Focus on Energy Quad V Planning Study Measures

Introduction

This document contains the list of energy efficiency, electrification, and load-shifting measure categories for the Focus on Energy Quad V Planning Study. While the tables contain measure categories, the study may include multiple measures in each measure category. For example, the residential air source heat pump measure category can include heat pumps at different efficiency levels.

Each table below shows measure categories for the residential, commercial, industrial, and agricultural sectors, and identifies if the measure category has electrification applications, is eligible for Federal Inflation Reduction Act (IRA) incentives, or has significant load reduction potential.

Cadmus updated the measure lists after receiving feedback on the draft lists from study stakeholders. Based on the feedback, measures have been added, renamed, deleted or combined.

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RESIDENTIAL MEASURE LIST

Residential Measure List

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	IRA Impacted Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing and New Construction	HVAC	Heat Pump - Air Source	Program Measure	Yes	Yes	Yes
Electric Only	Existing and New Construction	HVAC	Heat Pump - Cold Climate	2021 Focus Study	Yes	Yes	Yes
Electric Only	Existing and New Construction	HVAC	Heat Pump - Ground Source	Program Measure	Yes	Yes	Yes
Electric Only	Existing and New Construction	HVAC	Air Conditioner - Central	Program Measure		Yes	Yes
Electric and Natural Gas	Existing and New Construction	Cooking	Cooking Oven	2021 Focus Study	Yes	Yes - Electric Only	
Electric and Natural Gas	Existing and New Construction	Cooking	Cooking Range	2021 Focus Study	Yes	Yes - Electric Only	
Electric Only	Existing and New Construction	Appliance	Dehumidifier	Program Measure			Yes
Electric and Natural Gas	Existing and New Construction	Appliance	Clothes Dryer	Program Measure	Yes		
Electric Only	Existing and New Construction	Appliance	Heat Pump - Clothes Dryer	2021 Focus Study	Yes	Yes	Yes
Electric Only	Existing and New Construction	Appliance	Refrigerator	Focus Homes Offerings		Yes	
Electric and Natural Gas	Existing and New Construction	Appliance	Dishwasher	Focus Homes Offerings		Yes	
Electric Only	Existing and New Construction	Appliance	Freezer	2021 Focus Study		Yes	
Electric and Natural Gas	Existing and New Construction	Appliance	Clothes Washer	Focus Homes Offerings		Yes	

RESIDENTIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	IRA Impacted Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing and New Construction	HVAC	Air Conditioner - Ductless Mini-Split	2021 Focus Study			Yes
Electric Only	Existing and New Construction	Water Heat	Heat Pump Water Heater	2021 Focus Study	Yes	Yes	Yes
Electric and Natural Gas	Existing and New Construction	Water Heat	Storage Water Heater	Program Measure	Yes	Yes - Gas Only	
Electric Only	Existing and New Construction	Appliance	Air Purifier	2021 Focus Study			
Electric Only	Existing and New Construction	HVAC	Heat Pump - Ductless Mini-Split	Program Measure		Yes	Yes
Electric Only	Existing and New Construction	Plug Load	Soundbar	2021 Focus Study			
Electric Only	Existing and New Construction	Lighting	Lighting Interior Linear LED	2021 Focus Study			
Electric Only	Existing and New Construction	Other	Electric Vehicle Charger	2021 Focus Study			Yes
Natural Gas Only	Existing and New Construction	HVAC	Boiler - Efficient	Program Measure		Yes	
Electric Only	Existing and New Construction	HVAC	Ventilation Fans	Focus Homes Offerings		Yes	
Natural Gas Only	Existing and New Construction	HVAC	Furnace - Efficient	Program Measure		Yes	
Natural Gas Only	Existing and New Construction	Other	Pool Heater	2021 Focus Study	Yes		
Electric Only	Existing and New Construction	Other	Pool Pumps	Focus Homes Offerings		Yes	
Natural Gas Only	Existing and New Construction	Water Heat	Tankless Water Heater	Program Measure		Yes	
Electric and Natural Gas	Existing and New Construction	HVAC	Efficient Door	2021 Focus Study		Yes	Yes

RESIDENTIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	IRA Impacted Measure?	Customer Load Shift/ Reduction Application?
Electric and Natural Gas	Existing Construction Only	HVAC	Insulation - Sill Box	2021 Focus Study		Yes	Yes
Electric and Natural Gas	Existing and New Construction	HVAC	Window - Efficient	2021 Focus Study		Yes	Yes
Electric and Natural Gas	Existing and New Construction	HVAC	Smart Thermostat	Program Measure			
Electric Only	Existing Construction Only	HVAC	Air Conditioner Tune-up	2021 Focus Study			Yes
Electric Only	Existing Construction Only	HVAC	Heat Pump Tune-up	2021 Focus Study			Yes
Electric and Natural Gas	Existing and New Construction	Other	Water Heat Temperature Setback	2021 Focus Study			
Electric Only	Existing and New Construction	Plug Load	Advanced Power Strip	2021 Focus Study			
Electric and Natural Gas	Existing and New Construction	Water Heat	Faucet Aerator	Program Measure			
Electric and Natural Gas	Existing and New Construction	Water Heat	Showerhead	Program Measure			
Electric and Natural Gas	Existing and New Construction	Water Heat	Insulation - DWH Pipe	Program Measure			
Electric and Natural Gas	Existing and New Construction	Water Heat	Smart Water Heater Controller	Program Measure			Yes
Natural Gas Only	Existing Construction Only	HVAC	Boiler Controls - Reset Temperature Control	2021 Focus Study			
Natural Gas Only	Existing and New Construction	HVAC	Boiler - Pipe Insulation	2021 Focus Study			
Natural Gas Only	Existing Construction Only	HVAC	Boiler Tune-up	Program Measure			
Natural Gas Only	Existing Construction Only	HVAC	Furnace Tune-up	Program Measure			
Natural Gas Only	Existing and New Construction	Water Heat	Indirect Water Heater	Program Measure			

RESIDENTIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	IRA Impacted Measure?	Customer Load Shift/ Reduction Application?
Electric and Natural Gas	New Construction Only	HVAC	New Construction Home - Advanced	Program Measure			Yes
Electric and Natural Gas	Existing and New Construction	HVAC	Thermostat Load Shift	Cadmus Suggestion			Yes
Electric Only	Existing and New Construction	Other	Electric Vehicle Charging Load Shift	Cadmus Suggestion			Yes
Electric and Natural Gas	Existing and New Construction	Other	Energy / Demand Feedback - Installed Device	Cadmus Suggestion			Yes
Electric Only	Existing and New Construction	Other	Solar PV	2021 Focus Study			
Electric Only	Existing and New Construction	HVAC	Smart Thermostat, Line Voltage	Program Measure			
Electric and Natural Gas	Existing Construction Only	HVAC	Weatherization Project Completion - Tier 1	Program Measure		Yes	Yes
Electric and Natural Gas	Existing Construction Only	HVAC	Weatherization Project Completion - Tier 2	Program Measure		Yes	Yes
Electric Only	Existing and New Construction	HVAC	Air Conditioner Cover	Proposed Future WI TRM			
Electric Only	Existing and New Construction	HVAC	Window Heat Pump	Proposed Future WI TRM	Yes		
Electric Only	Existing and New Construction	Cooking	Induction Cooktop	Proposed Future WI TRM	Yes	Yes	
Electric and Natural Gas	Existing and New Construction	HVAC	Energy Recovery Ventilator	Proposed Future WI TRM			
Electric and Natural Gas	Existing and New Construction	Water Heat	Showerhead Thermostatic Shut-off Valves	2024 WI TRM			
Electric and Natural Gas	Existing and New Construction	Water Heat	Tub Spout Thermostatic Shut-off Valves	2024 WI TRM			

RESIDENTIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	IRA Impacted Measure?	Customer Load Shift/ Reduction Application?
Electric and Natural Gas	Existing and New Construction	Water Heat	DHW Temperature Turndown	2024 WI TRM			
Natural Gas Only	Existing and New Construction	HVAC	Thermostatic Radiator Valve (TRV)	2024 WI TRM			
Electric Only	Existing and New Construction	Lighting	LED Connected Lighting	2024 WI TRM			
Electric Only	Existing and New Construction	HVAC	Thermal Storage - Electric Space Heating	Stakeholder Suggestion			Yes
Electric Only	Existing and New Construction	All	Battery Storage	Stakeholder Suggestion			Yes

