Michigan - Residential Measure Database

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Annual kWh	% Savings	Annual kWh Savings	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Measure/End Use Description	Base Saturation	EE Saturation
7010	DFHP - SEER 17 with 95 AFUE furnace	SF	ROB	All			1409.9	0.2	0.2			3.3	0	15	$833.57	Installation of SEER 17/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7011	DFHP - SEER 18 with 95 AFUE furnace	SF	ROB	All			1350.5	0.3	0.3			3.7	0	15	$1,189.14	Installation of SEER 18/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7012	Furnace/AC - SEER 15	SF	ROB	All			531.2	0.5	0.5			-1.5	0	15	$555.71	Installation of 15 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7013	Furnace/AC - SEER 16	SF	ROB	All			403.1	0.5	0.5			-0.9	0	15	$833.57	Installation of 16 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7014	Furnace/AC - SEER 17	SF	ROB	All			564.6	0.7	0.7			-1.3	0	15	$1,111.42	Installation of 17 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7015	GSHP - EER 17 ASHP Base	SF	ROB	All			6042.7	0.4	0.4			0.0	0	15	$20,316.19	Installation of EER 17 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7016	GSHP - EER 19 ASHP Base	SF	ROB	All			6455.8	0.6	0.6			0.0	0	15	$20,316.19	Installation of EER 19 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7017	High efficiency 92 AFUE furnace with ECM	SF	ROB	All			596.0	0.3	0.3			19.8	0	15	$1,097.94	Installation of 92 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7018	High efficiency 94 AFUE furnace with ECM	SF	ROB	All			596.0	0.3	0.3			23.1	0	15	$1,354.65	Installation of 94 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7019	High efficiency 95 AFUE furnace with ECM	SF	ROB	All			596.0	0.3	0.3			24.8	0	15	$1,483.00	Installation of 95 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7020	O&M Tune-up - furnace only	SF	Retrofit	NLI			0.0	0.0	0.0			8.4	0	3	$139.00	5% increase in furnace efficiency - in homes with gas furnaces	81.00%	49.50%
7021	O&M Tune-up - furnace only	SF	Retrofit	LI	-	-	0.0	0.0	0.0			21.5	0	3	$139.00	5% increase in furnace efficiency - in homes with gas furnaces	81.00%	49.50%
7022	RCA 10% improvement	SF	Retrofit	All			92.7	0.2	0.2			0.0	0	5	$139.00	Refrigerant charge and air flow adjustment - 10% improvement - in homes with gas furnace and central AC	62.00%	23.80%
7023	RCA 15% improvement	SF	Retrofit	All			139.1	0.3	0.3			0.0	0	5	$438.81	Refrigerant charge and air flow adjustment - 15% improvement - in homes with gas furnace and central AC	62.00%	23.80%
7024	RCA 5% improvement	SF	Retrofit	All			46.4	0.1	0.1			0.0	0	5	$115.08	Refrigerant charge and air flow adjustment - 5% improvement - in homes with gas furnace and central AC	62.00%	23.80%
7025	Setback thermostat - full setback	SF	Retrofit	All			106.6	0.0	0.0			11.6	0	9	$56.37	Full thermostat setback per MEMD - all heating/cooling combinations	100.00%	53.00%
7026	Setback thermostat - moderate setback	SF	Retrofit	NLI			77.1	0.0	0.0			5.9	0	9	$56.37	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	53.00%
7027	Setback thermostat - moderate setback	SF	Retrofit	LI	-	-	77.1	0.0	0.0			0.4	0	9	$56.37	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	53.00%
7028	Whole House Fan	SF	Retrofit	All			53.9	0.0	0.0			0.0	0	15	$1,903.21	Installing a whole house fan to ventilate homes - all heating/cooling combinations	100.00%	4.20%
7029	High efficiency 93 AFUE furnace with ECM	SF	ROB	All			596.0	0.3	0.3			21.5	0	15	$1,225.55	Installation of 93 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7030	High efficiency 96 AFUE furnace with ECM	SF	ROB	All			596.0	0.3	0.3			26.4	0	15	$1,610.60	Installation of 96 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7031	High efficiency 97 AFUE furnace with ECM	SF	ROB	All			596.0	0.3	0.3			28.1	0	15	$1,738.95	Installation of 97 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7032	High efficiency 98 AFUE furnace with ECM	SF	ROB	All	-	-	596.0	0.3	0.3			29.7	0	15	$1,867.30	Installation of 98 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	49.50%
7033	ECM Furnace Fan	SF	Retrofit	All	-	-	596.0	0.3	0.3			-0.7	0	18	$97.00	Installing an efficient furnace fan motor - in homes with gas furnaces	81.00%	49.50%
7034	ASHP - SEER 19	SF	ROB	All			1454.0	0.6	0.6			0.0	0	15	$1,532.23	Installation of SEER 19 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7035	DFHP - SEER 19 with 95 AFUE furnace	SF	ROB	All			1616.1	0.6	0.6			3.7	0	15	$1,546.14	Installation of SEER 19/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7036	Furnace/AC - SEER 18	SF	ROB	All			667.3	1.1	1.1			-1.2	0	15	$1,975.35	Installation of 18 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7037	Furnace/AC - SEER 19	SF	ROB	All			758.6	1.3	1.3			-1.2	0	15	$2,332.35	Installation of 19 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7038	ASHP - SEER 20	SF	ROB	All			1938.5	1.2	1.2			0.0	0	15	$1,889.25	Installation of SEER 20 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7039	DFHP - SEER 20 with 95 AFUE furnace	SF	ROB	All			2189.8	1.2	1.2			3.7	0	15	$1,903.14	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7040	Furnace/AC - SEER 20	SF	ROB	All			840.8	1.6	1.6			-1.2	0	15	$2,689.35	Installation of 20 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7041	ASHP - SEER 21	SF	ROB	All			2810.6	2.6	2.6			0.0	0	15	$2,111.76	Installation of SEER 21 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7042	DFHP - SEER 21 with 95 AFUE furnace	SF	ROB	All			3222.6	2.6	2.6			3.7	0	15	$2,125.65	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7043	Furnace/AC - SEER 21	SF	ROB	All			915.1	1.8	1.8			-1.2	0	15	$2,911.86	Installation of 21 SEER air conditioner - baseline is 13 SEER AC	62.00%	29.40%
7044	SEER21 Minisplit Heat pump	SF	ROB	All			4659.5	0.8	0.8			0.0	0	15	$2,111.74	Installation of SEER 21 minisplit heat pump in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7045	SEER21 Minisplit Heat pump	SF	Retrofit	All			10722.6	-1.5	-1.5			0.0	0	15	$4,334.05	Installation of SEER 21 minisplit heat pump in homes with electric heating/cooling - baseline is electic furnace / central air conditioning	0.25%	0.00%
7046	Boiler Tune-up	SF	Retrofit	NLI			0.0	0.0	0.0			8.8	0	5	$139.00	Increasing boiler efficiency by 5% - in homes with gas boilers	9.00%	49.50%
7047	Boiler Tune-up	SF	Retrofit	LI			0.0	0.0	0.0			8.8	0	5	$139.00	Increasing boiler efficiency by 5% - in homes with gas boilers	9.00%	49.50%
7048	Boiler reset control	SF	Retrofit	All			0.0	0.0	0.0			7.1	0	20	$56,000.00	Installing boiler reset controls - in single-family homes with boilers	9.00%	49.50%
7049	Boiler 87% plus AFUE 82 AFUE BASE	SF	ROB	All			0.0	0.0	0.0			10.7	0	15	$1,100.00	Installing 87 AFUE boilers to replace standard boilers - in homes with gas boilers	9.00%	49.50%
7050	Boiler 92% plus AFUE 82 AFUE BASE	SF	ROB	All			-431.2	0.0	0.0			51.7	0	15	$1,954.00	Installing 92 AFUE boilers to replace standard boilers - in homes with gas boilers	9.00%	49.50%
7051	Boiler 95% plus AFUE 82 AFUE BASE	SF	ROB	All			-431.2	0.0	0.0			55.2	0	15	$2,436.00	Installing 95 AFUE boilers to replace standard boilers - in homes with gas boilers	9.00%	49.50%
7052	ENERGY STAR Room AC	SF	NC	All	470.2	13.2%	62	0.108	0.108	-	-	0	0	15	$75.00	Installation of ENERGY STAR Room AC	16.75%	0.00%
7053	CEE Tier 2 Room AC	SF	NC	All	470.2	17.0%	80	0.138	0.138	-	-	0	0	12	$250.00	Installation of CEE Tier 2 Room AC	16.75%	0.00%
7054	ASHP - SEER 15	SF	NC	All			642.1	0.6	0.6			0.0	0	15	$293.81	Installation of SEER 15 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7055	ASHP - SEER 16	SF	NC	All			1146.2	0.6	0.6			0.0	0	15	$587.62	Installation of SEER 16 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7056	ASHP - SEER 17	SF	NC	All			1341.8	0.6	0.6			0.0	0	15	$881.42	Installation of SEER 17 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7057	ASHP - SEER 18	SF	NC	All			1394.4	0.7	0.7			0.0	0	15	$1,175.23	Installation of SEER 18 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7058	DFHP - SEER 15 with 95 AFUE furnace	SF	NC	All			809.8	0.3	0.3			3.8	0	15	$277.86	Installation of SEER 15/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%

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7059	DFHP - SEER 16 with 95 AFUE furnace	SF	NC	All			899.2	0.2	0.2			4.6	0	15	$555.71	Installation of SEER 16/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7060	DFHP - SEER 17 with 95 AFUE furnace	SF	NC	All			1282.2	0.2	0.2			4.0	0	15	$833.57	Installation of SEER 17/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7061	DFHP - SEER 18 with 95 AFUE furnace	SF	NC	All			1188.8	0.3	0.3			4.3	0	15	$1,189.14	Installation of SEER 18/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7062	Furnace/AC - SEER 15	SF	NC	All			334.0	0.3	0.3			-0.7	0	15	$555.71	Installation of 15 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7063	Furnace/AC - SEER 16	SF	NC	All			217.4	0.4	0.4			-0.4	0	15	$833.57	Installation of 16 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7064	Furnace/AC - SEER 17	SF	NC	All			368.3	0.6	0.6			-0.8	0	15	$1,111.42	Installation of 17 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7065	GSHP - EER 17 ASHP Base	SF	NC	All			6071.9	0.5	0.5			0.0	0	15	$20,316.19	Installation of EER 17 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	1.00%	0.00%
7066	GSHP - EER 19 ASHP Base	SF	NC	All			6453.9	0.7	0.7			0.0	0	15	$20,316.19	Installation of EER 19 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	1.00%	0.00%
7067	High efficiency 92 AFUE furnace with ECM	SF	NC	All			556.0	0.3	0.3			11.7	0	15	$1,097.94	Installation of 92 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7068	High efficiency 94 AFUE furnace with ECM	SF	NC	All			556.0	0.3	0.3			13.6	0	15	$1,354.65	Installation of 94 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7069	High efficiency 95 AFUE furnace with ECM	SF	NC	All			556.0	0.3	0.3			14.6	0	15	$1,483.00	Installation of 95 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7070	Setback thermostat - full setback	SF	NC	All			66.6	0.0	0.0			6.6	0	9	$18.15	Full thermostat setback per MEMD - all heating/cooling combinations	100.00%	0.00%
7071	Setback thermostat - moderate setback	SF	NC	All			54.7	0.0	0.0			3.7	0	9	$18.15	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	0.00%
7072	Whole House Fan	SF	NC	All			40.8	0.0	0.0			0.0	0	15	$902.35	Installing a whole house fan to ventilate homes - all heating/cooling combinations	100.00%	0.00%
7073	High efficiency 93 AFUE furnace with ECM	SF	NC	All			556.0	0.3	0.3			12.7	0	15	$1,225.55	Installation of 93 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7074	High efficiency 96 AFUE furnace with ECM	SF	NC	All			556.0	0.3	0.3			15.6	0	15	$1,610.60	Installation of 96 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7075	High efficiency 97 AFUE furnace with ECM	SF	NC	All			556.0	0.3	0.3			16.5	0	15	$1,738.95	Installation of 97 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7076	High efficiency 98 AFUE furnace with ECM	SF	NC	All	-	-	556.0	0.3	0.3			17.5	0	15	$1,867.30	Installation of 98 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	81.00%	0.00%
7077	ECM Furnace Fan	SF	NC	All	-	-	556.0	0.3	0.3			-0.7	0	18	$97.00	Installing an efficient furnace fan motor - in homes with gas furnaces	81.00%	0.00%
7078	ASHP - SEER 19	SF	NC	All			1331.7	0.6	0.6			0.0	0	15	$1,532.23	Installation of SEER 19 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7079	DFHP - SEER 19 with 95 AFUE furnace	SF	NC	All			1427.4	0.6	0.6			4.3	0	15	$1,546.14	Installation of SEER 19/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7080	Furnace/AC - SEER 18	SF	NC	All			518.3	1.0	1.0			-0.6	0	15	$1,975.35	Installation of 18 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7081	Furnace/AC - SEER 19	SF	NC	All			589.18257	1.257	1.257			-0.639549	0	15	$2,332.35	Installation of 19 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7082	ASHP - SEER 20	SF	NC	All			1743.8776	1.129	1.129			0	0	15	$1,889.25	Installation of SEER 20 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7083	DFHP - SEER 20 with 95 AFUE furnace	SF	NC	All			1942.8733	1.253	1.3			4.3	0	15	$1,903.14	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7084	Furnace/AC - SEER 20	SF	NC	All			653.5	1.5	1.5			-0.6	0	15	$2,689.35	Installation of 20 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7085	ASHP - SEER 21	SF	NC	All			2485.7	2.3	2.3			0.0	0	15	$2,111.76	Installation of SEER 21 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7086	DFHP - SEER 21 with 95 AFUE furnace	SF	NC	All			2870.7	2.7	2.7			4.3	0	15	$2,125.65	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7087	Furnace/AC - SEER 21	SF	NC	All			710.8	1.7	1.7			-0.6	0	15	$2,911.86	Installation of 21 SEER air conditioner - baseline is 13 SEER AC	62.00%	0.00%
7088	SEER21 Minisplit Heat pump	SF	NC	All			1919.1	0.7	0.7			0.0	0	15	$2,111.74	Installation of SEER 21 minisplit heat pump in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7089	Boiler 87% plus AFUE 82 AFUE BASE	SF	NC	All			0.0	0.0	0.0			6.2	0	15	$1,100.00	Installing 87 AFUE boilers to replace standard boilers - in homes with gas boilers	9.00%	0.00%
7090	Boiler 92% plus AFUE 82 AFUE BASE	SF	NC	All			-258.8	0.0	0.0			32.2	0	15	$1,954.00	Installing 92 AFUE boilers to replace standard boilers - in homes with gas boilers	9.00%	0.00%
7091	Boiler 95% plus AFUE 82 AFUE BASE	SF	NC	All			-258.8	0.0	0.0			34.2	0	15	$2,436.00	Installing 95 AFUE boilers to replace standard boilers - in homes with gas boilers	9.00%	0.00%
7092	ENERGY STAR Room AC	MF	ROB	All	470.2	13.2%	62	0.108	0.108	-	-	0	0	15	$75.00	Installation of ENERGY STAR Room AC	47.45%	20.00%
7093	CEE Tier 2 Room AC	MF	ROB	All	470.2	17.0%	80	0.138	0.138	-	-	0	0	12	$250.00	Installation of CEE Tier 2 Room AC	47.45%	20.00%
7094	Room AC recycling	MF	Retrofit	All	113.0	100.0%	113	0.107	0.107	-	-	0	0	8	$49.00	Retirement of tertiary room AC	5.49%	0.00%
7095	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	MF	ROB	All			36794.2	6.8	6.8			0.0	0	20	$9,013.11	Installation of efficient reciprocating chiller (2.8 COP; 3.41 IPLV) in apartment buildings with chillers	0.12%	29.40%
7096	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	MF	ROB	All			66535.5	14.7	14.7			0.0	0	20	$18,407.87	Installation of efficient reciprocating chiller (2.8 COP; 3.89 IPLV) in apartment buildings with chillers	0.12%	29.40%
7097	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	MF	ROB	All			85178.7	18.2	18.2			0.0	0	20	$23,917.23	Installation of efficient reciprocating chiller (2.8 COP; 4.24 IPLV) in apartment buildings with chillers	0.12%	29.40%
7098	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	MF	ROB	All			22051.8	19.9	19.9			0.0	0	20	$11,715.95	Installation of efficient reciprocating chiller (3.08 COP; 3.36 IPLV) in apartment buildings with chillers	0.12%	29.40%
7099	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	MF	ROB	All			55547.5	26.1	26.1			0.0	0	20	$19,936.13	Installation of efficient reciprocating chiller (3.08 COP; 3.76 IPLV) in apartment buildings with chillers	0.12%	29.40%
7100	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	MF	ROB	All			82623.7	33.3	33.3			0.0	0	20	$28,325.32	Installation of efficient reciprocating chiller (3.08 COP; 4.28 IPLV) in apartment buildings with chillers	0.12%	29.40%
7101	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	MF	ROB	All			99595.2	36.5	36.5			0.0	0	20	$33,391.17	Installation of efficient reciprocating chiller (3.08 COP; 4.67 IPLV) in apartment buildings with chillers	0.12%	29.40%
7102	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	MF	ROB	All			40658.3	36.7	36.7			0.0	0	20	$21,246.06	Installation of efficient reciprocating chiller (3.36 COP; 3.66 IPLV) in apartment buildings with chillers	0.12%	29.40%
7103	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	MF	ROB	All			71371.0	42.4	42.4			0.0	0	20	$28,858.71	Installation of efficient reciprocating chiller (3.36 COP; 4.10 IPLV) in apartment buildings with chillers	0.12%	29.40%
7104	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	MF	ROB	All			96197.6	48.9	48.9			0.0	0	20	$36,587.70	Installation of efficient reciprocating chiller (3.36 COP; 4.67 IPLV) in apartment buildings with chillers	0.12%	29.40%

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Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Annual kWh	% Savings	Annual kWh Savings	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Measure/End Use Description	Base Saturation	EE Saturation
7105	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	MF	ROB	All			111759.1	51.9	51.9			0.0	0	20	$41,175.06	Installation of efficient reciprocating chiller (3.36 COP; 5.09 IPLV) in apartment buildings with chillers	0.12%	29.40%
7106	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	MF	ROB	All			39962.1	7.9	7.9			0.0	0	20	$10,113.35	Installation of efficient screw chiller (2.8 COP; 3.46 IPLV) in apartment buildings with chillers	0.12%	29.40%
7107	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	MF	ROB	All			39375.1	13.9	13.9			0.0	0	20	$13,823.94	Installation of efficient screw chiller (2.8 COP; 3.64 IPLV) in apartment buildings with chillers	0.12%	29.40%
7108	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	MF	ROB	All			118543.3	21.2	21.2			0.0	0	20	$30,491.67	Installation of efficient screw chiller (2.8 COP; 4.75 IPLV) in apartment buildings with chillers	0.12%	29.40%
7109	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	MF	ROB	All			23624.3	19.9	19.9			0.0	0	20	$11,715.95	Installation of efficient screw chiller (3.08 COP; 3.36 IPLV) in apartment buildings with chillers	0.12%	29.40%
7110	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	MF	ROB	All			60004.6	27.1	27.1			0.0	0	20	$20,662.97	Installation of efficient screw chiller (3.08 COP; 3.80 IPLV) in apartment buildings with chillers	0.12%	29.40%
7111	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	MF	ROB	All			59470.4	32.6	32.6			0.0	0	20	$24,079.10	Installation of efficient screw chiller (3.08 COP; 4.00 IPLV) in apartment buildings with chillers	0.12%	29.40%
7112	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	MF	ROB	All			131541.8	39.3	39.3			0.0	0	20	$39,248.83	Installation of efficient screw chiller (3.08 COP; 5.22 IPLV) in apartment buildings with chillers	0.12%	29.40%
7113	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	MF	ROB	All			43557.0	36.6	36.6			0.0	0	20	$21,246.06	Installation of efficient screw chiller (3.36 COP; 3.66 IPLV) in apartment buildings with chillers	0.12%	29.40%
7114	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	MF	ROB	All			76915.0	43.3	43.3			0.0	0	20	$29,621.65	Installation of efficient screw chiller (3.36 COP; 4.15 IPLV) in apartment buildings with chillers	0.12%	29.40%
7115	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	MF	ROB	All			76425.6	48.3	48.3			0.0	0	20	$33,443.22	Installation of efficient screw chiller (3.36 COP; 4.42 IPLV) in apartment buildings with chillers	0.12%	29.40%
7116	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	MF	ROB	All			142509.4	54.4	54.4			0.0	0	20	$46,553.67	Installation of efficient screw chiller (3.36 COP; 5.69 IPLV) in apartment buildings with chillers	0.12%	29.40%
7117	ASHP - SEER 15	MF	ROB	All			485.2	0.3	0.3			0.0	0	15	$293.81	Installation of SEER 15 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7118	ASHP - SEER 16	MF	ROB	All			742.4	0.2	0.2			0.0	0	15	$587.62	Installation of SEER 16 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7119	ASHP - SEER 17	MF	ROB	All			911.3	0.2	0.2			0.0	0	15	$881.42	Installation of SEER 17 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7120	ASHP - SEER 18	MF	ROB	All			987.7	0.2	0.2			0.0	0	15	$1,175.23	Installation of SEER 18 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7121	Boiler 85% Ec	MF	Retrofit	All			0.0	0.0	0.0			138.0	0	20	$7,232.27	Boiler economizer; 5% increase in boiler efficiency - in apartments with gas boilers and no central AC	20.24%	49.50%
7122	Boiler turndown control	MF	Retrofit	All			-132.2	0.0	0.0			170.6	0	15	$195.00	Installing boiler turndown controls - in apartment buildings with boilers	20.24%	49.50%
7123	CHW reset 10 deg	MF	Retrofit	All			15371.8	-0.3	-0.3			0.0	0	5	$158.98	Chilled water reset control strategy (10 degrees) - in apartment buildings with chillers	0.12%	29.40%
7124	CHW reset 5 deg	MF	Retrofit	All			8697.3	-0.1	-0.1			0.0	0	5	$158.98	Chilled water reset control strategy (5 degrees) - in apartment buildings with chillers	0.12%	29.40%
7125	DFHP - SEER 15 with 95 AFUE furnace	MF	ROB	All			686.8	0.3	0.3			12.9	0	15	$277.86	Installation of SEER 15/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7126	DFHP - SEER 16 with 95 AFUE furnace	MF	ROB	All			822.0	0.2	0.2			17.2	0	15	$555.71	Installation of SEER 16/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7127	DFHP - SEER 17 with 95 AFUE furnace	MF	ROB	All			1076.2	0.2	0.2			14.1	0	15	$833.57	Installation of SEER 17/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7128	DFHP - SEER 18 with 95 AFUE furnace	MF	ROB	All			1100.1	0.2	0.2			1.6	0	15	$1,189.14	Installation of SEER 18/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7129	Furnace/AC - SEER 15	MF	ROB	All			335.3	0.5	0.5			-1.4	0	15	$555.71	Installation of 15 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7130	Furnace/AC - SEER 16	MF	ROB	All			235.4	0.4	0.4			-2.1	0	15	$833.57	Installation of 16 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7131	Furnace/AC - SEER 17	MF	ROB	All			345.1	0.5	0.5			-2.4	0	15	$1,111.42	Installation of 17 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7132	High efficiency 92 AFUE furnace with ECM	MF	ROB	All			396.7	0.3	0.3			12.4	0	15	$1,097.94	Installation of 92 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7133	High efficiency 93 AFUE furnace with ECM	MF	ROB	All			396.7	0.3	0.3			13.5	0	15	$1,225.55	Installation of 93 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7134	High efficiency 94 AFUE furnace with ECM	MF	ROB	All			396.7	0.3	0.3			14.5	0	15	$1,354.65	Installation of 94 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7135	High efficiency 95 AFUE furnace with ECM	MF	ROB	All			396.7	0.3	0.3			15.5	0	15	$1,483.00	Installation of 95 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7136	High efficiency 96 AFUE furnace with ECM	MF	ROB	All			396.7	0.3	0.3			16.6	0	15	$1,610.60	Installation of 96 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7137	High efficiency 97 AFUE furnace with ECM	MF	ROB	All			396.7	0.3	0.3			17.6	0	15	$1,738.95	Installation of 97 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7138	High efficiency 98 AFUE furnace with ECM	MF	ROB	All	-	-	396.7	0.3	0.3			18.6	0	15	$1,867.30	Installation of 98 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	49.50%
7139	ECM Furnace Fan	MF	Retrofit	All	-	-	396.7	0.3	0.3			-0.7	0	18	$97.00	Installing an efficient furnace fan motor - in homes with gas furnaces	66.88%	49.50%
7140	O&M Tune-up - furnace only	MF	Retrofit	NLI			0.0	0.0	0.0			5.4	0	3	$139.00	5% increase in furnace efficiency - in homes with gas furnaces	66.88%	49.50%
7141	O&M Tune-up - furnace only	MF	Retrofit	LI			0.0	0.0	0.0	0.0	0.0%	5.4	0	3	$139.00	5% increase in furnace efficiency - in homes with gas furnaces	66.88%	49.50%
7142	O2 Trim Control	MF	Retrofit	All			0.0	0.0	0.0			2.8	0	15	$255.00	1.1% improvement in boiler efficiency resulting from the addition of oxygen trim controls - apartment buildings with boilers	6.75%	49.50%
7143	PTAC 9.3 EER	MF	ROB	All			136.1	0.2	0.2			0.0	0	15	$135.59	Installation of 9.3 EER packaged terminal air conditioner (PTAC) - in homes with PTACs	42.00%	29.40%
7144	PTHP 9.1 EER	MF	ROB	All			291.9	0.2	0.2			0.0	0	15	$169.21	Installation of 9.1 EER packaged terminal heat pump (PTHP) - in homes with PTHPs	5.50%	29.40%
7145	RCA 10% improvement	MF	Retrofit	All			82.6	0.2	0.2			0.0	0	5	$139.00	Refrigerant charge and air flow adjustment - 10% improvement - in homes with gas furnace and central AC	36.12%	23.80%
7146	RCA 15% improvement	MF	Retrofit	All			123.9	0.3	0.3			0.0	0	5	$438.81	Refrigerant charge and air flow adjustment - 15% improvement - in homes with gas furnace and central AC	36.12%	23.80%
7147	RCA 5% improvement	MF	Retrofit	All			41.3	0.1	0.1			0.0	0	5	$115.08	Refrigerant charge and air flow adjustment - 5% improvement - in homes with gas furnace and central AC	36.12%	23.80%

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7148	Setback thermostat - full setback	MF	Retrofit	All			108.6	0.0	0.0			3.0	0	9	$30.97	Full thermostat setback per MEMD - all heating/cooling combinations	100.00%	17.00%
7149	Setback thermostat - moderate setback	MF	Retrofit	NLI			70.2	0.0	0.0			1.7	0	9	$30.97	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	17.00%
7150	Setback thermostat - moderate setback	MF	Retrofit	LI			70.2	0.0	0.0	0.0	0.0%	1.7	0	9	$30.97	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	17.00%
7151	Whole House Fan	MF	Retrofit	All			70.4	0.0	0.0			0.0	0	15	$1,045.70	Installing a whole house fan to ventilate homes - all heating/cooling combinations	100.00%	4.20%
7152	ASHP - SEER 19	MF	ROB	All			1164.1	0.4	0.4			0.0	0	15	$1,532.23	Installation of SEER 19 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7153	ASHP - SEER 20	MF	ROB	All			1545.0	0.9	0.9			0.0	0	15	$1,889.25	Installation of SEER 20 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7154	ASHP - SEER 21	MF	ROB	All			2230.7	1.9	1.9			0.0	0	15	$2,111.76	Installation of SEER 21 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7155	DFHP - SEER 19 with 95 AFUE furnace	MF	ROB	All			1302.9	0.4	0.4			1.6	0	15	$1,546.14	Installation of SEER 19/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7156	DFHP - SEER 20 with 95 AFUE furnace	MF	ROB	All			1741.0	0.9	0.9			1.6	0	15	$1,903.14	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7157	DFHP - SEER 21 with 95 AFUE furnace	MF	ROB	All			2529.6	1.9	1.9			1.6	0	15	$2,125.65	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	2.75%	29.40%
7158	Furnace/AC - SEER 18	MF	ROB	All			486.2	0.8	0.8			-2.0	0	15	$1,975.35	Installation of 18 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7159	Furnace/AC - SEER 19	MF	ROB	All			552.8	1.0	1.0			-2.0	0	15	$2,332.35	Installation of 19 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7160	Furnace/AC - SEER 20	MF	ROB	All			612.7	1.2	1.2			-2.0	0	15	$2,689.35	Installation of 20 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7161	Furnace/AC - SEER 21	MF	ROB	All			666.8	1.3	1.3			-2.0	0	15	$2,911.86	Installation of 21 SEER air conditioner - baseline is 13 SEER AC	36.12%	29.40%
7162	SEER21 Minisplit Heat pump	MF	ROB	All			2560.1	0.5	0.5			0.0	0	15	$1,160.27	Installation of SEER 21 minisplit heat pump in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	29.40%
7163	SEER21 Minisplit Heat pump	MF	Retrofit	All			5891.4	-0.8	-0.8			0.0	0	15	$2,381.29	Installation of SEER 21 minisplit heat pump in homes with electric heating/cooling - baseline is electic furnace / central air conditioning	2.75%	0.00%
7164	Boiler Tune-up	MF	Retrofit	NLI			0.0	0.0	0.0			11.0	0	5	$139.00	Increasing boiler efficiency by 5% - in homes with gas boilers	20.24%	49.50%
7165	Boiler Tune-up	MF	Retrofit	LI			0.0	0.0	0.0	0.0	0.0%	11.0	0	5	$139.00	Increasing boiler efficiency by 5% - in homes with gas boilers	20.24%	49.50%
7166	Boiler 87% plus AFUE 82 AFUE BASE	MF	ROB	All			0.0	0.0	0.0			13.3	0	20	$1,100.00	Installing 87 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	49.50%
7167	Boiler 90% plus AFUE 82 AFUE BASE	MF	ROB	All			-695.3	0.0	0.0			29.4	0	20	$1,633.00	Installing 90 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	49.50%
7168	Boiler 92% plus AFUE 82 AFUE BASE	MF	ROB	All			-666.2	0.0	0.0			35.9	0	20	$1,954.00	Installing 92 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	49.50%
7169	Boiler 95% plus AFUE 82 AFUE BASE	MF	ROB	All			-666.2	0.0	0.0			42.5	0	20	$2,436.00	Installing 95 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	49.50%
7170	ENERGY STAR Room AC	MF	NC	All	470.2	13.2%	62	0.108	0.108	-	-	0	0	15	$75.00	Installation of ENERGY STAR Room AC	47.45%	0.00%
7171	CEE Tier 2 Room AC	MF	NC	All	470.2	17.0%	80	0.138	0.138	-	-	0	0	12	$250.00	Installation of CEE Tier 2 Room AC	47.45%	0.00%
7172	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	MF	NC	All			39855.7	2.0	2.0			0.0	0	20	$9,013.11	Installation of efficient reciprocating chiller (2.8 COP; 3.41 IPLV) in apartment buildings with chillers	0.12%	0.00%
7173	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	MF	NC	All			72948.6	4.5	4.5			0.0	0	20	$18,407.87	Installation of efficient reciprocating chiller (2.8 COP; 3.89 IPLV) in apartment buildings with chillers	0.12%	0.00%
7174	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	MF	NC	All			93462.3	5.2	5.2			0.0	0	20	$23,917.23	Installation of efficient reciprocating chiller (2.8 COP; 4.24 IPLV) in apartment buildings with chillers	0.12%	0.00%
7175	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	MF	NC	All			24624.9	21.2	21.2			0.0	0	20	$11,715.95	Installation of efficient reciprocating chiller (3.08 COP; 3.36 IPLV) in apartment buildings with chillers	0.12%	0.00%
7176	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	MF	NC	All			60908.0	23.0	23.0			0.0	0	20	$19,936.13	Installation of efficient reciprocating chiller (3.08 COP; 3.76 IPLV) in apartment buildings with chillers	0.12%	0.00%
7177	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	MF	NC	All			91034.5	25.4	25.4			0.0	0	20	$28,325.32	Installation of efficient reciprocating chiller (3.08 COP; 4.28 IPLV) in apartment buildings with chillers	0.12%	0.00%
7178	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	MF	NC	All			109709.8	26.0	26.0			0.0	0	20	$33,391.17	Installation of efficient reciprocating chiller (3.08 COP; 4.67 IPLV) in apartment buildings with chillers	0.12%	0.00%
7179	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	MF	NC	All			45402.4	39.0	39.0			0.0	0	20	$21,246.06	Installation of efficient reciprocating chiller (3.36 COP; 3.66 IPLV) in apartment buildings with chillers	0.12%	0.00%
7180	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	MF	NC	All			78670.5	40.7	40.7			0.0	0	20	$28,858.71	Installation of efficient reciprocating chiller (3.36 COP; 4.10 IPLV) in apartment buildings with chillers	0.12%	0.00%
7181	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	MF	NC	All			106295.1	42.9	42.9			0.0	0	20	$36,587.70	Installation of efficient reciprocating chiller (3.36 COP; 4.67 IPLV) in apartment buildings with chillers	0.12%	0.00%
7182	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	MF	NC	All			123418.5	43.6	43.6			0.0	0	20	$41,175.06	Installation of efficient reciprocating chiller (3.36 COP; 5.09 IPLV) in apartment buildings with chillers	0.12%	0.00%
7183	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	MF	NC	All			43124.7	2.3	2.3			0.0	0	20	$10,113.35	Installation of efficient screw chiller (2.8 COP; 3.46 IPLV) in apartment buildings with chillers	0.12%	0.00%
7184	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	MF	NC	All			44084.0	3.7	3.7			0.0	0	20	$13,823.94	Installation of efficient screw chiller (2.8 COP; 3.64 IPLV) in apartment buildings with chillers	0.12%	0.00%
7185	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	MF	NC	All			126348.5	5.6	5.6			0.0	0	20	$30,491.67	Installation of efficient screw chiller (2.8 COP; 4.75 IPLV) in apartment buildings with chillers	0.12%	0.00%
7186	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	MF	NC	All			26093.4	20.8	20.8			0.0	0	20	$11,715.95	Installation of efficient screw chiller (3.08 COP; 3.36 IPLV) in apartment buildings with chillers	0.12%	0.00%
7187	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	MF	NC	All			65352.2	23.1	23.1			0.0	0	20	$20,662.97	Installation of efficient screw chiller (3.08 COP; 3.80 IPLV) in apartment buildings with chillers	0.12%	0.00%
7188	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	MF	NC	All			66225.3	24.5	24.5			0.0	0	20	$24,079.10	Installation of efficient screw chiller (3.08 COP; 4.00 IPLV) in apartment buildings with chillers	0.12%	0.00%
7189	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	MF	NC	All			141115.6	26.2	26.2			0.0	0	20	$39,248.83	Installation of efficient screw chiller (3.08 COP; 5.22 IPLV) in apartment buildings with chillers	0.12%	0.00%
7190	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	MF	NC	All			48109.5	38.4	38.4			0.0	0	20	$21,246.06	Installation of efficient screw chiller (3.36 COP; 3.66 IPLV) in apartment buildings with chillers	0.12%	0.00%
7191	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	MF	NC	All			84105.8	40.6	40.6			0.0	0	20	$29,621.65	Installation of efficient screw chiller (3.36 COP; 4.15 IPLV) in apartment buildings with chillers	0.12%	0.00%
7192	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	MF	NC	All			84907.1	41.9	41.9			0.0	0	20	$33,443.22	Installation of efficient screw chiller (3.36 COP; 4.42 IPLV) in apartment buildings with chillers	0.12%	0.00%
7193	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	MF	NC	All			153575.7	43.6	43.6			0.0	0	20	$46,553.67	Installation of efficient screw chiller (3.36 COP; 5.69 IPLV) in apartment buildings with chillers	0.12%	0.00%

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7194	ASHP - SEER 15	MF	NC	All			442.8	0.4	0.4			0.0	0	15	$293.81	Installation of SEER 15 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7195	ASHP - SEER 16	MF	NC	All			514.6	0.2	0.2			0.0	0	15	$587.62	Installation of SEER 16 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7196	ASHP - SEER 17	MF	NC	All			620.8	0.2	0.2			0.0	0	15	$881.42	Installation of SEER 17 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7197	ASHP - SEER 18	MF	NC	All			705.9	0.2	0.2			0.0	0	15	$1,175.23	Installation of SEER 18 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7198	Boiler 85% Ec	MF	NC	All			0.0	0.0	0.0			10.3	0	20	$3,693.25	Boiler economizer; 5% increase in boiler efficiency - in apartments with gas boilers and no central AC	20.24%	0.00%
7199	Boiler turndown control	MF	NC	All			-106.0	0.0	0.0			13.0	0	15	$195.00	Installing boiler turndown controls - in apartment buildings with boilers	20.24%	0.00%
7200	CHW reset 10 deg	MF	NC	All			16359.1	-0.4	-0.4			0.0	0	5	$81.85	Chilled water reset control strategy (10 degrees) - in apartment buildings with chillers	0.12%	0.00%
7201	CHW reset 5 deg	MF	NC	All			9260.1	-0.3	-0.3			0.0	0	5	$81.85	Chilled water reset control strategy (5 degrees) - in apartment buildings with chillers	0.12%	0.00%
7202	DFHP - SEER 15 with 95 AFUE furnace	MF	NC	All			589.5	0.4	0.4			1.4	0	15	$277.86	Installation of SEER 15/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7203	DFHP - SEER 16 with 95 AFUE furnace	MF	NC	All			617.2	0.2	0.2			1.5	0	15	$555.71	Installation of SEER 16/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7204	DFHP - SEER 17 with 95 AFUE furnace	MF	NC	All			798.7	0.2	0.2			1.2	0	15	$833.57	Installation of SEER 17/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7205	DFHP - SEER 18 with 95 AFUE furnace	MF	NC	All			834.8	0.2	0.2			1.4	0	15	$1,189.14	Installation of SEER 18/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7206	Furnace/AC - SEER 15	MF	NC	All			296.3	0.5	0.5			-1.2	0	15	$555.71	Installation of 15 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7207	Furnace/AC - SEER 16	MF	NC	All			174.4	0.3	0.3			-2.8	0	15	$833.57	Installation of 16 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7208	Furnace/AC - SEER 17	MF	NC	All			253.7	0.5	0.5			-3.1	0	15	$1,111.42	Installation of 17 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7209	High efficiency 92 AFUE furnace with ECM	MF	NC	All			333.7	0.3	0.3			9.3	0	15	$1,097.94	Installation of 92 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7210	High efficiency 93 AFUE furnace with ECM	MF	NC	All			333.7	0.3	0.3			10.1	0	15	$1,225.55	Installation of 93 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7211	High efficiency 94 AFUE furnace with ECM	MF	NC	All			333.7	0.3	0.3			10.9	0	15	$1,354.65	Installation of 94 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7212	High efficiency 95 AFUE furnace with ECM	MF	NC	All			333.7	0.3	0.3			11.7	0	15	$1,483.00	Installation of 95 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7213	High efficiency 96 AFUE furnace with ECM	MF	NC	All			333.7	0.3	0.3			12.4	0	15	$1,610.60	Installation of 96 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7214	High efficiency 97 AFUE furnace with ECM	MF	NC	All			333.7	0.3	0.3			13.2	0	15	$1,738.95	Installation of 97 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7215	High efficiency 98 AFUE furnace with ECM	MF	NC	All	-	-	333.7	0.3	0.3			14.0	0	15	$1,867.30	Installation of 98 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	66.88%	0.00%
7216	ECM Furnace Fan	MF	NC	All	-	-	333.7	0.3	0.3			-0.7	0	18	$97.00	Installing an efficient furnace fan motor - in homes with gas furnaces	66.88%	0.00%
7217	O2 Trim Control	MF	NC	All			0.0	0.0	0.0			2.1	0	15	$165.00	1.1% improvement in boiler efficiency resulting from the addition of oxygen trim controls - apartment buildings with boilers	6.75%	0.00%
7218	PTAC 9.3 EER	MF	NC	All			159.9	0.2	0.2			0.0	0	15	$135.59	Installation of 9.3 EER packaged terminal air conditioner (PTAC) - in homes with PTACs	42.00%	0.00%
7219	PTHP 9.1 EER	MF	NC	All			265.7	0.2	0.2			0.0	0	15	$169.21	Installation of 9.1 EER packaged terminal heat pump (PTHP) - in homes with PTHPs	11.00%	0.00%
7220	Setback thermostat - full setback	MF	NC	All			69.6	0.0	0.0			1.7	0	9	$9.97	Full thermostat setback per MEMD - all heating/cooling combinations	100.00%	0.00%
7221	Setback thermostat - moderate setback	MF	NC	All			50.5	0.0	0.0			1.1	0	9	$9.97	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	0.00%
7222	Whole House Fan	MF	NC	All			70.4	0.0	0.0			0.0	0	15	$495.79	Installing a whole house fan to ventilate homes - all heating/cooling combinations	100.00%	0.00%
7223	ASHP - SEER 19	MF	NC	All			838.3	0.4	0.4			0.0	0	15	$1,532.23	Installation of SEER 19 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7224	ASHP - SEER 20	MF	NC	All			1124.3	0.9	0.9			0.0	0	15	$1,889.25	Installation of SEER 20 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7225	ASHP - SEER 21	MF	NC	All			1639.0	1.8	1.8			0.0	0	15	$2,111.76	Installation of SEER 21 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7226	DFHP - SEER 19 with 95 AFUE furnace	MF	NC	All			993.3	0.4	0.4			1.4	0	15	$1,546.14	Installation of SEER 19/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7227	DFHP - SEER 20 with 95 AFUE furnace	MF	NC	All			1335.7	0.9	0.9			1.4	0	15	$1,903.14	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7228	DFHP - SEER 21 with 95 AFUE furnace	MF	NC	All			1952.1	1.8	1.8			1.4	0	15	$2,125.65	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	5.50%	0.00%
7229	Furnace/AC - SEER 18	MF	NC	All			398.2	0.8	0.8			-2.4	0	15	$1,975.35	Installation of 18 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7230	Furnace/AC - SEER 19	MF	NC	All			452.7	1.0	1.0			-2.4	0	15	$2,332.35	Installation of 19 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7231	Furnace/AC - SEER 20	MF	NC	All			501.8	1.2	1.2			-2.4	0	15	$2,689.35	Installation of 20 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7232	Furnace/AC - SEER 21	MF	NC	All			546.1	1.3	1.3			-2.4	0	15	$2,911.86	Installation of 21 SEER air conditioner - baseline is 13 SEER AC	36.12%	0.00%
7233	SEER21 Minisplit Heat pump	MF	NC	All			2560.1	0.5	0.5			0.0	0	15	$1,160.27	Installation of SEER 21 minisplit heat pump in homes with electric heating/cooling - baseline is 14 SEER ASHP	5.50%	0.00%
7234	Boiler 87% plus AFUE 82 AFUE BASE	MF	NC	All			0.0	0.0	0.0			10.9	0	15	$1,100.00	Installing 87 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	0.00%
7235	Boiler 90% plus AFUE 82 AFUE BASE	MF	NC	All			-654.9	0.0	0.0			24.8	0	15	$1,633.00	Installing 90 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	0.00%
7236	Boiler 92% plus AFUE 82 AFUE BASE	MF	NC	All			-568.6	0.0	0.0			30.3	0	15	$1,954.00	Installing 92 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	0.00%
7237	Boiler 95% plus AFUE 82 AFUE BASE	MF	NC	All			-568.6	0.0	0.0			35.7	0	15	$2,436.00	Installing 95 AFUE boilers to replace standard boilers - in homes with gas boilers	20.24%	0.00%
7238	ENERGY STAR Room AC	MAN	ROB	All	470.2	13.2%	62	0.108	0.108	-	-	0	0	15	$75.00	Installation of ENERGY STAR Room AC	40.47%	4.00%
7239	CEE Tier 2 Room AC	MAN	ROB	All	470.2	17.0%	80	0.138	0.138	-	-	0	0	12	$250.00	Installation of CEE Tier 2 Room AC	40.47%	4.00%
7240	Room AC recycling	MAN	Retrofit	All	113.0	100.0%	113	0.107	0.107	-	-	0	0	8	$49.00	Retirement of tertiary room AC	4.68%	0.00%
7241	ASHP - SEER 15	MAN	ROB	All			276.0	0.3	0.3			0.0	0	15	$293.81	Installation of SEER 15 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7242	ASHP - SEER 16	MAN	ROB	All			809.5	0.2	0.2			0.0	0	15	$587.62	Installation of SEER 16 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%

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7243	ASHP - SEER 17	MAN	ROB	All			1036.2	0.2	0.2			0.0	0	15	$881.42	Installation of SEER 17 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7244	ASHP - SEER 18	MAN	ROB	All			1127.3	0.3	0.3			0.0	0	15	$1,175.23	Installation of SEER 18 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7245	DFHP - SEER 15 with 95 AFUE furnace	MAN	ROB	All			548.0	0.3	0.3			-1.3	0	15	$277.86	Installation of SEER 15/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7246	DFHP - SEER 16 with 95 AFUE furnace	MAN	ROB	All			839.5	0.2	0.2			-0.2	0	15	$555.71	Installation of SEER 16/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7247	DFHP - SEER 17 with 95 AFUE furnace	MAN	ROB	All			1120.4	0.2	0.2			-0.4	0	15	$833.57	Installation of SEER 17/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7248	DFHP - SEER 18 with 95 AFUE furnace	MAN	ROB	All			1185.4	0.3	0.3			-0.3	0	15	$1,189.14	Installation of SEER 18/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7249	Furnace/AC - SEER 15	MAN	ROB	All			361.9	0.4	0.4			-1.5	0	15	$555.71	Installation of 15 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7250	Furnace/AC - SEER 16	MAN	ROB	All			263.6	0.4	0.4			-2.1	0	15	$833.57	Installation of 16 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7251	Furnace/AC - SEER 17	MAN	ROB	All			410.9	0.6	0.6			-2.5	0	15	$1,111.42	Installation of 17 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7252	GSHP - EER 17 ASHP Base	MAN	ROB	All			4739.8	0.4	0.4			0.0	0	15	$18,717.47	Installation of EER 17 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7253	GSHP - EER 19 ASHP Base	MAN	ROB	All			5003.5	0.5	0.5			0.0	0	15	$18,717.47	Installation of EER 19 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7254	High efficiency 92 AFUE furnace with ECM	MAN	ROB	All			396.2	0.2	0.2			14.4	0	15	$1,097.94	Installation of 92 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7255	High efficiency 94 AFUE furnace with ECM	MAN	ROB	All			396.2	0.2	0.2			16.8	0	15	$1,354.65	Installation of 94 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7256	High efficiency 95 AFUE furnace with ECM	MAN	ROB	All			396.2	0.2	0.2			18.0	0	15	$1,483.00	Installation of 95 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7257	RCA 10% improvement	MAN	Retrofit	All			55.9	0.1	0.1			0.0	0	5	$139.00	Refrigerant charge and air flow adjustment - 10% improvement - in homes with gas furnace and central AC	40.00%	23.80%
7258	RCA 15% improvement	MAN	Retrofit	All			147.9	0.4	0.4			0.0	0	5	$438.81	Refrigerant charge and air flow adjustment - 15% improvement - in homes with gas furnace and central AC	40.00%	23.80%
7259	RCA 5% improvement	MAN	Retrofit	All			28.0	0.1	0.1			0.0	0	5	$115.08	Refrigerant charge and air flow adjustment - 5% improvement - in homes with gas furnace and central AC	40.00%	23.80%
7260	Setback thermostat - full setback	MAN	Retrofit	All			191.8	0.0	0.0			26.9	0	9	$37.72	Full thermostat setback per MEMD - all heating/cooling combinations	100.00%	17.00%
7261	Setback thermostat - moderate setback	MAN	Retrofit	NLI			128.4	0.0	0.0			13.5	0	9	$37.72	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	17.00%
7262	Setback thermostat - moderate setback	MAN	Retrofit	LI			128.4	0.0	0.0			13.5	0	9	$37.72	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	17.00%
7263	Whole House Fan	MAN	Retrofit	All	-	-	129.8	0.0	0.0			-0.1	0	15	$1,273.32	Installing a whole house fan to ventilate homes - all heating/cooling combinations	100.00%	4.20%
7264	High efficiency 93 AFUE furnace with ECM	MAN	ROB	All	-	-	587.9	0.3	0.3			18.5	0	15	$1,225.55	Installation of 93 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7265	High efficiency 96 AFUE furnace with ECM	MAN	ROB	All	-	-	587.9	0.3	0.3			22.2	0	15	$1,610.60	Installation of 96 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7266	High efficiency 97 AFUE furnace with ECM	MAN	ROB	All	-	-	587.9	0.3	0.3			23.4	0	15	$1,738.95	Installation of 97 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7267	High efficiency 98 AFUE furnace with ECM	MAN	ROB	All	-	-	587.9	0.3	0.3			24.6	0	15	$1,867.30	Installation of 98 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	49.50%
7268	ECM Furnace Fan	MAN	Retrofit	All	-	-	587.9	0.3	0.3			-0.7	0	18	$97.00	Installing an efficient furnace fan motor - in homes with gas furnaces	87.30%	49.50%
7269	Furnace/AC - SEER 18	MAN	ROB	All	-	-	485.1	0.9	0.9			-2.5	0	15	$1,975.35	Installation of 18 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7270	Furnace/AC - SEER 19	MAN	ROB	All	-	-	551.4	1.1	1.1			-2.5	0	15	$1,824.00	Installation of 19 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7271	Furnace/AC - SEER 20	MAN	ROB	All	-	-	611.2	1.3	1.3			-2.5	0	15	$2,689.35	Installation of 20 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7272	Furnace/AC - SEER 21	MAN	ROB	All	-	-	665.2	1.5	1.5			-2.5	0	15	$2,911.86	Installation of 21 SEER air conditioner - baseline is 13 SEER AC	40.00%	29.40%
7273	ASHP - SEER 19	MAN	ROB	All	-	-	1160.1	0.6	0.6			0.0	0	15	$1,532.23	Installation of SEER 19 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7274	ASHP - SEER 20	MAN	ROB	All	-	-	1535.7	1.1	1.1			0.0	0	15	$1,889.25	Installation of SEER 20 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7275	ASHP - SEER 21	MAN	ROB	All	-	-	2211.6	2.1	2.1			0.0	0	15	$2,111.76	Installation of SEER 21 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	29.40%
7276	DFHP - SEER 19 with 95 AFUE furnace	MAN	ROB	All	-	-	1319.6	0.6	0.6			0.3	0	15	$1,546.14	Installation of SEER 19/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%

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7277	DFHP - SEER 20 with 95 AFUE furnace	MAN	ROB	All	-	-	1755.1	1.1	1.1			0.3	0	15	$1,903.14	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7278	DFHP - SEER 21 with 95 AFUE furnace	MAN	ROB	All	-	-	2538.9	2.1	2.1			0.3	0	15	$2,125.65	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.25%	29.40%
7279	ENERGY STAR Room AC	MAN	NC	All	470.2	13.2%	62	0.108	0.108	-	-	0	0	15	$75.00	Installation of ENERGY STAR Room AC	40.47%	0.00%
7280	CEE Tier 2 Room AC	MAN	NC	All	470.2	17.0%	80	0.138	0.138	-	-	0	0	12	$250.00	Installation of CEE Tier 2 Room AC	40.47%	0.00%
7281	ASHP - SEER 15	MAN	NC	All	-	-	232.5	0.3	0.3			0.0	0	15	$293.81	Installation of SEER 15 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7282	ASHP - SEER 16	MAN	NC	All	-	-	702.4	0.2	0.2			0.0	0	15	$587.62	Installation of SEER 16 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7283	ASHP - SEER 17	MAN	NC	All	-	-	900.4	0.2	0.2			0.0	0	15	$881.42	Installation of SEER 17 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7284	ASHP - SEER 18	MAN	NC	All	-	-	999.4	0.3	0.3			0.0	0	15	$1,175.23	Installation of SEER 18 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7285	DFHP - SEER 15 with 95 AFUE furnace	MAN	NC	All	-	-	502.2	0.3	0.3			0.2	0	15	$277.86	Installation of SEER 15/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7286	DFHP - SEER 16 with 95 AFUE furnace	MAN	NC	All	-	-	738.1	0.2	0.2			1.1	0	15	$555.71	Installation of SEER 16/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7287	DFHP - SEER 17 with 95 AFUE furnace	MAN	NC	All	-	-	988.2	0.2	0.2			0.9	0	15	$833.57	Installation of SEER 17/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7288	DFHP - SEER 18 with 95 AFUE furnace	MAN	NC	All	-	-	1061.9	0.3	0.3			1.0	0	15	$1,189.14	Installation of SEER 18/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7289	Furnace/AC - SEER 15	MAN	NC	All	-	-	336.4	0.4	0.4			-1.6	0	15	$555.71	Installation of 15 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7290	Furnace/AC - SEER 16	MAN	NC	All	-	-	248.4	0.4	0.4			-2.7	0	15	$833.57	Installation of 16 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7291	Furnace/AC - SEER 17	MAN	NC	All	-	-	383.7	0.5	0.5			-3.0	0	15	$1,111.42	Installation of 17 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7292	GSHP - EER 17 ASHP Base	MAN	NC	All	-	-	5153.5	0.5	0.5			0.0	0	15	$18,717.47	Installation of EER 17 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	1.00%	0.00%
7293	GSHP - EER 19 ASHP Base	MAN	NC	All	-	-	5425.0	0.6	0.6			0.0	0	15	$18,717.47	Installation of EER 19 GSHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	1.00%	0.00%
7294	High efficiency 92 AFUE furnace with ECM	MAN	NC	All	-	-	364.2	0.3	0.3			13.4	0	15	$1,097.94	Installation of 92 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7295	High efficiency 94 AFUE furnace with ECM	MAN	NC	All	-	-	364.2	0.3	0.3			15.7	0	15	$1,354.65	Installation of 94 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7296	High efficiency 95 AFUE furnace with ECM	MAN	NC	All	-	-	364.2	0.3	0.3			16.8	0	15	$1,483.00	Installation of 95 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7297	Setback thermostat - full setback	MAN	NC	All	-	-	134.8	0.0	0.0			20.1	0	9	$12.14	Full thermostat setback per MEMD - all heating/cooling combinations	100.00%	0.00%
7298	Setback thermostat - moderate setback	MAN	NC	All	-	-	94.6	0.0	0.0			10.1	0	9	$12.14	Moderate thermostat setback per MEMD - all heating/cooling combinations	100.00%	0.00%
7299	Whole House Fan	MAN	NC	All	-	-	107.8	0.0	0.0			-0.1	0	15	$603.71	Installing a whole house fan to ventilate homes - all heating/cooling combinations	100.00%	0.00%
7300	High efficiency 93 AFUE furnace with ECM	MAN	NC	All	-	-	569.4	0.3	0.3			14.6	0	15	$1,225.55	Installation of 93 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7301	High efficiency 96 AFUE furnace with ECM	MAN	NC	All	-	-	569.4	0.3	0.3			17.9	0	15	$1,610.60	Installation of 96 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7302	High efficiency 97 AFUE furnace with ECM	MAN	NC	All	-	-	569.4	0.3	0.3			19.0	0	15	$1,738.95	Installation of 97 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7303	High efficiency 98 AFUE furnace with ECM	MAN	NC	All	-	-	569.4	0.3	0.3			20.2	0	15	$1,867.30	Installation of 98 AFUE furnace with electronically commutated motor - baseline is 80 AFUE furnace	87.30%	0.00%
7304	ECM Furnace Fan	MAN	NC	All	-	-	569.4	0.3	0.3			-0.7	0	18	$97.00	Installing an efficient furnace fan motor - in homes with gas furnaces	87.30%	0.00%
7305	Furnace/AC - SEER 18	MAN	NC	All	-	-	452.9	0.9	0.9			-3.0	0	15	$1,975.35	Installation of 18 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7306	Furnace/AC - SEER 19	MAN	NC	All	-	-	514.9	1.1	1.1			-3.0	0	15	$1,824.00	Installation of 19 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7307	Furnace/AC - SEER 20	MAN	NC	All	-	-	570.7	1.3	1.3			-3.0	0	15	$2,689.35	Installation of 20 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7308	Furnace/AC - SEER 21	MAN	NC	All	-	-	621.2	1.4	1.4			-3.0	0	15	$2,911.86	Installation of 21 SEER air conditioner - baseline is 13 SEER AC	40.00%	0.00%
7309	ASHP - SEER 19	MAN	NC	All	-	-	839.4	0.5	0.5			0.0	0	15	$1,532.23	Installation of SEER 19 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7310	ASHP - SEER 20	MAN	NC	All	-	-	1125.4	1.0	1.0			0.0	0	15	$1,889.25	Installation of SEER 20 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7311	ASHP - SEER 21	MAN	NC	All	-	-	1640.1	1.9	1.9			0.0	0	15	$2,111.76	Installation of SEER 21 ASHP in homes with electric heating/cooling - baseline is 14 SEER ASHP	0.50%	0.00%
7312	DFHP - SEER 19 with 95 AFUE furnace	MAN	NC	All	-	-	989.6	0.5	0.5			1.4	0	15	$1,546.14	Installation of SEER 19/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7313	DFHP - SEER 20 with 95 AFUE furnace	MAN	NC	All	-	-	1332.0	1.0	1.0			1.4	0	15	$1,903.14	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
7314	DFHP - SEER 21 with 95 AFUE furnace	MAN	NC	All	-	-	1948.4	1.9	1.9			1.4	0	15	$2,125.65	Installation of SEER 20/95 AFUE dual fuel heat pump in homes with electric heating/cooling - baseline is 14 SEER/80 AFUE DFHP	0.50%	0.00%
8000	Behavioral Programs																	
8001	Behavior Modification: Home Energy Reports (All Years)	SF	Retrofit	All	8,901.5	1.2%	106.4	0.012	0.012	104.4	0.68%	0.7	0	1	$6.77	Indirect feedback in single-family homes	100.00%	5.00%
8002	Real-time feedback	SF	Retrofit	All	8,901.5	5.3%	473.6	0.05	0.05	104.4	3.87%	4.0	0	3	$110.00	Direct feedback in single-family homes	100.00%	5.00%
8003	Behavior Modification: Home Energy Reports (All Years)	SF	NC	All	8,901.5	1.2%	106.4	0.012	0.012	104.4	0.68%	0.7	0	1	$6.77	Indirect feedback in single-family homes	100.00%	0.00%
8004	Real-time feedback	SF	NC	All	8,901.5	5.3%	473.6	0.05	0.05	104.4	3.87%	4.0	0	3	$110.00	Direct feedback in single-family homes	100.00%	0.00%
8005	Behavior Modification: Home Energy Reports (All Years)	MF	Retrofit	All	4,890.8	1.2%	58.4	0.012	0.012	57.3	0.68%	0.4	0	1	$6.77	Indirect feedback in multifamily homes	100.00%	5.00%
8006	Real-time feedback	MF	Retrofit	All	4,890.8	5.3%	260.2	0.03	0.03	57.3	3.87%	2.2	0	3	$110.00	Direct feedback in single-family homes	100.00%	5.00%
8007	Behavior Modification: Home Energy Reports (All Years)	MF	NC	All	4,890.8	1.2%	58.4	0.012	0.012	57.3	0.68%	0.4	0	1	$6.77	Indirect feedback in multifamily homes	100.00%	0.00%
8008	Real-time feedback	MF	NC	All	4,890.8	5.3%	260.2	0.03	0.03	57.3	3.87%	2.2	0	3	$110.00	Direct feedback in single-family homes	100.00%	0.00%
8009	Behavior Modification: Home Energy Reports (All Years)	MAN	Retrofit	All	5,955.4	1.2%	71.2	0.012	0.012	69.8	0.68%	0.5	0	1	$6.77	Indirect feedback in manufactured homes	100.00%	5.00%
8010	Real-time feedback	MAN	Retrofit	All	5,955.4	5.3%	316.8	0.04	0.04	69.8	3.87%	2.7	0	3	$110.00	Direct feedback in single-family homes	100.00%	5.00%
8011	Behavior Modification: Home Energy Reports (All Years)	MAN	NC	All	5,955.4	1.2%	71.2	0.012	0.012	69.8	0.68%	0.5	0	1	$6.77	Indirect feedback in manufactured homes	100.00%	0.00%
8012	Real-time feedback	MAN	NC	All	5,955.4	5.3%	316.8	0.04	0.04	69.8	3.87%	2.7	0	3	$110.00	Direct feedback in single-family homes	100.00%	0.00%

Michigan - Residential Measure Database

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Annual kWh	% Savings	Annual kWh Savings	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Measure/End Use Description	Base Saturation	EE Saturation

Column Acronyms:

Income Target (All/LI/NLI): All Homes, Low Income Homes, Non-Low Income Homes
MAN: Manufactured homes
MF: Multifamily buildings
SF: Multifamily buildings
NCP: Non-Coincident Peak
ROB/Retrofit/Old/Average/NC: Replace on Burnout / Retrofit / Old = Retrofit for "Old" vintage home / Average = Retroft for "Average" vintage home / New Construction; vintages vary by housing type

