Industrial Non-Equipment

Measure					Characteristics									Sources			Measure Assumptions in 2017						
Segment	Vintage	End Use	Measure	Efficient Definition	Replacement Type	Baseline Definition (NEM Only)	Measure Description	Measure Ramp Rate Name	Ramp Offset	Input Unit of Measure	Employees per facility	UOM Per Facility	Line Loss	Lifetime Source	Costs Source	Savings Source	Measure Lifetime (Years)	Incremental Measure Cost ($)	Incremental O&M Cost ($)	Incremental Non-Energy Benefits ($)	Cost Scalar	Measure Savings @ meter (therm) (NEM Only)	Base Saturation	Applicability
Agriculture	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	77	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Agriculture	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Agriculture	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 8.02	$ 0.19	$ -	1.00	-	5.0%	50.0%
Agriculture	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 8.02	$ 0.19	$ -	1.00	-	5.0%	50.0%
Agriculture	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 8.02	$ 0.19	$ -	1.00	-	5.0%	50.0%
Agriculture	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Agriculture	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Agriculture	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Agriculture	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Primary Metals	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	472	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.02	1.18	0.10	60.0%	100.0%
Primary Metals	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	472	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.01	1.18	0.07	60.0%	100.0%
Primary Metals	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	251	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Primary Metals	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	251	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Primary Metals	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	472	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.01	1.18	0.03	45.0%	100.0%
Primary Metals	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.02	$ -	$ -	1.06	0.66	20.0%	30.0%
Primary Metals	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.02	$ -	$ -	1.06	22.94	20.0%	30.0%
Primary Metals	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	20.0%	30.0%
Primary Metals	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 37.36	$ -	$ -	1.18	2.94	20.0%	45.0%
Primary Metals	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 37.36	$ -	$ -	1.18	101.93	20.0%	45.0%
Primary Metals	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 12.68	$ -	$ -	1.08	1.32	73.0%	85.0%
Primary Metals	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 12.68	$ -	$ -	1.08	45.71	73.0%	85.0%
Primary Metals	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 53.82	$ -	$ -	1.02	1.10	35.0%	50.0%
Primary Metals	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 53.82	$ -	$ -	1.02	38.23	35.0%	50.0%
Primary Metals	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 18.08	$ -	$ -	1.02	0.32	5.0%	85.0%
Primary Metals	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 18.08	$ -	$ -	1.02	11.09	5.0%	85.0%
Primary Metals	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	251	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.01	1.18	0.02	55.0%	75.0%
Primary Metals	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 30.52	$ -	$ -	1.18	0.49	15.0%	55.0%
Primary Metals	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 30.52	$ -	$ -	1.18	16.99	15.0%	55.0%
Primary Metals	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	251	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Primary Metals	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	472	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Primary Metals	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	472	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.01	1.04	0.03	25.0%	40.0%
Primary Metals	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	472	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.02	1.18	0.07	5.0%	20.0%
Primary Metals	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	472	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.01	1.18	0.06	15.0%	30.0%
Primary Metals	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condenstate tank insulated	Retrofit	No insulation	Lines and condenstate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 95.34	$ -	$ -	1.06	1.24	40.0%	50.0%
Primary Metals	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condenstate tank insulated	Retrofit	No insulation	Lines and condenstate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 95.34	$ -	$ -	1.06	43.02	40.0%	50.0%
Primary Metals	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 178.08	$ -	$ -	1.06	0.83	40.0%	50.0%
Primary Metals	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 178.08	$ -	$ -	1.06	28.80	40.0%	50.0%
Primary Metals	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Primary Metals	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Primary Metals	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	472	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 0.21	1.00	0.06	5.0%	65.0%
Primary Metals	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	33	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Primary Metals	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Primary Metals	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 179.01	$ -	$ 39.17	1.00	13.07	5.0%	50.0%
Primary Metals	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 179.01	$ -	$ 39.17	1.00	100.79	5.0%	50.0%
Primary Metals	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 179.01	$ -	$ 39.17	1.00	18.60	5.0%	50.0%
Primary Metals	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Primary Metals	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Primary Metals	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 538.76	$ -	$ 48.35	1.04	13.78	15.0%	50.0%
Primary Metals	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 538.76	$ -	$ 48.35	1.04	395.55	15.0%	50.0%
Primary Metals	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	472	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Primary Metals	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	472	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Primary Metals	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	251	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Primary Metals	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	251	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%
Primary Metals	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	472	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Primary Metals	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.02	$ -	$ -	1.06	0.63	5.0%	10.0%
Primary Metals	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.02	$ -	$ -	1.06	22.94	5.0%	10.0%
Primary Metals	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	5.0%	10.0%
Primary Metals	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 37.30	$ -	$ -	1.18	2.80	20.0%	45.0%
Primary Metals	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 37.30	$ -	$ -	1.18	101.93	20.0%	45.0%
Primary Metals	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 12.03	$ -	$ -	1.08	1.25	0.0%	0.0%
Primary Metals	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 12.03	$ -	$ -	1.08	45.71	0.0%	0.0%
Primary Metals	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 53.74	$ -	$ -	1.02	1.05	35.0%	50.0%
Primary Metals	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 53.74	$ -	$ -	1.02	38.23	35.0%	50.0%
Primary Metals	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 18.06	$ -	$ -	1.02	0.30	5.0%	85.0%
Primary Metals	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 18.06	$ -	$ -	1.02	11.09	5.0%	85.0%
Primary Metals	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	251	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.01	1.18	0.02	55.0%	75.0%
Primary Metals	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 30.48	$ -	$ -	1.18	0.47	15.0%	55.0%
Primary Metals	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 30.48	$ -	$ -	1.18	16.99	15.0%	55.0%
Primary Metals	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	251	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Primary Metals	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	472	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Primary Metals	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	472	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%
Primary Metals	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	472	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Primary Metals	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	472	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	30.0%
Primary Metals	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condenstate tank insulated	Retrofit	No insulation	Lines and condenstate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 95.21	$ -	$ -	1.06	1.18	45.0%	50.0%
