

Exhibit No.:

Issues: DSM/Low Income
Assistance

Witness: Matthew E. Daunis

Sponsoring Party: Aquila Networks-MPS
And L&P

Case No.: ER-2005-0436

FILED²

FEB 24 2006

Missouri Public
Service Commission

Before the Public Service Commission
of the State of Missouri

Surrebuttal Testimony

of

Matthew E. Daunis

Exhibit No. 29
Case No(s). ER-2005-0436
Date 1-02-06 Rptr AF

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SURREBUTTAL TESTIMONY OF MATTHEW E. DAUNIS
ON BEHALF OF AQUILA, INC.
D/B/A AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P
CASE NO. ER-2005-0436**

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**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI
SURREBUTTAL TESTIMONY OF MATTHEW E. DAUNIS
ON BEHALF OF AQUILA, INC.
D/B/A AQUILA NETWORKS-MPS AND AQUILA NETWORKS-L&P
CASES NO. ER-2005-0436**

1 Q. Please state your name and business address.

2 A. My name is Matthew E. Daunis. My business address is 10700 East 350 Highway,
3 Kansas City, MO 64138.

4 Q. By whom are you presently employed and in what capacity?

5 A. I am employed as Manager of Energy Efficiency Programs for Aquila, Inc. I am testifying
6 on behalf of Aquila, Inc. d/b/a Aquila Networks ("Aquila").

7 Q. What is your educational background?

8 A. I received a Bachelor's degree in Mechanical Engineering from the University of Maine
9 in 1976. I received a Masters degree in Business Administration from the University of
10 Nebraska in 1985.

11 Q. Please describe your professional experience.

12 A. I have been employed in the utility industry in positions requiring knowledge of Demand
13 Side Management, customer service, and marketing for about 18 years. Prior to that, I
14 was employed by a major HVAC manufacturer for ten years in various marketing and
15 sales positions.

16 **EXECUTIVE SUMMARY**

17 Q. What is the purpose of your surrebuttal testimony?

1 A. The purpose of my surrebuttal testimony is to respond to the rebuttal testimony of Lena
2 M. Mantle of the Missouri Public Service Commission ("MPSC") Staff with regard to the
3 MPSC Staff's positions on Weatherization Assistance and other energy efficiency
4 programs.

5 Q. What positions are you responding to?

6 A. Ms. Mantle indicates that the Staff's position is as follows:

7 - to accept a proposed increase in low-income weatherization program funding to

8 \$108,000 with fifty percent of the cost paid for by Aquila shareholders

9 - to accept a proposed increase in the Change a Light, Change the World program from

10 \$20,000 to \$40,000 with fifty percent of the cost paid for by Aquila shareholders

11 - to accept a funding level of \$75,000 for the Commercial Audit program with fifty
12 percent of the cost paid for by Aquila shareholders

13 - to reject a residential energy efficiency program.

14 Q. How will you address these positions?

15 A. First, it is important that I address the nature of demand side resources and their
16 relationship to supply side resources and integrated resource planning.

17 Second, I will describe how demand side management programs are selected through the
18 2005 Integrated Resource Plan (IRP).

19 Third, I will address recovery of the costs of these programs.

20 **DEMAND SIDE RESOURCES AND INTEGRATED RESOURCE PLANNING**

21 Q. Does the MPSC require that demand side resources be considered on an equivalent basis
22 as supply side resources?

1 A. Yes. 4 CSR 240-22.010 (2)(A) states that in order to meet the objective of the resource
2 planning process the utility shall "Consider and analyze demand-side efficiency and energy
3 management measures on an equivalent basis with supply-side alternatives in the resource
4 planning process."

5 Q. How is demand side resource load impact estimates incorporated into the resource plan?

6 A. The load impacts are incorporated in a manner consistent with a supply side resource. In
7 order to meet the company's projected load requirements, portfolios of resources are
8 developed. These portfolios contain supply side resources that provide additional
9 generation at specified costs as well as demand side resources that reduce demand and
10 energy requirements at specified costs.

11 Q. How does Aquila choose among the various portfolios that are developed?

12 A. The specifics of the decision process are beyond the scope of this testimony, however, in
13 general terms the financial impact, rate impact, environmental impact and risk profile are
14 considered. In accordance with 4 CSR 240-22.70 (6)(A), Aquila chooses a preferred
15 resource plan from among the portfolios that in the Company's judgment strikes an
16 appropriate balance between the various planning objectives specified in 4 CSR 240-
17 22.010 (2).

18 Q. Please summarize the requirements of 4 CSR 240-22.010 (2)?

19 A. The broad requirement is to provide the public with energy services that are safe, reliable
20 and efficient, at just and reasonable rates, in a manner that serves the public interest. To
21 meet this requirement the utility must assess tradeoffs and determine the appropriate

1 balance between minimization of expected utility costs and other considerations

2 including, but not limited to:

3 - Risks associated with critical uncertain factors that will affect the actual costs associated
4 with alternative resource plans;

5 - Risks associated with new or more stringent environmental laws or regulations that may
6 be imposed at some point within the planning horizon; and

7 - Rate increases associated with alternative resource plans.

8 Q. Did Aquila determine the appropriate demand side management programs to meet the
9 requirements of 4 CSR 240-22?

10 A. Yes. The "Aquila Networks State of Missouri Electric Demand-Side Management Plan,
11 2006-2010" (DSM Plan) develops the appropriate demand side management programs.
12 These were incorporated into the 2005 IRP.

13 Q. Are demand side management programs generally accepted as an integral component of
14 resource portfolios?

15 A. Yes. In addition to the requirements of the MPSC as I've outlined, they are actively
16 encouraged by both the National Association of Regulatory Utility Commissioners
17 (NARUC) and the Federal government. On July 23, 1999, NARUC adopted a resolution
18 entitled "Resolution Supporting Energy Efficiency and Load Management As Cost-
19 Effective Approaches to Reliability Concerns." In part the resolution reads:

20 "Resolved, That NARUC urges State public utility commissions to encourage
21 and support programs for cost-effective energy efficiency and load management

1 investments as both a short-term and long-term strategy for enhancing the
2 reliability of the nation's electric system, and reducing its costs."

3 The Federal government in Section 111(a) (7) of the Energy Policy act of 1992 states that
4 "Each electric utility shall employ integrated resource planning". Integrated resource
5 planning is defined as:

6 "a planning process for new energy resources that evaluates the full range of
7 alternatives, including new generating capacity, power purchases, energy
8 conservation and efficiency, cogeneration and district heating and cooling
9 applications, and renewable energy resources, in order to provide adequate and
10 reliable service to its electric customers at the lowest system cost. The process
11 shall take into account necessary features for system operation, such as diversity,
12 reliability, dispatchability, and other factors of risk; shall take into account the
13 ability to verify energy savings achieved through energy conservation and
14 efficiency and the projected durability of such savings measured over time; and
15 shall treat demand and supply resources on a consistent and integrated basis."

16 Q. Do you conclude that demand side resources are an accepted and appropriate component
17 of a utility's resource portfolio?

18 A. Yes.

19 **DEMAND SIDE RESOURCES IN AQUILA NETWORKS-MISSOURI INTEGRATED**
20 **RESOURCE PLAN**

21 Q. Does Ms. Mantle address each of the demand side programs that were incorporated in the
22 IRP?

1 A. No. Ms. Mantle only addresses a subset of the programs. Specifically, those that were
2 proposed in the direct testimony of Missouri Department of Natural Resources witness
3 Anita Randolph.

4 Q. Ms. Mantle indicates that she was unable to find how these or any other demand side
5 programs impacted the Company's IRP (Mantle Rebuttal Testimony, page 4, lines 2-6).
6 Please explain how they were incorporated.

7 A. The DSM Plan was developed as part of the IRP analysis. First, measures were bundled
8 into resource options for portfolio analysis. Measures within the selected resource
9 options were then incorporated into DSM programs. Table 3-8 of the IRP defines the
10 DSM options that were used for portfolio development. Table 3-9 of the IRP illustrates
11 that the DSM options that contained Residential, Commercial and Industrial measures
12 screened at cost level A (less than \$30 MWh) and cost level B (less than \$45 MWh)
13 resulted in the greatest reduction in cost for both the Least Cost Plan and the Preferred
14 Plan. Schedule MED- 1 lists the programs that fall into these cost categories. These
15 programs are described in more detail in Appendix A of the IRP, which is attached as my
16 Schedule MED- 3.

17 Q. Is the Company proposing to only implement the programs referenced by Ms. Mantle?

18 A. No. The Company believes that the Preferred Portfolio, including all of the selected DSM
19 programs, best meets the requirements of the Electric Utility Resource Planning rules that
20 I outlined previously.

21 **COST RECOVERY**

22 Q. How does Ms. Mantle propose that the costs of the programs be recovered?

1 A. Ms. Mantle is proposing a 50/50 sharing of the costs between shareholders and
2 ratepayers.

3 Q. Do you agree with her proposal?

4 A. No. Demand side resources are simply a component of the overall portfolio of resources
5 that the Company acquires to meet its projected load requirements. There is no
6 justification to require shareholders to bear the cost of either demand side or supply side
7 resources. I believe that doing so would be in direct violation of the MPSC requirement
8 to consider and analyze demand-side efficiency and energy management measures on an
9 equivalent basis with supply-side alternatives, not to mention the possible confiscation
10 issues.

11 Q. Is Aquila funding its energy efficiency programs with shareholder money currently?

12 A. Yes. In Case No. ER-2004-0034, the Company agreed to a stipulated resolution of the
13 case. The stipulation called for shareholder funding of \$93,500 per year until the next
14 general rate case.

15 Q. Why are you not requesting any revenue requirement to fund the programs that were
16 incorporated in the 2005 IRP?

17 A. The stipulation in Case No. ER-2004-0034 also established a collaborative work group to
18 explore and propose appropriate cost recovery mechanisms for the DSM programs.
19 Consequently, cost recovery was not included in this rate case. We have been working
20 with the collaborative group, but have not reached a consensus on the appropriate
21 recovery mechanism.

1 Q. Do you believe that a specific cost recovery mechanism is necessary for demand side
2 resources?

3 A. Yes. Demand side resources are purchased in small increments, rarely large enough to
4 warrant specific rate filings. This is unlike supply side resources that often trigger a rate
5 increase at the time of completion. Consequently, other mechanisms are necessary for the
6 cost recovery of demand side resources. These mechanisms generally fall into one of two
7 categories. One approach is that the costs may be accumulated in a balance sheet account
8 and amortized over a period of time, much like an accounting authority order. A second
9 approach has been adopted in several jurisdictions. This approach matches a funding
10 mechanism or tariff rider with the annual expenditures. Expenditures accumulate in a
11 balancing account and are offset by the collections from the funding mechanism. The
12 level of the funding mechanism is adjusted on a regular basis to maintain a balance in the
13 balancing account that is near zero.

14 Q. Do you have examples of these various funding mechanisms?

15 A. Yes. Schedule MED – 2 is a compilation of the funding mechanisms in use across the
16 country.

17 Q. Has the Federal government provided any guidance on appropriate cost recovery for DSM
18 programs?

19 A. Yes, in both the 1992 and 2005 Energy Policy Acts. Section 111(a) (8) of the 1992
20 Energy Policy Act states:

21 The rates allowed to be charged by a State regulated electric utility shall be such
22 that the utility's investment in and expenditures for energy conservation, energy

1 efficiency resources, and other demand side management measures are at least as
2 profitable, giving appropriate consideration to income lost from reduced sales due
3 to investments in and expenditures for conservation and efficiency, as its
4 investments in and expenditures for the construction of new generation,
5 transmission, and distribution equipment. Such energy conservation, energy
6 efficiency resources and other demand side management measures shall be
7 appropriately monitored and evaluated.

8 Section 139 of the 2005 Energy Policy Act directs the Secretary of Energy in consultation
9 with NARUC and the National Association of State Energy Officials to conduct a study
10 that considers among other things:

11 Section 139 (a) (5) methods of—

12 (A) removing disincentives for utilities to implement energy efficiency
13 programs;

14 (B) encouraging utilities to undertake voluntary energy efficiency programs;
15 and

16 (C) ensuring appropriate returns on energy efficiency programs.

17 Q. Does a funding mechanism that requires a 50% shareholder contribution meet the criteria
18 set forth in either the 1992 or 2005 Energy Policy Acts?

19 A. No. Such a mechanism would clearly not allow the demand side programs to be “at least
20 as profitable” as the supply side programs as set forth in the 1992 Act, nor would it
21 ensure an appropriate return as set forth in the 2005 Act.

22 **SUMMARY**

1 Q. Please summarize your testimony.

2 A. My testimony demonstrates three points:

3 1) Demand side resources should be considered on an equivalent basis to supply side
4 resources as directed by the MPSC and encouraged by both NARUC and Federal
5 legislation,

6 2) The demand side programs referred to by Ms. Mantle were correctly analyzed,
7 developed and incorporated into the 2005 IRP. In addition, the 2005 IRP identified
8 programs that were not included in Ms. Mantle's testimony.

9 3) Ms. Mantle's proposed cost recovery mechanism is inconsistent with the directive to
10 consider demand side resources on an equivalent basis with supply side resources and
11 fails to allow the Company an opportunity to recover its costs and earn a return on its
12 investment that is comparable to that which it would earn on a supply side resource.
13 Demand side programs must be funded by a mechanism that meets this criteria.

14 Q. Does this conclude your surrebuttal testimony?

15 A. Yes.

Summary of Aquila Networks State of Missouri Electric Demand-Side Management Plan Programs

Integrated Resource Plan Cost Category	Expected MWh Savings, 5th Year of Plan
A: Less than \$30/MWh	81,841
B: \$30 to \$45/MWh	19,822
Total Incorporated in IRP	101,663

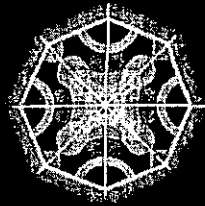
Programs Included in Cost Categories A and B (*)	MWh Savings, 5th Year of Plan	Levelized Cost / mWh
Residential Lighting (includes Change-A-Light)	26,383	\$15.39
Residential Thermal Envelope (includes Home Performance w/ ES)	9,326	\$45.90
Residential Space Heating & Cooling Replacement	4,260	\$40.60
Residential Programmable Thermostats & HVAC Maintenance	3,768	\$34.90
Residential New Construction (based on ES new homes)	5,423	\$41.45
Residential Audit	5,512	\$38.51
Comprehensive C&I Program	53,041	\$23.41
Program Totals	107,714	

(*) Savings by program were updated and presented to the MPSC and Company on August 4, 2005.

Summary of DSM Integration and Cost Recovery

State	Cost recovery Methodology	Integrated Resource Plan Requirement?	Shareholder Incentives
Kentucky	Tariff rider	Yes	No
Florida	Rates	Yes	Yes
Colorado	Tariff riders	Yes	No
Wyoming	Rates	No	No
Washington	Tariff rider	Yes, every two years	No
Oregon	3.5% tariff rider	No	No
Idaho	Tariff riders	Yes, every two years	No
Maine	\$.0015/kWh tariff rider	No	No
New Jersey	2% tariff rider	No	No
Minnesota	1.5-2.0% of gross operating revenues required EE spending recovered through rates and a tariff rider	Biennial IRPs	Yes
Nevada	Rates	Triennial Resource Plan	Yes
Montana	2.4% tariff rider	IRP and Portfolio	No
Arizona	1.45% tariff rider	No	No
California	3% tariff rider	Yes	Yes
Connecticut	4.05% tariff rider	No	No
Delaware	0.6% tariff rider	No	No
Illinois	.9% tariff rider	No	No
Massachusetts	3.06% tariff rider	No	No
Michigan	0.7% tariff rider	No	No
Pennsylvania	1.0% tariff rider	Yes	No
Rhode Island	2.3% tariff rider	No	No
Texas	1.65% tariff rider	Yes	No
Vermont	3.4% tariff rider	Yes	No
Wisconsin	4.3% tariff rider	Yes	No
New Mexico	Tariff rider	Yes	No
Utah	Tariff rider	Yes	No
Missouri	Rates	Yes	No
Georgia	Rates	Yes	No
Indiana	Tariff rider	Yes	No
South Dakota	Rates	No	No
North Dakota	Rates	No	No
Hawaii	Rates	Yes	No
Iowa	Tariff rider	Yes	No

Information was compiled from the Regulatory Assistance Project (RAP), the American Council for an Energy Efficiency Economy (ACE³) and the Southwest Energy Efficiency Project (SWEEP).



Aquila

Appendices:

Aquila Networks State of Missouri Electric Demand-Side Management Plan, 2006 – 2010

Prepared for:
Missouri Public Service Commission

Prepared by:
Aquila Networks

April 15, 2005

Appendix A. Baseline Data

**Econometric Forecast of Sales in
GWh by Area**

Year	MPS	SJD
2004	2,355	707
2005	2,518	745
2006	2,600	761
2007	2,684	777
2008	2,768	792
2009	2,843	802
2010	2,925	814
2011	3,011	826
2012	3,103	841
2013	3,182	851
2014	3,272	864
2015	3,366	878
2016	3,470	894
2017	3,560	906
2018	3,660	920
2019	3,762	935
2020	3,875	952
2021	3,983	967
2022	4,094	982
2023	4,210	998
2024	4,329	1,014
2025	4,452	1,031

**Forecast of Percentages of Families Living in
Single/Multi Family Homes, by Area**

Year	Area	Multi Family	Single Family
2004	MPS	21.32%	78.68%
2005	MPS	21.28%	78.72%
2006	MPS	21.24%	78.76%
2007	MPS	21.21%	78.79%
2008	MPS	21.18%	78.82%
2009	MPS	21.16%	78.84%
2010	MPS	21.14%	78.86%
2011	MPS	21.13%	78.87%
2012	MPS	21.12%	78.88%
2013	MPS	21.12%	78.88%
2014	MPS	21.12%	78.88%
2015	MPS	21.13%	78.87%
2016	MPS	21.14%	78.86%
2017	MPS	21.16%	78.84%
2018	MPS	21.19%	78.81%
2019	MPS	21.22%	78.78%
2020	MPS	21.25%	78.75%
2021	MPS	21.27%	78.73%
2022	MPS	21.30%	78.70%
2023	MPS	21.33%	78.67%
2024	MPS	21.36%	78.64%
2025	MPS	21.39%	78.61%
2004	SJD	21.32%	78.68%
2005	SJD	21.28%	78.72%
2006	SJD	21.24%	78.76%
2007	SJD	21.21%	78.79%
2008	SJD	21.18%	78.82%
2009	SJD	21.16%	78.84%
2010	SJD	21.14%	78.86%
2011	SJD	21.13%	78.87%
2012	SJD	21.12%	78.88%
2013	SJD	21.12%	78.88%
2014	SJD	21.12%	78.88%
2015	SJD	21.13%	78.87%
2016	SJD	21.14%	78.86%
2017	SJD	21.16%	78.84%
2018	SJD	21.19%	78.81%
2019	SJD	21.22%	78.78%
2020	SJD	21.25%	78.75%
2021	SJD	21.27%	78.73%
2022	SJD	21.30%	78.70%
2023	SJD	21.33%	78.67%
2024	SJD	21.36%	78.64%
2025	SJD	21.39%	78.61%

Forecast of Customers by Area

Year	Area	Number of Customers
2004	MPS	196,752
2005	MPS	200,668
2006	MPS	204,584
2007	MPS	208,500
2008	MPS	212,580
2009	MPS	216,729
2010	MPS	220,884
2011	MPS	225,070
2012	MPS	229,090
2013	MPS	233,141
2014	MPS	237,253
2015	MPS	241,466
2016	MPS	245,732
2017	MPS	249,986
2018	MPS	254,223
2019	MPS	258,457
2020	MPS	262,709
2021	MPS	266,976
2022	MPS	271,251
2023	MPS	275,557
2024	MPS	279,889
2025	MPS	284,223
2004	SJD	57,202
2005	SJD	57,586
2006	SJD	58,002
2007	SJD	58,419
2008	SJD	58,778
2009	SJD	59,145
2010	SJD	59,513
2011	SJD	59,862
2012	SJD	60,249
2013	SJD	60,628
2014	SJD	60,987
2015	SJD	61,316
2016	SJD	61,626
2017	SJD	61,936
2018	SJD	62,245
2019	SJD	62,552
2020	SJD	62,855
2021	SJD	63,147
2022	SJD	63,433
2023	SJD	63,707
2024	SJD	63,973
2025	SJD	64,241

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	vintage	saturation
Single Family	Central Heat	Existing	84.81%
Single Family	Room Heat	Existing	9.70%
Single Family	Heat Pump	Existing	5.49%
Single Family	Central AC	Existing	78.04%
Single Family	Room AC	Existing	11.60%
Single Family	Lighting Bulbs	Existing	90.00%
Single Family	Lighting Fixtures	Existing	10.00%
Single Family	Water Heat	Existing	100.00%
Single Family	Cooking	Existing	100.00%
Single Family	Refrigerator	Existing	123.00%
Single Family	Freezer	Existing	59.00%
Single Family	Dryer	Existing	98.00%
Single Family	Plug Load	Existing	100.00%
Single Family	Other	Existing	100.00%
Multi Family	Central Heat	Existing	77.47%
Multi Family	Room Heat	Existing	15.39%
Multi Family	Heat Pump	Existing	7.14%
Multi Family	Central AC	Existing	79.66%
Multi Family	Room AC	Existing	11.42%
Multi Family	Lighting Bulbs	Existing	90.00%
Multi Family	Lighting Fixtures	Existing	10.00%
Multi Family	Water Heat	Existing	100.00%
Multi Family	Cooking	Existing	100.00%
Multi Family	Refrigerator	Existing	100.00%
Multi Family	Freezer	Existing	41.00%
Multi Family	Dryer	Existing	86.00%
Multi Family	Plug Load	Existing	100.00%
Multi Family	Other	Existing	100.00%
Single Family	Central Heat	New	84.81%
Single Family	Room Heat	New	9.70%
Single Family	Heat Pump	New	5.49%
Single Family	Central AC	New	78.04%
Single Family	Room AC	New	11.60%
Single Family	Lighting Bulbs	New	90.00%
Single Family	Lighting Fixtures	New	10.00%
Single Family	Water Heat	New	100.00%
Single Family	Cooking	New	100.00%
Single Family	Refrigerator	New	123.00%
Single Family	Freezer	New	59.00%
Single Family	Dryer	New	98.00%
Single Family	Plug Load	New	100.00%
Single Family	Other	New	100.00%
Multi Family	Central Heat	New	77.47%
Multi Family	Room Heat	New	15.39%
Multi Family	Heat Pump	New	7.14%
Multi Family	Central AC	New	79.66%
Multi Family	Room AC	New	11.42%
Multi Family	Lighting Bulbs	New	90.00%
Multi Family	Lighting Fixtures	New	10.00%
Multi Family	Water Heat	New	100.00%
Multi Family	Cooking	New	100.00%
Multi Family	Refrigerator	New	100.00%
Multi Family	Freezer	New	41.00%
Multi Family	Dryer	New	86.00%
Multi Family	Plug Load	New	100.00%
Multi Family	Other	New	100.00%