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
1000	Appliances																	
1001	Refrigerator Retirement (and Recycling) - No Replacement	SF	Retrofit	All	MEMD	-	MEMD	Cadmus Group	Cadmus Group	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: 25% from Michigan Residential Baseline Study - saturation estimate is based on ratio of single-family home refrigerator ownership to total refrigerator ownership; Per Unit Demand Savings: Non-coincident peak demand savings from Table 14 of Cadmus memo to Michigan Evaluation Working Group (August 20, 2012) EE saturation %: GDS estimate
1002	Freezer Retirement (and Recycling) - No Replacement	SF	Retrofit	All	MEMD	-	MEMD	Cadmus Group	Cadmus Group	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: 2% from Michigan Residential Baseline Study (= saturation minus penetration) - does not distinguish between housing types; Per Unit Demand Savings: Non-coincident peak demand savings from Table 14 of Cadmus memo to Michigan Evaluation Working Group (August 20, 2012) EE saturation %: GDS estimate
1003	Dehumidifier Retirement (and Recycling) - No Replacement	SF	Retrofit	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	PA Baseline 2011 / GDS	GDS	Base elec use: Derived from MEMD work papers; Annual elec. Savings: Derived from MEMD work papers - assumes no replacement Annual kW Savings: Derived from MEMD work papers - assumes no replacement Base saturation: ~2% of homes in PA had secondary dehumidifiers (= saturation - penetration) EE saturation: GDS estimate
1004	Energy Star Dehumidifier	SF	ROB	All	MEMD work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base saturation: % of homes using dehumidifiers; EE saturation: % of dehumidifiers rated as ENERGY STAR
1005	ENERGY STAR Refrigerators	SF	ROB	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual kWh: Average of 7 configurations using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year
1006	ENERGY STAR Freezers	SF	ROB	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual kWh: Average of 6 freezer configurations (#8-10, and #16-18) using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year; EE saturation: 4% of freezers ENERGY STAR rated
1007	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and gas drying EE saturation: 14% among all clothes washers
1008	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and electric drying EE saturation: 14% among all clothes washers
1009	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and gas drying EE saturation: 14% among all clothes washers
1010	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD / GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and electric drying EE saturation: 14% among all clothes washers
1011	High Efficiency Gas Clothes Dryer with Moisture Sensor	SF	ROB	All	-	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS	-	MEMD / GDS	-	MEMD	MEMD	MI Baseline 2011	ACEEE (Bendt)	Base Annual Non-elec: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.3 EF); Annual Elec. Savings: Assumes 10% per MEMD EE saturation: 2010 ACEEE paper by Paul Bendt of Ecos
1012	High Efficiency Electric Clothes Dryer with Moisture Sensor	SF	ROB	All	GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	ES Dryer Rpt	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 10% per MEMD; EE saturation: Based on 2010 U.S. Appliance Shipment Statistics
1013	Heat Pump Electric Dryer	SF	ROB	All	GDS	-	LBNL / GDS	LBNL / GDS	LBNL / GDS	-	-	-	-	ES Dryer Rpt	LBNL	MI Baseline 2011	ES Dryer Rpt	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 4.52 EF; Per Unit kW Savings: Assumes 283 hrs/yr operation (1 hr/load) EE saturation: Based on 2010 U.S. Appliance Shipment Statistics
1014	Tier 2 Energy Star Dishwasher (electric water heating)	SF	ROB	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs Annual kW Savings: assumes 1.5 hours/cycle Base saturation: Homes with dishwashers and electric water heating = 66% saturation of dishwashers * % of homes with electric water heating
1015	Tier 2 Energy Star Dishwasher (gas water heating)	SF	ROB	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs; Annual kW Savings: assumes 1.5 hours/cycle; Base Non-elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Non-elec savings: Draft 2 Version 5.0 specs; Base saturation: Homes with dishwashers and gas water heating = 66% saturation of dishwashers * % of homes with gas water heating
1016	Energy Star Dehumidifier	SF	NC	All	MEMD work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base saturation: % of homes using dehumidifiers
1017	ENERGY STAR Refrigerators	SF	NC	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: Average of 7 configurations using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year
1018	ENERGY STAR Freezers	SF	NC	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: Average of 6 freezer configurations (#8-10, and #16-18) using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year;
1019	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and gas drying
1020	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and electric drying
1021	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and gas drying
1022	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD / GDS	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and electric drying
1023	High Efficiency Gas Clothes Dryer with Moisture Sensor	SF	NC	All	-	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS	-	MEMD / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Non-elec: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.3 EF); Annual Elec. Savings: Assumes 10% per MEMD
1024	High Efficiency Electric Clothes Dryer with Moisture Sensor	SF	NC	All	GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 10% per MEMD
1025	Heat Pump Electric Dryer	SF	NC	All	GDS	-	LBNL / GDS	LBNL / GDS	LBNL / GDS	-	-	-	-	ES Dryer Rpt	LBNL	MI Baseline 2011	GDS/NC	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 4.52 EF; Per Unit kW Savings: Assumes 283 hrs/yr operation (1 hr/load)
1026	Tier 2 Energy Star Dishwasher (electric water heating)	SF	NC	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs Annual kW Savings: assumes 1.5 hours/cycle Base saturation: Homes with dishwashers and electric water heating = 66% saturation of dishwashers * % of homes with electric water heating
1027	Tier 2 Energy Star Dishwasher (gas water heating)	SF	NC	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs; Annual kW Savings: assumes 1.5 hours/cycle; Base Non-elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Non-elec savings: Draft 2 Version 5.0 specs; Base saturation: Homes with dishwashers and gas water heating = 66% saturation of dishwashers * % of homes with gas water heating
1028	Refrigerator Retirement (and Recycling) - No Replacement	MF	Retrofit	All	MEMD	-	MEMD	Cadmus Group	Cadmus Group	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: 25% from Michigan Residential Baseline Study - saturation estimate is based on ratio of multifamily home refrigerator ownership to total refrigerator ownership; Per Unit Demand Savings: Non-coincident peak demand savings from Table 14 of Cadmus memo to Michigan Evaluation Working Group (August 20, 2012) EE saturation %: GDS estimate
1029	Freezer Retirement (and Recycling) - No Replacement	MF	Retrofit	All	MEMD	-	MEMD	Cadmus Group	Cadmus Group	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: 2% from Michigan Residential Baseline Study (= saturation minus penetration) - does not distinguish between housing types; Per Unit Demand Savings: Non-coincident peak demand savings from Table 14 of Cadmus memo to Michigan Evaluation Working Group (August 20, 2012) EE saturation %: GDS estimate
1030	Dehumidifier Retirement (and Recycling) - No Replacement	MF	Retrofit	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	PA Baseline 2011 / GDS	GDS	Base elec use: Derived from MEMD work papers; Annual elec. Savings: Derived from MEMD work papers - assumes no replacement Annual kW Savings: Derived from MEMD work papers - assumes no replacement Base saturation: ~2% of homes in PA had secondary dehumidifiers (= saturation - penetration) EE saturation: GDS estimate
1031	Energy Star Dehumidifier	MF	ROB	All	MEMD work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base saturation: % of homes using dehumidifiers; EE saturation: % of dehumidifiers rated as ENERGY STAR
1032	ENERGY STAR Refrigerators	MF	ROB	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual kWh: Average of 7 configurations using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year
1033	ENERGY STAR Freezers	MF	ROB	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual kWh: Average of 6 freezer configurations (#8-10, and #16-18) using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year; EE saturation: 4% of freezers ENERGY STAR rated
1034	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and gas drying EE saturation: 14% among all clothes washers

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
1035	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and electric drying EE saturation: 14% among all clothes washers
1036	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and gas drying EE saturation: 14% among all clothes washers
1037	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD / GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and electric drying EE saturation: 14% among all clothes washers
1038	High Efficiency Gas Clothes Dryer with Moisture Sensor	MF	ROB	All	-	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS	-	MEMD / GDS	-	MEMD	MEMD	MI Baseline 2011	ACEEE (Bendt)	Base Annual Non-elec: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.3 EF); Annual Elec. Savings: Assumes 10% per MEMD EE saturation: 2010 ACEEE paper by Paul Bendt of Ecos
1039	High Efficiency Electric Clothes Dryer with Moisture Sensor	MF	ROB	All	GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	ES Dryer Rpt	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 10% per MEMD; EE saturation: Based on 2010 U.S. Appliance Shipment Statistics
1040	Heat Pump Electric Dryer	MF	ROB	All	GDS	-	LBNL / GDS	LBNL / GDS	LBNL / GDS	-	-	-	-	ES Dryer Rpt	LBNL	MI Baseline 2011	ES Dryer Rpt	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 4.52 EF; Per Unit kW Savings: Assumes 283 hrs/yr operation (1 hr/load) EE saturation: Based on 2010 U.S. Appliance Shipment Statistics
1041	Tier 2 Energy Star Dishwasher (electric water heating)	MF	ROB	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs Annual kW Savings: assumes 1.5 hours/cycle Base saturation: Homes with dishwashers and electric water heating = 66% saturation of dishwashers * % of homes with electric water heating
1042	Tier 2 Energy Star Dishwasher (gas water heating)	MF	ROB	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs; Annual kW Savings: assumes 1.5 hours/cycle; Base Non-elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Non-elec savings: Draft 2 Version 5.0 specs; Base saturation: Homes with dishwashers and gas water heating = 66% saturation of dishwashers * % of homes with gas water heating
1043	Energy Star Dehumidifier	MF	NC	All	MEMD work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base saturation: % of homes using dehumidifiers
1044	ENERGY STAR Refrigerators	MF	NC	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: Average of 7 configurations using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year
1045	ENERGY STAR Freezers	MF	NC	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: Average of 6 freezer configurations (#8-10, and #16-18) using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year;
1046	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and gas drying
1047	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and electric drying
1048	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and gas drying
1049	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD / GDS	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and electric drying
1050	High Efficiency Gas Clothes Dryer with Moisture Sensor	MF	NC	All	-	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS	-	MEMD / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Non-elec: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.3 EF); Annual Elec. Savings: Assumes 10% per MEMD
1051	High Efficiency Electric Clothes Dryer with Moisture Sensor	MF	NC	All	GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 10% per MEMD
1052	Heat Pump Electric Dryer	MF	NC	All	GDS	-	LBNL / GDS	LBNL / GDS	LBNL / GDS	-	-	-	-	ES Dryer Rpt	LBNL	MI Baseline 2011	GDS/NC	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 4.52 EF; Per Unit kW Savings: Assumes 283 hrs/yr operation (1 hr/load)
1053	Tier 2 Energy Star Dishwasher (electric water heating)	MF	NC	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs Annual kW Savings: assumes 1.5 hours/cycle Base saturation: Homes with dishwashers and electric water heating = 66% saturation of dishwashers * % of homes with electric water heating
1054	Tier 2 Energy Star Dishwasher (gas water heating)	MF	NC	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs; Annual kW Savings: assumes 1.5 hours/cycle; Base Non-elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Non-elec savings: Draft 2 Version 5.0 specs; Base saturation: Homes with dishwashers and gas water heating = 66% saturation of dishwashers * % of homes with gas water heating
1055	Refrigerator Retirement (and Recycling) - No Replacement	MAN	Retrofit	All	MEMD	-	MEMD	Cadmus Group	Cadmus Group	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: 25% from Michigan Residential Baseline Study - saturation estimate is based on ratio of manufactured home refrigerator ownership to total refrigerator ownership; Per Unit Demand Savings: Non-coincident peak demand savings from Table 14 of Cadmus memo to Michigan Evaluation Working Group (August 20, 2012) EE saturation %: GDS estimate
1056	Freezer Retirement (and Recycling) - No Replacement	MAN	Retrofit	All	MEMD	-	MEMD	Cadmus Group	Cadmus Group	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: 2% from Michigan Residential Baseline Study (= saturation minus penetration) - does not distinguish between housing types; Per Unit Demand Savings: Non-coincident peak demand savings from Table 14 of Cadmus memo to Michigan Evaluation Working Group (August 20, 2012) EE saturation %: GDS estimate
1057	Dehumidifier Retirement (and Recycling) - No Replacement	MAN	Retrofit	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	PA Baseline 2011 / GDS	GDS	Base elec use: Derived from MEMD work papers; Annual elec. Savings: Derived from MEMD work papers - assumes no replacement Annual kW Savings: Derived from MEMD work papers - assumes no replacement Base saturation: ~2% of homes in PA had secondary dehumidifiers (= saturation - penetration) EE saturation: GDS estimate
1058	Energy Star Dehumidifier	MAN	ROB	All	MEMD work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base saturation: % of homes using dehumidifiers; EE saturation: % of dehumidifiers rated as ENERGY STAR
1059	ENERGY STAR Refrigerators	MAN	ROB	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual kWh: Average of 7 configurations using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year
1060	ENERGY STAR Freezers	MAN	ROB	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual kWh: Average of 6 freezer configurations (#8-10, and #16-18) using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year; EE saturation: 4% of freezers ENERGY STAR rated
1061	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and gas drying EE saturation: 14% among all clothes washers
1062	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and electric drying EE saturation: 14% among all clothes washers
1063	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and gas drying EE saturation: 14% among all clothes washers
1064	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD / GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and electric drying EE saturation: 14% among all clothes washers
1065	High Efficiency Gas Clothes Dryer with Moisture Sensor	MAN	ROB	All	-	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS	-	MEMD / GDS	-	MEMD	MEMD	MI Baseline 2011	ACEEE (Bendt)	Base Annual Non-elec: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.3 EF); Annual Elec. Savings: Assumes 10% per MEMD EE saturation: 2010 ACEEE paper by Paul Bendt of Ecos
1066	High Efficiency Electric Clothes Dryer with Moisture Sensor	MAN	ROB	All	GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	ES Dryer Rpt	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 10% per MEMD; EE saturation: Based on 2010 U.S. Appliance Shipment Statistics
1067	Heat Pump Electric Dryer	MAN	ROB	All	GDS	-	LBNL / GDS	LBNL / GDS	LBNL / GDS	-	-	-	-	ES Dryer Rpt	LBNL	MI Baseline 2011	ES Dryer Rpt	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 4.52 EF; Per Unit kW Savings: Assumes 283 hrs/yr operation (1 hr/load) EE saturation: Based on 2010 U.S. Appliance Shipment Statistics

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
1068	Tier 2 Energy Star Dishwasher (electric water heating)	MAN	ROB	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs Annual kW Savings: assumes 1.5 hours/cycle Base saturation: Homes with dishwashers and electric water heating = 66% saturation of dishwashers * % of homes with electric water heating
1069	Tier 2 Energy Star Dishwasher (gas water heating)	MAN	ROB	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs; Annual kW Savings: assumes 1.5 hours/cycle; Base Non-elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Non-elec savings: Draft 2 Version 5.0 specs; Base saturation: Homes with dishwashers and gas water heating = 66% saturation of dishwashers * % of homes with gas water heating
1070	Energy Star Dehumidifier	MAN	NC	All	MEMD work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base saturation: % of homes using dehumidifiers
1071	ENERGY STAR Refrigerators	MAN	NC	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: Average of 7 configurations using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year
1072	ENERGY STAR Freezers	MAN	NC	All	CFR / GDS	-	ES Refrigerators 5.0	GDS calc	GDS calc	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: Average of 6 freezer configurations (#8-10, and #16-18) using Code of Federal Regulations (10 CFR 430.32(a)); Annual Elec Savings: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0 - 10% savings for all product classes; Per Unit NCP kW Savings: Assumes 8,760 hrs of operation per year;
1073	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and gas drying
1074	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with gas water heating and electric drying
1075	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and gas drying
1076	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	MEMD / GDS	MEMD	MEMD / GDS	MI Baseline 2011 / GDS	GDS/NC	Baseline Annual kWh: MEMD calculations adjusted to reflect federal minimum standards - Modified Energy Factor of 1.26 and Water Factor of 9.5; Incremental Cost: Equal to difference between CEE Tier 3 and ENERGY STAR cost in MEMD - to account for new standards; Base saturation: Used MI Baseline data to create ratiod percentage of homes with electric water heating and electric drying
1077	High Efficiency Gas Clothes Dryer with Moisture Sensor	MAN	NC	All	-	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS	-	MEMD / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Non-elec: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.3 EF); Annual Elec. Savings: Assumes 10% per MEMD
1078	High Efficiency Electric Clothes Dryer with Moisture Sensor	MAN	NC	All	GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 10% per MEMD
1079	Heat Pump Electric Dryer	MAN	NC	All	GDS	-	LBNL / GDS	LBNL / GDS	LBNL / GDS	-	-	-	-	ES Dryer Rpt	LBNL	MI Baseline 2011	GDS/NC	Base Annual kWh: GDS calculation using the 2015 federal standard and testing procedure (283 loads/yr; 9 lbs/load; 3.73 EF); Annual Elec. Savings: Assumes 4.52 EF; Per Unit kW Savings: Assumes 283 hrs/yr operation (1 hr/load)
1080	Tier 2 Energy Star Dishwasher (electric water heating)	MAN	NC	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs Annual kW Savings: assumes 1.5 hours/cycle Base saturation: Homes with dishwashers and electric water heating = 66% saturation of dishwashers * % of homes with electric water heating
1081	Tier 2 Energy Star Dishwasher (gas water heating)	MAN	NC	All	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	DOE	-	ES Dishwasher 5.0 / GDS	ES Dishwasher 5.0 / GDS	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Annual elec. Savings: Draft 2 Version 5.0 specs; Annual kW Savings: assumes 1.5 hours/cycle; Base Non-elec use: Adopts DOE Final Rule - 77 FR 31918 (May 30, 2012); Non-elec savings: Draft 2 Version 5.0 specs; Base saturation: Homes with dishwashers and gas water heating = 66% saturation of dishwashers * % of homes with gas water heating
2000	Electronics																	
2001	Smart Strip plug outlet	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	GDS	RIA 2010	Annual kWh Savings: GDS used algorithm in NEEP Emerging Technologies Report and available MI saturation data to calculate per home savings; Per-unit kW Savings: Assumes 7,149 hrs/yr sleep mode per MID-ATL TRM; Base Saturation: Assumed an average of 2 per home EE Saturation: 2010 Plug Load Characterization Study for SoCal Edison has % of homes that do not use powerstrips or do not turn them off at 94%
2002	Efficient Set Top Box	SF	Retrofit	All	-	-	NEEP (ETR) / RIA 2010 / GDS	GDS calc	GDS calc	-	-	-	-	NEEP (ETR)	ACEEE (A041)	GDS	ES Unit Ship	Annual kWh Savings: GDS used Table 11-3 deemed savings in NEEP Emerging Technologies Report and Table F.1 in RIA study to calculate per home savings; Per-unit kW Savings: Assumes 1,611 hrs/yr active mode (=8,760-7,149); Incremental Cost: ~$400 wholesale cost per NEEP ETR (used this value as opposed to $10/month average over life of measure) Base Saturation: Saturation of televisions; EE Saturation: 4-yr average of ENERGY STAR market shipment data
2003	ENERGY STAR + 10% Display	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2004	ENERGY STAR + 30% Display	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2005	ENERGY STAR + 50 % Display	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2006	ENERGY STAR 6.0 TV + 20% (0-20")	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2007	ENERGY STAR 6.0 TV + 20% (21-30")	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 19-39" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2008	ENERGY STAR 6.0 TV + 20% (31-40")	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 19-39" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2009	ENERGY STAR 6.0 TV + 20% (41-50")	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 40-59" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2010	ENERGY STAR 6.0 TV + 20% (51-60")	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 40-59" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2011	ENERGY STAR 6.0 TV + 20% (over 60")	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2012	ENERGY STAR PC	SF	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM	VT TRM	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES desktop computers to sum of saturation of ES desktop and non-ES desktop computers
2013	ES Laptop	SF	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of laptop computers; EE Saturation: Ratio of saturation of ES laptop computers to total laptop computers
2014	ES Laptop (Power Mgmt Enabled)	SF	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of laptop computers; EE Saturation: Ratio of saturation of ES laptop computers to total laptop computers
2015	Smart Strip plug outlet	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	GDS	GDS/NC	Annual kWh Savings: GDS used algorithm in NEEP Emerging Technologies Report and available MI saturation data to calculate per home savings; Per-unit kW Savings: Assumes 7,149 hrs/yr sleep mode per MID-ATL TRM; Base Saturation: AAssumed an average of 2 per home
2016	Efficient Set Top Box	SF	NC	All	-	-	NEEP (ETR) / RIA 2010 / GDS	GDS calc	GDS calc	-	-	-	-	NEEP (ETR)	ACEEE (A041)	GDS	GDS/NC	Annual kWh Savings: GDS used Table 11-3 deemed savings in NEEP Emerging Technologies Report and Table F.1 in RIA study to calculate per home savings; Per-unit kW Savings: Assumes 1,611 hrs/yr active mode (=8,760-7,149); Incremental Cost: ~$400 wholesale cost per NEEP ETR (used this value as opposed to $10/month average over life of measure) Base Saturation: Saturation of televisions;
2017	ENERGY STAR + 10% Display	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2018	ENERGY STAR + 30% Display	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2019	ENERGY STAR + 50 % Display	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2020	ENERGY STAR 6.0 TV + 20% (0-20")	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2021	ENERGY STAR 6.0 TV + 20% (21-30")	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
2022	ENERGY STAR 6.0 TV + 20% (31-40")	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2023	ENERGY STAR 6.0 TV + 20% (41-50")	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2024	ENERGY STAR 6.0 TV + 20% (51-60")	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2025	ENERGY STAR 6.0 TV + 20% (over 60")	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2026	ENERGY STAR PC	SF	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM	VT TRM	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of desktop computers;
2027	ES Laptop	SF	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of laptop computers
2028	ES Laptop (Power Mgmt Enabled)	SF	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of laptop computers;
2029	Smart Strip plug outlet	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	GDS	RIA 2010	Annual kWh Savings: GDS used algorithm in NEEP Emerging Technologies Report and available MI saturation data to calculate per home savings; Per-unit kW Savings: Assumes 7,149 hrs/yr sleep mode per MID-ATL TRM; Base Saturation: Assumed an average of 2 per home EE Saturation: 2010 Plug Load Characterization Study for SoCal Edison has % of homes that do not use powerstrips or do not turn them off at 94%
2030	Efficient Set Top Box	MF	Retrofit	All	-	-	NEEP (ETR) / RIA 2010 / GDS	GDS calc	GDS calc	-	-	-	-	NEEP (ETR)	ACEEE (A041)	GDS	ES Unit Ship	Annual kWh Savings: GDS used Table 11-3 deemed savings in NEEP Emerging Technologies Report and Table F.1 in RIA study to calculate per home savings; Per-unit kW Savings: Assumes 1,611 hrs/yr active mode (=8,760-7,149); Incremental Cost: ~$400 wholesale cost per NEEP ETR (used this value as opposed to $10/month average over life of measure) Base Saturation: Saturation of televisions; EE Saturation: 4-yr average of ENERGY STAR market shipment data
2031	ENERGY STAR + 10% Display	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2032	ENERGY STAR + 30% Display	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2033	ENERGY STAR + 50 % Display	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2034	ENERGY STAR 6.0 TV + 20% (0-20")	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2035	ENERGY STAR 6.0 TV + 20% (21-30")	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 19-39" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2036	ENERGY STAR 6.0 TV + 20% (31-40")	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 19-39" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2037	ENERGY STAR 6.0 TV + 20% (41-50")	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 40-59" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2038	ENERGY STAR 6.0 TV + 20% (51-60")	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 40-59" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2039	ENERGY STAR 6.0 TV + 20% (over 60")	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2040	ENERGY STAR PC	MF	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM	VT TRM	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES desktop computers to sum of saturation of ES desktop and non-ES desktop computers
2041	ES Laptop	MF	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of laptop computers; EE Saturation: Ratio of saturation of ES laptop computers to total laptop computers
2042	ES Laptop (Power Mgmt Enabled)	MF	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of laptop computers; EE Saturation: Ratio of saturation of ES laptop computers to total laptop computers
2043	Smart Strip plug outlet	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	GDS	GDS/NC	Annual kWh Savings: GDS used algorithm in NEEP Emerging Technologies Report and available MI saturation data to calculate per home savings; Per-unit kW Savings: Assumes 7,149 hrs/yr sleep mode per MID-ATL TRM; Base Saturation: AAssumed an average of 2 per home
2044	Efficient Set Top Box	MF	NC	All	-	-	NEEP (ETR) / RIA 2010 / GDS	GDS calc	GDS calc	-	-	-	-	NEEP (ETR)	ACEEE (A041)	GDS	GDS/NC	Annual kWh Savings: GDS used Table 11-3 deemed savings in NEEP Emerging Technologies Report and Table F.1 in RIA study to calculate per home savings; Per-unit kW Savings: Assumes 1,611 hrs/yr active mode (=8,760-7,149); Incremental Cost: ~$400 wholesale cost per NEEP ETR (used this value as opposed to $10/month average over life of measure) Base Saturation: Saturation of televisions;
2045	ENERGY STAR + 10% Display	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2046	ENERGY STAR + 30% Display	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2047	ENERGY STAR + 50 % Display	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2048	ENERGY STAR 6.0 TV + 20% (0-20")	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2049	ENERGY STAR 6.0 TV + 20% (21-30")	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2050	ENERGY STAR 6.0 TV + 20% (31-40")	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2051	ENERGY STAR 6.0 TV + 20% (41-50")	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2052	ENERGY STAR 6.0 TV + 20% (51-60")	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2053	ENERGY STAR 6.0 TV + 20% (over 60")	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2054	ENERGY STAR PC	MF	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM	VT TRM	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of desktop computers;
2055	ES Laptop	MF	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of laptop computers
2056	ES Laptop (Power Mgmt Enabled)	MF	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of laptop computers;
2057	Smart Strip plug outlet	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	GDS	RIA 2010	Annual kWh Savings: GDS used algorithm in NEEP Emerging Technologies Report and available MI saturation data to calculate per home savings; Per-unit kW Savings: Assumes 7,149 hrs/yr sleep mode per MID-ATL TRM; Base Saturation: Assumed an average of 2 per home EE Saturation: 2010 Plug Load Characterization Study for SoCal Edison has % of homes that do not use powerstrips or do not turn them off at 94%
2058	Efficient Set Top Box	MAN	Retrofit	All	-	-	NEEP (ETR) / RIA 2010 / GDS	GDS calc	GDS calc	-	-	-	-	NEEP (ETR)	ACEEE (A041)	GDS	ES Unit Ship	Annual kWh Savings: GDS used Table 11-3 deemed savings in NEEP Emerging Technologies Report and Table F.1 in RIA study to calculate per home savings; Per-unit kW Savings: Assumes 1,611 hrs/yr active mode (=8,760-7,149); Incremental Cost: ~$400 wholesale cost per NEEP ETR (used this value as opposed to $10/month average over life of measure) Base Saturation: Saturation of televisions; EE Saturation: 4-yr average of ENERGY STAR market shipment data
2059	ENERGY STAR + 10% Display	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2060	ENERGY STAR + 30% Display	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors
2061	ENERGY STAR + 50 % Display	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES computer monitors to total computer monitors

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
2062	ENERGY STAR 6.0 TV + 20% (0-20")	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2063	ENERGY STAR 6.0 TV + 20% (21-30")	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 19-39" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2064	ENERGY STAR 6.0 TV + 20% (31-40")	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 19-39" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2065	ENERGY STAR 6.0 TV + 20% (41-50")	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 40-59" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2066	ENERGY STAR 6.0 TV + 20% (51-60")	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; Base Saturation: Half of the saturation of 40-59" TV's; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2067	ENERGY STAR 6.0 TV + 20% (over 60")	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	MI Baseline 2011	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes; EE Saturation: Applies the 6-yr (2007-2012) average estimated market penetration of ENERGY STAR units to the 51% of TV's identified by the baseline study as either LCD, plasma, LED or front/rear projection units; assumes that the 49% of TV's identified by the baseline study as traditional/CRT units are inefficient
2068	ENERGY STAR PC	MAN	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM	VT TRM	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of desktop computers; EE Saturation: Ratio of saturation of ES desktop computers to sum of saturation of ES desktop and non-ES desktop computers
2069	ES Laptop	MAN	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of laptop computers; EE Saturation: Ratio of saturation of ES laptop computers to total laptop computers
2070	ES Laptop (Power Mgmt Enabled)	MAN	ROB	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	MI Baseline 2011	Base Saturation: Saturation of laptop computers; EE Saturation: Ratio of saturation of ES laptop computers to total laptop computers
2071	Smart Strip plug outlet	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	GDS	GDS/NC	Annual kWh Savings: GDS used algorithm in NEEP Emerging Technologies Report and available MI saturation data to calculate per home savings; Per-unit kW Savings: Assumes 7,149 hrs/yr sleep mode per MID-ATL TRM; Base Saturation: AAssumed an average of 2 per home
2072	Efficient Set Top Box	MAN	NC	All	-	-	NEEP (ETR) / RIA 2010 / GDS	GDS calc	GDS calc	-	-	-	-	NEEP (ETR)	ACEEE (A041)	GDS	GDS/NC	Annual kWh Savings: GDS used Table 11-3 deemed savings in NEEP Emerging Technologies Report and Table F.1 in RIA study to calculate per home savings; Per-unit kW Savings: Assumes 1,611 hrs/yr active mode (=8,760-7,149); Incremental Cost: ~$400 wholesale cost per NEEP ETR (used this value as opposed to $10/month average over life of measure) Base Saturation: Saturation of televisions;
2073	ENERGY STAR + 10% Display	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2074	ENERGY STAR + 30% Display	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2075	ENERGY STAR + 50 % Display	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Incremental Cost: MEMD states incremental cost is $0 - GDS assumes $1 for purposes of benefit-cost modeling; Base Saturation: Saturation of desktop computers;
2076	ENERGY STAR 6.0 TV + 20% (0-20")	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2077	ENERGY STAR 6.0 TV + 20% (21-30")	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2078	ENERGY STAR 6.0 TV + 20% (31-40")	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2079	ENERGY STAR 6.0 TV + 20% (41-50")	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2080	ENERGY STAR 6.0 TV + 20% (51-60")	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011 / GDS	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2081	ENERGY STAR 6.0 TV + 20% (over 60")	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	GDS	MI Baseline 2011	GDS/NC	Base Elec Use: ES 6.0 +20% measure chosen to represent all ES television measures in this size range (MEMD also has ES 6.0 and ES 6.0 + 35%); Incremental Cost: MEMD lists an incremental cost of $0 - GDS assumes $1 for benefit-cost modeling purposes
2082	ENERGY STAR PC	MAN	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM	VT TRM	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of desktop computers;
2083	ES Laptop	MAN	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of laptop computers
2084	ES Laptop (Power Mgmt Enabled)	MAN	NC	All	ES Calc. - IT	-	ES Calc. - IT	ES Calc. - IT	ES Calc. - IT	-	-	-	-	VT TRM / GDS	VT TRM / GDS	MI Baseline 2011	GDS/NC	Base Saturation: Saturation of laptop computers;
3000	Lighting																	
3001	CFL bulbs - 9W	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3002	CFL bulbs - 14W	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3003	CFL bulbs - 20W	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3004	CFL bulbs - 26W	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3005	LED Replacing A-line 40W	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3006	LED Replacing A-line 60W	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3007	LED Replacing A-line 75W (53W halogen)	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3008	LED Replacing A-line 100W (72W Halogen)	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3009	LED Lighting (screw-in) ; 2021 and later	SF	ROB	All	NEEP / DC SEU	-	NEEP / DC SEU	NEEP / DC SEU	NEEP / DC SEU	-	-	DC SEU TRM	-	NEEP	NEEP	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Savings/Cost/Lifetime: LED Modeling Inputs derived from Table 2-6 of NEEP Residential Lighting Strategy; hours of use from DC SEU TRM Baseline: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3010	CFL bulbs high wattage	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3011	LED fixtures downlights	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 65 W incandescent downlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are LEDs
3012	CFL bulbs 3-Way	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 130 W 3-way incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3013	CFL bulbs dimmable	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 59 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3014	CFL bulbs Globe	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 46 W incandescent globe; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3015	CFL bulbs candelabra	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 47 W incandescent candelabra; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3016	LED Flood PAR (average values)	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78 W incandescent flood light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3017	LED Globe	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 38 W incandescent globe light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are LEDs
3018	LED Night Light	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	PA 2011	PA 2011	Base elec use: 7 W incandescent nightlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating
3019	Torchiere Floor Lamps	SF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MA Baseline 2009	MI Baseline 2011	Base elec use: 250 W halogen torchiere; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 0.8 halogen torchieres per SF home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3020	Outdoor LED PAR/Flood	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78W incandescent flood light; Base saturation: Assumes 4.7 exterior bulbs per SF home; EE saturation: % of eligible exterior bulbs that are CFLs or LEDs
3021	Holiday Lights	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	ES Unit Ship / GDS	ES Unit Ship / GDS	Base elec use: 13 W incandescent holiday lights; Base saturation: Assumes 3.2 strings per home; EE saturation: 2-year average of ENERGY STAR Market Shipment data (2011-2012) - % of decorative lighting that is efficient
3022	HPT8 4ft 2 lamp replacing T12	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 50 W fluorescent (= two 25 W tubes); Base saturation: Assumes 7.7 tubes per SF home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs (used as proxy because MI Baseline does not specify)
3023	LW HPT8 4ft 2 lamp replacing T12	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 45 W fluorescent (~ two 25 W tubes); Base saturation: Assumes 7.7 tubes per SF home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs (used as proxy because MI Baseline does not specify)
3024	CFL Exterior fixture - 1 Lamp	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 5.7 eligible exterior bulbs per SF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3182	LED Exterior fixture - 1 Lamp	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 4.7 eligible exterior bulbs per MAN home; 38.7% are considered standard screw-in
3026	Occupancy Sensor	SF	Retrofit	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD / GDS	MEMD / GDS	MEMD / GDS	PA 2011	Base elec use: Assumes 60 W average bulb; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20% of all bulbs per SF home are eligible; EE saturation: GDS work papers from PA 2011 study show ~0.1% of bulbs have occupancy sensor
3027	CFL bulbs - 9W	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3028	CFL bulbs - 14W	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3029	CFL bulbs - 20W	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3030	CFL bulbs - 26W	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3031	LED Replacing A-line 40W	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3032	LED Replacing A-line 60W	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3033	LED Replacing A-line 75W (53W halogen)	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3034	LED Replacing A-line 100W (72W Halogen)	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3035	LED Lighting (screw-in) ; 2021 and later	SF	NC	All	NEEP / DC SEU	-	NEEP / DC SEU	NEEP / DC SEU	NEEP / DC SEU	-	-	DC SEU TRM	-	NEEP	NEEP	MI Baseline 2011 / DOE 2010	GDS/NC	Savings/Cost/Lifetime: LED Modeling Inputs derived from Table 2-6 of NEEP Residential Lighting Strategy; hours of use from DC SEU TRM Baseline: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3036	CFL bulbs high wattage	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3037	LED fixtures downlights	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 65 W incandescent downlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in
3038	CFL bulbs 3-Way	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 130 W 3-way incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in
3039	CFL bulbs dimmable	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 59 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in
3040	CFL bulbs Globe	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 46 W incandescent globe; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in
3041	CFL bulbs candelabra	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 47 W incandescent candelabra; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in
3042	LED Flood PAR (average values)	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 78 W incandescent flood light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 61.3% are considered standard screw-in
3043	LED Globe	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 38 W incandescent globe light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 48 eligible sockets per SF home; 38.7% are considered specialty screw-in
3044	LED Night Light	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	PA 2011	GDS/NC	Base elec use: 7 W incandescent nightlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating
3045	Torchiere Floor Lamps	SF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MA Baseline 2009	GDS/NC	Base elec use: 250 W halogen torchiere; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 0.8 halogen torchieres per SF home;
3046	Outdoor LED PAR/Flood	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 78W incandescent flood light; Base saturation: Assumes 4.7 exterior bulbs per SF home;
3047	Holiday Lights	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	ES Unit Ship / GDS	ES Unit Ship / GDS	Base elec use: 13 W incandescent holiday lights; Base saturation: Assumes 3.2 strings per home;
3048	HPT8 4ft 2 lamp replacing T12	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 50 W fluorescent (~ two 25 W tubes); Base saturation: Assumes 7.7 tubes per SF home;
3049	LW HPT8 4ft 2 lamp replacing T12	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 45 W fluorescent (~ two 25 W tubes); Base saturation: Assumes 7.7 tubes per SF home;
3050	CFL Exterior fixture - 1 Lamp	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 5.7 eligible exterior bulbs per SF home; 61.3% are considered standard screw-in
3156	LED Exterior fixture - 1 Lamp	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 4.7 eligible exterior bulbs per MAN home; 38.7% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3052	Occupancy Sensor	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS/NC	Base elec use: Assumes 60 W average bulb; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20% of all bulbs per SF home are eligible
3053	CFL bulbs - 9W	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3054	CFL bulbs - 14W	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3055	CFL bulbs - 20W	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3056	CFL bulbs - 26W	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3057	LED Replacing A-line 40W	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3058	LED Replacing A-line 60W	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3059	LED Replacing A-line 75W (53W halogen)	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs

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Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3060	LED Replacing A-line 100W (72W Halogen)	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3061	LED Lighting (screw-in) ; 2021 and later	MF	ROB	All	NEEP / DC SEU	-	NEEP / DC SEU	NEEP / DC SEU	NEEP / DC SEU	-	-	DC SEU TRM	-	NEEP	NEEP	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Savings/Cost/Lifetime: LED Modeling Inputs derived from Table 2-6 of NEEP Residential Lighting Strategy; hours of use from DC SEU TRM Baseline: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3062	CFL bulbs high wattage	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3063	LED fixtures downlights	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 65 W incandescent downlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are LEDs
3064	CFL bulbs 3-Way	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 130 W 3-way incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3065	CFL bulbs dimmable	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 59 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3066	CFL bulbs Globe	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 46 W incandescent globe; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3067	CFL bulbs candelabra	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 47 W incandescent candelabra; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3068	LED Flood PAR (average values)	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78 W incandescent flood light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3069	LED Globe	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 38 W incandescent globe light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are LEDs
3070	LED Night Light	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	PA 2011	PA 2011	Base elec use: 7 W incandescent nightlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating
3071	Torchiere Floor Lamps	MF	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MA Baseline 2009	MI Baseline 2011	Base elec use: 250 W halogen torchiere; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 0.8 halogen torchieres per MF home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3072	Outdoor LED PAR/Flood	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78W incandescent flood light; Base saturation: Assumes 4.7 exterior bulbs per MF home; EE saturation: % of eligible exterior bulbs that are CFLs or LEDs
3073	Holiday Lights	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	ES Unit Ship / GDS	ES Unit Ship / GDS	Base elec use: 13 W incandescent holiday lights; Base saturation: Assumes 3.2 strings per home; EE saturation: 2-year average of ENERGY STAR Market Shipment data (2011-2012) - % of decorative lighting that is efficient
3074	HPT8 4ft 2 lamp replacing T12	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 50 W fluorescent (= two 25 W tubes); Base saturation: Assumes 7.7 tubes per MF home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs (used as proxy because MI Baseline does not specify)
3075	LW HPT8 4ft 2 lamp replacing T12	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 45 W fluorescent (~ two 25 W tubes); Base saturation: Assumes 7.7 tubes per MF home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs (used as proxy because MI Baseline does not specify)
3076	CFL Exterior fixture - 1 Lamp	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 5.7 eligible exterior bulbs per MF home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3119	LED Exterior fixture - 1 Lamp	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 1.9 eligible exterior bulbs per MF home; 38.7% are considered standard screw-in
3078	Occupancy Sensor	MF	Retrofit	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD / GDS	MEMD / GDS	MEMD / GDS	PA 2011	Base elec use: Assumes 60 W average bulb; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20% of all bulbs per MF home are eligible; EE saturation: GDS work papers from PA 2011 study show ~0.1% of bulbs have occupancy sensor
3079	CFL Fixture	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 115 W modified halogens (2 bulb average of 53 W and 72 W bulbs; adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit, 2 bulbs per fixture; 61.3% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are CFLs
3080	CFL Screw in	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 61.3% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are CFLs
3081	CFL Screw in - high wattage	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 61.3% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are CFLs
3082	LED Screw in	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 53 W modified halogen; Annual Elec. Savings: Assumes 15 W LED bulb; accounts for heating and cooling waste heat factors Winter and Summer kW Savings: Accounts for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 61.3% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are CFLs or LEDs

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Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3083	CFL Candelabra - 24/7	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 42 W specialty incandescent, operates 24 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are CFLs
3084	CFL Candelabra - 12/7	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 42 W specialty incandescent, operates 12 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are CFLs
3085	LED Candelabra - 24/7	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 33 W specialty incandescent, operates 24 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are LEDs
3086	LED Candelabra - 12/7	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 33 W specialty incandescent, operates 12 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are LEDs
3087	LED Globe - 24/7	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 38 W specialty incandescent, operates 24 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are LEDs
3088	LED Globe - 12/7	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS	Base elec use: 38 W specialty incandescent, operates 12 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in EE saturation: Several sources combined to estimate % of eligible interior bulbs that are LEDs
3089	Exterior CFL Fixture - replace HID fixture in common area	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	MI Comm Base	GDS	Base elec use: 200 W average metal halide bulb
3090	Photo Cell Daylight Sensor	MF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Comm Base	GDS	Base elec use: ~100 bulb
3091	HPT8 4ft 2 lamp replacing T12, 12 hrs	MF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 50 W fluorescent (= two 25 W tubes), 12 hrs/day; Base saturation: Assumes 2.7 tubes per unit (assumes that half are operated 12 hrs/day & remaining half 24 hrs/day); EE saturation: Based on Michigan Commercial Baseline study
3092	HPT8 4ft 2 lamp replacing T12, 24 hrs	MF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 50 W fluorescent (= two 25 W tubes), 24 hrs/day; Base saturation: Assumes 2.7 tubes per unit (assumes that half are operated 12 hrs/day & remaining half 24 hrs/day); EE saturation: Based on Michigan Commercial Baseline study
3093	LW HPT8 4ft 2 lamp replacing T12, 12 hrs	MF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 45 W fluorescent (= two 25 W tubes); 12 hrs/day Base saturation: Assumes 2.7 tubes per unit (assumes that half are operated 12 hrs/day & remaining half 24 hrs/day); EE saturation: Based on Michigan Commercial Baseline study
3094	LW HPT8 4ft 2 lamp replacing T12, 24 hrs	MF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 45 W fluorescent (= two 25 W tubes); 24 hrs/day Base saturation: Assumes 2.7 tubes per unit (assumes that half are operated 12 hrs/day & remaining half 24 hrs/day); EE saturation: Based on Michigan Commercial Baseline study
3095	CFL bulbs - 9W	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3096	CFL bulbs - 14W	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3097	CFL bulbs - 20W	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3098	CFL bulbs - 26W	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3099	LED Replacing A-line 40W	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3100	LED Replacing A-line 60W	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3101	LED Replacing A-line 75W (53W halogen)	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3102	LED Replacing A-line 100W (72W Halogen)	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3103	LED Lighting (screw-in) ; 2021 and later	MF	NC	All	NEEP / DC SEU	-	NEEP / DC SEU	NEEP / DC SEU	NEEP / DC SEU	-	-	DC SEU TRM	-	NEEP	NEEP	MI Baseline 2011 / DOE 2010	GDS/NC	Savings/Cost/Lifetime: LED Modeling Inputs derived from Table 2-6 of NEEP Residential Lighting Strategy; hours of use from DC SEU TRM Baseline: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3104	CFL bulbs high wattage	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3105	LED fixtures downlights	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 65 W incandescent downlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in
3106	CFL bulbs 3-Way	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 130 W 3-way incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in
3107	CFL bulbs dimmable	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 59 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3108	CFL bulbs Globe	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 46 W incandescent globe; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in
3109	CFL bulbs candelabra	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 47 W incandescent candelabra; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in
3110	LED Flood PAR (average values)	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 78 W incandescent flood light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 61.3% are considered standard screw-in
3111	LED Globe	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 38 W incandescent globe light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20 eligible sockets per MF home; 38.7% are considered specialty screw-in
3112	LED Night Light	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	PA 2011	GDS/NC	Base elec use: 7 W incandescent nightlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating
3113	Torchiere Floor Lamps	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MA Baseline 2009	GDS/NC	Base elec use: 250 W halogen torchiere; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 0.8 halogen torchieres per MF home;
3114	Outdoor LED PAR/Flood	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / DOE 2010	GDS/NC	Base elec use: 78W incandescent flood light; Base saturation: Assumes 4.7 exterior bulbs per MF home;
3115	Holiday Lights	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	ES Unit Ship / GDS	ES Unit Ship / GDS	Base elec use: 13 W incandescent holiday lights; Base saturation: Assumes 3.2 strings per home;
3116	HPT8 4ft 2 lamp replacing T12	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 50 W fluorescent (= two 25 W tubes); Base saturation: Assumes 7.7 tubes per MF home;
3117	LW HPT8 4ft 2 lamp replacing T12	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 45 W fluorescent (~ two 25 W tubes); Base saturation: Assumes 7.7 tubes per MF home;
3118	CFL Exterior fixture - 1 Lamp	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 5.7 eligible exterior bulbs per MF home; 61.3% are considered standard screw-in
3077	LED Exterior fixture - 1 Lamp	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 1.9 eligible exterior bulbs per MF home; 38.7% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3120	Occupancy Sensor	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS/NC	Base elec use: Assumes 60 W average bulb; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20% of all bulbs per MF home are eligible
3121	CFL Fixture	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 115 W modified halogens (2 bulb average of 53 W and 72 W bulbs; adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit, 2 bulbs per fixture; 61.3% of bulbs are standard screw-in
3122	CFL Screw in	MF	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 61.3% of bulbs are standard screw-in
3123	CFL Screw in - high wattage	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 61.3% of bulbs are standard screw-in
3124	LED Screw in	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 53 W modified halogen; Annual Elec. Savings: Assumes 15 W LED bulb; accounts for heating and cooling waste heat factors Winter and Summer kW Savings: Accounts for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 61.3% of bulbs are standard screw-in
3125	CFL Candelabra - 24/7	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 42 W specialty incandescent, operates 24 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in
3126	CFL Candelabra - 12/7	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 42 W specialty incandescent, operates 12 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in
3127	LED Candelabra - 24/7	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 42 W specialty incandescent, operates 24 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in
3128	LED Candelabra - 12/7	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 42 W specialty incandescent, operates 12 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in
3129	LED Globe - 24/7	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 38 W specialty incandescent, operates 24 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in
3130	LED Globe - 12/7	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	GDS	GDS/NC	Base elec use: 38 W specialty incandescent, operates 12 hrs/day; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Several sources combined to estimate 0.4 eligible sockets in common area per unit; 38.7% of bulbs are standard screw-in
3131	Exterior CFL Fixture - replace HID fixture in common area	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	-	MEMD	MEMD	MI Comm Base	GDS/NC	Base elec use: 200 W average metal halide bulb
3132	CFL bulbs - 9W	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3133	CFL bulbs - 14W	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3134	CFL bulbs - 20W	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3135	CFL bulbs - 26W	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3136	LED Replacing A-line 40W	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3137	LED Replacing A-line 60W	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3138	LED Replacing A-line 75W (53W halogen)	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3139	LED Replacing A-line 100W (72W Halogen)	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3140	LED Lighting (screw-in) ; 2021 and later	MAN	ROB	All	NEEP / DC SEU	-	NEEP / DC SEU	NEEP / DC SEU	NEEP / DC SEU	-	-	DC SEU TRM	-	NEEP	NEEP	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Savings/Cost/Lifetime: LED Modeling Inputs derived from Table 2-6 of NEEP Residential Lighting Strategy; hours of use from DC SEU TRM Baseline: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3141	CFL bulbs high wattage	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3142	LED fixtures downlights	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 65 W incandescent downlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are LEDs
3143	CFL bulbs 3-Way	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 130 W 3-way incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3144	CFL bulbs dimmable	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 59 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3145	CFL bulbs Globe	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 46 W incandescent globe; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3146	CFL bulbs candelabra	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 47 W incandescent candelabra; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3147	LED Flood PAR (average values)	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78 W incandescent flood light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standarad screw-in EE saturation: % of eligible interior bulbs that are LEDs
3148	LED Globe	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 38 W incandescent globe light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 38.7% are considered specialty screw-in EE saturation: % of eligible interior bulbs that are LEDs
3149	LED Night Light	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	PA 2011	PA 2011	Base elec use: 7 W incandescent nightlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating
3150	Torchiere Floor Lamps	MAN	ROB	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MA Baseline 2009	MI Baseline 2011	Base elec use: 250 W halogen torchiere; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 0.8 halogen torchieres per MAN home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs
3151	Outdoor LED PAR/Flood	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78W incandescent flood light; Base saturation: Assumes 4.7 exterior bulbs per MAN home; EE saturation: % of eligible exterior bulbs that are CFLs or LEDs
3152	Holiday Lights	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	ES Unit Ship / GDS	ES Unit Ship / GDS	Base elec use: 13 W incandescent holiday lights; Base saturation: Assumes 3.2 strings per home; EE saturation: 2-year average of ENERGY STAR Market Shipment data (2011-2012) - % of decorative lighting that is efficient
3153	HPT8 4ft 2 lamp replacing T12	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 50 W fluorescent (= two 25 W tubes); Base saturation: Assumes 7.7 tubes per MAN home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs (used as proxy because MI Baseline does not specify)
3154	LW HPT8 4ft 2 lamp replacing T12	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 45 W fluorescent (= two 25 W tubes); Base saturation: Assumes 7.7 tubes per MAN home; EE saturation: % of eligible interior bulbs that are CFLs or LEDs (used as proxy because MI Baseline does not specify)
3155	CFL Exterior fixture - 1 Lamp	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 5.7 eligible exterior bulbs per MAN home; 61.3% are considered standard screw-in EE saturation: % of eligible interior bulbs that are CFLs and LEDs
3051	LED Exterior fixture - 1 Lamp	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 2.6 eligible exterior bulbs per SF home; 38.7% are considered standard screw-in
3157	Occupancy Sensor	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD / GDS	MEMD / GDS	MEMD / GDS	PA 2011	Base elec use: Assumes 60 W average bulb; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20% of all bulbs per MAN home are eligible; EE saturation: GDS work papers from PA 2011 study show ~0.1% of bulbs have occupancy sensor

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
3158	CFL bulbs - 9W	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 61.3% are considered standard screw-in
3159	CFL bulbs - 14W	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 61.3% are considered standard screw-in
3160	CFL bulbs - 20W	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 61.3% are considered standard screw-in
3161	CFL bulbs - 26W	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 61.3% are considered standard screw-in
3162	LED Replacing A-line 40W	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 29 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in
3163	LED Replacing A-line 60W	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 43 W modified halogen (adjusted MEMD work papers to account for EISA standard); Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in
3164	LED Replacing A-line 75W (53W halogen)	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 53 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in
3165	LED Replacing A-line 100W (72W Halogen)	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 72 W modified halogen; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in
3166	LED Lighting (screw-in) ; 2021 and later	MAN	NC	All	NEEP / DC SEU	-	NEEP / DC SEU	NEEP / DC SEU	NEEP / DC SEU	-	-	DC SEU TRM	-	NEEP	NEEP	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Savings/Cost/Lifetime: LED Modeling Inputs derived from Table 2-6 of NEEP Residential Lighting Strategy; hours of use from DC SEU TRM Baseline: Assumes 29 eligible sockets per MAN home; 61.3% are considered standard screw-in
3167	CFL bulbs high wattage	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 200 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 61.3% are considered standard screw-in
3168	LED fixtures downlights	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 65 W incandescent downlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 38.7% are considered specialty screw-in
3169	CFL bulbs 3-Way	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 130 W 3-way incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 38.7% are considered specialty screw-in
3170	CFL bulbs dimmable	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 59 W incandescent; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 38.7% are considered specialty screw-in
3171	CFL bulbs Globe	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 46 W incandescent globe; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 38.7% are considered specialty screw-in
3172	CFL bulbs candelabra	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 47 W incandescent candelabra; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 38.7% are considered specialty screw-in
3173	LED Flood PAR (average values)	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78 W incandescent flood light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 61.3% are considered standard screw-in
3174	LED Globe	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 38 W incandescent globe light; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 29 eligible sockets per MF home; 38.7% are considered specialty screw-in
3175	LED Night Light	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	PA 2011	PA 2011	Base elec use: 7 W incandescent nightlight; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating
3176	Torchiere Floor Lamps	MAN	NC	All	MEMD	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD	MEMD	MA Baseline 2009	MI Baseline 2011	Base elec use: 250 W halogen torchiere; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 0.8 halogen torchieres per MF home;
3177	Outdoor LED PAR/Flood	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / DOE 2010	MI Baseline 2011	Base elec use: 78W incandescent flood light; Base saturation: Assumes 4.7 exterior bulbs per MAN home;
3178	Holiday Lights	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	ES Unit Ship / GDS	ES Unit Ship / GDS	Base elec use: 13 W incandescent holiday lights; Base saturation: Assumes 3.2 strings per home;
3179	HPT8 4ft 2 lamp replacing T12	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 50 W fluorescent (= two 25 W tubes); Base saturation: Assumes 7.7 tubes per MAN home;
3180	LW HPT8 4ft 2 lamp replacing T12	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 45 W fluorescent (~ two 25 W tubes); Base saturation: Assumes 7.7 tubes per MAN home;
3181	CFL Exterior fixture - 1 Lamp	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 5.7 eligible exterior bulbs per MAN home; 61.3% are considered standard screw-in
3025	LED Exterior fixture - 1 Lamp	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base elec use: 43 W modified halogen bulb; Base saturation: Assumes 2.6 eligible exterior bulbs per SF home; 38.7% are considered standard screw-in EE saturation: % of eligible interior bulbs that are LEDs
3183	Occupancy Sensor	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	GDS / DC SEU / Ohio TRM	GDS / DC SEU / Ohio TRM	MEMD / GDS	MEMD / GDS	MEMD / GDS	PA 2011	Base elec use: Assumes 60 W average bulb; Annual Elec. Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Winter and Summer kW Savings: MEMD work papers adjusted to account for heating and cooling waste heat factors Annual Non-elec. Savings: GDS calculation (using DC SEU TRM algorithm) to account for increased heating load in homes with gas heating Base saturation: Assumes 20% of all bulbs per MAN home are eligible
4000	Water Heating																	
4001	Heat Pump Water Heaters	SF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD	MEMD	-	-	MID-ATL TRM / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS	Base Annual Elec: MEMD algorithm adjusted to account for 2015 federal standard (~0.95 EF) for electric water heaters; Annual kWh Savings: MEMD algorithm used with updated federal baseline; Base Saturation: % of homes with electric water heating; EE Saturation: GDS estimate based on secondary data
4002	Super Efficiency Gas Water Heater 0.70 EF	SF	ROB	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: % of homes with gas water heating EE saturation: GDS estimate based on secondary data

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
4003	Instant Gas Water Heater	SF	ROB	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS	Base Saturation: % of homes with gas water heating; EE Saturation: GDS estimate based on secondary research
4004	Tank Wrap	SF	Retrofit	All	-	-	-	-	-	GDS calc	-	GDS calc	-	MID-ATL TRM	MID-ATL TRM	MI Baseline 2011	GDS	Base Saturation: percentage of homes with gas water heating, less the percentage with tankless water heating
4005	Pipe Wrap - gas water heater - Insulated Pipe with R3	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4006	Pipe Wrap - gas water heater - Insulated Pipe with R2	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.23 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4007	Pipe Wrap - electric water heater - Insulated Pipe with R3	SF	Retrofit	NLI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4008	Pipe Wrap - electric water heater - Insulated Pipe with R2	SF	Retrofit	NLI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (45 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4009	Low Flow Showerheads 1.75 gpm - gas water heating	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4010	Low Flow Showerheads 1.5 gpm - gas water heating	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4011	Low Flow Showerheads 1.25 gpm - gas water heating	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4012	Low Flow Showerheads 1.0 gpm - gas water heating	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4013	Low Flow Showerheads 0.5 gpm - gas water heating	SF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4014	Low Flow Showerheads 1.75 gpm - electric water heating	SF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4015	Low Flow Showerheads 1.5 gpm - electric water heating	SF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4016	Low Flow Showerheads 1.25 gpm - electric water heating	SF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4017	Low Flow Showerheads 1.0 gpm - electric water heating	SF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4018	Low Flow Showerheads 0.5 gpm - electric water heating	SF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4019	Pipe Wrap - gas water heater - Insulated Pipe with R3	SF	Retrofit	LI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4020	Pipe Wrap - electric water heater - Insulated Pipe with R3	SF	Retrofit	LI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4021	Low Flow Showerheads 1.25 gpm - gas water heating	SF	Retrofit	LI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4022	Low Flow Showerheads 1.25 gpm - electric water heating	SF	Retrofit	LI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4023	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4024	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4025	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4026	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4027	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4028	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4029	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4030	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4031	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4032	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4033	Shower start - 1.75 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4034	Shower start - 1.5 gpm - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4035	Shower start - 1.75 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric water heating
4036	Shower start - 1.5 gpm - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric water heating
4037	Gravity Film Heat Exchanger GFX - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4038	Gravity Film Heat Exchanger GFX - electric water heating	SF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric heating
4039	Solar Domestic Hot Water - gas water heating	SF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4040	Solar Domestic Hot Water - electric water heating	SF	Retrofit	All	MEMD / GDS	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual Elec: Adjusted to account for 2015 federal water heating standards Base Saturation: % of homes with electric water heating
4041	Heat Pump Water Heaters	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD	MEMD	-	-	MID-ATL TRM / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Elec: MEMD algorithm adjusted to account for 2015 federal standard (~0.95 EF) for electric water heaters; Annual kWh Savings: MEMD algorithm used with updated federal baseline; Base Saturation: % of homes with electric water heating
4042	Super Efficiency Gas Water Heater 0.70 EF	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base saturation: % of homes with gas water heating
4043	Instant Gas Water Heater	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating;
4044	Pipe Wrap - gas water heater - Insulated Pipe with R3	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4045	Pipe Wrap - gas water heater - Insulated Pipe with R2	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.23 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4046	Pipe Wrap - electric water heater - Insulated Pipe with R3	SF	NC	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4047	Pipe Wrap - electric water heater - Insulated Pipe with R2	SF	NC	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (45 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4048	Low Flow Showerheads 1.75 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4049	Low Flow Showerheads 1.5 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4050	Low Flow Showerheads 1.25 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
4051	Low Flow Showerheads 1.0 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4052	Low Flow Showerheads 0.5 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4053	Low Flow Showerheads 1.75 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4054	Low Flow Showerheads 1.5 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4055	Low Flow Showerheads 1.25 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4056	Low Flow Showerheads 1.0 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4057	Low Flow Showerheads 0.5 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4058	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4059	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4060	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4061	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4062	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4063	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4064	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4065	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4066	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4067	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4068	Shower start - 1.75 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4069	Shower start - 1.5 gpm - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4070	Shower start - 1.75 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric water heating
4071	Shower start - 1.5 gpm - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric water heating
4072	Gravity Film Heat Exchanger GFX - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4073	Gravity Film Heat Exchanger GFX - electric water heating	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric heating
4074	Solar Domestic Hot Water - gas water heating	SF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4075	Solar Domestic Hot Water - electric water heating	SF	NC	All	MEMD / GDS	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Elec: Adjusted to account for 2015 federal water heating standards Base Saturation: % of homes with electric water heating
4076	Heat Pump Water Heaters	MF	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD	MEMD	-	-	MID-ATL TRM / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS	Base Annual Elec: MEMD algorithm adjusted to account for 2015 federal standard (~0.95 EF) for electric water heaters; Annual kWh Savings: MEMD algorithm used with updated federal baseline; Base Saturation: % of homes with electric water heating; EE Saturation: GDS estimate based on secondary data
4077	Super Efficiency Gas Water Heater 0.70 EF	MF	ROB	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: % of homes with gas water heating EE saturation: GDS estimate based on secondary data
4078	Instant Gas Water Heater	MF	ROB	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS	Base Saturation: % of homes with gas water heating; EE Saturation: GDS estimate based on secondary research
4079	Tank Wrap	MF	Retrofit	All	-	-	-	-	-	GDS calc	-	GDS calc	-	MID-ATL TRM	MID-ATL TRM	MI Baseline 2011	GDS	Base Saturation: percentage of homes with gas water heating, less the percentage with tankless water heating
4080	Pipe Wrap - gas water heater - Insulated Pipe with R3	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4081	Pipe Wrap - gas water heater - Insulated Pipe with R2	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.23 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4082	Pipe Wrap - electric water heater - Insulated Pipe with R3	MF	Retrofit	NLI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4083	Pipe Wrap - electric water heater - Insulated Pipe with R2	MF	Retrofit	NLI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (45 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4084	Low Flow Showerheads 1.75 gpm - gas water heating	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4085	Low Flow Showerheads 1.5 gpm - gas water heating	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4086	Low Flow Showerheads 1.25 gpm - gas water heating	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4087	Low Flow Showerheads 1.0 gpm - gas water heating	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4088	Low Flow Showerheads 0.5 gpm - gas water heating	MF	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4089	Low Flow Showerheads 1.75 gpm - electric water heating	MF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4090	Low Flow Showerheads 1.5 gpm - electric water heating	MF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4091	Low Flow Showerheads 1.25 gpm - electric water heating	MF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4092	Low Flow Showerheads 1.0 gpm - electric water heating	MF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4093	Low Flow Showerheads 0.5 gpm - electric water heating	MF	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4094	Pipe Wrap - gas water heater - Insulated Pipe with R3	MF	Retrofit	LI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4095	Pipe Wrap - electric water heater - Insulated Pipe with R3	MF	Retrofit	LI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4096	Low Flow Showerheads 1.25 gpm - gas water heating	MF	Retrofit	LI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4097	Low Flow Showerheads 1.25 gpm - electric water heating	MF	Retrofit	LI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4098	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4099	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating

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Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
4100	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4101	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4102	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4103	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4104	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4105	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4106	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4107	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4108	Shower start - 1.75 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4109	Shower start - 1.5 gpm - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4110	Shower start - 1.75 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric water heating
4111	Shower start - 1.5 gpm - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric water heating
4112	Gravity Film Heat Exchanger GFX - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4113	Gravity Film Heat Exchanger GFX - electric water heating	MF	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric heating
4114	Solar Domestic Hot Water - gas water heating	MF	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4115	Solar Domestic Hot Water - electric water heating	MF	Retrofit	All	MEMD / GDS	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual Elec: Adjusted to account for 2015 federal water heating standards Base Saturation: % of homes with electric water heating
4116	Heat Pump Water Heaters	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD	MEMD	-	-	MID-ATL TRM / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Elec: MEMD algorithm adjusted to account for 2015 federal standard (~0.95 EF) for electric water heaters; Annual kWh Savings: MEMD algorithm used with updated federal baseline; Base Saturation: % of homes with electric water heating
4117	Super Efficiency Gas Water Heater 0.70 EF	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base saturation: % of homes with gas water heating
4118	Instant Gas Water Heater	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating;
4119	Pipe Wrap - gas water heater - Insulated Pipe with R3	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4120	Pipe Wrap - gas water heater - Insulated Pipe with R2	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.23 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4121	Pipe Wrap - electric water heater - Insulated Pipe with R3	MF	NC	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4122	Pipe Wrap - electric water heater - Insulated Pipe with R2	MF	NC	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (45 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4123	Low Flow Showerheads 1.75 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4124	Low Flow Showerheads 1.5 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4125	Low Flow Showerheads 1.25 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4126	Low Flow Showerheads 1.0 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4127	Low Flow Showerheads 0.5 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4128	Low Flow Showerheads 1.75 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4129	Low Flow Showerheads 1.5 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4130	Low Flow Showerheads 1.25 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4131	Low Flow Showerheads 1.0 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4132	Low Flow Showerheads 0.5 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4133	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4134	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4135	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4136	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4137	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4138	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4139	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4140	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4141	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4142	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4143	Shower start - 1.75 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4144	Shower start - 1.5 gpm - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4145	Shower start - 1.75 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric water heating
4146	Shower start - 1.5 gpm - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric water heating