COMMERCIAL MEASURE LIST

Commercial Measure List

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing and New Construction	HVAC	Heat Pump - Air Source	Program Measure	Yes	Yes
Electric Only	Existing and New Construction	HVAC	Heat Pump - Cold Climate	2021 Focus Study	Yes	Yes
Electric Only	Existing and New Construction	HVAC	Heat Pump - Ground Source	2022 Focus Study	Yes	Yes
Electric Only	Existing and New Construction	HVAC	Cooling Chillers	Program Measure		Yes
Electric Only	Existing and New Construction	HVAC	Air Conditioner - Central	Program Measure		Yes
Electric Only	Existing and New Construction	HVAC	Air Conditioner - Split or Packaged System	Program Measure		Yes
Electric Only	Existing and New Construction	HVAC	Air Conditioner - Package Terminal	2021 Focus Study		Yes
Electric Only	Existing and New Construction	HVAC	Heat Pump - Package Terminal	Program Measure	Yes	Yes
Electric Only	Existing Construction Only	Lighting	Lighting Interior Linear LED	Program Measure		Yes
Electric Only	Existing Construction Only	Lighting	Lighting Interior High Bay LED	Program Measure		Yes
Electric Only	New Construction Only	Lighting	New Construction Lighting	Program Measure		Yes
Electric Only	Existing and New Construction	Other	Pool Pump VSD	Program Measure		
Electric Only	Existing and New Construction	Water Heat	Heat Pump Water Heater	2021 Focus Study	Yes	
Electric Only	Existing and New Construction	Appliance	Heat Pump - Clothes Dryer	2021 Focus Study	Yes	
Natural Gas Only	Existing and New Construction	HVAC	Unit Heater - Infrared Heater	Stakeholder Suggestion		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Natural Gas Only	Existing and New Construction	HVAC	Boiler - Efficient	Program Measure		
Natural Gas Only	Existing and New Construction	HVAC	Furnace - Efficient	Program Measure		
Electric and Natural Gas	Existing and New Construction	Other	Pool Heat	2021 Focus Study	Yes	
Electric and Natural Gas	Existing and New Construction	Water Heat	Storage Water Heater	Program Measure	Yes	
Natural Gas Only	Existing and New Construction	Water Heat	Tankless Water Heater	Program Measure		
Electric and Natural Gas	Existing and New Construction	HVAC	Advanced Rooftop Unit Controller	Program Measure		
Electric Only	Existing and New Construction	Air Compressor	Air Compressor - VFD	Program Measure		
Electric Only	Existing and New Construction	Air Compressor	Air Compressor - Leakage Reduction	Program Measure		Yes
Electric and Natural Gas	Existing and New Construction	Cooking	Fryers	Program Measure	Yes	
Electric and Natural Gas	Existing and New Construction	Cooking	Griddle	Program Measure	Yes	
Electric Only	Existing and New Construction	Cooking	Hot Food Holding Cabinet	2021 Focus Study		
Electric and Natural Gas	Existing and New Construction	Cooking	Convection Oven	Program Measure	Yes	
Electric and Natural Gas	Existing and New Construction	Cooking	Combination Oven	2021 Focus Study	Yes	
Electric and Natural Gas	Existing and New Construction	Cooking	Steam Cooker	Program Measure	Yes	
Electric Only	Existing Construction Only	Plug Load	Advanced Power Strip	2021 Focus Study		
Electric Only	Existing and New Construction	Embedded Data Center	IT Systems - Uninterruptible Power Supply Upgrade	Program Measure		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing and New Construction	Embedded Data Center	IT Systems - Hot or Cold Aisle Configuration	Program Measure		
Electric Only	Existing Construction Only	Water Heat	Variable Speed ECM Pump - Domestic Hot Water Recirculation	Program Measure		
Electric Only	Existing Construction Only	HVAC	Variable Speed ECM Pump - HVAC Space Heating Recirculation	Program Measure		
Electric Only	Existing Construction Only	HVAC	Variable Speed ECM Pump - HVAC Space Cooling Recirculation	Program Measure		
Electric Only	Existing Construction Only	HVAC	Variable Speed ECM Pump - HVAC Heat Pump Recirculation	2021 Focus Study		
Electric Only	Existing Construction Only	HVAC	Cooling Tower Fan - Variable Speed Control	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	Exhaust Air to Ventilation Air Heat Recovery	2021 Focus Study		
Electric and Natural Gas	Existing Construction Only	HVAC	Automated Ventilation CO2 Sensors	Program Measure		
Electric Only	Existing and New Construction	HVAC and Lighting	Hotel Key Card Control System	Program Measure		
Electric and Natural Gas	Existing and New Construction	HVAC	HVAC Commissioning	Program Measure		Yes
Electric and Natural Gas	Existing and New Construction	HVAC	Strategic Energy Management	Program Measure		Yes
Electric and Natural Gas	Existing and New Construction	HVAC	Smart Thermostat	Program Measure		
Electric and Natural Gas	Existing and New Construction	HVAC	Energy Management System	Program Measure		
Electric Only	Existing and New Construction	HVAC	Heat Pump - Ductless Mini-Split	2021 Focus Study	Yes	Yes
Electric Only	Existing Construction Only	HVAC	Chilled Water Side Economizer	2021 Focus Study		
Electric Only	Existing Construction Only	HVAC	Air Side Economizer	Program Measure		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	HVAC	Economizer Optimization	Program Measure		
Electric Only	Existing and New Construction	HVAC	Cooking Hood Controls	Program Measure		
Electric Only	Existing Construction Only	HVAC	Air Conditioner Tune-up	2021 Focus Study		Yes
Electric Only	Existing Construction Only	HVAC	Chiller Tune-up	2021 Focus Study		Yes
Electric Only	Existing Construction Only	HVAC	Heat Pump Tune-up	2021 Focus Study		Yes
Electric Only	Existing Construction Only	Lighting	Lighting Occupancy Sensor	Program Measure		
Electric Only	Existing Construction Only	Lighting	Bi-Level Control - Stairwell Lighting	Program Measure		
