

Residential and Business Deemed Savings Table

MEEIA 2024-26



Ameren Missouri Deemed Savings Table Revision Log

Ameren Missouri Deemed Savings Table	Date	Ameren Missouri TRM			Description
		Volume 1: Overview and User Guide	Volume 2: C&I Measures	Volume 3: Residential Measures	
Revision		Revision	Revision	Revision	
1.0	05/30/2018	1.0	1.0	1.0	Initial version filed for Commission approval.
2.0	12/31/2018	1.0	1.0	2.0	Updated RES/BUS "Deemed Tables" with PY2017 Evaluation results per Stipulation and Agreement (File No. EO-2018-0211). This included updates to Volume 3 of the TRM.
3.0	01/01/2020	1.0	1.0	3.0	Updated "Deemed Tables" with PY2018 Evaluation results. Also includes revisions to HVAC measures and multifamily measures, based on feedback from evaluation contractor. This includes updates to Volume 3 of the TRM.
3.1	02/06/2020	1.0	1.0	3.0	Updated "Deemed Tables" with updates for 11 step process/program updates and minor corrections found since prior TRM update.
3.2	06/18/2020	1.0	1.1	3.0	Updated Business Deemed Table in alignment with 11 step program changes to best meet goals under current market conditions.
4.0	01/01/2021	1.0	2.0	4.0	Updated "Deemed Tables" with PY19 Evaluation results and variations of existing measures such as "direct install" and other options. Updated Appendix H & I for consistency.
5.0	09/15/2021	2.0	3.0	5.0	Updated "Deemed Tables" with PY20 Evaluation results; variations of existing measures such as non-electric heat ASHP, Lighting, Water Chillers, Home Energy Report EUL, and updated Appendix G, H and I for consistency.
6.0	09/26/2022	2.0	4.0	6.0	Updated "Deemed Tables" with PY21 Evaluation results, variations of existing measures such as DMSHP replacing non-electric heat, Advanced Thermostats in Income Eligible, Handheld Showerhead in EE Products, and Lighting Redesign w/ Network Controls, a new PTHP measure, and updated Appendix G, H and I for consistency.
6.1 MEEIA 2024-26 Filing	12/15/2022	2.1	4.1	6.1	Updated "Deemed Tables" with Residential HVAC baseline updates to select ASHP & CAC (14 SEER base). Added placeholders for Demand Response Measures. Updated to reflect PY2022 Avoided cost assumptions with starting year of 2024 and new discount rate (6.59%). Updated present value & discounting formulas. This document will need to be updated in PY2023 per the normal TRM update process with new or updated measure assumptions as appropriate and tie in the updated avoided cost and discount rates for PY2024-26.

BUSINESS PRESCRIPTIVE MEASURES

The values in the cells highlighted in this color are values used in the Cells highlighted in this color are calculated

PROGRAMS: All

Lighting

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
800050_2019_12_	C&I	LED <=11 Watt Lamp Replacing Interior Halogen A 28-52 Watt Lamp	81.45	Lighting BUS	0.0001899635	0.015968	10.0	\$15.64	per measure
800100_2019_12_	C&I	LED 7-20 Watt Lamp Replacing Interior Halogen 53-70 Watt Lamp	131.65	Lighting BUS	0.0001899635	0.025809	10.0	\$19.64	per measure
800150_2019_12_	C&I	Lamp	232.54	Lighting BUS	0.0001899635	0.045588	10.0	\$48.27	per measure
800200_2019_12_	C&I	LED <=13 Watt Lamp Replacing Interior Halogen MR-16 35-50 Watt Lamp	79.69	Lighting BUS	0.0001899635	0.015623	10.0	\$36.64	per measure
800250_2019_12_	C&I	LED <=20 Watt Lamp Replacing Interior Halogen PAR 48-90 Watt Lamp	187.80	Lighting BUS	0.0001899635	0.036817	10.0	\$74.64	per measure
800300_2019_12_	C&I	LED <=80 Watt Lamp or Fixture Replacing Interior HID 100-175 Watt Lamp or Fixture	1,128.77	Lighting BUS	0.0001899635	0.221287	15.0	\$191.39	per measure
800350_2019_12_	C&I	LED 62 - 130 Watt Lamp or Fixture Replacing Interior HID 176-300 Watt Lamp or Fixture	843.64	Lighting BUS	0.0001899635	0.165389	15.0	\$233.64	per measure
800400_2019_12_	C&I	LED 85 - 225 Watt Lamp or Fixture Replacing Interior HID 301-500 Watt Lamp or Fixture	1,039.76	Lighting BUS	0.0001899635	0.208837	15.0	\$361.64	per measure
800450_2019_12_	C&I	LED <=80 Watt Lamp or Fixture Replacing Garage or Exterior <24/7 HID 100-175 Watt Lamp or Fixture	442.06	Ext Lighting BUS	0.0000056160	0.002483	15.0	\$191.39	per measure
800500_2019_12_	C&I	LED 62 - 130 Watt Lamp or Fixture Replacing Garage or Exterior <24/7 HID 176-300 Watt Lamp or Fixture	841.83	Ext Lighting BUS	0.0000056160	0.004728	15.0	\$233.64	per measure
800550_2019_12_	C&I	LED 85 - 225 Watt Lamp or Fixture Replacing Garage or Exterior <24/7 HID 301-500 Watt Lamp or Fixture	1,540.46	Ext Lighting BUS	0.0000056160	0.008651	15.0	\$361.64	per measure
800600_2019_12_	C&I	LED <=80 Watt Lamp or Fixture Replacing Garage or Exterior 24/7 HID 100-175 Watt Lamp or Fixture Misc.	694.21	Miscellaneous BUS	0.0001379439	0.095762	15.0	\$191.39	per measure
800650_2019_12_	C&I	LED 62 - 130 Watt Lamp or Fixture Replacing Garage or Exterior 24/7 HID 176-300 Watt Lamp or Fixture Misc.	1,468.46	Miscellaneous BUS	0.0001379439	0.202565	15.0	\$233.64	per measure
800700_2019_12_	C&I	LED 85 - 225 Watt Lamp or Fixture Replacing Garage or Exterior 24/7 HID 301-500 Watt Lamp or Fixture Misc.	2,632.74	Miscellaneous BUS	0.0001379439	0.363170	15.0	\$361.64	per measure
800750_2019_12_	C&I	LED or Electroluminescent Replacing Interior Incandescent/CFL Exit Sign	309.17	Lighting BUS	0.0001899635	0.060610	7.0	\$45.25	per measure
800800_2020_12_	C&I	LED Replacing Interior T5 Fluorescent (Type A / Hybrid)	301.78	Lighting BUS	0.0001899635	0.059162	10.0	\$29.64	per measure
800801_2020_12_	C&I	LED Replacing Interior T5 Fluorescent (Type B, Kits, and Fixtures)	545.31	Lighting BUS	0.0001899635	0.106904	15.0	\$29.64	per measure
800802_2021_12_	C&I	LED Replacing Interior T5 Fluorescent (Type C)	303.13	Lighting BUS	0.0001899635	0.059426	11.0	\$29.64	per measure
800850_2020_12_	C&I	LED Replacing Interior T8 Fluorescent (Type A / Hybrid)	234.31	Lighting BUS	0.0001899635	0.045935	10.0	\$29.64	per measure
800851_2020_12_	C&I	LED Replacing Interior T8 Fluorescent (Type B, Kits, and Fixtures)	198.81	Lighting BUS	0.0001899635	0.038975	15.0	\$29.64	per measure
800852_2021_12_	C&I	LED Replacing Interior T8 Fluorescent (Type C)	176.38	Lighting BUS	0.0001899635	0.034578	11.0	\$29.64	per measure
800900_2020_12_	C&I	LED Replacing Interior T12 Fluorescent (Type A / Hybrid)	197.53	Lighting BUS	0.0001899635	0.038724	10.0	\$29.64	per measure
800901_2020_12_	C&I	LED Replacing Interior T12 Fluorescent (Type B, Kits, and Fixtures)	315.35	Lighting BUS	0.0001899635	0.061822	15.0	\$29.64	per measure
800902_2021_12_	C&I	LED Replacing Interior T12 Fluorescent (Type C)	426.61	Lighting BUS	0.0001899635	0.083634	11.0	\$29.64	per measure
800950_2019_12_	C&I	LED Specialty Lamp	99.89	Lighting BUS	0.0001899635	0.019583	10.0	\$11.94	per measure
800980_2021_12_	C&I	LED Lighting Redesign	46,759.28	Lighting BUS	0.0001899635	9.166798	15.0	\$10,000.00	per project

Lighting - Lighting Power Density (LPD)

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
800990_2021_12_	C&I	Lighting Power Density	0.708	Lighting BUS	0.0001899635	0.000139	15.0	\$0.22	per sqft

Lighting - Occupancy Sensor Lighting Controls

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
801010_2020_07_	C&I	Fixture Mounted Occupancy Sensor Controlling > 60 Watts	117.20	Lighting BUS	0.0001899635	0.022976	10.0	\$45.00	per measure
801020_2020_07_	C&I	Remote Mounted Occupancy Sensor Controlling > 150 Watts	287.06	Lighting BUS	0.0001899635	0.056276	10.0	\$105.00	per measure

ESF =Energy Savings factor (represents the percentage reduction to the operating Hours from the non-controlled baseline lighting system). Determined on a site-specific basis or use 24% as default value

Lighting - LED with Network Controls

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
801225_2020_12_	C&I	LED Retrofit Kit with Network Controls Replacing Interior T5 Fluoresc	157.62	Lighting BUS	0.0001899635	0.030900	15.0	\$55.76	per measure
801227_2020_12_	C&I	LED Fixture with Network Controls Replacing Interior T5 Fluorescent	157.62	Lighting BUS	0.0001899635	0.030900	15.0	\$55.76	per measure
801229_2020_12_	C&I	LED Retrofit Kit with Network Controls Replacing Interior T8 Fluoresc	186.30	Lighting BUS	0.0001899635	0.036523	15.0	\$55.76	per measure
801231_2020_12_	C&I	LED Fixture with Network Controls Replacing Interior T8 Fluorescent	331.86	Lighting BUS	0.0001899635	0.065059	15.0	\$55.76	per measure
801233_2020_12_	C&I	LED Retrofit Kit with Network Controls Replacing Interior T12 Fluoresc	312.86	Lighting BUS	0.0001899635	0.061334	15.0	\$55.76	per measure
801235_2020_12_	C&I	LED Fixture with Network Controls Replacing Interior T12 Fluorescent	361.42	Lighting BUS	0.0001899635	0.070854	15.0	\$55.76	per measure
801237_2020_12_	C&I	LED Retrofit Kit with Network Controls Replacing Interior HID	1,054.60	Lighting BUS	0.0001899635	0.206746	15.0	\$366.72	per measure
801239_2020_12_	C&I	LED Fixture with Network Controls Replacing Interior HID	1,054.60	Lighting BUS	0.0001899635	0.206746	15.0	\$366.72	per measure
801241_2022_12_	C&I	Lighting Redesign-LED Fixture w/ network controls-Replacing Linear	90,833.22	Lighting BUS	0.0001899635	17.807156	15.0	\$10,000.00	per project

BUSINESS PRESCRIPTIVE MEASURES

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PROGRAMS: All

Commercial Solid and Glass Door Refrigerators & Freezers

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
801250_2019_12	C&I	0 < V < 15 - Vertical Closed - Solid Door Refrigerator	379.86	Refrigeration BUS	0.0001357383	0.051562	12.0	\$150.00	per measure
801300_2019_12	C&I	15 ≤ V < 30 - Vertical Closed - Solid Door Refrigerator	626.40	Refrigeration BUS	0.0001357383	0.085026	12.0	\$400.00	per measure
801350_2019_12	C&I	30 ≤ V < 50 - Vertical Closed - Solid Door Refrigerator	982.52	Refrigeration BUS	0.0001357383	0.133366	12.0	\$550.00	per measure
801400_2019_12	C&I	V ≥ 50 - Vertical Closed - Solid Door Refrigerator	1,311.25	Refrigeration BUS	0.0001357383	0.177987	12.0	\$700.00	per measure
801450_2019_12	C&I	0 < V < 15 - Vertical Closed - Glass Door Refrigerator	354.29	Refrigeration BUS	0.0001357383	0.048091	12.0	\$250.00	per measure
801500_2019_12	C&I	15 ≤ V < 30 - Vertical Closed - Glass Door Refrigerator	217.32	Refrigeration BUS	0.0001357383	0.029499	12.0	\$500.00	per measure
801550_2019_12	C&I	30 ≤ V < 50 - Vertical Closed - Glass Door Refrigerator	226.46	Refrigeration BUS	0.0001357383	0.030739	12.0	\$1,307.00	per measure
801600_2019_12	C&I	V ≥ 50 - Vertical Closed - Glass Door Refrigerator	372.56	Refrigeration BUS	0.0001357383	0.050571	12.0	\$2,300.00	per measure
801650_2019_12	C&I	Horizontal Closed - Solid or Glass Door Refrigerator - All Volumes	1,219.94	Refrigeration BUS	0.0001357383	0.165593	12.0	\$525.00	per measure
801700_2019_12	C&I	0 < V < 15 - Vertical Closed - Solid Door Freezer	348.81	Refrigeration BUS	0.0001357383	0.047347	12.0	\$150.00	per measure
801750_2019_12	C&I	15 ≤ V < 30 - Vertical Closed - Solid Door Freezer	1,307.60	Refrigeration BUS	0.0001357383	0.177491	12.0	\$400.00	per measure
801800_2019_12	C&I	30 ≤ V < 50 - Vertical Closed - Solid Door Freezer	2,403.35	Refrigeration BUS	0.0001357383	0.326227	12.0	\$550.00	per measure
801850_2019_12	C&I	V ≥ 50 - Vertical Closed - Solid Door Freezer	2,951.22	Refrigeration BUS	0.0001357383	0.400594	12.0	\$700.00	per measure
801900_2019_12	C&I	0 < V < 15 - Vertical Closed - Glass Door Freezer	1,429.95	Refrigeration BUS	0.0001357383	0.194099	12.0	\$220.00	per measure
801950_2019_12	C&I	15 ≤ V < 30 - Vertical Closed - Glass Door Freezer	3,186.81	Refrigeration BUS	0.0001357383	0.432572	12.0	\$950.00	per measure
802000_2019_12	C&I	30 ≤ V < 50 - Vertical Closed - Glass Door Freezer	5,150.03	Refrigeration BUS	0.0001357383	0.699056	12.0	\$1,307.00	per measure
802050_2019_12	C&I	V ≥ 50 - Vertical Closed - Glass Door Freezer	5,884.18	Refrigeration BUS	0.0001357383	0.798709	12.0	\$2,300.00	per measure
802100_2019_12	C&I	Horizontal Closed - Solid or Glass Door Freezer - All Volumes	5,265.08	Refrigeration BUS	0.0001357383	0.714673	12.0	\$595.00	per measure

Refrigerators & Freezers Controls

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per door)	End Use	kW Factor	kW	EUL	Inc. Cost (per door)	Units
802150_2019_12	C&I	Anti-Sweat Heater Controls Refrigerator	668.14	Refrigeration BUS	0.0001357383	0.090692	12.0	\$151.00	per door
802200_2019_12	C&I	Anti-Sweat Heater Controls Freezer	770.93	Refrigeration BUS	0.0001357383	0.104645	12.0	\$151.00	per door

Heat Pump Water Heaters

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
802250_2019_12	C&I	Heat Pump Water Heater w/ 98% Efficiency 2.9-14.6 kW (10 to 50 M	21,156.00	Water Heating BUS	0.0001811545	3.832505	15.0	\$4,000.00	per measure
802300_2019_12	C&I	Heat Pump Water Heater w/ 98% Efficiency 14.7-29.3 kW (50 to 100	52,890.00	Water Heating BUS	0.0001811545	9.581262	15.0	\$7,000.00	per measure
802350_2019_12	C&I	Heat Pump Water Heater w/ 98% Efficiency 29.4-87.9 kW (100 to 300	141,041.00	Water Heating BUS	0.0001811545	25.550212	15.0	\$10,000.00	per measure
802400_2019_12	C&I	Heat Pump Water Heater w/ 98% Efficiency 88-146.5 kW (300 to 500	282,081.00	Water Heating BUS	0.0001811545	51.100243	15.0	\$14,000.00	per measure
802450_2019_12	C&I	Heat Pump Water Heater w/ 98% Efficiency >146.6 kW (above 500 M	423,122.00	Water Heating BUS	0.0001811545	76.650454	15.0	\$18,000.00	per measure

Heat Pump Pool Heater

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost (per unit)	Units
802500_2019_12	C&I	Pool Heater Heat Pump (Uncovered)	35,272.88	Water Heating BUS	0.0001811545	6.389841	15.00	\$1,000.00	per measure
802550_2019_12	C&I	Pool Heater Heat Pump (Covered)	6,206.88	Water Heating BUS	0.0001811545	1.124404	15.00	\$1,000.00	per measure

Pool Pump

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per HP)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
802600_2019_12	C&I	Pool Pump w/ Variable Frequency Drive	1,747.00	Motors BUS	0.0001379439	0.240988	10.00	\$246.00	per measure

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
802650_2019_12	C&I	Pool Pump Timer	601.28	Motors BUS	0.0001379439	0.082943	10.00	\$100.00	per measure

Steam Cookers

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
802700_2019_12	C&I	3 Pan ENERGY STAR Steam Cooker	7,856.31	Cooking BUS	0.000198949	1.570436	12.0	\$4,150.00	per measure
802750_2019_12	C&I	4 Pan ENERGY STAR Steam Cooker	9,213.50	Cooking BUS	0.000198949	1.841732	12.0	\$4,150.00	per measure
802800_2019_12	C&I	5 Pan ENERGY STAR Steam Cooker	10,512.97	Cooking BUS	0.000198949	2.101489	12.0	\$4,150.00	per measure
802850_2019_12	C&I	6 Pan ENERGY STAR Steam Cooker	11,818.65	Cooking BUS	0.000198949	2.362488	12.0	\$4,150.00	per measure

Holding Cabinet

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
802900_2019_12	C&I	ENERGY STAR Hot Holding Cabinet (0 < V < 13)	709.50	Cooking BUS	0.000198949	0.141825	12.00	\$1,783.00	per measure
802950_2019_12	C&I	ENERGY STAR Hot Holding Cabinet (13 ≤ V < 28)	2,772.25	Cooking BUS	0.000198949	0.554159	12.00	\$1,783.00	per measure
803000_2019_12	C&I	ENERGY STAR Hot Holding Cabinet (28 ≤ V)	4,438.34	Cooking BUS	0.000198949	0.887202	12.00	\$1,783.00	per measure

BUSINESS PRESCRIPTIVE MEASURES

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PROGRAMS: All

HVAC

Measure Reference No.	Program/ Channel	Measure	Cooling kWh Annual Savings (per Ton)	Heating kWh Annual Savings (per ton)	Total kWh Annual Savings	End Use	End Use	kW Factor	kW	EUL	Inc. Cost	Units
803050_2019_12_	C&I	Learning Thermostat	205.34	233.0	438.3	Cooling BUS	Heating BUS	0.0009106840	0.187000	10.00	\$224.00	per measure

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per HP)	End Use	kW Factor	kW	EUL	Inc. Cost (per HP)	Units
803100_2020_07_	C&I	VFD on Chilled Water Pump >= 1HP	1,289.6	Cooling BUS	0.0009106840	1.174455	15.00	\$179.00	per Hp
803150_2020_07_	C&I	VFD on Hot Water Pump >= 1HP	1,696.6	HVAC BUS	0.0004439830	0.753248	15.00	\$179.00	per Hp
803155_2020_07_	C&I	VFD on Condenser Water Pump >= 1HP	1,289.6	Cooling BUS	0.0009106840	1.174455	15.00	\$179.00	per Hp
803160_2020_07_	C&I	VFD on Cooling Tower Fan >= 1HP	479.5	HVAC BUS	0.0004439830	0.212881	15.00	\$179.00	per Hp

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per HP)	End Use	kW Factor	kW	EUL	Inc. Cost (per HP)	Units
803200_2020_07_	C&I	VFD on HVAC Fans >= 1HP	939.75	HVAC BUS	0.0004439830	0.417233	15.00	\$168.00	per Hp

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per ton)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
803250_2020_07_	C&I	Single Packag or Split Sytem Unitary AC_DX 135 - 240kbtu	153.77	Cooling BUS	0.0009106840	0.140036	15.0	\$100.00	per ton
803300_2020_07_	C&I	Single Packag or Split Sytem Unitary AC_DX 240 - 760kbtu	167.94	Cooling BUS	0.0009106840	0.15294	15.0	\$100.00	per ton
803350_2020_07_	C&I	Single Packag or Split Sytem Unitary AC_DX 65 -135kbtu	148.68	Cooling BUS	0.0009106840	0.135400	15.0	\$100.00	per ton
803400_2020_07_	C&I	Single Packag or Split Sytem Unitary AC_DX >760kbtu	167.52	Cooling BUS	0.0009106840	0.152558	15.0	\$100.00	per ton
803450_2020_07_	C&I	Single Packag or Split Sytem Unitary AC_DX <65kbtu	129.60	Cooling BUS	0.0009106840	0.118025	15.0	\$100.00	per ton

Measure Reference No.	Program/ Channel	Measure	Cooling kWh Annual Savings (per ton)	Heating kWh Annual Savings (per ton)	Total kWh Annual Savings	End Use	End Use	kW Factor	kW	EUL	Inc. Cost (per ton)	Units
803500_2019_12_	C&I	GSHP <135kbtu; >=17EER	36.71	27.99	64.70	Cooling BUS	Heating BUS	0.0009106840	0.033431	15.0	\$180.00	per ton
803550_2019_12_	C&I	GSHP <135kbtu; >=19EER	114.95	27.99	142.94	Cooling BUS	Heating BUS	0.0009106840	0.104683	15.0	\$180.00	per ton
803600_2020_07_	C&I	ASHP 65 - 135kbtu	117.33	223.04	340.37	Cooling BUS	Heating BUS	0.0009106840	0.106851	15.0	\$100.00	per ton
803650_2020_07_	C&I	ASHP 135 - 240kbtu	127.93	265.20	393.13	Cooling BUS	Heating BUS	0.0009106840	0.116504	15.0	\$100.00	per ton
803700_2020_07_	C&I	ASHP >240kbtu	146.25	265.20	411.45	Cooling BUS	Heating BUS	0.0009106840	0.133188	15.0	\$100.00	per ton
803750_2020_07_	C&I	ASHP <65kbtu	106.52	222.73	329.25	Cooling BUS	Heating BUS	0.0009106840	0.097006	15.0	\$100.00	per ton

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per ton)	End Use	kW Factor	kW	EUL	Inc. Cost (per ton)	Units
803800_2019_12_	C&I	Air Cooled Chiller	411.00	Cooling BUS	0.0009106840	0.374291	20.0	\$106.23	per ton
803810_2021_12_	C&I	Water Cooled Chiller	122.15	Cooling BUS	0.0009106840	0.11124	20.0	\$106.23	per ton

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per ton)	End Use	kW Factor	kW	EUL	Inc. Cost (per ton)	Units
803820_2022_12_	C&I	Air Cooled Chiller Tune up	80.95	Cooling BUS	0.0009106840	0.07372	5.0	\$5.00	per ton
803825_2022_12_	C&I	Water Cooled Chiller Tune up	48.86	Cooling BUS	0.0009106840	0.044496	5.0	\$5.00	per ton

Appliances

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
803850_2019_12_	C&I	Clothes Washer (Electric DHW; Electric Dryer)	907.62	Miscellaneous BUS	0.0001379439	0.125201	11.00	\$200.00	per measure
803900_2019_12_	C&I	Clothes Washer (Gas DHW; Electric Dryer)	308.41	Miscellaneous BUS	0.0001379439	0.042543	11.00	\$200.00	per measure
803950_2019_12_	C&I	Clothes Washer (Electric DHW; Gas Dryer)	750.78	Miscellaneous BUS	0.0001379439	0.103566	11.00	\$200.00	per measure
804000_2019_12_	C&I	Clothes Washer (Gas DHW; Gas Dryer)	151.57	Miscellaneous BUS	0.0001379439	0.020908	11.00	\$200.00	per measure

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
804050_2019_12_	C&I	Clothes Dryer Vented Electric, Standard (>= 4.4 ft3)	840.73	Miscellaneous BUS	0.0001379439	0.115974	14.00	\$75.00	per measure
804100_2019_12_	C&I	Clothes Dryer Vented Electric, Compact (120V) (< 4.4 ft3)	307.28	Miscellaneous BUS	0.0001379439	0.042387	14.00	\$105.00	per measure
804150_2019_12_	C&I	Clothes Dryer Vented Electric, Compact (240V) (< 4.4 ft3)	340.11	Miscellaneous BUS	0.0001379439	0.046916	14.00	\$105.00	per measure
804200_2019_12_	C&I	Clothes Dryer Vented Electric, Compact (240V) (< 4.4 ft3)	428.66	Miscellaneous BUS	0.0001379439	0.059131	14.00	\$105.00	per measure
804250_2019_12_	C&I	Clothes Dryer Vented Gas	40.57	Miscellaneous BUS	0.0001379439	0.005596	14.00	\$75.00	per measure

BUSINESS PRESCRIPTIVE MEASURES

The values in the cells highlighted in this color are values used in the Cells highlighted in this color are calculated