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Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
4147	Gravity Film Heat Exchanger GFX - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4148	Gravity Film Heat Exchanger GFX - electric water heating	MF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric heating
4149	Solar Domestic Hot Water - gas water heating	MF	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4150	Solar Domestic Hot Water - electric water heating	MF	NC	All	MEMD / GDS	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Elec: Adjusted to account for 2015 federal water heating standards Base Saturation: % of homes with electric water heating
4151	Heat Pump Water Heaters	MAN	ROB	All	MEMD / GDS	-	MEMD / GDS	MEMD	MEMD	-	-	MID-ATL TRM / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS	Base Annual Elec: MEMD algorithm adjusted to account for 2015 federal standard (~0.95 EF) for electric water heaters; Annual kWh Savings: MEMD algorithm used with updated federal baseline; Base Saturation: % of homes with electric water heating; EE Saturation: GDS estimate based on secondary data
4152	Super Efficiency Gas Water Heater 0.70 EF	MAN	ROB	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS	Base saturation: % of homes with gas water heating EE saturation: GDS estimate based on secondary data
4153	Instant Gas Water Heater	MAN	ROB	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS	Base Saturation: % of homes with gas water heating; EE Saturation: GDS estimate based on secondary research
4154	Tank Wrap	MAN	Retrofit	All	-	-	-	-	-	GDS calc	-	GDS calc	-	MID-ATL TRM	MID-ATL TRM	MI Baseline 2011	GDS	Base Saturation: percentage of homes with gas water heating, less the percentage with tankless water heating
4155	Pipe Wrap - gas water heater - Insulated Pipe with R3	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4156	Pipe Wrap - gas water heater - Insulated Pipe with R2	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.23 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4157	Pipe Wrap - electric water heater - Insulated Pipe with R3	MAN	Retrofit	NLI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4158	Pipe Wrap - electric water heater - Insulated Pipe with R2	MAN	Retrofit	NLI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (45 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4159	Low Flow Showerheads 1.75 gpm - gas water heating	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4160	Low Flow Showerheads 1.5 gpm - gas water heating	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4161	Low Flow Showerheads 1.25 gpm - gas water heating	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4162	Low Flow Showerheads 1.0 gpm - gas water heating	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4163	Low Flow Showerheads 0.5 gpm - gas water heating	MAN	Retrofit	NLI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4164	Low Flow Showerheads 1.75 gpm - electric water heating	MAN	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4165	Low Flow Showerheads 1.5 gpm - electric water heating	MAN	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4166	Low Flow Showerheads 1.25 gpm - electric water heating	MAN	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4167	Low Flow Showerheads 1.0 gpm - electric water heating	MAN	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4168	Low Flow Showerheads 0.5 gpm - electric water heating	MAN	Retrofit	NLI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4169	Pipe Wrap - gas water heater - Insulated Pipe with R3	MAN	Retrofit	LI	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4170	Pipe Wrap - electric water heater - Insulated Pipe with R3	MAN	Retrofit	LI	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4171	Low Flow Showerheads 1.25 gpm - gas water heating	MAN	Retrofit	LI	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4172	Low Flow Showerheads 1.25 gpm - electric water heating	MAN	Retrofit	LI	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	MI Baseline 2011	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4173	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4174	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4175	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4176	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4177	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4178	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4179	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4180	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4181	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4182	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4183	Shower start - 1.75 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4184	Shower start - 1.5 gpm - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4185	Shower start - 1.75 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric water heating
4186	Shower start - 1.5 gpm - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric water heating
4187	Gravity Film Heat Exchanger GFX - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4188	Gravity Film Heat Exchanger GFX - electric water heating	MAN	Retrofit	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with electric heating
4189	Solar Domestic Hot Water - gas water heating	MAN	Retrofit	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Saturation: % of homes with gas water heating
4190	Solar Domestic Hot Water - electric water heating	MAN	Retrofit	All	MEMD / GDS	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Annual Elec: Adjusted to account for 2015 federal water heating standards Base Saturation: % of homes with electric water heating
4191	Heat Pump Water Heaters	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD	MEMD	-	-	MID-ATL TRM / GDS	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Elec: MEMD algorithm adjusted to account for 2015 federal standard (~0.95 EF) for electric water heaters; Annual kWh Savings: MEMD algorithm used with updated federal baseline; Base Saturation: % of homes with electric water heating
4192	Super Efficiency Gas Water Heater 0.70 EF	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base saturation: % of homes with gas water heating
4193	Instant Gas Water Heater	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating;
4194	Pipe Wrap - gas water heater - Insulated Pipe with R3	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.26 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
4195	Pipe Wrap - gas water heater - Insulated Pipe with R2	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD / GDS	-	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Annual Non-elec Savings: Assumes 6 LF of pipe wrap; savings = (0.23 MMBtu/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with gas water heating
4196	Pipe Wrap - electric water heater - Insulated Pipe with R3	MAN	NC	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (51 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4197	Pipe Wrap - electric water heater - Insulated Pipe with R2	MAN	NC	All	MEMD work papers	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	-	-	-	-	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Annual kWh Savings: Assumes 6 LF of pipe wrap; savings = (45 kWh/LF)*(6 LF); Incremental Cost: = ($0.20/LF)*(6 LF) incremental cost + $3.63 installation cost; Base Saturation: % of homes with electric water heating
4198	Low Flow Showerheads 1.75 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4199	Low Flow Showerheads 1.5 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4200	Low Flow Showerheads 1.25 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4201	Low Flow Showerheads 1.0 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4202	Low Flow Showerheads 0.5 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with gas heating
4203	Low Flow Showerheads 1.75 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4204	Low Flow Showerheads 1.5 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4205	Low Flow Showerheads 1.25 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4206	Low Flow Showerheads 1.0 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4207	Low Flow Showerheads 0.5 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD / GDS	MI Baseline 2011	GDS/NC	Incremental Cost: $12 for equipment - assumes $6.70 for labor; Base Saturation: % of homes with electric heating
4208	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4209	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4210	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4211	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4212	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with gas water heating
4213	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4214	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	MI Baseline 2011	Base Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4215	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4216	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4217	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Non-Elec Use: Derived from MEMD work papers; Incremental Cost: $2.80 per aerator + $6.70 labor cost Base Saturation: Percentage of homes with electric water heating
4218	Shower start - 1.75 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4219	Shower start - 1.5 gpm - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	MEMD work papers	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4220	Shower start - 1.75 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric water heating
4221	Shower start - 1.5 gpm - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric water heating
4222	Gravity Film Heat Exchanger GFX - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4223	Gravity Film Heat Exchanger GFX - electric water heating	MAN	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with electric heating
4224	Solar Domestic Hot Water - gas water heating	MAN	NC	All	-	-	-	-	-	MEMD work papers	-	MEMD	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Saturation: % of homes with gas water heating
4225	Solar Domestic Hot Water - electric water heating	MAN	NC	All	MEMD / GDS	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	GDS/NC	Base Annual Elec: Adjusted to account for 2015 federal water heating standards Base Saturation: % of homes with electric water heating
5000	Other																	
5001	Pump and Motor Single Speed	SF	ROB	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	CEE	Base saturation: % of homes with pools (assigns all pools to single-family homes)
5002	Pump and motor w auto controls - multi speed	SF	ROB	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011	CEE	Base saturation: % of homes with pools (assigns all pools to single-family homes)
5003	Pump and Motor Single Speed	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	CEE	Base saturation: % of homes with pools (assigns all pools to single-family homes)
5004	Pump and motor w auto controls - multi speed	SF	NC	All	MEMD Work papers	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	CEE	Base saturation: % of homes with pools (assigns all pools to single-family homes)
6000	HVAC (Envelope)																	
6001	Airtight Can Lights	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6002	Basement Wall Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6003	Cool roof	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6004	Crawlspace Wall Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6005	Door weatherstripping	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6006	Duct Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6007	Duct location	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6008	Duct sealing 15% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6009	Duct sealing 20% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6010	Duct sealing 25% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6011	Duct sealing 30% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6012	Energy Star Door	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6013	Floor Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6014	Infiltration reduction - 10%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6015	Infiltration reduction - 15%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6016	Infiltration reduction - 20%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6017	Infiltration reduction - 30%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6018	Infiltration reduction - 40%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6019	Infiltration reduction - 50%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6020	Rim Joist Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6021	Wall Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6022	Window Film	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6023	Window Replacement	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6024	New vinyl window	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6025	Original double hung window with low U storm	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6026	Original double hung window with original storm window	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6027	Rehabbed double hung	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6028	Rehabbed double hung with low U storm	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6029	Rehabbed double hung with single glazed storm	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6030	R19 kneewalls	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6031	R-38 "scuttle hole" Attic hatch	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6032	R-38 pull-down stairs Attic hatch	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6033	R-30 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6034	R-38 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6035	R-49 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6036	R-60 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6037	Low Income Weatherization Package	SF	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6038	Basement Wall Insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6039	Cool roof	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6040	Crawlspace Wall Insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6041	Duct Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6042	Duct location	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6043	Duct sealing 15% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6044	Duct sealing 20% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6045	Duct sealing 25% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6046	Duct sealing 30% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6047	Energy Star Door	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6048	Floor Insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6049	Infiltration reduction - 10%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6050	Infiltration reduction - 15%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6051	Infiltration reduction - 20%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6052	Infiltration reduction - 30%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6053	Infiltration reduction - 40%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6054	Infiltration reduction - 50%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6055	Wall Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6056	Window Film	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6057	Window Replacement	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6058	R19 kneewalls	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6059	R-38 "scuttle hole" Attic hatch	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6060	R-38 pull-down stairs Attic hatch	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6061	R-30 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6062	R-38 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6063	R-49 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6064	R-60 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6065	Low Income Weatherization Package	SF	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6066	Airtight Can Lights	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6067	Basement Wall Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6068	Cool roof	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6069	Crawlspace Wall Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6070	Door weatherstripping	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6071	Duct Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6072	Duct location	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6073	Duct sealing 15% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6074	Duct sealing 20% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6075	Duct sealing 25% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6076	Duct sealing 30% leakage base	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6077	Energy Star Door	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6078	Floor Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6079	Infiltration reduction - 10%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6080	Infiltration reduction - 15%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6081	Infiltration reduction - 20%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6082	Infiltration reduction - 30%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6083	Infiltration reduction - 40%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6084	Infiltration reduction - 50%	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6085	Rim Joist Insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6086	Steam pipe insulation	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	
6087	Wall Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6088	Window Film	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6089	Window Replacement	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6090	New vinyl window	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6091	Original double hung window with low U storm	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6092	Original double hung window with original storm window	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6093	Rehabbed double hung	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6094	Rehabbed double hung with low U storm	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6095	Rehabbed double hung with single glazed storm	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6096	R19 kneewalls	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6097	R-38 "scuttle hole" Attic hatch	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6098	R-38 pull-down stairs Attic hatch	SF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6099	R-30 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6100	R-38 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6101	R-49 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6102	R-60 Roof Insulation	SF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6103	Low Income Weatherization Package	SF	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6104	Basement Wall Insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6105	Cool roof	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6106	Crawlspace Wall Insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6107	Duct Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6108	Duct location	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6109	Duct sealing 15% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6110	Duct sealing 20% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6111	Duct sealing 25% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6112	Duct sealing 30% leakage base	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6113	Energy Star Door	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6114	Floor Insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6115	Infiltration reduction - 10%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6116	Infiltration reduction - 15%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6117	Infiltration reduction - 20%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6118	Infiltration reduction - 30%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6119	Infiltration reduction - 40%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6120	Infiltration reduction - 50%	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6121	Steam pipe insulation	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	
6122	Wall Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6123	Window Film	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6124	Window Replacement	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6125	R19 kneewalls	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6126	R-38 "scuttle hole" Attic hatch	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6127	R-38 pull-down stairs Attic hatch	SF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6128	R-30 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6129	R-38 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6130	R-49 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6131	R-60 Roof Insulation	SF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6132	Low Income Weatherization Package	SF	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6133	Basement Wall Insulation	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6134	Cool roof	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6135	Crawlspace Wall Insulation	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6136	Duct Insulation	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6137	Duct location	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6138	Duct sealing 15% leakage base	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6139	Duct sealing 20% leakage base	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6140	Duct sealing 25% leakage base	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6141	Duct sealing 30% leakage base	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6142	Energy Star Door	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6143	Floor Insulation	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6144	Infiltration reduction - 10%	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6145	Infiltration reduction - 15%	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6146	Infiltration reduction - 20%	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6147	Infiltration reduction - 30%	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6148	Infiltration reduction - 40%	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6149	Infiltration reduction - 50%	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6150	Wall Insulation	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6151	Window Film	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6152	Window Replacement	SF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6153	Airtight Can Lights	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6154	Cool roof	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6155	Door weatherstripping	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6156	Duct Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6157	Duct location	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6158	Duct sealing 15% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6159	Duct sealing 20% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6160	Duct sealing 25% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6161	Duct sealing 30% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6162	Energy Star Door	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6163	Infiltration reduction - 10%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6164	Infiltration reduction - 15%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6165	Infiltration reduction - 30%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6166	Infiltration reduction - 50%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6167	Roof Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6168	Wall Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6169	Window Film	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6170	Window Replacement	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6171	Basement Wall Insulation	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6172	New vinyl window	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6173	Original double hung window with low U storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6174	Original double hung window with original storm window	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6175	Rehabbed double hung	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6176	Rehabbed double hung with low U storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6177	Rehabbed double hung with single glazed storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6178	Low Income Weatherization Package	MF	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6179	Airtight Can Lights	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6180	Cool roof	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6181	Door weatherstripping	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6182	Duct Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6183	Duct location	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6184	Duct sealing 15% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6185	Duct sealing 20% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6186	Duct sealing 25% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6187	Duct sealing 30% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6188	Energy Star Door	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6189	Infiltration reduction - 10%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6190	Infiltration reduction - 15%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6191	Infiltration reduction - 30%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6192	Infiltration reduction - 50%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6193	Roof Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6194	Wall Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6195	Window Film	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6196	Window Replacement	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6197	Basement Wall Insulation	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6198	Low Income Weatherization Package	MF	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6199	Airtight Can Lights	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6200	Cool roof	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6201	Door weatherstripping	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6202	Duct Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6203	Duct location	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6204	Duct sealing 15% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6205	Duct sealing 20% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6206	Duct sealing 25% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6207	Duct sealing 30% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6208	Energy Star Door	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6209	Infiltration reduction - 10%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6210	Infiltration reduction - 15%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6211	Infiltration reduction - 30%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6212	Infiltration reduction - 50%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6213	Roof Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6214	Wall Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6215	Window Film	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6216	Window Replacement	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6217	Basement Wall Insulation	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6218	New vinyl window	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6219	Original double hung window with low U storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6220	Original double hung window with original storm window	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6221	Rehabbed double hung	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6222	Rehabbed double hung with low U storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6223	Rehabbed double hung with single glazed storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6224	Low Income Weatherization Package	MF	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6225	Airtight Can Lights	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6226	Cool roof	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6227	Door weatherstripping	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6228	Duct Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6229	Duct location	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6230	Duct sealing 15% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6231	Duct sealing 20% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6232	Duct sealing 25% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6233	Duct sealing 30% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6234	Energy Star Door	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6235	Infiltration reduction - 10%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6236	Infiltration reduction - 15%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6237	Infiltration reduction - 30%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6238	Infiltration reduction - 50%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6239	Roof Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6240	Wall Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6241	Window Film	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6242	Window Replacement	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6243	Basement Wall Insulation	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6244	Low Income Weatherization Package	MF	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6245	Airtight Can Lights	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6246	Cool roof	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6247	Door weatherstripping	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6248	Duct Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6249	Duct location	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6250	Duct sealing 15% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6251	Duct sealing 20% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6252	Duct sealing 25% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6253	Duct sealing 30% leakage base	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6254	Energy Star Door	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6255	Infiltration reduction - 10%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6256	Infiltration reduction - 15%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6257	Infiltration reduction - 30%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6258	Infiltration reduction - 50%	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6259	Roof Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6260	Wall Insulation	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6261	Window Film	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6262	Window Replacement	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6263	Basement Wall Insulation	MF	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6264	New vinyl window	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6265	Original double hung window with low U storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6266	Original double hung window with original storm window	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6267	Rehabbed double hung	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6268	Rehabbed double hung with low U storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6269	Rehabbed double hung with single glazed storm	MF	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6270	Low Income Weatherization Package	MF	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6271	Airtight Can Lights	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6272	Cool roof	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS estimate	
6273	Door weatherstripping	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6274	Duct Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6275	Duct location	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Equals the percent of homes with either an unfinished basement or crawlspace, less the percentage of homes which have finished (proxy for conditioned) crawl spaces or basements
6276	Duct sealing 15% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6277	Duct sealing 20% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6278	Duct sealing 25% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6279	Duct sealing 30% leakage base	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6280	Energy Star Door	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	EE Saturation: % of all customers with insulated or storm doors - based on GDS review of various Michigan data sources
6281	Infiltration reduction - 10%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6282	Infiltration reduction - 15%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6283	Infiltration reduction - 30%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6284	Infiltration reduction - 50%	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6285	Roof Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6286	Wall Insulation	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6287	Window Film	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6288	Window Replacement	MF	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6289	Basement Wall Insulation	MF	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE saturation: Table 13 of MI Baseline study; % of finished basements with no insulation = 29%; therefore 71% assumed to have some insulation
6290	Low Income Weatherization Package	MF	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6291	Airtight Can Lights	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6292	Cool roof	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6293	Door weatherstripping	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6294	Duct Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6295	Duct location	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6296	Duct sealing 15% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6297	Duct sealing 20% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6298	Duct sealing 25% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6299	Duct sealing 30% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6300	Energy Star Door	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6301	Infiltration reduction - 10%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6302	Infiltration reduction - 15%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6303	Infiltration reduction - 30%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6304	Infiltration reduction - 50%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6305	Roof Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6306	Wall Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6307	Window Film	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6308	Window Replacement	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6309	Basement Wall Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6310	Airtight Can Lights	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6311	Cool roof	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6312	Door weatherstripping	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6313	Duct Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6314	Duct location	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6315	Duct sealing 15% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6316	Duct sealing 20% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6317	Duct sealing 25% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6318	Duct sealing 30% leakage base	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6319	Energy Star Door	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6320	Infiltration reduction - 10%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6321	Infiltration reduction - 15%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6322	Infiltration reduction - 30%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6323	Infiltration reduction - 50%	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6324	Roof Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6325	Wall Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6326	Window Film	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6327	Window Replacement	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6328	Basement Wall Insulation	MF	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6329	Crawlspace Wall Insulation	MAN	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6330	Duct Insulation	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6331	Duct sealing 15% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6332	Duct sealing 20% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6333	Duct sealing 25% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6334	Duct sealing 30% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6335	Floor Insulation	MAN	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6336	Infiltration reduction - 10%	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6337	Infiltration reduction - 15%	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6338	Roof Insulation	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6339	Wall Insulation	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6340	Window Replacement	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6341	Low Income Weatherization Package	MAN	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6342	Crawlspace Wall Insulation	MAN	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6343	Duct Insulation	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6344	Duct sealing 15% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6345	Duct sealing 20% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6346	Duct sealing 25% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6347	Duct sealing 30% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6348	Floor Insulation	MAN	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6349	Infiltration reduction - 10%	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6350	Infiltration reduction - 15%	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6351	Roof Insulation	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6352	Wall Insulation	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6353	Window Replacement	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6354	Low Income Weatherization Package	MAN	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6355	Crawlspace Wall Insulation	MAN	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6356	Duct Insulation	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6357	Duct sealing 15% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6358	Duct sealing 20% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6359	Duct sealing 25% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6360	Duct sealing 30% leakage base	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6361	Floor Insulation	MAN	Retrofit-OLD	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6362	Infiltration reduction - 10%	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6363	Infiltration reduction - 15%	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6364	Roof Insulation	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6365	Wall Insulation	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6366	Window Replacement	MAN	Retrofit-OLD	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6367	Low Income Weatherization Package	MAN	Retrofit-OLD	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6368	Crawlspace Wall Insulation	MAN	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of MI Baseline Study; 70% of crawl spaces are uninsulated; therefore EE saturation assumed to be 30%
6369	Duct Insulation	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are poorly insulated
6370	Duct sealing 15% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
6371	Duct sealing 20% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6372	Duct sealing 25% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6373	Duct sealing 30% leakage base	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6374	Floor Insulation	MAN	Retrofit-AVG	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	MI Baseline 2011	EE Saturation: Table 13 of Baseline Report; 77% of unfinished basements did not have insulation; therefore assumes 23% of homes do not have floor insulation (homes with crawl spaces would receive crawl space wall insulation)
6375	Infiltration reduction - 10%	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6376	Infiltration reduction - 15%	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes that are drafty most or all of the time
6377	Roof Insulation	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6378	Wall Insulation	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6379	Window Replacement	MAN	Retrofit-AVG	NLI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturation: % of Michigan homes with double or triple pane windows
6380	Low Income Weatherization Package	MAN	Retrofit-AVG	LI	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	EE saturations: % of Michigan homes that are poorly insulated
6381	Crawlspace Wall Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6382	Duct Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6383	Duct sealing 15% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6384	Duct sealing 20% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6385	Duct sealing 25% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6386	Duct sealing 30% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6387	Floor Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6388	Infiltration reduction - 10%	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6389	Infiltration reduction - 15%	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6390	Roof Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6391	Wall Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6392	Window Replacement	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6393	Crawlspace Wall Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6394	Duct Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6395	Duct sealing 15% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6396	Duct sealing 20% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6397	Duct sealing 25% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6398	Duct sealing 30% leakage base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6399	Floor Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6400	Infiltration reduction - 10%	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6401	Infiltration reduction - 15%	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6402	Roof Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6403	Wall Insulation	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
6404	Window Replacement	MAN	NC	All	-	-	MEMD	MEMD	MEMD	MEMD	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	
7000	HVAC (Equipment)																	
7001	ENERGY STAR Room AC	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	PA 2011	Base Saturation: saturation of primary and secondary room air conditioners
7002	CEE Tier 2 Room AC	SF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	PA 2011	Base Saturation: saturation of primary and secondary room air conditioners
7003	Room AC recycling	SF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: saturation of tertiary room air conditioners
7004	ASHP - SEER 15	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7005	ASHP - SEER 16	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7006	ASHP - SEER 17	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7007	ASHP - SEER 18	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7008	DFHP - SEER 15 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7009	DFHP - SEER 16 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7010	DFHP - SEER 17 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7011	DFHP - SEER 18 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7012	Furnace/AC - SEER 15	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7013	Furnace/AC - SEER 16	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7014	Furnace/AC - SEER 17	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7015	GSHP - EER 17 ASHP Base	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7016	GSHP - EER 19 ASHP Base	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7017	High efficiency 92 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7018	High efficiency 94 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7019	High efficiency 95 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7020	O&M Tune-up - furnace only	SF	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on a review of several Michigan sources
7021	O&M Tune-up - furnace only	SF	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on a review of several Michigan sources
7022	RCA 10% improvement	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: % of single-family homes with central AC; EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7023	RCA 15% improvement	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: % of single-family homes with central AC; EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7024	RCA 5% improvement	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: % of single-family homes with central AC; EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
7025	Setback thermostat - full setback	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of single-family homes with programmable thermostats
7026	Setback thermostat - moderate setback	SF	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of single-family homes with programmable thermostats
7027	Setback thermostat - moderate setback	SF	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of single-family homes with programmable thermostats
7028	Whole House Fan	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	CASE	EE Saturation: % of homes with whole house attic fans
7029	High efficiency 93 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7030	High efficiency 96 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7031	High efficiency 97 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7032	High efficiency 98 AFUE furnace with ECM	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7033	ECM Furnace Fan	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Annual Elec. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual kW. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual Non-Elec Savings: Heating penalty taken from p. 87 of MASS TRM; Base Saturation; % of single-family homes with gas furnaces EE saturation: Based on review of various Michigan sources
7034	ASHP - SEER 19	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7035	DFHP - SEER 19 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7036	Furnace/AC - SEER 18	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7037	Furnace/AC - SEER 19	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7038	ASHP - SEER 20	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7039	DFHP - SEER 20 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7040	Furnace/AC - SEER 20	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7041	ASHP - SEER 21	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7042	DFHP - SEER 21 with 95 AFUE furnace	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7043	Furnace/AC - SEER 21	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of single-family homes with central AC; EE saturation: Based on review of various Michigan sources
7044	SEER21 Minisplit Heat pump	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7045	SEER21 Minisplit Heat pump	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of single-family homes use electric heat - assuming one-quarter of this group uses electric furnace / baseboards for heating; EE saturation: Based on review of various Michigan sources
7046	Boiler Tune-up	SF	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7047	Boiler Tune-up	SF	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7048	Boiler reset control	SF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7049	Boiler 87% plus AFUE 82 AFUE BASE	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7050	Boiler 92% plus AFUE 82 AFUE BASE	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7051	Boiler 95% plus AFUE 82 AFUE BASE	SF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of single-family homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7052	ENERGY STAR Room AC	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: saturation of primary and secondary room air conditioners
7053	CEE Tier 2 Room AC	SF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: saturation of primary and secondary room air conditioners
7054	ASHP - SEER 15	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7055	ASHP - SEER 16	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7056	ASHP - SEER 17	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7057	ASHP - SEER 18	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7058	DFHP - SEER 15 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7059	DFHP - SEER 16 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7060	DFHP - SEER 17 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7061	DFHP - SEER 18 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7062	Furnace/AC - SEER 15	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7063	Furnace/AC - SEER 16	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7064	Furnace/AC - SEER 17	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7065	GSHP - EER 17 ASHP Base	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes new construction with electric heat will use heat pump technology
7066	GSHP - EER 19 ASHP Base	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes new construction with electric heat will use heat pump technology
7067	High efficiency 92 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7068	High efficiency 94 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7069	High efficiency 95 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7070	Setback thermostat - full setback	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7071	Setback thermostat - moderate setback	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7072	Whole House Fan	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7073	High efficiency 93 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7074	High efficiency 96 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7075	High efficiency 97 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7076	High efficiency 98 AFUE furnace with ECM	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with gas furnaces
7077	ECM Furnace Fan	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Annual Elec. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual kW. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual Non-Elec Savings: Heating penalty taken from p. 87 of MASS TRM; Base Saturation; % of single-family homes with gas furnace
7078	ASHP - SEER 19	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7079	DFHP - SEER 19 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7080	Furnace/AC - SEER 18	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7081	Furnace/AC - SEER 19	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7082	ASHP - SEER 20	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
7083	DFHP - SEER 20 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7084	Furnace/AC - SEER 20	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7085	ASHP - SEER 21	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7086	DFHP - SEER 21 with 95 AFUE furnace	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7087	Furnace/AC - SEER 21	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of single-family homes with central AC
7088	SEER21 Minisplit Heat pump	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of single-family homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7089	Boiler 87% plus AFUE 82 AFUE BASE	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with boilers
7090	Boiler 92% plus AFUE 82 AFUE BASE	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with boilers
7091	Boiler 95% plus AFUE 82 AFUE BASE	SF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of single-family homes with boilers
7092	ENERGY STAR Room AC	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	PA 2011	Base Saturation: saturation of primary and secondary room air conditioners
7093	CEE Tier 2 Room AC	MF	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	PA 2011	Base Saturation: saturation of primary and secondary room air conditioners
7094	Room AC recycling	MF	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: saturation of tertiary room air conditioners
7095	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7096	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7097	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7098	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7099	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7100	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7101	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7102	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7103	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7104	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7105	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7106	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7107	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7108	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7109	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7110	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7111	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7112	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7113	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7114	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7115	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7116	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller EE saturation: Based on review of various Michigan sources
7117	ASHP - SEER 15	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7118	ASHP - SEER 16	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7119	ASHP - SEER 17	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7120	ASHP - SEER 18	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7121	Boiler 85% Ec	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7122	Boiler turndown control	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7123	CHW reset 10 deg	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller; EE saturation: Based on review of various Michigan sources (assumes same EE saturation as high-efficiency central air conditioners)
7124	CHW reset 5 deg	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller; EE saturation: Based on review of various Michigan sources (assumes same EE saturation as high-efficiency central air conditioners)
7125	DFHP - SEER 15 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7126	DFHP - SEER 16 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7127	DFHP - SEER 17 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7128	DFHP - SEER 18 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7129	Furnace/AC - SEER 15	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7130	Furnace/AC - SEER 16	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7131	Furnace/AC - SEER 17	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7132	High efficiency 92 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7133	High efficiency 93 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7134	High efficiency 94 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7135	High efficiency 95 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7136	High efficiency 96 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7137	High efficiency 97 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7138	High efficiency 98 AFUE furnace with ECM	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7139	ECM Furnace Fan	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Annual Elec. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual kW. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual Non-Elec Savings: Heating penalty taken from p. 87 of MASS TRM; Base Saturation; % of single-family homes with gas furnaces EE saturation: Based on review of various Michigan sources

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
7140	O&M Tune-up - furnace only	MF	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on a review of several Michigan sources
7141	O&M Tune-up - furnace only	MF	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with gas furnaces; EE saturation: Based on a review of several Michigan sources
7142	O2 Trim Control	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers (divided by 3 based on size of O2 trim control measure compared to boiler tune-up in MEMD)
7143	PTAC 9.3 EER	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS	
7144	PTHP 9.1 EER	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7145	RCA 10% improvement	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7146	RCA 15% improvement	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7147	RCA 5% improvement	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7148	Setback thermostat - full setback	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of multifamily homes with programmable thermostats
7149	Setback thermostat - moderate setback	MF	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of multifamily homes with programmable thermostats
7150	Setback thermostat - moderate setback	MF	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of multifamily homes with programmable thermostats
7151	Whole House Fan	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	CASE	EE Saturation: % of homes with whole house attic fans
7152	ASHP - SEER 19	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7153	ASHP - SEER 20	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7154	ASHP - SEER 21	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7155	DFHP - SEER 19 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7156	DFHP - SEER 20 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7157	DFHP - SEER 21 with 95 AFUE furnace	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7158	Furnace/AC - SEER 18	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7159	Furnace/AC - SEER 19	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7160	Furnace/AC - SEER 20	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7161	Furnace/AC - SEER 21	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers); EE saturation: Based on review of various Michigan sources
7162	SEER21 Minisplit Heat pump	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multimily homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7163	SEER21 Minisplit Heat pump	MF	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 11% of multifamily homes use electric heat - assuming one-quarter of this group uses electric furnace / baseboards for heating; EE saturation: Retrofit measure - implicit that none are efficient
7164	Boiler Tune-up	MF	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7165	Boiler Tune-up	MF	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7166	Boiler 87% plus AFUE 82 AFUE BASE	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7167	Boiler 90% plus AFUE 82 AFUE BASE	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7168	Boiler 92% plus AFUE 82 AFUE BASE	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7169	Boiler 95% plus AFUE 82 AFUE BASE	MF	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of multifamily homes with boilers; EE saturation: Based on review of various Michigan sources (assumes percentage to be the same as for efficient furnaces)
7170	ENERGY STAR Room AC	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: saturation of primary and secondary room air conditioners
7171	CEE Tier 2 Room AC	MF	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: saturation of primary and secondary room air conditioners
7172	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7173	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7174	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7175	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7176	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7177	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7178	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7179	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7180	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7181	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7182	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7183	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7184	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7185	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7186	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7187	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7188	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7189	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7190	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7191	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7192	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7193	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7194	ASHP - SEER 15	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7195	ASHP - SEER 16	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7196	ASHP - SEER 17	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7197	ASHP - SEER 18	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7198	Boiler 85% Ec	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers
7199	Boiler turndown control	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
7200	CHW reset 10 deg	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7201	CHW reset 5 deg	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: 42% central/AC*14% of multifamily homes are high-rise buildings; assumes 50 units per chiller
7202	DFHP - SEER 15 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7203	DFHP - SEER 16 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7204	DFHP - SEER 17 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7205	DFHP - SEER 18 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7206	Furnace/AC - SEER 15	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7207	Furnace/AC - SEER 16	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7208	Furnace/AC - SEER 17	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7209	High efficiency 92 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7210	High efficiency 93 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7211	High efficiency 94 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7212	High efficiency 95 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7213	High efficiency 96 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7214	High efficiency 97 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7215	High efficiency 98 AFUE furnace with ECM	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with gas furnaces
7216	ECM Furnace Fan	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Annual Elec. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual kW. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual Non-Elec Savings: Heating penalty taken from p. 87 of MASS TRM; Base Saturation; % of single-family homes with gas furnace
7217	O2 Trim Control	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers (divided by 3 based on size of O2 trim control measure compared to boiler tune-up in MEMD)
7218	PTAC 9.3 EER	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7219	PTHP 9.1 EER	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multimily homes use electric heat - assumes half of new construction with electric heat will use heat pump technology
7220	Setback thermostat - full setback	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7221	Setback thermostat - moderate setback	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7222	Whole House Fan	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7223	ASHP - SEER 19	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7224	ASHP - SEER 20	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7225	ASHP - SEER 21	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7226	DFHP - SEER 19 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7227	DFHP - SEER 20 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7228	DFHP - SEER 21 with 95 AFUE furnace	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multifamily homes use electric heat - assumes half of new construction market with electric heat will use dual-fuel heat pump technology
7229	Furnace/AC - SEER 18	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7230	Furnace/AC - SEER 19	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7231	Furnace/AC - SEER 20	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7232	Furnace/AC - SEER 21	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 42% of MF homes have central AC; assumes 86% of homes are in low-rise buildings (14% of homes assumed to be in high-rise buildings with chillers)
7233	SEER21 Minisplit Heat pump	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 11% of multimily homes use electric heat - assumes half of new construction with electric heat will use heat pump technology
7234	Boiler 87% plus AFUE 82 AFUE BASE	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers
7235	Boiler 90% plus AFUE 82 AFUE BASE	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers
7236	Boiler 92% plus AFUE 82 AFUE BASE	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers
7237	Boiler 95% plus AFUE 82 AFUE BASE	MF	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of multifamily homes with boilers
7238	ENERGY STAR Room AC	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	PA 2011	Base Saturation: saturation of primary and secondary room air conditioners
7239	CEE Tier 2 Room AC	MAN	ROB	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	PA 2011	Base Saturation: saturation of primary and secondary room air conditioners
7240	Room AC recycling	MAN	Retrofit	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: saturation of tertiary room air conditioners
7241	ASHP - SEER 15	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7242	ASHP - SEER 16	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7243	ASHP - SEER 17	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7244	ASHP - SEER 18	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7245	DFHP - SEER 15 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7246	DFHP - SEER 16 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7247	DFHP - SEER 17 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7248	DFHP - SEER 18 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7249	Furnace/AC - SEER 15	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7250	Furnace/AC - SEER 16	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7251	Furnace/AC - SEER 17	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7252	GSHP - EER 17 ASHP Base	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7253	GSHP - EER 19 ASHP Base	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7254	High efficiency 92 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7255	High efficiency 94 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7256	High efficiency 95 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7257	RCA 10% improvement	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: % of manufactured homes with central AC; EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7258	RCA 15% improvement	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: % of manufactured homes with central AC; EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance
7259	RCA 5% improvement	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	RECS 2009	Base saturation: % of manufactured homes with central AC; EE Saturation: Michigan-specific RECS 2009 data - homes with routine AC maintenance

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
7260	Setback thermostat - full setback	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of manufactured homes with programmable thermostats
7261	Setback thermostat - moderate setback	MAN	Retrofit	NLI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of manufactured homes with programmable thermostats
7262	Setback thermostat - moderate setback	MAN	Retrofit	LI	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	MI Baseline 2011	EE saturation: % of manufactured homes with programmable thermostats
7263	Whole House Fan	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	CASE	EE Saturation: % of homes with whole house attic fans
7264	High efficiency 93 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7265	High efficiency 96 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7266	High efficiency 97 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7267	High efficiency 98 AFUE furnace with ECM	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base Saturation: % of manufactured homes with gas furnaces; EE saturation: Based on review of various Michigan sources
7268	ECM Furnace Fan	MAN	Retrofit	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Annual Elec. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual kW. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual Non-Elec Savings: Heating penalty taken from p. 87 of MASS TRM; Base Saturation; % of single-family homes with gas furnaces EE saturation: Based on review of various Michigan sources
7269	Furnace/AC - SEER 18	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7270	Furnace/AC - SEER 19	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7271	Furnace/AC - SEER 20	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7272	Furnace/AC - SEER 21	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: % of manufactured homes with central AC; EE saturation: Based on review of various Michigan sources
7273	ASHP - SEER 19	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7274	ASHP - SEER 20	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7275	ASHP - SEER 21	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming half of this group uses heat pumps for heating; EE saturation: Based on review of various Michigan sources
7276	DFHP - SEER 19 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7277	DFHP - SEER 20 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7278	DFHP - SEER 21 with 95 AFUE furnace	MAN	ROB	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS	Base saturation: 1% of manufactured homes use electric heat - assuming one-quarter of this group uses dual-fuel heat pumps for heating; EE saturation: Based on review of various Michigan sources
7279	ENERGY STAR Room AC	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: saturation of primary and secondary room air conditioners
7280	CEE Tier 2 Room AC	MAN	NC	All	MEMD	-	MEMD	MEMD	MEMD	-	-	-	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: saturation of primary and secondary room air conditioners
7281	ASHP - SEER 15	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7282	ASHP - SEER 16	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7283	ASHP - SEER 17	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7284	ASHP - SEER 18	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7285	DFHP - SEER 15 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
7286	DFHP - SEER 16 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
7287	DFHP - SEER 17 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
7288	DFHP - SEER 18 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
7289	Furnace/AC - SEER 15	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7290	Furnace/AC - SEER 16	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7291	Furnace/AC - SEER 17	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7292	GSHP - EER 17 ASHP Base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes new construction with electric heat will use heat pump technology
7293	GSHP - EER 19 ASHP Base	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes new construction with electric heat will use heat pump technology
7294	High efficiency 92 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7295	High efficiency 94 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7296	High efficiency 95 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7297	Setback thermostat - full setback	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7298	Setback thermostat - moderate setback	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7299	Whole House Fan	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	GDS	GDS/NC	
7300	High efficiency 93 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7301	High efficiency 96 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7302	High efficiency 97 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7303	High efficiency 98 AFUE furnace with ECM	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base Saturation: % of manufactured homes with gas furnaces
7304	ECM Furnace Fan	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Annual Elec. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual kW. Savings: Assumed to be equal to the savings High efficiency 98 AFUE furnace with ECM measure; Annual Non-Elec Savings: Heating penalty taken from p. 87 of MASS TRM; Base Saturation; % of single-family homes with gas furnace
7305	Furnace/AC - SEER 18	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7306	Furnace/AC - SEER 19	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7307	Furnace/AC - SEER 20	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7308	Furnace/AC - SEER 21	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: % of manufactured homes with central AC
7309	ASHP - SEER 19	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7310	ASHP - SEER 20	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7311	ASHP - SEER 21	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will use heat pump technology
7312	DFHP - SEER 19 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
7313	DFHP - SEER 20 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
7314	DFHP - SEER 21 with 95 AFUE furnace	MAN	NC	All	-	-	MEMD	MEMD	MEMD	-	-	MEMD	-	MEMD	MEMD	MI Baseline 2011 / GDS	GDS/NC	Base saturation: 1% of manufactured homes use electric heat - assumes half of new construction market with electric heat will dual-fuel use heat pump technology
8000	Behavioral Programs																	
8001	Behavior Modification: Home Energy Reports (All Years)	SF	Retrofit	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS calc	-	MEMD / GDS	-	MEMD	MEMD	GDS	GDS	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of single-family homes; Annual kWh Savings: Averages the first year (1.05%) and consecutive year (1.34%) savings for 7k-9k kWh/yr households in MEMD; Per-unit kW Savings: Divides kWh savings by 8,760 hours/yr; Base Annual Non-elec Use: GDS calc using Michigan data Annual Non-Elec Savings: Averages the first year (0.64%) and consecutive year (0.71%) savings for 7k-9k kWh/yr households in MEMD; EE saturation: GDS estimate

Michigan - Residential Measure Database - Sources

Measure ID	Measure Name	Home Type (SF/ MF/ MAN)	ROB vs. Retrofit vs. Old vs. Average vs. NC	Income Target (All / NLI / LI)	Base Elec. Use (kWh)	% Elec. Savings	Annual Elec. Savings (kWh)	Per Unit Winter NCP kW Savings	Per Unit Summer NCP kW Savings	Base Annual Non-elec (MMBTU)	% Non-elec Savings	Annual Non-elec. Savings (MMBTU)	Annual Water Savings (gal.)	Useful Life	Incremental /Full Cost	Base Saturation	EE Saturation	Notes
8002	Real-time feedback	SF	Retrofit	All	MEMD / GDS	-	ODC/MA	GDS	GDS	GDS calc	-	ODC/MA	-	VT TRM	ECW	GDS	GDS	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of single-family homes; Energy: Based on opt-in program in Massachusetts ; Gas reduced based on gas:electric ratio for OPower ; reduced by 5% to account for cross-cutting savings Demand: Assumed consistent conservation across all annual hours (GDS est) Base and EE saturation: GDS estimate
8003	Behavior Modification: Home Energy Reports (All Years)	SF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS calc	-	MEMD / GDS	-	MEMD	MEMD	GDS	GDS/NC	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of single-family homes; Annual kWh Savings: Averages the first year (1.05%) and consecutive year (1.34%) savings for 7k-9k kWh/yr households in MEMD; Per-unit kW Savings: Divides kWh savings by 8,760 hours/yr; Base Annual Non-elec Use: GDS calc using Michigan data Annual Non-Elec Savings: Averages the first year (0.64%) and consecutive year (0.71%) savings for 7k-9k kWh/yr households in MEMD;
8004	Real-time feedback	SF	NC	All	MEMD / GDS	-	ODC/MA	GDS	GDS	GDS calc	-	ODC/MA	-	VT TRM	ECW	GDS	GDS/NC	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of single-family homes; Energy: Based on opt-in program in Massachusetts ; Gas reduced based on gas:electric ratio for OPower ; reduced by 5% to account for cross-cutting savings Demand: Assumed consistent conservation across all annual hours (GDS est) Base saturation: GDS estimate
8005	Behavior Modification: Home Energy Reports (All Years)	MF	Retrofit	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS calc	-	MEMD / GDS	-	MEMD	MEMD	GDS	GDS	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of multifamily homes; Annual kWh Savings: Averages the first year (1.05%) and consecutive year (1.34%) savings for 7k-9k kWh/yr households in MEMD; Per-unit kW Savings: Divides kWh savings by 8,760 hours/yr; Base Annual Non-elec Use: GDS calc using Michigan data Annual Non-Elec Savings: Averages the first year (0.64%) and consecutive year (0.71%) savings for 7k-9k kWh/yr households in MEMD; EE saturation: GDS estimate
8006	Real-time feedback	MF	Retrofit	All	MEMD / GDS	-	ODC/MA	GDS	GDS	GDS calc	-	ODC/MA	-	VT TRM	ECW	GDS	GDS	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of multifamily homes; Energy: Based on opt-in program in Massachusetts ; Gas reduced based on gas:electric ratio for OPower ; reduced by 5% to account for cross-cutting savings Demand: Assumed consistent conservation across all annual hours (GDS est) Base and EE saturation: GDS estimate
8007	Behavior Modification: Home Energy Reports (All Years)	MF	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS calc	-	MEMD / GDS	-	MEMD	MEMD	GDS	GDS/NC	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of multifamily homes; Annual kWh Savings: Averages the first year (1.05%) and consecutive year (1.34%) savings for 7k-9k kWh/yr households in MEMD; Per-unit kW Savings: Divides kWh savings by 8,760 hours/yr; Base Annual Non-elec Use: GDS calc using Michigan data Annual Non-Elec Savings: Averages the first year (0.64%) and consecutive year (0.71%) savings for 7k-9k kWh/yr households in MEMD;
8008	Real-time feedback	MF	NC	All	MEMD / GDS	-	ODC/MA	GDS	GDS	GDS calc	-	ODC/MA	-	VT TRM	ECW	GDS	GDS/NC	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of multifamily homes; Energy: Based on opt-in program in Massachusetts ; Gas reduced based on gas:electric ratio for OPower ; reduced by 5% to account for cross-cutting savings Demand: Assumed consistent conservation across all annual hours (GDS est) Base saturation: GDS estimate
8009	Behavior Modification: Home Energy Reports (All Years)	MAN	Retrofit	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS calc	-	MEMD / GDS	-	MEMD	MEMD	GDS	GDS	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of manufactured homes; Annual kWh Savings: Averages the first year (1.05%) and consecutive year (1.34%) savings for 7k-9k kWh/yr households in MEMD; Per-unit kW Savings: Divides kWh savings by 8,760 hours/yr; Base Annual Non-elec Use: GDS calc using Michigan data Annual Non-Elec Savings: Averages the first year (0.64%) and consecutive year (0.71%) savings for 7k-9k kWh/yr households in MEMD; EE saturation: GDS estimate
8010	Real-time feedback	MAN	Retrofit	All	MEMD / GDS	-	ODC/MA	GDS	GDS	GDS calc	-	ODC/MA	-	VT TRM	ECW	GDS	GDS	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of manufactured homes; Energy: Based on opt-in program in Massachusetts ; Gas reduced based on gas:electric ratio for OPower ; reduced by 5% to account for cross-cutting savings Demand: Assumed consistent conservation across all annual hours (GDS est) Base and EE saturation: GDS estimate
8011	Behavior Modification: Home Energy Reports (All Years)	MAN	NC	All	MEMD / GDS	-	MEMD / GDS	MEMD / GDS	MEMD / GDS	GDS calc	-	MEMD / GDS	-	MEMD	MEMD	GDS	GDS/NC	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of manufactured homes; Annual kWh Savings: Averages the first year (1.05%) and consecutive year (1.34%) savings for 7k-9k kWh/yr households in MEMD; Per-unit kW Savings: Divides kWh savings by 8,760 hours/yr; Base Annual Non-elec Use: GDS calc using Michigan data Annual Non-Elec Savings: Averages the first year (0.64%) and consecutive year (0.71%) savings for 7k-9k kWh/yr households in MEMD;
8012	Real-time feedback	MAN	NC	All	MEMD / GDS	-	ODC/MA	GDS	GDS	GDS calc	-	ODC/MA	-	VT TRM	ECW	GDS	GDS/NC	Base Elec Use: Based on GDS sales forecast - adjusted based on square footage of manufactured homes; Energy: Based on opt-in program in Massachusetts ; Gas reduced based on gas:electric ratio for OPower ; reduced by 5% to account for cross-cutting savings Demand: Assumed consistent conservation across all annual hours (GDS est) Base saturation: GDS estimate

Abbreviations

ACEEE (A041): Set-Top Boxes: Opportunities and Issues in Setting Efficiency Standards, Report Number A041.
ACEEE (Bendt): From 2010 ACEEE Summer Study on Energy Efficiency in Buildings, "Are We Missing Energy Savings in Clothes Dryers?", Paul Bendt, Ecos. 2010.
CASE: Codes and Standards Enhancement Initiative - Analysis of Standards Options for Whole House Fans, prepared by Davis Energy Group.
Cadmus Group, Michigan Appliance Recycling Metering Study: Overview of the Study and the Results, August 2012
CEE: Email exchange with Eileen Eaton (CEE) on 6/15/2012. Speculated based on industry sources that ~ 1/3 of all pool pumps are two-speed or greater
CFR/GDS: Referenced Code of Federal Regulations in order to calculate updated baseline electric use for refrigerators and freezers
DC SEU TRM: Technical Reference Manual (TRM) Measure Savings Algorithms and Cost Assumptions. August 2012.
DOE: Department of Energy, DOE Final Rule - 77 FR 31918 (May 30, 2012); used to calculate updated base electric use for dishwashers
ECW: Energy Center of Wisconsin - "Focus on Energy - PowerCost Monitor Study", 2010
ES Calc-IT: Energy Star Low Carbon IT Savings Calc. V26 w/ 5.0 (Also see Computers worksheet)
ES Dishwasher 5.0 / GDS: GDS calculated the savings using Draft 2 Version 5.0 of the ENERGY STAR specs for dishwashers, along with the new federal baseline (see DOE abbreviation for details); applied ratio of baseline electric standard to ES electric standard to calculate gas savings
ES Dryer Rpt: ENERGY STAR Market & Industry Scoping Report Residential Clothes Dryers November 2011
ES Refrigerators 5.0: ENERGY STAR Product Specification for Residential Refrigerators and Freezers version 5.0
ES Unit Ship: Data from various ENERGY STAR Unit Shipment and Market Penetration Reports
ES Unit Ship / GDS: GDS estimated the holiday light saturation based on 2-yrs of ENERGY STAR unit shipment data
GDS: GDS assumption. See source notes.
GDS Calc: GDS calculation. See source notes.
GDS / DC SEU / Ohio TRM: Algorithm used for savings estimate taken from the DC SEU TRM; waste heat factors taken from the Ohio TRM (2010, VEIC).
LBNL: Ernest Orlando Lawrence Berkeley National Laboratory report, "Do Heat Pump Clothes Dryers Make Sense for the U.S. Market?," August 2010
LBNL / GDS: Utilized the baseline integrated energy factor of 4.52 from Table 1 of the Ernest Orlando Lawrence Berkeley National Laboratory report, "Do Heat Pump Clothes Dryers Make Sense for the U.S. Market?," August 2010. GDS then calculated the savings using the residential dryer savings algorithm from the MEMD
MA Baseline 2009: Massachusetts Residential Appliance Saturation Survey (RASS), Opinion Dynamics Corporation, April 2009
MEMD: Michigan Energy Measures Database, received via email from Rick Morgan on August 2, 2013.
MEMD/GDS: The MEMD is the primary source; GDS made various adjustments to account for things like prospective changes to federal standards
MEMD Work Papers: Source calculations and data used in developing the MEMD; received via email from Rick Morgan on August 8, 2013.
Mid Atl TRM: Mid-Atlantic Technical Reference Manual. Version 2.0
Mid Atl TRM / GDS : Algorithm and heat pump water heater efficiency taken from the Mid-Atlantic Technical Reference Manual. Version 2.0; savings estimate calculated independently by GDS
MI Baseline 2011: Michigan Baseline Study 2011: Residential Baseline Report, July 2011. The Cadmus Group Inc.
MI Baseline 2011 / DOE 2010: Socket counts taken from the 2011 Michigan Baseline study; % of sockets that are specialty vs. standard etc. taken from the January 2012 Department of Energy report, "2010 U.S. Lighting Market Characterization."
MI Baseline 2011 / GDS: Data from the 2011 Michigan Baseline study used as the basis for the estimate; GDS refined the estimate to align with specific market segments as necessary
MI Comm Base: Michigan Baseline Study 2011: Commercial Baseline Report, July 2011. The Cadmus Group Inc.
NEEP: Northeast Residential Lighting Strategy. Presented by NEEP, March 2012.
NEEP / DC SEU: Used assumed wattages presented in NEEP RLS report ; used remaining algorithm/assumptions in DC SEU TRM
NEEP (ETR): NEEP Emerging Technologies Report (Feb. 13, 2013)
NEEP (ETR) / RIA 2010 / GDS: Utilized Table 11-3 from the NEEP Emerging Technologies Report (Feb. 13, 2013) and Table F.1 from the Research into Action report, "Electronics and Energy Efficiency: A Plug Load Characterization Study," (January 29, 2010), to independently calculate the savings estimate of set-top boxes.
ODC/MA: Massachusetts 3-Year Cross-Cutting Behavioral Program Evaluation Integrated Report. July 2012. Completed by Opinion Dynamics & Navigant Consulting
PA 2011: Pennsylvania Statewide Residential End-Use and Saturation Study. GDS Associates. 2011.
PA Baseline 2011 / GDS: GDS estimate of homes with secondary dehumidifiers using 2011 Pennsylvania baseline study regarding penetration and saturation percentages
RECS 2009: Residential Energy Consumption Survey. EIA. 2009. Restricted to DC,MD, VT, DE sub-region.
RIA 2010: Electronics and Energy Efficiency: A Plug Load Characterization Study. Appendix K. Prepared by Research Into Action for Southern California Edison.
VT TRM: Technical Reference Manual. Measure Savings Algorithms and Cost Assumptions. Efficiency Vermont. December 31, 2011.
VT TRM / GDS: Assumes same useful life for laptops as desktops