Electric Only	Existing Construction Only	Lighting	Bi-Level Control - Parking Garage Lighting	Program Measure		
Electric Only	Existing Construction Only	Lighting	Daylighting Controls	Program Measure		
Electric Only	Existing and New Construction	Lighting	Display Case LEDs	Program Measure		
Electric Only	Existing Construction Only	Lighting	Exit Sign - LED	2021 Focus Study		
Electric Only	Existing and New Construction	Lighting	Lighting Exterior	Program Measure		
Electric Only	Existing and New Construction	Lighting	LED Signage	Program Measure		
Electric Only	Existing and New Construction	Appliance	Ice Maker	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	Refrigeration Economizer	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	Night Covers for Display Cases	Program Measure		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	Refrigeration	Anti-Sweat Controls	Program Measure		
Electric Only	Existing Construction Only	Refrigeration	Demand Control Defrost	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	Evaporator Fan Controller	Program Measure		
Electric Only	Existing Construction Only	Refrigeration	Floating Head Pressure Controls	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	Smart Controls for Central Refrigeration	Stakeholder Suggestion		
Electric Only	Existing and New Construction	Refrigeration	Walk-In ECM	Program Measure		
Electric Only	Existing Construction Only	Refrigeration	Display Case ECM	Program Measure		
Electric Only	Existing Construction Only	Refrigeration	Strip Curtains	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	No Heat Case Doors	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	Display Case Add Doors	Program Measure		
Electric and Natural Gas	Existing and New Construction	Appliance	Dishwasher - Commercial Sized	Program Measure		
Electric and Natural Gas	Existing and New Construction	Water Heat	Refrigeration Heat Recovery to Water Heater	Program Measure		
Electric and Natural Gas	Existing and New Construction	Water Heat	Faucet Aerator	2021 Focus Study		
Electric Only	New Construction Only	Lighting	Networked Lighting Controls for New Construction	Program Measure		
Electric Only	Existing and New Construction	HVAC	Variable Refrigerant Flow	2021 Focus Study		Yes
Electric and Natural Gas	Existing Construction Only	HVAC	Behavioral Energy Management	Program Measure		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	HVAC	Fan - Variable Speed	Program Measure		
Electric Only	Existing Construction Only	HVAC	Pump - Variable Speed	Program Measure		
Electric Only	Existing and New Construction	Embedded Data Center	IT Systems - High Efficiency Computer Room Air Conditioner (CRAC)	2021 Focus Study		
Electric Only	Existing and New Construction	Refrigeration	Mechanical Subcooling - Commercial Refrigeration System	Program Measure		
Electric Only	Existing and New Construction	Refrigeration	Ultra-Low Temperature Freezers with Sterling Engine	2021 Focus Study		
Electric Only	Existing and New Construction	HVAC	Boiler Draft Fan - VFD	Program Measure		
Natural Gas Only	Existing and New Construction	HVAC	Garage Door Hinges	Program Measure		
Natural Gas Only	Existing and New Construction	HVAC	Modulating Gas Dryer	2021 Focus Study		
Natural Gas Only	Existing and New Construction	Cooking	Rack Oven	2021 Focus Study	Yes	
Natural Gas Only	Existing and New Construction	Cooking	Charbroiler	Cadmus Suggestion	Yes	
Natural Gas Only	Existing and New Construction	Cooking	Broiler - Salamander	2021 Focus Study	Yes	
Natural Gas Only	Existing and New Construction	Cooking	Conveyor Oven	2021 Focus Study	Yes	
Natural Gas Only	Existing and New Construction	HVAC	Boiler Oxygen Trim Controls	Program Measure		
Natural Gas Only	Existing Construction Only	HVAC	Boiler Tune-up	Program Measure		
Natural Gas Only	Existing Construction Only	HVAC	Furnace Tune-up	2021 Focus Study		
Natural Gas Only	Existing Construction Only	HVAC	Boiler - Economizer	2021 Focus Study		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Natural Gas Only	Existing and New Construction	HVAC	Boiler - Pipe Insulation	2021 Focus Study		
Natural Gas Only	Existing and New Construction	HVAC	Boiler Controls - Reset Temperature Control	2021 Focus Study		
Natural Gas Only	Existing and New Construction	HVAC	Boiler Controls - Linkageless	2021 Focus Study		
Natural Gas Only	Existing Construction Only	HVAC	Steam Trap Repair	2021 Focus Study		
Natural Gas Only	Existing and New Construction	HVAC	Boiler Controls - High Turndown Burners	2021 Focus Study		
Electric Only	Existing and New Construction	Lighting	Bi-Level Control - High Bay	Program Measure		
Electric and Natural Gas	New Construction Only	HVAC	New Construction Program Building	Program Measure		
Electric and Natural Gas	Existing and New Construction	Other	Waste Water Treatment	Program Measure		
Electric Only	Existing and New Construction	Other	Waste Water Treatment Aeration	Program Measure		
Electric and Natural Gas	Existing and New Construction	HVAC	Direct Fired Make-up Air Unit	Program Measure		
Electric Only	Existing and New Construction	Other	Efficient Rectifier	Program Measure		
Electric and Natural Gas	Existing and New Construction	HVAC	Energy Recovery Ventilator	Program Measure		
Electric Only	Existing and New Construction	Other	Solar PV	2021 Focus Study		
Electric and Natural Gas	Existing and New Construction	HVAC	Thermostat Load Shift	Cadmus Suggestion		Yes
Electric Only	Existing and New Construction	Other	Electric Vehicle Charging Load Shift	Cadmus Suggestion		Yes
Electric and Natural Gas	Existing and New Construction	HVAC	Loading Dock Door and Pit/Ramp Seals	2024 WI TRM		

COMMERCIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing and New Construction	Air Compressor	Air Compressor - Process Load Shifting	2024 WI TRM		Yes
Electric Only	Existing and New Construction	Air Compressor	Air Compressor - Storage	2024 WI TRM		
Electric Only	Existing and New Construction	Air Compressor	Air Compressor - Desiccant Dryer	2024 WI TRM		
Electric and Natural Gas	Existing and New Construction	HVAC	Morning Warmup Optimization	2024 WI TRM		
Electric and Natural Gas	Existing and New Construction	HVAC	Adaptive Optimal Start	2024 WI TRM		
Electric and Natural Gas	Existing and New Construction	HVAC	Custom Project	Cadmus Suggestion	Yes	Yes
Electric Only	Existing and New Construction	Lighting	Custom Project	Cadmus Suggestion		
Electric and Natural Gas	Existing and New Construction	Water Heat	Custom Project	Cadmus Suggestion	Yes	
Electric Only	Existing and New Construction	Air Compressor	Custom Project	Cadmus Suggestion		
Electric Only	Existing and New Construction	Embedded Data Center	Custom Project	Cadmus Suggestion		
Electric Only	Existing and New Construction	Refrigeration	Custom Project	Cadmus Suggestion		
Electric Only	Existing and New Construction	HVAC	Thermal Storage	Aptim Suggestion		Yes

