Appendix A: Measure Level Assumptions

The data below reflects the measure list that was used for the screening process and is not inclusive of the universe of measures screened (see electronic filing for database containing all measures). The measures and associated data assumptions below reflect measures that have been consolidated, non-applicable measures have been removed (example: distributed generation technologies), and only pertinent data required for TRC calculations is shown.

List of Acronyms

Btuh	British thermal units per hour, heating size
CEE	Consortium of Energy Efficiency
CFL	Compact fluorescent lamp
ECM	Electronincally commutated motor
EF	Energy Factor
ft	feet
HID	High intensity discharge, typically metal halide
HO	High output
HP	heat pump
HP	horsepower
HPT8	High performance T8
LED	Light emitting diode
LF	linear foot
LW	Low Watt
MBH	Thousand British thermal units per hour
MEF	Modified energy factor
PV	Photovoltaic
SF	square foot
TE	Thermal efficiency
VFD	Variable frequency drive
VSD	Variable speed drive, synonomous with VFD

°F - Degrees Fahrenheit
1 Ph - Single Phase
3 Ph - Three Phase
3L T5HO - 3 Lamp T5 High Output
4LT5HO - 4 Lamp T5 High Output
6L T5HO - 6 Lamp T5 High Output
A/C - Air Conditioner
AC - Air Conditioner
ACH - Air Changes per Hour
AFUE - Annual Fuel Utilization Efficiency
ASH - Anti-Sweat Heater
ASHP - Air-Source Heat Pump
BTU - British Thermal Units
CEE - Consortium for Energy Efficiency
CFL - Compact Fluorescent Light
cfm - Cubic Feet per Minute
CHW - Commercial Hot-Water
CKV - Commercial Kitchen Ventilation
COP - Coefficient of Performance

CV pump - Constant Volume Pump
DCV - Demand Controlled Ventilation
deg - Degrees
DFHP - Duel Fuel Heat Pump
dia - diameter
ECM - Electronically Commutated Motor
EER - Energy Efficiency Ratio
EF - Energy Factor
Elec - Electric
EMS - Energy Management Systems
ES - Energy Star
FLV - Full Load Value
ft - foot
ft^2 - square feet
ft3 - cubic feet
gal - Gallon
GFX - Gravity-Film-Heat Exchanger
gpm - Gallon per Minute
Hi Bay CFL - High Bay CFL
HID - High Intensity Discharge
HO - High Output
HP - Heat Pump
HP Water Heater - Heat Pump Water Heater
HPT8 - High-Performance T8
hr - Hour
Inj - Injection
IPLV - Integrated Part-Load Value
kW - kilowatt
lbs - pounds
LED - Light-emitting diode
LW HPT8 - Low Watt High-Performance T8
MBH - Thousand BTU's Per Hour
MEF - Modified Energy Factor
min - Minute
Motors 1 to 5 HP - Motors 1 to 5 Horsepower
PTAC - Package Terminal Air Conditioners
PTHP - Packaged Terminal Heat Pumps
Pumps HP - High Efficiency Pumps
PV - Photovoltaic
RCA - Refrigerant Charge and Airflow
R-factor - R-6 is equivalent to a thermal resistance of 6 $ft^2 \cdot °F \cdot h/Btu$
SEER - Seasonal Energy Efficiency Ratio
SHGC - Solar Heat Gain Coefficient
T12 - Tx means x/8 inch tube diameter. T12 = 12/8 inch = 38.1 millimeter
T5 - Tx means x/8 inch tube diameter. T8 = 5/8 inch = 15.875 millimeter
T5 HO - T5 High Output
T5HO - T5 High Output
T8 - Tx means x/8 inch tube diameter. T8 = 8/8 inch = 25.4 millimeter
T8LWT8 - Low Watt High-Performance T8
U-factor - inverse of the R-factor
VFD - Variable Frequency Drive
VFD HP - Variable Frequency Drive High Efficiency Pump
VSD - Variable Speed Drive

W - Watt
WLHP - Water-Loop Heat Pump

RESIDENTIAL AND COMMERCIAL MEASURES

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Airtight Can Lights	WS	Elec& Gas	HVAC RES	Standard can light	Air tight can light	905,431	1,368,216	91	0.02	14	15	$193
ASHP - SEER 14	WS	Elec	HVAC RES	SEER 13	SEER 14	4,958,923	-	496	0.54	-	12	$269
ASHP - SEER 15	WS	Elec	HVAC RES	SEER 13	SEER 15	9,240,946	-	924	0.76	-	12	$537
ASHP - SEER 16	WS	Elec	HVAC RES	SEER 13	SEER 16	11,657,176	-	1,166	0.72	-	12	$806
ASHP - SEER 17	WS	Elec	HVAC RES	SEER 13	SEER 17	13,467,110	-	1,347	0.72	-	12	$1,074
ASHP - SEER 18	WS	Elec	HVAC RES	SEER 13	SEER 18	13,841,733	-	1,384	0.77	-	12	$1,343
Basement Wall Insulation	WS	Elec& Gas	Building Shell RES	No insulation	Varies by vintage	3,054,915	5,671,939	305	(0.01)	57	20	$437
Ceiling Fan	WS	Elec& Gas	HVAC RES	Standard fans, 140 W/cfm	Efficient fan; 70 W/cfm	603,500	2,598	60	0.03	0	15	$25
Cool roof	WS	Elec	Building Shell RES	Standard roof. Absorptance = 0.8	Absorptance = 0.3	296,148	(563,328)	30	0.04	(6)	20	$232
Crawlspace Wall Insulation	WS	Elec& Gas	Building Shell RES	No insulation	Varies by vintage	1,783,863	1,483,783	178	0.07	15	20	$219
DFHP - SEER 14	WS	Elec	HVAC RES	SEER 13; 78 AFUE	SEER 14	5,945,682	(473,974)	595	0.54	(5)	12	$254
DFHP - SEER 15	WS	Elec	HVAC RES	SEER 13; 78 AFUE	SEER 15	12,271,379	(1,489,404)	1,227	0.76	(15)	12	$508
DFHP - SEER 16	WS	Elec	HVAC RES	SEER 13; 78 AFUE	SEER 16	13,479,038	(910,288)	1,348	0.72	(9)	12	$762
DFHP - SEER 17	WS	Elec	HVAC RES	SEER 13; 78 AFUE	SEER 17	16,339,051	(1,419,425)	1,634	0.72	(14)	12	$1,016
DFHP - SEER 18	WS	Elec	HVAC RES	SEER 13; 78 AFUE	SEER 18	16,157,485	(1,145,224)	1,616	0.77	(11)	12	$1,341
Door weatherstripping	WS	Elec& Gas	Building Shell RES	No weatherstrip	Weatherstripped door	203,971	306,450	20	0.01	3	5	$24
Duct Insulation	WS	Elec& Gas	HVAC RES	Uninsulated ducts	Insulate to R-6	2,777,644	4,061,146	278	0.04	41	20	$220
Duct location	WS	Elec& Gas	HVAC RES	Ducts outside conditioned space	Ducts within conditioned space	7,057,806	8,879,646	706	0.15	89	20	$1,650
Duct sealing 15% leakage base	WS	Elec& Gas	HVAC RES	15% total	Seal from baseline to 6%	1,594,314	2,095,291	159	0.04	21	18	$73
Duct sealing 20% leakage base	WS	Elec& Gas	HVAC RES	20% total	Seal from baseline to 6%	2,480,153	3,240,993	248	0.06	32	18	$73

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Duct sealing 25% leakage base	WS	Elec& Gas	HVAC RES	25% total	Seal from baseline to 6%	3,370,485	4,363,637	337	0.09	44	18	$73
Duct sealing 30% leakage base	WS	Elec& Gas	HVAC RES	30% total	Seal from baseline to 6%	4,241,246	5,485,650	424	0.12	55	18	$73
ECM blower - continuous	WS	Elec	HVAC RES	Standard motor continuous operation	ECM continuous operation	15,171,039	(3,138,921)	1,517	0.26	(31)	15	$480
ECM blower - intermittent	WS	Elec	HVAC RES	Standard motor intermittent operation	ECM intermittent operation	3,456,391	(721,780)	346	0.20	(7)	15	$480
Energy Star Door	WS	Elec& Gas	Building Shell RES	Standard door	Energy Star door	1,474,165	2,031,207	147	0.03	20	20	$2,077
Floor Insulation	WS	Elec& Gas	Building Shell RES	No insulation	Varies	47,921	2,135,337	5	(0.04)	21	20	$601
Furnace-AC - SEER 14	WS	Elec	Cooling RES	SEER 13	SEER 14	4,969,174	(536,535)	497	0.45	(5)	12	$254
Furnace-AC - SEER 15	WS	Elec	Cooling RES	SEER 13	SEER 15	5,156,162	(1,133,252)	516	0.45	(11)	12	$508
Furnace-AC - SEER 16	WS	Elec	Cooling RES	SEER 13	SEER 16	4,307,841	(1,581,919)	431	0.50	(16)	12	$762
Furnace-AC - SEER 17	WS	Elec	Cooling RES	SEER 13	SEER 17	5,883,677	(1,972,938)	588	0.63	(20)	12	$1,016
High efficiency furnace with ECM	WS	Elec& Gas	Heating RES	AFUE 80 standard motor	AFUE 95 ECM	5,241,426	14,319,659	524	0.26	143	15	$1,483
High efficiency furnace without ECM	WS	Gas	Heating RES	AFUE 80 standard motor	AFUE 95	-	17,651,648	-	-	177	15	$958
Infiltration reduction - 30%	WS	Elec& Gas	HVAC RES	Varies by vintage	Varies by vintage	4,644,332	6,984,725	464	0.12	70	13	$264
Infiltration reduction - 30% and attic insulation	WS	Elec& Gas	HVAC RES	Varies by vintage	Varies by vintage	6,762,599	9,967,406	676	0.17	100	13	$1,929
Infiltration reduction - 50%	WS	Elec& Gas	HVAC RES	Varies by vintage	Varies by vintage	7,752,157	11,656,370	775	0.21	117	13	$264
HVAC Maintenance and Tune-up	WS	Elec& Gas	HVAC RES	10% EER degradation; 5% furnace efficiency degradation	Namplate SEER and AFUE	1,276,302	2,339,664	128	0.17	23	10	$129
PTAC 10.3 EER	WS	Elec	Cooling RES	8.7 EER	10.3 EER	1,161,425	-	116	0.09	-	15	$124
PTAC 9.3 EER	WS	Elec	Cooling RES	7.1 EER	9.3 EER	1,788,511	-	179	0.17	-	15	$136
PTHP 10.9 EER	WS	Elec	HVAC RES	8.5 EER	10.9 EER	2,217,314	-	222	0.13	-	15	$155
PTHP 9.1 EER	WS	Elec	HVAC RES	7.0 EER	9.1 EER	2,956,657	-	296	0.17	-	15	$169
RCA 10% improvement	WS	Elec	HVAC RES	10% EER degradation	Nameplate SEER	1,546,585	-	155	0.21	-	10	$127
RCA 15%	WS	Elec	HVAC RES	15% EER degradation	Nameplate SEER		-					$401

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
improvement						2,343,371		234	0.32	-	10	
RCA 5% improvement	WS	Elec	HVAC RES	5% EER degradation	Nameplate SEER	775,430	-	78	0.11	-	10	$105
Roof Insulation	WS	Elec& Gas	Building Shell RES	Varies by building	Varies by building	3,355,335	4,668,478	336	0.07	47	20	$1,243
Setback thermostat - full setback	WS	Elec& Gas	HVAC RES	No setback	Assumes full setback achieved - use with caution	6,927,817	10,556,760	693	(0.02)	106	9	$73
Setback thermostat - moderate setback	WS	Elec& Gas	HVAC RES	No setback	Assumes full setback achieved - use with caution	4,264,530	5,683,639	426	(0.02)	57	9	$73
Wall Insulation	WS	Elec& Gas	Building Shell RES	Varies by vintage	Varies by vintage	4,499,226	6,626,461	450	0.09	66	20	$350
Whole House Fan	WS	Elec	HVAC RES	No whole house fan	Increase ventilation to 10 ACH	850,876	(1,480)	85	0.00	(0)	15	$1,175
Window Film	WS	Elec	Building Shell RES	2 pane clear; SHGC = .73; U=.72	SHGC = .39; U=.72	1,180,254	(8,760,958)	118	0.43	(88)	10	$315
13W CFL (60W incand equiv) Pre-EISA	NWS	Elec	Lighting RES	60W incand	13W CFL	463,185	-	46	0.00	-	9	$3
13W CFL (60W incand equiv) POST-EISA	NWS	Elec	Lighting RES	45W EISA compliant bulb (25% improvement)	13W CFL	315,360	-	32	0.00	-	9	$1
18W CFL (75W incand equiv) Pre-EISA	NWS	Elec	Lighting RES	75W incand	18W CFL	561,735	-	56	0.00	-	9	$3
18W CFL (75W incand equiv) POST-EISA	NWS	Elec	Lighting RES	56W EISA compliant bulb (25% improvement)	18W CFL	374,490	-	37	0.00	-	9	$1
23W CFL (100W incand equiv) Pre-EISA	NWS	Elec	Lighting RES	100W incand	23W CFL	758,835	-	76	0.01	-	9	$3
23W CFL (100W incand equiv) POST-EISA	NWS	Elec	Lighting RES	75W EISA compliant bulb (25% improvement)	23W CFL	512,460	-	51	0.00	-	9	$1
CFL bulbs specialty	NWS	Elec	Lighting RES	Incandescent lamps	Compact fluorescent lamps	441,000	-	44	0.00	-	9	$10
CFL bulbs hgh wattage	NWS	Elec	Lighting RES	Incandescent lamps	Compact fluorescent lamps	1,130,000	-	113	0.01	-	9	$15
CFL Reflector	NWS	Elec	Lighting RES	Incandescent lamps with reflectors	Compact fluorescent lamps with reflectors	441,000	-	44	0.00	-	9	$13
LED Downlight	NWS	Elec	Lighting RES	EISA compliant light	LED downlight	97,900	-	10	0.00	-	20	$90
LED Lamps	NWS	Elec	Lighting RES	EISA compliant light	LED lamp ≤ 12W	88,000	-	9	0.00	-	20	$51
CFL fixtures	NWS	Elec	Lighting RES	Incandescent fixtures	Compact fluorescent fixtures	780,000	-	78	0.01	-	12	$45

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
LED Night Light	NWS	Elec	Lighting RES	EISA compliant light	LED night light	48,400	-	5	-	-	12	$5
LED Task Light	NWS	Elec	Lighting RES	EISA compliant light	LED task light	85,800	-	9	0.00	-	20	$25
Torchiere Floor Lamps - CFL	NWS	Elec	Lighting RES	Incandescent Torchiere	CFL Torchiere	1,640,000	-	164	0.02	-	12	$50
LED Holiday Lights	NWS	Elec	Lighting RES	Incandescent holiday lights	LED holiday lights	106,000	-	11	-	-	10	$12
T8 4ft 1 lamp	NWS	Elec	Lighting RES	T12 fluorescent	Standard T8 fluorescent	109,000	-	11	0.00	-	12	$33
T8 4ft 2 lamp	NWS	Elec	Lighting RES	T12 fluorescent	Standard T8 fluorescent	101,000	-	10	0.00	-	12	$36
T8 4ft 3 lamp	NWS	Elec	Lighting RES	T12 fluorescent	Standard T8 fluorescent	227,000	-	23	0.00	-	12	$54
T8 4ft 4 lamp	NWS	Elec	Lighting RES	T12 fluorescent	Standard T8 fluorescent	269,000	-	27	0.00	-	12	$57
T8 8ft 1 lamp	NWS	Elec	Lighting RES	T12 fluorescent	Standard T8 fluorescent	143,000	-	14	0.00	-	12	$50
T8 8ft 2 lamp	NWS	Elec	Lighting RES	T12 fluorescent	Standard T8 fluorescent	92,000	-	9	0.00	-	12	$54
Photosensor Control - Outdoor Lighting	NWS	Elec	Lighting RES	Manual switch	Photosensor control	170,000	-	17	-	-	8	$12
Metal Halide Outdoor Lighting	NWS	Elec	Lighting RES	Incandescent lighting	Metal Halide lighting	1,898,000	-	190	-	-	15	$112
Electric Water Heater EF 0.93+	NWS	Elec	Water Heating RES	Standard Electric water heater EF=0.9	Efficient Electric water heater EF>=0.93	1,570,000	-	157	0.02	-	15	$49
Heat Pump Water Heaters	NWS	Elec	Water Heating RES	Standard Electric water heater EF=0.9	Heat pump water heater EF>=2.0	18,020,000	-	1,802	0.33	-	15	$1,020
High Efficiency Gas Water Heater	NWS	Gas	Water Heating RES	Standard Gas Water Heater EF=0.60	High Efficiency Gas Water Heater EF>= 0.62	-	976,563	-	-	10	15	$67
Super Efficiency Gas Water Heater	NWS	Gas	Water Heating RES	Standard Gas Water Heater EF=0.60	Super High Efficiency Gas Water Heater EF>= 0.67	-	2,246,094	-	-	22	15	$235
Instant Gas Water Heater	NWS	Gas	Water Heating RES	Standard Gas Water Heater EF=0.60	Tankless Gas Water Heater EF>= 0.80 (0r .82)	-	4,882,813	-	-	49	15	$1,527
Pipe Wrap - Gas water heater	NWS	Gas	Water Heating RES	Uninsulated	R4 5 Ln feet	-	1,074,219	-	-	11	6	$4
Pipe Wrap - Electric water heater	NWS	Elec	Water Heating RES	Uninsulated	R4 5 Ln feet	2,570,000	-	257	0.03	-	6	$4
Low Flow Showerheads - Gas water heater	NWS	Gas	Water Heating RES	Standard Flow 2.5 gal.min	Low Flow 1.75 gal/minute	-	2,148,438	-	-	21	12	$15
Low Flow Showerheads - Electric water heater	NWS	Elec	Water Heating RES	Standard Flow 2.5 gal.min	Low Flow 1.75 gal/minute	4,240,000	-	424	0.05	-	12	$15
Low Flow Faucet	NWS	Gas	Water	2.2 gal/minute	1.5 gal/minute							$3

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Aerators - Gas water heater			Heating RES			-	683,594	-	-	7	12	
Low Flow Faucet Aerators - Electric water heater	NWS	Elec	Water Heating RES	2.2 gal/minute	1.5 gal/minute	1,360,000	-	136	0.02	-	12	$3
Shower Start - Gas water heater	NWS	Gas	Water Heating RES	Standard shower head 2.5 gpm	Shower start technology with low flow showerhead 1.75 gpm	-	1,132,813	-	-	11	3	$40
Shower Start - Electric water heater	NWS	Elec	Water Heating RES	Standard shower head 2.5 gpm	Shower start technology with low flow showerhead 1.75 gpm	599,000	-	60	-	-	3	$40
Gravity Film Heat Exchanger GFX - Electric water heater	NWS	Elec	Water Heating RES	No GFX unit	40-60 ft GFX unit installed	8,420,000	-	842	0.10	-	10	$565
Gravity Film Heat Exchanger GFX - Gas water heater	NWS	Gas	Water Heating RES	No GFX unit	40-60 ft GFX unit installed	-	4,296,875	-	-	43	10	$565
Energy Star Room AC	WS	Elec	Cooling RES	Standard A/C unit, 9.8 EER	Energy Star A/C unit, 10.8 EER	1,010,000	-	101	0.09	-	12	$86
Pool Pump and Motor Single Speed	NWS	Elec	Motors BUS	Standard pump and motor efficiency	High efficiency pump and motor, speed control	6,940,000	-	694	0.36	-	10	$85
Pool Pump and motor w auto controls - multi speed	NWS	Elec	Motors BUS	Standard pump and motor efficiency	High efficiency pump and motor	10,810,000	-	1,081	0.80	-	10	$579
VFDs on Residential Swimming Pool Pumps	NWS	Elec	Pool Spa RES	Pool pump without speed control	Variable speed pump control	15,430,000	-	1,543	0.41	-	10	$425
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Gas dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	75,000	1,074,219	8	0.00	11	14	$347
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Electric dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	917,000	732,422	92	0.03	7	14	$347
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Gas Dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	1,770,000	341,797	177	0.06	3	14	$347
Clothes Washer Energy Star-CEE Tier1, Electric	NWS	Elec	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	2,610,000	-	261	0.09	-	14	$347

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Water heater, Electric Dryer												
Clothes Washer CEE Tier2, Gas water heater, Gas dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	75,000	1,337,891	8	0.00	13	14	$475
Clothes Washer CEE Tier2, Gas water heater, Electric dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	1,230,000	878,906	123	0.04	9	14	$475
Clothes Washer CEE Tier2, Electric Water heater, Gas Dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	2,070,000	458,984	207	0.07	5	14	$475
Clothes Washer CEE Tier2, Electric Water heater, Electric Dryer	NWS	Elec	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	3,220,000	-	322	0.11	-	14	$475
Clothes Washer CEE Tier3, Gas water heater, Gas dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	75,000	1,533,203	8	0.00	15	14	$604
Clothes Washer CEE Tier3, Gas water heater, Electric dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	1,540,000	957,031	154	0.05	10	14	$604
Clothes Washer CEE Tier3, Electric Water heater, Gas Dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	2,250,000	576,172	225	0.08	6	14	$604
Clothes Washer CEE Tier3, Electric Water heater, Electric Dryer	NWS	Elec	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	3,720,000	-	372	0.13	-	14	$604
Smart Strip plug outlet	NWS	Elec	Miscellaneous RES	Standard plug outlet	Smart Strip plug outlet	1,840,000	-	184	0.01	-	5	$40
Refrigerators Energy Star - Refrig. Only - single door	NWS	Elec	Refrigeration RES	Standard refrigerator	Energy Star refrigerator	850,000	-	85	0.02	-	12	$93
Refrigerators Energy Star - Refrig-Freezer - single door	NWS	Elec	Refrigeration RES	Standard refrigerator	Energy Star refrigerator	860,000	-	86	0.02	-	12	$93
Refrigerators-Freezers Energy	NWS	Elec	Refrigeratio	Standard refrigerator	Energy Star refrigerator	1,090,000	-	109	0.02	-	12	$93

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Star - Side by Side			n RES									
Refrigerators-Freezers Energy Star - Top Freezer	NWS	Elec	Refrigeratio n RES	Standard refrigerator	Energy Star refrigerator	790,000	-	79	0.01	-	12	$93
Freezers Energy Star - Bottom Freezer	NWS	Elec	Freezer RES	Standard freezer	Energy Star freezer	960,000	-	96	0.02	-	12	$93
Freezers Energy Star - Chest Freezer	NWS	Elec	Freezer RES	Standard freezer	Energy Star freezer	460,000	-	46	0.01	-	12	$93
Freezers Energy Star - Upright Freezer	NWS	Elec	Freezer RES	Standard freezer	Energy Star freezer	810,000	-	81	0.01	-	12	$93
Refrigerator recycling	NWS	Elec	Refrigeratio n RES	Old refrigerator running	Old refrigerator removed	12,600,000	-	1,260	0.19	-	6	$93
Freezer recycling	NWS	Elec	Freezer RES	Old freezer running	Old freezer removed	12,470,000	-	1,247	0.18	-	5	$93
Room AC recycling	WS	Elec	Cooling RES	Old unit running	Old unit removed	1,130,000	-	113	0.11	-	8	$49
Dehumidifier recycling	NWS	Elec	Miscellaneo us RES	Old unit running	Old unit removed	1,390,000	-	139	0.04	-	8	$49
Energy Star Dehumidifier	NWS	Elec	Miscellaneo us RES	Standard Dehumidfier	Energy Star Dehumidifier	841,000	-	84	0.05	-	12	$75
ES Dishwasher Tier 1 - gas water heater	NWS	Elec& Gas	Dishwasher RES	Standard Dishwasher EF=0.46	ES High Efficiency Dishwasher EF>= 0.65	774,000	1,239,258	77	0.03	12	11	$211
ES Dishwasher Tier 1 - elec water heater	NWS	Elec	Dishwasher RES	Standard Dishwasher EF=0.46	ES High Efficiency Dishwasher EF>= 0.65	1,350,000	-	135	0.05	-	11	$211
ES Dishwasher Tier 2 - gas water heater	NWS	Elec& Gas	Dishwasher RES	Standard Dishwasher EF=0.46	ES High Efficiency Dishwasher EF>= 0.68	774,000	1,281,250	77	0.03	13	11	$211
ES Dishwasher Tier 2 - elec water heater	NWS	Elec	Dishwasher RES	Standard Dishwasher EF=0.46	ES High Efficiency Dishwasher EF>= 0.68	1,500,000	-	150	0.05	-	11	$211
Clothes Dryers - Gas	NWS	Gas	Clothes Dryer RES	Standard Gas Clothes Dryer EF=2.67	High Efficiency Gas Clothes Dryer with Moisture Sensor.	-	361,328	-	-	4	14	$150
Clothes Dryers - Electric	NWS	Elec	Clothes Dryer RES	Standard Electric Clothes Dryer EF=3.01	High Efficiency Electric Clothes Dryer with Moisture Sensor.	1,440,000	-	144	0.04	-	14	$150
Residential PV	NWS	Elec	Solar	No Photovoltaic system	1 kW PV system	12,810,000	-	1,281	0.47	-	20	$4,000
Solar Domestic Hot Water -	NWS	Elec	Water Heating RES	Standard Electric water heater EF=0.9	Solar water heater	25,460,000	-	2,546	0.42	-	20	$4,500

