23.0%	$8,352.41
942	Nighttime shutdown - Printer	0.71	348.54	23.1%	$40,935.28
921	Purchase LCD monitor	0.97	349.52	23.1%	$57,312.43
211	RET 2L4'T8, 1EB	0.00	349.52	23.1%	N/A
212	Outdoor Lighting Controls - Fluorescent	0.00	349.52	23.1%	N/A
221	High Pressure Sodium 250W Lamp	0.00	349.52	23.1%	N/A
222	Outdoor Lighting Controls HID	0.00	349.52	23.1%	N/A
503	Night covers for display cases	0.00	349.52	23.1%	N/A
504	Evaporator fan controller for MT walk-ins	0.00	349.52	23.1%	N/A
507	Floating head pressure controls	0.00	349.52	23.1%	N/A

Energy Supply Curve	COMMERCIAL NEW CONSTRUCTION				
Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Percent Savings	Levelized Energy Cost $/kWH
510	Demand Defrost Electric	6.55	6.55	0.2%	$0.002
505	Efficient compressor motor	4.80	11.36	0.4%	$0.008
923	Network Power Management Enabling - Monitor	14.91	26.27	0.9%	$0.008
509	Demand Hot Gas Defrost	0.59	26.86	1.0%	$0.008
507	Floating head pressure controls	1.94	28.80	1.0%	$0.013
502	Strip curtains for walk-ins	1.00	29.80	1.1%	$0.016
317	Optimize Controls - DX	1.40	31.20	1.1%	$0.019
511	Anti-sweat (humidistat) controls	3.35	34.55	1.2%	$0.020
101	10% More Efficient Design (Lighting)	113.17	147.72	5.2%	$0.021
411	Fan Motor, 15hp, 1800rpm, 92.4%	0.85	148.57	5.3%	$0.022
301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	9.21	157.78	5.6%	$0.023
315	Programmable Thermostat - DX	14.31	172.09	6.1%	$0.024
922	Power Management Enabling - Monitor	9.81	181.90	6.5%	$0.027
931	Power Management Enabling - Copier	5.14	187.03	6.6%	$0.028
422	Variable Speed Drive Control, 40 HP	8.20	195.23	6.9%	$0.029
102	20% More Efficient Design (Lighting)	112.04	307.27	10.9%	$0.030
307	EMS Optimization	0.43	307.70	10.9%	$0.037
503	Night covers for display cases	1.24	308.94	11.0%	$0.039
413	Air Handler Optimization, 15 HP	1.24	310.18	11.0%	$0.043
423	Air Handler Optimization, 40 HP	1.67	311.85	11.1%	$0.044
501	High-efficiency refrig fan motors	8.48	320.32	11.4%	$0.050
412	Variable Speed Drive Control, 15 HP	7.73	328.05	11.6%	$0.064
506	Compressor VSD retrofit	1.56	329.62	11.7%	$0.065
911	Power Management Enabling - PC	10.78	340.40	12.1%	$0.070
508	Refrigeration Commissioning	1.65	342.05	12.1%	$0.074
312	DX Packaged System, EER=10.9, 10 tons	22.60	364.64	12.9%	$0.076
421	Fan Motor, 40hp, 1800rpm, 94.1%	0.57	365.21	13.0%	$0.095
401	Fan Motor, 5hp, 1800rpm, 89.5%	2.52	367.74	13.0%	$0.098
316	Cool Roof - DX	9.81	377.55	13.4%	$0.117
402	Variable Speed Drive Control, 5 HP	4.22	381.77	13.5%	$0.125
313	Window Film (Standard) - DX	8.82	390.59	13.9%	$0.125
303	EMS - Chiller	3.92	394.50	14.0%	$0.127
504	Evaporator fan controller for MT walk-ins	0.19	394.69	14.0%	$0.174
306	Cooling Circ. Pumps - VSD	2.13	396.82	14.1%	$0.192
311	DX Tune-up/Advanced Diagnostics	14.88	411.70	14.6%	$0.194
305	Chiller Tune-up/Diagnostics	0.34	412.03	14.6%	$0.208
302	Window Film (Standard) - Chiller	0.90	412.94	14.6%	$0.291
304	Cool Roof - Chiller	0.60	413.54	14.7%	$0.292
314	Evaporative Pre-Cooler	8.58	422.12	15.0%	$0.362
941	External hardware control - Printer	7.50	429.62	15.2%	$0.441
924	External hardware control - Monitor	5.36	434.98	15.4%	$0.589
942	Nighttime shutdown - Printer	4.97	439.95	15.6%	$2.166
921	Purchase LCD monitor	2.69	442.64	15.7%	$7.671

Capacity Supply Curve		COMMERCIAL NEW CONSTRUCTION			
Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Percent Savings	Levelized Capacity Cost $/kW
510	Demand Defrost Electric	0.70	0.70	0.1%	$22.26
317	Optimize Controls - DX	0.63	1.33	0.2%	$42.85
301	Centrifugal Chiller, 0.51 kW/ton, 500 tons	4.05	5.39	1.0%	$52.37
505	Efficient compressor motor	0.51	5.90	1.0%	$73.11
509	Demand Hot Gas Defrost	0.06	5.96	1.1%	$77.56
307	EMS Optimization	0.19	6.16	1.1%	$82.60
923	Network Power Management Enabling - Monitor	1.08	7.23	1.3%	$111.08
101	10% More Efficient Design (Lighting)	18.40	25.63	4.5%	$131.57
411	Fan Motor, 15hp, 1800rpm, 92.4%	0.13	25.76	4.6%	$146.89
502	Strip curtains for walk-ins	0.11	25.87	4.6%	$152.30
312	DX Packaged System, EER=10.9, 10 tons	9.45	35.31	6.3%	$182.32
102	20% More Efficient Design (Lighting)	18.21	53.53	9.5%	$186.05
315	Programmable Thermostat - DX	1.79	55.32	9.8%	$190.26
305	Chiller Tune-up/Diagnostics	0.30	55.62	9.9%	$237.46
303	EMS - Chiller	1.73	57.35	10.2%	$286.49
316	Cool Roof - DX	3.91	61.26	10.9%	$291.10
413	Air Handler Optimization, 15 HP	0.18	61.44	10.9%	$298.39
313	Window Film (Standard) - DX	3.52	64.96	11.5%	$313.49
423	Air Handler Optimization, 40 HP	0.24	65.19	11.6%	$314.48
511	Anti-sweat (humidistat) controls	0.19	65.38	11.6%	$353.48
922	Power Management Enabling - Monitor	0.71	66.09	11.7%	$374.94
931	Power Management Enabling - Copier	0.37	66.46	11.8%	$388.78
306	Cooling Circ. Pumps - VSD	0.94	67.39	12.0%	$435.85
311	DX Tune-up/Advanced Diagnostics	6.21	73.60	13.1%	$463.87
501	High-efficiency refrig fan motors	0.91	74.51	13.2%	$465.67
401	Fan Motor, 5hp, 1800rpm, 89.5%	0.40	74.91	13.3%	$612.02
302	Window Film (Standard) - Chiller	0.41	75.32	13.4%	$635.72
421	Fan Motor, 40hp, 1800rpm, 94.1%	0.08	75.40	13.4%	$654.18
304	Cool Roof - Chiller	0.26	75.66	13.4%	$674.27
508	Refrigeration Commissioning	0.18	75.84	13.5%	$693.64
422	Variable Speed Drive Control, 40 HP	0.33	76.16	13.5%	$728.99
314	Evaporative Pre-Cooler	3.58	79.74	14.2%	$868.60
911	Power Management Enabling - PC	0.78	80.52	14.3%	$970.40
506	Compressor VSD retrofit	0.10	80.62	14.3%	$1,026.94
412	Variable Speed Drive Control, 15 HP	0.33	80.95	14.4%	$1,522.01
402	Variable Speed Drive Control, 5 HP	0.19	81.14	14.4%	$2,817.60
924	External hardware control - Monitor	0.39	81.52	14.5%	$8,133.21
941	External hardware control - Printer	0.40	81.92	14.5%	$8,352.41
942	Nighttime shutdown - Printer	0.26	82.18	14.6%	$40,935.28
921	Purchase LCD monitor	0.36	82.54	14.6%	$57,312.43
503	Night covers for display cases	0.00	82.54	14.6%	N/A
504	Evaporator fan controller for MT walk-ins	0.00	82.54	14.6%	N/A
507	Floating head pressure controls	0.00	82.54	14.6%	N/A