Primary Metals	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condenstate tank insulated	Retrofit	No insulation	Lines and condenstate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 95.21	$ -	$ -	1.06	43.02	45.0%	50.0%
Primary Metals	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 177.83	$ -	$ -	1.06	0.79	45.0%	50.0%
Primary Metals	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 177.83	$ -	$ -	1.06	28.80	45.0%	50.0%
Primary Metals	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Primary Metals	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Primary Metals	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	472	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Primary Metals	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	33	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Primary Metals	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Primary Metals	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 179.01	$ 4.26	$ -	1.00	-	5.0%	50.0%
Primary Metals	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 179.01	$ 4.26	$ -	1.00	-	5.0%	50.0%
Primary Metals	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 179.01	$ 4.26	$ -	1.00	-	5.0%	50.0%
Primary Metals	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Primary Metals	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Primary Metals	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Primary Metals	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Stone, Clay, and Glass	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	483	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.02	1.18	0.10	60.0%	100.0%
Stone, Clay, and Glass	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	483	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.01	1.18	0.07	60.0%	100.0%
Stone, Clay, and Glass	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	347	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Stone, Clay, and Glass	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	347	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Stone, Clay, and Glass	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	483	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.01	1.18	0.03	45.0%	100.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.01	$ -	$ -	1.06	7.50	20.0%	30.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.01	$ -	$ -	1.06	3.44	20.0%	30.0%
Stone, Clay, and Glass	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.01	$ -	$ -	1.06	0.01	20.0%	30.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 17.33	$ -	$ -	1.18	33.34	20.0%	45.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 17.33	$ -	$ -	1.18	15.31	20.0%	45.0%
Stone, Clay, and Glass	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 5.88	$ -	$ -	1.08	14.95	73.0%	85.0%
Stone, Clay, and Glass	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 5.88	$ -	$ -	1.08	6.86	73.0%	85.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 24.96	$ -	$ -	1.02	12.50	35.0%	50.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 24.96	$ -	$ -	1.02	5.74	35.0%	50.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 8.39	$ -	$ -	1.02	3.63	5.0%	85.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 8.39	$ -	$ -	1.02	1.66	5.0%	85.0%
Stone, Clay, and Glass	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	347	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.01	1.18	0.02	55.0%	75.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 14.16	$ -	$ -	1.18	5.56	15.0%	55.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 14.16	$ -	$ -	1.18	2.55	15.0%	55.0%
Stone, Clay, and Glass	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	347	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Stone, Clay, and Glass	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	483	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Stone, Clay, and Glass	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	483	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.01	1.04	0.03	25.0%	40.0%
Stone, Clay, and Glass	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	483	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.02	1.18	0.07	5.0%	20.0%
Stone, Clay, and Glass	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	483	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.01	1.18	0.06	15.0%	30.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condenstate tank insulated	Retrofit	No insulation	Lines and condenstate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 44.22	$ -	$ -	1.06	14.07	40.0%	50.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condenstate tank insulated	Retrofit	No insulation	Lines and condenstate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 44.22	$ -	$ -	1.06	6.46	40.0%	50.0%
Stone, Clay, and Glass	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 82.59	$ -	$ -	1.06	9.42	40.0%	50.0%
Stone, Clay, and Glass	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 82.59	$ -	$ -	1.06	4.33	40.0%	50.0%
Stone, Clay, and Glass	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Stone, Clay, and Glass	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Stone, Clay, and Glass	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	483	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 0.21	1.00	0.06	5.0%	65.0%
Stone, Clay, and Glass	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	371	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Stone, Clay, and Glass	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Stone, Clay, and Glass	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 121.86	$ -	$ 40.55	1.00	13.38	5.0%	50.0%
Stone, Clay, and Glass	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 121.86	$ -	$ 40.55	1.00	60.53	5.0%	50.0%
Stone, Clay, and Glass	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 121.86	$ -	$ 40.55	1.00	16.26	5.0%	50.0%
Stone, Clay, and Glass	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Stone, Clay, and Glass	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Stone, Clay, and Glass	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 328.73	$ -	$ 48.24	1.04	12.19	15.0%	50.0%
Stone, Clay, and Glass	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 328.73	$ -	$ 48.24	1.04	237.57	15.0%	50.0%
Stone, Clay, and Glass	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	483	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	483	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	347	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	347	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	483	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.01	$ -	$ -	1.06	7.12	5.0%	10.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.01	$ -	$ -	1.06	3.44	5.0%	10.0%
Stone, Clay, and Glass	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	5.0%	10.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 16.73	$ -	$ -	1.18	31.67	20.0%	45.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 16.73	$ -	$ -	1.18	15.31	20.0%	45.0%
Stone, Clay, and Glass	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 5.40	$ -	$ -	1.08	14.20	0.0%	0.0%
Stone, Clay, and Glass	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 5.40	$ -	$ -	1.08	6.86	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 24.11	$ -	$ -	1.02	11.87	35.0%	50.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 24.11	$ -	$ -	1.02	5.74	35.0%	50.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 8.10	$ -	$ -	1.02	3.44	5.0%	85.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 8.10	$ -	$ -	1.02	1.66	5.0%	85.0%
Stone, Clay, and Glass	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	347	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.01	1.18	0.02	55.0%	75.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 13.67	$ -	$ -	1.18	5.28	15.0%	55.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 13.67	$ -	$ -	1.18	2.55	15.0%	55.0%
Stone, Clay, and Glass	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	347	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	483	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Stone, Clay, and Glass	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	483	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%

Industrial Non-Equipment

Segment	Vintage	End Use	Measure	Efficient Definition	Replacement Type	Baseline Definition (NEM Only)	Measure Description	Measure Ramp Rate Name	Ramp Offset	Input Unit of Measure	Employees per facility	UOM Per Facility	Line Loss	Lifetime Source	Costs Source	Savings Source	Measure Lifetime (Years)	Incremental Measure Cost ($)	Incremental O&M Cost ($)	Incremental Non-Energy Benefits ($)	Cost Scalar	Measure Savings @ meter (therm) (NEM Only)	Base Saturation	Applicability
Measure					Characteristics									Sources			Measure Assumptions in 2017							