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
1000	Appliances		
1001	Refrigerator Retirement (and Recycling) - No Replacement	$0.01	$0.00
1002	Freezer Retirement (and Recycling) - No Replacement	$0.01	$0.00
1003	Dehumidifier Retirement (and Recycling) - No Replacement	$0.01	$0.00
1004	Energy Star Dehumidifier	$0.04	$0.00
1005	ENERGY STAR Refrigerators	$0.09	$0.00
1006	ENERGY STAR Freezers	$0.02	$0.00
1007	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	$0.00	$76.41
1008	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	$0.28	$82.01
1009	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	$0.35	$101.21
1010	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	$0.35	$0.00
1011	High Efficiency Gas Clothes Dryer with Moisture Sensor	$0.00	$64.81
1012	High Efficiency Electric Clothes Dryer with Moisture Sensor	$0.24	$0.00
1013	Heat Pump Electric Dryer	$0.34	$0.00
1014	Tier 2 Energy Star Dishwasher (electric water heating)	$0.24	$0.00
1015	Tier 2 Energy Star Dishwasher (gas water heating)	$0.20	$59.20
1016	Energy Star Dehumidifier	$0.04	$0.00
1017	ENERGY STAR Refrigerators	$0.09	$0.00
1018	ENERGY STAR Freezers	$0.02	$0.00
1019	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	$0.00	$76.41
1020	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	$0.28	$82.01
1021	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	$0.35	$101.21
1022	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	$0.35	$0.00
1023	High Efficiency Gas Clothes Dryer with Moisture Sensor	$0.00	$64.81
1024	High Efficiency Electric Clothes Dryer with Moisture Sensor	$0.24	$0.00
1025	Heat Pump Electric Dryer	$0.34	$0.00
1026	Tier 2 Energy Star Dishwasher (electric water heating)	$0.24	$0.00
1027	Tier 2 Energy Star Dishwasher (gas water heating)	$0.20	$59.20
1028	Refrigerator Retirement (and Recycling) - No Replacement	$0.01	$0.00
1029	Freezer Retirement (and Recycling) - No Replacement	$0.01	$0.00
1030	Dehumidifier Retirement (and Recycling) - No Replacement	$0.01	$0.00
1031	Energy Star Dehumidifier	$0.04	$0.00
1032	ENERGY STAR Refrigerators	$0.09	$0.00
1033	ENERGY STAR Freezers	$0.02	$0.00
1034	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	$0.00	$76.41
1035	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	$0.28	$82.01
1036	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	$0.35	$101.21
1037	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	$0.35	$0.00
1038	High Efficiency Gas Clothes Dryer with Moisture Sensor	$0.00	$64.81
1039	High Efficiency Electric Clothes Dryer with Moisture Sensor	$0.24	$0.00
1040	Heat Pump Electric Dryer	$0.34	$0.00
1041	Tier 2 Energy Star Dishwasher (electric water heating)	$0.24	$0.00
1042	Tier 2 Energy Star Dishwasher (gas water heating)	$0.20	$59.20
1043	Energy Star Dehumidifier	$0.04	$0.00
1044	ENERGY STAR Refrigerators	$0.09	$0.00
1045	ENERGY STAR Freezers	$0.02	$0.00
1046	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	$0.00	$76.41
1047	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	$0.28	$82.01
1048	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	$0.35	$101.21
1049	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	$0.35	$0.00
1050	High Efficiency Gas Clothes Dryer with Moisture Sensor	$0.00	$64.81
1051	High Efficiency Electric Clothes Dryer with Moisture Sensor	$0.24	$0.00
1052	Heat Pump Electric Dryer	$0.34	$0.00
1053	Tier 2 Energy Star Dishwasher (electric water heating)	$0.24	$0.00
1054	Tier 2 Energy Star Dishwasher (gas water heating)	$0.20	$59.20
1055	Refrigerator Retirement (and Recycling) - No Replacement	$0.01	$0.00
1056	Freezer Retirement (and Recycling) - No Replacement	$0.01	$0.00
1057	Dehumidifier Retirement (and Recycling) - No Replacement	$0.01	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
1058	Energy Star Dehumidifier	$0.04	$0.00
1059	ENERGY STAR Refrigerators	$0.09	$0.00
1060	ENERGY STAR Freezers	$0.02	$0.00
1061	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	$0.00	$76.41
1062	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	$0.28	$82.01
1063	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	$0.35	$101.21
1064	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	$0.35	$0.00
1065	High Efficiency Gas Clothes Dryer with Moisture Sensor	$0.00	$64.81
1066	High Efficiency Electric Clothes Dryer with Moisture Sensor	$0.24	$0.00
1067	Heat Pump Electric Dryer	$0.34	$0.00
1068	Tier 2 Energy Star Dishwasher (electric water heating)	$0.24	$0.00
1069	Tier 2 Energy Star Dishwasher (gas water heating)	$0.20	$59.20
1070	Energy Star Dehumidifier	$0.04	$0.00
1071	ENERGY STAR Refrigerators	$0.09	$0.00
1072	ENERGY STAR Freezers	$0.02	$0.00
1073	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	$0.00	$76.41
1074	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	$0.28	$82.01
1075	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	$0.35	$101.21
1076	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	$0.35	$0.00
1077	High Efficiency Gas Clothes Dryer with Moisture Sensor	$0.00	$64.81
1078	High Efficiency Electric Clothes Dryer with Moisture Sensor	$0.24	$0.00
1079	Heat Pump Electric Dryer	$0.34	$0.00
1080	Tier 2 Energy Star Dishwasher (electric water heating)	$0.24	$0.00
1081	Tier 2 Energy Star Dishwasher (gas water heating)	$0.20	$59.20
2000	Electronics		
2001	Smart Strip plug outlet	$0.40	$0.00
2002	Efficient Set Top Box	$0.03	$0.00
2003	ENERGY STAR + 10% Display	$0.01	$0.00
2004	ENERGY STAR + 30% Display	$0.01	$0.00
2005	ENERGY STAR + 50 % Display	$0.01	$0.00
2006	ENERGY STAR 6.0 TV + 20% (0-20")	$0.01	$0.00
2007	ENERGY STAR 6.0 TV + 20% (21-30")	$0.00	$0.00
2008	ENERGY STAR 6.0 TV + 20% (31-40")	$0.00	$0.00
2009	ENERGY STAR 6.0 TV + 20% (41-50")	$0.00	$0.00
2010	ENERGY STAR 6.0 TV + 20% (51-60")	$0.00	$0.00
2011	ENERGY STAR 6.0 TV + 20% (over 60")	$0.00	$0.00
2012	ENERGY STAR PC	$0.03	$0.00
2013	ES Laptop	$0.05	$0.00
2014	ES Laptop (Power Mgmt Enabled)	$0.23	$0.00
2015	Smart Strip plug outlet	$0.40	$0.00
2016	Efficient Set Top Box	$0.03	$0.00
2017	ENERGY STAR + 10% Display	$0.01	$0.00
2018	ENERGY STAR + 30% Display	$0.01	$0.00
2019	ENERGY STAR + 50 % Display	$0.01	$0.00
2020	ENERGY STAR 6.0 TV + 20% (0-20")	$0.01	$0.00
2021	ENERGY STAR 6.0 TV + 20% (21-30")	$0.00	$0.00
2022	ENERGY STAR 6.0 TV + 20% (31-40")	$0.00	$0.00
2023	ENERGY STAR 6.0 TV + 20% (41-50")	$0.00	$0.00
2024	ENERGY STAR 6.0 TV + 20% (51-60")	$0.00	$0.00
2025	ENERGY STAR 6.0 TV + 20% (over 60")	$0.00	$0.00
2026	ENERGY STAR PC	$0.03	$0.00
2027	ES Laptop	$0.05	$0.00
2028	ES Laptop (Power Mgmt Enabled)	$0.23	$0.00
2029	Smart Strip plug outlet	$0.40	$0.00
2030	Efficient Set Top Box	$0.03	$0.00
2031	ENERGY STAR + 10% Display	$0.01	$0.00
2032	ENERGY STAR + 30% Display	$0.01	$0.00
2033	ENERGY STAR + 50 % Display	$0.01	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
2034	ENERGY STAR 6.0 TV + 20% (0-20")	$0.01	$0.00
2035	ENERGY STAR 6.0 TV + 20% (21-30")	$0.00	$0.00
2036	ENERGY STAR 6.0 TV + 20% (31-40")	$0.00	$0.00
2037	ENERGY STAR 6.0 TV + 20% (41-50")	$0.00	$0.00
2038	ENERGY STAR 6.0 TV + 20% (51-60")	$0.00	$0.00
2039	ENERGY STAR 6.0 TV + 20% (over 60")	$0.00	$0.00
2040	ENERGY STAR PC	$0.03	$0.00
2041	ES Laptop	$0.05	$0.00
2042	ES Laptop (Power Mgmt Enabled)	$0.23	$0.00
2043	Smart Strip plug outlet	$0.40	$0.00
2044	Efficient Set Top Box	$0.03	$0.00
2045	ENERGY STAR + 10% Display	$0.01	$0.00
2046	ENERGY STAR + 30% Display	$0.01	$0.00
2047	ENERGY STAR + 50 % Display	$0.01	$0.00
2048	ENERGY STAR 6.0 TV + 20% (0-20")	$0.01	$0.00
2049	ENERGY STAR 6.0 TV + 20% (21-30")	$0.00	$0.00
2050	ENERGY STAR 6.0 TV + 20% (31-40")	$0.00	$0.00
2051	ENERGY STAR 6.0 TV + 20% (41-50")	$0.00	$0.00
2052	ENERGY STAR 6.0 TV + 20% (51-60")	$0.00	$0.00
2053	ENERGY STAR 6.0 TV + 20% (over 60")	$0.00	$0.00
2054	ENERGY STAR PC	$0.03	$0.00
2055	ES Laptop	$0.05	$0.00
2056	ES Laptop (Power Mgmt Enabled)	$0.23	$0.00
2057	Smart Strip plug outlet	$0.40	$0.00
2058	Efficient Set Top Box	$0.03	$0.00
2059	ENERGY STAR + 10% Display	$0.01	$0.00
2060	ENERGY STAR + 30% Display	$0.01	$0.00
2061	ENERGY STAR + 50 % Display	$0.01	$0.00
2062	ENERGY STAR 6.0 TV + 20% (0-20")	$0.01	$0.00
2063	ENERGY STAR 6.0 TV + 20% (21-30")	$0.00	$0.00
2064	ENERGY STAR 6.0 TV + 20% (31-40")	$0.00	$0.00
2065	ENERGY STAR 6.0 TV + 20% (41-50")	$0.00	$0.00
2066	ENERGY STAR 6.0 TV + 20% (51-60")	$0.00	$0.00
2067	ENERGY STAR 6.0 TV + 20% (over 60")	$0.00	$0.00
2068	ENERGY STAR PC	$0.03	$0.00
2069	ES Laptop	$0.05	$0.00
2070	ES Laptop (Power Mgmt Enabled)	$0.23	$0.00
2071	Smart Strip plug outlet	$0.40	$0.00
2072	Efficient Set Top Box	$0.03	$0.00
2073	ENERGY STAR + 10% Display	$0.01	$0.00
2074	ENERGY STAR + 30% Display	$0.01	$0.00
2075	ENERGY STAR + 50 % Display	$0.01	$0.00
2076	ENERGY STAR 6.0 TV + 20% (0-20")	$0.01	$0.00
2077	ENERGY STAR 6.0 TV + 20% (21-30")	$0.00	$0.00
2078	ENERGY STAR 6.0 TV + 20% (31-40")	$0.00	$0.00
2079	ENERGY STAR 6.0 TV + 20% (41-50")	$0.00	$0.00
2080	ENERGY STAR 6.0 TV + 20% (51-60")	$0.00	$0.00
2081	ENERGY STAR 6.0 TV + 20% (over 60")	$0.00	$0.00
2082	ENERGY STAR PC	$0.03	$0.00
2083	ES Laptop	$0.05	$0.00
2084	ES Laptop (Power Mgmt Enabled)	$0.23	$0.00
3000	Lighting		
3001	CFL bulbs - 9W	$0.03	$0.00
3002	CFL bulbs - 14W	$0.02	$0.00
3003	CFL bulbs - 20W	$0.02	$0.00
3004	CFL bulbs - 26W	$0.01	$0.00
3005	LED Replacing A-line 40W	$0.05	$0.00
3006	LED Replacing A-line 60W	$0.03	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
3007	LED Replacing A-line 75W (53W halogen)	$0.07	$0.00
3008	LED Replacing A-line 100W (72W Halogen)	$0.08	$0.00
3009	LED Lighting (screw-in) ; 2021 and later	$0.06	$0.00
3010	CFL bulbs high wattage	$0.02	$0.00
3011	LED fixtures downlights	$0.10	$0.00
3012	CFL bulbs 3-Way	$0.02	$0.00
3013	CFL bulbs dimmable	$0.04	$0.00
3014	CFL bulbs Globe	$0.05	$0.00
3015	CFL bulbs candelabra	$0.05	$0.00
3016	LED Flood PAR (average values)	$0.03	$0.00
3017	LED Globe	$0.07	$0.00
3018	LED Night Light	$0.01	$0.00
3019	Torchiere Floor Lamps	$0.04	$0.00
3020	Outdoor LED PAR/Flood	$0.01	$0.00
3021	Holiday Lights	$0.16	$0.00
3022	HPT8 4ft 2 lamp replacing T12	$0.52	$0.00
3023	LW HPT8 4ft 2 lamp replacing T12	$0.38	$0.00
3024	CFL Exterior fixture - 1 Lamp	$0.05	$0.00
3025	LED Exterior fixture - 1 Lamp	$0.05	$0.00
3026	Occupancy Sensor	$0.26	$0.00
3027	CFL bulbs - 9W	$0.03	$0.00
3028	CFL bulbs - 14W	$0.02	$0.00
3029	CFL bulbs - 20W	$0.02	$0.00
3030	CFL bulbs - 26W	$0.01	$0.00
3031	LED Replacing A-line 40W	$0.05	$0.00
3032	LED Replacing A-line 60W	$0.03	$0.00
3033	LED Replacing A-line 75W (53W halogen)	$0.07	$0.00
3034	LED Replacing A-line 100W (72W Halogen)	$0.08	$0.00
3035	LED Lighting (screw-in) ; 2021 and later	$0.06	$0.00
3036	CFL bulbs high wattage	$0.02	$0.00
3037	LED fixtures downlights	$0.10	$0.00
3038	CFL bulbs 3-Way	$0.02	$0.00
3039	CFL bulbs dimmable	$0.04	$0.00
3040	CFL bulbs Globe	$0.05	$0.00
3041	CFL bulbs candelabra	$0.05	$0.00
3042	LED Flood PAR (average values)	$0.03	$0.00
3043	LED Globe	$0.07	$0.00
3044	LED Night Light	$0.01	$0.00
3045	Torchiere Floor Lamps	$0.04	$0.00
3046	Outdoor LED PAR/Flood	$0.01	$0.00
3047	Holiday Lights	$0.16	$0.00
3048	HPT8 4ft 2 lamp replacing T12	$0.52	$0.00
3049	LW HPT8 4ft 2 lamp replacing T12	$0.38	$0.00
3050	CFL Exterior fixture - 1 Lamp	$0.05	$0.00
3051	LED Exterior fixture - 1 Lamp	$0.05	$0.00
3052	Occupancy Sensor	$0.26	$0.00
3053	CFL bulbs - 9W	$0.03	$0.00
3054	CFL bulbs - 14W	$0.02	$0.00
3055	CFL bulbs - 20W	$0.02	$0.00
3056	CFL bulbs - 26W	$0.01	$0.00
3057	LED Replacing A-line 40W	$0.05	$0.00
3058	LED Replacing A-line 60W	$0.03	$0.00
3059	LED Replacing A-line 75W (53W halogen)	$0.07	$0.00
3060	LED Replacing A-line 100W (72W Halogen)	$0.08	$0.00
3061	LED Lighting (screw-in) ; 2021 and later	$0.06	$0.00
3062	CFL bulbs high wattage	$0.02	$0.00
3063	LED fixtures downlights	$0.10	$0.00
3064	CFL bulbs 3-Way	$0.02	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
3065	CFL bulbs dimmable	$0.04	$0.00
3066	CFL bulbs Globe	$0.05	$0.00
3067	CFL bulbs candelabra	$0.05	$0.00
3068	LED Flood PAR (average values)	$0.03	$0.00
3069	LED Globe	$0.07	$0.00
3070	LED Night Light	$0.01	$0.00
3071	Torchiere Floor Lamps	$0.04	$0.00
3072	Outdoor LED PAR/Flood	$0.01	$0.00
3073	Holiday Lights	$0.16	$0.00
3074	HPT8 4ft 2 lamp replacing T12	$0.52	$0.00
3075	LW HPT8 4ft 2 lamp replacing T12	$0.38	$0.00
3076	CFL Exterior fixture - 1 Lamp	$0.05	$0.00
3077	LED Exterior fixture - 1 Lamp	$0.05	$0.00
3078	Occupancy Sensor	$0.26	$0.00
3079	CFL Fixture	$0.01	$0.00
3080	CFL Screw in	$0.02	$0.00
3081	CFL Screw in - high wattage	$0.01	$0.00
3082	LED Screw in	$0.01	$0.00
3083	CFL Candelabra - 24/7	$0.02	$0.00
3084	CFL Candelabra - 12/7	$0.03	$0.00
3085	LED Candelabra - 24/7	$0.01	$0.00
3086	LED Candelabra - 12/7	$0.02	$0.00
3087	LED Globe - 24/7	$0.01	$0.00
3088	LED Globe - 12/7	$0.01	$0.00
3089	Exterior CFL Fixture - replace HID fixture in common area	$0.02	$0.00
3090	Photo Cell Daylight Sensor	$0.04	$0.00
3091	HPT8 4ft 2 lamp replacing T12, 12 hrs	$0.16	$0.00
3092	HPT8 4ft 2 lamp replacing T12, 24 hrs	$0.08	$0.00
3093	LW HPT8 4ft 2 lamp replacing T12, 12 hrs	$0.12	$0.00
3094	LW HPT8 4ft 2 lamp replacing T12, 24 hrs	$0.06	$0.00
3095	CFL bulbs - 9W	$0.03	$0.00
3096	CFL bulbs - 14W	$0.02	$0.00
3097	CFL bulbs - 20W	$0.02	$0.00
3098	CFL bulbs - 26W	$0.01	$0.00
3099	LED Replacing A-line 40W	$0.05	$0.00
3100	LED Replacing A-line 60W	$0.03	$0.00
3101	LED Replacing A-line 75W (53W halogen)	$0.07	$0.00
3102	LED Replacing A-line 100W (72W Halogen)	$0.08	$0.00
3103	LED Lighting (screw-in) ; 2021 and later	$0.06	$0.00
3104	CFL bulbs high wattage	$0.02	$0.00
3105	LED fixtures downlights	$0.10	$0.00
3106	CFL bulbs 3-Way	$0.02	$0.00
3107	CFL bulbs dimmable	$0.04	$0.00
3108	CFL bulbs Globe	$0.05	$0.00
3109	CFL bulbs candelabra	$0.05	$0.00
3110	LED Flood PAR (average values)	$0.03	$0.00
3111	LED Globe	$0.07	$0.00
3112	LED Night Light	$0.01	$0.00
3113	Torchiere Floor Lamps	$0.04	$0.00
3114	Outdoor LED PAR/Flood	$0.01	$0.00
3115	Holiday Lights	$0.16	$0.00
3116	HPT8 4ft 2 lamp replacing T12	$0.52	$0.00
3117	LW HPT8 4ft 2 lamp replacing T12	$0.38	$0.00
3118	CFL Exterior fixture - 1 Lamp	$0.05	$0.00
3119	LED Exterior fixture - 1 Lamp	$0.05	$0.00
3120	Occupancy Sensor	$0.26	$0.00
3121	CFL Fixture	$0.01	$0.00
3122	CFL Screw in	$0.02	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
3123	CFL Screw in - high wattage	$0.01	$0.00
3124	LED Screw in	$0.01	$0.00
3125	CFL Candelabra - 24/7	$0.02	$0.00
3126	CFL Candelabra - 12/7	$0.03	$0.00
3127	LED Candelabra - 24/7	$0.01	$0.00
3128	LED Candelabra - 12/7	$0.02	$0.00
3129	LED Globe - 24/7	$0.01	$0.00
3130	LED Globe - 12/7	$0.01	$0.00
3131	Exterior CFL Fixture - replace HID fixture in common area	$0.02	$0.00
3132	CFL bulbs - 9W	$0.03	$0.00
3133	CFL bulbs - 14W	$0.02	$0.00
3134	CFL bulbs - 20W	$0.02	$0.00
3135	CFL bulbs - 26W	$0.01	$0.00
3136	LED Replacing A-line 40W	$0.05	$0.00
3137	LED Replacing A-line 60W	$0.03	$0.00
3138	LED Replacing A-line 75W (53W halogen)	$0.07	$0.00
3139	LED Replacing A-line 100W (72W Halogen)	$0.08	$0.00
3140	LED Lighting (screw-in) ; 2021 and later	$0.06	$0.00
3141	CFL bulbs high wattage	$0.02	$0.00
3142	LED fixtures downlights	$0.10	$0.00
3143	CFL bulbs 3-Way	$0.02	$0.00
3144	CFL bulbs dimmable	$0.04	$0.00
3145	CFL bulbs Globe	$0.05	$0.00
3146	CFL bulbs candelabra	$0.05	$0.00
3147	LED Flood PAR (average values)	$0.03	$0.00
3148	LED Globe	$0.07	$0.00
3149	LED Night Light	$0.01	$0.00
3150	Torchiere Floor Lamps	$0.04	$0.00
3151	Outdoor LED PAR/Flood	$0.01	$0.00
3152	Holiday Lights	$0.16	$0.00
3153	HPT8 4ft 2 lamp replacing T12	$0.52	$0.00
3154	LW HPT8 4ft 2 lamp replacing T12	$0.38	$0.00
3155	CFL Exterior fixture - 1 Lamp	$0.05	$0.00
3156	LED Exterior fixture - 1 Lamp	$0.05	$0.00
3157	Occupancy Sensor	$0.26	$0.00
3158	CFL bulbs - 9W	$0.03	$0.00
3159	CFL bulbs - 14W	$0.02	$0.00
3160	CFL bulbs - 20W	$0.02	$0.00
3161	CFL bulbs - 26W	$0.01	$0.00
3162	LED Replacing A-line 40W	$0.05	$0.00
3163	LED Replacing A-line 60W	$0.03	$0.00
3164	LED Replacing A-line 75W (53W halogen)	$0.07	$0.00
3165	LED Replacing A-line 100W (72W Halogen)	$0.08	$0.00
3166	LED Lighting (screw-in) ; 2021 and later	$0.06	$0.00
3167	CFL bulbs high wattage	$0.02	$0.00
3168	LED fixtures downlights	$0.10	$0.00
3169	CFL bulbs 3-Way	$0.02	$0.00
3170	CFL bulbs dimmable	$0.04	$0.00
3171	CFL bulbs Globe	$0.05	$0.00
3172	CFL bulbs candelabra	$0.05	$0.00
3173	LED Flood PAR (average values)	$0.03	$0.00
3174	LED Globe	$0.07	$0.00
3175	LED Night Light	$0.01	$0.00
3176	Torchiere Floor Lamps	$0.04	$0.00
3177	Outdoor LED PAR/Flood	$0.01	$0.00
3178	Holiday Lights	$0.16	$0.00
3179	HPT8 4ft 2 lamp replacing T12	$0.52	$0.00
3180	LW HPT8 4ft 2 lamp replacing T12	$0.38	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
3181	CFL Exterior fixture - 1 Lamp	$0.05	$0.00
3182	LED Exterior fixture - 1 Lamp	$0.05	$0.00
3183	Occupancy Sensor	$0.26	$0.00
4000	Water Heating		
4001	Heat Pump Water Heaters	$0.03	$0.00
4002	Super Efficiency Gas Water Heater 0.70 EF	$0.00	$6.90
4003	Instant Gas Water Heater	$0.00	$6.85
4004	Tank Wrap	$0.00	$12.83
4005	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4006	Pipe Wrap - gas water heater - Insulated Pipe with R2	$0.00	$0.72
4007	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4008	Pipe Wrap - electric water heater - Insulated Pipe with R2	$0.04	$0.00
4009	Low Flow Showerheads 1.75 gpm - gas water heating	$0.00	$2.35
4010	Low Flow Showerheads 1.5 gpm - gas water heating	$0.00	$1.76
4011	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.41
4012	Low Flow Showerheads 1.0 gpm - gas water heating	$0.00	$1.18
4013	Low Flow Showerheads 0.5 gpm - gas water heating	$0.00	$0.88
4014	Low Flow Showerheads 1.75 gpm - electric water heating	$0.01	$0.00
4015	Low Flow Showerheads 1.5 gpm - electric water heating	$0.01	$0.00
4016	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4017	Low Flow Showerheads 1.0 gpm - electric water heating	$0.01	$0.00
4018	Low Flow Showerheads 0.5 gpm - electric water heating	$0.00	$0.00
4019	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4020	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4021	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.41
4022	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4023	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$1.07
4024	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$0.63
4025	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$7.31
4026	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$4.39
4027	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	$0.00	$3.06
4028	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	$0.00	$0.00
4029	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	$0.00	$0.00
4030	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	$0.03	$0.00
4031	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	$0.02	$0.00
4032	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	$0.01	$0.00
4033	Shower start - 1.75 gpm - gas water heating	$0.00	$4.26
4034	Shower start - 1.5 gpm - gas water heating	$0.00	$3.32
4035	Shower start - 1.75 gpm - electric water heating	$0.02	$0.00
4036	Shower start - 1.5 gpm - electric water heating	$0.01	$0.00
4037	Gravity Film Heat Exchanger GFX - gas water heating	$0.00	$90.25
4038	Gravity Film Heat Exchanger GFX - electric water heating	$0.44	$0.00
4039	Solar Domestic Hot Water - gas water heating	$0.00	$42.67
4040	Solar Domestic Hot Water - electric water heating	$0.20	$0.00
4041	Heat Pump Water Heaters	$0.03	$0.00
4042	Super Efficiency Gas Water Heater 0.70 EF	$0.00	$6.90
4043	Instant Gas Water Heater	$0.00	$6.85
4044	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4045	Pipe Wrap - gas water heater - Insulated Pipe with R2	$0.00	$0.72
4046	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4047	Pipe Wrap - electric water heater - Insulated Pipe with R2	$0.04	$0.00
4048	Low Flow Showerheads 1.75 gpm - gas water heating	$0.00	$2.35
4049	Low Flow Showerheads 1.5 gpm - gas water heating	$0.00	$1.76
4050	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.41
4051	Low Flow Showerheads 1.0 gpm - gas water heating	$0.00	$1.18
4052	Low Flow Showerheads 0.5 gpm - gas water heating	$0.00	$0.88
4053	Low Flow Showerheads 1.75 gpm - electric water heating	$0.01	$0.00
4054	Low Flow Showerheads 1.5 gpm - electric water heating	$0.01	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
4055	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4056	Low Flow Showerheads 1.0 gpm - electric water heating	$0.01	$0.00
4057	Low Flow Showerheads 0.5 gpm - electric water heating	$0.00	$0.00
4058	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$1.07
4059	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$0.63
4060	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$7.31
4061	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$4.39
4062	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	$0.00	$3.06
4063	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	$0.00	$0.00
4064	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	$0.00	$0.00
4065	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	$0.03	$0.00
4066	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	$0.02	$0.00
4067	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	$0.01	$0.00
4068	Shower start - 1.75 gpm - gas water heating	$0.00	$4.26
4069	Shower start - 1.5 gpm - gas water heating	$0.00	$3.32
4070	Shower start - 1.75 gpm - electric water heating	$0.02	$0.00
4071	Shower start - 1.5 gpm - electric water heating	$0.01	$0.00
4072	Gravity Film Heat Exchanger GFX - gas water heating	$0.00	$90.25
4073	Gravity Film Heat Exchanger GFX - electric water heating	$0.44	$0.00
4074	Solar Domestic Hot Water - gas water heating	$0.00	$42.67
4075	Solar Domestic Hot Water - electric water heating	$0.20	$0.00
4076	Heat Pump Water Heaters	$0.03	$0.00
4077	Super Efficiency Gas Water Heater 0.70 EF	$0.00	$6.90
4078	Instant Gas Water Heater	$0.00	$6.85
4079	Tank Wrap	$0.00	$12.83
4080	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4081	Pipe Wrap - gas water heater - Insulated Pipe with R2	$0.00	$0.72
4082	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4083	Pipe Wrap - electric water heater - Insulated Pipe with R2	$0.04	$0.00
4084	Low Flow Showerheads 1.75 gpm - gas water heating	$0.00	$2.40
4085	Low Flow Showerheads 1.5 gpm - gas water heating	$0.00	$1.80
4086	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.45
4087	Low Flow Showerheads 1.0 gpm - gas water heating	$0.00	$1.20
4088	Low Flow Showerheads 0.5 gpm - gas water heating	$0.00	$0.90
4089	Low Flow Showerheads 1.75 gpm - electric water heating	$0.01	$0.00
4090	Low Flow Showerheads 1.5 gpm - electric water heating	$0.01	$0.00
4091	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4092	Low Flow Showerheads 1.0 gpm - electric water heating	$0.01	$0.00
4093	Low Flow Showerheads 0.5 gpm - electric water heating	$0.00	$0.00
4094	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4095	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4096	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.45
4097	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4098	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$1.48
4099	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$0.87
4100	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$7.31
4101	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$4.24
4102	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	$0.00	$2.99
4103	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	$0.01	$0.00
4104	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	$0.00	$0.00
4105	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	$0.03	$0.00
4106	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	$0.02	$0.00
4107	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	$0.01	$0.00
4108	Shower start - 1.75 gpm - gas water heating	$0.00	$4.36
4109	Shower start - 1.5 gpm - gas water heating	$0.00	$3.40
4110	Shower start - 1.75 gpm - electric water heating	$0.02	$0.00
4111	Shower start - 1.5 gpm - electric water heating	$0.01	$0.00
4112	Gravity Film Heat Exchanger GFX - gas water heating	$0.00	$90.25

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
4113	Gravity Film Heat Exchanger GFX - electric water heating	$0.44	$0.00
4114	Solar Domestic Hot Water - gas water heating	$0.00	$42.67
4115	Solar Domestic Hot Water - electric water heating	$0.20	$0.00
4116	Heat Pump Water Heaters	$0.03	$0.00
4117	Super Efficiency Gas Water Heater 0.70 EF	$0.00	$6.90
4118	Instant Gas Water Heater	$0.00	$6.85
4119	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4120	Pipe Wrap - gas water heater - Insulated Pipe with R2	$0.00	$0.72
4121	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4122	Pipe Wrap - electric water heater - Insulated Pipe with R2	$0.04	$0.00
4123	Low Flow Showerheads 1.75 gpm - gas water heating	$0.00	$2.40
4124	Low Flow Showerheads 1.5 gpm - gas water heating	$0.00	$1.80
4125	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.45
4126	Low Flow Showerheads 1.0 gpm - gas water heating	$0.00	$1.20
4127	Low Flow Showerheads 0.5 gpm - gas water heating	$0.00	$0.90
4128	Low Flow Showerheads 1.75 gpm - electric water heating	$0.01	$0.00
4129	Low Flow Showerheads 1.5 gpm - electric water heating	$0.01	$0.00
4130	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4131	Low Flow Showerheads 1.0 gpm - electric water heating	$0.01	$0.00
4132	Low Flow Showerheads 0.5 gpm - electric water heating	$0.00	$0.00
4133	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$1.48
4134	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$0.87
4135	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$7.31
4136	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$4.24
4137	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	$0.00	$2.99
4138	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	$0.01	$0.00
4139	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	$0.00	$0.00
4140	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	$0.03	$0.00
4141	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	$0.02	$0.00
4142	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	$0.01	$0.00
4143	Shower start - 1.75 gpm - gas water heating	$0.00	$4.36
4144	Shower start - 1.5 gpm - gas water heating	$0.00	$3.40
4145	Shower start - 1.75 gpm - electric water heating	$0.02	$0.00
4146	Shower start - 1.5 gpm - electric water heating	$0.01	$0.00
4147	Gravity Film Heat Exchanger GFX - gas water heating	$0.00	$90.25
4148	Gravity Film Heat Exchanger GFX - electric water heating	$0.44	$0.00
4149	Solar Domestic Hot Water - gas water heating	$0.00	$42.67
4150	Solar Domestic Hot Water - electric water heating	$0.20	$0.00
4151	Heat Pump Water Heaters	$0.03	$0.00
4152	Super Efficiency Gas Water Heater 0.70 EF	$0.00	$6.90
4153	Instant Gas Water Heater	$0.00	$6.85
4154	Tank Wrap	$0.00	$12.83
4155	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4156	Pipe Wrap - gas water heater - Insulated Pipe with R2	$0.00	$0.72
4157	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4158	Pipe Wrap - electric water heater - Insulated Pipe with R2	$0.04	$0.00
4159	Low Flow Showerheads 1.75 gpm - gas water heating	$0.00	$2.35
4160	Low Flow Showerheads 1.5 gpm - gas water heating	$0.00	$1.76
4161	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.41
4162	Low Flow Showerheads 1.0 gpm - gas water heating	$0.00	$1.18
4163	Low Flow Showerheads 0.5 gpm - gas water heating	$0.00	$0.88
4164	Low Flow Showerheads 1.75 gpm - electric water heating	$0.01	$0.00
4165	Low Flow Showerheads 1.5 gpm - electric water heating	$0.01	$0.00
4166	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4167	Low Flow Showerheads 1.0 gpm - electric water heating	$0.01	$0.00
4168	Low Flow Showerheads 0.5 gpm - electric water heating	$0.00	$0.00
4169	Pipe Wrap - gas water heater - Insulated Pipe with R3	$0.00	$0.64
4170	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
4171	Low Flow Showerheads 1.25 gpm - gas water heating	$0.00	$1.41
4172	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4173	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$1.07
4174	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$0.63
4175	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$7.31
4176	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$4.39
4177	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	$0.00	$3.06
4178	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	$0.00	$0.00
4179	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	$0.00	$0.00
4180	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	$0.03	$0.00
4181	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	$0.02	$0.00
4182	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	$0.01	$0.00
4183	Shower start - 1.75 gpm - gas water heating	$0.00	$4.26
4184	Shower start - 1.5 gpm - gas water heating	$0.00	$3.32
4185	Shower start - 1.75 gpm - electric water heating	$0.02	$0.00
4186	Shower start - 1.5 gpm - electric water heating	$0.01	$0.00
4187	Gravity Film Heat Exchanger GFX - gas water heating	$0.00	$90.25
4189	Solar Domestic Hot Water - gas water heating	$0.00	$42.67
4190	Solar Domestic Hot Water - electric water heating	$0.20	$0.00
4192	Super Efficiency Gas Water Heater 0.70 EF	$0.00	$6.90
4193	Instant Gas Water Heater	$0.00	$6.85
4195	Pipe Wrap - gas water heater - Insulated Pipe with R2	$0.00	$0.72
4196	Pipe Wrap - electric water heater - Insulated Pipe with R3	$0.03	$0.00
4198	Low Flow Showerheads 1.75 gpm - gas water heating	$0.00	$2.35
4199	Low Flow Showerheads 1.5 gpm - gas water heating	$0.00	$1.76
4201	Low Flow Showerheads 1.0 gpm - gas water heating	$0.00	$1.18
4202	Low Flow Showerheads 0.5 gpm - gas water heating	$0.00	$0.88
4204	Low Flow Showerheads 1.5 gpm - electric water heating	$0.01	$0.00
4205	Low Flow Showerheads 1.25 gpm - electric water heating	$0.01	$0.00
4206	Low Flow Showerheads 1.0 gpm - electric water heating	$0.01	$0.00
4207	Low Flow Showerheads 0.5 gpm - electric water heating	$0.00	$0.00
4208	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$1.07
4209	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$0.63
4210	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	$0.00	$7.31
4211	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	$0.00	$4.39
4212	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	$0.00	$3.06
4213	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	$0.00	$0.00
4214	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	$0.00	$0.00
4215	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	$0.03	$0.00
4216	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	$0.02	$0.00
4217	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	$0.01	$0.00
4218	Shower start - 1.75 gpm - gas water heating	$0.00	$4.26
4219	Shower start - 1.5 gpm - gas water heating	$0.00	$3.32
4220	Shower start - 1.75 gpm - electric water heating	$0.02	$0.00
4221	Shower start - 1.5 gpm - electric water heating	$0.01	$0.00
4222	Gravity Film Heat Exchanger GFX - gas water heating	$0.00	$90.25
4223	Gravity Film Heat Exchanger GFX - electric water heating	$0.44	$0.00
4224	Solar Domestic Hot Water - gas water heating	$0.00	$42.67
4225	Solar Domestic Hot Water - electric water heating	$0.20	$0.00
5000	Other		
5001	Pump and Motor Single Speed	$0.02	$0.00
5002	Pump and motor w auto controls - multi speed	$0.07	$0.00
5003	Pump and Motor Single Speed	$0.02	$0.00
5004	Pump and motor w auto controls - multi speed	$0.07	$0.00
6000	HVAC (Envelope)		
6001	Airtight Can Lights	$0.10	$30.50
6002	Basement Wall Insulation	$0.00	$8.36
6003	Cool roof	$3.05	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6004	Crawlspace Wall Insulation	$0.00	$7.87
6005	Door weatherstripping	$0.15	$42.59
6006	Duct Insulation	$0.00	$12.88
6007	Duct location	$0.04	$10.83
6008	Duct sealing 15% leakage base	$0.08	$23.66
6009	Duct sealing 20% leakage base	$0.05	$15.46
6010	Duct sealing 25% leakage base	$0.04	$11.55
6011	Duct sealing 30% leakage base	$0.03	$9.22
6012	Energy Star Door	$0.46	$135.95
6013	Floor Insulation	$0.00	$7.46
6014	Infiltration reduction - 10%	$0.02	$6.40
6015	Infiltration reduction - 15%	$0.01	$4.25
6016	Infiltration reduction - 20%	$0.01	$3.10
6017	Infiltration reduction - 30%	$0.01	$2.07
6018	Infiltration reduction - 40%	$0.01	$1.55
6019	Infiltration reduction - 50%	$0.00	$1.24
6020	Rim Joist Insulation	$0.02	$4.47
6021	Wall Insulation	$0.06	$18.54
6022	Window Film	$0.13	$0.00
6023	Window Replacement	$0.02	$5.42
6024	New vinyl window	$0.03	$10.17
6025	Original double hung window with low U storm	$0.04	$11.30
6026	Original double hung window with original storm window	$0.09	$25.51
6027	Rehabbed double hung	$0.11	$31.10
6028	Rehabbed double hung with low U storm	$0.09	$25.85
6029	Rehabbed double hung with single glazed storm	$0.10	$29.68
6030	R19 kneewalls	$0.01	$2.04
6031	R-38 "scuttle hole" Attic hatch	$0.00	$0.68
6032	R-38 pull-down stairs Attic hatch	$0.00	$0.68
6033	R-30 Roof Insulation	$0.09	$25.67
6034	R-38 Roof Insulation	$0.11	$31.75
6035	R-49 Roof Insulation	$0.14	$40.23
6036	R-60 Roof Insulation	$0.17	$48.63
6037	Low Income Weatherization Package	$0.06	$16.76
6038	Basement Wall Insulation	$0.00	$12.76
6039	Cool roof	$5.25	$0.00
6040	Crawlspace Wall Insulation	$0.00	$47.11
6041	Duct Insulation	$0.06	$16.72
6042	Duct location	$0.04	$10.77
6043	Duct sealing 15% leakage base	$0.15	$42.61
6044	Duct sealing 20% leakage base	$0.09	$27.49
6045	Duct sealing 25% leakage base	$0.07	$20.40
6046	Duct sealing 30% leakage base	$0.06	$16.26
6047	Energy Star Door	$0.46	$133.36
6048	Floor Insulation	$0.00	$31.56
6049	Infiltration reduction - 10%	$0.04	$13.09
6050	Infiltration reduction - 15%	$0.03	$8.70
6051	Infiltration reduction - 20%	$0.02	$6.08
6052	Infiltration reduction - 30%	$0.01	$4.04
6053	Infiltration reduction - 40%	$0.01	$3.03
6054	Infiltration reduction - 50%	$0.01	$2.42
6055	Wall Insulation	$0.10	$28.49
6056	Window Film	$0.14	$0.00
6057	Window Replacement	$0.03	$8.24
6058	R19 kneewalls	$0.01	$1.98
6059	R-38 "scuttle hole" Attic hatch	$0.00	$0.68
6060	R-38 pull-down stairs Attic hatch	$0.00	$0.67
6061	R-30 Roof Insulation	$0.09	$25.15

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6062	R-38 Roof Insulation	$0.11	$31.12
6063	R-49 Roof Insulation	$0.13	$39.47
6064	R-60 Roof Insulation	$0.16	$47.73
6065	Low Income Weatherization Package	$0.09	$25.02
6066	Airtight Can Lights	$0.11	$30.83
6067	Basement Wall Insulation	$0.03	$7.35
6068	Cool roof	-$0.62	-$181.10
6069	Crawlspace Wall Insulation	$0.02	$5.15
6070	Door weatherstripping	$0.15	$44.10
6071	Duct Insulation	$0.00	$12.86
6072	Duct location	$0.03	$9.54
6073	Duct sealing 15% leakage base	$0.08	$24.58
6074	Duct sealing 20% leakage base	$0.05	$16.04
6075	Duct sealing 25% leakage base	$0.04	$12.01
6076	Duct sealing 30% leakage base	$0.03	$9.65
6077	Energy Star Door	$0.48	$141.08
6078	Floor Insulation	$0.04	$11.80
6079	Infiltration reduction - 10%	$0.02	$5.96
6080	Infiltration reduction - 15%	$0.01	$3.96
6081	Infiltration reduction - 20%	$0.01	$2.92
6082	Infiltration reduction - 30%	$0.01	$1.95
6083	Infiltration reduction - 40%	$0.00	$1.46
6084	Infiltration reduction - 50%	$0.00	$1.17
6085	Rim Joist Insulation	$0.00	$4.42
6086	Steam pipe insulation	$0.00	$3.19
6087	Wall Insulation	$0.06	$18.11
6088	Window Film	-$0.02	-$5.06
6089	Window Replacement	$0.02	$5.53
6090	New vinyl window	$0.04	$10.84
6091	Original double hung window with low U storm	$0.04	$12.14
6092	Original double hung window with original storm window	$0.09	$26.94
6093	Rehabbed double hung	$0.11	$32.07
6094	Rehabbed double hung with low U storm	$0.09	$27.81
6095	Rehabbed double hung with single glazed storm	$0.10	$30.64
6096	R19 kneewalls	$0.01	$2.02
6097	R-38 "scuttle hole" Attic hatch	$0.00	$0.79
6098	R-38 pull-down stairs Attic hatch	$0.00	$0.78
6099	R-30 Roof Insulation	$0.05	$15.85
6100	R-38 Roof Insulation	$0.07	$21.93
6101	R-49 Roof Insulation	$0.10	$29.50
6102	R-60 Roof Insulation	$0.13	$36.80
6103	Low Income Weatherization Package	$0.05	$16.10
6104	Basement Wall Insulation	$0.04	$11.17
6105	Cool roof	-$0.90	-$263.53
6106	Crawlspace Wall Insulation	$0.06	$16.71
6107	Duct Insulation	$0.00	$16.70
6108	Duct location	$0.03	$9.41
6109	Duct sealing 15% leakage base	$0.15	$45.04
6110	Duct sealing 20% leakage base	$0.10	$29.14
6111	Duct sealing 25% leakage base	$0.07	$21.77
6112	Duct sealing 30% leakage base	$0.06	$17.37
6113	Energy Star Door	$0.47	$136.97
6114	Floor Insulation	$0.17	$48.47
6115	Infiltration reduction - 10%	$0.04	$11.98
6116	Infiltration reduction - 15%	$0.03	$7.95
6117	Infiltration reduction - 20%	$0.02	$5.69
6118	Infiltration reduction - 30%	$0.01	$3.79
6119	Infiltration reduction - 40%	$0.01	$2.83

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6120	Infiltration reduction - 50%	$0.01	$2.27
6121	Steam pipe insulation	$0.00	$4.04
6122	Wall Insulation	$0.09	$27.14
6123	Window Film	-$0.02	-$6.72
6124	Window Replacement	$0.03	$8.32
6125	R19 kneewalls	$0.01	$1.92
6126	R-38 "scuttle hole" Attic hatch	$0.00	$0.67
6127	R-38 pull-down stairs Attic hatch	$0.00	$0.66
6128	R-30 Roof Insulation	$0.08	$24.29
6129	R-38 Roof Insulation	$0.10	$30.05
6130	R-49 Roof Insulation	$0.13	$38.04
6131	R-60 Roof Insulation	$0.16	$46.02
6132	Low Income Weatherization Package	$0.08	$24.53
6133	Basement Wall Insulation	$0.00	$10.04
6134	Cool roof	$1.25	$0.00
6135	Crawlspace Wall Insulation	$0.00	$283.33
6136	Duct Insulation	$0.03	$8.33
6137	Duct location	$0.04	$12.92
6138	Duct sealing 15% leakage base	$0.04	$13.06
6139	Duct sealing 20% leakage base	$0.03	$8.32
6140	Duct sealing 25% leakage base	$0.02	$6.20
6141	Duct sealing 30% leakage base	$0.02	$4.89
6142	Energy Star Door	$0.11	$30.78
6143	Floor Insulation	$0.00	$44.23
6144	Infiltration reduction - 10%	$0.01	$3.13
6145	Infiltration reduction - 15%	$0.01	$2.08
6146	Infiltration reduction - 20%	$0.00	$1.40
6147	Infiltration reduction - 30%	$0.00	$0.93
6148	Infiltration reduction - 40%	$0.00	$0.70
6149	Infiltration reduction - 50%	$0.00	$0.56
6150	Wall Insulation	$0.03	$9.17
6151	Window Film	$0.30	$0.00
6152	Window Replacement	$0.20	$58.54
6153	Airtight Can Lights	$0.07	$21.55
6154	Cool roof	$0.53	$0.00
6155	Door weatherstripping	$0.13	$38.12
6156	Duct Insulation	$0.02	$6.38
6157	Duct location	$0.03	$7.50
6158	Duct sealing 15% leakage base	$0.05	$15.89
6159	Duct sealing 20% leakage base	$0.04	$10.30
6160	Duct sealing 25% leakage base	$0.03	$7.61
6161	Duct sealing 30% leakage base	$0.02	$6.05
6162	Energy Star Door	$0.46	$135.10
6163	Infiltration reduction - 10%	$0.02	$5.46
6164	Infiltration reduction - 15%	$0.01	$3.63
6165	Infiltration reduction - 30%	$0.01	$2.03
6166	Infiltration reduction - 50%	$0.00	$1.22
6167	Roof Insulation	$0.03	$9.80
6168	Wall Insulation	$0.06	$16.51
6169	Window Film	$0.06	$0.00
6170	Window Replacement	$0.02	$5.18
6171	Basement Wall Insulation	$0.00	$8.36
6172	New vinyl window	$0.01	$3.80
6173	Original double hung window with low U storm	$0.01	$4.07
6174	Original double hung window with original storm window	$0.03	$10.05
6175	Rehabbed double hung	$0.04	$12.61
6176	Rehabbed double hung with low U storm	$0.03	$9.27
6177	Rehabbed double hung with single glazed storm	$0.04	$11.70

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6178	Low Income Weatherization Package	$0.04	$10.47
6179	Airtight Can Lights	$0.07	$21.49
6180	Cool roof	$0.65	$0.00
6181	Door weatherstripping	$0.13	$36.79
6182	Duct Insulation	$0.02	$6.98
6183	Duct location	$0.03	$9.36
6184	Duct sealing 15% leakage base	$0.07	$21.94
6185	Duct sealing 20% leakage base	$0.05	$14.07
6186	Duct sealing 25% leakage base	$0.04	$10.35
6187	Duct sealing 30% leakage base	$0.03	$8.18
6188	Energy Star Door	$0.43	$126.92
6189	Infiltration reduction - 10%	$0.04	$10.57
6190	Infiltration reduction - 15%	$0.02	$7.05
6191	Infiltration reduction - 30%	$0.01	$3.96
6192	Infiltration reduction - 50%	$0.01	$2.37
6193	Roof Insulation	$0.06	$18.07
6194	Wall Insulation	$0.09	$26.41
6195	Window Film	$0.07	$0.00
6196	Window Replacement	$0.03	$8.52
6197	Basement Wall Insulation	$0.00	$12.76
6198	Low Income Weatherization Package	$0.06	$16.99
6199	Airtight Can Lights	$0.06	$18.95
6200	Cool roof	$1.39	$0.00
6201	Door weatherstripping	$0.13	$38.53
6202	Duct Insulation	$0.00	$6.62
6203	Duct location	$0.03	$7.80
6204	Duct sealing 15% leakage base	$0.06	$16.52
6205	Duct sealing 20% leakage base	$0.04	$10.68
6206	Duct sealing 25% leakage base	$0.03	$7.90
6207	Duct sealing 30% leakage base	$0.02	$6.28
6208	Energy Star Door	$0.47	$137.38
6209	Infiltration reduction - 10%	$0.02	$6.06
6210	Infiltration reduction - 15%	$0.01	$4.04
6211	Infiltration reduction - 30%	$0.01	$2.26
6212	Infiltration reduction - 50%	$0.00	$1.35
6213	Roof Insulation	$0.03	$9.64
6214	Wall Insulation	$0.06	$18.29
6215	Window Film	$0.63	$0.00
6216	Window Replacement	$0.02	$5.90
6217	Basement Wall Insulation	$0.02	$7.06
6218	New vinyl window	$0.01	$4.28
6219	Original double hung window with low U storm	$0.02	$4.62
6220	Original double hung window with original storm window	$0.04	$11.24
6221	Rehabbed double hung	$0.05	$14.00
6222	Rehabbed double hung with low U storm	$0.04	$10.52
6223	Rehabbed double hung with single glazed storm	$0.04	$13.04
6224	Low Income Weatherization Package	$0.04	$11.39
6225	Airtight Can Lights	$0.00	$19.13
6226	Cool roof	$1.82	$0.00
6227	Door weatherstripping	$0.13	$37.29
6228	Duct Insulation	$0.03	$7.36
6229	Duct location	$0.03	$9.84
6230	Duct sealing 15% leakage base	$0.08	$22.97
6231	Duct sealing 20% leakage base	$0.05	$14.73
6232	Duct sealing 25% leakage base	$0.04	$10.84
6233	Duct sealing 30% leakage base	$0.03	$8.57
6234	Energy Star Door	$0.44	$129.04
6235	Infiltration reduction - 10%	$0.04	$12.02

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6236	Infiltration reduction - 15%	$0.03	$8.00
6237	Infiltration reduction - 30%	$0.02	$4.48
6238	Infiltration reduction - 50%	$0.01	$2.68
6239	Roof Insulation	$0.06	$18.25
6240	Wall Insulation	$0.13	$38.45
6241	Window Film	$0.56	$0.00
6242	Window Replacement	$0.03	$10.16
6243	Basement Wall Insulation	$0.04	$10.70
6244	Low Income Weatherization Package	$0.07	$20.00
6245	Airtight Can Lights	$0.14	$0.00
6246	Cool roof	-$0.68	$0.00
6247	Door weatherstripping	$0.19	$0.00
6248	Duct Insulation	$0.03	$0.00
6249	Duct location	$0.03	$0.00
6250	Duct sealing 15% leakage base	$0.07	$0.00
6251	Duct sealing 20% leakage base	$0.05	$0.00
6252	Duct sealing 25% leakage base	$0.03	$0.00
6253	Duct sealing 30% leakage base	$0.03	$0.00
6254	Energy Star Door	$0.69	$0.00
6255	Infiltration reduction - 10%	$0.03	$0.00
6256	Infiltration reduction - 15%	$0.02	$0.00
6257	Infiltration reduction - 30%	$0.01	$0.00
6258	Infiltration reduction - 50%	$0.01	$0.00
6259	Roof Insulation	$0.04	$0.00
6260	Wall Insulation	$0.08	$0.00
6261	Window Film	-$0.02	$0.00
6262	Window Replacement	$0.02	$0.00
6263	Basement Wall Insulation	$0.04	$0.00
6264	New vinyl window	$0.02	$0.00
6265	Original double hung window with low U storm	$0.02	$0.00
6266	Original double hung window with original storm window	$0.05	$0.00
6267	Rehabbed double hung	$0.06	$0.00
6268	Rehabbed double hung with low U storm	$0.05	$0.00
6269	Rehabbed double hung with single glazed storm	$0.06	$0.00
6270	Low Income Weatherization Package	$0.05	$0.00
6271	Airtight Can Lights	$0.14	$0.00
6272	Cool roof	-$1.14	$0.00
6273	Door weatherstripping	$0.19	$0.00
6274	Duct Insulation	$0.03	$0.00
6275	Duct location	$0.04	$0.00
6276	Duct sealing 15% leakage base	$0.10	$0.00
6277	Duct sealing 20% leakage base	$0.06	$0.00
6278	Duct sealing 25% leakage base	$0.05	$0.00
6279	Duct sealing 30% leakage base	$0.04	$0.00
6280	Energy Star Door	$0.66	$0.00
6281	Infiltration reduction - 10%	$0.05	$0.00
6282	Infiltration reduction - 15%	$0.04	$0.00
6283	Infiltration reduction - 30%	$0.02	$0.00
6284	Infiltration reduction - 50%	$0.01	$0.00
6285	Roof Insulation	$0.08	$0.00
6286	Wall Insulation	$0.13	$0.00
6287	Window Film	-$0.02	$0.00
6288	Window Replacement	$0.03	$0.00
6289	Basement Wall Insulation	$0.07	$0.00
6290	Low Income Weatherization Package	$0.08	$0.00
6291	Airtight Can Lights	$0.02	$6.70
6292	Cool roof	$0.11	$0.00
6293	Door weatherstripping	$0.04	$10.41

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6294	Duct Insulation	$0.01	$3.14
6295	Duct location	$0.04	$11.85
6296	Duct sealing 15% leakage base	$0.02	$5.10
6297	Duct sealing 20% leakage base	$0.01	$3.27
6298	Duct sealing 25% leakage base	$0.01	$2.41
6299	Duct sealing 30% leakage base	$0.01	$1.91
6300	Energy Star Door	$0.15	$45.12
6301	Infiltration reduction - 10%	$0.01	$2.36
6302	Infiltration reduction - 15%	$0.01	$1.57
6303	Infiltration reduction - 30%	$0.00	$0.89
6304	Infiltration reduction - 50%	$0.00	$0.53
6305	Roof Insulation	$0.10	$29.90
6306	Wall Insulation	$0.03	$7.38
6307	Window Film	$0.17	$0.00
6308	Window Replacement	$0.18	$52.53
6309	Basement Wall Insulation	$0.00	$10.04
6310	Airtight Can Lights	$0.06	$0.00
6311	Cool roof	-$2.51	$0.00
6312	Door weatherstripping	$0.08	$0.00
6313	Duct Insulation	$0.01	$0.00
6314	Duct location	$0.05	$0.00
6315	Duct sealing 15% leakage base	$0.03	$0.00
6316	Duct sealing 20% leakage base	$0.02	$0.00
6317	Duct sealing 25% leakage base	$0.01	$0.00
6318	Duct sealing 30% leakage base	$0.01	$0.00
6319	Energy Star Door	$0.36	$0.00
6320	Infiltration reduction - 10%	$0.02	$0.00
6321	Infiltration reduction - 15%	$0.01	$0.00
6322	Infiltration reduction - 30%	$0.01	$0.00
6323	Infiltration reduction - 50%	$0.00	$0.00
6324	Roof Insulation	$0.20	$0.00
6325	Wall Insulation	$0.06	$0.00
6326	Window Film	-$0.15	$0.00
6327	Window Replacement	$0.16	$0.00
6328	Basement Wall Insulation	$0.09	$0.00
6329	Crawlspace Wall Insulation	$0.07	$19.08
6330	Duct Insulation	$0.01	$3.98
6331	Duct sealing 15% leakage base	$0.01	$4.28
6332	Duct sealing 20% leakage base	$0.01	$2.75
6333	Duct sealing 25% leakage base	$0.01	$2.04
6334	Duct sealing 30% leakage base	$0.01	$1.61
6335	Floor Insulation	$0.05	$15.47
6336	Infiltration reduction - 10%	$0.02	$6.01
6337	Infiltration reduction - 15%	$0.01	$4.01
6338	Roof Insulation	$0.04	$11.39
6339	Wall Insulation	$0.05	$13.49
6340	Window Replacement	$0.02	$4.71
6341	Low Income Weatherization Package	$0.03	$9.06
6342	Crawlspace Wall Insulation	$0.09	$25.37
6343	Duct Insulation	$0.01	$3.92
6344	Duct sealing 15% leakage base	$0.02	$5.53
6345	Duct sealing 20% leakage base	$0.01	$3.55
6346	Duct sealing 25% leakage base	$0.01	$2.60
6347	Duct sealing 30% leakage base	$0.01	$2.05
6348	Floor Insulation	$0.04	$13.03
6349	Infiltration reduction - 10%	$0.04	$13.03
6350	Infiltration reduction - 15%	$0.03	$8.62
6351	Roof Insulation	$0.03	$7.84

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
6352	Wall Insulation	$0.08	$22.24
6353	Window Replacement	$0.04	$10.57
6354	Low Income Weatherization Package	$0.04	$12.75
6355	Crawlspace Wall Insulation	$0.07	$20.88
6356	Duct Insulation	$0.01	$4.11
6357	Duct sealing 15% leakage base	$0.02	$4.41
6358	Duct sealing 20% leakage base	$0.01	$2.84
6359	Duct sealing 25% leakage base	$0.01	$2.09
6360	Duct sealing 30% leakage base	$0.01	$1.66
6361	Floor Insulation	$0.05	$15.61
6362	Infiltration reduction - 10%	$0.02	$6.10
6363	Infiltration reduction - 15%	$0.01	$4.08
6364	Roof Insulation	$0.04	$11.84
6365	Wall Insulation	$0.05	$13.76
6366	Window Replacement	$0.02	$4.98
6367	Low Income Weatherization Package	$0.03	$9.39
6368	Crawlspace Wall Insulation	$0.10	$28.75
6369	Duct Insulation	$0.01	$4.06
6370	Duct sealing 15% leakage base	$0.02	$5.71
6371	Duct sealing 20% leakage base	$0.01	$3.66
6372	Duct sealing 25% leakage base	$0.01	$2.68
6373	Duct sealing 30% leakage base	$0.01	$2.11
6374	Floor Insulation	$0.04	$13.16
6375	Infiltration reduction - 10%	$0.04	$13.17
6376	Infiltration reduction - 15%	$0.03	$8.75
6377	Roof Insulation	$0.03	$8.10
6378	Wall Insulation	$0.08	$22.62
6379	Window Replacement	$0.04	$11.70
6380	Low Income Weatherization Package	$0.04	$11.05
6381	Crawlspace Wall Insulation	$0.05	$13.95
6382	Duct Insulation	$0.01	$1.57
6383	Duct sealing 15% leakage base	$0.00	$0.94
6384	Duct sealing 20% leakage base	$0.00	$0.60
6385	Duct sealing 25% leakage base	$0.00	$0.44
6386	Duct sealing 30% leakage base	$0.00	$0.35
6387	Floor Insulation	$0.02	$6.22
6388	Infiltration reduction - 10%	$0.01	$2.66
6389	Infiltration reduction - 15%	$0.01	$1.76
6390	Roof Insulation	$0.02	$7.18
6391	Wall Insulation	$0.01	$2.92
6392	Window Replacement	$0.05	$14.06
6393	Crawlspace Wall Insulation	$0.05	$15.99
6394	Duct Insulation	$0.01	$1.62
6395	Duct sealing 15% leakage base	$0.00	$0.97
6396	Duct sealing 20% leakage base	$0.00	$0.62
6397	Duct sealing 25% leakage base	$0.00	$0.46
6398	Duct sealing 30% leakage base	$0.00	$0.36
6399	Floor Insulation	$0.02	$6.28
6400	Infiltration reduction - 10%	$0.01	$2.65
6401	Infiltration reduction - 15%	$0.01	$1.79
6402	Roof Insulation	$0.03	$7.43
6403	Wall Insulation	$0.01	$2.96
6404	Window Replacement	$0.05	$15.36
7000	HVAC (Equipment)		
7001	ENERGY STAR Room AC	$0.13	$0.00
7002	CEE Tier 2 Room AC	$0.38	$0.00
7003	Room AC recycling	$0.07	$0.00
7004	ASHP - SEER 15	$0.07	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
7005	ASHP - SEER 16	$0.07	$0.00
7006	ASHP - SEER 17	$0.08	$0.00
7007	ASHP - SEER 18	$0.10	$0.00
7008	DFHP - SEER 15 with 95 AFUE furnace	$0.02	$5.24
7009	DFHP - SEER 16 with 95 AFUE furnace	$0.03	$8.11
7010	DFHP - SEER 17 with 95 AFUE furnace	$0.04	$10.82
7011	DFHP - SEER 18 with 95 AFUE furnace	$0.05	$15.18
7012	Furnace/AC - SEER 15	$0.11	$0.00
7013	Furnace/AC - SEER 16	$0.22	$0.00
7014	Furnace/AC - SEER 17	$0.21	$0.00
7015	GSHP - EER 17 ASHP Base	$0.36	$104.14
7016	GSHP - EER 19 ASHP Base	$0.33	$97.47
7017	High efficiency 92 AFUE furnace with ECM	$0.02	$5.32
7018	High efficiency 94 AFUE furnace with ECM	$0.02	$5.70
7019	High efficiency 95 AFUE furnace with ECM	$0.02	$5.85
7020	O&M Tune-up - furnace only	$0.00	$6.25
7021	O&M Tune-up - furnace only	$0.00	$2.44
7022	RCA 10% improvement	$0.36	$0.00
7023	RCA 15% improvement	$0.76	$0.00
7024	RCA 5% improvement	$0.60	$0.00
7025	Setback thermostat - full setback	$0.00	$0.71
7026	Setback thermostat - moderate setback	$0.00	$1.36
7027	Setback thermostat - moderate setback	$0.04	$12.91
7028	Whole House Fan	$3.73	$0.00
7029	High efficiency 93 AFUE furnace with ECM	$0.02	$5.52
7030	High efficiency 96 AFUE furnace with ECM	$0.02	$5.99
7031	High efficiency 97 AFUE furnace with ECM	$0.02	$6.11
7032	High efficiency 98 AFUE furnace with ECM	$0.02	$6.22
7033	ECM Furnace Fan	$0.02	$0.00
7034	ASHP - SEER 19	$0.11	$0.00
7035	DFHP - SEER 19 with 95 AFUE furnace	$0.06	$17.79
7036	Furnace/AC - SEER 18	$0.31	$0.00
7037	Furnace/AC - SEER 19	$0.32	$0.00
7038	ASHP - SEER 20	$0.10	$0.00
7039	DFHP - SEER 20 with 95 AFUE furnace	$0.06	$18.05
7040	Furnace/AC - SEER 20	$0.34	$0.00
7041	ASHP - SEER 21	$0.08	$0.00
7042	DFHP - SEER 21 with 95 AFUE furnace	$0.05	$15.32
7043	Furnace/AC - SEER 21	$0.34	$0.00
7044	SEER21 Minisplit Heat pump	$0.05	$0.00
7045	SEER21 Minisplit Heat pump	$0.04	$0.00
7046	Boiler Tune-up	$0.00	$3.79
7047	Boiler Tune-up	$0.00	$3.79
7048	Boiler reset control	$0.00	$714.15
7049	Boiler 87% plus AFUE 82 AFUE BASE	$0.00	$10.90
7050	Boiler 92% plus AFUE 82 AFUE BASE	$0.00	$4.00
7051	Boiler 95% plus AFUE 82 AFUE BASE	$0.00	$4.67
7052	ENERGY STAR Room AC	$0.13	$0.00
7053	CEE Tier 2 Room AC	$0.38	$0.00
7054	ASHP - SEER 15	$0.05	$0.00
7055	ASHP - SEER 16	$0.05	$0.00
7056	ASHP - SEER 17	$0.07	$0.00
7057	ASHP - SEER 18	$0.09	$0.00
7058	DFHP - SEER 15 with 95 AFUE furnace	$0.02	$4.48
7059	DFHP - SEER 16 with 95 AFUE furnace	$0.03	$7.69
7060	DFHP - SEER 17 with 95 AFUE furnace	$0.04	$10.55
7061	DFHP - SEER 18 with 95 AFUE furnace	$0.05	$14.98
7062	Furnace/AC - SEER 15	$0.18	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
7063	Furnace/AC - SEER 16	$0.41	$0.00
7064	Furnace/AC - SEER 17	$0.32	$0.00
7065	GSHP - EER 17 ASHP Base	$0.35	$0.00
7066	GSHP - EER 19 ASHP Base	$0.33	$0.00
7067	High efficiency 92 AFUE furnace with ECM	$0.03	$8.55
7068	High efficiency 94 AFUE furnace with ECM	$0.03	$9.23
7069	High efficiency 95 AFUE furnace with ECM	$0.03	$9.50
7070	Setback thermostat - full setback	$0.00	$0.40
7071	Setback thermostat - moderate setback	$0.00	$0.69
7072	Whole House Fan	$2.34	$0.00
7073	High efficiency 93 AFUE furnace with ECM	$0.03	$8.90
7074	High efficiency 96 AFUE furnace with ECM	$0.03	$9.75
7075	High efficiency 97 AFUE furnace with ECM	$0.03	$9.97
7076	High efficiency 98 AFUE furnace with ECM	$0.03	$10.17
7077	ECM Furnace Fan	$0.02	$0.00
7078	ASHP - SEER 19	$0.12	$0.00
7079	DFHP - SEER 19 with 95 AFUE furnace	$0.06	$17.76
7080	Furnace/AC - SEER 18	$0.40	$0.00
7081	Furnace/AC - SEER 19	$0.42	$0.00
7082	ASHP - SEER 20	$0.11	$0.00
7083	DFHP - SEER 20 with 95 AFUE furnace	$0.06	$18.35
7084	Furnace/AC - SEER 20	$0.44	$0.00
7085	ASHP - SEER 21	$0.09	$0.00
7086	DFHP - SEER 21 with 95 AFUE furnace	$0.05	$15.90
7087	Furnace/AC - SEER 21	$0.43	$0.00
7088	SEER21 Minisplit Heat pump	$0.12	$0.00
7089	Boiler 87% plus AFUE 82 AFUE BASE	$0.00	$18.61
7090	Boiler 92% plus AFUE 82 AFUE BASE	$0.00	$6.41
7091	Boiler 95% plus AFUE 82 AFUE BASE	$0.00	$7.53
7092	ENERGY STAR Room AC	$0.13	$0.00
7093	CEE Tier 2 Room AC	$0.38	$0.00
7094	Room AC recycling	$0.07	$0.00
7095	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	$0.02	$0.00
7096	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	$0.02	$0.00
7097	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	$0.03	$0.00
7098	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	$0.05	$0.00
7099	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	$0.03	$0.00
7100	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	$0.03	$0.00
7101	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	$0.03	$0.00
7102	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	$0.05	$0.00
7103	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	$0.04	$0.00
7104	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	$0.03	$0.00
7105	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	$0.03	$0.00
7106	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	$0.02	$0.00
7107	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	$0.03	$0.00
7108	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	$0.02	$0.00
7109	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	$0.04	$0.00
7110	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	$0.03	$0.00
7111	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	$0.04	$0.00
7112	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	$0.03	$0.00
7113	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	$0.04	$0.00
7114	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	$0.03	$0.00
7115	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	$0.04	$0.00
7116	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	$0.03	$0.00
7117	ASHP - SEER 15	$0.06	$0.00
7118	ASHP - SEER 16	$0.08	$0.00
7119	ASHP - SEER 17	$0.10	$0.00
7120	ASHP - SEER 18	$0.13	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
7121	Boiler 85% Ec	$0.00	$4.72
7122	Boiler turndown control	$0.00	$0.12
7123	CHW reset 10 deg	$0.00	$0.00
7124	CHW reset 5 deg	$0.00	$0.00
7125	DFHP - SEER 15 with 95 AFUE furnace	$0.01	$1.93
7126	DFHP - SEER 16 with 95 AFUE furnace	$0.01	$2.94
7127	DFHP - SEER 17 with 95 AFUE furnace	$0.02	$4.94
7128	DFHP - SEER 18 with 95 AFUE furnace	$0.08	$23.47
7129	Furnace/AC - SEER 15	$0.18	$0.00
7130	Furnace/AC - SEER 16	$0.37	$0.00
7131	Furnace/AC - SEER 17	$0.34	$0.00
7132	High efficiency 92 AFUE furnace with ECM	$0.03	$8.42
7133	High efficiency 93 AFUE furnace with ECM	$0.03	$8.74
7134	High efficiency 94 AFUE furnace with ECM	$0.03	$9.03
7135	High efficiency 95 AFUE furnace with ECM	$0.03	$9.28
7136	High efficiency 96 AFUE furnace with ECM	$0.03	$9.50
7137	High efficiency 97 AFUE furnace with ECM	$0.03	$9.69
7138	High efficiency 98 AFUE furnace with ECM	$0.03	$9.87
7139	ECM Furnace Fan	$0.02	$0.00
7140	O&M Tune-up - furnace only	$0.00	$9.77
7141	O&M Tune-up - furnace only	$0.00	$9.77
7142	O2 Trim Control	$0.00	$9.51
7143	PTAC 9.3 EER	$0.11	$0.00
7144	PTHP 9.1 EER	$0.06	$0.00
7145	RCA 10% improvement	$0.40	$0.00
7146	RCA 15% improvement	$0.85	$0.00
7147	RCA 5% improvement	$0.67	$0.00
7148	Setback thermostat - full setback	$0.00	$1.37
7149	Setback thermostat - moderate setback	$0.01	$2.41
7150	Setback thermostat - moderate setback	$0.01	$2.41
7151	Whole House Fan	$1.57	$0.00
7152	ASHP - SEER 19	$0.14	$0.00
7153	ASHP - SEER 20	$0.13	$0.00
7154	ASHP - SEER 21	$0.10	$0.00
7155	DFHP - SEER 19 with 95 AFUE furnace	$0.09	$27.03
7156	DFHP - SEER 20 with 95 AFUE furnace	$0.09	$26.68
7157	DFHP - SEER 21 with 95 AFUE furnace	$0.07	$21.96
7158	Furnace/AC - SEER 18	$0.43	$0.00
7159	Furnace/AC - SEER 19	$0.45	$0.00
7160	Furnace/AC - SEER 20	$0.46	$0.00
7161	Furnace/AC - SEER 21	$0.46	$0.00
7162	SEER21 Minisplit Heat pump	$0.05	$0.00
7163	SEER21 Minisplit Heat pump	$0.04	$0.00
7164	Boiler Tune-up	$0.00	$3.05
7165	Boiler Tune-up	$0.00	$3.05
7166	Boiler 87% plus AFUE 82 AFUE BASE	$0.00	$7.46
7167	Boiler 90% plus AFUE 82 AFUE BASE	$0.00	$5.01
7168	Boiler 92% plus AFUE 82 AFUE BASE	$0.00	$4.90
7169	Boiler 95% plus AFUE 82 AFUE BASE	$0.00	$5.16
7170	ENERGY STAR Room AC	$0.13	$0.00
7171	CEE Tier 2 Room AC	$0.38	$0.00
7172	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	$0.02	$0.00
7173	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	$0.02	$0.00
7174	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	$0.02	$0.00
7175	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	$0.04	$0.00
7176	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	$0.03	$0.00
7177	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	$0.03	$0.00
7178	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	$0.03	$0.00

