



KANSAS CITY POWER & LIGHT 2016 DSM POTENTIAL STUDY

VOLUME 5: APPENDICES FINAL REPORT

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Kansas City Power & Light

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INTRODUCTION

Kansas City Power and Light Company (KCP&L) engaged the Applied Energy Group (AEG) Team to conduct this Demand Side Management (DSM) Market Potential Study. It evaluates various categories of electricity DSM resources in the residential, commercial, and industrial sectors of KCP&L's service territory in Kansas and Missouri for the years 2019-2037. The resource categories investigated are: Energy Efficiency, Demand Response, Demand-Side Rates, and Combined Heat & Power.

The key objectives of the study are to:

- Perform a comprehensive analysis that complies with the respective statutory requirements of the Missouri Public Service Commission and the Kansas Corporation Commission
- Develop annual electricity energy and peak demand potential estimates for the DSM resource categories by customer class for each KCP&L jurisdiction for the time period of 2019 to 2037
- Develop baseline projections of annual electricity use and peak demand for each KCP&L jurisdiction, accounting for future codes and standards, naturally occurring energy efficiency, opt-out customers, smart connected devices, and combined heat and power
- Identify a subset of economic and program potential that is applicable to low-income customers
- Conduct a reliable, accurate and useful residential appliance saturation survey and C&I end-use saturation survey
- Quantify potential program savings from the DSM initiatives at various levels of cost
- Support KCP&L's effort to offer programs to all customer market segments while achieving the ultimate goal of all cost-effective demand-side savings

The study assesses various tiers of potential including technical, economic, maximum achievable, and realistic achievable potential. The study developed updated baseline estimates with the latest information on federal, state, and local codes and standards for improving energy efficiency.

As part of the study, the AEG Team conducted primary market research to collect data for the KCP&L service territory, including: end-use equipment saturation data and customer demographics and firmographics. All models and assumptions include the results from these primary market research efforts.

KCP&L will use the results of this study in its DSM and IRP planning process to optimally implement programs across its four service territories: Kansas City Power & Light Missouri (KCP&L-MO), Kansas City Power & Light Kansas (KCP&L-KS), Greater Missouri Operations Missouri Public Service (GMO-MPS), and Greater Missouri Operations St. Joseph Light & Power (GMO-SJLP).

REPORT ORGANIZATION

This report is presented in five volumes:

- Volume 1, Executive Summary
- Volume 2, Market Research Report
- Volume 3, Potential Analysis
- Volume 4, Program Potential
- Volume 5, Appendices

This document is Volume 5: Appendices.

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A

KEY ASSUMPTIONS QUICK REFERENCE TABLE

This section includes a summary of selected assumptions in a quick reference table, as well as a list of abbreviations and acronyms.

Table A-1 Quick Reference of Key Assumptions

Assumption	Explanation
Location of savings	All energy and demand savings are reported at the customer meter. All cost-effectiveness calculations are conducted with savings grossed up by line loss factors to be at generation.
Definition of low income	Low income customers were identified through our market research surveys as those respondents with an annual household income of \$30,000 or less. This is based on the eligibility for KCP&L's current Income-Eligible Weatherization Program, which is about 200% of the Federal Poverty Income Guideline for a family of two
Dollars and inflation	All dollars are real 2015 dollars. That is, they are represented in real terms for all future years with inflationary effects removed such that they are equivalent to a dollar in the base year of 2015.
Measure-level vs Program level	The program-level potential is when the measure-level analysis components – energy efficiency, demand response, demand side rates, and combined heat and power – are considered and bundled in an integrated and holistic manner to ascertain the total potential savings, costs, and delivery structure of an actual and realizable portfolio of DSM resources. Program potential is defined as the portion of the achievable potential that might be reasonably achieved given the realities of implementation and the constraints of program resources. It is a subset of measure-level potential that is aligned with recent program accomplishments, available future budget, and long-term strategic goals.
Large C&I Opt-Out customers	For EE and CHP resources, large C&I customers in Missouri are allowed to opt out of programs, forego incentives, and forego payment of the associated tariff rider. Eligible customers are defined as those with billing demand of 5,000 kW or higher, or those with locations aggregated under the same primary account name having demand of 2,500 kW or higher. In this EE and CHP potential analysis, we include all customers for the initial analysis cases, namely: base year market profile, baseline forecast, technical potential, and economic potential. However, opt-out customers have been removed from realistic and maximum achievable potential (in MO only) by adjusting customer adoption rates downward to reflect near-term levels of actual customer opt-outs. This results in opt-out or removal of 11% of available Commercial load & achievable potential, 32% of available Industrial load & achievable potential, and 25% across all C&I customers combined. The large C&I customer Opt-Out provision is not applicable to DR and DSR resources, so no associated removal or adjustment is made in those portion of the analysis.
Market Research surveys	3,961 surveys collected data from KCP&L customers on end-use equipment saturation, customer demographics, and firmographics. Residential customers were assessed using a mix of mail and internet surveys, comprising 3,209 responses. The business surveys were conducted by telephone (712 customers) as well as by onsite visits for key accounts (an additional 40 customers).

Economic Screening	<p>Total Resource Cost (TRC) test used. Lifetime NPV of benefits must be greater than lifetime NPV of costs (i.e. TRC benefit to cost ratio should be greater than one).</p> <p>Measure-level economic screen assumes 100% of incremental measure costs and no program administration costs. Program potential assigns incentive and program cost.</p> <p>For more inclusion of Low-Income Residential measures, the measure-level economic screen has been relaxed to $TRC \geq 0.50$ instead of 1.00.</p>
Current Date of Data and Assumptions	We implemented assumptions for known future equipment standards as of January 2016. We used the most current cost, performance, and lifetime information for measures and technologies as of June 2016.
Advanced Metering Infrastructure (AMI)	AMI is actively rolling out in the KCP&L service territories at the time of this analysis and should be completed in the near term. For this analysis, we assume that AMI is fully available in the years of interest for the study (2019-2037).
Net savings, naturally occurring energy efficiency, codes & standards	All savings provided in this report are "Net" savings unless otherwise indicated. This means that the baseline already includes and accounts for naturally occurring efficiency and codes & standards. In other words, the baseline or counterfactual case assumes that all customers are purchasing at least the minimum efficiency option required by law, and further that some customers are already purchasing more efficient options. Net savings potential available to DSM initiatives excludes these activities and only applies to efficient decisions above and beyond them.
Measure Roll-off	We assume that measures expire and roll-off at the end of their effective useful life. They are not assumed to automatically renew at the same level of savings. At the time of expiry, a new purchase decision is analyzed with the costs, savings, baseline assumptions, economic screen, and customer adoption factors that are relevant for the given year; each of which may have changed relative to prior years.

Table A-2 Explanation of Abbreviations and Acronyms

Acronym	Explanation
AMI	Advanced Metering Infrastructure
C&I	Commercial and Industrial
CAC	Central Air Conditioning
CPP	Critical Peak Pricing
DHW	Domestic Hot Water
DSM	Demand-Side Management
DLC	Direct Load Control
EE	Energy Efficiency
EIA	Energy Information Administration
EUL	Effective Useful Life
EUI	Energy Usage Intensity
HVAC	Heating Ventilation and Cooling
IBR	Inclining Block Rate
IECC	International Energy Conservation Code
IOU	Investor Owned Utility
NPV	Net Present Value
O&M	Operations and Maintenance
PCT	Participant Cost Test
TOU	Time-of-Use
TRC	Total Resource Cost
UCT	Utility Cost Test
UEC	Unit Energy Consumption
UES	Unit Energy Savings
WH	Water Heater

B

MARKET PROFILES

Market profiles, the distribution of end-use technologies and average use for those technologies across the population, are the foundation for development of the baseline projection and the potential estimates. The average market profile for each sector as a whole is presented in Volume 3. Segment-specific market profiles are presented here.

RESIDENTIAL SECTOR MARKET PROFILES

Table B-1 KCP&L-KS Single Family Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	89.3%	3,977	3,551	468.5
Cooling	Room AC	1.5%	1,545	24	3.1
Cooling	Air-Source Heat Pump	5.7%	3,751	213	28.1
Cooling	Geothermal Heat Pump	1.1%	3,646	39	5.1
Heating	Electric Room Heat	0.3%	6,858	24	3.1
Heating	Electric Furnace	19.1%	11,658	2,230	294.2
Heating	Air-Source Heat Pump	5.7%	9,408	535	70.6
Heating	Geothermal Heat Pump	1.1%	4,415	47	6.2
Water Heating	Water Heater <= 55 Gal	14.3%	3,407	487	64.3
Water Heating	Water Heater > 55 Gal	0.8%	3,602	29	3.8
Interior Lighting	General Service Screw-In	100.0%	1,367	1,367	180.4
Interior Lighting	Linear Lighting	100.0%	118	118	15.6
Interior Lighting	Exempted Screw-In	100.0%	472	472	62.3
Exterior Lighting	Screw-in	100.0%	292	292	38.5
Appliances	Clothes Washer	96.9%	89	86	11.4
Appliances	Clothes Dryer	85.0%	860	731	96.4
Appliances	Dishwasher	93.0%	407	378	49.9
Appliances	Refrigerator	99.8%	759	758	100.0
Appliances	Freezer	44.7%	604	270	35.7
Appliances	Second Refrigerator	44.0%	885	389	51.3
Appliances	Stove/Oven	53.0%	481	255	33.7
Appliances	Microwave	103.0%	130	134	17.6
Electronics	Personal Computers	64.0%	176	113	14.9
Electronics	Monitor	67.0%	74	50	6.6
Electronics	Laptops	121.0%	46	56	7.4
Electronics	TVs	274.0%	159	436	57.6
Electronics	Printer/Fax/Copier	99.0%	62	61	8.1
Electronics	Set top Boxes/DVRs	175.0%	110	193	25.4
Electronics	Devices and Gadgets	341.0%	106	361	47.6
Miscellaneous	Electric Vehicles	0.5%	3,844	19	2.4
Miscellaneous	Pool Pump	4.0%	1,431	57	7.6
Miscellaneous	Pool Heater	4.0%	1,438	58	7.6
Miscellaneous	Hot Tub/Spa	5.0%	2,092	105	13.8
Miscellaneous	Furnace Fan	83.0%	681	565	74.5
Miscellaneous	Well pump	2.0%	589	12	1.6
Miscellaneous	Miscellaneous	100.0%	724	724	95.6
Total				15,241	2,010.5

Table B-2 KCP&L-KS Multifamily Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	92.9%	1,083	1,006	37.0
Cooling	Room AC	0.0%	986	0	0.0
Cooling	Air-Source Heat Pump	3.2%	1,022	33	1.2
Cooling	Geothermal Heat Pump	1.6%	993	16	0.6
Heating	Electric Room Heat	1.4%	1,761	25	0.9
Heating	Electric Furnace	67.1%	2,566	1,723	63.3
Heating	Air-Source Heat Pump	3.2%	1,429	46	1.7
Heating	Geothermal Heat Pump	1.6%	670	11	0.4
Water Heating	Water Heater <= 55 Gal	32.1%	2,838	911	33.5
Water Heating	Water Heater > 55 Gal	0.0%	3,001	0	0.0
Interior Lighting	General Service Screw-In	100.0%	919	919	33.8
Interior Lighting	Linear Lighting	100.0%	30	30	1.1
Interior Lighting	Exempted Screw-In	100.0%	53	53	1.9
Exterior Lighting	Screw-in	100.0%	92	92	3.4
Appliances	Clothes Washer	85.9%	86	74	2.7
Appliances	Clothes Dryer	82.0%	513	421	15.5
Appliances	Dishwasher	90.0%	404	364	13.4
Appliances	Refrigerator	100.0%	751	751	27.6
Appliances	Freezer	6.8%	596	40	1.5
Appliances	Second Refrigerator	6.0%	875	52	1.9
Appliances	Stove/Oven	56.0%	475	266	9.8
Appliances	Microwave	91.0%	130	118	4.3
Electronics	Personal Computers	40.0%	176	70	2.6
Electronics	Monitor	44.0%	74	33	1.2
Electronics	Laptops	117.0%	46	54	2.0
Electronics	TVs	164.0%	159	261	9.6
Electronics	Printer/Fax/Copier	60.0%	62	37	1.4
Electronics	Set top Boxes/DVRs	94.0%	110	103	3.8
Electronics	Devices and Gadgets	255.0%	106	270	9.9
Miscellaneous	Electric Vehicles	0.0%	3,844	0	0.0
Miscellaneous	Pool Pump	0.0%	1,431	0	0.0
Miscellaneous	Pool Heater	0.0%	1,438	0	0.0
Miscellaneous	Hot Tub/Spa	1.0%	2,092	21	0.8
Miscellaneous	Furnace Fan	85.0%	337	287	10.5
Miscellaneous	Well pump	0.0%	584	0	0.0
Miscellaneous	Miscellaneous	100.0%	346	346	12.7
Total				8,433	310.1

Table B-3 KCP&L-KS Single Family Low Income Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	68.6%	3,724	2,553	51.9
Cooling	Room AC	11.4%	1,447	165	3.4
Cooling	Air-Source Heat Pump	9.7%	3,512	341	6.9
Cooling	Geothermal Heat Pump	0.0%	3,414	0	0.0
Heating	Electric Room Heat	4.0%	6,421	257	5.2
Heating	Electric Furnace	12.0%	10,916	1,310	26.6
Heating	Air-Source Heat Pump	9.7%	8,810	856	17.4
Heating	Geothermal Heat Pump	0.0%	4,134	0	0.0
Water Heating	Water Heater <= 55 Gal	14.8%	3,342	495	10.1
Water Heating	Water Heater > 55 Gal	1.9%	3,534	67	1.4
Interior Lighting	General Service Screw-In	100.0%	851	851	17.3
Interior Lighting	Linear Lighting	100.0%	102	102	2.1
Interior Lighting	Exempted Screw-In	100.0%	294	294	6.0
Exterior Lighting	Screw-in	100.0%	195	195	4.0
Appliances	Clothes Washer	92.6%	88	81	1.6
Appliances	Clothes Dryer	82.0%	843	692	14.1
Appliances	Dishwasher	69.0%	399	275	5.6
Appliances	Refrigerator	100.0%	745	745	15.2
Appliances	Freezer	24.5%	593	145	3.0
Appliances	Second Refrigerator	24.0%	868	208	4.2
Appliances	Stove/Oven	61.0%	472	288	5.9
Appliances	Microwave	98.0%	127	125	2.5
Electronics	Personal Computers	39.0%	173	67	1.4
Electronics	Monitor	28.0%	73	20	0.4
Electronics	Laptops	41.0%	45	19	0.4
Electronics	TVs	230.0%	156	359	7.3
Electronics	Printer/Fax/Copier	46.0%	61	28	0.6
Electronics	Set top Boxes/DVRs	81.0%	108	87	1.8
Electronics	Devices and Gadgets	169.0%	104	175	3.6
Miscellaneous	Electric Vehicles	0.0%	3,771	0	0.0
Miscellaneous	Pool Pump	0.0%	1,404	0	0.0
Miscellaneous	Pool Heater	0.0%	1,411	0	0.0
Miscellaneous	Hot Tub/Spa	0.0%	2,052	0	0.0
Miscellaneous	Furnace Fan	70.0%	668	467	9.5
Miscellaneous	Well pump	7.0%	578	40	0.8
Miscellaneous	Miscellaneous	100.0%	340	340	6.9
Total				11,649	237.0

Table B-4 KCP&L-KS Multifamily Low Income Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	71.4%	985	704	21.8
Cooling	Room AC	4.8%	896	43	1.3
Cooling	Air-Source Heat Pump	1.4%	929	13	0.4
Cooling	Geothermal Heat Pump	0.0%	903	0	0.0
Heating	Electric Room Heat	8.6%	1,601	137	4.3
Heating	Electric Furnace	48.6%	2,332	1,133	35.1
Heating	Air-Source Heat Pump	1.4%	1,299	19	0.6
Heating	Geothermal Heat Pump	0.0%	609	0	0.0
Water Heating	Water Heater <= 55 Gal	21.6%	2,703	584	18.1
Water Heating	Water Heater > 55 Gal	0.0%	2,858	0	0.0
Interior Lighting	General Service Screw-In	100.0%	484	484	15.0
Interior Lighting	Linear Lighting	100.0%	29	29	0.9
Interior Lighting	Exempted Screw-In	100.0%	28	28	0.9
Exterior Lighting	Screw-in	100.0%	43	43	1.3
Appliances	Clothes Washer	48.6%	82	40	1.2
Appliances	Clothes Dryer	49.0%	489	239	7.4
Appliances	Dishwasher	73.0%	385	281	8.7
Appliances	Refrigerator	100.0%	715	715	22.2
Appliances	Freezer	2.9%	567	16	0.5
Appliances	Second Refrigerator	3.0%	833	25	0.8
Appliances	Stove/Oven	59.0%	453	267	8.3
Appliances	Microwave	84.0%	124	104	3.2
Electronics	Personal Computers	27.0%	168	45	1.4
Electronics	Monitor	27.0%	71	19	0.6
Electronics	Laptops	35.0%	44	15	0.5
Electronics	TVs	122.0%	152	185	5.7
Electronics	Printer/Fax/Copier	32.0%	59	19	0.6
Electronics	Set top Boxes/DVRs	38.0%	105	40	1.2
Electronics	Devices and Gadgets	135.0%	101	136	4.2
Miscellaneous	Electric Vehicles	0.0%	3,661	0	0.0
Miscellaneous	Pool Pump	0.0%	1,363	0	0.0
Miscellaneous	Pool Heater	0.0%	1,370	0	0.0
Miscellaneous	Hot Tub/Spa	0.0%	1,993	0	0.0
Miscellaneous	Furnace Fan	76.0%	321	244	7.6
Miscellaneous	Well pump	0.0%	556	0	0.0
Miscellaneous	Miscellaneous	100.0%	243	243	7.5
Total				5,849	181.2