PROGRAMS: All

Compressed Air

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
804300_2019_12	C&I	No Loss Condensate Drain (Reciprocating - On/off Control)	3,272.3	Air Comp BUS	0.0001379439	0.451388	13.00	\$700.00	per measure
804350_2019_12	C&I	No Loss Condensate Drain (Reciprocating - Load/Unload)	2,418.6	Air Comp BUS	0.0001379439	0.333634	13.00	\$700.00	per measure
804400_2019_12	C&I	No Loss Condensate Drain (Screw - Load/Unload)	2,703.2	Air Comp BUS	0.0001379439	0.372886	13.00	\$700.00	per measure
804450_2019_12	C&I	No Loss Condensate Drain (Screw - Inlet Modulation)	978.1	Air Comp BUS	0.0001379439	0.134926	13.00	\$700.00	per measure
804500_2019_12	C&I	No Loss Condensate Drain (Screw - Inlet Modulation w/ Unloading)	978.1	Air Comp BUS	0.0001379439	0.134926	13.00	\$700.00	per measure
804550_2019_12	C&I	No Loss Condensate Drain (Screw - Variable Displacement)	2,721.0	Air Comp BUS	0.0001379439	0.375338	13.00	\$700.00	per measure
804600_2019_12	C&I	No Loss Condensate Drain (Screw - VFD)	3,165.6	Air Comp BUS	0.0001379439	0.436668	13.00	\$700.00	per measure

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
804650_2019_12	C&I	Compressed Air Nozzle (Reciprocating - On/off Control)	1,547.21	Air Comp BUS	0.0001379439	0.213428	15.00	\$77.00	per measure
804700_2019_12	C&I	Compressed Air Nozzle (Reciprocating - Load/Unload)	1,203.38	Air Comp BUS	0.0001379439	0.165999	15.00	\$77.00	per measure
804750_2019_12	C&I	Compressed Air Nozzle (Screw - Load/Unload)	1,289.34	Air Comp BUS	0.0001379439	0.177857	15.00	\$77.00	per measure
804800_2019_12	C&I	Compressed Air Nozzle (Screw - Inlet Modulation)	515.74	Air Comp BUS	0.0001379439	0.071143	15.00	\$77.00	per measure
804850_2019_12	C&I	Compressed Air Nozzle (Screw - Inlet Modulation w/ Unloading)	515.74	Air Comp BUS	0.0001379439	0.071143	15.00	\$77.00	per measure
804900_2019_12	C&I	Compressed Air Nozzle (Screw - Variable Displacement)	1,289.34	Air Comp BUS	0.0001379439	0.177857	15.00	\$77.00	per measure
804950_2019_12	C&I	Compressed Air Nozzle (Screw - VFD)	1,547.21	Air Comp BUS	0.0001379439	0.213428	15.00	\$77.00	per measure

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per HP)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805000_2020_07_	C&I	VSD Air Compressor 5-40 HP	987.0	Air Comp BUS	0.0001379439	0.136152	10.00	"=(127*HPcomp)+1446"	per HP

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per CFM Reduced)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805020_2022_12	C&I	Leak Repair (Reciprocating - On/off Control)	1,090.75	Air Comp BUS	0.0001379439	0.150462	2.00	Actual	per CFM Reduced
805022_2022_12	C&I	Leak Repair (Reciprocating - Load/Unload)	806.21	Air Comp BUS	0.0001379439	0.111212	2.00	Actual	per CFM Reduced
805024_2022_12	C&I	Leak Repair (Screw - Load/Unload)	901.06	Air Comp BUS	0.0001379439	0.124296	2.00	Actual	per CFM Reduced
805026_2022_12	C&I	Leak Repair (Screw - Inlet Modulation)	326.04	Air Comp BUS	0.0001379439	0.044975	2.00	Actual	per CFM Reduced
805028_2022_12	C&I	Leak Repair (Screw - Inlet Modulation w/ Unloading)	326.04	Air Comp BUS	0.0001379439	0.044975	2.00	Actual	per CFM Reduced
805030_2022_12	C&I	Leak Repair (Screw - Variable Displacement)	906.98	Air Comp BUS	0.0001379439	0.125112	2.00	Actual	per CFM Reduced
805032_2022_12	C&I	Leak Repair (Screw - VFD)	1,055.18	Air Comp BUS	0.0001379439	0.145556	2.00	Actual	per CFM Reduced

Combination Oven

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805050_2019_12	C&I	Combination Oven (Pan Capacity < 15)	6,372.30	Cooking BUS	0.0001998949	1.27379	12.0	\$4,300.00	per measure
805100_2019_12	C&I	Combination Oven (Pan Capacity ≥ 15)	11,743.62	Cooking BUS	0.0001998949	2.34749	12.0	\$4,300.00	per measure

Fryer

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805150_2019_12	C&I	Standard Open Deep-Fat Fryer	952.31	Cooking BUS	0.0001998949	0.190362	12.0	\$210.00	per measure
805200_2019_12	C&I	Large Vat Open Deep-Fat Fryer	2,537.84	Cooking BUS	0.0001998949	0.507301	12.0	\$0.00	per measure

Convection Oven

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805250_2019_12	C&I	Convection Oven (Full Size)	1,938.47	Cooking BUS	0.0001998949	0.38749	12.0	\$0.00	per measure
805300_2019_12	C&I	Convection Oven (Half Size)	192.11	Cooking BUS	0.0001998949	0.038402	12.0	\$0.00	per measure

Griddle

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805350_2019_12	C&I	Griddle	1,910.38	Cooking BUS	0.0001998949	0.381875	12.0	\$0.00	per measure

Kitchen Demand Ventilation Controls

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per HP)	End Use	kW Factor	kW	EUL	Inc. Cost (per Hp)	Units
805405_2020_07_	C&I	Kitchen Demand Ventilation Controls, Retrofit	4,197.00	Cooking BUS	0.0001998949	0.838959	15.0	\$1,991.00	per HP
805410_2020_07_	C&I	Kitchen Demand Ventilation Controls, New	4,197.00	Cooking BUS	0.0001998949	0.838959	15.0	\$1,991.00	per HP

BUSINESS PRESCRIPTIVE MEASURES

The values in the cells highlighted in this color are values used in the Cells highlighted in this color are calculated

PROGRAMS: All

Pre-Rinse Spray Valve

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805450_2019_12_	C&I	Pre-Rinse Spray Valve	5,786.53	Cooking BUS	0.0001988949	1.156698	5.0	\$92.90	per measure

Low Flow Faucet Aerator

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805500_2019_12_	C&I	Low Flow Faucet Aerator	86.63	Water Heating BUS	0.0001811545	0.015693	9.0	\$8.00	per measure

Circulator Pump

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805550_2019_12_	C&I	Circulator Pump	651.00	Miscellaneous BUS	0.0001379439	0.089801	15.0	\$1,200.00	per measure

Small Commercial Programmable Thermostats

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per sqft)	End Use	kW Factor	kW	EUL	Inc. Cost (per unit)	Units
805600_2019_12_	C&I	Small Commercial Programmable Thermostats	0.03	Cooling BUS	0.0009106840	0.000027	8.0	\$181.00	per measure

Demand Controlled Ventilation

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per sqft)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805650_2019_12_	C&I	Demand Controlled Ventilation (Gas Heat)	0.67	Cooling BUS	0.0009106840	0.00061	10.00	Actual	per sq. ft.
805700_2019_12_	C&I	Demand Controlled Ventilation (Electric Heat)	1.90	Cooling BUS	0.0009106840	0.00173	10.00	Actual	per sq. ft.
805750_2019_12_	C&I	Demand Controlled Ventilation (Heat Pump)	1.08	Cooling BUS	0.0009106840	0.000984	10.00	Actual	per sq. ft.

Advanced RTU Controls

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per HP)	End Use	kW Factor	kW	EUL	Inc. Cost (per unit)	Units
805800_2019_12_	C&I	Advanced RTU Controls	3,779.33	HVAC BUS	0.0004439830	1.677958	15.0	\$4,038.00	per measure

PTAC & PTHP

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per ton) first 5 years	kWh Annual Savings (per ton) next ten years	End Use	kW Factor	kW (per ton) first 5 years	kW (per ton) next ten years	EUL	Inc. Cost (per ton)	Units
805850_2019_12_	C&I	PTAC	411.27	10.5	Cooling BUS	0.0009106840	0.3745	0.010	15.0	\$1,047.00	per ton
805900_2019_12_	C&I	PTHP	715.42	177.1	Cooling BUS	0.0009106840	0.3745	0.019	15.0	\$1,047.00	per ton

Refrigerated Beverage Vending Machine

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per cubicft)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
805950_2019_12_	C&I	Refrigerated Beverage Vending Machine (Class A)	0.13	Refrigeration BUS	0.0001357383	0.000018	12.0	\$140.00	per measure
806000_2019_12_	C&I	Refrigerated Beverage Vending Machine (Class B)	0.32	Refrigeration BUS	0.0001357383	0.000043	12.0	\$140.00	per measure

ECM for Walk-in & Reach-in Coolers/Freezers

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per motor)	End Use	kW Factor	kW	EUL	Inc. Cost (per motor)	Units
806050_2019_12_	C&I	ECM for Walk-in & Reach-in Coolers/Freezers	1,409.00	Miscellaneous BUS	0.0001379439	0.194363	15.0	\$177.00	per motor

High Volume Low Speed Fans

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per measure)	End Use	kW Factor	kW	EUL	Inc. Cost	Units
806100_2020_07_	C&I	High Volume Low Speed Fan, 20	6,577.0	HVAC BUS	0.0004439830	2.9201	10.0	\$4,150.00	per measure
806110_2020_07_	C&I	High Volume Low Speed Fan, 22	8,543.0	HVAC BUS	0.0004439830	3.7929	10.0	\$4,180.00	per measure
806120_2020_07_	C&I	High Volume Low Speed Fan, 24	10,018.0	HVAC BUS	0.0004439830	4.4478	10.0	\$4,225.00	per measure

Custom Measure

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings (per motor)	End Use	kW Factor	kW	EUL	Inc. Cost (per motor)	Units
999999_2019_12	C&I	Custom	Custom	Variable	Variable	Custom	Custom	Custom	Custom

RESIDENTIAL LIGHTING

Lighting Program

** CFL baseline is Post 2021, EISA baseline is pre-2021 **

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	kW	End Use - RES	kW Factor - RES	End Use - BUS	kW Factor - BUS	kWh RES	kWh BUS	KW RES	KW BUS	EUL - RES	EUL - BUS**	Inc. Cost*	Units
200050_2019_12_	Lighting	LED - 10.5W Downlight E26 (CFL baseline)	9.68	0.001501	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	8.29	1.39	0.0012	0.0003	19.0	6.0	\$ 0.0000010	per bulb
200100_2019_12_	Lighting	LED - 10.5W Downlight E26 (Halogen baseline)	39.74	0.006164	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	34.05	5.70	0.0051	0.0011	19.0	6.0	\$ 0.0000010	per bulb
200150_2019_12_	Lighting	LED - 10W (CFL baseline) (750-1049 lumens)	4.70	0.000729	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.02	0.67	0.0006	0.0001	19.0	6.0	\$ 0.0000010	per bulb
200200_2019_12_	Lighting	LED - 10W (Halogen baseline) (750-1049 lumens)	32.51	0.005042	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	27.85	4.66	0.0042	0.0009	19.0	6.0	\$ 0.0000010	per bulb
200250_2019_12_	Lighting	LED - 12W Dimmable Light Bulb (Replacing CFL)	2.44	0.000379	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	2.09	0.35	0.0003	0.0001	19.0	6.0	\$ 0.0000010	per bulb
200300_2019_12_	Lighting	LED - 12W Dimmable Light Bulb (Replacing Specialty Incandescent)	72.16	0.011191	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	61.81	10.34	0.0092	0.0020	19.0	6.0	\$ 0.0000010	per bulb
200350_2019_12_	Lighting	LED - 15W (Halogen baseline) (1050-1489 lumens)	38.43	0.005960	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	32.92	5.51	0.0049	0.0010	19.0	6.0	\$ 0.0000010	per bulb
200400_2019_12_	Lighting	LED - 15W (CFL baseline) (1050-1489 lumens)	6.39	0.000991	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.47	0.92	0.0008	0.0002	19.0	6.0	\$ 0.0000010	per bulb
200401_2020_12_	Lighting	LED - 11W Flood Light BR30 Bulb (CFL baseline)	7.41	0.001150	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	6.35	1.06	0.0009	0.0002	19.0	6.0	\$ 0.0000010	per bulb
200402_2020_12_	Lighting	LED - 11W Flood Light BR30 Bulb (Halogen baseline)	50.74	0.007869	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	43.46	7.27	0.0065	0.0014	19.0	6.0	\$ 0.0000010	per bulb
200450_2019_12_	Lighting	LED - 15W Flood Light PAR30 Bulb (CFL baseline)	5.64	0.000874	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.83	0.81	0.0007	0.0002	19.0	6.0	\$ 0.0000010	per bulb
200500_2019_12_	Lighting	LED - 15W Flood Light PAR30 Bulb (Halogen baseline)	48.20	0.007475	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	41.29	6.91	0.0062	0.0013	19.0	6.0	\$ 0.0000010	per bulb
200550_2019_12_	Lighting	LED - 18W Flood Light PAR30 Bulb (CFL baseline)	4.70	0.000729	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.02	0.67	0.0006	0.0001	19.0	6.0	\$ 0.0000010	per bulb
200600_2019_12_	Lighting	LED - 18W Flood Light PAR38 Bulb (Halogen baseline)	77.04	0.011949	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	66.00	11.04	0.0099	0.0021	19.0	6.0	\$ 0.0000010	per bulb
200650_2019_12_	Lighting	LED - 20W (CFL baseline) (1490-2600 lumens)	9.02	0.001399	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	7.73	1.29	0.0012	0.0002	19.0	6.0	\$ 0.0000010	per bulb
200700_2019_12_	Lighting	LED - 20W (Halogen baseline) (1490-2600 lumens)	53.37	0.008277	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	45.72	7.65	0.0068	0.0015	19.0	6.0	\$ 0.0000010	per bulb
200750_2019_12_	Lighting	LED - 4W Candelabra (CFL baseline)	4.70	0.000729	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.02	0.67	0.0006	0.0001	19.0	6.0	\$ 0.0000010	per bulb
200800_2019_12_	Lighting	LED - 4W Candelabra (Replacing Specialty Incandescent)	32.88	0.005100	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	28.17	4.71	0.0042	0.0009	19.0	6.0	\$ 0.0000010	per bulb
200850_2019_12_	Lighting	LED - 8W Globe Light G25 Bulb (Replacing CFL)	5.45	0.000845	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.67	0.78	0.0007	0.0001	19.0	6.0	\$ 0.0000010	per bulb
200900_2019_12_	Lighting	LED - 8W Globe Light G25 Bulb (Replacing Specialty Incandescent)	34.01	0.005275	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	29.14	4.88	0.0043	0.0009	19.0	6.0	\$ 0.0000010	per bulb
200950_2019_12_	Lighting	LED - 10W (Halogen baseline) (750-1049 lumens) - Specialty Connected Light	29.22	0.004532	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	25.03	4.19	0.0037	0.0008	19.0	6.0	\$ 0.0000010	per bulb
201000_2019_12_	Lighting	LED - 15W (Halogen baseline) (1050-1489 lumens) - Specialty Connected Light	38.43	0.005960	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	32.92	5.51	0.0049	0.0010	19.0	6.0	\$ 0.0000010	per bulb
201050_2019_12_	Lighting	LED - 15W Flood Light PAR30 Bulb (Halogen baseline) - Specialty Connected Light	46.23	0.007169	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	39.60	6.63	0.0059	0.0013	19.0	6.0	\$ 0.0000010	per bulb
201099_2021_12_	Lighting	LED - 6W (CFL baseline) (310-749 lumens)	5.42	0.000840	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.64	0.78	0.0007	0.0001	19.0	6.0	\$ 0.0000010	per bulb
201100_2019_12_	Lighting	LED - 6W (Halogen baseline) (310-749 lumens)	21.61	0.003351	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	18.51	3.10	0.0028	0.0006	19.0	6.0	\$ 0.0000010	per bulb
201130_2021_12_	Lighting	LED Nightlights	24.83	0.003750	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	23.73	1.09	0.0035	0.0002	19.0	6.0	\$ 0.0000010	per bulb

*The present value cost of multiple halogen or CFL bulbs over the life of the measure is typically at or below \$0. For modeling purposes, use 5.000001 to model these measures within DSMare.

**EUL-BUS based on MO TRM - 20,000 hours total life, 3,351 annual hours of use for average building type.

RESIDENTIAL EFFICIENT PRODUCTS

Heat Pump Hot Water Heater

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kWh _{cool}	kWh _{heat} - Electric Resistance	kWh _{heat} - Heat Pumps	kW	EUL	Inc. Cost	Units
250050_2019_12	Efficient Products	Heat Pump Hot Water Heater	2,276.14	Water Heating RES	0.0000887318	383.38	153.81	96.43	0.201966	13.0	\$588.00	per measure

Learning Thermostat / Advanced Thermostat

*CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
250100_2021_12	Efficient Products	Learning Thermostat - ASHP heating/cooling SF	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250100_2021_12	Efficient Products	Learning Thermostat - ASHP heating/cooling SF	550.48	Heating RES	0.0000000000	0.000000	10.0		per measure
250101_2021_12	Efficient Products	Learning Thermostat - ASHP heating/cooling MF	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250101_2021_12	Efficient Products	Learning Thermostat - ASHP heating/cooling MF	357.82	Heating RES	0.0000000000	0.000000	10.0		per measure
250102_2021_12	Efficient Products_CompE	Learning Thermostat - ASHP heating/cooling MF_CompE	138.33	Cooling RES	0.0009474181	0.131056	10.0	\$125.00	per measure
250102_2021_12	Efficient Products_CompE	Learning Thermostat - ASHP heating/cooling MF_CompE	121.74	Heating RES	0.0000000000	0.000000	10.0		per measure
250150_2021_12	Efficient Products	Learning Thermostat - electric furnace heating / central AC MF	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250150_2021_12	Efficient Products	Learning Thermostat - electric furnace heating / central AC MF	608.22	Heating RES	0.0000000000	0.000000	10.0		per measure
250151_2021_12	Efficient Products_CompE	Learning Thermostat - electric furnace heating / central AC MF_CompE	138.33	Cooling RES	0.0009474181	0.131056	10.0	\$125.00	per measure
250151_2021_12	Efficient Products_CompE	Learning Thermostat - electric furnace heating / central AC MF_CompE	206.94	Heating RES	0.0000000000	0.000000	10.0		per measure
250250_2021_12	Efficient Products	Learning Thermostat - electric furnace heating / central AC SF	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250250_2021_12	Efficient Products	Learning Thermostat - electric furnace heating / central AC SF	935.72	Heating RES	0.0000000000	0.000000	10.0		per measure
250350_2021_12	Efficient Products	Learning Thermostat - Gas Heated / central AC SF**	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250350_2021_12	Efficient Products	Learning Thermostat - Gas Heated / central AC SF**	41.35	Heating RES	0.0000000000	0.000000	10.0		per measure
250351_2021_12	Efficient Products	Learning Thermostat - Gas Heated / central AC MF**	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250351_2021_12	Efficient Products	Learning Thermostat - Gas Heated / central AC MF**	26.88	Heating RES	0.0000000000	0.000000	10.0		per measure
250352_2021_12	Efficient Products_CompE	Learning Thermostat - Gas Heated / central AC MF_CompE**	138.33	Cooling RES	0.0009474181	0.131056	10.0	\$125.00	per measure
250352_2021_12	Efficient Products_CompE	Learning Thermostat - Gas Heated / central AC MF_CompE**	26.88	Heating RES	0.0000000000	0.000000	10.0		per measure
250450_2021_12	Efficient Products	Learning Thermostat - Unknown SF**	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250450_2021_12	Efficient Products	Learning Thermostat - Unknown SF**	276.79	Heating RES	0.0000000000	0.000000	10.0		per measure
250451_2021_12	Efficient Products	Learning Thermostat - Unknown MF**	190.21	Cooling RES	0.0009474181	0.180208	10.0	\$125.00	per measure
250451_2021_12	Efficient Products	Learning Thermostat - Unknown MF**	179.91	Heating RES	0.0000000000	0.000000	10.0		per measure
250452_2021_12	Efficient Products_CompE	Learning Thermostat - Unknown MF_CompE**	138.33	Cooling RES	0.0009474181	0.131056	10.0	\$125.00	per measure
250452_2021_12	Efficient Products_CompE	Learning Thermostat - Unknown MF_CompE**	73.09	Heating RES	0.0000000000	0.000000	10.0		per measure

High Efficiency Pool Pumps

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
250500_2021_12	Efficient Products	ENERGY STAR Pool Pump and motor w auto controls - multi speed	0.00	Pool Spa RES	0.0002354459	0.000000	10.0	\$0.00	per measure
250550_2021_12	Efficient Products	ENERGY STAR VFDs on Residential Swimming Pool Pumps - ROF	315.21	Pool Spa RES	0.0002354459	0.074215	10.0	\$314.00	per measure
250551_2021_12	Efficient Products	ENERGY STAR VFDs on Residential Swimming Pool Pumps - ER	1,478.34	Pool Spa RES	0.0002354459	0.348069	10.0	\$549.00	per measure

Advanced Power Strips Tier 2 / Advanced Control Strategies

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
250600_2019_12	Efficient Products	Advanced Tier 2 Power Strips - A	237.60	Miscellaneous RES	0.0001148238	0.027282	10.0	\$30.00	per measure
250650_2019_12	Efficient Products	Advanced Tier 2 Power Strips - B	216.00	Miscellaneous RES	0.0001148238	0.024802	10.0	\$30.00	per measure
250700_2019_12	Efficient Products	Advanced Tier 2 Power Strips - C	194.40	Miscellaneous RES	0.0001148238	0.022322	10.0	\$30.00	per measure
250750_2019_12	Efficient Products	Advanced Tier 2 Power Strips - D	172.80	Miscellaneous RES	0.0001148238	0.019842	10.0	\$30.00	per measure
250800_2019_12	Efficient Products	Advanced Tier 2 Power Strips - E	151.20	Miscellaneous RES	0.0001148238	0.017361	10.0	\$30.00	per measure
250850_2019_12	Efficient Products	Advanced Tier 2 Power Strips - F	129.60	Miscellaneous RES	0.0001148238	0.014881	10.0	\$30.00	per measure
250900_2019_12	Efficient Products	Advanced Tier 2 Power Strips - G	108.00	Miscellaneous RES	0.0001148238	0.012401	10.0	\$30.00	per measure
250950_2019_12	Efficient Products	Advanced Tier 2 Power Strips - H	86.40	Miscellaneous RES	0.0001148238	0.009921	10.0	\$30.00	per measure
251000_2019_12	Efficient Products	Advanced Tier 2 Power Strips / TOS/NC / Average	151.96	Miscellaneous RES	0.0001148238	0.017449	10.0	\$30.00	per measure
251001_2020_12	Efficient Products	Advanced Tier 2 Power Strips / DI / Average	153.90	Miscellaneous RES	0.0001148238	0.017671	10.0	\$60.00	per measure

ENERGY STAR Air Purifier

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
251050_2019_12	Efficient Products	ENERGY STAR Air Purifier/Cleaner	578.86	HVAC RES	0.0004660805	0.269795	9.0	\$70.00	per measure

RESIDENTIAL EFFICIENT PRODUCTS

ENERGY STAR Dehumidifier

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
251100_2019_12_	Efficient Products	ENERGY STAR Dehumidifier	204.00	Cooling RES	0.0009474181	0.193273	12.0	\$5.00	per measure

Energy Star Room AC

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
251150_2019_12_	Efficient Products	ENERGY STAR Room AC (kWh w ISR)	49.5	Cooling RES	0.0009474181	0.046859	9.0	\$20.00	per measure
251200_2019_12_	Efficient Products	ENERGY STAR Room AC (kWh w/o ISR)	50.7	Cooling RES	0.0009474181	0.048072	9.0	\$20.00	per measure

Low Flow Handheld Showerheads

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
251300_2022_12_	Efficient Products	Low Flow Handheld Showerhead SF	86.90	Water heating RES	0.0000887318	0.109	0.007711	10.0	\$15.02	per measure
251350_2022_12_	Efficient Products	Low Flow Handheld Showerhead MF	98.65	Water heating RES	0.0000887318	0.109	0.008753	10.0	\$15.02	per measure

RESIDENTIAL ENERGY EFFICIENCY KITS

Dirty Filter Alarm

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	kW	EUL	Inc. Cost	Units
300050_2019_12_	School	Dirty Filter Alarm_SF	53.75	HVAC RES	0.0004660805	34.00	19.75	0.025052	14.0	\$5.00	per measure
300051_2020_12_	IE	Dirty Filter Alarm_SF - IE Kits	98.22	HVAC RES	0.0004660805	62.13	36.09	0.045778	14.0	\$5.00	per measure
300060_2021_12_	ARP	Dirty Filter Alarm_SF - ARP Kits	15.27	HVAC RES	0.0004660805	9.66	5.61	0.007117	14.0	\$5.00	per measure
300100_2019_12_	School	Dirty Filter Alarm_MF	177.38	HVAC RES	0.0004660805	112.20	65.18	0.082673	14.0	\$5.00	per measure
300101_2019_12_	School	Dirty Filter Alarm_MF_CompE	85.65	HVAC RES	0.0004660805	38.25	47.40	0.039920	14.0	\$5.00	per measure