Fuel Shares by Building Type, End-Use and Fuel

Building Type	End-Use	Fuel Type	Base Avg Electric Share	Base Marg Electric Share Existing	Base Marg Electric Share Conversion	Base Marg Electric Share New
Single Family	Central Heat	Electric	4.98%	4.98%	4.98%	4.98%
Single Family	Room Heat	Electric	19.95%	19.95%	19.95%	19.95%
Single Family	Heat Pump	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Central AC	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Room AC	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Lighting Bulbs	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Lighting Fixtures	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Water Heat	Electric	32.32%	32.32%	32.32%	32.32%
Single Family	Cooking	Electric	83.10%	83.10%	83.10%	83.10%
Single Family	Refrigerator	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Freezer	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Dryer	Electric	80.57%	80.57%	80.57%	80.57%
Single Family	Plug Load	Electric	100.00%	100.00%	100.00%	100.00%
Single Family	Other	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Central Heat	Electric	16.43%	16.43%	16.43%	16.43%
Multi Family	Room Heat	Electric	17.09%	17.09%	17.09%	17.09%
Multi Family	Heat Pump	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Central AC	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Room AC	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Lighting Bulbs	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Lighting Fixtures	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Water Heat	Electric	18.16%	18.16%	18.16%	18.16%
Multi Family	Cooking	Electric	89.77%	89.77%	89.77%	89.77%
Multi Family	Refrigerator	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Freezer	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Dryer	Electric	88.28%	88.28%	88.28%	88.28%
Multi Family	Plug Load	Electric	100.00%	100.00%	100.00%	100.00%
Multi Family	Other	Electric	100.00%	100.00%	100.00%	100.00%

Efficiency Shares by Building Type, End-Use and Fuel

Building Type	End-Use	Fuel Type	Stock Efficiency Share	Standard Efficiency Share	High Efficiency Share	Premium Efficiency Share
Multi Family	Central AC	Electric	50%	40%	9%	1%
Multi Family	Central Heat	Electric	100%			
Multi Family	Cooking	Electric	90%	10%		
Multi Family	Dryer	Electric	90%	10%		
Multi Family	Freezer	Electric	50%	45%	5%	
Multi Family	Heat Pump	Electric	50%	40%	9%	1%
Multi Family	Lighting Bulbs	Electric	100%			
Multi Family	Lighting Fixtures	Electric	100%			
Multi Family	Other	Electric	100%			
Multi Family	Plug Load	Electric	90%	10%		
Multi Family	Refrigerator	Electric	50%	45%	5%	
Multi Family	Room AC	Electric	50%	45%	5%	
Multi Family	Room Heat	Electric	100%			
Multi Family	Water Heat	Electric	50%	45%	5%	
Multi Family	Central Heat	Gas	100%			
Multi Family	Cooking	Gas	100%			
Multi Family	Dryer	Gas	100%			
Multi Family	Room Heat	Gas	100%			
Multi Family	Water Heat	Gas	100%			
Single Family	Central AC	Electric	50%	40%	9%	1%
Single Family	Central Heat	Electric	100%			
Single Family	Cooking	Electric	90%	10%		
Single Family	Dryer	Electric	90%	10%		
Single Family	Freezer	Electric	50%	45%	5%	
Single Family	Heat Pump	Electric	50%	40%	9%	1%
Single Family	Lighting Bulbs	Electric	100%			
Single Family	Lighting Fixtures	Electric	100%			
Single Family	Other	Electric	100%			
Single Family	Plug Load	Electric	90%	10%		
Single Family	Refrigerator	Electric	50%	45%	5%	
Single Family	Room AC	Electric	50%	45%	5%	
Single Family	Room Heat	Electric	100%			
Single Family	Water Heat	Electric	50%	45%	5%	
Single Family	Central Heat	Gas	100%			
Single Family	Cooking	Gas	100%			
Single Family	Dryer	Gas	100%			
Single Family	Room Heat	Gas	100%			
Single Family	Water Heat	Gas	100%			

UECs by Building Type, End-Use and Fuel

Building Type	End-Use	Fuel Type	Stock UEC	Standard UEC	Stock Efficiency	Standard Efficiency
Multi Family	Central AC	Electric	1144.2	942.6	10.7	13.0
Multi Family	Central Heat	Electric	7413.5	7413.5	1.0	1.0
Multi Family	Cooking	Electric	465.5	465.5	1.0	1.0
Multi Family	Dryer	Electric	811.9	811.9	1.0	1.0
Multi Family	Freezer	Electric	631.2	504.9	0.8	1.0
Multi Family	Heat Pump	Electric	4929.1	4042.1	1.0	1.2
Multi Family	Lighting Bulbs	Electric	1088.0	1088.0	1.0	1.0
Multi Family	Lighting Fixtures	Electric	1088.0	1088.0	1.0	1.0
Multi Family	Other	Electric	0.0	0.0	1.0	1.0
Multi Family	Plug Load	Electric	2000.0	2000.0	1.0	1.0
Multi Family	Refrigerator	Electric	817.2	653.7	0.8	1.0
Multi Family	Room AC	Electric	752.9	721.9	9.3	9.7
Multi Family	Room Heat	Electric	7657.8	7657.8	1.0	1.0
Multi Family	Water Heat	Electric	3166.3	3038.5	0.9	0.9
Single Family	Central AC	Electric	2370.5	1952.9	10.7	13.0
Single Family	Central Heat	Electric	14693.7	14693.7	1.0	1.0
Single Family	Cooking	Electric	602.5	602.5	1.0	1.0
Single Family	Dryer	Electric	866.9	866.9	1.0	1.0
Single Family	Freezer	Electric	643.0	514.4	0.8	1.0
Single Family	Heat Pump	Electric	10225.4	8971.2	1.0	1.1
Single Family	Lighting Bulbs	Electric	2004.0	2004.0	1.0	1.0
Single Family	Lighting Fixtures	Electric	2004.0	2004.0	1.0	1.0
Single Family	Other	Electric	0.0	0.0	1.0	1.0
Single Family	Plug Load	Electric	3500.0	3500.0	1.0	1.0
Single Family	Refrigerator	Electric	867.0	693.6	0.8	1.0
Single Family	Room AC	Electric	1316.3	1262.1	9.3	9.7
Single Family	Room Heat	Electric	14594.7	14594.7	1.0	1.0
Single Family	Water Heat	Electric	3447.7	3308.6	0.9	0.9
Multi Family	Central Heat	Gas	1.0	1.0	1.0	1.0
Multi Family	Cooking	Gas	1.0	1.0	1.0	1.0
Multi Family	Dryer	Gas	1.0	1.0	1.0	1.0
Multi Family	Room Heat	Gas	1.0	1.0	1.0	1.0
Multi Family	Water Heat	Gas	1.0	1.0	1.0	1.0
Single Family	Central Heat	Gas	1.0	1.0	1.0	1.0
Single Family	Cooking	Gas	1.0	1.0	1.0	1.0
Single Family	Dryer	Gas	1.0	1.0	1.0	1.0
Single Family	Room Heat	Gas	1.0	1.0	1.0	1.0
Single Family	Water Heat	Gas	1.0	1.0	1.0	1.0

**Econometric Forecast of Sales
in GWh by Area**

Year	MPS	SJD
2004	1,705	571
2005	1,819	598
2006	1,915	614
2007	2,013	631
2008	2,086	644
2009	2,163	654
2010	2,250	667
2011	2,337	680
2012	2,432	695
2013	2,517	707
2014	2,610	721
2015	2,700	733
2016	2,796	748
2017	2,881	759
2018	2,975	773
2019	3,070	787
2020	3,173	803
2021	3,269	817
2022	3,366	830
2023	3,464	844
2024	3,562	858
2025	3,664	872

Forecasts of Percentage of Customers by Building Type

Year	Area	Small Office	Large Office	Restaurant	Retail	Grocery	Warehouse	School	Health	Lodging	Miscellaneous
2004	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2005	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2006	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2007	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2008	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2009	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2010	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2011	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2012	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2013	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2014	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2015	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2016	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2017	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2018	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2019	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2020	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2021	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2022	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2023	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2024	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2025	MPS	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2004	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2005	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2006	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
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2011	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2012	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2013	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2014	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2015	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2016	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2017	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2018	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2019	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2020	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2021	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2022	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2023	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2024	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%
2025	SJD	27.27%	2.03%	4.34%	19.50%	1.71%	7.46%	2.76%	5.15%	1.97%	27.82%

Forecast of Customers by Area

Year	Area	Number of Customers
2004	MPS	27,515
2005	MPS	28,606
2006	MPS	29,697
2007	MPS	30,788
2008	MPS	31,879
2009	MPS	32,970
2010	MPS	34,061
2011	MPS	35,152
2012	MPS	36,243
2013	MPS	37,334
2014	MPS	38,425
2015	MPS	39,516
2016	MPS	40,607
2017	MPS	41,698
2018	MPS	42,789
2019	MPS	43,880
2020	MPS	44,971
2021	MPS	46,062
2022	MPS	47,153
2023	MPS	48,244
2024	MPS	49,335
2025	MPS	50,426
2004	SJD	7,344
2005	SJD	7,486
2006	SJD	7,628
2007	SJD	7,770
2008	SJD	7,912
2009	SJD	8,054
2010	SJD	8,196
2011	SJD	8,338
2012	SJD	8,480
2013	SJD	8,622
2014	SJD	8,764
2015	SJD	8,906
2016	SJD	9,048
2017	SJD	9,190
2018	SJD	9,332
2019	SJD	9,474
2020	SJD	9,616
2021	SJD	9,758
2022	SJD	9,900
2023	SJD	10,042
2024	SJD	10,184
2025	SJD	10,326

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Grocery	Cooking	Existing	67.0%
Grocery	Cooling_Chillers	Existing	1.8%
Grocery	Cooling_DX	Existing	53.5%
Grocery	Cooling_HeatPump	Existing	7.2%
Grocery	Lighting_2L4T12	Existing	5.2%
Grocery	Lighting_2L4T8	Existing	26.1%
Grocery	Lighting_2L8T12	Existing	0.4%
Grocery	Lighting_3L4T12	Existing	0.4%
Grocery	Lighting_3L4T8	Existing	17.7%
Grocery	Lighting_4L4T12	Existing	0.1%
Grocery	Lighting_4L4T8	Existing	8.7%
Grocery	Lighting_INC150W	Existing	20.7%
Grocery	Lighting_INC40W	Existing	20.7%
Grocery	Lighting_INC75W	Existing	20.7%
Grocery	Other	Existing	100.0%
Grocery	Plug_Load	Existing	100.0%
Grocery	Refrigeration	Existing	92.8%
Grocery	Space_Heat	Existing	56.1%
Grocery	Ventilation	Existing	100.0%
Grocery	Water_Heat	Existing	66.4%
Grocery	Cooking	New	67.0%
Grocery	Cooling_Chillers	New	1.8%
Grocery	Cooling_DX	New	53.5%
Grocery	Cooling_HeatPump	New	7.2%
Grocery	Lighting_2L4T12	New	5.2%
Grocery	Lighting_2L4T8	New	26.1%
Grocery	Lighting_2L8T12	New	0.4%
Grocery	Lighting_3L4T12	New	0.4%
Grocery	Lighting_3L4T8	New	17.7%
Grocery	Lighting_4L4T12	New	0.1%
Grocery	Lighting_4L4T8	New	8.7%
Grocery	Lighting_INC150W	New	20.7%
Grocery	Lighting_INC40W	New	20.7%
Grocery	Lighting_INC75W	New	20.7%
Grocery	Other	New	100.0%
Grocery	Plug_Load	New	100.0%
Grocery	Refrigeration	New	92.8%
Grocery	Space_Heat	New	56.1%
Grocery	Ventilation	New	100.0%
Grocery	Water_Heat	New	66.4%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Health	Cooking	Existing	81.7%
Health	Cooling_Chillers	Existing	13.2%
Health	Cooling_DX	Existing	30.8%
Health	Cooling_HeatPump	Existing	3.6%
Health	Lighting_2L4T12	Existing	25.1%
Health	Lighting_2L4T8	Existing	15.8%
Health	Lighting_2L8T12	Existing	2.1%
Health	Lighting_3L4T12	Existing	0.0%
Health	Lighting_3L4T8	Existing	9.9%
Health	Lighting_4L4T12	Existing	17.3%
Health	Lighting_4L4T8	Existing	11.2%
Health	Lighting_INC150W	Existing	9.4%
Health	Lighting_INC40W	Existing	9.4%
Health	Lighting_INC75W	Existing	9.4%
Health	Other	Existing	100.0%
Health	Plug_Load	Existing	100.0%
Health	Refrigeration	Existing	67.9%
Health	Space_Heat	Existing	61.8%
Health	Ventilation	Existing	100.0%
Health	Water_Heat	Existing	66.6%
Health	Cooking	New	81.7%
Health	Cooling_Chillers	New	13.2%
Health	Cooling_DX	New	30.8%
Health	Cooling_HeatPump	New	3.6%
Health	Lighting_2L4T12	New	25.1%
Health	Lighting_2L4T8	New	15.8%
Health	Lighting_2L8T12	New	2.1%
Health	Lighting_3L4T12	New	0.0%
Health	Lighting_3L4T8	New	9.9%
Health	Lighting_4L4T12	New	17.3%
Health	Lighting_4L4T8	New	11.2%
Health	Lighting_INC150W	New	9.4%
Health	Lighting_INC40W	New	9.4%
Health	Lighting_INC75W	New	9.4%
Health	Other	New	100.0%
Health	Plug_Load	New	100.0%
Health	Refrigeration	New	67.9%
Health	Space_Heat	New	61.8%
Health	Ventilation	New	100.0%
Health	Water_Heat	New	66.6%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Large_Office	Cooling_Chillers	Existing	23.7%
Large_Office	Cooling_DX	Existing	29.1%
Large_Office	Cooling_HeatPump	Existing	19.6%
Large_Office	Lighting_2L4T12	Existing	6.7%
Large_Office	Lighting_2L4T8	Existing	15.6%
Large_Office	Lighting_2L8T12	Existing	1.4%
Large_Office	Lighting_3L4T12	Existing	1.8%
Large_Office	Lighting_3L4T8	Existing	21.6%
Large_Office	Lighting_4L4T12	Existing	16.0%
Large_Office	Lighting_4L4T8	Existing	4.8%
Large_Office	Lighting_INC150W	Existing	16.0%
Large_Office	Lighting_INC40W	Existing	16.0%
Large_Office	Lighting_INC75W	Existing	16.0%
Large_Office	Other	Existing	100.0%
Large_Office	Plug_Load	Existing	100.0%
Large_Office	Space_Heat	Existing	63.7%
Large_Office	Ventilation	Existing	100.0%
Large_Office	Water_Heat	Existing	59.9%
Large_Office	Cooling_Chillers	New	23.7%
Large_Office	Cooling_DX	New	29.1%
Large_Office	Cooling_HeatPump	New	19.6%
Large_Office	Lighting_2L4T12	New	6.7%
Large_Office	Lighting_2L4T8	New	15.6%
Large_Office	Lighting_2L8T12	New	1.4%
Large_Office	Lighting_3L4T12	New	1.8%
Large_Office	Lighting_3L4T8	New	21.6%
Large_Office	Lighting_4L4T12	New	16.0%
Large_Office	Lighting_4L4T8	New	4.8%
Large_Office	Lighting_INC150W	New	16.0%
Large_Office	Lighting_INC40W	New	16.0%
Large_Office	Lighting_INC75W	New	16.0%
Large_Office	Other	New	100.0%
Large_Office	Plug_Load	New	100.0%
Large_Office	Space_Heat	New	63.7%
Large_Office	Ventilation	New	100.0%
Large_Office	Water_Heat	New	59.9%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Retail	Cooling_Chillers	Existing	12.3%
Retail	Cooling_DX	Existing	33.6%
Retail	Cooling_HeatPump	Existing	13.9%
Retail	Lighting_2L4T12	Existing	7.1%
Retail	Lighting_2L4T8	Existing	18.6%
Retail	Lighting_2L8T12	Existing	11.7%
Retail	Lighting_3L4T12	Existing	0.8%
Retail	Lighting_3L4T8	Existing	6.8%
Retail	Lighting_4L4T12	Existing	9.8%
Retail	Lighting_4L4T8	Existing	5.9%
Retail	Lighting_INC150W	Existing	19.7%
Retail	Lighting_INC40W	Existing	19.7%
Retail	Lighting_INC75W	Existing	19.7%
Retail	Other	Existing	100.0%
Retail	Plug_Load	Existing	100.0%
Retail	Space_Heat	Existing	82.3%
Retail	Ventilation	Existing	100.0%
Retail	Water_Heat	Existing	60.3%
Retail	Cooling_Chillers	New	12.3%
Retail	Cooling_DX	New	33.6%
Retail	Cooling_HeatPump	New	13.9%
Retail	Lighting_2L4T12	New	7.1%
Retail	Lighting_2L4T8	New	18.6%
Retail	Lighting_2L8T12	New	11.7%
Retail	Lighting_3L4T12	New	0.8%
Retail	Lighting_3L4T8	New	6.8%
Retail	Lighting_4L4T12	New	9.8%
Retail	Lighting_4L4T8	New	5.9%
Retail	Lighting_INC150W	New	19.7%
Retail	Lighting_INC40W	New	19.7%
Retail	Lighting_INC75W	New	19.7%
Retail	Other	New	100.0%
Retail	Plug_Load	New	100.0%
Retail	Space_Heat	New	82.3%
Retail	Ventilation	New	100.0%
Retail	Water_Heat	New	60.3%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Lodging	Cooking	Existing	41.1%
Lodging	Cooling_Chillers	Existing	29.2%
Lodging	Cooling_DX	Existing	2.7%
Lodging	Cooling_HeatPump	Existing	20.8%
Lodging	Lighting_2L4T12	Existing	14.6%
Lodging	Lighting_2L4T8	Existing	13.1%
Lodging	Lighting_2L8T12	Existing	0.0%
Lodging	Lighting_3L4T12	Existing	0.4%
Lodging	Lighting_3L4T8	Existing	0.2%
Lodging	Lighting_4L4T12	Existing	4.1%
Lodging	Lighting_4L4T8	Existing	1.8%
Lodging	Lighting_INC150W	Existing	32.9%
Lodging	Lighting_INC40W	Existing	32.9%
Lodging	Lighting_INC75W	Existing	32.9%
Lodging	Other	Existing	100.0%
Lodging	Plug_Load	Existing	100.0%
Lodging	Refrigeration	Existing	42.7%
Lodging	Space_Heat	Existing	67.5%
Lodging	Ventilation	Existing	100.0%
Lodging	Water_Heat	Existing	55.7%
Lodging	Cooking	New	41.1%
Lodging	Cooling_Chillers	New	29.2%
Lodging	Cooling_DX	New	2.7%
Lodging	Cooling_HeatPump	New	20.8%
Lodging	Lighting_2L4T12	New	14.6%
Lodging	Lighting_2L4T8	New	13.1%
Lodging	Lighting_2L8T12	New	0.0%
Lodging	Lighting_3L4T12	New	0.4%
Lodging	Lighting_3L4T8	New	0.2%
Lodging	Lighting_4L4T12	New	4.1%
Lodging	Lighting_4L4T8	New	1.8%
Lodging	Lighting_INC150W	New	32.9%
Lodging	Lighting_INC40W	New	32.9%
Lodging	Lighting_INC75W	New	32.9%
Lodging	Other	New	100.0%
Lodging	Plug_Load	New	100.0%
Lodging	Refrigeration	New	42.7%
Lodging	Space_Heat	New	67.5%
Lodging	Ventilation	New	100.0%
Lodging	Water_Heat	New	55.7%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Miscellaneous	Cooling_Chillers	Existing	2.6%
Miscellaneous	Cooling_DX	Existing	20.3%
Miscellaneous	Cooling_HeatPump	Existing	4.6%
Miscellaneous	Lighting_2L4T12	Existing	20.1%
Miscellaneous	Lighting_2L4T8	Existing	21.8%
Miscellaneous	Lighting_2L8T12	Existing	13.9%
Miscellaneous	Lighting_3L4T12	Existing	1.3%
Miscellaneous	Lighting_3L4T8	Existing	14.5%
Miscellaneous	Lighting_4L4T12	Existing	10.1%
Miscellaneous	Lighting_4L4T8	Existing	8.5%
Miscellaneous	Lighting_INC150W	Existing	4.9%
Miscellaneous	Lighting_INC40W	Existing	4.9%
Miscellaneous	Lighting_INC75W	Existing	4.9%
Miscellaneous	Other	Existing	100.0%
Miscellaneous	Plug_Load	Existing	100.0%
Miscellaneous	Space_Heat	Existing	54.5%
Miscellaneous	Ventilation	Existing	100.0%
Miscellaneous	Water_Heat	Existing	72.8%
Miscellaneous	Cooling_Chillers	New	2.6%
Miscellaneous	Cooling_DX	New	20.3%
Miscellaneous	Cooling_HeatPump	New	4.6%
Miscellaneous	Lighting_2L4T12	New	20.1%
Miscellaneous	Lighting_2L4T8	New	21.8%
Miscellaneous	Lighting_2L8T12	New	13.9%
Miscellaneous	Lighting_3L4T12	New	1.3%
Miscellaneous	Lighting_3L4T8	New	14.5%
Miscellaneous	Lighting_4L4T12	New	10.1%
Miscellaneous	Lighting_4L4T8	New	8.5%
Miscellaneous	Lighting_INC150W	New	4.9%
Miscellaneous	Lighting_INC40W	New	4.9%
Miscellaneous	Lighting_INC75W	New	4.9%
Miscellaneous	Other	New	100.0%
Miscellaneous	Plug_Load	New	100.0%
Miscellaneous	Space_Heat	New	54.5%
Miscellaneous	Ventilation	New	100.0%
Miscellaneous	Water_Heat	New	72.8%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Restaurant	Cooking	Existing	100.0%
Restaurant	Cooling_Chillers	Existing	0.0%
Restaurant	Cooling_DX	Existing	28.4%
Restaurant	Cooling_HeatPump	Existing	11.0%
Restaurant	Lighting_2L4T12	Existing	2.5%
Restaurant	Lighting_2L4T8	Existing	3.1%
Restaurant	Lighting_2L8T12	Existing	20.0%
Restaurant	Lighting_3L4T12	Existing	0.0%
Restaurant	Lighting_3L4T8	Existing	7.1%
Restaurant	Lighting_4L4T12	Existing	5.8%
Restaurant	Lighting_4L4T8	Existing	3.8%
Restaurant	Lighting_INC150W	Existing	28.8%
Restaurant	Lighting_INC40W	Existing	28.8%
Restaurant	Lighting_INC75W	Existing	28.8%
Restaurant	Other	Existing	100.0%
Restaurant	Plug_Load	Existing	100.0%
Restaurant	Refrigeration	Existing	100.0%
Restaurant	Space_Heat	Existing	81.2%
Restaurant	Ventilation	Existing	100.0%
Restaurant	Water_Heat	Existing	73.4%
Restaurant	Cooking	New	100.0%
Restaurant	Cooling_Chillers	New	0.0%
Restaurant	Cooling_DX	New	28.4%
Restaurant	Cooling_HeatPump	New	11.0%
Restaurant	Lighting_2L4T12	New	2.5%
Restaurant	Lighting_2L4T8	New	3.1%
Restaurant	Lighting_2L8T12	New	20.0%
Restaurant	Lighting_3L4T12	New	0.0%
Restaurant	Lighting_3L4T8	New	7.1%
Restaurant	Lighting_4L4T12	New	5.8%
Restaurant	Lighting_4L4T8	New	3.8%
Restaurant	Lighting_INC150W	New	28.8%
Restaurant	Lighting_INC40W	New	28.8%
Restaurant	Lighting_INC75W	New	28.8%
Restaurant	Other	New	100.0%
Restaurant	Plug_Load	New	100.0%
Restaurant	Refrigeration	New	100.0%
Restaurant	Space_Heat	New	81.2%
Restaurant	Ventilation	New	100.0%
Restaurant	Water_Heat	New	73.4%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
School	Cooking	Existing	44.5%
School	Cooling_Chillers	Existing	3.5%
School	Cooling_DX	Existing	25.3%
School	Cooling_HeatPump	Existing	12.6%
School	Lighting_2L4T12	Existing	2.9%
School	Lighting_2L4T8	Existing	27.5%
School	Lighting_2L8T12	Existing	0.1%
School	Lighting_3L4T12	Existing	0.8%
School	Lighting_3L4T8	Existing	60.5%
School	Lighting_4L4T12	Existing	2.4%
School	Lighting_4L4T8	Existing	3.7%
School	Lighting_INC150W	Existing	1.0%
School	Lighting_INC40W	Existing	1.0%
School	Lighting_INC75W	Existing	1.0%
School	Other	Existing	100.0%
School	Plug_Load	Existing	100.0%
School	Refrigeration	Existing	61.5%
School	Space_Heat	Existing	78.9%
School	Ventilation	Existing	100.0%
School	Water_Heat	Existing	71.5%
School	Cooking	New	44.5%
School	Cooling_Chillers	New	3.5%
School	Cooling_DX	New	25.3%
School	Cooling_HeatPump	New	12.6%
School	Lighting_2L4T12	New	2.9%
School	Lighting_2L4T8	New	27.5%
School	Lighting_2L8T12	New	0.1%
School	Lighting_3L4T12	New	0.8%
School	Lighting_3L4T8	New	60.5%
School	Lighting_4L4T12	New	2.4%
School	Lighting_4L4T8	New	3.7%
School	Lighting_INC150W	New	1.0%
School	Lighting_INC40W	New	1.0%
School	Lighting_INC75W	New	1.0%
School	Other	New	100.0%
School	Plug_Load	New	100.0%
School	Refrigeration	New	61.5%
School	Space_Heat	New	78.9%
School	Ventilation	New	100.0%
School	Water_Heat	New	71.5%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Small_Office	Cooling_Chillers	Existing	23.7%
Small_Office	Cooling_DX	Existing	29.1%
Small_Office	Cooling_HeatPump	Existing	19.6%
Small_Office	Lighting_2L4T12	Existing	6.7%
Small_Office	Lighting_2L4T8	Existing	15.6%
Small_Office	Lighting_2L8T12	Existing	1.4%
Small_Office	Lighting_3L4T12	Existing	1.8%
Small_Office	Lighting_3L4T8	Existing	21.6%
Small_Office	Lighting_4L4T12	Existing	16.0%
Small_Office	Lighting_4L4T8	Existing	4.8%
Small_Office	Lighting_INC150W	Existing	16.0%
Small_Office	Lighting_INC40W	Existing	16.0%
Small_Office	Lighting_INC75W	Existing	16.0%
Small_Office	Other	Existing	100.0%
Small_Office	Plug_Load	Existing	100.0%
Small_Office	Space_Heat	Existing	63.7%
Small_Office	Ventilation	Existing	100.0%
Small_Office	Water_Heat	Existing	59.9%
Small_Office	Cooling_Chillers	New	23.7%
Small_Office	Cooling_DX	New	29.1%
Small_Office	Cooling_HeatPump	New	19.6%
Small_Office	Lighting_2L4T12	New	6.7%
Small_Office	Lighting_2L4T8	New	15.6%
Small_Office	Lighting_2L8T12	New	1.4%
Small_Office	Lighting_3L4T12	New	1.8%
Small_Office	Lighting_3L4T8	New	21.6%
Small_Office	Lighting_4L4T12	New	16.0%
Small_Office	Lighting_4L4T8	New	4.8%
Small_Office	Lighting_INC150W	New	16.0%
Small_Office	Lighting_INC40W	New	16.0%
Small_Office	Lighting_INC75W	New	16.0%
Small_Office	Other	New	100.0%
Small_Office	Plug_Load	New	100.0%
Small_Office	Space_Heat	New	63.7%
Small_Office	Ventilation	New	100.0%
Small_Office	Water_Heat	New	59.9%