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Electric Water Heater												
Solar Domestic Hot Water - Gas Water Heater	NWS	Gas	Water Heating RES	Standard Gas Water Heater EF=0.60	Solar Water Heater	-	10,839,844	-	-	108	20	$4,500
Outdoor Ligthing - Photovoltaics	NWS	Elec	Lighting RES	Incandescent fixtures	Photovoltaic Lighting Fixture	1,750,000	-	175	-	-	15	$140
Solar Attic Fan	WS	Elec	HVAC RES	Electric Attic Fan	Solar Attic Fan	144,000	-	14	0.02	-	19	$550
Radiant Barrier	WS	Elec& Gas	HVAC RES	No Radiant Barrier	Radiant Barrier	1,710,000	1,367,188	171	0.05	14	30	$436
Geothermal HP Desuperheater	NWS	Elec	Water Heating RES	No Desuperheater	Desuperheater	15,400,000	-	1,540	0.17	-	10	$239
High Intensity Discharge Lamps (HID) - Exterior	NWS	Elec	Lighting RES	?	High Intensity Discharge Lamps (HID) - Exterior	6,030,000	-	603	-	-	6	$85
Occupancy Sensor	NWS	Elec	Lighting RES	No Occupancy Sensors	Wall-Switch Occupancy Sensors	2,170,000	-	217	0.04	-	10	$61
Lighting Timeclock	NWS	Elec	Lighting RES	No timeclock	Timeclock - Controling 4 - 70W (95W w/ballast) HPS fixtures	4,740,000	-	474	-	-	8	$240
Multiple Drawer Refrigerators	NWS	Elec	Refrigeratio n RES	Standard refrigerator	Multiple Drawer Refrigerators	3,000,000	-	*300*	0.04	-	13	$259
Home Electronics - Copier, Printer, Energy Star	NWS	Elec	Miscellaneo us RES	Energy Star	Non Energy Star	120,000	-	12	-	-	5	$10
Home Electronics - DVD-VCR-Audio-Set-top box, Energy Star	NWS	Elec	Color TV RES	Energy Star	Non Energy Star	650,000	-	65	0.01	-	6	$35
Home Electronics - Monitor, Energy Star	NWS	Elec	Miscellaneo us RES	Energy Star	Non Energy Star	350,000	-	35	-	-	4	$10
Home Electronics - Television, CEE Tier III	NWS	Elec	Color TV RES	CEE Tier III	EnergyStar 3.0 (market de facto standard)	1,366,000	-	137	-	-	9	$274
1-Watt Standby Power	NWS	Elec	Miscellaneo us RES	Standard plug load appliance.	1W or less standby power use for small appliances	350,000	-	35	-	-	7	$30
EnergyStar Battery Charger	NWS	Elec	Miscellaneo us RES	Energy Star	Non Energy Star	40,000	-	4	-	-	7	$4
Water Heater, Tank Blanket-Insulation - Electric	NWS	Elec	Water Heating RES	No Tank Insulation	Install Insulation (R-5)	1,800,000	-	180	0.02	-	10	$18
Water Heater, Tank Blanket-	NWS	Gas	Water Heating RES	No Tank Insulation	Install Insulation (R-5)	-	1,171,875	-	-	12	10	$18

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Insulation - Gas												
Water Heater, Thermostat Setback - Electric	NWS	Elec	Water Heating RES	135 degrees	120 degrees	1,630,000	-	163	0.02	-	4	$8
Water Heater, Thermostat Setback - Gas	NWS	Gas	Water Heating RES	135 degrees	120 degrees	-	1,074,219	-	-	11	4	$8
Water Heater, Timer - Electric	NWS	Elec	Water Heating RES	No Water Heater, Timer	Water Heater, Timer	2,510,000	-	251	0.03	-	9	$130
Water Heater, Timer - Gas	NWS	Gas	Water Heating RES	No Water Heater, Timer	Water Heater, Timer	-	1,562,500	-	-	16	9	$130
Heat Pump Clothes Dryer	NWS	Elec	Clothes Dryer RES	Standard Electric Dryer	Heat Pump Clothes Dryer	3,580,000	-	358	-	-	14	$603
Small Windmills - Residential	WS	Elec	Wind	No windmill	2.5 kW wind system, 16% capacity factor on customer site	35,040,000	-	3,504	2.50	-	25	$7,700
Battery Storage - Residential	NWS	Elec	Energy Storage	No Storage	Ni-Cad battery	31,000	-	3	3.10	-	10	$6,820
GCHP replacing Elec Resist and SEER13	WS	Elec	HVAC RES	Elec Resist / SEER 13	GCHP (COP 4.0, EER 20)	119,360,000	-	11,936	0.71	-	15	$8,400
GCHP replacing Gas Furnace and SEER13	WS	Elec	HVAC RES	Gas Furnace AFUE 0.95 / SEER 13	GCHP (COP 4.0, EER 20)	(20,060,000)	53,710,938	(2,006)	0.62	537	15	$6,300
AC less than 65,000 1 Ph	WS	Elec	Cooling BUS	13.0 SEER	14 SEER	157,680,662	-	15,768	20.23	-	15	$14,598
AC less than 65,000 3 Ph	WS	Elec	Cooling BUS	12.0 SEER	13 SEER	118,057,593	-	11,806	15.20	-	15	$31,230
AC greater than 760,000	WS	Elec	Cooling BUS	9.0 EER	10 EER	222,688,326	-	22,269	28.74	-	15	$25,846
AC 135,000 - 240,000	WS	Elec	Cooling BUS	9.5 EER	11 EER	287,734,201	-	28,773	36.96	-	15	$29,131
AC 240,000 - 760,000	WS	Elec	Cooling BUS	9.3 EER	10 EER	150,877,467	-	15,088	19.45	-	15	$30,244
AC 65,000 - 135,000	WS	Elec	Cooling BUS	10.1 EER	11 EER	162,355,035	-	16,236	20.85	-	15	$39,177
Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	WS	Elec	Cooling BUS	1.26 kWperTon FLV, 1.15 kWperTon IPLV	1.26 kWperTon FLV, 0.9 IPLV	1,474,569,321	-	147,457	19.10	-	20	$51,384
Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	WS	Elec	Cooling BUS	1.26 kWperTon FLV, 1.15 kWperTon IPLV	1.14 kWperTon FLV, 0.94 IPLV	1,830,256,975	-	183,026	66.40	-	20	$55,650
Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	WS	Elec	Cooling BUS	1.26 kWperTon FLV, 1.15 kWperTon IPLV	1.05 kWperTon FLV, 0.86 IPLV	2,791,616,173	-	279,162	114.80	-	20	$80,556
Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	WS	Elec	Cooling BUS	1.26 kWperTon FLV, 1.15 kWperTon IPLV	1.26 kWperTon FLV, 0.97 IPLV	1,088,479,938	-	108,848	17.96	-	20	$38,588

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	WS	Elec	Cooling BUS	1.26 kWperTon FLV, 1.15 kWperTon IPLV	1.14 kWperTon FLV, 0.93 IPLV	1,908,858,210	-	190,886	67.40	-	20	$57,679
Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	WS	Elec	Cooling BUS	1.26 kWperTon FLV, 1.15 kWperTon IPLV	1.05 kWperTon FLV, 0.85 IPLV	2,865,653,333	-	286,565	115.83	-	20	$82,686
Boiler	WS	Gas	Heating BUS	80% efficiency	85% efficiency	-	1,009,675,187	-	-	10,097	20	$53,363
CHW reset 10 deg	WS	Elec& Gas	HVAC BUS	No reset	10 deg reset	1,055,933,308	128,454,100	105,593	6.96	1,285	5	$281
CHW reset 5 deg	WS	Elec& Gas	HVAC BUS	No reset	5 deg reset	879,907,111	102,799,700	87,991	6.58	1,028	5	$281
Cool roof	WS	Elec	Building Shell BUS	Standard roof. Absorptance = 0.8	Absorptance = 0.3	165,897,199	(147,063,323)	16,590	8.92	(1,471)	20	$54,567
Demand Controlled Ventilation	WS	Elec& Gas	HVAC BUS	No DCV	DCV	172,000,177	2,219,742,698	17,200	7.32	22,197	15	$7,352
Economizer	WS	Elec	HVAC BUS	No Economizer	Dual temperature economizer	178,700,292	(33,207,332)	17,870	(0.21)	(332)	15	$35,354
Efficient Condenser	WS	Elec	Refrigeratio n BUS	Low Temp: 15°F approach; 45 Btu/hr - watt; Medium Temp: 20°F approach; 45 Btu/hr - watt	Low Temp: 8°F approach; 85 Btu/hr-watt; Medium Temp: 13°F approach; 85 Btu/hr-watt	853,360,000	-	85,336	11.60	-	15	$44,550
EMS	WS	Elec& Gas	HVAC BUS	Constant CHW setpoint, pumps available 24/7	CHW reset, loop pump timers	3,135,469,279	630,907,609	313,547	20.87	6,309	15	$87,257
Engineered CKV hood	WS	Elec& Gas	Cooking BUS	Standard hood	Engineered hood	17,830,000	38,378,906	1,783	0.50	384	15	$250
Floating Head Pressure Control	WS	Elec	HVAC BUS	Fixed head pressure at 85	Float head pressure to 70	1,064,450,000	-	106,445	-	-	16	$685
Gas Engine Chiller	WS	Gas	Cooling BUS	Baseline gas engine chiller 1.6 COP	1.76 COP	39,598,931	1,117,963,656	3,960	0.77	11,180	20	$244,492
Gas Furnace	WS	Gas	Heating BUS	78 AFUE	95 AFUE	26,826,937	582,942,271	2,683	0.18	5,829	15	$38,032
GSHP under 135,000 17EER	WS	Elec	HVAC BUS	13.4 EER	17 EER	452,543,214	-	45,254	20.43	-	15	$31,685
GSHP under 135,000 19EER	WS	Elec	HVAC BUS	13.4 EER	19 EER	580,957,867	-	58,096	26.68	-	15	$31,685
GSHP under 135,000 EER 17 ASHP base	WS	Elec	HVAC BUS	13.0 SEER ASHP	17 EER	2,544,421,986	-	254,442	58.97	-	15	$1,210,737
GSHP under 135,000 EER 19 ASHP base	WS	Elec	HVAC BUS	13.0 SEER ASHP	19 EER	2,706,879,418	-	270,688	66.89	-	15	$1,210,737
High Performance Glazing	WS	Elec	Building Shell BUS	2 pane clear; SHGC = .73; U=.72	SHGC = .39; U=.57	56,774,571	(22,515,952)	5,677	1.66	(225)	20	$22,743
HP under 65,000 1 Ph	WS	Elec	HVAC BUS	13.0 SEER	14 SEER	308,603,270	-	30,860	21.58	-	15	$19,313

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
HP under 65,000 3 Ph	WS	Elec	HVAC BUS	12.0 SEER	13 SEER	169,308,373	-	16,931	15.12	-	15	$48,993
HP over 240,000	WS	Elec	HVAC BUS	8.8 EER	10 EER	468,494,817	-	46,849	35.43	-	15	$34,105
HP 135,000 - 240,000	WS	Elec	HVAC BUS	9.1 EER	10 EER	392,725,575	-	39,273	25.74	-	15	$32,954
HP 65,000 - 135,000	WS	Elec	HVAC BUS	9.9 EER	11 EER	328,751,090	-	32,875	26.33	-	15	$47,924
Infrared Heater	WS	Elec& Gas	Process BUS	Gas unit heater, 80% efficiency	80% thermal efficiency, setpoint 5 deg lower, no fan power	928,359,636	513,885,039	92,836	20.85	5,139	15	$11,376
Night Covers	WS	Elec	Refrigeratio n BUS	No covers	Covered 4 hr/night; 50% reduction in infiltration	59,300,000	-	5,930	-	-	5	$7,830
PTAC	WS	Elec	Cooling BUS	8.9 EER	9.2 EER	39,002,199	-	3,900	3.44	-	15	$22,866
PTAC-HP	WS	Elec	HVAC BUS	8.7 EER	9 EER	89,486,949	-	8,949	3.81	-	15	$28,536
Refrigerant charging correction	WS	Elec& Gas	Refrigeratio n BUS	Uncorrected	10% EER improvement	235,689,225	157,531	23,569	30.29	2	10	$2,722
Roof Insulation	WS	Elec& Gas	Building Shell BUS	Varies by building	Varies by building	93,156,068	426,162,419	9,316	1.90	4,262	20	$31,589
Setback-Setup Thermostat	WS	Elec& Gas	HVAC BUS	No setback	Assumes full setback achieved - use with caution	723,769,760	1,296,197,669	72,377	(14.27)	12,962	9	$4,873
VFD Fan - Large Building Package	WS	Elec	HVAC BUS	VAV inlet vane	VAV with VFD	3,208,186,810	(783,909,632)	320,819	29.60	(7,839)	10	$37,321
VFD Pump - Large Building Package	WS	Elec& Gas	HVAC BUS	CV pump	VV pump with VFD	3,875,647,962	45,044,330	387,565	35.11	450	10	$13,247
Wtr-Cool cent Chiller over 300 ton 0.46 kWperTon with 0.35 kWperTon IPLV	WS	Elec	Cooling BUS	0.58 kWperTon .55 IPLV	0.46 kWperTon with 0.35 kWperTon IPLV	1,897,243,889	-	189,724	65.06	-	20	$62,991
Wtr-Cool cent Chiller over 300 ton 0.52 kWperTon with 0.39 kWperTon IPLV	WS	Elec	Cooling BUS	0.58 kWperTon .55 IPLV	0.52 kWperTon with 0.39 kWperTon IPLV	1,251,188,827	-	125,119	35.20	-	20	$38,688
Wtr-Cool cent Chiller over 300 ton 0.58 kWperTon with 0.41 kWperTon IPLV	WS	Elec	Cooling BUS	0.58 kWperTon .55 IPLV	0.58 kWperTon with 0.41 kWperTon IPLV	747,056,975	-	74,706	6.24	-	20	$18,169

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Wtr-Cool cent Chiller 150 - 300 ton 0.51 kWperTon with 0.39 kWperTon IPLV	WS	Elec	Cooling BUS	.63 kWperTon, .60 IPLV	0.51 kWperTon with 0.39 kWperTon IPLV	2,071,353,086	-	207,135	71.74	-	20	$80,118
Wtr-Cool cent Chiller 150 - 300 ton 0.57 kWperTon with 0.43 kWperTon IPLV	WS	Elec	Cooling BUS	.63 kWperTon, .60 IPLV	0.57 kWperTon with 0.43 kWperTon IPLV	1,344,738,519	-	134,474	38.44	-	20	$47,260
Wtr-Cool cent Chiller 150 - 300 ton 0.63 kWperTon with 0.45 kWperTon IPLV	WS	Elec	Cooling BUS	.63 kWperTon, .60 IPLV	0.63 kWperTon with 0.45 kWperTon IPLV	790,664,198	-	79,066	6.62	-	20	$18,403
Wtr-Cool Centrifugal Chiller under 150 ton 0.56 kWperTon with 0.43 kWperTon IPLV	WS	Elec	Cooling BUS	.70 kWperTon, .67 IPLV	0.56 kWperTon with 0.43 kWperTon IPLV	2,332,686,358	-	233,269	79.94	-	20	$103,923
Wtr-Cool Centrifugal Chiller under 150 ton 0.63 kWperTon with 0.48 kWperTon IPLV	WS	Elec	Cooling BUS	.70 kWperTon, .67 IPLV	0.63 kWperTon with 0.48 kWperTon IPLV	1,526,577,160	-	152,658	42.99	-	20	$58,957
Wtr-Cool Centrifugal Chiller under 150 ton 0.7 kWperTon with 0.5 kWperTon IPLV	WS	Elec	Cooling BUS	.70 kWperTon, .67 IPLV	0.7 kWperTon with 0.5 kWperTon IPLV	911,818,642	-	91,182	7.62	-	20	$17,672
Wtr-Cool screw chiller under 150 ton 0.63 kWperTon with 0.44 kWperTon IPLV	WS	Elec	Cooling BUS	.79 kWperTon, .68 IPLV	0.63 kWperTon with 0.44 kWperTon IPLV	2,534,466,605	-	253,447	95.53	-	20	$92,374
Wtr-Cool screw chiller under 150 ton 0.71 kWperTon with 0.5 kWperTon IPLV	WS	Elec	Cooling BUS	.79 kWperTon, .68 IPLV	0.71 kWperTon with 0.5 kWperTon IPLV	1,732,838,210	-	173,284	53.49	-	20	$65,102

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Wtr-Cool screw chiller under 150 ton 0.79 kWperTon with 0.55 kWperTon IPLV	WS	Elec	Cooling BUS	.79 kWperTon, .68 IPLV	0.79 kWperTon with 0.55 kWperTon IPLV	922,659,691	-	92,266	11.74	-	20	$37,830
Wtr-Cool screw chiller over 300 ton 0.51 kWperTon with 0.36 kWperTon IPLV	WS	Elec	Cooling BUS	.64 kWperTon, .57 IPLV	0.51 kWperTon with 0.36 kWperTon IPLV	2,052,449,630	-	205,245	77.53	-	20	$52,472
Wtr-Cool screw chiller over 300 ton 0.58 kWperTon with 0.4 kWperTon IPLV	WS	Elec	Cooling BUS	.64 kWperTon, .57 IPLV	0.58 kWperTon with 0.4 kWperTon IPLV	1,391,720,123	-	139,172	43.57	-	20	$39,536
Wtr-Cool screw chiller over 300 ton 0.64 kWperTon with 0.45 kWperTon IPLV	WS	Elec	Cooling BUS	.64 kWperTon, .57 IPLV	0.64 kWperTon with 0.45 kWperTon IPLV	733,910,000	-	73,391	9.51	-	20	$26,600
Wtr-Cool screw chiller 150 - 300 ton 0.57 kWperTon with 0.4 kWperTon IPLV	WS	Elec	Cooling BUS	.72 kWperTon, .63 IPLV	0.57 kWperTon with 0.4 kWperTon IPLV	2,291,978,086	-	229,198	87.05	-	20	$69,956
Wtr-Cool screw chiller 150 - 300 ton 0.65 kWperTon with 0.45 kWperTon IPLV	WS	Elec	Cooling BUS	.72 kWperTon, .63 IPLV	0.65 kWperTon with 0.45 kWperTon IPLV	1,554,346,667	-	155,435	48.88	-	20	$50,955
Wtr-Cool screw chiller 150 - 300 ton 0.72 kWperTon with 0.5 kWperTon IPLV	WS	Elec	Cooling BUS	.72 kWperTon, .63 IPLV	0.72 kWperTon with 0.5 kWperTon IPLV	826,124,753	-	82,612	10.71	-	20	$31,953
WLHP under 17,000	WS	Elec	HVAC BUS	11.2 EER	11.5 EER	100,482,718	(5,313,586)	10,048	5.64	(53)	15	$5,332
WLHP 17,000-65,000	WS	Elec	HVAC BUS	12.0 EER	12.3 EER	86,482,355	(4,200,754)	8,648	4.92	(42)	15	$6,370
WLHP 65,000-135,000	WS	Elec	HVAC BUS	12.0 EER	12.3 EER	86,482,355	(4,200,754)	8,648	4.92	(42)	15	$6,558
Delamping with 4ft T12 to T8	NWS	Elec	Lighting BUS	T12 fluorescent	Standard T8 fluorescent with fewer lamps	1,520,000	-	152	0.04	-	12	$73
Delamping with	NWS	Elec	Lighting	T12 fluorescent	Standard T8 fluorescent with		-					$107

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
8ft T12 to T8			BUS		fewer lamps	2,520,000		252	0.06	-	12	
HPT8 4ft 1 lamp, T8 to HPT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance T8 fluorescent	190,000	-	19	0.00	-	12	$38
HPT8 4ft 2 lamp, T8 to HPT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance T8 fluorescent	310,000	-	31	0.01	-	12	$41
HPT8 4ft 3 lamp, T8 to HPT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance T8 fluorescent	350,000	-	35	0.01	-	12	$62
HPT8 4ft 4 lamp, T8 to HPT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance T8 fluorescent	520,000	-	52	0.01	-	12	$66
HPT8 4ft 1 lamp, T12 to HPT8	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	634,800	-	63	0.02	-	12	$38
HPT8 4ft 2 lamp, T12 to HPT8	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	820,241	-	82	0.02	-	12	$41
HPT8 4ft 3 lamp, T12 to HPT8	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	1,451,831	-	145	0.04	-	12	$62
HPT8 4ft 4 lamp, T12 to HPT8	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	1,696,530	-	170	0.04	-	12	$66
T12 8ft 1 lamp retrofit to HPT8 T8 4ft 2 lamp	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	670,000	-	67	0.02	-	12	$41
T12 8ft 2 lamp retrofit to HPT8 T8 4ft 4 lamp	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	490,000	-	49	0.01	-	12	$66
T12HO 8ft 1 lamp retrofit to HPT8 T8 4ft 2 lamp	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	1,740,000	-	174	0.04	-	12	$41
T12HO 8ft 2 lamp retrofit to HPT8 T8 4ft 4 lamp	NWS	Elec	Lighting BUS	T12 fluorescent	High performance T8 fluorescent	2,930,000	-	293	0.07	-	12	$66
LW HPT8 4ft 1 lamp, T8LWT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance low watt lamp T8 fluorescent	290,000	-	29	0.01	-	12	$37
LW HPT8 4ft 2 lamp, T8LWT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance low watt lamp T8 fluorescent	480,000	-	48	0.01	-	12	$39
LW HPT8 4ft 3 lamp, T8LWT8	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance low watt lamp T8 fluorescent	620,000	-	62	0.02	-	12	$58
LW HPT8 4ft 4 lamp	NWS	Elec	Lighting BUS	Standard T8 fluorescent	High performance low watt lamp T8 fluorescent	920,000	-	92	0.02	-	12	$60
1 Lamp T5 with Elec Ballast replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5 fluorescent	441,600	-	44	0.01	-	12	$107
2 Lamp T5 replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5 fluorescent	441,600	-	44	0.01	-	12	$107
3 Lamp T5 replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5 fluorescent	993,600	-	99	0.02	-	12	$124
4 Lamp T5 replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5 fluorescent	883,200	-	88	0.02	-	12	$124
1 Lamp T5 HO with Elec Ballast	NWS	Elec	Lighting BUS	T12 fluorescent	T5HO fluorescent	550,000	-	55	0.01	-	12	$120

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
replacing T12												
2 Lamp T5HO replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5HO fluorescent	700,000	-	70	0.02	-	12	$140
3 Lamp T5HO replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5HO fluorescent	920,000	-	92	0.02	-	12	$175
4 Lamp T5HO replacing T12	NWS	Elec	Lighting BUS	T12 fluorescent	T5HO fluorescent	1,910,000	-	191	0.05	-	12	$225
Occupancy Sensors under 500 W	NWS	Elec	Lighting BUS	No automatic or motion control	Motion sensor control, generally wall mounted	3,970,000	-	397	0.10	-	10	$100
Occupancy Sensors over 500 W	NWS	Elec	Lighting BUS	No automatic or motion control	Motion sensor control, generally ceiling mounted	9,940,000	-	994	0.24	-	10	$200
Central Lighting Control	NWS	Elec	Lighting BUS	No automatic or motion control	Automatic lighting control system	115,000,000	-	11,500	2.81	-	12	$2,700
Switching Controls for Multilevel Lighting	NWS	Elec	Lighting BUS	Single level control for each lighting fixture	Multi-Level control for each lighting fixture	80,000,000	-	8,000	2.20	-	12	$3,000
Daylight Sensor controls	NWS	Elec	Lighting BUS	No automatic control	Daylight sensor lighting control	148,000,000	-	14,800	3.82	-	12	$3,000
Timeclocks	NWS	Elec	Lighting BUS	No automatic control	High performance T8 fluorescent	2,370,000	-	237	-	-	8	$100
High Bay 3L T5HO Replacing 250W HID	NWS	Elec	Lighting BUS	High bay HID lighting	T5 fluorescent high bay lighting	4,490,000	-	449	0.10	-	12	$180
High Bay 4LT5HO Replacing 400W HID	NWS	Elec	Lighting BUS	High bay HID lighting	T5 fluorescent high bay lighting	8,820,000	-	882	0.20	-	12	$192
High Bay 6L T5HO replacing 400W HID	NWS	Elec	Lighting BUS	High bay HID lighting	T5 fluorescent high bay lighting	3,740,000	-	374	0.09	-	12	$350
High Bay 6L T5HO Double fixture replace 1000W HID	NWS	Elec	Lighting BUS	High bay HID lighting	T5 fluorescent high bay lighting, two for one replacement	14,560,000	-	1,456	0.33	-	12	$700
42W 8 Lamp Hi Bay CFL Replacing 400W HID	NWS	Elec	Lighting BUS	High bay HID lighting	CFL highbay fixture	3,450,000	-	345	0.08	-	12	$395
Pulse Start Metal Halide 150-200W retrofit only	NWS	Elec	Lighting BUS	High bay HID lighting 175-250W	Pulse start metal halide highbay lighting 150-200W replacing higher wattage	2,370,000	-	237	0.05	-	12	$135
Pulse Start Metal Halide 320W retrofit only	NWS	Elec	Lighting BUS	High bay HID lighting 400W	Pulse start metal halide highbay lighting 320W	3,540,000	-	354	0.08	-	12	$150
Pulse Start Metal Halide 750W retrofit only	NWS	Elec	Lighting BUS	High bay HID lighting 1000W	Pulse start metal halide highbay lighting 750W	10,900,000	-	1,090	0.25	-	12	$200

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Ceramic Metal Halide 20-100W	NWS	Elec	Lighting BUS	Incandescent display lighting	Ceramic metal halide display lighting 20-100W	4,450,000	-	445	0.11	-	12	$225
Ceramic Metal Halide Integral Ballast	NWS	Elec	Lighting BUS	Incandescent display lighting ≥ 70W	Ceramic metal halide display lighting ≤ 25W	1,660,000	-	166	0.04	-	3	$95
Exterior HID replacement to 175W HID retrofit	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	2,680,000	-	268	-	-	12	$400
Exterior HID replacement above 175W to 250W HID retrofit	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	4,090,000	-	409	-	-	12	$500
Exterior HID replacement above 250W to 400W HID retrofit	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	7,060,000	-	706	-	-	12	$800
Garage HID replacement to 175W HID retrofit	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	6,110,000	-	611	0.07	-	12	$400
Garage HID replacement above 175W to 250W HID retrofit	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	9,360,000	-	936	0.10	-	12	$500
Garage HID replacement above 250W to 400W HID retrofit	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	16,140,000	-	1,614	0.17	-	12	$800
Exterior Lighting BiLevel Control w Override, 150 to 1000 HID	NWS	Elec	Lighting BUS	HID exterior lighting	LED or induction exterior lighting, 40% wattage reduction	7,430,000	-	743	-	-	10	$300
Sports Field Lighting HiLo Control	NWS	Elec	Lighting BUS	HID exterior lighting	Two level HID lighting control	1,490,000	-	149	-	-	10	$400
CFL Fixture	NWS	Elec	Lighting BUS	Incandescent fixture	Compact fluorescent fixture	3,420,000	-	342	0.08	-	12	$45
CFL Screw in	NWS	Elec	Lighting BUS	Incandescent lamp	Compact fluorescent lamp less than 30W	2,020,000	-	202	0.05	-	2	$3
CFL Screw high wattage	NWS	Elec	Lighting BUS	Incandescent lamp	Compact fluorescent lamp more than 30W and less than 115W	4,970,000	-	497	0.12	-	2	$15
CFL Reflector Flood	NWS	Elec	Lighting BUS	Incandescent lamps with reflectors	Compact fluorescent lamps with reflectors	2,020,000	-	202	0.05	-	2	$6
LED Lamps - pre-EISA	NWS	Elec	Lighting BUS	Incandescent lamp	LED lamp	1,770,000	-	177	0.04	-	15	$70
LED Lamps - post-EISA	NWS	Elec	Lighting BUS	EISA compliant lamp	LED lamp	389,400	-	39	0.01	-	15	$70
LED Exit Signs	NWS	Elec	Lighting	Incandescent or CFL exit sign	LED exit sign		-					$25