LEDs (per bulb)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
300150_2019_12_	School	LED - 10W (CFL baseline) (750-1049 lumens)	2.87	Lighting RES	0.0001492529	0.000428	19.0	\$1.95	per measure
300200_2019_12_	MF	LED - 10W (CFL baseline) (750-1049 lumens)	4.34	Lighting RES	0.0001492529	0.000648	19.0	\$1.95	per measure
300250_2019_12_	School	LED - 10W (Halogen baseline) (750-1049 lumens)	22.19	Lighting RES	0.0001492529	0.003312	19.0	\$1.95	per measure
300251_2020_12_	IE	LED - 10W (Halogen baseline) (750-1049 lumens) - IE Kit	30.15	Lighting RES	0.0001492529	0.004500	19.0	\$1.95	per measure
300260_2020_12_	ARP	LED - 10W (Halogen baseline) (750-1049 lumens) - ARP Kit	29.48	Lighting RES	0.0001492529	0.004400	19.0	\$1.95	per measure
300300_2019_12_	MF	LED - 10W (Halogen baseline) (750-1049 lumens)	33.50	Lighting RES	0.0001492529	0.005000	19.0	\$1.95	per measure
300350_2019_12_	School	LED - 10.5W Downlight E26 (CFL baseline)	7.83	Lighting RES	0.0001492529	0.001169	19.0	\$1.95	per measure
300400_2019_12_	MF	LED - 10.5W Downlight E26 (CFL baseline)	11.82	Lighting RES	0.0001492529	0.001764	19.0	\$1.95	per measure
300401_2020_12_	IE	LED 8W Globe Light G25 Bulb (Halogen Baseline) - IE Kit	32.10	Lighting RES	0.0001492529	0.004791	19.0	\$1.95	per measure
300402_2020_12_	IE	LED 20W (Halogen baseline) (1490-2600 lumens) - IE Kit	50.36	Lighting RES	0.0001492529	0.007516	19.0	\$1.95	per measure
300403_2020_12_	IE	LED 15W Flood Light PAR30 Bulb (Halogen Baseline) - IE Kit	45.49	Lighting RES	0.0001492529	0.006790	19.0	\$1.95	per measure
300430_2021_12_	IE	LED Nightlights	26.15	Lighting RES	0.0001492529	0.003903	19.0	\$1.95	per measure

Kit Faucet Aerators (Kitchen)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
300450_2019_12_	School	Kit Faucet Aerator (Kitchen)	29.75	Water Heating RES	0.0000887318	0.079	0.002640	\$10.00	\$3.00	per measure
300460_2020_12_	ARP	Kit Faucet Aerator (Kitchen) - ARP Kits	12.77	Water Heating RES	0.0000887318	0.079	0.001133	\$10.00	\$3.00	per measure
300500_2019_12_	MF	Kit Faucet Aerator (Kitchen)	99.55	Water Heating RES	0.0000887318	0.079	0.008833	\$10.00	\$3.00	per measure
300501_2020_12_	IE	Kit Faucet Aerator (Kitchen) - SFIE Kits	43.69	Water Heating RES	0.0000887318	0.079	0.003877	\$10.00	\$3.00	per measure

Kit Faucet Aerators (Bathroom)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
300550_2019_12_	School	Kit Faucet Aerator (Bathroom)	6.17	Water Heating RES	0.0000887318	0.06153283	0.000547	10.0	\$3.00	per measure
300560_2020_12_	ARP	Kit Faucet Aerator (Bathroom) - ARP Kits	2.65	Water Heating RES	0.0000887318	0.06153283	0.000235	10.0	\$3.00	per measure
300600_2019_12_	MF	Kit Faucet Aerator (Bathroom)	30.10	Water Heating RES	0.0000887318	0.06153283	0.002671	10.0	\$3.00	per measure
300601_2020_12_	IE	Kit Faucet Aerator (Bathroom) - SFIE Kits	13.84	Water Heating RES	0.0000887318	0.04658558	0.001228	10.0	\$3.00	per measure

Low Flow Showerheads

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
300650_2019_12_	School	Low Flow Showerheads	71.66	Water Heating RES	0.0000887318	0.109	0.006359	10.0	\$7.00	per measure
300660_2020_12_	ARP	Low Flow Showerheads - ARP Kits	27.35	Water Heating RES	0.0000887318	0.109	0.002427	10.0	\$7.00	per measure
300700_2019_12_	MF	Low Flow Showerheads	291.45	Water Heating RES	0.0000887318	0.109	0.025861	10.0	\$7.00	per measure
300701_2021_12_	IE	Low Flow Showerheads - SFIE Kits	79.49	Water Heating RES	0.0000887318	0.109	0.007053	10.0	\$7.00	per measure

Pipe Insulation

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
300750_2019_12_	School	Pipe Insulation	3.24	Water Heating RES	0.0000887318	0.000287	12.0	\$2.87	per foot
300760_2020_12_	ARP	Pipe Insulation - ARP Kits	2.59	Water Heating RES	0.0000887318	0.000230	12.0	\$2.87	per foot
300800_2019_12_	MF	Pipe Insulation	15.01	Water Heating RES	0.0000887318	0.001332	12.0	\$2.87	per foot
300801_2020_12_	IE	Pipe Insulation - SFIE Kits	3.40	Water Heating RES	0.0000887318	0.000302	12.0	\$2.87	per foot

RESIDENTIAL ENERGY EFFICIENCY KITS

Advanced Power Strips Tier 1 / Load Sensing

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
300850_2019_12_	Unknown	Advanced Tier 1 Power Strips -TOS/NC - Home Office	29.45	Miscellaneous RES	0.0001148238	0.003382	10.0	\$20.00	per measure
300851_2020_12_	Unknown	Advanced Tier 1 Power Strips -DI - Home Office	29.45	Miscellaneous RES	0.0001148238	0.003382	10.0	\$30.00	per measure
300900_2019_12_	Unknown	Advanced Tier 1 Power Strips -Kits - Home Office	29.08	Miscellaneous RES	0.0001148238	0.003339	10.0	\$20.00	per measure
300950_2019_12_	Unknown	Advanced Tier 1 Power Strips -TOS/NC - Home Entertainment	71.35	Miscellaneous RES	0.0001148238	0.008193	10.0	\$20.00	per measure
300951_2020_12_	Unknown	Advanced Tier 1 Power Strips -DI - Home Entertainment	71.35	Miscellaneous RES	0.0001148238	0.008193	10.0	\$30.00	per measure
301000_2019_12_	Unknown	Advanced Tier 1 Power Strips -Kits - Home Entertainment	70.44	Miscellaneous RES	0.0001148238	0.008088	10.0	\$20.00	per measure
301050_2019_12_	Unknown	Advanced Tier 1 Power Strips -TOS/NC - Unknown Location	56.26	Miscellaneous RES	0.0001148238	0.006460	10.0	\$20.00	per measure
301051_2020_12_	Unknown	Advanced Tier 1 Power Strips -DI - Unknown Location	56.26	Miscellaneous RES	0.0001148238	0.006460	10.0	\$30.00	per measure
301100_2019_12_	Unknown	Advanced Tier 1 Power Strips -Kits - Unknown Location	50.59	Miscellaneous RES	0.0001148238	0.005809	10.0	\$20.00	per measure

Advanced Power Strips Tier 2 / Advanced Control Strategies

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
301149_2021_12_	Unknown	Advanced Tier 2 Power Strips - TOS/NC/DI - Unknown Location	153.90	Miscellaneous RES	0.0001148238	0.017671	10.0	\$10.00	per measure
301150_2021_12_	IE	Advanced Tier 2 Power Strips - SFIE Kits - Unknown Location	151.96	Miscellaneous RES	0.0001148238	0.017449	10.0	\$30.00	per measure

*The actual full installation cost of the Tier 2 AV APS (including equipment and labor) should be used.

RESIDENTIAL HVAC

ECM/ Blower Motor

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	Auto kWh	Continuous kWh	kW	EUL	Inc. Cost	Units
350050_2021_12	SF	ECM Auto Fan ROF-SF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	20.0	\$0.00	per measure
350100_2021_12	MF	ECM Auto Fan ROF-MF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	20.0	\$0.00	per measure
350150_2021_12	SF	ECM Auto Fan ER1 - SF	582.00	HVAC RES	0.0004660805	264.1	31.1	286.7	0.0	0.271259000	6.0	\$86.21	per measure
350150_2021_12	SF	ECM Auto Fan ER2 - SF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	0.0	\$0.00	per measure
350175_2021_12	MF	ECM Auto Fan ER1 - MF	582.00	HVAC RES	0.0004660805	264.1	31.1	286.7	0.0	0.271259000	6.0	\$86.21	per measure
350175_2021_12	MF	ECM Auto Fan ER2 - MF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	0.0	\$0.00	per measure
350200_2021_12	SF	ECM Continuous Fan ROF- SF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	20.0	\$0.00	per measure
350250_2021_12	MF	ECM Continuous Fan ROF- MF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	20.0	\$0.00	per measure
350300_2021_12	SF	ECM Continuous Fan ER1 - SF	582.00	HVAC RES	0.0004660805	264.1	31.1	0.0	286.7	0.271259000	6.0	\$86.21	per measure
350300_2021_12	SF	ECM Continuous Fan ER2 - SF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	0.0	\$0.00	per measure
350350_2021_12	MF	ECM Continuous Fan ER1 - MF	582.00	HVAC RES	0.0004660805	264.1	31.1	0.0	286.7	0.271259000	6.0	\$86.21	per measure
350350_2021_12	MF	ECM Continuous Fan ER2 - MF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000000	0.0	\$0.00	per measure

Note: As part of the Code of Federal Regulations, energy conservation standards for covered residential furnace fans became effective on July 3, 2019 (10 CFR 430.32(y)). This code requirement effectively makes ECMs part of the baseline for New Construction (NC), Replace-on-Fail (ROF), Time-of-Replacement (TOS), and Early Replacement (EREP) scenarios. Savings are only allowable for EREP measures, for the remaining useful life of the existing equipment (ER1, 6 years). Therefore, the EUL of the measure is assumed to be 6 years. (ER1 = 6, ER2 = 0).

Central Air Conditioners

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/ Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	inc. Cost	Units (tons/measure)
350400_2021_12	SF	CAC-SEER14_ER1_SF	1,507.85	Cooling RES	0.0009474181	1.428564	6	\$515.09	2.98
350400_2021_12	SF	CAC-SEER14_ER2_SF	0.00	Cooling RES ER2	0.0009474181	0.000000	12	\$0.00	2.98
350450_2021_12	SF	CAC-SEER14_ROF_SF	0.00	Cooling RES	0.0009474181	0.000000	18	\$0.00	2.97
350500_2021_12	MF	CAC-SEER14_ER1_MF	1,011.98	Cooling RES	0.0009474181	0.958768	6	\$442.08	2.00
350500_2021_12	MF	CAC-SEER14_ER2_MF	0.00	Cooling RES ER2	0.0009474181	0.000000	12	\$0.00	2.00
350501_2021_12	Mfc	CAC-SEER14_ER1_MF_CompE	735.98	Cooling RES	0.0009474181	0.697281	6	\$345.70	2.00
350501_2021_12	Mfc	CAC-SEER14_ER2_MF_CompE	0.00	Cooling RES ER2	0.0009474181	0.000000	12	\$0.00	2.00
350550_2021_12	MF	CAC-SEER14_ROF_MF	0.00	Cooling RES	0.0009474181	0.000000	18	\$0.00	2.00
350551_2021_12	Mfc	CAC-SEER14_ROF_MF_CompE	0.00	Cooling RES	0.0009474181	0.000000	18	\$0.00	2.00
350600_2021_12	SF	CAC-SEER15_ER1_SF	2,221.96	Cooling RES	0.0009474181	2.105125	6	\$650.93	3.14
350600_2021_12	SF	CAC-SEER15_ER2_SF	170.82	Cooling RES ER2	0.0009474181	0.161838	12	\$0.00	3.14
350650_2021_12	SF	CAC-SEER15_ROF_SF	165.49	Cooling RES	0.0009474181	0.156788	18	\$108.00	3.06
350700_2021_12	MF	CAC-SEER15_ER1_MF	1,818.89	Cooling RES	0.0009474181	1.723249	6	\$522.84	2.40
350700_2021_12	MF	CAC-SEER15_ER2_MF	141.21	Cooling RES ER2	0.0009474181	0.133785	12	\$0.00	2.40
350701_2021_12	Mfc	CAC-SEER15_ER1_MF_CompE	1,322.83	Cooling RES	0.0009474181	1.253273	6	\$522.84	2.40
350701_2021_12	Mfc	CAC-SEER15_ER2_MF_CompE	102.70	Cooling RES ER2	0.0009474181	0.097300	12	\$8.00	2.40
350750_2021_12	MF	CAC-SEER15_ROF_MF	74.99	Cooling RES	0.0009474181	0.071047	18	\$108.00	1.51
350751_2021_12	Mfc	CAC-SEER15_ROF_MF_CompE	54.54	Cooling RES	0.0009474181	0.051672	18	\$108.00	1.51
350800_2021_12	SF	CAC-SEER16_ER1_SF	2,164.25	Cooling RES	0.0009474181	2.050450	6	\$724.12	2.91
350800_2021_12	SF	CAC-SEER16_ER2_SF	273.48	Cooling RES ER2	0.0009474181	0.259100	12	\$0.00	2.91
350850_2021_12	SF	CAC-SEER16_ROF_SF	283.54	Cooling RES	0.0009474181	0.268631	18	\$221.00	3.00
350900_2021_12	MF	CAC-SEER16_ER1_MF	1,566.43	Cooling RES	0.0009474181	1.484064	6	\$598.04	2.18
350900_2021_12	MF	CAC-SEER16_ER2_MF	203.18	Cooling RES ER2	0.0009474181	0.192496	12	\$0.00	2.18
350901_2021_12	Mfc	CAC-SEER16_ER1_MF_CompE	1,139.23	Cooling RES	0.0009474181	1.079327	6	\$598.04	2.18
350901_2021_12	Mfc	CAC-SEER16_ER2_MF_CompE	147.77	Cooling RES ER2	0.0009474181	0.140000	12	\$0.00	2.18
350950_2021_12	MF	CAC-SEER16_ROF_MF	257.86	Cooling RES	0.0009474181	0.244301	18	\$221.00	2.75
350951_2021_12	Mfc	CAC-SEER16_ROF_MF_CompE	187.53	Cooling RES	0.0009474181	0.177669	18	\$221.00	2.75
351000_2021_12	SF	CAC-SEER17_ER1_SF	2,272.74	Cooling RES	0.0009474181	2.153235	6	\$1,128.88	2.94
351000_2021_12	SF	CAC-SEER17_ER2_SF	394.29	Cooling RES ER2	0.0009474181	0.373557	12	\$0.00	2.94
351050_2021_12	SF	CAC-SEER17_ROF_SF	392.43	Cooling RES	0.0009474181	0.371795	18	\$620.00	2.93
351100_2021_12	MF	CAC-SEER17_ER1_MF	2,166.20	Cooling RES	0.0009474181	2.052297	6	\$1,090.53	2.72
351100_2021_12	MF	CAC-SEER17_ER2_MF	362.54	Cooling RES ER2	0.0009474181	0.343477	12	\$0.00	2.72
351101_2021_12	Mfc	CAC-SEER17_ER1_MF_CompE	1,575.42	Cooling RES	0.0009474181	1.492581	6	\$1,090.53	2.72
351101_2021_12	Mfc	CAC-SEER17_ER2_MF_CompE	263.66	Cooling RES ER2	0.0009474181	0.249796	12	\$0.00	2.72
351150_2021_12	MF	CAC-SEER17_ROF_MF	360.75	Cooling RES	0.0009474181	0.341781	18	\$620.00	2.75
351151_2021_12	Mfc	CAC-SEER17_ROF_MF_CompE	262.36	Cooling RES	0.0009474181	0.248565	18	\$620.00	2.75
351160_2021_12	SF	CAC-SEER18_ER1_SF	2,517.94	Cooling RES	0.0009474181	2.385542	6	\$1,402.78	3.33
351160_2021_12	SF	CAC-SEER18_ER2_SF	551.22	Cooling RES ER2	0.0009474181	0.522236	12	\$0.00	3.33
351161_2021_12	SF	CAC-SEER18_ROF_SF	561.19	Cooling RES	0.0009474181	0.531682	18	\$826.67	3.40

RESIDENTIAL HVAC

Central Air Conditioners

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
351162_2021_12	MF	CAC-SEER18_ER1_MF	2,128.65	Cooling RES	0.0009474181	2.016722	6	\$1,379.27	2.50
351162_2021_12	MF	CAC-SEER18_ER2_MF	412.98	Cooling RES ER2	0.0009474181	0.391265	12	\$0.00	2.50
351163_2021_12	Mfc	CAC-SEER18_ER1_MF_CompE	1,220.33	Cooling RES	0.0009474181	1.156163	6	\$1,258.79	2.50
351163_2021_12	Mfc	CAC-SEER18_ER2_MF_CompE	300.35	Cooling RES ER2	0.0009474181	0.284557	12	\$0.00	2.50
351164_2021_12	MF	CAC-SEER18_ROF_MF	330.39	Cooling RES	0.0009474181	0.313017	18	\$826.67	2.00
351165_2021_12	Mfc	CAC-SEER18_ROF_MF_CompE	240.28	Cooling RES	0.0009474181	0.227646	18	\$826.67	2.00
351170_2021_12	SF	CAC-SEER19_ER1_SF	3,353.86	Cooling RES	0.0009474181	3.177508	6	\$1,778.89	4.31
351170_2021_12	SF	CAC-SEER19_ER2_SF	863.90	Cooling RES ER2	0.0009474181	0.818474	12	\$0.00	4.31
351171_2021_12	SF	CAC-SEER19_ROF_SF	870.89	Cooling RES	0.0009474181	0.825097	18	\$1,033.33	4.31
351172_2021_12	MF	CAC-SEER19_ER1_MF	1,403.23	Cooling RES	0.0009474181	1.329446	6	\$1,379.03	2.00
351172_2021_12	MF	CAC-SEER19_ER2_MF	391.25	Cooling RES ER2	0.0009474181	0.370677	12	\$0.00	2.00
351173_2021_12	Mfc	CAC-SEER19_ER1_MF_CompE	1,020.53	Cooling RES	0.0009474181	0.966869	6	\$1,379.03	2.00
351173_2021_12	Mfc	CAC-SEER19_ER2_MF_CompE	284.54	Cooling RES ER2	0.0009474181	0.269578	12	\$0.00	2.00
351174_2021_12	MF	CAC-SEER19_ROF_MF	391.25	Cooling RES	0.0009474181	0.370677	18	\$1,033.33	2.00
351175_2021_12	Mfc	CAC-SEER19_ROF_MF_CompE	284.54	Cooling RES	0.0009474181	0.269578	18	\$1,033.33	2.00
351180_2021_12	SF	CAC-SEER20_ER1_SF	2,895.68	Cooling RES	0.0009474181	2.743420	6	\$1,829.28	3.41
351180_2021_12	SF	CAC-SEER20_ER2_SF	772.33	Cooling RES ER2	0.0009474181	0.731719	12	\$0.00	3.41
351181_2021_12	SF	CAC-SEER20_ROF_SF	759.23	Cooling RES	0.0009474181	0.719308	18	\$1,240.00	3.36
351182_2021_12	MF	CAC-SEER20_ER1_MF	1,436.44	Cooling RES	0.0009474181	1.360909	6	\$1,585.70	2.00
351182_2021_12	MF	CAC-SEER20_ER2_MF	446.02	Cooling RES ER2	0.0009474181	0.422567	12	\$0.00	2.00
351183_2021_12	Mfc	CAC-SEER20_ER1_MF_CompE	1,060.36	Cooling RES	0.0009474181	1.004604	6	\$1,585.70	2.00
351183_2021_12	Mfc	CAC-SEER20_ER2_MF_CompE	324.38	Cooling RES ER2	0.0009474181	0.307323	12	\$0.00	2.00
351184_2021_12	MF	CAC-SEER20_ROF_MF	446.02	Cooling RES	0.0009474181	0.422567	18	\$1,240.00	2.00
351185_2021_12	Mfc	CAC-SEER20_ROF_MF_CompE	324.38	Cooling RES	0.0009474181	0.307323	18	\$1,240.00	2.00
351190_2021_12	SF	CAC-SEER21+_ER1_SF	2,849.43	Cooling RES	0.0009474181	2.699602	6	\$2,006.33	3.24
351190_2021_12	SF	CAC-SEER21+_ER2_SF	869.99	Cooling RES ER2	0.0009474181	0.824244	12	\$0.00	3.24
351191_2021_12	SF	CAC-SEER21+_ROF_SF	886.90	Cooling RES	0.0009474181	0.840265	18	\$1,446.67	3.19
351192_2021_12	MF	CAC-SEER21+_ER1_MF	1,507.56	Cooling RES	0.0009474181	1.428290	6	\$1,792.36	2.00
351192_2021_12	MF	CAC-SEER21+_ER2_MF	495.58	Cooling RES ER2	0.0009474181	0.469521	12	\$0.00	2.00
351193_2021_12	Mfc	CAC-SEER21+_ER1_MF_CompE	1,096.41	Cooling RES	0.0009474181	1.038759	6	\$1,792.36	2.00
351193_2021_12	Mfc	CAC-SEER21+_ER2_MF_CompE	360.42	Cooling RES ER2	0.0009474181	0.341468	12	\$0.00	2.00
351194_2021_12	MF	CAC-SEER21+_ROF_MF	495.58	Cooling RES	0.0009474181	0.469521	18	\$1,446.67	2.00
351195_2021_12	Mfc	CAC-SEER21+_ROF_MF_CompE	360.42	Cooling RES	0.0009474181	0.341468	18	\$1,446.67	2.00

*Incremental cost to be adjusted based on cost testing used

Mini/Multi-Split Heat Pumps and Air Conditioners

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
351200_2021_12	SF	Mini/MultiSplitAC_ER1_SF	1,227.25	Cooling RES	0.0009474181	1.162719	6.0	\$1,449.70	1.8
351200_2021_12	SF	Mini/MultiSplitAC_ER2_SF	280.15	Cooling RES ER2	0.0009474181	0.265419	12.0	\$0.00	
351250_2021_12	SF	Mini/MultiSplitAC_ROF_SF	214.55	Cooling RES	0.0009474181	0.203269	18.0	\$364.64	1.1
351300_2021_12	SF	Mini/MultiSplitASHP_ROF_SF_NC	307.28	Cooling RES	0.0009474181	0.291123	18.0	\$364.64	1.5
351300_2021_12	SF	Mini/MultiSplitASHP_ROF_SF_NC	694.54	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351350_2021_12	SF	Mini/MultiSplitASHP_ROF_SF	307.28	Cooling RES	0.0009474181	0.291123	18.0	\$364.64	1.8
351350_2021_12	SF	Mini/MultiSplitASHP_ROF_SF	694.54	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351400_2021_12	SF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER1_SF	1,085.77	Cooling RES	0.0009474181	1.028678	6.0	\$2,768.84	1.7
351400_2021_12	SF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER1_SF	4,719.00	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351400_2021_12	SF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER2_SF	341.01	Cooling RES ER2	0.0009474181	0.323079	12.0	\$0.00	
351400_2021_12	SF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER2_SF	4,719.00	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351401_2022_12	SF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER1_SF	1,085.77	Cooling RES	0.0009474181	1.028678	6.0	\$2,768.84	1.7
351401_2022_12	SF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351401_2022_12	SF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER2_SF	341.01	Cooling RES ER2	0.0009474181	0.323079	12.0	\$0.00	
351401_2022_12	SF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351450_2021_12	SF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ROF_SF	307.28	Cooling RES	0.0009474181	0.291123	18.0	\$364.64	1.5
351450_2021_12	SF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ROF_SF	4,151.16	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351451_2022_12	SF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ROF_SF	307.28	Cooling RES	0.0009474181	0.291123	18.0	\$364.64	1.5
351451_2022_12	SF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351500_2021_12	SF	Mini/MultiSplitASHP_ER1_SF	1,085.77	Cooling RES	0.0009474181	1.028678	6.0	\$848.11	1.7
351500_2021_12	SF	Mini/MultiSplitASHP_ER1_SF	2,176.05	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351500_2021_12	SF	Mini/MultiSplitASHP_ER2_SF	341.01	Cooling RES ER2	0.0009474181	0.323079	12.0	\$0.00	
351500_2021_12	SF	Mini/MultiSplitASHP_ER2_SF	1,434.81	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	