Table B-5 KCP&L-MO Single Family Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	88.7%	3,615	3,206	401.1
Cooling	Room AC	4.8%	1,405	67	8.4
Cooling	Air-Source Heat Pump	3.4%	3,410	117	14.6
Cooling	Geothermal Heat Pump	0.4%	3,315	14	1.7
Heating	Electric Room Heat	1.1%	6,234	71	8.9
Heating	Electric Furnace	18.5%	10,598	1,960	245.2
Heating	Air-Source Heat Pump	3.4%	8,553	292	36.6
Heating	Geothermal Heat Pump	0.4%	4,014	17	2.1
Water Heating	Water Heater <= 55 Gal	8.7%	3,245	282	35.3
Water Heating	Water Heater > 55 Gal	0.4%	3,431	14	1.7
Interior Lighting	General Service Screw-In	100.0%	1,036	1,036	129.5
Interior Lighting	Linear Lighting	100.0%	95	95	11.8
Interior Lighting	Exempted Screw-In	100.0%	359	359	45.0
Exterior Lighting	Screw-in	100.0%	232	232	29.0
Appliances	Clothes Washer	94.6%	85	80	10.1
Appliances	Clothes Dryer	81.0%	819	663	83.0
Appliances	Dishwasher	82.0%	387	318	39.7
Appliances	Refrigerator	99.6%	723	720	90.1
Appliances	Freezer	36.1%	576	208	26.0
Appliances	Second Refrigerator	35.0%	843	295	36.9
Appliances	Stove/Oven	47.0%	458	215	27.0
Appliances	Microwave	100.0%	124	124	15.5
Electronics	Personal Computers	68.0%	168	114	14.3
Electronics	Monitor	63.0%	71	45	5.6
Electronics	Laptops	116.0%	44	51	6.4
Electronics	TVs	276.0%	152	419	52.4
Electronics	Printer/Fax/Copier	90.0%	59	53	6.6
Electronics	Set top Boxes/DVRs	156.0%	105	163	20.4
Electronics	Devices and Gadgets	343.0%	101	345	43.2
Miscellaneous	Electric Vehicles	0.6%	3,661	23	2.9
Miscellaneous	Pool Pump	3.0%	1,363	41	5.1
Miscellaneous	Pool Heater	3.0%	1,370	41	5.1
Miscellaneous	Hot Tub/Spa	5.0%	1,993	100	12.5
Miscellaneous	Furnace Fan	84.0%	648	544	68.1
Miscellaneous	Well pump	2.0%	561	11	1.4
Miscellaneous	Miscellaneous	100.0%	295	295	37.0
Total				12,630	1,580.0

Table B-6 KCP&L-MO Multifamily Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	86.7%	1,064	923	44.4
Cooling	Room AC	7.1%	968	69	3.3
Cooling	Air-Source Heat Pump	1.9%	1,003	19	0.9
Cooling	Geothermal Heat Pump	1.0%	975	9	0.5
Heating	Electric Room Heat	1.8%	1,729	31	1.5
Heating	Electric Furnace	42.3%	2,519	1,067	51.3
Heating	Air-Source Heat Pump	1.9%	1,403	27	1.3
Heating	Geothermal Heat Pump	1.0%	658	6	0.3
Water Heating	Water Heater <= 55 Gal	18.1%	2,838	514	24.7
Water Heating	Water Heater > 55 Gal	2.4%	3,001	72	3.5
Interior Lighting	General Service Screw-In	100.0%	855	855	41.1
Interior Lighting	Linear Lighting	100.0%	33	33	1.6
Interior Lighting	Exempted Screw-In	100.0%	50	50	2.4
Exterior Lighting	Screw-in	100.0%	95	95	4.5
Appliances	Clothes Washer	69.3%	86	59	2.9
Appliances	Clothes Dryer	66.0%	513	339	16.3
Appliances	Dishwasher	80.0%	404	324	15.6
Appliances	Refrigerator	100.0%	751	751	36.1
Appliances	Freezer	8.8%	596	52	2.5
Appliances	Second Refrigerator	9.0%	875	79	3.8
Appliances	Stove/Oven	46.0%	475	219	10.5
Appliances	Microwave	95.0%	130	123	5.9
Electronics	Personal Computers	42.0%	176	74	3.6
Electronics	Monitor	42.0%	74	31	1.5
Electronics	Laptops	108.0%	46	50	2.4
Electronics	TVs	197.0%	159	314	15.1
Electronics	Printer/Fax/Copier	64.0%	62	40	1.9
Electronics	Set top Boxes/DVRs	100.0%	110	110	5.3
Electronics	Devices and Gadgets	256.0%	106	271	13.0
Miscellaneous	Electric Vehicles	0.0%	3,844	0	0.0
Miscellaneous	Pool Pump	0.0%	1,431	0	0.0
Miscellaneous	Pool Heater	0.0%	1,438	0	0.0
Miscellaneous	Hot Tub/Spa	2.0%	2,092	42	2.0
Miscellaneous	Furnace Fan	79.0%	337	266	12.8
Miscellaneous	Well pump	2.0%	584	12	0.6
Miscellaneous	Miscellaneous	100.0%	269	269	12.9
Total				7,194	346.0

Table B-7 KCP&L-MO Single Family Low Income Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	72.5%	3,435	2,490	90.6
Cooling	Room AC	12.5%	1,334	167	6.1
Cooling	Air-Source Heat Pump	0.0%	3,239	0	0.0
Cooling	Geothermal Heat Pump	0.0%	3,149	0	0.0
Heating	Electric Room Heat	5.9%	5,923	352	12.8
Heating	Electric Furnace	15.8%	10,068	1,595	58.1
Heating	Air-Source Heat Pump	0.0%	8,125	0	0.0
Heating	Geothermal Heat Pump	0.0%	3,813	0	0.0
Water Heating	Water Heater <= 55 Gal	11.5%	3,083	355	12.9
Water Heating	Water Heater > 55 Gal	0.0%	3,259	0	0.0
Interior Lighting	General Service Screw-In	100.0%	610	610	22.2
Interior Lighting	Linear Lighting	100.0%	48	48	1.8
Interior Lighting	Exempted Screw-In	100.0%	212	212	7.7
Exterior Lighting	Screw-in	100.0%	118	118	4.3
Appliances	Clothes Washer	87.6%	81	71	2.6
Appliances	Clothes Dryer	73.0%	778	568	20.7
Appliances	Dishwasher	34.0%	368	125	4.6
Appliances	Refrigerator	99.1%	687	681	24.8
Appliances	Freezer	13.8%	547	75	2.7
Appliances	Second Refrigerator	13.0%	800	104	3.8
Appliances	Stove/Oven	42.0%	435	183	6.7
Appliances	Microwave	93.0%	118	109	4.0
Electronics	Personal Computers	32.0%	159	51	1.9
Electronics	Monitor	20.0%	67	13	0.5
Electronics	Laptops	52.0%	42	22	0.8
Electronics	TVs	202.0%	144	291	10.6
Electronics	Printer/Fax/Copier	43.0%	56	24	0.9
Electronics	Set top Boxes/DVRs	108.0%	100	107	3.9
Electronics	Devices and Gadgets	205.0%	96	196	7.1
Miscellaneous	Electric Vehicles	2.7%	3,478	92	3.4
Miscellaneous	Pool Pump	1.0%	1,295	13	0.5
Miscellaneous	Pool Heater	1.0%	1,301	13	0.5
Miscellaneous	Hot Tub/Spa	1.0%	1,893	19	0.7
Miscellaneous	Furnace Fan	80.0%	616	493	17.9
Miscellaneous	Well pump	0.0%	533	0	0.0
Miscellaneous	Miscellaneous	100.0%	228	228	8.3
Total				9,424	343.0

Table B-8 KCP&L-MO Multifamily Low Income Market Profile

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	80.8%	985	796	26.8
Cooling	Room AC	17.0%	896	153	5.1
Cooling	Air-Source Heat Pump	0.9%	929	8	0.3
Cooling	Geothermal Heat Pump	0.0%	903	0	0.0
Heating	Electric Room Heat	10.3%	1,601	166	5.6
Heating	Electric Furnace	51.7%	2,332	1,206	40.7
Heating	Air-Source Heat Pump	0.9%	1,299	11	0.4
Heating	Geothermal Heat Pump	0.0%	609	0	0.0
Water Heating	Water Heater <= 55 Gal	12.5%	2,703	338	11.4
Water Heating	Water Heater > 55 Gal	0.0%	2,858	0	0.0
Interior Lighting	General Service Screw-In	100.0%	581	581	19.6
Interior Lighting	Linear Lighting	100.0%	16	16	0.5
Interior Lighting	Exempted Screw-In	100.0%	33	33	1.1
Exterior Lighting	Screw-in	100.0%	50	50	1.7
Appliances	Clothes Washer	36.1%	82	30	1.0
Appliances	Clothes Dryer	41.0%	489	200	6.8
Appliances	Dishwasher	53.0%	385	204	6.9
Appliances	Refrigerator	100.0%	715	715	24.1
Appliances	Freezer	4.5%	567	26	0.9
Appliances	Second Refrigerator	4.0%	833	33	1.1
Appliances	Stove/Oven	60.0%	453	272	9.2
Appliances	Microwave	93.0%	124	115	3.9
Electronics	Personal Computers	21.0%	168	35	1.2
Electronics	Monitor	11.0%	71	8	0.3
Electronics	Laptops	58.0%	44	26	0.9
Electronics	TVs	174.0%	152	264	8.9
Electronics	Printer/Fax/Copier	32.0%	59	19	0.6
Electronics	Set top Boxes/DVRs	64.0%	105	67	2.3
Electronics	Devices and Gadgets	192.0%	101	193	6.5
Miscellaneous	Electric Vehicles	2.8%	3,661	102	3.4
Miscellaneous	Pool Pump	0.0%	1,363	0	0.0
Miscellaneous	Pool Heater	0.0%	1,370	0	0.0
Miscellaneous	Hot Tub/Spa	0.0%	1,993	0	0.0
Miscellaneous	Furnace Fan	68.0%	321	218	7.4
Miscellaneous	Well pump	0.0%	556	0	0.0
Miscellaneous	Miscellaneous	100.0%	199	199	6.7
Total				6,083	205.0

Table B-9 *GMO-MPS Single Family Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	82.9%	3,254	2,698	372.9
Cooling	Room AC	3.1%	1,264	39	5.4
Cooling	Air-Source Heat Pump	10.2%	3,069	312	43.1
Cooling	Geothermal Heat Pump	1.7%	2,983	50	6.9
Heating	Electric Room Heat	1.2%	5,611	70	9.7
Heating	Electric Furnace	23.8%	9,538	2,274	314.3
Heating	Air-Source Heat Pump	10.2%	7,698	783	108.2
Heating	Geothermal Heat Pump	1.7%	3,612	60	8.3
Water Heating	Water Heater <= 55 Gal	18.5%	2,985	552	76.3
Water Heating	Water Heater > 55 Gal	0.8%	3,156	25	3.5
Interior Lighting	General Service Screw-In	100.0%	1,290	1,290	178.3
Interior Lighting	Linear Lighting	100.0%	130	130	17.9
Interior Lighting	Exempted Screw-In	100.0%	447	447	61.8
Exterior Lighting	Screw-in	100.0%	297	297	41.1
Appliances	Clothes Washer	97.3%	80	78	10.7
Appliances	Clothes Dryer	89.0%	770	685	94.7
Appliances	Dishwasher	92.0%	364	335	46.3
Appliances	Refrigerator	100.0%	680	680	94.0
Appliances	Freezer	43.0%	541	233	32.1
Appliances	Second Refrigerator	43.0%	792	341	47.1
Appliances	Stove/Oven	63.0%	431	271	37.5
Appliances	Microwave	105.0%	116	122	16.9
Electronics	Personal Computers	66.0%	158	104	14.4
Electronics	Monitor	62.0%	66	41	5.7
Electronics	Laptops	115.0%	42	48	6.6
Electronics	TVs	292.0%	143	416	57.5
Electronics	Printer/Fax/Copier	90.0%	55	50	6.9
Electronics	Set top Boxes/DVRs	177.0%	98	174	24.1
Electronics	Devices and Gadgets	363.0%	95	344	47.5
Miscellaneous	Electric Vehicles	0.3%	3,442	11	1.5
Miscellaneous	Pool Pump	3.0%	1,281	38	5.3
Miscellaneous	Pool Heater	3.0%	1,287	39	5.3
Miscellaneous	Hot Tub/Spa	6.0%	1,873	112	15.5
Miscellaneous	Furnace Fan	73.0%	609	445	61.5
Miscellaneous	Well pump	2.0%	527	11	1.5
Miscellaneous	Miscellaneous	100.0%	447	447	61.8
Total				14,053	1,942.1

Table B-10 *GMO-MPS Multifamily Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	80.6%	877	706	10.5
Cooling	Room AC	16.7%	797	133	2.0
Cooling	Air-Source Heat Pump	2.6%	827	22	0.3
Cooling	Geothermal Heat Pump	0.0%	804	0	0.0
Heating	Electric Room Heat	9.8%	1,425	139	2.1
Heating	Electric Furnace	41.5%	2,076	861	12.8
Heating	Air-Source Heat Pump	2.6%	1,156	30	0.4
Heating	Geothermal Heat Pump	0.0%	542	0	0.0
Water Heating	Water Heater <= 55 Gal	15.9%	2,487	395	5.9
Water Heating	Water Heater > 55 Gal	0.0%	2,629	0	0.0
Interior Lighting	General Service Screw-In	100.0%	796	796	11.8
Interior Lighting	Linear Lighting	100.0%	55	55	0.8
Interior Lighting	Exempted Screw-In	100.0%	46	46	0.7
Exterior Lighting	Screw-in	100.0%	121	121	1.8
Appliances	Clothes Washer	77.3%	75	58	0.9
Appliances	Clothes Dryer	77.0%	449	346	5.1
Appliances	Dishwasher	80.0%	354	283	4.2
Appliances	Refrigerator	100.0%	658	658	9.8
Appliances	Freezer	2.3%	522	12	0.2
Appliances	Second Refrigerator	2.0%	767	15	0.2
Appliances	Stove/Oven	74.0%	416	308	4.6
Appliances	Microwave	98.0%	114	112	1.7
Electronics	Personal Computers	48.0%	154	74	1.1
Electronics	Monitor	41.0%	65	27	0.4
Electronics	Laptops	84.0%	41	34	0.5
Electronics	TVs	189.0%	140	264	3.9
Electronics	Printer/Fax/Copier	61.0%	54	33	0.5
Electronics	Set top Boxes/DVRs	118.0%	96	114	1.7
Electronics	Devices and Gadgets	249.0%	93	231	3.4
Miscellaneous	Electric Vehicles	2.3%	3,368	77	1.1
Miscellaneous	Pool Pump	0.0%	1,254	0	0.0
Miscellaneous	Pool Heater	0.0%	1,260	0	0.0
Miscellaneous	Hot Tub/Spa	0.0%	1,833	0	0.0
Miscellaneous	Furnace Fan	80.0%	295	236	3.5
Miscellaneous	Well pump	0.0%	512	0	0.0
Miscellaneous	Miscellaneous	100.0%	235	235	3.5
Total				6,420	95.3

Table B-11 *GM0-MPS Single Family Low Income Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	68.1%	3,218	2,192	95.1
Cooling	Room AC	20.3%	1,250	254	11.0
Cooling	Air-Source Heat Pump	5.5%	3,035	166	7.2
Cooling	Geothermal Heat Pump	0.0%	2,950	0	0.0
Heating	Electric Room Heat	6.2%	5,549	343	14.9
Heating	Electric Furnace	26.8%	9,432	2,528	109.8
Heating	Air-Source Heat Pump	5.5%	7,612	417	18.1
Heating	Geothermal Heat Pump	0.0%	3,572	0	0.0
Water Heating	Water Heater <= 55 Gal	28.7%	2,888	829	36.0
Water Heating	Water Heater > 55 Gal	0.9%	3,053	27	1.2
Interior Lighting	General Service Screw-In	100.0%	642	642	27.8
Interior Lighting	Linear Lighting	100.0%	68	68	2.9
Interior Lighting	Exempted Screw-In	100.0%	222	222	9.6
Exterior Lighting	Screw-in	100.0%	155	155	6.7
Appliances	Clothes Washer	88.7%	79	70	3.0
Appliances	Clothes Dryer	79.0%	762	602	26.1
Appliances	Dishwasher	54.0%	360	195	8.4
Appliances	Refrigerator	100.0%	673	673	29.2
Appliances	Freezer	14.2%	535	76	3.3
Appliances	Second Refrigerator	14.0%	784	110	4.8
Appliances	Stove/Oven	54.0%	426	230	10.0
Appliances	Microwave	91.0%	115	105	4.5
Electronics	Personal Computers	34.0%	156	53	2.3
Electronics	Monitor	30.0%	66	20	0.9
Electronics	Laptops	64.0%	41	26	1.1
Electronics	TVs	210.0%	141	296	12.9
Electronics	Printer/Fax/Copier	40.0%	55	22	1.0
Electronics	Set top Boxes/DVRs	87.0%	97	85	3.7
Electronics	Devices and Gadgets	221.0%	94	207	9.0
Miscellaneous	Electric Vehicles	0.9%	3,405	30	1.3
Miscellaneous	Pool Pump	2.0%	1,268	25	1.1
Miscellaneous	Pool Heater	2.0%	1,274	25	1.1
Miscellaneous	Hot Tub/Spa	1.0%	1,853	19	0.8
Miscellaneous	Furnace Fan	66.0%	603	398	17.3
Miscellaneous	Well pump	4.0%	522	21	0.9
Miscellaneous	Miscellaneous	100.0%	230	230	10.0
Total				11,359	493.0

Table B-12 *GM0-MPS Multifamily Low Income Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	68.2%	837	571	14.0
Cooling	Room AC	22.7%	762	173	4.3
Cooling	Air-Source Heat Pump	0.0%	790	0	0.0
Cooling	Geothermal Heat Pump	0.0%	768	0	0.0
Heating	Electric Room Heat	22.5%	1,361	306	7.5
Heating	Electric Furnace	47.5%	1,983	942	23.2
Heating	Air-Source Heat Pump	0.0%	1,104	0	0.0
Heating	Geothermal Heat Pump	0.0%	518	0	0.0
Water Heating	Water Heater <= 55 Gal	20.9%	2,406	503	12.4
Water Heating	Water Heater > 55 Gal	0.0%	2,543	0	0.0
Interior Lighting	General Service Screw-In	100.0%	544	544	13.4
Interior Lighting	Linear Lighting	100.0%	23	23	0.6
Interior Lighting	Exempted Screw-In	100.0%	31	31	0.8
Exterior Lighting	Screw-in	100.0%	50	50	1.2
Appliances	Clothes Washer	32.6%	74	24	0.6
Appliances	Clothes Dryer	33.0%	445	147	3.6
Appliances	Dishwasher	51.0%	350	179	4.4
Appliances	Refrigerator	100.0%	651	651	16.0
Appliances	Freezer	2.4%	516	13	0.3
Appliances	Second Refrigerator	2.0%	758	15	0.4
Appliances	Stove/Oven	67.0%	412	276	6.8
Appliances	Microwave	88.0%	113	99	2.4
Electronics	Personal Computers	12.0%	153	18	0.5
Electronics	Monitor	2.0%	64	1	0.0
Electronics	Laptops	51.0%	40	20	0.5
Electronics	TVs	158.0%	138	218	5.4
Electronics	Printer/Fax/Copier	33.0%	54	18	0.4
Electronics	Set top Boxes/DVRs	53.0%	95	51	1.2
Electronics	Devices and Gadgets	147.0%	92	135	3.3
Miscellaneous	Electric Vehicles	4.7%	3,332	155	3.8
Miscellaneous	Pool Pump	0.0%	1,240	0	0.0
Miscellaneous	Pool Heater	0.0%	1,246	0	0.0
Miscellaneous	Hot Tub/Spa	0.0%	1,813	0	0.0
Miscellaneous	Furnace Fan	70.0%	292	205	5.0
Miscellaneous	Well pump	0.0%	506	0	0.0
Miscellaneous	Miscellaneous	100.0%	113	113	2.8
Total				5,480	134.8