INDUSTRIAL MEASURE LIST

Industrial Measure List

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler Management	Program Measure		
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler Heat Recovery	Program Measure		
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler Controls	Program Measure		
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler Pipe Insulation	Program Measure		
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler Draft Fan VFD	Program Measure		
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler High Efficiency	Program Measure		
Natural Gas Only	Existing Construction Only	Boilers & Burners	Boiler - Custom	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - VFD	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - No Air Loss Drain	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Pressure/Flow Controller	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Heat Recovery	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Mist Eliminators	Program Measure		

INDUSTRIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Nozzles	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Cycling Dryers	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Dew Point Controls for Desiccant Dryers	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Leakage Reduction	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Desiccant Compressed Air Dryer	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Storage and Load Shift	Program Measure		
Electric Only	Existing Construction Only	Compressed Air, Vacuum Pumps	Compressed Air - Custom	Program Measure		
Electric Only	Existing Construction Only	HVAC	Air Conditioning Upgrade	Program Measure		
Natural Gas Only	Existing Construction Only	HVAC	Steam Trap	Program Measure		
Electric Only	Existing Construction Only	HVAC	Advanced Rooftop Unit Controller	Program Measure		
Electric Only	Existing Construction Only	HVAC	Air Filtration Upgrade	Program Measure		
Electric Only	Existing Construction Only	HVAC	Air Source Heat Pump Upgrade	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	Building Shell Upgrade	Program Measure		

INDUSTRIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	HVAC	Cooling Chillers Upgrade	Program Measure		
Electric Only	Existing Construction Only	HVAC	Ventilation Upgrade	Program Measure		
Electric Only	Existing Construction Only	HVAC	Economizer Upgrade	Program Measure		
Natural Gas Only	Existing Construction Only	HVAC	Efficient Furnace	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	HVAC Commissioning	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	Energy Management System	Program Measure		
Natural Gas Only	Existing Construction Only	HVAC	Radiant Heater	Program Measure		
Electric Only	Existing Construction Only	HVAC	Variable Speed ECM Pump - HVAC Space Cooling Recirculation	Program Measure		
Electric Only	Existing Construction Only	HVAC	Cooling Tower Fan Upgrade	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	Building Duct System Improvements	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	HVAC Controls	Program Measure		
Electric and Natural Gas	Existing Construction Only	HVAC	HVAC - Custom	Program Measure		
Electric Only	Existing Construction Only	Lighting	Interior Lighting Upgrade	Program Measure		
Electric Only	Existing Construction Only	Lighting	Exterior Lighting Upgrades	Program Measure		
Electric Only	Existing Construction Only	Lighting	Lighting Controls	Program Measure		
Electric and Natural Gas	Existing Construction Only	Lighting	Advanced Lighting and Controls Design	Program Measure		

INDUSTRIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric and Natural Gas	Existing Construction Only	Lighting	Lighting - Custom	Program Measure		
Electric Only	Existing Construction Only	Motor	Pulper Rotors	Program Measure		
Electric Only	Existing Construction Only	Motor	Motor Upgrade and Drives	Program Measure		
Electric Only	Existing Construction Only	Motor	Motor Management and Optimization	2021 Focus Study		
Electric Only	Existing Construction Only	Motor	Fan Upgrades and Drives	Program Measure		
Electric Only	Existing Construction Only	Motor	Pump Upgrades and Drives	Program Measure		
Electric Only	Existing Construction Only	Motor	Motor - Custom	Program Measure		
Electric and Natural Gas	New Construction	New Construction	New Construction Design	Program Measure		
Electric Only	Existing Construction Only	Other	Industrial Battery Charger	Program Measure		
Electric Only	Existing Construction Only	Other	Efficient Welder	Program Measure		
Electric Only	Existing Construction Only	Process	High Efficiency Injection Mold Machines	2021 Focus Study		
Electric Only	Existing Construction Only	Process	Lime Kiln Improvements	2021 Focus Study		
Electric and Natural Gas	Existing Construction Only	Process	Process Heat Recovery	Program Measure		
Electric Only	Existing Construction Only	Process	Side Entry Agitators	Program Measure		
Electric and Natural Gas	Existing Construction Only	Process	Process Exhaust Filtration	Program Measure		
Electric and Natural Gas	Existing Construction Only	Process	Strategic Energy Management	Program Measure		

INDUSTRIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	Process	Spline Upgrade	Program Measure		
Electric and Natural Gas	Existing Construction Only	Process	Operations and Maintenance	2021 Focus Study		
Electric and Natural Gas	Existing Construction Only	Process	Process - Custom	Program Measure		
Electric and Natural Gas	Existing Construction Only	Process	Process - Custom Tier 2 with Optimization	Program Measure		
Electric and Natural Gas	Existing Construction Only	Process	Other Plant Operations Improvements to Reduce Energy Requirements	2021 Focus Study		
Electric Only	Existing Construction Only	Process	Water Use Reduction	Program Measure		
Electric Only	Existing Construction Only	Process	Industrial Heat Pump	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Radio Frequency Heating	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Electric Arc Furnace	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Electric Infrared Heaters	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Electrochemical Process Change (from thermochemical)	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Microwave Heating	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Electric Induction Melting	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Resistance Heating	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Plasma Melting	Cadmus Suggestion	Yes	
Electric Only	Existing Construction Only	Process	Electrolytic Reduction	Cadmus Suggestion	Yes	

INDUSTRIAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?	Customer Load Shift/ Reduction Application?
Electric Only	Existing Construction Only	Refrigeration	Refrigeration Upgrade	2021 Focus Study		
Electric Only	Existing Construction Only	Refrigeration	Refrigeration Controls	Program Measure		
Electric Only	Existing Construction Only	Refrigeration	Refrigeration - Custom	Program Measure		
Electric Only	Existing Construction Only	Renewable Energy	Solar PV	Program Measure		
Electric Only	Existing Construction Only	Streetlighting	Efficient Streetlights	Program Measure		
Electric Only	Existing Construction Only	Waste Water	Wastewater System Upgrade	Program Measure		
Electric Only	Existing and New Construction	HVAC	Thermal Storage	Aptim Suggestion		Yes

AGRICULTURAL MEASURE LIST

Agricultural Measure List

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?
Electric Only	Existing Construction Only	Dairy	Plate Heat Exchanger - Dairy	Program Measure	
Electric Only	Existing Construction Only	Dairy	Water Heater - Refrigeration Heat Recovery Unit	Stakeholder Suggestion	
Electric Only	Existing Construction Only	Dairy	Dairy Refrigeration Tune-Up	Program Measure	
Electric Only	Existing Construction Only	Dairy	Vacuum Pump - VFD	Program Measure	
Electric Only	Existing Construction Only	Dairy	Milk Pump - VFD	Stakeholder Suggestion	
Electric Only	Existing Construction Only	HVAC	Ventilation Fan	Program Measure	
Electric Only	Existing Construction Only	HVAC	Circulation Fan	Program Measure	
Electric Only	Existing Construction Only	HVAC	Advanced Fan Controls	Stakeholder Suggestion	
Electric Only	Existing Construction Only	HVAC	High-Volume Low-Speed Fan	Program Measure	
Electric Only	Existing Construction Only	Other	Livestock Waterer < 250 Watts	Program Measure	
Electric Only	Existing Construction Only	Other	Livestock Waterer - Energy Free	Program Measure	
Electric Only	Existing Construction Only	Irrigation	Agricultural Pump - VFD	Program Measure	
Electric Only	Existing Construction Only	Lighting	Lighting Interior High Bay LED	Program Measure	
Electric Only	Existing Construction Only	Lighting	Lighting Interior Linear LED	Program Measure	
Electric Only	Existing Construction Only	Lighting	Lighting Controls	2021 Focus Study	
Electric Only	Existing Construction Only	Irrigation	Irrigation Pump Motor HP Reduction	Program Measure	
Electric and Natural Gas	Existing Construction Only	Other	Grain Dryer Tune-Up	Program Measure	
Electric Only	Existing Construction Only	Other	Swine Farrowing Crate Heater	2021 Focus Study	
Electric Only	Existing Construction Only	Lighting	Horticultural Lighting	Program Measure	
Natural Gas Only	Existing Construction Only	Other	Grain Dryer - Efficient	Program Measure	
Natural Gas Only	Existing Construction Only	Water Heat	Water Heater Gas Upgrade	2021 Focus Study	Yes
Natural Gas Only	Existing Construction Only	HVAC	Boiler - Efficient	Stakeholder Suggestion	Yes
Natural Gas Only	Existing Construction Only	HVAC	Furnace - Efficient	Stakeholder Suggestion	Yes