RESIDENTIAL HVAC

Mini/Multi-Split Heat Pumps and Air Conditioners

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
351550_2021_12	MF	Mini/MultiSplitAC_ER1_MF	1,402.57	Cooling RES	0.0009474181	1.328820	6.0	\$1,604.71	1.8
351550_2021_12	MF	Mini/MultiSplitAC_ER2_MF	320.17	Cooling RES ER2	0.0009474181	0.303335	12.0	\$0.00	
351551_2021_12	Mfc	Mini/MultiSplitAC_ER1_MF_CompE	937.47	Cooling RES	0.0009474181	0.888176	6.0	\$1,604.71	2.0
351551_2021_12	Mfc	Mini/MultiSplitAC_ER2_MF_CompE	226.66	Cooling RES ER2	0.0009474181	0.214742	12.0	\$0.00	
351600_2021_12	MF	Mini/MultiSplitAC_ROF_MF	406.52	Cooling RES	0.0009474181	0.385144	18.0	\$364.64	1.1
351601_2021_12	Mfc	Mini/MultiSplitAC_ROF_MF_CompE	1,100.38	Cooling RES	0.0009474181	1.042520	18.0	\$364.64	2.0
351650_2021_12	MF	Mini/MultiSplitASHP_ROF_MF_NC	345.16	Cooling RES	0.0009474181	0.327011	18.0	\$364.64	1.5
351650_2021_12	MF	Mini/MultiSplitASHP_ROF_MF_NC	1,041.06	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351651_2021_12	Mfc	Mini/MultiSplitASHP_ROF_MF_NC_CompE	226.66	Cooling RES	0.0009474181	0.214742	18.0	\$364.64	2.0
351651_2021_12	Mfc	Mini/MultiSplitASHP_ROF_MF_NC_CompE	395.68	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351700_2021_12	MF	Mini/MultiSplitASHP_ROF_MF	345.16	Cooling RES	0.0009474181	0.327011	18.0	\$364.64	1.5
351700_2021_12	MF	Mini/MultiSplitASHP_ROF_MF	1,041.06	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351701_2021_12	Mfc	Mini/MultiSplitASHP_ROF_MF_CompE	226.66	Cooling RES	0.0009474181	0.214742	18.0	\$364.64	2.0
351701_2021_12	Mfc	Mini/MultiSplitASHP_ROF_MF_CompE	395.68	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351750_2021_12	MF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER1_MF	1,200.76	Cooling RES	0.0009474181	1.137622	6.0	\$3,126.64	2.0
351750_2021_12	MF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER1_MF	5,287.87	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351750_2021_12	MF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER2_MF	345.16	Cooling RES ER2	0.0009474181	0.327011	12.0	\$0.00	
351750_2021_12	MF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER2_MF	5,287.87	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351751_2021_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER1_MF_CompE	788.53	Cooling RES	0.0009474181	0.747068	6.0	\$3,126.64	2.0
351751_2021_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER1_MF_CompE	2,009.80	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351751_2021_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER2_MF_CompE	226.66	Cooling RES ER2	0.0009474181	0.214742	12.0	\$0.00	
351751_2021_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ER2_MF_CompE	2,009.80	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351752_2022_12	MF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER1_MF	1,093.24	Cooling RES	0.0009474181	1.035755	6.0	\$3,126.64	2.0
351752_2022_12	MF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351752_2022_12	MF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER2_MF	345.16	Cooling RES ER2	0.0009474181	0.327011	12.0	\$0.00	
351752_2022_12	MF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351753_2022_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER1_MF_CompE	788.53	Cooling RES	0.0009474181	0.747068	6.0	\$3,126.64	2.0
351753_2022_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351753_2022_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER2_MF_CompE	226.66	Cooling RES ER2	0.0009474181	0.214742	12.0	\$0.00	
351753_2022_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351800_2021_12	MF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ROF_MF	345.16	Cooling RES	0.0009474181	0.327011	18.0	\$364.64	2.0
351800_2021_12	MF	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ROF_MF	4,303.97	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351801_2021_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ROF_MF_CompE	226.66	Cooling RES	0.0009474181	0.214742	18.0	\$364.64	2.0
351801_2021_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,009.80	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351802_2022_12	MF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ROF_MF	345.16	Cooling RES	0.0009474181	0.327011	18.0	\$364.64	2.0
351802_2022_12	MF	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351803_2022_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ROF_MF_CompE	226.66	Cooling RES	0.0009474181	0.214742	18.0	\$364.64	2.0
351803_2022_12	Mfc	Mini/MultiSplitASHP-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating RES	0.0000000000	0.000000	18.0	\$0.00	
351850_2021_12	MF	Mini/MultiSplitASHP_ER1_MF	1,200.76	Cooling RES	0.0009474181	1.137622	6.0	\$920.06	2.0
351850_2021_12	MF	Mini/MultiSplitASHP_ER1_MF	2,576.48	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351850_2021_12	MF	Mini/MultiSplitASHP_ER2_MF	345.16	Cooling RES ER2	0.0009474181	0.327011	12.0	\$0.00	
351850_2021_12	MF	Mini/MultiSplitASHP_ER2_MF	1,434.81	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	
351851_2021_12	Mfc	Mini/MultiSplitASHP_ER1_MF_CompE	788.53	Cooling RES	0.0009474181	0.747068	6.0	\$920.06	2.0
351851_2021_12	Mfc	Mini/MultiSplitASHP_ER1_MF_CompE	979.26	Heating RES	0.0000000000	0.000000	6.0	\$0.00	
351851_2021_12	Mfc	Mini/MultiSplitASHP_ER2_MF_CompE	226.66	Cooling RES ER2	0.0009474181	0.214742	12.0	\$0.00	
351851_2021_12	Mfc	Mini/MultiSplitASHP_ER2_MF_CompE	678.87	Heating RES ER2	0.0000000000	0.000000	12.0	\$0.00	

Dual Fuel Heat Pumps

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
351900_2019_12	MF	DFHP-SEER19-ROF_MF	433.19	Cooling Res	0.0009474181	0.410412	18.0	\$2,936.60	3.4
351900_2019_12	MF	DFHP-SEER19-ROF_MF	651.42	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
351901_2019_12	Mfc	DFHP-SEER19-ROF_MF_CompE	315.05	Cooling Res	0.0009474181	0.298484	18.0	\$2,936.60	3.4
351901_2019_12	Mfc	DFHP-SEER19-ROF_MF_CompE	296.89	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
351950_2019_12	MF	DFHP-SEER20-ROF_MF	639.09	Cooling Res	0.0009474181	0.605485	18.0	\$3,176.60	4.4
351950_2019_12	MF	DFHP-SEER20-ROF_MF	990.72	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
351951_2019_12	Mfc	DFHP-SEER20-ROF_MF_CompE	464.79	Cooling Res	0.0009474181	0.440350	18.0	\$3,176.60	4.4
351951_2019_12	Mfc	DFHP-SEER20-ROF_MF_CompE	451.54	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352000_2019_12	MF	DFHP-SEER21-ROF_MF	871.48	Cooling Res	0.0009474181	0.825656	18.0	\$3,626.60	5.4
352000_2019_12	MF	DFHP-SEER21-ROF_MF	1,383.74	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352001_2019_12	Mfc	DFHP-SEER21-ROF_MF_CompE	633.81	Cooling Res	0.0009474181	0.600483	18.0	\$3,626.60	5.4
352001_2019_12	Mfc	DFHP-SEER21-ROF_MF_CompE	630.66	Heating Res	0.0000000000	0.000000	18.0	\$0.00	

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Ground Source Heat Pumps

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
352050_2021_12	SF	GSHP-EER23-Replace_CAC_ElectricHeat_ROF_SF	1,510.41	Cooling Res	0.0009474181	1.430990	18.0	\$4,717.00	3.87
352050_2021_12	SF	GSHP-EER23-Replace_CAC_ElectricHeat_ROF_SF	16,223.39	Heating RES	0.0000000000	0.000000	18.0		
352100_2021_12	SF	GSHP-EER23-Replace_CAC_ElectricHeat_ER1_SF	4,933.84	Cooling Res	0.0009474181	4.674409	6.0	\$5,250.00	3.87
352100_2021_12	SF	GSHP-EER23-Replace_CAC_ElectricHeat_ER1_SF	15,784.45	Heating RES	0.0000000000	0.000000	6.0		
352100_2021_12	SF	GSHP-EER23-Replace_CAC_ElectricHeat_ER2_SF	1,431.53	Cooling Res ER2	0.0009474181	1.356257	12.0		
352100_2021_12	SF	GSHP-EER23-Replace_CAC_ElectricHeat_ER2_SF	15,784.45	Heating RES ER2	0.0000000000	0.000000	12.0		
352200_2021_12	SF	GSHP-EER23_ER1_SF	3,557.73	Cooling Res	0.0009474181	3.370658	6.0	\$4,859.00	3.87
352200_2021_12	SF	GSHP-EER23_ER1_SF	2,686.03	Heating RES	0.0000000000	0.000000	6.0		
352200_2021_12	SF	GSHP-EER23_ER2_SF	1,431.53	Cooling Res ER2	0.0009474181	1.356257	12.0		
352200_2021_12	SF	GSHP-EER23_ER2_SF	1,977.83	Heating RES ER2	0.0000000000	0.000000	12.0		
352250_2021_12	SF	GSHP-EER23_ROF_SF	1,510.41	Cooling Res	0.0009474181	1.430990	18.0	\$3,200.00	3.98
352250_2021_12	SF	GSHP-EER23_ROF_SF	2,032.83	Heating RES	0.0000000000	0.000000	18.0		

Air Source Heat Pumps

*MFC = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
352300_2021_12	SF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER1_SF	2,105.67	Cooling Res	0.0009474181	1.994950	6.0	\$1,044.52	2.7
352300_2021_12	SF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER1_SF	8,749.46	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352300_2021_12	SF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER2_SF	164.86	Cooling Res ER2	0.0009474181	0.156191	12.0	\$0.00	
352300_2021_12	SF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER2_SF	8,749.46	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352310_2021_12	SF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER1_SF	2,105.67	Cooling Res	0.0009474181	1.994950	6.0	\$1,044.52	2.7
352310_2021_12	SF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352310_2021_12	SF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER2_SF	164.86	Cooling Res ER2	0.0009474181	0.156191	12.0	\$0.00	
352310_2021_12	SF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352350_2021_12	SF	ASHP-SEER15_ER1_SF	2,105.67	Cooling Res	0.0009474181	1.994950	6.0	\$1,044.52	2.7
352350_2021_12	SF	ASHP-SEER15_ER1_SF	1,855.90	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352350_2021_12	SF	ASHP-SEER15_ER2_SF	164.86	Cooling Res ER2	0.0009474181	0.156191	12.0	\$0.00	
352350_2021_12	SF	ASHP-SEER15_ER2_SF	390.89	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352400_2021_12	SF	ASHP-SEER15-Replace_CAC_ElectricHeat_ROF_SF	176.89	Cooling Res	0.0009474181	0.167589	18.0	\$303.00	2.8
352400_2021_12	SF	ASHP-SEER15-Replace_CAC_ElectricHeat_ROF_SF	9,046.66	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352410_2021_12	SF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ROF_SF	176.89	Cooling Res	0.0009474181	0.167589	18.0	\$303.00	2.8
352410_2021_12	SF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352450_2021_12	SF	ASHP-SEER15_ROF_SF	176.89	Cooling Res	0.0009474181	0.167589	18.0	\$303.00	2.8
352450_2021_12	SF	ASHP-SEER15_ROF_SF	393.91	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352500_2021_12	SF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER1_SF	2,194.71	Cooling Res	0.0009474181	2.079308	6.0	\$1,189.40	2.8
352500_2021_12	SF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER1_SF	9,041.35	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352500_2021_12	SF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER2_SF	282.74	Cooling Res ER2	0.0009474181	0.267873	12.0	\$0.00	
352500_2021_12	SF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER2_SF	9,041.35	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352510_2021_12	SF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER1_SF	2,194.71	Cooling Res	0.0009474181	2.079308	6.0	\$1,189.40	2.8
352510_2021_12	SF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352510_2021_12	SF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER2_SF	282.74	Cooling Res ER2	0.0009474181	0.267873	12.0	\$0.00	
352510_2021_12	SF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352550_2021_12	SF	ASHP-SEER16_ER1_SF	2,194.71	Cooling Res	0.0009474181	2.079308	6.0	\$1,189.40	2.8
352550_2021_12	SF	ASHP-SEER16_ER1_SF	2,055.86	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352550_2021_12	SF	ASHP-SEER16_ER2_SF	282.74	Cooling Res ER2	0.0009474181	0.267873	12.0	\$0.00	
352550_2021_12	SF	ASHP-SEER16_ER2_SF	571.32	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352600_2021_12	SF	ASHP-SEER16-Replace_CAC_ElectricHeat_ROF_SF	300.64	Cooling Res	0.0009474181	0.284832	18.0	\$438.00	3.0
352600_2021_12	SF	ASHP-SEER16-Replace_CAC_ElectricHeat_ROF_SF	9,811.71	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352610_2022_12	SF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ROF_SF	300.64	Cooling Res	0.0009474181	0.284832	18.0	\$438.00	3.0
352610_2022_12	SF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352650_2021_12	SF	ASHP-SEER16_ROF_SF	300.64	Cooling Res	0.0009474181	0.284832	18.0	\$438.00	3.0
352650_2021_12	SF	ASHP-SEER16_ROF_SF	677.46	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352700_2021_12	MF	ASHP-SEER15_ER1_MF	2,374.39	Cooling Res	0.0009474181	2.249540	6.0	\$1,114.17	3.0
352700_2021_12	MF	ASHP-SEER15_ER1_MF	2,372.56	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352700_2021_12	MF	ASHP-SEER15_ER2_MF	171.49	Cooling Res ER2	0.0009474181	0.162473	12.0	\$0.00	
352700_2021_12	MF	ASHP-SEER15_ER2_MF	769.93	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352701_2021_12	MFC	ASHP-SEER15_ER1_MF_CompE	1,122.44	Cooling Res	0.0009474181	1.063420	6.0	\$830.26	3.0
352701_2021_12	MFC	ASHP-SEER15_ER1_MF_CompE	525.74	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352701_2021_12	MFC	ASHP-SEER15_ER2_MF_CompE	81.07	Cooling Res ER2	0.0009474181	0.076807	12.0	\$0.00	
352701_2021_12	MFC	ASHP-SEER15_ER2_MF_CompE	170.61	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	

RESIDENTIAL HVAC

Air Source Heat Pumps

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Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
352750_2021_12	MF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER1_MF	2,374.39	Cooling Res	0.0009474181	2.249540	6.0	\$1,114.17	3.0
352750_2021_12	MF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER1_MF	9,913.67	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352750_2021_12	MF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER2_MF	171.49	Cooling Res ER2	0.0009474181	0.162473	12.0	\$0.00	
352750_2021_12	MF	ASHP-SEER15-Replace_CAC_ElectricHeat_ER2_MF	9,913.67	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352751_2021_12	MFc	ASHP-SEER15-Replace_CAC_ElectricHeat_ER1_MF_CompE	1,726.83	Cooling Res	0.0009474181	1.636030	6.0	\$1,114.17	3.0
352751_2021_12	MFc	ASHP-SEER15-Replace_CAC_ElectricHeat_ER1_MF_CompE	3,379.66	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352751_2021_12	MFc	ASHP-SEER15-Replace_CAC_ElectricHeat_ER2_MF_CompE	124.72	Cooling Res ER2	0.0009474181	0.118162	12.0	\$0.00	
352751_2021_12	MFc	ASHP-SEER15-Replace_CAC_ElectricHeat_ER2_MF_CompE	3,379.66	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352760_2021_12	MF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER1_MF	2,374.39	Cooling Res	0.0009474181	2.249540	6.0	\$1,114.17	3.0
352760_2021_12	MF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352760_2021_12	MF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER2_MF	171.49	Cooling Res ER2	0.0009474181	0.162473	12.0	\$0.00	
352760_2021_12	MF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352761_2021_12	MFc	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER1_MF_CompE	1,726.83	Cooling Res	0.0009474181	1.636030	6.0	\$1,114.17	3.0
352761_2021_12	MFc	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352761_2021_12	MFc	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER2_MF_CompE	124.72	Cooling Res ER2	0.0009474181	0.118162	12.0	\$0.00	
352761_2021_12	MFc	ASHP-SEER15-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352800_2019_12	MF	ASHP-SEER15-Replace_CAC_ElectricHeat_ROF_MF	124.14	Cooling Res	0.0009474181	0.117612	18.0	\$303.00	2.2
352800_2019_12	MF	ASHP-SEER15-Replace_CAC_ElectricHeat_ROF_MF	6,882.99	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352801_2021_12	MFc	ASHP-SEER15-Replace_CAC_ElectricHeat_ROF_MF_CompE	90.29	Cooling Res	0.0009474181	0.085542	18.0	\$303.00	2.2
352801_2021_12	MFc	ASHP-SEER15-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,346.48	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352810_2021_12	MF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ROF_MF	124.14	Cooling Res	0.0009474181	0.117612	18.0	\$303.00	2.2
352810_2021_12	MF	ASHP-SEER15-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352811_2021_12	MFc	ASHP-SEER15-Replace_CAC_NonElectricHeat_ROF_MF_CompE	90.29	Cooling Res	0.0009474181	0.085542	18.0	\$303.00	2.2
352811_2021_12	MFc	ASHP-SEER15-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352850_2021_12	MF	ASHP-SEER16_ER1_MF	2,088.29	Cooling Res	0.0009474181	1.978484	6.0	\$1,212.49	2.8
352850_2021_12	MF	ASHP-SEER16_ER1_MF	2,245.56	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352850_2021_12	MF	ASHP-SEER16_ER2_MF	294.84	Cooling Res ER2	0.0009474181	0.279337	12.0	\$0.00	
352850_2021_12	MF	ASHP-SEER16_ER2_MF	715.41	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352851_2021_12	MFc	ASHP-SEER16_ER1_MF_CompE	1,518.75	Cooling Res	0.0009474181	1.438891	6.0	\$1,212.49	2.8
352851_2021_12	MFc	ASHP-SEER16_ER1_MF_CompE	765.53	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
352851_2021_12	MFc	ASHP-SEER16_ER2_MF_CompE	214.43	Cooling Res ER2	0.0009474181	0.203155	12.0	\$0.00	
352851_2021_12	MFc	ASHP-SEER16_ER2_MF_CompE	243.89	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
352900_2021_12	MF	ASHP-SEER16_ROF_MF	209.49	Cooling Res	0.0009474181	0.198475	18.0	\$438.00	2.2
352900_2021_12	MF	ASHP-SEER16_ROF_MF	434.61	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352901_2021_12	MFc	ASHP-SEER16_ROF_MF_CompE	152.36	Cooling Res	0.0009474181	0.144349	18.0	\$438.00	2.2
352901_2021_12	MFc	ASHP-SEER16_ROF_MF_CompE	148.16	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352950_2019_12	MF	ASHP-SEER16-Replace_CAC_ElectricHeat_ROF_MF	209.49	Cooling Res	0.0009474181	0.198475	18.0	\$438.00	2.2
352950_2019_12	MF	ASHP-SEER16-Replace_CAC_ElectricHeat_ROF_MF	7,302.66	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352951_2019_12	MFc	ASHP-SEER16-Replace_CAC_ElectricHeat_ROF_MF_CompE	152.36	Cooling Res	0.0009474181	0.144349	18.0	\$438.00	2.2
352951_2019_12	MFc	ASHP-SEER16-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,489.54	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352960_2021_12	MF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ROF_MF	209.49	Cooling Res	0.0009474181	0.198475	18.0	\$438.00	2.2
352960_2021_12	MF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
352961_2021_12	MFc	ASHP-SEER16-Replace_CAC_NonElectricHeat_ROF_MF_CompE	152.36	Cooling Res	0.0009474181	0.144349	18.0	\$438.00	2.2
352961_2021_12	MFc	ASHP-SEER16-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353000_2021_12	MF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER1_MF	2,088.29	Cooling Res	0.0009474181	1.978484	6.0	\$1,212.49	2.8
353000_2021_12	MF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER1_MF	9,445.69	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353000_2021_12	MF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER2_MF	294.84	Cooling Res ER2	0.0009474181	0.279337	12.0	\$0.00	
353000_2021_12	MF	ASHP-SEER16-Replace_CAC_ElectricHeat_ER2_MF	9,445.69	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353001_2021_12	MFc	ASHP-SEER16-Replace_CAC_ElectricHeat_ER1_MF_CompE	987.19	Cooling Res	0.0009474181	0.935282	6.0	\$941.42	2.8
353001_2021_12	MFc	ASHP-SEER16-Replace_CAC_ElectricHeat_ER1_MF_CompE	2,093.08	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353001_2021_12	MFc	ASHP-SEER16-Replace_CAC_ElectricHeat_ER2_MF_CompE	139.38	Cooling Res ER2	0.0009474181	0.132051	12.0	\$0.00	
353001_2021_12	MFc	ASHP-SEER16-Replace_CAC_ElectricHeat_ER2_MF_CompE	2,093.08	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353010_2021_12	MF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER1_MF	1,357.39	Cooling Res	0.0009474181	1.286016	6.0	\$941.42	2.8
353010_2021_12	MF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353010_2021_12	MF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER2_MF	191.65	Cooling Res ER2	0.0009474181	0.181573	12.0	\$0.00	
353010_2021_12	MF	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353011_2021_12	MFc	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER1_MF_CompE	987.19	Cooling Res	0.0009474181	0.935282	6.0	\$941.42	2.8
353011_2021_12	MFc	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353011_2021_12	MFc	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER2_MF_CompE	139.38	Cooling Res ER2	0.0009474181	0.132051	12.0	\$0.00	
353011_2021_12	MFc	ASHP-SEER16-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353050_2021_12	MF	ASHP-SEER15_ROF_MF	124.14	Cooling Res	0.0009474181	0.117612	18.0	\$303.00	2.2
353050_2021_12	MF	ASHP-SEER15_ROF_MF	168.70	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353051_2021_12	MFc	ASHP-SEER15_ROF_MF_CompE	90.29	Cooling Res	0.0009474181	0.085542	18.0	\$303.00	2.2
353051_2021_12	MFc	ASHP-SEER15_ROF_MF_CompE	57.51	Heating Res	0.0000000000	0.000000	18.0	\$0.00	