Stone, Clay, and Glass	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	483	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Stone, Clay, and Glass	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	483	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	30.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 42.70	$ -	$ -	1.06	13.37	45.0%	50.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 42.70	$ -	$ -	1.06	6.46	45.0%	50.0%
Stone, Clay, and Glass	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 79.76	$ -	$ -	1.06	8.95	45.0%	50.0%
Stone, Clay, and Glass	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 79.76	$ -	$ -	1.06	4.33	45.0%	50.0%
Stone, Clay, and Glass	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Stone, Clay, and Glass	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Stone, Clay, and Glass	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	483	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Stone, Clay, and Glass	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	371	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Stone, Clay, and Glass	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Stone, Clay, and Glass	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 121.86	$ 2.90	$ -	1.00	-	5.0%	50.0%
Stone, Clay, and Glass	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 121.86	$ 2.90	$ -	1.00	-	5.0%	50.0%
Stone, Clay, and Glass	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 121.86	$ 2.90	$ -	1.00	-	5.0%	50.0%
Stone, Clay, and Glass	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Stone, Clay, and Glass	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Stone, Clay, and Glass	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Petroleum	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	11,459	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.01	1.18	0.10	60.0%	100.0%
Petroleum	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	11,459	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.00	1.18	0.07	60.0%	100.0%
Petroleum	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	12,213	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Petroleum	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	12,213	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Petroleum	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	11,459	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.00	1.18	0.03	45.0%	100.0%
Petroleum	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.36	$ -	$ -	1.06	28.08	20.0%	30.0%
Petroleum	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.36	$ -	$ -	1.06	439.17	20.0%	30.0%
Petroleum	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.19	$ -	$ -	1.06	0.01	20.0%	30.0%
Petroleum	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 739.70	$ -	$ -	1.18	124.81	20.0%	45.0%
Petroleum	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 739.70	$ -	$ -	1.18	1,951.87	20.0%	45.0%
Petroleum	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 251.13	$ -	$ -	1.08	55.97	73.0%	85.0%
Petroleum	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 251.13	$ -	$ -	1.08	875.23	73.0%	85.0%
Petroleum	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 1,065.68	$ -	$ -	1.02	46.80	35.0%	50.0%
Petroleum	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 1,065.68	$ -	$ -	1.02	731.95	35.0%	50.0%
Petroleum	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 358.04	$ -	$ -	1.02	13.57	5.0%	85.0%
Petroleum	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 358.04	$ -	$ -	1.02	212.27	5.0%	85.0%
Petroleum	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	12,213	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.00	1.18	0.02	55.0%	75.0%
Petroleum	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 604.33	$ -	$ -	1.18	20.80	15.0%	55.0%
Petroleum	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 604.33	$ -	$ -	1.18	325.31	15.0%	55.0%
Petroleum	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	12,213	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Petroleum	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	11,459	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Petroleum	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	11,459	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.00	1.04	0.03	25.0%	40.0%
Petroleum	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	11,459	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.02	1.18	0.07	5.0%	20.0%
Petroleum	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	11,459	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.00	1.18	0.06	15.0%	30.0%
Petroleum	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 1,887.81	$ -	$ -	1.06	52.68	40.0%	50.0%
Petroleum	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 1,887.81	$ -	$ -	1.06	823.84	40.0%	50.0%
Petroleum	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 3,526.09	$ -	$ -	1.06	35.27	40.0%	50.0%
Petroleum	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 3,526.09	$ -	$ -	1.06	551.52	40.0%	50.0%
Petroleum	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Petroleum	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Petroleum	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	11,459	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 0.01	1.00	0.06	5.0%	65.0%
Petroleum	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1,391	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Petroleum	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Petroleum	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 1,667.82	$ -	$ 24.96	1.00	317.64	5.0%	50.0%
Petroleum	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 1,667.82	$ -	$ 24.96	1.00	769.04	5.0%	50.0%
Petroleum	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 1,667.82	$ -	$ 24.96	1.00	147.44	5.0%	50.0%
Petroleum	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Petroleum	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Petroleum	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 4,006.09	$ -	$ 49.14	1.04	25.54	15.0%	50.0%
Petroleum	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 4,006.09	$ -	$ 49.14	1.04	3,018.11	15.0%	50.0%
Petroleum	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	11,459	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Petroleum	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	11,459	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Petroleum	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	12,213	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Petroleum	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	12,213	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%
Petroleum	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	11,459	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Petroleum	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.36	$ -	$ -	1.06	26.68	5.0%	10.0%
Petroleum	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.36	$ -	$ -	1.06	439.17	5.0%	10.0%
Petroleum	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.17	$ -	$ -	1.06	0.01	5.0%	10.0%
Petroleum	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 737.48	$ -	$ -	1.18	118.56	20.0%	45.0%
Petroleum	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 737.48	$ -	$ -	1.18	1,951.87	20.0%	45.0%
Petroleum	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 237.84	$ -	$ -	1.08	53.16	0.0%	0.0%
Petroleum	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 237.84	$ -	$ -	1.08	875.23	0.0%	0.0%
Petroleum	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 1,062.48	$ -	$ -	1.02	44.46	35.0%	50.0%
Petroleum	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 1,062.48	$ -	$ -	1.02	731.95	35.0%	50.0%
Petroleum	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 356.96	$ -	$ -	1.02	12.89	5.0%	85.0%
Petroleum	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 356.96	$ -	$ -	1.02	212.27	5.0%	85.0%
Petroleum	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	12,213	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.00	1.18	0.02	55.0%	75.0%
Petroleum	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 602.51	$ -	$ -	1.18	19.76	15.0%	55.0%
Petroleum	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 602.51	$ -	$ -	1.18	325.31	15.0%	55.0%
Petroleum	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	12,213	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Petroleum	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	11,459	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Petroleum	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	11,459	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%
Petroleum	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	11,459	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Petroleum	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	11,459	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	30.0%
Petroleum	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 1,882.13	$ -	$ -	1.06	50.04	45.0%	50.0%