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
7179	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	$0.04	$0.00
7180	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	$0.03	$0.00
7181	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	$0.03	$0.00
7182	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	$0.03	$0.00
7183	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	$0.02	$0.00
7184	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	$0.03	$0.00
7185	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	$0.02	$0.00
7186	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	$0.04	$0.00
7187	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	$0.03	$0.00
7188	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	$0.03	$0.00
7189	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	$0.03	$0.00
7190	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	$0.04	$0.00
7191	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	$0.03	$0.00
7192	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	$0.04	$0.00
7193	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	$0.03	$0.00
7194	ASHP - SEER 15	$0.07	$0.00
7195	ASHP - SEER 16	$0.12	$0.00
7196	ASHP - SEER 17	$0.15	$0.00
7197	ASHP - SEER 18	$0.18	$0.00
7198	Boiler 85% Ec	$0.00	$32.20
7199	Boiler turndown control	$0.00	$1.58
7200	CHW reset 10 deg	$0.00	$0.00
7201	CHW reset 5 deg	$0.00	$0.00
7202	DFHP - SEER 15 with 95 AFUE furnace	$0.03	$8.72
7203	DFHP - SEER 16 with 95 AFUE furnace	$0.06	$16.25
7204	DFHP - SEER 17 with 95 AFUE furnace	$0.08	$22.23
7205	DFHP - SEER 18 with 95 AFUE furnace	$0.10	$29.53
7206	Furnace/AC - SEER 15	$0.20	$0.00
7207	Furnace/AC - SEER 16	$0.51	$0.00
7208	Furnace/AC - SEER 17	$0.46	$0.00
7209	High efficiency 92 AFUE furnace with ECM	$0.04	$11.09
7210	High efficiency 93 AFUE furnace with ECM	$0.04	$11.52
7211	High efficiency 94 AFUE furnace with ECM	$0.04	$11.91
7212	High efficiency 95 AFUE furnace with ECM	$0.04	$12.25
7213	High efficiency 96 AFUE furnace with ECM	$0.04	$12.54
7214	High efficiency 97 AFUE furnace with ECM	$0.04	$12.81
7215	High efficiency 98 AFUE furnace with ECM	$0.04	$13.04
7216	ECM Furnace Fan	$0.03	$0.00
7217	O2 Trim Control	$0.00	$8.22
7218	PTAC 9.3 EER	$0.09	$0.00
7219	PTHP 9.1 EER	$0.07	$0.00
7220	Setback thermostat - full setback	$0.00	$0.77
7221	Setback thermostat - moderate setback	$0.00	$1.19
7222	Whole House Fan	$0.74	$0.00
7223	ASHP - SEER 19	$0.19	$0.00
7224	ASHP - SEER 20	$0.18	$0.00
7225	ASHP - SEER 21	$0.14	$0.00
7226	DFHP - SEER 19 with 95 AFUE furnace	$0.12	$34.07
7227	DFHP - SEER 20 with 95 AFUE furnace	$0.12	$33.72
7228	DFHP - SEER 21 with 95 AFUE furnace	$0.10	$27.85
7229	Furnace/AC - SEER 18	$0.52	$0.00
7230	Furnace/AC - SEER 19	$0.54	$0.00
7231	Furnace/AC - SEER 20	$0.57	$0.00
7232	Furnace/AC - SEER 21	$0.56	$0.00
7233	SEER21 Minisplit Heat pump	$0.05	$0.00
7234	Boiler 87% plus AFUE 82 AFUE BASE	$0.00	$10.68
7235	Boiler 90% plus AFUE 82 AFUE BASE	$0.00	$6.97
7236	Boiler 92% plus AFUE 82 AFUE BASE	$0.00	$6.82

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
7237	Boiler 95% plus AFUE 82 AFUE BASE	$0.00	$7.22
7238	ENERGY STAR Room AC	$0.13	$0.00
7239	CEE Tier 2 Room AC	$0.38	$0.00
7240	Room AC recycling	$0.07	$0.00
7241	ASHP - SEER 15	$0.11	$0.00
7242	ASHP - SEER 16	$0.08	$0.00
7243	ASHP - SEER 17	$0.09	$0.00
7244	ASHP - SEER 18	$0.11	$0.00
7245	DFHP - SEER 15 with 95 AFUE furnace	$0.05	$0.00
7246	DFHP - SEER 16 with 95 AFUE furnace	$0.07	$0.00
7247	DFHP - SEER 17 with 95 AFUE furnace	$0.08	$0.00
7248	DFHP - SEER 18 with 95 AFUE furnace	$0.11	$0.00
7249	Furnace/AC - SEER 15	$0.16	$0.00
7250	Furnace/AC - SEER 16	$0.33	$0.00
7251	Furnace/AC - SEER 17	$0.29	$0.00
7252	GSHP - EER 17 ASHP Base	$0.42	$0.00
7253	GSHP - EER 19 ASHP Base	$0.40	$0.00
7254	High efficiency 92 AFUE furnace with ECM	$0.03	$7.36
7255	High efficiency 94 AFUE furnace with ECM	$0.03	$7.88
7256	High efficiency 95 AFUE furnace with ECM	$0.03	$8.09
7257	RCA 10% improvement	$0.60	$0.00
7258	RCA 15% improvement	$0.71	$0.00
7259	RCA 5% improvement	$0.99	$0.00
7260	Setback thermostat - full setback	$0.00	$0.20
7261	Setback thermostat - moderate setback	$0.00	$0.40
7262	Setback thermostat - moderate setback	$0.00	$0.40
7263	Whole House Fan	$1.04	$0.00
7264	High efficiency 93 AFUE furnace with ECM	$0.02	$6.32
7265	High efficiency 96 AFUE furnace with ECM	$0.02	$7.04
7266	High efficiency 97 AFUE furnace with ECM	$0.02	$7.23
7267	High efficiency 98 AFUE furnace with ECM	$0.03	$7.40
7268	ECM Furnace Fan	$0.02	$0.00
7269	Furnace/AC - SEER 18	$0.43	$0.00
7270	Furnace/AC - SEER 19	$0.35	$0.00
7271	Furnace/AC - SEER 20	$0.47	$0.00
7272	Furnace/AC - SEER 21	$0.46	$0.00
7273	ASHP - SEER 19	$0.14	$0.00
7274	ASHP - SEER 20	$0.13	$0.00
7275	ASHP - SEER 21	$0.10	$0.00
7276	DFHP - SEER 19 with 95 AFUE furnace	$0.12	$33.71
7277	DFHP - SEER 20 with 95 AFUE furnace	$0.11	$31.76
7278	DFHP - SEER 21 with 95 AFUE furnace	$0.09	$24.94
7279	ENERGY STAR Room AC	$0.13	$0.00
7280	CEE Tier 2 Room AC	$0.38	$0.00
7281	ASHP - SEER 15	$0.13	$0.00
7282	ASHP - SEER 16	$0.09	$0.00
7283	ASHP - SEER 17	$0.10	$0.00
7284	ASHP - SEER 18	$0.12	$0.00
7285	DFHP - SEER 15 with 95 AFUE furnace	$0.05	$15.04
7286	DFHP - SEER 16 with 95 AFUE furnace	$0.05	$16.04
7287	DFHP - SEER 17 with 95 AFUE furnace	$0.07	$20.45
7288	DFHP - SEER 18 with 95 AFUE furnace	$0.09	$26.97
7289	Furnace/AC - SEER 15	$0.17	$0.00
7290	Furnace/AC - SEER 16	$0.35	$0.00
7291	Furnace/AC - SEER 17	$0.31	$0.00
7292	GSHP - EER 17 ASHP Base	$0.38	$0.00
7293	GSHP - EER 19 ASHP Base	$0.36	$0.00
7294	High efficiency 92 AFUE furnace with ECM	$0.03	$7.91

Measure-level Levelized Costs

Measure #	Measure Name	Levelized Cost/kWh (- Admin)	Levelized Cost/MMBTu (- Admin)
7295	High efficiency 94 AFUE furnace with ECM	$0.03	$8.46
7296	High efficiency 95 AFUE furnace with ECM	$0.03	$8.69
7297	Setback thermostat - full setback	$0.00	$0.09
7298	Setback thermostat - moderate setback	$0.00	$0.17
7299	Whole House Fan	$0.59	$0.00
7300	High efficiency 93 AFUE furnace with ECM	$0.03	$7.85
7301	High efficiency 96 AFUE furnace with ECM	$0.03	$8.57
7302	High efficiency 97 AFUE furnace with ECM	$0.03	$8.76
7303	High efficiency 98 AFUE furnace with ECM	$0.03	$8.93
7304	ECM Furnace Fan	$0.02	$0.00
7305	Furnace/AC - SEER 18	$0.46	$0.00
7306	Furnace/AC - SEER 19	$0.37	$0.00
7307	Furnace/AC - SEER 20	$0.50	$0.00
7308	Furnace/AC - SEER 21	$0.50	$0.00
7309	ASHP - SEER 19	$0.19	$0.00
7310	ASHP - SEER 20	$0.18	$0.00
7311	ASHP - SEER 21	$0.14	$0.00
7312	DFHP - SEER 19 with 95 AFUE furnace	$0.12	$34.16
7313	DFHP - SEER 20 with 95 AFUE furnace	$0.12	$33.79
7314	DFHP - SEER 21 with 95 AFUE furnace	$0.10	$27.89
8000	Behavioral Programs		
8001	Behavior Modification: Home Energy Reports (All Years)	$0.06	$1.79
8002	Real-time feedback	$0.03	$7.33
8003	Behavior Modification: Home Energy Reports (All Years)	$0.02	$6.75
8004	Real-time feedback	$0.03	$7.33
8005	Behavior Modification: Home Energy Reports (All Years)	$0.04	$12.28
8006	Real-time feedback	$0.05	$13.34
8007	Behavior Modification: Home Energy Reports (All Years)	$0.04	$12.28
8008	Real-time feedback	$0.05	$13.34
8009	Behavior Modification: Home Energy Reports (All Years)	$0.03	$10.09
8010	Real-time feedback	$0.04	$10.95
8011	Behavior Modification: Home Energy Reports (All Years)	$0.03	$10.09
8012	Real-time feedback	$0.04	$10.95

Residential Load Shapes (listed by measure type)

	Allocation of Annual Energy Savings by Season			
Measure Type	Winter		Summer	
	Peak	*Off Peak*	*Peak*	*Off Peak*
A - Refrigeration	37%	18%	30%	15%
B - Freezers	39%	16%	32%	13%
C - Dehumidifier	13%	16%	32%	39%
D - Clothes Washer	47%	11%	34%	8%
E - Dishwasher	49%	9%	36%	6%
F - Smart Strip	25%	34%	18%	24%
G - Televisions	48%	19%	24%	9%
H - Computers	34%	33%	17%	16%
I - Residential interior lighting	48%	16%	26%	11%
J - Night Lights	0%	60%	0%	40%
K - Holiday Lights	0%	100%	0%	0%
L - Non-electric	0%	0%	0%	0%
M - Residential exterior lighting	18%	44%	9%	28%
N - Common area indoor lighting - 12 hrs/day	40%	19%	28%	13%
N - Common area indoor lighting - 24 hrs/day	40%	19%	28%	13%
P - Common area exterior lighting	23%	35%	13%	28%
Q - Electric Water Heating	43%	21%	25%	12%
R - Flat	36%	22%	26%	16%
S - Central Air (gas heating; single-family HVAC cooling meaures)	4%	1%	71%	24%
T - Room Air Conditioning	4%	1%	71%	24%
U - Electric Heating & Cooling	35%	23%	31%	11%
V - Thermostat	35%	23%	31%	11%
X - Chiller	5%	1%	66%	28%
Y - Pool	0%	0%	62%	38%

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
1000	Appliances		
1001	Refrigerator Retirement (and Recycling) - No Replacement	6.28	5.56
1002	Freezer Retirement (and Recycling) - No Replacement	5.64	5.00
1003	Dehumidifier Retirement (and Recycling) - No Replacement	16.83	16.16
1004	Energy Star Dehumidifier	6.08	11.66
1005	ENERGY STAR Refrigerators	1.03	1.87
1006	ENERGY STAR Freezers	4.96	8.94
1007	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	0.24	0.09
1008	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	0.27	0.16
1009	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	0.41	0.40
1010	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	0.45	0.47
1011	High Efficiency Gas Clothes Dryer with Moisture Sensor	0.09	0.16
1012	High Efficiency Electric Clothes Dryer with Moisture Sensor	0.37	0.66
1013	Heat Pump Electric Dryer	0.27	0.48
1014	Tier 2 Energy Star Dishwasher (electric water heating)	0.58	0.85
1015	Tier 2 Energy Star Dishwasher (gas water heating)	0.46	0.65
1016	Energy Star Dehumidifier	6.08	11.66
1017	ENERGY STAR Refrigerators	1.03	1.87
1018	ENERGY STAR Freezers	4.96	8.94
1019	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	0.24	0.09
1020	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	0.27	0.16
1021	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	0.41	0.40
1022	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	0.45	0.47
1023	High Efficiency Gas Clothes Dryer with Moisture Sensor	0.09	0.16
1024	High Efficiency Electric Clothes Dryer with Moisture Sensor	0.37	0.66
1025	Heat Pump Electric Dryer	0.27	0.48
1026	Tier 2 Energy Star Dishwasher (electric water heating)	0.58	0.85
1027	Tier 2 Energy Star Dishwasher (gas water heating)	0.46	0.65
1028	Refrigerator Retirement (and Recycling) - No Replacement	6.28	5.56
1029	Freezer Retirement (and Recycling) - No Replacement	5.64	5.00
1030	Dehumidifier Retirement (and Recycling) - No Replacement	16.83	16.16
1031	Energy Star Dehumidifier	6.08	11.66
1032	ENERGY STAR Refrigerators	1.03	1.87
1033	ENERGY STAR Freezers	4.96	8.94
1034	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	0.24	0.09
1035	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	0.27	0.16
1036	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	0.41	0.40
1037	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	0.45	0.47
1038	High Efficiency Gas Clothes Dryer with Moisture Sensor	0.09	0.16
1039	High Efficiency Electric Clothes Dryer with Moisture Sensor	0.37	0.66
1040	Heat Pump Electric Dryer	0.27	0.48
1041	Tier 2 Energy Star Dishwasher (electric water heating)	0.58	0.85
1042	Tier 2 Energy Star Dishwasher (gas water heating)	0.46	0.65
1043	Energy Star Dehumidifier	6.08	11.66
1044	ENERGY STAR Refrigerators	1.03	1.87
1045	ENERGY STAR Freezers	4.96	8.94
1046	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	0.24	0.09
1047	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	0.27	0.16
1048	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	0.41	0.40
1049	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	0.45	0.47
1050	High Efficiency Gas Clothes Dryer with Moisture Sensor	0.09	0.16
1051	High Efficiency Electric Clothes Dryer with Moisture Sensor	0.37	0.66
1052	Heat Pump Electric Dryer	0.27	0.48
1053	Tier 2 Energy Star Dishwasher (electric water heating)	0.58	0.85
1054	Tier 2 Energy Star Dishwasher (gas water heating)	0.46	0.65

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
1055	Refrigerator Retirement (and Recycling) - No Replacement	6.28	5.56
1056	Freezer Retirement (and Recycling) - No Replacement	5.64	5.00
1057	Dehumidifier Retirement (and Recycling) - No Replacement	16.83	16.16
1058	Energy Star Dehumidifier	6.08	11.66
1059	ENERGY STAR Refrigerators	1.03	1.87
1060	ENERGY STAR Freezers	4.96	8.94
1061	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	0.24	0.09
1062	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	0.27	0.16
1063	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	0.41	0.40
1064	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	0.45	0.47
1065	High Efficiency Gas Clothes Dryer with Moisture Sensor	0.09	0.16
1066	High Efficiency Electric Clothes Dryer with Moisture Sensor	0.37	0.66
1067	Heat Pump Electric Dryer	0.27	0.48
1068	Tier 2 Energy Star Dishwasher (electric water heating)	0.58	0.85
1069	Tier 2 Energy Star Dishwasher (gas water heating)	0.46	0.65
1070	Energy Star Dehumidifier	6.08	11.66
1071	ENERGY STAR Refrigerators	1.03	1.87
1072	ENERGY STAR Freezers	4.96	8.94
1073	ENERGY STAR Clothes Washer, Gas water heater, Gas dryer	0.24	0.09
1074	ENERGY STAR Clothes Washer, Gas water heater, Electric dryer	0.27	0.16
1075	ENERGY STAR Clothes Washer, Electric Water heater, Gas Dryer	0.41	0.40
1076	ENERGY STAR Clothes Washer, Electric Water heater, Electric Dryer	0.45	0.47
1077	High Efficiency Gas Clothes Dryer with Moisture Sensor	0.09	0.16
1078	High Efficiency Electric Clothes Dryer with Moisture Sensor	0.37	0.66
1079	Heat Pump Electric Dryer	0.27	0.48
1080	Tier 2 Energy Star Dishwasher (electric water heating)	0.58	0.85
1081	Tier 2 Energy Star Dishwasher (gas water heating)	0.46	0.65
2000	Electronics		
2001	Smart Strip plug outlet	0.24	0.44
2002	Efficient Set Top Box	3.72	6.85
2003	ENERGY STAR + 10% Display	6.77	12.18
2004	ENERGY STAR + 30% Display	10.42	18.74
2005	ENERGY STAR + 50 % Display	14.04	25.25
2006	ENERGY STAR 6.0 TV + 20% (0-20")	11.69	21.54
2007	ENERGY STAR 6.0 TV + 20% (21-30")	26.64	49.31
2008	ENERGY STAR 6.0 TV + 20% (31-40")	41.00	76.07
2009	ENERGY STAR 6.0 TV + 20% (41-50")	59.59	110.33
2010	ENERGY STAR 6.0 TV + 20% (51-60")	90.61	167.75
2011	ENERGY STAR 6.0 TV + 20% (over 60")	143.06	264.85
2012	ENERGY STAR PC	2.28	4.00
2013	ES Laptop	1.08	1.84
2014	ES Laptop (Power Mgmt Enabled)	0.25	0.42
2015	Smart Strip plug outlet	0.24	0.44
2016	Efficient Set Top Box	3.72	6.85
2017	ENERGY STAR + 10% Display	6.77	12.18
2018	ENERGY STAR + 30% Display	10.42	18.74
2019	ENERGY STAR + 50 % Display	14.04	25.25
2020	ENERGY STAR 6.0 TV + 20% (0-20")	11.69	21.54
2021	ENERGY STAR 6.0 TV + 20% (21-30")	26.64	49.31
2022	ENERGY STAR 6.0 TV + 20% (31-40")	41.00	76.07
2023	ENERGY STAR 6.0 TV + 20% (41-50")	59.59	110.33
2024	ENERGY STAR 6.0 TV + 20% (51-60")	90.61	167.75
2025	ENERGY STAR 6.0 TV + 20% (over 60")	143.06	264.85
2026	ENERGY STAR PC	2.28	4.00
2027	ES Laptop	1.08	1.84

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
2028	ES Laptop (Power Mgmt Enabled)	0.25	0.42
2029	Smart Strip plug outlet	0.24	0.44
2030	Efficient Set Top Box	3.72	6.85
2031	ENERGY STAR + 10% Display	6.77	12.18
2032	ENERGY STAR + 30% Display	10.42	18.74
2033	ENERGY STAR + 50 % Display	14.04	25.25
2034	ENERGY STAR 6.0 TV + 20% (0-20")	11.69	21.54
2035	ENERGY STAR 6.0 TV + 20% (21-30")	26.64	49.31
2036	ENERGY STAR 6.0 TV + 20% (31-40")	41.00	76.07
2037	ENERGY STAR 6.0 TV + 20% (41-50")	59.59	110.33
2038	ENERGY STAR 6.0 TV + 20% (51-60")	90.61	167.75
2039	ENERGY STAR 6.0 TV + 20% (over 60")	143.06	264.85
2040	ENERGY STAR PC	2.28	4.00
2041	ES Laptop	1.08	1.84
2042	ES Laptop (Power Mgmt Enabled)	0.25	0.42
2043	Smart Strip plug outlet	0.24	0.44
2044	Efficient Set Top Box	3.72	6.85
2045	ENERGY STAR + 10% Display	6.77	12.18
2046	ENERGY STAR + 30% Display	10.42	18.74
2047	ENERGY STAR + 50 % Display	14.04	25.25
2048	ENERGY STAR 6.0 TV + 20% (0-20")	11.69	21.54
2049	ENERGY STAR 6.0 TV + 20% (21-30")	26.64	49.31
2050	ENERGY STAR 6.0 TV + 20% (31-40")	41.00	76.07
2051	ENERGY STAR 6.0 TV + 20% (41-50")	59.59	110.33
2052	ENERGY STAR 6.0 TV + 20% (51-60")	90.61	167.75
2053	ENERGY STAR 6.0 TV + 20% (over 60")	143.06	264.85
2054	ENERGY STAR PC	2.28	4.00
2055	ES Laptop	1.08	1.84
2056	ES Laptop (Power Mgmt Enabled)	0.25	0.42
2057	Smart Strip plug outlet	0.24	0.44
2058	Efficient Set Top Box	3.72	6.85
2059	ENERGY STAR + 10% Display	6.77	12.18
2060	ENERGY STAR + 30% Display	10.42	18.74
2061	ENERGY STAR + 50 % Display	14.04	25.25
2062	ENERGY STAR 6.0 TV + 20% (0-20")	11.69	21.54
2063	ENERGY STAR 6.0 TV + 20% (21-30")	26.64	49.31
2064	ENERGY STAR 6.0 TV + 20% (31-40")	41.00	76.07
2065	ENERGY STAR 6.0 TV + 20% (41-50")	59.59	110.33
2066	ENERGY STAR 6.0 TV + 20% (51-60")	90.61	167.75
2067	ENERGY STAR 6.0 TV + 20% (over 60")	143.06	264.85
2068	ENERGY STAR PC	2.28	4.00
2069	ES Laptop	1.08	1.84
2070	ES Laptop (Power Mgmt Enabled)	0.25	0.42
2071	Smart Strip plug outlet	0.24	0.44
2072	Efficient Set Top Box	3.72	6.85
2073	ENERGY STAR + 10% Display	6.77	12.18
2074	ENERGY STAR + 30% Display	10.42	18.74
2075	ENERGY STAR + 50 % Display	14.04	25.25
2076	ENERGY STAR 6.0 TV + 20% (0-20")	11.69	21.54
2077	ENERGY STAR 6.0 TV + 20% (21-30")	26.64	49.31
2078	ENERGY STAR 6.0 TV + 20% (31-40")	41.00	76.07
2079	ENERGY STAR 6.0 TV + 20% (41-50")	59.59	110.33
2080	ENERGY STAR 6.0 TV + 20% (51-60")	90.61	167.75
2081	ENERGY STAR 6.0 TV + 20% (over 60")	143.06	264.85
2082	ENERGY STAR PC	2.28	4.00

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
2083	ES Laptop	1.08	1.84
2084	ES Laptop (Power Mgmt Enabled)	0.25	0.42
3000	Lighting		
3001	CFL bulbs - 9W	5.45	6.06
3002	CFL bulbs - 14W	6.95	8.78
3003	CFL bulbs - 20W	7.62	9.99
3004	CFL bulbs - 26W	9.79	13.93
3005	LED Replacing A-line 40W	2.76	3.12
3006	LED Replacing A-line 60W	3.58	4.60
3007	LED Replacing A-line 75W (53W halogen)	1.63	2.20
3008	LED Replacing A-line 100W (72W Halogen)	1.41	2.06
3009	LED Lighting (screw-in) ; 2021 and later	3.67	2.64
3010	CFL bulbs high wattage	4.93	8.17
3011	LED fixtures downlights	1.13	1.66
3012	CFL bulbs 3-Way	5.30	8.46
3013	CFL bulbs dimmable	2.83	3.99
3014	CFL bulbs Globe	2.33	3.08
3015	CFL bulbs candelabra	2.40	3.21
3016	LED Flood PAR (average values)	3.14	4.75
3017	LED Globe	1.83	2.37
3018	LED Night Light	7.74	6.73
3019	Torchiere Floor Lamps	2.60	4.42
3020	Outdoor LED PAR/Flood	7.96	12.24
3021	Holiday Lights	0.32	0.52
3022	HPT8 4ft 2 lamp replacing T12	0.31	0.31
3023	LW HPT8 4ft 2 lamp replacing T12	0.38	0.43
3024	CFL Exterior fixture - 1 Lamp	1.41	1.66
3025	LED Exterior fixture - 1 Lamp	3.31	3.97
3026	Occupancy Sensor	0.33	0.59
3027	CFL bulbs - 9W	5.45	6.06
3028	CFL bulbs - 14W	6.95	8.78
3029	CFL bulbs - 20W	7.62	9.99
3030	CFL bulbs - 26W	9.79	13.93
3031	LED Replacing A-line 40W	2.76	3.12
3032	LED Replacing A-line 60W	3.58	4.60
3033	LED Replacing A-line 75W (53W halogen)	1.63	2.20
3034	LED Replacing A-line 100W (72W Halogen)	1.41	2.06
3035	LED Lighting (screw-in) ; 2021 and later	3.67	2.64
3036	CFL bulbs high wattage	4.93	8.17
3037	LED fixtures downlights	1.13	1.66
3038	CFL bulbs 3-Way	5.30	8.46
3039	CFL bulbs dimmable	2.83	3.99
3040	CFL bulbs Globe	2.33	3.08
3041	CFL bulbs candelabra	2.40	3.21
3042	LED Flood PAR (average values)	3.14	4.75
3043	LED Globe	1.83	2.37
3044	LED Night Light	7.74	6.73
3045	Torchiere Floor Lamps	2.60	4.42
3046	Outdoor LED PAR/Flood	7.96	12.24
3047	Holiday Lights	0.32	0.52
3048	HPT8 4ft 2 lamp replacing T12	0.31	0.31
3049	LW HPT8 4ft 2 lamp replacing T12	0.38	0.43
3050	CFL Exterior fixture - 1 Lamp	1.41	1.66
3051	LED Exterior fixture - 1 Lamp	3.31	3.97
3052	Occupancy Sensor	0.33	0.59

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
3053	CFL bulbs - 9W	5.45	6.06
3054	CFL bulbs - 14W	6.95	8.78
3055	CFL bulbs - 20W	7.62	9.99
3056	CFL bulbs - 26W	9.79	13.93
3057	LED Replacing A-line 40W	2.76	3.12
3058	LED Replacing A-line 60W	3.58	4.60
3059	LED Replacing A-line 75W (53W halogen)	1.63	2.20
3060	LED Replacing A-line 100W (72W Halogen)	1.41	2.06
3061	LED Lighting (screw-in) ; 2021 and later	3.67	2.64
3062	CFL bulbs high wattage	4.93	8.17
3063	LED fixtures downlights	1.13	1.66
3064	CFL bulbs 3-Way	5.30	8.46
3065	CFL bulbs dimmable	2.83	3.99
3066	CFL bulbs Globe	2.33	3.08
3067	CFL bulbs candelabra	2.40	3.21
3068	LED Flood PAR (average values)	3.14	4.75
3069	LED Globe	1.83	2.37
3070	LED Night Light	7.74	6.73
3071	Torchiere Floor Lamps	2.60	4.42
3072	Outdoor LED PAR/Flood	7.96	12.24
3073	Holiday Lights	0.32	0.52
3074	HPT8 4ft 2 lamp replacing T12	0.31	0.31
3075	LW HPT8 4ft 2 lamp replacing T12	0.38	0.43
3076	CFL Exterior fixture - 1 Lamp	1.41	1.66
3077	LED Exterior fixture - 1 Lamp	3.31	3.97
3078	Occupancy Sensor	0.33	0.59
3079	CFL Fixture	3.18	4.96
3080	CFL Screw in	2.45	3.67
3081	CFL Screw in - high wattage	3.06	4.87
3082	LED Screw in	4.74	7.64
3083	CFL Candelabra - 24/7	5.02	8.66
3084	CFL Candelabra - 12/7	1.47	2.06
3085	LED Candelabra - 24/7	9.34	16.00
3086	LED Candelabra - 12/7	2.79	3.81
3087	LED Globe - 24/7	10.55	18.18
3088	LED Globe - 12/7	3.11	4.33
3089	Exterior CFL Fixture - replace HID fixture in common area	2.10	3.29
3090	Photo Cell Daylight Sensor	1.38	2.27
3091	HPT8 4ft 2 lamp replacing T12, 12 hrs	0.25	0.40
3092	HPT8 4ft 2 lamp replacing T12, 24 hrs	0.50	0.81
3093	LW HPT8 4ft 2 lamp replacing T12, 12 hrs	0.33	0.53
3094	LW HPT8 4ft 2 lamp replacing T12, 24 hrs	0.66	1.06
3095	CFL bulbs - 9W	5.45	6.06
3096	CFL bulbs - 14W	6.95	8.78
3097	CFL bulbs - 20W	7.62	9.99
3098	CFL bulbs - 26W	9.79	13.93
3099	LED Replacing A-line 40W	2.76	3.12
3100	LED Replacing A-line 60W	3.58	4.60
3101	LED Replacing A-line 75W (53W halogen)	1.63	2.20
3102	LED Replacing A-line 100W (72W Halogen)	1.41	2.06
3103	LED Lighting (screw-in) ; 2021 and later	3.67	2.64
3104	CFL bulbs high wattage	4.93	8.17
3105	LED fixtures downlights	1.13	1.66
3106	CFL bulbs 3-Way	5.30	8.46
3107	CFL bulbs dimmable	2.83	3.99

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
3108	CFL bulbs Globe	2.33	3.08
3109	CFL bulbs candelabra	2.40	3.21
3110	LED Flood PAR (average values)	3.14	4.75
3111	LED Globe	1.83	2.37
3112	LED Night Light	7.74	6.73
3113	Torchiere Floor Lamps	2.60	4.42
3114	Outdoor LED PAR/Flood	7.96	12.24
3115	Holiday Lights	0.32	0.52
3116	HPT8 4ft 2 lamp replacing T12	0.31	0.31
3117	LW HPT8 4ft 2 lamp replacing T12	0.38	0.43
3118	CFL Exterior fixture - 1 Lamp	1.41	1.66
3119	LED Exterior fixture - 1 Lamp	3.31	3.97
3120	Occupancy Sensor	0.33	0.59
3121	CFL Fixture	3.18	4.96
3122	CFL Screw in	2.45	3.67
3123	CFL Screw in - high wattage	3.06	4.87
3124	LED Screw in	4.74	7.64
3125	CFL Candelabra - 24/7	5.02	8.66
3126	CFL Candelabra - 12/7	1.47	2.06
3127	LED Candelabra - 24/7	9.34	16.00
3128	LED Candelabra - 12/7	2.79	3.81
3129	LED Globe - 24/7	10.55	18.18
3130	LED Globe - 12/7	3.11	4.33
3131	Exterior CFL Fixture - replace HID fixture in common area	2.10	3.29
3132	CFL bulbs - 9W	5.45	6.06
3133	CFL bulbs - 14W	6.95	8.78
3134	CFL bulbs - 20W	7.62	9.99
3135	CFL bulbs - 26W	9.79	13.93
3136	LED Replacing A-line 40W	2.76	3.12
3137	LED Replacing A-line 60W	3.58	4.60
3138	LED Replacing A-line 75W (53W halogen)	1.63	2.20
3139	LED Replacing A-line 100W (72W Halogen)	1.41	2.06
3140	LED Lighting (screw-in) ; 2021 and later	3.67	2.64
3141	CFL bulbs high wattage	4.93	8.17
3142	LED fixtures downlights	1.13	1.66
3143	CFL bulbs 3-Way	5.30	8.46
3144	CFL bulbs dimmable	2.83	3.99
3145	CFL bulbs Globe	2.33	3.08
3146	CFL bulbs candelabra	2.40	3.21
3147	LED Flood PAR (average values)	3.14	4.75
3148	LED Globe	1.83	2.37
3149	LED Night Light	7.74	6.73
3150	Torchiere Floor Lamps	2.60	4.42
3151	Outdoor LED PAR/Flood	7.96	12.24
3152	Holiday Lights	0.32	0.52
3153	HPT8 4ft 2 lamp replacing T12	0.31	0.31
3154	LW HPT8 4ft 2 lamp replacing T12	0.38	0.43
3155	CFL Exterior fixture - 1 Lamp	1.41	1.66
3156	LED Exterior fixture - 1 Lamp	3.31	3.97
3157	Occupancy Sensor	0.33	0.59
3158	CFL bulbs - 9W	5.45	6.06
3159	CFL bulbs - 14W	6.95	8.78
3160	CFL bulbs - 20W	7.62	9.99
3161	CFL bulbs - 26W	9.79	13.93
3162	LED Replacing A-line 40W	2.76	3.12

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
3163	LED Replacing A-line 60W	3.58	4.60
3164	LED Replacing A-line 75W (53W halogen)	1.63	2.20
3165	LED Replacing A-line 100W (72W Halogen)	1.41	2.06
3166	LED Lighting (screw-in) ; 2021 and later	3.67	2.64
3167	CFL bulbs high wattage	4.93	8.17
3168	LED fixtures downlights	1.13	1.66
3169	CFL bulbs 3-Way	5.30	8.46
3170	CFL bulbs dimmable	2.83	3.99
3171	CFL bulbs Globe	2.33	3.08
3172	CFL bulbs candelabra	2.40	3.21
3173	LED Flood PAR (average values)	1.83	2.37
3174	LED Globe	3.14	4.75
3175	LED Night Light	7.74	6.73
3176	Torchiere Floor Lamps	2.60	4.42
3177	Outdoor LED PAR/Flood	7.96	12.24
3178	Holiday Lights	0.32	0.52
3179	HPT8 4ft 2 lamp replacing T12	0.31	0.31
3180	LW HPT8 4ft 2 lamp replacing T12	0.38	0.43
3181	CFL Exterior fixture - 1 Lamp	1.41	1.66
3182	LED Exterior fixture - 1 Lamp	3.31	3.97
3183	Occupancy Sensor	0.33	0.59
4000	Water Heating		
4001	Heat Pump Water Heaters	3.05	5.43
4002	Super Efficiency Gas Water Heater 0.70 EF	0.83	1.49
4003	Instant Gas Water Heater	0.83	1.50
4004	Tank Wrap	0.43	0.77
4005	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	15.40
4006	Pipe Wrap - gas water heater - Insulated Pipe with R2	7.57	13.62
4007	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	21.37
4008	Pipe Wrap - electric water heater - Insulated Pipe with R2	9.63	18.80
4009	Low Flow Showerheads 1.75 gpm - gas water heating	5.22	4.21
4010	Low Flow Showerheads 1.5 gpm - gas water heating	6.97	5.62
4011	Low Flow Showerheads 1.25 gpm - gas water heating	8.71	7.03
4012	Low Flow Showerheads 1.0 gpm - gas water heating	10.44	8.41
4013	Low Flow Showerheads 0.5 gpm - gas water heating	13.93	11.24
4014	Low Flow Showerheads 1.75 gpm - electric water heating	9.76	12.05
4015	Low Flow Showerheads 1.5 gpm - electric water heating	13.06	16.16
4016	Low Flow Showerheads 1.25 gpm - electric water heating	16.24	20.02
4017	Low Flow Showerheads 1.0 gpm - electric water heating	19.54	24.13
4018	Low Flow Showerheads 0.5 gpm - electric water heating	26.02	32.11
4019	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	7.70
4020	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	10.69
4021	Low Flow Showerheads 1.25 gpm - gas water heating	8.71	3.52
4022	Low Flow Showerheads 1.25 gpm - electric water heating	16.24	10.01
4023	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	12.78	9.26
4024	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	21.87	15.80
4025	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	2.08	1.35
4026	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	3.53	2.26
4027	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	5.03	3.24
4028	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	24.70	30.37
4029	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	42.35	52.11
4030	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	3.86	4.52
4031	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	6.48	7.48
4032	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	9.14	10.51
4033	Shower start - 1.75 gpm - gas water heating	2.88	2.32

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
4034	Shower start - 1.5 gpm - gas water heating	3.70	2.98
4035	Shower start - 1.75 gpm - electric water heating	5.45	6.78
4036	Shower start - 1.5 gpm - electric water heating	6.99	8.70
4037	Gravity Film Heat Exchanger GFX - gas water heating	0.07	0.12
4038	Gravity Film Heat Exchanger GFX - electric water heating	0.19	0.34
4039	Solar Domestic Hot Water - gas water heating	0.49	0.25
4040	Solar Domestic Hot Water - electric water heating	0.83	0.85
4041	Heat Pump Water Heaters	3.05	5.43
4042	Super Efficiency Gas Water Heater 0.70 EF	0.83	1.49
4043	Instant Gas Water Heater	0.83	1.50
4044	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	15.40
4045	Pipe Wrap - gas water heater - Insulated Pipe with R2	7.57	13.62
4046	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	21.37
4047	Pipe Wrap - electric water heater - Insulated Pipe with R2	9.63	18.80
4048	Low Flow Showerheads 1.75 gpm - gas water heating	5.22	4.21
4049	Low Flow Showerheads 1.5 gpm - gas water heating	6.97	5.62
4050	Low Flow Showerheads 1.25 gpm - gas water heating	8.71	7.03
4051	Low Flow Showerheads 1.0 gpm - gas water heating	10.44	8.41
4052	Low Flow Showerheads 0.5 gpm - gas water heating	13.93	11.24
4053	Low Flow Showerheads 1.75 gpm - electric water heating	9.76	12.05
4054	Low Flow Showerheads 1.5 gpm - electric water heating	13.06	16.16
4055	Low Flow Showerheads 1.25 gpm - electric water heating	16.24	20.02
4056	Low Flow Showerheads 1.0 gpm - electric water heating	19.54	24.13
4057	Low Flow Showerheads 0.5 gpm - electric water heating	26.02	32.11
4058	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	12.78	9.26
4059	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	21.87	15.80
4060	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	2.08	1.35
4061	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	3.53	2.26
4062	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	5.03	3.24
4063	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	24.70	30.37
4064	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	42.35	52.11
4065	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	3.86	4.52
4066	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	6.48	7.48
4067	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	9.14	10.51
4068	Shower start - 1.75 gpm - gas water heating	2.88	2.32
4069	Shower start - 1.5 gpm - gas water heating	3.70	2.98
4070	Shower start - 1.75 gpm - electric water heating	5.45	6.78
4071	Shower start - 1.5 gpm - electric water heating	6.99	8.70
4072	Gravity Film Heat Exchanger GFX - gas water heating	0.07	0.12
4073	Gravity Film Heat Exchanger GFX - electric water heating	0.19	0.34
4074	Solar Domestic Hot Water - gas water heating	0.49	0.25
4075	Solar Domestic Hot Water - electric water heating	0.83	0.85
4076	Heat Pump Water Heaters	3.05	5.43
4077	Super Efficiency Gas Water Heater 0.70 EF	0.83	1.49
4078	Instant Gas Water Heater	0.83	1.50
4079	Tank Wrap	0.43	0.77
4080	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	15.40
4081	Pipe Wrap - gas water heater - Insulated Pipe with R2	7.57	13.62
4082	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	21.37
4083	Pipe Wrap - electric water heater - Insulated Pipe with R2	9.63	18.80
4084	Low Flow Showerheads 1.75 gpm - gas water heating	5.11	4.13
4085	Low Flow Showerheads 1.5 gpm - gas water heating	6.82	5.51
4086	Low Flow Showerheads 1.25 gpm - gas water heating	8.50	6.84
4087	Low Flow Showerheads 1.0 gpm - gas water heating	10.20	8.22
4088	Low Flow Showerheads 0.5 gpm - gas water heating	13.61	10.97

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
4089	Low Flow Showerheads 1.75 gpm - electric water heating	9.60	11.89
4090	Low Flow Showerheads 1.5 gpm - electric water heating	12.72	15.70
4091	Low Flow Showerheads 1.25 gpm - electric water heating	15.96	19.74
4092	Low Flow Showerheads 1.0 gpm - electric water heating	19.18	23.75
4093	Low Flow Showerheads 0.5 gpm - electric water heating	25.54	31.60
4094	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	7.70
4095	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	10.69
4096	Low Flow Showerheads 1.25 gpm - gas water heating	8.50	3.42
4097	Low Flow Showerheads 1.25 gpm - electric water heating	15.96	9.87
4098	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	9.24	6.70
4099	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	15.82	11.44
4100	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	2.13	1.35
4101	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	3.65	2.33
4102	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	5.17	3.31
4103	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	17.84	21.92
4104	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	30.49	37.39
4105	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	3.94	4.58
4106	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	6.63	7.61
4107	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	9.35	10.70
4108	Shower start - 1.75 gpm - gas water heating	2.81	2.27
4109	Shower start - 1.5 gpm - gas water heating	3.61	2.91
4110	Shower start - 1.75 gpm - electric water heating	4.98	5.94
4111	Shower start - 1.5 gpm - electric water heating	6.38	7.59
4112	Gravity Film Heat Exchanger GFX - gas water heating	0.07	0.12
4113	Gravity Film Heat Exchanger GFX - electric water heating	0.19	0.34
4114	Solar Domestic Hot Water - gas water heating	0.49	0.25
4115	Solar Domestic Hot Water - electric water heating	0.83	0.85
4116	Heat Pump Water Heaters	3.05	5.43
4117	Super Efficiency Gas Water Heater 0.70 EF	0.83	1.49
4118	Instant Gas Water Heater	0.83	1.50
4119	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	15.40
4120	Pipe Wrap - gas water heater - Insulated Pipe with R2	7.57	13.62
4121	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	21.37
4122	Pipe Wrap - electric water heater - Insulated Pipe with R2	9.63	18.80
4123	Low Flow Showerheads 1.75 gpm - gas water heating	5.11	4.13
4124	Low Flow Showerheads 1.5 gpm - gas water heating	6.82	5.51
4125	Low Flow Showerheads 1.25 gpm - gas water heating	8.50	6.84
4126	Low Flow Showerheads 1.0 gpm - gas water heating	10.20	8.22
4127	Low Flow Showerheads 0.5 gpm - gas water heating	13.61	10.97
4128	Low Flow Showerheads 1.75 gpm - electric water heating	9.60	11.89
4129	Low Flow Showerheads 1.5 gpm - electric water heating	12.72	15.70
4130	Low Flow Showerheads 1.25 gpm - electric water heating	15.96	19.74
4131	Low Flow Showerheads 1.0 gpm - electric water heating	19.18	23.75
4132	Low Flow Showerheads 0.5 gpm - electric water heating	25.54	31.60
4133	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	9.24	6.70
4134	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	15.82	11.44
4135	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	2.13	1.35
4136	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	3.65	2.33
4137	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	5.17	3.31
4138	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	17.84	21.92
4139	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	30.49	37.39
4140	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	3.94	4.58
4141	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	6.63	7.61
4142	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	9.35	10.70
4143	Shower start - 1.75 gpm - gas water heating	2.81	2.27

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
4144	Shower start - 1.5 gpm - gas water heating	3.61	2.91
4145	Shower start - 1.75 gpm - electric water heating	4.98	5.94
4146	Shower start - 1.5 gpm - electric water heating	6.38	7.59
4147	Gravity Film Heat Exchanger GFX - gas water heating	0.07	0.12
4148	Gravity Film Heat Exchanger GFX - electric water heating	0.19	0.34
4149	Solar Domestic Hot Water - gas water heating	0.49	0.25
4150	Solar Domestic Hot Water - electric water heating	0.83	0.85
4151	Heat Pump Water Heaters	3.05	5.43
4152	Super Efficiency Gas Water Heater 0.70 EF	0.83	1.49
4153	Instant Gas Water Heater	0.83	1.50
4154	Tank Wrap	0.43	0.77
4155	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	15.40
4156	Pipe Wrap - gas water heater - Insulated Pipe with R2	7.57	13.62
4157	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	21.37
4158	Pipe Wrap - electric water heater - Insulated Pipe with R2	9.63	18.80
4159	Low Flow Showerheads 1.75 gpm - gas water heating	5.22	4.21
4160	Low Flow Showerheads 1.5 gpm - gas water heating	6.97	5.62
4161	Low Flow Showerheads 1.25 gpm - gas water heating	8.71	7.03
4162	Low Flow Showerheads 1.0 gpm - gas water heating	10.44	8.41
4163	Low Flow Showerheads 0.5 gpm - gas water heating	13.93	11.24
4164	Low Flow Showerheads 1.75 gpm - electric water heating	9.76	12.05
4165	Low Flow Showerheads 1.5 gpm - electric water heating	13.06	16.16
4166	Low Flow Showerheads 1.25 gpm - electric water heating	16.24	20.02
4167	Low Flow Showerheads 1.0 gpm - electric water heating	19.54	24.13
4168	Low Flow Showerheads 0.5 gpm - electric water heating	26.02	32.11
4169	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	7.70
4170	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	10.69
4171	Low Flow Showerheads 1.25 gpm - gas water heating	8.71	3.52
4172	Low Flow Showerheads 1.25 gpm - electric water heating	16.24	10.01
4173	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	12.78	9.26
4174	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	21.87	15.80
4175	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	2.08	1.35
4176	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	3.53	2.26
4177	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	5.03	3.24
4178	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	24.70	30.37
4179	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	42.35	52.11
4180	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	3.86	4.52
4181	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	6.48	7.48
4182	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	9.14	10.51
4183	Shower start - 1.75 gpm - gas water heating	2.88	2.32
4184	Shower start - 1.5 gpm - gas water heating	3.70	2.98
4185	Shower start - 1.75 gpm - electric water heating	5.45	6.78
4186	Shower start - 1.5 gpm - electric water heating	6.99	8.70
4187	Gravity Film Heat Exchanger GFX - gas water heating	0.07	0.12
4188	Gravity Film Heat Exchanger GFX - electric water heating	0.19	0.34
4189	Solar Domestic Hot Water - gas water heating	0.49	0.25
4190	Solar Domestic Hot Water - electric water heating	0.83	0.85
4191	Heat Pump Water Heaters	3.05	5.43
4192	Super Efficiency Gas Water Heater 0.70 EF	0.83	1.49
4193	Instant Gas Water Heater	0.83	1.50
4194	Pipe Wrap - gas water heater - Insulated Pipe with R3	8.56	15.40
4195	Pipe Wrap - gas water heater - Insulated Pipe with R2	7.57	13.62
4196	Pipe Wrap - electric water heater - Insulated Pipe with R3	10.95	21.37
4197	Pipe Wrap - electric water heater - Insulated Pipe with R2	9.63	18.80
4198	Low Flow Showerheads 1.75 gpm - gas water heating	5.22	4.21

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
4199	Low Flow Showerheads 1.5 gpm - gas water heating	6.97	5.62
4200	Low Flow Showerheads 1.25 gpm - gas water heating	8.71	7.03
4201	Low Flow Showerheads 1.0 gpm - gas water heating	10.44	8.41
4202	Low Flow Showerheads 0.5 gpm - gas water heating	13.93	11.24
4203	Low Flow Showerheads 1.75 gpm - electric water heating	9.76	12.05
4204	Low Flow Showerheads 1.5 gpm - electric water heating	13.06	16.16
4205	Low Flow Showerheads 1.25 gpm - electric water heating	16.24	20.02
4206	Low Flow Showerheads 1.0 gpm - electric water heating	19.54	24.13
4207	Low Flow Showerheads 0.5 gpm - electric water heating	26.02	32.11
4208	Low Flow Kitchen Faucet Aerators - 1.5 gpm - gas water heating	12.78	9.26
4209	Low Flow Kitchen Faucet Aerators - 1.0 gpm - gas water heating	21.87	15.80
4210	Low Flow Bathroom Faucet Aerators - 1.5 gpm - gas water heating	2.08	1.35
4211	Low Flow Bathroom Faucet Aerators - 1.0 gpm - gas water heating	3.53	2.26
4212	Low Flow Bathroom Faucet Aerators - 0.5 gpm - gas water heating	5.03	3.24
4213	Low Flow Kitchen Faucet Aerators - 1.5 gpm - electric water heating	24.70	30.37
4214	Low Flow Kitchen Faucet Aerators - 1.0 gpm - electric water heating	42.35	52.11
4215	Low Flow Bathroom Faucet Aerators - 1.5 gpm - electric water heating	3.86	4.52
4216	Low Flow Bathroom Faucet Aerators - 1.0 gpm - electric water heating	6.48	7.48
4217	Low Flow Bathroom Faucet Aerators - 0.5 gpm - electric water heating	9.14	10.51
4218	Shower start - 1.75 gpm - gas water heating	2.88	2.32
4219	Shower start - 1.5 gpm - gas water heating	3.70	2.98
4220	Shower start - 1.75 gpm - electric water heating	5.45	6.78
4221	Shower start - 1.5 gpm - electric water heating	6.99	8.70
4222	Gravity Film Heat Exchanger GFX - gas water heating	0.07	0.12
4223	Gravity Film Heat Exchanger GFX - electric water heating	0.19	0.34
4224	Solar Domestic Hot Water - gas water heating	0.49	0.25
4225	Solar Domestic Hot Water - electric water heating	0.83	0.85
5000	Other		
5001	Pump and Motor Single Speed	10.58	20.11
5002	Pump and motor w auto controls - multi speed	3.17	6.10
5003	Pump and Motor Single Speed	10.58	20.11
5004	Pump and motor w auto controls - multi speed	3.17	6.10
6000	HVAC (Envelope)		
6001	Airtight Can Lights	0.32	0.59
6002	Basement Wall Insulation	0.51	0.88
6003	Cool roof	0.05	0.11
6004	Crawlspace Wall Insulation	0.35	0.57
6005	Door weatherstripping	0.14	0.24
6006	Duct Insulation	0.58	1.07
6007	Duct location	0.83	1.51
6008	Duct sealing 15% leakage base	0.48	0.89
6009	Duct sealing 20% leakage base	0.74	1.39
6010	Duct sealing 25% leakage base	1.03	1.94
6011	Duct sealing 30% leakage base	1.32	2.47
6012	Energy Star Door	0.07	0.13
6013	Floor Insulation	0.53	0.92
6014	Infiltration reduction - 10%	1.50	2.81
6015	Infiltration reduction - 15%	2.38	4.46
6016	Infiltration reduction - 20%	3.03	5.65
6017	Infiltration reduction - 30%	4.75	8.88
6018	Infiltration reduction - 40%	6.58	12.34
6019	Infiltration reduction - 50%	8.41	15.80
6020	Rim Joist Insulation	1.77	3.24
6021	Wall Insulation	0.43	0.78
6022	Window Film	1.19	2.46

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6023	Window Replacement	2.38	4.47
6024	New vinyl window	1.27	2.38
6025	Original double hung window with low U storm	1.21	2.28
6026	Original double hung window with original storm window	0.47	0.88
6027	Rehabbed double hung	0.33	0.61
6028	Rehabbed double hung with low U storm	0.53	1.01
6029	Rehabbed double hung with single glazed storm	0.35	0.65
6030	R19 kneewalls	4.37	8.07
6031	R-38 "scuttle hole" Attic hatch	9.37	16.71
6032	R-38 pull-down stairs Attic hatch	9.92	17.83
6033	R-30 Roof Insulation	0.36	0.66
6034	R-38 Roof Insulation	0.28	0.52
6035	R-49 Roof Insulation	0.23	0.42
6036	R-60 Roof Insulation	0.19	0.35
6037	Low Income Weatherization Package	0.61	0.57
6038	Basement Wall Insulation	0.34	0.59
6039	Cool roof	0.02	0.04
6040	Crawlspace Wall Insulation	0.10	0.18
6041	Duct Insulation	0.53	1.00
6042	Duct location	0.79	1.43
6043	Duct sealing 15% leakage base	0.37	0.69
6044	Duct sealing 20% leakage base	0.51	0.96
6045	Duct sealing 25% leakage base	0.68	1.28
6046	Duct sealing 30% leakage base	0.89	1.68
6047	Energy Star Door	0.07	0.13
6048	Floor Insulation	0.15	0.27
6049	Infiltration reduction - 10%	0.83	1.56
6050	Infiltration reduction - 15%	1.28	2.41
6051	Infiltration reduction - 20%	1.39	2.57
6052	Infiltration reduction - 30%	2.03	3.75
6053	Infiltration reduction - 40%	2.63	4.84
6054	Infiltration reduction - 50%	3.22	5.92
6055	Wall Insulation	0.29	0.53
6056	Window Film	0.99	2.01
6057	Window Replacement	1.62	3.04
6058	R19 kneewalls	4.53	8.37
6059	R-38 "scuttle hole" Attic hatch	16.92	31.85
6060	R-38 pull-down stairs Attic hatch	13.86	25.65
6061	R-30 Roof Insulation	0.35	0.64
6062	R-38 Roof Insulation	0.28	0.52
6063	R-49 Roof Insulation	0.23	0.42
6064	R-60 Roof Insulation	0.18	0.34
6065	Low Income Weatherization Package	0.41	0.38
6066	Airtight Can Lights	0.19	0.34
6067	Basement Wall Insulation	0.81	1.46
6068	Cool roof	-0.03	-0.06
6069	Crawlspace Wall Insulation	1.16	2.08
6070	Door weatherstripping	0.13	0.23
6071	Duct Insulation	0.43	0.78
6072	Duct location	0.66	1.17
6073	Duct sealing 15% leakage base	0.24	0.44
6074	Duct sealing 20% leakage base	0.37	0.67
6075	Duct sealing 25% leakage base	0.50	0.89
6076	Duct sealing 30% leakage base	0.62	1.12
6077	Energy Star Door	0.04	0.08

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6078	Floor Insulation	0.51	0.92
6079	Infiltration reduction - 10%	0.97	1.73
6080	Infiltration reduction - 15%	1.45	2.60
6081	Infiltration reduction - 20%	1.97	3.53
6082	Infiltration reduction - 30%	2.96	5.29
6083	Infiltration reduction - 40%	3.95	7.07
6084	Infiltration reduction - 50%	4.94	8.84
6085	Rim Joist Insulation	1.34	2.40
6086	Steam pipe insulation	1.74	3.13
6087	Wall Insulation	0.33	0.59
6088	Window Film	-1.12	-2.00
6089	Window Replacement	1.09	1.95
6090	New vinyl window	0.56	1.00
6091	Original double hung window with low U storm	0.50	0.90
6092	Original double hung window with original storm window	0.23	0.40
6093	Rehabbed double hung	0.19	0.34
6094	Rehabbed double hung with low U storm	0.22	0.39
6095	Rehabbed double hung with single glazed storm	0.20	0.36
6096	R19 kneewalls	2.97	5.32
6097	R-38 "scuttle hole" Attic hatch	7.60	13.60
6098	R-38 pull-down stairs Attic hatch	7.71	13.80
6099	R-30 Roof Insulation	0.38	0.68
6100	R-38 Roof Insulation	0.27	0.49
6101	R-49 Roof Insulation	0.20	0.36
6102	R-60 Roof Insulation	0.16	0.29
6103	Low Income Weatherization Package	0.36	0.32
6104	Basement Wall Insulation	0.54	0.96
6105	Cool roof	-0.02	-0.04
6106	Crawlspace Wall Insulation	0.36	0.64
6107	Duct Insulation	0.33	0.60
6108	Duct location	0.67	1.20
6109	Duct sealing 15% leakage base	0.13	0.24
6110	Duct sealing 20% leakage base	0.21	0.37
6111	Duct sealing 25% leakage base	0.28	0.49
6112	Duct sealing 30% leakage base	0.35	0.62
6113	Energy Star Door	0.04	0.08
6114	Floor Insulation	0.12	0.22
6115	Infiltration reduction - 10%	0.48	0.86
6116	Infiltration reduction - 15%	0.72	1.29
6117	Infiltration reduction - 20%	1.01	1.81
6118	Infiltration reduction - 30%	1.52	2.71
6119	Infiltration reduction - 40%	2.03	3.63
6120	Infiltration reduction - 50%	2.54	4.54
6121	Steam pipe insulation	1.37	2.47
6122	Wall Insulation	0.22	0.40
6123	Window Film	-0.84	-1.50
6124	Window Replacement	0.72	1.29
6125	R19 kneewalls	3.13	5.61
6126	R-38 "scuttle hole" Attic hatch	8.98	16.07
6127	R-38 pull-down stairs Attic hatch	9.07	16.23
6128	R-30 Roof Insulation	0.25	0.44
6129	R-38 Roof Insulation	0.20	0.36
6130	R-49 Roof Insulation	0.16	0.28
6131	R-60 Roof Insulation	0.13	0.23
6132	Low Income Weatherization Package	0.23	0.21

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6133	Basement Wall Insulation	0.47	0.81
6134	Cool roof	-0.01	-0.03
6135	Crawlspace Wall Insulation	0.01	0.03
6136	Duct Insulation	1.13	2.10
6137	Duct location	0.61	1.10
6138	Duct sealing 15% leakage base	1.13	2.13
6139	Duct sealing 20% leakage base	1.79	3.40
6140	Duct sealing 25% leakage base	2.23	4.20
6141	Duct sealing 30% leakage base	3.17	6.02
6142	Energy Star Door	0.26	0.47
6143	Floor Insulation	0.12	0.21
6144	Infiltration reduction - 10%	2.27	4.14
6145	Infiltration reduction - 15%	3.22	5.83
6146	Infiltration reduction - 20%	5.10	9.31
6147	Infiltration reduction - 30%	7.52	13.69
6148	Infiltration reduction - 40%	9.99	18.18
6149	Infiltration reduction - 50%	12.46	22.66
6150	Wall Insulation	0.80	1.45
6151	Window Film	0.12	0.26
6152	Window Replacement	0.14	0.24
6153	Airtight Can Lights	0.37	0.69
6154	Cool roof	0.28	0.54
6155	Door weatherstripping	0.22	0.41
6156	Duct Insulation	1.77	3.32
6157	Duct location	1.58	2.96
6158	Duct sealing 15% leakage base	0.64	1.18
6159	Duct sealing 20% leakage base	1.00	1.85
6160	Duct sealing 25% leakage base	1.35	2.52
6161	Duct sealing 30% leakage base	1.71	3.19
6162	Energy Star Door	0.06	0.11
6163	Infiltration reduction - 10%	1.59	2.95
6164	Infiltration reduction - 15%	2.39	4.43
6165	Infiltration reduction - 30%	4.28	7.93
6166	Infiltration reduction - 50%	7.22	13.41
6167	Roof Insulation	0.85	1.57
6168	Wall Insulation	0.44	0.81
6169	Window Film	2.58	5.27
6170	Window Replacement	2.12	3.94
6171	Basement Wall Insulation	0.55	0.97
6172	New vinyl window	2.41	4.45
6173	Original double hung window with low U storm	2.30	4.26
6174	Original double hung window with original storm window	0.89	1.64
6175	Rehabbed double hung	0.65	1.19
6176	Rehabbed double hung with low U storm	1.02	1.88
6177	Rehabbed double hung with single glazed storm	0.69	1.27
6178	Low Income Weatherization Package	0.87	0.80
6179	Airtight Can Lights	0.38	0.70
6180	Cool roof	0.27	0.52
6181	Door weatherstripping	0.23	0.42
6182	Duct Insulation	1.76	3.32
6183	Duct location	1.39	2.60
6184	Duct sealing 15% leakage base	0.49	0.91
6185	Duct sealing 20% leakage base	0.77	1.44
6186	Duct sealing 25% leakage base	1.06	1.98
6187	Duct sealing 30% leakage base	1.33	2.49

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6188	Energy Star Door	0.06	0.12
6189	Infiltration reduction - 10%	0.82	1.53
6190	Infiltration reduction - 15%	1.23	2.28
6191	Infiltration reduction - 30%	2.20	4.09
6192	Infiltration reduction - 50%	3.72	6.91
6193	Roof Insulation	0.44	0.81
6194	Wall Insulation	0.28	0.50
6195	Window Film	2.23	4.52
6196	Window Replacement	1.46	2.74
6197	Basement Wall Insulation	0.36	0.64
6198	Low Income Weatherization Package	0.58	0.53
6199	Airtight Can Lights	0.32	0.58
6200	Cool roof	-0.06	-0.12
6201	Door weatherstripping	0.15	0.26
6202	Duct Insulation	0.88	1.58
6203	Duct location	0.81	1.44
6204	Duct sealing 15% leakage base	0.36	0.65
6205	Duct sealing 20% leakage base	0.56	1.00
6206	Duct sealing 25% leakage base	0.76	1.35
6207	Duct sealing 30% leakage base	0.95	1.70
6208	Energy Star Door	0.04	0.08
6209	Infiltration reduction - 10%	0.95	1.70
6210	Infiltration reduction - 15%	1.42	2.55
6211	Infiltration reduction - 30%	2.56	4.58
6212	Infiltration reduction - 50%	4.26	7.62
6213	Roof Insulation	0.62	1.11
6214	Wall Insulation	0.33	0.59
6215	Window Film	-1.64	-2.92
6216	Window Replacement	1.10	1.98
6217	Basement Wall Insulation	0.85	1.52
6218	New vinyl window	1.45	2.60
6219	Original double hung window with low U storm	1.36	2.43
6220	Original double hung window with original storm window	0.55	0.98
6221	Rehabbed double hung	0.44	0.78
6222	Rehabbed double hung with low U storm	0.60	1.07
6223	Rehabbed double hung with single glazed storm	0.47	0.84
6224	Low Income Weatherization Package	0.52	0.46
6225	Airtight Can Lights	0.31	0.56
6226	Cool roof	-0.04	-0.08
6227	Door weatherstripping	0.15	0.27
6228	Duct Insulation	0.80	1.44
6229	Duct location	0.64	1.14
6230	Duct sealing 15% leakage base	0.26	0.47
6231	Duct sealing 20% leakage base	0.41	0.73
6232	Duct sealing 25% leakage base	0.55	0.99
6233	Duct sealing 30% leakage base	0.70	1.25
6234	Energy Star Door	0.05	0.08
6235	Infiltration reduction - 10%	0.48	0.86
6236	Infiltration reduction - 15%	0.72	1.29
6237	Infiltration reduction - 30%	1.28	2.30
6238	Infiltration reduction - 50%	2.14	3.84
6239	Roof Insulation	0.33	0.59
6240	Wall Insulation	0.16	0.28
6241	Window Film	-1.22	-2.17
6242	Window Replacement	0.68	1.22