End-Use Saturations By Building Type and Vintage

Building Type	End-Use	Vintage	Saturation
Warehouse	Cooling_Chillers	Existing	6.6%
Warehouse	Cooling_DX	Existing	8.0%
Warehouse	Cooling_HeatPump	Existing	1.5%
Warehouse	Lighting_2L4T12	Existing	3.1%
Warehouse	Lighting_2L4T8	Existing	5.5%
Warehouse	Lighting_2L8T12	Existing	26.0%
Warehouse	Lighting_3L4T12	Existing	0.0%
Warehouse	Lighting_3L4T8	Existing	21.3%
Warehouse	Lighting_4L4T12	Existing	6.1%
Warehouse	Lighting_4L4T8	Existing	0.7%
Warehouse	Lighting_INC150W	Existing	18.7%
Warehouse	Lighting_INC40W	Existing	18.7%
Warehouse	Lighting_INC75W	Existing	18.7%
Warehouse	Other	Existing	100.0%
Warehouse	Plug_Load	Existing	100.0%
Warehouse	Refrigeration	Existing	40.0%
Warehouse	Space_Heat	Existing	46.4%
Warehouse	Ventilation	Existing	100.0%
Warehouse	Water_Heat	Existing	48.3%
Warehouse	Cooling_Chillers	New	6.6%
Warehouse	Cooling_DX	New	8.0%
Warehouse	Cooling_HeatPump	New	1.5%
Warehouse	Lighting_2L4T12	New	3.1%
Warehouse	Lighting_2L4T8	New	5.5%
Warehouse	Lighting_2L8T12	New	26.0%
Warehouse	Lighting_3L4T12	New	0.0%
Warehouse	Lighting_3L4T8	New	21.3%
Warehouse	Lighting_4L4T12	New	6.1%
Warehouse	Lighting_4L4T8	New	0.7%
Warehouse	Lighting_INC150W	New	18.7%
Warehouse	Lighting_INC40W	New	18.7%
Warehouse	Lighting_INC75W	New	18.7%
Warehouse	Other	New	100.0%
Warehouse	Plug_Load	New	100.0%
Warehouse	Refrigeration	New	40.0%
Warehouse	Space_Heat	New	46.4%
Warehouse	Ventilation	New	100.0%
Warehouse	Water_Heat	New	48.3%

Fuel Shares By Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Base Avg Electric Share	Base Marg Electric Share Existing	Base Marg Electric Share Conversion	Base Marg Electric Share New
Small Office	Space Heat	Electric	20%	20%	20%	20%
Small Office	Cooling Chillers	Electric	100%	100%	100%	100%
Small Office	Cooling DX	Electric	100%	100%	100%	100%
Small Office	Cooling HeatPump	Electric	100%	100%	100%	100%
Small Office	Ventilation	Electric	100%	100%	100%	100%
Small Office	Lighting 4L4T12	Electric	100%	100%	100%	100%
Small Office	Lighting 3L4T12	Electric	100%	100%	100%	100%
Small Office	Lighting 2L4T12	Electric	100%	100%	100%	100%
Small Office	Lighting 2L8T12	Electric	100%	100%	100%	100%
Small Office	Lighting 4L4T8	Electric	100%	100%	100%	100%
Small Office	Lighting 3L4T8	Electric	100%	100%	100%	100%
Small Office	Lighting 2L4T8	Electric	100%	100%	100%	100%
Small Office	Lighting INC40W	Electric	100%	100%	100%	100%
Small Office	Lighting INC75W	Electric	100%	100%	100%	100%
Small Office	Lighting INC150W	Electric	100%	100%	100%	100%
Small Office	Water Heat	Electric	50%	50%	50%	50%
Small Office	Plug Load	Electric	100%	100%	100%	100%
Small Office	Other	Electric	100%	100%	100%	100%
Large Office	Space Heat	Electric	20%	20%	20%	20%
Large Office	Cooling Chillers	Electric	100%	100%	100%	100%
Large Office	Cooling DX	Electric	100%	100%	100%	100%
Large Office	Cooling HeatPump	Electric	100%	100%	100%	100%
Large Office	Ventilation	Electric	100%	100%	100%	100%
Large Office	Lighting 4L4T12	Electric	100%	100%	100%	100%
Large Office	Lighting 3L4T12	Electric	100%	100%	100%	100%
Large Office	Lighting 2L4T12	Electric	100%	100%	100%	100%
Large Office	Lighting 2L8T12	Electric	100%	100%	100%	100%
Large Office	Lighting 4L4T8	Electric	100%	100%	100%	100%
Large Office	Lighting 3L4T8	Electric	100%	100%	100%	100%
Large Office	Lighting 2L4T8	Electric	100%	100%	100%	100%
Large Office	Lighting INC40W	Electric	100%	100%	100%	100%
Large Office	Lighting INC75W	Electric	100%	100%	100%	100%
Large Office	Lighting INC150W	Electric	100%	100%	100%	100%
Large Office	Water Heat	Electric	50%	50%	50%	50%
Large Office	Plug Load	Electric	100%	100%	100%	100%
Large Office	Other	Electric	100%	100%	100%	100%
Restaurant	Space Heat	Electric	42%	42%	42%	42%
Restaurant	Cooling Chillers	Electric	100%	100%	100%	100%
Restaurant	Cooling DX	Electric	100%	100%	100%	100%
Restaurant	Cooling HeatPump	Electric	100%	100%	100%	100%
Restaurant	Ventilation	Electric	100%	100%	100%	100%
Restaurant	Lighting 4L4T12	Electric	100%	100%	100%	100%
Restaurant	Lighting 3L4T12	Electric	100%	100%	100%	100%
Restaurant	Lighting 2L4T12	Electric	100%	100%	100%	100%
Restaurant	Lighting 2L8T12	Electric	100%	100%	100%	100%
Restaurant	Lighting 4L4T8	Electric	100%	100%	100%	100%
Restaurant	Lighting 3L4T8	Electric	100%	100%	100%	100%
Restaurant	Lighting 2L4T8	Electric	100%	100%	100%	100%
Restaurant	Lighting INC40W	Electric	100%	100%	100%	100%
Restaurant	Lighting INC75W	Electric	100%	100%	100%	100%
Restaurant	Lighting INC150W	Electric	100%	100%	100%	100%
Restaurant	Water Heat	Electric	36%	36%	36%	36%
Restaurant	Refrigeration	Electric	100%	100%	100%	100%
Restaurant	Cooking	Electric	43%	43%	43%	43%
Restaurant	Plug Load	Electric	100%	100%	100%	100%
Restaurant	Other	Electric	100%	100%	100%	100%
Retail	Space Heat	Electric	29%	29%	29%	29%
Retail	Cooling Chillers	Electric	100%	100%	100%	100%
Retail	Cooling DX	Electric	100%	100%	100%	100%
Retail	Cooling HeatPump	Electric	100%	100%	100%	100%
Retail	Ventilation	Electric	100%	100%	100%	100%
Retail	Lighting 4L4T12	Electric	100%	100%	100%	100%
Retail	Lighting 3L4T12	Electric	100%	100%	100%	100%
Retail	Lighting 2L4T12	Electric	100%	100%	100%	100%
Retail	Lighting 2L8T12	Electric	100%	100%	100%	100%
Retail	Lighting 4L4T8	Electric	100%	100%	100%	100%
Retail	Lighting 3L4T8	Electric	100%	100%	100%	100%
Retail	Lighting 2L4T8	Electric	100%	100%	100%	100%
Retail	Lighting INC40W	Electric	100%	100%	100%	100%
Retail	Lighting INC75W	Electric	100%	100%	100%	100%
Retail	Lighting INC150W	Electric	100%	100%	100%	100%
Retail	Water Heat	Electric	58%	58%	58%	58%
Retail	Plug Load	Electric	100%	100%	100%	100%
Retail	Other	Electric	100%	100%	100%	100%

Fuel Shares By Building Type, End-Use and Fuel (continued 1)

Building Type	End-Use	Fuel	Base Avg Electric Share	Base Marg	Base Marg	Base Marg
				Electric Share Existing	Electric Share Conversion	Electric Share New
Grocery	Space Heat	Electric	6%	6%	6%	6%
Grocery	Cooling Chillers	Electric	100%	100%	100%	100%
Grocery	Cooling DX	Electric	100%	100%	100%	100%
Grocery	Cooling HeatPump	Electric	100%	100%	100%	100%
Grocery	Ventilation	Electric	100%	100%	100%	100%
Grocery	Lighting 4L4T12	Electric	100%	100%	100%	100%
Grocery	Lighting 3L4T12	Electric	100%	100%	100%	100%
Grocery	Lighting 2L4T12	Electric	100%	100%	100%	100%
Grocery	Lighting 2L8T12	Electric	100%	100%	100%	100%
Grocery	Lighting 4L4T8	Electric	100%	100%	100%	100%
Grocery	Lighting 3L4T8	Electric	100%	100%	100%	100%
Grocery	Lighting 2L4T8	Electric	100%	100%	100%	100%
Grocery	Lighting INC40W	Electric	100%	100%	100%	100%
Grocery	Lighting INC75W	Electric	100%	100%	100%	100%
Grocery	Lighting INC150W	Electric	100%	100%	100%	100%
Grocery	Water Heat	Electric	49%	49%	49%	49%
Grocery	Refrigeration	Electric	100%	100%	100%	100%
Grocery	Cooking	Electric	74%	74%	74%	74%
Grocery	Plug Load	Electric	100%	100%	100%	100%
Grocery	Other	Electric	100%	100%	100%	100%
Warehouse	Space Heat	Electric	25%	25%	25%	25%
Warehouse	Cooling Chillers	Electric	100%	100%	100%	100%
Warehouse	Cooling DX	Electric	100%	100%	100%	100%
Warehouse	Cooling HeatPump	Electric	100%	100%	100%	100%
Warehouse	Ventilation	Electric	100%	100%	100%	100%
Warehouse	Lighting 4L4T12	Electric	100%	100%	100%	100%
Warehouse	Lighting 3L4T12	Electric	100%	100%	100%	100%
Warehouse	Lighting 2L4T12	Electric	100%	100%	100%	100%
Warehouse	Lighting 2L8T12	Electric	100%	100%	100%	100%
Warehouse	Lighting 4L4T8	Electric	100%	100%	100%	100%
Warehouse	Lighting 3L4T8	Electric	100%	100%	100%	100%
Warehouse	Lighting 2L4T8	Electric	100%	100%	100%	100%
Warehouse	Lighting INC40W	Electric	100%	100%	100%	100%
Warehouse	Lighting INC75W	Electric	100%	100%	100%	100%
Warehouse	Lighting INC150W	Electric	100%	100%	100%	100%
Warehouse	Water Heat	Electric	54%	54%	54%	54%
Warehouse	Refrigeration	Electric	100%	100%	100%	100%
Warehouse	Plug Load	Electric	100%	100%	100%	100%
Warehouse	Other	Electric	100%	100%	100%	100%
School	Space Heat	Electric	16%	16%	16%	16%
School	Cooling Chillers	Electric	100%	100%	100%	100%
School	Cooling DX	Electric	100%	100%	100%	100%
School	Cooling HeatPump	Electric	100%	100%	100%	100%
School	Ventilation	Electric	100%	100%	100%	100%
School	Lighting 4L4T12	Electric	100%	100%	100%	100%
School	Lighting 3L4T12	Electric	100%	100%	100%	100%
School	Lighting 2L4T12	Electric	100%	100%	100%	100%
School	Lighting 2L8T12	Electric	100%	100%	100%	100%
School	Lighting 4L4T8	Electric	100%	100%	100%	100%
School	Lighting 3L4T8	Electric	100%	100%	100%	100%
School	Lighting 2L4T8	Electric	100%	100%	100%	100%
School	Lighting INC40W	Electric	100%	100%	100%	100%
School	Lighting INC75W	Electric	100%	100%	100%	100%
School	Lighting INC150W	Electric	100%	100%	100%	100%
School	Water Heat	Electric	23%	23%	23%	23%
School	Refrigeration	Electric	100%	100%	100%	100%
School	Cooking	Electric	39%	39%	39%	39%
School	Plug Load	Electric	100%	100%	100%	100%
School	Other	Electric	100%	100%	100%	100%

Fuel Shares By Building Type, End-Use and Fuel (continued 2)

Building Type	End-Use	Fuel	Base Avg Electric Share	Base Marg Electric Share Existing	Base Marg Electric Share Conversion	Base Marg Electric Share New
Health	Space Heat	Electric	16%	16%	16%	16%
Health	Cooling Chillers	Electric	100%	100%	100%	100%
Health	Cooling DX	Electric	100%	100%	100%	100%
Health	Cooling HeatPump	Electric	100%	100%	100%	100%
Health	Ventilation	Electric	100%	100%	100%	100%
Health	Lighting 4L4T12	Electric	100%	100%	100%	100%
Health	Lighting 3L4T12	Electric	100%	100%	100%	100%
Health	Lighting 2L4T12	Electric	100%	100%	100%	100%
Health	Lighting 2L8T12	Electric	100%	100%	100%	100%
Health	Lighting 4L4T8	Electric	100%	100%	100%	100%
Health	Lighting 3L4T8	Electric	100%	100%	100%	100%
Health	Lighting 2L4T8	Electric	100%	100%	100%	100%
Health	Lighting INC40W	Electric	100%	100%	100%	100%
Health	Lighting INC75W	Electric	100%	100%	100%	100%
Health	Lighting INC150W	Electric	100%	100%	100%	100%
Health	Water Heat	Electric	23%	23%	23%	23%
Health	Refrigeration	Electric	100%	100%	100%	100%
Health	Cooking	Electric	43%	43%	43%	43%
Health	Plug Load	Electric	100%	100%	100%	100%
Health	Other	Electric	100%	100%	100%	100%
Lodging	Space Heat	Electric	66%	66%	66%	66%
Lodging	Cooling Chillers	Electric	100%	100%	100%	100%
Lodging	Cooling DX	Electric	100%	100%	100%	100%
Lodging	Cooling HeatPump	Electric	100%	100%	100%	100%
Lodging	Ventilation	Electric	100%	100%	100%	100%
Lodging	Lighting 4L4T12	Electric	100%	100%	100%	100%
Lodging	Lighting 3L4T12	Electric	100%	100%	100%	100%
Lodging	Lighting 2L4T12	Electric	100%	100%	100%	100%
Lodging	Lighting 2L8T12	Electric	100%	100%	100%	100%
Lodging	Lighting 4L4T8	Electric	100%	100%	100%	100%
Lodging	Lighting 3L4T8	Electric	100%	100%	100%	100%
Lodging	Lighting 2L4T8	Electric	100%	100%	100%	100%
Lodging	Lighting INC40W	Electric	100%	100%	100%	100%
Lodging	Lighting INC75W	Electric	100%	100%	100%	100%
Lodging	Lighting INC150W	Electric	100%	100%	100%	100%
Lodging	Water Heat	Electric	12%	12%	12%	12%
Lodging	Refrigeration	Electric	100%	100%	100%	100%
Lodging	Cooking	Electric	48%	48%	48%	48%
Lodging	Plug Load	Electric	100%	100%	100%	100%
Lodging	Other	Electric	100%	100%	100%	100%
Miscellaneous	Space Heat	Electric	10%	10%	10%	10%
Miscellaneous	Cooling Chillers	Electric	100%	100%	100%	100%
Miscellaneous	Cooling DX	Electric	100%	100%	100%	100%
Miscellaneous	Cooling HeatPump	Electric	100%	100%	100%	100%
Miscellaneous	Ventilation	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 4L4T12	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 3L4T12	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 2L4T12	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 2L8T12	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 4L4T8	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 3L4T8	Electric	100%	100%	100%	100%
Miscellaneous	Lighting 2L4T8	Electric	100%	100%	100%	100%
Miscellaneous	Lighting INC40W	Electric	100%	100%	100%	100%
Miscellaneous	Lighting INC75W	Electric	100%	100%	100%	100%
Miscellaneous	Lighting INC150W	Electric	100%	100%	100%	100%
Miscellaneous	Water Heat	Electric	50%	50%	50%	50%
Miscellaneous	Plug Load	Electric	100%	100%	100%	100%
Miscellaneous	Other	Electric	100%	100%	100%	100%