Energy Supply Curve		INDUSTRIAL			
Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Percent Savings	Levelized Energy Cost $/kWH
301	Process Level 1	15.97	15.97	1.5%	$0.010
152	Add 201-500 HP VSD	7.29	23.26	2.2%	$0.017
501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	1.93	25.18	2.3%	$0.025
151	Replace 201-500 HP Motor	2.12	27.30	2.5%	$0.030
515	Programmable Thermostat - DX	1.52	28.82	2.7%	$0.030
202	CAS Level 1	6.03	34.85	3.2%	$0.032
123	Motor Practices Level 1 - 21-50 HP	5.69	40.54	3.8%	$0.032
153	Motor Practices Level 1 - 200+ HP	8.35	48.89	4.5%	$0.035
302	10% More Efficient Design (Lighting)	16.02	64.90	6.0%	$0.038
513	Window Film (Standard) - DX	1.37	66.27	6.1%	$0.043
122	Add 21-50 HP VSD	4.49	70.76	6.6%	$0.044
401	RET 2L4' Premium T8, 1EB	13.70	84.46	7.8%	$0.050
421	CFL Hardwired, Modular 36W	7.80	92.25	8.6%	$0.052
203	CAS Level 2	6.31	98.56	9.1%	$0.055
103	Motor Practices Level 1 - 5HP	8.25	106.81	9.9%	$0.066
412	20% More Efficient Design (Lighting)	0.67	107.48	10.0%	$0.077
303	Process Level 3	4.60	112.09	10.4%	$0.077
411	RET 2L8'T12, 60W, 1EB	5.18	117.26	10.9%	$0.078
402	Occupancy Sensor, 4L4' Fluorescent Fixtures	0.98	118.24	11.0%	$0.085
502	Window Film (Standard) - Chiller	0.58	118.82	11.0%	$0.086
154	Motor Practices Level 2 - 200+ HP	7.83	126.64	11.7%	$0.088
512	DX Packaged System, EER=10.9, 10 tons	2.79	129.43	12.0%	$0.091
121	Replace 21-50 HP Motor	1.10	130.53	12.1%	$0.104
101	Replace 1-5 HP Motor	3.38	133.91	12.4%	$0.110
124	Motor Practices Level 2 - 21-50 HP	5.09	139.00	12.9%	$0.127
204	CAS Level 3	4.52	143.53	13.3%	$0.141
516	Cool Roof - DX	1.47	145.00	13.4%	$0.144
503	EMS - Chiller	0.88	145.88	13.5%	$0.145
102	Add 1-5 HP VSD	6.08	151.96	14.1%	$0.160
506	Cooling Circ. Pumps - VSD	0.43	152.39	14.1%	$0.215
104	Motor Practices Level 2 - 5 HP	7.33	159.72	14.8%	$0.266
511	DX Tune-up/Advanced Diagnostics	1.83	161.56	15.0%	$0.279
504	Cool Roof - Chiller	0.36	161.91	15.0%	$0.291
403	Continuous Dimming, 5L4' Fluorescent Fixtures	2.66	164.58	15.3%	$0.377
413	Continuous Dimming, 5L8' Fluorescent Fixtures	1.52	166.09	15.4%	$0.402
514	Evaporative Pre-Cooler	1.07	167.16	15.5%	$0.433
505	Chiller Tune-up/Diagnostics	0.03	167.19	15.5%	$0.512
422	Metal Halide, 50W	2.08	169.27	15.7%	$0.645

Capacity Supply Curve		INDUSTRIAL			
Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Percent Savings	Levelized Capacity Cost $/kW
501	Centrifugal Chiller, 0.51 kW/ton, 500 tons	1.09	1.09	0.6%	$43.83
301	Process Level 1	2.15	3.24	1.8%	$74.21
513	Window Film (Standard) - DX	0.78	4.02	2.2%	$75.94
152	Add 201-500 HP VSD	0.98	5.00	2.8%	$124.39
502	Window Film (Standard) - Chiller	0.33	5.32	2.9%	$151.30
512	DX Packaged System, EER=10.9, 10 tons	1.58	6.91	3.8%	$161.18
515	Programmable Thermostat - DX	0.26	7.17	4.0%	$174.91
505	Chiller Tune-up/Diagnostics	0.07	7.24	4.0%	$220.22
151	Replace 201-500 HP Motor	0.28	7.53	4.2%	$224.27
202	CAS Level 1	0.81	8.34	4.6%	$235.53
123	Motor Practices Level 1 - 21-50 HP	0.76	9.10	5.0%	$236.88
516	Cool Roof - DX	0.83	9.94	5.5%	$254.73
503	10% More Efficient Design (Lighting)	0.50	10.44	5.8%	$255.66
153	Motor Practices Level 1 - 200+ HP	1.12	11.56	6.4%	$259.23
401	RET 2L4' Premium T8, 1EB	2.62	14.18	7.8%	$261.06
421	CFL Hardwired, Modular 36W	1.49	15.68	8.7%	$270.19
302	20% More Efficient Design (Lighting)	2.15	17.83	9.9%	$280.86
412	Occupancy Sensor, 4L8' Fluorescent Fixtures	0.18	18.01	10.0%	$291.56
402	Occupancy Sensor, 4L4' Fluorescent Fixtures	0.26	18.27	10.1%	$320.47
122	Add 21-50 HP VSD	0.60	18.87	10.4%	$325.43
506	Cooling Circ. Pumps - VSD	0.24	19.11	10.6%	$378.89
203	CAS Level 2	0.85	19.96	11.0%	$406.60
411	RET 2L8'T12, 60W, 1EB	0.99	20.95	11.6%	$408.00
511	DX Tune-up/Advanced Diagnostics	1.04	21.99	12.2%	$491.88
103	Motor Practices Level 1 - 5HP	1.11	23.10	12.8%	$493.46
504	Cool Roof - Chiller	0.20	23.30	12.9%	$512.93
303	Process Level 3	0.62	23.92	13.2%	$576.14
154	Motor Practices Level 2 - 200+ HP	1.05	24.97	13.8%	$656.87
403	Continuous Dimming, 5L4' Fluorescent Fixtures	1.40	26.37	14.6%	$718.04
514	Evaporative Pre-Cooler	0.60	26.98	14.9%	$762.88
413	Continuous Dimming, 5L8' Fluorescent Fixtures	0.80	27.77	15.4%	$766.21
121	Replace 21-50 HP Motor	0.15	27.92	15.5%	$772.42
101	Replace 1-5 HP Motor	0.45	28.37	15.7%	$816.56
124	Motor Practices Level 2 - 21-50 HP	0.68	29.06	16.1%	$942.67
204	CAS Level 3	0.61	29.67	16.4%	$1,049.42
102	Add 1-5 HP VSD	0.82	30.48	16.9%	$1,192.02
104	Motor Practices Level 2 - 5 HP	0.99	31.47	17.4%	$1,979.27
422	Metal Halide, 50W	0.40	31.87	17.6%	$3,368.13

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ACHIEVABLE POTENTIAL SCENARIOS

Summary of Achievable Program Potential Scenarios

Base Efficiency Totals - All Market Segments

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	13,927,390	27,749,314	41,690,319	55,742,111	69,801,417	83,796,744	97,681,575	111,427,089	125,016,414	138,445,568
Net Peak Demand Savings - kW	3,931	7,828	11,735	15,645	19,539	23,402	27,222	30,992	34,707	38,365
New Net Energy Savings - kWh	13,927,390	13,821,924	13,941,004	14,051,792	14,059,306	13,995,327	13,884,831	13,745,514	13,589,325	13,429,154
New Net Peak Demand Savings - kW	3,931	3,898	3,907	3,910	3,894	3,862	3,820	3,770	3,715	3,658
Program Costs - Real										
Administration	$1,175,000	$1,147,340	$1,155,123	$1,172,547	$1,192,379	$1,212,977	$1,233,649	$1,254,071	$1,274,085	$1,293,826
Marketing	$900,000	$970,000	$1,036,000	$1,075,600	$1,075,600	$1,075,600	$1,075,600	$1,075,600	$1,075,600	$1,075,600
Incentives	$1,258,331	$1,195,695	$1,171,515	$1,160,395	$1,153,116	$1,147,974	$1,144,133	$1,141,121	$1,138,648	$1,136,846
Total	$3,333,331	$3,313,035	$3,362,638	$3,408,542	$3,421,095	$3,436,551	$3,453,383	$3,470,792	$3,488,333	$3,506,273
PV Avoided Costs	$12,745,565	$11,194,185	$10,036,211	$9,061,386	$8,192,040	$7,415,890	$6,723,007	$6,104,104	$5,550,512	$5,055,712
PV Annual Program Costs	$3,333,331	$3,085,376	$2,916,381	$2,753,055	$2,573,318	$2,407,317	$2,252,876	$2,108,644	$1,973,671	$1,847,501
PV Participant Costs	$2,454,484	$2,161,489	$1,951,638	$1,782,191	$1,632,936	$1,499,678	$1,379,676	$1,270,948	$1,171,982	$1,081,887
TRC	2.20	2.13	2.06	2.00	1.95	1.90	1.85	1.81	1.76	1.73
$/1st yr kWh	$0.239	$0.240	$0.241	$0.243	$0.243	$0.246	$0.249	$0.253	$0.257	$0.261