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6243	Basement Wall Insulation	0.56	1.00
6244	Low Income Weatherization Package	0.30	0.27
6245	Airtight Can Lights	0.49	0.84
6246	Cool roof	0.23	0.48
6247	Door weatherstripping	0.33	0.57
6248	Duct Insulation	2.75	4.82
6249	Duct location	2.44	4.29
6250	Duct sealing 15% leakage base	0.98	1.70
6251	Duct sealing 20% leakage base	1.53	2.66
6252	Duct sealing 25% leakage base	2.08	3.61
6253	Duct sealing 30% leakage base	2.62	4.56
6254	Energy Star Door	0.09	0.16
6255	Infiltration reduction - 10%	2.41	4.17
6256	Infiltration reduction - 15%	3.63	6.27
6257	Infiltration reduction - 30%	7.31	12.63
6258	Infiltration reduction - 50%	12.19	21.09
6259	Roof Insulation	1.51	2.56
6260	Wall Insulation	0.73	1.23
6261	Window Film	1.51	3.97
6262	Window Replacement	3.93	6.93
6263	Basement Wall Insulation	1.14	1.83
6264	New vinyl window	3.83	6.65
6265	Original double hung window with low U storm	3.60	6.27
6266	Original double hung window with original storm window	1.44	2.49
6267	Rehabbed double hung	1.05	1.80
6268	Rehabbed double hung with low U storm	1.59	2.76
6269	Rehabbed double hung with single glazed storm	1.11	1.90
6270	Low Income Weatherization Package	1.34	1.17
6271	Airtight Can Lights	0.49	0.84
6272	Cool roof	0.25	0.51
6273	Door weatherstripping	0.33	0.57
6274	Duct Insulation	2.66	4.70
6275	Duct location	2.07	3.66
6276	Duct sealing 15% leakage base	0.73	1.28
6277	Duct sealing 20% leakage base	1.15	2.01
6278	Duct sealing 25% leakage base	1.58	2.76
6279	Duct sealing 30% leakage base	1.99	3.48
6280	Energy Star Door	0.10	0.17
6281	Infiltration reduction - 10%	1.25	2.16
6282	Infiltration reduction - 15%	1.87	3.23
6283	Infiltration reduction - 30%	3.67	6.34
6284	Infiltration reduction - 50%	6.14	10.62
6285	Roof Insulation	0.78	1.32
6286	Wall Insulation	0.48	0.81
6287	Window Film	1.64	3.99
6288	Window Replacement	2.56	4.55
6289	Basement Wall Insulation	0.72	1.16
6290	Low Income Weatherization Package	0.88	0.77
6291	Airtight Can Lights	1.17	2.15
6292	Cool roof	1.84	3.58
6293	Door weatherstripping	0.77	1.43
6294	Duct Insulation	4.44	8.40
6295	Duct location	1.24	2.34
6296	Duct sealing 15% leakage base	2.29	4.29
6297	Duct sealing 20% leakage base	3.54	6.62

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6298	Duct sealing 25% leakage base	4.87	9.11
6299	Duct sealing 30% leakage base	6.22	11.65
6300	Energy Star Door	0.17	0.32
6301	Infiltration reduction - 10%	3.59	6.64
6302	Infiltration reduction - 15%	5.46	10.12
6303	Infiltration reduction - 30%	9.82	18.21
6304	Infiltration reduction - 50%	16.49	30.61
6305	Roof Insulation	0.25	0.45
6306	Wall Insulation	0.96	1.74
6307	Window Film	0.71	0.73
6308	Window Replacement	0.26	0.48
6309	Basement Wall Insulation	0.46	0.80
6310	Airtight Can Lights	1.14	2.00
6311	Cool roof	1.19	2.38
6312	Door weatherstripping	0.87	1.54
6313	Duct Insulation	6.86	12.28
6314	Duct location	1.75	3.13
6315	Duct sealing 15% leakage base	2.57	4.52
6316	Duct sealing 20% leakage base	4.00	7.05
6317	Duct sealing 25% leakage base	5.51	9.72
6318	Duct sealing 30% leakage base	6.94	12.25
6319	Energy Star Door	0.20	0.34
6320	Infiltration reduction - 10%	4.01	7.04
6321	Infiltration reduction - 15%	6.13	10.78
6322	Infiltration reduction - 30%	11.81	20.65
6323	Infiltration reduction - 50%	19.55	34.13
6324	Roof Insulation	0.30	0.51
6325	Wall Insulation	1.05	1.79
6326	Window Film	1.20	2.52
6327	Window Replacement	0.72	1.33
6328	Basement Wall Insulation	0.62	1.02
6329	Crawlspace Wall Insulation	0.67	1.25
6330	Duct Insulation	2.73	5.13
6331	Duct sealing 15% leakage base	2.48	4.64
6332	Duct sealing 20% leakage base	3.90	7.31
6333	Duct sealing 25% leakage base	4.80	8.93
6334	Duct sealing 30% leakage base	6.03	11.22
6335	Floor Insulation	0.51	0.94
6336	Infiltration reduction - 10%	1.50	2.78
6337	Infiltration reduction - 15%	2.18	4.04
6338	Roof Insulation	0.87	1.62
6339	Wall Insulation	0.63	1.15
6340	Window Replacement	2.61	4.91
6341	Low Income Weatherization Package	1.12	1.05
6342	Crawlspace Wall Insulation	0.57	1.07
6343	Duct Insulation	2.95	5.55
6344	Duct sealing 15% leakage base	1.92	3.59
6345	Duct sealing 20% leakage base	2.97	5.55
6346	Duct sealing 25% leakage base	4.01	7.50
6347	Duct sealing 30% leakage base	5.06	9.45
6348	Floor Insulation	0.60	1.11
6349	Infiltration reduction - 10%	0.59	1.08
6350	Infiltration reduction - 15%	1.02	1.90
6351	Roof Insulation	1.23	2.27
6352	Wall Insulation	0.37	0.69

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
6353	Window Replacement	1.48	2.79
6354	Low Income Weatherization Package	0.83	1.56
6355	Crawlspace Wall Insulation	0.29	0.52
6356	Duct Insulation	1.44	2.58
6357	Duct sealing 15% leakage base	1.34	2.41
6358	Duct sealing 20% leakage base	2.09	3.74
6359	Duct sealing 25% leakage base	2.83	5.07
6360	Duct sealing 30% leakage base	3.58	6.40
6361	Floor Insulation	0.39	0.69
6362	Infiltration reduction - 10%	0.95	1.69
6363	Infiltration reduction - 15%	1.42	2.53
6364	Roof Insulation	0.51	0.91
6365	Wall Insulation	0.44	0.79
6366	Window Replacement	1.21	2.17
6367	Low Income Weatherization Package	0.61	0.55
6368	Crawlspace Wall Insulation	0.21	0.38
6369	Duct Insulation	1.46	2.62
6370	Duct sealing 15% leakage base	1.04	1.86
6371	Duct sealing 20% leakage base	1.62	2.90
6372	Duct sealing 25% leakage base	2.21	3.95
6373	Duct sealing 30% leakage base	2.81	5.03
6374	Floor Insulation	0.46	0.82
6375	Infiltration reduction - 10%	0.44	0.78
6376	Infiltration reduction - 15%	0.66	1.18
6377	Roof Insulation	0.75	1.33
6378	Wall Insulation	0.27	0.48
6379	Window Replacement	0.52	0.92
6380	Low Income Weatherization Package	0.52	0.93
6381	Crawlspace Wall Insulation	1.18	2.24
6382	Duct Insulation	7.43	13.98
6383	Duct sealing 15% leakage base	11.45	21.43
6384	Duct sealing 20% leakage base	17.67	33.05
6385	Duct sealing 25% leakage base	23.89	44.66
6386	Duct sealing 30% leakage base	30.16	56.35
6387	Floor Insulation	1.26	2.30
6388	Infiltration reduction - 10%	2.97	5.45
6389	Infiltration reduction - 15%	4.47	8.22
6390	Roof Insulation	1.34	2.49
6391	Wall Insulation	2.88	5.29
6392	Window Replacement	1.04	1.96
6393	Crawlspace Wall Insulation	0.38	0.68
6394	Duct Insulation	3.67	6.58
6395	Duct sealing 15% leakage base	6.07	10.88
6396	Duct sealing 20% leakage base	9.51	17.02
6397	Duct sealing 25% leakage base	13.02	23.30
6398	Duct sealing 30% leakage base	16.57	29.67
6399	Floor Insulation	0.96	1.72
6400	Infiltration reduction - 10%	2.18	3.90
6401	Infiltration reduction - 15%	3.23	5.77
6402	Roof Insulation	0.81	1.45
6403	Wall Insulation	2.04	3.65
6404	Window Replacement	0.39	0.70
7000	HVAC (Equipment)		
7001	ENERGY STAR Room AC	3.91	7.67
7002	CEE Tier 2 Room AC	1.28	2.52

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
7003	Room AC recycling	4.03	7.82
7004	ASHP - SEER 15	2.92	5.57
7005	ASHP - SEER 16	1.73	3.18
7006	ASHP - SEER 17	1.22	2.21
7007	ASHP - SEER 18	1.10	2.02
7008	DFHP - SEER 15 with 95 AFUE furnace	4.30	7.96
7009	DFHP - SEER 16 with 95 AFUE furnace	2.25	4.12
7010	DFHP - SEER 17 with 95 AFUE furnace	1.64	2.94
7011	DFHP - SEER 18 with 95 AFUE furnace	1.30	2.37
7012	Furnace/AC - SEER 15	2.22	4.31
7013	Furnace/AC - SEER 16	1.55	3.03
7014	Furnace/AC - SEER 17	1.51	2.94
7015	GSHP - EER 17 ASHP Base	0.52	0.33
7016	GSHP - EER 19 ASHP Base	0.55	0.38
7017	High efficiency 92 AFUE furnace with ECM	0.97	1.75
7018	High efficiency 94 AFUE furnace with ECM	0.92	1.65
7019	High efficiency 95 AFUE furnace with ECM	0.90	1.62
7020	O&M Tune-up - furnace only	0.88	1.58
7021	O&M Tune-up - furnace only	2.24	2.03
7022	RCA 10% improvement	1.59	3.13
7023	RCA 15% improvement	0.75	1.48
7024	RCA 5% improvement	0.95	1.88
7025	Setback thermostat - full setback	8.14	14.52
7026	Setback thermostat - moderate setback	4.31	7.66
7027	Setback thermostat - moderate setback	0.70	0.60
7028	Whole House Fan	0.01	0.02
7029	High efficiency 93 AFUE furnace with ECM	0.95	1.70
7030	High efficiency 96 AFUE furnace with ECM	0.89	1.59
7031	High efficiency 97 AFUE furnace with ECM	0.87	1.56
7032	High efficiency 98 AFUE furnace with ECM	0.86	1.54
7033	ECM Furnace Fan	11.96	22.71
7034	ASHP - SEER 19	1.35	2.54
7035	DFHP - SEER 19 with 95 AFUE furnace	1.52	2.83
7036	Furnace/AC - SEER 18	1.37	2.69
7037	Furnace/AC - SEER 19	1.42	2.78
7038	ASHP - SEER 20	2.00	3.83
7039	DFHP - SEER 20 with 95 AFUE furnace	2.16	4.10
7040	Furnace/AC - SEER 20	1.43	2.82
7041	ASHP - SEER 21	3.51	6.79
7042	DFHP - SEER 21 with 95 AFUE furnace	3.68	7.07
7043	Furnace/AC - SEER 21	1.50	2.94
7044	SEER21 Minisplit Heat pump	1.99	3.60
7045	SEER21 Minisplit Heat pump	0.40	0.36
7046	Boiler Tune-up	1.45	2.61
7047	Boiler Tune-up	1.45	1.30
7048	Boiler reset control	0.01	0.01
7049	Boiler 87% plus AFUE 82 AFUE BASE	0.52	0.94
7050	Boiler 92% plus AFUE 82 AFUE BASE	1.43	2.56
7051	Boiler 95% plus AFUE 82 AFUE BASE	1.22	2.20
7052	ENERGY STAR Room AC	3.91	7.67
7053	CEE Tier 2 Room AC	1.28	2.52
7054	ASHP - SEER 15	5.76	11.15
7055	ASHP - SEER 16	3.33	6.32
7056	ASHP - SEER 17	2.40	4.54
7057	ASHP - SEER 18	1.95	3.70

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
7058	DFHP - SEER 15 with 95 AFUE furnace	4.36	8.06
7059	DFHP - SEER 16 with 95 AFUE furnace	2.28	4.19
7060	DFHP - SEER 17 with 95 AFUE furnace	1.61	2.90
7061	DFHP - SEER 18 with 95 AFUE furnace	1.28	2.34
7062	Furnace/AC - SEER 15	1.25	2.41
7063	Furnace/AC - SEER 16	1.13	2.23
7064	Furnace/AC - SEER 17	1.25	2.44
7065	GSHP - EER 17 ASHP Base	0.54	0.37
7066	GSHP - EER 19 ASHP Base	0.57	0.42
7067	High efficiency 92 AFUE furnace with ECM	0.57	1.03
7068	High efficiency 94 AFUE furnace with ECM	0.54	0.98
7069	High efficiency 95 AFUE furnace with ECM	0.53	0.95
7070	Setback thermostat - full setback	14.56	25.96
7071	Setback thermostat - moderate setback	8.54	15.18
7072	Whole House Fan	0.02	0.04
7073	High efficiency 93 AFUE furnace with ECM	0.56	1.00
7074	High efficiency 96 AFUE furnace with ECM	0.52	0.94
7075	High efficiency 97 AFUE furnace with ECM	0.51	0.92
7076	High efficiency 98 AFUE furnace with ECM	0.51	0.91
7077	ECM Furnace Fan	12.34	23.56
7078	ASHP - SEER 19	1.30	2.45
7079	DFHP - SEER 19 with 95 AFUE furnace	1.50	2.81
7080	Furnace/AC - SEER 18	1.27	2.49
7081	Furnace/AC - SEER 19	1.31	2.58
7082	ASHP - SEER 20	1.84	3.52
7083	DFHP - SEER 20 with 95 AFUE furnace	2.15	4.10
7084	Furnace/AC - SEER 20	1.33	2.61
7085	ASHP - SEER 21	3.13	6.06
7086	DFHP - SEER 21 with 95 AFUE furnace	3.69	7.12
7087	Furnace/AC - SEER 21	1.38	2.73
7088	SEER21 Minisplit Heat pump	1.22	2.29
7089	Boiler 87% plus AFUE 82 AFUE BASE	0.31	0.55
7090	Boiler 92% plus AFUE 82 AFUE BASE	0.89	1.60
7091	Boiler 95% plus AFUE 82 AFUE BASE	0.76	1.36
7092	ENERGY STAR Room AC	3.91	7.67
7093	CEE Tier 2 Room AC	1.28	2.52
7094	Room AC recycling	4.03	7.82
7095	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	4.44	8.02
7096	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	4.27	7.77
7097	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	4.14	7.53
7098	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	5.62	10.85
7099	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	5.14	9.69
7100	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	4.85	9.09
7101	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	4.68	8.73
7102	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	5.72	11.04
7103	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	5.37	10.23
7104	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	5.11	9.67
7105	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	4.96	9.35
7106	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	4.44	8.04
7107	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	4.37	8.13
7108	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	4.16	7.51
7109	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	5.71	11.00
7110	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	5.21	9.81
7111	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	5.06	9.60
7112	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	4.65	8.60

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
7113	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	5.80	11.16
7114	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	5.42	10.30
7115	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	5.19	9.90
7116	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	4.92	9.20
7117	ASHP - SEER 15	3.31	6.33
7118	ASHP - SEER 16	1.50	2.79
7119	ASHP - SEER 17	1.03	1.89
7120	ASHP - SEER 18	0.86	1.58
7121	Boiler 85% Ec	1.25	2.24
7122	Boiler turndown control	47.28	84.84
7123	CHW reset 10 deg	17.73	28.66
7124	CHW reset 5 deg	10.16	16.47
7125	DFHP - SEER 15 with 95 AFUE furnace	6.35	11.77
7126	DFHP - SEER 16 with 95 AFUE furnace	3.33	6.06
7127	DFHP - SEER 17 with 95 AFUE furnace	2.11	3.80
7128	DFHP - SEER 18 with 95 AFUE furnace	0.97	1.76
7129	Furnace/AC - SEER 15	1.96	3.85
7130	Furnace/AC - SEER 16	0.97	1.91
7131	Furnace/AC - SEER 17	1.03	2.03
7132	High efficiency 92 AFUE furnace with ECM	0.61	1.10
7133	High efficiency 93 AFUE furnace with ECM	0.59	1.07
7134	High efficiency 94 AFUE furnace with ECM	0.58	1.04
7135	High efficiency 95 AFUE furnace with ECM	0.57	1.02
7136	High efficiency 96 AFUE furnace with ECM	0.56	1.00
7137	High efficiency 97 AFUE furnace with ECM	0.55	0.98
7138	High efficiency 98 AFUE furnace with ECM	0.54	0.97
7139	ECM Furnace Fan	9.89	18.97
7140	O&M Tune-up - furnace only	0.56	1.01
7141	O&M Tune-up - furnace only	0.56	0.51
7142	O2 Trim Control	0.60	1.08
7143	PTAC 9.3 EER	3.56	6.95
7144	PTHP 9.1 EER	3.37	6.45
7145	RCA 10% improvement	1.38	2.71
7146	RCA 15% improvement	0.66	1.30
7147	RCA 5% improvement	0.83	1.63
7148	Setback thermostat - full setback	3.68	6.23
7149	Setback thermostat - moderate setback	1.92	3.17
7150	Setback thermostat - moderate setback	1.92	1.58
7151	Whole House Fan	0.05	0.09
7152	ASHP - SEER 19	1.03	1.94
7153	ASHP - SEER 20	1.51	2.87
7154	ASHP - SEER 21	2.61	5.04
7155	DFHP - SEER 19 with 95 AFUE furnace	1.12	2.09
7156	DFHP - SEER 20 with 95 AFUE furnace	1.59	3.02
7157	DFHP - SEER 21 with 95 AFUE furnace	2.70	5.20
7158	Furnace/AC - SEER 18	1.00	1.96
7159	Furnace/AC - SEER 19	1.04	2.04
7160	Furnace/AC - SEER 20	1.05	2.08
7161	Furnace/AC - SEER 21	1.10	2.17
7162	SEER21 Minisplit Heat pump	1.99	3.60
7163	SEER21 Minisplit Heat pump	0.40	0.36
7164	Boiler Tune-up	1.80	3.25
7165	Boiler Tune-up	1.80	1.62
7166	Boiler 87% plus AFUE 82 AFUE BASE	0.79	1.42
7167	Boiler 90% plus AFUE 82 AFUE BASE	1.18	2.11

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
7168	Boiler 92% plus AFUE 82 AFUE BASE	1.20	2.16
7169	Boiler 95% plus AFUE 82 AFUE BASE	1.14	2.05
7170	ENERGY STAR Room AC	3.91	7.67
7171	CEE Tier 2 Room AC	1.28	2.52
7172	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.41	3.24	5.54
7173	Air-Cooled Recip Chiller COP = 2.8, IPLV = 3.89	3.01	5.18
7174	Air-Cooled Recip Chiller COP = 2.8, IPLV = 4.24	2.90	4.98
7175	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.36	6.04	11.64
7176	Air-Cooled Recip Chiller COP = 3.08, IPLV = 3.76	4.89	9.13
7177	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.28	4.29	7.91
7178	Air-Cooled Recip Chiller COP = 3.08, IPLV = 4.67	4.02	7.35
7179	Air-Cooled Recip Chiller COP = 3.36, IPLV = 3.66	6.14	11.83
7180	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.10	5.37	10.16
7181	Air-Cooled Recip Chiller COP = 3.36, IPLV = 4.67	4.85	9.08
7182	Air-Cooled Recip Chiller COP = 3.36, IPLV = 5.09	4.59	8.56
7183	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.46	3.14	5.39
7184	Air-Cooled Screw Chiller COP = 2.8, IPLV = 3.64	2.62	4.56
7185	Air-Cooled Screw Chiller COP = 2.8, IPLV = 4.75	2.96	5.05
7186	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.36	6.04	11.62
7187	Air-Cooled Screw Chiller COP = 3.08, IPLV = 3.80	4.86	9.04
7188	Air-Cooled Screw Chiller COP = 3.08, IPLV = 4.00	4.34	8.10
7189	Air-Cooled Screw Chiller COP = 3.08, IPLV = 5.22	3.92	7.08
7190	Air-Cooled Screw Chiller COP = 3.36, IPLV = 3.66	6.15	11.82
7191	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.15	5.33	10.06
7192	Air-Cooled Screw Chiller COP = 3.36, IPLV = 4.42	4.83	9.13
7193	Air-Cooled Screw Chiller COP = 3.36, IPLV = 5.69	4.45	8.21
7194	ASHP - SEER 15	3.51	6.77
7195	ASHP - SEER 16	1.21	2.26
7196	ASHP - SEER 17	0.77	1.42
7197	ASHP - SEER 18	0.72	1.33
7198	Boiler 85% Ec	0.18	0.33
7199	Boiler turndown control	3.61	6.49
7200	CHW reset 10 deg	35.10	56.13
7201	CHW reset 5 deg	19.13	30.29
7202	DFHP - SEER 15 with 95 AFUE furnace	4.24	8.05
7203	DFHP - SEER 16 with 95 AFUE furnace	1.51	2.80
7204	DFHP - SEER 17 with 95 AFUE furnace	1.00	1.81
7205	DFHP - SEER 18 with 95 AFUE furnace	0.83	1.52
7206	Furnace/AC - SEER 15	2.00	3.94
7207	Furnace/AC - SEER 16	0.86	1.71
7208	Furnace/AC - SEER 17	0.94	1.88
7209	High efficiency 92 AFUE furnace with ECM	0.46	0.82
7210	High efficiency 93 AFUE furnace with ECM	0.45	0.80
7211	High efficiency 94 AFUE furnace with ECM	0.43	0.78
7212	High efficiency 95 AFUE furnace with ECM	0.42	0.76
7213	High efficiency 96 AFUE furnace with ECM	0.42	0.75
7214	High efficiency 97 AFUE furnace with ECM	0.41	0.74
7215	High efficiency 98 AFUE furnace with ECM	0.40	0.73
7216	ECM Furnace Fan	9.28	17.97
7217	O2 Trim Control	0.00	0.00
7218	PTAC 9.3 EER	3.56	6.91
7219	PTHP 9.1 EER	3.22	6.17
7220	Setback thermostat - full setback	5.17	8.26
7221	Setback thermostat - moderate setback	-1.11	-2.82
7222	Whole House Fan	0.12	0.22

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
7223	ASHP - SEER 19	0.90	1.70
7224	ASHP - SEER 20	1.35	2.60
7225	ASHP - SEER 21	2.39	4.64
7226	DFHP - SEER 19 with 95 AFUE furnace	0.99	1.85
7227	DFHP - SEER 20 with 95 AFUE furnace	1.43	2.74
7228	DFHP - SEER 21 with 95 AFUE furnace	2.48	4.79
7229	Furnace/AC - SEER 18	0.95	1.88
7230	Furnace/AC - SEER 19	0.99	1.97
7231	Furnace/AC - SEER 20	1.01	2.00
7232	Furnace/AC - SEER 21	1.11	2.18
7233	SEER21 Minisplit Heat pump	1.99	3.60
7234	Boiler 87% plus AFUE 82 AFUE BASE	0.53	0.96
7235	Boiler 90% plus AFUE 82 AFUE BASE	0.82	1.47
7236	Boiler 92% plus AFUE 82 AFUE BASE	0.84	1.50
7237	Boiler 95% plus AFUE 82 AFUE BASE	0.79	1.42
7238	ENERGY STAR Room AC	3.91	7.67
7239	CEE Tier 2 Room AC	1.28	2.52
7240	Room AC recycling	4.03	7.82
7241	ASHP - SEER 15	2.78	5.40
7242	ASHP - SEER 16	1.40	2.56
7243	ASHP - SEER 17	1.09	1.97
7244	ASHP - SEER 18	1.02	1.87
7245	DFHP - SEER 15 with 95 AFUE furnace	3.17	6.06
7246	DFHP - SEER 16 with 95 AFUE furnace	1.49	2.72
7247	DFHP - SEER 17 with 95 AFUE furnace	1.17	2.11
7248	DFHP - SEER 18 with 95 AFUE furnace	1.01	1.86
7249	Furnace/AC - SEER 15	1.96	3.83
7250	Furnace/AC - SEER 16	1.18	2.33
7251	Furnace/AC - SEER 17	1.18	2.31
7252	GSHP - EER 17 ASHP Base	0.54	0.31
7253	GSHP - EER 19 ASHP Base	0.56	0.35
7254	High efficiency 92 AFUE furnace with ECM	0.71	1.27
7255	High efficiency 94 AFUE furnace with ECM	0.67	1.20
7256	High efficiency 95 AFUE furnace with ECM	0.66	1.18
7257	RCA 10% improvement	1.07	2.12
7258	RCA 15% improvement	0.91	1.79
7259	RCA 5% improvement	0.63	1.24
7260	Setback thermostat - full setback	27.81	49.68
7261	Setback thermostat - moderate setback	14.27	12.73
7262	Setback thermostat - moderate setback	14.27	12.73
7263	Whole House Fan	0.07	0.12
7264	High efficiency 93 AFUE furnace with ECM	0.82	1.46
7265	High efficiency 96 AFUE furnace with ECM	0.74	1.34
7266	High efficiency 97 AFUE furnace with ECM	0.73	1.31
7267	High efficiency 98 AFUE furnace with ECM	0.71	1.28
7268	ECM Furnace Fan	11.73	22.35
7269	Furnace/AC - SEER 18	1.10	2.16
7270	Furnace/AC - SEER 19	1.46	2.88
7271	Furnace/AC - SEER 20	1.16	2.30
7272	Furnace/AC - SEER 21	1.22	2.41
7273	ASHP - SEER 19	1.26	2.38
7274	ASHP - SEER 20	1.71	3.27
7275	ASHP - SEER 21	2.83	5.47
7276	DFHP - SEER 19 with 95 AFUE furnace	1.31	2.46
7277	DFHP - SEER 20 with 95 AFUE furnace	1.76	3.36

Measure-level Benefit-Cost Ratios (TRC and UCT)

Measure #	*Measure Name*	*TRC ratio*	*UCT ratio*
7278	DFHP - SEER 21 with 95 AFUE furnace	2.89	5.57
7279	ENERGY STAR Room AC	3.91	7.67
7280	CEE Tier 2 Room AC	1.28	2.52
7281	ASHP - SEER 15	2.61	5.09
7282	ASHP - SEER 16	1.27	2.33
7283	ASHP - SEER 17	0.99	1.79
7284	ASHP - SEER 18	0.94	1.74
7285	DFHP - SEER 15 with 95 AFUE furnace	3.29	6.25
7286	DFHP - SEER 16 with 95 AFUE furnace	1.48	2.71
7287	DFHP - SEER 17 with 95 AFUE furnace	1.15	2.09
7288	DFHP - SEER 18 with 95 AFUE furnace	1.00	1.84
7289	Furnace/AC - SEER 15	1.85	3.64
7290	Furnace/AC - SEER 16	1.04	2.07
7291	Furnace/AC - SEER 17	1.09	2.14
7292	GSHP - EER 17 ASHP Base	0.55	0.34
7293	GSHP - EER 19 ASHP Base	0.57	0.38
7294	High efficiency 92 AFUE furnace with ECM	0.66	1.19
7295	High efficiency 94 AFUE furnace with ECM	0.63	1.12
7296	High efficiency 95 AFUE furnace with ECM	0.61	1.10
7297	Setback thermostat - full setback	64.39	115.07
7298	Setback thermostat - moderate setback	33.13	59.11
7299	Whole House Fan	0.10	0.17
7300	High efficiency 93 AFUE furnace with ECM	0.64	1.15
7301	High efficiency 96 AFUE furnace with ECM	0.60	1.08
7302	High efficiency 97 AFUE furnace with ECM	0.59	1.06
7303	High efficiency 98 AFUE furnace with ECM	0.58	1.05
7304	ECM Furnace Fan	11.76	22.37
7305	Furnace/AC - SEER 18	1.02	2.02
7306	Furnace/AC - SEER 19	1.37	2.71
7307	Furnace/AC - SEER 20	1.09	2.16
7308	Furnace/AC - SEER 21	1.15	2.27
7309	ASHP - SEER 19	1.06	2.03
7310	ASHP - SEER 20	1.49	2.87
7311	ASHP - SEER 21	2.51	4.88
7312	DFHP - SEER 19 with 95 AFUE furnace	1.15	2.18
7313	DFHP - SEER 20 with 95 AFUE furnace	1.57	3.01
7314	DFHP - SEER 21 with 95 AFUE furnace	2.60	5.03
8000	Behavioral Programs		
8001	Behavior Modification: Home Energy Reports (All Years)	1.70	3.05
8002	Real-time feedback	1.43	2.58
8003	Behavior Modification: Home Energy Reports (All Years)	1.70	3.05
8004	Real-time feedback	1.43	2.58
8005	Behavior Modification: Home Energy Reports (All Years)	1.13	2.08
8006	Real-time feedback	0.79	1.42
8007	Behavior Modification: Home Energy Reports (All Years)	1.13	2.08
8008	Real-time feedback	0.79	1.42
8009	Behavior Modification: Home Energy Reports (All Years)	1.28	2.33
8010	Real-time feedback	0.96	1.72
8011	Behavior Modification: Home Energy Reports (All Years)	1.28	2.33
8012	Real-time feedback	0.96	1.72

Michigan Commercial Measure Database - Electric

Base Case Factor:
Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Computers & Office Equipment									
Energy Star Compliant Single Door Refrigerator	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%
PC Network Energy Management Controls replacing no central control	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
EZ Save Monitor Power Management Software	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
Energy Star UPS	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
Water Heating									
Heat Pump Water Heater	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Booster Water Heater	0.0%	0.0%	10.0%	0.0%	10.0%	10.0%	62.5%	10.0%	0.0%
Point of Use Water Heating	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Solar Water Heating System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
High Efficiency Electric Water Heater	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flow Pre-Rinse Spray Nozzle	0.0%	0.0%	10.0%	0.0%	10.0%	10.0%	62.5%	10.0%	0.0%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	0.0%	0.8%	2.0%	0.4%	1.0%	2.0%	3.0%	2.0%	2.0%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	0.0%	0.8%	2.0%	0.4%	1.0%	2.0%	3.0%	2.0%	2.0%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	0.0%	0.8%	2.0%	0.4%	1.0%	2.0%	3.0%	2.0%	2.0%
ES Dishwasher, Low Temp, Elec Heat	0.0%	0.8%	2.0%	0.4%	1.0%	2.0%	3.0%	2.0%	2.0%
ES Dishwasher, Low Temp, Gas Heat	0.0%	0.8%	2.0%	0.4%	1.0%	2.0%	3.0%	2.0%	2.0%
Ozone Commercial laundry System	0.0%	0.0%	0.0%	0.0%	15.0%	17.5%	0.0%	5.0%	5.0%
Low Flow Faucet Aerator	100.0%	96.0%	79.0%	98.0%	35.0%	43.0%	22.5%	37.0%	72.0%
Low Flow Showerhead	0.0%	0.0%	0.0%	0.0%	20.0%	2.0%	0.0%	33.0%	13.0%
Hot Water (DHW) Pipe Insulation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Tank Insulation (electric)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Drain water Heat Recovery Water Heater	2.0%	0.0%	0.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Hot Water Circulation Pump Time-Clock	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Refrigeration Heat Recovery	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	0.0%	0.0%	0.3%	0.0%	3.8%	4.4%	0.0%	1.3%	0.0%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	0.0%	0.0%	0.3%	0.0%	3.8%	4.4%	0.0%	1.3%	0.0%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	0.0%	0.0%	0.3%	0.0%	3.8%	4.4%	0.0%	1.3%	0.0%
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	0.0%	0.0%	0.3%	0.0%	3.8%	4.4%	0.0%	1.3%	0.0%
Efficient Hot Water Pump	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pools									
Energy Efficient Pool Pump with controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Solar Pool Heating	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%
Heat Pump Pool Heater	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%	42.5%
High efficiency spas/hot tubs	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Building Envelope									

Michigan Commercial Measure Database - Electric

Base Case Factor:
Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Integrated Building Design	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Efficient Windows	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cool Roofing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Ceiling Insulation R-11 to R-42	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Below Grade Insulation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Wall Insulation R-7.5 to R13	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Roof Insulation R-11 to R-24	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Ventilation									
Enthalpy Economizer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Demand-Controlled Ventilation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Variable Speed Drive Control, 15 HP	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Variable Speed Drive Control, 5 HP	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Variable Speed Drive Control, 40 HP	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Improved Duct Sealing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Destratification Fan	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	10.0%
Controlled Ventilation Optimization	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
High Performance Air Filters	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Space Cooling - Chillers									
Air-Cooled Recip Chiller	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Air-Cooled Screw Chiller	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Water-Cooled Centrifugal Chiller < 150 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Centrifugal Chiller 150 - 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Centrifugal Chiller > 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Screw Chiller < 150 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Screw Chiller 150 - 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Screw Chiller > 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Chiller Tune Up/Diagnostics - 300 ton	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Chiller Tune Up/Diagnostics - 500 ton	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
High Efficiency Pumps	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Efficient Chilled Water Pump	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chilled Hot Water Reset	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
HVAC Controls									
Programmable Thermostats	50.0%	50.0%	50.0%	50.0%	40.0%	50.0%	50.0%	50.0%	50.0%
EMS install	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
EMS Optimization	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%
Hotel Guest Room Occupancy Control System	0.0%	0.0%	0.0%	0.0%	10.0%	0.0%	0.0%	0.0%	0.0%
Zoning	50.0%	50.0%	50.0%	50.0%	0.0%	50.0%	50.0%	50.0%	50.0%
Retrocommissioning	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Commissioning	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Space Cooling - Unitary and Split AC									
High Efficiency AC - Unitary & Split Systems	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Ductless (mini split) - Cooling	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Ground Source Heat Pump - Cooling	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Water Loop Heat Pump (WLHP) - Cooling	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Packaged Terminal Air Conditioner (PTAC) - Cooling	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0.0%	20.0%	0.0%

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Cooking									
HE Steamer	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
HE Combination Oven	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%
HE Convection Ovens	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%
HE Holding Cabinet	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
HE Fryer	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%	23.0%
HE Griddle	19.0%	19.0%	19.0%	19.0%	19.0%	19.0%	19.0%	19.0%	19.0%
Induction Cooktops	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%
Lighting									
Lamp & Ballast Retrofit (HPT8 Replacing T12)	26.1%	28.2%	27.5%	27.7%	15.8%	30.4%	19.5%	29.1%	26.1%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	19.6%	21.2%	20.7%	20.8%	11.8%	22.8%	14.7%	21.8%	19.6%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	19.6%	21.2%	20.7%	20.8%	11.8%	22.8%	14.7%	21.8%	19.6%
Fluorescent Fixture with Reflectors	19.6%	21.2%	20.7%	20.8%	11.8%	22.8%	14.7%	21.8%	19.6%
T5 HP replacing T12	26.1%	28.2%	27.5%	27.7%	15.8%	30.4%	19.5%	29.1%	26.1%
LED Exterior Flood and Spotlight	6.0%	2.3%	4.1%	3.8%	6.9%	2.7%	7.9%	3.8%	4.0%
Parking Garage LED	0.0%	0.1%	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%
LED Exit Sign	0.9%	0.9%	0.9%	0.9%	0.8%	0.9%	0.8%	0.9%	0.9%
LED Traffic Signals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LED Pedestrian Signals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light Tube	4.3%	4.7%	4.4%	4.5%	4.2%	4.7%	3.9%	4.5%	4.5%
High Intensity Fluorescent Fixture (replacing HID)	1.0%	0.7%	1.1%	0.7%	1.1%	0.3%	0.8%	0.4%	0.9%
42W 8 lamp Hi Bay CFL	1.0%	0.7%	1.1%	0.7%	1.1%	0.3%	0.8%	0.4%	0.9%
HID Fixture Upgrade - Pulse Start Metal Halide	1.0%	0.7%	1.1%	0.7%	1.1%	0.3%	0.8%	0.4%	0.9%
Induction Fluorescent	1.0%	0.7%	1.1%	0.7%	1.1%	0.3%	0.8%	0.4%	0.9%
CFL Fixture	0.6%	1.3%	0.4%	0.9%	6.7%	0.2%	3.1%	0.3%	1.6%
CFL Screw-in	0.6%	1.3%	0.4%	0.9%	6.7%	0.2%	3.1%	0.3%	1.6%
LED Screw In	0.5%	1.0%	0.3%	0.7%	5.2%	0.2%	2.5%	0.3%	1.3%
LED Fuel Pump Canopy Fixture	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.8%	0.0%	0.1%
CFL Flood	0.6%	1.3%	0.4%	0.9%	6.7%	0.2%	3.1%	0.3%	1.6%
LED Downlight	0.5%	1.0%	0.3%	0.7%	5.2%	0.2%	2.5%	0.3%	1.3%
LED Replacing Halogen Incandescent	0.5%	1.0%	0.3%	0.7%	5.2%	0.2%	2.5%	0.3%	1.3%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	26.1%	28.2%	27.5%	27.7%	15.8%	30.4%	19.5%	29.1%	26.1%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	19.6%	21.2%	20.7%	20.8%	11.8%	22.8%	14.7%	21.8%	19.6%
LED Roadway Lights	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LED Outdoor Area Fixture (Parking Light or Street Light)	3.0%	1.2%	2.1%	1.9%	3.5%	1.3%	3.9%	1.9%	2.0%
LED Pin Based Lamp	0.5%	1.0%	0.3%	0.7%	5.2%	0.2%	2.5%	0.3%	1.3%
LED Wallpack	3.0%	1.2%	2.1%	1.9%	3.5%	1.3%	3.9%	1.9%	2.0%
CFL Exterior Lighting	3.0%	1.1%	1.9%	1.7%	3.1%	1.3%	3.8%	1.9%	1.9%
CFL Screw in Specialty	0.6%	1.3%	0.4%	0.9%	6.7%	0.2%	3.1%	0.3%	1.6%
LED Specialty	0.5%	1.0%	0.3%	0.7%	5.2%	0.2%	2.5%	0.3%	1.3%
Illuminated Signs to LED	0.0%	0.7%	0.7%	0.7%	0.1%	0.1%	3.4%	0.0%	0.7%
LED Lighting in Refrigeration	0.0%	1.0%	0.3%	0.7%	5.2%	0.2%	2.5%	0.3%	1.3%
Lighting Controls									

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Controls for HID (Hi/Lo)	1.0%	0.7%	1.1%	0.7%	1.1%	0.3%	0.8%	0.4%	0.9%
Controls for H.I.F.	2.9%	2.2%	3.3%	2.1%	3.2%	0.9%	2.5%	1.3%	2.5%
Daylight Dimming	69.1%	84.6%	73.7%	79.6%	47.3%	91.1%	54.0%	82.8%	76.6%
Daylight Dimming - New Construction	69.1%	84.6%	73.7%	79.6%	47.3%	91.1%	54.0%	82.8%	76.6%
15% More Efficient Design - New Construction	85.1%	93.2%	88.9%	90.1%	83.0%	93.3%	76.9%	90.5%	89.5%
30% More Efficient Design - New Construction	85.1%	93.2%	88.9%	90.1%	83.0%	93.3%	76.9%	90.5%	89.5%
Remote Mounted Occupancy Sensor	39.2%	42.3%	41.3%	41.6%	23.7%	45.6%	29.3%	43.7%	39.2%
Switch Mounted Occupancy Sensor	39.2%	42.3%	41.3%	41.6%	23.7%	45.6%	29.3%	43.7%	39.2%
Central Lighting Control	85.1%	93.2%	88.9%	90.1%	83.0%	93.3%	76.9%	90.5%	89.5%
Switching Controls for Multilevel Lighting (Non-HID)	78.4%	84.6%	82.6%	83.2%	47.3%	91.1%	58.6%	87.4%	78.3%
Lighting Power Density - Exceed Code by 10%	85.1%	93.2%	88.9%	90.1%	83.0%	93.3%	76.9%	90.5%	89.5%
Stairwell Bi-Level Control	3.9%	4.2%	4.0%	4.1%	3.8%	4.2%	3.5%	4.1%	4.1%
Occupancy Sensors for LED Refrigerator Lighting	0.9%	1.0%	0.9%	0.9%	0.9%	1.0%	0.8%	0.9%	0.9%
Refrigeration									
Vending Miser for Soft Drink Vending Machines	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
Refrigerated Case Covers	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%
Refrigeration Economizer	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Commercial Ice-makers	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Evaporator Fan Motor Controls on S-P motors	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Evaporator Fan Motor Controls on PSC motors	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Evaporator Fan Motor Controls on ECM motors	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
H.E. Evaporative Fan Motors	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Zero-Energy Doors	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Door Heater Controls	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Discus and Scroll Compressors	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Floating Head Pressure Control	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
ENERGY STAR Commercial Solid Door Refrigerators	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
ENERGY STAR Commercial Solid Door Freezers	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
ENERGY STAR Commercial Glass Door Refrigerators	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
ENERGY STAR Commercial Glass Door Freezers	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Strip Curtains	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
Efficient Refrigeration Condenser	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Door Gaskets - Cooler and Freezer	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
Reach-in Refrigerated display case door retrofit	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%
Refrigeration Savings due to Lighting Savings	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
ECM case fan motors	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%

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Efficient low-temp compressor	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Automatic High Speed Doors - between freezer and cooler	1.0%	1.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Refrigerant charging correction	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Compressed Air									
Efficient Air Compressors	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Automatic Drains	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cycling Dryers	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Pressure Drop-Filters	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Air-Entraining Air Nozzles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Receiver Capacity Addition	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Barrel Wraps Inj Mold and Extruders	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pellet Dryer Tanks and Ducts	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compressed Air Audits & Leak Repair	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compressed Air Pressure Flow Controller replacing no flow controller	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
High Efficiency Air Dryers	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Air Compressor Outdoor Air Intake	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Variable Displacement Air Compressor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Space Heating									
High Efficiency Heat Pump	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Ground Source Heat Pump - Heating	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Ductless (mini split) - Heating	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
High Efficiency Pumps	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
VFD Pump	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
ECM motors on furnaces	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Water Loop Heat Pump (WLHP) - Heating	25.0%	25.0%	25.0%	25.0%	20.0%	20.0%	25.0%	20.0%	25.0%
Packaged Terminal Air Conditioner (PTAC) - Heating	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	0.0%	20.0%	100.0%
Other									
Electrically Commutated Plug Fans in data centers	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
NEMA Premium Transformer, single-	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
NEMA Premium Transformer, three-phase	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Commercial Clothes washers - Non-Water Heating Savings	0.0%	0.0%	1.0%	0.0%	1.0%	3.4%	0.0%	1.0%	1.0%
Vendor Miser for Non-Refrig Equipment	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Optimized Snow and Ice Melt Controls	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Engine Block Heater Timer	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

Michigan Commercial Measure Database - Electric

Convertible Factor:
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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Computers & Office Equipment									
Energy Star Compliant Single Door Refrigerator	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	60%	60%	60%	60%	60%	60%	60%	60%	60%
PC Network Energy Management Controls replacing no central control	80%	80%	80%	80%	80%	80%	80%	80%	80%
EZ Save Monitor Power Management Software	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Star UPS	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water Heating									
Heat Pump Water Heater	25%	25%	85%	85%	85%	85%	85%	85%	85%
Booster Water Heater	25%	25%	90%	90%	90%	90%	90%	90%	90%
Point of Use Water Heating	25%	25%	80%	80%	80%	80%	80%	80%	80%
Solar Water Heating System	34%	34%	34%	34%	34%	34%	34%	34%	34%
High Efficiency Electric Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low Flow Pre-Rinse Spray Nozzle	90%	90%	90%	90%	90%	90%	90%	90%	90%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, Low Temp, Elec Heat	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, Low Temp, Gas Heat	95%	95%	95%	95%	95%	95%	95%	95%	95%
Ozone Commercial laundry System	90%	90%	90%	90%	90%	90%	90%	90%	90%
Low Flow Faucet Aerator	90%	90%	90%	90%	90%	90%	90%	90%	90%
Low Flow Showerhead	90%	90%	90%	90%	90%	90%	90%	90%	90%
Hot Water (DHW) Pipe Insulation	50%	50%	50%	50%	50%	50%	50%	50%	50%
Tank Insulation (electric)	50%	50%	50%	50%	50%	50%	50%	50%	50%
Drain water Heat Recovery Water Heater	39%	39%	39%	39%	39%	39%	39%	39%	39%
Hot Water Circulation Pump Time-Clock	10%	5%	80%	10%	20%	80%	80%	15%	5%
Refrigeration Heat Recovery	0%	0%	10%	0%	30%	30%	70%	30%	0%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	100%	100%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	100%	100%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	100%	100%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	100%	100%	99%	99%	99%	99%	99%	99%	99%
Efficient Hot Water Pump	85%	85%	85%	85%	85%	85%	85%	85%	85%
Pools									

Michigan Commercial Measure Database - Electric

Convertible Factor:
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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Energy Efficient Pool Pump with controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Solar Pool Heating	34%	34%	34%	34%	34%	34%	34%	34%	34%
Heat Pump Pool Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%
High efficiency spas/hot tubs	100%	100%	100%	100%	100%	100%	100%	100%	100%
Building Envelope									
Integrated Building Design	39%	39%	95%	95%	95%	95%	95%	95%	95%
Energy Efficient Windows	75%	75%	75%	75%	75%	75%	75%	75%	75%
Cool Roofing	75%	75%	75%	75%	75%	75%	75%	75%	75%
Ceiling Insulation R-11 to R-42	69%	48%	50%	54%	87%	78%	86%	74%	57%
Below Grade Insulation	14%	14%	14%	14%	14%	14%	14%	14%	14%
Wall Insulation R-7.5 to R13	100%	100%	100%	100%	100%	100%	100%	100%	100%
Roof Insulation R-11 to R-24	31%	52%	50%	46%	13%	22%	14%	26%	43%
Ventilation									
Enthalpy Economizer	86%	86%	86%	86%	86%	86%	86%	86%	86%
Demand-Controlled Ventilation	67%	67%	67%	67%	67%	67%	67%	67%	67%
Variable Speed Drive Control, 15 HP	92%	92%	92%	92%	92%	92%	92%	92%	92%
Variable Speed Drive Control, 5 HP	92%	92%	92%	92%	92%	92%	92%	92%	92%
Variable Speed Drive Control, 40 HP	92%	92%	92%	92%	92%	92%	92%	92%	92%
Improved Duct Sealing	75%	75%	75%	75%	75%	75%	75%	75%	75%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	75%	75%	75%	75%	75%	75%	75%	75%	75%
Destratification Fan	90%	90%	90%	90%	90%	90%	90%	90%	90%
Controlled Ventilation Optimization	67%	67%	67%	67%	67%	67%	67%	67%	67%
High Performance Air Filters	95%	95%	95%	95%	95%	95%	95%	95%	95%
Space Cooling - Chillers									
Air-Cooled Recip Chiller	0%	0%	0%	100%	0%	100%	0%	0%	0%
Air-Cooled Screw Chiller	0%	0%	0%	100%	0%	100%	0%	0%	0%
Water-Cooled Centrifugal Chiller < 150 ton	0%	0%	0%	100%	0%	100%	0%	0%	0%
Water-Cooled Centrifugal Chiller 150 - 300 ton	0%	0%	0%	100%	0%	100%	0%	0%	0%
Water-Cooled Centrifugal Chiller > 300 ton	0%	0%	0%	100%	0%	100%	0%	0%	0%
Water-Cooled Screw Chiller < 150 ton	0%	0%	0%	80%	0%	80%	0%	0%	0%
Water-Cooled Screw Chiller 150 - 300 ton	0%	0%	0%	95%	0%	95%	0%	0%	0%
Water-Cooled Screw Chiller > 300 ton	0%	0%	0%	100%	0%	100%	0%	0%	0%
Chiller Tune Up/Diagnostics - 300 ton	0%	0%	0%	100%	0%	100%	0%	0%	0%
Chiller Tune Up/Diagnostics - 500 ton	0%	0%	0%	100%	0%	100%	0%	0%	0%
High Efficiency Pumps	0%	0%	0%	100%	0%	100%	0%	0%	0%
Efficient Chilled Water Pump	0%	0%	0%	100%	0%	100%	0%	0%	0%
Chilled Hot Water Reset	0%	0%	0%	100%	0%	100%	0%	0%	0%
HVAC Controls									
Programmable Thermostats	100%	100%	100%	100%	100%	100%	100%	100%	100%
EMS install	100%	100%	100%	100%	100%	100%	100%	100%	100%
EMS Optimization	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hotel Guest Room Occupancy Control System	0%	0%	0%	0%	90%	0%	0%	0%	0%
Zoning	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Retrocommissioning	54%	54%	54%	54%	54%	54%	54%	54%	54%
Commissioning	71%	71%	71%	71%	71%	71%	71%	71%	71%
Space Cooling - Unitary and Split AC									
High Efficiency AC - Unitary & Split Systems	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ductless (mini split) - Cooling	60%	60%	60%	60%	60%	60%	60%	60%	60%
Ground Source Heat Pump - Cooling	60%	60%	60%	60%	60%	60%	60%	60%	60%
Water Loop Heat Pump (WLHP) - Cooling	60%	60%	60%	60%	60%	60%	60%	60%	60%
Packaged Terminal Air Conditioner (PTAC) - Cooling	0%	0%	0%	0%	100%	100%	0%	100%	0%
Cooking									
HE Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Combination Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Convection Ovens	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Holding Cabinet	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%
Induction Cooktops	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lighting									
Lamp & Ballast Retrofit (HPT8 Replacing T12)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fluorescent Fixture with Reflectors	100%	100%	100%	100%	100%	100%	100%	100%	100%
T5 HP replacing T12	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Exterior Flood and Spotlight	100%	100%	100%	100%	100%	100%	100%	100%	100%
Parking Garage LED	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Traffic Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Pedestrian Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%
Light Tube	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Intensity Fluorescent Fixture (replacing HID)	100%	100%	100%	100%	100%	100%	100%	100%	100%
42W 8 lamp Hi Bay CFL	15%	15%	15%	15%	15%	15%	15%	15%	15%
HID Fixture Upgrade - Pulse Start Metal Halide	100%	100%	100%	100%	100%	100%	100%	100%	100%
Induction Fluorescent	75%	75%	75%	75%	75%	75%	75%	75%	75%
CFL Fixture	15%	15%	15%	15%	15%	15%	15%	15%	15%
CFL Screw-in	85%	75%	85%	85%	85%	75%	85%	85%	83%
LED Screw In	85%	75%	85%	85%	85%	75%	85%	85%	83%
LED Fuel Pump Canopy Fixture	15%	15%	15%	15%	15%	15%	15%	15%	15%
CFL Flood	10%	10%	10%	10%	10%	10%	10%	10%	10%
LED Downlight	10%	10%	10%	10%	10%	10%	10%	10%	10%
LED Replacing Halogen Incandescent	10%	10%	10%	10%	10%	10%	10%	10%	10%

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
New Fluorescent Fixtures T5/HP T8 (replacing T12)	100%	100%	100%	100%	100%	100%	100%	100%	100%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Roadway Lights	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Outdoor Area Fixture (Parking Light or Street Light)	15%	15%	15%	15%	15%	15%	15%	15%	15%
LED Pin Based Lamp	85%	75%	85%	85%	85%	75%	85%	85%	83%
LED Wallpack	100%	100%	100%	100%	100%	100%	100%	100%	100%
CFL Exterior Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%
CFL Screw in Specialty	85%	75%	85%	85%	85%	75%	85%	85%	83%
LED Specialty	100%	100%	100%	100%	100%	100%	100%	100%	100%
Illuminated Signs to LED	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Lighting in Refrigeration	90%	90%	90%	0%	90%	90%	90%	90%	90%
Lighting Controls									
Controls for HID (Hi/Lo)	59%	25%	59%	73%	25%	73%	59%	71%	71%
Controls for H.I.F.	90%	10%	10%	40%	75%	75%	0%	90%	80%
Daylight Dimming	35%	35%	35%	35%	35%	35%	35%	35%	35%
Daylight Dimming - New Construction	95%	95%	95%	95%	95%	95%	95%	95%	95%
15% More Efficient Design - New Construction	90%	10%	10%	20%	10%	10%	0%	50%	20%
30% More Efficient Design - New Construction	90%	10%	10%	20%	10%	10%	0%	50%	20%
Remote Mounted Occupancy Sensor	90%	10%	10%	20%	10%	10%	0%	50%	20%
Switch Mounted Occupancy Sensor	90%	10%	10%	20%	10%	10%	0%	50%	20%
Central Lighting Control	90%	10%	10%	20%	10%	10%	0%	50%	20%
Switching Controls for Multilevel Lighting (Non-HID)	90%	10%	10%	20%	10%	10%	0%	50%	20%
Lighting Power Density - Exceed Code by 10%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stairwell Bi-Level Control	100%	100%	100%	100%	100%	100%	100%	100%	100%
Occupancy Sensors for LED Refrigerator Lighting	90%	90%	90%	0%	90%	90%	90%	90%	90%
Refrigeration									
Vending Miser for Soft Drink Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerated Case Covers	75%	75%	75%	75%	75%	75%	75%	75%	75%
Refrigeration Economizer	75%	75%	75%	75%	75%	75%	75%	75%	75%
Commercial Ice-makers	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on S-P motors	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on PSC motors	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on ECM motors	75%	75%	75%	75%	75%	75%	75%	75%	75%
H.E. Evaporative Fan Motors	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Zero-Energy Doors	100%	100%	100%	100%	100%	100%	100%	100%	100%
Door Heater Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Discus and Scroll Compressors	100%	100%	100%	100%	100%	100%	100%	100%	100%
Floating Head Pressure Control	18%	18%	75%	18%	18%	18%	50%	18%	18%
ENERGY STAR Commercial Solid Door Refrigerators	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Solid Door Freezers	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Glass Door Refrigerators	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Glass Door Freezers	100%	100%	100%	100%	100%	100%	100%	100%	100%
Strip Curtains	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient Refrigeration Condenser	100%	100%	100%	100%	100%	100%	100%	100%	100%
Door Gaskets - Cooler and Freezer	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reach-in Refrigerated display case door retrofit	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration Savings due to Lighting Savings	100%	100%	100%	100%	100%	100%	100%	100%	100%
ECM case fan motors	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient low-temp compressor	100%	100%	100%	100%	100%	100%	100%	100%	100%
Automatic High Speed Doors - between freezer and cooler	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerant charging correction	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compressed Air									
Efficient Air Compressors	100%	100%	0%	0%	0%	0%	0%	0%	100%
Automatic Drains	100%	100%	0%	0%	0%	0%	0%	0%	100%
Cycling Dryers	100%	100%	0%	0%	0%	0%	0%	0%	100%
Low Pressure Drop-Filters	100%	100%	0%	0%	0%	0%	0%	0%	100%
Air-Entraining Air Nozzles	100%	100%	0%	0%	0%	0%	0%	0%	100%
Receiver Capacity Addition	100%	100%	0%	0%	0%	0%	0%	0%	100%
Barrel Wraps Inj Mold and Extruders	100%	100%	0%	0%	0%	0%	0%	0%	100%
Pellet Dryer Tanks and Ducts	100%	100%	0%	0%	0%	0%	0%	0%	100%
Compressed Air Audits & Leak Repair	100%	100%	0%	0%	0%	0%	0%	0%	100%
Compressed Air Pressure Flow Controller replacing no flow controller	100%	100%	0%	0%	0%	0%	0%	0%	100%
High Efficiency Air Dryers	100%	100%	0%	0%	0%	0%	0%	0%	100%
Air Compressor Outdoor Air Intake	100%	100%	0%	0%	0%	0%	0%	0%	100%
Variable Displacement Air Compressor	100%	100%	0%	0%	0%	0%	0%	0%	100%
Space Heating									
High Efficiency Heat Pump	77%	77%	77%	67%	77%	60%	77%	60%	77%
Ground Source Heat Pump - Heating	75%	75%	75%	75%	75%	75%	75%	75%	75%
Ductless (mini split) - Heating	60%	60%	60%	60%	60%	60%	60%	60%	60%
High Efficiency Pumps	100%	100%	100%	100%	100%	100%	100%	100%	100%
VFD Pump	80%	80%	80%	80%	80%	80%	80%	80%	80%
ECM motors on furnaces	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Electric

Convertible Factor:
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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Loop Heat Pump (WLHP) - Heating	75%	75%	75%	75%	75%	75%	75%	75%	75%
Packaged Terminal Air Conditioner (PTAC) - Heating	0%	0%	0%	0%	100%	100%	0%	100%	0%
Other									
Electrically Commutated Plug Fans in data centers	100%	100%	100%	100%	100%	100%	100%	100%	100%
NEMA Premium Transformer, single-phase	93%	93%	93%	93%	93%	93%	93%	93%	93%
NEMA Premium Transformer, three-phase	93%	93%	93%	93%	93%	93%	93%	93%	93%
Commercial Clothes washers - Non-Water Heating Savings	99%	99%	99%	99%	99%	99%	99%	99%	99%
Vendor Miser for Non-Refrig Equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%
Optimized Snow and Ice Melt Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Engine Block Heater Timer	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	Direct Utility Test	Total Resource Cost Test
Computers & Office Equipment							
Energy Star Compliant Single Door Refrigerator	270	2	per unit	$250	12	1.3	0.7
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	858	2	per unit	$300	4	17.4	8.8
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	17	1	per unit	$40	5	0.2	0.1
PC Network Energy Management Controls replacing no central control	135	1	per PC	$12	4	4.0	2.3
EZ Save Monitor Power Management Software	30	1	per unit	$26	1.7	0.9	0.5
Energy Star UPS	105	2	per kW	$1,303	10	0.1	0.1
Water Heating							
Heat Pump Water Heater	154278	2	per unit	$9,000	15	31.9	17.4
Booster Water Heater	625	2	per unit	$951	10	0.9	0.5
Point of Use Water Heating	345	1	per unit	$665	10	0.7	0.4
Solar Water Heating System	19836	1	per unit	$26,400	20	1.7	1.1
High Efficiency Electric Water Heater	279	2	per unit	$70	13	6.9	3.8
Low Flow Pre-Rinse Spray Nozzle	1396	1	per unit	$35	5	20.7	14.8
ES Dishwasher, High Temp, Elec Heat, Elec Booster	12914	2	per unit	$977.50	16.3	22.5	12.5
ES Dishwasher, High Temp, Gas Heat, Elec Booster	5777	2	per unit	$978	16.3	10.1	5.6
ES Dishwasher, High Temp, Gas Heat, Gas Booster	1775	2	per unit	$1,263	18.3	2.6	1.4
ES Dishwasher, Low Temp, Elec Heat	10520	2	per unit	$228	15	74.4	41.2
ES Dishwasher, Low Temp, Gas Heat	584	2	per unit	$228	20	5.0	2.8
Ozone Commercial laundry System	194220	1	per unit	$65,000	7	3.2	1.7
Low Flow Faucet Aerator	903	1	per unit	$3	10	376.5	280.0
Low Flow Showerhead	527	1	per unit	$25	10	22.0	16.4
Hot Water (DHW) Pipe Insulation	21	1	linear ft	$6	20	12.3	6.5
Tank Insulation (electric)	468	1	sq ft	$2	15	298.5	167.5
Drain water Heat Recovery Water Heater	251	2	per unit	$350	20	1.7	0.9
Hot Water Circulation Pump Time-Clock	1673	1	per unit	$132	10	18.0	9.8
Refrigeration Heat Recovery	1825	1	per unit	$2,861	15	1.2	0.7
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	126	2	per unit	$540	7	0.1	0.1
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	793	2	per unit	$540	7	0.7	0.4
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	627	2	per unit	$540	7	0.6	1.1
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	1293	2	per unit	$540	7	1.2	1.6
Efficient Hot Water Pump	533	1	per hp	$33	15	26.2	14.5
Pools							
Energy Efficient Pool Pump with controls	1235	2	per unit	$450	10	8.8	4.6
Solar Pool Heating	28059	1	per unit	$4,750	20	13.0	7.1
Heat Pump Pool Heater	5732	1	per unit	$4,000	10	3.1	1.6
High efficiency spas/hot tubs	375	2	per unit	$300	10	2.0	1.1
Building Envelope							
Integrated Building Design	322775	2	per unit	$166,226	30	12.6	6.6
Energy Efficient Windows	342	2	100 sq ft	$2,250.00	20	1.0	0.6
Cool Roofing	91	2	1,000 sq ft roof area	$664.88	20	0.4	0.2
Ceiling Insulation R-11 to R-42	146	1	1,000 sq ft roof area	$600.00	20	3.9	2.2
Below Grade Insulation	528	1	1,000 sq ft bsmt wall area	$273.35	20	2.5	1.5
Wall Insulation R-7.5 to R13	680	1	1,000 sq ft wall area	$100.00	20	160.0	89.0
Roof Insulation R-11 to R-24	76	1	1,000 sq ft roof area	$1,000.00	20	1.2	0.6
Ventilation							
Enthalpy Economizer	118	2	per ton	$75.00	10	1.0	0.6
Demand-Controlled Ventilation	161	2	1,000 sq ft cond floor area	$75.00	15	7.1	3.7
Variable Speed Drive Control, 15 HP	10062	1	per unit	$2,339.33	10	2.6	1.6