Table B-13 *GMO-SJLP Single Family Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	68.8%	3,362	2,315	70.5
Cooling	Room AC	10.0%	1,306	130	4.0
Cooling	Air-Source Heat Pump	16.5%	3,171	524	16.0
Cooling	Geothermal Heat Pump	1.9%	3,083	58	1.8
Heating	Electric Room Heat	2.9%	5,798	169	5.1
Heating	Electric Furnace	23.9%	9,856	2,359	71.9
Heating	Air-Source Heat Pump	16.5%	7,954	1,315	40.1
Heating	Geothermal Heat Pump	1.9%	3,733	70	2.1
Water Heating	Water Heater <= 55 Gal	36.9%	3,083	1,138	34.7
Water Heating	Water Heater > 55 Gal	3.6%	3,259	117	3.6
Interior Lighting	General Service Screw-In	100.0%	1,068	1,068	32.5
Interior Lighting	Linear Lighting	100.0%	121	121	3.7
Interior Lighting	Exempted Screw-In	100.0%	370	370	11.3
Exterior Lighting	Screw-in	100.0%	248	248	7.6
Appliances	Clothes Washer	96.6%	81	78	2.4
Appliances	Clothes Dryer	87.0%	778	677	20.6
Appliances	Dishwasher	74.0%	368	272	8.3
Appliances	Refrigerator	99.8%	687	686	20.9
Appliances	Freezer	36.5%	547	199	6.1
Appliances	Second Refrigerator	36.0%	800	288	8.8
Appliances	Stove/Oven	64.0%	435	279	8.5
Appliances	Microwave	104.0%	118	122	3.7
Electronics	Personal Computers	57.0%	159	91	2.8
Electronics	Monitor	44.0%	67	30	0.9
Electronics	Laptops	98.0%	42	41	1.3
Electronics	TVs	264.0%	144	380	11.6
Electronics	Printer/Fax/Copier	78.0%	56	44	1.3
Electronics	Set top Boxes/DVRs	124.0%	100	123	3.8
Electronics	Devices and Gadgets	314.0%	96	300	9.2
Miscellaneous	Electric Vehicles	1.0%	3,478	35	1.1
Miscellaneous	Pool Pump	4.0%	1,295	52	1.6
Miscellaneous	Pool Heater	4.0%	1,301	52	1.6
Miscellaneous	Hot Tub/Spa	5.0%	1,893	95	2.9
Miscellaneous	Furnace Fan	63.0%	616	388	11.8
Miscellaneous	Well pump	4.0%	533	21	0.6
Miscellaneous	Miscellaneous	100.0%	251	251	7.6
Total				14,505	442.1

Table B-14 *GMO-SJLP Multifamily Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	66.1%	1,014	671	4.7
Cooling	Room AC	6.5%	923	60	0.4
Cooling	Air-Source Heat Pump	13.8%	957	132	0.9
Cooling	Geothermal Heat Pump	4.8%	930	45	0.3
Heating	Electric Room Heat	11.9%	1,649	196	1.4
Heating	Electric Furnace	38.1%	2,402	915	6.4
Heating	Air-Source Heat Pump	13.8%	1,338	185	1.3
Heating	Geothermal Heat Pump	4.8%	628	30	0.2
Water Heating	Water Heater <= 55 Gal	60.6%	2,784	1,687	11.7
Water Heating	Water Heater > 55 Gal	2.1%	2,943	62	0.4
Interior Lighting	General Service Screw-In	100.0%	1,202	1,202	8.4
Interior Lighting	Linear Lighting	100.0%	120	120	0.8
Interior Lighting	Exempted Screw-In	100.0%	69	69	0.5
Exterior Lighting	Screw-in	100.0%	226	226	1.6
Appliances	Clothes Washer	86.2%	82	70	0.5
Appliances	Clothes Dryer	82.0%	489	401	2.8
Appliances	Dishwasher	71.0%	385	273	1.9
Appliances	Refrigerator	98.9%	715	707	4.9
Appliances	Freezer	32.2%	567	183	1.3
Appliances	Second Refrigerator	31.0%	833	258	1.8
Appliances	Stove/Oven	72.0%	453	326	2.3
Appliances	Microwave	96.0%	124	119	0.8
Electronics	Personal Computers	53.0%	168	89	0.6
Electronics	Monitor	32.0%	71	23	0.2
Electronics	Laptops	88.0%	44	39	0.3
Electronics	TVs	212.0%	152	322	2.2
Electronics	Printer/Fax/Copier	64.0%	59	38	0.3
Electronics	Set top Boxes/DVRs	84.0%	105	88	0.6
Electronics	Devices and Gadgets	249.0%	101	251	1.7
Miscellaneous	Electric Vehicles	0.0%	3,661	0	0.0
Miscellaneous	Pool Pump	0.0%	1,363	0	0.0
Miscellaneous	Pool Heater	0.0%	1,370	0	0.0
Miscellaneous	Hot Tub/Spa	1.0%	1,993	20	0.1
Miscellaneous	Furnace Fan	48.0%	321	154	1.1
Miscellaneous	Well pump	11.0%	556	61	0.4
Miscellaneous	Miscellaneous	100.0%	263	263	1.8
Total				9,284	64.5

Table B-15 *GMO-SJLP Single Family Low Income Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	68.0%	3,254	2,213	32.8
Cooling	Room AC	24.0%	1,264	303	4.5
Cooling	Air-Source Heat Pump	1.9%	3,069	58	0.9
Cooling	Geothermal Heat Pump	0.0%	2,983	0	0.0
Heating	Electric Room Heat	6.9%	5,611	387	5.7
Heating	Electric Furnace	24.8%	9,538	2,368	35.1
Heating	Air-Source Heat Pump	1.9%	7,698	145	2.1
Heating	Geothermal Heat Pump	0.0%	3,612	0	0.0
Water Heating	Water Heater <= 55 Gal	30.7%	2,985	917	13.6
Water Heating	Water Heater > 55 Gal	0.0%	3,156	0	0.0
Interior Lighting	General Service Screw-In	100.0%	662	662	9.8
Interior Lighting	Linear Lighting	100.0%	65	65	1.0
Interior Lighting	Exempted Screw-In	100.0%	229	229	3.4
Exterior Lighting	Screw-in	100.0%	154	154	2.3
Appliances	Clothes Washer	87.7%	79	69	1.0
Appliances	Clothes Dryer	77.0%	762	586	8.7
Appliances	Dishwasher	39.0%	360	140	2.1
Appliances	Refrigerator	100.0%	673	673	10.0
Appliances	Freezer	16.2%	535	87	1.3
Appliances	Second Refrigerator	16.0%	784	125	1.9
Appliances	Stove/Oven	53.0%	426	226	3.3
Appliances	Microwave	98.0%	115	113	1.7
Electronics	Personal Computers	44.0%	156	69	1.0
Electronics	Monitor	24.0%	66	16	0.2
Electronics	Laptops	51.0%	41	21	0.3
Electronics	TVs	210.0%	141	296	4.4
Electronics	Printer/Fax/Copier	47.0%	55	26	0.4
Electronics	Set top Boxes/DVRs	85.0%	97	83	1.2
Electronics	Devices and Gadgets	203.0%	94	190	2.8
Miscellaneous	Electric Vehicles	1.2%	3,405	42	0.6
Miscellaneous	Pool Pump	3.0%	1,268	38	0.6
Miscellaneous	Pool Heater	3.0%	1,274	38	0.6
Miscellaneous	Hot Tub/Spa	1.0%	1,853	19	0.3
Miscellaneous	Furnace Fan	69.0%	603	416	6.2
Miscellaneous	Well pump	4.0%	522	21	0.3
Miscellaneous	Miscellaneous	100.0%	123	123	1.8
Total				10,916	161.6

Table B-16 *GMO-SJLP Multifamily Low Income Market Profile*

End Use	Technology	Saturation	UEC (kWh)	Intensity (kWh/HH)	Usage (GWh)
Cooling	Central AC	55.9%	1,014	567	3.1
Cooling	Room AC	23.5%	923	217	1.2
Cooling	Air-Source Heat Pump	2.6%	957	25	0.1
Cooling	Geothermal Heat Pump	5.2%	930	48	0.3
Heating	Electric Room Heat	11.1%	1,649	183	1.0
Heating	Electric Furnace	51.1%	2,402	1,227	6.7
Heating	Air-Source Heat Pump	2.6%	1,338	35	0.2
Heating	Geothermal Heat Pump	5.2%	628	32	0.2
Water Heating	Water Heater <= 55 Gal	36.0%	2,784	1,002	5.5
Water Heating	Water Heater > 55 Gal	2.0%	2,943	59	0.3
Interior Lighting	General Service Screw-In	100.0%	765	765	4.2
Interior Lighting	Linear Lighting	100.0%	40	40	0.2
Interior Lighting	Exempted Screw-In	100.0%	44	44	0.2
Exterior Lighting	Screw-in	100.0%	94	94	0.5
Appliances	Clothes Washer	58.0%	82	47	0.3
Appliances	Clothes Dryer	59.0%	489	288	1.6
Appliances	Dishwasher	36.0%	385	139	0.8
Appliances	Refrigerator	98.0%	715	701	3.8
Appliances	Freezer	2.0%	567	12	0.1
Appliances	Second Refrigerator	2.0%	833	17	0.1
Appliances	Stove/Oven	50.0%	453	226	1.2
Appliances	Microwave	94.0%	124	116	0.6
Electronics	Personal Computers	16.0%	168	27	0.1
Electronics	Monitor	12.0%	71	8	0.0
Electronics	Laptops	54.0%	44	24	0.1
Electronics	TVs	158.0%	152	240	1.3
Electronics	Printer/Fax/Copier	38.0%	59	22	0.1
Electronics	Set top Boxes/DVRs	48.0%	105	50	0.3
Electronics	Devices and Gadgets	212.0%	101	213	1.2
Miscellaneous	Electric Vehicles	2.0%	3,661	73	0.4
Miscellaneous	Pool Pump	0.0%	1,363	0	0.0
Miscellaneous	Pool Heater	0.0%	1,370	0	0.0
Miscellaneous	Hot Tub/Spa	0.0%	1,993	0	0.0
Miscellaneous	Furnace Fan	68.0%	321	218	1.2
Miscellaneous	Well pump	0.0%	556	0	0.0
Miscellaneous	Miscellaneous	100.0%	258	258	1.4
Total				7,019	38.3

COMMERCIAL SECTOR MARKET PROFILES

Table B-17 Small Office Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	2.2%	3.69	0.08	4.8
Cooling	Water-Cooled Chiller	1.4%	3.75	0.05	3.1
Cooling	RTU	60.8%	4.15	2.52	149.7
Cooling	Room AC	3.1%	4.10	0.13	7.6
Cooling	Air-Source Heat Pump	1.7%	4.29	0.07	4.3
Cooling	Geothermal Heat Pump	0.0%	2.96	0.00	0.0
Heating	Electric Furnace	23.7%	5.01	1.19	70.5
Heating	Electric Room Heat	6.1%	4.77	0.29	17.4
Heating	Air-Source Heat Pump	1.7%	3.86	0.07	3.9
Heating	Geothermal Heat Pump	0.0%	3.29	0.00	0.0
Ventilation	Ventilation	100.0%	0.81	0.81	47.9
Water Heating	Water Heater	36.6%	0.60	0.22	12.9
Interior Lighting	Screw-in	100.0%	0.36	0.36	21.4
Interior Lighting	High-Bay Fixtures	100.0%	1.16	1.16	68.9
Interior Lighting	Linear Lighting	100.0%	1.95	1.95	115.9
Exterior Lighting	Screw-in	100.0%	0.24	0.24	14.4
Exterior Lighting	Area Lighting	100.0%	0.90	0.90	53.2
Exterior Lighting	Linear Lighting	100.0%	0.20	0.20	11.9
Refrigeration	Walk-in Refrigerator/Freezer	0.0%	0.85	0.00	0.0
Refrigeration	Reach-in Refrigerator/Freezer	0.0%	0.19	0.00	0.0
Refrigeration	Glass Door Display	0.0%	0.20	0.00	0.0
Refrigeration	Open Display Case	0.0%	1.16	0.00	0.0
Refrigeration	Icemaker	5.7%	0.32	0.02	1.1
Refrigeration	Vending Machine	3.3%	0.15	0.00	0.3
Food Preparation	Range/Oven	2.7%	0.42	0.01	0.7
Food Preparation	Fryer	0.0%	0.61	0.00	0.0
Food Preparation	Dishwasher	0.0%	0.83	0.00	0.0
Food Preparation	Hot Food Container	0.0%	0.11	0.00	0.0
Food Preparation	Steamer	0.0%	0.61	0.00	0.0
Food Preparation	Griddle	0.0%	0.59	0.00	0.0
Food Preparation	Broiler	0.0%	0.81	0.00	0.0
Office Equipment	Desktop Computer	92.5%	1.31	1.21	71.6
Office Equipment	Laptop	80.1%	0.20	0.16	9.6
Office Equipment	Server	24.2%	0.38	0.09	5.5
Office Equipment	Monitor	81.2%	0.23	0.19	11.1
Office Equipment	Printer/Copier/Fax	92.5%	0.18	0.17	9.8
Office Equipment	POS Terminal	17.2%	0.10	0.02	1.0
Miscellaneous	Non-HVAC Motors	0.0%	0.27	0.00	0.0
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	1.00	1.00	59.4
Total				13.10	777.9

Table B-18 Large Office Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.0%	3.17	0.16	5.3
Cooling	Water-Cooled Chiller	10.5%	3.34	0.35	11.8
Cooling	RTU	50.8%	3.35	1.70	57.3
Cooling	Room AC	0.0%	3.30	0.00	0.0
Cooling	Air-Source Heat Pump	0.0%	3.46	0.00	0.0
Cooling	Geothermal Heat Pump	0.0%	2.39	0.00	0.0
Heating	Electric Furnace	10.9%	3.73	0.41	13.6
Heating	Electric Room Heat	4.2%	3.56	0.15	5.0
Heating	Air-Source Heat Pump	0.0%	2.67	0.00	0.0
Heating	Geothermal Heat Pump	0.0%	2.32	0.00	0.0
Ventilation	Ventilation	100.0%	1.80	1.80	60.5
Water Heating	Water Heater	51.5%	0.60	0.31	10.3
Interior Lighting	Screw-in	100.0%	0.50	0.50	17.0
Interior Lighting	High-Bay Fixtures	100.0%	1.28	1.28	43.1
Interior Lighting	Linear Lighting	100.0%	2.24	2.24	75.4
Exterior Lighting	Screw-in	100.0%	0.16	0.16	5.5
Exterior Lighting	Area Lighting	100.0%	1.17	1.17	39.5
Exterior Lighting	Linear Lighting	100.0%	0.28	0.28	9.4
Refrigeration	Walk-in Refrigerator/Freezer	15.9%	0.31	0.05	1.6
Refrigeration	Reach-in Refrigerator/Freezer	8.4%	0.07	0.01	0.2
Refrigeration	Glass Door Display	34.4%	0.07	0.02	0.8
Refrigeration	Open Display Case	2.3%	0.42	0.01	0.3
Refrigeration	Icemaker	35.9%	0.12	0.04	1.4
Refrigeration	Vending Machine	31.5%	0.05	0.02	0.6
Food Preparation	Range/Oven	26.7%	0.05	0.01	0.5
Food Preparation	Fryer	10.4%	0.07	0.01	0.3
Food Preparation	Dishwasher	15.0%	0.10	0.02	0.5
Food Preparation	Hot Food Container	15.4%	0.01	0.00	0.1
Food Preparation	Steamer	5.9%	0.07	0.00	0.1
Food Preparation	Griddle	6.5%	0.07	0.00	0.2
Food Preparation	Broiler	30.4%	0.10	0.03	1.0
Office Equipment	Desktop Computer	100.0%	1.58	1.58	53.1
Office Equipment	Laptop	74.8%	0.24	0.18	6.1
Office Equipment	Server	54.7%	0.93	0.51	17.1
Office Equipment	Monitor	81.4%	0.28	0.23	7.6
Office Equipment	Printer/Copier/Fax	100.0%	0.14	0.14	4.8
Office Equipment	POS Terminal	57.6%	0.02	0.01	0.4
Miscellaneous	Non-HVAC Motors	1.0%	0.29	0.00	0.1
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	1.12	1.12	37.6
Total				14.50	488.1