Advanced Efficiency Totals - All Market Segments

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	28,204,036	55,824,032	83,364,288	110,857,272	138,126,911	165,053,310	191,561,139	217,606,637	243,167,260	268,236,323
Net Peak Demand Savings - kW	7,737	15,319	22,844	30,309	37,684	44,946	52,080	59,077	65,932	72,645
New Net Energy Savings - kWh	28,204,036	27,619,997	27,540,255	27,492,984	27,269,640	26,926,398	26,507,830	26,045,498	25,560,623	25,069,063
New Net Peak Demand Savings - kW	7,737	7,583	7,524	7,466	7,375	7,262	7,134	6,997	6,855	6,713
Program Costs - Real										
Administration	$1,850,000	$1,829,123	$1,849,526	$1,878,236	$1,905,154	$1,929,371	$1,950,923	$1,970,106	$1,987,267	$2,002,830
Marketing	$1,125,000	$1,220,000	$1,310,000	$1,364,000	$1,364,000	$1,364,000	$1,364,000	$1,364,000	$1,364,000	$1,364,000
Incentives	$3,169,107	$3,045,716	$3,009,395	$2,999,176	$2,989,984	$2,979,756	$2,968,018	$2,954,814	$2,940,359	$2,925,114
Total	$6,144,107	$6,094,839	$6,168,921	$6,241,412	$6,259,138	$6,273,127	$6,282,941	$6,288,920	$6,291,626	$6,291,943
PV Avoided Costs	$21,213,968	$18,815,769	$17,017,007	$15,470,149	$14,048,181	$12,748,770	$11,568,080	$10,499,384	$9,534,135	$8,663,782
PV Annual Program Costs	$6,144,107	$5,676,025	$5,350,242	$5,041,145	$4,708,070	$4,394,349	$4,098,789	$3,820,769	$3,559,752	$3,315,307
PV Participant Costs	$3,641,921	$3,249,297	$2,964,602	$2,728,843	$2,512,141	$2,312,143	$2,127,449	$1,956,972	$1,799,747	$1,654,998
TRC	2.17	2.11	2.05	1.99	1.95	1.90	1.86	1.82	1.78	1.74
$/1st yr kWh	$0.218	$0.221	$0.224	$0.227	$0.230	$0.233	$0.237	$0.241	$0.246	$0.251

Residential Base Efficiency

HVAC and Water Heating

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	2,785,217	5,603,225	8,426,882	11,234,876	14,010,669	16,741,623	19,418,259	22,033,647	24,582,904	27,062,777
Net Peak Demand Savings - kW	2,363	4,742	7,114	9,464	11,778	14,048	16,265	18,424	20,523	22,559
New Net Energy Savings - kWh	2,785,217	2,818,008	2,823,658	2,807,994	2,775,793	2,730,954	2,676,636	2,615,388	2,549,256	2,479,873
New Net Peak Demand Savings - kW	2,363	2,379	2,372	2,350	2,314	2,269	2,217	2,160	2,099	2,036
Program Costs - Real										
Administration	$250,000	$245,771	$241,718	$237,794	$233,975	$230,245	$226,600	$223,039	$219,561	$216,171
Marketing	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Incentives	$319,046	$311,851	$304,954	$298,278	$291,778	$285,432	$279,230	$273,170	$267,253	$261,483
Total	$769,046	$757,623	$746,672	$736,072	$725,753	$715,677	$705,830	$696,208	$686,814	$677,654
PV Avoided Costs	$3,847,986	$3,519,329	$3,208,811	$2,918,026	$2,647,735	$2,398,048	$2,168,579	$1,958,594	$1,767,119	$1,593,036
PV Annual Program Costs	$769,046	$705,562	$647,581	$594,520	$545,905	$501,335	$460,461	$422,974	$388,594	$357,065
PV Participant Costs	$443,695	$403,875	$367,825	$335,090	$305,316	$278,208	$253,519	$231,031	$210,550	$191,899
TRC	3.17	3.17	3.16	3.14	3.11	3.08	3.04	2.99	2.95	2.90
$/1st yr kWh	$0.276	$0.27	$0.26	$0.26	$0.26	$0.26	$0.26	$0.27	$0.27	$0.27

Lighting and Appliances

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	3,084,320	6,217,282	9,441,238	12,748,544	16,124,102	19,552,236	23,018,470	26,510,009	30,015,812	33,531,539
Net Peak Demand Savings - kW	299	601	911	1,229	1,554	1,884	2,218	2,555	2,893	3,232
New Net Energy Savings - kWh	3,084,320	3,132,961	3,223,956	3,307,306	3,375,558	3,428,135	3,466,234	3,491,539	3,505,803	3,515,727
New Net Peak Demand Savings - kW	299	302	310	318	325	330	334	337	338	339
Program Costs - Real										
Administration	$250,000	$246,727	$248,550	$251,152	$253,700	$255,951	$257,837	$259,350	$260,515	$261,567
Marketing	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000
Incentives	$289,971	$284,909	$287,729	$291,753	$295,693	$299,175	$302,090	$304,432	$306,232	$307,859
Total	$739,971	$731,636	$736,280	$742,905	$749,392	$755,126	$759,927	$763,782	$766,747	$769,426
PV Avoided Costs	$1,588,545	$1,457,205	$1,365,284	$1,282,448	$1,203,473	$1,127,218	$1,053,592	$982,796	$915,075	$851,990
PV Annual Program Costs	$739,971	$681,361	$638,568	$600,039	$563,686	$528,968	$495,752	$464,028	$433,819	$405,421
PV Participant Costs	$463,736	$430,971	$405,780	$382,437	$359,959	$338,151	$317,026	$296,657	$277,118	$258,774
TRC	1.32	1.31	1.31	1.31	1.30	1.30	1.30	1.29	1.29	1.28
$/1st yr kWh	$0.24	$0.23	$0.23	$0.22	$0.22	$0.22	$0.22	$0.22	$0.22	$0.22

Residential Base Efficiency

New Construction

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	442,104	932,268	1,506,341	2,169,582	2,921,058	3,757,950	4,676,831	5,674,146	6,746,408	7,890,290
Net Peak Demand Savings - kW	225	445	687	956	1,254	1,580	1,934	2,314	2,721	3,153
New Net Energy Savings - kWh	442,104	490,164	574,074	663,240	751,476	836,892	918,881	997,314	1,072,263	1,143,882
New Net Peak Demand Savings - kW	225	220	242	269	298	326	354	381	407	432
Program Costs - Real										
Administration	$200,000	$213,537	$238,050	$264,607	$291,377	$317,786	$343,632	$368,852	$393,441	$417,415
Marketing	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000	$75,000
Incentives	$53,030	$57,816	$66,482	$75,871	$85,335	$94,672	$103,809	$112,726	$121,419	$129,894
Total	$328,030	$346,353	$379,532	$415,479	$451,713	$487,457	$522,441	$556,578	$589,860	$622,310
PV Avoided Costs	$387,879	$365,902	$381,714	$401,035	$417,670	$430,175	$438,426	$442,736	$443,562	$441,386
PV Annual Program Costs	$328,030	$322,553	$329,164	$335,579	$339,774	$341,466	$340,824	$338,143	$333,738	$327,903
PV Participant Costs	$47,275	$48,228	$51,771	$55,111	$57,795	$59,769	$61,082	$61,811	$62,037	$61,836
TRC	1.03	0.99	1.00	1.03	1.05	1.07	1.09	1.11	1.12	1.13
$/1st yr kWh	$0.74	$0.71	$0.66	$0.63	$0.60	$0.58	$0.57	$0.56	$0.55	$0.54

Total Residential

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	6,311,641	12,752,774	19,374,461	26,153,002	33,055,829	40,051,810	47,113,560	54,217,802	61,345,124	68,484,606
Net Peak Demand Savings - kW	2,887	5,787	8,712	11,649	14,586	17,512	20,416	23,293	26,137	28,944
New Net Energy Savings - kWh	6,311,641	6,441,133	6,621,687	6,778,540	6,902,827	6,995,981	7,061,751	7,104,242	7,127,322	7,139,482
New Net Peak Demand Savings - kW	2,887	2,900	2,925	2,937	2,937	2,925	2,905	2,877	2,844	2,807
Program Costs - Real										
Administration	$700,000	$706,035	$728,318	$753,554	$779,051	$803,982	$828,068	$851,241	$873,517	$895,153
Marketing	$475,000	$475,000	$475,000	$475,000	$475,000	$475,000	$475,000	$475,000	$475,000	$475,000
Incentives	$662,048	$654,576	$659,166	$665,902	$672,806	$679,278	$685,130	$690,327	$694,903	$699,237
Total	$1,837,048	$1,835,612	$1,862,484	$1,894,456	$1,926,858	$1,958,260	$1,988,198	$2,016,568	$2,043,420	$2,069,390
PV Avoided Costs	$5,824,409	$5,342,435	$4,955,809	$4,601,509	$4,268,879	$3,955,441	$3,660,598	$3,384,127	$3,125,757	$2,886,412
PV Annual Program Costs	$1,837,048	$1,709,476	$1,615,313	$1,530,138	$1,449,366	$1,371,769	$1,297,037	$1,225,145	$1,156,151	$1,090,389
PV Participant Costs	$954,705	$883,074	$825,375	$772,638	$723,070	$676,128	$631,628	$589,499	$549,705	$512,509
TRC	2.09	2.06	2.03	2.00	1.97	1.93	1.90	1.86	1.83	1.80
$/1st yr kWh	$0.29	$0.28	$0.28	$0.28	$0.28	$0.28	$0.28	$0.28	$0.29	$0.29