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Electronic Fixtures (Retrofit Only)			BUS			2,010,000		201	0.02	-	15	
LED Pedestrian Signals	NWS	Elec	Lighting BUS	Incandescent traffic signals	LED traffic signals	1,500,000	-	150	0.04	-	8	$100
Light Tube	NWS	Elec	Lighting BUS	No daylighting or daylighting control	Light tubes and automatic daylighting control	3,610,000	-	361	0.09	-	14	$500
LED Case lighting	NWS	Elec	Lighting BUS	Fluorescent case lighting	LED Case lighting	4,290,000	-	429	0.04	-	15	$300
LED Case lighting with motion sensors	NWS	Elec	Lighting BUS	LED Case lighting with no sensors	LED Case lighting with sensor control	2,200,000	-	220	0.01	-	15	$320
Small High Efficiency Gas Water Heater	NWS	Gas	Water Heating BUS	Gas water heater (EF=0.59) < 75,000 Btuh	EF>= 0.62	-	3,027,344	-	-	30	15	$145
Large High Efficiency Gas Water Heater	NWS	Gas	Water Heating BUS	Gas water heater (TE=0.80) ≥ 75,000 Btuh	TE >= 0.88	-	18,359,375	-	-	184	15	$209
Instant Gas Water Heater	NWS	Gas	Water Heating BUS	Gas water heater (EF=0.59) < 75,000 Btuh	EF >= 0.82	-	17,285,156	-	-	173	15	$1,185
HP Water Heater 10 to 50 MBH	NWS	Elec	Water Heating BUS	Electric water heater	Heat pump water heater COP>=3.0	211,560,000	-	21,156	4.20	-	15	$6,000
HP Water Heater 50 to 100 MBH	NWS	Elec	Water Heating BUS	Electric water heater	Heat pump water heater COP>=3.0	528,900,000	-	52,890	10.50	-	15	$14,000
HP Water Heater 100 to 300 MBH	NWS	Elec	Water Heating BUS	Electric water heater	Heat pump water heater COP>=3.0	1,410,410,000	-	141,041	28.00	-	15	$25,000
HP Water Heater 300 to 500 MBH	NWS	Elec	Water Heating BUS	Electric water heater	Heat pump water heater COP>=3.0	2,820,810,000	-	282,081	56.00	-	15	$42,000
HP Water Heater above 500 MBH	NWS	Elec	Water Heating BUS	Electric water heater	Heat pump water heater COP>=3.0	4,231,220,000	-	423,122	84.00	-	15	$63,000
High Efficiency Pool Heater	NWS	Gas	Pool Spa RES	Standard Efficiency Pool Heater 78% Eff.	High Efficiency Pool Heater Eff. >=84%	-	238,281	-	-	2	15	$4
Steam Traps	NWS	Gas	Miscellaneous BUS	Steam Trap Failed Open	Replaced or Repaired Steam Trap	-	22,656,250	-	-	227	5	$168
Pool Covers	NWS	Gas	Pool Spa RES	No pool cover	Automatic pool cover	-	85,938	-	-	1	10	$2
Pipe Wrap - Steam Boiler	NWS	Gas	Water Heating BUS	No Insulation	R-4 insulation	-	390,625	-	-	4	20	$7
Pipe Wrap - Hot Water Boiler	NWS	Gas	Water Heating BUS	No Insulation	R-4 insulation	-	1,464,844	-	-	15	20	$7
Motors 1 to 5 HP	NWS	Elec	Motors BUS	EPACT standard efficiency motor	NEMA premium efficiency motor	1,132,954	-	113	0.02	-	15	$88
Motors 7.5 to 20 HP	NWS	Elec	Motors BUS	EPACT standard efficiency motor	NEMA premium efficiency motor	4,084,297	-	408	0.09	-	15	$223
Motors 25 to 100 HP	NWS	Elec	Motors BUS	EPACT standard efficiency motor	NEMA premium efficiency motor	10,560,434	-	1,056	0.22	-	15	$559
Motors 125 to 250 HP	NWS	Elec	Motors BUS	EPACT standard efficiency motor	NEMA premium efficiency motor	24,353,630	-	2,435	0.52	-	15	$1,080

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Pumps HP 1.5	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 60%	High Efficiency Pump - Efficiency ≥ 63%	3,020,000	-	302	0.06	-	15	$350
Pumps HP 2	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 60%	High Efficiency Pump - Efficiency ≥ 63%	4,030,000	-	403	0.09	-	15	$350
Pumps HP 3	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 60%	High Efficiency Pump - Efficiency ≥ 65%	6,040,000	-	604	0.13	-	15	$350
Pumps HP 5	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 60%	High Efficiency Pump - Efficiency ≥ 68%	10,070,000	-	1,007	0.21	-	15	$341
Pumps HP 7.5	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 64%	High Efficiency Pump - Efficiency ≥ 73%	15,110,000	-	1,511	0.32	-	15	$498
Pumps HP 10	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 66%	High Efficiency Pump - Efficiency ≥ 75%	20,140,000	-	2,014	0.43	-	15	$332
Pumps HP 15	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 69%	High Efficiency Pump - Efficiency ≥ 77%	30,210,000	-	3,021	0.64	-	15	$585
Pumps HP 20	NWS	Elec	Motors BUS	Standard Efficiency Pump - Efficiency ≤ 72%	High Efficiency Pump - Efficiency ≥ 77%	40,280,000	-	4,028	0.85	-	15	$850
VFD HP 1.5 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	16,234,400	-	1,623	0.34	-	15	$1,445
VFD HP 2 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	21,645,867	-	2,165	0.46	-	15	$1,645
VFD HP 3 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	32,461,867	-	3,246	0.69	-	15	$1,845
VFD HP 5 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	53,566,933	-	5,357	1.14	-	15	$2,070
VFD HP 7.5 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	81,161,600	-	8,116	1.71	-	15	$2,860
VFD HP 10 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	107,133,867	-	10,713	2.29	-	15	$2,860
VFD HP 15 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	162,323,200	-	16,232	3.43	-	15	$3,265
VFD HP 20 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	216,430,933	-	21,643	4.57	-	15	$4,515
VFD HP 25 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	270,538,667	-	27,054	5.71	-	15	$5,120
VFD HP 30 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	324,646,400	-	32,465	6.86	-	15	$5,770
VFD HP 40 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	432,861,867	-	43,286	9.14	-	15	$8,095
VFD HP 50 Process Pumping	NWS	Elec	Motors BUS	Pump without speed control	Variable speed pump control	541,084,267	-	54,108	11.43	-	15	$8,950
VFDs on Commercial Swimming Pool Pumps	NWS	Elec	Motors BUS	Pool pump without speed control	Variable speed pump control	25,110,000	-	2,511	0.32	-	15	$286
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Gas dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	180,500	2,597,656	18	0.00	26	10	$347

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Electric dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	2,220,000	1,762,695	222	0.02	18	10	$347
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Gas Dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	4,280,000	834,961	428	0.05	8	10	$347
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Electric Dryer	NWS	Elec	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 1.8	6,330,000	-	633	0.07	-	10	$347
Clothes Washer CEE Tier2, Gas water heater, Gas dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	180,500	3,247,070	18	0.00	32	10	$475
Clothes Washer CEE Tier2, Gas water heater, Electric dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	2,980,000	2,133,789	298	0.03	21	10	$475
Clothes Washer CEE Tier2, Electric Water heater, Gas Dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	5,010,000	1,113,281	501	0.05	11	10	$475
Clothes Washer CEE Tier2, Electric Water heater, Electric Dryer	NWS	Elec	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.0	7,810,000	-	781	0.08	-	10	$475
Clothes Washer CEE Tier3, Gas water heater, Gas dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	180,500	3,710,938	18	0.00	37	10	$604
Clothes Washer CEE Tier3, Gas water heater, Electric dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	3,730,000	2,319,336	373	0.04	23	10	$604
Clothes Washer CEE Tier3, Electric Water heater, Gas Dryer	NWS	Elec& Gas	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	5,460,000	1,391,602	546	0.06	14	10	$604
Clothes Washer CEE Tier3, Electric Water heater, Electric Dryer	NWS	Elec	Clothes Washer RES	Standard Clothes Washer MEF=1.26	Clothes washer MEF= 2.2	9,020,000	-	902	0.09	-	10	$604

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Smart Strip plug outlet	NWS	Elec	Miscellaneous BUS	Standard plug outlet	Smart Strip plug outlet	880,000	-	88	0.01	-	5	$40
Vending Equipment Controller	NWS	Elec	Miscellaneous BUS	Refrigerated vending machine without motion control	Refrigerated vending machine with motion control	8,000,000	-	800	0.06	-	5	$160
Snack Machine Controller	NWS	Elec	Miscellaneous BUS	Snack machine without motion control	Snack machine with motion control	2,800,000	-	280	0.01	-	5	$75
Beverage Reach-in Controller	NWS	Elec	Miscellaneous BUS	Beverage Reach-in Cooler without motion control	Beverage Reach-in Cooler with motion control	6,720,000	-	672	0.04	-	5	$170
Energy Efficient Water Fountain	NWS	Elec	Miscellaneous BUS	Standard Drinking Fountain	Energy Efficient Drinking Fountain	238,200	-	24	0.01	-	8	$650
ENERGY STAR Commercial Solid Door Refrigerators less than 15ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	2,700,000	-	270	0.03	-	12	$250
ENERGY STAR Commercial Solid Door Refrigerators 15 to 30 ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	6,680,000	-	668	0.08	-	12	$500
ENERGY STAR Commercial Solid Door Refrigerators 30 to 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	7,900,000	-	790	0.09	-	12	$750
ENERGY STAR Commercial Solid Door Refrigerators more than 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	11,330,000	-	1,133	0.13	-	12	$900
ENERGY STAR Commercial Solid Door Freezers less than 15ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	5,950,000	-	595	0.07	-	12	$150
ENERGY STAR Commercial Solid Door Freezers 15 to 30 ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	8,690,000	-	869	0.10	-	12	$400
ENERGY STAR Commercial Solid Door Freezers 30 to 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	17,280,000	-	1,728	0.20	-	12	$550
ENERGY STAR Commercial Solid Door Freezers more than 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	37,570,000	-	3,757	0.43	-	12	$700

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ENERGY STAR Commercial Glass Door Refrigerators less than 15ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	7,220,000	-	722	0.08	-	12	$250
ENERGY STAR Commercial Glass Door Refrigerators 15 to 30 ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	14,340,000	-	1,434	0.16	-	12	$500
ENERGY STAR Commercial Glass Door Refrigerators 30 to 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	7,280,000	-	728	0.08	-	12	$750
ENERGY STAR Commercial Glass Door Refrigerators more than 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial refrigerator	Energy Star commercial refrigerator	8,980,000	-	898	0.10	-	12	$900
ENERGY STAR Commercial Glass Door Freezers less than 15ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	16,930,000	-	1,693	0.19	-	12	$220
ENERGY STAR Commercial Glass Door Freezers 15 to 30 ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	20,040,000	-	2,004	0.23	-	12	$950
ENERGY STAR Commercial Glass Door Freezers 30 to 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	38,690,000	-	3,869	0.44	-	12	$1,307
ENERGY STAR Commercial Glass Door Freezers more than 50ft3	NWS	Elec	Refrigeration BUS	Standard efficiency commercial freezer	Energy Star commercial freezer	71,180,000	-	7,118	0.81	-	12	$2,300
ENERGY STAR Ice Machines less than 500 lbs	NWS	Elec	Refrigeration BUS	Standard efficiency ice machine	Energy Star ice machine	16,520,000	-	1,652	0.19	-	12	$600
ENERGY STAR Ice Machines 500 to 1000 lbs	NWS	Elec	Refrigeration BUS	Standard efficiency ice machine	Energy Star ice machine	26,950,000	-	2,695	0.31	-	12	$1,500
ENERGY STAR Ice Machines more than 1000 lbs	NWS	Elec	Refrigeration BUS	Standard efficiency ice machine	Energy Star ice machine	60,480,000	-	6,048	0.69	-	12	$2,000
Guest Room Energy Management, Electric Heating	WS	Elec	HVAC BUS	Guest Room without motion control on HVAC	Guest Room with motion control on HVAC	11,120,000	-	1,112	0.09	-	9	$500
Guest Room Energy Management, Gas	WS	Elec& Gas	HVAC BUS	Guest Room without motion control on HVAC	Guest Room with motion control on HVAC	4,000,000	4,980,469	400	0.09	50	9	$500

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Heating												
ENERGY STAR Steam Cookers 3 Pan - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.28	Energy Star Cooking Energy Efficiency = 0.50	111,880,000	-	11,188	2.55	-	12	$4,150
ENERGY STAR Steam Cookers 4 Pan - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.28	Energy Star Cooking Energy Efficiency = 0.50	121,590,000	-	12,159	2.85	-	12	$4,150
ENERGY STAR Steam Cookers 5 Pan - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.28	Energy Star Cooking Energy Efficiency = 0.50	131,390,000	-	13,139	3.16	-	12	$4,150
ENERGY STAR Steam Cookers 5 Pan - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.15	Energy Star Cooking Energy Efficiency = 0.38	-	198,632,813	-	-	1,986	12	$6,221
ENERGY STAR Steam Cookers 6 Pan - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.28	Energy Star Cooking Energy Efficiency = 0.50	151,700,000	-	15,170	3.46	-	12	$4,150
ENERGY STAR Steam Cookers 6 Pan - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.15	Energy Star Cooking Energy Efficiency = 0.38	-	203,515,625	-	-	2,035	12	$6,221
ENERGY STAR Hot Holding Cabinets Half Size - Electric	NWS	Elec	Cooking BUS	Standard efficiency holding cabinet	Energy Star holding cabinet <40W/cuft	17,880,000	-	1,788	0.33	-	12	$1,783
ENERGY STAR Hot Holding Cabinets Three Quarter Size - Electric	NWS	Elec	Cooking BUS	Standard efficiency holding cabinet	Energy Star holding cabinet <40W/cuft	28,320,000	-	2,832	0.52	-	12	$1,783
ENERGY STAR Hot Holding Cabinets Full Size - Electric	NWS	Elec	Cooking BUS	Standard efficiency holding cabinet	Energy Star holding cabinet <40W/cuft	52,780,000	-	5,278	0.96	-	12	$1,783
ENERGY STAR Fryers - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.75	Energy Star Cooking Energy Efficiency = 0.80	9,830,000	-	983	0.20	-	12	$4,708
ENERGY STAR Fryers - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.35	Energy Star Cooking Energy Efficiency = 0.50	-	49,316,406	-	-	493	12	$3,796
Griddles - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.65	Cooking Energy Efficiency = 0.70	16,370,000	-	1,637	0.40	-	12	$3,604
Griddles - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.32	Cooking Energy Efficiency = 0.38	-	8,593,750	-	-	86	12	$4,575
Convection Ovens - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.65	Cooking Energy Efficiency = 0.70	22,620,000	-	2,262	0.50	-	12	$2,713
Convection Ovens - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.30	Cooking Energy Efficiency = 0.40	-	31,542,969	-	-	315	12	$3,144
Combination Ovens - Electric	NWS	Elec	Cooking BUS	Cooking Energy Efficiency = 0.44	Cooking Energy Efficiency = 0.60	184,320,000	-	18,432	4.20	-	12	$16,884
Combination Ovens - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.35	Cooking Energy Efficiency = 0.40	-	39,355,469	-	-	394	12	$21,797
Large Vat Fryers - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.35	Cooking Energy Efficiency = 0.50	-	56,347,656	-	-	563	12	$3,122

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Rack Oven Single - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.30	Cooking Energy Efficiency = 0.50	-	100,976,563	-	-	1,010	12	$8,221
Rack Oven Double - Gas	NWS	Gas	Cooking BUS	Cooking Energy Efficiency = 0.30	Cooking Energy Efficiency = 0.50	-	206,347,656	-	-	2,063	12	$8,646
Pre Rinse Sprayers - Gas water heater	NWS	Gas	Water Heating BUS	Standard Sprayer >1.6 gpm	Efficient Sprayer <= 0.64 gpm	-	25,488,281	-	-	255	5	$50
Pre Rinse Sprayers - Electric water heater	NWS	Elec	Water Heating BUS	Standard Sprayer >1.6 gpm	Efficient Sprayer <= 0.64 gpm	56,260,000	-	5,626	0.12	-	5	$50
Anti Sweat Heater Controls	NWS	Elec	Refrigeration BUS	Heaters without control	Automatic heater control	10,590,000	-	1,059	-	-	15	$250
ECM Case Motors	NWS	Elec	Motors BUS	Low Efficiency Shaded Pole or Permanent Split Capacitor Motor	Electronically Commutated Motor, ECM	8,240,000	-	824	0.08	-	15	$150
ECM Cooler and Freezer Motors - ECM replacing PSC	NWS	Elec	Motors BUS	Cooler or Freezer Fan Motor with Shaded Pole Motor	Cooler or Freezer Fan Motor with ECM Motor	17,570,000	-	1,757	0.18	-	15	$150
ECM Cooler and Freezer Motors - ECM replacing SP	NWS	Elec	Motors BUS	Cooler or Freezer Fan Motor with Perm. Split. Cap. Motor	Cooler or Freezer Fan Motor with ECM Motor	5,810,000	-	581	0.06	-	15	$150
Night covers for displays	NWS	Elec	Refrigeration BUS	Cases without covers	Cases with night covers	1,050,000	-	105	-	-	5	$35
Strip Curtains - Cooler	NWS	Elec	Refrigeration BUS	Cooler without Strip Curtains	Cooler with Strip Curtains	850,000	-	85	0.01	-	4	$10
Strip Curtains - Freezer	NWS	Elec	Refrigeration BUS	Freezer without Strip Curtains	Freezer with Strip Curtains	4,540,000	-	454	0.05	-	4	$10
Efficient Refrigeration Condenser	NWS	Elec	Refrigeration BUS	Standard condensers	Oversized condensers with low approach temperatures	1,200,000	-	120	0.12	-	15	$35
Head Pressure Control	WS	Elec	HVAC BUS	Constant or manual head pressure control	Automatic head pressure control varying on outside temperature	12,640,000	-	1,264	-	-	15	$80
Engineered Nozzles Compressed Air	NWS	Elec	Air Comp BUS	Compressed air blow-off application without engineered nozzle	Installation of engineered nozzle for blow-off	73,430,000	-	7,343	3.68	-	15	$80
Barrel Wraps Inj Mold and Extruders	NWS	Elec	Process BUS	Heater barrel without insulation	Heater barrel with insulation	500,000	-	50	0.01	-	5	$2
Pellet Dryer Tanks and Ducts 3 dia	NWS	Elec	Process BUS	Pellet dryer without insulation	Pellet dryer with insulated duct and tank	980,000	-	98	0.02	-	5	$33
Pellet Dryer Tanks and Ducts 4 dia	NWS	Elec	Process BUS	Pellet dryer without insulation	Pellet dryer with insulated duct and tank	1,340,000	-	134	0.03	-	5	$43
Pellet Dryer Tanks and Ducts 5 dia	NWS	Elec	Process BUS	Pellet dryer without insulation	Pellet dryer with insulated duct and tank	1,750,000	-	175	0.04	-	5	$54

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Pellet Dryer Tanks and Ducts 6 dia	NWS	Elec	Process BUS	Pellet dryer without insulation	Pellet dryer with insulated duct and tank	2,160,000	-	216	0.05	-	5	$65
Furnace Tube Inserts	WS	Gas	Heating BUS	No Tube Inserts	Tube Inserts	-	4,882,813	-	-	49	5	$325
VSD Air Compressors	NWS	Elec	Air Comp BUS	Screw Air Compressor with Modulation Control	Screw Air compressor with VSD control	5,820,000	-	582	0.14	-	15	$100
Commercial PV (1 kW system)	WS	Elec	Solar	No Photovoltaic system	1 kW PV system	12,810,000	-	1,281	0.47	-	20	$8,000
Ducting, Insulation	WS	Elec	HVAC BUS	No Insulation	Insulation	19,908,060	-	1,991	1.19	-	20	$6,241
Ducting, Repair and Sealing	WS	Elec	HVAC BUS	Before repair and sealing	After repair and sealing	12,914,700	-	1,291	0.77	-	15	$5,784
External Shades or Overhangs-Fins	WS	Elec	HVAC BUS	0	0	27,877,680	-	2,788	1.67	-	10	$3,501
Retrocommissioning, HVAC	WS	Elec	HVAC BUS	0	0	74,340,000	-	7,434	1.65	-	4	$3,257
Retrocommissioning, Lighting	NWS	Elec	Lighting BUS	0	0	53,114,130	-	5,311	0.94	-	5	$761
Radiant Barrier	WS	Elec	HVAC BUS	No Radiant Barrier R-19	Install Radiant Barrier-Improves R-Value insulation	63,930,000	-	6,393	0.83	-	20	$3,957
Window replacement	WS	Elec	HVAC BUS	0	0	305,754,570	-	30,575	6.41	-	20	$13,394
Low Flow Faucet Aerators - Electric - Commercial	NWS	Elec	Water Heating BUS	2.2 GPM Aerator (Federal Code)	1.5 GPM Aerator	1,736,550	-	174	0.02	-	9	$12
Low Flow Faucet Aerators - Gas - Commercial	NWS	Gas	Water Heating BUS	2.2 GPM Aerator (Federal Code)	1.5 GPM Aerator	-	7,714,844	-	-	77	9	$12
Office Electronics - Copier, Printer, Max Efficiency	NWS	Elec	Miscellaneous BUS	0	0	3,221,000	-	322	0.02	-	5	$100
Office Electronics - Monitor, Max Efficiency	NWS	Elec	Miscellaneous BUS	0	0	13,729,770	-	1,373	0.18	-	4	$137
Office Electronics - Personal Computer, Max Efficiency	NWS	Elec	Miscellaneous BUS	0	0	1,994,250	-	199	0.03	-	4	$152
Wall Insulation	WS	Elec	HVAC BUS	R-11	R-13 + R-7.5 (Code)	67,070,000	-	6,707	1.03	-	20	$1,741
Task Lighting	NWS	Elec	Lighting BUS	No Task Lighting	Delamp And Install Task Lighting	25,510,000	-	2,551	0.45	-	13	$2,754
Water Heater, Tank Blanket-Insulation - Electric	NWS	Elec	Water Heating BUS	No Tank Insulation	R-6.9	2,380,000	-	238	0.03	-	10	$257
Water Heater, Tank Blanket-Insulation - Gas	NWS	Gas	Water Heating BUS	No Tank Insulation	R-6.9	-	9,667,969	-	-	97	10	$377

Measure	Weath. Senstv.	Fuel	End Use effected	Baseline Description	Efficient Description	SOURCE BTU Elec savings/ year/ cust	SOURCE BTU Nat Gas savings/ year/ cust	kWh savings/ year/ cust	kW savings/ year/ cust	Nat Gas CCF savings/ year/ cust	Measure Life	Incr. Cost
Optimizing Process Cooling	NWS	Elec	Process BUS	0	0	163,250,000	-	16,325	2.24	-	15	$1,568
Optimizing Process Heating	NWS	Elec	Process BUS	0	0	70,530,000	-	7,053	0.97	-	15	$760
Compressed Air Optimization - Leak Audit, New Compressors, Improved Controls	NWS	Elec	Air Comp BUS	0	0	2,000,000	-	200	0.03	-	10	$16
Livestock Waterer	NWS	Elec	Miscellaneous BUS	Inefficient Waterer	Energy Efficient Waterer (150 beef cattle)	2,900,000	-	290	-	-	10	$671
Tractor Heater Timers	WS	Elec	Heating BUS	No Heater	Engine Block Heater (tractors)	5,760,000	-	576	-	-	10	$35
LED Street Lighting - 80W GE Cobra head	NWS	Elec	Ext Lighting BUS	100 W HPS (high pressure sodium lamp & fixture)	LED Street Lighting - 80W GE Cobra head	1,840,000	-	184	-	-	13	$485
LED Street Lighting - 169W GE Cobra head	NWS	Elec	Ext Lighting BUS	250 W HPS (high pressure sodium lamp & fixture)	LED Street Lighting - 169W GE Cobra head	5,240,000	-	524	-	-	13	$607
LED Street Lighting - 205W GE Area Light	NWS	Elec	Ext Lighting BUS	400 W Pulse Start MH (metal halide)	LED Street Lighting - 205W GE Area Light	9,800,000	-	980	-	-	13	$1,688
Induction Street Lighting	NWS	Elec	Ext Lighting BUS	100 W HPS (high pressure sodium lamp & fixture)	Icetron 85 W Induction	1,920,000	-	192	0.85	-	25	$400
Microturbines	NWS	Elec	Fuel Generation	No Microturbine	200 kW system	15,768,000,000	-	1,576,800	200.00	-	3	$380,000
Fuel Cells	NWS	Elec	Fuel Generation	No Fuel Cell	PA 200 kW system, 30% efficiency	15,768,000,000	-	1,576,800	200.00	-	5	$700,000
Ice Storage	WS	Elec	Energy Storage - Thermal, Cold	No Storage	52 MW Distributed Storage Units	71,429	-	7	7.14	-	18	$15,000
Battery Storage - Commercial	WS	Elec	Energy Storage	No Storage	Ni-Cad battery (100 kW)	1,000,000	-	100	100.00	-	10	$220,000
PV (Commercial 150 kW system)	WS	Elec	Solar	No Photovoltaic system	150 kW PV system, 17% capacity factor	2,233,800,000	-	223,380	150.00	-	25	$748,000
Small Windmills - Commercial	WS	Elec	Wind	No windmill	10 kW wind system, 17% capacity factor	148,920,000	-	14,892	-	-	25	$40,000
CHP - Microturbines	NWS	Elec	Fuel Generation	No CHP	200 kW system	15,768,000,000	97,656,250	1,576,800	200.00	977	3	$612,000

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Airtight Can Lights	8	Light	0.43				1.06				0.63			
ASHP - SEER 14	3	ton	1.40				1.40				-			
ASHP - SEER 15	3	ton	1.30				1.30				-			
ASHP - SEER 16	3	ton	1.09				1.09				-			
ASHP - SEER 17	3	ton	0.95				0.95				-			
ASHP - SEER 18	3	ton	0.78				0.78				-			
Basement Wall Insulation	2	1000 sq ft basement wall area	0.81				2.24				1.44			
Ceiling Fan	1	fan	2.09				2.10				0.01			
Cool roof	2	1000 sq ft roof area	0.15				(0.12)				(0.27)			
Crawlspace Wall Insulation	1	1000 sq ft crawl wall area	0.94				1.70				0.75			
DFHP - SEER 14	3	ton	1.77				1.63				(0.14)			
DFHP - SEER 15	3	ton	1.83				1.61				(0.21)			
DFHP - SEER 16	3	ton	1.34				1.25				(0.09)			
DFHP - SEER 17	3	ton	1.22				1.11				(0.10)			
DFHP - SEER 18	3	ton	0.91				0.85				(0.06)			
Door weatherstripping	2	Door	0.28				0.69				0.41			
Duct Insulation	2	1000 sq ft cond floor area	1.46				3.51				2.04			
Duct location	2	1000 sq ft cond floor area	0.49				1.09				0.60			