Table B-19 Restaurant Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	6.0%	7.01	0.42	6.3
Cooling	Water-Cooled Chiller	4.0%	6.88	0.28	4.1
Cooling	RTU	82.3%	7.45	6.13	91.6
Cooling	Room AC	0.0%	7.36	0.00	0.0
Cooling	Air-Source Heat Pump	0.0%	7.70	0.00	0.0
Cooling	Geothermal Heat Pump	0.0%	5.32	0.00	0.0
Heating	Electric Furnace	34.0%	6.31	2.14	32.0
Heating	Electric Room Heat	0.0%	6.01	0.00	0.0
Heating	Air-Source Heat Pump	0.0%	4.05	0.00	0.0
Heating	Geothermal Heat Pump	0.0%	3.11	0.00	0.0
Ventilation	Ventilation	100.0%	2.25	2.25	33.6
Water Heating	Water Heater	8.4%	7.92	0.66	9.9
Interior Lighting	Screw-in	100.0%	1.63	1.63	24.3
Interior Lighting	High-Bay Fixtures	100.0%	2.70	2.70	40.4
Interior Lighting	Linear Lighting	100.0%	1.82	1.82	27.2
Exterior Lighting	Screw-in	100.0%	0.85	0.85	12.7
Exterior Lighting	Area Lighting	100.0%	2.27	2.27	34.0
Exterior Lighting	Linear Lighting	100.0%	0.44	0.44	6.6
Refrigeration	Walk-in Refrigerator/Freezer	24.4%	8.16	1.99	29.7
Refrigeration	Reach-in Refrigerator/Freezer	16.0%	3.66	0.59	8.7
Refrigeration	Glass Door Display	68.6%	1.88	1.29	19.2
Refrigeration	Open Display Case	26.0%	11.14	2.90	43.3
Refrigeration	Icemaker	67.2%	3.08	2.07	30.9
Refrigeration	Vending Machine	7.3%	1.45	0.11	1.6
Food Preparation	Range/Oven	52.7%	2.86	1.50	22.4
Food Preparation	Fryer	12.7%	4.13	0.53	7.8
Food Preparation	Dishwasher	40.7%	2.84	1.16	17.3
Food Preparation	Hot Food Container	18.8%	0.39	0.07	1.1
Food Preparation	Steamer	7.1%	2.08	0.15	2.2
Food Preparation	Griddle	7.9%	2.02	0.16	2.4
Food Preparation	Broiler	37.1%	2.77	1.03	15.3
Office Equipment	Desktop Computer	75.2%	0.39	0.29	4.3
Office Equipment	Laptop	21.1%	0.05	0.01	0.2
Office Equipment	Server	37.3%	0.46	0.17	2.5
Office Equipment	Monitor	71.2%	0.07	0.05	0.7
Office Equipment	Printer/Copier/Fax	75.2%	0.08	0.06	1.0
Office Equipment	POS Terminal	65.0%	0.12	0.08	1.2
Miscellaneous	Non-HVAC Motors	6.0%	0.61	0.04	0.6
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	2.76	2.76	41.2
Total				38.58	576.2

Table B-20 Retail Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	1.0%	3.00	0.03	1.5
Cooling	Water-Cooled Chiller	3.8%	3.05	0.12	5.8
Cooling	RTU	63.5%	3.37	2.14	106.5
Cooling	Room AC	0.9%	3.33	0.03	1.4
Cooling	Air-Source Heat Pump	0.3%	3.48	0.01	0.5
Cooling	Geothermal Heat Pump	0.5%	2.40	0.01	0.6
Heating	Electric Furnace	32.1%	4.49	1.44	71.7
Heating	Electric Room Heat	0.6%	4.27	0.02	1.2
Heating	Air-Source Heat Pump	0.3%	4.31	0.01	0.6
Heating	Geothermal Heat Pump	0.5%	3.84	0.02	1.0
Ventilation	Ventilation	100.0%	0.77	0.77	38.2
Water Heating	Water Heater	41.9%	0.61	0.26	12.8
Interior Lighting	Screw-in	100.0%	1.32	1.32	66.0
Interior Lighting	High-Bay Fixtures	100.0%	0.97	0.97	48.4
Interior Lighting	Linear Lighting	100.0%	1.37	1.37	68.5
Exterior Lighting	Screw-in	100.0%	0.89	0.89	44.5
Exterior Lighting	Area Lighting	100.0%	1.05	1.05	52.5
Exterior Lighting	Linear Lighting	100.0%	0.31	0.31	15.4
Refrigeration	Walk-in Refrigerator/Freezer	0.0%	1.64	0.00	0.0
Refrigeration	Reach-in Refrigerator/Freezer	29.4%	0.37	0.11	5.4
Refrigeration	Glass Door Display	38.7%	0.38	0.15	7.3
Refrigeration	Open Display Case	7.8%	2.24	0.17	8.7
Refrigeration	Icemaker	6.8%	0.62	0.04	2.1
Refrigeration	Vending Machine	6.5%	0.58	0.04	1.9
Food Preparation	Range/Oven	5.9%	2.38	0.14	7.0
Food Preparation	Fryer	0.0%	3.45	0.00	0.0
Food Preparation	Dishwasher	0.0%	4.74	0.00	0.0
Food Preparation	Hot Food Container	0.0%	0.65	0.00	0.0
Food Preparation	Steamer	0.0%	3.48	0.00	0.0
Food Preparation	Griddle	0.0%	3.37	0.00	0.0
Food Preparation	Broiler	0.0%	4.62	0.00	0.0
Office Equipment	Desktop Computer	90.9%	0.21	0.19	9.6
Office Equipment	Laptop	49.4%	0.03	0.02	0.8
Office Equipment	Server	32.1%	0.25	0.08	4.0
Office Equipment	Monitor	62.8%	0.04	0.02	1.2
Office Equipment	Printer/Copier/Fax	90.9%	0.02	0.02	1.0
Office Equipment	POS Terminal	73.8%	0.07	0.05	2.4
Miscellaneous	Non-HVAC Motors	2.0%	0.22	0.00	0.2
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	0.99	0.99	49.2
Total				12.81	638.0

Table B-21 Grocery Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	13.2%	8.73	1.16	9.9
Cooling	Water-Cooled Chiller	2.0%	8.88	0.18	1.5
Cooling	RTU	68.9%	9.80	6.75	57.8
Cooling	Room AC	0.0%	9.68	0.00	0.0
Cooling	Air-Source Heat Pump	0.0%	9.99	0.00	0.0
Cooling	Geothermal Heat Pump	0.0%	5.58	0.00	0.0
Heating	Electric Furnace	3.3%	8.35	0.27	2.3
Heating	Electric Room Heat	0.0%	7.95	0.00	0.0
Heating	Air-Source Heat Pump	0.0%	3.92	0.00	0.0
Heating	Geothermal Heat Pump	0.0%	3.11	0.00	0.0
Ventilation	Ventilation	100.0%	2.56	2.56	21.9
Water Heating	Water Heater	35.5%	2.66	0.94	8.1
Interior Lighting	Screw-in	100.0%	0.71	0.71	6.0
Interior Lighting	High-Bay Fixtures	100.0%	1.40	1.40	12.0
Interior Lighting	Linear Lighting	100.0%	2.53	2.53	21.7
Exterior Lighting	Screw-in	100.0%	1.25	1.25	10.7
Exterior Lighting	Area Lighting	100.0%	1.53	1.53	13.1
Exterior Lighting	Linear Lighting	100.0%	0.61	0.61	5.2
Refrigeration	Walk-in Refrigerator/Freezer	16.6%	6.32	1.05	9.0
Refrigeration	Reach-in Refrigerator/Freezer	6.6%	0.41	0.03	0.2
Refrigeration	Glass Door Display	97.6%	4.16	4.06	34.8
Refrigeration	Open Display Case	95.6%	24.66	23.58	202.0
Refrigeration	Icemaker	70.5%	0.34	0.24	2.1
Refrigeration	Vending Machine	35.2%	0.32	0.11	1.0
Food Preparation	Range/Oven	52.9%	0.52	0.28	2.4
Food Preparation	Fryer	28.3%	0.75	0.21	1.8
Food Preparation	Dishwasher	22.4%	1.03	0.23	2.0
Food Preparation	Hot Food Container	68.7%	0.14	0.10	0.8
Food Preparation	Steamer	12.5%	0.76	0.09	0.8
Food Preparation	Griddle	12.5%	0.74	0.09	0.8
Food Preparation	Broiler	27.1%	1.01	0.27	2.3
Office Equipment	Desktop Computer	66.8%	0.31	0.21	1.8
Office Equipment	Laptop	58.1%	0.05	0.03	0.2
Office Equipment	Server	16.3%	0.18	0.03	0.3
Office Equipment	Monitor	66.8%	0.05	0.04	0.3
Office Equipment	Printer/Copier/Fax	66.8%	0.03	0.02	0.2
Office Equipment	POS Terminal	95.9%	0.12	0.12	1.0
Miscellaneous	Non-HVAC Motors	7.4%	1.24	0.09	0.8
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	4.08	4.08	35.0
Total				54.84	469.8

Table B-22 School Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.1%	4.75	0.24	15.8
Cooling	Water-Cooled Chiller	1.0%	5.45	0.05	3.6
Cooling	RTU	65.1%	4.32	2.81	185.2
Cooling	Room AC	3.9%	4.27	0.17	10.9
Cooling	Air-Source Heat Pump	4.0%	4.47	0.18	11.7
Cooling	Geothermal Heat Pump	0.0%	3.08	0.00	0.0
Heating	Electric Furnace	8.9%	11.32	1.01	66.4
Heating	Electric Room Heat	0.1%	10.78	0.01	0.6
Heating	Air-Source Heat Pump	4.0%	6.51	0.26	17.1
Heating	Geothermal Heat Pump	0.0%	4.48	0.00	0.0
Ventilation	Ventilation	100.0%	1.22	1.22	80.1
Water Heating	Water Heater	16.5%	1.68	0.28	18.3
Interior Lighting	Screw-in	100.0%	0.09	0.09	6.2
Interior Lighting	High-Bay Fixtures	100.0%	1.09	1.09	71.8
Interior Lighting	Linear Lighting	100.0%	0.71	0.71	46.9
Exterior Lighting	Screw-in	100.0%	0.38	0.38	25.2
Exterior Lighting	Area Lighting	100.0%	0.82	0.82	53.8
Exterior Lighting	Linear Lighting	100.0%	0.67	0.67	44.1
Refrigeration	Walk-in Refrigerator/Freezer	37.6%	0.40	0.15	9.8
Refrigeration	Reach-in Refrigerator/Freezer	21.3%	0.18	0.04	2.5
Refrigeration	Glass Door Display	45.1%	0.09	0.04	2.7
Refrigeration	Open Display Case	11.9%	0.54	0.06	4.2
Refrigeration	Icemaker	76.4%	0.30	0.23	15.1
Refrigeration	Vending Machine	68.3%	0.14	0.10	6.3
Food Preparation	Range/Oven	61.4%	0.13	0.08	5.1
Food Preparation	Fryer	2.6%	0.18	0.00	0.3
Food Preparation	Dishwasher	40.4%	0.25	0.10	6.7
Food Preparation	Hot Food Container	26.3%	0.03	0.01	0.6
Food Preparation	Steamer	29.6%	0.18	0.05	3.6
Food Preparation	Griddle	29.6%	0.18	0.05	3.5
Food Preparation	Broiler	60.3%	0.24	0.15	9.7
Office Equipment	Desktop Computer	98.5%	0.58	0.57	37.5
Office Equipment	Laptop	95.1%	0.05	0.05	3.4
Office Equipment	Server	60.4%	0.07	0.04	2.7
Office Equipment	Monitor	88.8%	0.10	0.09	6.0
Office Equipment	Printer/Copier/Fax	98.5%	0.08	0.08	5.1
Office Equipment	POS Terminal	11.5%	0.02	0.00	0.2
Miscellaneous	Non-HVAC Motors	4.7%	0.16	0.01	0.5
Miscellaneous	Pool Pump	32.9%	0.02	0.01	0.5
Miscellaneous	Pool Heater	32.9%	0.03	0.01	0.7
Miscellaneous	Other Miscellaneous	100.0%	0.88	0.88	57.7
Total				12.79	842.2

Table B-23 College Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	2.4%	4.65	0.11	4.1
Cooling	Water-Cooled Chiller	32.5%	5.33	1.73	64.0
Cooling	RTU	56.8%	4.23	2.40	88.9
Cooling	Room AC	0.0%	4.18	0.00	0.0
Cooling	Air-Source Heat Pump	0.0%	4.37	0.00	0.0
Cooling	Geothermal Heat Pump	0.0%	3.02	0.00	0.0
Heating	Electric Furnace	48.6%	9.47	4.60	170.0
Heating	Electric Room Heat	0.1%	9.02	0.01	0.3
Heating	Air-Source Heat Pump	0.0%	5.44	0.00	0.0
Heating	Geothermal Heat Pump	0.0%	3.75	0.00	0.0
Ventilation	Ventilation	100.0%	1.30	1.30	48.1
Water Heating	Water Heater	41.5%	1.76	0.73	27.0
Interior Lighting	Screw-in	100.0%	0.10	0.10	3.8
Interior Lighting	High-Bay Fixtures	100.0%	0.76	0.76	28.1
Interior Lighting	Linear Lighting	100.0%	0.99	0.99	36.8
Exterior Lighting	Screw-in	100.0%	0.43	0.43	15.9
Exterior Lighting	Area Lighting	100.0%	0.61	0.61	22.5
Exterior Lighting	Linear Lighting	100.0%	0.65	0.65	24.0
Refrigeration	Walk-in Refrigerator/Freezer	38.2%	0.17	0.07	2.5
Refrigeration	Reach-in Refrigerator/Freezer	13.2%	0.08	0.01	0.4
Refrigeration	Glass Door Display	97.2%	0.04	0.04	1.4
Refrigeration	Open Display Case	4.8%	0.24	0.01	0.4
Refrigeration	Icemaker	75.8%	0.13	0.10	3.7
Refrigeration	Vending Machine	69.2%	0.06	0.04	1.6
Food Preparation	Range/Oven	73.8%	0.14	0.10	3.8
Food Preparation	Fryer	61.2%	0.20	0.12	4.6
Food Preparation	Dishwasher	61.2%	0.28	0.17	6.3
Food Preparation	Hot Food Container	54.2%	0.04	0.02	0.8
Food Preparation	Steamer	13.4%	0.20	0.03	1.0
Food Preparation	Griddle	13.4%	0.20	0.03	1.0
Food Preparation	Broiler	46.1%	0.27	0.13	4.6
Office Equipment	Desktop Computer	96.4%	0.57	0.55	20.3
Office Equipment	Laptop	96.4%	0.07	0.07	2.5
Office Equipment	Server	78.1%	0.13	0.10	3.9
Office Equipment	Monitor	93.1%	0.10	0.09	3.5
Office Equipment	Printer/Copier/Fax	96.4%	0.06	0.06	2.2
Office Equipment	POS Terminal	95.6%	0.02	0.02	0.6
Miscellaneous	Non-HVAC Motors	4.7%	0.25	0.01	0.4
Miscellaneous	Pool Pump	58.8%	0.04	0.02	0.8
Miscellaneous	Pool Heater	58.8%	0.05	0.03	1.1
Miscellaneous	Other Miscellaneous	100.0%	1.20	1.20	44.4
Total				17.45	645.6

Table B-24 Healthcare Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	2.0%	4.86	0.10	5.4
Cooling	Water-Cooled Chiller	24.8%	5.11	1.27	70.8
Cooling	RTU	51.8%	4.35	2.25	125.7
Cooling	Room AC	1.8%	4.29	0.08	4.2
Cooling	Air-Source Heat Pump	4.8%	4.49	0.21	12.0
Cooling	Geothermal Heat Pump	0.0%	3.10	0.00	0.0
Heating	Electric Furnace	36.9%	7.17	2.65	147.9
Heating	Electric Room Heat	9.0%	6.83	0.61	34.3
Heating	Air-Source Heat Pump	4.8%	3.98	0.19	10.6
Heating	Geothermal Heat Pump	0.0%	2.72	0.00	0.0
Ventilation	Ventilation	100.0%	1.82	1.82	101.4
Water Heating	Water Heater	41.6%	1.68	0.70	39.0
Interior Lighting	Screw-in	100.0%	0.78	0.78	43.5
Interior Lighting	High-Bay Fixtures	100.0%	1.52	1.52	84.6
Interior Lighting	Linear Lighting	100.0%	1.68	1.68	93.7
Exterior Lighting	Screw-in	100.0%	0.17	0.17	9.4
Exterior Lighting	Area Lighting	100.0%	0.71	0.71	39.9
Exterior Lighting	Linear Lighting	100.0%	0.21	0.21	11.7
Refrigeration	Walk-in Refrigerator/Freezer	30.9%	0.41	0.13	7.0
Refrigeration	Reach-in Refrigerator/Freezer	7.7%	0.09	0.01	0.4
Refrigeration	Glass Door Display	50.6%	0.09	0.05	2.6
Refrigeration	Open Display Case	6.4%	0.55	0.04	2.0
Refrigeration	Icemaker	72.3%	0.15	0.11	6.2
Refrigeration	Vending Machine	37.8%	0.07	0.03	1.5
Food Preparation	Range/Oven	62.2%	0.18	0.11	6.2
Food Preparation	Fryer	14.2%	0.26	0.04	2.0
Food Preparation	Dishwasher	30.9%	0.35	0.11	6.1
Food Preparation	Hot Food Container	12.3%	0.05	0.01	0.3
Food Preparation	Steamer	3.6%	0.26	0.01	0.5
Food Preparation	Griddle	4.9%	0.25	0.01	0.7
Food Preparation	Broiler	68.7%	0.35	0.24	13.3
Office Equipment	Desktop Computer	99.0%	0.34	0.34	18.7
Office Equipment	Laptop	87.9%	0.03	0.02	1.3
Office Equipment	Server	42.8%	0.20	0.09	4.8
Office Equipment	Monitor	78.1%	0.03	0.02	1.3
Office Equipment	Printer/Copier/Fax	99.0%	0.02	0.02	1.0
Office Equipment	POS Terminal	51.0%	0.03	0.01	0.8
Miscellaneous	Non-HVAC Motors	3.0%	0.43	0.01	0.7
Miscellaneous	Pool Pump	3.9%	0.07	0.00	0.1
Miscellaneous	Pool Heater	5.7%	0.08	0.00	0.3
Miscellaneous	Other Miscellaneous	100.0%	4.05	4.05	226.3
Total				20.39	1,138.3