Nonresidential Base Efficiency

Commercial Existing

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	4,458,278	8,794,876	13,067,087	17,281,743	21,393,461	25,381,559	29,240,285	32,972,046	36,583,061	40,080,759
Net Peak Demand Savings - kW	566	1,112	1,649	2,178	2,695	3,200	3,691	4,169	4,634	5,088
New Net Energy Savings - kWh	4,458,278	4,336,598	4,272,211	4,214,656	4,111,718	3,988,098	3,858,725	3,731,762	3,611,015	3,497,698
New Net Peak Demand Savings - kW	566	546	536	529	518	505	491	478	465	454
Program Costs - Real										
Administration	$250,000	$234,175	$223,816	$216,787	$210,906	$205,945	$201,719	$198,079	$194,903	$192,095
Marketing	$200,000	$240,000	$288,000	$316,800	$316,800	$316,800	$316,800	$316,800	$316,800	$316,800
Incentives	$344,304	$315,245	$296,222	$283,314	$272,515	$263,406	$255,646	$248,962	$243,130	$237,974
Total	$794,304	$789,420	$808,038	$816,901	$800,221	$786,150	$774,165	$763,840	$754,833	$746,869
PV Avoided Costs	$4,316,490	$3,658,406	$3,137,917	$2,710,221	$2,339,377	$2,022,367	$1,753,559	$1,526,371	$1,334,289	$1,171,399
PV Annual Program Costs	$794,304	$735,174	$700,803	$659,805	$601,919	$550,701	$505,040	$464,063	$427,079	$393,535
PV Participant Costs	$969,549	$829,591	$727,803	$649,293	$582,174	$524,262	$473,854	$429,620	$390,512	$355,708
TRC	2.45	2.34	2.20	2.07	1.98	1.88	1.79	1.71	1.63	1.56
$/1st yr kWh	$0.178	$0.182	$0.189	$0.194	$0.195	$0.197	$0.201	$0.205	$0.209	$0.214

Commercial New Construction

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	1,460,112	2,930,489	4,484,972	6,117,448	7,811,393	9,550,524	11,321,209	13,112,854	14,917,655	16,730,150
Net Peak Demand Savings - kW	235	461	693	932	1,176	1,423	1,673	1,924	2,176	2,428
New Net Energy Savings - kWh	1,460,112	1,470,377	1,554,484	1,632,475	1,693,945	1,739,131	1,770,685	1,791,645	1,804,800	1,812,495
New Net Peak Demand Savings - kW	235	226	232	239	244	248	250	251	252	252
Program Costs - Real										
Administration	$150,000	$137,668	$137,486	$139,700	$142,524	$145,436	$148,252	$150,908	$153,387	$155,691
Marketing	$150,000	$165,000	$165,000	$165,000	$165,000	$165,000	$165,000	$165,000	$165,000	$165,000
Incentives	$116,165	$103,431	$103,243	$105,530	$108,446	$111,452	$114,360	$117,103	$119,663	$122,042
Total	$416,165	$406,099	$405,729	$410,230	$415,970	$421,888	$427,611	$433,011	$438,050	$442,733
PV Avoided Costs	$889,164	$780,166	$755,561	$741,076	$724,963	$705,079	$681,605	$655,318	$627,078	$597,661
PV Annual Program Costs	$416,165	$378,194	$351,885	$331,340	$312,889	$295,534	$278,960	$263,071	$247,845	$233,282
PV Participant Costs	$152,869	$132,316	$127,025	$123,978	$121,041	$117,750	$114,052	$110,011	$105,717	$101,259
TRC	1.56	1.53	1.58	1.63	1.67	1.71	1.73	1.76	1.77	1.79
$/1st yr kWh	$0.285	$0.276	$0.261	$0.251	$0.246	$0.243	$0.241	$0.242	$0.243	$0.244

Nonresidential Base Efficiency

Industrial

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	1,697,360	3,271,176	4,763,798	6,189,918	7,540,734	8,812,851	10,006,521	11,124,386	12,170,574	13,150,054
Net Peak Demand Savings - kW	242	468	682	887	1,082	1,267	1,441	1,605	1,760	1,905
New Net Energy Savings - kWh	1,697,360	1,573,816	1,492,622	1,426,120	1,350,816	1,272,117	1,193,670	1,117,865	1,046,188	979,479
New Net Peak Demand Savings - kW	242	225	214	205	195	185	174	164	155	146
Program Costs - Real										
Administration	$75,000	$69,462	$65,503	$62,507	$59,897	$57,615	$55,610	$53,843	$52,278	$50,887
Marketing	$75,000	$90,000	$108,000	$118,800	$118,800	$118,800	$118,800	$118,800	$118,800	$118,800
Incentives	$135,814	$122,442	$112,883	$105,649	$99,349	$93,838	$88,998	$84,730	$80,951	$77,593
Total	$285,814	$281,904	$286,386	$286,955	$278,046	$270,253	$263,408	$257,372	$252,029	$247,280
PV Avoided Costs	$1,715,501	$1,413,178	$1,186,923	$1,008,579	$858,820	$733,003	$627,246	$538,289	$463,389	$400,239
PV Annual Program Costs	$285,814	$262,533	$248,380	$231,772	$209,144	$189,313	$171,839	$156,364	$142,596	$130,295
PV Participant Costs	$377,360	$316,508	$271,435	$236,282	$206,653	$181,539	$160,141	$141,817	$126,048	$112,411
TRC	2.59	2.44	2.28	2.15	2.07	1.98	1.89	1.81	1.72	1.65
$/1st yr kWh	$0.168	$0.179	$0.192	$0.201	$0.206	$0.212	$0.221	$0.230	$0.241	$0.252

Total Nonresidential

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	7,615,750	14,996,540	22,315,857	29,589,109	36,745,588	43,744,934	50,568,015	57,209,286	63,671,290	69,960,962
Net Peak Demand Savings - kW	1,044	2,041	3,024	3,996	4,953	5,890	6,805	7,698	8,570	9,421
New Net Energy Savings - kWh	7,615,750	7,380,790	7,319,317	7,273,252	7,156,479	6,999,346	6,823,081	6,641,272	6,462,003	6,289,672
New Net Peak Demand Savings - kW	1,044	998	982	973	957	937	915	893	872	851
Program Costs - Real										
Administration	$475,000	$441,305	$426,805	$418,993	$413,327	$408,995	$405,581	$402,829	$400,568	$398,673
Marketing	$425,000	$495,000	$561,000	$600,600	$600,600	$600,600	$600,600	$600,600	$600,600	$600,600
Incentives	$596,283	$541,118	$512,349	$494,493	$480,310	$468,696	$459,004	$450,794	$443,745	$437,609
Total	$1,496,283	$1,477,423	$1,500,154	$1,514,087	$1,494,238	$1,478,291	$1,465,185	$1,454,224	$1,444,913	$1,436,882
PV Avoided Costs	$6,921,156	$5,851,750	$5,080,401	$4,459,876	$3,923,161	$3,460,449	$3,062,409	$2,719,977	$2,424,756	$2,169,299
PV Annual Program Costs	$1,496,283	$1,375,900	$1,301,068	$1,222,917	$1,123,953	$1,035,548	$955,839	$883,499	$817,520	$757,112
PV Participant Costs	$1,499,778	$1,278,414	$1,126,262	$1,009,553	$909,867	$823,550	$748,048	$681,448	$622,277	$569,378
TRC	2.31	2.20	2.09	2.00	1.93	1.86	1.80	1.74	1.68	1.64
$/1st yr kWh	$0.196	$0.200	$0.205	$0.208	$0.209	$0.211	$0.215	$0.219	$0.224	$0.228

Residential Advanced Efficiency

HVAC and Water Heating

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	5,249,887	10,474,288	15,630,032	20,684,749	25,614,900	30,404,059	35,041,457	39,520,755	43,839,048	47,996,047
Net Peak Demand Savings - kW	4,373	8,693	12,930	17,062	21,073	24,951	28,691	32,290	35,747	39,063
New Net Energy Savings - kWh	5,249,887	5,224,401	5,155,744	5,054,717	4,930,151	4,789,160	4,637,398	4,479,298	4,318,292	4,156,999
New Net Peak Demand Savings - kW	4,373	4,320	4,237	4,132	4,011	3,879	3,740	3,599	3,457	3,316
Program Costs - Real										
Administration	$375,000	$367,829	$360,734	$353,726	$346,831	$340,078	$333,494	$327,102	$320,920	$314,962
Marketing	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000
Incentives	$721,146	$702,759	$684,565	$666,597	$648,919	$631,603	$614,721	$598,332	$582,482	$567,204
Total	$1,321,146	$1,295,588	$1,270,299	$1,245,323	$1,220,750	$1,196,681	$1,173,215	$1,150,434	$1,128,402	$1,107,166
PV Avoided Costs	$6,549,016	$5,958,212	$5,396,402	$4,869,786	$4,381,737	$3,933,490	$3,524,744	$3,154,139	$2,819,637	$2,518,801
PV Annual Program Costs	$1,321,146	$1,206,560	$1,101,717	$1,005,839	$918,238	$838,280	$765,368	$698,934	$638,441	$583,380
PV Participant Costs	$661,818	$600,731	$545,102	$494,463	$448,414	$406,587	$368,642	$334,256	$303,123	$274,955
TRC	3.30	3.30	3.28	3.25	3.21	3.16	3.11	3.05	2.99	2.93
$/1st yr kWh	$0.252	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.26	$0.26	$0.27