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Duct sealing 15% leakage base	2	1000 sq ft cond floor area	2.32				5.25				2.92			
Duct sealing 20% leakage base	2	1000 sq ft cond floor area	3.61				8.13				4.52			
Duct sealing 25% leakage base	2	1000 sq ft cond floor area	4.91				11.00				6.09			
Duct sealing 30% leakage base	2	1000 sq ft cond floor area	6.18				13.83				7.66			
ECM blower - continuous	3	ton	2.91				2.33				(0.58)			
ECM blower - intermittent	3	ton	0.66				0.53				(0.13)			
Energy Star Door	2	Door	0.08				0.19				0.11			
Floor Insulation	2	1000 sq ft floor area	0.01				0.40				0.39			
Furnace-AC - SEER 14	3	ton	2.10				1.96				(0.15)			
Furnace-AC - SEER 15	3	ton	1.09				0.94				(0.15)			
Furnace-AC - SEER 16	3	ton	0.61				0.47				(0.14)			
Furnace-AC - SEER 17	3	ton	0.62				0.49				(0.13)			
High efficiency furnace with ECM	100	kBtu/hr capacity	0.17				1.14				0.98			
High efficiency furnace without ECM	100	kBtu/hr capacity	-				1.86				1.86			

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Infiltration reduction - 30%	2	ton	1.43				3.50				2.07			
Infiltration reduction - 30% and attic insulation	2	ton	0.28				0.69				0.40			
Infiltration reduction - 50%	2	ton	2.38				5.84				3.45			
HVAC Maintenance and Tune-up	3	ton	0.63				1.75				1.12			
PTAC 10.3 EER	1	ton	1.22				1.22				-			
PTAC 9.3 EER	1	ton	1.72				1.72				-			
PTHP 10.9 EER	1	ton	1.31				1.31				-			
PTHP 9.1 EER	1	ton	1.61				1.61				-			
RCA 10% improvement	3	ton	0.78				0.78				-			
RCA 15% improvement	3	ton	0.37				0.37				-			
RCA 5% improvement	3	ton	0.47				0.47				-			
Roof Insulation	2	1000 sq ft roof area	0.31				0.73				0.42			
Setback thermostat - full setback	2	1000 sq ft cond floor area	5.49				13.59				8.10			
Setback thermostat - moderate setback	2	1000 sq ft cond floor area	3.38				7.74				4.36			
Wall Insulation	2	1000 sq ft wall area	1.49				3.59				2.10			

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Whole House Fan	2	1000 sq ft cond floor area	0.06				0.06				(0.00)			
Window Film	4	1000 sq ft cond floor area	0.24				(1.49)				(1.73)			
13W CFL (60W incand equiv) Pre-EISA	1	lamp	5.62				5.62				5.62			
13W CFL (60W incand equiv) POST-EISA	1	lamp	11.48				11.48				11.48			
18W CFL (75W incand equiv) Pre-EISA	1	lamp	6.81				6.81				6.81			
18W CFL (75W incand equiv) POST-EISA	1	lamp	13.63				13.63				13.63			
23W CFL (100W incand equiv) Pre-EISA	1	lamp	9.20				9.20				9.20			
23W CFL (100W incand equiv) POST-EISA	1	lamp	18.65				18.65				18.65			
CFL bulbs specialty	1	lamp	1.60				1.60				1.60			
CFL bulbs hgh wattage	1	lamp	2.74				2.74				2.74			
CFL Reflector	1	lamp	1.23				1.23				1.23			
LED Downlight	1	fixture	0.08				0.08				0.08			
LED Lamps	1	lamp	0.13				0.13				0.13			
CFL fixtures	1	fixture	0.82				0.82				0.82			
LED Night Light	1	fixture	0.46				0.46				0.46			
LED Task Light	1	fixture												

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
			0.25				0.25				0.25			
Torchiere Floor Lamps - CFL	1	fixture	1.56				1.56				1.56			
LED Holiday Lights	1	string	0.35				0.35				0.35			
T8 4ft 1 lamp	1	fixture	0.16				0.16				0.16			
T8 4ft 2 lamp	1	fixture	0.13				0.13				0.13			
T8 4ft 3 lamp	1	fixture	0.20				0.20				0.20			
T8 4ft 4 lamp	1	fixture	0.22				0.22				0.22			
T8 8ft 1 lamp	1	fixture	0.14				0.14				0.14			
T8 8ft 2 lamp	1	fixture	0.08				0.08				0.08			
Photosensor Control - Outdoor Lighting	1	sensor	0.46				0.46				0.46			
Metal Halide Outdoor Lighting	35	Watt	0.98				0.98				0.98			
Electric Water Heater EF 0.93+	1	unit	1.97				1.97				1.97			
Heat Pump Water Heaters	1	unit	1.59				1.59				1.59			
High Efficiency Gas Water Heater	1	unit	-				1.28				1.28			
Super Efficiency Gas Water Heater	1	unit	-				1.32				1.32			
Instant Gas Water Heater	1	unit	-				1.33				1.33			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Pipe Wrap - Gas water heater	10	LF	-				10.31				10.31			
Pipe Wrap - Electric water heater	10	LF	16.95				16.95				16.95			
Low Flow Showerheads - Gas water heater	1	unit	-				10.47				10.47			
Low Flow Showerheads - Electric water heater	1	unit	14.39				14.39				14.39			
Low Flow Faucet Aerators - Gas water heater	1	unit	-				17.73				17.73			
Low Flow Faucet Aerators - Electric water heater	1	unit	24.55				24.55				24.55			
Shower Start - Gas water heater	1	unit	-				0.56				0.56			
Shower Start - Electric water heater	1	unit	0.20				0.20				0.20			
Gravity Film Heat Exchanger GFX - Electric water heater	1	unit	0.64				0.64				0.64			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Gravity Film Heat Exchanger GFX - Gas water heater	1	unit	-				0.47				0.47			
Energy Star Room AC	6,000	Btu	1.26				1.26				-			
Pool Pump and Motor Single Speed	2	hp	3.84				3.84				3.84			
Pool Pump and motor w auto controls - multi speed	2	hp	0.88				0.88				0.88			
VFDs on Residential Swimming Pool Pumps	2	hp	1.78				1.78				1.78			
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Gas dryer	1	unit	0.01				0.27				0.27			
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Electric dryer	1	unit	0.16				0.34				0.34			
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Gas Dryer	1	unit	0.31				0.39				0.39			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Electric Dryer	1	unit	0.46				0.46				0.46			
Clothes Washer CEE Tier2, Gas water heater, Gas dryer	1	unit	0.01				0.24				0.24			
Clothes Washer CEE Tier2, Gas water heater, Electric dryer	1	unit	0.16				0.31				0.31			
Clothes Washer CEE Tier2, Electric Water heater, Gas Dryer	1	unit	0.26				0.34				0.34			
Clothes Washer CEE Tier2, Electric Water heater, Electric Dryer	1	unit	0.41				0.41				0.41			
Clothes Washer CEE Tier3, Gas water heater, Gas dryer	1	unit	0.01				0.22				0.22			
Clothes Washer CEE Tier3, Gas water heater, Electric dryer	1	unit	0.16				0.29				0.29			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Clothes Washer CEE Tier3, Electric Water heater, Gas Dryer	1	unit	0.23				0.31				0.31			
Clothes Washer CEE Tier3, Electric Water heater, Electric Dryer	1	unit	0.37				0.37				0.37			
Smart Strip plug outlet	1	unit	1.01				1.01				1.01			
Refrigerators Energy Star - Refrig. Only - single door	1	unit	0.49				0.49				0.49			
Refrigerators Energy Star - Refrig-Freezer - single door	1	unit	0.49				0.49				0.49			
Refrigerators-Freezers Energy Star - Side by Side	1	unit	0.62				0.62				0.62			
Refrigerators-Freezers Energy Star - Top Freezer	1	unit	0.45				0.45				0.45			
Freezers Energy Star - Bottom Freezer	1	unit	0.58				0.58				0.58			
Freezers Energy Star - Chest Freezer	1	unit	0.28				0.28				0.28			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Freezers Energy Star - Upright Freezer	1	unit	0.49				0.49				0.49			
Refrigerator recycling	1	unit	3.75				3.75				3.75			
Freezer recycling	1	unit	3.31				3.31				3.31			
Room AC recycling	1	unit	1.71				1.71				-			
Dehumidifier recycling	1	unit	0.97				0.97				0.97			
Energy Star Dehumidifier	1	unit	0.56				0.56				0.56			
ES Dishwasher Tier 1 - gas water heater	1	unit	0.19				0.58				0.58			
ES Dishwasher Tier 1 - elec water heater	1	unit	0.33				0.33				0.33			
ES Dishwasher Tier 2 - gas water heater	1	unit	0.19				0.60				0.60			
ES Dishwasher Tier 2 - elec water heater	1	unit	0.37				0.37				0.37			
Clothes Dryers - Gas	1	unit	-				0.20				0.20			
Clothes Dryers - Electric	1	unit	0.64				0.64				0.64			
Residential PV	1	unit	0.30				0.30				0.30			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Solar Domestic Hot Water - Electric Water Heater	40	SF	0.44				0.44				0.44			
Solar Domestic Hot Water - Gas Water Heater	40	SF	-				0.27				0.27			
Outdoor Ligthing - Photovoltaics	1	fixture	0.72				0.72				0.72			
Solar Attic Fan	20	Watt	0.03				0.03				-			
Radiant Barrier	1	unit	0.69				1.25				0.56			
Geothermal HP Desuperheater	1	unit	2.76				2.76				2.76			
High Intensity Discharge Lamps (HID) - Exterior	1	unit	1.76				1.76				1.76			
Occupancy Sensor	1	unit	1.43				1.43				1.43			
Lighting Timeclock	1	unit	0.64				0.64				0.64			
Multiple Drawer Refrigerators	1	unit	0.66				0.66				0.66			
Home Electronics - Copier, Printer, Energy Star	1	unit	0.26				0.26				0.26			

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Home Electronics - DVD-VCR-Audio-Set-top box, Energy Star	1	unit	0.52				0.52				0.52			
Home Electronics - Monitor, Energy Star	1	unit	0.62				0.62				0.62			
Home Electronics - Television, CEE Tier III	1	unit	0.21				0.21				0.21			
1-Watt Standby Power	1	unit	0.35				0.35				0.35			
EnergyStar Battery Charger	1	unit	0.30				0.30				0.30			
Water Heater, Tank Blanket-Insulation - Electric	1	unit	4.28				4.28				4.28			
Water Heater, Tank Blanket-Insulation - Gas	1	unit	-				4.02				4.02			
Water Heater, Thermostat Setback - Electric	1	unit	3.65				3.65				3.65			
Water Heater, Thermostat Setback - Gas	1	unit	-				3.50				3.50			
Water Heater, Timer - Electric	1	unit	0.75				0.75				0.75			

Measure	Number of units	Unit	Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
			Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Water Heater, Timer - Gas	1	unit	-				0.67				0.67			
Heat Pump Clothes Dryer	1	unit	0.40				0.40				0.40			
Small Windmills - Residential	3	kW	0.31				0.31				0.31			
Battery Storage - Residential	3	kW	0.43				0.43				0.43			
GCHP replacing Elec Resist and SEER13	1	unit	1.18				1.18				-			
GCHP replacing Gas Furnace and SEER13	1	unit	(0.29)				0.56				0.85			
AC less than 65,000 1 Ph	263	ton		1.36	1.33	1.09		1.36	1.33	1.09		-	-	-
AC less than 65,000 3 Ph	263	ton		0.51	0.47	0.38		0.51	0.47	0.38		-	-	-
AC greater than 760,000	263	ton		0.83	1.06	0.87		0.83	1.06	0.87		-	-	-
AC 135,000 - 240,000	263	ton		0.76	1.22	1.00		0.76	1.22	1.00		-	-	-
AC 240,000 - 760,000	263	ton		0.64	0.62	0.50		0.64	0.62	0.50		-	-	-
AC 65,000 - 135,000	263	ton		0.51	0.51	0.42		0.51	0.51	0.42		-	-	-
Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	558	ton		0.62	4.45	3.64		0.62	4.45	3.64		-	-	-
Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	558	ton		0.59	5.10	4.17		0.59	5.10	4.17		-	-	-

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	558	ton		0.42	5.37	4.39		0.42	5.37	4.39		-	-	-
Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	558	ton		0.81	4.37	3.57		0.81	4.37	3.57		-	-	-
Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	558	ton		0.57	5.13	4.19		0.57	5.13	4.19		-	-	-
Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	558	ton		0.41	5.37	4.39		0.41	5.37	4.39		-	-	-
Boiler	15,087	kBtu/hr		-	-	-		2.11	2.11	2.11		2.11	2.11	2.11
CHW reset 10 deg	687	ton		44.85	118.80	100.39		59.66	133.60	115.20		14.81	14.81	14.81
CHW reset 5 deg	687	ton		44.33	98.99	83.66		56.18	110.84	95.50		11.85	11.85	11.85
Cool roof	82	1000 sq ft roof area		0.36	0.33	0.28		0.06	0.03	(0.02)		(0.30)	(0.30)	(0.30)
Demand Controlled Ventilation	98	1000 sq ft cond floor area		2.19	2.04	1.72		28.88	28.72	28.41		26.68	26.68	26.68
Economizer	279	ton		0.47	0.44	0.37		0.39	0.36	0.29		(0.08)	(0.08)	(0.08)
Efficient Condenser	68	ton		0.78	1.38	1.18		0.78	1.38	1.18		-	-	-
EMS	271	1000 sq ft cond floor area		0.40	3.13	2.64		1.04	3.77	3.28		0.64	0.64	0.64
Engineered CKV hood	3	100 cfm red		5.31	4.98	4.27		18.75	18.42	17.71		13.44	13.44	13.44
Floating Head Pressure Control	68	ton		53.68	142.77	120.75		53.68	142.77	120.75		-	-	-

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Gas Engine Chiller	712	ton		0.03	0.03	0.02		0.44	0.44	0.43		0.41	0.41	0.41
Gas Furnace	3,970	kBtu/hr		0.03	0.03	0.03		1.40	1.40	1.40		1.37	1.37	1.37
GSHP under 135,000 17EER	176	ton		0.97	1.24	1.05		0.97	1.24	1.05		-	-	-
GSHP under 135,000 19EER	176	ton		1.03	1.60	1.35		1.03	1.60	1.35		-	-	-
GSHP under 135,000 EER 17 ASHP base	176	ton		0.03	0.18	0.15		0.03	0.18	0.15		-	-	-
GSHP under 135,000 EER 19 ASHP base	176	ton		0.03	0.19	0.16		0.03	0.19	0.16		-	-	-
High Performance Glazing	16	100 sqft glazing		0.29	0.27	0.23		0.18	0.16	0.12		(0.11)	(0.11)	(0.11)
HP under 65,000 1 Ph	263	ton		1.39	1.39	1.18		1.39	1.39	1.18		-	-	-
HP under 65,000 3 Ph	263	ton		0.32	0.30	0.25		0.32	0.30	0.25		-	-	-
HP over 240,000	263	ton		0.91	1.20	1.01		0.91	1.20	1.01		-	-	-
HP 135,000 - 240,000	263	ton		0.90	1.04	0.88		0.90	1.04	0.88		-	-	-
HP 65,000 - 135,000	263	ton		0.58	0.60	0.50		0.58	0.60	0.50		-	-	-
Infrared Heater	4,213	kBtu/hr		3.06	5.70	4.89		7.02	9.66	8.84		3.96	3.96	3.96
Night Covers	232	LF of case		0.21	0.20	0.17		0.21	0.20	0.17		-	-	-
PTAC	126	ton		0.23	0.21	0.17		0.23	0.21	0.17		-	-	-
PTAC-HP	126	ton		0.29	0.27	0.23		0.29	0.27	0.23		-	-	-
Refrigerant charging correction	263	ton		4.64	4.33	3.70		4.64	4.34	3.71		0.00	0.00	0.00

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Roof Insulation	84	1000 sq ft roof area		0.35	0.32	0.27		1.84	1.82	1.77		1.49	1.49	1.49
Setback-Setup Thermostat	98	1000 sq ft cond floor area		4.35	8.17	6.91		19.35	23.17	21.90		15.00	15.00	15.00
VFD Fan - Large Building Package	239	per fan hp		0.65	5.21	4.41		(0.65)	3.91	3.10		(1.30)	(1.30)	(1.30)
VFD Pump - Large Building Package	89	per CHW pump hp		1.83	17.74	15.00		2.04	17.95	15.21		0.21	0.21	0.21
Wtr-Cool cent Chiller over 300 ton 0.46 kWperTon with 0.35 kWperTon IPLV	558	ton		0.52	4.67	3.82		0.52	4.67	3.82		-	-	-
Wtr-Cool cent Chiller over 300 ton 0.52 kWperTon with 0.39 kWperTon IPLV	558	ton		0.82	5.02	4.10		0.82	5.02	4.10		-	-	-
Wtr-Cool cent Chiller over 300 ton 0.58 kWperTon with 0.41 kWperTon IPLV	558	ton		1.68	6.38	5.21		1.68	6.38	5.21		-	-	-

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Wtr-Cool cent Chiller 150 - 300 ton 0.51 kWperTon with 0.39 kWperTon IPLV	558	ton		0.41	4.01	3.28		0.41	4.01	3.28		-	-	-
Wtr-Cool cent Chiller 150 - 300 ton 0.57 kWperTon with 0.43 kWperTon IPLV	558	ton		0.67	4.41	3.61		0.67	4.41	3.61		-	-	-
Wtr-Cool cent Chiller 150 - 300 ton 0.63 kWperTon with 0.45 kWperTon IPLV	558	ton		1.67	6.66	5.44		1.67	6.66	5.44		-	-	-
Wtr-Cool Centrifugal Chiller under 150 ton 0.56 kWperTon with 0.43 kWperTon IPLV	558	ton		0.32	3.48	2.84		0.32	3.48	2.84		-	-	-
Wtr-Cool Centrifugal Chiller under 150 ton 0.63 kWperTon with 0.48 kWperTon IPLV	558	ton		0.55	4.02	3.28		0.55	4.02	3.28		-	-	-

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Wtr-Cool Centrifugal Chiller under 150 ton 0.7 kWperTon with 0.5 kWperTon IPLV	558	ton		1.75	8.00	6.54		1.75	8.00	6.54		-	-	-
Wtr-Cool screw chiller under 150 ton 0.63 kWperTon with 0.44 kWperTon IPLV	558	ton		0.36	4.25	3.48		0.36	4.25	3.48		-	-	-
Wtr-Cool screw chiller under 150 ton 0.71 kWperTon with 0.5 kWperTon IPLV	558	ton		0.50	4.13	3.37		0.50	4.13	3.37		-	-	-
Wtr-Cool screw chiller under 150 ton 0.79 kWperTon with 0.55 kWperTon IPLV	558	ton		0.82	3.78	3.09		0.82	3.78	3.09		-	-	-

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Wtr-Cool screw chiller over 300 ton 0.51 kWperTon with 0.36 kWperTon IPLV	558	ton		0.63	6.07	4.96		0.63	6.07	4.96		-	-	-
Wtr-Cool screw chiller over 300 ton 0.58 kWperTon with 0.4 kWperTon IPLV	558	ton		0.81	5.46	4.46		0.81	5.46	4.46		-	-	-
Wtr-Cool screw chiller over 300 ton 0.64 kWperTon with 0.45 kWperTon IPLV	558	ton		1.15	4.28	3.50		1.15	4.28	3.50		-	-	-
Wtr-Cool screw chiller 150 - 300 ton 0.57 kWperTon with 0.4 kWperTon IPLV	558	ton		0.48	5.08	4.15		0.48	5.08	4.15		-	-	-

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Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Wtr-Cool screw chiller 150 - 300 ton 0.65 kWperTon with 0.45 kWperTon IPLV	558	ton		0.63	4.73	3.87		0.63	4.73	3.87		-	-	-
Wtr-Cool screw chiller 150 - 300 ton 0.72 kWperTon with 0.5 kWperTon IPLV	558	ton		0.96	4.01	3.28		0.96	4.01	3.28		-	-	-
WLHP under 17,000	242	ton		1.77	1.64	1.39		1.68	1.55	1.30		(0.09)	(0.09)	(0.09)
WLHP 17,000-65,000	242	ton		1.27	1.18	1.00		1.21	1.12	0.94		(0.06)	(0.06)	(0.06)
WLHP 65,000-135,000	242	ton		1.24	1.15	0.97		1.18	1.09	0.91		(0.06)	(0.06)	(0.06)
Delamping with 4ft T12 to T8	1	lamp		1.12	1.12	1.08		1.12	1.12	1.08		1.12	1.12	1.08
Delamping with 8ft T12 to T8	1	lamp		1.27	1.27	1.22		1.27	1.27	1.22		1.27	1.27	1.22
HPT8 4ft 1 lamp, T8 to HPT8	1	fixture		0.27	0.27	0.26		0.27	0.27	0.26		0.27	0.27	0.26
HPT8 4ft 2 lamp, T8 to HPT8	1	fixture		0.41	0.41	0.39		0.41	0.41	0.39		0.41	0.41	0.39
HPT8 4ft 3 lamp, T8 to HPT8	1	fixture		0.30	0.30	0.29		0.30	0.30	0.29		0.30	0.30	0.29

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
HPT8 4ft 4 lamp, T8 to HPT8	1	fixture		0.42	0.42	0.41		0.42	0.42	0.41		0.42	0.42	0.41
HPT8 4ft 1 lamp, T12 to HPT8	1	fixture		0.90	0.90	0.86		0.90	0.90	0.86		0.90	0.90	0.86
HPT8 4ft 2 lamp, T12 to HPT8	1	fixture		1.08	1.08	1.04		1.08	1.08	1.04		1.08	1.08	1.04
HPT8 4ft 3 lamp, T12 to HPT8	1	fixture		1.26	1.26	1.21		1.26	1.26	1.21		1.26	1.26	1.21
HPT8 4ft 4 lamp, T12 to HPT8	1	fixture		1.39	1.39	1.33		1.39	1.39	1.33		1.39	1.39	1.33
T12 8ft 1 lamp retrofit to HPT8 T8 4ft 2 lamp	1	fixture		0.88	0.88	0.85		0.88	0.88	0.85		0.88	0.88	0.85
T12 8ft 2 lamp retrofit to HPT8 T8 4ft 4 lamp	1	fixture		0.40	0.40	0.38		0.40	0.40	0.38		0.40	0.40	0.38
T12HO 8ft 1 lamp retrofit to HPT8 T8 4ft 2 lamp	1	fixture		2.29	2.29	2.20		2.29	2.29	2.20		2.29	2.29	2.20
T12HO 8ft 2 lamp retrofit to HPT8 T8 4ft 4 lamp	1	fixture		2.39	2.39	2.30		2.39	2.39	2.30		2.39	2.39	2.30
LW HPT8 4ft 1 lamp, T8LWT8	1	fixture		0.42	0.42	0.41		0.42	0.42	0.41		0.42	0.42	0.41
LW HPT8 4ft 2 lamp, T8LWT8	1	fixture		0.66	0.66	0.64		0.66	0.66	0.64		0.66	0.66	0.64
LW HPT8 4ft 3 lamp, T8LWT8	1	fixture		0.58	0.58	0.55		0.58	0.58	0.55		0.58	0.58	0.55

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
LW HPT8 4ft 4 lamp	1	fixture		0.83	0.83	0.79		0.83	0.83	0.79		0.83	0.83	0.79
1 Lamp T5 with Elec Ballast replacing T12	1	fixture		0.22	0.22	0.21		0.22	0.22	0.21		0.22	0.22	0.21
2 Lamp T5 replacing T12	1	fixture		0.22	0.22	0.21		0.22	0.22	0.21		0.22	0.22	0.21
3 Lamp T5 replacing T12	1	fixture		0.43	0.43	0.41		0.43	0.43	0.41		0.43	0.43	0.41
4 Lamp T5 replacing T12	1	fixture		0.38	0.38	0.37		0.38	0.38	0.37		0.38	0.38	0.37
1 Lamp T5 HO with Elec Ballast replacing T12	1	fixture		0.25	0.25	0.24		0.25	0.25	0.24		0.25	0.25	0.24
2 Lamp T5HO replacing T12	1	fixture		0.27	0.27	0.26		0.27	0.27	0.26		0.27	0.27	0.26
3 Lamp T5HO replacing T12	1	fixture		0.28	0.28	0.27		0.28	0.28	0.27		0.28	0.28	0.27
4 Lamp T5HO replacing T12	1	fixture		0.46	0.46	0.44		0.46	0.46	0.44		0.46	0.46	0.44
Occupancy Sensors under 500 W	1	device		1.81	1.81	1.74		1.81	1.81	1.74		1.81	1.81	1.74
Occupancy Sensors over 500 W	1	device		2.27	2.27	2.18		2.27	2.27	2.18		2.27	2.27	2.18
Central Lighting Control	10,000	SF		2.30	2.30	2.20		2.30	2.30	2.20		2.30	2.30	2.20
Switching Controls for Multilevel Lighting	10,000	SF		1.44	1.44	1.38		1.44	1.44	1.38		1.44	1.44	1.38
Daylight Sensor controls	10,000	SF		2.66	2.66	2.55		2.66	2.66	2.55		2.66	2.66	2.55

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Timeclocks	1	device		0.88	0.88	0.84		0.88	0.88	0.84		0.88	0.88	0.84
High Bay 3L T5HO Replacing 250W HID	1	fixture		1.35	1.35	1.29		1.35	1.35	1.29		1.35	1.35	1.29
High Bay 4LT5HO Replacing 400W HID	1	fixture		2.48	2.48	2.38		2.48	2.48	2.38		2.48	2.48	2.38
High Bay 6L T5HO replacing 400W HID	1	fixture		0.58	0.58	0.55		0.58	0.58	0.55		0.58	0.58	0.55
High Bay 6L T5HO Double fixture replace 1000W HID	1	fixture		1.12	1.12	1.08		1.12	1.12	1.08		1.12	1.12	1.08
42W 8 Lamp Hi Bay CFL Replacing 400W HID	1	fixture		0.47	0.47	0.45		0.47	0.47	0.45		0.47	0.47	0.45
Pulse Start Metal Halide 150-200W retrofit only	1	fixture		0.95	0.95	0.91		0.95	0.95	0.91		0.95	0.95	0.91
Pulse Start Metal Halide 320W retrofit only	1	fixture		1.27	1.27	1.22		1.27	1.27	1.22		1.27	1.27	1.22
Pulse Start Metal Halide 750W retrofit only	1	fixture		2.94	2.94	2.82		2.94	2.94	2.82		2.94	2.94	2.82
Ceramic Metal Halide 20-100W	1	fixture		1.07	1.07	1.02		1.07	1.07	1.02		1.07	1.07	1.02