Table B-25 Lodging Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	0.5%	2.55	0.01	0.2
Cooling	Water-Cooled Chiller	7.4%	2.58	0.19	3.3
Cooling	RTU	28.4%	5.05	1.43	24.9
Cooling	Room AC	25.0%	4.99	1.25	21.7
Cooling	Air-Source Heat Pump	7.1%	5.11	0.36	6.3
Cooling	Geothermal Heat Pump	0.0%	4.58	0.00	0.0
Heating	Electric Furnace	28.2%	6.24	1.76	30.6
Heating	Electric Room Heat	0.0%	5.94	0.00	0.0
Heating	Air-Source Heat Pump	7.1%	4.36	0.31	5.4
Heating	Geothermal Heat Pump	0.0%	3.74	0.00	0.0
Ventilation	Ventilation	100.0%	1.58	1.58	27.5
Water Heating	Water Heater	22.0%	5.31	1.17	20.3
Interior Lighting	Screw-in	100.0%	1.38	1.38	23.9
Interior Lighting	High-Bay Fixtures	100.0%	1.98	1.98	34.3
Interior Lighting	Linear Lighting	100.0%	0.87	0.87	15.1
Exterior Lighting	Screw-in	100.0%	0.20	0.20	3.5
Exterior Lighting	Area Lighting	100.0%	1.56	1.56	27.1
Exterior Lighting	Linear Lighting	100.0%	0.04	0.04	0.7
Refrigeration	Walk-in Refrigerator/Freezer	13.3%	1.37	0.18	3.2
Refrigeration	Reach-in Refrigerator/Freezer	13.3%	0.31	0.04	0.7
Refrigeration	Glass Door Display	11.7%	0.32	0.04	0.6
Refrigeration	Open Display Case	0.5%	1.87	0.01	0.1
Refrigeration	Icemaker	40.4%	1.04	0.42	7.3
Refrigeration	Vending Machine	40.4%	0.49	0.20	3.4
Food Preparation	Range/Oven	8.3%	0.19	0.02	0.3
Food Preparation	Fryer	13.1%	0.27	0.04	0.6
Food Preparation	Dishwasher	90.8%	0.38	0.34	6.0
Food Preparation	Hot Food Container	23.4%	0.05	0.01	0.2
Food Preparation	Steamer	23.4%	0.28	0.06	1.1
Food Preparation	Griddle	23.4%	0.27	0.06	1.1
Food Preparation	Broiler	37.5%	0.37	0.14	2.4
Office Equipment	Desktop Computer	97.4%	0.17	0.17	3.0
Office Equipment	Laptop	90.1%	0.03	0.02	0.4
Office Equipment	Server	19.7%	0.10	0.02	0.4
Office Equipment	Monitor	36.5%	0.03	0.01	0.2
Office Equipment	Printer/Copier/Fax	97.4%	0.02	0.02	0.3
Office Equipment	POS Terminal	38.9%	0.03	0.01	0.2
Miscellaneous	Non-HVAC Motors	7.0%	0.25	0.02	0.3
Miscellaneous	Pool Pump	66.7%	0.04	0.03	0.4
Miscellaneous	Pool Heater	2.9%	0.05	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	1.22	1.22	21.2
Total				17.17	298.5

Table B-26 Data Center Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	10.0%	23.96	2.40	23.4
Cooling	Water-Cooled Chiller	79.5%	25.27	20.10	196.7
Cooling	RTU	0.2%	25.31	0.06	0.6
Cooling	Room AC	0.0%	25.00	0.00	0.0
Cooling	Air-Source Heat Pump	3.9%	26.16	1.02	10.0
Cooling	Geothermal Heat Pump	0.0%	18.05	0.00	0.0
Heating	Electric Furnace	23.3%	2.23	0.52	5.1
Heating	Electric Room Heat	0.4%	2.13	0.01	0.1
Heating	Air-Source Heat Pump	3.9%	1.60	0.06	0.6
Heating	Geothermal Heat Pump	0.0%	1.38	0.00	0.0
Ventilation	Ventilation	100.0%	16.71	16.71	163.5
Water Heating	Water Heater	59.5%	0.35	0.21	2.0
Interior Lighting	Screw-in	100.0%	0.78	0.78	7.6
Interior Lighting	High-Bay Fixtures	100.0%	3.14	3.14	30.8
Interior Lighting	Linear Lighting	100.0%	3.08	3.08	30.2
Exterior Lighting	Screw-in	100.0%	0.01	0.01	0.1
Exterior Lighting	Area Lighting	100.0%	0.42	0.42	4.1
Exterior Lighting	Linear Lighting	100.0%	0.48	0.48	4.7
Refrigeration	Walk-in Refrigerator/Freezer	15.9%	0.10	0.02	0.2
Refrigeration	Reach-in Refrigerator/Freezer	8.4%	0.02	0.00	0.0
Refrigeration	Glass Door Display	34.4%	0.02	0.01	0.1
Refrigeration	Open Display Case	2.3%	0.14	0.00	0.0
Refrigeration	Icemaker	35.9%	0.04	0.01	0.1
Refrigeration	Vending Machine	31.5%	0.02	0.01	0.1
Food Preparation	Range/Oven	26.7%	0.03	0.01	0.1
Food Preparation	Fryer	10.4%	0.04	0.00	0.0
Food Preparation	Dishwasher	15.0%	0.06	0.01	0.1
Food Preparation	Hot Food Container	15.4%	0.01	0.00	0.0
Food Preparation	Steamer	5.9%	0.04	0.00	0.0
Food Preparation	Griddle	6.5%	0.04	0.00	0.0
Food Preparation	Broiler	30.4%	0.06	0.02	0.2
Office Equipment	Desktop Computer	75.6%	3.97	3.01	29.4
Office Equipment	Laptop	65.6%	0.25	0.16	1.6
Office Equipment	Server	90.0%	46.76	42.09	411.8
Office Equipment	Monitor	75.6%	0.70	0.53	5.2
Office Equipment	Printer/Copier/Fax	75.6%	0.44	0.33	3.2
Office Equipment	POS Terminal	57.6%	0.12	0.07	0.7
Miscellaneous	Non-HVAC Motors	24.4%	4.33	1.06	10.3
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	16.41	16.41	160.6
Total				112.74	1,103.2

Table B-27 Warehouse Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.0%	4.36	0.22	11.9
Cooling	Water-Cooled Chiller	36.5%	4.43	1.62	88.4
Cooling	RTU	11.8%	4.90	0.58	31.4
Cooling	Room AC	0.4%	4.84	0.02	1.0
Cooling	Air-Source Heat Pump	0.0%	5.06	0.00	0.0
Cooling	Geothermal Heat Pump	0.0%	3.49	0.00	0.0
Heating	Electric Furnace	5.0%	13.33	0.67	36.8
Heating	Electric Room Heat	0.0%	12.70	0.00	0.0
Heating	Air-Source Heat Pump	0.0%	13.45	0.00	0.0
Heating	Geothermal Heat Pump	0.0%	11.98	0.00	0.0
Ventilation	Ventilation	100.0%	0.36	0.36	19.6
Water Heating	Water Heater	61.0%	0.36	0.22	12.0
Interior Lighting	Screw-in	100.0%	0.30	0.30	16.2
Interior Lighting	High-Bay Fixtures	100.0%	1.79	1.79	98.1
Interior Lighting	Linear Lighting	100.0%	0.79	0.79	43.3
Exterior Lighting	Screw-in	100.0%	0.37	0.37	20.1
Exterior Lighting	Area Lighting	100.0%	0.97	0.97	53.1
Exterior Lighting	Linear Lighting	100.0%	0.16	0.16	8.7
Refrigeration	Walk-in Refrigerator/Freezer	3.9%	0.84	0.03	1.8
Refrigeration	Reach-in Refrigerator/Freezer	0.0%	0.19	0.00	0.0
Refrigeration	Glass Door Display	0.0%	0.19	0.00	0.0
Refrigeration	Open Display Case	0.0%	1.14	0.00	0.0
Refrigeration	Icemaker	48.0%	0.32	0.15	8.3
Refrigeration	Vending Machine	44.9%	0.15	0.07	3.6
Food Preparation	Range/Oven	6.9%	0.02	0.00	0.1
Food Preparation	Fryer	0.0%	0.03	0.00	0.0
Food Preparation	Dishwasher	3.9%	0.03	0.00	0.1
Food Preparation	Hot Food Container	0.0%	0.00	0.00	0.0
Food Preparation	Steamer	0.0%	0.03	0.00	0.0
Food Preparation	Griddle	0.0%	0.02	0.00	0.0
Food Preparation	Broiler	0.0%	0.03	0.00	0.0
Office Equipment	Desktop Computer	96.6%	0.17	0.16	9.0
Office Equipment	Laptop	89.5%	0.02	0.02	1.0
Office Equipment	Server	47.0%	0.20	0.09	5.1
Office Equipment	Monitor	84.7%	0.03	0.03	1.4
Office Equipment	Printer/Copier/Fax	96.6%	0.02	0.02	1.0
Office Equipment	POS Terminal	6.1%	0.05	0.00	0.2
Miscellaneous	Non-HVAC Motors	3.9%	0.31	0.01	0.6
Miscellaneous	Pool Pump	0.0%	0.00	0.00	0.0
Miscellaneous	Pool Heater	0.0%	0.00	0.00	0.0
Miscellaneous	Other Miscellaneous	100.0%	1.03	1.03	56.4
Total				9.69	529.3

Table B-28 Miscellaneous Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Sqft)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.1%	1.46	0.07	12.4
Cooling	Water-Cooled Chiller	5.2%	1.48	0.08	12.7
Cooling	RTU	57.7%	1.64	0.94	156.8
Cooling	Room AC	0.6%	1.68	0.01	1.7
Cooling	Air-Source Heat Pump	2.8%	1.69	0.05	8.0
Cooling	Geothermal Heat Pump	0.6%	1.17	0.01	1.2
Heating	Electric Furnace	21.9%	2.69	0.59	98.2
Heating	Electric Room Heat	2.4%	2.56	0.06	10.2
Heating	Air-Source Heat Pump	2.8%	1.88	0.05	8.9
Heating	Geothermal Heat Pump	0.6%	1.40	0.01	1.4
Ventilation	Ventilation	100.0%	0.34	0.34	56.2
Water Heating	Water Heater	38.0%	0.64	0.24	40.2
Interior Lighting	Screw-in	100.0%	0.63	0.63	104.5
Interior Lighting	High-Bay Fixtures	100.0%	0.91	0.91	151.2
Interior Lighting	Linear Lighting	100.0%	1.25	1.25	208.4
Exterior Lighting	Screw-in	100.0%	0.40	0.40	66.7
Exterior Lighting	Area Lighting	100.0%	0.59	0.59	97.6
Exterior Lighting	Linear Lighting	100.0%	0.27	0.27	44.4
Refrigeration	Walk-in Refrigerator/Freezer	4.1%	0.27	0.01	1.8
Refrigeration	Reach-in Refrigerator/Freezer	15.4%	0.06	0.01	1.5
Refrigeration	Glass Door Display	25.5%	0.06	0.02	2.6
Refrigeration	Open Display Case	0.5%	0.36	0.00	0.3
Refrigeration	Icemaker	47.0%	0.10	0.05	7.8
Refrigeration	Vending Machine	29.5%	0.09	0.03	4.6
Food Preparation	Range/Oven	46.1%	0.04	0.02	3.3
Food Preparation	Fryer	4.1%	0.06	0.00	0.4
Food Preparation	Dishwasher	4.1%	0.09	0.00	0.6
Food Preparation	Hot Food Container	10.0%	0.01	0.00	0.2
Food Preparation	Steamer	2.4%	0.06	0.00	0.3
Food Preparation	Griddle	16.0%	0.06	0.01	1.6
Food Preparation	Broiler	51.8%	0.08	0.04	7.2
Office Equipment	Desktop Computer	93.0%	0.16	0.15	24.7
Office Equipment	Laptop	81.1%	0.02	0.02	3.3
Office Equipment	Server	41.2%	0.09	0.04	6.4
Office Equipment	Monitor	66.9%	0.03	0.02	3.1
Office Equipment	Printer/Copier/Fax	93.0%	0.02	0.02	2.7
Office Equipment	POS Terminal	22.7%	0.03	0.01	0.9
Miscellaneous	Non-HVAC Motors	9.0%	0.15	0.01	2.2
Miscellaneous	Pool Pump	11.6%	0.01	0.00	0.2
Miscellaneous	Pool Heater	5.6%	0.01	0.00	0.1
Miscellaneous	Other Miscellaneous	100.0%	0.58	0.58	96.9
Total				7.54	1,253.2

INDUSTRIAL SECTOR MARKET PROFILES

Table B-29 Food Production Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.2%	7,572	394	5.5
Cooling	Water-Cooled Chiller	31.0%	7,696	2,389	33.4
Cooling	RTU	2.2%	8,502	191	2.7
Cooling	Air-Source Heat Pump	2.5%	8,789	221	3.1
Cooling	Geothermal Heat Pump	0.0%	5,862	0	0.0
Heating	Electric Furnace	0.6%	23,148	143	2.0
Heating	Electric Room Heat	1.0%	22,046	215	3.0
Heating	Air-Source Heat Pump	2.5%	23,360	588	8.2
Heating	Geothermal Heat Pump	0.0%	15,581	0	0.0
Ventilation	Ventilation	100.0%	622	622	8.7
Interior Lighting	Screw-in	100.0%	317	317	4.4
Interior Lighting	High-Bay Fixtures	100.0%	1,923	1,923	26.9
Interior Lighting	Linear Lighting	100.0%	842	842	11.8
Exterior Lighting	Screw-in	100.0%	395	395	5.5
Exterior Lighting	Area Lighting	100.0%	1,042	1,042	14.6
Exterior Lighting	Linear Lighting	100.0%	169	169	2.4
Motors	Pumps	100.0%	4,544	4,544	63.6
Motors	Fans & Blowers	100.0%	7,555	7,555	105.7
Motors	Compressed Air	100.0%	2,906	2,906	40.7
Motors	Material Handling	100.0%	14,252	14,252	199.4
Motors	Other Motors	100.0%	1,458	1,458	20.4
Process	Process Heating	100.0%	4,881	4,881	68.3
Process	Process Cooling	100.0%	8,112	8,112	113.5
Process	Process Refrigeration	100.0%	8,112	8,112	113.5
Process	Process Electrochemical	100.0%	38	38	0.5
Process	Process Other	100.0%	364	364	5.1
Miscellaneous	Miscellaneous	100.0%	2,225	2,225	31.1
	Total			63,900	894.1

Table B-30 Chemicals & Pharmaceuticals Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.0%	19,896	995	4.0
Cooling	Water-Cooled Chiller	36.3%	20,224	7,333	29.6
Cooling	RTU	1.2%	22,341	279	1.1
Cooling	Air-Source Heat Pump	0.0%	22,341	0	0.0
Cooling	Geothermal Heat Pump	0.0%	14,902	0	0.0
Heating	Electric Furnace	0.0%	0	0	0.0
Heating	Electric Room Heat	1.2%	57,930	723	2.9
Heating	Air-Source Heat Pump	0.0%	0	0	0.0
Heating	Geothermal Heat Pump	0.0%	0	0	0.0
Ventilation	Ventilation	100.0%	1,635	1,635	6.6
Interior Lighting	Screw-in	100.0%	543	543	2.2
Interior Lighting	High-Bay Fixtures	100.0%	3,294	3,294	13.3
Interior Lighting	Linear Lighting	100.0%	1,442	1,442	5.8
Exterior Lighting	Screw-in	100.0%	677	677	2.7
Exterior Lighting	Area Lighting	100.0%	1,785	1,785	7.2
Exterior Lighting	Linear Lighting	100.0%	290	290	1.2
Motors	Pumps	100.0%	34,150	34,150	138.0
Motors	Fans & Blowers	100.0%	15,605	15,605	63.0
Motors	Compressed Air	100.0%	36,185	36,185	146.2
Motors	Material Handling	100.0%	32,793	32,793	132.5
Motors	Other Motors	100.0%	4,299	4,299	17.4
Process	Process Heating	100.0%	13,978	13,978	56.5
Process	Process Cooling	100.0%	7,691	7,691	31.1
Process	Process Refrigeration	100.0%	7,691	7,691	31.1
Process	Process Electrochemical	100.0%	9,739	9,739	39.3
Process	Process Other	100.0%	1,477	1,477	6.0
Miscellaneous	Miscellaneous	100.0%	4,176	4,176	16.9
Total				186,778	754.6

Table B-31 Transportation Equipment Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.0%	5,428	271	6.4
Cooling	Water-Cooled Chiller	53.1%	5,518	2,928	68.6
Cooling	RTU	0.2%	6,096	11	0.3
Cooling	Air-Source Heat Pump	0.0%	6,096	0	0.0
Cooling	Geothermal Heat Pump	0.0%	4,066	0	0.0
Heating	Electric Furnace	1.1%	16,596	175	4.1
Heating	Electric Room Heat	0.0%	15,806	0	0.0
Heating	Air-Source Heat Pump	0.0%	12,447	0	0.0
Heating	Geothermal Heat Pump	0.0%	8,302	0	0.0
Ventilation	Ventilation	100.0%	446	446	10.5
Interior Lighting	Screw-in	100.0%	217	217	5.1
Interior Lighting	High-Bay Fixtures	100.0%	1,318	1,318	30.9
Interior Lighting	Linear Lighting	100.0%	577	577	13.5
Exterior Lighting	Screw-in	100.0%	271	271	6.3
Exterior Lighting	Area Lighting	100.0%	714	714	16.7
Exterior Lighting	Linear Lighting	100.0%	116	116	2.7
Motors	Pumps	100.0%	1,652	1,652	38.7
Motors	Fans & Blowers	100.0%	1,202	1,202	28.2
Motors	Compressed Air	100.0%	1,352	1,352	31.7
Motors	Material Handling	100.0%	3,605	3,605	84.5
Motors	Other Motors	100.0%	519	519	12.2
Process	Process Heating	100.0%	2,935	2,935	68.8
Process	Process Cooling	100.0%	652	652	15.3
Process	Process Refrigeration	100.0%	652	652	15.3
Process	Process Electrochemical	100.0%	88	88	2.1
Process	Process Other	100.0%	480	480	11.2
Miscellaneous	Miscellaneous	100.0%	1,049	1,049	24.6
Total				21,229	497.7

Table B-32 Electronic Equipment Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	1.0%	61,480	615	2.7
Cooling	Water-Cooled Chiller	5.8%	62,493	3,623	15.7
Cooling	RTU	20.0%	69,037	13,800	59.9
Cooling	Air-Source Heat Pump	0.0%	69,037	0	0.0
Cooling	Geothermal Heat Pump	0.0%	46,048	0	0.0
Heating	Electric Furnace	0.0%	0	0	0.0
Heating	Electric Room Heat	3.8%	179,009	6,853	29.8
Heating	Air-Source Heat Pump	0.0%	0	0	0.0
Heating	Geothermal Heat Pump	0.0%	0	0	0.0
Ventilation	Ventilation	100.0%	5,053	5,053	21.9
Interior Lighting	Screw-in	100.0%	962	962	4.2
Interior Lighting	High-Bay Fixtures	100.0%	5,829	5,829	25.3
Interior Lighting	Linear Lighting	100.0%	2,551	2,551	11.1
Exterior Lighting	Screw-in	100.0%	1,197	1,197	5.2
Exterior Lighting	Area Lighting	100.0%	3,159	3,159	13.7
Exterior Lighting	Linear Lighting	100.0%	513	513	2.2
Motors	Pumps	100.0%	1,825	1,825	7.9
Motors	Fans & Blowers	100.0%	2,920	2,920	12.7
Motors	Compressed Air	100.0%	5,282	5,282	22.9
Motors	Material Handling	100.0%	16,515	16,515	71.7
Motors	Other Motors	0.0%	7,935	0	0.0
Process	Process Heating	100.0%	13,060	13,060	56.7
Process	Process Cooling	100.0%	6,098	6,098	26.5
Process	Process Refrigeration	100.0%	6,098	6,098	26.5
Process	Process Electrochemical	100.0%	567	567	2.5
Process	Process Other	100.0%	6,955	6,955	30.2
Miscellaneous	Miscellaneous	100.0%	7,935	7,935	34.5
	Total			111,410	484.0