Efficiency Shares By Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Stock Efficiency	Standard Efficiency	High Efficiency	Premium Efficiency
Grocery	Cooking	Electric	90%	10%		
Grocery	Cooling Chillers	Electric	50%	40%	9%	1%
Grocery	Cooling DX	Electric	50%	45%	5%	
Grocery	Cooling HeatPump	Electric	50%	45%	5%	
Grocery	Lighting 2L4T12	Electric	100%			
Grocery	Lighting 2L4T8	Electric	100%			
Grocery	Lighting 2L8T12	Electric	100%			
Grocery	Lighting 3L4T12	Electric	100%			
Grocery	Lighting 3L4T8	Electric	100%			
Grocery	Lighting 4L4T12	Electric	100%			
Grocery	Lighting 4L4T8	Electric	100%			
Grocery	Lighting INC150W	Electric	100%			
Grocery	Lighting INC40W	Electric	100%			
Grocery	Lighting INC75W	Electric	100%			
Grocery	Other	Electric	100%			
Grocery	Plug Load	Electric	90%	10%		
Grocery	Refrigeration	Electric	90%	10%		
Grocery	Space Heat	Electric	100%			
Grocery	Ventilation	Electric	50%	40%	9%	1%
Grocery	Water Heat	Electric	50%	45%	5%	
Grocery	Cooking	Gas	100%			
Grocery	Space Heat	Gas	100%			
Grocery	Water Heat	Gas	100%			
Health	Cooking	Electric	90%	10%		
Health	Cooling Chillers	Electric	50%	40%	9%	1%
Health	Cooling DX	Electric	50%	45%	5%	
Health	Cooling HeatPump	Electric	50%	45%	5%	
Health	Lighting 2L4T12	Electric	100%			
Health	Lighting 2L4T8	Electric	100%			
Health	Lighting 2L8T12	Electric	100%			
Health	Lighting 3L4T12	Electric	100%			
Health	Lighting 3L4T8	Electric	100%			
Health	Lighting 4L4T12	Electric	100%			
Health	Lighting 4L4T8	Electric	100%			
Health	Lighting INC150W	Electric	100%			
Health	Lighting INC40W	Electric	100%			
Health	Lighting INC75W	Electric	100%			
Health	Other	Electric	100%			
Health	Plug Load	Electric	90%	10%		
Health	Refrigeration	Electric	90%	10%		
Health	Space Heat	Electric	100%			
Health	Ventilation	Electric	50%	40%	9%	1%
Health	Water Heat	Electric	50%	45%	5%	
Health	Cooking	Gas	100%			
Health	Space Heat	Gas	100%			
Health	Water Heat	Gas	100%			
Large Office	Cooling Chillers	Electric	50%	40%	9%	1%
Large Office	Cooling DX	Electric	50%	45%	5%	
Large Office	Cooling HeatPump	Electric	50%	45%	5%	
Large Office	Lighting 2L4T12	Electric	100%			
Large Office	Lighting 2L4T8	Electric	100%			
Large Office	Lighting 2L8T12	Electric	100%			
Large Office	Lighting 3L4T12	Electric	100%			
Large Office	Lighting 3L4T8	Electric	100%			
Large Office	Lighting 4L4T12	Electric	100%			
Large Office	Lighting 4L4T8	Electric	100%			
Large Office	Lighting INC150W	Electric	100%			
Large Office	Lighting INC40W	Electric	100%			
Large Office	Lighting INC75W	Electric	100%			
Large Office	Other	Electric	100%			
Large Office	Plug Load	Electric	90%	10%		
Large Office	Space Heat	Electric	100%			
Large Office	Ventilation	Electric	50%	40%	9%	1%
Large Office	Water Heat	Electric	50%	45%	5%	
Large Office	Space Heat	Gas	100%			
Large Office	Water Heat	Gas	100%			

Efficiency Shares By Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Stock Efficiency	Standard Efficiency	High Efficiency	Premium Efficiency
Lodging	Cooking	Electric	90%	10%		
Lodging	Cooling Chillers	Electric	50%	40%	9%	1%
Lodging	Cooling DX	Electric	50%	45%	5%	
Lodging	Cooling HeatPump	Electric	50%	45%	5%	
Lodging	Lighting 2L4T12	Electric	100%			
Lodging	Lighting 2L4T8	Electric	100%			
Lodging	Lighting 2L8T12	Electric	100%			
Lodging	Lighting 3L4T12	Electric	100%			
Lodging	Lighting 3L4T8	Electric	100%			
Lodging	Lighting 4L4T12	Electric	100%			
Lodging	Lighting 4L4T8	Electric	100%			
Lodging	Lighting INC150W	Electric	100%			
Lodging	Lighting INC40W	Electric	100%			
Lodging	Lighting INC75W	Electric	100%			
Lodging	Other	Electric	100%			
Lodging	Plug Load	Electric	90%	10%		
Lodging	Refrigeration	Electric	90%	10%		
Lodging	Space Heat	Electric	100%			
Lodging	Ventilation	Electric	50%	40%	9%	1%
Lodging	Water Heat	Electric	50%	45%	5%	
Lodging	Cooking	Gas	100%			
Lodging	Space Heat	Gas	100%			
Lodging	Water Heat	Gas	100%			
Miscellaneous	Cooling Chillers	Electric	50%	40%	9%	1%
Miscellaneous	Cooling DX	Electric	50%	45%	5%	
Miscellaneous	Cooling HeatPump	Electric	50%	45%	5%	
Miscellaneous	Lighting 2L4T12	Electric	100%			
Miscellaneous	Lighting 2L4T8	Electric	100%			
Miscellaneous	Lighting 2L8T12	Electric	100%			
Miscellaneous	Lighting 3L4T12	Electric	100%			
Miscellaneous	Lighting 3L4T8	Electric	100%			
Miscellaneous	Lighting 4L4T12	Electric	100%			
Miscellaneous	Lighting 4L4T8	Electric	100%			
Miscellaneous	Lighting INC150W	Electric	100%			
Miscellaneous	Lighting INC40W	Electric	100%			
Miscellaneous	Lighting INC75W	Electric	100%			
Miscellaneous	Other	Electric	100%			
Miscellaneous	Plug Load	Electric	90%	10%		
Miscellaneous	Space Heat	Electric	100%			
Miscellaneous	Ventilation	Electric	50%	40%	9%	1%
Miscellaneous	Water Heat	Electric	50%	45%	5%	
Miscellaneous	Space Heat	Gas	100%			
Miscellaneous	Water Heat	Gas	100%			
Restaurant	Cooking	Electric	90%	10%		
Restaurant	Cooling Chillers	Electric	50%	40%	9%	1%
Restaurant	Cooling DX	Electric	50%	45%	5%	
Restaurant	Cooling HeatPump	Electric	50%	45%	5%	
Restaurant	Lighting 2L4T12	Electric	100%			
Restaurant	Lighting 2L4T8	Electric	100%			
Restaurant	Lighting 2L8T12	Electric	100%			
Restaurant	Lighting 3L4T12	Electric	100%			
Restaurant	Lighting 3L4T8	Electric	100%			
Restaurant	Lighting 4L4T12	Electric	100%			
Restaurant	Lighting 4L4T8	Electric	100%			
Restaurant	Lighting INC150W	Electric	100%			
Restaurant	Lighting INC40W	Electric	100%			
Restaurant	Lighting INC75W	Electric	100%			
Restaurant	Other	Electric	100%			
Restaurant	Plug Load	Electric	90%	10%		
Restaurant	Refrigeration	Electric	90%	10%		
Restaurant	Space Heat	Electric	100%			
Restaurant	Ventilation	Electric	50%	40%	9%	1%
Restaurant	Water Heat	Electric	50%	45%	5%	
Restaurant	Cooking	Gas	100%			
Restaurant	Space Heat	Gas	100%			
Restaurant	Water Heat	Gas	100%			

Efficiency Shares By Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Stock Efficiency	Standard Efficiency	High Efficiency	Premium Efficiency
Retail	Cooling Chillers	Electric	50%	40%	9%	1%
Retail	Cooling DX	Electric	50%	45%	5%	
Retail	Cooling HeatPump	Electric	50%	45%	5%	
Retail	Lighting 2L4T12	Electric	100%			
Retail	Lighting 2L4T8	Electric	100%			
Retail	Lighting 2L8T12	Electric	100%			
Retail	Lighting 3L4T12	Electric	100%			
Retail	Lighting 3L4T8	Electric	100%			
Retail	Lighting 4L4T12	Electric	100%			
Retail	Lighting 4L4T8	Electric	100%			
Retail	Lighting INC150W	Electric	100%			
Retail	Lighting INC40W	Electric	100%			
Retail	Lighting INC75W	Electric	100%			
Retail	Other	Electric	100%			
Retail	Plug Load	Electric	90%	10%		
Retail	Space Heat	Electric	100%			
Retail	Ventilation	Electric	50%	40%	9%	1%
Retail	Water Heat	Electric	50%	45%	5%	
Retail	Space Heat	Gas	100%			
Retail	Water Heat	Gas	100%			
School	Cooking	Electric	90%	10%		
School	Cooling Chillers	Electric	50%	40%	9%	1%
School	Cooling DX	Electric	50%	45%	5%	
School	Cooling HeatPump	Electric	50%	45%	5%	
School	Lighting 2L4T12	Electric	100%			
School	Lighting 2L4T8	Electric	100%			
School	Lighting 2L8T12	Electric	100%			
School	Lighting 3L4T12	Electric	100%			
School	Lighting 3L4T8	Electric	100%			
School	Lighting 4L4T12	Electric	100%			
School	Lighting 4L4T8	Electric	100%			
School	Lighting INC150W	Electric	100%			
School	Lighting INC40W	Electric	100%			
School	Lighting INC75W	Electric	100%			
School	Other	Electric	100%			
School	Plug Load	Electric	90%	10%		
School	Refrigeration	Electric	90%	10%		
School	Space Heat	Electric	100%			
School	Ventilation	Electric	50%	40%	9%	1%
School	Water Heat	Electric	50%	45%	5%	
School	Cooking	Gas	100%			
School	Space Heat	Gas	100%			
School	Water Heat	Gas	100%			
Small Office	Cooling Chillers	Electric	50%	40%	9%	1%
Small Office	Cooling DX	Electric	50%	45%	5%	
Small Office	Cooling HeatPump	Electric	50%	45%	5%	
Small Office	Lighting 2L4T12	Electric	100%			
Small Office	Lighting 2L4T8	Electric	100%			
Small Office	Lighting 2L8T12	Electric	100%			
Small Office	Lighting 3L4T12	Electric	100%			
Small Office	Lighting 3L4T8	Electric	100%			
Small Office	Lighting 4L4T12	Electric	100%			
Small Office	Lighting 4L4T8	Electric	100%			
Small Office	Lighting INC150W	Electric	100%			
Small Office	Lighting INC40W	Electric	100%			
Small Office	Lighting INC75W	Electric	100%			
Small Office	Other	Electric	100%			
Small Office	Plug Load	Electric	90%	10%		
Small Office	Space Heat	Electric	100%			
Small Office	Ventilation	Electric	50%	40%	9%	1%
Small Office	Water Heat	Electric	50%	45%	5%	
Small Office	Space Heat	Gas	100%			
Small Office	Water Heat	Gas	100%			
Warehouse	Cooling Chillers	Electric	50%	40%	9%	1%
Warehouse	Cooling DX	Electric	50%	45%	5%	
Warehouse	Cooling HeatPump	Electric	50%	45%	5%	
Warehouse	Lighting 2L4T12	Electric	100%			
Warehouse	Lighting 2L4T8	Electric	100%			
Warehouse	Lighting 2L8T12	Electric	100%			
Warehouse	Lighting 3L4T12	Electric	100%			
Warehouse	Lighting 3L4T8	Electric	100%			
Warehouse	Lighting 4L4T12	Electric	100%			
Warehouse	Lighting 4L4T8	Electric	100%			
Warehouse	Lighting INC150W	Electric	100%			
Warehouse	Lighting INC40W	Electric	100%			
Warehouse	Lighting INC75W	Electric	100%			
Warehouse	Other	Electric	100%			
Warehouse	Plug Load	Electric	90%	10%		
Warehouse	Refrigeration	Electric	90%	10%		
Warehouse	Space Heat	Electric	100%			
Warehouse	Ventilation	Electric	50%	40%	9%	1%
Warehouse	Water Heat	Electric	50%	45%	5%	
Warehouse	Space Heat	Gas	100%			
Warehouse	Water Heat	Gas	100%			

EUIs by Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Stock EUI	Standard EUI	Stock Eff	Standard Eff
Small_Office	Space_Heat	Electric	6.18	6.18	1	1
Small_Office	Cooling_Chillers	Electric	4.19	3.56	0.85	1
Small_Office	Cooling_DX	Electric	4.19	3.77	0.9	1
Small_Office	Cooling_HeatPump	Electric	4.19	3.77	0.9	1
Small_Office	Ventilation	Electric	1.43	1.43	1	1
Small_Office	Lighting_4L4T12	Electric	5.29	5.29	1	1
Small_Office	Lighting_3L4T12	Electric	5.29	5.29	1	1
Small_Office	Lighting_2L4T12	Electric	5.29	5.29	1	1
Small_Office	Lighting_2L8T12	Electric	5.29	5.29	1	1
Small_Office	Lighting_4L4T8	Electric	4.24	4.24	1	1
Small_Office	Lighting_3L4T8	Electric	4.24	4.24	1	1
Small_Office	Lighting_2L4T8	Electric	4.24	4.24	1	1
Small_Office	Lighting_INC40W	Electric	5.29	5.29	1	1
Small_Office	Lighting_INC75W	Electric	5.29	5.29	1	1
Small_Office	Lighting_INC150W	Electric	5.29	5.29	1	1
Small_Office	Water_Heat	Electric	0.95	0.90	0.95	1
Small_Office	Plug_Load	Electric	1.59	1.59	1	1
Small_Office	Other	Electric	0.00	0.00	1	1
Large_Office	Space_Heat	Electric	6.18	6.18	1	1
Large_Office	Cooling_Chillers	Electric	4.19	3.56	0.85	1
Large_Office	Cooling_DX	Electric	4.19	3.77	0.9	1
Large_Office	Cooling_HeatPump	Electric	4.19	3.77	0.9	1
Large_Office	Ventilation	Electric	1.43	1.43	1	1
Large_Office	Lighting_4L4T12	Electric	5.29	5.29	1	1
Large_Office	Lighting_3L4T12	Electric	5.29	5.29	1	1
Large_Office	Lighting_2L4T12	Electric	5.29	5.29	1	1
Large_Office	Lighting_2L8T12	Electric	5.29	5.29	1	1
Large_Office	Lighting_4L4T8	Electric	4.24	4.24	1	1
Large_Office	Lighting_3L4T8	Electric	4.24	4.24	1	1
Large_Office	Lighting_2L4T8	Electric	4.24	4.24	1	1
Large_Office	Lighting_INC40W	Electric	5.29	5.29	1	1
Large_Office	Lighting_INC75W	Electric	5.29	5.29	1	1
Large_Office	Lighting_INC150W	Electric	5.29	5.29	1	1
Large_Office	Water_Heat	Electric	0.95	0.90	0.95	1
Large_Office	Plug_Load	Electric	1.59	1.59	1	1
Large_Office	Other	Electric	0.00	0.00	1	1
Restaurant	Space_Heat	Electric	3.76	3.76	1	1
Restaurant	Cooling_Chillers	Electric	4.49	3.82	0.85	1
Restaurant	Cooling_DX	Electric	4.49	4.04	0.9	1
Restaurant	Cooling_HeatPump	Electric	4.49	4.04	0.9	1
Restaurant	Ventilation	Electric	2.75	2.75	1	1
Restaurant	Lighting_4L4T12	Electric	8.74	8.74	1	1
Restaurant	Lighting_3L4T12	Electric	8.74	8.74	1	1
Restaurant	Lighting_2L4T12	Electric	8.74	8.74	1	1
Restaurant	Lighting_2L8T12	Electric	8.74	8.74	1	1
Restaurant	Lighting_4L4T8	Electric	6.99	6.99	1	1
Restaurant	Lighting_3L4T8	Electric	6.99	6.99	1	1
Restaurant	Lighting_2L4T8	Electric	6.99	6.99	1	1
Restaurant	Lighting_INC40W	Electric	8.74	8.74	1	1
Restaurant	Lighting_INC75W	Electric	8.74	8.74	1	1
Restaurant	Lighting_INC150W	Electric	8.74	8.74	1	1
Restaurant	Water_Heat	Electric	9.19	8.73	0.95	1
Restaurant	Refrigeration	Electric	7.67	7.67	1	1
Restaurant	Cooking	Electric	25.07	25.07	1	1
Restaurant	Plug_Load	Electric	0.23	0.23	1	1
Restaurant	Other	Electric	0.00	0.00	1	1
Retail	Space_Heat	Electric	4.59	4.59	1	1
Retail	Cooling_Chillers	Electric	3.14	2.67	0.85	1
Retail	Cooling_DX	Electric	3.14	2.83	0.9	1
Retail	Cooling_HeatPump	Electric	3.14	2.83	0.9	1
Retail	Ventilation	Electric	1.39	1.39	1	1
Retail	Lighting_4L4T12	Electric	5.89	5.89	1	1
Retail	Lighting_3L4T12	Electric	5.89	5.89	1	1
Retail	Lighting_2L4T12	Electric	5.89	5.89	1	1
Retail	Lighting_2L8T12	Electric	5.89	5.89	1	1
Retail	Lighting_4L4T8	Electric	4.71	4.71	1	1
Retail	Lighting_3L4T8	Electric	4.71	4.71	1	1
Retail	Lighting_2L4T8	Electric	4.71	4.71	1	1
Retail	Lighting_INC40W	Electric	5.89	5.89	1	1
Retail	Lighting_INC75W	Electric	5.89	5.89	1	1
Retail	Lighting_INC150W	Electric	5.89	5.89	1	1
Retail	Water_Heat	Electric	1.01	0.96	0.95	1
Retail	Plug_Load	Electric	0.15	0.15	1	1
Retail	Other	Electric	0.00	0.00	1	1

EUIs by Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Stock EUI	Standard EUI	Stock Eff	Standard Eff
Grocery	Space_Heat	Electric	5.42	5.42	1	1
Grocery	Cooling_Chillers	Electric	4.10	3.49	0.85	1
Grocery	Cooling_DX	Electric	4.10	3.69	0.9	1
Grocery	Cooling_HeatPump	Electric	4.10	3.69	0.9	1
Grocery	Ventilation	Electric	2.52	2.52	1	1
Grocery	Lighting_4L4T12	Electric	12.76	12.76	1	1
Grocery	Lighting_3L4T12	Electric	12.76	12.76	1	1
Grocery	Lighting_2L4T12	Electric	12.76	12.76	1	1
Grocery	Lighting_2L8T12	Electric	12.76	12.76	1	1
Grocery	Lighting_4L4T8	Electric	10.21	10.21	1	1
Grocery	Lighting_3L4T8	Electric	10.21	10.21	1	1
Grocery	Lighting_2L4T8	Electric	10.21	10.21	1	1
Grocery	Lighting_INC40W	Electric	12.76	12.76	1	1
Grocery	Lighting_INC75W	Electric	12.76	12.76	1	1
Grocery	Lighting_INC150W	Electric	12.76	12.76	1	1
Grocery	Water_Heat	Electric	2.40	2.28	0.95	1
Grocery	Refrigeration	Electric	28.13	28.13	1	1
Grocery	Cooking	Electric	7.31	7.31	1	1
Grocery	Plug_Load	Electric	0.41	0.41	1	1
Grocery	Other	Electric	0.00	0.00	1	1
Warehouse	Space_Heat	Electric	4.02	4.02	1	1
Warehouse	Cooling_Chillers	Electric	1.66	1.42	0.85	1
Warehouse	Cooling_DX	Electric	1.66	1.50	0.9	1
Warehouse	Cooling_HeatPump	Electric	1.66	1.50	0.9	1
Warehouse	Ventilation	Electric	0.77	0.77	1	1
Warehouse	Lighting_4L4T12	Electric	2.94	2.94	1	1
Warehouse	Lighting_3L4T12	Electric	2.94	2.94	1	1
Warehouse	Lighting_2L4T12	Electric	2.94	2.94	1	1
Warehouse	Lighting_2L8T12	Electric	2.94	2.94	1	1
Warehouse	Lighting_4L4T8	Electric	2.36	2.36	1	1
Warehouse	Lighting_3L4T8	Electric	2.36	2.36	1	1
Warehouse	Lighting_2L4T8	Electric	2.36	2.36	1	1
Warehouse	Lighting_INC40W	Electric	2.94	2.94	1	1
Warehouse	Lighting_INC75W	Electric	2.94	2.94	1	1
Warehouse	Lighting_INC150W	Electric	2.94	2.94	1	1
Warehouse	Water_Heat	Electric	0.42	0.40	0.95	1
Warehouse	Refrigeration	Electric	10.45	10.45	1	1
Warehouse	Plug_Load	Electric	0.15	0.15	1	1
Warehouse	Other	Electric	0.00	0.00	1	1
School	Space_Heat	Electric	2.77	2.77	1	1
School	Cooling_Chillers	Electric	1.51	1.28	0.85	1
School	Cooling_DX	Electric	1.51	1.36	0.9	1
School	Cooling_HeatPump	Electric	1.51	1.36	0.9	1
School	Ventilation	Electric	0.77	0.77	1	1
School	Lighting_4L4T12	Electric	2.68	2.68	1	1
School	Lighting_3L4T12	Electric	2.68	2.68	1	1
School	Lighting_2L4T12	Electric	2.68	2.68	1	1
School	Lighting_2L8T12	Electric	2.68	2.68	1	1
School	Lighting_4L4T8	Electric	2.14	2.14	1	1
School	Lighting_3L4T8	Electric	2.14	2.14	1	1
School	Lighting_2L4T8	Electric	2.14	2.14	1	1
School	Lighting_INC40W	Electric	2.68	2.68	1	1
School	Lighting_INC75W	Electric	2.68	2.68	1	1
School	Lighting_INC150W	Electric	2.68	2.68	1	1
School	Water_Heat	Electric	0.90	0.85	0.95	1
School	Refrigeration	Electric	0.48	0.48	1	1
School	Cooking	Electric	1.21	1.21	1	1
School	Plug_Load	Electric	0.11	0.11	1	1
School	Other	Electric	0.00	0.00	1	1
Health	Space_Heat	Electric	4.96	4.96	1	1
Health	Cooling_Chillers	Electric	3.36	2.86	0.85	1
Health	Cooling_DX	Electric	3.36	3.02	0.9	1
Health	Cooling_HeatPump	Electric	3.36	3.02	0.9	1
Health	Ventilation	Electric	3.58	3.58	1	1
Health	Lighting_4L4T12	Electric	10.77	10.77	1	1
Health	Lighting_3L4T12	Electric	10.77	10.77	1	1
Health	Lighting_2L4T12	Electric	10.77	10.77	1	1
Health	Lighting_2L8T12	Electric	10.77	10.77	1	1
Health	Lighting_4L4T8	Electric	8.62	8.62	1	1
Health	Lighting_3L4T8	Electric	8.62	8.62	1	1
Health	Lighting_2L4T8	Electric	8.62	8.62	1	1
Health	Lighting_INC40W	Electric	10.77	10.77	1	1
Health	Lighting_INC75W	Electric	10.77	10.77	1	1
Health	Lighting_INC150W	Electric	10.77	10.77	1	1
Health	Water_Heat	Electric	2.27	2.16	0.95	1
Health	Refrigeration	Electric	0.65	0.65	1	1
Health	Cooking	Electric	4.33	4.33	1	1
Health	Plug_Load	Electric	0.52	0.52	1	1
Health	Other	Electric	0.00	0.00	1	1

