

Table 1 Residential End-Use Measures

Residential ID	Baseline measure	End-Use Improvement	End-Use Category
R1	AC Refrigerant under charged	Add refrigerant	Space Cooling
R2	AC Refrigerant over charged	Remove refrigerant	Space Cooling
R3	Low evaporator airflow A	Increase duct sizes or add new ducts	Space Cooling
R4	Low evaporator airflow B	Increase blower speed	Space Cooling
R5	High duct leakage (25%)	Reduce duct leakage to 5%	Space Heating & Cooling
R6	Oversized AC units A	Size AC units to 100% of Manual J	Space Cooling
R7	Oversized AC units B	Size AC units to 100% of Manual J	Space Cooling
R8	One inch insul. on ducts in attic	Add two more inches of insulation	Space Heating & Cooling
R9	Gas heat and 13 SEER AC	Install AC SEER = 16	Space Cooling
R10	Home has 13 SEER heat pump	Install Heat Pump SEER = 16	Space Heating & Cooling
R11	Home has electric strip heat	Install Heat Pump SEER = 16	Space Heating & Cooling
R12	Attic insulation = R-7	Add another R-23 attic insulation	Space Heating & Cooling
R13	Attic insulation = R-11	Add another R-19 attic insulation	Space Heating & Cooling
R14	Exposed walls not insulated	Add R-11 wall insulation	Space Heating & Cooling
R15	Floor over basement not insulated	Add R-19 Insulation to floor	Space Heating & Cooling
R16	House infiltration = 0.8 ACH	Reduce infiltration to 0.35 ACH	Space Heating & Cooling
R17	Single pane windows A	Add storm windows	Space Heating & Cooling
R18	Single pane windows B	Install Low E double pane window 2904	Space Heating & Cooling
R19	Standard double pane windows	Install Low E double pane window 2904	Space Heating & Cooling
R20	No E & W window shading A	Add solar screens to E & W glass	Space Heating & Cooling
R21	No E & W window shading B	Plant deciduous trees on E & W sides	Space Heating & Cooling
R22	No Compact Fluorescent Lamps	Use 10 more CFLs throughout house	LIGHTING
R23	Refrigerator needs to be replaced	Purchase Energy Star refrigerator	REFRIGERATION
R24	Refrigerator early retirement	Removed unit uses no energy	REFRIGERATION
R25	Dishwasher to be replaced	Purchase Energy Star dishwasher	HOME APPLIANCE
R26	Clothes washer to be replaced	Purchase Energy Star clothes washer	HOME APPLIANCE
R27	No prgrammable thermostat	Install programmable thermostat	Space Heating & Cooling
R28	No faucet aerators	Install faucet aerators	Water Heating
R29	No low flow shower heads	Install low fow shower heads	Water Heating
R30	Hot water pipes not insulated	Insulate hot water pipes	Water Heating
R31	Electric water heater not wrapped	Wrap electric water heater	Water Heating
R32	Electric Meter	Energy Usage and Display Monitor	Usage Device
R33	Early Retirement of HVAC system, if SEER< 8.5	Install Heat Pump SEER = 16	Space Heating & Cooling
R34	Early Retirement of HVAC system, if SEER< 8.5	Install Heat Pump SEER = 14	Space Heating & Cooling
R35	Early Retirement of HVAC system, if SEER< 8.5	Install Heat Pump SEER = 15	Space Heating & Cooling
R36	De-humidifier early retirement	Removed unit uses no energy	HVAC
R37	Room A/C Unit early retirement	Removed unit uses no energy	HVAC
R38	Freezer early retirement	Removed unit uses no energy	REFRIGERATION
R39	Failure of HVAC system, Replace with 13 SEER	Replace with 14 SEER Unit	Space Cooling
R40	Failure of HVAC system, Replace with 13 SEER	Replace with 15 SEER Unit	Space Cooling
R41	Failure of HVAC system, Replace with 13 SEER	Replace with 16 SEER Unit	Space Cooling