Petroleum	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 1,882.13	$ -	$ -	1.06	823.84	45.0%	50.0%
Petroleum	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 3,515.48	$ -	$ -	1.06	33.50	45.0%	50.0%
Petroleum	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 3,515.48	$ -	$ -	1.06	551.52	45.0%	50.0%
Petroleum	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Petroleum	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Petroleum	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	11,459	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Petroleum	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1,391	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Petroleum	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Petroleum	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 1,667.82	$ 39.72	$ -	1.00	-	5.0%	50.0%
Petroleum	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 1,667.82	$ 39.72	$ -	1.00	-	5.0%	50.0%
Petroleum	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 1,667.82	$ 39.72	$ -	1.00	-	5.0%	50.0%
Petroleum	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Petroleum	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Petroleum	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Petroleum	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Paper and Printing	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	1,531	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.01	1.18	0.10	60.0%	100.0%
Paper and Printing	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	1,531	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.01	1.18	0.07	60.0%	100.0%
Paper and Printing	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	889	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Paper and Printing	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	889	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Paper and Printing	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	1,531	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.00	1.18	0.03	45.0%	100.0%
Paper and Printing	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.06	$ -	$ -	1.06	27.45	20.0%	30.0%
Paper and Printing	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.06	$ -	$ -	1.06	45.66	20.0%	30.0%
Paper and Printing	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.01	$ -	$ -	1.06	0.01	20.0%	30.0%
Paper and Printing	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 115.73	$ -	$ -	1.18	121.99	20.0%	45.0%
Paper and Printing	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 115.73	$ -	$ -	1.18	202.91	20.0%	45.0%
Paper and Printing	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 39.29	$ -	$ -	1.08	54.70	73.0%	85.0%
Paper and Printing	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 39.29	$ -	$ -	1.08	90.99	73.0%	85.0%
Paper and Printing	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 166.73	$ -	$ -	1.02	45.75	35.0%	50.0%
Paper and Printing	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 166.73	$ -	$ -	1.02	76.09	35.0%	50.0%
Paper and Printing	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 56.02	$ -	$ -	1.02	13.27	5.0%	85.0%
Paper and Printing	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 56.02	$ -	$ -	1.02	22.07	5.0%	85.0%
Paper and Printing	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	889	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.00	1.18	0.02	55.0%	75.0%
Paper and Printing	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 94.55	$ -	$ -	1.18	20.33	15.0%	55.0%
Paper and Printing	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 94.55	$ -	$ -	1.18	33.82	15.0%	55.0%
Paper and Printing	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	889	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Paper and Printing	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	1,531	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Paper and Printing	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	1,531	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.00	1.04	0.03	25.0%	40.0%
Paper and Printing	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	1,531	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.02	1.18	0.07	5.0%	20.0%
Paper and Printing	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	1,531	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.01	1.18	0.06	15.0%	30.0%
Paper and Printing	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 295.35	$ -	$ -	1.06	51.49	40.0%	50.0%
Paper and Printing	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 295.35	$ -	$ -	1.06	85.65	40.0%	50.0%
Paper and Printing	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 551.67	$ -	$ -	1.06	34.47	40.0%	50.0%
Paper and Printing	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 551.67	$ -	$ -	1.06	57.34	40.0%	50.0%
Paper and Printing	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Paper and Printing	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Paper and Printing	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	1,531	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 0.07	1.00	0.06	5.0%	65.0%
Paper and Printing	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1,359	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Paper and Printing	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Paper and Printing	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 158.57	$ -	$ 41.70	1.00	42.43	5.0%	50.0%
Paper and Printing	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 158.57	$ -	$ 41.70	1.00	56.89	5.0%	50.0%
Paper and Printing	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 158.57	$ -	$ 41.70	1.00	18.02	5.0%	50.0%
Paper and Printing	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Paper and Printing	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Paper and Printing	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 357.32	$ -	$ 50.65	1.04	48.22	15.0%	50.0%
Paper and Printing	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 357.32	$ -	$ 50.65	1.04	223.26	15.0%	50.0%
Paper and Printing	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	1,531	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Paper and Printing	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	1,531	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Paper and Printing	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	889	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Paper and Printing	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	889	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%
Paper and Printing	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	1,531	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Paper and Printing	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.06	$ -	$ -	1.06	26.07	5.0%	10.0%
Paper and Printing	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.06	$ -	$ -	1.06	45.66	5.0%	10.0%
Paper and Printing	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.01	$ -	$ -	1.06	0.01	5.0%	10.0%
Paper and Printing	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 113.55	$ -	$ -	1.18	115.88	20.0%	45.0%
Paper and Printing	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 113.55	$ -	$ -	1.18	202.91	20.0%	45.0%
Paper and Printing	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 36.62	$ -	$ -	1.08	51.96	0.0%	0.0%
Paper and Printing	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 36.62	$ -	$ -	1.08	90.99	0.0%	0.0%
Paper and Printing	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 163.60	$ -	$ -	1.02	43.46	35.0%	50.0%

Industrial Non-Equipment

Measure					Characteristics									Sources			Measure Assumptions in 2017							
Segment	Vintage	End Use	Measure	Efficient Definition	Replacement Type	Baseline Definition (NEM Only)	Measure Description	Measure Ramp Rate Name	Ramp Offset	Input Unit of Measure	Employees per facility	UOM Per Facility	Line Loss	Lifetime Source	Costs Source	Savings Source	Measure Lifetime (Years)	Incremental Measure Cost ($)	Incremental O&M Cost ($)	Incremental Non-Energy Benefits ($)	Cost Scalar	Measure Savings @ meter (therm) (NEM Only)	Base Saturation	Applicability
Paper and Printing	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 163.60	$ -	$ -	1.02	76.09	35.0%	50.0%
Paper and Printing	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 54.96	$ -	$ -	1.02	12.60	5.0%	85.0%
Paper and Printing	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 54.96	$ -	$ -	1.02	22.07	5.0%	85.0%
Paper and Printing	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	889	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.00	1.18	0.02	55.0%	75.0%
Paper and Printing	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 92.77	$ -	$ -	1.18	19.31	15.0%	55.0%
Paper and Printing	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 92.77	$ -	$ -	1.18	33.82	15.0%	55.0%