Lighting and Appliances

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	6,059,971	12,167,301	18,395,457	24,725,484	31,125,621	37,564,135	44,012,550	50,446,436	56,845,405	63,194,826
Net Peak Demand Savings - kW	585	1,171	1,769	2,378	2,993	3,614	4,236	4,858	5,477	6,092
New Net Energy Savings - kWh	6,059,971	6,107,330	6,228,156	6,330,027	6,400,137	6,438,515	6,448,414	6,433,886	6,398,969	6,349,422
New Net Peak Demand Savings - kW	585	586	598	608	616	620	622	622	619	615
Program Costs - Real										
Administration	$425,000	$421,610	$425,608	$430,112	$433,905	$436,719	$438,546	$439,468	$439,596	$439,143
Marketing	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000
Incentives	$679,563	$672,335	$680,860	$690,460	$698,549	$704,548	$708,442	$710,407	$710,681	$709,715
Total	$1,329,563	$1,318,945	$1,331,468	$1,345,572	$1,357,454	$1,366,267	$1,371,988	$1,374,875	$1,375,278	$1,373,858
PV Avoided Costs	$2,893,596	$2,670,786	$2,507,050	$2,352,842	$2,201,523	$2,052,919	$1,908,184	$1,768,582	$1,635,151	$1,509,305
PV Annual Program Costs	$1,329,563	$1,228,313	$1,154,769	$1,086,809	$1,021,065	$957,075	$895,041	$835,291	$778,121	$723,904
PV Participant Costs	$716,856	$671,155	$632,479	$594,621	$557,023	$519,947	$483,781	$448,876	$415,502	$383,976
TRC	1.41	1.41	1.40	1.40	1.40	1.39	1.38	1.38	1.37	1.36
$/1st yr kWh	$0.22	$0.22	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.22

Residential Advanced Efficiency

New Construction

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	1,085,764	2,314,971	3,745,989	5,376,027	7,192,844	9,183,137	11,334,545	13,636,091	16,078,152	18,652,301
Net Peak Demand Savings - kW	566	1,156	1,815	2,548	3,352	4,222	5,156	6,148	7,196	8,297
New Net Energy Savings - kWh	1,085,764	1,229,206	1,431,018	1,630,038	1,816,817	1,990,293	2,151,408	2,301,546	2,442,061	2,574,149
New Net Peak Demand Savings - kW	566	589	659	733	804	871	933	992	1,048	1,101
Program Costs - Real										
Administration	$300,000	$333,213	$375,445	$416,504	$454,957	$490,780	$524,258	$555,723	$585,475	$613,765
Marketing	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Incentives	$176,856	$202,963	$236,158	$268,432	$298,657	$326,815	$353,130	$377,862	$401,248	$423,485
Total	$576,856	$636,176	$711,602	$784,936	$853,615	$917,595	$977,388	$1,033,585	$1,086,723	$1,137,250
PV Avoided Costs	$915,347	$908,978	$958,225	$1,001,038	$1,029,796	$1,044,971	$1,048,622	$1,042,920	$1,029,790	$1,010,845
PV Annual Program Costs	$576,856	$592,460	$617,165	$633,987	$642,082	$642,779	$637,617	$627,944	$614,859	$599,232
PV Participant Costs	$90,081	$96,794	$105,157	$111,499	$115,670	$117,990	$118,822	$118,482	$117,232	$115,278
TRC	1.37	1.32	1.33	1.34	1.36	1.37	1.39	1.40	1.41	1.41
$/1st yr kWh	$0.53	$0.52	$0.50	$0.48	$0.47	$0.46	$0.45	$0.45	$0.45	$0.44

Total Residential

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	12,395,622	24,956,560	37,771,478	50,786,260	63,933,365	77,151,331	90,388,552	103,603,282	116,762,604	129,843,174
Net Peak Demand Savings - kW	5,524	11,020	16,514	21,988	27,418	32,787	38,083	43,296	48,420	53,453
New Net Energy Savings - kWh	12,395,622	12,560,937	12,814,918	13,014,782	13,147,105	13,217,967	13,237,220	13,214,730	13,159,323	13,080,570
New Net Peak Demand Savings - kW	5,524	5,496	5,494	5,473	5,430	5,370	5,296	5,213	5,124	5,032
Program Costs - Real										
Administration	$1,100,000	$1,122,652	$1,161,786	$1,200,342	$1,235,694	$1,267,577	$1,296,298	$1,322,293	$1,345,992	$1,367,870
Marketing	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000
Incentives	$1,577,565	$1,578,057	$1,601,583	$1,625,490	$1,646,124	$1,662,966	$1,676,293	$1,686,601	$1,694,411	$1,700,404
Total	$3,227,565	$3,250,709	$3,313,369	$3,375,831	$3,431,819	$3,480,543	$3,522,591	$3,558,894	$3,590,402	$3,618,274
PV Avoided Costs	$10,357,959	$9,537,976	$8,861,677	$8,223,666	$7,613,055	$7,031,380	$6,481,550	$5,965,641	$5,484,578	$5,038,951
PV Annual Program Costs	$3,227,565	$3,027,333	$2,873,651	$2,726,635	$2,581,385	$2,438,134	$2,298,025	$2,162,170	$2,031,421	$1,906,515
PV Participant Costs	$1,468,755	$1,368,680	$1,282,738	$1,200,584	$1,121,107	$1,044,524	$971,245	$901,614	$835,856	$774,209
TRC	2.21	2.17	2.13	2.09	2.06	2.02	1.98	1.95	1.91	1.88
$/1st yr kWh	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.27	$0.27	$0.27	$0.28

Nonresidential Advanced Efficiency

Commercial Existing

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	9,708,092	18,984,417	28,026,618	36,895,325	45,516,497	53,854,822	61,898,707	69,649,753	77,115,995	84,307,904
Net Peak Demand Savings - kW	1,275	2,487	3,668	4,827	5,960	7,062	8,133	9,172	10,181	11,160
New Net Energy Savings - kWh	9,708,092	9,276,325	9,042,201	8,868,707	8,621,172	8,338,325	8,043,885	7,751,046	7,466,242	7,191,909
New Net Peak Demand Savings - kW	1,275	1,212	1,180	1,160	1,133	1,102	1,071	1,039	1,009	.979
Program Costs - Real										
Administration	$425,000	$402,016	$389,008	$381,425	$374,636	$368,457	$362,745	$357,394	$352,323	$347,470
Marketing	$275,000	$330,000	$396,000	$435,600	$435,600	$435,600	$435,600	$435,600	$435,600	$435,600
Incentives	$958,166	$889,077	$849,975	$827,179	$806,772	$788,196	$771,027	$754,943	$739,698	$725,109
Total	$1,658,166	$1,621,093	$1,634,983	$1,644,204	$1,617,009	$1,592,253	$1,569,372	$1,547,937	$1,527,621	$1,508,179
PV Avoided Costs	$6,797,602	$5,831,430	$5,093,266	$4,489,969	$3,949,424	$3,473,304	$3,057,972	$2,697,233	$2,384,102	$2,111,814
PV Annual Program Costs	$1,658,166	$1,509,698	$1,418,004	$1,328,012	$1,216,300	$1,115,379	$1,023,808	$940,434	$864,316	$794,679
PV Participant Costs	$1,443,724	$1,252,020	$1,117,263	$1,013,738	$921,168	$838,020	$763,060	$695,279	$633,841	$578,047
TRC	2.19	2.11	2.01	1.92	1.85	1.78	1.71	1.65	1.59	1.54
$/1st yr kWh	$0.171	$0.175	$0.181	$0.185	$0.188	$0.191	$0.195	$0.200	$0.205	$0.210

Commercial New Construction

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	2,831,386	5,656,161	8,593,110	11,627,226	14,729,224	17,872,269	21,034,991	24,201,450	27,360,334	30,504,018
Net Peak Demand Savings - kW	462	904	1,351	1,804	2,261	2,718	3,175	3,629	4,080	4,526
New Net Energy Savings - kWh	2,831,386	2,824,775	2,936,949	3,034,116	3,101,998	3,143,045	3,162,722	3,166,459	3,158,883	3,143,685
New Net Peak Demand Savings - kW	462	442	447	453	457	458	457	454	451	446
Program Costs - Real										
Administration	$200,000	$188,250	$188,460	$190,535	$192,790	$194,818	$196,532	$197,940	$199,078	$199,987
Marketing	$200,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000
Incentives	$298,981	$275,560	$275,979	$280,115	$284,609	$288,652	$292,069	$294,876	$297,143	$298,954
Total	$698,981	$683,809	$684,439	$690,650	$697,399	$703,470	$708,602	$712,816	$716,221	$718,941
PV Avoided Costs	$1,591,722	$1,415,688	$1,353,016	$1,300,830	$1,245,678	$1,186,526	$1,124,707	$1,061,800	$999,132	$937,702
PV Annual Program Costs	$698,981	$636,821	$593,606	$557,833	$524,578	$492,784	$462,269	$433,064	$405,232	$378,820
PV Participant Costs	$219,285	$198,466	$192,393	$187,275	$181,346	$174,514	$167,006	$159,080	$150,956	$142,806
TRC	1.73	1.69	1.72	1.75	1.76	1.78	1.79	1.79	1.80	1.80
$/1st yr kWh	$0.247	$0.242	$0.233	$0.228	$0.225	$0.224	$0.224	$0.225	$0.227	$0.229