EUIs by Building Type, End-Use and Fuel

Building Type	End-Use	Fuel	Stock EUI	Standard EUI	Stock Eff	Standard Eff
Lodging	Space_Heat	Electric	2.54	2.54	1	1
Lodging	Cooling_Chillers	Electric	2.83	2.41	0.85	1
Lodging	Cooling_DX	Electric	2.83	2.55	0.9	1
Lodging	Cooling_HeatPump	Electric	2.83	2.55	0.9	1
Lodging	Ventilation	Electric	1.20	1.20	1	1
Lodging	Lighting_4L4T12	Electric	3.01	3.01	1	1
Lodging	Lighting_3L4T12	Electric	3.01	3.01	1	1
Lodging	Lighting_2L4T12	Electric	3.01	3.01	1	1
Lodging	Lighting_2L8T12	Electric	3.01	3.01	1	1
Lodging	Lighting_4L4T8	Electric	2.41	2.41	1	1
Lodging	Lighting_3L4T8	Electric	2.41	2.41	1	1
Lodging	Lighting_2L4T8	Electric	2.41	2.41	1	1
Lodging	Lighting_INC40W	Electric	3.01	3.01	1	1
Lodging	Lighting_INC75W	Electric	3.01	3.01	1	1
Lodging	Lighting_INC150W	Electric	3.01	3.01	1	1
Lodging	Water_Heat	Electric	2.79	2.65	0.95	1
Lodging	Refrigeration	Electric	0.54	0.54	1	1
Lodging	Cooking	Electric	4.32	4.32	1	1
Lodging	Plug_Load	Electric	0.10	0.10	1	1
Lodging	Other	Electric	0.00	0.00	1	1
Miscellaneous	Space_Heat	Electric	2.76	2.76	1	1
Miscellaneous	Cooling_Chillers	Electric	2.39	2.03	0.85	1
Miscellaneous	Cooling_DX	Electric	2.39	2.15	0.9	1
Miscellaneous	Cooling_HeatPump	Electric	2.39	2.15	0.9	1
Miscellaneous	Ventilation	Electric	0.94	0.94	1	1
Miscellaneous	Lighting_4L4T12	Electric	2.12	2.12	1	1
Miscellaneous	Lighting_3L4T12	Electric	2.12	2.12	1	1
Miscellaneous	Lighting_2L4T12	Electric	2.12	2.12	1	1
Miscellaneous	Lighting_2L8T12	Electric	2.12	2.12	1	1
Miscellaneous	Lighting_4L4T8	Electric	1.70	1.70	1	1
Miscellaneous	Lighting_3L4T8	Electric	1.70	1.70	1	1
Miscellaneous	Lighting_2L4T8	Electric	1.70	1.70	1	1
Miscellaneous	Lighting_INC40W	Electric	2.12	2.12	1	1
Miscellaneous	Lighting_INC75W	Electric	2.12	2.12	1	1
Miscellaneous	Lighting_INC150W	Electric	2.12	2.12	1	1
Miscellaneous	Water_Heat	Electric	1.65	1.57	0.95	1
Miscellaneous	Plug_Load	Electric	1.00	1.00	1	1
Miscellaneous	Other	Electric	0.00	0.00	1	1
Small_Office	Space_Heat	Gas	57.20	57.20	1	1
Small_Office	Water_Heat	Gas	5.88	5.88	1	1
Large_Office	Space_Heat	Gas	57.20	57.20	1	1
Large_Office	Water_Heat	Gas	5.88	5.88	1	1
Restaurant	Space_Heat	Gas	47.98	47.98	1	1
Restaurant	Water_Heat	Gas	78.51	78.51	1	1
Restaurant	Cooking	Gas	132.36	132.36	1	1
Retail	Space_Heat	Gas	53.33	53.33	1	1
Retail	Water_Heat	Gas	8.20	8.20	1	1
Grocery	Space_Heat	Gas	89.38	89.38	1	1
Grocery	Water_Heat	Gas	27.31	27.31	1	1
Grocery	Cooking	Gas	50.64	50.64	1	1
Warehouse	Space_Heat	Gas	55.82	55.82	1	1
Warehouse	Water_Heat	Gas	3.63	3.63	1	1
School	Space_Heat	Gas	49.16	49.16	1	1
School	Water_Heat	Gas	10.76	10.76	1	1
School	Cooking	Gas	8.76	8.76	1	1
Health	Space_Heat	Gas	112.32	112.32	1	1
Health	Water_Heat	Gas	41.82	41.82	1	1
Health	Cooking	Gas	49.15	49.15	1	1
Lodging	Space_Heat	Gas	47.05	47.05	1	1
Lodging	Water_Heat	Gas	34.69	34.69	1	1
Lodging	Cooking	Gas	31.96	31.96	1	1
Miscellaneous	Space_Heat	Gas	42.05	42.05	1	1
Miscellaneous	Water_Heat	Gas	11.87	11.87	1	1

Appendix B. Residential and Commercial Measures

[illegible]

[illegible]

Area	Building Type	End-Use	Fuel	Efficiency	Vintage	EUI	Measure Names	Energy Savings	Full Per Unit Cost	Life	Feasibility	Inconcrete Factor	Maximize Applicability (Feas Factor)	Stand Alone Savings	Adjusted Base	Savings App	Stacked Marginal Energy Cost	Stacked Marginal Energy Cost	Stacked Stand Alone Cost Group
SJD	Multi Family	Central Heat	Electric	Stock	Existing	7413.47	Comprehensive Shell Air Sealing - Int. Reduction	14.4%	\$650.00	10	90.0%	20.0%	18.0%	1087.54	4578.4641	118.674	859.288235	50.10	E
SJD	Multi Family	Central Heat	Electric	Stock	Existing	7413.47	Comprehensive Shell Air Sealing - Int. Reduction	48.5%	\$320.00	18	90.0%	100.0%	18.0%	3591.826	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	7413.47	Comprehensive Shell Air Sealing - Int. Reduction	8.0%	\$320.00	18	50.0%	30.0%	18.0%	44.6002	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	7413.47	Comprehensive Shell Air Sealing - Int. Reduction	2.2%	\$320.00	30	33.0%	59.8%	15.0%	684.2742	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	631.158	Removal of Secondary Refrigerator (or rep of unit)	17.0%	\$47.20	30	15.0%	100.0%	15.0%	684.2742	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	23.1%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	14.2%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	6.2%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	17.3%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	5.5%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	28.5%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	14.4%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	4929.15	High Efficiency Windows, Low-U=0.35	2.3%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	1088.08	CFL 6.0W/day	39.3%	\$4.50	7	100.0%	85.3%	95.5%	48.0002	1088.08	48.387	48.387	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	1088.08	CFL 6.0W/day	4.4%	\$4.50	7	100.0%	85.3%	95.5%	48.0002	1088.08	48.387	48.387	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	1088.08	CFL 6.0W/day	21.3%	\$4.50	7	100.0%	85.3%	95.5%	48.0002	1088.08	48.387	48.387	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	1088.08	CFL 6.0W/day	39.3%	\$4.50	7	100.0%	85.3%	95.5%	48.0002	1088.08	48.387	48.387	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	2000	Powerstrip with Occupancy Sensor	21.3%	\$23.33	8	100.0%	66.2%	86.3%	231.828	1088.08	188.478	231.828	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	817.181	Removal of Secondary Refrigerator (or rep of unit)	17.0%	\$47.20	30	15.0%	100.0%	15.0%	684.2742	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	7657.78	High Efficiency Windows, Low-U=0.35	28.5%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F
SJD	Multi Family	Central Heat	Electric	Stock	Existing	7657.78	High Efficiency Windows, Low-U=0.35	14.4%	\$47.20	30	60.0%	89.8%	30.0%	138.833	4550.7503	194.638	260.98235	50.10	F

Appendix C. Industrial Top-Down Potential Results

2003 Annual Consumption		
SIC	Business Category	MWh
20	Food/Kindred Products	68,490
23	Apparel & other textile products	14,415
24	Lumber/Wood Products	27,001
26	Paper/Allied Products	90,653
27	Printing/Publishing	137,355
28	Chemical/Allied Products	32,204
29	Petroleum Related	1,459
30	Rubber/Misc. Plastics Products	96,474
32	Stone/Clay/Glass/Concrete Prod.	70,215
33	Primary Metal Industries	148,364
34	Fabricated Metal Products	48,639
35	Machinery, except Electrical	27,315
36	Electric/Electronic Equip.	244,515
37	Transportation Equipment	118,237
38	Instruments/Related Products	12,973
39	Miscellaneous	196,022
Total		1,334,334
		%
		5.1%
		1.1%
		2.0%
		6.8%
		10.3%
		2.4%
		0.1%
		7.2%
		5.3%
		11.1%
		3.6%
		2.0%
		18.3%
		8.9%
		1.0%
		14.7%

Source data: Aquila COMMENT

Industrial Technical Electric Conservation Potential by End-Use

Electric End-Use	2003 Firm Consumption Total (MWh)	Measure Life (Years)	Savings as % of End-Use	Savings as % of Total	First Year Savings (MWh)	Measure Cost \$/MWh Saved	Total Cost (\$)	Simple Payback @ \$0.05/kWh (Years)	Cumulative Savings (MWh)	Simple Payback @ \$0.05/kWh (Years)	Levelized COE (\$/kWh)
Total Load	1,334,332	15.8	10.1%	N/A	67,442	15.4	\$0.216	\$28,137,550	4.3	2,130,583	0.024
Uncoded/Miscoded/Invalid	-	-	-	-	-	-	-	-	-	-	-
1. HVAC	189,339	15.0	1.6%	11.1%	20,923	2.4	\$0.450	\$9,415,232	9.0	313,841	0.051
2. Indirect Boiler	10,054	-	-	-	-	-	-	-	-	-	-
3. Lighting	154,428	10.0	1.3%	11.5%	17,723	2.0	\$0.250	\$4,430,756	5.0	177,230	0.036
4. Other Not Reported	117,139	-	-	-	-	-	-	-	-	-	-
5. Process Electrochemical	22,589	-	-	-	-	-	-	-	-	-	-
6. Process Heat	177,393	-	-	-	-	-	-	-	-	-	-
7. Process Other	8,581	-	-	-	-	-	-	-	-	-	-
8. Motors	584,889	17.2	6.7%	15.2%	88,863	10.1	\$0.130	\$11,539,435	2.6	1,529,186	0.014
9. Refrigeration/Process Cooling	69,920	15.0	0.6%	10.5%	7,355	0.8	\$0.150	\$1,103,259	3.0	110,326	0.017
10. Motors	-	20.0	5.8%	12.8%	75,079	8.8	\$0.148	\$11,125,295	3.0	1,501,577	0.015
11. Compressed Air (CAI)	-	2.0	1.0%	2.4%	13,805	1.6	\$0.030	\$414,139	0.8	27,609	0.017

Industrial Electric Technical Conservation Potential by Sector

Electric Market Segments	2003 Firm Consumption Total (MWh)	Savings as % of Sector Load	Savings (MWh)	First Year Savings (MWh)	Measure Cost \$/MWh Saved	Total Cost (\$)	Measure Life (Years)	Simple Payback @ \$0.05/kWh (Years)	Cumulative Savings (MWh)	Simple Payback @ \$0.05/kWh (Years)	Levelized COE (\$/kWh)
Total Load	1,334,332	10.1%	134,884	15.4	\$0.216	\$28,137,550	15.8	4.3	2,130,583	4.3	0.024
Uncoded/Miscoded/Invalid	-	-	-	-	-	-	-	-	-	-	-
20. Food/Kindred Products	68,490	23.2%	15,896	1.8	\$0.165	\$2,618,606	17.1	3.3	272,108	3.3	0.017
23. Apparel & other textile products	14,413	6.6%	984	0.1	\$0.276	\$263,256	12.7	5.5	12,118	5.5	0.034
24. Lumber & wood products	27,001	13.3%	3,579	0.4	\$0.160	\$571,275	18.3	3.2	65,552	3.2	0.016
25. Paper/Allyed Products	90,653	17.9%	16,214	1.9	\$0.168	\$2,727,362	18.8	3.4	304,851	3.4	0.017
27. Printing/Publishing	137,355	5.2%	7,185	0.8	\$0.279	\$2,003,736	14.2	5.6	101,872	5.6	0.033
28. Chemical/Allyed Products	32,204	20.5%	6,617	0.8	\$0.143	\$947,836	16.8	2.9	111,006	2.9	0.015
29. Petroleum Related	1,459	23.4%	341	0.0	\$0.144	\$49,204	18.2	2.9	6,210	2.9	0.015
30. Rubber/Misc. Plastics Products	96,474	7.9%	7,846	0.9	\$0.180	\$1,376,039	15.2	3.6	116,439	3.6	0.020
32. Stone/Clay/Glass/Concrete Prod.	70,215	11.4%	7,975	0.9	\$0.140	\$1,115,933	14.3	2.8	114,299	2.8	0.016
33. Primary Metal Industries	148,364	15.4%	22,919	2.6	\$0.153	\$3,486,666	18.2	3.1	417,747	3.1	0.016
34. Fabricated Metal Products	48,639	6.2%	3,001	0.3	\$0.187	\$559,810	11.7	3.7	35,106	3.7	0.025
35. Machinery & other Electrical	27,315	10.2%	2,735	0.3	\$0.230	\$638,819	14.2	4.6	39,542	4.6	0.027
36. Electrical Equip.	244,515	10.5%	25,586	2.9	\$0.234	\$5,981,540	13.8	4.7	354,151	4.7	0.028
37. Transportation Equipment	118,237	7.3%	8,646	1.0	\$0.257	\$2,223,686	12.8	5.1	110,767	5.1	0.032
38. Instruments & Related Products	12,973	7.0%	912	0.1	\$0.283	\$267,020	13.5	5.9	12,329	5.9	0.035
39. Miscellaneous	196,022	2.9%	5,588	0.6	\$0.342	\$1,911,150	12.3	6.8	68,805	6.8	0.044

End-Use Share	Firm MWh	Load Breakdown	Measure Life	% Potential	Savings Potential	Market Saturation	Technical Potential			Savings Potential MWh	First-Year CEE \$/MWh	Total Cost (\$)	Simple Payback @ \$10.05/kWh	Comm. Savings (MWh)	CCE (\$/kWh)
							% Industrial	% End Use	% End Use						
26 Paper/Allied Products	9.4%	8,482	15	15.0%	25.0%	1.1%	11.3%	954.2	11.3%	954.2	\$0.45	\$429,397		14,313	\$0.030
	1.4%	1,289	10	0.7%	0.7%	0.7%	0.7%	878.3	0.7%	878.3	\$0.25	\$169,089		6,763	\$0.025
	8.0%	7,193	20	15.5%	23.0%	14,050.0	15.5%	23.0%	14,050.0	\$0.15	\$2,098,873		281,000	\$0.007	
	5.9%	5,273	20	9.3%	7.9%	4,801.0	9.3%	7.9%	4,801.0	\$0.15	\$270,151		96,070	\$0.008	
	0.4%	335	20	0.9%	0.9%	791.1	0.9%	0.9%	791.1	\$0.15	\$118,211		15,824	\$0.004	
	8.4%	5,765	20	6.3%	29.4%	8,729.6	6.3%	29.4%	8,729.6	\$0.15	\$556,360		114,531	\$0.008	
	0.3%	273	20	0.1%	0.1%	284.3	0.1%	0.1%	284.3	\$0.12	\$14,111		10,181	\$0.004	
	3.2%	2,800	20	0.1%	0.1%	644.5	0.1%	0.1%	644.5	\$0.15	\$107,689		13,889	\$0.004	
	84.2%	58,233	15	6.0%	20.0%	118.0	6.0%	4.0%	118.0	\$0.15	\$17,402		1,740	\$0.010	
	67.4%	61,132	2	0.5%	15.0%	417.4	0.5%	15.0%	417.4	\$0.03	\$12,522.0		935	\$0.015	
	12.3%	12,041	16.8			18,213.8			18,213.8		2,727,262		304,651	\$0.009	
	21.2%	19,219													
	3.1%	2,760													
	24.6%	27,058													
	100.0%	90,653													
Conservation Technical Potential															
27 Printing/Publishing	19.8%	27,239	15	15.0%	25.0%	1.1%	11.3%	954.2	11.3%	954.2	\$0.45	\$429,397		14,313	\$0.030
	0.4%	544	10	0.7%	0.7%	0.7%	0.7%	878.3	0.7%	878.3	\$0.25	\$169,089		6,763	\$0.025
	12.8%	17,303	20	15.5%	23.0%	14,050.0	15.5%	23.0%	14,050.0	\$0.15	\$2,098,873		281,000	\$0.007	
	14.8%	20,441	20	9.3%	7.9%	4,801.0	9.3%	7.9%	4,801.0	\$0.15	\$270,151		96,070	\$0.008	
	0.3%	402	20	0.9%	0.9%	791.1	0.9%	0.9%	791.1	\$0.15	\$118,211		15,824	\$0.004	
	2.7%	3,850	20	6.3%	29.4%	8,729.6	6.3%	29.4%	8,729.6	\$0.15	\$556,360		114,531	\$0.008	
	0.2%	221	20	0.1%	0.1%	284.3	0.1%	0.1%	284.3	\$0.12	\$14,111		10,181	\$0.004	
	4.1%	5,813	15	6.0%	20.0%	118.0	6.0%	4.0%	118.0	\$0.15	\$17,402		1,740	\$0.010	
	45.1%	61,845	2	0.5%	15.0%	417.4	0.5%	15.0%	417.4	\$0.03	\$12,522.0		935	\$0.015	
	49.3%	67,558	16.8			18,213.8			18,213.8		2,727,262		304,651	\$0.009	
	7.8%	10,801													
	0.7%	544													
	27.6%	4,857													
	100.0%	137,355													
Conservation Technical Potential															
28 Chemical/Allied Products	6.0%	1,925	15	15.0%	20.0%	0.5%	12.0%	613.5	12.0%	613.5	\$0.15	\$101,090		10,103	\$0.010
	2.8%	842	2	0.5%	0.5%	742.7	0.5%	15.0%	742.7	\$0.03	\$22,281		1,485	\$0.015	
	4.0%	1,302	14.3	5.2%	N/A	7,184.7			7,184.7		2,003,736		101,872	\$0.020	
	3.8%	1,211													

	End-Use Share	Firm kWh	Load Breakdown	Measure Life	% Potential	Savings Market Saturation	Technical Potential			Savings Potential MWh	First-Year CCE \$/MWh	Total Cost (\$)	Simple Payback @ \$0.05/kWh	Cumm. Savings (MWh)	CCE (\$/kWh)
							%	% Industrial	% End Use						
29 Petroleum Related	Process Electro Chemical	4.4%	1,402												
	Process Heat	0.3%	2,039												
	Process Other	1.1%	308												
	Process Cool	6.9%	2,237												
	Process Motors	64.8%	20,880												
	(Process Motors & Cooling Breakdown)														
	Fan System	71.8%	23,517												
	Pump System	8.9%	2,744												
	Air Comp. Sys.	16.3%	6,399												
	Other Systems (mostly Motor)	24.7%	7,959												
	Total Consumption (MWh)	100.0%	32,204												
	Conservation Technical Potential														
	HVAC														
	Lighting														
	Motor Technical Potential w/o Compr. Air Q&M														
30 Rubber/Misc. Plastics Products	Process Electro Chemical	4.4%	1,402												
	Process Heat	0.3%	2,039												
	Process Other	1.1%	308												
	Process Cool	6.9%	2,237												
	Process Motors	64.8%	20,880												
	(Process Motors & Cooling Breakdown)														
	Fan System	71.8%	23,517												
	Pump System	8.9%	2,744												
	Air Comp. Sys.	16.3%	6,399												
	Other Systems (mostly Motor)	24.7%	7,959												
	Total Consumption (MWh)	100.0%	32,204												
	Conservation Technical Potential														
	HVAC														
	Lighting														
	Motor Technical Potential w/o Compr. Air Q&M														