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Air Source Heat Pumps

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Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
353100_2021_12	SF	ASHP-SEER17-Replace_CAC_ElectricHeat_ROF_SF	429.65	Cooling Res	0.0009474181	0.407058	18.0	\$724.00	3.0
353100_2021_12	SF	ASHP-SEER17-Replace_CAC_ElectricHeat_ROF_SF	9,907.98	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353110_2022_12	SF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ROF_SF	429.65	Cooling Res	0.0009474181	0.407058	18.0	\$724.00	3.0
353110_2022_12	SF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353150_2019_12	MF	ASHP-SEER17-Replace_CAC_ElectricHeat_ROF_MF	239.23	Cooling Res	0.0009474181	0.226651	18.0	\$724.00	2.8
353150_2019_12	MF	ASHP-SEER17-Replace_CAC_ElectricHeat_ROF_MF	6,213.11	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353151_2019_12	MFc	ASHP-SEER17-Replace_CAC_ElectricHeat_ROF_MF_CompE	173.99	Cooling Res	0.0009474181	0.164841	18.0	\$724.00	2.8
353151_2019_12	MFc	ASHP-SEER17-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,118.10	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353160_2021_12	MF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ROF_MF	239.23	Cooling Res	0.0009474181	0.226651	18.0	\$724.00	2.8
353160_2021_12	MF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353161_2021_12	MFc	ASHP-SEER17-Replace_CAC_NonElectricHeat_ROF_MF_CompE	173.99	Cooling Res	0.0009474181	0.164841	18.0	\$724.00	2.8
353161_2021_12	MFc	ASHP-SEER17-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353200_2021_12	SF	ASHP-SEER18-Replace_CAC_ElectricHeat_ROF_SF	521.93	Cooling Res	0.0009474181	0.494486	18.0	\$962.92	3.1
353200_2021_12	SF	ASHP-SEER18-Replace_CAC_ElectricHeat_ROF_SF	10,917.73	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353210_2022_12	SF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ROF_SF	521.93	Cooling Res	0.0009474181	0.494486	18.0	\$962.92	3.1
353210_2022_12	SF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353250_2021_12	MF	ASHP-SEER18-Replace_CAC_ElectricHeat_ROF_MF	496.57	Cooling Res	0.0009474181	0.470459	18.0	\$962.92	3.0
353250_2021_12	MF	ASHP-SEER18-Replace_CAC_ElectricHeat_ROF_MF	10,124.50	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353251_2021_12	MFc	ASHP-SEER18-Replace_CAC_ElectricHeat_ROF_MF_CompE	361.14	Cooling Res	0.0009474181	0.342151	18.0	\$962.92	3.0
353251_2021_12	MFc	ASHP-SEER18-Replace_CAC_ElectricHeat_ROF_MF_CompE	3,451.53	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353260_2021_12	MF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ROF_MF	496.57	Cooling Res	0.0009474181	0.470459	18.0	\$962.92	3.0
353260_2021_12	MF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353261_2021_12	MFc	ASHP-SEER18-Replace_CAC_NonElectricHeat_ROF_MF_CompE	361.14	Cooling Res	0.0009474181	0.342151	18.0	\$962.92	3.0
353261_2021_12	MFc	ASHP-SEER18-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353300_2021_12	SF	ASHP-SEER19-Replace_CAC_ElectricHeat_ROF_SF	699.07	Cooling Res	0.0009474181	0.662312	18.0	\$1,203.65	3.0
353300_2021_12	SF	ASHP-SEER19-Replace_CAC_ElectricHeat_ROF_SF	10,441.58	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353310_2022_12	SF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ROF_SF	699.07	Cooling Res	0.0009474181	0.662312	18.0	\$1,203.65	3.0
353310_2022_12	SF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353350_2021_12	MF	ASHP-SEER19-Replace_CAC_ElectricHeat_ROF_MF	382.36	Cooling Res	0.0009474181	0.362255	18.0	\$1,203.65	2.8
353350_2021_12	MF	ASHP-SEER19-Replace_CAC_ElectricHeat_ROF_MF	6,213.11	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353351_2019_12	MFc	ASHP-SEER19-Replace_CAC_ElectricHeat_ROF_MF_CompE	259.45	Cooling Res	0.0009474181	0.245808	18.0	\$1,203.65	2.8
353351_2019_12	MFc	ASHP-SEER19-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,118.10	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353360_2021_12	MF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ROF_MF	382.36	Cooling Res	0.0009474181	0.362255	18.0	\$1,203.65	2.8
353360_2021_12	MF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353361_2021_12	MFc	ASHP-SEER19-Replace_CAC_NonElectricHeat_ROF_MF_CompE	259.45	Cooling Res	0.0009474181	0.245808	18.0	\$1,203.65	2.8
353361_2021_12	MFc	ASHP-SEER19-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353400_2021_12	SF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER1_SF	2,594.98	Cooling Res	0.0009474181	2.458531	6.0	\$2,203.31	2.8
353400_2021_12	SF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER1_SF	9,717.92	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353400_2021_12	SF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER2_SF	687.08	Cooling Res ER2	0.0009474181	0.650952	12.0	\$0.00	
353400_2021_12	SF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER2_SF	9,717.92	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353410_2021_12	SF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER1_SF	2,594.98	Cooling Res	0.0009474181	2.458531	6.0	\$2,203.31	2.8
353410_2021_12	SF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353410_2021_12	SF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER2_SF	687.08	Cooling Res ER2	0.0009474181	0.650952	12.0	\$0.00	
353410_2021_12	SF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353450_2021_12	SF	ASHP-SEER20-Replace_CAC_ElectricHeat_ROF_SF	717.64	Cooling Res	0.0009474181	0.679905	18.0	\$1,444.38	2.9
353450_2021_12	SF	ASHP-SEER20-Replace_CAC_ElectricHeat_ROF_SF	10,217.26	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353460_2022_12	SF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ROF_SF	717.64	Cooling Res	0.0009474181	0.679905	18.0	\$1,444.38	2.9
353460_2022_12	SF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353500_2019_12	MF	ASHP-SEER20-Replace_CAC_ElectricHeat_ROF_MF	464.79	Cooling Res	0.0009474181	0.440350	18.0	\$1,444.38	3.2
353500_2019_12	MF	ASHP-SEER20-Replace_CAC_ElectricHeat_ROF_MF	7,100.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353501_2019_12	MFc	ASHP-SEER20-Replace_CAC_ElectricHeat_ROF_MF_CompE	338.03	Cooling Res	0.0009474181	0.320256	18.0	\$1,444.38	3.2
353501_2019_12	MFc	ASHP-SEER20-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,420.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353510_2021_12	MF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ROF_MF	464.79	Cooling Res	0.0009474181	0.440350	18.0	\$1,444.38	3.2
353510_2021_12	MF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353511_2021_12	MFc	ASHP-SEER20-Replace_CAC_NonElectricHeat_ROF_MF_CompE	338.03	Cooling Res	0.0009474181	0.320256	18.0	\$1,444.38	3.2
353511_2021_12	MFc	ASHP-SEER20-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353550_2021_12	SF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER1_SF	2,958.13	Cooling Res	0.0009474181	2.802586	6.0	\$2,604.43	3.4
353550_2021_12	SF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER1_SF	12,037.46	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353550_2021_12	SF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER2_SF	877.41	Cooling Res ER2	0.0009474181	0.831274	12.0	\$0.00	
353550_2021_12	SF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER2_SF	12,037.46	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353560_2021_12	SF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER1_SF	2,958.13	Cooling Res	0.0009474181	2.802586	6.0	\$2,604.43	3.4
353560_2021_12	SF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353560_2021_12	SF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER2_SF	877.41	Cooling Res ER2	0.0009474181	0.831274	12.0	\$0.00	
353560_2021_12	SF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	

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*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
353600_2019_12	MF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER1_MF	1,521.91	Cooling Res	0.0009474181	1.441885	6.0	\$2,239.65	3.1
353600_2019_12	MF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER1_MF	6,759.78	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353600_2019_12	MF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER2_MF	500.30	Cooling Res ER2	0.0009474181	0.473993	12.0	\$0.00	
353600_2019_12	MF	ASHP-SEER21-Replace_CAC_ElectricHeat_ER2_MF	6,759.78	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353601_2019_12	Mfc	ASHP-SEER21-Replace_CAC_ElectricHeat_ER1_MF_CompE	1,106.84	Cooling Res	0.0009474181	1.048640	6.0	\$2,239.65	3.1
353601_2019_12	Mfc	ASHP-SEER21-Replace_CAC_ElectricHeat_ER1_MF_CompE	2,304.47	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353601_2019_12	Mfc	ASHP-SEER21-Replace_CAC_ElectricHeat_ER2_MF_CompE	363.85	Cooling Res ER2	0.0009474181	0.344718	12.0	\$0.00	
353601_2019_12	Mfc	ASHP-SEER21-Replace_CAC_ElectricHeat_ER2_MF_CompE	2,304.47	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353610_2021_12	MF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER1_MF	1,521.91	Cooling Res	0.0009474181	1.441885	6.0	\$2,239.65	3.1
353610_2021_12	MF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353610_2021_12	MF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER2_MF	500.30	Cooling Res ER2	0.0009474181	0.473993	12.0	\$0.00	
353610_2021_12	MF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353611_2021_12	Mfc	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER1_MF_CompE	1,106.84	Cooling Res	0.0009474181	1.048640	6.0	\$2,239.65	3.1
353611_2021_12	Mfc	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353611_2021_12	Mfc	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER2_MF_CompE	363.85	Cooling Res ER2	0.0009474181	0.344718	12.0	\$0.00	
353611_2021_12	Mfc	ASHP-SEER21-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353650_2021_12	SF	ASHP-SEER21-Replace_CAC_ElectricHeat_ROF_SF	924.97	Cooling Res	0.0009474181	0.876333	18.0	\$1,689.92	3.5
353650_2021_12	SF	ASHP-SEER21-Replace_CAC_ElectricHeat_ROF_SF	12,604.65	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353660_2022_12	SF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ROF_SF	924.97	Cooling Res	0.0009474181	0.876333	18.0	\$1,689.92	3.5
353660_2022_12	SF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ROF_SF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353700_2019_12	MF	ASHP-SEER21+Replace_CAC_ElectricHeat_ROF_MF	516.43	Cooling Res	0.0009474181	0.489275	18.0	\$1,689.92	3.2
353700_2019_12	MF	ASHP-SEER21+Replace_CAC_ElectricHeat_ROF_MF	7,100.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353701_2019_12	Mfc	ASHP-SEER21+Replace_CAC_ElectricHeat_ROF_MF_CompE	375.59	Cooling Res	0.0009474181	0.355841	18.0	\$1,689.92	3.2
353701_2019_12	Mfc	ASHP-SEER21+Replace_CAC_ElectricHeat_ROF_MF_CompE	2,420.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353710_2021_12	MF	ASHP-SEER21+Replace_CAC_NonElectricHeat_ROF_MF	516.43	Cooling Res	0.0009474181	0.489275	18.0	\$1,689.92	3.2
353710_2021_12	MF	ASHP-SEER21+Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353711_2021_12	Mfc	ASHP-SEER21+Replace_CAC_NonElectricHeat_ROF_MF_CompE	375.59	Cooling Res	0.0009474181	0.355841	18.0	\$1,689.92	3.2
353711_2021_12	Mfc	ASHP-SEER21+Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353750_2021_12	SF	ASHP-SEER17_ER1_SF	2,219.17	Cooling Res	0.0009474181	2.102482	6.0	\$1,524.68	2.9
353750_2021_12	SF	ASHP-SEER17_ER1_SF	2,439.54	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353750_2021_12	SF	ASHP-SEER17_ER2_SF	427.89	Cooling Res ER2	0.0009474181	0.405391	12.0	\$0.00	
353750_2021_12	SF	ASHP-SEER17_ER2_SF	857.63	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353800_2021_12	SF	ASHP-SEER17_ROF_SF	429.65	Cooling Res	0.0009474181	0.407058	18.0	\$724.00	3.0
353800_2021_12	SF	ASHP-SEER17_ROF_SF	835.36	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
353850_2021_12	SF	ASHP-SEER18_ER1_SF	2,369.30	Cooling Res	0.0009474181	2.244718	6.0	\$1,783.41	3.0
353850_2021_12	SF	ASHP-SEER18_ER1_SF	2,872.62	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
353850_2021_12	SF	ASHP-SEER18_ER2_SF	526.57	Cooling Res ER2	0.0009474181	0.498882	12.0	\$0.00	
353850_2021_12	SF	ASHP-SEER18_ER2_SF	1,251.58	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
353950_2021_12	SF	ASHP-SEER18_ROF_SF	521.93	Cooling Res	0.0009474181	0.494486	18.0	\$962.92	3.1
353950_2021_12	SF	ASHP-SEER18_ROF_SF	1,313.04	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354000_2021_12	SF	ASHP-SEER19_ER1_SF	3,279.13	Cooling Res	0.0009474181	3.106707	6.0	\$2,233.01	3.8
354000_2021_12	SF	ASHP-SEER19_ER1_SF	3,393.01	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354000_2021_12	SF	ASHP-SEER19_ER2_SF	816.88	Cooling Res ER2	0.0009474181	0.773927	12.0	\$0.00	
354000_2021_12	SF	ASHP-SEER19_ER2_SF	1,359.30	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354050_2021_12	SF	ASHP-SEER19_ROF_SF	699.07	Cooling Res	0.0009474181	0.662312	18.0	\$1,203.65	3.0
354050_2021_12	SF	ASHP-SEER19_ROF_SF	1,240.33	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354100_2021_12	SF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER1_SF	2,219.17	Cooling Res	0.0009474181	2.102482	6.0	\$1,524.68	2.9
354100_2021_12	SF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER1_SF	9,883.16	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354100_2021_12	SF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER2_SF	427.89	Cooling Res ER2	0.0009474181	0.405391	12.0	\$0.00	
354100_2021_12	SF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER2_SF	9,883.16	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354110_2021_12	SF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER1_SF	2,219.17	Cooling Res	0.0009474181	2.102482	6.0	\$1,524.68	2.9
354110_2021_12	SF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354110_2021_12	SF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER2_SF	427.89	Cooling Res ER2	0.0009474181	0.405391	12.0	\$0.00	
354110_2021_12	SF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354150_2019_12	MF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER1_MF	1,286.47	Cooling Res	0.0009474181	1.218825	6.0	\$1,273.72	3.1
354150_2019_12	MF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER1_MF	6,759.78	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354150_2019_12	MF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER2_MF	264.86	Cooling Res ER2	0.0009474181	0.250933	12.0	\$0.00	
354150_2019_12	MF	ASHP-SEER17-Replace_CAC_ElectricHeat_ER2_MF	6,759.78	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354151_2019_12	Mfc	ASHP-SEER17-Replace_CAC_ElectricHeat_ER1_MF_CompE	935.62	Cooling Res	0.0009474181	0.886423	6.0	\$1,273.72	3.1
354151_2019_12	Mfc	ASHP-SEER17-Replace_CAC_ElectricHeat_ER1_MF_CompE	2,304.47	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354151_2019_12	Mfc	ASHP-SEER17-Replace_CAC_ElectricHeat_ER2_MF_CompE	192.63	Cooling Res ER2	0.0009474181	0.182501	12.0	\$0.00	
354151_2019_12	Mfc	ASHP-SEER17-Replace_CAC_ElectricHeat_ER2_MF_CompE	2,304.47	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	

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Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
354160_2021_12	MF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER1_MF	1,286.47	Cooling Res	0.0009474181	1.218825	6.0	\$1,273.72	3.1
354160_2021_12	MF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354160_2021_12	MF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER2_MF	264.86	Cooling Res ER2	0.0009474181	0.250933	12.0	\$0.00	
354160_2021_12	MF	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354161_2021_12	MFc	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER1_MF_CompE	935.62	Cooling Res	0.0009474181	0.886423	6.0	\$1,273.72	3.1
354161_2021_12	MFc	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354161_2021_12	MFc	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER2_MF_CompE	192.63	Cooling Res ER2	0.0009474181	0.182501	12.0	\$0.00	
354161_2021_12	MFc	ASHP-SEER17-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354200_2019_12	MF	ASHP-SEER17_ER1_MF	1,369.47	Cooling Res	0.0009474181	1.297461	6.0	\$1,309.19	3.3
354200_2019_12	MF	ASHP-SEER17_ER1_MF	1,798.76	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354200_2019_12	MF	ASHP-SEER17_ER2_MF	281.95	Cooling Res ER2	0.0009474181	0.267125	12.0	\$0.00	
354200_2019_12	MF	ASHP-SEER17_ER2_MF	642.61	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354201_2019_12	MFc	ASHP-SEER17_ER1_MF_CompE	995.98	Cooling Res	0.0009474181	0.943609	6.0	\$1,309.19	3.3
354201_2019_12	MFc	ASHP-SEER17_ER1_MF_CompE	613.21	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354201_2019_12	MFc	ASHP-SEER17_ER2_MF_CompE	205.05	Cooling Res ER2	0.0009474181	0.194268	12.0	\$0.00	
354201_2019_12	MFc	ASHP-SEER17_ER2_MF_CompE	219.07	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354250_2021_12	SF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER1_SF	2,369.30	Cooling Res	0.0009474181	2.244718	6.0	\$1,783.41	3.0
354250_2021_12	SF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER1_SF	10,500.37	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354250_2021_12	SF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER2_SF	526.57	Cooling Res ER2	0.0009474181	0.498882	12.0	\$0.00	
354250_2021_12	SF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER2_SF	10,500.37	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354260_2021_12	SF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER1_SF	2,369.30	Cooling Res	0.0009474181	2.244718	6.0	\$1,783.41	3.0
354260_2021_12	SF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354260_2021_12	SF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER2_SF	526.57	Cooling Res ER2	0.0009474181	0.498882	12.0	\$0.00	
354260_2021_12	SF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354300_2021_12	MF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER1_MF	2,018.52	Cooling Res	0.0009474181	1.912382	6.0	\$1,372.14	1.5
354300_2021_12	MF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER1_MF	5,203.97	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354300_2021_12	MF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER2_MF	248.29	Cooling Res ER2	0.0009474181	0.235234	12.0	\$0.00	
354300_2021_12	MF	ASHP-SEER18-Replace_CAC_ElectricHeat_ER2_MF	5,203.97	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354301_2021_12	MFc	ASHP-SEER18-Replace_CAC_ElectricHeat_ER1_MF_CompE	476.88	Cooling Res	0.0009474181	0.451805	6.0	\$1,228.91	1.5
354301_2021_12	MFc	ASHP-SEER18-Replace_CAC_ElectricHeat_ER1_MF_CompE	1,153.15	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354301_2021_12	MFc	ASHP-SEER18-Replace_CAC_ElectricHeat_ER2_MF_CompE	117.37	Cooling Res ER2	0.0009474181	0.111198	12.0	\$0.00	
354301_2021_12	MFc	ASHP-SEER18-Replace_CAC_ElectricHeat_ER2_MF_CompE	1,153.15	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354310_2021_12	MF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER1_MF	1,312.04	Cooling Res	0.0009474181	1.243050	6.0	\$1,228.91	1.5
354310_2021_12	MF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354310_2021_12	MF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER2_MF	161.39	Cooling Res ER2	0.0009474181	0.152904	12.0	\$0.00	
354310_2021_12	MF	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354311_2021_12	MFc	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER1_MF_CompE	476.88	Cooling Res	0.0009474181	0.451805	6.0	\$1,228.91	1.5
354311_2021_12	MFc	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354311_2021_12	MFc	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER2_MF_CompE	117.37	Cooling Res ER2	0.0009474181	0.111198	12.0	\$0.00	
354311_2021_12	MFc	ASHP-SEER18-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354350_2021_12	MF	ASHP-SEER18_ER1_MF	2,464.77	Cooling Res	0.0009474181	2.335168	6.0	\$1,644.96	2.5
354350_2021_12	MF	ASHP-SEER18_ER1_MF	2,332.67	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354350_2021_12	MF	ASHP-SEER18_ER2_MF	413.81	Cooling Res ER2	0.0009474181	0.392051	12.0	\$0.00	
354350_2021_12	MF	ASHP-SEER18_ER2_MF	985.17	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354351_2021_12	MFc	ASHP-SEER18_ER1_MF_CompE	1,792.56	Cooling Res	0.0009474181	1.698304	6.0	\$1,644.96	2.5
354351_2021_12	MFc	ASHP-SEER18_ER1_MF_CompE	795.23	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354351_2021_12	MFc	ASHP-SEER18_ER2_MF_CompE	300.95	Cooling Res ER2	0.0009474181	0.285125	12.0	\$0.00	
354351_2021_12	MFc	ASHP-SEER18_ER2_MF_CompE	335.85	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354400_2021_12	SF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER1_SF	3,279.14	Cooling Res	0.0009474181	3.106717	6.0	\$2,233.01	3.8
354400_2021_12	SF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER1_SF	12,962.58	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354400_2021_12	SF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER2_SF	816.88	Cooling Res ER2	0.0009474181	0.773927	12.0	\$0.00	
354400_2021_12	SF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER2_SF	12,962.58	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354410_2021_12	SF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER1_SF	2,436.71	Cooling Res	0.0009474181	2.308583	6.0	\$2,185.78	3.6
354410_2021_12	SF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER1_SF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354410_2021_12	SF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER2_SF	718.57	Cooling Res ER2	0.0009474181	0.680786	12.0	\$0.00	
354410_2021_12	SF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER2_SF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354450_2019_12	MF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER1_MF	1,416.58	Cooling Res	0.0009474181	1.342094	6.0	\$1,753.37	3.1
354450_2019_12	MF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER1_MF	6,759.78	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354450_2019_12	MF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER2_MF	394.97	Cooling Res ER2	0.0009474181	0.374202	12.0	\$0.00	
354450_2019_12	MF	ASHP-SEER19-Replace_CAC_ElectricHeat_ER2_MF	6,759.78	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354451_2019_12	MFc	ASHP-SEER19-Replace_CAC_ElectricHeat_ER1_MF_CompE	1,030.24	Cooling Res	0.0009474181	0.976068	6.0	\$1,753.37	3.1
354451_2019_12	MFc	ASHP-SEER19-Replace_CAC_ElectricHeat_ER1_MF_CompE	2,304.47	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354451_2019_12	MFc	ASHP-SEER19-Replace_CAC_ElectricHeat_ER2_MF_CompE	287.25	Cooling Res ER2	0.0009474181	0.272146	12.0	\$0.00	
354451_2019_12	MFc	ASHP-SEER19-Replace_CAC_ElectricHeat_ER2_MF_CompE	2,304.47	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	

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Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
354460_2021_12	MF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER1_MF	1,416.58	Cooling Res	0.0009474181	1.342094	6.0	\$1,753.37	3.1
354460_2021_12	MF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354460_2021_12	MF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER2_MF	394.97	Cooling Res ER2	0.0009474181	0.374202	12.0	\$0.00	
354460_2021_12	MF	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354461_2021_12	MFc	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER1_MF_CompE	1,030.24	Cooling Res	0.0009474181	0.976068	6.0	\$1,753.37	3.1
354461_2021_12	MFc	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354461_2021_12	MFc	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER2_MF_CompE	287.25	Cooling Res ER2	0.0009474181	0.272146	12.0	\$0.00	
354461_2021_12	MFc	ASHP-SEER19-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354500_2019_12	MF	ASHP-SEER19_ER1_MF	1,507.97	Cooling Res	0.0009474181	1.428678	6.0	\$1,788.84	3.3
354500_2019_12	MF	ASHP-SEER19_ER1_MF	1,798.76	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354500_2019_12	MF	ASHP-SEER19_ER2_MF	420.45	Cooling Res ER2	0.0009474181	0.398342	12.0	\$0.00	
354500_2019_12	MF	ASHP-SEER19_ER2_MF	642.61	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354501_2019_12	MFc	ASHP-SEER19_ER1_MF_CompE	1,096.71	Cooling Res	0.0009474181	1.039043	6.0	\$1,788.84	3.3
354501_2019_12	MFc	ASHP-SEER19_ER1_MF_CompE	613.21	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354501_2019_12	MFc	ASHP-SEER19_ER2_MF_CompE	305.78	Cooling Res ER2	0.0009474181	0.289702	12.0	\$0.00	
354501_2019_12	MFc	ASHP-SEER19_ER2_MF_CompE	219.07	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354550_2021_12	SF	ASHP-SEER20_ER1_SF	2,594.98	Cooling Res	0.0009474181	2.458531	6.0	\$2,203.31	2.8
354550_2021_12	SF	ASHP-SEER20_ER1_SF	2,662.45	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354550_2021_12	SF	ASHP-SEER20_ER2_SF	687.08	Cooling Res ER2	0.0009474181	0.650952	12.0	\$0.00	
354550_2021_12	SF	ASHP-SEER20_ER2_SF	1,163.03	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354600_2021_12	SF	ASHP-SEER20_ROF_SF	717.64	Cooling Res	0.0009474181	0.679905	18.0	\$1,444.38	2.9
354600_2021_12	SF	ASHP-SEER20_ROF_SF	1,338.76	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354650_2019_12	MF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER1_MF	1,471.88	Cooling Res	0.0009474181	1.394486	6.0	\$1,994.10	3.1
354650_2019_12	MF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER1_MF	6,759.78	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354650_2019_12	MF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER2_MF	450.27	Cooling Res ER2	0.0009474181	0.426594	12.0	\$0.00	
354650_2019_12	MF	ASHP-SEER20-Replace_CAC_ElectricHeat_ER2_MF	6,759.78	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354651_2019_12	MFc	ASHP-SEER20-Replace_CAC_ElectricHeat_ER1_MF_CompE	1,070.46	Cooling Res	0.0009474181	1.014173	6.0	\$1,994.10	3.1
354651_2019_12	MFc	ASHP-SEER20-Replace_CAC_ElectricHeat_ER1_MF_CompE	2,304.47	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354651_2019_12	MFc	ASHP-SEER20-Replace_CAC_ElectricHeat_ER2_MF_CompE	327.47	Cooling Res ER2	0.0009474181	0.310251	12.0	\$0.00	
354651_2019_12	MFc	ASHP-SEER20-Replace_CAC_ElectricHeat_ER2_MF_CompE	2,304.47	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354660_2021_12	MF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER1_MF	1,471.88	Cooling Res	0.0009474181	1.394486	6.0	\$1,994.10	3.1
354660_2021_12	MF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER1_MF	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354660_2021_12	MF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER2_MF	450.27	Cooling Res ER2	0.0009474181	0.426594	12.0	\$0.00	
354660_2021_12	MF	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER2_MF	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354661_2021_12	MFc	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER1_MF_CompE	1,070.46	Cooling Res	0.0009474181	1.014173	6.0	\$1,994.10	3.1
354661_2021_12	MFc	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER1_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354661_2021_12	MFc	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER2_MF_CompE	327.47	Cooling Res ER2	0.0009474181	0.310251	12.0	\$0.00	
354661_2021_12	MFc	ASHP-SEER20-Replace_CAC_NonElectricHeat_ER2_MF_CompE	0.00	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354700_2019_12	MF	ASHP-SEER20_ER1_MF	1,566.84	Cooling Res	0.0009474181	1.484453	6.0	\$2,029.57	3.3
354700_2019_12	MF	ASHP-SEER20_ER1_MF	1,798.76	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354700_2019_12	MF	ASHP-SEER20_ER2_MF	479.32	Cooling Res ER2	0.0009474181	0.454116	12.0	\$0.00	
354700_2019_12	MF	ASHP-SEER20_ER2_MF	642.61	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354701_2019_12	MFc	ASHP-SEER20_ER1_MF_CompE	1,139.52	Cooling Res	0.0009474181	1.079602	6.0	\$2,029.57	3.3
354701_2019_12	MFc	ASHP-SEER20_ER1_MF_CompE	613.21	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354701_2019_12	MFc	ASHP-SEER20_ER2_MF_CompE	348.59	Cooling Res ER2	0.0009474181	0.330260	12.0	\$0.00	
354701_2019_12	MFc	ASHP-SEER20_ER2_MF_CompE	219.07	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354750_2021_12	SF	ASHP-SEER21_ER1_SF	2,958.13	Cooling Res	0.0009474181	2.802586	6.0	\$2,604.43	3.4
354750_2021_12	SF	ASHP-SEER21_ER1_SF	3,535.71	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354750_2021_12	SF	ASHP-SEER21_ER2_SF	877.41	Cooling Res ER2	0.0009474181	0.831274	12.0	\$0.00	
354750_2021_12	SF	ASHP-SEER21_ER2_SF	1,728.93	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354800_2021_12	SF	ASHP-SEER21_ROF_SF	924.97	Cooling Res	0.0009474181	0.876333	18.0	\$1,689.92	3.5
354800_2021_12	SF	ASHP-SEER21_ROF_SF	1,933.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354850_2019_12	MF	ASHP-SEER21-Replace_CAC_ElectricHeat_ROF_MF	451.88	Cooling Res	0.0009474181	0.428119	18.0	\$1,689.92	2.8
354850_2019_12	MF	ASHP-SEER21-Replace_CAC_ElectricHeat_ROF_MF	6,213.11	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354851_2019_12	MFc	ASHP-SEER21-Replace_CAC_ElectricHeat_ROF_MF_CompE	328.64	Cooling Res	0.0009474181	0.311359	18.0	\$1,689.92	2.8
354851_2019_12	MFc	ASHP-SEER21-Replace_CAC_ElectricHeat_ROF_MF_CompE	2,118.10	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354860_2021_12	MF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ROF_MF	451.88	Cooling Res	0.0009474181	0.428119	18.0	\$1,689.92	2.8
354860_2021_12	MF	ASHP-SEER21-Replace_CAC_NonElectricHeat_ROF_MF	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354861_2021_12	MFc	ASHP-SEER21-Replace_CAC_NonElectricHeat_ROF_MF_CompE	328.64	Cooling Res	0.0009474181	0.311359	18.0	\$1,689.92	2.8
354861_2021_12	MFc	ASHP-SEER21-Replace_CAC_NonElectricHeat_ROF_MF_CompE	0.00	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354900_2019_12	MF	ASHP-SEER21_ER1_MF	1,620.10	Cooling Res	0.0009474181	1.534912	6.0	\$2,275.11	3.3
354900_2019_12	MF	ASHP-SEER21_ER1_MF	1,798.76	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354900_2019_12	MF	ASHP-SEER21_ER2_MF	532.57	Cooling Res ER2	0.0009474181	0.504566	12.0	\$0.00	
354900_2019_12	MF	ASHP-SEER21_ER2_MF	642.61	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	