Paper and Printing	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	889	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Paper and Printing	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	1,531	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Paper and Printing	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	1,531	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%
Paper and Printing	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	1,531	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Paper and Printing	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	1,531	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	30.0%
Paper and Printing	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 289.80	$ -	$ -	1.06	48.91	45.0%	50.0%
Paper and Printing	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 289.80	$ -	$ -	1.06	85.65	45.0%	50.0%
Paper and Printing	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 541.30	$ -	$ -	1.06	32.74	45.0%	50.0%
Paper and Printing	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 541.30	$ -	$ -	1.06	57.34	45.0%	50.0%
Paper and Printing	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Paper and Printing	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Paper and Printing	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	1,531	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Paper and Printing	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1,359	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Paper and Printing	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Paper and Printing	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 158.57	$ 3.78	$ -	1.00	-	5.0%	50.0%
Paper and Printing	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 158.57	$ 3.78	$ -	1.00	-	5.0%	50.0%
Paper and Printing	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 158.57	$ 3.78	$ -	1.00	-	5.0%	50.0%
Paper and Printing	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Paper and Printing	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Paper and Printing	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Paper and Printing	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Instruments	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	80	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.08	1.18	0.10	60.0%	100.0%
Instruments	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	80	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.06	1.18	0.07	60.0%	100.0%
Instruments	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	59	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Instruments	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	59	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Instruments	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	80	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.03	1.18	0.03	45.0%	100.0%
Instruments	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	1.66	20.0%	30.0%
Instruments	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	2.11	20.0%	30.0%
Instruments	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	20.0%	30.0%
Instruments	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 5.96	$ -	$ -	1.18	7.36	20.0%	45.0%
Instruments	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 5.96	$ -	$ -	1.18	9.38	20.0%	45.0%
Instruments	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 2.02	$ -	$ -	1.08	3.30	73.0%	85.0%
Instruments	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 2.02	$ -	$ -	1.08	4.21	73.0%	85.0%
Instruments	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 8.59	$ -	$ -	1.02	2.76	35.0%	50.0%
Instruments	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 8.59	$ -	$ -	1.02	3.52	35.0%	50.0%
Instruments	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.89	$ -	$ -	1.02	0.80	5.0%	85.0%
Instruments	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.89	$ -	$ -	1.02	1.02	5.0%	85.0%
Instruments	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	59	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.03	1.18	0.02	55.0%	75.0%
Instruments	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.87	$ -	$ -	1.18	1.23	15.0%	55.0%
Instruments	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.87	$ -	$ -	1.18	1.56	15.0%	55.0%
Instruments	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	59	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Instruments	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	80	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Instruments	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	80	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.02	1.04	0.03	25.0%	40.0%
Instruments	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	80	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.07	1.18	0.07	5.0%	20.0%
Instruments	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	80	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.05	1.18	0.06	15.0%	30.0%
Instruments	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 15.22	$ -	$ -	1.06	3.11	40.0%	50.0%
Instruments	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 15.22	$ -	$ -	1.06	3.96	40.0%	50.0%
Instruments	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 28.42	$ -	$ -	1.06	2.08	40.0%	50.0%
Instruments	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 28.42	$ -	$ -	1.06	2.65	40.0%	50.0%
Instruments	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Instruments	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Instruments	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	80	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 1.23	1.00	0.06	5.0%	65.0%
Instruments	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	82	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Instruments	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Instruments	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.81	$ -	$ 42.51	1.00	2.23	5.0%	50.0%
Instruments	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.81	$ -	$ 42.51	1.00	1.70	5.0%	50.0%
Instruments	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.81	$ -	$ 42.51	1.00	1.12	5.0%	50.0%
Instruments	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Instruments	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Instruments	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 12.19	$ -	$ 47.60	1.04	2.59	15.0%	50.0%
Instruments	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 12.19	$ -	$ 47.60	1.04	6.67	15.0%	50.0%
Instruments	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	80	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Instruments	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	80	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Instruments	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	59	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Instruments	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	59	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%
Instruments	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	80	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Instruments	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	1.57	5.0%	10.0%
Instruments	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	2.11	5.0%	10.0%
Instruments	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	5.0%	10.0%
Instruments	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 5.83	$ -	$ -	1.18	6.99	20.0%	45.0%
Instruments	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 5.83	$ -	$ -	1.18	9.38	20.0%	45.0%
Instruments	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 1.88	$ -	$ -	1.08	3.13	0.0%	0.0%
Instruments	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 1.88	$ -	$ -	1.08	4.21	0.0%	0.0%
Instruments	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 8.40	$ -	$ -	1.02	2.62	35.0%	50.0%
Instruments	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 8.40	$ -	$ -	1.02	3.52	35.0%	50.0%
Instruments	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.82	$ -	$ -	1.02	0.76	5.0%	85.0%
Instruments	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.82	$ -	$ -	1.02	1.02	5.0%	85.0%
Instruments	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	59	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.03	1.18	0.02	55.0%	75.0%
Instruments	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.76	$ -	$ -	1.18	1.16	15.0%	55.0%
Instruments	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.76	$ -	$ -	1.18	1.56	15.0%	55.0%
Instruments	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	59	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Instruments	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	80	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Instruments	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	80	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%
Instruments	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	80	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Instruments	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	80	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	30.0%