	End-Use Shares	Firm MWh	Load Breakdown	Measure Life	% Savings Potential	Market Saturation	Technical Potential			First-Year CCE \$/MWh	Total Cost (\$)	Simple Payback @ \$0.05/MWh	Cumm. Savings (MWh)	CCE (\$/MWh)
							% Industrial	% End Use	Savings Potential MWh					
32 Stone/Clay/Glass/Concrete Prod.														
(Process Motors & Cooling Breakout)	87.8%		53,757											
Fan System	3.3%		3,140											
Pump System	14.3%		14,003											
Air Comp. Sys.	7.5%		7,269											
Other Systems (Identify Below)	32.5%		31,330											
Total Consumption (MWh)	100.0%	98,474	98,474											
Conservation Technical Potential														
HVAC				15	15.0%	25.0%		11.3%	883.1	\$0.45	\$401,883	\$10.05/MWh	13,398	\$0.030
Lighting				10			1.0%	13.8%	958.9	\$0.25	\$239,800		9,589	\$0.025
Motor Technical Potential w/o Compr. Air Q&M				20			4.3%	7.4%	4,140.1	\$0.15	\$616,890		82,803	\$0.007
Motor Efficiency Upgrade														
Process Improvements														
Motor Overhauling														
Pump System Improvements														
Fan System Improvements														
Air Compressor Improvements														
Other System Improvements														
Refrigeration/Process Cooling Technical Potential				15	10.0%	20.0%	0.6%	8.0%	564.2	\$0.15	\$84,627		8,463	\$0.010
Compressed Air Q&M Technical Potential				2			1.1%	15.0%	1,089.0	\$0.03	\$32,869		2,178	\$0.015
Total Conservation Technical Potential				15.2			7.9%	N/A	7,846.3		1,376,029		116,439	\$0.012
33 Primary Metal Industries														
1 HVAC	4.2%		6,246											
2 Indirect Boilers	0.5%		730											
3 Lighting	5.2%		7,783											
4 Other - Not Reported	3.5%		6,758											
5 Process Electro Chemical	2.7%		4,039											
6 Process Heat	35.1%		52,017											
7 Process Other	0.9%		1,344											
8 Process Cool	1.5%		2,285											
Process Motors	46.0%		66,182											
(Process Motors & Cooling Breakout)														
Fan System	47.3%		76,467											
Pump System	1.2%		1,519											
Air Comp. Sys.	4.1%		5,127											
Other Systems (Identify Below)	6.1%		10,104											

End-Use Share	Firm MWh	Load Breakdown	Measure Life	% Savings Potential	Market Saturation	% Industrial Load	% End Use	Savings Potential MWh	First-Year CCE \$/MWh	Total Cost (\$)	Simple Payback (\$/0.05/MWh)	Cumm. Savings (MWh)	CCE (\$/MWh)
29.3%	148,264	42,472											
100.0%	148,264	148,264											
Conservation Technical Potential													
HVAC													
Lighting													
Motors Technical Potential w/o Compr. Air Q&M													
Motor Efficiency Upgrade													
Motor Demanding													
Fan System Improvements													
Air Compressor Improvements													
Other System Improvements													
Refrigeration/Process Cooling Technical Potential													
Compressed Air Q&M Technical Potential													
Total Conservation Technical Potential													

34 Fabricated Metal Products

1 HVAC	10.1%	4,915											
2 Indirect Boiler	1.1%	535											
3 Lighting	11.0%	5,340											
4 Other - Not Reported	4.1%	1,915											
5 Process Electro Chemical	4.5%	2,192											
6 Process Heat	12.5%	6,102											
7 Process Other	0.8%	393											
8 Process Cool	2.2%	1,067											
9 Process Motors	49.3%	23,879											
(Process Motors & Cooling Breakout)	51.5%	25,045											
Fan System	4.3%	2,044											
Pump System	6.4%	3,049											
Air Comp. Sys.	12.5%	6,093											
Other System (Heating & Cooling)	24.3%	11,749											
Total Consumption (MWh)	100.0%	48,639											
Conservation Technical Potential													
HVAC													
Lighting													
Motors Technical Potential w/o Compr. Air Q&M													
Motor Efficiency Upgrade													
Refrigeration/Process Cooling Technical Potential													
Compressed Air Q&M Technical Potential													
Total Conservation Technical Potential													

35 Machinery, except Electrical

1 HVAC	18.4%	5,312											
2 Indirect Boiler	0.6%	158											
3 Lighting	14.9%	4,078											
4 Other - Not Reported	1.4%	3,127											
5 Process Electro Chemical	0.3%	92											
6 Process Heat	8.3%	2,277											
7 Process Other	0.8%	215											
8 Process Cool	3.3%	901											
9 Process Motors	40.3%	11,158											
(Process Motors & Cooling Breakout)	44.1%	12,069											
Fan System	3.1%	840											
Pump System	5.4%	1,492											
Air Comp. Sys.	7.5%	1,916											
Other System (Heating & Cooling)	24.3%	7,119											
Total Consumption (MWh)	100.0%	27,315											
Conservation Technical Potential													
HVAC													

Measure	End-Use Shares	Firm MWh	Load Breakdown	Measure Life	% Savings Potential	Market Saturation	Technical Potential			Savings Potential MWh	First-Year CCE \$/MWh	Total Cost (\$)	Simple Payback @ \$0.05/kWh	Cumm. Savings (MWh)	CCE (\$/kWh)
							% Industrial Load	% End Use	% End Use						
23 Apparel & other textile products															
1	HVAC	23.3%	3,368												
2	Indirect Boilers	0.0%	88												
3	Lighting	17.0%	2,451												
4	Other - Not Reported	12.3%	1,766												
5	Process Electric Chemical	0.9%	122												
6	Process Heat	3.0%	432												
7	Process Oil(H)	1.5%	214												
8	Process Cool	1.5%	216												
9	Process Motors	40.0%	5,786												
10	(Process Motors & Cooling Breakout)	41.9%	6,041												
11	Fan System	5.1%	727												
12	Pump System	10.4%	1,488												
13	Air Control Sys.	8.4%	656												
14	Other (Steam Heat/Relay)	14.4%	2,761												
15	Total Conservation Technical Potential	100.0%	14,415												
Conservation Technical Potential															
HVAC															
Lighting															
Motors															
Motor Efficiency Upgrade															
Rawind Improvements															
Motor Downsizing															
Pump System Improvements															
Fan System Improvements															
Air Compressor Improvements															
Other System Improvements															
Refrigeration/Process Cooling Technical Potential															
Compressed Air O&M Technical Potential															
Total Conservation Technical Potential															

TERMS

Motor Efficiency Upgrade- The savings potential of moving from pre-EPAct motor efficiencies to EPAct levels and from EPAct to CEE levels.

Improved Rawind Practices- The savings from better processing of the rawind process such as closer control of the burnout stage of processing.

Correct Motor Sizing- The savings from selection of motors to operate in the range of 65% to 85% rated capacity to take advantage of the operating efficiencies range.

Pump System Efficiency Improvements- The savings from ASD control of the driving motor and/or the improved design of the system through such improvements as better pumps, more efficient piping, and eliminating unnecessary flows.

Fan System Efficiency Improvements- The savings from ASD control of the motor drive and/or the improved design of the system through such improvements as better fans and blowers, ducting, and flow design.

Compressed Air Efficiency Improvements- The savings from such improvements as better control of compressed air drives and/or the improvement in air delivery systems through surge tanks, leakage correction, and better components.

Other Special System- Other equipment savings have also been estimated.

Appendix D. Demand Response Potential Results

Aggregate "Gross" Potential					
Sector/Segment	Max of Average	Summer Off	Summer On	Winter Off	Winter On
Industrial Sector	173,501	160,402	173,501	145,383	159,313
Commercial: Education	37,160	13,599	37,160	6,568	30,857
Commercial: Food Stores	63,305	17,711	63,305	13,502	50,273
Commercial: Hospitals	83,553	49,503	83,553	51,607	71,380
Commercial: Hotels/Motels	13,634	9,297	13,634	9,293	10,911
Commercial: Misc	39,487	8,779	39,487	9,456	32,727
Commercial: Offices	92,561	27,469	92,561	22,067	66,451
Commercial: Restaurants	27,779	7,217	27,779	8,281	26,837
Commercial: Retail	59,195	12,996	59,195	16,215	48,172
Commercial: Warehouses	17,361	5,248	17,361	4,627	15,147
Residential	499,119	207,989	499,119	182,929	286,304

Sum of End-Uses	520,212	1,106,655	469,927	798,372
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Sum of Max Average Hourly	1,427,111	955,369	1,427,111	794,947	990,215
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Class Peaks (Max of Averages)					
Industrial	173,501			145,383	159,313
Commercial	434,035			141,615	352,755
Residential	499,119			182,929	286,304

	MAX	Total			
		Summer Off	Summer On	Winter Off	Winter On
	INDU	165,575	178,850	155,352	162,946
Commercial: Education	EDUC	38,720	40,262	15,636	33,398
Commercial: Food Stores	GROC	57,200	65,621	53,922	57,164
Commercial: Hospitals	HEAL	70,085	88,200	62,099	74,595
Commercial: Hotels/Motels	LODG	13,978	15,330	11,425	13,501
Commercial: Misc	MISC	25,712	28,479	27,723	30,475
Commercial: Offices	SOFF	50,312	63,652	45,788	51,853
Commercial: Restaurants	REST	86,285	103,035	31,528	75,741
Commercial: Retail	ARET	32,894	41,695	31,615	36,724
Commercial: Warehouses	WARE	16,275	17,760	15,593	16,483
	RESID	398,333	784,227	344,265	437,335

Lighting				Other				Plug Load				Ventilation			
Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
17-21	08-10	17-21	08-10	17-21	08-10	17-21	08-10	17-21	08-10	17-21	08-10	17-21	08-10	17-21	08-10
15,554	3,416	14,569	-	160,402	173,801	145,383	159,313	1,513	4,332	778	3,937	1,544	4,526	800	4,546
16,091	2,535	14,171	-	1,099	3,208	410	2,311	8,531	32,883	6,758	29,078	1,402	1,795	1,439	1,790
41,408	24,431	39,224	-	3,544	3,972	2,591	2,904	5,858	9,335	5,520	8,842	10,737	10,737	10,737	10,737
4,270	3,891	4,361	-	59	-	8,260	6,480	755	1,937	561	1,756	1,167	1,080	1,379	1,270
14,095	2,183	12,402	-	-	-	1,318	1,069	1,675	6,701	1,312	5,914	1,939	5,308	1,681	5,234
25,038	7,461	33,257	-	-	-	3,131	2,228	4,172	7,845	3,173	7,710	2,522	6,610	2,442	6,563
8,806	1,377	7,578	-	12	-	2,067	2,063	3,615	13,998	2,658	12,376	982	1,380	1,046	1,370
32,405	5,021	28,528	-	-	-	4,698	3,442	170	706	138	622	2,011	5,503	1,742	5,428
5,181	971	5,426	-	1,061	1,190	776	870	1,981	7,637	1,569	6,753	593	867	711	885
49,705	26,232	46,866	-	12,616	45,047	12,121	12,533	96,293	148,894	83,709	145,929	-	-	-	-

Class 2: Firm: Curtailment Contracts									
Participation									
LOAD									
EVENT									
25% 5% 25% 25% 0% 0% 25% 90%									
% Achievable									
% Eligible Load: KW>250	Heat	Cool	HW	Light	Plug	Ventilati on	Technical Potential kW	Achievable Potential kW	
80%	20%	4%	20%	20%	0%	0%	-	-	
50%	13%	3%	13%	13%	0%	0%	2,588	582	
70%	18%	4%	18%	18%	0%	0%	3,264	734	
0%	0%	0%	0%	0%	0%	0%	-	-	
12%	3%	1%	3%	3%	0%	0%	231	52	
0%	0%	0%	0%	0%	0%	0%	-	-	
50%	13%	3%	13%	13%	0%	0%	6,104	1,373	
0%	0%	0%	0%	0%	0%	0%	-	-	
0%	0%	0%	0%	0%	0%	0%	-	-	
40%	10%	2%	10%	10%	0%	0%	741	167	
0%	0%	0%	0%	0%	0%	0%	-	-	

Industrial
Commercial: Education
Commercial: Food Stores
Commercial: Hospitals
Commercial: Hotels/Motels
Commercial: Misc
Commercial: Offices
Commercial: Restaurants
Commercial: Retail
Commercial: Warehouses
Residential

Optimal start saves 5-10%, Variable capacity control saves 5-15% of total building energy, Demand-responsive
*** ventilation saves 2-7% of total building energy use, thermal storage saves 2%-10% of total building. Case studies in this

Class 3: Non-Firm: Two-Part (TOU) Tariffs				
% Eligible Load	Participation		LOAD	
	3%	6%	35%	EVENT 100%
	% Achievable			
	TOU Affects all End Uses, Therefore Impacts are at Aggregate Level Only			
	Overall Tech %	Technical Potential kW	Achievable Potential kW	
Industrial	3.00%	5,205	1,822	
Commercial: Education	3.00%	1,195	418	
Commercial: Food Stores	0.00%	-	-	
Commercial: Hospitals	0.00%	-	-	
Commercial: Hotels/Motels	0.00%	-	-	
Commercial: Misc	0.00%	-	-	
Commercial: Offices	0.00%	-	-	
Commercial: Restaurants	3.00%	3,059	1,071	
Commercial: Retail	0.00%	-	-	
Commercial: Warehouses	0.00%	-	-	
Residential	6.00%	33,067	11,574	

Commercial: Education
 Commercial: Food Stores
 Commercial: Hospitals
 Commercial: Hotels/Motels
 Commercial: Misc
 Commercial: Offices
 Commercial: Restaurants
 Commercial: Retail
 Commercial: Warehouses
 Residential

* Assumes that all sectors are available for TOU, if under 30 kW (based on eligibility requirements filed by utilities with OPLUC)

** Net is calculated as product of portion of sector load that is under 30kW and 20%

** 20% savings for C&I: NWPPC Issues: Georgia Power C&I load of 5,000 MW saved a max of 1,000MW, but they expect 500MW (Dynamic Pricing). Duke Power program saves 200MW of 1,000 MW load at hourly prices above \$0.25

** Gulf Power reduction of 2.37kW per customer on Critical Peak Pricing program (50%); PSE August 2003

** PSE TOU Evaluation for Residential

Class 4: Non-Firm: DBB										
Participation										
25% 25% 25% 25% 25% 0% 0%										
% Achievable										
% Eligible Load: kW>250	Plug Ventilati on						Technical Potential kW	Achievable Potential kW	LOAD	
	Heat	Cool	HW	Light	Other	Plug Ventilati on			100%	EVENT 30%
Industrial										
Commercial: Education	80%	20%	20%	20%	0%	0%	-	-		
Commercial: Food Stores	50%	13%	13%	13%	0%	0%	3,470	1,041		
Commercial: Hospitals	70%	18%	18%	18%	0%	0%	4,347	1,304		
Commercial: Hotels/Motels	0%	0%	0%	0%	0%	0%	-	-		
Commercial: Misc	12%	3%	3%	3%	0%	0%	374	112		
Commercial: Offices	0%	0%	0%	0%	0%	0%	-	-		
Commercial: Restaurants	50%	13%	13%	13%	0%	0%	10,225	3,067		
Commercial: Retail	0%	0%	0%	0%	0%	0%	-	-		
Commercial: Warehouses	40%	10%	10%	10%	0%	0%	845	253		
Residential	0%	0%	0%	0%	0%	0%	-	-		

** Figures are product of % of eligible load and maximum potential reduction
 ** It is assumed that savings on average would be 10 percentage points (35%) above those assumed for curtailment contracts.

Class 5: Non-Firm: Critical Peak Pricing				
% Eligible Load	CPP Theoretically can affect all End Uses, so Overall only	Participation		EVENT
		RESID	LOAD	
		12%	50%	75%
		% Achievable		
		Overall		
		Overall	Technical Potential kW	Achievable Potential kW
Industrial		12%	20,820	7,808
Commercial: Education		12%	4,782	1,793
Commercial: Food Stores		12%	7,619	2,857
Commercial: Hospitals		12%	11,145	4,179
Commercial: Hotels/Motels		12%	2,088	783
Commercial: Misc		12%	5,221	1,958
Commercial: Offices		12%	12,237	4,589
Commercial: Restaurants		12%	3,686	1,382
Commercial: Retail		12%	8,189	3,071
Commercial: Warehouses		12%	2,180	817
Residential		0%	-	-

Technical Potential, By EndUse

Combined Technical Potential									
Sector/Segment	Heat	Cool	HW	Light	Other	Plug Load	Ventilation	Maximum Potential by Strategy	Maximum Potential by End-Use
Industrial	20%	20%	20%	20%	12%	12%	12%	20,820	20,820
Commercial: Education	13%	13%	13%	13%	12%	12%	12%	4,782	4,921
Commercial: Food Stores	18%	18%	18%	18%	12%	12%	12%	7,619	8,985
Commercial: Hospitals	12%	12%	12%	12%	12%	12%	12%	11,145	11,145
Commercial: Hotels/Motels	12%	12%	12%	12%	12%	12%	12%	2,088	2,088
Commercial: Misc	12%	12%	12%	12%	12%	12%	12%	5,221	5,221
Commercial: Offices	13%	13%	13%	13%	12%	12%	12%	12,237	12,646
Commercial: Restaurants	12%	12%	12%	12%	12%	12%	12%	3,686	3,686
Commercial: Retail	12%	12%	12%	12%	12%	12%	12%	8,189	8,189
Commercial: Warehouses	12%	12%	12%	12%	12%	12%	12%	2,180	2,180
Residential	3%	39%	8%	6%	6%	6%	6%	93,605	109,579
Total								171,569	189,457
Percent of System Peak								12.0%	13.3%

Achievable Potential, By EndUse

Combined/Achievable Potential									
Heat	Cool	HW	Light	Refrig	Plug Load	Process	Achievable Potential by Strategy	Achievable Potential by End-Use	
6%	6%	6%	6%	5%	5%	5%	7,808	7,808	
5%	5%	5%	5%	5%	5%		1,793	1,589	
5%	5%	5%	5%	5%	5%		2,857	2,962	
5%	5%	5%	5%	5%	5%		4,179	3,696	
5%	5%	5%	5%	5%	5%		783	721	
5%	5%	5%	5%	5%	5%		1,958	1,719	
5%	5%	5%	5%	5%	5%		4,589	4,291	
5%	5%	5%	5%	5%	5%		1,382	1,320	
5%	5%	5%	5%	5%	5%		3,071	2,823	
5%	5%	5%	5%	5%	5%		817	777	
2%	10%	2%	2%	2%	2%		23,401	29,495	
Total							52,638	57,201	
Percent of System Peak							3.7%	4.0%	

Technical Potential Summary (kW)					
Sector	Direct Load Control	Curtailment Contracts	TOU	Demand Buy Back	Critical Peak Pricing
Industrial					
Technical Potential	-	-	5,205	-	20,820
Percent of Class Peak	0.0%	0.0%	3.0%	0.0%	12.0%
Commercial					
Technical Potential	-	12,929	4,255	19,261	57,145
Percent of Class Peak	0.0%	3.0%	1.0%	4.4%	13.2%
Residential					
Technical Potential	93,605	-	33,067	-	-
Percent of Class Peak	18.8%	-	6.6%	-	0.0%
Total Potential*	93,605	12,929	42,527	19,261	77,965
Percent of System Peak	6.6%	0.9%	3.0%	1.3%	5.5%

* Note that not all strategies mutually exclusive, hence potentials are not additive.

Achievable Potential Summary (kW)					
Sector	Direct Load Control	Curtailment Contracts	TOU	Demand Buy-Back	Critical Peak Pricing
Industrial					
Market Potential			1,822		7,808
Percent of Class Peak			1.1%		4.5%
Commercial					
Market Potential		2,909	1,489	5,778	21,429
Percent of Class Peak		0.7%	0.3%	1.3%	4.9%
Residential					
Market Potential	23,401		11,574		
Percent of Class Peak	4.7%		2.3%		
Total Potential*	23,401	2,909	14,884	5,778	29,237
Percent of System Peak	1.6%	0.2%	1.0%	0.4%	2.0%

* Note that not all strategies mutually exclusive, hence potentials are not additive.