Measure	Number of units	Unit	Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
			Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Ceramic Metal Halide Integral Ballast	1	lamp		0.25	0.25	0.24		0.25	0.25	0.24		0.25	0.25	0.24
Exterior HID replacement to 175W HID retrofit	1	fixture		0.36	0.36	0.35		0.36	0.36	0.35		0.36	0.36	0.35
Exterior HID replacement above 175W to 250W HID retrofit	1	fixture		0.44	0.44	0.42		0.44	0.44	0.42		0.44	0.44	0.42
Exterior HID replacement above 250W to 400W HID retrofit	1	fixture		0.48	0.48	0.46		0.48	0.48	0.46		0.48	0.48	0.46
Garage HID replacement to 175W HID retrofit	1	fixture		0.82	0.82	0.79		0.82	0.82	0.79		0.82	0.82	0.79
Garage HID replacement above 175W to 250W HID retrofit	1	fixture		1.01	1.01	0.97		1.01	1.01	0.97		1.01	1.01	0.97
Garage HID replacement above 250W to 400W HID retrofit	1	fixture		1.09	1.09	1.04		1.09	1.09	1.04		1.09	1.09	1.04
Exterior Lighting BiLevel Control w Override, 150 to 1000 HID	1	fixture		1.13	1.13	1.09		1.13	1.13	1.09		1.13	1.13	1.09

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Sports Field Lighting HiLo Control	1	fixture		0.17	0.17	0.16		0.17	0.17	0.16		0.17	0.17	0.16
CFL Fixture	1	fixture		4.10	4.10	3.93		4.10	4.10	3.93		4.10	4.10	3.93
CFL Screw in	1	lamp		6.56	6.56	6.29		6.56	6.56	6.29		6.56	6.56	6.29
CFL Screw high wattage	1	lamp		3.23	3.23	3.10		3.23	3.23	3.10		3.23	3.23	3.10
CFL Reflector Flood	1	lamp		3.28	3.28	3.15		3.28	3.28	3.15		3.28	3.28	3.15
LED Lamps - pre-EISA	1	lamp		1.66	1.66	1.59		1.66	1.66	1.59		1.66	1.66	1.59
LED Lamps - post-EISA	1	lamp		0.37	0.37	0.35		0.37	0.37	0.35		0.37	0.37	0.35
LED Exit Signs Electronic Fixtures (Retrofit Only)	1	fixture		5.28	5.28	5.07		5.28	5.28	5.07		5.28	5.28	5.07
LED Pedestrian Signals	1	lamp		0.56	0.56	0.53		0.56	0.56	0.53		0.56	0.56	0.53
Light Tube	1	fixture		0.45	0.45	0.43		0.45	0.45	0.43		0.45	0.45	0.43
LED Case lighting	1	door		0.94	0.94	0.90		0.94	0.94	0.90		0.94	0.94	0.90
LED Case lighting with motion sensors	1	door		0.45	0.45	0.43		0.45	0.45	0.43		0.45	0.45	0.43
Small High Efficiency Gas Water Heater	45	MBH		-	-	-		1.84	1.84	1.84		1.84	1.84	1.84
Large High Efficiency Gas Water Heater	200	MBH		-	-	-		7.72	7.72	7.72		7.72	7.72	7.72
Instant Gas Water Heater	150	MBH		-	-	-		5.33	5.33	5.33		5.33	5.33	5.33

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
HP Water Heater 10 to 50 MBH	30,000	Btuh		2.28	2.28	2.19		2.28	2.28	2.19		2.28	2.28	2.19
HP Water Heater 50 to 100 MBH	75,000	Btuh		2.44	2.44	2.35		2.44	2.44	2.35		2.44	2.44	2.35
HP Water Heater 100 to 300 MBH	200,000	Btuh		3.65	3.65	3.50		3.65	3.65	3.50		3.65	3.65	3.50
HP Water Heater 300 to 500 MBH	400,000	Btuh		4.35	4.35	4.17		4.35	4.35	4.17		4.35	4.35	4.17
HP Water Heater above 500 MBH	600,000	Btuh		4.35	4.35	4.17		4.35	4.35	4.17		4.35	4.35	4.17
High Efficiency Pool Heater	1,000	Mbtu		-	-	-		5.47	5.47	5.47		5.47	5.47	5.47
Steam Traps	1	trap		-	-	-		4.33	4.33	4.33		4.33	4.33	4.33
Pool Covers	2,000	SF		-	-	-		3.10	3.10	3.10		3.10	3.10	3.10
Pipe Wrap - Steam Boiler	10	LF		-	-	-		6.50	6.50	6.50		6.50	6.50	6.50
Pipe Wrap - Hot Water Boiler	10	LF		-	-	-		24.38	24.38	24.38		24.38	24.38	24.38
Motors 1 to 5 HP	3	hp		0.86	0.86	0.83		0.86	0.86	0.83		0.86	0.86	0.83
Motors 7.5 to 20 HP	13	hp		1.23	1.23	1.18		1.23	1.23	1.18		1.23	1.23	1.18
Motors 25 to 100 HP	54	hp		1.27	1.27	1.21		1.27	1.27	1.21		1.27	1.27	1.21
Motors 125 to 250 HP	181	hp		1.51	1.51	1.45		1.51	1.51	1.45		1.51	1.51	1.45
Pumps HP 1.5	1	unit		0.58	0.58	0.55		0.58	0.58	0.55		0.58	0.58	0.55
Pumps HP 2	1	unit		0.77	0.77	0.74		0.77	0.77	0.74		0.77	0.77	0.74

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Pumps HP 3	1	unit		1.16	1.16	1.11		1.16	1.16	1.11		1.16	1.16	1.11
Pumps HP 5	1	unit		1.98	1.98	1.90		1.98	1.98	1.90		1.98	1.98	1.90
Pumps HP 7.5	1	unit		2.03	2.03	1.95		2.03	2.03	1.95		2.03	2.03	1.95
Pumps HP 10	1	unit		4.06	4.06	3.90		4.06	4.06	3.90		4.06	4.06	3.90
Pumps HP 15	1	unit		3.46	3.46	3.32		3.46	3.46	3.32		3.46	3.46	3.32
Pumps HP 20	1	unit		3.17	3.17	3.04		3.17	3.17	3.04		3.17	3.17	3.04
VFD HP 1.5 Process Pumping	1	unit		0.75	0.75	0.72		0.75	0.75	0.72		0.75	0.75	0.72
VFD HP 2 Process Pumping	1	unit		0.88	0.88	0.85		0.88	0.88	0.85		0.88	0.88	0.85
VFD HP 3 Process Pumping	1	unit		1.18	1.18	1.13		1.18	1.18	1.13		1.18	1.18	1.13
VFD HP 5 Process Pumping	1	unit		1.73	1.73	1.66		1.73	1.73	1.66		1.73	1.73	1.66
VFD HP 7.5 Process Pumping	1	unit		1.90	1.90	1.82		1.90	1.90	1.82		1.90	1.90	1.82
VFD HP 10 Process Pumping	1	unit		2.51	2.51	2.41		2.51	2.51	2.41		2.51	2.51	2.41
VFD HP 15 Process Pumping	1	unit		3.33	3.33	3.19		3.33	3.33	3.19		3.33	3.33	3.19
VFD HP 20 Process Pumping	1	unit		3.21	3.21	3.08		3.21	3.21	3.08		3.21	3.21	3.08
VFD HP 25 Process Pumping	1	unit		3.54	3.54	3.40		3.54	3.54	3.40		3.54	3.54	3.40

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
VFD HP 30 Process Pumping	1	unit		3.77	3.77	3.62		3.77	3.77	3.62		3.77	3.77	3.62
VFD HP 40 Process Pumping	1	unit		3.58	3.58	3.44		3.58	3.58	3.44		3.58	3.58	3.44
VFD HP 50 Process Pumping	1	unit		4.05	4.05	3.88		4.05	4.05	3.88		4.05	4.05	3.88
VFDs on Commercial Swimming Pool Pumps	10	hp		5.88	5.88	5.64		5.88	5.88	5.64		5.88	5.88	5.64
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Gas dryer	1	unit		0.02	0.02	0.02		0.48	0.48	0.48		0.48	0.48	0.48
Clothes Washer Energy Star-CEE Tier1, Gas water heater, Electric dryer	1	unit		0.28	0.28	0.27		0.60	0.60	0.59		0.60	0.60	0.59
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Gas Dryer	1	unit		0.55	0.55	0.53		0.70	0.70	0.67		0.70	0.70	0.67

Measure	Number of units	Unit	Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
			Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Clothes Washer Energy Star-CEE Tier1, Electric Water heater, Electric Dryer	1	unit		0.81	0.81	0.78		0.81	0.81	0.78		0.81	0.81	0.78
Clothes Washer CEE Tier2, Gas water heater, Gas dryer	1	unit		0.02	0.02	0.02		0.44	0.44	0.44		0.44	0.44	0.44
Clothes Washer CEE Tier2, Gas water heater, Electric dryer	1	unit		0.28	0.28	0.27		0.55	0.55	0.54		0.55	0.55	0.54
Clothes Washer CEE Tier2, Electric Water heater, Gas Dryer	1	unit		0.47	0.47	0.45		0.61	0.61	0.59		0.61	0.61	0.59
Clothes Washer CEE Tier2, Electric Water heater, Electric Dryer	1	unit		0.73	0.73	0.70		0.73	0.73	0.70		0.73	0.73	0.70
Clothes Washer CEE Tier3, Gas water heater, Gas dryer	1	unit		0.01	0.01	0.01		0.39	0.39	0.39		0.39	0.39	0.39
Clothes Washer CEE Tier3, Gas water heater, Electric dryer	1	unit		0.27	0.27	0.26		0.51	0.51	0.50		0.51	0.51	0.50

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Clothes Washer CEE Tier3, Electric Water heater, Gas Dryer	1	unit		0.40	0.40	0.39		0.54	0.54	0.53		0.54	0.54	0.53
Clothes Washer CEE Tier3, Electric Water heater, Electric Dryer	1	unit		0.66	0.66	0.64		0.66	0.66	0.64		0.66	0.66	0.64
Smart Strip plug outlet	1	unit		0.53	0.53	0.51		0.53	0.53	0.51		0.53	0.53	0.51
Vending Equipment Controller	1	unit		1.21	1.21	1.16		1.21	1.21	1.16		1.21	1.21	1.16
Snack Machine Controller	1	unit		0.90	0.90	0.87		0.90	0.90	0.87		0.90	0.90	0.87
Beverage Reach-in Controller	1	unit		0.96	0.96	0.92		0.96	0.96	0.92		0.96	0.96	0.92
Energy Efficient Water Fountain	1	unit		0.01	0.01	0.01		0.01	0.01	0.01		0.01	0.01	0.01
ENERGY STAR Commercial Solid Door Refrigerators less than 15ft3	1	unit		0.57	0.57	0.54		0.57	0.57	0.54		0.57	0.57	0.54
ENERGY STAR Commercial Solid Door Refrigerators 15 to 30 ft3	1	unit		0.70	0.70	0.67		0.70	0.70	0.67		0.70	0.70	0.67

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
ENERGY STAR Commercial Solid Door Refrigerators 30 to 50ft3	1	unit		0.55	0.55	0.53		0.55	0.55	0.53		0.55	0.55	0.53
ENERGY STAR Commercial Solid Door Refrigerators more than 50ft3	1	unit		0.66	0.66	0.63		0.66	0.66	0.63		0.66	0.66	0.63
ENERGY STAR Commercial Solid Door Freezers less than 15ft3	1	unit		2.08	2.08	1.99		2.08	2.08	1.99		2.08	2.08	1.99
ENERGY STAR Commercial Solid Door Freezers 15 to 30 ft3	1	unit		1.14	1.14	1.09		1.14	1.14	1.09		1.14	1.14	1.09
ENERGY STAR Commercial Solid Door Freezers 30 to 50ft3	1	unit		1.65	1.64	1.58		1.65	1.64	1.58		1.65	1.64	1.58
ENERGY STAR Commercial Solid Door Freezers more than 50ft3	1	unit		2.81	2.81	2.70		2.81	2.81	2.70		2.81	2.81	2.70
ENERGY STAR Commercial Glass Door Refrigerators less than 15ft3	1	unit		1.51	1.51	1.45		1.51	1.51	1.45		1.51	1.51	1.45

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
ENERGY STAR Commercial Glass Door Refrigerators 15 to 30 ft3	1	unit		1.50	1.50	1.44		1.50	1.50	1.44		1.50	1.50	1.44
ENERGY STAR Commercial Glass Door Refrigerators 30 to 50ft3	1	unit		0.51	0.51	0.49		0.51	0.51	0.49		0.51	0.51	0.49
ENERGY STAR Commercial Glass Door Refrigerators more than 50ft3	1	unit		0.52	0.52	0.50		0.52	0.52	0.50		0.52	0.52	0.50
ENERGY STAR Commercial Glass Door Freezers less than 15ft3	1	unit		4.03	4.03	3.87		4.03	4.03	3.87		4.03	4.03	3.87
ENERGY STAR Commercial Glass Door Freezers 15 to 30 ft3	1	unit		1.10	1.10	1.06		1.10	1.10	1.06		1.10	1.10	1.06
ENERGY STAR Commercial Glass Door Freezers 30 to 50ft3	1	unit		1.55	1.55	1.49		1.55	1.55	1.49		1.55	1.55	1.49
ENERGY STAR Commercial Glass Door Freezers more than 50ft3	1	unit		1.62	1.62	1.55		1.62	1.62	1.55		1.62	1.62	1.55

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
ENERGY STAR Ice Machines less than 500 lbs	315	lb/24 hrs		1.44	1.44	1.38		1.44	1.44	1.38		1.44	1.44	1.38
ENERGY STAR Ice Machines 500 to 1000 lbs	704	lb/24 hrs		0.94	0.94	0.90		0.94	0.94	0.90		0.94	0.94	0.90
ENERGY STAR Ice Machines more than 1000 lbs	1,454	lb/24 hrs		1.58	1.58	1.52		1.58	1.58	1.52		1.58	1.58	1.52
Guest Room Energy Management, Electric Heating	1	unit		1.32	1.22	1.03		1.32	1.22	1.03		-	-	-
Guest Room Energy Management, Gas Heating	1	unit		0.47	0.44	0.37		1.04	1.00	0.93		0.56	0.56	0.56
ENERGY STAR Steam Cookers 3 Pan - Electric	1	unit		1.50	1.50	1.44		1.50	1.50	1.44		1.50	1.50	1.44
ENERGY STAR Steam Cookers 4 Pan - Electric	1	unit		1.63	1.63	1.56		1.63	1.63	1.56		1.63	1.63	1.56
ENERGY STAR Steam Cookers 5 Pan - Electric	1	unit		1.76	1.76	1.69		1.76	1.76	1.69		1.76	1.76	1.69
ENERGY STAR Steam Cookers 5 Pan - Gas	1	unit		-	-	-		2.31	2.31	2.31		2.31	2.31	2.31

Measure	Number of units	Unit	Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
			Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
ENERGY STAR Steam Cookers 6 Pan - Electric	1	unit		2.03	2.03	1.95		2.03	2.03	1.95		2.03	2.03	1.95
ENERGY STAR Steam Cookers 6 Pan - Gas	1	unit		-	-	-		2.36	2.36	2.36		2.36	2.36	2.36
ENERGY STAR Hot Holding Cabinets Half Size - Electric	1	unit		0.56	0.56	0.53		0.56	0.56	0.53		0.56	0.56	0.53
ENERGY STAR Hot Holding Cabinets Three Quarter Size - Electric	1	unit		0.88	0.88	0.85		0.88	0.88	0.85		0.88	0.88	0.85
ENERGY STAR Hot Holding Cabinets Full Size - Electric	1	unit		1.64	1.64	1.58		1.64	1.64	1.58		1.64	1.64	1.58
ENERGY STAR Fryers - Electric	1	unit		0.12	0.12	0.11		0.12	0.12	0.11		0.12	0.12	0.11
ENERGY STAR Fryers - Gas	1	unit		-	-	-		0.94	0.94	0.94		0.94	0.94	0.94
Griddles - Electric	1	unit		0.25	0.25	0.24		0.25	0.25	0.24		0.25	0.25	0.24
Griddles - Gas	1	unit		-	-	-		0.14	0.14	0.14		0.14	0.14	0.14
Convection Ovens - Electric	1	unit		0.46	0.46	0.44		0.46	0.46	0.44		0.46	0.46	0.44
Convection Ovens - Gas	1	unit		-	-	-		0.73	0.73	0.73		0.73	0.73	0.73

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Combination Ovens - Electric	6	unit		0.61	0.61	0.58		0.61	0.61	0.58		0.61	0.61	0.58
Combination Ovens - Gas	6	unit		-	-	-		0.13	0.13	0.13		0.13	0.13	0.13
Large Vat Fryers - Gas	1	unit		-	-	-		1.30	1.30	1.30		1.30	1.30	1.30
Rack Oven Single - Gas	1	unit		-	-	-		0.89	0.89	0.89		0.89	0.89	0.89
Rack Oven Double - Gas	1	unit		-	-	-		1.73	1.73	1.73		1.73	1.73	1.73
Pre Rinse Sprayers - Gas water heater	1	unit		-	-	-		16.43	16.43	16.43		16.43	16.43	16.43
Pre Rinse Sprayers - Electric water heater	1	unit		26.32	26.32	25.25		26.32	26.32	25.25		26.32	26.32	25.25
Anti Sweat Heater Controls	1	door		2.70	2.70	2.59		2.70	2.70	2.59		2.70	2.70	2.59
ECM Case Motors	1	motor		3.68	3.68	3.53		3.68	3.68	3.53		3.68	3.68	3.53
ECM Cooler and Freezer Motors - ECM replacing PSC	1	motor		7.84	7.84	7.53		7.84	7.84	7.53		7.84	7.84	7.53
ECM Cooler and Freezer Motors - ECM replacing SP	1	motor		2.59	2.59	2.49		2.59	2.59	2.49		2.59	2.59	2.49
Night covers for displays	21	SF		0.69	0.69	0.66		0.69	0.69	0.66		0.69	0.69	0.66
Strip Curtains - Cooler	21	SF		1.55	1.55	1.49		1.55	1.55	1.49		1.55	1.55	1.49
Strip Curtains - Freezer	21	SF		8.27	8.27	7.93		8.27	8.27	7.93		8.27	8.27	7.93

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Efficient Refrigeration Condenser	40	ton		2.19	2.19	2.10		2.19	2.19	2.10		2.19	2.19	2.10
Head Pressure Control	40	ton		14.81	13.75	11.63		14.81	13.75	11.63		-	-	-
Engineered Nozzles Compressed Air	1	unit		61.46	61.46	58.98		61.46	61.46	58.98		61.46	61.46	58.98
Barrel Wraps Inj Mold and Extruders	200	ton		6.05	6.05	5.81		6.05	6.05	5.81		6.05	6.05	5.81
Pellet Dryer Tanks and Ducts 3 dia	10	LF		0.73	0.73	0.70		0.73	0.73	0.70		0.73	0.73	0.70
Pellet Dryer Tanks and Ducts 4 dia	10	LF		0.75	0.75	0.72		0.75	0.75	0.72		0.75	0.75	0.72
Pellet Dryer Tanks and Ducts 5 dia	10	LF		0.79	0.79	0.75		0.79	0.79	0.75		0.79	0.79	0.75
Pellet Dryer Tanks and Ducts 6 dia	10	LF		0.81	0.81	0.78		0.81	0.81	0.78		0.81	0.81	0.78
Furnace Tube Inserts	60	units		-	-	-		0.49	0.49	0.49		0.49	0.49	0.49
VSD Air Compressors	100	hp		3.90	3.90	3.74		3.90	3.90	3.74		3.90	3.90	3.74
Commercial PV (1 kW system)	1	kW		0.16	0.16	0.16		0.16	0.16	0.16		0.16	0.16	0.16
Ducting, Insulation	-	-		0.38	0.35	0.30		0.38	0.35	0.30		-	-	-
Ducting, Repair and Sealing	-	-		0.21	0.19	0.16		0.21	0.19	0.16		-	-	-

Measure	Number of units	Unit	Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
			Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
External Shades or Overhangs-Fins	-	-		0.52	0.48	0.41		0.52	0.48	0.41		-	-	-
Retrocommissioning, HVAC	-	-		0.63	0.58	0.49		0.63	0.58	0.49		-	-	-
Retrocommissioning, Lighting	-	-		1.66	1.66	1.59		1.66	1.66	1.59		1.66	1.66	1.59
Radiant Barrier	-	-		1.91	1.77	1.50		1.91	1.77	1.50		-	-	-
Window replacement	-	-		2.52	2.50	2.12		2.52	2.50	2.12		-	-	-
Low Flow Faucet Aerators - Electric - Commercial	-	-		5.90	5.90	5.66		5.90	5.90	5.66		5.90	5.90	5.66
Low Flow Faucet Aerators - Gas - Commercial	-	-		-	-	-		36.06	36.06	36.06		36.06	36.06	36.06
Office Electronics - Copier, Printer, Max Efficiency	-	-		0.78	0.78	0.75		0.78	0.78	0.75		0.78	0.78	0.75
Office Electronics - Monitor, Max Efficiency	-	-		1.96	1.96	1.88		1.96	1.96	1.88		1.96	1.96	1.88
Office Electronics - Personal Computer, Max Efficiency	-	-		0.26	0.26	0.25		0.26	0.26	0.25		0.26	0.26	0.25

			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
Wall Insulation	-	-		4.54	4.22	3.57		4.54	4.22	3.57		-	-	-
Task Lighting	-	-		0.54	0.54	0.52		0.54	0.54	0.52		0.54	0.54	0.52
Water Heater, Tank Blanket-Insulation - Electric	-	-		0.42	0.42	0.40		0.42	0.42	0.40		0.42	0.42	0.40
Water Heater, Tank Blanket-Insulation - Gas	-	-		-	-	-		1.58	1.58	1.58		1.58	1.58	1.58
Optimizing Process Cooling	-	-		6.97	6.97	6.69		6.97	6.97	6.69		6.97	6.97	6.69
Optimizing Process Heating	-	-		6.21	6.21	5.96		6.21	6.21	5.96		6.21	6.21	5.96
Compressed Air Optimization - Leak Audit, New Compressors, Improved Controls	-	-		5.81	5.81	5.58		5.81	5.81	5.58		5.81	5.81	5.58
Livestock Waterer	-	-		0.20	0.20	0.19		0.20	0.20	0.19		0.20	0.20	0.19
Tractor Heater Timers	-	-		5.40	5.34	4.89		5.40	5.34	4.89		-	-	-
LED Street Lighting - 80W GE Cobra head	-	-		0.13	0.13	0.12		0.13	0.13	0.12		0.13	0.13	0.12

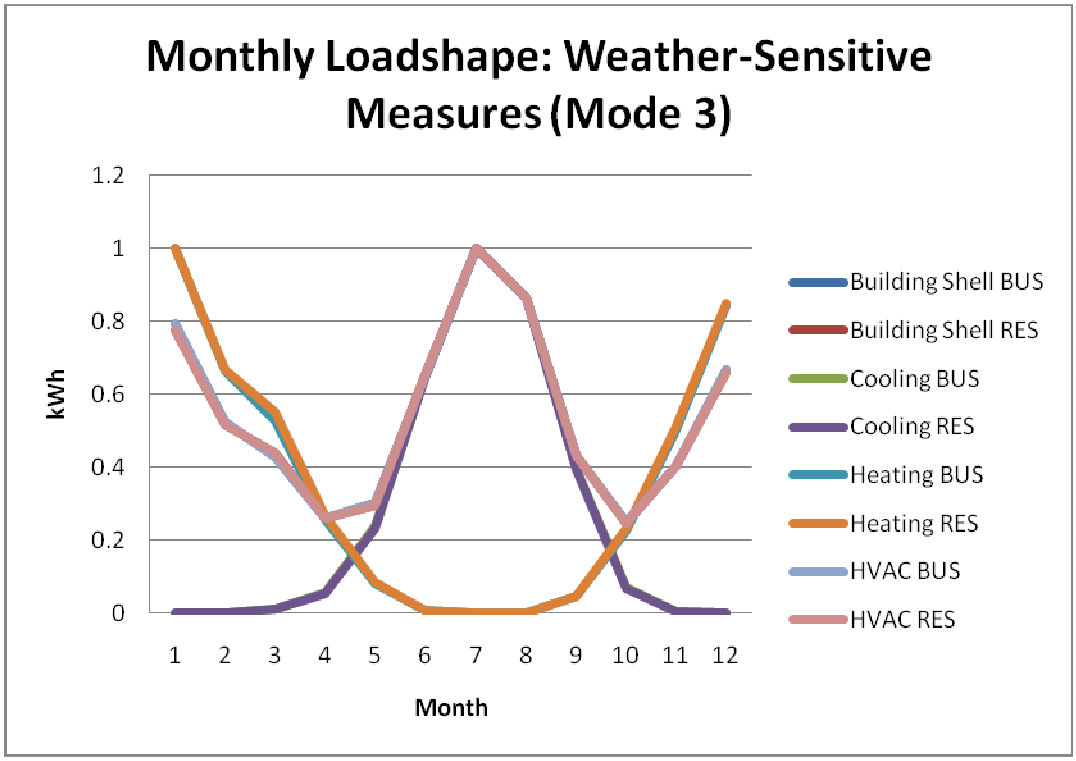
			Elec Benefits Only				Electric and Gas Benefits				Natural Gas Benefits Only			
Measure	Number of units	Unit	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4	Ameren IL DS1-GDS1	Ameren IL DS2-GDS2	Ameren IL DS3-GDS3	Ameren IL DS4-GDS4
LED Street Lighting - 169W GE Cobra head	-	-		0.29	0.29	0.28		0.29	0.29	0.28		0.29	0.29	0.28
LED Street Lighting - 205W GE Area Light	-	-		0.20	0.20	0.19		0.20	0.20	0.19		0.20	0.20	0.19
Induction Street Lighting	-	-		0.29	0.29	0.28		0.29	0.29	0.28		0.29	0.29	0.28
Microturbines	200	kW		0.30	0.30	0.29		0.30	0.30	0.29		0.30	0.30	0.29
Fuel Cells	200	kW		0.28	0.28	0.27		0.28	0.28	0.27		0.28	0.28	0.27
Ice Storage	7	kW		0.61	0.61	0.58		0.61	0.61	0.58		0.61	0.61	0.58
Battery Storage - Commercial	100	kW		0.42	0.42	0.40		0.42	0.42	0.40		0.42	0.42	0.40
PV (Commercial 150 kW system)	150	kW		0.33	0.33	0.31		0.33	0.33	0.31		0.33	0.33	0.31
Small Windmills - Commercial	10	kW		0.26	0.26	0.25		0.26	0.26	0.25		0.26	0.26	0.25
CHP - Microturbines	200	kW		0.18	0.18	0.18		0.18	0.18	0.18		0.18	0.18	0.18

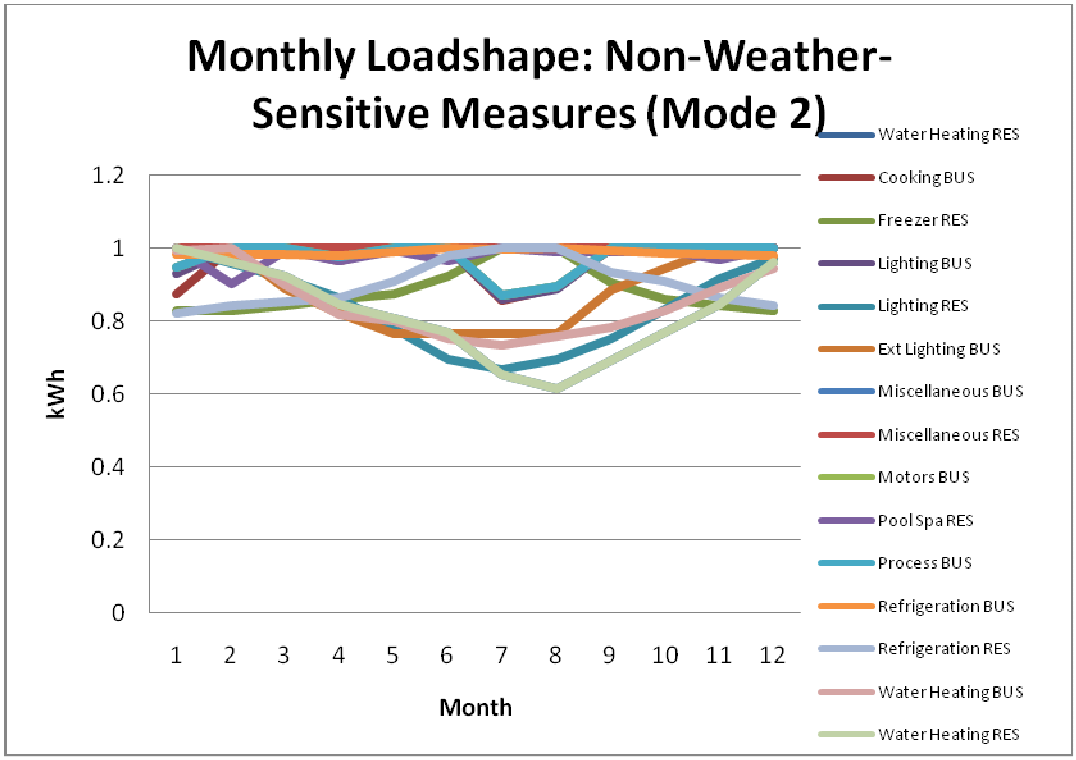
Net-to-Gross Table

PROGRAM	Total NTG Factor			Notes
	PY4	PY5	PY6	
Residential Lighting (regular CFL bulbs)	0.8	0.6	0.4	EM&V calculated as 1.00. Adjusted and declining based on best practice and anticipated EISA impacts.
Residential Lighting (other lighting)	0.8	0.8	0.8	EM&V calculated as 1.00. Adjusted based on best practice.
Residential Energy Efficient Products	0.8	0.8	0.8	Not yet evaluated. Considered best practice.
Residential HVAC	0.8	0.7	0.6	Deemed reasonable by EM&V. Declining to account for changing standards & practices, reflects assumptions in DEER 2008.
Residential Appliance Recycling	0.54	0.54	0.54	Based on EM&V calculated data.
Residential Home Energy Performance	0.76	0.76	0.76	Deemed reasonable by EM&V.
Residential Energy Star New Homes	0.8	0.8	0.8	Not yet evaluated. Considered best practice.
Residential Multifamily	0.8	0.8	0.8	Deemed reasonable by EM&V.
Residential Behavior Modification	1.0	1.0	1.0	"Net effect" calculation implicit in vendor's reporting methodology. No additional penalty applied here.
Residential Moderate Income	1.0	1.0	1.0	Subsidized incentives allow targeting of segment who would not otherwise act on EE.
Residential DR	1.0	1.0	1.0	Volt/Var equipment is pure command & control; no free-ridership potential.
Business Standard Incentive	0.73	0.73	0.73	Based on EM&V calculated data.
Business Custom Incentive	0.75	0.75	0.75	Based on EM&V calculated data.
Business Retro-commissioning	0.8	0.8	0.8	Not yet evaluated. Considered best practice.
Business New Construction	0.8	0.8	0.8	Not yet evaluated. Considered best practice.