Nonresidential Advanced Efficiency

Industrial

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	3,268,935	6,226,894	8,973,082	11,548,461	13,947,826	16,174,887	18,238,890	20,152,152	21,928,327	23,581,226
Net Peak Demand Savings - kW	476	908	1,310	1,690	2,046	2,378	2,689	2,979	3,251	3,506
New Net Energy Savings - kWh	3,268,935	2,957,959	2,746,187	2,575,379	2,399,365	2,227,061	2,064,002	1,913,262	1,776,175	1,652,899
New Net Peak Demand Savings - kW	476	432	403	380	356	333	311	290	272	255
Program Costs - Real										
Administration	$125,000	$116,205	$110,271	$105,935	$102,034	$98,519	$95,348	$92,478	$89,875	$87,503
Marketing	$100,000	$120,000	$144,000	$158,400	$158,400	$158,400	$158,400	$158,400	$158,400	$158,400
Incentives	$334,395	$303,023	$281,859	$266,392	$252,478	$239,942	$228,629	$218,394	$209,107	$200,646
Total	$559,395	$539,228	$536,130	$530,727	$512,911	$496,861	$482,376	$469,273	$457,381	$446,549
PV Avoided Costs	$2,466,685	$2,030,675	$1,709,049	$1,455,684	$1,240,024	$1,057,560	$903,851	$774,710	$666,323	$575,314
PV Annual Program Costs	$559,395	$502,174	$464,980	$428,664	$385,808	$348,053	$314,687	$285,102	$258,783	$235,292
PV Participant Costs	$510,157	$430,130	$372,207	$327,246	$288,521	$255,085	$226,138	$200,999	$179,093	$159,936
TRC	2.31	2.18	2.04	1.93	1.84	1.75	1.67	1.59	1.52	1.46
$/1st yr kWh	$0.171	$0.182	$0.195	$0.206	$0.214	$0.223	$0.234	$0.245	$0.258	$0.270

Total Nonresidential

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	15,808,413	30,867,473	45,592,810	60,071,012	74,193,547	87,901,978	101,172,588	114,003,356	126,404,656	138,393,148
Net Peak Demand Savings - kW	2,213	4,299	6,329	8,322	10,267	12,159	13,997	15,781	17,512	19,192
New Net Energy Savings - kWh	15,808,413	15,059,059	14,725,337	14,478,202	14,122,535	13,708,431	13,270,610	12,830,768	12,401,300	11,988,493
New Net Peak Demand Savings - kW	2,213	2,086	2,030	1,992	1,945	1,892	1,838	1,784	1,731	1,681
Program Costs - Real										
Administration	$750,000	$706,470	$687,739	$677,895	$669,460	$661,794	$654,625	$647,813	$641,276	$634,959
Marketing	$575,000	$670,000	$760,000	$814,000	$814,000	$814,000	$814,000	$814,000	$814,000	$814,000
Incentives	$1,591,543	$1,467,660	$1,407,812	$1,373,686	$1,343,859	$1,316,790	$1,291,725	$1,268,213	$1,245,948	$1,224,710
Total	$2,916,543	$2,844,130	$2,855,552	$2,865,581	$2,827,319	$2,792,584	$2,760,350	$2,730,026	$2,701,224	$2,673,669
PV Avoided Costs	$10,856,010	$9,277,793	$8,155,330	$7,246,483	$6,435,127	$5,717,390	$5,086,530	$4,533,743	$4,049,557	$3,624,830
PV Annual Program Costs	$2,916,543	$2,648,692	$2,476,590	$2,314,510	$2,126,685	$1,956,216	$1,800,764	$1,658,599	$1,528,331	$1,408,791
PV Participant Costs	$2,173,166	$1,880,617	$1,681,863	$1,528,259	$1,391,034	$1,267,619	$1,156,204	$1,055,358	$963,890	$880,789
TRC	2.13	2.05	1.96	1.89	1.83	1.77	1.72	1.67	1.62	1.58
$/1st yr kWh	$0.184	$0.189	$0.194	$0.198	$0.200	$0.204	$0.208	$0.213	$0.218	$0.223

Residential Measures Included in the Program Scenarios

Program Component	Measures
HVAC and Water Heating	Attic Venting Basic HVAC Diagnostic Testing and Repair Ceiling Insulation R-11 to R-30 Duct Diagnostics and Repair ENERGY STAR Room Air Conditioner HE Water Heater Heat Pump Space Heater High Performance Windows Low Flow Showerhead Pipe Wrap Programmable Thermostat Water Heater Blanket Whole House Fans Window Film
Lighting and Appliances	ENERGY STAR Clothes Washer CFL, 2.5 hr/day CFL, 6.0 hr/day ROB 2L4'T8, 1EB Fluorescent Torchiere HE Refrigerator - ENERGY STAR HE Freezer ENERGY STAR Dishwasher High Efficiency Pool Pump and Motor
New Construction	Attic Venting Basic HVAC Diagnostic Testing and Repair Ceiling Insulation R-30 to R-38 Duct Diagnostics and Repair ENERGY STAR Room Air Conditioner HE Water Heater Pipe Wrap Programmable Thermostat ROB 2L4'T8, 1EB Wall Insulation R-13 to R-19 Water Heater Blanket Whole House Fans Window Film

Commercial Measures Included in the Program Scenarios

Program Component	Measures	Program Component	Measures
Retrofit	Air Handler Optimization, 15 HP	New Construction	10% More Efficient Design (Lighting)
	Anti-sweat (humidistat) controls		20% More Efficient Design (Lighting)
	Centrifugal Chiller, 0.51 kW/ton, 500 tons		Air Handler Optimization, 15 HP
	CFL Screw-in, Modular 18W		Air Handler Optimization, 40 HP
	Chiller Tune-up/Diagnostics		Anti-sweat (humidistat) controls
	Cool Roof - DX		Centrifugal Chiller, 0.51 kW/ton, 500 tons
	Demand Defrost Electric		Chiller Tune-up/Diagnostics
	Demand Hot Gas Defrost		Cool Roof - DX
	DX Packaged System, EER=10.9, 10 tons		Demand Defrost Electric
	Efficient compressor motor		Demand Hot Gas Defrost
	EMS - Chiller		DX Packaged System, EER=10.9, 10 tons
	EMS Optimization		Efficient compressor motor
	Fan Motor, 15hp, 1800rpm, 92.4%		EMS - Chiller
	Fan Motor, 40hp, 1800rpm, 94.1%		EMS Optimization
	Fan Motor, 5hp, 1800rpm, 89.5%		Fan Motor, 15hp, 1800rpm, 92.4%
	Floating head pressure controls		Fan Motor, 40hp, 1800rpm, 94.1%
	High Pressure Sodium 250W Lamp		Fan Motor, 5hp, 1800rpm, 89.5%
	High-efficiency fan motors		Floating head pressure controls
	Lighting Control Tune-up		High-efficiency fan motors
	Occupancy Sensor, 4L4' Fluorescent Fixtures		Optimize Controls
	Occupancy Sensor, 4L8' Fluorescent Fixtures		Programmable Thermostat - DX
	Occupancy Sensor, 8L4' Fluorescent Fixtures		Strip curtains for walk-ins
	Optimize Controls		Variable Speed Drive Control, 15 HP
	Outdoor Lighting Controls (Photocell/Timeclock)		Variable Speed Drive Control, 40 HP
	Programmable Thermostat - DX		Variable Speed Drive Control, 5 HP
	RET 1L4' Premium T8, 1EB, Reflector OEM		Window Film (Standard)
	RET 1L8'T12, 60W, 1EB, Reflector		Window Film (Standard)
	RET 2L4' Premium T8, 1EB		
	RET 2L4' Premium T8, 1EB, Reflector		
	RET 4L4' Premium T8, 1EB		
	ROB 2L4' Premium T8, 1EB		
	ROB 4L4' Premium T8, 1EB		
	Strip curtains for walk-ins		
	Variable Speed Drive Control, 15 HP		
	Variable Speed Drive Control, 40 HP		
	Variable Speed Drive Control, 5 HP		
	Window Film (Standard)		

Industrial Measures Included in the Program Scenarios

Add 201-500 HP VSD
Add 21-50 HP VSD
CAS Level 1
CAS Level 2
Centrifugal Chiller, 0.51 kW/ton, 500 tons
CFL Hardwired, Modular 36W
DX Packaged System, EER=10.9, 10 tons
Motor Practices Level 1
Motor Practices Level 1
Occupancy Sensor, 4L8' Fluorescent Fixtures
Process Level 1
Process Level 2
Programmable Thermostat - DX
Replace 201-500 HP Motor
RET 2L4' Premium T8, 1EB
Window Film (Standard)
Window Film (Standard)

Residential Advanced Efficiency

HVAC and Water Heating

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	5,249,887	10,474,288	15,630,032	20,684,749	25,614,900	30,404,059	35,041,457	39,520,755	43,839,048	47,996,047
Net Peak Demand Savings - kW	4,373	8,693	12,930	17,062	21,073	24,951	28,691	32,290	35,747	39,063
New Net Energy Savings - kWh	5,249,887	5,224,401	5,155,744	5,054,717	4,930,151	4,789,160	4,637,398	4,479,298	4,318,292	4,156,999
New Net Peak Demand Savings - kW	4,373	4,320	4,237	4,132	4,011	3,879	3,740	3,599	3,457	3,316
Program Costs - Real										
Administration	$375,000	$367,829	$360,734	$353,726	$346,831	$340,078	$333,494	$327,102	$320,920	$314,962
Marketing	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000
Incentives	$721,146	$702,759	$684,565	$666,597	$648,919	$631,603	$614,721	$598,332	$582,482	$567,204
Total	$1,321,146	$1,295,588	$1,270,299	$1,245,323	$1,220,750	$1,196,681	$1,173,215	$1,150,434	$1,128,402	$1,107,166
PV Avoided Costs	$6,549,016	$5,958,212	$5,396,402	$4,869,786	$4,381,737	$3,933,490	$3,524,744	$3,154,139	$2,819,637	$2,518,801
PV Annual Program Costs	$1,321,146	$1,206,560	$1,101,717	$1,005,839	$918,238	$838,280	$765,368	$698,934	$638,441	$583,380
PV Participant Costs	$661,818	$600,731	$545,102	$494,463	$448,414	$406,587	$368,642	$334,256	$303,123	$274,955
TRC	3.30	3.30	3.28	3.25	3.21	3.16	3.11	3.05	2.99	2.93
$/1st yr kWh	$0.252	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.26	$0.26	$0.27