Table B-33 Stone, Clay, Glass Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	1.0%	6,004	60	0.4
Cooling	Water-Cooled Chiller	5.8%	6,103	354	2.2
Cooling	RTU	33.9%	6,742	2,287	14.1
Cooling	Air-Source Heat Pump	0.0%	6,742	0	0.0
Cooling	Geothermal Heat Pump	0.0%	4,497	0	0.0
Heating	Electric Furnace	3.6%	18,355	665	4.1
Heating	Electric Room Heat	0.1%	17,481	20	0.1
Heating	Air-Source Heat Pump	0.0%	13,766	0	0.0
Heating	Geothermal Heat Pump	0.0%	9,182	0	0.0
Ventilation	Ventilation	100.0%	493	493	3.0
Interior Lighting	Screw-in	100.0%	248	248	1.5
Interior Lighting	High-Bay Fixtures	100.0%	1,505	1,505	9.3
Interior Lighting	Linear Lighting	100.0%	659	659	4.1
Exterior Lighting	Screw-in	100.0%	309	309	1.9
Exterior Lighting	Area Lighting	100.0%	816	816	5.0
Exterior Lighting	Linear Lighting	100.0%	132	132	0.8
Motors	Pumps	100.0%	4,910	4,910	30.3
Motors	Fans & Blowers	100.0%	6,909	6,909	42.7
Motors	Compressed Air	100.0%	1,244	1,244	7.7
Motors	Material Handling	100.0%	28,603	28,603	176.8
Motors	Other Motors	100.0%	446	446	2.8
Process	Process Heating	100.0%	14,214	14,214	87.8
Process	Process Cooling	100.0%	881	881	5.4
Process	Process Refrigeration	100.0%	881	881	5.4
Process	Process Electrochemical	100.0%	61	61	0.4
Process	Process Other	100.0%	1,766	1,766	10.9
Miscellaneous	Miscellaneous	100.0%	1,743	1,743	10.8
Total				69,208	427.7

Table B-34 Primary Metals Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	1.0%	2,800	28	0.3
Cooling	Water-Cooled Chiller	5.8%	2,847	165	2.1
Cooling	RTU	19.2%	3,145	605	7.5
Cooling	Air-Source Heat Pump	0.2%	3,251	6	0.1
Cooling	Geothermal Heat Pump	0.0%	2,168	0	0.0
Heating	Electric Furnace	2.0%	8,562	173	2.1
Heating	Electric Room Heat	0.0%	8,154	0	0.0
Heating	Air-Source Heat Pump	0.2%	8,640	15	0.2
Heating	Geothermal Heat Pump	0.0%	5,763	0	0.0
Ventilation	Ventilation	100.0%	230	230	2.9
Interior Lighting	Screw-in	100.0%	95	95	1.2
Interior Lighting	High-Bay Fixtures	100.0%	576	576	7.2
Interior Lighting	Linear Lighting	100.0%	252	252	3.1
Exterior Lighting	Screw-in	100.0%	118	118	1.5
Exterior Lighting	Area Lighting	100.0%	312	312	3.9
Exterior Lighting	Linear Lighting	100.0%	51	51	0.6
Motors	Pumps	100.0%	4,942	4,942	61.4
Motors	Fans & Blowers	100.0%	2,703	2,703	33.6
Motors	Compressed Air	100.0%	1,815	1,815	22.6
Motors	Material Handling	100.0%	3,257	3,257	40.5
Motors	Other Motors	100.0%	274	274	3.4
Process	Process Heating	100.0%	10,758	10,758	133.7
Process	Process Cooling	100.0%	173	173	2.1
Process	Process Refrigeration	100.0%	173	173	2.1
Process	Process Electrochemical	100.0%	5,193	5,193	64.5
Process	Process Other	100.0%	282	282	3.5
Miscellaneous	Miscellaneous	100.0%	429	429	5.3
Total				32,623	405.4

Table B-35 Rubber & Plastics Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	5.0%	22,833	1,142	2.2
Cooling	Water-Cooled Chiller	20.9%	23,210	4,854	9.5
Cooling	RTU	10.6%	25,640	2,715	5.3
Cooling	Air-Source Heat Pump	0.0%	25,640	0	0.0
Cooling	Geothermal Heat Pump	0.0%	17,102	0	0.0
Heating	Electric Furnace	3.6%	69,808	2,529	4.9
Heating	Electric Room Heat	0.1%	66,483	76	0.1
Heating	Air-Source Heat Pump	0.0%	52,356	0	0.0
Heating	Geothermal Heat Pump	0.0%	34,921	0	0.0
Ventilation	Ventilation	100.0%	1,877	1,877	3.7
Interior Lighting	Screw-in	100.0%	798	798	1.6
Interior Lighting	High-Bay Fixtures	100.0%	4,836	4,836	9.4
Interior Lighting	Linear Lighting	100.0%	2,117	2,117	4.1
Exterior Lighting	Screw-in	100.0%	993	993	1.9
Exterior Lighting	Area Lighting	100.0%	2,621	2,621	5.1
Exterior Lighting	Linear Lighting	100.0%	425	425	0.8
Motors	Pumps	100.0%	43,412	43,412	84.8
Motors	Fans & Blowers	100.0%	9,866	9,866	19.3
Motors	Compressed Air	100.0%	15,786	15,786	30.8
Motors	Material Handling	0.0%	4,923	0	0.0
Motors	Other Motors	100.0%	1,973	1,973	3.9
Process	Process Heating	100.0%	20,037	20,037	39.1
Process	Process Cooling	100.0%	5,756	5,756	11.2
Process	Process Refrigeration	100.0%	5,756	5,756	11.2
Process	Process Electrochemical	100.0%	92	92	0.2
Process	Process Other	100.0%	1,668	1,668	3.3
Miscellaneous	Miscellaneous	100.0%	4,923	4,923	9.6
Total				134,253	262.2

Table B-36 Other Industrial Market Profile

End Use	Technology	Saturation	EUI (kWh)	Intensity (kWh/Employee)	Usage (GWh)
Cooling	Air-Cooled Chiller	1.0%	8,985	90	6.4
Cooling	Water-Cooled Chiller	5.8%	9,133	529	37.4
Cooling	RTU	20.0%	10,089	2,017	142.6
Cooling	Air-Source Heat Pump	0.9%	10,430	95	6.7
Cooling	Geothermal Heat Pump	0.0%	7,198	1	0.1
Heating	Electric Furnace	3.6%	27,469	995	70.4
Heating	Electric Room Heat	0.1%	26,161	30	2.1
Heating	Air-Source Heat Pump	0.9%	27,720	251	17.8
Heating	Geothermal Heat Pump	0.0%	24,684	3	0.2
Ventilation	Ventilation	100.0%	738	738	52.2
Interior Lighting	Screw-in	100.0%	245	245	17.3
Interior Lighting	High-Bay Fixtures	100.0%	1,485	1,485	105.0
Interior Lighting	Linear Lighting	100.0%	650	650	46.0
Exterior Lighting	Screw-in	100.0%	305	305	21.6
Exterior Lighting	Area Lighting	100.0%	805	805	56.9
Exterior Lighting	Linear Lighting	100.0%	131	131	9.2
Motors	Pumps	100.0%	1,693	1,693	119.7
Motors	Fans & Blowers	100.0%	1,122	1,122	79.3
Motors	Compressed Air	100.0%	1,186	1,186	83.8
Motors	Material Handling	100.0%	3,164	3,164	223.7
Motors	Other Motors	100.0%	460	460	32.5
Process	Process Heating	100.0%	2,341	2,341	165.5
Process	Process Cooling	100.0%	613	613	43.4
Process	Process Refrigeration	100.0%	613	613	43.4
Process	Process Electrochemical	100.0%	58	58	4.1
Process	Process Other	100.0%	155	155	10.9
Miscellaneous	Miscellaneous	100.0%	1,194	1,194	84.4
Total				20,970	1,482.4

C

MEASURE ASSUMPTIONS

This section documents the essential assumptions behind the measure analysis for each sector, including costs (in real 2015 dollars), energy and summer peak demand savings per unit of measure, lifetime, and selected sources for those values. The separation of measures into two designations – Equipment and Non-Equipment – is a convenience of modeling that reflects that some measures, such as insulation, are not exchanges of energy-consuming equipment on a stock-turnover schedule, but rather measures or enhancements that influence the way end-use equipment consumes energy. Many non-equipment measures apply to more than one end use or technology as well. For these reasons, they are handled by a separate, purpose-built module in our modeling.

Please see the embedded spreadsheet documentation below.

RESIDENTIAL MEASURE ASSUMPTIONS

Filename: *"KCPL LoadMAP Residential Measure Assumptions.xlsx"*



KCPL LoadMAP
Residential Measure

COMMERCIAL MEASURE ASSUMPTIONS

Filename: *"KCPL LoadMAP Commercial Measure Assumptions.xlsx"*



KCPL LoadMAP
Commercial Measure

INDUSTRIAL MEASURE ASSUMPTIONS

Filename: *"KCPL LoadMAP Industrial Measure Assumptions.xlsx"*



KCPL LoadMAP
Industrial Measure

D

MEASURE TAKE RATES

AEG estimated adoption rates for measure categories by triangulating data from KCP&L’s existing programs, benchmark data from other comparable programs, and proprietary market research conducted in the Midwest and around the U.S. The tables below show take-rates developed for the broad categories, which are then mapped and expanded to the full universe of measures for use in the potential modeling. Take rates are assumed to rise over time, adding 0.5% per year due to trends in education, awareness, marketing and customer communication, etc.¹

RESIDENTIAL TAKE RATES

The take rates shown in Table E-1 below are the general starting point for the sector in year 1. These rates grow over time as described above.

Additionally, residential low-income take rates were further adjusted by a factor of 0.80 for high cost measures like HVAC equipment and 0.92 for low cost measures like efficient light bulbs. This reflects AEG research that indicates low-income households are less likely to make these investments.

Table D-1 Residential Take Rates in Base Year

Measure Take Rate in Base Year	Realistic Achievable Potential	Maximum Achievable Potential	Measure Take Rate in Base Year	Realistic Achievable Potential	Maximum Achievable Potential
AC Unit	35%	50%	Smart Power Strips	32%	51%
Appliances (Non-Fridge)	31%	45%	Add / Upgrade Insulation	30%	43%
Appliances (Refrigerator)	38%	53%	Hot water conservation	27%	43%
Cooking Equipment	33%	46%	Duct Sealing/Insulation	31%	44%
Hot Water Heater	37%	48%	EE Windows	30%	43%
Electronics	31%	45%	HVAC Maintenance	34%	47%
Furnace/Boiler	36%	48%	Lighting Controls	30%	45%
Geothermal Heat Pump	19%	31%	Programmable Thermostat	34%	47%
Lighting - General Service	39%	57%	Smart Thermostat	35%	55%
Lighting - Specialty	12%	18%	Whole House Fan	23%	33%
Pool Pump	27%	38%			

¹ This increase is in absolute terms, not as a percent of the participation rate. For example, a take rate of 35.0% in year 1 will be 35.5% in year 2, 36.0% in year 3, and so on.

COMMERCIAL AND INDUSTRIAL TAKE RATES

The take rates shown in Table E-2 below are the general starting point for the sector in year 1. These rates grow over time as described above.

Table D-2 C&I Take Rates in Base Year

Measure Take Rate in Base Year	Realistic Achievable Potential	Maximum Achievable Potential	Measure Take Rate in Base Year	Realistic Achievable Potential	Maximum Achievable Potential
Cooking Equipment	38%	64%	EE Windows	37%	62%
Hot water heater	39%	59%	HVAC controls	43%	67%
Electronics	37%	58%	HVAC maintenance	41%	62%
Furnace/Boiler	40%	61%	HVAC motors/pumps	39%	62%
HVAC Cooling	45%	67%	Install an Energy Mgmt Sys.	36%	56%
Lighting	44%	69%	Lighting Controls	42%	64%
Pumps/Motors/Drives EQ	37%	57%	Motors/Drives	42%	54%
Refrigeration	40%	64%	Pool Pump Timer	43%	69%
Retrocommissioning	39%	65%	Pre-rinse Spray Valves	38%	66%
RTU/Chiller	44%	63%	Programmable Thermostat	42%	59%
Add / Upgrade Insulation	37%	57%	Pumps/Motors/Drives NEM	40%	66%
Chiller Fans	43%	69%	Retrocommissioning	40%	62%
Hot water conservation	39%	58%	Strategic Energy Mgmt.	35%	60%
Duct Sealing/Insulation	38%	62%			

C&I OPT OUT ADJUSTMENT FOR ACHIEVABLE POTENTIAL

The general C&I take rates in Table E-2 above were also adjusted downward for Missouri service territories by building or industry segment to reflect large C&I opt-out customers according to data provided to AEG by KCP&L. The adjustment was proportional to the amount of electric load represented by customers opting out in a given segment. This value, shown in the table below, is the amount by which the take rate was reduced. For example, if the nominal take rate from Table E-2 is 35% in year 1, and the adjustment in Table E-3 below is a 15% reduction, the actual take rate for the given measure in that segment is $29.75\% = (35\% \times (100\% - 15\%))$.

Table D-3 C&I Opt Out Rates for Missouri

Commercial Segment	% Opting Out	Industrial Segment	% Opting Out
Small Office	0%	Food Production	58%
Large Office	89%	Chemicals & Pharmaceuticals	39%
Restaurant	0%	Transportation Equipment	77%
Retail	18%	Electronic Equipment	0%
Grocery	0%	Stone, clay, glass	40%
School	3%	Primary Metals	0%
College	0%	Rubber & Plastics	15%
Healthcare	14%	Other Industrial	17%
Lodging	6%	Total Industrial	32%
Data Center	10%		
Warehouse	3%		
Miscellaneous	7%		
Total Commercial	11%		

E

AVOIDED COSTS (HIGHLY CONFIDENTIAL) PORTIONS REDACTED

The avoided energy and capacity costs provided by KCP&L are shown in the table below. These values were used to calculate the value of DSM savings in all potential study analyses. The values are in real dollar terms for the base year of 2015 and therefore do not include an inflation escalator.

Table E-1 Value of Avoided Costs (Real 2015 Dollars) – **TABLE REDACTED**

OTHER DATA USED IN ECONOMIC CALCULATIONS

Other data used for the economic calculations are discount rate, inflation rate, and line losses used to gross up impacts from customer meters to impacts at the generator where valuation is calculated from the perspective of utility system resource planning. These data are shown in the tables below.

Table E-2 Discount and Inflation Rates

Quantity	Value
Nominal Discount Rate	7.84%
Inflation Rate	2.50%
Real Discount Rate	5.21%

Table E-3 Line loss assumptions

Sector	Energy	Peak Demand
Residential	7.19%	8.43%
Commercial	6.74%	7.90%
Industrial	5.56%	6.48%

F

ANNUAL SAVINGS SUMMARIES

Table F-1 KCP&L All Service Territories - Total Cumulative Measure-Level EE Savings by Sector

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (GWh)																			
Res	9,082	9,069	9,053	9,023	9,020	9,037	9,066	9,123	9,190	9,260	9,335	9,416	9,501	9,588	9,673	9,760	9,851	9,947	10,041
Com	8,870	8,866	8,876	8,905	8,948	9,005	9,072	9,143	9,217	9,299	9,385	9,471	9,559	9,652	9,748	9,848	9,951	10,059	10,171
Ind	5,352	5,354	5,349	5,350	5,354	5,366	5,375	5,389	5,404	5,422	5,432	5,444	5,458	5,478	5,491	5,509	5,528	5,551	5,566
Total	23,304	23,289	23,278	23,279	23,322	23,408	23,514	23,655	23,811	23,982	24,152	24,331	24,518	24,718	24,912	25,117	25,329	25,557	25,779
Realistic Achievable Potential Savings (GWh)																			
Res	115	156	198	230	264	301	333	375	417	458	498	539	580	620	659	700	742	784	823
Com	75	135	194	254	312	374	436	494	550	608	666	727	785	843	902	961	1,019	1,076	1,135
Ind	13	26	39	51	65	80	95	110	125	141	157	173	189	206	222	239	255	271	287
Total	203	318	431	536	642	755	864	978	1,092	1,207	1,321	1,440	1,554	1,670	1,784	1,900	2,016	2,131	2,245
Maximum Achievable Potential Savings (GWh)																			
Res	145	204	263	306	351	399	438	491	544	596	646	697	748	798	845	896	947	998	1,046
Com	118	211	301	391	477	568	658	741	822	905	988	1,074	1,155	1,236	1,317	1,399	1,477	1,554	1,632
Ind	20	41	60	80	101	123	145	168	191	214	237	261	284	308	331	355	378	400	423
Total	283	455	624	777	929	1,090	1,241	1,400	1,557	1,715	1,871	2,032	2,187	2,342	2,494	2,649	2,801	2,952	3,101
Economic Potential Savings (GWh)																			
Res	299	433	558	645	727	800	855	934	1,012	1,092	1,171	1,254	1,335	1,414	1,488	1,563	1,637	1,709	1,777
Com	203	364	516	666	805	948	1,085	1,211	1,332	1,455	1,575	1,698	1,814	1,927	2,038	2,147	2,250	2,349	2,450
Ind	46	92	135	178	221	266	312	357	401	447	490	536	580	624	666	707	747	787	825
Total	549	888	1,209	1,488	1,752	2,014	2,251	2,502	2,746	2,994	3,237	3,488	3,729	3,965	4,192	4,417	4,634	4,845	5,051
Technical Potential Savings (GWh)																			
Res	395	623	837	1,012	1,179	1,337	1,477	1,638	1,797	1,954	2,108	2,263	2,413	2,558	2,696	2,832	2,962	3,089	3,209
Com	270	492	703	909	1,102	1,296	1,482	1,656	1,822	1,989	2,153	2,315	2,468	2,616	2,759	2,901	3,035	3,163	3,289
Ind	61	122	178	233	287	342	395	448	500	553	604	654	703	752	799	845	890	934	977
Total	726	1,236	1,719	2,154	2,568	2,975	3,355	3,742	4,120	4,497	4,865	5,232	5,584	5,926	6,254	6,578	6,887	7,186	7,475