Instruments	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 14.88	$ -	$ -	1.06	2.95	45.0%	50.0%
Instruments	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 14.88	$ -	$ -	1.06	3.96	45.0%	50.0%
Instruments	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 27.80	$ -	$ -	1.06	1.98	45.0%	50.0%
Instruments	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 27.80	$ -	$ -	1.06	2.65	45.0%	50.0%
Instruments	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Instruments	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Instruments	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	80	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Instruments	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	82	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Instruments	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Instruments	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.81	$ 0.16	$ -	1.00	-	5.0%	50.0%
Instruments	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.81	$ 0.16	$ -	1.00	-	5.0%	50.0%
Instruments	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.81	$ 0.16	$ -	1.00	-	5.0%	50.0%
Instruments	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Instruments	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Instruments	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Instruments	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Wood and Lumber Products	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	171	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.04	1.18	0.10	60.0%	100.0%
Wood and Lumber Products	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	171	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.03	1.18	0.07	60.0%	100.0%
Wood and Lumber Products	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	131	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Wood and Lumber Products	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	131	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Wood and Lumber Products	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	171	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.01	1.18	0.03	45.0%	100.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.04	$ -	$ -	1.06	40.10	20.0%	30.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.04	$ -	$ -	1.06	5.18	20.0%	30.0%
Wood and Lumber Products	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	20.0%	30.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 71.68	$ -	$ -	1.18	178.24	20.0%	45.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 71.68	$ -	$ -	1.18	23.01	20.0%	45.0%
Wood and Lumber Products	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 24.34	$ -	$ -	1.08	79.92	73.0%	85.0%
Wood and Lumber Products	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 24.34	$ -	$ -	1.08	10.32	73.0%	85.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 103.27	$ -	$ -	1.02	66.84	35.0%	50.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 103.27	$ -	$ -	1.02	8.63	35.0%	50.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 34.70	$ -	$ -	1.02	19.38	5.0%	85.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 34.70	$ -	$ -	1.02	2.50	5.0%	85.0%
Wood and Lumber Products	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	131	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.01	1.18	0.02	55.0%	75.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 58.56	$ -	$ -	1.18	29.71	15.0%	55.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 58.56	$ -	$ -	1.18	3.83	15.0%	55.0%
Wood and Lumber Products	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	131	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Wood and Lumber Products	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	171	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Wood and Lumber Products	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	171	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.01	1.04	0.03	25.0%	40.0%
Wood and Lumber Products	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	171	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.04	1.18	0.07	5.0%	20.0%
Wood and Lumber Products	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	171	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.03	1.18	0.06	15.0%	75.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 182.94	$ -	$ -	1.06	75.23	40.0%	50.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 182.94	$ -	$ -	1.06	9.71	40.0%	50.0%
Wood and Lumber Products	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 341.70	$ -	$ -	1.06	50.36	40.0%	50.0%
Wood and Lumber Products	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 341.70	$ -	$ -	1.06	6.50	40.0%	50.0%
Wood and Lumber Products	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Wood and Lumber Products	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Wood and Lumber Products	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	171	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 0.58	1.00	0.06	5.0%	65.0%
Wood and Lumber Products	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1,986	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Wood and Lumber Products	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Wood and Lumber Products	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 23.11	$ -	$ 42.30	1.00	4.75	5.0%	50.0%
Wood and Lumber Products	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 23.11	$ -	$ 42.30	1.00	8.95	5.0%	50.0%
Wood and Lumber Products	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 23.11	$ -	$ 42.30	1.00	3.40	5.0%	50.0%
Wood and Lumber Products	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Wood and Lumber Products	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Wood and Lumber Products	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 52.73	$ -	$ 47.76	1.04	4.95	15.0%	50.0%
Wood and Lumber Products	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 52.73	$ -	$ 47.76	1.04	35.11	15.0%	50.0%
Wood and Lumber Products	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	171	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Wood and Lumber Products	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	171	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Wood and Lumber Products	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	131	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Wood and Lumber Products	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	131	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%

Industrial Non-Equipment

Measure					Characteristics									Sources			Measure Assumptions in 2017							
Segment	Vintage	End Use	Measure	Efficient Definition	Replacement Type	Baseline Definition (NEM Only)	Measure Description	Measure Ramp Rate Name	Ramp Offset	Input Unit of Measure	Employees per facility	UOM Per Facility	Line Loss	Lifetime Source	Costs Source	Savings Source	Measure Lifetime (Years)	Incremental Measure Cost ($)	Incremental O&M Cost ($)	Incremental Non-Energy Benefits ($)	Cost Scalar	Measure Savings @ meter (therm) (NEM Only)	Base Saturation	Applicability
Wood and Lumber Products	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	171	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Wood and Lumber Products	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.03	$ -	$ -	1.06	38.10	5.0%	10.0%
Wood and Lumber Products	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.03	$ -	$ -	1.06	5.18	5.0%	10.0%
Wood and Lumber Products	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	5.0%	10.0%
Wood and Lumber Products	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 68.50	$ -	$ -	1.18	169.32	20.0%	45.0%
Wood and Lumber Products	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 68.50	$ -	$ -	1.18	23.01	20.0%	45.0%
Wood and Lumber Products	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 22.09	$ -	$ -	1.08	75.92	0.0%	0.0%
Wood and Lumber Products	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 22.09	$ -	$ -	1.08	10.32	0.0%	0.0%
Wood and Lumber Products	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 98.69	$ -	$ -	1.02	63.49	35.0%	50.0%
Wood and Lumber Products	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 98.69	$ -	$ -	1.02	8.63	35.0%	50.0%
Wood and Lumber Products	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 33.16	$ -	$ -	1.02	18.41	5.0%	85.0%
Wood and Lumber Products	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 33.16	$ -	$ -	1.02	2.50	5.0%	85.0%
Wood and Lumber Products	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	131	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.01	1.18	0.02	55.0%	75.0%
Wood and Lumber Products	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 55.97	$ -	$ -	1.18	28.22	15.0%	55.0%
Wood and Lumber Products	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 55.97	$ -	$ -	1.18	3.83	15.0%	55.0%