End-use Load Shapes

End Use Monthly Load Shapes

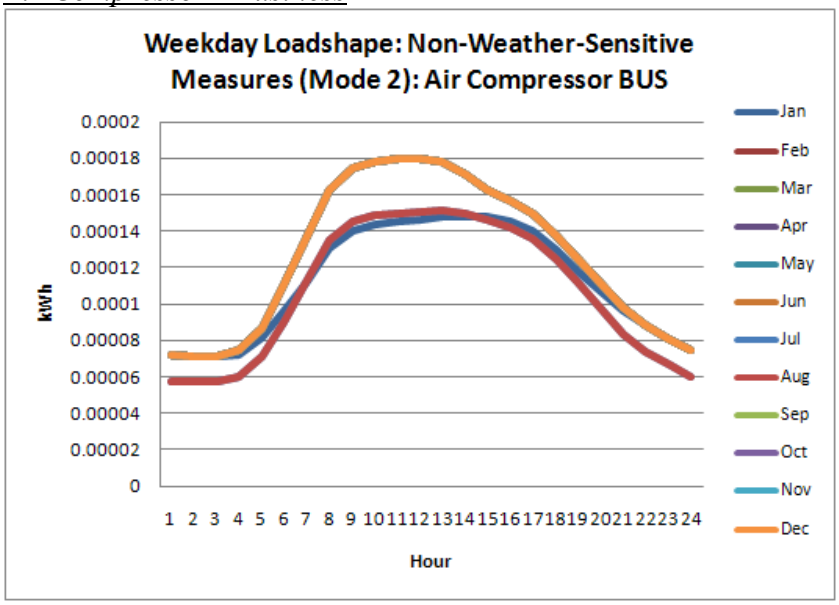


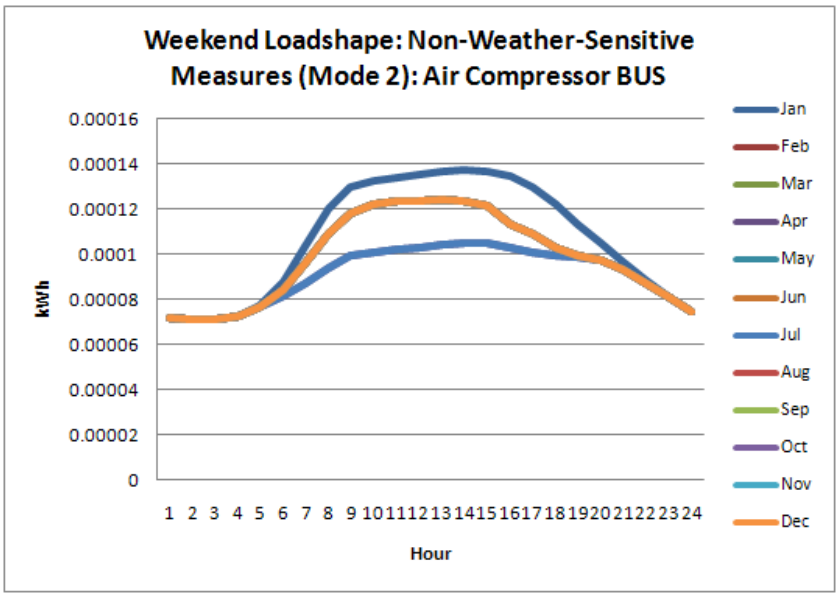


End Use Hourly Load Shapes

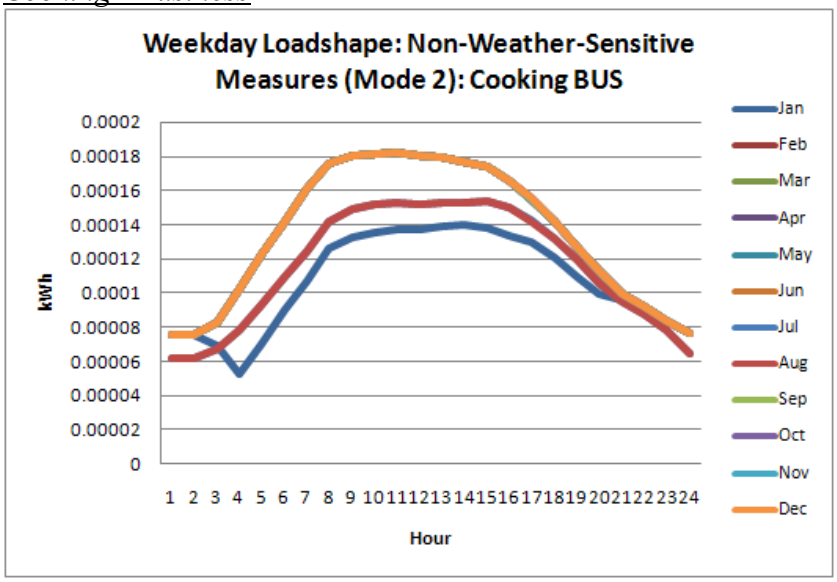
The below graphs represent hourly load shapes for each non-weather sensitive end-use. It should be noted that these types of graphs do not exist for weather sensitive load shapes because the calculation of weather sensitive hourly loads are implicit within DSMore's calculation methodology. This functionality was provided to Ameren from the Integryl Analytics team at the time the model was purchased.