Michigan Commercial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	Direct Utility Test	Total Resource Cost Test
Variable Speed Drive Control, 5 HP	3354	1	per unit	$779.78	10	2.6	1.6
Variable Speed Drive Control, 40 HP	26831	1	per unit	$6,238.21	10	2.6	1.6
Improved Duct Sealing	26	2	per ton	$107.91	18	1.5	0.8
Electronically-Commutated Permanent Magnet Motors (ECPMs)	1234	2	per motor	$78.00	15	21.4	12.1
Destratification Fan	22	1	1,000 sq ft cond floor area	$375.00	15	0.1	0.0
Controlled Ventilation Optimization	1208	2	linear ft of sash	$985.67	12.8	2.6	1.4
High Performance Air Filters	908	2	1,000 cfm	$70.00	3	5.2	2.9
Space Cooling - Chillers							
Air-Cooled Recip Chiller	337	2	per ton	$123.90	20	8.4	4.5
Air-Cooled Screw Chiller	332	2	per ton	$127.73	20	8.0	4.3
Water-Cooled Centrifugal Chiller < 150 ton	252	2	per ton	$112.38	20	6.2	3.3
Water-Cooled Centrifugal Chiller 150 - 300 ton	223	2	per ton	$90.15	20	6.9	3.7
Water-Cooled Centrifugal Chiller > 300 ton	207	2	per ton	$73.46	20	7.7	4.2
Water-Cooled Screw Chiller < 150 ton	251	2	per ton	$113.28	20	6.6	3.5
Water-Cooled Screw Chiller 150 - 300 ton	227	2	per ton	$88.03	20	7.7	4.1
Water-Cooled Screw Chiller > 300 ton	203	2	per ton	$67.81	20	8.9	4.8
Chiller Tune Up/Diagnostics - 300 ton	137	1	per ton	$2.83	5	58.2	22.8
Chiller Tune Up/Diagnostics - 500 ton	137	1	per ton	$2.83	5	58.2	22.8
High Efficiency Pumps	201	1	per hp	$96.79	15	3.8	2.1
Efficient Chilled Water Pump	764	1	per hp	$33.20	15	35.0	19.5
Chilled Hot Water Reset	113	1	per ton	$5.27	8.3	33.0	18.9
HVAC Controls							
Programmable Thermostats	273	1	1,000 sq ft cond floor area	$49.71	9	30.4	17.1
EMS install	543	1	1,000 sq ft cond floor area	$7.07	15	84.4	49.9
EMS Optimization	1720	1	1,000 sq ft cond floor area	$17.00	16.7	196.8	110.9
Hotel Guest Room Occupancy Control System	676	2	per unit	$250.00	8	3.2	1.8
Zoning	375	2	1,000 sq ft cond floor area	$500.00	15	1.4	0.8
Retrocommissioning	5	1	sq ft	$0.30	7	7.5	4.5
Commissioning	5	1	sq ft	$1.16	7	1.7	1.0
Space Cooling - Unitary & Split AC							
High Efficiency AC - Unitary & Split Systems	54	2	per ton	$105.82	15	3.1	1.6
Ductless (mini split) - Cooling	251	1	per ton	$801.85	15	1.0	0.5
Ground Source Heat Pump - Cooling	1384	2	per ton	$3,524.89	15	0.5	0.6
Water Loop Heat Pump (WLHP) - Cooling	36	2	per ton	$25.11	15	3.3	1.8
Packaged Terminal Air Conditioner (PTAC) - Cooling	49	2	per ton	$220.96	15	1.1	0.6
Cooking							
HE Steamer	12914	2	per unit	$4,150	12	5.4	3.3
HE Combination Oven	18432	2	per unit	$16,884	12	1.9	1.0
HE Convection Ovens	1879	2	per unit	$2,713	12	1.2	0.6
HE Holding Cabinet	3299	2	per unit	$1,783	12	2.8	1.5
HE Fryer	1166	2	per unit	$4,708	12	0.4	0.2
HE Griddle	2594	2	per unit	$3,604	12	1.2	0.7
Induction Cooktops	784	2	per unit	$3,000	11	4.4	2.2
Lighting							
Lamp & Ballast Retrofit (HPT8 Replacing T12)	81	2	per fixture	$51	12	2.8	1.5
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	37	2	per fixture	$46	12	1.4	0.8
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	63	2	per fixture	$38	10.7	2.8	1.5
Fluorescent Fixture with Reflectors	149	2	per fixture	$86	13	2.9	1.6
T5 HP replacing T12	81	2	per fixture	$80	12	1.8	1.0
LED Exterior Flood and Spotlight	550	2	per fixture	$460	11.3	0.9	0.5
Parking Garage LED	1054	2	per fixture	$567	12	2.2	1.2
LED Exit Sign	201	2	per fixture	$25	15	11.4	8.9
LED Traffic Signals	275	2	per lamp	$50	6	6.6	3.5
LED Pedestrian Signals	150	2	per lamp	$100	8	2.2	1.2

Michigan Commercial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	Direct Utility Test	Total Resource Cost Test
Light Tube	361	2	per fixture	$500	14	1.5	0.8
High Intensity Fluorescent Fixture (replacing HID)	684	2	per fixture	$179	12.2	6.6	3.6
42W 8 lamp Hi Bay CFL	345	2	per fixture	$395	12	1.5	0.8
HID Fixture Upgrade - Pulse Start Metal Halide	769	2	per fixture	$175	13	8.0	4.3
Induction Fluorescent	47	2	Watt Reduced	$22	12.5	3.1	1.7
CFL Fixture	342	2	per fixture	$45	12	13.6	7.4
CFL Screw-in	213	2	per lamp	$5	2	15.1	8.2
LED Screw In	156	2	per unit	$37	15	10.4	6.7
LED Fuel Pump Canopy Fixture	195	2	per fixture	$343	21	1.5	0.8
CFL Flood	202	2	per lamp	$6	2	12.9	7.0
LED Downlight	121	2	per fixture	$30	10.3	6.3	4.0
LED Replacing Halogen Incandescent	187	2	per lamp	$26	8	9.3	5.2
New Fluorescent Fixtures T5/HP T8 (replacing T12)	48	2	per fixture	$88	15	1.3	0.7
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	134	2	per fixture	$80	15	3.5	1.9
LED Roadway Lights	484	2	per fixture	$310	18	3.8	2.1
LED Outdoor Area Fixture (Parking Light or Street Light)	768	2	per fixture	$643	13	2.3	1.3
LED Pin Based Lamp	171	2	per unit	$35	15	12.4	6.6
LED Wallpack	722	2	per unit	$250	15	6.5	3.5
CFL Exterior Lighting	1021	2	per fixture	$433	12	1.7	1.0
CFL Screw in Specialty	120	2	per lamp	$3	2	35.1	18.1
LED Specialty	111	2	per lamp	$29	8.8	5.0	2.7
Illuminated Signs to LED	6	2	per watt reduced	$4	9.5	1.3	0.8
LED Lighting in Refrigeration	460	2	per door	$300	16	2.0	1.1
Lighting Controls							
Controls for HID (Hi/Lo)	149	1	per fixture	$400	10	0.6	0.3
Controls for H.I.F.	195	2	per unit	$74	10	4.4	2.4
Daylight Dimming	12100	1	10,000 sq ft	$3,000	12	7.8	4.2
Daylight Dimming - New Construction	14800	1	10,000 sq ft	$3,000	12	9.1	4.9
15% More Efficient Design - New Construction	27000	2	building	$4,000	15	13.6	7.4
30% More Efficient Design - New Construction	54000	2	building	$8,000	15	13.6	7.4
Remote Mounted Occupancy Sensor	994	2	per sensor	$200	10	3.7	2.2
Switch Mounted Occupancy Sensor	751	2	per sensor	$463	10	1.2	0.7
Central Lighting Control	11500	2	10,000 sq ft	$2,700	12	7.6	4.1
Switching Controls for Multilevel Lighting (Non-HID)	8000	2	10,000 sq ft	$3,000	12	5.1	2.8
Lighting Power Density - Exceed Code by 10%	5586	2	per kW reduced	$220	12	29.6	16.7
Stairwell Bi-Level Control	4809	2	per kW controlled	$825	9	5.3	3.0
Occupancy Sensors for LED Refrigerator Lighting	195	2	per door	$20	16	12.7	7.2
Refrigeration							
Vending Miser for Soft Drink Vending Machines	800	1	per unit	$216	10	3.0	1.7
Refrigerated Case Covers	2900	1	per unit	$150	4	9.4	5.2
Refrigeration Economizer	167	1	per ton	$127	15	1.0	0.6
Commercial Ice-makers	926	2	per unit	$1,367	12	0.8	0.5
Evaporator Fan Motor Controls on S-P motors	1155	1	per controller	$300	5	2.2	1.2
Evaporator Fan Motor Controls on PSC motors	796	1	per controller	$300	5	1.5	0.8
Evaporator Fan Motor Controls on ECM motors	330	1	per controller	$300	5	0.6	0.3
H.E. Evaporative Fan Motors	773	1	per unit	$60	15	18.2	10.2
Zero-Energy Doors	1800	2	per unit	$290	10	5.7	3.3
Door Heater Controls	1489	1	per door	$250	12.5	4.8	2.9
Discus and Scroll Compressors	1500	2	per unit	$825	13	2.6	1.4
Floating Head Pressure Control	1264	1	per ton	$80	15	12.7	7.7
ENERGY STAR Commercial Solid Door Refrigerators	666	2	per unit	$600	12	1.3	0.7
ENERGY STAR Commercial Solid Door Freezers	1737	2	per unit	$450	12	4.6	2.6
ENERGY STAR Commercial Glass Door Refrigerators	754	2	per unit	$600	12	1.5	0.8
ENERGY STAR Commercial Glass Door Freezers	3671	2	per unit	$450	12	9.8	5.5
Strip Curtains	270	1	sq ft	$8	4	16.7	9.4

Michigan Commercial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	Direct Utility Test	Total Resource Cost Test
Efficient Refrigeration Condenser	120	2	per ton	$35	15	20.7	10.6
Door Gaskets - Cooler and Freezer	98	2	linear ft	$2	4	21.0	11.7
Reach-in Refrigerated display case door retrofit	1014	1	linear ft	$670	12	3.0	1.6
Refrigeration Savings due to Lighting Savings	1	2	per lighting Watt reduced	$0	12	2.3	1.2
ECM case fan motors	824	2	per motor	$78	15	14.3	8.1
Efficient low-temp compressor	283	2	per unit	$552	13	0.8	0.4
Automatic High Speed Doors - between freezer and cooler	968	2	sq ft	$150	12	7.7	4.3
Refrigerant charging correction	78	2	per ton	$10	2	8.5	4.4
Compressed Air							
Efficient Air Compressors	1390	2	per HP	$100	15	17.0	9.7
Automatic Drains	2097	2	per drain	$355	5	3.8	2.1
Cycling Dryers	13	2	per SCFM	$20	10	0.8	0.4
Low Pressure Drop-Filters	65	1	per hp	$22	10	3.4	1.9
Air-Entraining Air Nozzles	21143	1	per nozzle	$77	15	661.0	354.4
Receiver Capacity Addition	9159	1	per unit	$2,000	10	7.3	3.9
Barrel Wraps Inj Mold and Extruders	1210	1	sq ft	$80	5	13.2	7.1
Pellet Dryer Tanks and Ducts	185	1	linear foot	$56	5	2.8	1.5
Compressed Air Audits & Leak Repair	624	1	per SCFM	$8	1	11.4	6.3
Compressed Air Pressure Flow Controller replacing no flow controller	74	1	per HP	$25	10	3.4	1.9
High Efficiency Air Dryers	47	2	per SCFM	$35	14.4	2.0	1.1
Air Compressor Outdoor Air Intake	110	1	per hp	$5	20	40.9	22.7
Variable Displacement Air Compressor	442	1	per hp	$340	13	1.8	1.0
Space Heating							
High Efficiency Heat Pump	79	2	per ton	$156	15	2.6	1.3
Ground Source Heat Pump - Heating	1384	2	per ton	$3,525	15	0.6	0.6
Ductless (mini split) - Heating	251	1	per ton	$802	15	1.0	0.5
High Efficiency Pumps	201	2	per hp	$97	15	4.0	2.2
VFD Pump	1724	1	per CHW pump hp	$149	10	8.2	4.9
ECM motors on furnaces	720	1	per furnace	$250	20	4.5	2.5
Water Loop Heat Pump (WLHP) - Heating	36	2	per ton	$25	15	3.5	1.9
Packaged Terminal Air Conditioner (PTAC) - Heating	153	2	per ton	$138	15	2.8	1.5
Other							
Electrically Commutated Plug Fans in data centers	1445	2	per fan	$718	15	2.8	1.6
NEMA Premium Transformer, single-phase	7	2	per kVA	$12	30	2.3	1.2
NEMA Premium Transformer, three-phase	10	2	per kVA	$10	30	2.3	1.3
Commercial Clothes washers - Non-Water Heating Savings	235	2	per unit	$98	7	1.2	0.7
Vendor Miser for Non-Refrig Equipment	474	1	per unit	$135	5	1.2	0.7
Optimized Snow and Ice Melt Controls	0	1	sq ft	$0	15	38.4	21.5
Engine Block Heater Timer	576	2	per engine block	$50	5	39.7	20.3

Michigan Commercial Measure Database - Electric

Remaining Factor:
Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Computers & Office Equipment									
Energy Star Compliant Single Door Refrigerator	43%	43%	43%	43%	43%	43%	43%	43%	43%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	72%	72%	72%	72%	72%	72%	72%	72%	72%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	70%	70%	70%	70%	70%	70%	70%	70%	70%
PC Network Energy Management Controls replacing no central control	70%	70%	70%	70%	70%	70%	70%	70%	70%
EZ Save Monitor Power Management Software	55%	55%	55%	55%	55%	55%	55%	55%	55%
Energy Star UPS	61%	61%	61%	61%	61%	61%	61%	61%	61%
Water Heating									
Heat Pump Water Heater	100%	92%	94%	88%	97%	100%	100%	91%	100%
Booster Water Heater	100%	92%	94%	88%	97%	100%	100%	91%	100%
Point of Use Water Heating	100%	92%	94%	88%	97%	100%	100%	91%	100%
Solar Water Heating System	75%	75%	75%	75%	75%	75%	75%	75%	75%
High Efficiency Electric Water Heater	100%	92%	94%	88%	97%	100%	100%	91%	100%
Low Flow Pre-Rinse Spray Nozzle	84%	84%	84%	84%	84%	84%	84%	84%	84%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, Low Temp, Elec Heat	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, Low Temp, Gas Heat	80%	80%	80%	80%	80%	80%	80%	80%	80%
Ozone Commercial laundry System	40%	40%	40%	40%	40%	40%	40%	40%	40%
Low Flow Faucet Aerator	56%	48%	60%	41%	78%	51%	63%	47%	43%
Low Flow Showerhead	100%	100%	100%	100%	84%	100%	93%	86%	100%
Hot Water (DHW) Pipe Insulation	94%	95%	85%	93%	72%	88%	92%	87%	100%
Tank Insulation (electric)	100%	93%	100%	97%	97%	88%	94%	100%	75%
Drain water Heat Recovery Water Heater	94%	90%	100%	94%	100%	88%	97%	100%	100%
Hot Water Circulation Pump Time-Clock	60%	60%	60%	60%	60%	60%	60%	60%	60%
Refrigeration Heat Recovery	99%	99%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%
Efficient Hot Water Pump	47%	47%	47%	47%	47%	47%	47%	47%	47%

Michigan Commercial Measure Database - Electric

Remaining Factor:
Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Pools									
Energy Efficient Pool Pump with controls	83%	83%	83%	83%	83%	83%	83%	83%	83%
Solar Pool Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heat Pump Pool Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%
High efficiency spas/hot tubs	83%	83%	83%	83%	83%	83%	83%	83%	83%
Building Envelope									
Integrated Building Design	83%	83%	83%	83%	83%	83%	83%	83%	83%
Energy Efficient Windows	53%	40%	38%	24%	48%	12%	32%	7%	29%
Cool Roofing	100%	100%	93%	99%	97%	100%	97%	100%	99%
Ceiling Insulation R-11 to R-42	54%	28%	54%	47%	23%	33%	31%	39%	51%
Below Grade Insulation	54%	90%	34%	60%	54%	5%	72%	40%	54%
Wall Insulation R-7.5 to R13	40%	40%	47%	42%	16%	56%	44%	24%	40%
Roof Insulation R-11 to R-24	54%	28%	54%	47%	23%	33%	31%	39%	51%
Ventilation									
Enthalpy Economizer	97%	97%	97%	97%	97%	97%	97%	97%	97%
Demand-Controlled Ventilation	99%	99%	99%	99%	99%	99%	99%	99%	99%
Variable Speed Drive Control, 15 HP	89%	89%	89%	89%	89%	89%	89%	89%	89%
Variable Speed Drive Control, 5 HP	89%	89%	89%	89%	89%	89%	89%	89%	89%
Variable Speed Drive Control, 40 HP	89%	89%	89%	89%	89%	89%	89%	89%	89%
Improved Duct Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	90%	90%	90%	90%	90%	90%	90%	90%	90%
Destratification Fan	93%	93%	93%	93%	93%	93%	93%	93%	93%
Controlled Ventilation Optimization	71%	71%	71%	71%	71%	71%	71%	71%	71%
High Performance Air Filters	40%	40%	40%	40%	40%	40%	40%	40%	40%
Space Cooling - Chillers									
Air-Cooled Recip Chiller	67%	67%	67%	67%	67%	67%	67%	67%	67%
Air-Cooled Screw Chiller	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Centrifugal Chiller < 150 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Centrifugal Chiller 150 - 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Centrifugal Chiller > 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Screw Chiller < 150 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Screw Chiller 150 - 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Screw Chiller > 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%
Chiller Tune Up/Diagnostics - 300 ton	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chiller Tune Up/Diagnostics - 500 ton	0%	0%	0%	0%	0%	0%	0%	0%	0%
High Efficiency Pumps	47%	47%	47%	47%	47%	47%	47%	47%	47%
Efficient Chilled Water Pump	47%	47%	47%	47%	47%	47%	47%	47%	47%
Chilled Hot Water Reset	99%	99%	99%	99%	99%	99%	99%	99%	99%
HVAC Controls									
Programmable Thermostats	82%	82%	82%	82%	82%	82%	82%	82%	82%
EMS install	99%	99%	99%	99%	99%	99%	99%	99%	99%
EMS Optimization	99%	99%	99%	99%	99%	99%	99%	99%	99%

Michigan Commercial Measure Database - Electric

Remaining Factor:
Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Hotel Guest Room Occupancy Control System	0%	0%	0%	0%	100%	0%	0%	0%	0%
Zoning	82%	82%	82%	82%	82%	82%	82%	82%	82%
Retrocommissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%
Commissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%
Space Cooling - Unitary and Split AC									
High Efficiency AC - Unitary & Split Systems	83%	83%	83%	83%	83%	83%	83%	83%	83%
Ductless (mini split) - Cooling	55%	55%	55%	55%	55%	55%	55%	55%	55%
Ground Source Heat Pump - Cooling	83%	83%	83%	83%	83%	83%	83%	83%	83%
Water Loop Heat Pump (WLHP) - Cooling	83%	83%	83%	83%	83%	83%	83%	83%	83%
Packaged Terminal Air Conditioner (PTAC) - Cooling	83%	83%	83%	83%	83%	83%	83%	83%	83%
Cooking									
HE Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Combination Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Convection Ovens	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Holding Cabinet	93%	93%	93%	93%	93%	93%	93%	93%	93%
HE Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Griddle	89%	89%	89%	89%	89%	89%	89%	89%	89%
Induction Cooktops	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lighting									
Lamp & Ballast Retrofit (HPT8 Replacing T12)	81%	86%	52%	83%	87%	39%	70%	38%	54%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	17%	13%	38%	17%	10%	1%	30%	62%	10%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	17%	13%	38%	17%	10%	1%	30%	62%	10%
Fluorescent Fixture with Reflectors	17%	13%	38%	17%	10%	1%	30%	62%	10%
T5 HP replacing T12	81%	86%	52%	83%	87%	39%	70%	38%	54%
LED Exterior Flood and Spotlight	100%	99%	100%	100%	100%	100%	100%	100%	100%
Parking Garage LED	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Exit Sign	32%	42%	21%	39%	34%	33%	42%	63%	38%
LED Traffic Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Pedestrian Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%
Light Tube	100%	97%	93%	99%	94%	94%	92%	94%	100%
High Intensity Fluorescent Fixture (replacing HID)	5%	3%	5%	3%	5%	1%	4%	2%	4%
42W 8 lamp Hi Bay CFL	5%	3%	5%	3%	5%	1%	4%	2%	4%
HID Fixture Upgrade - Pulse Start Metal Halide	5%	3%	5%	3%	5%	1%	4%	2%	4%
Induction Fluorescent	100%	100%	100%	100%	100%	100%	100%	100%	100%
CFL Fixture	83%	88%	75%	86%	85%	80%	83%	73%	83%
CFL Screw-in	83%	88%	75%	86%	85%	80%	83%	73%	83%
LED Screw In	83%	88%	75%	86%	85%	80%	83%	73%	83%
LED Fuel Pump Canopy Fixture	0%	100%	0%	0%	0%	0%	0%	0%	0%

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
CFL Flood	83%	88%	75%	86%	85%	80%	83%	73%	83%
LED Downlight	83%	88%	75%	86%	85%	80%	83%	73%	83%
LED Replacing Halogen Incandescent	83%	88%	75%	86%	85%	80%	83%	73%	83%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	81%	86%	52%	83%	87%	39%	70%	38%	54%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	17%	13%	38%	17%	10%	1%	30%	62%	10%
LED Roadway Lights	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Outdoor Area Fixture (Parking Light or Street Light)	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Pin Based Lamp	83%	88%	75%	86%	85%	80%	83%	73%	83%
LED Wallpack	100%	88%	97%	100%	100%	100%	98%	100%	99%
CFL Exterior Lighting	99%	90%	93%	82%	66%	94%	94%	99%	91%
CFL Screw in Specialty	83%	88%	75%	86%	85%	80%	83%	73%	83%
LED Specialty	83%	88%	75%	86%	85%	80%	83%	73%	83%
Illuminated Signs to LED	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Lighting in Refrigeration	83%	88%	75%	86%	85%	80%	83%	73%	83%
Lighting Controls									
Controls for HID (Hi/Lo)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Controls for H.I.F.	100%	100%	100%	100%	100%	100%	100%	100%	100%
Daylight Dimming	100%	100%	100%	100%	100%	100%	100%	100%	100%
Daylight Dimming - New Construction	100%	100%	100%	100%	100%	100%	100%	100%	100%
15% More Efficient Design - New Construction	63%	89%	89%	89%	89%	89%	89%	89%	89%
30% More Efficient Design - New Construction	100%	89%	89%	89%	89%	89%	89%	89%	89%
Remote Mounted Occupancy Sensor	95%	96%	93%	95%	97%	94%	92%	87%	94%
Switch Mounted Occupancy Sensor	95%	96%	93%	95%	97%	94%	92%	87%	94%
Central Lighting Control	100%	99%	93%	100%	100%	94%	97%	87%	98%
Switching Controls for Multilevel Lighting (Non-HID)	100%	100%	100%	99%	97%	100%	100%	94%	99%
Lighting Power Density - Exceed Code by 10%	62%	29%	36%	66%	31%	61%	32%	31%	43%
Stairwell Bi-Level Control	100%	100%	100%	99%	100%	94%	100%	100%	100%
Occupancy Sensors for LED Refrigerator Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration									
Vending Miser for Soft Drink Vending Machines	95%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerated Case Covers	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration Economizer	69%	69%	69%	69%	69%	69%	69%	69%	69%
Commercial Ice-makers	98%	98%	98%	98%	98%	98%	98%	98%	98%
Evaporator Fan Motor Controls on S-P motors	100%	83%	64%	100%	100%	100%	82%	100%	100%

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Evaporator Fan Motor Controls on PSC motors	100%	83%	64%	100%	100%	100%	82%	100%	100%
Evaporator Fan Motor Controls on ECM motors	100%	83%	64%	100%	100%	100%	82%	100%	100%
H.E. Evaporative Fan Motors	100%	100%	93%	100%	100%	100%	100%	100%	100%
Zero-Energy Doors	96%	96%	96%	96%	96%	96%	96%	96%	96%
Door Heater Controls	77%	77%	77%	77%	77%	77%	77%	77%	77%
Discus and Scroll Compressors	74%	74%	74%	74%	74%	74%	74%	74%	74%
Floating Head Pressure Control	99%	99%	99%	99%	99%	99%	99%	99%	99%
ENERGY STAR Commercial Solid Door Refrigerators	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Solid Door Freezers	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Glass Door Refrigerators	99%	99%	99%	99%	99%	99%	99%	99%	99%
ENERGY STAR Commercial Glass Door Freezers	99%	99%	99%	99%	99%	99%	99%	99%	99%
Strip Curtains	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient Refrigeration Condenser	74%	74%	74%	74%	74%	74%	74%	74%	74%
Door Gaskets - Cooler and Freezer	75%	75%	75%	75%	75%	75%	75%	75%	75%
Reach-in Refrigerated display case door retrofit	66%	66%	66%	66%	66%	66%	66%	66%	66%
Refrigeration Savings due to Lighting Savings	100%	100%	100%	100%	100%	100%	100%	100%	100%
ECM case fan motors	88%	88%	88%	88%	88%	88%	88%	88%	88%
Efficient low-temp compressor	80%	80%	80%	80%	80%	80%	80%	80%	80%
Automatic High Speed Doors - between freezer and cooler	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerant charging correction	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compressed Air									
Efficient Air Compressors	75%	75%	0%	0%	0%	0%	0%	0%	60%
Automatic Drains	75%	75%	0%	75%	75%	75%	75%	75%	60%
Cycling Dryers	75%	75%	0%	75%	75%	75%	75%	75%	60%
Low Pressure Drop-Filters	75%	75%	0%	75%	75%	75%	75%	75%	60%
Air-Entraining Air Nozzles	83%	83%	0%	83%	83%	83%	83%	83%	83%
Receiver Capacity Addition	75%	75%	0%	75%	75%	75%	75%	75%	60%
Barrel Wraps Inj Mold and Extruders	75%	75%	0%	75%	75%	75%	75%	75%	60%
Pellet Dryer Tanks and Ducts	75%	75%	0%	75%	75%	75%	75%	75%	60%
Compressed Air Audits & Leak Repair	100%	100%	0%	100%	100%	100%	100%	100%	100%
Compressed Air Pressure Flow Controller replacing no flow controller	83%	83%	0%	83%	83%	83%	83%	83%	83%
High Efficiency Air Dryers	75%	75%	0%	75%	75%	75%	75%	75%	60%
Air Compressor Outdoor Air Intake	75%	75%	0%	75%	75%	75%	75%	75%	60%
Variable Displacement Air Compressor	75%	75%	0%	75%	75%	75%	75%	75%	60%
Space Heating									

Michigan Commercial Measure Database - Electric

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Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
High Efficiency Heat Pump	67%	67%	67%	67%	67%	67%	67%	67%	67%
Ground Source Heat Pump - Heating	72%	72%	72%	72%	72%	72%	72%	72%	72%
Ductless (mini split) - Heating	90%	90%	90%	90%	90%	90%	90%	90%	90%
High Efficiency Pumps	47%	47%	47%	47%	47%	47%	47%	47%	47%
VFD Pump	83%	83%	83%	83%	83%	83%	83%	83%	83%
ECM motors on furnaces	47%	47%	47%	47%	47%	47%	47%	47%	47%
Water Loop Heat Pump (WLHP) - Heating	83%	83%	83%	83%	83%	83%	83%	83%	83%
Packaged Terminal Air Conditioner (PTAC) - Heating	83%	83%	83%	83%	83%	83%	83%	83%	83%
Other									
Electrically Commutated Plug Fans in data centers	100%	100%	100%	100%	100%	100%	100%	100%	100%
NEMA Premium Transformer, single-phase	98%	98%	98%	98%	98%	98%	98%	98%	98%
NEMA Premium Transformer, three-phase	98%	98%	98%	98%	98%	98%	98%	98%	98%
Commercial Clothes washers - Non-Water Heating Savings	57%	57%	57%	57%	57%	57%	57%	57%	57%
Vendor Miser for Non-Refrig Equipment	95%	100%	100%	100%	100%	100%	100%	100%	100%
Optimized Snow and Ice Melt Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Engine Block Heater Timer	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Electric

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Computers & Office Equipment									
Energy Star Compliant Single Door Refrigerator	24%	24%	24%	24%	24%	24%	24%	24%	24%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	35%	35%	35%	35%	35%	35%	35%	35%	35%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	50%	50%	50%	50%	50%	50%	50%	50%	50%
PC Network Energy Management Controls replacing no central control	46%	46%	46%	46%	46%	46%	46%	46%	46%
EZ Save Monitor Power Management Software	15%	15%	15%	15%	15%	15%	15%	15%	15%
Energy Star UPS	11%	11%	11%	11%	11%	11%	11%	11%	11%
Water Heating									
Heat Pump Water Heater	31%	31%	31%	31%	31%	31%	31%	31%	31%
Booster Water Heater	13%	13%	13%	13%	13%	13%	13%	13%	13%
Point of Use Water Heating	7%	7%	7%	7%	7%	7%	7%	7%	7%
Solar Water Heating System	60%	60%	60%	60%	60%	60%	60%	60%	60%
High Efficiency Electric Water Heater	5%	5%	5%	5%	5%	5%	5%	5%	5%
Low Flow Pre-Rinse Spray Nozzle	50%	50%	50%	50%	50%	50%	50%	50%	50%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	28%	28%	28%	28%	28%	28%	28%	28%	28%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	26%	26%	26%	26%	26%	26%	26%	26%	26%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	15%	15%	15%	15%	15%	15%	15%	15%	15%
ES Dishwasher, Low Temp, Elec Heat	33%	33%	33%	33%	33%	33%	33%	33%	33%
ES Dishwasher, Low Temp, Gas Heat	5%	5%	5%	5%	5%	5%	5%	5%	5%
Ozone Commercial laundry System	15%	15%	15%	15%	15%	15%	15%	15%	15%
Low Flow Faucet Aerator	66%	66%	66%	66%	66%	66%	66%	66%	66%
Low Flow Showerhead	30%	30%	30%	30%	30%	30%	30%	30%	30%
Hot Water (DHW) Pipe Insulation	2%	2%	2%	2%	2%	2%	2%	2%	2%
Tank Insulation (electric)	91%	91%	91%	91%	91%	91%	91%	91%	91%
Drain water Heat Recovery Water Heater	25%	25%	25%	25%	25%	25%	25%	25%	25%
Hot Water Circulation Pump Time-Clock	5%	5%	5%	5%	5%	5%	5%	5%	5%
Refrigeration Heat Recovery	10%	10%	10%	10%	10%	10%	10%	10%	10%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	38%	38%	38%	38%	38%	38%	38%	38%	38%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	25%	25%	25%	25%	25%	25%	25%	25%	25%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	33%	33%	33%	33%	33%	33%	33%	33%	33%
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	27%	27%	27%	27%	27%	27%	27%	27%	27%
Efficient Hot Water Pump	21%	21%	21%	21%	21%	21%	21%	21%	21%
Pools									
Energy Efficient Pool Pump with controls	67%	67%	67%	67%	67%	67%	67%	67%	67%
Solar Pool Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heat Pump Pool Heater	61%	61%	61%	61%	61%	61%	61%	61%	61%

Michigan Commercial Measure Database - Electric

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
High efficiency spas/hot tubs	15%	15%	15%	15%	15%	15%	15%	15%	15%
Building Envelope									
Integrated Building Design	40%	40%	40%	40%	40%	40%	40%	40%	40%
Energy Efficient Windows	14%	14%	14%	14%	14%	14%	14%	14%	14%
Cool Roofing	15%	15%	15%	15%	15%	15%	15%	15%	15%
Ceiling Insulation R-11 to R-42	8%	8%	8%	8%	8%	8%	8%	8%	8%
Below Grade Insulation	1%	1%	1%	1%	1%	1%	1%	1%	1%
Wall Insulation R-7.5 to R13	2%	2%	2%	2%	2%	2%	2%	2%	2%
Roof Insulation R-11 to R-24	8%	8%	8%	8%	8%	8%	8%	8%	8%
Ventilation									
Enthalpy Economizer	22%	22%	22%	22%	22%	22%	22%	22%	22%
Demand-Controlled Ventilation	25%	25%	25%	25%	25%	25%	25%	25%	25%
Variable Speed Drive Control, 15 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%
Variable Speed Drive Control, 5 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%
Variable Speed Drive Control, 40 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%
Improved Duct Sealing	5%	5%	5%	5%	5%	5%	5%	5%	5%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	48%	48%	48%	48%	48%	48%	48%	48%	48%
Destratification Fan	12%	12%	12%	12%	12%	12%	12%	12%	12%
Controlled Ventilation Optimization	43%	43%	43%	43%	43%	43%	43%	43%	43%
High Performance Air Filters	32%	32%	32%	32%	32%	32%	32%	32%	32%
Space Cooling - Chillers									
Air-Cooled Recip Chiller	25%	25%	25%	25%	25%	25%	25%	25%	25%
Air-Cooled Screw Chiller	25%	25%	25%	25%	25%	25%	25%	25%	25%
Water-Cooled Centrifugal Chiller < 150	30%	30%	30%	30%	30%	30%	30%	30%	30%
Water-Cooled Centrifugal Chiller 150 - 300 ton	29%	29%	29%	29%	29%	29%	29%	29%	29%
Water-Cooled Centrifugal Chiller > 300	30%	30%	30%	30%	30%	30%	30%	30%	30%
Water-Cooled Screw Chiller < 150 ton	26%	26%	26%	26%	26%	26%	26%	26%	26%
Water-Cooled Screw Chiller 150 - 300 ton	27%	27%	27%	27%	27%	27%	27%	27%	27%
Water-Cooled Screw Chiller > 300 ton	28%	28%	28%	28%	28%	28%	28%	28%	28%
Chiller Tune Up/Diagnostics - 300 ton	8%	8%	8%	8%	8%	8%	8%	8%	8%
Chiller Tune Up/Diagnostics - 500 ton	8%	8%	8%	8%	8%	8%	8%	8%	8%
High Efficiency Pumps	10%	10%	10%	10%	10%	10%	10%	10%	10%
Efficient Chilled Water Pump	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chilled Hot Water Reset	25%	25%	25%	25%	25%	25%	25%	25%	25%
HVAC Controls									
Programmable Thermostats	5%	5%	5%	5%	5%	5%	5%	5%	5%
EMS install	10%	10%	10%	10%	10%	10%	10%	10%	10%
EMS Optimization	1%	6%	8%	7%	1%	2%	1%	5%	1%
Hotel Guest Room Occupancy Control System	30%	30%	30%	30%	30%	30%	30%	30%	30%
Zoning	0%	0%	0%	0%	20%	0%	0%	0%	0%
Retrocommissioning	9%	9%	9%	9%	9%	9%	9%	9%	9%
Commissioning	9%	9%	9%	9%	9%	9%	9%	9%	9%
Space Cooling - Unitary and Split AC									
High Efficiency AC - Unitary & Split Systems	9%	9%	9%	9%	9%	9%	9%	9%	9%
Ductless (mini split) - Cooling	62%	62%	62%	62%	62%	62%	62%	62%	62%

Michigan Commercial Measure Database - Electric

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Ground Source Heat Pump - Cooling	41%	41%	41%	41%	41%	41%	41%	41%	41%
Water Loop Heat Pump (WLHP) - Cooling	3%	3%	3%	3%	3%	3%	3%	3%	3%
Packaged Terminal Air Conditioner (PTAC) - Cooling	7%	7%	7%	7%	7%	7%	7%	7%	7%
Cooking									
HE Steamer	66%	66%	66%	66%	66%	66%	66%	66%	66%
HE Combination Oven	48%	48%	48%	48%	48%	48%	48%	48%	48%
HE Convection Ovens	15%	15%	15%	15%	15%	15%	15%	15%	15%
HE Holding Cabinet	63%	63%	63%	63%	63%	63%	63%	63%	63%
HE Fryer	6%	6%	6%	6%	6%	6%	6%	6%	6%
HE Griddle	15%	15%	15%	15%	15%	15%	15%	15%	15%
Induction Cooktops	20%	20%	20%	20%	20%	20%	20%	20%	20%
Lighting									
Lamp & Ballast Retrofit (HPT8 Replacing T12)	14%	14%	14%	14%	14%	14%	14%	14%	14%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	17%	17%	17%	17%	17%	17%	17%	17%	17%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fluorescent Fixture with Reflectors	27%	27%	27%	27%	27%	27%	27%	27%	27%
T5 HP replacing T12	30%	30%	30%	30%	30%	30%	30%	30%	30%
LED Exterior Flood and Spotlight	38%	38%	38%	38%	38%	38%	38%	38%	38%
Parking Garage LED	40%	40%	40%	40%	40%	40%	40%	40%	40%
LED Exit Sign	41%	41%	41%	41%	41%	41%	41%	41%	41%
LED Traffic Signals	85%	85%	85%	85%	85%	85%	85%	85%	85%
LED Pedestrian Signals	85%	85%	85%	85%	85%	85%	85%	85%	85%
Light Tube	45%	45%	45%	45%	45%	45%	45%	45%	45%
High Intensity Fluorescent Fixture (replacing HID)	32%	32%	32%	32%	32%	32%	32%	32%	32%
42W 8 lamp Hi Bay CFL	18%	18%	18%	18%	18%	18%	18%	18%	18%
HID Fixture Upgrade - Pulse Start Metal Halide	24%	24%	24%	24%	24%	24%	24%	24%	24%
Induction Fluorescent	38%	38%	38%	38%	38%	38%	38%	38%	38%
CFL Fixture	51%	51%	51%	51%	51%	51%	51%	51%	51%
CFL Screw-in	47%	47%	47%	47%	47%	47%	47%	47%	47%
LED Screw In	69%	69%	69%	69%	69%	69%	69%	69%	69%
LED Fuel Pump Canopy Fixture	73%	73%	73%	73%	73%	73%	73%	73%	73%
CFL Flood	63%	63%	63%	63%	63%	63%	63%	63%	63%
LED Downlight	66%	66%	66%	66%	66%	66%	66%	66%	66%
LED Replacing Halogen Incandescent	75%	75%	75%	75%	75%	75%	75%	75%	75%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	21%	21%	21%	21%	21%	21%	21%	21%	21%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	45%	45%	45%	45%	45%	45%	45%	45%	45%
LED Roadway Lights	92%	92%	92%	92%	92%	92%	92%	92%	92%
LED Outdoor Area Fixture (Parking Light or Street Light)	72%	72%	72%	72%	72%	72%	72%	72%	72%
LED Pin Based Lamp	64%	64%	64%	64%	64%	64%	64%	64%	64%
LED Wallpack	68%	68%	68%	68%	68%	68%	68%	68%	68%

Michigan Commercial Measure Database - Electric

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
CFL Exterior Lighting	78%	78%	78%	78%	78%	78%	78%	78%	78%
CFL Screw in Specialty	72%	72%	72%	72%	72%	72%	72%	72%	72%
LED Specialty	86%	86%	86%	86%	86%	86%	86%	86%	86%
Illuminated Signs to LED	18%	18%	18%	18%	18%	18%	18%	18%	18%
LED Lighting in Refrigeration	50%	50%	50%	50%	50%	50%	50%	50%	50%
Lighting Controls									
Controls for HID (Hi/Lo)	33%	33%	33%	33%	33%	33%	33%	33%	33%
Controls for H.I.F.	42%	42%	42%	42%	42%	42%	42%	42%	42%
Daylight Dimming	30%	30%	30%	30%	30%	30%	30%	30%	30%
Daylight Dimming - New Construction	30%	30%	30%	30%	30%	30%	30%	30%	30%
15% More Efficient Design - New Construction	15%	15%	15%	15%	15%	15%	15%	15%	15%
30% More Efficient Design - New Construction	30%	30%	30%	30%	30%	30%	30%	30%	30%
Remote Mounted Occupancy Sensor	30%	30%	30%	30%	30%	30%	30%	30%	30%
Switch Mounted Occupancy Sensor	30%	30%	30%	30%	30%	30%	30%	30%	30%
Central Lighting Control	25%	25%	25%	25%	25%	25%	25%	25%	25%
Switching Controls for Multilevel Lighting (Non-HID)	18%	18%	18%	18%	18%	18%	18%	18%	18%
Lighting Power Density - Exceed Code by 10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Stairwell Bi-Level Control	55%	55%	55%	55%	55%	55%	55%	55%	55%
Occupancy Sensors for LED Refrigerator Lighting	43%	43%	43%	43%	43%	43%	43%	43%	43%
Refrigeration									
Vending Miser for Soft Drink Vending Machines	30%	30%	30%	30%	30%	30%	30%	30%	30%
Refrigerated Case Covers	6%	6%	6%	6%	6%	6%	6%	6%	6%
Refrigeration Economizer	30%	30%	30%	30%	30%	30%	30%	30%	30%
Commercial Ice-makers	7%	7%	7%	7%	7%	7%	7%	7%	7%
Evaporator Fan Motor Controls on S-P motors	25%	25%	25%	25%	25%	25%	25%	25%	25%
Evaporator Fan Motor Controls on PSC motors	25%	25%	25%	25%	25%	25%	25%	25%	25%
Evaporator Fan Motor Controls on ECM motors	25%	25%	25%	25%	25%	25%	25%	25%	25%
H.E. Evaporative Fan Motors	30%	30%	30%	30%	30%	30%	30%	30%	30%
Zero-Energy Doors	20%	20%	20%	20%	20%	20%	20%	20%	20%
Door Heater Controls	68%	68%	68%	68%	68%	68%	68%	68%	68%
Discus and Scroll Compressors	8%	8%	8%	8%	8%	8%	8%	8%	8%
Floating Head Pressure Control	9%	9%	9%	9%	9%	9%	9%	9%	9%
ENERGY STAR Commercial Solid Door Refrigerators	32%	32%	32%	32%	32%	32%	32%	32%	32%
ENERGY STAR Commercial Solid Door Freezers	30%	30%	30%	30%	30%	30%	30%	30%	30%
ENERGY STAR Commercial Glass Door Refrigerators	30%	30%	30%	30%	30%	30%	30%	30%	30%
ENERGY STAR Commercial Glass Door Freezers	34%	34%	34%	34%	34%	34%	34%	34%	34%

Michigan Commercial Measure Database - Electric

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Strip Curtains	80%	80%	80%	80%	80%	80%	80%	80%	80%
Efficient Refrigeration Condenser	2%	2%	2%	2%	2%	2%	2%	2%	2%
Door Gaskets - Cooler and Freezer	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reach-in Refrigerated display case door retrofit	43%	43%	43%	43%	43%	43%	43%	43%	43%
Refrigeration Savings due to Lighting Savings	100%	100%	100%	100%	100%	100%	100%	100%	100%
ECM case fan motors	54%	54%	54%	54%	54%	54%	54%	54%	54%
Efficient low-temp compressor	1%	1%	1%	1%	1%	1%	1%	1%	1%
Automatic High Speed Doors - between freezer and cooler	15%	15%	15%	15%	15%	15%	15%	15%	15%
Refrigerant charging correction	14%	14%	14%	14%	14%	14%	14%	14%	14%
Compressed Air									
Efficient Air Compressors	31%	31%	31%	31%	31%	31%	31%	31%	31%
Automatic Drains	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cycling Dryers	29%	29%	29%	29%	29%	29%	29%	29%	29%
Low Pressure Drop-Filters	3%	3%	3%	3%	3%	3%	3%	3%	3%
Air-Entraining Air Nozzles	42%	42%	42%	42%	42%	42%	42%	42%	42%
Receiver Capacity Addition	10%	10%	10%	10%	10%	10%	10%	10%	10%
Barrel Wraps Inj Mold and Extruders	89%	89%	89%	89%	89%	89%	89%	89%	89%
Pellet Dryer Tanks and Ducts	85%	85%	85%	85%	85%	85%	85%	85%	85%
Compressed Air Audits & Leak Repair	50%	50%	50%	50%	50%	50%	50%	50%	50%
Compressed Air Pressure Flow Controller replacing no flow controller	3%	3%	3%	3%	3%	3%	3%	3%	3%
High Efficiency Air Dryers	22%	22%	22%	22%	22%	22%	22%	22%	22%
Air Compressor Outdoor Air Intake	6%	6%	6%	6%	6%	6%	6%	6%	6%
Variable Displacement Air Compressor	10%	10%	10%	10%	10%	10%	10%	10%	10%
Space Heating									
High Efficiency Heat Pump	9%	9%	9%	9%	9%	9%	9%	9%	9%
Ground Source Heat Pump - Heating	41%	41%	41%	41%	41%	41%	41%	41%	41%
Ductless (mini split) - Heating	62%	62%	62%	62%	62%	62%	62%	62%	62%
High Efficiency Pumps	10%	10%	10%	10%	10%	10%	10%	10%	10%
VFD Pump	41%	41%	41%	41%	41%	41%	41%	41%	41%
ECM motors on furnaces	26%	26%	26%	26%	26%	26%	26%	26%	26%
Water Loop Heat Pump (WLHP) - Heating	3%	3%	3%	3%	3%	3%	3%	3%	3%
Packaged Terminal Air Conditioner (PTAC) - Heating	7%	7%	7%	7%	7%	7%	7%	7%	7%
Other									
Electrically Commutated Plug Fans in data centers	33%	33%	33%	33%	33%	33%	33%	33%	33%
NEMA Premium Transformer, single-	35%	35%	35%	35%	35%	35%	35%	35%	35%
NEMA Premium Transformer, three-phase	36%	36%	36%	36%	36%	36%	36%	36%	36%
Commercial Clothes washers - Non-Water Heating Savings	31%	31%	31%	31%	31%	31%	31%	31%	31%
Vendor Miser for Non-Refrig Equipment	52%	52%	52%	52%	52%	52%	52%	52%	52%
Optimized Snow and Ice Melt Controls	92%	92%	92%	92%	92%	92%	92%	92%	92%
Engine Block Heater Timer	64%	64%	64%	64%	64%	64%	64%	64%	64%

Michigan Commercial Measure Database - Electric

Electric Measure Sources

Source Number	Source
1	Michigan Master Database of Deemed Savings - 2013 - Non-Weather Sensitive Commercial
2	Michigan Master Database of Deemed Savings - 2013 - Weather Sensitive
3	Michigan Baseline 2011: Commercial Baseline Report
4	http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/appliance_calculator.xlsx
5	Big Ass Fan Company Calculations, http://www.todaysfacilitymanager.com/articles/the-hvac-factor-high-volume-low-speed-fans.php
6	2009 MPRP EE Potential Study - June 2009
7	Vermont TRM - Manual No. 2011-73b
8	Vermont Energy Efficiency Potential Study - January 2007
9	Natural Gas Energy Efficiency Potential in Massachusetts, Prepared for GasNetworks by GDS Associates, April 22, 2009
10	Energy Efficiency and Renewable Energy Resource Development Potential in New York State - Final Report, Volume 5 Energy Efficiency Technical Appendices, August 2003.
11	GDS Benefit Cost Model
12	Federal Energy Management Program (FEMP), Energy Cost Calculator for Electric and Gas Water Heaters
13	http://www.aceee.org/consumer/water-heating
14	GDS Associates estimate based upon review of various customer and vendor surveys, baseline studies and potential studies conducted by GDS in other states
15	GDS New Hampshire Potential Study
16	Efficiency Vermont Technical Reference User Manual (TRM) No. 2006-41
17	Efficiency Vermont Technical Reference User Manual (TRM) No. 2010-64
18	Efficiency Maine Commercial Technical Reference Manual No. 2007-01
19	Efficiency Maine Commercial Technical Reference Manual No. 2010-01
20	Refrigerant Heat Recovery System Learning Center Dining Facility, PG&E Food Services Technology Center, April 1993
21	http://apps1.eere.energy.gov/consumer/your_home/space_heating_cooling/index.cfm/mytopic=12430
22	http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13200
23	US DOE, EERE Consumer's Guide to Energy Efficiency and Renewable Energy, "Solar Swimming Pool Heaters" http://apps1.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=13230
24	ES Analysis-ResDWH: ENERGY STAR® Residential Water Heaters: Final Criteria Analysis (www.energystar.gov). April 2008.
25	http://web.archive.org/web/20061006153904/http://www.energy.ca.gov/appliances/2003rulemaking/documents/case_studies/CASE_Portable_Spa.pdf
26	City of Keene NH, Cities for Climate Protection Campaign, Local Action Plan, February 19, 2004
27	EPA Energy Star Program
28	DC SEU Technical Reference Manual 2012-1.2
29	Maryland Baseline Study – Commercial and Industrial Sectors, ITRON, December 3, 2010
30	Delaware Statewide Commercial & Industrial End Use & Saturation Study - July 26, 2012
31	Independent Assessment of Conservation and Energy Efficiency Potential for Connecticut and the Southwest Connecticut Region, GDS Associates, June
32	Building Commissioning - A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions. Lawrence Berkeley National Laboratory. Report Prepared for: California Energy Commission Public Interest Energy Research (PIER) - July 21, 2009
33	DTE Non-Residential Potential Study - 2010. Cadmus
34	Efficiency Maine Commercial Technical Reference Manual - Version 2013.1, January 1, 2013, Efficiency Maine Trust
35	Mid-Atlantic Technical Reference Manual - Version 3.0, March, 2013, NEEP
36	MEMD Support Documentation - 2014 - Workbooks and Algorithms
37	ENERGY STAR Qualified Office Equipment Calculator
38	Energy Consumption by Commercial Office and Telecommunication Equipment, ACEEE August 18, 2002

Michigan Commercial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/ Unit	Effective Measure Life	Savings Factor	Remaining Factor
Computers & Office Equipment					
Energy Star Compliant Single Door Refrigerator	1	1	1	36	3
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	26	27	27	26,29	3
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	1	1	1	36	14
PC Network Energy Management Controls replacing no central control	1	1	1	36	14
EZ Save Monitor Power Management Software	16	16	16	16	14
Energy Star UPS	1	1	1	36	14
Water Heating					
Heat Pump Water Heater	1	1	1	1, 36	3
Booster Water Heater	10	10	10	10	3
Point of Use Water Heating	10	10	10	10	3
Solar Water Heating System	9	9	3	14	14
High Efficiency Electric Water Heater	12	13	12	14	3
Low Flow Pre-Rinse Spray Nozzle	1	1	1	36	14
ES Dishwasher, High Temp, Elec Heat, Elec Booster	1	1	1	36	33
ES Dishwasher, High Temp, Gas Heat, Elec Booster	1	1	1	36	33
ES Dishwasher, High Temp, Gas Heat, Gas Booster	1	1	1	36	33
ES Dishwasher, Low Temp, Elec Heat	1	1	1	36	33
ES Dishwasher, Low Temp, Gas Heat	1	1	1	36	33
Ozone Commercial laundry System	14	15	8	14	15
Low Flow Faucet Aerator	1	1	1	36	3
Low Flow Showerhead	1	1	1	36	3
Hot Water (DHW) Pipe Insulation	1	1	1	14	3
Tank Insulation (electric)	1	1	1	1	3
Drain water Heat Recovery Water Heater	10	10	10	10	3
Hot Water Circulation Pump Time-Clock	9	9	9	9	9
Refrigeration Heat Recovery	20	20	9	14	3
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	1	1	1	36	33
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	1	1	1	36	33
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	1	1	1	36	33
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	1	1	1	36	33
Efficient Hot Water Pump	1	1	1	2	29
Pools					
Energy Efficient Pool Pump with controls	7	7	7	7	3
Solar Pool Heating	9	23	24	14	3
Heat Pump Pool Heater	22	23	21	21	3
High efficiency spas/hot tubs	25	25	25	25	3
Building Envelope					
Integrated Building Design	10	11	11	10	14
Energy Efficient Windows	2	2	2	2	3

Michigan Commercial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/ Unit	Effective Measure Life	Savings Factor	Remaining Factor
Cool Roofing	2	2	2	2	3
Ceiling Insulation R-11 to R-42	2	2	2	2	3
Below Grade Insulation	2	2	2	14	3
Wall Insulation R-7.5 to R13	2	2	2	14	3
Roof Insulation R-11 to R-24	2	2	2	14	3
Ventilation					
Enthalpy Economizer	2	2	2	10	3
Demand-Controlled Ventilation	2	2	2	14	3
Variable Speed Drive Control, 15 HP	2	2	2	8	14
Variable Speed Drive Control, 5 HP	2	2	2	8	14
Variable Speed Drive Control, 40 HP	2	2	2	8	14
Improved Duct Sealing	2	2	2	7	3
Electronically-Commutated Permanent Magnet Motors (ECPMs)	1	1	1	36	14
Destratification Fan	2	2	2	5	14
Controlled Ventilation Optimization	2	2	2	2	14
High Performance Air Filters	2	2	2	2	14
Space Cooling - Chillers					
Air-Cooled Recip Chiller	2	2	2	2	14
Air-Cooled Screw Chiller	2	2	2	2	14
Water-Cooled Centrifugal Chiller < 150 ton	2	2	2	2	14
Water-Cooled Centrifugal Chiller 150 - 300 ton	2	2	2	2	14
Water-Cooled Centrifugal Chiller > 300 ton	2	2	2	2	14
Water-Cooled Screw Chiller < 150 ton	2	2	2	2	14
Water-Cooled Screw Chiller 150 - 300 ton	2	2	2	2	14
Water-Cooled Screw Chiller > 300 ton	2	2	2	2	14
Chiller Tune Up/Diagnostics - 300 ton	2	2	2	8	3
Chiller Tune Up/Diagnostics - 500 ton	2	2	2	8	3
High Efficiency Pumps	1	1	1	2	29
Efficient Chilled Water Pump	2	2	2	2	29
Chilled Hot Water Reset	2	2	2	14	29
HVAC Controls					
Programmable Thermostats	2	2	2	8	3
EMS install	2	2	2	8	3
EMS Optimization	2	2	2	14	3
Hotel Guest Room Occupancy Control System	1	1	1	36	3
Zoning	2	2	2	14	15
Retrocommissioning	32	32	7	32	32
Commissioning	32	32	7	32	32
Space Cooling - Unitary & Split AC					
High Efficiency AC - Unitary & Split Systems	2	2	2	2	14
Ductless (mini split) - Cooling	2	2	2	2	3
Ground Source Heat Pump - Cooling	2	2	2	2	14
Water Loop Heat Pump (WLHP) - Cooling	2	2	2	2	14
Packaged Terminal Air Conditioner (PTAC) - Cooling	2	2	2	2	14
Cooking					
HE Steamer	1	1	1	36	3

Michigan Commercial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/ Unit	Effective Measure Life	Savings Factor	Remaining Factor
HE Combination Oven	1	1	1	36	3
HE Convection Ovens	1	1	1	36	3
HE Holding Cabinet	1	1	1	36	3
HE Fryer	1	1	1	36	3
HE Griddle	1	1	1	36	3
Induction Cooktops	6	6	6	6	3
Lighting					
Lamp & Ballast Retrofit (HPT8 Replacing T12)	1	1	1	36	3
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	1	1	1	36	3
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	1	1	1	36	3
Fluorescent Fixture with Reflectors	19	19	19	14	3
T5 HP replacing T12	1	1	1	36	3
LED Exterior Flood and Spotlight	1	1	1	36	3
Parking Garage LED	1	1	1	36	30
LED Exit Sign	1	1	1	36	3
LED Traffic Signals	1	1	1	36	30
LED Pedestrian Signals	1	1	1	36	30
Light Tube	1	1	1	14	3
High Intensity Fluorescent Fixture (replacing HID)	1	1	1	36	3
42W 8 lamp Hi Bay CFL	1	1	1	36	3
HID Fixture Upgrade - Pulse Start Metal Halide	1	1	1	36	3
Induction Fluorescent	1	1	1	36	3
CFL Fixture	1	1	1	36	3
CFL Screw-in	1	1	1	36	3
LED Screw In	28	28	28	14	3
LED Fuel Pump Canopy Fixture	35	35	35	14	14
CFL Flood	1	1	1	36	3
LED Downlight	1	1	1	36	3
LED Replacing Halogen Incandescent	1	1	1	36	3
New Fluorescent Fixtures T5/HP T8 (replacing T12)	19	19	28	14	3
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	19	19	28	14	3
LED Roadway Lights	35	35	35	14	30
LED Outdoor Area Fixture (Parking Light or Street Light)	34	34	34	14	30
LED Pin Based Lamp	28	28	28	14	3
LED Wallpack	28	28	28	14	3
CFL Exterior Lighting	1	1	1	36	3
CFL Screw in Specialty	1	1	1	36	3
LED Specialty	1	1	1	36	3
Illuminated Signs to LED	1	1	1	14	3
LED Lighting in Refrigeration	1	1	1	36	3
Lighting Controls					
Controls for HID (Hi/Lo)	1	1	1	36	3
Controls for H.I.F.	19	19	19	19	3
Daylight Dimming	1	1	1	36	3
Daylight Dimming - New Construction	1	1	1	36	3

Michigan Commercial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/ Unit	Effective Measure Life	Savings Factor	Remaining Factor
15% More Efficient Design - New Construction	31	31	31	14	38
30% More Efficient Design - New Construction	31	31	31	14	38
Remote Mounted Occupancy Sensor	1	1	1	36	3
Switch Mounted Occupancy Sensor	1	1	1	36	3
Central Lighting Control	1	1	1	36	3
Switching Controls for Multilevel Lighting (Non-HID)	1	1	1	36	3
Lighting Power Density - Exceed Code by 10%	1	1	1	36	3, 15
Stairwell Bi-Level Control	1	1	1	36	3
Occupancy Sensors for LED Refrigerator Lighting	1	1	1	36	3
Refrigeration					
Vending Miser for Soft Drink Vending Machines	1	1	1	36	3
Refrigerated Case Covers	7	7	7	14	3
Refrigeration Economizer	2	2	2	8	6
Commercial Ice-makers	1	1	1	36	3

Michigan Commercial Measure Database - Gas

Base Case Factor:
Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	13%	13%	13%	13%	10%	11%	13%	8%	13%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	8%	8%	8%	8%	7%	8%	8%	5%	8%
On-Demand, Tankless Water Heater (>=.82 EF) (<=200,000 BTU/h)	13%	13%	13%	13%	10%	11%	13%	8%	13%
On-Demand, Tankless Water Heater (>=.95 EF) (<=200,000 Btu/h)	13%	13%	13%	13%	10%	11%	13%	8%	13%
On-Demand, Tankless Water Heater (.85 TE) (>200,000 BTU)	8%	8%	8%	8%	7%	8%	8%	5%	8%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=85% (EF=.82)	8%	8%	8%	8%	7%	8%	8%	5%	8%
Heat Recovery Water Heater	15%	0%	100%	0%	20%	0%	50%	0%	0%
Pipe wrap - DHW	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low flow shower head (1.5 gpm)	0%	0%	0%	0%	20%	2%	0%	33%	13%
Faucet aerator	60%	60%	5%	50%	5%	15%	5%	15%	26%
Graywater Heat Exchanger/GFX	2%	0%	0%	2%	20%	2%	50%	33%	13%
Low Flow Pre-Rinse Spray Nozzle (1.6 gpm)	0%	0%	10%	0%	2%	2%	15%	2%	0%
Circulation Pump Time Clocks	100%	100%	100%	100%	100%	100%	100%	100%	100%
Solar Water Heating w/gas auxiliary tank (SEF=1.5)	21%	21%	21%	21%	17%	19%	21%	14%	21%
Wastewater, Filtration/Reclamation	0%	0%	0%	0%	17%	8%	0%	0%	8%
Ozone Commercial Laundry System (Gas HW)	0%	0%	0%	0%	17%	8%	0%	0%	4%
High Efficiency (95%) Gas Pool Water Heater	0%	0%	0%	0%	17%	10%	0%	35%	0%
Pool Cover	0%	0%	0%	0%	17%	8%	0%	35%	0%
Solar pool heater	0%	0%	0%	0%	17%	10%	0%	0%	0%
Stand Alone Commercial Water Heater (>=88% Thermal efficiency)(>75000 btu)	8%	8%	8%	8%	7%	8%	8%	5%	8%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=90% (EF=.90)	8%	8%	8%	8%	7%	8%	8%	5%	8%
Domestic Water Heater Tune-up	100%	100%	100%	100%	93%	90%	100%	65%	100%
O-zone Generator for Laundromat	0%	0%	0%	0%	0%	0%	0%	0%	4%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	0%	0%	0%	0%	6%	3%	0%	0%	0%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	0%	0%	0%	0%	6%	3%	0%	0%	0%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	0%	0%	0%	0%	6%	3%	0%	0%	0%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	0%	0%	3%	0%	3%	3%	3%	3%	0%

Michigan Commercial Measure Database - Gas

Base Case Factor:
Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	13%	13%	13%	13%	10%	11%	13%	8%	13%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	0%	0%	3%	0%	3%	3%	3%	3%	0%
ES Dishwasher, Low Temp, Gas Heat	0%	0%	3%	0%	3%	3%	3%	3%	0%
Space & Water Heating									
Combination Water Heater/Furnace (.86 EF, .90 AFUE)	13%	13%	13%	13%	10%	11%	13%	8%	13%
Combination Water Heater/Boiler (Condensing)(0.9 EF, 0.9 AFUE)	13%	13%	13%	13%	10%	11%	13%	8%	13%
Combination Water Heater/Boiler (Non-Condensing) (0.86 EF, 85 AFUE)	13%	13%	13%	13%	10%	11%	13%	8%	13%
Building Envelope									
Energy Efficient Windows	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ceiling Insulation R-11 to R-42	50%	50%	50%	50%	50%	50%	50%	50%	50%
Below Grade Insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%
Wall Insulation R-7.5 to R13	100%	100%	100%	100%	100%	100%	100%	100%	100%
Roof Insulation R-11 to R-24	50%	50%	50%	50%	50%	50%	50%	50%	50%
Integrated Building Design, Envelope Only (30% > code)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Truck Loading Dock Seals	100%	100%	100%	0%	0%	0%	0%	0%	0%
Heat Curtains for Greenhouses	0%	100%	0%	0%	0%	0%	0%	0%	0%
Infrared film for Greenhouses	0%	100%	0%	0%	0%	0%	0%	0%	0%
Improved Duct Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%
HVAC Controls									
EMS install	36%	36%	36%	36%	36%	36%	36%	36%	36%
EMS Optimization	7%	7%	7%	7%	7%	7%	7%	7%	7%
Zoning	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retrocommissioning	42%	42%	42%	42%	42%	42%	42%	42%	42%
Commissioning	42%	42%	42%	42%	42%	42%	42%	42%	42%
Programmable Thermostat	14%	24%	61%	23%	6%	5%	60%	12%	20%
Cooking									
High Efficiency Gas Griddle	18%	18%	18%	18%	18%	18%	18%	18%	18%
High Efficiency Gas Combination Oven	5%	5%	5%	5%	5%	5%	5%	5%	5%
High Efficiency Gas Convection Oven	5%	5%	5%	5%	5%	5%	5%	5%	5%
High Efficiency Gas Conveyer Oven	5%	5%	5%	5%	5%	5%	5%	5%	5%
High Efficiency Gas Rack Oven	5%	5%	5%	5%	5%	5%	5%	5%	5%
High Efficiency Gas Broiler	5%	5%	5%	5%	5%	5%	5%	5%	5%
Power Burner Range	5%	5%	5%	5%	5%	5%	5%	5%	5%
High Efficiency Fryer	28%	28%	28%	28%	28%	28%	28%	28%	28%
High Efficiency Gas Steamer	18%	18%	18%	18%	18%	18%	18%	18%	18%
Space Heating									
Gas Furnace 92 AFUE	39%	17%	17%	17%	17%	17%	17%	17%	17%
Gas Furnace 95 AFUE	9%	9%	9%	9%	9%	9%	9%	9%	9%
Improved Duct Sealing	9%	9%	9%	9%	9%	9%	9%	9%	9%