Table 2: Refrigeration and food service measures

ID#	Potential Situation	Improvement	Quantity
C&I Refrig 1	No Controls on Vending Machine	Install Cold Beverage Vending Machine Controllers	1 each
C&I Refrig 2	No anti-sweat heater control	Install Anti-sweat heater controls	per door
C&I Refrig 3	Standard condenser	Install Efficient Refrigeration Condenser	40 Ton capacity
C&I Refrig 4	No covers on food cases	Install Night Covers for Food Cases	Per lineal Ft
C&I Refrig 5	No compressor head controls	Install compressor head controls	Per Ton
C&I Refrig 6	Standard Commercial Solid Door Refrigerators less than 20ft3	ENERGY STAR Commercial Solid Door Refrigerators less than 20ft3	per unit
C&I Refrig 7	Standard Commercial Solid Door Refrigerators 20-48 ft3	ENERGY STAR Commercial Solid Door Refrigerators 20-48 ft3	per unit
C&I Refrig 8	Standard Commercial Solid Door Refrigerators more than 48ft3	ENERGY STAR Commercial Solid Door Refrigerators more than 48ft3	per unit
C&I Refrig 9	Standard Commercial Solid Door Freezers less than 20ft3	ENERGY STAR Commercial Solid Door Freezers less than 20ft3	per unit
C&I Refrig 10	Standard Commercial Solid Door Freezers 20-48 ft3	ENERGY STAR Commercial Solid Door Freezers 20-48 ft3	per unit
C&I Refrig 11	Standard Commercial Solid Door Freezers more than 48ft3	ENERGY STAR Commercial Solid Door Freezers more than 48ft3	per unit
C&I Refrig 12	Standard Ice Machines less than 500 lbs	Energy Efficient Ice Machines less than 500 lbs	per unit
C&I Refrig 13	Standard Ice Machines 500-1000 lbs	Energy Efficient Ice Machines 500-1000 lbs	per unit
C&I Refrig 14	Standard Ice Machines more than 1000 lbs	Energy Efficient Ice Machines more than 1000 lbs	per unit

Table 3: HVAC Measures

ID	Potential Situation	Improvement	Quantity
C&I HVAC 1	AC 65,000 1 Ph, 66 kWh/ton	AC 65,000 1 Ph, 59 kWh/ton	per Ton
C&I HVAC 2	AC 65,000 3 Ph, 49 kWh/ton	AC 65,000 3 Ph, 44 kWh/ton	per Ton
C&I HVAC 3	AC 65,000 - 135,000, 77 kWh/ton	AC 65,000 - 135,000, 60 kWh/ton	per Ton
C&I HVAC 4	AC 135,000 - 240,000, 120 kWh/ton	AC 135,000 - 240,000, 107 kWh/ton	per Ton
C&I HVAC 5	AC 240,000 - 760,000, 63 kWh/ton	AC 240,000 - 760,000, 56 kWh/ton	per Ton
C&I HVAC 6	AC >760,000, 93 kWh/ton	AC >760,000, 83 kWh/ton	per Ton
C&I HVAC 7	HP 65,000 1 Ph, 96 kWh/ton	HP 65,000 1 Ph, 99 kWh/ton	per Ton
C&I HVAC 8	HP 65,000 3 Ph, 58 kWh/ton	HP 65,000 3 Ph, 57 kWh/ton	per Ton
C&I HVAC 9	HP 65,000 - 135,000, 108 kWh/ton	HP 65,000 - 135,000, 108 kWh/ton	per Ton
C&I HVAC 10	HP 135,000 - 240,000, 119 kWh/ton	HP 135,000 - 240,000, 124 kWh/ton	per Ton
C&I HVAC 11	HP >240,000, 150 kWh/ton	HP >240,000, 153 kWh/ton	per Ton
C&I HVAC 12	Ground Source HP Closed Loop <135,000, 9 kWh/ton	Ground Source HP Closed Loop <135,000, 7 kWh/ton	per Ton
C&I HVAC 13	WLHP <17,000, 24 kWh/ton	WLHP <17,000, 22 kWh/ton	per Ton
C&I HVAC 14	WLHP 17,000-65,000, 21 kWh/ton	WLHP 17,000-65,000, 19 kWh/ton	per Ton
C&I HVAC 15	WLHP 65,000-135,000, 21 kWh/ton	WLHP 65,000-135,000, 19 kWh/ton	per Ton
C&I HVAC 16	PTAC, 28 kWh/ton	PTAC, 24 kWh/ton	per Ton
C&I HVAC 17	PTAC-HP, 45 kWh/ton	PTAC-HP, 48 kWh/ton	per Ton
C&I HVAC 18	Economizer, 159 kWh/ton	Economizer, 109 kWh/ton	per Ton
C&I HVAC 19	Tuneup - Refrigerant Charge, 145 kWh/ton	Tuneup - Refrigerant Charge, kWh/ton	per Ton
C&I HVAC 20	No ES Sleeve AC over 14,000 Btu hr	Install ES Sleeve AC over 14,000 Btu hr	1 Each
C&I HVAC 21	No ES Sleeve AC under 14,000 Btu hr	Install ES Sleeve AC under 14,000 Btu hr	1 Each
C&I HVAC 22	No Setback_Programmable Thermostat	Install Setback_Programmable Thermostat	1 Each
C&I HVAC 23	Chilled Water Reset Air Cooled 0-100 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 24	Chilled Water Reset Air Cooled 100-200 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 25	Chilled Water Reset Air Cooled 200-300 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 26	Chilled Water Reset Air Cooled 300-400 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 27	Chilled Water Reset Air Cooled 400-500 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 28	Chilled Water Reset Water Cooled 0-1000 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 29	Chilled Water Reset Water Cooled 1000-2000 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 30	Chilled Water Reset Water Cooled 2000-3000 tons	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 31	Air Cooled Chillers	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 32	Water Cooled Chillers less than 150 ton	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 33	Water Cooled Chillers 150 - 300 ton	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 34	Water Cooled Chillers more than 300 ton	Replace with Min ARI rated Efficiency	per Ton
C&I HVAC 35	No Window Film	Install Window Film	per Sq. Ft.
C&I HVAC 36	Electric Water heater	HP Water Heater 500 gal_day	Gal per day
C&I HVAC 37	Electric Water heater	HP Water Heater 1000 gal_day	Gal per day
C&I HVAC 38	Electric Water heater	HP Water Heater 1500 gal_day	Gal per day