Wood and Lumber Products	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	131	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Wood and Lumber Products	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	171	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Wood and Lumber Products	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	171	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%
Wood and Lumber Products	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	171	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Wood and Lumber Products	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	171	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	75.0%
Wood and Lumber Products	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 174.83	$ -	$ -	1.06	71.47	45.0%	50.0%
Wood and Lumber Products	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 174.83	$ -	$ -	1.06	9.71	45.0%	50.0%
Wood and Lumber Products	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 326.55	$ -	$ -	1.06	47.84	45.0%	50.0%
Wood and Lumber Products	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 326.55	$ -	$ -	1.06	6.50	45.0%	50.0%
Wood and Lumber Products	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Wood and Lumber Products	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Wood and Lumber Products	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	171	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Wood and Lumber Products	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1,986	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Wood and Lumber Products	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Wood and Lumber Products	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 23.11	$ 0.55	$ -	1.00	-	5.0%	50.0%
Wood and Lumber Products	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 23.11	$ 0.55	$ -	1.00	-	5.0%	50.0%
Wood and Lumber Products	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 23.11	$ 0.55	$ -	1.00	-	5.0%	50.0%
Wood and Lumber Products	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Wood and Lumber Products	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Wood and Lumber Products	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Wood and Lumber Products	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Other Industrial	Existing	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	97	0.16%	INS_CLG-Heating-RTF-v2.1-55	INS_CLG-Heating-RTF-v2.1-55	Building Energy Simulation Tool	45	$ 1.02	$ -	$ 0.07	1.18	0.10	60.0%	100.0%
Other Industrial	Existing	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	97	0.16%	INS_WC-Heating-RTF-v2.1-1	INS_WC-Heating-RTF-v2.1-1	Building Energy Simulation Tool	45	$ 0.31	$ -	$ 0.05	1.18	0.07	60.0%	100.0%
Other Industrial	Existing	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	97	0.16%	INS_DCT-All-DEER-1	INS_DCT-All-DEER-1	Building Energy Simulation Tool	20	$ 0.86	$ -	$ 0.00	1.12	0.00	40.0%	60.0%
Other Industrial	Existing	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	97	0.16%	DCT_RPR-All-DEER-1	DCT_RPR-Cooling-RTF-1	Building Energy Simulation Tool	18	$ 0.59	$ -	$ 0.00	1.18	0.00	15.0%	50.0%
Other Industrial	Existing	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	97	0.16%	WND_HE-Heating-RTF-v2.1-46	WND_HE-Heating-RTF-v2.1-46	Building Energy Simulation Tool	45	$ 0.23	$ -	$ 0.02	1.18	0.03	45.0%	100.0%
Other Industrial	Existing	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	employee	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	1.95	20.0%	30.0%
Other Industrial	Existing	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	1.27	20.0%	30.0%
Other Industrial	Existing	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	20.0%	30.0%
Other Industrial	Existing	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	employee	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 5.10	$ -	$ -	1.18	8.67	20.0%	45.0%
Other Industrial	Existing	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 5.10	$ -	$ -	1.18	5.66	20.0%	45.0%
Other Industrial	Existing	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	employee	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 1.73	$ -	$ -	1.08	3.89	73.0%	85.0%
Other Industrial	Existing	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 1.73	$ -	$ -	1.08	2.54	73.0%	85.0%
Other Industrial	Existing	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	employee	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 7.35	$ -	$ -	1.02	3.25	35.0%	50.0%
Other Industrial	Existing	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 7.35	$ -	$ -	1.02	2.12	35.0%	50.0%
Other Industrial	Existing	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	employee	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.47	$ -	$ -	1.02	0.94	5.0%	85.0%
Other Industrial	Existing	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.47	$ -	$ -	1.02	0.62	5.0%	85.0%
Other Industrial	Existing	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	97	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.25	$ -	$ 0.02	1.18	0.02	55.0%	75.0%
Other Industrial	Existing	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	employee	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.17	$ -	$ -	1.18	1.44	15.0%	55.0%
Other Industrial	Existing	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.17	$ -	$ -	1.18	0.94	15.0%	55.0%
Other Industrial	Existing	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	97	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Other Industrial	Existing	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	97	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	0.02	5.0%	10.0%
Other Industrial	Existing	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	97	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ 0.02	1.04	0.03	25.0%	40.0%
Other Industrial	Existing	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	97	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.06	1.18	0.07	5.0%	20.0%
Other Industrial	Existing	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	97	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ 0.04	1.18	0.06	15.0%	30.0%
Other Industrial	Existing	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 13.02	$ -	$ -	1.06	3.66	40.0%	50.0%
Other Industrial	Existing	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 13.02	$ -	$ -	1.06	2.39	40.0%	50.0%
Other Industrial	Existing	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	employee	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 24.32	$ -	$ -	1.06	2.45	40.0%	50.0%
Other Industrial	Existing	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 24.32	$ -	$ -	1.06	1.60	40.0%	50.0%
Other Industrial	Existing	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Other Industrial	Existing	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Other Industrial	Existing	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	97	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.30	$ -	$ 1.03	1.00	0.06	5.0%	65.0%
Other Industrial	Existing	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	97	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Other Industrial	Existing	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Other Industrial	Existing	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.73	$ -	$ 42.54	1.00	2.68	5.0%	50.0%
Other Industrial	Existing	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.73	$ -	$ 42.54	1.00	1.41	5.0%	50.0%
Other Industrial	Existing	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.73	$ -	$ 42.54	1.00	0.90	5.0%	50.0%
Other Industrial	Existing	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Other Industrial	Existing	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Other Industrial	Existing	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 10.80	$ -	$ 47.61	1.04	2.69	15.0%	50.0%
Other Industrial	Existing	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	AEG Estimate	5	$ 10.80	$ -	$ 47.61	1.04	5.52	15.0%	50.0%
Other Industrial	New	Heating	Insulation - Roof/Ceiling	R-38	Retrofit	R-13	R-38	Retro3Slow	2	sqft	1	97	0.16%	INS_CLG-Heating-RTF-v2.1-55	N/A	Building Energy Simulation Tool	45	$ 1.18	$ -	$ -	1.18	-	0.0%	0.0%
Other Industrial	New	Heating	Insulation - Wall Cavity	R-21	Retrofit	R-11 or less	R-21	Retro3Slow	2	sqft	1	97	0.16%	INS_WC-Heating-RTF-v2.1-1	N/A	Building Energy Simulation Tool	45	$ 0.22	$ -	$ -	1.18	-	0.0%	0.0%
Other Industrial	New	Heating	Insulation - Ducting	50% reduction in thermal losses	Retrofit	~2°F thermal losses	50% reduction in thermal losses	Retro5Med	0	sqft	1	97	0.16%	INS_DCT-All-DEER-1	N/A	Building Energy Simulation Tool	20	$ 1.12	$ -	$ 0.00	1.12	0.00	0.0%	0.0%
Other Industrial	New	Heating	HVAC - Duct Repair and Sealing	30% reduced duct leaking	Retrofit	Poorly sealed/leaky ducts	30% reduced duct leaking	RetroEven20	0	sqft	1	97	0.16%	DCT_RPR-All-DEER-1	N/A	Building Energy Simulation Tool	18	$ -	$ -	$ 0.00	1.18	0.00	0.0%	0.0%
Other Industrial	New	Heating	Windows - High Efficiency	U-.22 or better	Retrofit	U-.5 or worse	U-.22 or better	Retro1Slow	0	sqft	1	97	0.16%	WND_HE-Heating-RTF-v2.1-46	N/A	Building Energy Simulation Tool	45	$ -	$ -	$ -	1.18	-	0.0%	0.0%