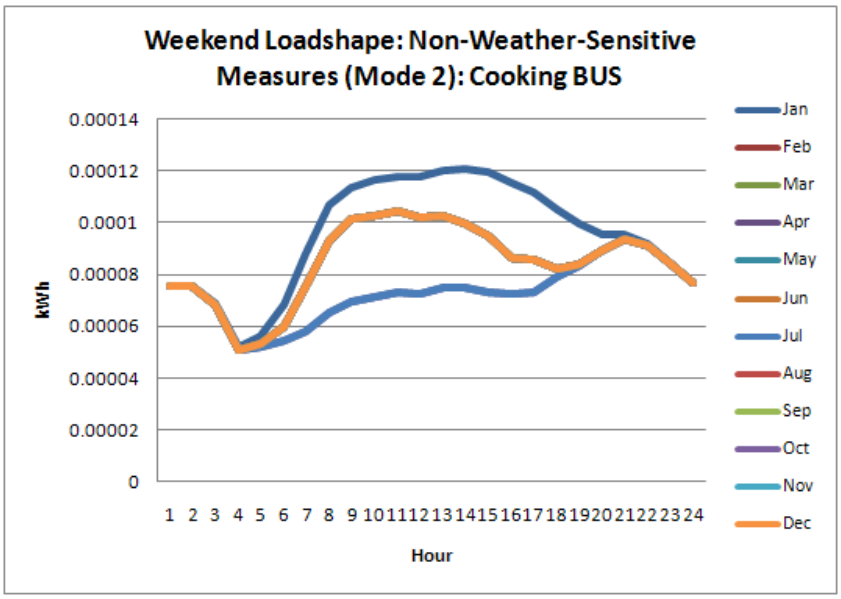
Air Compressor - Business



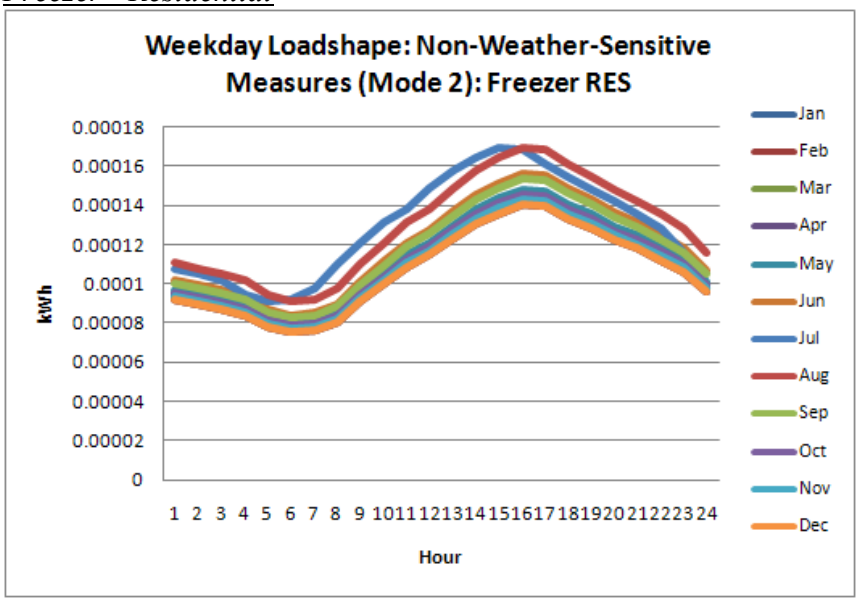


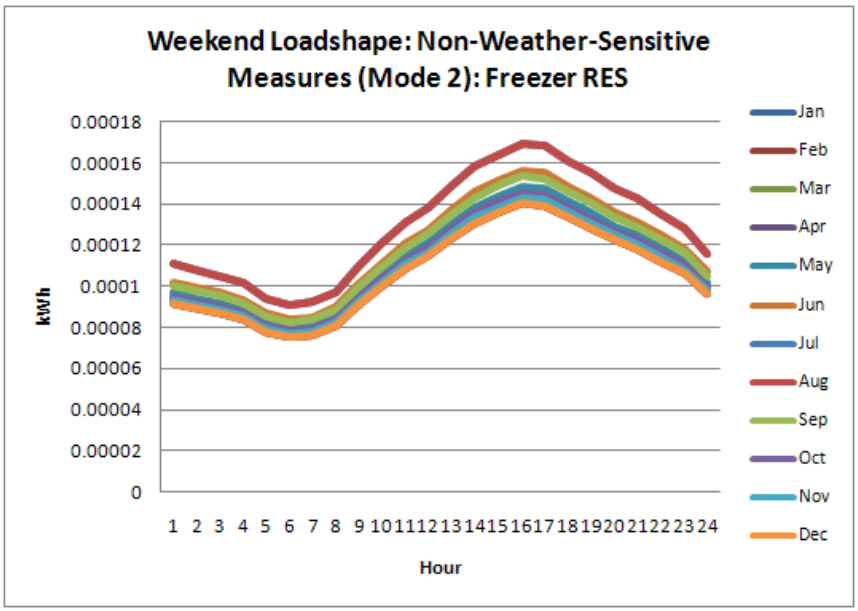
Cooking - Business



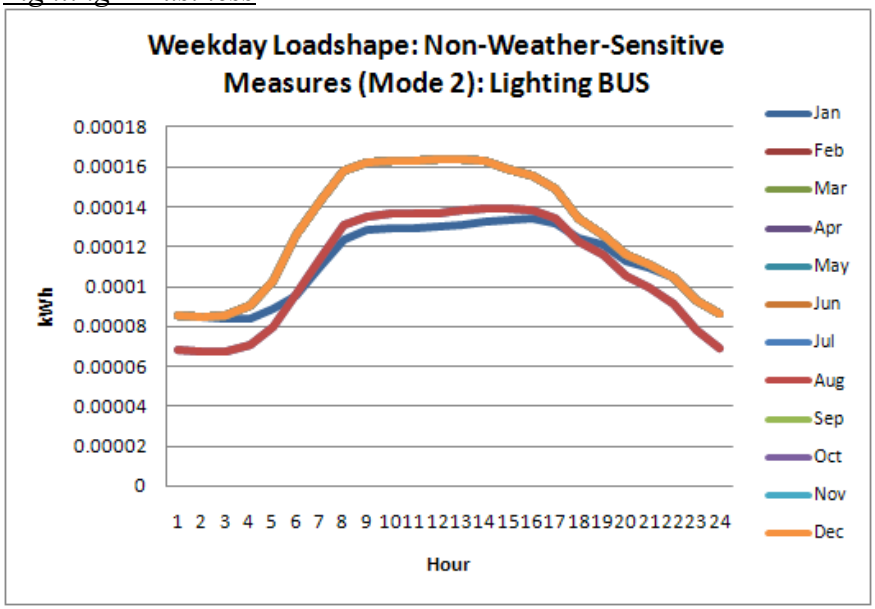


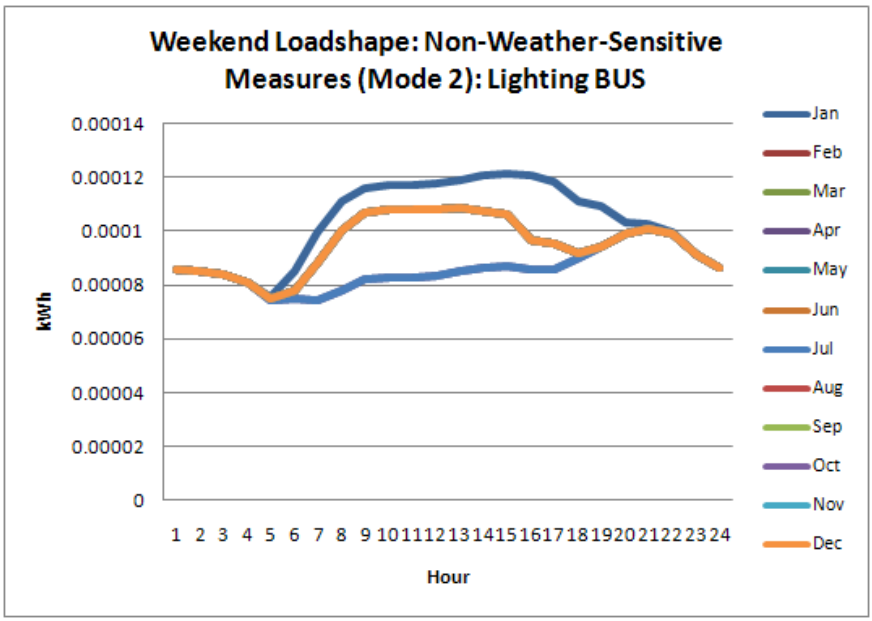
Freezer - Residential



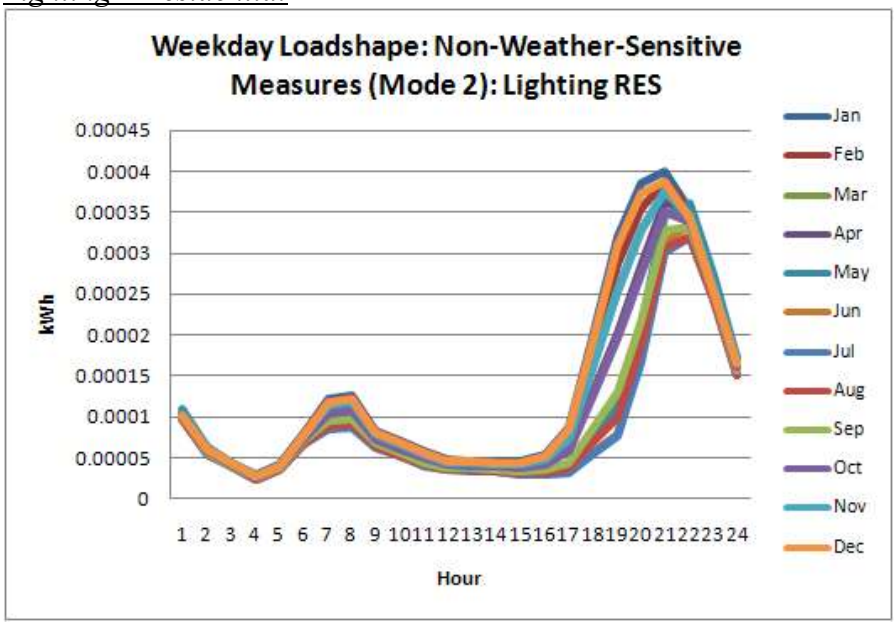


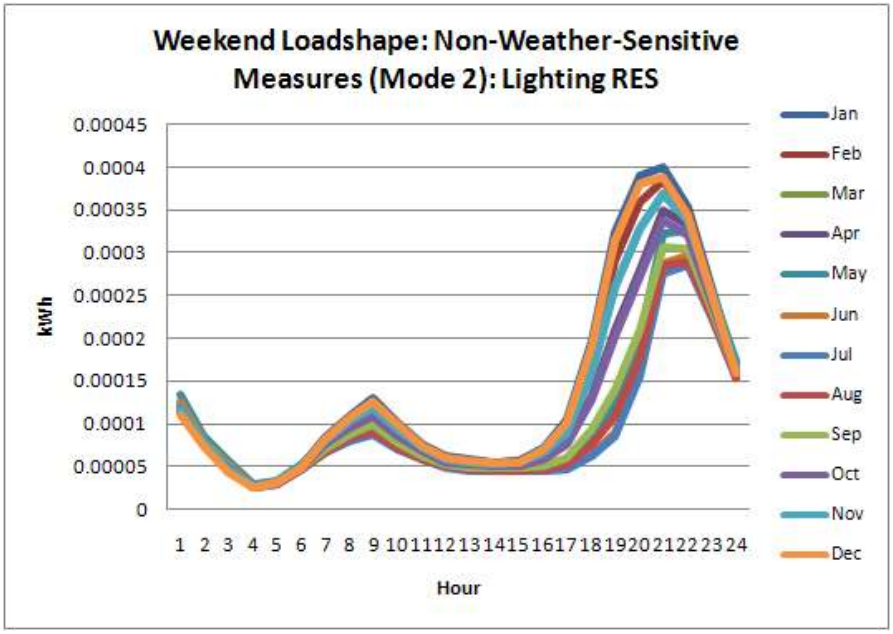
Lighting – Business



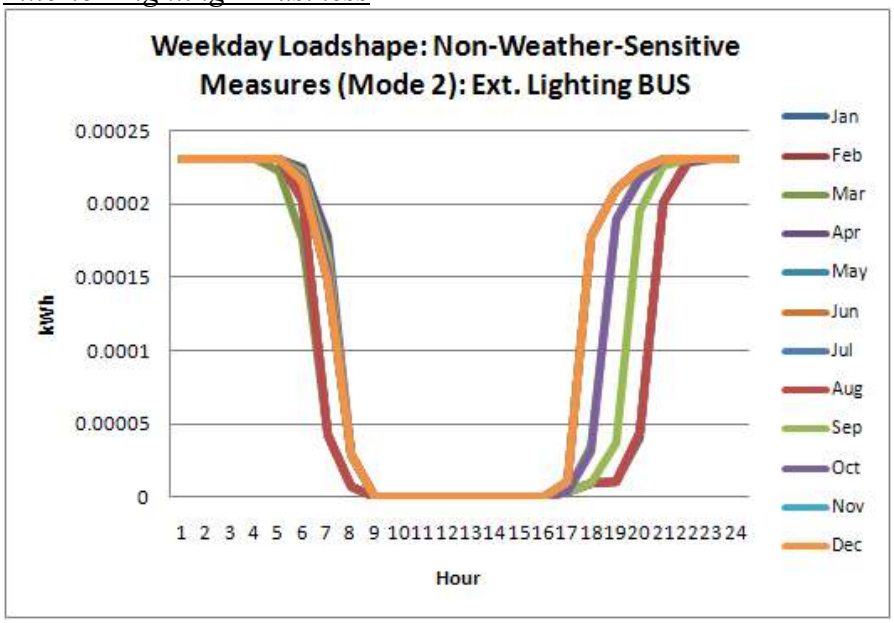


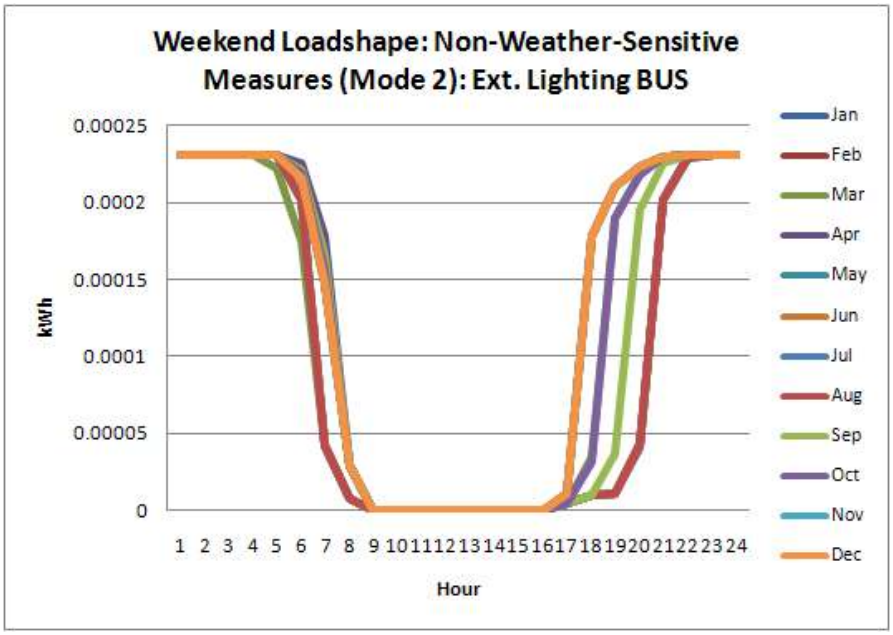
Lighting – Residential



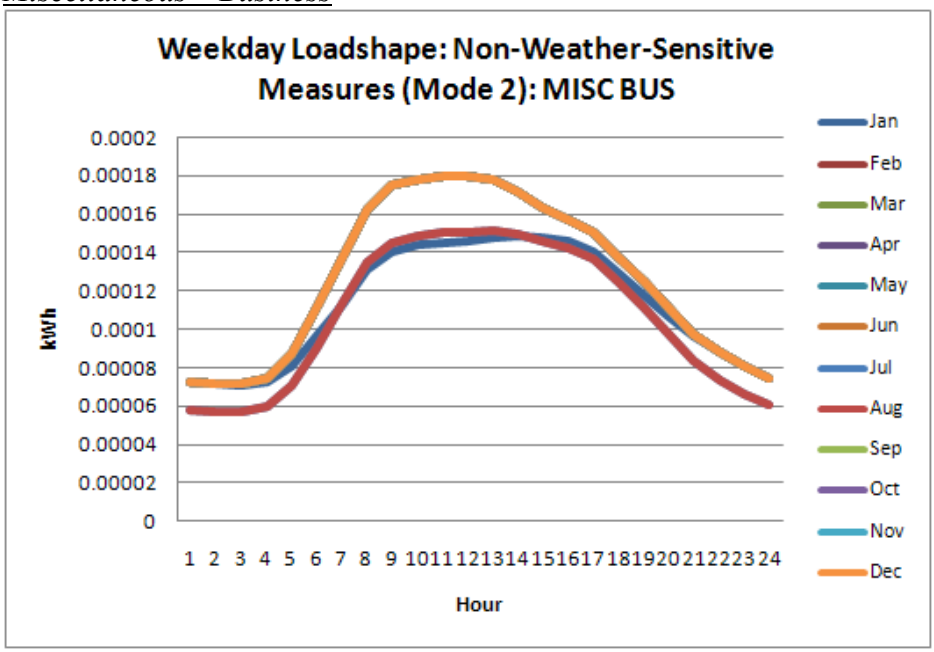


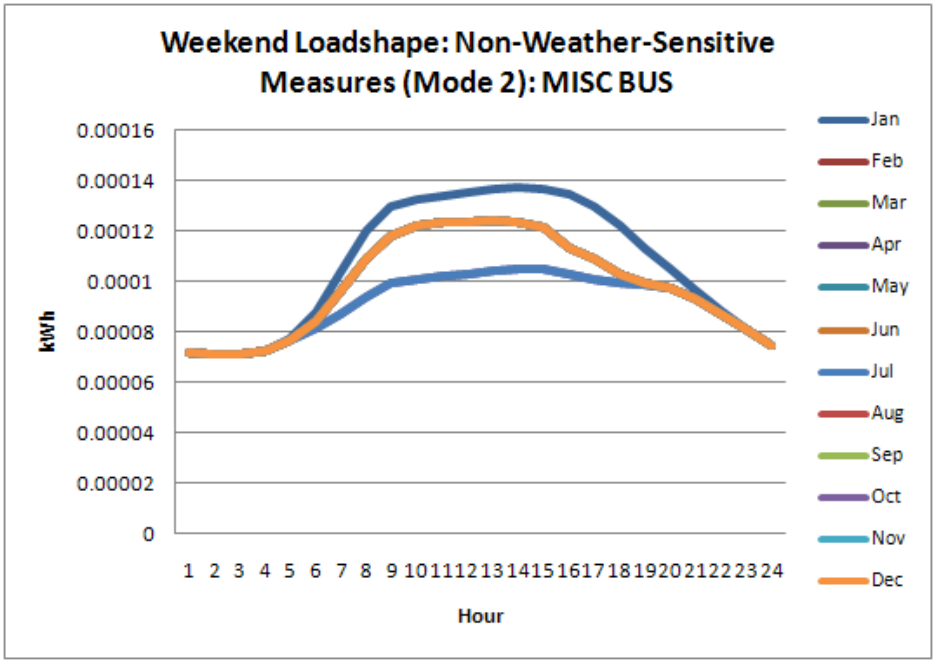
Exterior Lighting – Business



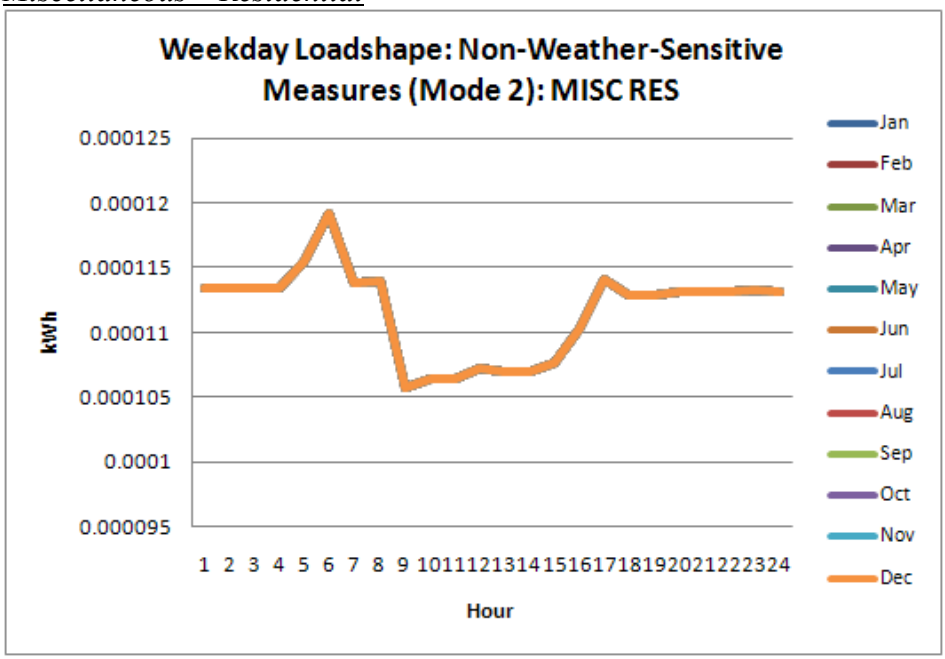


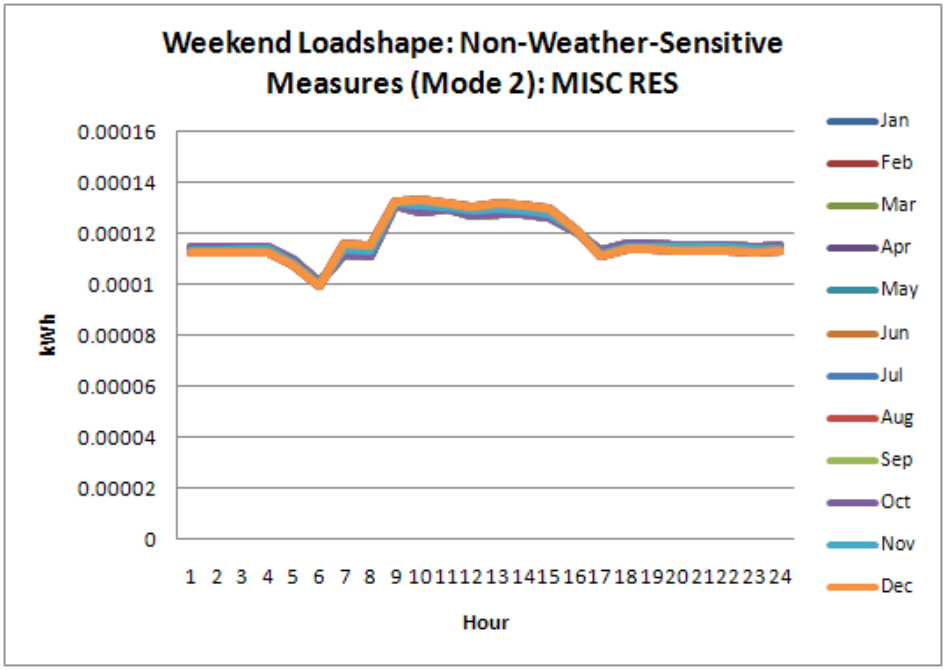
Miscellaneous – Business



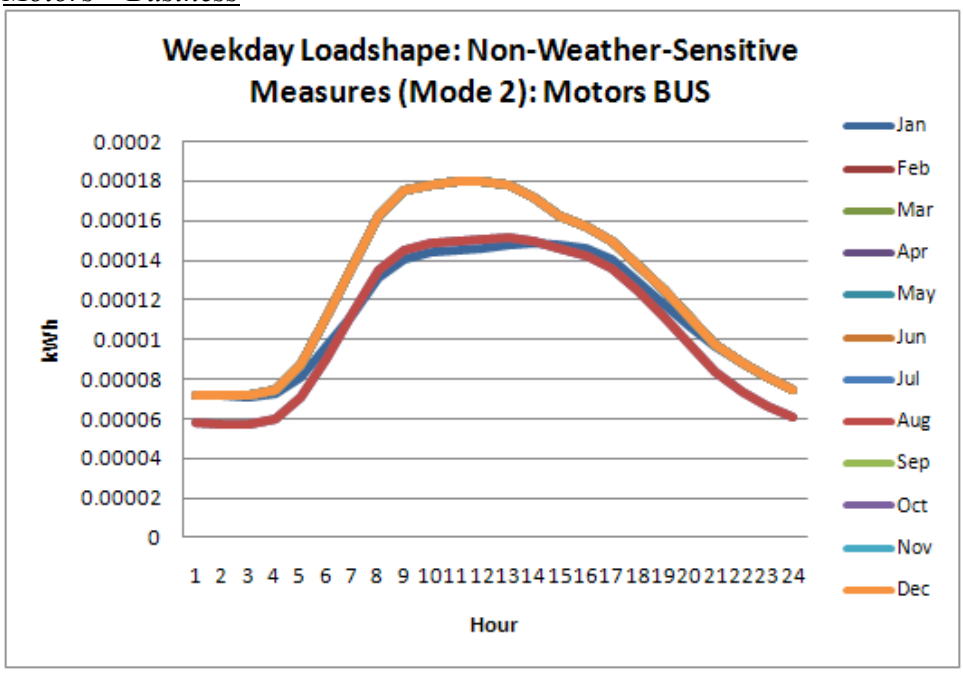


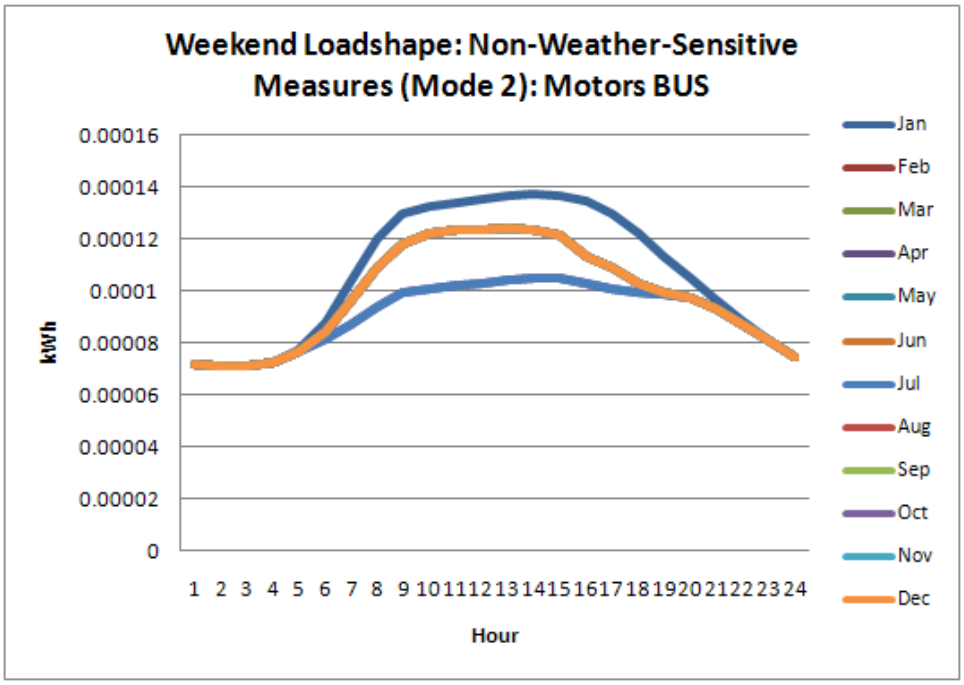
Miscellaneous – Residential



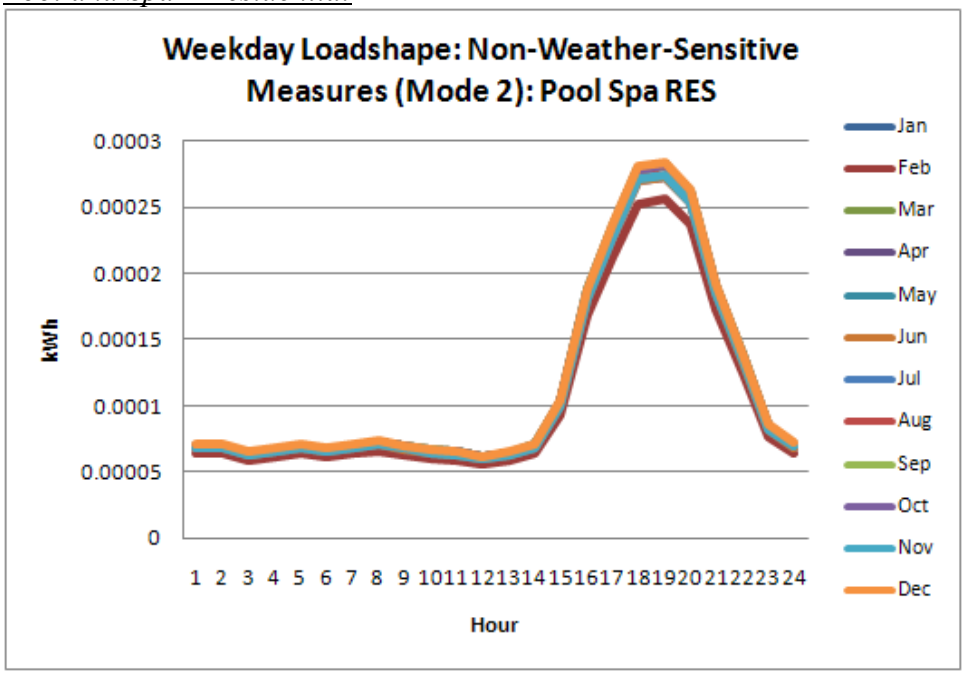


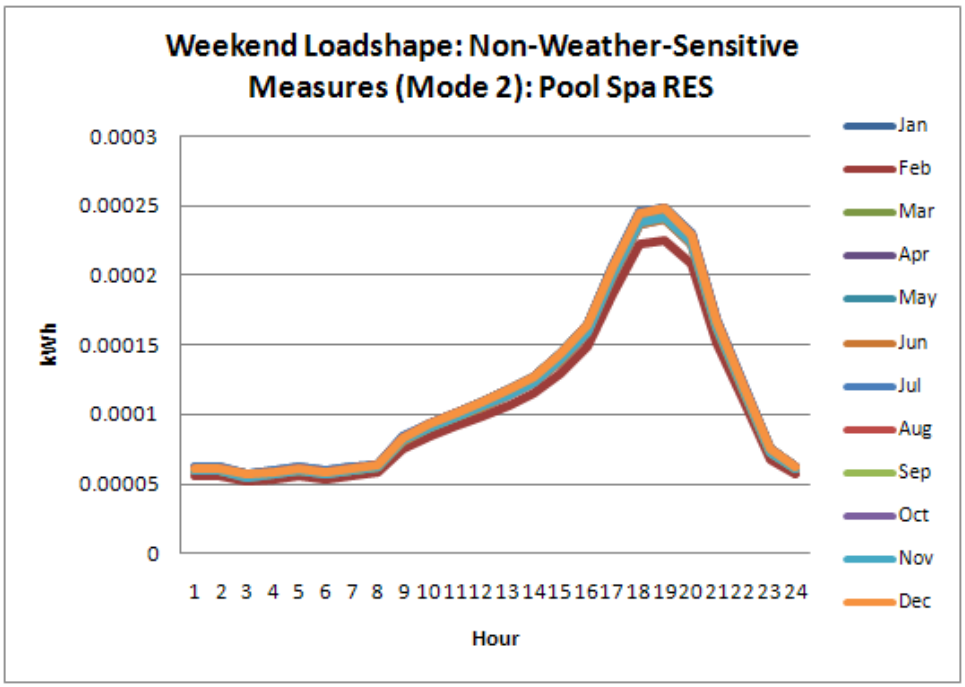
Motors – Business



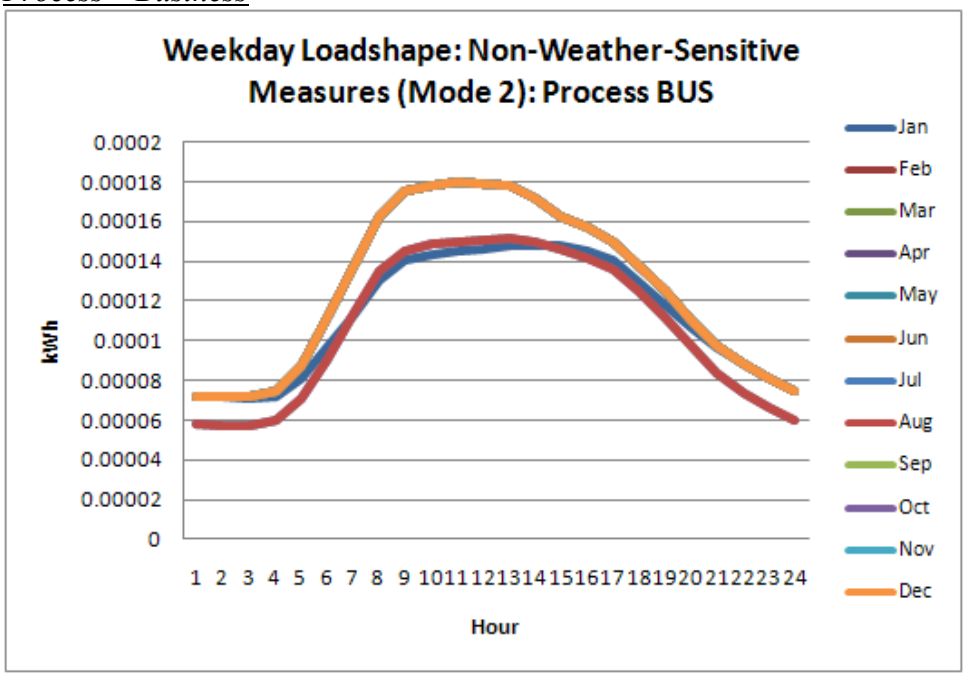


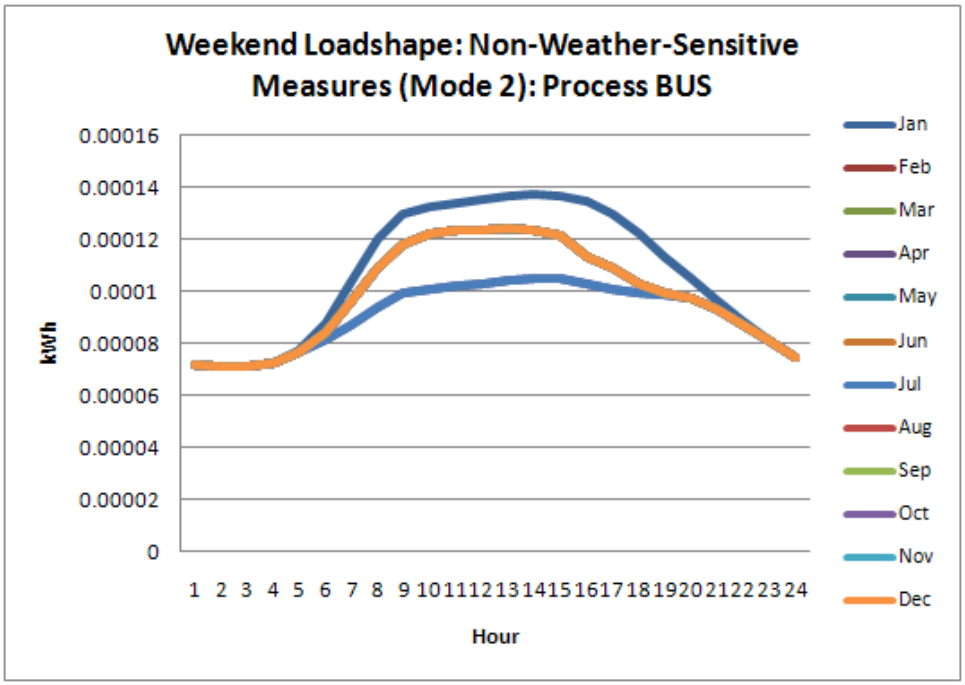
Pool and Spa – Residential



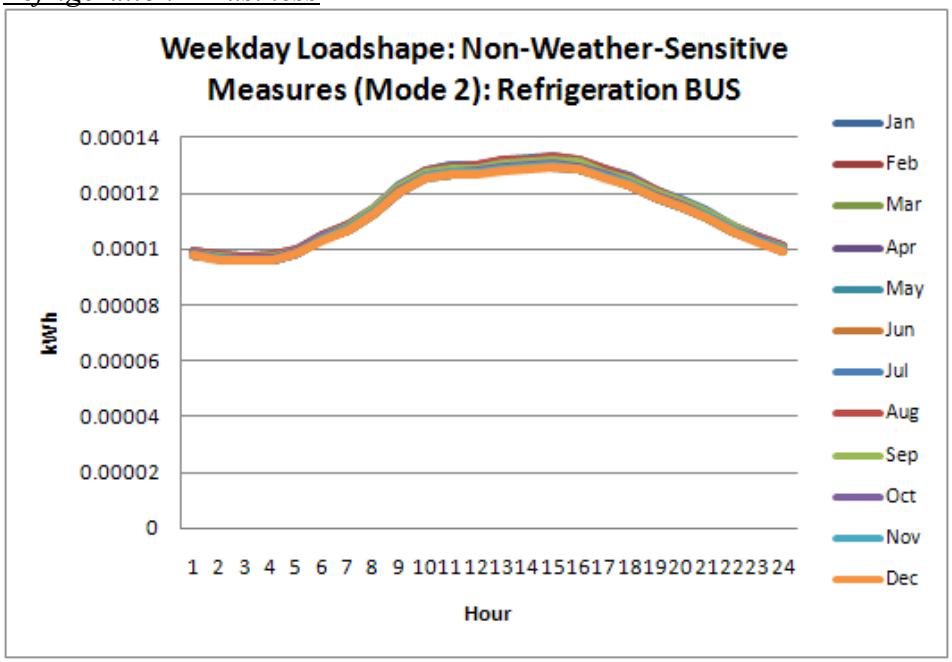


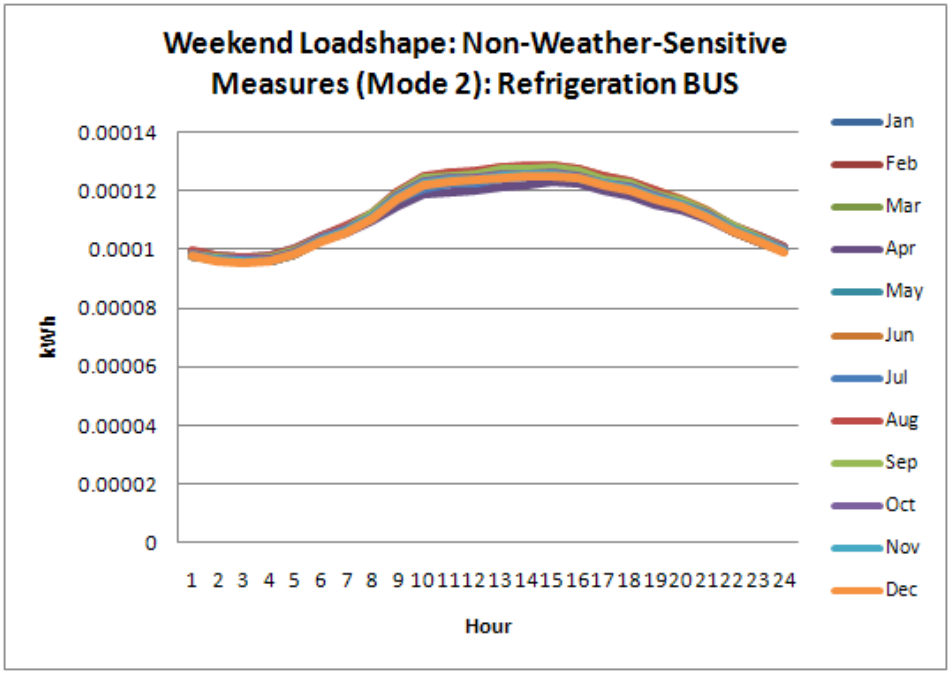
Process – Business



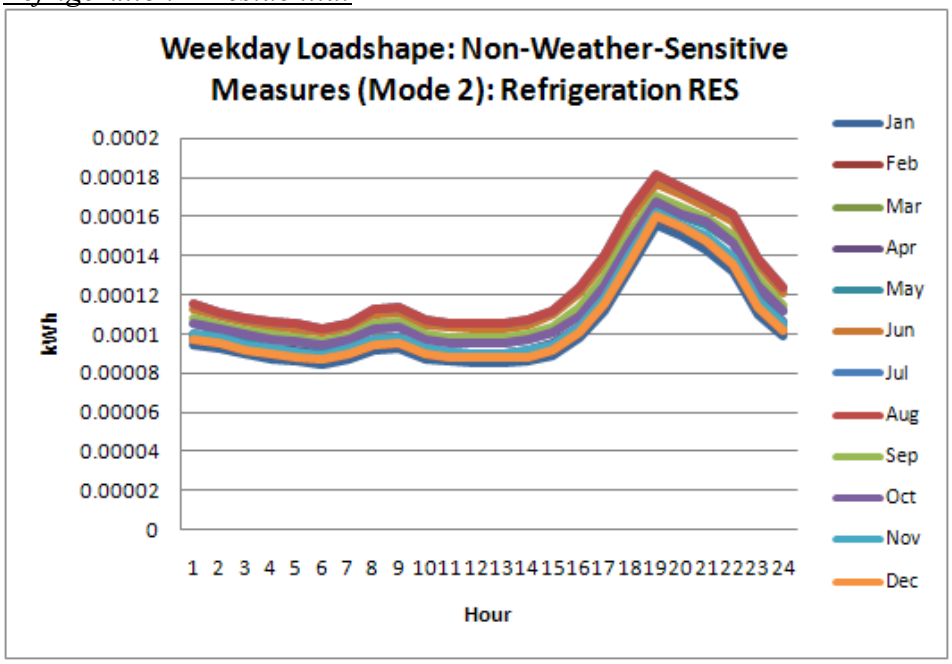


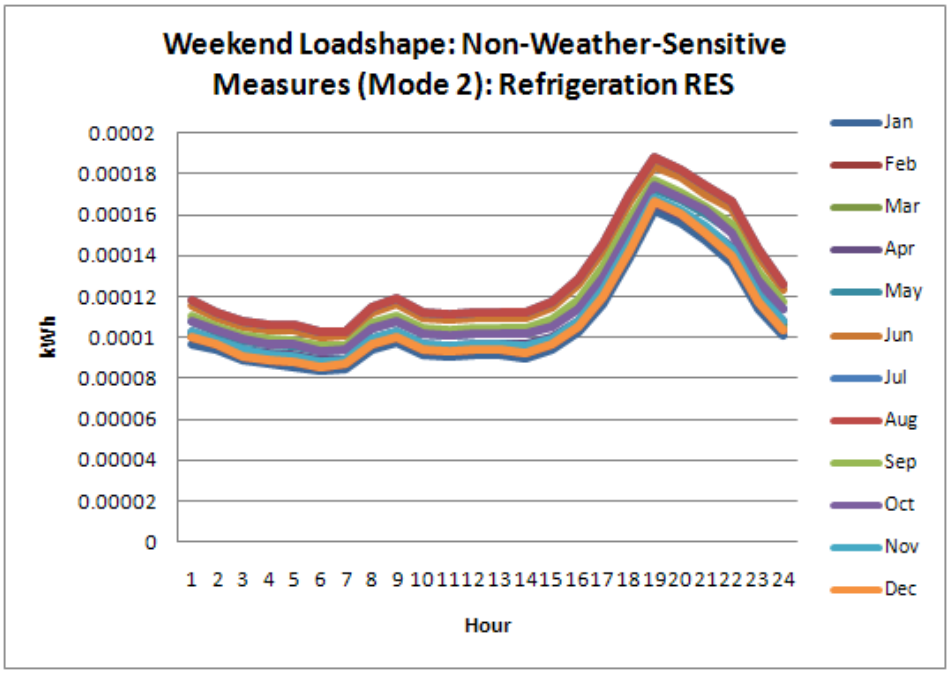
Refrigeration – Business



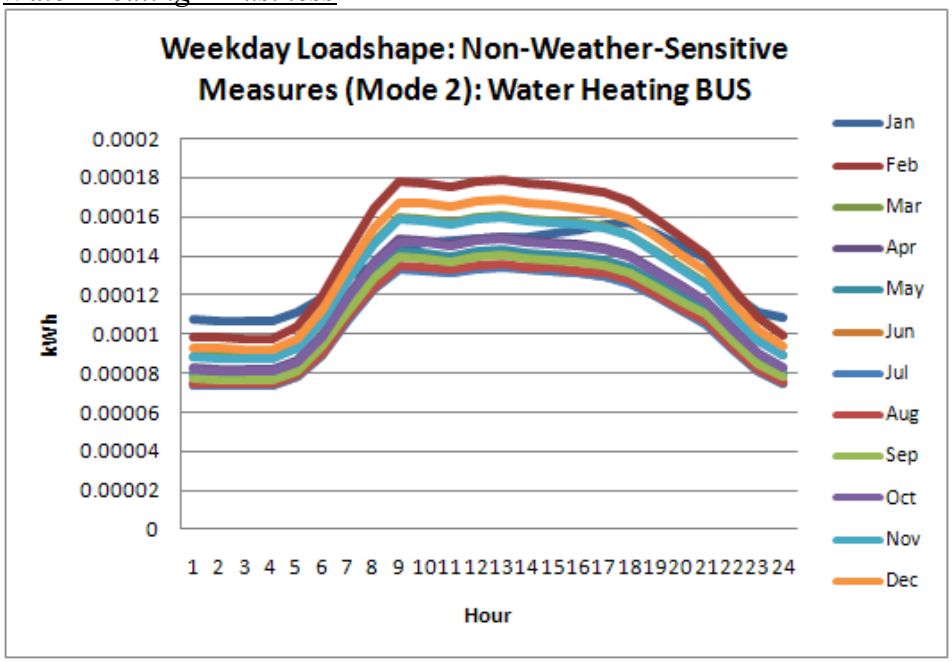


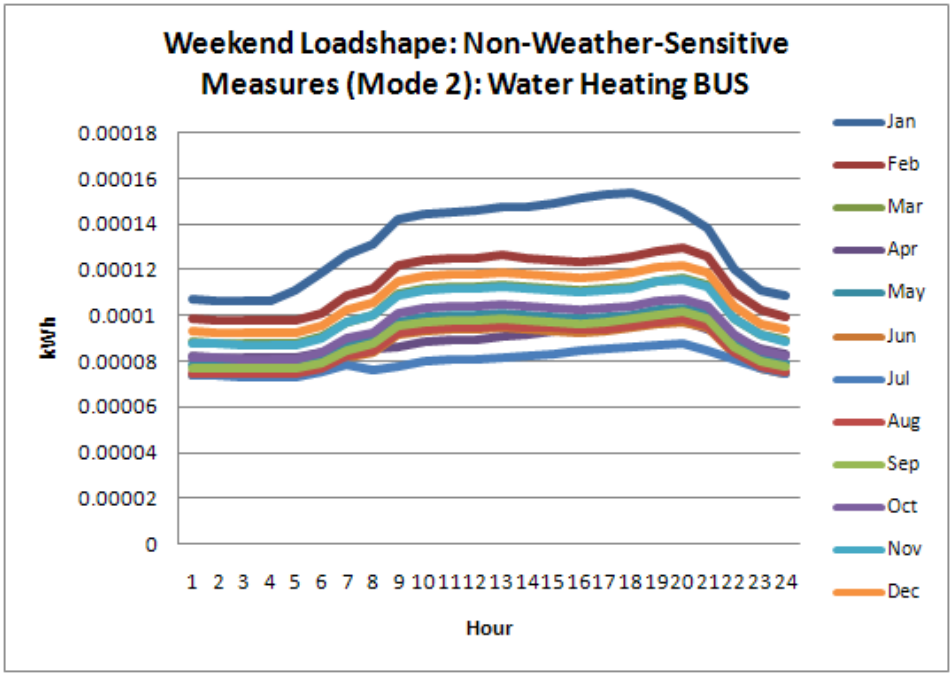
Refrigeration – Residential



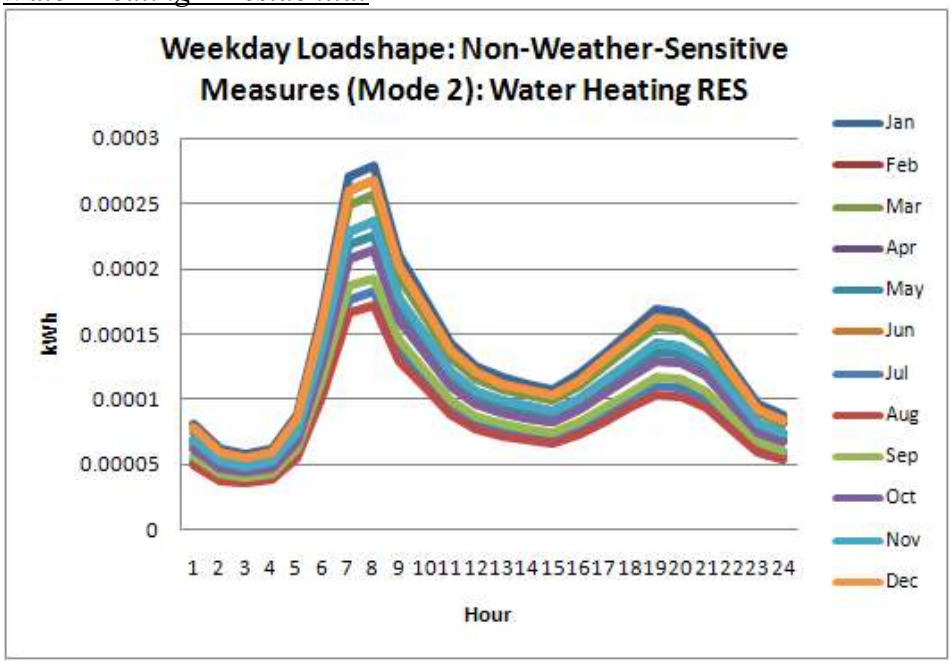


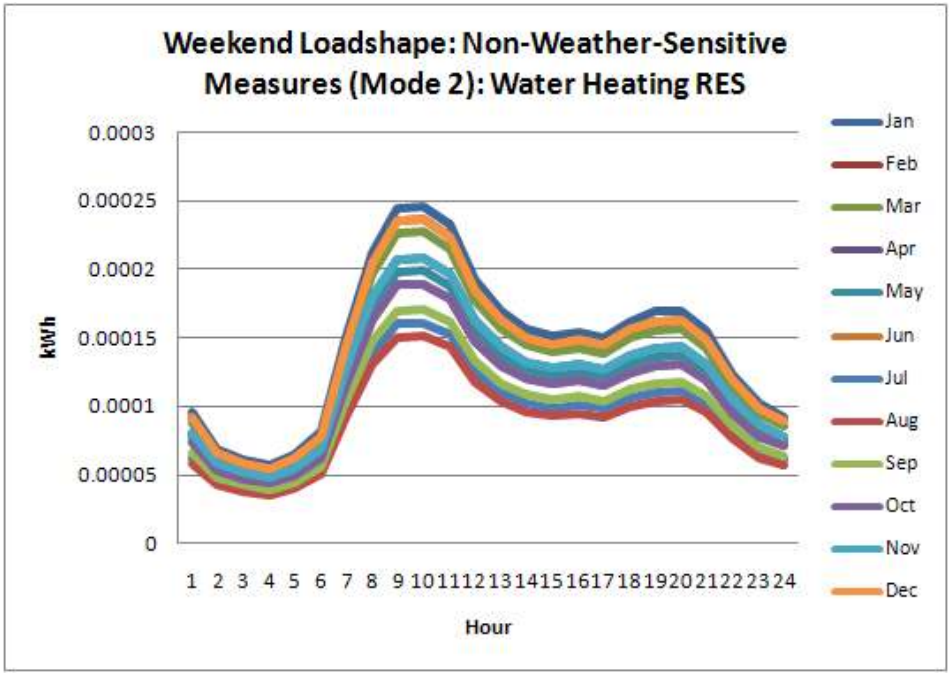
Water Heating – Business





Water Heating – Residential





Building Simulation Tables

Residential Single Family

Table 1: Residential Building Prototype Description

Characteristic	Value
Vintage	Three vintages simulated – old poorly insulated buildings, existing average insulated buildings and new buildings
Conditioned floor area	1 story house: 1465 SF (not including basement) 2 story house: 2930 SF (not including basement)
Wall construction and R-value	Wood frame with siding, R-value varies by vintage
Roof construction and R-value	Wood frame with asphalt shingles, R-value varies by vintage
Glazing type	Average of single and double pane; properties vary by vintage
Lighting and appliance power density	0.51 W/SF average
HVAC system type	Central split system AC with gas furnace Central split system heat pump Electric furnace only Gas furnace only
HVAC system size	Based on ASHRAE design day peak load with 20% oversizing.
HVAC system efficiency	Baseline SEER = 13
Thermostat setpoints	Heating: 70°F with setback to 60°F Cooling: 75°F with setup to 80°F
Duct location	Buildings without basement: attic Buildings with basement: basement
Duct surface area	Single story house: 390 SF supply, 72 SF return Two story house: 505 SF supply, 290 SF return
Duct insulation	Uninsulated
Duct leakage	20% of fan flow total leakage, evenly split between supply and return.
Natural ventilation	Allowed during cooling season when cooling setpoint exceeded and outdoor temperature < 65°F. 2 air changes per hour

Table 2: Wall Insulation R-Value Assumptions by Vintage

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	7	Wood frame 2x4 with wood siding, drywall, no insulation
Existing, average insulation	11	Fiberglass insulation in 2 by 4 wall per MEC 1980
New construction	Springfield – 19 St Louis - 15	IECC 2004

Table 3: Floor Insulation Levels by Vintage

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	2	12" concrete block, no insulation
Existing, average insulation	6	12" concrete block, 1" expanded polystyrene
New construction	Springfield – 30 St Louis - 21	IECC 2004

Table 4: Ceiling Insulation R-Value Assumptions by Vintage

Vintage	Assumed R-value of insulated ceiling	Notes
Older, poorly insulated	11	Minimal ceiling insulation
Existing, average insulation	19	Fiberglass insulation per MEC 1980
New construction	Springfield – 38 St Louis - 38	IECC 2004

Table 5: Window Property Assumptions by Vintage

Vintage	U-value (Btu/hr-F-SF)	SHGC	Notes
Older, poorly insulated	0.93	0.87	Single pane clear
Existing, average insulation	0.68	0.77	Avg. of Double Pane 1/2" air space (U=0.49) and standard double pane (U=0.87)
New construction	0.35	Springfield – 0.55 St Louis – 0.40	IECC 2004

Table 6: Infiltration Rate Assumptions by Vintage

Vintage	Assumed infiltration rate	Notes
Older, poorly insulated	1 ACH	
Existing, average insulation	0.5 ACH	
New construction	0.35 ACH	Minimum without forced ventilation per ASHRAE Standard 66.

Manufactured Homes

Table 7 Manufactured Home Prototype Building Description

Characteristic	Value
Vintage	Three vintages simulated – Pre 78, 78-95, and 95-05.
Conditioned floor area	1196 SF (23 x 52)
Wall construction and R-value	Wood frame, R-value varies by vintage
Roof construction and R-value	Wood frame, R-value varies by vintage
Glazing type	Single or double pane, varies by vintage. 191 SF (16% of floor area)
Lighting and appliance power density	0.58 W/SF
HVAC system types	Central split system AC with gas furnace Central split system AC with electric furnace Central split system heat pump Central dual fuel heat pump Electric furnace only Gas furnace only
HVAC system size	Based on ASHRAE design day peak load with 20% oversizing.
HVAC system efficiency	Baseline SEER = 13
Thermostat setpoints	Heating: 70°F with setback to 60°F Cooling: 75°F with setup to 80°F
Duct location	Attic
Duct surface area	360 SF (supply only)
Duct insulation	Uninsulated
Duct leakage	22.5% of fan flow total leakage, evenly split between supply and return.
Natural ventilation	Allowed during cooling season when cooling setpoint exceeded and outdoor temperature < 65°F. 2 air changes per hour

Table 8. Wall Floor and Ceiling Insulation R-Value Assumptions by Vintage

Vintage	R-value of insulated wall	R-value of insulated floor	R-value of insulated ceiling
Pre 78	5.0	5.0	5.0
78 - 94	8.0	8.0	8.0
95 - 05	13.0	13.0	13.0

Table 9. Window Property Assumptions by Vintage

Vintage	U-value (Btu/hr-F-SF)	SHGC
Pre 78	1.27	0.87
78 - 94	0.87	0.77
95 - 05	0.65	0.56

Table 10: Infiltration Rate Assumptions by Vintage

Vintage	Assumed infiltration rate
Pre 78	1 ACH
78 - 94	0.5 ACH
95 - 05	0.35 ACH

Multifamily

Table 11: Multifamily Low-Rise Residential Building Prototype Description

Characteristic	Value
Vintage	Three vintages simulated – old poorly insulated buildings, existing average insulated buildings and new buildings
Conditioned floor area	**2-4 unit building:** 950 SF per unit; 2 units per floor, 2 floors per building, 3,800 SF total **5+ unit building:** 950 SF per unit; 6 units per floor, 2 floors per building, 11,400 SF total.
Wall construction and R-value	Wood frame with siding, R-value varies by vintage
Roof construction and R-value	Wood frame with asphalt shingles, R-value varies by vintage
Glazing type	Single or double pane; properties vary by vintage
Lighting and appliance power density	0.87 W/SF average in bedrooms, 0.58 W/SF in living space
HVAC system types[1]	1. Split system AC with gas heat 2. Split system AC with electric heat 3. Split system heat pump 4. PTAC with electric heat 5. PTHP 6. Electric heat only (no AC) 7. Gas heat only (no AC)
HVAC system size	Based on peak load with 20% oversizing.
HVAC system efficiency	AC and heat pump: SEER = 13 PTAC and PTHP: EER = 7.1 (Old and Average) PTAC and PTHP: EER = 8.7 (New) Furnace AFUE = 78
Thermostat setpoints	Heating: 70°F with setback to 67°F Cooling: 75°F with setup to 78°F
Duct location	In attic and plenum space between first and second floors. PTACs and PTHPs have no duct work.
Duct surface area	256 SF supply, 47 SF return per system
Duct insulation	Uninsulated
Duct leakage	20% of fan flow total leakage, evenly split between supply and return.
Natural ventilation	Allowed during cooling season when cooling setpoint exceeded and outdoor temperature < 65°F. 3 air changes per hour

[1] PTAC and PTHP systems simulated for MF 5+ unit building only.

Table 12: Wall Insulation R-Value Assumptions by Vintage

Vintage	Assumed R-value of insulated wall	Notes
Older, poorly insulated	7	No insulation in 2 by 4 wall; 3.5 in. air gap resistance only
Existing, average insulation	11	Fiberglass insulation in 2 by 4 wall per MEC 1980
New construction	Springfield – 19 St Louis - 15	Code

Table 13: Ceiling Insulation R-Value Assumptions by Vintage

Vintage	Assumed R-value of insulated ceiling	Notes
Older, poorly insulated	11	Minimal ceiling insulation
Existing, average insulation	19	Fiberglass insulation per MEC 1980
New construction	38	Code

Table 14: Window Property Assumptions by Vintage

Vintage	U-value (Btu/hr-F-SF)	SHGC	Notes
Older, poorly insulated	0.93	0.87	Single pane clear
Existing, average insulation	0.68	0.77	Double pane clear
New construction	0.35	Springfield – 0.55 St Louis – 0.40	Double low e per code

Table 15: Infiltration Rate Assumptions by Vintage

Vintage	Assumed infiltration rate	Notes
Older, poorly insulated	1 ACH	
Existing, average insulation	0.5 ACH	
New construction	0.35 ACH	Minimum without forced ventilation per ASHRAE Standard 66.

Commercial Building Prototype Model Development

Assembly

Table 16: Assembly Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	34,000 square feet Auditorium: 33,240 SF Office: 760 SF
Number of floors	1
Wall construction and R-value	Concrete block, R-5
Roof construction and R-value	Wood frame with built-up roof, R-12
Glazing type	Multipane Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Auditorium: 1.9 W/SF Office: 1.55 W/SF
Plug load density	Auditorium: 1.2 W/SF Office: 1.7 W/SF
Operating hours	Mon-Sun: 8am – 9pm
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Big Box Retail

Table 17: Big Box Retail Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	130,500 square feet Sales: 107,339 SF Storage: 11,870 SF Office: 4,683 SF Auto repair: 5,151 SF Kitchen: 1,459 SF
Number of floors	1
Wall construction and R-value	Concrete block with insulation, R-7.5
Roof construction and R-value	Metal frame with built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Sales: 2.15 W/SF Storage: 0.85 W/SF (Active) 0.45 W/SF (Inactive) Office: 1.55 W/SF Auto repair: 1.7 W/SF Kitchen: 2.2 W/SF
Plug load density	Sales: 1.15 W/SF Storage: 0.23 W/SF Office: 1.73 W/SF Auto repair: 1.15 W/SF Kitchen: 3.23 W/SF