Table 42: Pumps and Variable Frequency Drive (VFD) measures

ID3	Potential Situation	Improvement	Quantity
CI Motive Power 1	Std. EPACT Motors 1-5 HP	NEMA Premium Motors 1-5 HP	per HP
CI Motive Power 2	Std. EPACT Motors 7.5-20 HP	NEMA Premium Motors 7.5-20 HP	per HP
CI Motive Power 3	Std. EPACT Motors 25-100 HP	NEMA Premium Motors 25-100 HP	per HP
CI Motive Power 4	Std. EPACT Motors 125-250 HP	NEMA Premium Motors 125-250 HP	per HP
CI Motive Power 5	Std. Pump HP 1.5	Hi Efficiency Pump HP 1.5	per HP
CI Motive Power 6	Std. Pump HP 2	Hi Efficiency Pump HP 2	per HP
CI Motive Power 7	Std. Pump HP 3	Hi Efficiency Pump HP 3	per HP
CI Motive Power 8	Std. Pump HP 5	Hi Efficiency Pump HP 5	per HP
CI Motive Power 9	Std. Pump HP 7.5	Hi Efficiency Pump HP 7.5	per HP
CI Motive Power 10	Std. Pump HP 10	Hi Efficiency Pump HP 10	per HP
CI Motive Power 11	Std. Pump HP 15	Hi Efficiency Pump HP 15	per HP
CI Motive Power 12	Std. Pump HP 20	Hi Efficiency Pump HP 20	per HP
CI Motive Power 13	No Variable Frequency Drive HP 1.5	Install Variable Frequency Drive HP 1.5	per HP
CI Motive Power 14	No Variable Frequency Drive HP 2	Install Variable Frequency Drive HP 2	per HP
CI Motive Power 15	No Variable Frequency Drive HP 3	Install Variable Frequency Drive HP 3	per HP
CI Motive Power 16	No Variable Frequency Drive HP 5	Install Variable Frequency Drive HP 5	per HP
CI Motive Power 17	No Variable Frequency Drive HP 7.5	Install Variable Frequency Drive HP 7.5	per HP
CI Motive Power 18	No Variable Frequency Drive HP 10	Install Variable Frequency Drive HP 10	per HP
CI Motive Power 19	No Variable Frequency Drive HP 15	Install Variable Frequency Drive HP 15	per HP
CI Motive Power 20	No Variable Frequency Drive HP 20	Install Variable Frequency Drive HP 20	per HP
CI Motive Power 21	No Variable Frequency Drive HP 25	Install Variable Frequency Drive HP 25	per HP
CI Motive Power 22	No Variable Frequency Drive HP 30	Install Variable Frequency Drive HP 30	per HP
CI Motive Power 23	No Variable Frequency Drive HP 40	Install Variable Frequency Drive HP 40	per HP
CI Motive Power 24	No Variable Frequency Drive HP 50	Install Variable Frequency Drive HP 50	per HP

Industrial End Use	Energy Efficiency Measure	Included in GMO IRP?
Heating / Cooling	Pumps, Variable Speed Control	√
Heating / Cooling	Thermostat, Clock/Programmable	
Heating / Cooling	Ventilation, CO2-Controlled	
Lighting	Day lighting Controls - Outdoors	
Lighting	High-Pressure Sodium Lamps	
Lighting	LED Exit Lighting	√
Lighting	LED Exterior Lighting	
Lighting	LED Interior Lighting	
Lighting	Super T8 Fluorescent Lamps	√
Lighting	T5/Electronic Ballasts	√
Lighting	T8/Electronic Ballasts	√
Lighting	Time Clocks and Timers (lighting)	
Motors	High-efficiency motors	√
Process cooling	Various generic efficiency improvements	
Process heating	Various generic efficiency improvements	
Food Service	Hot Water Boost Heater	
Compressed Air (C&I)	Compressed Air (C&I) Efficient compressors	
Compressed Air (C&I)	Cycling dryers	
Compressed Air (C&I)	No Loss Condensate Drains	
Compressed Air (C&I)	Air Receivers for Load/No Load Compressors	
Compressed Air (C&I)	Air system audits and leak elimination	
Compressed Air (C&I)	Compressed Air Controls	
Transformers (C&I)	Energy Star Transformers	