Lighting and Appliances

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	6,059,971	12,167,301	18,395,457	24,725,484	31,125,621	37,564,135	44,012,550	50,446,436	56,845,405	63,194,826
Net Peak Demand Savings - kW	585	1,171	1,769	2,378	2,993	3,614	4,236	4,858	5,477	6,092
New Net Energy Savings - kWh	6,059,971	6,107,330	6,228,156	6,330,027	6,400,137	6,438,515	6,448,414	6,433,886	6,398,969	6,349,422
New Net Peak Demand Savings - kW	585	586	598	608	616	620	622	622	619	615
Program Costs - Real										
Administration	$425,000	$421,610	$425,608	$430,112	$433,905	$436,719	$438,546	$439,468	$439,596	$439,143
Marketing	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000	$225,000
Incentives	$679,563	$672,335	$680,860	$690,460	$698,549	$704,548	$708,442	$710,407	$710,681	$709,715
Total	$1,329,563	$1,318,945	$1,331,468	$1,345,572	$1,357,454	$1,366,267	$1,371,988	$1,374,875	$1,375,278	$1,373,858
PV Avoided Costs	$2,893,596	$2,670,786	$2,507,050	$2,352,842	$2,201,523	$2,052,919	$1,908,184	$1,768,582	$1,635,151	$1,509,305
PV Annual Program Costs	$1,329,563	$1,228,313	$1,154,769	$1,086,809	$1,021,065	$957,075	$895,041	$835,291	$778,121	$723,904
PV Participant Costs	$716,856	$671,155	$632,479	$594,621	$557,023	$519,947	$483,781	$448,876	$415,502	$383,976
TRC	1.41	1.41	1.40	1.40	1.40	1.39	1.38	1.38	1.37	1.36
$/1st yr kWh	$0.22	$0.22	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.21	$0.22

Residential Advanced Efficiency

New Construction

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	1,085,764	2,314,971	3,745,989	5,376,027	7,192,844	9,183,137	11,334,545	13,636,091	16,078,152	18,652,301
Net Peak Demand Savings - kW	566	1,156	1,815	2,548	3,352	4,222	5,156	6,148	7,196	8,297
New Net Energy Savings - kWh	1,085,764	1,229,206	1,431,018	1,630,038	1,816,817	1,990,293	2,151,408	2,301,546	2,442,061	2,574,149
New Net Peak Demand Savings - kW	566	589	659	733	804	871	933	992	1,048	1,101
Program Costs - Real										
Administration	$300,000	$333,213	$375,445	$416,504	$454,957	$490,780	$524,258	$555,723	$585,475	$613,765
Marketing	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Incentives	$176,856	$202,963	$236,158	$268,432	$298,657	$326,815	$353,130	$377,862	$401,248	$423,485
Total	$576,856	$636,176	$711,602	$784,936	$853,615	$917,595	$977,388	$1,033,585	$1,086,723	$1,137,250
PV Avoided Costs	$915,347	$908,978	$958,225	$1,001,038	$1,029,796	$1,044,971	$1,048,622	$1,042,920	$1,029,790	$1,010,845
PV Annual Program Costs	$576,856	$592,460	$617,165	$633,987	$642,082	$642,779	$637,617	$627,944	$614,859	$599,232
PV Participant Costs	$90,081	$96,794	$105,157	$111,499	$115,670	$117,990	$118,822	$118,482	$117,232	$115,278
TRC	1.37	1.32	1.33	1.34	1.36	1.37	1.39	1.40	1.41	1.41
$/1st yr kWh	$0.53	$0.52	$0.50	$0.48	$0.47	$0.46	$0.45	$0.45	$0.45	$0.44

Total Residential

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	12,395,622	24,956,560	37,771,478	50,786,260	63,933,365	77,151,331	90,388,552	103,603,282	116,762,604	129,843,174
Net Peak Demand Savings - kW	5,524	11,020	16,514	21,988	27,418	32,787	38,083	43,296	48,420	53,453
New Net Energy Savings - kWh	12,395,622	12,560,937	12,814,918	13,014,782	13,147,105	13,217,967	13,237,220	13,214,730	13,159,323	13,080,570
New Net Peak Demand Savings - kW	5,524	5,496	5,494	5,473	5,430	5,370	5,296	5,213	5,124	5,032
Program Costs - Real										
Administration	$1,100,000	$1,122,652	$1,161,786	$1,200,342	$1,235,694	$1,267,577	$1,296,298	$1,322,293	$1,345,992	$1,367,870
Marketing	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000	$550,000
Incentives	$1,577,565	$1,578,057	$1,601,583	$1,625,490	$1,646,124	$1,662,966	$1,676,293	$1,686,601	$1,694,411	$1,700,404
Total	$3,227,565	$3,250,709	$3,313,369	$3,375,831	$3,431,819	$3,480,543	$3,522,591	$3,558,894	$3,590,402	$3,618,274
PV Avoided Costs	$10,357,959	$9,537,976	$8,861,677	$8,223,666	$7,613,055	$7,031,380	$6,481,550	$5,965,641	$5,484,578	$5,038,951
PV Annual Program Costs	$3,227,565	$3,027,333	$2,873,651	$2,726,635	$2,581,385	$2,438,134	$2,298,025	$2,162,170	$2,031,421	$1,906,515
PV Participant Costs	$1,468,755	$1,368,680	$1,282,738	$1,200,584	$1,121,107	$1,044,524	$971,245	$901,614	$835,856	$774,209
TRC	2.21	2.17	2.13	2.09	2.06	2.02	1.98	1.95	1.91	1.88
$/1st yr kWh	$0.26	$0.26	$0.26	$0.26	$0.26	$0.26	$0.27	$0.27	$0.27	$0.28

Nonresidential Advanced Efficiency

Commercial Existing

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	9,708,092	18,984,417	28,026,618	36,895,325	45,516,497	53,854,822	61,898,707	69,649,753	77,115,995	84,307,904
Net Peak Demand Savings - kW	1,275	2,487	3,668	4,827	5,960	7,062	8,133	9,172	10,181	11,160
New Net Energy Savings - kWh	9,708,092	9,276,325	9,042,201	8,868,707	8,621,172	8,338,325	8,043,885	7,751,046	7,466,242	7,191,909
New Net Peak Demand Savings - kW	1,275	1,212	1,180	1,160	1,133	1,102	1,071	1,039	1,009	979
Program Costs - Real										
Administration	$425,000	$402,016	$389,008	$381,425	$374,636	$368,457	$362,745	$357,394	$352,323	$347,470
Marketing	$275,000	$330,000	$396,000	$435,600	$435,600	$435,600	$435,600	$435,600	$435,600	$435,600
Incentives	$958,166	$889,077	$849,975	$827,179	$806,772	$788,196	$771,027	$754,943	$739,698	$725,109
Total	$1,658,166	$1,621,093	$1,634,983	$1,644,204	$1,617,009	$1,592,253	$1,569,372	$1,547,937	$1,527,621	$1,508,179
PV Avoided Costs	$6,797,602	$5,831,430	$5,093,266	$4,489,969	$3,949,424	$3,473,304	$3,057,972	$2,697,233	$2,384,102	$2,111,814
PV Annual Program Costs	$1,658,166	$1,509,698	$1,418,004	$1,328,012	$1,216,300	$1,115,379	$1,023,808	$940,434	$864,316	$794,679
PV Participant Costs	$1,443,724	$1,252,020	$1,117,263	$1,013,738	$921,168	$838,020	$763,060	$695,279	$633,841	$578,047
TRC	2.19	2.11	2.01	1.92	1.85	1.78	1.71	1.65	1.59	1.54
$/1st yr kWh	$0.171	$0.175	$0.181	$0.185	$0.188	$0.191	$0.195	$0.200	$0.205	$0.210

Commercial New Construction

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	2,831,386	5,656,161	8,593,110	11,627,226	14,729,224	17,872,269	21,034,991	24,201,450	27,360,334	30,504,018
Net Peak Demand Savings - kW	462	904	1,351	1,804	2,261	2,718	3,175	3,629	4,080	4,526
New Net Energy Savings - kWh	2,831,386	2,824,775	2,936,949	3,034,116	3,101,998	3,143,045	3,162,722	3,166,459	3,158,883	3,143,685
New Net Peak Demand Savings - kW	462	442	447	453	457	458	457	454	451	446
Program Costs - Real										
Administration	$200,000	$188,250	$188,460	$190,535	$192,790	$194,818	$196,532	$197,940	$199,078	$199,987
Marketing	$200,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000	$220,000
Incentives	$298,981	$275,560	$275,979	$280,115	$284,609	$288,652	$292,069	$294,876	$297,143	$298,954
Total	$698,981	$683,809	$684,439	$690,650	$697,399	$703,470	$708,602	$712,816	$716,221	$718,941
PV Avoided Costs	$1,591,722	$1,415,688	$1,353,016	$1,300,830	$1,245,678	$1,186,526	$1,124,707	$1,061,800	$999,132	$937,702
PV Annual Program Costs	$698,981	$636,821	$593,606	$557,833	$524,578	$492,784	$462,269	$433,064	$405,232	$378,820
PV Participant Costs	$219,285	$198,466	$192,393	$187,275	$181,346	$174,514	$167,006	$159,080	$150,956	$142,806
TRC	1.73	1.69	1.72	1.75	1.76	1.78	1.79	1.79	1.80	1.80
$/1st yr kWh	$0.247	$0.242	$0.233	$0.228	$0.225	$0.224	$0.224	$0.225	$0.227	$0.229