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Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
354901_2019_12	Mfc	ASHP-SEER21_ER1_MF_CompE	1,178.25	Cooling Res	0.0009474181	1.116295	6.0	\$2,275.11	3.3
354901_2019_12	Mfc	ASHP-SEER21_ER1_MF_CompE	613.21	Heating Res	0.0000000000	0.000000	6.0	\$0.00	
354901_2019_12	Mfc	ASHP-SEER21_ER2_MF_CompE	387.33	Cooling Res ER2	0.0009474181	0.366963	12.0	\$0.00	
354901_2019_12	Mfc	ASHP-SEER21_ER2_MF_CompE	219.07	Heating Res ER2	0.0000000000	0.000000	12.0	\$0.00	
354950_2019_12	MF	ASHP-SEER17_ROF_MF	281.95	Cooling Res	0.0009474181	0.267125	18.0	\$724.00	3.3
354950_2019_12	MF	ASHP-SEER17_ROF_MF	766.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
354951_2019_12	Mfc	ASHP-SEER17_ROF_MF_CompE	205.05	Cooling Res	0.0009474181	0.194268	18.0	\$724.00	3.3
354951_2019_12	Mfc	ASHP-SEER17_ROF_MF_CompE	261.37	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355000_2019_12	MF	ASHP-SEER18_ROF_MF	355.05	Cooling Res	0.0009474181	0.336381	18.0	\$962.92	3.3
355000_2019_12	MF	ASHP-SEER18_ROF_MF	766.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355001_2021_12	Mfc	ASHP-SEER18_ROF_MF_CompE	258.22	Cooling Res	0.0009474181	0.244642	18.0	\$962.92	3.3
355001_2021_12	Mfc	ASHP-SEER18_ROF_MF_CompE	261.37	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355050_2019_12	MF	ASHP-SEER19_ROF_MF	420.45	Cooling Res	0.0009474181	0.398342	18.0	\$1,203.65	3.3
355050_2019_12	MF	ASHP-SEER19_ROF_MF	766.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355051_2019_12	Mfc	ASHP-SEER19_ROF_MF_CompE	305.78	Cooling Res	0.0009474181	0.289702	18.0	\$1,203.65	3.3
355051_2019_12	Mfc	ASHP-SEER19_ROF_MF_CompE	261.37	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355100_2019_12	MF	ASHP-SEER20_ROF_MF	479.32	Cooling Res	0.0009474181	0.454116	18.0	\$1,444.38	3.3
355100_2019_12	MF	ASHP-SEER20_ROF_MF	766.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355101_2019_12	Mfc	ASHP-SEER20_ROF_MF_CompE	348.59	Cooling Res	0.0009474181	0.330260	18.0	\$1,444.38	3.3
355101_2019_12	Mfc	ASHP-SEER20_ROF_MF_CompE	261.37	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355150_2019_12	MF	ASHP-SEER21_ROF_MF	532.57	Cooling Res	0.0009474181	0.504566	18.0	\$1,689.92	3.3
355150_2019_12	MF	ASHP-SEER21_ROF_MF	766.69	Heating Res	0.0000000000	0.000000	18.0	\$0.00	
355151_2019_12	Mfc	ASHP-SEER21_ROF_MF_CompE	387.33	Cooling Res	0.0009474181	0.366963	18.0	\$1,689.92	3.3
355151_2019_12	Mfc	ASHP-SEER21_ROF_MF_CompE	261.37	Heating Res	0.0000000000	0.000000	18.0	\$0.00	

Packaged Terminal Air Source Heat Pumps

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
356200_2022_12	MF	PTHP-SEER12-ER1_MF	415.90	Cooling Res	0.0009474181	0.394031	5.0	\$224.93	1.01
356200_2022_12	MF	PTHP-SEER12-ER1_MF	1,229.91	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356200_2022_12	MF	PTHP-SEER12-ER2_MF	16.00	Cooling Res ER2	0.0009474181	0.015159	10.0	\$0.00	
356200_2022_12	MF	PTHP-SEER12-ER2_MF	112.08	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356225_2022_12	Mfc	PTHP-SEER12-ER1_MF_CompE	302.66	Cooling Res	0.0009474181	0.286746	5.0	\$224.93	1.01
356225_2022_12	Mfc	PTHP-SEER12-ER1_MF_CompE	419.83	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356225_2022_12	Mfc	PTHP-SEER12-ER2_MF_CompE	11.64	Cooling Res ER2	0.0009474181	0.011028	10.0	\$0.00	
356225_2022_12	Mfc	PTHP-SEER12-ER2_MF_CompE	38.26	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356250_2022_12	MF	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER1_MF	477.07	Cooling Res	0.0009474181	0.451985	5.0	\$224.93	1.01
356250_2022_12	MF	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER1_MF	2,610.79	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356250_2022_12	MF	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER2_MF	16.00	Cooling Res ER2	0.0009474181	0.015159	10.0	\$0.00	
356250_2022_12	MF	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER2_MF	2,610.79	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356275_2022_12	Mfc	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER1_MF_CompE	347.17	Cooling Res	0.0009474181	0.328915	5.0	\$224.93	1.01
356275_2022_12	Mfc	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER1_MF_CompE	891.18	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356275_2022_12	Mfc	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER2_MF_CompE	11.64	Cooling Res ER2	0.0009474181	0.011028	10.0	\$0.00	
356275_2022_12	Mfc	PTHP-SEER12-Replace_PTAC_ElectricHeat_ER2_MF_CompE	891.18	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356300_2022_12	MF	PTHP-SEER12-ROF_MF	16.00	Cooling Res	0.0009474181	0.015159	15.0	\$84.93	1.01
356300_2022_12	MF	PTHP-SEER12-ROF_MF	112.08	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356325_2022_12	Mfc	PTHP-SEER12-ROF_MF_CompE	11.64	Cooling Res	0.0009474181	0.011028	15.0	\$84.93	1.01
356325_2022_12	Mfc	PTHP-SEER12-ROF_MF_CompE	38.26	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356350_2022_12	MF	PTHP-SEER12-Replace_PTAC_ElectricHeat_ROF_MF	16.00	Cooling Res	0.0009474181	0.015159	15.0	\$84.93	1.01
356350_2022_12	MF	PTHP-SEER12-Replace_PTAC_ElectricHeat_ROF_MF	2,610.79	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356375_2022_12	Mfc	PTHP-SEER12-Replace_PTAC_ElectricHeat_ROF_MF_CompE	11.64	Cooling Res	0.0009474181	0.011028	15.0	\$84.93	1.01
356375_2022_12	Mfc	PTHP-SEER12-Replace_PTAC_ElectricHeat_ROF_MF_CompE	891.18	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356400_2022_12	MF	PTHP-SEER13-ER1_MF	463.89	Cooling Res	0.0009474181	0.439498	5.0	\$224.93	1.01
356400_2022_12	MF	PTHP-SEER13-ER1_MF	1,248.41	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356400_2022_12	MF	PTHP-SEER13-ER2_MF	63.99	Cooling Res ER2	0.0009474181	0.060625	10.0	\$0.00	
356400_2022_12	MF	PTHP-SEER13-ER2_MF	130.58	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356425_2022_12	Mfc	PTHP-SEER13-ER1_MF_CompE	337.58	Cooling Res	0.0009474181	0.319829	5.0	\$224.93	1.01
356425_2022_12	Mfc	PTHP-SEER13-ER1_MF_CompE	426.14	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356425_2022_12	Mfc	PTHP-SEER13-ER2_MF_CompE	46.56	Cooling Res ER2	0.0009474181	0.044112	10.0	\$0.00	
356425_2022_12	Mfc	PTHP-SEER13-ER2_MF_CompE	44.57	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	

RESIDENTIAL HVAC

Packaged Terminal Air Source Heat Pumps

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
356450_2022_12	MF	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER1_MF	525.05	Cooling Res	0.0009474181	0.497442	5.0	\$224.93	1.01
356450_2022_12	MF	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER1_MF	2,629.29	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356450_2022_12	MF	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER2_MF	63.99	Cooling Res ER2	0.0009474181	0.060625	10.0	\$0.00	
356450_2022_12	MF	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER2_MF	2,629.29	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356475_2022_12	Mfc	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER1_MF_CompE	382.09	Cooling Res	0.0009474181	0.361999	5.0	\$224.93	1.01
356475_2022_12	Mfc	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER1_MF_CompE	897.50	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356475_2022_12	Mfc	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER2_MF_CompE	46.56	Cooling Res ER2	0.0009474181	0.044112	10.0	\$0.00	
356475_2022_12	Mfc	PTHP-SEER13-Replace_PTAC_ElectricHeat_ER2_MF_CompE	897.50	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356500_2022_12	MF	PTHP-SEER13-ROF_MF	63.99	Cooling Res	0.0009474181	0.060625	15.0	\$84.93	1.01
356500_2022_12	MF	PTHP-SEER13-ROF_MF	130.58	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356525_2022_12	Mfc	PTHP-SEER13-ROF_MF_CompE	46.56	Cooling Res	0.0009474181	0.044112	15.0	\$84.93	1.01
356525_2022_12	Mfc	PTHP-SEER13-ROF_MF_CompE	44.57	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356550_2022_12	MF	PTHP-SEER13-Replace_PTAC_ElectricHeat_ROF_MF	63.99	Cooling Res	0.0009474181	0.060625	15.0	\$84.93	1.01
356550_2022_12	MF	PTHP-SEER13-Replace_PTAC_ElectricHeat_ROF_MF	2,629.29	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356575_2022_12	Mfc	PTHP-SEER13-Replace_PTAC_ElectricHeat_ROF_MF_CompE	46.56	Cooling Res	0.0009474181	0.044112	15.0	\$84.93	1.01
356575_2022_12	Mfc	PTHP-SEER13-Replace_PTAC_ElectricHeat_ROF_MF_CompE	897.50	Heating Res	0.0000000000	0.000000	15.0	\$0.00	

Packaged Terminal Air Source Heat Pumps

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
356600_2022_12	MF	PTHP-SEER14-ER1_MF	505.03	Cooling Res	0.0009474181	0.478475	5.0	\$224.93	1.01
356600_2022_12	MF	PTHP-SEER14-ER1_MF	1,288.67	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356600_2022_12	MF	PTHP-SEER14-ER2_MF	105.12	Cooling Res ER2	0.0009474181	0.099593	10.0	\$0.00	
356600_2022_12	MF	PTHP-SEER14-ER2_MF	170.84	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356625_2022_12	Mfc	PTHP-SEER14-ER1_MF_CompE	367.51	Cooling Res	0.0009474181	0.348186	5.0	\$224.93	1.01
356625_2022_12	Mfc	PTHP-SEER14-ER1_MF_CompE	439.88	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356625_2022_12	Mfc	PTHP-SEER14-ER2_MF_CompE	76.50	Cooling Res ER2	0.0009474181	0.072477	10.0	\$0.00	
356625_2022_12	Mfc	PTHP-SEER14-ER2_MF_CompE	58.32	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356650_2022_12	MF	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER1_MF	566.19	Cooling Res	0.0009474181	0.536419	5.0	\$224.93	1.01
356650_2022_12	MF	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER1_MF	2,669.55	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356650_2022_12	MF	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER2_MF	105.12	Cooling Res ER2	0.0009474181	0.099593	10.0	\$0.00	
356650_2022_12	MF	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER2_MF	2,669.55	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356675_2022_12	Mfc	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER1_MF_CompE	412.02	Cooling Res	0.0009474181	0.390355	5.0	\$224.93	1.01
356675_2022_12	Mfc	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER1_MF_CompE	911.24	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356675_2022_12	Mfc	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER2_MF_CompE	76.50	Cooling Res ER2	0.0009474181	0.072477	10.0	\$0.00	
356675_2022_12	Mfc	PTHP-SEER14-Replace_PTAC_ElectricHeat_ER2_MF_CompE	911.24	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356700_2022_12	MF	PTHP-SEER14-ROF_MF	105.12	Cooling Res	0.0009474181	0.099593	15.0	\$84.93	1.01
356700_2022_12	MF	PTHP-SEER14-ROF_MF	170.84	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356725_2022_12	Mfc	PTHP-SEER14-ROF_MF_CompE	76.50	Cooling Res	0.0009474181	0.072477	15.0	\$84.93	1.01
356725_2022_12	Mfc	PTHP-SEER14-ROF_MF_CompE	58.32	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356750_2022_12	MF	PTHP-SEER14-Replace_PTAC_ElectricHeat_ROF_MF	105.12	Cooling Res	0.0009474181	0.099593	15.0	\$84.93	1.01
356750_2022_12	MF	PTHP-SEER14-Replace_PTAC_ElectricHeat_ROF_MF	2,669.55	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356775_2022_12	Mfc	PTHP-SEER14-Replace_PTAC_ElectricHeat_ROF_MF_CompE	76.50	Cooling Res	0.0009474181	0.072477	15.0	\$84.93	1.01
356775_2022_12	Mfc	PTHP-SEER14-Replace_PTAC_ElectricHeat_ROF_MF_CompE	911.24	Heating Res	0.0000000000	0.000000	15.0	\$0.00	

RESIDENTIAL HVAC
Packaged Terminal Air Source Heat Pumps

*Mfc = Multifamily Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units (tons/measure)
356800_2022_12	MF	PTHP-SEER15-ER1_MF	540.67	Cooling Res	0.0009474181	0.512241	5.0	\$224.93	1.01
356800_2022_12	MF	PTHP-SEER15-ER1_MF	1,328.35	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356800_2022_12	MF	PTHP-SEER15-ER2_MF	140.77	Cooling Res ER2	0.0009474181	0.133368	10.0	\$0.00	
356800_2022_12	MF	PTHP-SEER15-ER2_MF	210.52	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356825_2022_12	MFc	PTHP-SEER15-ER1_MF_CompE	393.46	Cooling Res	0.0009474181	0.372771	5.0	\$224.93	1.01
356825_2022_12	MFc	PTHP-SEER15-ER1_MF_CompE	453.43	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356825_2022_12	MFc	PTHP-SEER15-ER2_MF_CompE	102.44	Cooling Res ER2	0.0009474181	0.097054	10.0	\$0.00	
356825_2022_12	MFc	PTHP-SEER15-ER2_MF_CompE	71.86	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356850_2022_12	MF	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER1_MF	601.84	Cooling Res	0.0009474181	0.570194	5.0	\$224.93	1.01
356850_2022_12	MF	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER1_MF	2,709.23	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356850_2022_12	MF	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER2_MF	140.77	Cooling Res ER2	0.0009474181	0.133368	10.0	\$0.00	
356850_2022_12	MF	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER2_MF	2,709.23	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356875_2022_12	MFc	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER1_MF_CompE	437.97	Cooling Res	0.0009474181	0.414941	5.0	\$224.93	1.01
356875_2022_12	MFc	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER1_MF_CompE	924.79	Heating Res	0.0000000000	0.000000	5.0	\$0.00	
356875_2022_12	MFc	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER2_MF_CompE	102.44	Cooling Res ER2	0.0009474181	0.097054	10.0	\$0.00	
356875_2022_12	MFc	PTHP-SEER15-Replace_PTAC_ElectricHeat_ER2_MF_CompE	924.79	Heating Res ER2	0.0000000000	0.000000	10.0	\$0.00	
356900_2022_12	MF	PTHP-SEER15-ROF_MF	140.77	Cooling Res	0.0009474181	0.133368	15.0	\$84.93	1.01
356900_2022_12	MF	PTHP-SEER15-ROF_MF	210.52	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356925_2022_12	MFc	PTHP-SEER15-ROF_MF_CompE	102.44	Cooling Res	0.0009474181	0.097054	15.0	\$84.93	1.01
356925_2022_12	MFc	PTHP-SEER15-ROF_MF_CompE	71.86	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356950_2022_12	MF	PTHP-SEER15-Replace_PTAC_ElectricHeat_ROF_MF	140.77	Cooling Res	0.0009474181	0.133368	15.0	\$84.93	1.01
356950_2022_12	MF	PTHP-SEER15-Replace_PTAC_ElectricHeat_ROF_MF	2,709.23	Heating Res	0.0000000000	0.000000	15.0	\$0.00	
356975_2022_12	MFc	PTHP-SEER15-Replace_PTAC_ElectricHeat_ROF_MF_CompE	102.44	Cooling Res	0.0009474181	0.097054	15.0	\$84.93	1.01
356975_2022_12	MFc	PTHP-SEER15-Replace_PTAC_ElectricHeat_ROF_MF_CompE	924.79	Heating Res	0.0000000000	0.000000	15.0	\$0.00	

RESIDENTIAL INCOME ELIGIBLE

AC Tune-up

*MFIEc = Multifamily Income Eligible Comprehensive Envelope, CompE = Comprehensive Envelope

Table with columns: Measure Reference No., Program/Channel, Measure, kWh Annual Savings, End Use, kW Factor, kW, EUL, Inc. Cost, Units. Rows include AC General Tune-Up, AC Tune-up / Refrigerant charge MF, AC Tune-up / Indoor Coil (Evaporator) Cleaning SF, etc.

Air Sealing

Table with columns: Measure Reference No., Program/Channel, Measure, kWh Annual Savings, End Use, kW Factor, Heating kWh, Cooling kWh, kW, EUL, Inc. Cost, Units (sq. ft.). Rows include Air Sealing (infiltration reduction) - 30% MF IE DI electric furnace base, Air Sealing (infiltration reduction) - 30% SF IE DI gas furnace base, etc.

Ceiling Insulation

Table with columns: Measure Reference No., Program/Channel, Measure, kWh Annual Savings, End Use, kW Factor, Heating kWh, Cooling kWh, kW, EUL, Inc. Cost, Units -area of ceiling/attic (ft2). Rows include Ceiling Insulation R11-R49 MF IE DI electric furnace base, Ceiling Insulation R11-R49 MF IE DI heat pump base, etc.

Floor Insulation

*MH = Mobile Home

Table with columns: Measure Reference No., Program/Channel, Measure, kWh Annual Savings, End Use, kW Factor, Heating kWh, Cooling kWh, kW, EUL, Inc. Cost, Units -area of floor (ft2). Rows include Floor Insulation R25 (R-3.96 base) MH electric furnace/baseboard and electric cool, Floor Insulation R25 (R-3.96 base) MH heat pump and electric cooling, etc.

RESIDENTIAL INCOME ELIGIBLE

Dirty Filter Alarm

*MFIEc = Multifamily Income Eligible Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	kW	EUL	Inc. Cost	Units
402250_2019_12	MFIE	Dirty Filter Alarm_MFIE	102.68	HVAC RES	0.0004660805	65.0	37.7	0.047857	14.0	\$5.00	per measure
402251_2019_12	MFIEc	Dirty Filter Alarm_MFIE_CompE	49.58	HVAC RES	0.0004660805	22.1	27.4	0.023108	14.0	\$5.00	per measure

Duct Insulation

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	ΔkWhCooling	ΔkWhHeating	Δtherms	kW	EUL	Inc. Cost*	Units - DuctLength (ft.)
402300_2019_12	SFIE	Duct Insulation - Electric Heating	29.13	HVAC RES	0.0004660805	1.6	27.5	0.00	0.013577	20.0	\$4.22	1.0
402350_2019_12	SFIE	Mobile Home Adjusted Duct Insulation - Electric Heating	29.13	HVAC RES	0.0004660805	1.6	27.5	0.00	0.013577	20.0	\$4.22	1.0
402400_2019_12	SFIE	Duct Insulation - Gas Heating	2.69	HVAC RES	0.0004660805	1.6	1.1	1.20	0.001254	20.0	\$4.22	1.0

Duct Repair (Duct Sealing and Repair - Methodology 3)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	ΔkWhCooling	ΔkWhHeating	kW	EUL	Inc. Cost*	Units - DuctLength (ft.)
402450_2019_12	SFIE	Duct Repair (Sealing) - Electric Heating SF	4.92	HVAC RES	0.0004660805	0.8	4.1	0.002293	20.0	\$8.04	1.0
402451_2021_12	SFIE	Duct Repair (Sealing) - Gas Heating SF	1.00	HVAC RES	0.0004660805	0.8	0.2	0.000466	20.0	\$8.04	1.0
402452_2020_12	MFIE	Duct Repair (Sealing) - Electric Heating MF Adjusted	4.11	HVAC RES	0.0004660805	0.70	3.41	0.001916	20.0	\$8.04	1.0
402453_2021_12	MFIE	Duct Repair (Sealing) - Gas Heating MF Adjusted	0.87	HVAC RES	0.0004660805	0.70	0.17	0.000405	20.0	\$8.04	1.0
402500_2019_12	SFIE	Duct Repair (Sealing) - Electric Heating MH Adjusted	6.01	HVAC RES	0.0004660805	1.0	5.1	0.002801	20.0	\$8.04	1.0
402501_2021_12	SFIE	Duct Repair (Sealing) - Gas Heating MH Adjusted	1.19	HVAC RES	0.0004660805	1.0	0.2	0.000555	20.0	\$8.04	1.0

ECM/ Blower Motor

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	Auto kWh	Continuous kWh	kW	EUL	Inc. Cost	Units
402550_2021_12	SFIE	ECM Auto Fan EUL Replacement -SF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000	20	\$74.33	per measure
402600_2021_12	SFIE	ECM Auto Fan Early Replacement ER1 (Full Cost) - SF	582.00	HVAC RES	0.0004660805	264.1	31.1	286.7	0.0	0.271259	6	\$475.00	per measure
402600_2021_12	SFIE	ECM Auto Fan Early Replacement ER2 (Remaining Life) - SF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000	0	\$0.00	per measure
402650_2021_12	SFIE	ECM Continuous Fan EUL Replacement - SF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000	20	\$74.33	per measure
402700_2021_12	SFIE	ECM Continuous Fan Early Replacement ER1 (Full Cost) - SF	582.00	HVAC RES	0.0004660805	264.1	31.1	0.0	286.7	0.271259	6	\$475.00	per measure
402700_2021_12	SFIE	ECM Continuous Fan Early Replacement ER2 (Remaining Life) - SF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000	0	\$0.00	per measure
402750_2021_12	MFIE	ECM Auto Fan EUL Replacement - MF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000	20	\$74.33	per measure
402800_2021_12	MFIE	ECM Auto Fan Early Replacement ER1 (Full Cost) - MF	582.00	HVAC RES	0.0004660805	264.1	31.1	286.7	0.0	0.271259	6	\$475.00	per measure
402800_2021_12	MFIE	ECM Auto Fan Early Replacement ER2 (Remaining Life) - MF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000	0	\$0.00	per measure
402850_2021_12	MFIE	ECM Continuous Fan EUL Replacement - MF	0.00	HVAC RES	0.0004660805	0.0	0.0	0.0	0.0	0.000000	20	\$74.33	per measure
402900_2021_12	MFIE	ECM Continuous Fan Early Replacement ER1 (Full Cost) - MF	582.00	HVAC RES	0.0004660805	264.1	31.1	0.0	286.7	0.271259	6	\$475.00	per measure
402900_2021_12	MFIE	ECM Continuous Fan Early Replacement ER2 (Remaining Life) - MF	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000	0	\$0.00	per measure

Note: As part of the Code of Federal Regulations, energy conservation standards for covered residential furnace fans became effective on July 3, 2019 (10 CFR 430.32(i)). This code requirement effectively makes ECMs part of the baseline for New Construction (NC), Replace-on-Fail (ROF), Time-of-Replacement (TOS), and Early Replacement (EREP) scenarios. Savings are only allowable for EREP measures, for the remaining useful life of the existing equipment (ER1, 6 years). Therefore, the EUL of the measure is assumed to be 6 years. (ER1 = 6, ER2 = 0).