AGRICULTURAL MEASURE LIST

Fuel Type	Construction Vintage	End Use Category	Measure Category	Measure Source	Electrification Measure?
Natural Gas Only	Existing Construction Only	HVAC	Greenhouse Infrared Heater	Stakeholder Suggestion	Yes
Natural Gas Only	Existing Construction Only	HVAC	Greenhouse Thermal Blanket	Program Measure	
Natural Gas Only	Existing Construction Only	HVAC	Greenhouse Climate Controls	Program Measure	
Natural Gas Only	Existing Construction Only	HVAC	Greenhouse Perimeter Insulation	Program	
Electric Only	Existing Construction Only	HVAC	High Speed Ventilation/Circulation Fan - VFD	Program	
Electric Only	Existing Construction Only	Other	Constant Torque - VFD	Stakeholder Suggestion	
Electric Only	Existing Construction Only	Other	Solar PV	2021 Focus Study	
Electric Only	Existing Construction Only	Dairy	Custom Project	Cadmus Suggestion	
Electric and Natural Gas	Existing Construction Only	HVAC	Custom Project	Cadmus Suggestion	Yes
Electric Only	Existing Construction Only	Irrigation	Custom Project	Cadmus Suggestion	
Electric and Natural Gas	Existing Construction Only	Water Heat	Custom Project	Cadmus Suggestion	Yes
Electric Only	Existing Construction Only	Lighting	Custom Project	Cadmus Suggestion	

Measures Lists Revisions

The specific measure list revisions made after receiving feedback from study stakeholders are below:

Residential

- Added Measures:
  - Thermal Storage – Electric Space Heating
  - Battery Storage
  - Refrigerator from the IRA HOMES Offering delivered by Focus
  - Dishwasher from the IRA HOMES Offering delivered by Focus
  - Clothes Washer from the IRA HOMES Offering delivered by Focus
  - Pool Pumps from the IRA HOMES Offering delivered by Focus
  - Ventilation Fans from the IRA HOMES Offering delivered by Focus
- Renamed Measures:
  - Lighting Interior Fluorescent renamed Lighting Interior Linear LED
- Deleted Measures:
  - Freezer – Removal of Stand Alone (appliance recycling)
- Combined Measures:
  - Energy Feedback and Demand Feedback combined to Energy / Demand Feedback – Installed Device

Commercial

- Added Measures:
  - Smart Controls for Central Refrigeration System (Grocery)
  - Thermal Storage
- Renamed Measures:
  - Lighting Interior HID / High Bay LED renamed Lighting Interior High Bay LED
  - Radiant Heater renamed Unit Heater – Infrared Heater (efficient tier)

Industrial

- Added Measure:
  - Thermal Storage

Agricultural

- Added Measures:
  - Milk Pump – VDF
  - Advanced Fan Controls
  - Greenhouse Infrared Heater (efficient tier)
  - Boiler – Efficient
  - Furnace – Efficient
  - Constant Torque – VFD
  - Water Heater – Refrigeration Heat Recovery Unit
- Renamed Measures:
  - Irrigation Pressure Reduction renamed Irrigation Pump Motor HP Reduction

- Deleted Measures:
    - Greenhouse Unit Heater
    - Engine Block Heater Timer
- Combined Measures:
    - Ventilation Fan – Level 1 and Ventilation Fan – Level 2 combined to Ventilation Fan
    - Circulation Fan – Level 1 and Circulation Fan – Level 2 combined to Circulation Fan