Nonresidential Advanced Efficiency

Industrial

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	3,268,935	6,226,894	8,973,082	11,548,461	13,947,826	16,174,887	18,238,890	20,152,152	21,928,327	23,581,226
Net Peak Demand Savings - kW	476	908	1,310	1,690	2,046	2,378	2,689	2,979	3,251	3,506
New Net Energy Savings - kWh	3,268,935	2,957,959	2,746,187	2,575,379	2,399,365	2,227,061	2,064,002	1,913,262	1,776,175	1,652,899
New Net Peak Demand Savings - kW	476	432	403	380	356	333	311	290	272	255
Program Costs - Real										
Administration	$125,000	$116,205	$110,271	$105,935	$102,034	$98,519	$95,348	$92,478	$89,875	$87,503
Marketing	$100,000	$120,000	$144,000	$158,400	$158,400	$158,400	$158,400	$158,400	$158,400	$158,400
Incentives	$334,395	$303,023	$281,859	$266,392	$252,478	$239,942	$228,629	$218,394	$209,107	$200,646
Total	$559,395	$539,228	$536,130	$530,727	$512,911	$496,861	$482,376	$469,273	$457,381	$446,549
PV Avoided Costs	$2,466,685	$2,030,675	$1,709,049	$1,455,684	$1,240,024	$1,057,560	$903,851	$774,710	$666,323	$575,314
PV Annual Program Costs	$559,395	$502,174	$464,980	$428,664	$385,808	$348,053	$314,687	$285,102	$258,783	$235,292
PV Participant Costs	$510,157	$430,130	$372,207	$327,246	$288,521	$255,085	$226,138	$200,999	$179,093	$159,936
TRC	2.31	2.18	2.04	1.93	1.84	1.75	1.67	1.59	1.52	1.46
$/1st yr kWh	$0.171	$0.182	$0.195	$0.206	$0.214	$0.223	$0.234	$0.245	$0.258	$0.270

Total Nonresidential

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Net Energy Savings - kWh	15,808,413	30,867,473	45,592,810	60,071,012	74,193,547	87,901,978	101,172,588	114,003,356	126,404,656	138,393,148
Net Peak Demand Savings - kW	2,213	4,299	6,329	8,322	10,267	12,159	13,997	15,781	17,512	19,192
New Net Energy Savings - kWh	15,808,413	15,059,059	14,725,337	14,478,202	14,122,535	13,708,431	13,270,610	12,830,768	12,401,300	11,988,493
New Net Peak Demand Savings - kW	2,213	2,086	2,030	1,992	1,945	1,892	1,838	1,784	1,731	1,681
Program Costs - Real										
Administration	$750,000	$706,470	$687,739	$677,895	$669,460	$661,794	$654,625	$647,813	$641,276	$634,959
Marketing	$575,000	$670,000	$760,000	$814,000	$814,000	$814,000	$814,000	$814,000	$814,000	$814,000
Incentives	$1,591,543	$1,467,660	$1,407,812	$1,373,686	$1,343,859	$1,316,790	$1,291,725	$1,268,213	$1,245,948	$1,224,710
Total	$2,916,543	$2,844,130	$2,855,552	$2,865,581	$2,827,319	$2,792,584	$2,760,350	$2,730,026	$2,701,224	$2,673,669
PV Avoided Costs	$10,856,010	$9,277,793	$8,155,330	$7,246,483	$6,435,127	$5,717,390	$5,086,530	$4,533,743	$4,049,557	$3,624,830
PV Annual Program Costs	$2,916,543	$2,648,692	$2,476,590	$2,314,510	$2,126,685	$1,956,216	$1,800,764	$1,658,599	$1,528,331	$1,408,791
PV Participant Costs	$2,173,166	$1,880,617	$1,681,863	$1,528,259	$1,391,034	$1,267,619	$1,156,204	$1,055,358	$963,890	$880,789
TRC	2.13	2.05	1.96	1.89	1.83	1.77	1.72	1.67	1.62	1.58
$/1st yr kWh	$0.184	$0.189	$0.194	$0.198	$0.200	$0.204	$0.208	$0.213	$0.218	$0.223

Residential Measures Included in the Program Scenarios

Program Component	Measures
HVAC and Water Heating	Attic Venting Basic HVAC Diagnostic Testing and Repair Ceiling Insulation R-11 to R-30 Duct Diagnostics and Repair ENERGY STAR Room Air Conditioner HE Water Heater Heat Pump Space Heater High Performance Windows Low Flow Showerhead Pipe Wrap Programmable Thermostat Water Heater Blanket Whole House Fans Window Film
Lighting and Appliances	ENERGY STAR Clothes Washer CFL, 2.5 hr/day CFL, 6.0 hr/day ROB 2L4'T8, 1EB Fluorescent Torchiere HE Refrigerator - ENERGY STAR HE Freezer ENERGY STAR Dishwasher High Efficiency Pool Pump and Motor
New Construction	Attic Venting Basic HVAC Diagnostic Testing and Repair Ceiling Insulation R-30 to R-38 Duct Diagnostics and Repair ENERGY STAR Room Air Conditioner HE Water Heater Pipe Wrap Programmable Thermostat ROB 2L4'T8, 1EB Wall Insulation R-13 to R-19 Water Heater Blanket Whole House Fans Window Film

Commercial Measures Included in the Program Scenarios

Program Component	Measures	Program Component	Measures
Retrofit	Air Handler Optimization, 15 HP	New Construction	10% More Efficient Design (Lighting)
	Anti-sweat (humidistat) controls		20% More Efficient Design (Lighting)
	Centrifugal Chiller, 0.51 kW/ton, 500 tons		Air Handler Optimization, 15 HP
	CFL Screw-in, Modular 18W		Air Handler Optimization, 40 HP
	Chiller Tune-up/Diagnostics		Anti-sweat (humidistat) controls
	Cool Roof - DX		Centrifugal Chiller, 0.51 kW/ton, 500 tons
	Demand Defrost Electric		Chiller Tune-up/Diagnostics
	Demand Hot Gas Defrost		Cool Roof - DX
	DX Packaged System, EER=10.9, 10 tons		Demand Defrost Electric
	Efficient compressor motor		Demand Hot Gas Defrost
	EMS - Chiller		DX Packaged System, EER=10.9, 10 tons
	EMS Optimization		Efficient compressor motor
	Fan Motor, 15hp, 1800rpm, 92.4%		EMS - Chiller
	Fan Motor, 40hp, 1800rpm, 94.1%		EMS Optimization
	Fan Motor, 5hp, 1800rpm, 89.5%		Fan Motor, 15hp, 1800rpm, 92.4%
	Floating head pressure controls		Fan Motor, 40hp, 1800rpm, 94.1%
	High Pressure Sodium 250W Lamp		Fan Motor, 5hp, 1800rpm, 89.5%
	High-efficiency fan motors		Floating head pressure controls
	Lighting Control Tune-up		High-efficiency fan motors
	Occupancy Sensor, 4L4' Fluorescent Fixtures		Optimize Controls
	Occupancy Sensor, 4L8' Fluorescent Fixtures		Programmable Thermostat - DX
	Occupancy Sensor, 8L4' Fluorescent Fixtures		Strip curtains for walk-ins
	Optimize Controls		Variable Speed Drive Control, 15 HP
	Outdoor Lighting Controls (Photocell/Timeclock)		Variable Speed Drive Control, 40 HP
	Programmable Thermostat - DX		Variable Speed Drive Control, 5 HP
	RET 1L4' Premium T8, 1EB, Reflector OEM		Window Film (Standard)
	RET 1L8'T12, 60W, 1EB, Reflector		Window Film (Standard)
	RET 2L4' Premium T8, 1EB		
	RET 2L4' Premium T8, 1EB, Reflector		
	RET 4L4' Premium T8, 1EB		
	ROB 2L4' Premium T8, 1EB		
	ROB 4L4' Premium T8, 1EB		
	Strip curtains for walk-ins		
	Variable Speed Drive Control, 15 HP		
	Variable Speed Drive Control, 40 HP		
	Variable Speed Drive Control, 5 HP		
	Window Film (Standard)		

Industrial Measures Included in the Program Scenarios

Add 201-500 HP VSD
Add 21-50 HP VSD
CAS Level 1
CAS Level 2
Centrifugal Chiller, 0.51 kW/ton, 500 tons
CFL Hardwired, Modular 36W
DX Packaged System, EER=10.9, 10 tons
Motor Practices Level 1
Motor Practices Level 1
Occupancy Sensor, 4L8' Fluorescent Fixtures
Process Level 1
Process Level 2
Programmable Thermostat - DX
Replace 201-500 HP Motor
RET 2L4' Premium T8, 1EB
Window Film (Standard)
Window Film (Standard)