Appendix E. Detailed Program Cost Effectiveness Results

Program Name:		Residential Lighting						
Key Program Inputs:								
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)			
2006	3,100	\$ 164,063	\$ 82,383	2,710,665	406			
2007	4,750	\$ 222,079	\$ 125,741	6,848,483	1,026			
2008	6,500	\$ 283,540	\$ 171,712	12,499,515	1,873			
2009	7,500	\$ 318,673	\$ 197,406	18,996,930	2,846			
2010	8,500	\$ 355,717	\$ 224,444	26,383,455	3,953			
2011	-	\$ -	\$ -	25,017,255	3,748			
2012	-	\$ -	\$ -	22,930,695	3,435			
2013	-	\$ -	\$ -	19,813,005	2,968			
2014	-	\$ -	\$ -	15,144,705	2,269			
2015	-	\$ -	\$ -	9,364,410	1,403			
2016	-	\$ -	\$ -	6,583,815	986			
2017	-	\$ -	\$ -	3,361,028	504			
2018	-	\$ -	\$ -	490,860	74			
2019	-	\$ -	\$ -	261,225	39			
2020	-	\$ -	\$ -	-	-			
2021	-	\$ -	\$ -	-	-			
2022	-	\$ -	\$ -	-	-			
2023	-	\$ -	\$ -	-	-			
2024	-	\$ -	\$ -	-	-			
2025	-	\$ -	\$ -	-	-			
Cost-Effectiveness Test Results:								
Program	Total Resource Cost Test		Utility Cost Test (UCT)		Participant (PCT)		Rate Impact Measure (RIM)	
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits
2006	\$ 246,445	\$ 89,478	\$ 164,063	\$ 89,478	\$ 82,383	\$ 190,407	\$ 354,470	\$ 89,478
2007	\$ 347,819	\$ 190,992	\$ 222,079	\$ 190,992	\$ 125,741	\$ 495,495	\$ 717,574	\$ 190,992
2008	\$ 455,252	\$ 384,011	\$ 283,540	\$ 384,011	\$ 171,712	\$ 931,484	\$ 1,215,024	\$ 384,011
2009	\$ 516,079	\$ 793,614	\$ 318,673	\$ 793,614	\$ 197,406	\$ 1,458,152	\$ 1,776,825	\$ 793,614
2010	\$ 580,160	\$ 987,406	\$ 355,717	\$ 987,406	\$ 224,444	\$ 2,085,875	\$ 2,441,591	\$ 987,406
2011	\$ -	\$ 1,147,508	\$ -	\$ 1,147,508	\$ -	\$ 2,037,199	\$ 2,037,199	\$ 1,147,508
2012	\$ -	\$ 1,083,354	\$ -	\$ 1,083,354	\$ -	\$ 1,923,305	\$ 1,923,305	\$ 1,083,354
2013	\$ -	\$ 964,141	\$ -	\$ 964,141	\$ -	\$ 1,711,664	\$ 1,711,664	\$ 964,141
2014	\$ -	\$ 759,082	\$ -	\$ 759,082	\$ -	\$ 1,347,616	\$ 1,347,616	\$ 759,082
2015	\$ -	\$ 483,443	\$ -	\$ 483,443	\$ -	\$ 858,268	\$ 858,268	\$ 483,443
2016	\$ -	\$ 350,090	\$ -	\$ 350,090	\$ -	\$ 621,523	\$ 621,523	\$ 350,090
2017	\$ -	\$ 184,082	\$ -	\$ 184,082	\$ -	\$ 326,805	\$ 326,805	\$ 184,082
2018	\$ -	\$ 27,691	\$ -	\$ 27,691	\$ -	\$ 49,160	\$ 49,160	\$ 27,691
2019	\$ -	\$ 15,178	\$ -	\$ 15,178	\$ -	\$ 26,947	\$ 26,947	\$ 15,178
2020	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2021	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2022	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2023	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2024	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2025	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2026	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2033	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2035	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NPV	\$1,692,372	\$4,686,281	\$1,062,611	\$4,686,281	\$629,761	\$8,956,227	\$10,018,838	\$4,686,281
Net Benefits	\$2,993,909		Net Benefits	\$3,623,670	Net Benefits	\$8,326,466	Net Benefits	(\$5,332,557)
B/C Ratio	2.77		B/C Ratio	4.41	B/C Ratio	14.22	B/C Ratio	0.47

Detailed Cost-Effectiveness Results

E-1

Program Name:		Residential Thermal Envelope Improvements						
Key Program Inputs								
Program Year	Participants	Utility Costs	Participant Costs ¹¹	Energy Impacts	Impacts (Avg. Max)			
2006	482	\$ 376,992	\$ 292,183	1,613,338	300			
2007	613	\$ 501,161	\$ 411,078	3,881,482	718			
2008	748	\$ 627,643	\$ 532,044	6,826,062	1,292			
2009	760	\$ 642,920	\$ 543,270	9,927,814	1,891			
2010	773	\$ 660,535	\$ 556,244	13,231,311	2,521			
2011	-	\$ -	\$ -	13,020,171	2,489			
2012	-	\$ -	\$ -	12,703,461	2,442			
2013	-	\$ -	\$ -	12,233,661	2,372			
2014	-	\$ -	\$ -	11,476,176	2,259			
2015	-	\$ -	\$ -	10,516,731	2,117			
2016	-	\$ -	\$ -	9,908,040	2,023			
2017	-	\$ -	\$ -	9,194,666	1,911			
2018	-	\$ -	\$ -	8,480,882	1,797			
2019	-	\$ -	\$ -	8,318,866	1,765			
2020	-	\$ -	\$ -	8,147,790	1,731			
2021	-	\$ -	\$ -	8,147,790	1,731			
2022	-	\$ -	\$ -	8,147,790	1,731			
2023	-	\$ -	\$ -	8,147,790	1,731			
2024	-	\$ -	\$ -	8,147,790	1,731			
2025	-	\$ -	\$ -	8,147,790	1,731			
Cost-Effectiveness Test Results								
Program	Total Resource	Cost Test	Utility Cost Test (UCT)		Participant (PCT)		Rate/Impact Measure (RIM)	
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits
2006	\$ 669,175	\$ 56,381	\$ 376,992	\$ 56,381	\$ 292,183	\$ 113,327	\$ 490,319	\$ 56,381
2007	\$ 912,239	\$ 122,139	\$ 501,161	\$ 122,139	\$ 411,078	\$ 280,829	\$ 781,990	\$ 122,139
2008	\$ 1,159,687	\$ 239,814	\$ 627,643	\$ 239,814	\$ 532,044	\$ 508,689	\$ 1,136,332	\$ 239,814
2009	\$ 1,186,190	\$ 474,809	\$ 642,920	\$ 474,809	\$ 543,270	\$ 762,032	\$ 1,404,952	\$ 474,809
2010	\$ 1,216,779	\$ 563,151	\$ 660,535	\$ 563,151	\$ 556,244	\$ 1,046,067	\$ 1,706,602	\$ 563,151
2011	\$ -	\$ 658,146	\$ -	\$ 658,146	\$ -	\$ 1,060,255	\$ 1,060,255	\$ 658,146
2012	\$ -	\$ 662,928	\$ -	\$ 662,928	\$ -	\$ 1,065,499	\$ 1,065,499	\$ 662,928
2013	\$ -	\$ 659,954	\$ -	\$ 659,954	\$ -	\$ 1,056,878	\$ 1,056,878	\$ 659,954
2014	\$ -	\$ 641,786	\$ -	\$ 641,786	\$ -	\$ 1,021,181	\$ 1,021,181	\$ 641,786
2015	\$ -	\$ 611,508	\$ -	\$ 611,508	\$ -	\$ 963,881	\$ 963,881	\$ 611,508
2016	\$ -	\$ 597,036	\$ -	\$ 597,036	\$ -	\$ 935,336	\$ 935,336	\$ 597,036
2017	\$ -	\$ 575,138	\$ -	\$ 575,138	\$ -	\$ 894,032	\$ 894,032	\$ 575,138
2018	\$ -	\$ 551,083	\$ -	\$ 551,083	\$ -	\$ 849,367	\$ 849,367	\$ 551,083
2019	\$ -	\$ 557,114	\$ -	\$ 557,114	\$ -	\$ 858,135	\$ 858,135	\$ 557,114
2020	\$ -	\$ 562,455	\$ -	\$ 562,455	\$ -	\$ 865,702	\$ 865,702	\$ 562,455
2021	\$ -	\$ 579,329	\$ -	\$ 579,329	\$ -	\$ 891,674	\$ 891,674	\$ 579,329
2022	\$ -	\$ 596,709	\$ -	\$ 596,709	\$ -	\$ 918,424	\$ 918,424	\$ 596,709
2023	\$ -	\$ 614,610	\$ -	\$ 614,610	\$ -	\$ 945,976	\$ 945,976	\$ 614,610
2024	\$ -	\$ 633,048	\$ -	\$ 633,048	\$ -	\$ 974,356	\$ 974,356	\$ 633,048
2025	\$ -	\$ 652,040	\$ -	\$ 652,040	\$ -	\$ 1,003,586	\$ 1,003,586	\$ 652,040
2026	\$ -	\$ 657,855	\$ -	\$ 657,855	\$ -	\$ 1,012,050	\$ 1,012,050	\$ 657,855
2027	\$ -	\$ 657,918	\$ -	\$ 657,918	\$ -	\$ 1,011,987	\$ 1,011,987	\$ 657,918
2028	\$ -	\$ 651,625	\$ -	\$ 651,625	\$ -	\$ 1,002,484	\$ 1,002,484	\$ 651,625
2029	\$ -	\$ 643,972	\$ -	\$ 643,972	\$ -	\$ 990,892	\$ 990,892	\$ 643,972
2030	\$ -	\$ 634,851	\$ -	\$ 634,851	\$ -	\$ 977,038	\$ 977,038	\$ 634,851
2031	\$ -	\$ 653,896	\$ -	\$ 653,896	\$ -	\$ 1,006,349	\$ 1,006,349	\$ 653,896
2032	\$ -	\$ 673,513	\$ -	\$ 673,513	\$ -	\$ 1,036,539	\$ 1,036,539	\$ 673,513
2033	\$ -	\$ 693,719	\$ -	\$ 693,719	\$ -	\$ 1,067,635	\$ 1,067,635	\$ 693,719
2034	\$ -	\$ 714,530	\$ -	\$ 714,530	\$ -	\$ 1,099,664	\$ 1,099,664	\$ 714,530
2035	\$ -	\$ 735,966	\$ -	\$ 735,966	\$ -	\$ 1,132,654	\$ 1,132,654	\$ 735,966
NPV	\$4,093,084	\$6,030,779	\$2,237,597	\$6,030,779	\$1,855,487	\$9,770,625	\$12,008,222	\$6,030,779
0 Net Benefits		\$1,937,694	Net Benefits	\$3,793,182	Net Benefits	\$7,915,137	Net Benefits	(\$5,977,443)
0 B/C Ratio		1.47	B/C Ratio	2.70	B/C Ratio	5.27	B/C Ratio	0.50

Detailed Cost-Effectiveness Results

E-2

Program Name:		Residential Space Heating & Cooling							
Key Program Inputs:									
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)				
2006	60	\$ 29,200	\$ 179,100	479,550	158				
2007	92	\$ 39,740	\$ 274,620	1,214,861	401				
2008	125	\$ 50,609	\$ 373,125	2,213,924	731				
2009	127	\$ 51,567	\$ 379,095	3,228,973	1,066				
2010	129	\$ 52,535	\$ 385,065	4,260,006	1,406				
2011	-	\$ -	\$ -	4,260,006	1,406				
2012	-	\$ -	\$ -	4,260,006	1,406				
2013	-	\$ -	\$ -	4,260,006	1,406				
2014	-	\$ -	\$ -	4,260,006	1,406				
2015	-	\$ -	\$ -	4,260,006	1,406				
2016	-	\$ -	\$ -	4,260,006	1,406				
2017	-	\$ -	\$ -	4,260,006	1,406				
2018	-	\$ -	\$ -	4,260,006	1,406				
2019	-	\$ -	\$ -	4,260,006	1,406				
2020	-	\$ -	\$ -	4,260,006	1,406				
2021	-	\$ -	\$ -	4,260,006	1,406				
2022	-	\$ -	\$ -	4,260,006	1,406				
2023	-	\$ -	\$ -	4,260,006	1,406				
2024	-	\$ -	\$ -	3,780,456	1,248				
2025	-	\$ -	\$ -	3,045,145	1,005				
Cost-Effectiveness Test Results									
Program	Total Resource Cost-Test	Utility Cost-Test (UCT)		Participant (PCT)		Rate Impact Measure (RIM)			
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits	
2006	\$ 208,300	\$ 15,055	\$ 29,200	\$ 15,055	\$ 179,100	\$ 33,685	\$ 62,885	\$ 15,055	
2007	\$ 314,360	\$ 25,729	\$ 39,740	\$ 25,729	\$ 274,620	\$ 87,896	\$ 127,636	\$ 25,729	
2008	\$ 423,734	\$ 51,543	\$ 50,609	\$ 51,543	\$ 373,125	\$ 164,985	\$ 215,594	\$ 51,543	
2009	\$ 430,662	\$ 128,547	\$ 51,567	\$ 128,547	\$ 379,095	\$ 247,847	\$ 299,414	\$ 128,547	
2010	\$ 437,600	\$ 150,768	\$ 52,535	\$ 150,768	\$ 385,065	\$ 336,796	\$ 389,331	\$ 150,768	
2011	\$ -	\$ 172,963	\$ -	\$ 172,963	\$ -	\$ 346,900	\$ 346,900	\$ 172,963	
2012	\$ -	\$ 178,152	\$ -	\$ 178,152	\$ -	\$ 357,307	\$ 357,307	\$ 178,152	
2013	\$ -	\$ 183,497	\$ -	\$ 183,497	\$ -	\$ 368,026	\$ 368,026	\$ 183,497	
2014	\$ -	\$ 189,002	\$ -	\$ 189,002	\$ -	\$ 379,067	\$ 379,067	\$ 189,002	
2015	\$ -	\$ 194,672	\$ -	\$ 194,672	\$ -	\$ 390,439	\$ 390,439	\$ 194,672	
2016	\$ -	\$ 200,512	\$ -	\$ 200,512	\$ -	\$ 402,152	\$ 402,152	\$ 200,512	
2017	\$ -	\$ 206,527	\$ -	\$ 206,527	\$ -	\$ 414,216	\$ 414,216	\$ 206,527	
2018	\$ -	\$ 212,723	\$ -	\$ 212,723	\$ -	\$ 426,643	\$ 426,643	\$ 212,723	
2019	\$ -	\$ 219,105	\$ -	\$ 219,105	\$ -	\$ 439,442	\$ 439,442	\$ 219,105	
2020	\$ -	\$ 225,678	\$ -	\$ 225,678	\$ -	\$ 452,626	\$ 452,626	\$ 225,678	
2021	\$ -	\$ 232,448	\$ -	\$ 232,448	\$ -	\$ 466,204	\$ 466,204	\$ 232,448	
2022	\$ -	\$ 239,422	\$ -	\$ 239,422	\$ -	\$ 480,190	\$ 480,190	\$ 239,422	
2023	\$ -	\$ 246,605	\$ -	\$ 246,605	\$ -	\$ 494,596	\$ 494,596	\$ 246,605	
2024	\$ -	\$ 225,409	\$ -	\$ 225,409	\$ -	\$ 452,087	\$ 452,087	\$ 225,409	
2025	\$ -	\$ 187,014	\$ -	\$ 187,014	\$ -	\$ 375,079	\$ 375,079	\$ 187,014	
2026	\$ -	\$ 129,427	\$ -	\$ 129,427	\$ -	\$ 259,582	\$ 259,582	\$ 129,427	
2027	\$ -	\$ 67,176	\$ -	\$ 67,176	\$ -	\$ 134,729	\$ 134,729	\$ 67,176	
2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2033	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2035	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
NPV	\$1,438,442	\$1,579,758	\$178,015	\$1,579,758	\$1,260,427	\$3,269,438	\$3,447,453	\$1,579,758	
0 Net Benefits		\$141,316	Net Benefits	\$1,401,744	Net Benefits	\$2,009,011	Net Benefits	(\$1,867,694)	
0 B/C Ratio		1.10	B/C Ratio	8.87	B/C Ratio	2.59	B/C Ratio	0.46	

Detailed Cost-Effectiveness Results

E-3

Program Name:		Residential Programmable Thermostat & HVAC Maintenance							
Key Program Inputs:									
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)				
2006	502	\$ 85,172	\$ 50,100	423,189	114				
2007	764	\$ 108,964	\$ 76,247	1,067,246	287				
2008	1,035	\$ 133,555	\$ 103,281	1,939,677	522				
2009	1,050	\$ 136,195	\$ 104,790	2,824,833	761				
2010	1,067	\$ 139,046	\$ 106,499	3,724,401	1,003				
2011	-	\$ -	\$ -	3,724,401	1,003				
2012	-	\$ -	\$ -	3,724,401	1,003				
2013	-	\$ -	\$ -	3,724,401	1,003				
2014	-	\$ -	\$ -	3,724,401	1,003				
2015	-	\$ -	\$ -	3,724,401	1,003				
2016	-	\$ -	\$ -	3,557,138	954				
2017	-	\$ -	\$ -	3,302,580	880				
2018	-	\$ -	\$ -	2,701,800	715				
2019	-	\$ -	\$ -	1,962,450	514				
2020	-	\$ -	\$ -	1,079,357	276				
2021	-	\$ -	\$ -	544,052	139				
2022	-	\$ -	\$ -	-	-				
2023	-	\$ -	\$ -	-	-				
2024	-	\$ -	\$ -	-	-				
2025	-	\$ -	\$ -	-	-				
Cost-Effectiveness Test Results									
Program	Total Resource Cost Test		Utility Cost Test (UCT)		Participant (PCT)		Rate Impact Measure (RIM)		
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits	
2006	\$ 135,272	\$ 14,353	\$ 85,172	\$ 14,353	\$ 50,100	\$ 29,726	\$ 114,898	\$ 14,353	
2007	\$ 185,211	\$ 28,803	\$ 108,964	\$ 28,803	\$ 76,247	\$ 77,216	\$ 186,180	\$ 28,803	
2008	\$ 236,836	\$ 57,973	\$ 133,555	\$ 57,973	\$ 103,281	\$ 144,548	\$ 278,103	\$ 57,973	
2009	\$ 240,985	\$ 128,543	\$ 136,195	\$ 128,543	\$ 104,790	\$ 216,826	\$ 353,021	\$ 128,543	
2010	\$ 245,545	\$ 151,449	\$ 139,046	\$ 151,449	\$ 106,499	\$ 294,451	\$ 433,497	\$ 151,449	
2011	\$ -	\$ 173,498	\$ -	\$ 173,498	\$ -	\$ 303,284	\$ 303,284	\$ 173,498	
2012	\$ -	\$ 178,703	\$ -	\$ 178,703	\$ -	\$ 312,383	\$ 312,383	\$ 178,703	
2013	\$ -	\$ 184,064	\$ -	\$ 184,064	\$ -	\$ 321,755	\$ 321,755	\$ 184,064	
2014	\$ -	\$ 189,586	\$ -	\$ 189,586	\$ -	\$ 331,407	\$ 331,407	\$ 189,586	
2015	\$ -	\$ 195,273	\$ -	\$ 195,273	\$ -	\$ 341,349	\$ 341,349	\$ 195,273	
2016	\$ -	\$ 192,536	\$ -	\$ 192,536	\$ -	\$ 335,800	\$ 335,800	\$ 192,536	
2017	\$ -	\$ 184,837	\$ -	\$ 184,837	\$ -	\$ 321,122	\$ 321,122	\$ 184,837	
2018	\$ -	\$ 156,454	\$ -	\$ 156,454	\$ -	\$ 270,587	\$ 270,587	\$ 156,454	
2019	\$ -	\$ 117,789	\$ -	\$ 117,789	\$ -	\$ 202,437	\$ 202,437	\$ 117,789	
2020	\$ -	\$ 67,679	\$ -	\$ 67,679	\$ -	\$ 114,682	\$ 114,682	\$ 67,679	
2021	\$ -	\$ 35,137	\$ -	\$ 35,137	\$ -	\$ 59,540	\$ 59,540	\$ 35,137	
2022	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2023	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2024	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2025	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2026	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2027	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2028	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2033	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2035	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
NPV	\$830,652	\$1,114,402	\$481,245	\$1,114,402	\$349,407	\$2,019,942	\$2,501,187	\$1,114,402	
0 Net Benefits		\$283,750		\$633,157		\$1,670,535		\$1,386,785	
0 B/C Ratio		1.34		2.32		5.78		0.45	

Detailed Cost-Effectiveness Results

E-4

Program Name:		Residential New Construction							
Key Program Inputs									
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)				
2006	90	\$ 134,680	\$ 124,558	739,536	138				
2007	120	\$ 172,900	\$ 166,077	1,725,585	323				
2008	150	\$ 211,140	\$ 207,596	2,958,146	553				
2009	150	\$ 211,840	\$ 207,596	4,190,706	783				
2010	150	\$ 212,561	\$ 207,596	5,423,267	1,014				
2011	-	\$ -	\$ -	5,311,487	997				
2012	-	\$ -	\$ -	5,162,447	975				
2013	-	\$ -	\$ -	4,967,399	945				
2014	-	\$ -	\$ -	4,501,163	876				
2015	-	\$ -	\$ -	3,942,587	792				
2016	-	\$ -	\$ -	3,463,391	720				
2017	-	\$ -	\$ -	2,978,363	647				
2018	-	\$ -	\$ -	2,502,083	576				
2019	-	\$ -	\$ -	2,425,981	567				
2020	-	\$ -	\$ -	2,334,233	556				
2021	-	\$ -	\$ -	2,249,718	547				
2022	-	\$ -	\$ -	2,163,110	537				
2023	-	\$ -	\$ -	2,074,409	528				
2024	-	\$ -	\$ -	2,007,195	512				
2025	-	\$ -	\$ -	1,921,065	491				
Cost Effectiveness Test Results									
Program	Total Resource Cost (Test)	Utility Cost Test (UCT)		Participant (PCT)		Rate Impact Measure (RIM)			
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits	
2006	\$ 259,238	\$ 24,956	\$ 134,680	\$ 24,956	\$ 124,558	\$ 51,948	\$ 186,628	\$ 24,956	
2007	\$ 338,977	\$ 48,394	\$ 172,900	\$ 48,394	\$ 166,077	\$ 124,848	\$ 297,748	\$ 48,394	
2008	\$ 418,736	\$ 91,589	\$ 211,140	\$ 91,589	\$ 207,596	\$ 220,446	\$ 431,586	\$ 91,589	
2009	\$ 419,436	\$ 183,502	\$ 211,840	\$ 183,502	\$ 207,596	\$ 321,667	\$ 533,607	\$ 183,502	
2010	\$ 420,157	\$ 212,500	\$ 212,561	\$ 212,500	\$ 207,596	\$ 428,763	\$ 641,324	\$ 212,500	
2011	\$ -	\$ 247,953	\$ -	\$ 247,953	\$ -	\$ 432,524	\$ 432,524	\$ 247,953	
2012	\$ -	\$ 248,350	\$ -	\$ 248,350	\$ -	\$ 432,999	\$ 432,999	\$ 248,350	
2013	\$ -	\$ 246,309	\$ -	\$ 246,309	\$ -	\$ 429,138	\$ 429,138	\$ 246,309	
2014	\$ -	\$ 230,330	\$ -	\$ 230,330	\$ -	\$ 400,526	\$ 400,526	\$ 230,330	
2015	\$ -	\$ 208,403	\$ -	\$ 208,403	\$ -	\$ 361,347	\$ 361,347	\$ 208,403	
2016	\$ -	\$ 189,174	\$ -	\$ 189,174	\$ -	\$ 326,950	\$ 326,950	\$ 189,174	
2017	\$ -	\$ 168,284	\$ -	\$ 168,284	\$ -	\$ 289,597	\$ 289,597	\$ 168,284	
2018	\$ -	\$ 146,465	\$ -	\$ 146,465	\$ -	\$ 250,586	\$ 250,586	\$ 146,465	
2019	\$ -	\$ 146,465	\$ -	\$ 146,465	\$ -	\$ 250,253	\$ 250,253	\$ 146,465	
2020	\$ -	\$ 145,407	\$ -	\$ 145,407	\$ -	\$ 248,012	\$ 248,012	\$ 145,407	
2021	\$ -	\$ 144,610	\$ -	\$ 144,610	\$ -	\$ 246,203	\$ 246,203	\$ 144,610	
2022	\$ -	\$ 143,503	\$ -	\$ 143,503	\$ -	\$ 243,827	\$ 243,827	\$ 143,503	
2023	\$ -	\$ 142,062	\$ -	\$ 142,062	\$ -	\$ 240,843	\$ 240,843	\$ 142,062	
2024	\$ -	\$ 141,617	\$ -	\$ 141,617	\$ -	\$ 240,031	\$ 240,031	\$ 141,617	
2025	\$ -	\$ 139,642	\$ -	\$ 139,642	\$ -	\$ 236,623	\$ 236,623	\$ 139,642	
2026	\$ -	\$ 131,098	\$ -	\$ 131,098	\$ -	\$ 222,146	\$ 222,146	\$ 131,098	
2027	\$ -	\$ 119,976	\$ -	\$ 119,976	\$ -	\$ 203,299	\$ 203,299	\$ 119,976	
2028	\$ -	\$ 106,069	\$ -	\$ 106,069	\$ -	\$ 179,734	\$ 179,734	\$ 106,069	
2029	\$ -	\$ 98,958	\$ -	\$ 98,958	\$ -	\$ 167,684	\$ 167,684	\$ 98,958	
2030	\$ -	\$ 91,325	\$ -	\$ 91,325	\$ -	\$ 154,750	\$ 154,750	\$ 91,325	
2031	\$ -	\$ 94,065	\$ -	\$ 94,065	\$ -	\$ 159,393	\$ 159,393	\$ 94,065	
2032	\$ -	\$ 96,887	\$ -	\$ 96,887	\$ -	\$ 164,174	\$ 164,174	\$ 96,887	
2033	\$ -	\$ 99,793	\$ -	\$ 99,793	\$ -	\$ 169,100	\$ 169,100	\$ 99,793	
2034	\$ -	\$ 102,787	\$ -	\$ 102,787	\$ -	\$ 174,172	\$ 174,172	\$ 102,787	
2035	\$ -	\$ 105,871	\$ -	\$ 105,871	\$ -	\$ 179,398	\$ 179,398	\$ 105,871	
NPV	\$1,482,533	\$1,793,380	\$753,699	\$1,793,380	\$728,834	\$3,232,987	\$3,986,686	\$1,793,380	
0 Net Benefits		\$310,847	Net Benefits	\$1,039,681	Net Benefits	\$2,504,153	Net Benefits	(\$2,193,306)	
0 B/C Ratio		1.21	B/C Ratio	2.38	B/C Ratio	4.435835422	B/C Ratio	0.45	