Other Industrial	New	Heating	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	1.85	5.0%	10.0%
Other Industrial	New	Process	Gas Boiler - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	GBLR_MNT-Heating-ILTRM-v4.0-1	3	$ 0.00	$ -	$ -	1.06	1.27	5.0%	10.0%
Other Industrial	New	Heating	Gas Furnace - Maintenance	General cleaning and maintenance	Retrofit	Degrade performance	General cleaning and maintenance	Retro20Fast	0	sqft	1	1	0.16%	GFURN_MNT-Heating-ILTRM-v4.0-1	GFURN_MNT-Heating-MNTRM-v2.1-1	GFURN_MNT-Heating-MNTRM-v2.1-1	2	$ 0.00	$ -	$ -	1.06	0.01	5.0%	10.0%
Other Industrial	New	Heating	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 4.95	$ -	$ -	1.18	8.23	20.0%	45.0%
Other Industrial	New	Process	Gas Boiler - Hot Water Reset	Reset control installed	Retrofit	No control	Reset control installed	Retro5Med	0	sqft	1	1	0.16%	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	GBLR_HWRST-Heating-ILTRM-v4.0-1	20	$ 4.95	$ -	$ -	1.18	5.66	20.0%	45.0%
Other Industrial	New	Heating	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 1.60	$ -	$ -	1.08	3.69	0.0%	0.0%
Other Industrial	New	Process	Steam Trap Maintenance	Cleaning and maintenance	Retrofit	Degrade performance	Cleaning and maintenance	RetroEven20	0	sqft	1	1	0.16%	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	GBLR_MNT_ST-Heating-XCELCO-2017-18-2	4	$ 1.60	$ -	$ -	1.08	2.54	0.0%	0.0%
Other Industrial	New	Heating	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 7.13	$ -	$ -	1.02	3.09	35.0%	50.0%
Other Industrial	New	Process	Gas Boiler - High Turndown	Turndown control installed	Retrofit	No control	Turndown control installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	GBLR_TRN-Heating-MNTRM-v2.1-1	15	$ 7.13	$ -	$ -	1.02	2.12	35.0%	50.0%
Other Industrial	New	Heating	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.39	$ -	$ -	1.02	0.90	5.0%	85.0%
Other Industrial	New	Process	Gas Boiler - Burner Control Optimization	Optimized burner controls	Retrofit	Average performance	Optimized burner controls	Retro3Slow	0	sqft	1	1	0.16%	GBLR_O2TRM-Heating-ILTRM-v4.0-1	GBLR_O2TRM-Heating-MEMD-2018-1	GBLR_O2TRM-Heating-ILTRM-v4.0-1	18	$ 2.39	$ -	$ -	1.02	0.62	5.0%	85.0%
Other Industrial	New	Heating	HVAC - Demand Controlled Ventilation	DCV enabled	Retrofit	Constant ventilation	DCV enabled	RetroEven20	0	sqft	1	97	0.16%	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	VENT_DCV-Heating-7PLN-v5-8	15	$ 0.16	$ -	$ 0.02	1.18	0.02	55.0%	75.0%
Other Industrial	New	Heating	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.04	$ -	$ -	1.18	1.37	15.0%	55.0%
Other Industrial	New	Process	Gas Boiler - Stack Economizer	Economizer installed	Retrofit	None	Economizer installed	Retro12Med	0	sqft	1	1	0.16%	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	GBLR_ECON-Heating-XCELCO-2017-18-1	12	$ 4.04	$ -	$ -	1.18	0.94	15.0%	55.0%
Other Industrial	New	Heating	Gas Furnace Tube Inserts	Tube inserts installed	Retrofit	None	Tube inserts installed	Retro3Slow	0	sqft	1	97	0.16%	N/A	N/A	N/A	5	$ 1.00	$ -	$ -	1.00	-	0.0%	0.0%
Other Industrial	New	Heating	Space Heating - Heat Recovery Ventilator	HRV installed	Retrofit	None	HRV installed	RetroEven20	0	sqft	1	97	0.16%	HRV-Heating-ILTRM-v5.0-1	HRV-Heating-ILTRM-v5.0-3	HRV-Heating-ILTRM-v5.0-3	15	$ 0.42	$ -	$ -	1.18	-	5.0%	10.0%
Other Industrial	New	Heating	Thermostat - Programmable	Programmable thermostat installed	Retrofit	Manual control	Programmable thermostat installed	RetroEven20	0	sqft	1	97	0.16%	STAT-Cooling/Heating-ILTRM-v4.0-6	STAT-Cooling/Heating-ILTRM-v4.0-6	BEST	4	$ 0.19	$ -	$ -	1.04	-	25.0%	40.0%
Other Industrial	New	Heating	Thermostat - WiFi Enabled	Wi-Fi/interactive thermostat installed	Retrofit	Manual control	Wi-Fi/interactive thermostat installed	RetroEven20	0	sqft	1	97	0.16%	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	STAT_WIFI-All-7PLN-v2-1	5	$ 0.75	$ -	$ 0.01	1.18	-	5.0%	20.0%
Other Industrial	New	Heating	Destratification Fans (HVLS)	Fans installed	Retrofit	None/Standard ventilation	Fans installed	RetroEven20	0	sqft	1	97	0.16%	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	HVLS-Heating-AEG-v5.0-121	10	$ 0.67	$ -	$ -	1.18	-	15.0%	30.0%
Other Industrial	New	Heating	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 12.63	$ -	$ -	1.06	3.47	45.0%	50.0%
Other Industrial	New	Process	Gas Boiler - Insulate Steam Lines/Condensate Tank	Lines and condensate tank insulated	Retrofit	No insulation	Lines and condensate tank insulated	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	GBLR_PINS_STM-Heating-PGE-R7-1	11	$ 12.63	$ -	$ -	1.06	2.39	45.0%	50.0%
Other Industrial	New	Heating	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 23.59	$ -	$ -	1.06	2.33	45.0%	50.0%
Other Industrial	New	Process	Gas Boiler - Insulate Hot Water Lines	Insulated water lines	Retrofit	No insulation	Insulated water lines	RetroEven20	0	sqft	1	1	0.16%	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	GBLR_PINS_HW-Heating-PGE-R7-1	11	$ 23.59	$ -	$ -	1.06	1.60	45.0%	50.0%
Other Industrial	New	Process	Process - Insulate Heated Process Fluids	Insulated process fluid lines	Retrofit	No insulation	Insulated process fluid lines	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	15.0%	65.0%
Other Industrial	New	Process	Process Heat Recovery	HR system installed	Retrofit	No HR system	HR system installed	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	5	$ 1.00	$ -	$ -	1.00	-	5.0%	50.0%
Other Industrial	New	Heating	Building Automation System	Automation system installed and programmed	Retrofit	No control system	Automation system installed and programmed	Retro1Slow	0	sqft	1	97	0.16%	COM_EMS-All-XCELCO-2017-18-3	BEHAV_EIS-All-CPUC-2018_PG-10	COM_EMS-All-XCELCO-2017-18-3	15	$ 0.34	$ -	$ -	1.00	-	5.0%	65.0%
Other Industrial	New	Heating	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	97	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Other Industrial	New	Process	Steam System Efficiency Improvements	Optimized system	Retrofit	Average system efficiency	Optimized system	Retro1Slow	0	sqft	1	1	0.16%	n/a	n/a	n/a	5	$ -	$ -	$ -	1.08	-	30.0%	60.0%
Other Industrial	New	Heating	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.73	$ 0.16	$ -	1.00	-	5.0%	50.0%
Other Industrial	New	Process	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.73	$ 0.16	$ -	1.00	-	5.0%	50.0%
Other Industrial	New	Miscellaneous	Strategic Energy Management	Energy management system installed and programmed	Retrofit	No energy management system	Energy management system installed and programmed	RetroEven20	0	employee	1	1	0.16%	BEHAV_SEM-All-CPUC-2018_PG-26	BEHAV_SEM-All-CPUC-2018_PG-26	AEG Research	5	$ 6.73	$ 0.16	$ -	1.00	-	5.0%	50.0%
Other Industrial	New	Heating	Commissioning	Optimized HVAC design and controls	Retrofit	New construction code	Optimized HVAC design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Other Industrial	New	Process	Commissioning	Optimized process design and controls	Retrofit	New construction code	Optimized process design and controls	Retro12Med	0	employee	1	1	0.16%	TBD	TBD	TBD	3	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Other Industrial	New	Heating	Retrocommissioning	Optimized HVAC flow and controls	Retrofit	Vintage/existing building	Optimized HVAC flow and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Other Industrial	New	Process	Retrocommissioning	Optimized process design and controls	Retrofit	Vintage/existing building	Optimized process design and controls	RetroEven20	0	employee	1	1	0.16%	COM_RCX-Heating-7PLN-v5-18	COM_RCX-Heating-7PLN-v5-18	n/a	5	$ -	$ -	$ -	1.04	-	0.0%	0.0%
Food Products	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Food Products	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Agriculture	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Agriculture	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Primary Metals	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Primary Metals	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Stone, Clay, and Glass	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Stone, Clay, and Glass	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Petroleum	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Petroleum	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Paper and Printing	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Paper and Printing	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Instruments	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Instruments	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Wood and Lumber Products	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Wood and Lumber Products	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Other Industrial	Existing	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%
Other Industrial	New	Heating	Condensing RTU	tbd	Retrofit	tbd	tbd	Retro5Med	0	employee	1	1	0.16%	tbd	tbd	tbd	1	$ -	$ -	$ -	1.00	-	0.0%	0.0%