Operating hours	Mon-Sun: 10am – 9pm
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Fast Food Restaurant

Table 18: Fast Food Restaurant Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	2000 square feet 1000 SF dining 600 SF entry/lobby 300 SF kitchen 100 SF restroom
Number of floors	1
Wall construction and R-value	Concrete block with brick veneer, R-7.5
Roof construction and R-value	Concrete deck with built-up roof, R-13.5
Glazing type	Multipane Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Dining: 1.7 W/SF Entry area: 1.7 W/SF Kitchen: 2.2 W/SF Restroom: 0.9 W/SF
Plug load density	0.6 W/SF dining 0.6 W/SF entry/lobby 4.3 W/SF kitchen 0.2 W/SF restroom
Operating hours	Mon-Sun: 6am – 11pm
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Full-Service Restaurant

Table 19: Full Service Restaurant Prototype Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	2000 square foot dining area 600 square foot entry/reception area 1200 square foot kitchen 200 square foot restrooms
Number of floors	1
Wall construction and R-value	Concrete block with brick veneer, R-7.5
Roof construction and R-value	Wood frame with built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Dining area: 1.7 W/SF Entry area: 1.7 W/SF Kitchen: 2.2 W/SF Restrooms: 1.5 W/SF
Plug load density	Dining area: 0.6 W/SF Entry area: 0.6 W/SF Kitchen: 3.1 W/SF Restrooms: 0.2 W/SF
Operating hours	9am – 12am
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Grocery

Table 20: Grocery Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	50,000 square feet Sales: 40,000 SF Office and employee lounge: 3,500 SF Dry storage: 2,860 SF 50 °F prep area: 1,268 SF 35 °F walk-in cooler: 1,560 SF - 5 °F walk-in freezer: 812 SF
Number of floors	1
Wall construction and R-value	Concrete block with insulation, R-5
Roof construction and R-value	Metal frame with built-up roof, R-12
Glazing type	Single pane clear
Lighting power density	Sales: 3.36 W/SF Office: 2.2 W/SF Storage: 1.82 W/SF 50°F prep area: 4.3 W/SF 35°F walk-in cooler: 0.9 W/SF - 5°F walk-in freezer: 0.9 W/SF
Equipment power density	Sales: 1.15 W/SF Office: 1.73 W/SF Storage: 0.23 W/SF 50°F prep area: 0.23 W/SF + 36 kBtu/hr process load 35°F walk-in cooler: 0.23 W/SF + 17 kBtu/hr process load - 5°F walk-in freezer: 0.23 W/SF+ 29 kBtu/hr process load
Operating hours	Mon-Sun: 6am – 10pm
HVAC system type	Packaged single zone, no economizer
Refrigeration system type	Air cooled multiplex
Refrigeration system size	Low temperature (-20°F suction temp): 23 compressor ton Medium temperature (18°F suction temp): 45 compressor ton
Refrigeration condenser size	Low temperature: 535 kBtu/hr THR Medium temperature: 756 kBtu/hr THR
Thermostat setpoints	Occupied hours: 74°F cooling, 70°F heating Unoccupied hours: 79°F cooling, 65°F heating

HOSPITAL

Table 21: Large Hospital Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	250,000 square feet
Number of floors	3
Wall construction and R-value	Brick and CMU, R=7.5
Roof construction and R-value	Built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Patient rooms: 2.3 W/SF Office: 2.2 W/SF Lab: 4.4 Dining: 1.7 Kitchen and food prep: 4.3
Plug load density	Patient rooms: 1.7 W/SF Office: 1.7 W/SF Lab: 1.7 Dining: 0.6 Kitchen and food prep: 4.6
Operating hours	24/7, 365
HVAC system types	Patient Rooms: 4 pipe fan coil Kitchen: Rooftop DX Remaining space; 1. Central constant volume system with hydronic reheat, without economizer; 2. Central constant volume system with hydronic reheat, with economizer; 3. Central VAV system with hydronic reheat, with economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Chiller type	Water cooled and air cooled
Chilled water system type	Constant volume with 3 way control valves,
Chilled water system control	Constant CHW Temp, 45 deg F setpoint
Boiler type	Hot water, 80% efficiency
Hot water system type	Constant volume with 3 way control valves,
Hot water system control	Constant HW Temp, 180 deg F setpoint
Thermostat setpoints	Occupied hours: 76 cooling, 72 heating Unoccupied hours: 81 cooling, 67 heating

Hotel

Table 22: Hotel Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	200,000 square feet total Bar, cocktail lounge – 800 SF Corridor – 20,100 SF Dining Area – 1,250 SF Guest rooms – 160,680 SF Kitchen – 750 SF Laundry – 4,100 SF Lobby – 8,220 Office – 4,100 SF
Number of floors	11
Wall construction and R-value	Block construction, R-7.5
Roof construction and R-value	Wood deck with built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Bar, cocktail lounge – 1.7 W/SF Corridor – 1.0 W/SF Dining Area – 1.7 W/SF Guest rooms – 0.6 W/SF Kitchen – 4.3 W/SF Laundry – 1.8 W/SF Lobby – 3.1 W/SF Office – 2.2 W/SF
Plug load density	Bar, cocktail lounge – 1.2 W/SF Corridor – 0.2 W/SF Dining Area – 0.6 W/SF Guest rooms – 0.6 W/SF Kitchen – 3.0 W/SF Laundry – 3.5 W/SF Lobby – 0.6 W/SF Office – 1.7 W/SF
Operating hours	Rooms: 60% occupied 40% unoccupied All others: 24 hr / day
HVAC system type	Central built-up system: All except corridors and rooms 1. Central constant volume system with perimeter hydronic reheat, without economizer; 2. Central constant volume system with perimeter hydronic reheat, with economizer; 3. Central VAV system with perimeter hydronic reheat,

Characteristic	**Value**
	with economizer PTAC : Guest rooms PSZ: Corridors
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Chiller type	Water cooled and air cooled
Chilled water system type	Constant volume with 3 way control valves,
Chilled water system control	Constant CHW Temp, 45 deg F setpoint
Boiler type	Hot water, 80% efficiency
Hot water system type	Constant volume with 3 way control valves,
Hot water system control	Constant HW Temp, 180 deg F setpoint
Thermostat setpoints	Occupied hours: 76 cooling, 72 heating Unoccupied hours: 81 cooling, 67 heating

Large Office

Table 23: Large Office Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	350,000 square feet
Number of floors	10
Wall construction and R-value	Glass curtain wall, R-7.5
Roof construction and R-value	Built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Perimeter offices: 1.55 W/SF Core offices: 1.45 W/SF
Plug load density	Perimeter offices: 1.6 W/SF Core offices: 0.7 W/SF
Operating hours	Mon-Sat: 9am – 6pm Sun: Unoccupied
HVAC system types	1. Central constant volume system with perimeter hydronic reheat, without economizer; 2. Central constant volume system with perimeter hydronic reheat, with economizer; 3. Central VAV system with perimeter hydronic reheat, with economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Chiller type	Water cooled and air cooled
Chilled water system type	Constant volume with 3 way control valves,
Chilled water system control	Constant CHW Temp, 45 deg F setpoint
Boiler type	Hot water, 80% efficiency
Hot water system type	Constant volume with 3 way control valves,
Hot water system control	Constant HW Temp, 180 deg F setpoint
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Light Industrial

Table 24: Light Industrial Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	100,000 square feet total 80,000 SF factory 20,000 SF warehouse
Number of floors	1
Wall construction and R-value	Concrete block with Brick, no insulation, R-5
Roof construction and R-value	Concrete deck with built-up roof, R-12
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Factory – 2.25 W/SF Warehouse – 0.7 W/SF
Plug load density	Factory – 1.2 W/SF Warehouse – 0.2 W/SF
Operating hours	Mon-Fri: 6am – 6pm Sat Sun: Unoccupied
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Primary School

Table 25: Elementary School Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	2 buildings, 25,000 square feet each; oriented 90° from each other Classroom: 15,750 SF Cafeteria: 3,750 SF Gymnasium: 3,750 SF Kitchen: 1,750 SF
Number of floors	1
Wall construction and R-value	Concrete with brick veneer, R-7.5
Roof construction and R-value	Wood frame with built-up roof, R-13.5
Glazing type	Multipane Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Classroom: 1.8 W/SF Cafeteria: 1.3 W/SF Gymnasium: 1.7 W/SF Kitchen: 2.2 W/SF
Plug load density	Classroom: 1.2 W/SF Cafeteria: 0.6 W/SF Gymnasium: 0.6 W/SF Kitchen: 4.2 W/SF
Operating hours	Mon-Fri: 8am – 6pm Sun: 8am – 4pm
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Small Office

Table 26: Small Office Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	10,000 square feet
Number of floors	2
Wall construction and R-value	Wood frame with brick veneer, R-7.5
Roof construction and R-value	Wood frame with built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Perimeter offices: 1.55 W/SF Core offices: 1.45 W/SF
Plug load density	Perimeter offices: 1.6 W/SF Core offices: 0.7 W/SF
Operating hours	Mon-Sat: 9am – 6pm Sun: Unoccupied
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Small Retail

Table 27: Small Retail Prototype Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	6400 square foot sales area 1600 square foot storage area 8000 square feet total
Number of floors	1
Wall construction and R-value	Concrete block with brick veneer, R-7.5
Roof construction and R-value	Wood frame with built-up roof, R-13.5
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	Sales area: 2.15 W/SF Storage area: 0.85 W/SF (Active) 0.45 W/SF (Inactive)
Plug load density	Sales area: 1.2 W/SF Storage area: 0.2 W/SF
Operating hours	10 – 10 Monday-Saturday 10 – 8 Sunday
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 75 cooling, 70 heating Unoccupied hours: 80 cooling, 65 heating

Warehouse

Table 28: Warehouse Prototype Building Description

Characteristic	Value
Vintage	Existing (1970s) vintage
Size	500,000
Number of floors	1
Wall construction and insulation R-value	Concrete block, R-5
Roof construction and insulation R-value	Wood deck with built-up roof, R-12
Glazing type	Multipane; Shading-coefficient = 0.84 U-value = 0.72
Lighting power density	0.9 W/SF
Plug load density	0.2 W/SF
Operating hours	Mon-Fri: 7am – 6pm Sat Sun: Unoccupied
HVAC system type	Packaged single zone, no economizer
HVAC system size	Based on ASHRAE design day conditions, 10% oversizing assumed.
Thermostat setpoints	Occupied hours: 80 cooling, 68 heating Unoccupied hours: 85 cooling, 63 heating