Detailed Cost-Effectiveness Results

E-5

Program Name:		Residential Audit Program							
Key Program Inputs									
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)				
2006	1,150	\$ 177,751	\$ -	711,526	96	-	-	-	-
2007	1,500	\$ 222,395	\$ -	1,644,876	222	-	-	-	-
2008	1,850	\$ 267,073	\$ -	2,800,047	378	-	-	-	-
2009	2,075	\$ 295,341	\$ -	4,089,160	552	-	-	-	-
2010	2,300	\$ 323,145	\$ -	5,512,212	745	-	-	-	-
2011	-	\$ -	\$ -	5,040,252	674	-	-	-	-
2012	-	\$ -	\$ -	4,419,252	581	-	-	-	-
2013	-	\$ -	\$ -	3,649,212	465	-	-	-	-
2014	-	\$ -	\$ -	2,792,232	337	-	-	-	-
2015	-	\$ -	\$ -	1,848,312	211	-	-	-	-
2016	-	\$ -	\$ -	1,827,344	209	-	-	-	-
2017	-	\$ -	\$ -	1,801,133	206	-	-	-	-
2018	-	\$ -	\$ -	1,769,679	202	-	-	-	-
2019	-	\$ -	\$ -	1,732,984	198	-	-	-	-
2020	-	\$ -	\$ -	1,691,046	193	-	-	-	-
2021	-	\$ -	\$ -	1,491,888	170	-	-	-	-
2022	-	\$ -	\$ -	1,231,670	141	-	-	-	-
2023	-	\$ -	\$ -	910,392	104	-	-	-	-
2024	-	\$ -	\$ -	550,595	63	-	-	-	-
2025	-	\$ -	\$ -	152,280	17	-	-	-	-
Cost-Effectiveness Test Results									
Program	Total Resource Cost Test	Utility Cost Test (UCT)		Participant (PCT)		Rate Impact Measure (RIM)			
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits	
2006	\$ 177,751	\$ 24,017	\$ 177,751	\$ 24,017	\$ -	\$ 49,980	\$ 227,731	\$ 24,017	
2007	\$ 222,395	\$ 45,631	\$ 222,395	\$ 45,631	\$ -	\$ 119,008	\$ 341,403	\$ 45,631	
2008	\$ 267,073	\$ 85,375	\$ 267,073	\$ 85,375	\$ -	\$ 208,664	\$ 475,737	\$ 85,375	
2009	\$ 295,341	\$ 171,971	\$ 295,341	\$ 171,971	\$ -	\$ 313,873	\$ 609,214	\$ 171,971	
2010	\$ 323,145	\$ 206,809	\$ 323,145	\$ 206,809	\$ -	\$ 435,795	\$ 758,940	\$ 206,809	
2011	\$ -	\$ 230,315	\$ -	\$ 230,315	\$ -	\$ 410,437	\$ 410,437	\$ 230,315	
2012	\$ -	\$ 207,885	\$ -	\$ 207,885	\$ -	\$ 370,664	\$ 370,664	\$ 207,885	
2013	\$ -	\$ 176,650	\$ -	\$ 176,650	\$ -	\$ 315,259	\$ 315,259	\$ 176,650	
2014	\$ -	\$ 138,996	\$ -	\$ 138,996	\$ -	\$ 248,460	\$ 248,460	\$ 138,996	
2015	\$ -	\$ 94,435	\$ -	\$ 94,435	\$ -	\$ 169,402	\$ 169,402	\$ 94,435	
2016	\$ -	\$ 96,165	\$ -	\$ 96,165	\$ -	\$ 172,504	\$ 172,504	\$ 96,165	
2017	\$ -	\$ 97,629	\$ -	\$ 97,629	\$ -	\$ 175,131	\$ 175,131	\$ 97,629	
2018	\$ -	\$ 98,802	\$ -	\$ 98,802	\$ -	\$ 177,235	\$ 177,235	\$ 98,802	
2019	\$ -	\$ 99,656	\$ -	\$ 99,656	\$ -	\$ 178,766	\$ 178,766	\$ 99,656	
2020	\$ -	\$ 100,161	\$ -	\$ 100,161	\$ -	\$ 179,674	\$ 179,674	\$ 100,161	
2021	\$ -	\$ 91,016	\$ -	\$ 91,016	\$ -	\$ 163,268	\$ 163,268	\$ 91,016	
2022	\$ -	\$ 77,395	\$ -	\$ 77,395	\$ -	\$ 138,835	\$ 138,835	\$ 77,395	
2023	\$ -	\$ 58,923	\$ -	\$ 58,923	\$ -	\$ 105,699	\$ 105,699	\$ 58,923	
2024	\$ -	\$ 36,705	\$ -	\$ 36,705	\$ -	\$ 65,843	\$ 65,843	\$ 36,705	
2025	\$ -	\$ 10,456	\$ -	\$ 10,456	\$ -	\$ 18,757	\$ 18,757	\$ 10,456	
2026	\$ -	\$ 9,395	\$ -	\$ 9,395	\$ -	\$ 16,853	\$ 16,853	\$ 9,395	
2027	\$ -	\$ 7,789	\$ -	\$ 7,789	\$ -	\$ 13,972	\$ 13,972	\$ 7,789	
2028	\$ -	\$ 5,591	\$ -	\$ 5,591	\$ -	\$ 10,030	\$ 10,030	\$ 5,591	
2029	\$ -	\$ 3,005	\$ -	\$ 3,005	\$ -	\$ 5,390	\$ 5,390	\$ 3,005	
2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2033	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2035	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
NPV	\$1,022,007	\$1,181,163	\$1,022,007	\$1,181,163	\$0	\$2,247,158	\$3,269,165	\$1,181,163	
0 Net Benefits		\$159,156	Net Benefits	\$159,156	Net Benefits	\$2,247,158	Net Benefits	(\$2,088,002)	
0 B/C Ratio		1.16	B/C Ratio	1.16	B/C Ratio	#DIV/0!	B/C Ratio	0.36	

Detailed Cost-Effectiveness Results

E-6

Program Name:		Comprehensive Commercial and Industrial							
Key Program Inputs									
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)				
2006	100	\$ 970,194	\$ 377,718	4,696,086	832				
2007	125	\$ 1,194,920	\$ 604,349	12,209,828	2,164				
2008	150	\$ 1,638,372	\$ 1,164,676	24,148,793	4,080				
2009	175	\$ 1,802,130	\$ 1,369,732	37,338,784	6,122				
2010	200	\$ 1,966,084	\$ 1,574,352	51,785,528	8,291				
2011	-	\$ -	\$ -	51,730,053	8,290				
2012	-	\$ -	\$ -	51,674,548	8,290				
2013	-	\$ -	\$ -	51,576,016	8,289				
2014	-	\$ -	\$ -	51,511,476	8,289				
2015	-	\$ -	\$ -	51,362,946	8,281				
2016	-	\$ -	\$ -	50,270,829	7,908				
2017	-	\$ -	\$ -	48,558,429	7,316				
2018	-	\$ -	\$ -	45,875,408	6,577				
2019	-	\$ -	\$ -	42,904,460	5,837				
2020	-	\$ -	\$ -	39,702,276	5,297				
2021	-	\$ -	\$ -	39,544,399	5,271				
2022	-	\$ -	\$ -	39,184,511	5,215				
2023	-	\$ -	\$ -	37,436,997	4,974				
2024	-	\$ -	\$ -	34,864,783	4,625				
2025	-	\$ -	\$ -	31,916,346	4,225				
Cost-Effectiveness Test Results									
Program	Total Resource Cost Test	Utility Cost Test (UCT)		Participant (PCT)		Rate Impact Measure (RIM)			
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits	
2006	\$ 1,347,912	\$ 155,305	\$ 970,194	\$ 155,305	\$ 377,718	\$ 266,339	\$ 1,236,533	\$ 155,305	
2007	\$ 1,799,269	\$ 331,547	\$ 1,194,920	\$ 331,547	\$ 604,349	\$ 713,256	\$ 1,908,177	\$ 331,547	
2008	\$ 2,803,048	\$ 732,997	\$ 1,638,372	\$ 732,997	\$ 1,164,676	\$ 1,453,010	\$ 3,091,382	\$ 732,997	
2009	\$ 3,171,862	\$ 1,619,937	\$ 1,802,130	\$ 1,619,937	\$ 1,369,732	\$ 2,314,039	\$ 4,116,169	\$ 1,619,937	
2010	\$ 3,540,436	\$ 2,027,545	\$ 1,966,084	\$ 2,027,545	\$ 1,574,352	\$ 3,305,645	\$ 5,271,729	\$ 2,027,545	
2011	\$ -	\$ 2,423,851	\$ -	\$ 2,423,851	\$ -	\$ 3,401,167	\$ 3,401,167	\$ 2,423,851	
2012	\$ -	\$ 2,493,338	\$ -	\$ 2,493,338	\$ -	\$ 3,499,443	\$ 3,499,443	\$ 2,493,338	
2013	\$ -	\$ 2,562,115	\$ -	\$ 2,562,115	\$ -	\$ 3,597,553	\$ 3,597,553	\$ 2,562,115	
2014	\$ -	\$ 2,634,810	\$ -	\$ 2,634,810	\$ -	\$ 3,700,843	\$ 3,700,843	\$ 2,634,810	
2015	\$ -	\$ 2,704,893	\$ -	\$ 2,704,893	\$ -	\$ 3,800,877	\$ 3,800,877	\$ 2,704,893	
2016	\$ -	\$ 2,733,906	\$ -	\$ 2,733,906	\$ -	\$ 3,831,662	\$ 3,831,662	\$ 2,733,906	
2017	\$ -	\$ 2,731,932	\$ -	\$ 2,731,932	\$ -	\$ 3,812,176	\$ 3,812,176	\$ 2,731,932	
2018	\$ -	\$ 2,665,818	\$ -	\$ 2,665,818	\$ -	\$ 3,709,586	\$ 3,709,586	\$ 2,665,818	
2019	\$ -	\$ 2,571,748	\$ -	\$ 2,571,748	\$ -	\$ 3,573,430	\$ 3,573,430	\$ 2,571,748	
2020	\$ -	\$ 2,450,677	\$ -	\$ 2,450,677	\$ -	\$ 3,405,928	\$ 3,405,928	\$ 2,450,677	
2021	\$ -	\$ 2,513,583	\$ -	\$ 2,513,583	\$ -	\$ 3,494,155	\$ 3,494,155	\$ 2,513,583	
2022	\$ -	\$ 2,564,768	\$ -	\$ 2,564,768	\$ -	\$ 3,566,226	\$ 3,566,226	\$ 2,564,768	
2023	\$ -	\$ 2,525,503	\$ -	\$ 2,525,503	\$ -	\$ 3,509,399	\$ 3,509,399	\$ 2,525,503	
2024	\$ -	\$ 2,425,843	\$ -	\$ 2,425,843	\$ -	\$ 3,366,324	\$ 3,366,324	\$ 2,425,843	
2025	\$ -	\$ 2,292,189	\$ -	\$ 2,292,189	\$ -	\$ 3,174,090	\$ 3,174,090	\$ 2,292,189	
2026	\$ -	\$ 2,122,933	\$ -	\$ 2,122,933	\$ -	\$ 2,930,538	\$ 2,930,538	\$ 2,122,933	
2027	\$ -	\$ 1,940,397	\$ -	\$ 1,940,397	\$ -	\$ 2,668,642	\$ 2,668,642	\$ 1,940,397	
2028	\$ -	\$ 1,920,757	\$ -	\$ 1,920,757	\$ -	\$ 2,639,767	\$ 2,639,767	\$ 1,920,757	
2029	\$ -	\$ 1,898,140	\$ -	\$ 1,898,140	\$ -	\$ 2,606,683	\$ 2,606,683	\$ 1,898,140	
2030	\$ -	\$ 1,712,011	\$ -	\$ 1,712,011	\$ -	\$ 2,349,597	\$ 2,349,597	\$ 1,712,011	
2031	\$ -	\$ 1,391,361	\$ -	\$ 1,391,361	\$ -	\$ 1,910,859	\$ 1,910,859	\$ 1,391,361	
2032	\$ -	\$ 888,107	\$ -	\$ 888,107	\$ -	\$ 1,222,187	\$ 1,222,187	\$ 888,107	
2033	\$ -	\$ 651,327	\$ -	\$ 651,327	\$ -	\$ 898,402	\$ 898,402	\$ 651,327	
2034	\$ -	\$ 399,407	\$ -	\$ 399,407	\$ -	\$ 553,907	\$ 553,907	\$ 399,407	
2035	\$ -	\$ 131,785	\$ -	\$ 131,785	\$ -	\$ 187,933	\$ 187,933	\$ 131,785	
NPV	\$9,939,131	\$21,973,926	\$5,992,137	\$21,973,926	\$3,946,994	\$31,634,458	\$37,626,595	\$21,973,926	
0 Net Benefits		\$12,034,795	Net Benefits	\$15,981,789	Net Benefits	\$27,687,464	Net Benefits	(\$15,652,669)	
0 B/C Ratio		2.21	B/C Ratio	3.67	B/C Ratio	8.014823117	B/C Ratio	0.58	

Detailed Cost-Effectiveness Results

E-7

Program Name:		School-Based Energy Education						
Key Program Inputs								
Program Year	Participants	Utility Costs	Participant Costs	Energy Impacts	Impacts (Avg. Max)			
2006	1,200	\$ 61,200	\$ -	547,479	67			
2007	1,800	\$ 91,800	\$ -	1,368,697	167			
2008	2,400	\$ 122,400	\$ -	2,463,654	301			
2009	2,400	\$ 122,400	\$ -	3,558,611	434			
2010	2,400	\$ 122,400	\$ -	4,653,569	568			
2011	-	\$ -	\$ -	4,511,009	546			
2012	-	\$ -	\$ -	4,297,169	514			
2013	-	\$ -	\$ -	3,953,729	463			
2014	-	\$ -	\$ -	3,581,129	407			
2015	-	\$ -	\$ -	3,179,369	355			
2016	-	\$ -	\$ -	3,062,729	346			
2017	-	\$ -	\$ -	2,946,089	336			
2018	-	\$ -	\$ -	2,946,089	336			
2019	-	\$ -	\$ -	2,946,089	336			
2020	-	\$ -	\$ -	2,946,089	336			
2021	-	\$ -	\$ -	2,635,163	301			
2022	-	\$ -	\$ -	2,168,775	248			
2023	-	\$ -	\$ -	1,546,925	177			
2024	-	\$ -	\$ -	925,074	106			
2025	-	\$ -	\$ -	303,223	35			
Cost-Effectiveness Test Results								
Program	Total Resource Cost Test		Utility Cost Test (UCT)		Participant (PC)		Rate/Impact Measure (RIM)	
	Costs	Benefits	Costs	Benefits	Costs	Benefits	Costs	Benefits
2006	\$ 61,200	\$ 18,839	\$ 61,200	\$ 18,839	\$ -	\$ 38,457	\$ 99,657	\$ 18,839
2007	\$ 91,800	\$ 37,791	\$ 91,800	\$ 37,791	\$ -	\$ 99,027	\$ 190,827	\$ 37,791
2008	\$ 122,400	\$ 74,609	\$ 122,400	\$ 74,609	\$ -	\$ 183,595	\$ 305,995	\$ 74,609
2009	\$ 122,400	\$ 150,545	\$ 122,400	\$ 150,545	\$ -	\$ 273,149	\$ 395,549	\$ 150,545
2010	\$ 122,400	\$ 174,978	\$ 122,400	\$ 174,978	\$ -	\$ 367,911	\$ 490,311	\$ 174,978
2011	\$ -	\$ 205,519	\$ -	\$ 205,519	\$ -	\$ 367,339	\$ 367,339	\$ 205,519
2012	\$ -	\$ 201,582	\$ -	\$ 201,582	\$ -	\$ 360,424	\$ 360,424	\$ 201,582
2013	\$ -	\$ 190,917	\$ -	\$ 190,917	\$ -	\$ 341,566	\$ 341,566	\$ 190,917
2014	\$ -	\$ 177,969	\$ -	\$ 177,969	\$ -	\$ 318,658	\$ 318,658	\$ 177,969
2015	\$ -	\$ 162,567	\$ -	\$ 162,567	\$ -	\$ 291,396	\$ 291,396	\$ 162,567
2016	\$ -	\$ 161,242	\$ -	\$ 161,242	\$ -	\$ 289,127	\$ 289,127	\$ 161,242
2017	\$ -	\$ 159,691	\$ -	\$ 159,691	\$ -	\$ 286,459	\$ 286,459	\$ 159,691
2018	\$ -	\$ 164,481	\$ -	\$ 164,481	\$ -	\$ 295,053	\$ 295,053	\$ 164,481
2019	\$ -	\$ 169,416	\$ -	\$ 169,416	\$ -	\$ 303,905	\$ 303,905	\$ 169,416
2020	\$ -	\$ 174,498	\$ -	\$ 174,498	\$ -	\$ 313,022	\$ 313,022	\$ 174,498
2021	\$ -	\$ 160,764	\$ -	\$ 160,764	\$ -	\$ 288,386	\$ 288,386	\$ 160,764
2022	\$ -	\$ 136,281	\$ -	\$ 136,281	\$ -	\$ 244,466	\$ 244,466	\$ 136,281
2023	\$ -	\$ 100,121	\$ -	\$ 100,121	\$ -	\$ 179,601	\$ 179,601	\$ 100,121
2024	\$ -	\$ 61,669	\$ -	\$ 61,669	\$ -	\$ 110,625	\$ 110,625	\$ 61,669
2025	\$ -	\$ 20,821	\$ -	\$ 20,821	\$ -	\$ 37,349	\$ 37,349	\$ 20,821
2026	\$ -	\$ 18,922	\$ -	\$ 18,922	\$ -	\$ 33,944	\$ 33,944	\$ 18,922
2027	\$ -	\$ 15,592	\$ -	\$ 15,592	\$ -	\$ 27,969	\$ 27,969	\$ 15,592
2028	\$ -	\$ 10,706	\$ -	\$ 10,706	\$ -	\$ 19,206	\$ 19,206	\$ 10,706
2029	\$ -	\$ 5,514	\$ -	\$ 5,514	\$ -	\$ 9,891	\$ 9,891	\$ 5,514
2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2032	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2033	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2035	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NPV	\$413,023	\$1,362,819	\$413,023	\$1,362,819	\$0	\$2,553,835	\$2,966,858	\$1,362,819
Net Benefits	\$949,797		\$949,797		\$2,553,835		\$2,966,858	
B/C Ratio	3.30		3.30		#DIV/0!		B/C Ratio	

Detailed Cost-Effectiveness Results

E-8

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

County of Jackson)
)
State of Missouri) ss

AFFIDAVIT OF MATTHEW E. DAUNIS

Matthew E. Daunis, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Surrebuttal Testimony of Matthew E. Daunis;" that said testimony was prepared by him and under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

Matthew E. Daunis
Matthew E. Daunis

Subscribed and sworn to before me this 13th day of December, 2005.

Terry D. Lutes
Notary Public
Terry D. Lutes

My Commission expires:

8-20-2008



TERRY D. LUTES
Jackson County
My Commission Expires
August 20, 2008