Heat Pump (HP) Tune-up

*MFIEc = Multifamily Income Eligible Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
402950_2019_12	SFIE	General HP tune-up (no charge or coil clean)	141.72	Cooling RES	0.0009474181	0.134268	2.0	\$70.00	per measure
402950_2019_12	SFIE	General HP tune-up (no charge or coil clean)	114.06	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403000_2019_12	MFIE	General HP tune-up (no charge or coil clean)	87.28	Cooling RES	0.0009474181	0.082691	2.0	\$70.00	per measure
403000_2019_12	MFIE	General HP tune-up (no charge or coil clean)	70.25	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403050_2019_12	SFIE	HP tune-up / Refrigerant charge SF	591.08	Cooling RES	0.0009474181	0.560000	2.0	\$81.00	per measure
403050_2019_12	SFIE	HP tune-up / Refrigerant charge SF	549.10	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403100_2019_12	MFIE	HP tune-up / Refrigerant charge MF	364.03	Cooling RES	0.0009474181	0.344889	2.0	\$81.00	per measure
403100_2019_12	MFIE	HP tune-up / Refrigerant charge MF	338.18	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403101_2019_12	MFIEc	HP tune-up / Refrigerant charge MF_CompE	264.75	Cooling RES	0.0009474181	0.250829	2.0	\$81.00	per measure
403101_2019_12	MFIEc	HP tune-up / Refrigerant charge MF_CompE	115.29	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403150_2019_12	SFIE	HP tune-up / Indoor Coil (Evaporator) Cleaning SF	97.83	Cooling RES	0.0009474181	0.092686	2.0	\$63.00	per measure
403150_2019_12	SFIE	HP tune-up / Indoor Coil (Evaporator) Cleaning SF	77.73	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403200_2019_12	MFIE	HP tune-up / Indoor Coil (Evaporator) Cleaning MF	60.25	Cooling RES	0.0009474181	0.057082	2.0	\$63.00	per measure
403200_2019_12	MFIE	HP tune-up / Indoor Coil (Evaporator) Cleaning MF	47.87	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403201_2019_12	MFIEc	HP tune-up / Indoor Coil (Evaporator) Cleaning MF_CompE	43.82	Cooling RES	0.0009474181	0.041516	2.0	\$63.00	per measure
403201_2019_12	MFIEc	HP tune-up / Indoor Coil (Evaporator) Cleaning MF_CompE	16.32	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403250_2019_12	SFIE	HP tune-up / Outdoor Coil (Condenser) Cleaning SF	195.66	Cooling RES	0.0009474181	0.185372	2.0	\$31.00	per measure
403250_2019_12	SFIE	HP tune-up / Outdoor Coil (Condenser) Cleaning SF	160.04	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403300_2019_12	MFIE	HP tune-up / Outdoor Coil (Condenser) Cleaning MF	120.50	Cooling RES	0.0009474181	0.114164	2.0	\$31.00	per measure
403300_2019_12	MFIE	HP tune-up / Outdoor Coil (Condenser) Cleaning MF	98.57	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403301_2019_12	MFIEc	HP tune-up / Outdoor Coil (Condenser) Cleaning MF_CompE	87.64	Cooling RES	0.0009474181	0.083032	2.0	\$31.00	per measure
403301_2019_12	MFIEc	HP tune-up / Outdoor Coil (Condenser) Cleaning MF_CompE	33.60	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403310_2021_12	SFIE	HP tune-up / Packaged Service SF	367.93	Cooling RES	0.0009474181	0.348584	2.0	\$185.00	per measure
403310_2021_12	SFIE	HP tune-up / Packaged Service SF	1180.10	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403311_2021_12	MFIE	HP tune-up / Packaged Service MF	226.60	Cooling RES	0.0009474181	0.214685	2.0	\$35.00	per measure
403311_2021_12	MFIE	HP tune-up / Packaged Service MF	726.80	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
403312_2021_12	MFIEc	HP tune-up / Packaged Service MF_CompE	164.80	Cooling RES	0.0009474181	0.156135	2.0	\$185.00	per measure
403312_2021_12	MFIEc	HP tune-up / Packaged Service MF_CompE	247.77	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure

RESIDENTIAL INCOME ELIGIBLE

Low Flow Faucet Aerators (Bathroom)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
403350_2019_12	MFIE	Low Flow Bathroom Faucet Aerator MFIE	17.77	Water heating RES	0.000087318	0.047	0.001577	11.0	\$3.00	per measure
403351_2020_12	SFIE	Low Flow Bathroom Faucet Aerator SFIE	17.77	Water heating RES	0.000087318	0.047	0.001577	11.0	\$3.00	per measure
403400_2019_12	MFIE DI	Low Flow Bathroom Faucet Aerator MFIE DI	35.17	Water heating RES	0.000087318	0.047	0.003121	11.0	\$11.33	per measure
403450_2019_12	SFIE DI	Low Flow Bathroom Faucet Aerator SFIE DI	35.17	Water heating RES	0.000087318	0.047	0.003121	11.0	\$11.33	per measure

Low Flow Faucet Aerators (Kitchen)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
403470_2020_12	MFIE	Low Flow Kitchen Faucet Aerator MFIE	46.75	Water Heating RES	0.000087318	0.079	0.004148	11.0	\$3.00	per measure
403471_2020_12	SFIE	Low Flow Kitchen Faucet Aerator SFIE	46.75	Water Heating RES	0.000087318	0.079	0.004148	11.0	\$3.00	per measure
403480_2020_12	MFIE DI	Low Flow Kitchen Faucet Aerator MFIE DI	111.03	Water Heating RES	0.000087318	0.079	0.009852	11.0	\$11.33	per measure
403481_2020_12	SFIE DI	Low Flow Kitchen Faucet Aerator SFIE DI	111.03	Water Heating RES	0.000087318	0.079	0.009852	11.0	\$11.33	per measure

Low Flow Showerheads

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
403500_2021_12	MFIE	Low Flow Showerhead MFIE	220.38	Water heating RES	0.000087318	0.109	0.019555	10.0	\$7.00	per measure
403550_2021_12	MFIE DI	Low Flow Showerhead MFIE DI	232.58	Water heating RES	0.000087318	0.109	0.020637	10.0	\$15.33	per measure
403551_2021_12	MFIE DI	Low Flow Handheld Showerhead MFIE DI	232.58	Water heating RES	0.000087318	0.109	0.020637	10.0	\$23.35	per measure
403600_2021_12	SFIE DI	Low Flow Showerhead SFIE DI	194.77	Water heating RES	0.000087318	0.109	0.017282	10.0	\$15.33	per measure
403601_2021_12	SFIE DI	Low Flow Handheld Showerhead SFIE DI	194.77	Water heating RES	0.000087318	0.109	0.017282	10.0	\$23.35	per measure

Pipe Insulation

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
403650_2019_12	MFIE	Pipe Insulation MFIE	4.64	Water heating RES	0.000087318	0.000412	12.0	\$7.10	per foot
403700_2019_12	MFIE DI	Pipe Insulation MFIE DI	4.64	Water heating RES	0.000087318	0.000412	12.0	\$5.66	per foot
403750_2019_12	SFIE DI	Pipe Insulation SFIE DI	4.64	Water heating RES	0.000087318	0.000412	12.0	\$5.66	per foot

Programmable Thermostat

*MFIE = Multifamily Low Income Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
403800_2019_12	MFIE	Setback thermostat - full setback - ASHP heating/cooling MF	201.39	Cooling RES	0.0009474181	0.190801	10.0	\$70.00	per measure
403800_2019_12	MFIE	Setback thermostat - full setback - ASHP heating/cooling MF	30.37	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
403801_2019_12	MFIE	Setback thermostat - full setback - ASHP heating/cooling MF_CompE	146.46	Cooling RES	0.0009474181	0.138759	10.0	\$70.00	per measure
403801_2019_12	MFIE	Setback thermostat - full setback - ASHP heating/cooling MF_CompE	10.35	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
403850_2019_12	SFIE	Setback thermostat - full setback - ASHP heating/cooling SF	358.20	Cooling RES	0.0009474181	0.339365	10.0	\$70.00	per measure
403850_2019_12	SFIE	Setback thermostat - full setback - ASHP heating/cooling SF	87.38	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
403900_2019_12	MFIE	Setback thermostat - full setback - elec furnace heating / central AC MF	201.39	Cooling RES	0.0009474181	0.190801	10.0	\$70.00	per measure
403900_2019_12	MFIE	Setback thermostat - full setback - elec furnace heating / central AC MF	62.33	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
403901_2019_12	MFIE	Setback thermostat - full setback - elec furnace heating / central AC MF_CompE	146.46	Cooling RES	0.0009474181	0.138759	10.0	\$70.00	per measure
403901_2019_12	MFIE	Setback thermostat - full setback - elec furnace heating / central AC MF_CompE	21.25	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
403950_2019_12	SFIE	Setback thermostat - full setback - elec furnace heating / central AC SF	358.20	Cooling RES	0.0009474181	0.339365	10.0	\$70.00	per measure
403950_2019_12	SFIE	Setback thermostat - full setback - elec furnace heating / central AC SF	148.63	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
404000_2019_12	MFIE	Setback thermostat - full setback - gas heating / central AC MF	201.39	Cooling RES	0.0009474181	0.190800	10.0	\$70.00	per measure
404000_2019_12	MFIE	Setback thermostat - full setback - gas heating / central AC MF	0.00	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
404001_2019_12	MFIE	Setback thermostat - full setback - gas heating / central AC MF_CompE	146.46	Cooling RES	0.0009474181	0.138763	10.0	\$70.00	per measure
404001_2019_12	MFIE	Setback thermostat - full setback - gas heating / central AC MF_CompE	0.00	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
404050_2019_12	SFIE	Setback thermostat for SF - full setback - gas heating / central AC	358.20	Cooling RES	0.0009474181	0.339365	10.0	\$70.00	per measure
404050_2019_12	SFIE	Setback thermostat for SF - full setback - gas heating / central AC	0.00	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
404100_2019_12	MFIE	Setback thermostat - full setback - Unknown MF	201.39	Cooling RES	0.0009474181	0.190801	10.0	\$70.00	per measure
404100_2019_12	MFIE	Setback thermostat - full setback - Unknown MF	15.49	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
404101_2019_12	MFIE	Setback thermostat - full setback - Unknown MF_CompE	146.46	Cooling RES	0.0009474181	0.138759	10.0	\$70.00	per measure
404101_2019_12	MFIE	Setback thermostat - full setback - Unknown MF_CompE	5.28	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure
404150_2019_12	SFIE	Setback thermostat for SF - full setback - Unknown	358.20	Cooling RES	0.0009474181	0.339365	10.0	\$70.00	per measure
404150_2019_12	SFIE	Setback thermostat for SF - full setback - Unknown	32.33	Heating RES	0.0000000000	0.000000	10.0	\$0.00	per measure

Thermostatic Restrictor Shower Valve

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
404200_2019_12	SFIE DI	Shower Start 1.5 gpm electric water heater SFIE DI	41.68	Water heating RES	0.000087318	0.109	0.003698	10.0	\$50.00	per measure
404250_2019_12	MFIE DI	Shower Start 1.5 gpm electric water heater MFIE DI	47.32	Water heating RES	0.000087318	1.856	0.004199	10.0	\$50.00	per measure

Water Heater Wrap

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
404300_2019_12	SFIE	Water Heater Wrap SFIE	100.55	Water heating RES	0.000087318	0.008922	12.0	\$58.00	per measure

RESIDENTIAL INCOME ELIGIBLE

Common Area Faucet Aerators

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
404350_2019_12	MFIE	Common Area Low Flow Bathroom Faucet Aerator	28.40	Water heating RES	0.0000887318	0.071	0.002520	10.0	\$11.33	per measure

Common Area Low Flow Showerheads

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
404400_2019_12	MFIE DI	Common Area Low Flow Showerhead	213.29	Water heating RES	0.0000887318	0.109	0.018926	10.0	\$7.00	per measure

Lighting

** CFL baseline is Post 2021, EISA baseline is pre-2021 **

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use - RES	kW Factor - RES	End Use - BUS	kW Factor - BUS	kWh RES	kWh BUS	kW	EUL - RES	EUL - BUS**	Inc. Cost*		Units
													\$F	\$M	
404450_2019_12	SFIE / MFIE	LED - 10.5W Downlight E26 (EISA baseline) IE DI	23.6	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	23.6	0.0000000	0.003521	19.0	6.0	\$6.00	\$3.30	per measure
404500_2019_12	SFIE / MFIE	LED - 10W (Halogen baseline) (750-1049 lumens) IEDI	22.2	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	22.2	0.0000000	0.003316	19.0	6.0	\$6.00	\$3.68	per measure
404550_2019_12	SFIE / MFIE	LED - 12W (Halogen baseline) IE DI	23.0	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	23.0	0.0000000	0.003425	19.0	6.0	\$6.00	\$4.72	per measure
404600_2019_12	SFIE / MFIE	LED - 12W Dimmable Light Bulb (Replacing Specialty Incandescent) IE DI	27.5	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	27.5	0.0000000	0.004108	19.0	6.0	\$6.00	\$3.53	per measure
404650_2019_12	SFIE / MFIE	LED - 15W (Halogen baseline) (1050-1489 lumens) IEDI	27.8	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	27.8	0.0000000	0.004147	19.0	6.0	\$8.00	\$6.27	per measure
404651_2020_12	SFIE / MFIE	LED - 11W Flood Light BR30 Bulb (Halogen baseline) IE DI	35.4	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	35.4	0.0000000	0.005282	19.0	6.0	\$10.00	\$4.92	per measure
404700_2019_12	SFIE / MFIE	LED - 15W Flood Light PAR30 Bulb (Halogen baseline) IE DI	26.9	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	26.9	0.0000000	0.004010	19.0	6.0	\$10.00	\$4.92	per measure
404750_2019_12	SFIE / MFIE	LED - 18W Flood Light PAR38 Bulb (Halogen baseline) IE DI	34.7	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	34.7	0.0000000	0.005184	19.0	6.0	\$15.00	\$4.92	per measure
404800_2019_12	SFIE / MFIE	LED - 20W (Halogen baseline) (1490-2600 lumens) IEDI	37.4	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	37.4	0.0000000	0.005575	19.0	6.0	\$8.00	\$7.83	per measure
404850_2019_12	SFIE / MFIE	LED - 4W Candelabra (Replacing Specialty Incandescent) IE DI	23.5	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	23.53	0.0000000	0.003512	19.0	6.0	\$7.00	\$3.27	per measure
404900_2019_12	SFIE / MFIE	LED - 4W Candelabra (CFL baseline) IEDI	3.0	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	2.9	0.0000000	0.000440	19.0	6.0	\$7.00	\$3.27	per measure
404950_2019_12	SFIE / MFIE	LED - 8W Globe Light G25 Bulb (Replacing Specialty Incandescent) IE DI	14.4	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	14.4	0.0000000	0.002152	19.0	6.0	\$7.00	\$3.27	per measure
405000_2019_12	SFIE / MFIE	LED - 9W Globe Light G25 Bulb (Replacing CFL) IEDI	2.6	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	2.6	0.0000000	0.000391	19.0	6.0	\$7.00	\$3.27	per measure
405050_2019_12	SFIE / MFIE	LED - 10W (CFL baseline) (750-1049 lumens) IEDI	2.8	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	2.8	0.0000000	0.000421	19.0	6.0	\$6.00	\$3.68	per measure
405100_2019_12	SFIE / MFIE	LED - 10.5W Downlight E26 (CFL baseline) IEDI	8.5	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	8.5	0.0000000	0.001272	19.0	6.0	\$6.00	\$3.30	per measure
405150_2019_12	SFIE / MFIE	LED - 12W Dimmable Light Bulb (Replacing CFL) IEDI	5.6	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.6	0.0000000	0.000831	19.0	6.0	\$6.00	\$3.53	per measure
405200_2019_12	SFIE / MFIE	LED - 12W (Replacing CFL) IEDI	5.6	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.6	0.0000000	0.000831	19.0	6.0	\$6.00	\$4.72	per measure
405250_2019_12	SFIE / MFIE	LED - 15W (CFL baseline) (1050-1489 lumens) IEDI	5.4	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.4	0.0000000	0.000812	19.0	6.0	\$8.00	\$6.27	per measure
405251_2020_12	SFIE / MFIE	LED - 11W Flood Light BR30 Bulb (CFL baseline) IEDI	5.2	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.2	0.0000000	0.000772	19.0	6.0	\$10.00	\$4.92	per measure
405300_2019_12	SFIE / MFIE	LED - 15W Flood Light PAR30 Bulb (CFL baseline) IEDI	3.2	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	3.1	0.0000000	0.000469	19.0	6.0	\$10.00	\$4.92	per measure
405350_2019_12	SFIE / MFIE	LED - 18W Flood Light PAR38 Bulb (CFL baseline) IEDI	3.3	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	3.3	0.0000000	0.000489	19.0	6.0	\$15.00	\$4.92	per measure
405400_2019_12	SFIE / MFIE	LED - 20W (CFL baseline) (1490-2600 lumens) IEDI	6.4	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	6.4	0.0000000	0.000959	19.0	6.0	\$8.00	\$7.83	per measure
405409_2021_12	SFIE / MFIE	LED - 6W (CFL baseline) (310-749 lumens) IEDI	3.8	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	3.8	0.0000000	0.000564	19.0	6.0	\$7.00	\$3.27	per measure
405410_2019_12	SFIE / MFIE	LED - 6W (Halogen baseline) (310-749 lumens) IEDI	15.1	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	15.1	0.0000000	0.002250	19.0	6.0	\$6.00	\$3.68	per measure
405430_2021_12	SFIE / MFIE	LED Nightlights	28.53	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	28.5	0.0000000	0.004258	19.0	6.0	\$6.00	\$3.68	per measure

Advanced Power Strips Tier 1 / Load Sensing

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
405450_2021_12	SFIE / MFIE	Advanced Tier 1 Power Strips / TOS/NC - Home Office	29.450	Miscellaneous RES	0.0001148238	0.003382	10.0	\$20.00	per measure
405451_2021_12	SFIE / MFIE	Advanced Tier 1 Power Strips / DI - Home Office	29.450	Miscellaneous RES	0.0001148238	0.003382	10.0	\$30.00	per measure
405500_2019_12	SFIE / MFIE	Advanced Tier 1 Power Strips / Kits - Home Office	24.180	Miscellaneous RES	0.0001148238	0.002776	10.0	\$20.00	per measure
405550_2021_12	SFIE / MFIE	Advanced Tier 1 Power Strips / TOS/NC - Home Entertainment	71.350	Miscellaneous RES	0.0001148238	0.008193	10.0	\$20.00	per measure
405551_2021_12	SFIE / MFIE	Advanced Tier 1 Power Strips / DI - Home Entertainment	71.350	Miscellaneous RES	0.0001148238	0.008193	10.0	\$30.00	per measure
405600_2019_12	SFIE / MFIE	Advanced Tier 1 Power Strips / Kits - Home Entertainment	59.580	Miscellaneous RES	0.0001148238	0.006726	10.0	\$20.00	per measure
405650_2021_12	SFIE / MFIE	Advanced Tier 1 Power Strips / TOS/NC - Unknown Location	56.260	Miscellaneous RES	0.0001148238	0.006460	10.0	\$20.00	per measure
405651_2021_12	SFIE / MFIE	Advanced Tier 1 Power Strips / DI - Unknown Location	56.260	Miscellaneous RES	0.0001148238	0.006460	10.0	\$30.00	per measure
405700_2019_12	SFIE / MFIE	Advanced Tier 1 Power / Kits - Unknown Location	42.070	Miscellaneous RES	0.0001148238	0.004831	10.0	\$20.00	per measure
405750_2019_12	SFIE / MFIE	Advanced Tier 2 Power Strips / TOS/NC / Average	151.960	Miscellaneous RES	0.0001148238	0.017449	10.0	\$30.00	per measure
405751_2020_12	SFIE / MFIE	Advanced Tier 2 Power Strips / DI / Average	153.900	Miscellaneous RES	0.0001148238	0.017671	10.0	\$60.00	per measure

Refrigerator

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
405800_2019_12	SFIE / MFIE	Refrigerator - early replacement ER1	564.66	Refrigeration RES	0.0001286107	0.072621	6.0	\$753.00	per measure
405800_2019_12	SFIE / MFIE	Refrigerator - early replacement ER2	46.72	Refrigeration RES ER2	0.0001286107	0.006009	11.0	\$0.00	per measure
405825_2019_12	SFIE / MFIE	Refrigerator - Pre 1993 - ER1	1269.91	Refrigeration RES	0.0001286107	0.163324	6.0	\$753.00	per measure
405825_2019_12	SFIE / MFIE	Refrigerator - Pre 1993 - ER2	46.72	Refrigeration RES ER2	0.0001286107	0.006009	11.0	\$0.00	per measure

RESIDENTIAL INCOME ELIGIBLE

Energy Star Room AC

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
405850_2021_12	MFIE	AC - Energy Star Room_ unknown size_ Thru-Wall_ MF	190.46	Cooling RES	0.0009474181	0.180445	9.0	\$20.00	per measure
405900_2021_12	SFIE	AC - Energy Star Room_ unknown size_ Thru-Wall_ SF	75.04	Cooling RES	0.0009474181	0.071094	9.0	\$20.00	per measure
405950_2021_12	MFIE	AC - Energy Star Room_ unknown size_ MF	190.46	Cooling RES	0.0009474181	0.180445	9.0	\$20.00	per measure
406000_2021_12	SFIE	AC - Energy Star Room_ unknown size_ SF	75.04	Cooling RES	0.0009474181	0.071094	9.0	\$20.00	per measure
405851_2021_12	MFIE	AC - Energy Star Room_ 5k8tu_ Thru-Wall_ MF	81.08	Cooling RES	0.0009474181	0.076817	9.0	\$20.00	per measure
405901_2021_12	SFIE	AC - Energy Star Room_ 5k8tu_ Thru-Wall_ SF	36.35	Cooling RES	0.0009474181	0.034439	9.0	\$20.00	per measure
405951_2021_12	MFIE	AC - Energy Star Room_ 5k8tu_ MF	81.08	Cooling RES	0.0009474181	0.076817	9.0	\$20.00	per measure
406001_2021_12	SFIE	AC - Energy Star Room_ 5k8tu_ SF	36.35	Cooling RES	0.0009474181	0.034439	9.0	\$20.00	per measure
405852_2021_12	MFIE	AC - Energy Star Room_ 8k8tu_ Thru-Wall_ MF	129.73	Cooling RES	0.0009474181	0.122909	9.0	\$20.00	per measure
405902_2021_12	SFIE	AC - Energy Star Room_ 8k8tu_ Thru-Wall_ SF	58.16	Cooling RES	0.0009474181	0.055102	9.0	\$20.00	per measure
405952_2021_12	MFIE	AC - Energy Star Room_ 8k8tu_ MF	129.73	Cooling RES	0.0009474181	0.122909	9.0	\$20.00	per measure
406002_2021_12	SFIE	AC - Energy Star Room_ 8k8tu_ SF	58.16	Cooling RES	0.0009474181	0.055102	9.0	\$20.00	per measure
405853_2021_12	MFIE	AC - Energy Star Room_ 10k8tu_ Thru-Wall_ MF	162.16	Cooling RES	0.0009474181	0.153633	9.0	\$20.00	per measure
405903_2021_12	SFIE	AC - Energy Star Room_ 10k8tu_ Thru-Wall_ SF	72.70	Cooling RES	0.0009474181	0.068877	9.0	\$20.00	per measure
405953_2021_12	MFIE	AC - Energy Star Room_ 10k8tu_ MF	162.16	Cooling RES	0.0009474181	0.153633	9.0	\$20.00	per measure
406003_2021_12	SFIE	AC - Energy Star Room_ 10k8tu_ SF	72.70	Cooling RES	0.0009474181	0.068877	9.0	\$20.00	per measure
405854_2021_12	MFIE	AC - Energy Star Room_ 12k8tu_ Thru-Wall_ MF	194.59	Cooling RES	0.0009474181	0.184358	9.0	\$20.00	per measure
405904_2021_12	SFIE	AC - Energy Star Room_ 12k8tu_ Thru-Wall_ SF	87.24	Cooling RES	0.0009474181	0.082653	9.0	\$20.00	per measure
405954_2021_12	MFIE	AC - Energy Star Room_ 12k8tu_ MF	194.59	Cooling RES	0.0009474181	0.184358	9.0	\$20.00	per measure
406004_2021_12	SFIE	AC - Energy Star Room_ 12k8tu_ SF	87.24	Cooling RES	0.0009474181	0.082653	9.0	\$20.00	per measure
405855_2021_12	MFIE	AC - Energy Star Room_ 15k8tu_ Thru-Wall_ MF	243.24	Cooling RES	0.0009474181	0.230450	9.0	\$20.00	per measure
405905_2021_12	SFIE	AC - Energy Star Room_ 15k8tu_ Thru-Wall_ SF	109.05	Cooling RES	0.0009474181	0.103316	9.0	\$20.00	per measure
405955_2021_12	MFIE	AC - Energy Star Room_ 15k8tu_ MF	243.24	Cooling RES	0.0009474181	0.230450	9.0	\$20.00	per measure
406005_2021_12	SFIE	AC - Energy Star Room_ 15k8tu_ SF	109.05	Cooling RES	0.0009474181	0.103316	9.0	\$20.00	per measure