Table F-2 KCP&L-MO Cumulative Measure-Level EE Savings by Sector

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (GWh)																			
Res	2,573	2,567	2,560	2,550	2,547	2,550	2,556	2,570	2,587	2,605	2,624	2,645	2,666	2,688	2,710	2,732	2,755	2,780	2,804
Com	3,738	3,736	3,741	3,753	3,771	3,795	3,823	3,853	3,884	3,919	3,955	3,991	4,028	4,067	4,108	4,150	4,193	4,239	4,286
Ind	2,255	2,256	2,254	2,255	2,256	2,261	2,265	2,271	2,277	2,285	2,289	2,294	2,300	2,308	2,314	2,322	2,329	2,339	2,346
Total	8,567	8,559	8,554	8,557	8,574	8,606	8,644	8,694	8,748	8,808	8,868	8,930	8,994	9,064	9,131	9,203	9,277	9,358	9,436
Realistic Achievable Potential Savings (GWh)																			
Res	32	43	54	63	72	82	90	101	112	123	134	145	155	166	176	186	197	208	218
Com	32	57	82	107	132	158	184	208	232	256	281	306	331	355	380	405	430	454	478
Ind	5	11	16	22	27	34	40	46	53	59	66	73	80	87	94	101	108	114	121
Total	69	111	152	191	231	273	314	356	397	439	481	524	566	608	649	692	734	776	817
Maximum Achievable Potential Savings (GWh)																			
Res	40	56	72	83	95	108	118	133	147	160	174	187	200	213	225	238	251	265	277
Com	50	89	127	165	201	240	277	312	346	382	416	452	487	521	555	589	622	655	688
Ind	9	17	25	34	42	52	61	71	80	90	100	110	120	130	140	149	159	169	178
Total	99	162	224	282	339	399	457	516	574	632	690	749	807	864	920	977	1,033	1,088	1,143
Economic Potential Savings (GWh)																			
Res	82	118	151	174	196	215	230	250	271	292	313	334	355	376	395	415	433	452	469
Com	86	153	217	281	339	400	457	510	561	613	664	716	764	812	859	905	948	990	1,032
Ind	19	39	57	75	93	112	131	150	169	188	207	226	244	263	281	298	315	332	347
Total	187	310	426	529	628	727	818	911	1,002	1,094	1,183	1,276	1,364	1,451	1,534	1,617	1,696	1,773	1,849
Technical Potential Savings (GWh)																			
Res	110	174	234	282	329	373	411	456	500	544	586	629	671	711	749	786	822	857	890
Com	114	207	296	383	464	546	625	698	768	838	907	976	1,040	1,102	1,163	1,222	1,279	1,333	1,386
Ind	26	51	75	98	121	144	167	189	211	233	254	276	296	317	337	356	375	394	412
Total	249	432	605	764	914	1,063	1,203	1,343	1,479	1,615	1,748	1,880	2,007	2,130	2,248	2,365	2,476	2,583	2,688

Table F-3 KCP&L-KS Cumulative Measure-Level EE Savings by Sector

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (GWh)																			
Res	2,939	2,939	2,937	2,930	2,933	2,942	2,956	2,980	3,007	3,035	3,065	3,098	3,133	3,168	3,203	3,239	3,275	3,313	3,351
Com	2,232	2,231	2,234	2,241	2,252	2,266	2,283	2,301	2,320	2,340	2,362	2,384	2,406	2,429	2,453	2,478	2,504	2,532	2,560
Ind	1,347	1,347	1,346	1,346	1,347	1,350	1,353	1,356	1,360	1,365	1,367	1,370	1,374	1,379	1,382	1,386	1,391	1,397	1,401
Total	6,519	6,518	6,517	6,518	6,532	6,559	6,592	6,637	6,687	6,740	6,794	6,852	6,912	6,976	7,038	7,103	7,171	7,242	7,311
Realistic Achievable Potential Savings (GWh)																			
Res	33	46	59	69	80	91	101	114	128	140	153	166	178	191	203	216	229	242	254
Com	19	34	49	64	79	94	110	124	138	153	168	183	198	212	227	242	257	271	286
Ind	3	7	10	13	16	20	24	28	31	35	39	44	48	52	56	60	64	68	72
Total	55	86	118	146	175	206	235	266	298	329	360	392	423	455	486	518	549	581	612
Maximum Achievable Potential Savings (GWh)																			
Res	43	61	79	93	107	122	134	151	167	183	199	215	231	246	261	277	293	309	324
Com	30	53	76	98	120	143	165	187	207	228	249	270	291	311	332	352	372	391	411
Ind	5	10	15	20	25	31	37	42	48	54	60	66	72	78	83	89	95	101	106
Total	77	124	170	211	252	296	336	380	422	465	507	551	593	635	676	718	760	801	841
Economic Potential Savings (GWh)																			
Res	94	135	174	201	227	249	267	292	316	341	365	391	416	441	464	488	510	533	554
Com	51	92	130	168	203	239	273	305	335	366	396	427	457	485	513	540	566	591	616
Ind	12	23	34	45	56	67	78	90	101	112	123	135	146	157	168	178	188	198	208
Total	157	249	338	413	485	555	618	686	752	819	885	953	1,019	1,083	1,144	1,206	1,265	1,322	1,378
Technical Potential Savings (GWh)																			
Res	124	195	262	316	368	417	461	511	561	611	660	709	758	804	849	892	934	975	1,013
Com	68	124	177	229	277	326	373	417	459	501	542	583	621	658	694	730	764	796	828
Ind	15	31	45	59	72	86	99	113	126	139	152	165	177	189	201	213	224	235	246
Total	207	350	484	604	718	829	933	1,041	1,146	1,251	1,354	1,457	1,556	1,652	1,744	1,835	1,922	2,006	2,087

Table F-4 *GMO-MPS Cumulative Measure-Level EE Savings by Sector*

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (GWh)																			
Res	2,841	2,839	2,837	2,830	2,831	2,838	2,848	2,866	2,888	2,910	2,933	2,958	2,984	3,010	3,036	3,062	3,089	3,119	3,148
Com	2,050	2,049	2,051	2,058	2,068	2,081	2,096	2,113	2,130	2,149	2,169	2,189	2,209	2,230	2,252	2,275	2,299	2,324	2,350
Ind	1,237	1,237	1,236	1,236	1,237	1,240	1,242	1,245	1,249	1,253	1,255	1,258	1,261	1,266	1,269	1,273	1,277	1,283	1,286
Total	6,127	6,125	6,124	6,124	6,136	6,158	6,186	6,224	6,266	6,311	6,357	6,404	6,454	6,506	6,557	6,610	6,666	6,725	6,784
Realistic Achievable Potential Savings (GWh)																			
Res	40	55	69	80	91	104	114	128	142	156	170	184	198	212	225	239	253	268	282
Com	17	31	45	59	72	87	101	114	127	141	154	168	181	195	208	222	236	249	262
Ind	3	6	9	12	15	18	22	25	29	33	36	40	44	48	51	55	59	63	66
Total	61	92	123	150	178	208	237	267	298	329	360	392	423	454	485	517	548	579	610
Maximum Achievable Potential Savings (GWh)																			
Res	50	70	90	105	120	136	150	167	185	203	220	237	254	272	288	305	323	340	357
Com	27	49	69	90	110	131	152	171	190	209	228	248	267	286	304	323	341	359	377
Ind	5	9	14	19	23	28	34	39	44	49	55	60	66	71	77	82	87	93	98
Total	82	129	174	214	254	296	335	377	419	461	503	545	587	628	669	710	751	792	832
Economic Potential Savings (GWh)																			
Res	100	146	188	218	246	270	289	315	341	369	396	423	451	478	503	529	554	579	603
Com	47	84	119	154	186	219	251	280	308	336	364	392	419	445	471	496	520	543	566
Ind	11	21	31	41	51	62	72	82	93	103	113	124	134	144	154	163	173	182	191
Total	158	251	339	413	483	551	612	677	741	808	873	940	1,004	1,067	1,128	1,189	1,247	1,304	1,359
Technical Potential Savings (GWh)																			
Res	130	205	276	333	389	441	487	539	591	643	693	744	793	840	885	930	973	1,015	1,054
Com	62	114	162	210	255	300	343	383	421	460	497	535	570	604	638	670	701	731	760
Ind	14	28	41	54	66	79	91	104	116	128	139	151	163	174	185	195	206	216	226
Total	206	347	479	597	710	819	920	1,025	1,128	1,230	1,330	1,430	1,526	1,619	1,708	1,796	1,879	1,961	2,040

Table F-5 *GMO-SJLP Cumulative Measure-Level EE Savings by Sector*

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (GWh)																			
Res	729	724	719	713	710	707	706	707	708	710	713	715	718	721	724	728	732	736	739
Com	850	850	851	854	858	863	870	876	884	891	900	908	916	925	934	944	954	964	975
Ind	513	513	513	513	513	514	515	517	518	520	521	522	523	525	526	528	530	532	534
Total	2,092	2,087	2,083	2,080	2,081	2,085	2,091	2,100	2,110	2,122	2,133	2,145	2,158	2,172	2,185	2,200	2,215	2,232	2,248
Realistic Achievable Potential Savings (GWh)																			
Res	9	13	16	19	22	25	27	31	35	38	42	45	49	52	55	59	63	66	70
Com	7	13	19	24	30	36	42	47	53	58	64	70	75	81	86	92	98	103	109
Ind	1	2	4	5	6	8	9	11	12	14	15	17	18	20	21	23	24	26	28
Total	18	28	39	48	58	68	78	89	99	110	121	132	142	153	163	174	185	195	206
Maximum Achievable Potential Savings (GWh)																			
Res	12	17	21	25	29	33	36	41	45	50	54	58	63	67	71	75	80	84	88
Com	11	20	29	37	46	54	63	71	79	87	95	103	111	119	126	134	142	149	156
Ind	2	4	6	8	10	12	14	16	18	21	23	25	27	30	32	34	36	38	41
Total	25	41	56	70	84	99	113	128	142	157	171	186	201	215	229	244	258	272	285
Economic Potential Savings (GWh)																			
Res	23	34	44	52	58	64	69	77	84	91	98	105	112	119	125	132	139	145	151
Com	19	35	49	64	77	91	104	116	128	139	151	163	174	185	195	206	216	225	235
Ind	4	9	13	17	21	26	30	34	38	43	47	51	56	60	64	68	72	75	79
Total	47	78	107	132	157	181	203	227	250	274	296	319	342	364	385	406	426	445	465
Technical Potential Savings (GWh)																			
Res	31	49	66	80	94	107	118	131	144	156	169	180	192	203	213	224	234	243	252
Com	26	47	67	87	106	124	142	159	175	191	206	222	237	251	265	278	291	303	315
Ind	6	12	17	22	28	33	38	43	48	53	58	63	67	72	77	81	85	90	94
Total	63	108	150	190	227	264	298	333	367	400	433	465	496	526	554	583	610	636	661

Table F-6 KCP&L All Service Territories - Total Cumulative Measure-Level Summer Peak Demand EE Savings by Sector

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (MW)																			
Res	2,903	2,910	2,903	2,899	2,895	2,897	2,900	2,912	2,928	2,951	2,971	2,995	3,022	3,053	3,078	3,107	3,139	3,165	3,186
Com	1,658	1,677	1,701	1,724	1,747	1,770	1,788	1,804	1,817	1,789	1,798	1,806	1,814	1,821	1,826	1,832	1,839	1,852	1,859
Ind	986	997	1,011	1,025	1,038	1,052	1,063	1,072	1,080	1,063	1,069	1,074	1,078	1,083	1,085	1,089	1,093	1,101	1,105
Total	5,548	5,585	5,615	5,648	5,680	5,720	5,751	5,788	5,825	5,803	5,837	5,875	5,914	5,958	5,988	6,029	6,070	6,117	6,150
Realistic Achievable Potential Savings (MW)																			
Res	23	31	39	46	54	62	70	79	87	96	105	114	123	131	139	148	156	164	172
Com	10	19	28	37	45	55	64	72	80	89	97	106	115	123	132	140	148	157	165
Ind	3	7	10	14	17	21	24	28	32	36	39	43	47	51	55	59	62	66	70
Total	37	57	77	97	117	138	158	179	200	221	241	263	284	305	326	346	367	387	407
Maximum Achievable Potential Savings (MW)																			
Res	27	39	50	60	71	82	92	103	115	126	138	149	161	172	182	193	204	214	223
Com	16	29	42	55	68	81	94	106	118	130	142	154	166	178	189	201	212	223	234
Ind	5	10	15	20	26	31	36	42	47	52	58	63	68	74	79	84	90	95	100
Total	48	78	108	136	164	194	222	251	280	309	337	366	395	423	451	478	505	532	558
Economic Potential Savings (MW)																			
Res	56	81	105	126	146	166	184	204	224	244	264	284	304	323	341	359	375	391	406
Com	27	50	72	94	114	135	155	173	191	209	226	244	261	277	293	309	324	338	353
Ind	13	26	38	51	63	75	87	99	110	122	133	144	155	165	176	186	196	205	215
Total	96	157	216	270	323	376	426	476	526	575	623	672	720	766	810	854	895	935	974
Technical Potential Savings (MW)																			
Res	75	118	161	200	239	277	313	351	389	426	463	499	534	567	598	628	655	681	704
Com	40	75	108	141	172	203	232	260	287	314	340	366	390	413	436	458	478	498	517
Ind	17	34	50	66	82	97	112	126	141	155	168	182	194	207	219	231	242	253	264
Total	132	227	319	407	492	576	657	737	816	895	971	1,046	1,119	1,188	1,253	1,316	1,375	1,432	1,485

Table F-7 KCP&L-MO Cumulative Measure-Level Summer Peak Demand EE Savings by Sector

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (MW)																			
Res	811	814	814	814	816	819	822	826	832	841	849	857	866	876	885	895	905	913	919
Com	678	682	688	694	701	707	712	718	722	727	731	734	737	740	741	744	747	753	757
Ind	403	406	409	412	417	420	424	427	429	432	434	436	438	440	441	442	444	447	450
Total	1,892	1,902	1,910	1,921	1,933	1,947	1,958	1,970	1,983	2,001	2,014	2,027	2,041	2,056	2,067	2,082	2,096	2,114	2,126
Realistic Achievable Potential Savings (MW)																			
Res	7	9	11	14	16	18	21	23	26	28	31	33	36	39	41	43	46	48	50
Com	4	8	12	16	19	23	27	30	34	37	41	45	48	52	55	59	63	66	70
Ind	1	3	4	6	7	9	10	12	13	15	17	18	20	21	23	25	26	28	30
Total	13	20	28	35	42	50	58	65	73	81	88	96	104	112	119	127	134	142	149
Maximum Achievable Potential Savings (MW)																			
Res	8	11	15	18	21	24	27	30	34	37	41	44	47	50	54	57	59	62	65
Com	7	12	18	23	29	34	40	45	50	55	60	65	70	75	80	85	89	94	99
Ind	2	4	6	9	11	13	15	18	20	22	24	26	29	31	33	36	38	40	42
Total	17	28	39	50	60	71	82	93	103	114	125	135	146	156	167	177	187	196	206
Economic Potential Savings (MW)																			
Res	16	23	30	36	42	48	54	60	66	72	78	84	90	95	100	105	110	114	119
Com	12	21	30	40	48	57	65	73	80	88	95	103	110	117	124	130	136	143	149
Ind	5	11	16	21	26	32	37	42	47	51	56	61	65	70	74	78	82	87	91
Total	33	55	77	97	117	137	156	175	193	211	229	247	265	281	298	314	329	343	358
Technical Potential Savings (MW)																			
Res	22	35	48	60	72	83	94	106	117	129	140	151	161	171	181	189	198	205	212
Com	17	31	46	59	72	85	98	110	121	132	143	154	164	174	184	193	202	210	218
Ind	7	14	21	28	34	41	47	53	59	65	71	77	82	87	92	97	102	107	111
Total	46	81	115	147	178	210	239	269	298	326	354	381	408	433	457	480	501	522	542

Table F-8 KCP&L-KS Cumulative Measure-Level Summer Peak Demand EE Savings by Sector

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (MW)																			
Res	1,065	1,075	1,083	1,093	1,102	1,114	1,124	1,134	1,146	1,160	1,171	1,184	1,197	1,211	1,223	1,236	1,249	1,261	1,272
Com	443	450	458	463	466	470	474	477	479	481	483	484	485	486	486	486	487	489	489
Ind	263	267	272	275	277	280	282	284	285	286	287	288	288	289	289	289	289	291	291
Total	1,770	1,793	1,813	1,831	1,846	1,864	1,879	1,895	1,910	1,928	1,941	1,956	1,970	1,986	1,998	2,011	2,025	2,041	2,051
Realistic Achievable Potential Savings (MW)																			
Res	7	9	12	14	17	19	22	25	28	31	33	36	39	42	45	48	51	54	56
Com	3	5	7	9	11	14	16	18	20	22	24	27	29	31	33	35	37	39	42
Ind	1	2	3	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Total	10	16	21	27	33	38	44	50	56	62	68	74	80	86	92	98	104	110	116
Maximum Achievable Potential Savings (MW)																			
Res	8	12	16	19	22	26	29	33	37	40	44	48	52	56	59	63	67	70	74
Com	4	7	11	14	17	20	24	27	30	33	36	39	42	45	48	51	53	56	59
Ind	1	3	4	5	6	8	9	10	12	13	14	16	17	19	20	21	23	24	25
Total	13	22	30	38	46	54	62	70	78	86	94	103	111	119	127	135	143	150	158
Economic Potential Savings (MW)																			
Res	18	26	34	41	47	54	60	66	73	79	86	93	99	106	112	118	124	129	134
Com	7	13	18	24	29	34	39	44	48	53	57	61	66	70	74	78	82	85	89
Ind	3	7	10	13	16	19	22	25	28	31	33	36	39	42	44	47	49	52	54
Total	28	45	62	77	92	107	121	135	149	163	176	190	204	217	230	242	255	266	277
Technical Potential Savings (MW)																			
Res	25	39	53	65	78	91	103	115	128	140	152	165	177	188	199	209	218	227	235
Com	10	19	27	35	43	51	58	65	72	79	86	92	98	104	110	115	120	125	130
Ind	4	9	13	17	21	24	28	32	35	39	42	46	49	52	55	58	61	64	66
Total	39	66	93	118	142	166	189	212	235	258	280	302	324	344	363	382	399	416	431

Table F-9 *GMO-MPS Cumulative Measure-Level Summer Peak Demand EE Savings by Sector*

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (MW)																			
Res	834	830	817	804	792	781	772	769	768	767	768	771	775	780	783	788	793	798	802
Com	377	385	397	410	424	438	449	456	463	428	432	436	439	443	446	448	451	455	458
Ind	224	229	236	244	252	260	267	271	275	254	257	259	261	263	265	267	268	271	272
Total	1,435	1,444	1,450	1,459	1,468	1,479	1,488	1,497	1,506	1,449	1,457	1,466	1,475	1,486	1,494	1,503	1,513	1,524	1,532
Realistic Achievable Potential Savings (MW)																			
Res	8	10	13	15	17	20	22	25	27	30	33	35	38	41	43	46	48	51	53
Com	2	4	6	9	10	13	15	17	19	21	22	25	26	28	30	32	34	36	38
Ind	1	2	2	3	4	5	6	6	7	8	9	10	11	12	13	14	14	15	16
Total	11	16	22	27	32	37	42	48	53	59	64	70	75	81	86	92	97	102	107
Maximum Achievable Potential Savings (MW)																			
Res	9	13	16	19	22	26	29	32	36	39	43	46	50	53	56	59	62	65	68
Com	4	7	10	13	16	19	22	25	27	30	33	36	38	41	44	46	49	52	54
Ind	1	2	4	5	6	7	8	10	11	12	13	15	16	17	18	19	21	22	23
Total	14	22	29	37	44	52	59	66	74	81	89	96	104	111	118	125	132	139	146
Economic Potential Savings (MW)																			
Res	18	25	33	39	46	52	57	63	69	75	81	87	93	99	104	109	114	119	123
Com	6	12	17	22	26	31	36	40	44	48	52	56	60	64	68	71	75	78	82
Ind	3	6	9	12	15	17	20	23	26	28	31	33	36	38	41	43	45	47	50
Total	27	43	59	73	87	100	113	126	139	151	164	177	189	201	212	224	234	245	255
Technical Potential Savings (MW)																			
Res	23	36	49	61	73	84	95	106	117	128	139	150	160	170	179	187	195	203	210
Com	9	17	25	33	40	47	54	60	66	72	79	85	90	96	101	106	111	115	120
Ind	4	8	12	15	19	22	26	29	33	36	39	42	45	48	51	53	56	58	61
Total	36	61	86	109	131	153	174	195	216	236	256	276	295	313	330	347	362	377	391

Table F-10 *GM0-SJLP Cumulative Measure-Level Summer Peak Demand EE Savings by Sector*

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Projection (MW)																			
Res	194	192	190	188	185	184	182	182	182	182	182	183	185	186	187	189	191	192	193
Com	161	160	158	157	155	154	153	153	153	153	152	152	152	153	153	153	154	155	155
Ind	96	95	94	93	92	92	91	91	91	91	91	91	91	91	91	91	91	92	92
Total	450	446	442	438	433	430	426	426	425	426	425	426	428	430	430	433	436	438	441
Realistic Achievable Potential Savings (MW)																			
Res	2	2	3	3	4	5	5	6	6	7	8	8	9	10	10	11	12	12	13
Com	1	2	3	4	4	5	6	7	8	9	9	10	11	12	13	13	14	15	16
Ind	0	1	1	1	2	2	2	3	3	3	4	4	4	5	5	6	6	6	7
Total	3	5	7	8	10	12	14	15	17	19	21	23	25	26	28	30	32	33	35
Maximum Achievable Potential Savings (MW)																			
Res	2	3	4	4	5	6	7	8	8	9	10	11	12	13	13	14	15	16	16
Com	2	3	4	5	7	8	9	10	11	12	14	15	16	17	18	19	20	21	22
Ind	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10
Total	4	7	9	12	14	17	19	22	24	27	29	32	34	37	39	42	44	46	48
Economic Potential Savings (MW)																			
Res	4	6	8	9	11	12	13	15	17	18	20	21	22	24	25	26	28	29	30
Com	3	5	7	9	11	13	15	17	18	20	22	23	25	27	28	30	31	32	34
Ind	1	2	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21
Total	8	13	18	23	28	32	37	41	45	50	54	58	62	66	70	74	77	81	84
Technical Potential Savings (MW)																			
Res	5	8	11	14	16	19	21	24	26	29	31	34	36	38	40	42	44	46	47
Com	4	7	10	14	16	19	22	25	28	30	33	35	37	40	42	44	46	48	50
Ind	2	3	5	6	8	9	11	12	13	15	16	17	19	20	21	22	23	24	25
Total	11	19	26	34	41	48	54	61	67	74	80	86	92	98	103	108	113	118	122

DEMAND RESPONSE AND DEMAND SIDE RATES SUMMARY²

Table F-11 KCP&L All Service Territories - Total Cumulative DR/DSR Summer Peak MW Savings

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Forecast (MW)	5,514	5,548	5,585	5,615	5,648	5,680	5,720	5,751	5,788	5,825	5,803	5,837	5,875	5,914	5,958	5,988	6,029	6,070	6,117	6,150
Cumulative Savings (MW)																				
RAP	140.2	198.7	290.8	420.1	508.3	578.3	587.2	595.9	605.4	617.8	622.8	630.3	636.4	642.4	648.5	653.7	659.3	664.8	670.9	676.0
MAP	140.2	416.4	508.5	594.9	659.5	726.6	729.5	759.9	762.8	766.9	765.0	768.5	772.0	779.0	786.1	792.0	798.5	804.8	812.0	817.9
Peak Demand Savings (% of Baseline)																				
RAP	2.5%	3.6%	5.2%	7.5%	9.0%	10.2%	10.3%	10.4%	10.5%	10.6%	10.7%	10.8%	10.8%	10.9%	10.9%	10.9%	10.9%	11.0%	11.0%	11.0%
MAP	2.5%	7.5%	9.1%	10.6%	11.7%	12.8%	12.8%	13.2%	13.2%	13.2%	13.2%	13.2%	13.1%	13.2%	13.2%	13.2%	13.2%	13.3%	13.3%	13.3%

Table F-12 KCP&L-MO Cumulative DR/DSR Summer Peak MW Savings

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Forecast (MW)	1,883	1,892	1,902	1,910	1,921	1,933	1,947	1,958	1,970	1,983	2,001	2,014	2,027	2,041	2,056	2,067	2,082	2,096	2,114	2,126
Cumulative Savings (MW)																				
RAP	45	62	95	139	171	197	200	204	209	216	221	225	227	229	232	234	236	238	240	242
MAP	45	136	161	190	216	253	254	278	278	278	279	278	278	281	284	286	288	291	294	296
Peak Demand Savings (% of Baseline)																				
RAP	0.8%	1.1%	1.7%	2.5%	3.0%	3.5%	3.5%	3.5%	3.6%	3.7%	3.8%	3.8%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
MAP	0.8%	2.4%	2.9%	3.4%	3.8%	4.5%	4.4%	4.8%	4.8%	4.8%	4.8%	4.8%	4.7%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%

Table F-13 KCP&L-KS Cumulative DR/DSR Summer Peak MW Savings

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Forecast (MW)	1,749	1,770	1,793	1,813	1,831	1,846	1,864	1,879	1,895	1,910	1,928	1,941	1,956	1,970	1,986	1,998	2,011	2,025	2,041	2,051
Cumulative Savings (MW)																				
RAP	20	40	73	118	150	177	180	183	185	186	188	190	192	193	195	197	198	200	201	203
MAP	20	109	156	188	207	219	220	220	221	223	225	227	229	231	233	235	236	238	240	241
Peak Demand Savings (% of Baseline)																				
RAP	0.4%	0.7%	1.3%	2.1%	2.7%	3.1%	3.1%	3.2%	3.2%	3.2%	3.2%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
MAP	0.4%	2.0%	2.8%	3.3%	3.7%	3.9%	3.8%	3.8%	3.8%	3.8%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%

² Energy savings not tabulated for DR and DSR analysis since resources are primarily demand focused.

Table F-14 *GMO-MPS Cumulative DR/DSR Summer Peak MW Savings*

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Forecast (MW)	1,427	1,435	1,444	1,450	1,459	1,468	1,479	1,488	1,497	1,506	1,449	1,457	1,466	1,475	1,486	1,494	1,503	1,513	1,524	1,532
Cumulative Savings (MW)																				
RAP	54	71	92	123	143	157	160	162	164	166	163	164	166	167	169	171	172	174	175	177
MAP	54	127	143	163	179	194	195	196	199	201	197	199	201	203	204	206	208	210	212	213
Peak Demand Savings (% of Baseline)																				
RAP	1.0%	1.3%	1.6%	2.2%	2.5%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	2.9%	2.9%	2.9%	2.9%
MAP	1.0%	2.3%	2.6%	2.9%	3.2%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.5%	3.5%	3.5%

Table F-15 *GMO-SJLP Cumulative DR/DSR Summer Peak MW Savings*

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Baseline Forecast (MW)	454	450	446	442	438	433	430	426	426	425	426	425	426	428	430	430	433	436	438	441
Cumulative Savings (MW)																				
RAP	22	26	31	39	44	47	47	48	48	50	51	51	52	52	53	53	53	54	54	55
MAP	22	45	48	53	57	61	60	65	65	65	65	64	64	64	65	65	66	66	67	67
Peak Demand Savings (% of Baseline)																				
RAP	0.4%	0.5%	0.6%	0.7%	0.8%	0.8%	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
MAP	0.4%	0.8%	0.9%	0.9%	1.0%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%

COMBINED HEAT AND POWER SUMMARY

Table F-16 KCP&L Total Cumulative CHP Energy Savings (GWh)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RAP	0.6	1.3	1.9	2.6	3.2	3.9	4.6	5.3	6.0	6.7	7.4	8.1	8.9	9.6	10.4	11.2	12.0	12.8	13.6
MAP	1.0	1.9	2.9	3.9	4.9	5.9	7.0	8.0	9.0	10.1	11.1	12.2	13.3	14.4	15.5	16.6	17.7	18.9	20.0
Econ	2.5	4.9	7.4	9.9	12.3	14.8	17.3	19.7	22.2	24.6	27.1	29.6	32.0	34.5	37.0	39.4	41.9	44.4	46.8
TP	133.3	266.7	400.0	533.3	666.6	800.0	933.3	1,066.6	1,200.0	1,333.3	1,466.6	1,599.9	1,733.3	1,866.6	1,999.9	2,133.3	2,266.6	2,399.9	2,533.2

Table F-17 KCP&L Total CHP Cumulative Peak Demand Savings (MW)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RAP	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.5
MAP	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.2	1.3	1.4	1.5	1.6	1.8	1.9	2.0	2.2	2.3
Econ	0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.1	3.4	3.7	3.9	4.2	4.5	4.8	5.1	5.3
TP	15.3	30.6	45.9	61.3	76.6	91.9	107.2	122.5	137.8	153.2	168.5	183.8	199.1	214.4	229.7	245.1	260.4	275.7	291.0

Table F-18 KCP&L Commercial Cumulative CHP Energy Savings (GWh)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RAP	0.1	0.3	0.4	0.5	0.7	0.8	1.0	1.1	1.3	1.4	1.6	1.7	1.9	2.1	2.2	2.4	2.5	2.7	2.9
MAP	0.2	0.4	0.6	0.8	1.0	1.3	1.5	1.7	1.9	2.1	2.4	2.6	2.8	3.1	3.3	3.5	3.8	4.0	4.3
Econ	0.4	0.9	1.3	1.8	2.2	2.7	3.1	3.6	4.0	4.5	4.9	5.4	5.8	6.2	6.7	7.1	7.6	8.0	8.5
TP	54.4	108.9	163.3	217.8	272.2	326.6	381.1	435.5	489.9	544.4	598.8	653.3	707.7	762.1	816.6	871.0	925.5	979.9	1,034.3

Table F-19 KCP&L Commercial Cumulative CHP Peak Demand Savings (MW)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RAP	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
MAP	<0.1	<0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5
Econ	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0
TP	6.0	11.9	17.9	23.8	29.8	35.7	41.7	47.6	53.6	59.5	65.5	71.4	77.4	83.3	89.3	95.2	101.2	107.1	113.1

Table F-20 KCP&L Industrial Cumulative CHP Energy Savings (GWh)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RAP	0.5	1.0	1.5	2.0	2.5	3.1	3.6	4.2	4.7	5.3	5.8	6.4	7.0	7.6	8.2	8.8	9.4	10.0	10.7
MAP	0.8	1.5	2.3	3.1	3.9	4.7	5.5	6.3	7.1	7.9	8.8	9.6	10.5	11.3	12.2	13.1	14.0	14.8	15.7
Econ	2.0	4.0	6.1	8.1	10.1	12.1	14.1	16.1	18.2	20.2	22.2	24.2	26.2	28.3	30.3	32.3	34.3	36.3	38.4
TP	78.9	157.8	236.7	315.6	394.5	473.3	552.2	631.1	710.0	788.9	867.8	946.7	1,025.6	1,104.5	1,183.4	1,262.2	1,341.1	1,420.0	1,498.9

Table F-21 KCP&L Industrial Cumulative CHP Peak Demand Savings (MW)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
RAP	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2
MAP	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
Econ	0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3	2.5	2.8	3.0	3.2	3.5	3.7	3.9	4.1	4.4
TP	9.4	18.7	28.1	37.5	46.8	56.2	65.6	74.9	84.3	93.7	103.0	112.4	121.7	131.1	140.5	149.8	159.2	168.6	177.9

PROGRAM POTENTIAL SUMMARY

Table F-22 KCP&L Annual Program Potential Summary

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Total Budget (million\$)																			
Program RAP-	\$25.3	\$27.7	\$31.0	\$31.2	\$27.8	\$27.8	\$28.4	\$29.2	\$30.1	\$31.3	\$32.9	\$33.8	\$34.8	\$35.9	\$37.6	\$39.9	\$42.4	\$45.4	\$45.4
Program RAP	\$36.3	\$39.8	\$44.4	\$45.0	\$40.6	\$40.7	\$41.6	\$42.8	\$44.1	\$46.0	\$48.1	\$49.6	\$51.2	\$52.9	\$55.5	\$58.9	\$62.8	\$67.5	\$67.5
Program RAP+	\$46.9	\$50.7	\$56.2	\$57.2	\$52.2	\$52.1	\$53.4	\$55.1	\$57.4	\$60.3	\$63.4	\$65.8	\$67.7	\$70.0	\$73.6	\$78.4	\$83.6	\$90.0	\$90.1
Program MAP	\$59.7	\$64.7	\$71.3	\$72.8	\$67.3	\$67.2	\$68.9	\$71.0	\$74.8	\$78.6	\$82.8	\$86.4	\$89.0	\$92.2	\$96.8	\$103.3	\$110.1	\$118.6	\$118.8
Net Cumulative Energy Savings (GWh)																			
Program RAP-	135	220	308	389	467	549	629	712	794	880	945	1,011	1,070	1,130	1,199	1,239	1,306	1,381	1,450
Program RAP	177	288	401	506	608	713	818	925	1,031	1,142	1,227	1,313	1,389	1,468	1,558	1,610	1,697	1,795	1,886
Program RAP+	206	333	465	586	704	825	945	1,068	1,193	1,325	1,430	1,537	1,633	1,731	1,843	1,911	2,022	2,145	2,259
Program MAP	233	378	528	665	799	935	1,071	1,209	1,353	1,502	1,622	1,744	1,854	1,967	2,096	2,176	2,304	2,447	2,579
Net Cumulative Summer Peak Demand Savings (MW)																			
Program RAP-	149	207	267	324	370	397	424	452	479	508	515	521	518	517	530	543	559	577	591
Program RAP	198	274	354	430	490	526	562	598	634	671	681	688	684	683	700	717	738	762	780
Program RAP+	206	305	395	479	549	590	631	672	715	758	771	779	775	774	795	816	842	871	895
Program MAP	215	336	436	527	607	653	699	746	795	844	858	867	863	861	884	908	938	972	1,001
Energy Savings as % of Baseline																			
Program RAP-	0.6%	0.9%	1.3%	1.7%	2.0%	2.3%	2.7%	3.0%	3.3%	3.7%	3.9%	4.2%	4.4%	4.6%	4.8%	4.9%	5.2%	5.4%	5.6%
Program RAP	0.8%	1.2%	1.7%	2.2%	2.6%	3.0%	3.5%	3.9%	4.3%	4.8%	5.1%	5.4%	5.7%	5.9%	6.3%	6.4%	6.7%	7.0%	7.3%
Program RAP+	0.9%	1.4%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	5.5%	5.9%	6.3%	6.7%	7.0%	7.4%	7.6%	8.0%	8.4%	8.8%
Program MAP	1.0%	1.6%	2.3%	2.9%	3.4%	4.0%	4.6%	5.1%	5.7%	6.3%	6.7%	7.2%	7.6%	8.0%	8.4%	8.7%	9.1%	9.6%	10.0%
Summer Peak Demand Savings as % of Baseline																			
Program RAP-	2.7%	3.7%	4.7%	5.7%	6.5%	6.9%	7.4%	7.8%	8.2%	8.7%	8.8%	8.9%	8.8%	8.7%	8.9%	9.0%	9.2%	9.4%	9.6%
Program RAP	3.6%	4.9%	6.3%	7.6%	8.6%	9.2%	9.8%	10.3%	10.9%	11.6%	11.7%	11.7%	11.6%	11.5%	11.7%	11.9%	12.2%	12.5%	12.7%
Program RAP+	3.7%	5.5%	7.0%	8.5%	9.7%	10.3%	11.0%	11.6%	12.3%	13.1%	13.2%	13.3%	13.1%	13.0%	13.3%	13.5%	13.9%	14.2%	14.6%
Program MAP	3.9%	6.0%	7.8%	9.3%	10.7%	11.4%	12.2%	12.9%	13.6%	14.5%	14.7%	14.8%	14.6%	14.5%	14.8%	15.1%	15.5%	15.9%	16.3%

PROGRAM POTENTIAL – ADDITIONAL SUMMARY DATA

Detailed annual data by portfolio case, by service territory, and by program is available in the embedded spreadsheet below, filename: *"KCPL BenCost values appendix 02-08-2017.xlsx."*



KCPL BenCost
values appendix 02-

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