Storm Window

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
406025_2020_12	SFIE / MFIE	Storm Window - Single Pane, Double Hung - Electric Furnace	17.54	Building Shell RES	0.0004660805	0.008173	20	\$9.29	per sq ft
406050_2020_12	SFIE / MFIE	Storm Window - Single Pane, Double Hung - Heat Pump	10.42	Building Shell RES	0.0004660805	0.004856	20	\$9.29	per sq ft
406075_2020_12	SFIE / MFIE	Storm Window - Single Pane, Double Hung - Gas Heating	2.39	Building Shell RES	0.0004660805	0.001114	20	\$9.29	per sq ft
406100_2020_12	SFIE / MFIE	Storm Window - Double Pane, Double Hung - Electric Furnace	5.90	Building Shell RES	0.0004660805	0.002751	20	\$9.29	per sq ft
406125_2020_12	SFIE / MFIE	Storm Window - Double Pane, Double Hung - Heat Pump	3.67	Building Shell RES	0.0004660805	0.001711	20	\$9.29	per sq ft
406150_2020_12	SFIE / MFIE	Storm Window - Double Pane, Double Hung - Gas Heating	1.15	Building Shell RES	0.0004660805	0.000538	20	\$9.29	per sq ft
406175_2020_12	SFIE / MFIE	Storm Window - Single Pane, Fixed - Electric Furnace	17.53	Building Shell RES	0.0004660805	0.008170	20	\$9.29	per sq ft
406200_2020_12	SFIE / MFIE	Storm Window - Single Pane, Fixed - Heat Pump	10.41	Building Shell RES	0.0004660805	0.004854	20	\$9.29	per sq ft
406225_2020_12	SFIE / MFIE	Storm Window - Single Pane, Fixed - Gas Heating	2.39	Building Shell RES	0.0004660805	0.001114	20	\$9.29	per sq ft
406250_2020_12	SFIE / MFIE	Storm Window - Double Pane, Fixed - Electric Furnace	5.59	Building Shell RES	0.0004660805	0.002608	20	\$9.29	per sq ft
406275_2020_12	SFIE / MFIE	Storm Window - Double Pane, Fixed - Heat Pump	3.42	Building Shell RES	0.0004660805	0.001592	20	\$9.29	per sq ft
406300_2020_12	SFIE / MFIE	Storm Window - Double Pane, Fixed - Gas Heating	0.96	Building Shell RES	0.0004660805	0.000446	20	\$9.29	per sq ft

Learning Thermostat / Advanced Thermostat

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
406500_2022_12	SFIE	Learning Thermostat - ASHP heating/cooling SF	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406500_2022_12	SFIE	Learning Thermostat - ASHP heating/cooling SF	557.16	Heating RES	0.0000000000	0.000000	10.0		per measure
406525_2022_12	MFIE	Learning Thermostat - ASHP heating/cooling MF	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406525_2022_12	MFIE	Learning Thermostat - ASHP heating/cooling MF	362.16	Heating RES	0.0000000000	0.000000	10.0		per measure
406550_2022_12	MFIE	Learning Thermostat - electric furnace heating / central AC MF	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406550_2022_12	MFIE	Learning Thermostat - electric furnace heating / central AC MF	615.61	Heating RES	0.0000000000	0.000000	10.0		per measure
406575_2022_12	SFIE	Learning Thermostat - electric furnace heating / central AC SF	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406575_2022_12	SFIE	Learning Thermostat - electric furnace heating / central AC SF	947.09	Heating RES	0.0000000000	0.000000	10.0		per measure
406600_2022_12	SFIE	Learning Thermostat - Gas Heated / central AC SF**	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406600_2022_12	SFIE	Learning Thermostat - Gas Heated / central AC SF**	41.85	Heating RES	0.0000000000	0.000000	10.0		per measure
406625_2022_12	MFIE	Learning Thermostat - Gas Heated / central AC MF**	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406625_2022_12	MFIE	Learning Thermostat - Gas Heated / central AC MF**	27.20	Heating RES	0.0000000000	0.000000	10.0		per measure
406650_2022_12	SFIE	Learning Thermostat - Unknown SF**	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406650_2022_12	SFIE	Learning Thermostat - Unknown SF**	280.15	Heating RES	0.0000000000	0.000000	10.0		per measure
406675_2022_12	MFIE	Learning Thermostat - Unknown MF**	192.52	Cooling RES	0.0009474181	0.182397	10.0	\$125.00	per measure
406675_2022_12	MFIE	Learning Thermostat - Unknown MF**	182.10	Heating RES	0.0000000000	0.000000	10.0		per measure

RESIDENTIAL HOME ENERGY REPORT

Home Energy Report

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings [1]	End Use	kW Factor	kW	EUL [2]	Inc. Cost	Units
450050_2021_12_	SF	Home Energy Report	140.37	Building Shell RES	0.0004660805	0.0654220	5.0	\$0.00	per report

[1] Ameren MO PY21 Evaluation Report, PY2021 HER Program Adjusted Net Annual Savings / Number of Customers Treated)
 37,963 Table 32. Final Adjusted Net Program Savings (MWh)
 270,458 Table 28. Number of Customers Treated
 140.37 Savings per household (kWh)

[2] EUL is 5.0 years; however, the annual energy savings are estimated to decline each year over the 5-year lifetime. The table below shows the estimated annual savings for each year in the measure life.

140.37 First Year Annual kWh
 0.20 Annual Savings Decay

Annual Savings over the 5-Year EUL (for entry to Appendix 1)

Year	kWh Annual Savings [1]	Demand Savings
1	140.37	0.065422
2	112.29	0.052337
3	89.83	0.041870
4	71.87	0.033496
5	57.49	0.026797

RESIDENTIAL MULTI-FAMILY MARKET RATE

AC Tune-up

*MFMRc = Multifamily Market Rate Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
500050_2019_12	MFMR	General Tune-Up (no charge or coil clean) / MFMR	91.43	Cooling RES	0.0009474181	0.086622	2.0	\$70.00	per measure
500051_2019_12	MFMRc	General Tune-Up (no charge or coil clean) / MFMR CompE	66.50	Cooling RES	0.0009474181	0.063003	2.0	\$70.00	per measure
500100_2019_12	MFMR	AC Tune-up / refrigerant charge / MFMR	381.36	Cooling RES	0.0009474181	0.361307	2.0	\$81.00	per measure
500101_2019_12	MFMRc	AC Tune-up / refrigerant charge / MFMR CompE	277.35	Cooling RES	0.0009474181	0.262766	2.0	\$81.00	per measure
500150_2019_12	MFMR	Indoor Coil (Evaporator) Cleaning / MFMR	63.12	Cooling RES	0.0009474181	0.059801	2.0	\$63.00	per measure
500151_2019_12	MFMRc	Indoor Coil (Evaporator) Cleaning / MFMR CompE	45.91	Cooling RES	0.0009474181	0.043496	2.0	\$63.00	per measure
500200_2019_12	MFMR	Outdoor Coil (Condenser) Cleaning / MFMR	126.24	Cooling RES	0.0009474181	0.119602	2.0	\$31.00	per measure
500201_2019_12	MFMRc	Outdoor Coil (Condenser) Cleaning / MFMR CompE	91.81	Cooling RES	0.0009474181	0.086982	2.0	\$31.00	per measure
500210_2021_12	MFMR	AC Tune-up / Packaged Service / MFMR	237.39	Cooling RES	0.0009474181	0.105069	2.0	\$185.00	per measure
500211_2021_12	MFMRc	AC Tune-up / Packaged Service / MFMR CompE	172.64	Cooling RES	0.0009474181	0.076419	2.0	\$185.00	per measure

HP Tune-up

*MFMRc = Multifamily Market Rate Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
500230_2021_12	MFMR	HP Tune-up / Packaged Service / MFMR	237.39	Cooling RES	0.0009474181	0.224903	2.0	\$185.00	per measure
500230_2021_12	MFMR	HP Tune-up / Packaged Service / MFMR	761.39	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure
500231_2021_12	MFMRc	HP Tune-up / Packaged Service / MFMR CompE	172.64	Cooling RES	0.0009474181	0.163566	2.0	\$185.00	per measure
500231_2021_12	MFMRc	HP Tune-up / Packaged Service / MFMR CompE	259.56	Heating RES	0.0000000000	0.000000	2.0	\$0.00	per measure

Ceiling Insulation

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	kW	EUL	Inc. Cost	Units - area of ceiling/attic (ft2)
500250_2019_12	MFMR	Ceiling Insulation R11-R49 MFMR electric furnace base	1.06	Building Shell RES	0.0004660805	1.0	0.10	0.000494	25.0	\$2.12	1.0
500300_2019_12	MFMR	Ceiling Insulation R11-R49 MFMR gas heat and electric cool base	0.53	Building Shell RES	0.0004660805	0.4	0.11	0.000247	25.0	\$2.12	1.0
500350_2019_12	MFMR	Ceiling Insulation R5-R30 MFMR electric furnace base	1.71	Building Shell RES	0.0004660805	1.6	0.16	0.000797	25.0	\$1.16	1.0
500400_2019_12	MFMR	Ceiling Insulation R5-R30 MFMR gas heat and electric cool base	0.86	Building Shell RES	0.0004660805	0.7	0.18	0.000401	25.0	\$1.16	1.0
500450_2019_12	MFMR	Ceiling Insulation R5-R38 MFMR electric furnace base	1.84	Building Shell RES	0.0004660805	1.7	0.17	0.000858	25.0	\$1.68	1.0
500500_2019_12	MFMR	Ceiling Insulation R5-R38 MFMR gas heat and electric cool base	0.93	Building Shell RES	0.0004660805	0.7	0.19	0.000433	25.0	\$1.68	1.0
500550_2019_12	MFMR	Ceiling Insulation R5-R49 MFMR electric furnace base	1.96	Building Shell RES	0.0004660805	1.8	0.19	0.000914	25.0	\$2.57	1.0
500600_2019_12	MFMR	Ceiling Insulation R5-R49 MFMR gas heat and electric cool base	0.99	Building Shell RES	0.0004660805	0.8	0.20	0.000461	25.0	\$2.57	1.0
500650_2019_12	MFMR	Ceiling Insulation R5-R60 MFMR electric furnace base	2.03	Building Shell RES	0.0004660805	1.8	0.19	0.000946	25.0	\$3.42	1.0
500700_2019_12	MFMR	Ceiling Insulation R5-R60 MFMR gas heat and electric cool base	1.02	Building Shell RES	0.0004660805	0.8	0.21	0.000475	25.0	\$3.42	1.0

Dirty Filter Alarm

*MFMRc = Multifamily Market Rate Comprehensive Envelope, CompE = Comprehensive Envelope

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	kW	EUL	Inc. Cost	Units
500750_2019_12	MFMR	Dirty Filter Alarm_MFMR	79.20	HVAC RES	0.0004660805	50.1	29.1	0.036914	14.0	\$5.00	per measure
500751_2019_12	MFMRc	Dirty Filter Alarm_MFMR CompE	38.24	HVAC RES	0.0004660805	17.1	21.2	0.017823	14.0	\$5.00	per measure

ECM/ Blower Motor

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	Heating kWh	Cooling kWh	Auto kWh	Continuous kWh	kW	EUL*	Inc. Cost	Units
500800_2021_12	MFMR	ECM Auto Fan Early Replacement ER1 (Full Cost) - MFMR	582.00	HVAC RES	0.0004660805	264.1	31.1	286.7	0.0	0.271259	6.0	\$74.33	per measure
500800_2021_12	MFMR	ECM Auto Fan Early Replacement ER2 (Remaining Life) - MFMR	0.00	HVAC RES ER2	0.0004660805	0.0	0.0	0.0	0.0	0.000000	0.0		per measure

Note: As part of the Code of Federal Regulations, energy conservation standards for covered residential furnace fans became effective on July 3, 2019 (10 CFR 430.32l)(v)). This code requirement effectively makes ECMs part of the baseline for New Construction (NC), Replace-on-Fail (ROF), Time-of-Replacement (TOS), and Early Replacement (EREP) scenarios. Savings are only allowable for EREP measures, for the remaining useful life of the existing equipment (ER1, 6 years). Therefore, the EUL of the measure is assumed to be 6

Lighting

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use - RES	kW Factor - RES	End Use - BUS	kW Factor - BUS	kWh RES	kWh BUS	kW	EUL - RES	EUL - BUS**	Inc. Cost*	Units
500850_2019_12	MFMR	LED - 10W (CFL baseline) (750-1049 lumens)	4.18	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	4.2	0.0	0.000624	19.0	6.0	\$2.03	per measure
500900_2019_12	MFMR	LED - 10W (Halogen baseline) (750-1049 lumens)	23.51	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	23.5	0.0	0.002509	19.0	6.0	\$2.03	per measure
500950_2019_12	MFMR	LED - 12W Dimmable Light Bulb (Replacing CFL)	5.55	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.6	0.0	0.000828	19.0	6.0	\$4.14	per measure
501000_2019_12	MFMR	LED - 12W Dimmable Light Bulb (Replacing Specialty Incandescent)	43.59	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	43.6	0.0	0.006506	19.0	6.0	\$4.14	per measure
501050_2019_12	MFMR	LED - 12W (Halogen baseline)	22.87	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	22.9	0.0	0.003413	19.0	6.0	\$4.72	per measure
501100_2019_12	MFMR	LED - 12W (Replacing CFL)	5.55	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.6	0.0	0.000828	19.0	6.0	\$4.72	per measure
501150_2019_12	MFMR	LED - 15W (Halogen baseline) (1050-1489 lumens)	27.69	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	27.7	0.0	0.004133	19.0	6.0	\$6.27	per measure
501200_2019_12	MFMR	LED - 15W (CFL baseline) (1050-1489 lumens)	5.42	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.4	0.0	0.000809	19.0	6.0	\$6.27	per measure
501250_2019_12	MFMR	LED - 20W (Halogen baseline) (1490-2600 lumens)	37.22	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	37.2	0.0	0.005556	19.0	6.0	\$7.83	per measure
501300_2019_12	MFMR	LED - 20W (CFL baseline) (1490-2600 lumens)	6.40	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	6.4	0.0	0.000955	19.0	6.0	\$7.83	per measure
501310_2020_12	MFMR	LED - 11W Flood Light BR30 Bulb (Halogen baseline)	35.26	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	35.3	0.0	0.005263	19.0	6.0	\$1.66	per measure
501311_2020_12	MFMR	LED - 11W Flood Light BR30 Bulb (CFL baseline)	5.15	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	5.2	0.0	0.000769	19.0	6.0	\$1.66	per measure
501350_2019_12	MFMR	LED - 15W Flood Light PAR30 Bulb (Halogen baseline)	32.85	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	32.8	0.0	0.004903	19.0	6.0	\$3.05	per measure
501400_2019_12	MFMR	LED - 15W Flood Light PAR30 Bulb (CFL baseline)	3.13	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	3.1	0.0	0.000468	19.0	6.0	\$3.05	per measure
501401_2019_12	MFMR	LED - 6W (Halogen baseline) (310-749 lumens)	15.02	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	15.0	0.0	0.002242	19.0	6.0	\$2.03	per measure
501402_2021_12	MFMR	LED - 6W (CFL baseline) (310-749 lumens)	3.77	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	3.8	0.0	0.000562	19.0	6.0	\$2.03	per measure
501450_2021_12	MFMR	LED Nightlights	27.63	Lighting RES	0.0001492529	Lighting BUS	0.0001899635	27.6	0.0	0.004125	19.0	6.0	\$3.35	per measure

RESIDENTIAL MULTI-FAMILY MARKET RATE

Faucet Aerators (Kitchen)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
501500_2021_12_	MFMR	Faucet Aerators (Kitchen) MFMR	110.38	Water Heating RES	0.0000887318	0.079	0.009776	10.0	\$8.00	per measure

Faucet Aerators (Bathroom)

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
501550_2021_12_	MFMR	Faucet Aerators (Bathroom) MFMR	71.37	Water Heating RES	0.0000887318	0.062	0.006333	10.0	\$8.00	per measure

Low Flow Showerhead

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	EPG_electric	kW	EUL	Inc. Cost	Units
501600_2021_12_	MFMR	Low Flow Showerhead MFMR	404.92	Water Heating RES	0.0000887318	0.109	0.035929	10.0	\$7.00	per measure

Advanced Power Strips Tier 1 / Load Sensing

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
501650_2019_12_	MFMR	Advanced Tier 1 Power Strips / TOS/NC/DI - Home Office	29.45	Miscellaneous RES	0.0001148238	0.003382	10.0	\$20.00	per measure
501700_2019_12_	MFMR	Advanced Tier 1 Power Strips / Kits - Home Office	29.08	Miscellaneous RES	0.0001148238	0.003339	10.0	\$20.00	per measure
501750_2019_12_	MFMR	Advanced Tier 1 Power Strips / TOS/NC/DI - Home Entertainment	71.35	Miscellaneous RES	0.0001148238	0.008193	10.0	\$20.00	per measure
501800_2019_12_	MFMR	Advanced Tier 1 Power Strips / Kits - Home Entertainment	70.44	Miscellaneous RES	0.0001148238	0.008088	10.0	\$20.00	per measure
501850_2019_12_	MFMR	Advanced Tier 1 Power Strips / TOS/NC/DI - Unknown Location	56.26	Miscellaneous RES	0.0001148238	0.006460	10.0	\$20.00	per measure
501900_2019_12_	MFMR	Advanced Tier 1 Power / Kits - Unknown Location	50.59	Miscellaneous RES	0.0001148238	0.005809	10.0	\$20.00	per measure

Advanced Power Strips Tier 2 / Advanced Control Strategies

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
501950_2019_12_	MFMR	Advanced Tier 2 Power Strips - A	237.60	Miscellaneous RES	0.0001148238	0.027282	10.0	\$30.00	per measure
502000_2019_12_	MFMR	Advanced Tier 2 Power Strips - B	216.00	Miscellaneous RES	0.0001148238	0.024802	10.0	\$30.00	per measure
502050_2019_12_	MFMR	Advanced Tier 2 Power Strips - C	194.40	Miscellaneous RES	0.0001148238	0.022322	10.0	\$30.00	per measure
502100_2019_12_	MFMR	Advanced Tier 2 Power Strips - D	172.80	Miscellaneous RES	0.0001148238	0.019842	10.0	\$30.00	per measure
502150_2019_12_	MFMR	Advanced Tier 2 Power Strips - E	151.20	Miscellaneous RES	0.0001148238	0.017361	10.0	\$30.00	per measure
502200_2019_12_	MFMR	Advanced Tier 2 Power Strips - F	129.60	Miscellaneous RES	0.0001148238	0.014881	10.0	\$30.00	per measure
502250_2019_12_	MFMR	Advanced Tier 2 Power Strips - G	108.00	Miscellaneous RES	0.0001148238	0.012401	10.0	\$30.00	per measure
502300_2019_12_	MFMR	Advanced Tier 2 Power Strips - H	86.40	Miscellaneous RES	0.0001148238	0.009921	10.0	\$30.00	per measure
502350_2019_12_	MFMR	Advanced Tier 2 Power Strips / TOS/NC / Average	162.00	Miscellaneous RES	0.0001148238	0.018601	10.0	\$30.00	per measure

High Efficiency Pool Pump

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kWh _h /Day	kWh _h /Day	kWh _h /Day	kW	EUL	Inc. Cost	Units
502400_2021_12_	MFMR	Variable Speed Pool Pump - ROF	315.21	Pool Spa RES	0.0002354459	20.9760	1.58	2.52	0.074215	10.0	\$314.00	per measure
502401_2021_12_	MFMR	Variable Speed Pool Pump - ER	1478.34	Pool Spa RES	0.0002354459	7.1179	14.38	0.39	0.348069	10.0	\$549.00	per measure

Refrigerator

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
502450_2019_12_	MFMR	Refrigerator - early replacement ER1 (full cost) - MFMR	564.66	Refrigeration RES	0.0001286107	0.072621	6.0	\$753.00	per measure
502450_2019_12_	MFMR	Refrigerator - early replacement ER2 (remaining life) - MFMR	46.72	Refrigeration RES ER2	0.0001286107	0.006009	11.0	\$0.00	per measure

RESIDENTIAL APPLIANCE RECYCLING

Refrigerator Recycling

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
550050_2019_12_	Appliance Recycling	Refrigerator recycling (pre-1990)	1020.32	Refrigeration RES	0.0001286107	0.131224	8.0	\$140.00	per measure
550100_2019_12_	Appliance Recycling	Refrigerator recycling (post-1990)	520.00	Refrigeration RES	0.0001286107	0.066878	8.0	\$140.00	per measure

Freezer Recycling

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
550150_2019_12_	Appliance Recycling	Freezer recycling	825.22	Freezer RES	0.0001685722	0.139109	8.0	\$140.00	per measure

Room AC Recycling

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
550200_2019_12_	Appliance Recycling	Room AC recycling - Primary	302.53	Cooling RES	0.0009474181	0.286622	4.0	\$64.89	per measure
550250_2019_12_	Appliance Recycling	Room AC recycling - Secondary	195.59	Cooling RES	0.0009474181	0.185306	4.0	\$64.89	per measure

Dehumidifier Recycling

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor	kW	EUL	Inc. Cost	Units
550300_2019_12_	Appliance Recycling	Dehumidifier Recycling	139.00	HVAC RES	0.0004660805	0.064785	5.0	\$42.76	per measure

*EUL assumed to be 33% higher than Room AC EUL, based on TRM values for full equipment life (12 for dehumidifier and 9 for Room AC)

**Cost assumed based on full cost of Dehumidifier equipment (\$230) and ratio of refrigerator recycling cost (\$140) to full refrigerator cost (\$742 + \$11) . Full cost of Dehumidifier is based on an internet search.

RESIDENTIAL DEMAND RESPONSE

Demand Response Thermostat

Measure Reference No.	Program/Channel	Measure [1]	Gross kWh Annual Savings [2]	End Use [3]	kW Factor [4]	kW (Annual) [5]	EUL	Inc. Cost	Units
600050_2020_12_	DR	Demand Response Advanced Thermostat - with Program-driven Optimization	47.86	-	n/a	-	11.0	\$0.00	per thermostat
600100_2021_12_	DR	Demand Response Advanced Thermostat - without Program-Driven Optimization	0.00	-	n/a	-	11.0	\$0.00	per thermostat

[Note 1] As advanced thermostats mature, some models include embedded optimization routines that achieve energy savings. The program differentiates between thermostats with "program-driven optimization," which achieve savings through program influence to operate optional optimization, and without "program-driven optimization," which achieve no energy savings due to either the default optimization baseline or no optimization routine employed.

[Note 2] Source for Savings: Ameren MO PY2021 Final Report Optimization Energy Savings Summary, Per Device: Table 25. Residential DR Program: Device Optimization Energy Savings Summary Demand Impact, Per Device and Active Device Counts: Table 19. Residential DR Program: Resource Capability Impacts

Gross kWh Annual Savings are calculated as the total aggregate PY2021 energy savings (473.21 MWh) divided by the number of devices active at the end of the 2021 event season (9,887).

[Note 3] End Use may be "HVAC RES" for optimization routines that save energy during the cooling and heating seasons, or "Cooling RES" for optimization routines that save energy only during the cooling season.

[Note 4] The kW factor based on end use is not used because the actual demand impacts are directly measured.

[Note 5] Demand savings are calculated for demand response events, therefore no demand savings are calculated based on the energy savings for this measure. For planning estimates a value of 1.15 kW/thermostat is assumed based on the PY21 evaluation results.

Residential demand response: For demand and energy savings associated with calling a demand response event, smart thermostat program participants will be randomly partitioned into two groups. In this scenario, on an event day, participants in one group receive a signal to initiate activity on the thermostat, while the other group of participants would not receive this signal. As a result, the participants who receive the signal will serve as the treatment group, and the participants who do not receive a signal will serve as the control group. Demand impacts will be estimated from the average of the hours over all event periods. Energy savings impacts will be estimated from comparing the 24 hours of the control group for each event day to the 24 hours of actual kWh consumption for each event day.

Business demand response: For demand and energy savings associated with calling a demand response event, a customer baseline load ("CBL") approach will be used. A CBL approach applies a model or algorithm to develop customer-specific baselines for each event that are used to estimate load impacts for each hour of the event. Demand impacts will be estimated from the average of the hours over all event periods. Energy savings impacts will be estimated from comparing the 24 hours of the CBL for each event day to the 24 hours of actual kWh consumption for each event day.

Demand Response Water Heater

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor [4]	kW	EUL	Inc. Cost	Units
600400_2022_12_	DR	Demand Response Water Heater Switch	0.00	-	n/a	0.2000	11.0	\$0.00	per unit

[Note 4] The kW factor based on end use is not used because the actual demand impacts are directly measured.

Demand Response Electric Vehicle Charger

Measure Reference No.	Program/Channel	Measure	kWh Annual Savings	End Use	kW Factor [4]	kW	EUL	Inc. Cost	Units
600500_2022_12_	DR	Demand Response Electric Vehicle Charger	0.00	-	n/a	2.0000	11.0	\$0.00	per unit

[Note 4] The kW factor based on end use is not used because the actual demand impacts are directly measured.