Michigan Commercial Measure Database - Gas

Base Case Factor:
Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	13%	13%	13%	13%	10%	11%	13%	8%	13%
Gas Unit Heater - Condensing (AFUE =93%)	18%	18%	18%	18%	18%	18%	18%	18%	18%
Infrared Heater	3%	3%	3%	3%	3%	3%	3%	3%	3%
Boiler Heating Pipe Insulation	13%	13%	13%	13%	13%	13%	13%	13%	13%
Boiler Tune-Up	13%	13%	13%	13%	13%	13%	13%	13%	13%
Boiler Reset Controls	13%	13%	13%	13%	13%	13%	13%	13%	13%
Boiler O2 Trim Controls	13%	13%	13%	13%	13%	13%	13%	13%	13%
Boiler Parallel Positioning	13%	13%	13%	13%	13%	13%	13%	13%	13%
Repair/Replace malfunctioning steam traps	3%	3%	3%	3%	3%	3%	3%	3%	3%
Insulate steam lines/condensate tank	3%	3%	3%	3%	3%	3%	3%	3%	3%
Destratification Fans	100%	0%	0%	0%	0%	0%	0%	0%	0%
Exhaust Hood Makeup Air	3%	0%	1%	1%	20%	3%	1%	3%	1%
Exhaust Hood - Demand Ventilation	3%	0%	1%	1%	20%	3%	1%	3%	1%
Demand Controlled Ventilation	0%	100%	100%	10%	10%	0%	0%	100%	10%
Furnace Tube Inserts	0%	0%	0%	0%	0%	0%	0%	0%	0%
Air Compressor Exhaust Heat Recovery	0%	0%	0%	0%	0%	0%	0%	0%	0%
Linkageless Controls for Process boilers replacing linkages	0%	0%	0%	0%	0%	0%	0%	0%	0%
Modulated Boiler Control for Process	0%	0%	0%	0%	0%	0%	0%	0%	0%
Guest Room Energy Management, Gas Heating	0%	0%	0%	0%	100%	0%	0%	0%	0%
Boiler Efficiency Improvement 80% to 88%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Condensing Boiler 90% Efficiency	7%	7%	7%	7%	7%	7%	7%	7%	7%
Boiler turndown control	13%	13%	13%	13%	13%	13%	13%	13%	13%
Boiler Economizer	13%	13%	13%	13%	13%	13%	13%	13%	13%
Sensible ERV (Flat plate HX)	0%	0%	3%	0%	1%	1%	20%	3%	1%
Total ERV (Enthalpy Wheel)	0%	0%	0%	0%	0%	0%	0%	0%	0%
Boiler sequencing	13%	13%	13%	13%	13%	13%	13%	13%	13%
Furnace Tune-Up	0%	0%	0%	0%	0%	0%	0%	0%	0%
Direct Fired Make Up Air System	0%	0%	0%	0%	0%	0%	0%	0%	0%

Michigan Commercial Measure Database - Gas

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
On-Demand, Tankless Water Heater (>=.82 EF) (<=200,000 BTU/h)	100%	100%	100%	100%	100%	100%	100%	100%	100%
On-Demand, Tankless Water Heater (>=.95 EF) (<=200,000 Btu/h)	100%	100%	100%	100%	100%	100%	100%	100%	100%
On-Demand, Tankless Water Heater (.85 TE) (>200,000 BTU)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=85% (EF=.82)	39%	39%	39%	39%	39%	39%	39%	39%	39%
Heat Recovery Water Heater	10%	5%	80%	10%	20%	80%	80%	15%	5%
Pipe wrap - DHW	50%	50%	50%	50%	50%	50%	50%	50%	50%
Low flow shower head (1.5 gpm)	95%	95%	95%	95%	95%	95%	95%	95%	95%
Faucet aerator	95%	95%	25%	95%	50%	25%	25%	50%	75%
Graywater Heat Exchanger/GFX	50%	50%	50%	50%	50%	50%	50%	50%	50%
Low Flow Pre-Rinse Spray Nozzle (1.6 gpm)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Circulation Pump Time Clocks	100%	100%	100%	100%	100%	100%	100%	100%	100%
Solar Water Heating w/gas auxiliary tank (SEF=1.5)	34%	34%	34%	34%	34%	34%	34%	34%	34%
Wastewater, Filtration/Reclamation	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ozone Commercial Laundry System (Gas HW)	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency (95%) Gas Pool Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pool Cover	100%	100%	100%	100%	100%	100%	100%	100%	100%
Solar pool heater	34%	34%	34%	34%	34%	34%	34%	34%	34%
Stand Alone Commercial Water Heater (>=88% Thermal efficiency)(>75000 btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=90% (EF=.90)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Domestic Water Heater Tune-up	100%	100%	100%	100%	100%	100%	100%	100%	100%
O-zone Generator for Laundromat	100%	100%	100%	100%	100%	100%	100%	100%	100%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Gas

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	100%	100%	100%	100%	100%	100%	100%	100%	100%
ES Dishwasher, Low Temp, Gas Heat	100%	100%	100%	100%	100%	100%	100%	100%	100%
Space & Water Heating									
Combination Water Heater/Furnace (.86 EF, .90 AFUE)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Combination Water Heater/Boiler (Condensing)(0.9 EF, 0.9 AFUE)	56%	56%	56%	56%	56%	56%	56%	56%	56%
Combination Water Heater/Boiler (Non-Condensing) (0.86 EF, 85 AFUE)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Building Envelope									
Energy Efficient Windows	75%	75%	75%	75%	75%	75%	75%	75%	75%
Ceiling Insulation R-11 to R-42	69%	48%	50%	54%	87%	78%	86%	74%	57%
Below Grade Insulation	14%	14%	14%	14%	14%	14%	14%	14%	14%
Wall Insulation R-7.5 to R13	100%	100%	100%	100%	100%	100%	100%	100%	100%
Roof Insulation R-11 to R-24	100%	100%	100%	100%	100%	100%	100%	100%	100%
Integrated Building Design, Envelope Only (30% > code)	39%	39%	95%	95%	95%	95%	95%	95%	95%
Truck Loading Dock Seals	80%	80%	80%	80%	80%	50%	50%	80%	80%
Heat Curtains for Greenhouses	100%	100%	100%	100%	100%	100%	100%	100%	100%
Infrared film for Greenhouses	100%	100%	100%	100%	100%	100%	100%	100%	100%
Improved Duct Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%
HVAC Controls									
EMS install	100%	100%	100%	100%	100%	100%	100%	100%	100%
EMS Optimization	100%	100%	100%	100%	100%	100%	100%	100%	100%
Zoning	100%	100%	100%	100%	100%	100%	100%	100%	100%
Retrocommissioning	54%	54%	54%	54%	54%	54%	54%	54%	54%
Commissioning	71%	71%	71%	71%	71%	71%	71%	71%	71%
Programmable Thermostat	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cooking									
High Efficiency Gas Griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Combination Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Convection Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Conveyer Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Rack Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Broiler	100%	100%	100%	100%	100%	100%	100%	100%	100%
Power Burner Range	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%
Space Heating									
Gas Furnace 92 AFUE	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Gas

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gas Furnace 95 AFUE	100%	100%	100%	100%	100%	100%	100%	100%	100%
Improved Duct Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%
Gas Unit Heater - Condensing (AFUE =93%)	100%	0%	65%	0%	0%	0%	0%	0%	35%
Infrared Heater	100%	0%	65%	0%	0%	0%	0%	0%	35%
Boiler Heating Pipe Insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Tune-Up	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Reset Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler O2 Trim Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Parallel Positioning	42%	42%	42%	42%	42%	42%	42%	42%	42%
Repair/Replace malfunctioning steam traps	100%	100%	100%	100%	100%	100%	100%	100%	100%
Insulate steam lines/condensate tank	100%	100%	100%	100%	100%	100%	100%	100%	100%
Destratification Fans	90%	90%	90%	90%	90%	90%	90%	90%	90%
Exhaust Hood Makeup Air	100%	100%	100%	100%	100%	100%	100%	100%	100%
Exhaust Hood - Demand Ventilation	100%	100%	100%	100%	100%	100%	100%	100%	100%
Demand Controlled Ventilation	95%	95%	95%	95%	95%	95%	95%	95%	95%
Furnace Tube Inserts	100%	100%	100%	100%	100%	100%	100%	100%	100%
Air Compressor Exhaust Heat Recovery	100%	100%	100%	100%	100%	100%	100%	100%	100%
Linkageless Controls for Process boilers replacing linkages	100%	100%	100%	100%	100%	100%	100%	100%	100%
Modulated Boiler Control for Process	100%	100%	100%	100%	100%	100%	100%	100%	100%
Guest Room Energy Management, Gas Heating	0%	0%	0%	0%	90%	0%	0%	0%	0%
Boiler Efficiency Improvement 80% to 88%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Condensing Boiler 90% Efficiency	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler turndown control	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Economizer	67%	67%	67%	67%	67%	67%	67%	67%	67%
Sensible ERV (Flat plate HX)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Total ERV (Enthalpy Wheel)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler sequencing	100%	100%	100%	100%	100%	100%	100%	100%	100%
Furnace Tune-Up	100%	100%	100%	100%	100%	100%	100%	100%	100%
Direct Fired Make Up Air System	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Gas

Measure Savings, Cost and Useful Life

Measure Name	Annual MMBTU Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	Direct Utility Test	Total Resource Cost Test
Water Heating							
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	13.15	2	per unit	$335	13	3.4	1.9
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	25.00	2	per unit	$2,340	13	0.9	0.5
On-Demand, Tankless Water Heater (>=.82 EF) (<=200,000 BTU/h)	18.80	2	per unit	$285	20	7.8	4.3
On-Demand, Tankless Water Heater (>=.95 EF) (<=200,000 Btu/h)	9.59	2	per unit	$1,373	20	0.8	0.5
On-Demand, Tankless Water Heater (.85 TE) (>200,000 BTU)	13.50	2	per unit	$1,522	20	1.0	0.6
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=85% (EF=.82)	0.11	2	per MBH	$10	15	1.1	0.6
Heat Recovery Water Heater	258.60	2	per unit	$4,800	15	5.2	2.9
Pipe wrap - DHW	0.21	2	Linear Ft	$6	20	5.7	3.1
Low flow shower head (1.5 gpm)	2.20	2	per unit	$25	10	6.3	8.4
Faucet aerator	3.77	2	per unit	$3	10	107.9	144.3
Graywater Heat Exchanger/GFX	44.60	2	per unit	$3,364	20	1.6	0.9
Low Flow Pre-Rinse Spray Nozzle (1.6 gpm)	6.00	2	per unit	$35	5	7.1	6.9
Circulation Pump Time Clocks	5.91	2	per unit	$132	10	3.2	1.8
Solar Water Heating w/gas auxiliary tank (SEF=1.5)	67.68	2	per unit	$26,400	20	0.3	0.5
Wastewater, Filtration/Reclamation	1396.00	2	per unit	########	20	1.1	0.6
Ozone Commercial Laundry System (Gas HW)	1656.20	2	per unit	$26,000	15	6.2	3.4
High Efficiency (95%) Gas Pool Water Heater	0.24	2	Mbtu	$4	15	6.2	3.5
Pool Cover	0.09	2	per sq ft surface area	$2	10	3.7	2.1
Solar pool heater	94.69	2	per unit	$5,500	20	2.0	1.1
Stand Alone Commercial Water Heater (>=88% Thermal efficiency)(>75000 btu)	18.80	2	per unit	$209	13	7.9	4.4
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=90% (EF=.90)	0.25	2	per MBH	$18	15	1.3	0.7
Domestic Water Heater Tune-up	0.06	2	per MBh	$3	2	0.4	0.2
O-zone Generator for Laundromat	4.21	2	Per lb of laundry capacity	$76	10	4.0	2.2
Clothes Washer ENERGY STAR, Gas water heater, Gas	4.43	2	per unit	$540	7	0.4	1.1
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	2.15	2	per unit	$540	7	0.2	0.8
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	2.27	2	per unit	$540	7	0.2	0.1
ES Dishwasher, High Temp, Gas Heat, Elec Booster	29.83	2	per unit	$978	16.3	3.1	1.7
ES Dishwasher, High Temp, Gas Heat, Gas Booster	46.88	2	per unit	$978	16.3	4.9	2.7
ES Dishwasher, Low Temp, Gas Heat	52.80	2	per unit	$255	16.3	21.2	11.8
Space & Water Heating							
Combination Water Heater/Furnace (.86 EF, .90 AFUE)	24.01	2	per unit	$360	15	6.5	3.6
Combination Water Heater/Boiler (Condensing)(0.9 EF, 0.9 AFUE)	21.10	1	per unit	$1,093	20	2.3	1.3
Combination Water Heater/Boiler (Non-Condensing) (0.86 EF, 85 AFUE)	13.45	2	per unit	$650	20	2.4	1.4
Building Envelope							
Energy Efficient Windows	11.97	2	100 sq ft	$2,250	20	1.0	0.6
Ceiling Insulation R-11 to R-42	15.51	2	1,000 sq ft roof area	$600	20	3.9	2.2
Below Grade Insulation	3.03	1	1,000 sq ft bsmt wall area	$2,271	30	0.2	0.1
Wall Insulation R-7.5 to R13	123.42	1	1,000 sq ft wall area	$100	20	160.0	89.0
Roof Insulation R-11 to R-24	7.07	1	1,000 sq ft roof area	$1,000	20	1.2	0.6
Integrated Building Design, Envelope Only (30% > code)	809.46	1	building	$83,113	40	1.6	0.9
Truck Loading Dock Seals	22.93	2	Per door	$1,819	10	0.9	0.5
Heat Curtains for Greenhouses	0.03	1	per sq ft	$2	5	0.9	0.5
Infrared film for Greenhouses	0.03	1	per sq ft	$0	5	66.1	36.7
Improved Duct Sealing	2.53	1	ton	$108	18	4.0	2.2

Michigan Commercial Measure Database - Gas

Measure Savings, Cost and Useful Life

Measure Name	Annual MMBTU Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	Direct Utility Test	Total Resource Cost Test
HVAC Controls							
EMS install	1.37	1	1,000 sq ft cond floor area	$7	15	84.4	49.9
EMS Optimization	54.75	1	building	$2,608	5	0.9	0.5
Zoning	4.28	1	1,000 sq ft cond floor area	$500	15	1.4	0.8
Retrocommissioning	0.05	1	per sq ft	$0	7	8.1	4.5
Commissioning	0.04	1	per sq ft	$1	7	2.0	1.1
Programmable Thermostat	20.75	1	1,000 sq ft cond floor area	$50	9	33.7	19.1
Cooking							
High Efficiency Gas Griddle	14.90	2	per unit	$4,575	12	0.3	0.1
High Efficiency Gas Combination Oven	40.30	2	per unit	$21,797	12	0.2	0.1
High Efficiency Gas Convection Oven	30.60	2	per unit	$3,144	12	0.8	0.4
High Efficiency Gas Conveyer Oven	80.85	2	per unit	$3,241	12	2.1	1.1
High Efficiency Gas Rack Oven	157.35	2	per unit	$8,434	12	1.5	0.9
High Efficiency Gas Broiler	129.95	2	per unit	$8,518	12	1.3	0.7
Power Burner Range	40.80	2	per unit	$1,400	7	1.6	0.9
High Efficiency Fryer	54.10	2	per unit	$3,459	12	1.3	0.7
High Efficiency Gas Steamer	205.90	2	per unit	$6,221	12	2.7	2.3
Space Heating							
Gas Furnace 92 AFUE	0.26	2	kBtu/hr	$10	15	1.3	1.5
Gas Furnace 95 AFUE	0.32	2	kBtu/hr	$10	15	1.6	1.8
Improved Duct Sealing	2.53	2	ton	$108	18	2.0	2.2
Gas Unit Heater - Condensing (AFUE =93%)	64.94	2	per unit	$2,640	19	1.4	1.6
Infrared Heater	0.44	2	kBtu/hr	$2	15	9.7	10.8
Boiler Heating Pipe Insulation	1.65	2	Linear Ft	$13	13.3	5.9	6.5
Boiler Tune-Up	61.83	2	kBtu/hr	$300	2	1.8	2.0
Boiler Reset Controls	34.35	2	kBtu/hr	$993	20	2.0	2.3
Boiler O2 Trim Controls	0.07	2	kBtu/hr	$1	5	2.6	2.9
Boiler Parallel Positioning	124.19	2	per unit	$14,500	20	0.5	0.6
Repair/Replace malfunctioning steam traps	29.80	2	per unit	$168	5	3.7	4.1
Insulate steam lines/condensate tank	1.91	2	per sq ft	$2	15	41.8	46.5
Destratification Fans	8.66	2	1,000 sq ft cond floor area	$375	15	1.2	1.3
Exhaust Hood Makeup Air	345.86	2	per unit	$5,900	20	4.2	4.7
Exhaust Hood - Demand Ventilation	0.09	2	cfm	$2	17.5	5.3	5.8
Demand Controlled Ventilation	37.16	2	1,000 sq ft cond floor area	$75	15	27.6	30.5
Furnace Tube Inserts	5.00	2	per unit	$325	5	0.3	0.4
Air Compressor Exhaust Heat Recovery	4.13	2	per HP	$75	15	2.7	3.0
Linkageless Controls for Process boilers replacing linkages	0.07	2	kBtu/hr	$2	5	0.8	0.9
Modulated Boiler Control for Process	0.11	2	kBtu/hr	$1	5	3.3	3.7
Guest Room Energy Management, Gas Heating	6.10	2	per unit	$250	8	0.7	0.8
Boiler Efficiency Improvement 80% to 88%	0.08	2	kBtu/hr	$12	20	0.4	0.4
Condensing Boiler 90% Efficiency	0.15	2	kBtu/hr	$25	20	0.4	0.4
Boiler turndown control	0.10	2	kBtu/hr	$1	15	6.8	7.6
Boiler Economizer	0.04	2	kBtu/hr	$5	15	0.4	0.5
Sensible ERV (Flat plate HX)	0.06	2	cfm	$3	15	-0.9	-1.0
Total ERV (Enthalpy Wheel)	0.07	2	cfm	$3	15	-1.0	-1.1
Boiler sequencing	0.06	2	kBtu/hr	$100	15	0.0	0.0
Furnace Tune-Up	0.04	2	kBtu/hr	$18	3	0.0	0.0
Direct Fired Make Up Air System	0.19	2	kBtu/hr capacity	$4	15	2.1	2.4

Michigan Commercial Measure Database - Gas

Remaining Factor:

Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	5%	5%	5%	5%	5%	5%	5%	5%	5%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	96%	96%	96%	96%	96%	96%	96%	96%	96%
On-Demand, Tankless Water Heater (>=.82 EF) (<=200,000 BTU/h)	96%	96%	96%	96%	96%	96%	96%	96%	96%
On-Demand, Tankless Water Heater (>=.95 EF) (<=200,000 Btu/h)	96%	96%	96%	96%	96%	96%	96%	96%	96%
On-Demand, Tankless Water Heater (.85 TE) (>200,000 BTU)	96%	96%	96%	96%	96%	96%	96%	96%	96%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=85% (EF=.82)	58%	58%	58%	58%	58%	58%	58%	58%	58%
Heat Recovery Water Heater	99%	99%	99%	99%	99%	99%	99%	99%	99%
Pipe wrap - DHW	93%	93%	93%	93%	93%	93%	93%	93%	93%
Low flow shower head (1.5 gpm)	39%	39%	39%	39%	39%	39%	39%	39%	39%
Faucet aerator	32%	32%	32%	32%	32%	32%	32%	32%	32%
Graywater Heat Exchanger/GFX	99%	99%	99%	99%	99%	99%	99%	99%	99%
Low Flow Pre-Rinse Spray Nozzle (1.6 gpm)	50%	50%	50%	50%	50%	50%	50%	50%	50%
Circulation Pump Time Clocks	60%	60%	60%	60%	60%	60%	60%	60%	60%
Solar Water Heating w/gas auxiliary tank (SEF=1.5)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Wastewater, Filtration/Reclamation	98%	98%	98%	98%	98%	98%	98%	98%	98%
Ozone Commercial Laundry System (Gas HW)	93%	93%	93%	93%	93%	93%	93%	93%	93%
High Efficiency (95%) Gas Pool Water Heater	80%	80%	80%	80%	80%	80%	80%	80%	80%
Pool Cover	89%	89%	89%	89%	89%	89%	89%	89%	89%
Solar pool heater	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stand Alone Commercial Water Heater (>=88% Thermal efficiency)(>75000 btu)	85%	85%	85%	85%	85%	85%	85%	85%	85%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=90% (EF=.90)	85%	85%	85%	85%	85%	85%	85%	85%	85%
Domestic Water Heater Tune-up	93%	93%	93%	93%	93%	93%	93%	93%	93%
O-zone Generator for Laundromat	93%	93%	93%	93%	93%	93%	93%	93%	93%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	80%	80%	80%	80%	80%	80%	80%	80%	80%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	80%	80%	80%	80%	80%	80%	80%	80%	80%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%

Michigan Commercial Measure Database - Gas

Remaining Factor:

Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	5%	5%	5%	5%	5%	5%	5%	5%	5%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	96%	96%	96%	96%	96%	96%	96%	96%	96%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, Low Temp, Gas Heat	80%	80%	80%	80%	80%	80%	80%	80%	80%
Space & Water Heating									
Combination Water Heater/Furnace (.86 EF, .90 AFUE)	5%	5%	5%	5%	5%	5%	5%	5%	5%
Combination Water Heater/Boiler (Condensing)(0.9 EF, 0.9 AFUE)	90%	90%	90%	90%	90%	90%	90%	90%	90%
Combination Water Heater/Boiler (Non-Condensing) (0.86 EF, 85 AFUE)	5%	5%	5%	5%	5%	5%	5%	5%	5%
Building Envelope									
Energy Efficient Windows	53%	40%	38%	24%	48%	12%	32%	7%	29%
Ceiling Insulation R-11 to R-42	54%	28%	54%	47%	23%	33%	31%	39%	51%
Below Grade Insulation	54%	90%	34%	60%	54%	5%	72%	40%	54%
Wall Insulation R-7.5 to R13	40%	40%	47%	42%	16%	56%	44%	24%	40%
Roof Insulation R-11 to R-24	54%	28%	54%	47%	23%	33%	31%	39%	51%
Integrated Building Design, Envelope Only (30% > code)	100%	100%	100%	100%	100%	100%	100%	100%	100%
Truck Loading Dock Seals	50%	50%	50%	50%	50%	50%	50%	50%	50%
Heat Curtains for Greenhouses	95%	95%	95%	95%	95%	95%	95%	95%	95%
Infrared film for Greenhouses	10%	10%	10%	10%	10%	10%	10%	10%	10%
Improved Duct Sealing	60%	60%	60%	60%	60%	60%	60%	60%	60%
HVAC Controls									
EMS install	98%	98%	98%	98%	98%	98%	98%	98%	98%
EMS Optimization	86%	86%	86%	86%	86%	86%	86%	86%	86%
Zoning	44%	44%	44%	44%	44%	44%	44%	44%	44%
Retrocommissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%
Commissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%
Programmable Thermostat	81%	81%	81%	81%	81%	81%	81%	81%	81%
Cooking									
High Efficiency Gas Griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Combination Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Convection Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Conveyer Oven	83%	83%	83%	83%	83%	83%	83%	83%	83%
High Efficiency Gas Rack Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Broiler	100%	100%	100%	100%	100%	100%	100%	100%	100%
Power Burner Range	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Gas Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Commercial Measure Database - Gas

Remaining Factor:

Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	5%	5%	5%	5%	5%	5%	5%	5%	5%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	96%	96%	96%	96%	96%	96%	96%	96%	96%
Space Heating									
Gas Furnace 92 AFUE	82%	82%	82%	82%	82%	82%	82%	82%	82%
Gas Furnace 95 AFUE	90%	90%	90%	90%	90%	90%	90%	90%	90%
Improved Duct Sealing	60%	60%	60%	60%	60%	60%	60%	60%	60%
Gas Unit Heater - Condensing (AFUE =93%)	90%	90%	90%	90%	90%	90%	90%	90%	90%
Infrared Heater	51%	51%	51%	51%	51%	51%	51%	51%	51%
Boiler Heating Pipe Insulation	65%	65%	65%	65%	65%	65%	65%	65%	65%
Boiler Tune-Up	21%	21%	21%	21%	21%	21%	21%	21%	21%
Boiler Reset Controls	96%	96%	96%	96%	96%	96%	96%	96%	96%
Boiler O2 Trim Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Parallel Positioning	85%	85%	85%	85%	85%	85%	85%	85%	85%
Repair/Replace malfunctioning steam traps	30%	30%	30%	30%	30%	30%	30%	30%	30%
Insulate steam lines/condensate tank	70%	70%	70%	70%	70%	70%	70%	70%	70%
Destratification Fans	93%	93%	93%	93%	93%	93%	93%	93%	93%
Exhaust Hood Makeup Air	84%	84%	84%	84%	84%	84%	84%	84%	84%
Exhaust Hood - Demand Ventilation	98%	98%	98%	98%	98%	98%	98%	98%	98%
Demand Controlled Ventilation	99%	99%	99%	99%	99%	99%	99%	99%	99%
Furnace Tube Inserts	80%	80%	80%	80%	80%	80%	80%	80%	80%
Air Compressor Exhaust Heat Recovery	74%	74%	74%	74%	74%	74%	74%	74%	74%
Linkageless Controls for Process boilers replacing linkages	85%	85%	85%	85%	85%	85%	85%	85%	85%
Modulated Boiler Control for Process	96%	96%	96%	96%	96%	96%	96%	96%	96%
Guest Room Energy Management, Gas Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Efficiency Improvement 80% to 88%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Condensing Boiler 90% Efficiency	90%	90%	90%	90%	90%	90%	90%	90%	90%
Boiler turndown control	97%	97%	97%	97%	97%	97%	97%	97%	97%
Boiler Economizer	96%	96%	96%	96%	96%	96%	96%	96%	96%
Sensible ERV (Flat plate HX)	98%	98%	98%	98%	98%	98%	98%	98%	98%
Total ERV (Enthalpy Wheel)	98%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler sequencing	83%	83%	83%	83%	83%	83%	83%	83%	83%
Furnace Tune-Up	21%	21%	21%	21%	21%	21%	21%	21%	21%
Direct Fired Make Up Air System	90%	90%	90%	90%	90%	90%	90%	90%	90%

Michigan Commercial Measure Database - Gas

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	20%	20%	20%	20%	20%	20%	20%	20%	20%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	23%	23%	23%	23%	23%	23%	23%	23%	23%
On-Demand, Tankless Water Heater (>=.82 EF) (<=200,000 BTU/h)	29%	29%	29%	29%	29%	29%	29%	29%	29%
On-Demand, Tankless Water Heater (>=.95 EF) (<=200,000 Btu/h)	39%	39%	39%	39%	39%	39%	39%	39%	39%
On-Demand, Tankless Water Heater (.85 TE) (>200,000 BTU)	13%	13%	13%	13%	13%	13%	13%	13%	13%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=85% (EF=.82)	28%	28%	28%	28%	28%	28%	28%	28%	28%
Heat Recovery Water Heater	50%	50%	50%	50%	50%	50%	50%	50%	50%
Pipe wrap - DHW	2%	2%	2%	2%	2%	2%	2%	2%	2%
Low flow shower head (1.5 gpm)	30%	30%	30%	30%	30%	30%	30%	30%	30%
Faucet aerator	66%	66%	66%	66%	66%	66%	66%	66%	66%
Graywater Heat Exchanger/GFX	40%	40%	40%	40%	40%	40%	40%	40%	40%
Low Flow Pre-Rinse Spray Nozzle (1.6 gpm)	19%	19%	19%	19%	19%	19%	19%	19%	19%
Circulation Pump Time Clocks	5%	5%	5%	5%	5%	5%	5%	5%	5%
Solar Water Heating w/gas auxiliary tank (SEF=1.5)	61%	61%	61%	61%	61%	61%	61%	61%	61%
Wastewater, Filtration/Reclamation	50%	50%	50%	50%	50%	50%	50%	50%	50%
Ozone Commercial Laundry System (Gas HW)	55%	55%	55%	55%	55%	55%	55%	55%	55%
High Efficiency (95%) Gas Pool Water Heater	18%	18%	18%	18%	18%	18%	18%	18%	18%
Pool Cover	9%	9%	9%	9%	9%	9%	9%	9%	9%
Solar pool heater	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stand Alone Commercial Water Heater (>=88% Thermal efficiency)(>75000 btu)	9%	9%	9%	9%	9%	9%	9%	9%	9%
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=90% (EF=.90)	34%	34%	34%	34%	34%	34%	34%	34%	34%
Domestic Water Heater Tune-up	3%	3%	3%	3%	3%	3%	3%	3%	3%
O-zone Generator for Laundromat	50%	50%	50%	50%	50%	50%	50%	50%	50%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	27%	27%	27%	27%	27%	27%	27%	27%	27%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	32%	32%	32%	32%	32%	32%	32%	32%	32%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	24%	24%	24%	24%	24%	24%	24%	24%	24%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	29%	29%	29%	29%	29%	29%	29%	29%	29%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	46%	46%	46%	46%	46%	46%	46%	46%	46%
ES Dishwasher, Low Temp, Gas Heat	41%	41%	41%	41%	41%	41%	41%	41%	41%
Space & Water Heating									

Michigan Commercial Measure Database - Gas

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	20%	20%	20%	20%	20%	20%	20%	20%	20%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	23%	23%	23%	23%	23%	23%	23%	23%	23%
Combination Water Heater/Furnace (.86 EF, .90 AFUE)	15%	15%	15%	15%	15%	15%	15%	15%	15%
Combination Water Heater/Boiler (Condensing)(0.9 EF, 0.9 AFUE)	14%	14%	14%	14%	14%	14%	14%	14%	14%
Combination Water Heater/Boiler (Non-Condensing) (0.86 EF, 85 AFUE)	9%	9%	9%	9%	9%	9%	9%	9%	9%
Building Envelope									
Energy Efficient Windows	14%	14%	14%	14%	14%	14%	14%	14%	14%
Ceiling Insulation R-11 to R-42	8%	8%	8%	8%	8%	8%	8%	8%	8%
Below Grade Insulation	1%	1%	1%	1%	1%	1%	1%	1%	1%
Wall Insulation R-7.5 to R13	2%	2%	2%	2%	2%	2%	2%	2%	2%
Roof Insulation R-11 to R-24	4%	4%	4%	4%	4%	4%	4%	4%	4%
Integrated Building Design, Envelope Only (30% > code)	30%	30%	30%	30%	30%	30%	30%	30%	30%
Truck Loading Dock Seals	5%	5%	5%	5%	5%	5%	5%	5%	5%
Heat Curtains for Greenhouses	25%	25%	25%	25%	25%	25%	25%	25%	25%
Infrared film for Greenhouses	12%	12%	12%	12%	12%	12%	12%	12%	12%
Improved Duct Sealing	15%	15%	15%	15%	15%	15%	15%	15%	15%
HVAC Controls									
EMS install	20%	20%	20%	20%	20%	20%	20%	20%	20%
EMS Optimization	5%	5%	5%	5%	5%	5%	5%	5%	5%
Zoning	5%	5%	5%	5%	5%	5%	5%	5%	5%
Retrocommissioning	16%	16%	16%	16%	16%	16%	16%	16%	16%
Commissioning	16%	16%	16%	16%	16%	16%	16%	16%	16%
Programmable Thermostat	19%	19%	19%	19%	19%	19%	19%	19%	19%
Cooking									
High Efficiency Gas Griddle	12%	12%	12%	12%	12%	12%	12%	12%	12%
High Efficiency Gas Combination Oven	26%	26%	26%	26%	26%	26%	26%	26%	26%
High Efficiency Gas Convection Oven	29%	29%	29%	29%	29%	29%	29%	29%	29%
High Efficiency Gas Conveyer Oven	30%	30%	30%	30%	30%	30%	30%	30%	30%
High Efficiency Gas Rack Oven	37%	37%	37%	37%	37%	37%	37%	37%	37%
High Efficiency Gas Broiler	19%	19%	19%	19%	19%	19%	19%	19%	19%
Power Burner Range	34%	34%	34%	34%	34%	34%	34%	34%	34%
High Efficiency Fryer	32%	32%	32%	32%	32%	32%	32%	32%	32%
High Efficiency Gas Steamer	76%	76%	76%	76%	76%	76%	76%	76%	76%
Space Heating									
Gas Furnace 92 AFUE	2%	2%	2%	2%	2%	2%	2%	2%	2%
Gas Furnace 95 AFUE	6%	6%	6%	6%	6%	6%	6%	6%	6%
Improved Duct Sealing	15%	15%	15%	15%	15%	15%	15%	15%	15%
Gas Unit Heater - Condensing (AFUE =93%)	13%	13%	13%	13%	13%	13%	13%	13%	13%
Infrared Heater	30%	30%	30%	30%	30%	30%	30%	30%	30%
Boiler Heating Pipe Insulation	2%	2%	2%	2%	2%	2%	2%	2%	2%
Boiler Tune-Up	2%	2%	2%	2%	2%	2%	2%	2%	2%
Boiler Reset Controls	5%	5%	5%	5%	5%	5%	5%	5%	5%

Michigan Commercial Measure Database - Gas

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	Warehouse	Retail	Grocery	Office	Lodging	Health	Restaurant	Education	Other
Water Heating									
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	20%	20%	20%	20%	20%	20%	20%	20%	20%
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	23%	23%	23%	23%	23%	23%	23%	23%	23%
Boiler O2 Trim Controls	2%	2%	2%	2%	2%	2%	2%	2%	2%
Boiler Parallel Positioning	2%	2%	2%	2%	2%	2%	2%	2%	2%
Repair/Replace malfunctioning steam traps	10%	10%	10%	10%	10%	10%	10%	10%	10%
Insulate steam lines/condensate tank	2%	2%	2%	2%	2%	2%	2%	2%	2%
Destratification Fans	23%	23%	23%	23%	23%	23%	23%	23%	23%
Exhaust Hood Makeup Air	57%	57%	57%	57%	57%	57%	57%	57%	57%
Exhaust Hood - Demand Ventilation	25%	25%	25%	25%	25%	25%	25%	25%	25%
Demand Controlled Ventilation	12%	12%	12%	12%	12%	12%	12%	12%	12%
Furnace Tube Inserts	15%	15%	15%	15%	15%	15%	15%	15%	15%
Air Compressor Exhaust Heat Recovery	2%	2%	2%	2%	2%	2%	2%	2%	2%
Linkageless Controls for Process boilers replacing linkages	2%	2%	2%	2%	2%	2%	2%	2%	2%
Modulated Boiler Control for Process	3%	3%	3%	3%	3%	3%	3%	3%	3%
Guest Room Energy Management, Gas Heating	0%	0%	0%	0%	21%	0%	0%	0%	0%
Boiler Efficiency Improvement 80% to 88%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Condensing Boiler 90% Efficiency	10%	10%	10%	10%	10%	10%	10%	10%	10%
Boiler turndown control	2%	2%	2%	2%	2%	2%	2%	2%	2%
Boiler Economizer	5%	5%	5%	5%	5%	5%	5%	5%	5%
Sensible ERV (Flat plate HX)	10%	10%	10%	10%	10%	10%	10%	10%	10%
Total ERV (Enthalpy Wheel)	10%	10%	10%	10%	10%	10%	10%	10%	10%
Boiler sequencing	4%	4%	4%	4%	4%	4%	4%	4%	4%
Furnace Tune-Up	2%	2%	2%	2%	2%	2%	2%	2%	2%
Direct Fired Make Up Air System	16%	16%	16%	16%	16%	16%	16%	16%	16%

Michigan Commercial Measure Database - Gas

Natural Gas Measure Sources

Source Number	Source
1	Michigan Master Database of Deemed Savings - 2013 - Non-Weather Sensitive Commercial
2	Michigan Master Database of Deemed Savings - 2013 - Weather Sensitive
3	Federal Energy Management Program (FEMP), Energy Cost Calculator for Electric and Gas Water Heaters
4	GDS Associates estimate based upon review of various customer and vendor surveys, baseline studies and potential studies conducted by GDS in other states
5	Therma-Stor Return On Investment Calculation Form, http://www.thermastor.com/Heat-Recovery-water-Heaters/Heat-Recovery-ROI-Form.pdf
6	Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006, Appendix C
7	US DOE- Federal Energy Management Program (FEMP): Heat Recovery from Wastewater Using a Gravity-Film Heat Exchanger
8	Food Service Technology Center, Pre-Rinse Spray Valve/Water Cost Calculator
9	Energy Efficiency Potential of Gas-Fired Commercial Hot Water Heating Systems in Restaurants, An Emerging Technology Field Monitoring Study, FSTC Report 5011.07.04, Food Service Technology Center, April 2007
10	US DOE - Energy Efficiency And Renewable Energy - Estimating a Solar Water Heater System's Cost
11	Gene Dedick - East Coast VP Sales - AquaRecycle - ph: 210-325-9258: 1,248,000 lbs/yr = 30 gpm washer-extractor system with lint shaker.
12	http://www.aquarecycle.com/laundry-water-energy-savings.php
13	Commercial Laundry Conservation Technologies, Bill Hoffman, James Riesenberger
14	Trevor Brown Southeastern Laundry/Commercial Laundry Conservation Technologies - Bill Hoffman, James Riesenberger
15	US DOE - Energy Efficiency And Renewable Energy - Determining Gas Swimming Pool Heating Efficiency - http://apps1.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=13170
16	NYSERDA Deemed Savings Database, Rev 09-082006.
17	Revised DEER Measure Cost Summary (05_30_2008) Revised (06_02_2008)
18	Gas Solutions for the Foodservice Industry, http://www.gfen.info/pdf/cookinggas0107.pdf
19	CALIFORNIA STATEWIDE COMMERCIAL SECTOR NATURAL GAS ENERGY EFFICIENCY POTENTIAL STUDY, Study ID #SW061, Prepared for Pacific Gas & Electric Company, Prepared by Mike Rufo and Fred Coito KEMA-XENERGY Inc., May 14, 2003; Questar 2006 DSM Market Characterization Report, Nexant, Appendix D (sq ft) & E (cost/sq ft).
20	Cost of the most common type of steam trap (Inverted bucket trap) according to Grainger catalog ranges from $125 - $147, plus one hour of labor @ $100/hr. http://www.grainger.com/Grainger/ecatalog/N-bkg/No-16/Ntt-inverted+bucket+trap?Ns=List+Price%7C0
21	Greenheck sales representative cost and measure life information on 5,000 CFM model. ($4,500 materials, $1,000 labor, and $400 crane rental (to lift onto roof))
22	http://www.cleanboiler.org/Eff_Improve/Efficiency/Boiler_Reset_Control.asp
23	Measure information from Nexant's "Gas Energy Efficiency Measure Analysis to Support NYSERDA's Con Edison Gas Efficiency Program" reported in August 2005. Savings unit is MMBtu/unit. Baseline efficiency from DOE
24	Natural Gas Boiler/Burner Consortium - http://www.energysolutionscenter.org/boilerburner/Eff_Improve/Efficiency/Oxygen_Control.asp
25	Found a wide range (4% - 16%) of savings estimates based on literature review Used a mid-range savings estimate factor of 10%
26	5% - 10% improvement in energy associated with losses (Optimizing Steam Systems: Saving Energy and Money in Mexican Hotels, by David Jaber, Alliance to Save Energy) GDS estimates that poor insulation represents 15%- 20% of total gas input.
27	Review of various internet sites including Zoo Fans (25%), Big Ass Fan Company (30%) and Energy Wales (20%)
28	Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006 - Appendix C -MD ENERGY SAVINGS FRACTIONS
29	Flex Your Power, Demand Ventilation Control Reduces Kitchen Fan Energy Consumption by 50% to 70% and makeup air heating energy by 25%: http://www.fypower.org/news/?p=682
30	Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006 Appendix C - RET ENERGY SAVINGS FRACTIONS. (Average across all building types - varies significantly based on occupancy and ventilation requirements)
31	ACEE, Emerging Energy Saving Technologies & Practices for the Buildings Sector, 2004 (6 zones at $575 per zone) p 102.
32	Assessment of Energy and Capacity Savings Potential in Iowa', Prepared for The Iowa Utility Association February 15, 2008. In Collaboration with Summit Blue Consulting, Nexant, Inc., A-TEC Energy Corporation, and Britt/Makela Group; Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006 Appendix B p 40-44
33	Actual average project cost provided by NGRID for NY projects
34	ACEE, Emerging Energy Saving Technologies & Practices for the Buildings Sector, 2004
35	Energy Efficiency and Renewable Energy Resource Development Potential in New York State - Final Report, Volume 5 Energy Efficiency Technical
36	http://www.toolbase.org/Technology-Inventory/HVAC/hvac-smart-zoning-controls
37	Energy Star Cost Calculator, Energy Star Website, www.energystar.gov.
38	GasNetworks Aug08update - "Validating the Impacts of Programmable Thermostats." GasNetworks, January 2007
39	EIA, 2003 CBECS, New England, Non Mall saturation, square footage
40	For Combo Heating / Water Heating Units costs and savings add up similar separate equipment from water heating tab and space heating tab. Literature claims combined system equipment costs are higher, installation costs lower compared to separate systems.
41	Gas Fired water Heater Screening Tool http://bea.ugi.esource.com/BEA1/PA/PA_WaterHeating/PA-41_calc
42	Building Commissioning - A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions. Lawrence Berkeley National Laboratory. Report Prepared for: California Energy Commission Public Interest Energy Research (PIER) - July 21, 2009
43	GDS Natural Gas Energy Efficiency Potential in Massachusetts - April 2009
44	MEMD Support Documentation - 2014 - Workbooks and Algorithms
45	Michigan Baseline 2011: Commercial Baseline Report

Michigan Commercial Measure Database - Gas

Natural Gas Measure Sources

Source Number	Source
46	Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development, Analysis of Standards Options for Portable Electric Spas, Davis Energy Group Energy Solutions, May 12, 2004
47	Massachusetts Farm Energy Guides by Farm Sector: Best Management Practices for Greenhouses, 2010
48	Public Service New Mexico Electric Energy Efficiency Potential Study; Itron, Inc., September 2006
49	DTE Energy Commercial Baseline Study; Opinion Dynamics Corporation, October 2010

Michigan Commercial Measure Database - Gas
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Natural Gas Source List

Measure Name	Annual MMBTU Savings	Cost/ Unit	Effective Measure	Savings Factor	Remaining Factor
Water Heating					
High Efficiency Stand Alone Commercial Water Heater (>=0.67 EF <=75000 Btu)	1	1	3	44	4
Condensing Stand Alone Commercial Water Heater (>=95% Thermal efficiency)(>75000 btu)	41	4	3	41	45
On-Demand, Tankless Water Heater (>=.82 EF) (<=200,000 BTU/h)	1	1	3	44	45
On-Demand, Tankless Water Heater (>=.95 EF) (<=200,000 Btu/h)	3	4	3	44	45
On-Demand, Tankless Water Heater (.85 TE) (>200,000 BTU)	41	4	3	41	45
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=85% (EF=.82)	1	1	3	4	4
Heat Recovery Water Heater	5	5	3	5	4
Pipe wrap - DHW	1	1	3	6	45
Low flow shower head (1.5 gpm)	1	1	3	44	45
Faucet aerator	1	1	3	44	45
Graywater Heat Exchanger/GFX	41	32	3	7	45
Low Flow Pre-Rinse Spray Nozzle (1.6 gpm)	1	1	3	8	4
Circulation Pump Time Clocks	41	17	3	9	4
Solar Water Heating w/gas auxiliary tank (SEF=1.5)	41	4	3	10	4
Wastewater, Filtration/Reclamation	11	11	3	12	4
Ozone Commercial Laundry System (Gas HW)	14	14	3	13	45
High Efficiency (95%) Gas Pool Water Heater	1	1	3	44	4
Pool Cover	1	1	3	44	4
Solar pool heater	15	33	3	43	4
Stand Alone Commercial Water Heater (>=88% Thermal efficiency)(>75000 btu)	1	1	3	44	4
Indirect Water Heater - Combined appliance efficiency rating (CAE)>=90% (EF=.90)	1	1	3	44, 4	4
Domestic Water Heater Tune-up	1	1	3	44	4
O-zone Generator for Laundromat	1	1	3	43	45
Clothes Washer ENERGY STAR, Gas water heater, Gas	1	1	3	44	45
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	1	1	3	44	45
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	1	1	3	44	45
ES Dishwasher, High Temp, Gas Heat, Elec Booster	1	1	3	44	49
ES Dishwasher, High Temp, Gas Heat, Gas Booster	1	1	3	44	49
ES Dishwasher, Low Temp, Gas Heat	1	1	3	44	49
Space & Water Heating					
Combination Water Heater/Furnace (.86 EF, .90 AFUE)	4	40	3	46	45
Combination Water Heater/Boiler (Condensing)(0.9 EF, 0.9 AFUE)	4	40	3	4	45

Michigan Commercial Measure Database - Gas
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Natural Gas Source List

Combination Water Heater/Boiler (Non-Condensing) (0.86 EF, 85 AFUE)	4	40	3	4	45
Building Envelope					
Energy Efficient Windows	2	2	3	4	45
Ceiling Insulation R-11 to R-42	2	2	3	2	45
Below Grade Insulation	4	4	3	4	45
Wall Insulation R-7.5 to R13	2	2	3	4	45
Roof Insulation R-11 to R-24	2	2	3	4	45
Integrated Building Design, Envelope Only (30% > code)	31	34	3	4	4
Truck Loading Dock Seals	1	1	3	4	4
Heat Curtains for Greenhouses	1	1	3	47	4
Infrared film for Greenhouses	1	1	3	47	4
Improved Duct Sealing	2	2	3	2	4
HVAC Controls					
EMS install	2	2	3	48	45
EMS Optimization	4	35	3	35	4
Zoning	4	36	3	48	4
Retrocommissioning	44	42	3	48	4
Commissioning	44	42	3	48	39
Programmable Thermostat	38	37	3	43	45
Cooking					
High Efficiency Gas Griddle	1	1	3	44	45
High Efficiency Gas Combination Oven	1	1	3	44	4
High Efficiency Gas Convection Oven	1	1	3	44	45
High Efficiency Gas Conveyer Oven	1	1	3	44	45
High Efficiency Gas Rack Oven	1	1	3	44	4
High Efficiency Gas Broiler	1	1	3	43	4
Power Burner Range	43	43	3	44	45
High Efficiency Fryer	1	1	3	44	45
High Efficiency Gas Steamer	1	1	3	44	45
Space Heating					
Gas Furnace 92 AFUE	2	2	3	2	4
Gas Furnace 95 AFUE	2	2	3	2	4
Improved Duct Sealing	2	2	3	2	4
Gas Unit Heater - Condensing (AFUE =93%)	4	16	3	2	4
Infrared Heater	2	2	3	2	4
Boiler Heating Pipe Insulation	1	1	3	43	45
Boiler Tune-Up	2	2	3	2	45
Boiler Reset Controls	2	2	3	22	45
Boiler O2 Trim Controls	1	1	3	23	4
Boiler Parallel Positioning	16	16	3	24	6
Repair/Replace malfunctioning steam traps	1	1	3	25	4
Insulate steam lines/condensate tank	1	1	3	26	19
Destratification Fans	2	2	3	27	4
Exhaust Hood Makeup Air	18	21	3	28	45
Exhaust Hood - Demand Ventilation	2	2	3	29	45
Demand Controlled Ventilation	2	2	3	30	45

Michigan Commercial Measure Database - Gas
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Natural Gas Source List

Furnace Tube Inserts	1	1	3	44	20
Air Compressor Exhaust Heat Recovery	1	1	3	44	20
Linkageless Controls for Process boilers replacing linkages	1	1	3	44	20
Modulated Boiler Control for Process	1	1	3	44	4
Guest Room Energy Management, Gas Heating	1	1	3	44	45
Boiler Efficiency Improvement 80% to 88%	2	2	3	43	4
Condensing Boiler 90% Efficiency	2	2	3	2	4
Boiler turndown control	2	2	3	2	45
Boiler Economizer	2	2	3	43	4
Sensible ERV (Flat plate HX)	2	2	3	4	45
Total ERV (Enthalpy Wheel)	2	2	3	4	4
Boiler sequencing	2	2	3	44	45
Furnace Tune-Up	2	2	3	2	4
Direct Fired Make Up Air System	2	2	3	43	4

Michigan Industrial Measure Database - Electric

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Computers and Office Equipment																				
Energy Star Compliant Single Door Refrigerator	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%	47.5%
PC Network Energy Management Controls replacing no central control	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
EZ Save Monitor Power Management Software	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
Energy Star UPS	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
Water Heating																				
Heat Pump Water Heater	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Booster Water Heater	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Point of Use Water Heating	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Solar Water Heating System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
High Efficiency Electric Water Heater	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Low Flow Pre-Rinse Spary Nozzle	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ES Dishwasher, Low Temp, Elec Heat	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
ES Dishwasher, Low Temp, Gas Heat	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Ozone Commercial laundry System	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Low Flow Faucet Aerator	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%
Low Flow Showerhead	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hot Water (DHW) Pipe Insulation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Tank Insulation (electric)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Drain water Heat Recovery Water Heater	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Hot Water Circulation Pump Time-Clock	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Refrigeration Heat Recovery	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%	52.0%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Michigan Industrial Measure Database - Electric

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Efficient Hot Water Pump	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Building Envelope																				
Integrated Building Design	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Efficient Windows	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cool Roofing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Ceiling Insulation R-11 to R-42	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Below Grade Insulation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Wall Insulation R-7.5 to R13	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Roof Insulation R-11 to R-24	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Ventilation																				
Enthalpy Economizer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Demand-Controlled Ventilation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Variable Speed Drive Control, 15 HP	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Variable Speed Drive Control, 5 HP	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Variable Speed Drive Control, 40 HP	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%
Improved Duct Sealing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Destratification Fan	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Controled Ventilation Optimization	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
High Performance Air Filters	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Space Cooling - Chillers																				
Air-Cooled Recip Chiller	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Air-Cooled Screw Chiller	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Water-Cooled Centrifugal Chiller < 150 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Centrifugal Chiller 150 - 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Centrifugal Chiller > 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Screw Chiller < 150 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Screw Chiller 150 - 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Water-Cooled Screw Chiller > 300 ton	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%	4.2%
Chiller Tune Up/Diagnostics - 300 ton	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Chiller Tune Up/Diagnostics - 500 ton	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
High Efficiency Pumps	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Efficient Chilled Water Pump	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Chilled Hot Water Reset	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
HVAC Controls																				
Programmable Thermostats	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
EMS install	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
EMS Optimization	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%

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Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Hotel Guest Room Occupancy Control System	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Zoning	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Space Cooling - Unitary and Split AC															1					
High Efficiency AC - Unitary & Split Systems	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Ductless (mini split) - Cooling	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Ground Source Heat Pump - Cooling	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Water Loop Heat Pump (WLHP) - Cooling	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Packaged Terminal Air Conditioner (PTAC) - Cooling	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lighting																				
Lamp & Ballast Retrofit (HPT8 Replacing T12)	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%
Fluorescent Fixture with Reflectors	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%
T5 HP replacing T12	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
LED Exterior Flood and Spotlight	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Parking Garage LED	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LED Exit Sign	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
LED Traffic Signals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LED Pedestrian Signals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Light Tube	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
High Intensity Fluorescent Fixture (replacing HID)	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
42W 8 lamp Hi Bay CFL	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
HID Fixture Upgrade - Pulse Start Metal Halide	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
Induction Fluorescent	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
CFL Fixture	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
CFL Screw-in	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
LED Screw In	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
LED Fuel Pump Canopy Fixture	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CFL Flood	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
LED Downlight	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
LED Replacing Halogen Incandescent	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%	22.4%

Michigan Industrial Measure Database - Electric

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%	16.8%
LED Roadway Lights	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
LED Outdoor Area Fixture (Parking Light or Street Light)	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
LED Pin Based Lamp	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
LED Wallpack	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
CFL Exterior Lighting	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
CFL Screw in Specialty	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
LED Specialty	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Illuminated Signs to LED	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
LED Lighting in Refrigeration	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Lighting Controls																				
Controls for HID (Hi/Lo)	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
Controls for H.I.F.	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%
Daylight Dimming	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%
Daylight Dimming - New Construction	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%	73.7%
15% More Efficient Design - New Construction	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%
30% More Efficient Design - New Construction	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%
Remote Mounted Occupancy Sensor	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%
Switch Mounted Occupancy Sensor	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%	41.3%
Central Lighting Control	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%
Switching Controls for Multilevel Lighting (Non-HID)	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%
Lighting Power Density - Exceed Code by 10%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%	88.9%
Stairwell Bi-Level Control	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Occupancy Sensors for LED Refrigerator Lighting	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
Space Heating																				
High Efficiency Heat Pump	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Ground Source Heat Pump - Heating	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Ductless (mini split) - Heating	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
High Efficiency Pumps	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
VFD Pump	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
ECM motors on furnaces	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Water Loop Heat Pump (WLHP) - Heating	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Packaged Terminal Air Conditioner (PTAC) - Heating	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other																				

Michigan Industrial Measure Database - Electric

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Electrically Commutated Plug Fans in data centers	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
NEMA Premium Transformer, single-	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
NEMA Premium Transformer, three-phase	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Commercial Clothes washers - Non-Water Heating Savings	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Vendor Miser for Non-Refrig Equipment	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Optimized Snow and Ice Melt Controls	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Engine Block Heater Timer	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Machine Drive																				
Sensors & Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Information System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electric Supply System Improvements	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Advanced Efficient Motors	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Industrial Motor Management	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Advanced Lubricants	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%
Motor System Optimization (Including ASD)	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Pump System Efficiency Improvements	23.2%	23.2%	23.0%	23.0%	0.0%	12.0%	33.1%	3.0%	59.4%	28.1%	34.0%	9.0%	8.7%	15.9%	15.5%	50.9%	50.9%	25.0%	1.0%	20.4%
Fan System Improvements	10.6%	10.6%	7.0%	7.0%	12.7%	8.0%	20.8%	7.0%	9.6%	12.0%	2.0%	5.0%	15.3%	3.0%	2.2%	1.0%	1.0%	8.0%	18.0%	14.5%
Compressed Air System Management	10.9%	10.9%	14.3%	14.3%	24.0%	8.3%	4.8%	7.3%	15.3%	29.9%	13.0%	25.4%	14.3%	24.4%	15.9%	22.7%	22.7%	18.7%	12.5%	16.1%
Compressed Air - Advanced Compressor Controls	10.9%	10.9%	14.3%	14.3%	24.0%	8.3%	4.8%	7.3%	15.3%	29.9%	13.0%	25.4%	14.3%	24.4%	15.9%	22.7%	22.7%	18.7%	12.5%	16.1%
Process Cooling & Refrigeration																				
Sensors & Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Information System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electric Supply System Improvements	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Improved Refrigeration	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Process Heating																				
Sensors & Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Information System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electric Supply System Improvements	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Michigan Industrial Measure Database - Electric

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Computers and Office Equipment																				
Energy Star Compliant Single Door Refrigerator	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
PC Network Energy Management Controls replacing no central control	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
EZ Save Monitor Power Management Software	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Star UPS	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water Heating																				
Heat Pump Water Heater	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Booster Water Heater	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Point of Use Water Heating	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Solar Water Heating System	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
High Efficiency Electric Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Low Flow Pre-Rinse Spary Nozzle	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, Low Temp, Elec Heat	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
ES Dishwasher, Low Temp, Gas Heat	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Ozone Commercial laundry System	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Low Flow Faucet Aerator	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Low Flow Showerhead	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Hot Water (DHW) Pipe Insulation	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Tank Insulation (electric)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Drain water Heat Recovery Water Heater	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
Hot Water Circulation Pump Time-Clock	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Refrigeration Heat Recovery	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

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Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Efficient Hot Water Pump	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Pools																				
Energy Efficient Pool Pump with controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Solar Pool Heating	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Heat Pump Pool Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
High efficiency spas/hot tubs	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Building Envelope																				
Integrated Building Design	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Energy Efficient Windows	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Cool Roofing	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Ceiling Insulation R-11 to R-42	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%
Below Grade Insulation	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Wall Insulation R-7.5 to R13	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Roof Insulation R-11 to R-24	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Ventilation																				
Enthalpy Economizer	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
Demand-Controlled Ventilation	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Variable Speed Drive Control, 15 HP	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Variable Speed Drive Control, 5 HP	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Variable Speed Drive Control, 40 HP	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Improved Duct Sealing	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Destratification Fan	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Controled Ventilation Optimization	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
High Performance Air Filters	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Space Cooling - Chillers																				
Air-Cooled Recip Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Air-Cooled Screw Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water-Cooled Centrifugal Chiller < 150 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water-Cooled Centrifugal Chiller 150 - 300 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water-Cooled Centrifugal Chiller > 300 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water-Cooled Screw Chiller < 150 ton	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Water-Cooled Screw Chiller 150 - 300 ton	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Water-Cooled Screw Chiller > 300 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Chiller Tune Up/Diagnostics - 300 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Chiller Tune Up/Diagnostics - 500 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Efficiency Pumps	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient Chilled Water Pump	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Chilled Hot Water Reset	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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HVAC Controls																				
Programmable Thermostats	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EMS install	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EMS Optimization	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hotel Guest Room Occupancy Control System	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Zoning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Space Cooling - Unitary and Split AC																				
High Efficiency AC - Unitary & Split Systems	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ductless (mini split) - Cooling	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Ground Source Heat Pump - Cooling	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Water Loop Heat Pump (WLHP) - Cooling	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Packaged Terminal Air Conditioner (PTAC) - Cooling	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cooking																				
HE Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Combination Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Convection Ovens	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Holding Cabinet	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Griddle	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Induction Cooktops	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lighting																				
Lamp & Ballast Retrofit (HPT8 Replacing T12)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fluorescent Fixture with Reflectors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
T5 HP replacing T12	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Exterior Flood and Spotlight	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Parking Garage LED	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Traffic Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Pedestrian Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Light Tube	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
High Intensity Fluorescent Fixture (replacing HID)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
42W 8 lamp Hi Bay CFL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HID Fixture Upgrade - Pulse Start Metal Halide	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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Induction Fluorescent	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
CFL Fixture	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
CFL Screw-in	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
LED Screw In	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
LED Fuel Pump Canopy Fixture	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
CFL Flood	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
LED Downlight	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
LED Replacing Halogen Incandescent	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Roadway Lights	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Outdoor Area Fixture (Parking Light or Street Light)	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
LED Pin Based Lamp	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
LED Wallpack	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
CFL Exterior Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
CFL Screw in Specialty	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
LED Specialty	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Illuminated Signs to LED	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Lighting in Refrigeration	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Lighting Controls																				
Controls for HID (Hi/Lo)	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%
Controls for H.I.F.	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Daylight Dimming	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Daylight Dimming - New Construction	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
15% More Efficient Design - New Construction	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
30% More Efficient Design - New Construction	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Remote Mounted Occupancy Sensor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Switch Mounted Occupancy Sensor	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Central Lighting Control	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Switching Controls for Multilevel Lighting (Non-HID)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Lighting Power Density - Exceed Code by 10%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stairwell Bi-Level Control	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Occupancy Sensors for LED Refrigerator Lighting	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Refrigeration																				

Michigan Industrial Measure Database - Electric

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Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Vending Miser for Soft Drink Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerated Case Covers	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Refrigeration Economizer	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Commercial Ice-makers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on S-P motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on PSC motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on ECM motors	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
H.E. Evaporative Fan Motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Zero-Energy Doors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Door Heater Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Discus and Scroll Compressors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Floating Head Pressure Control	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
ENERGY STAR Commercial Solid Door Refrigerators	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Solid Door Freezers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Glass Door Refrigerators	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Glass Door Freezers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Strip Curtains	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient Refrigeration Condenser	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Door Gaskets - Cooler and Freezer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reach-in Refrigerated display case door retrofit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration Savings due to Lighting Savings	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ECM case fan motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient low-temp compressor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Automatic High Speed Doors - between freezer and cooler	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerant charging correction	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compressed Air																				
Efficient Air Compressors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Automatic Drains	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Cycling Dryers	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Low Pressure Drop-Filters	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Air-Entraining Air Nozzles	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Receiver Capacity Addition	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Michigan Industrial Measure Database - Electric

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Barrel Wraps Inj Mold and Extruders	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pellet Dryer Tanks and Ducts	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compressed Air Audits & Leak Repair	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Compressed Air Pressure Flow Controller replacing no flow controller	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High Efficiency Air Dryers	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Air Compressor Outdoor Air Intake	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Variable Displacement Air Compressor	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Space Heating																				
High Efficiency Heat Pump	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Ground Source Heat Pump - Heating	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Ductless (mini split) - Heating	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
High Efficiency Pumps	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VFD Pump	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
ECM motors on furnaces	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Water Loop Heat Pump (WLHP) - Heating	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Packaged Terminal Air Conditioner (PTAC) - Heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other																				
Electrically Commutated Plug Fans in data centers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NEMA Premium Transformer, single-phase	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
NEMA Premium Transformer, three-phase	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
Commercial Clothes washers - Non-Water Heating Savings	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Vendor Miser for Non-Refrig Equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Optimized Snow and Ice Melt Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Engine Block Heater Timer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machine Drive																				
Sensors & Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Information System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electric Supply System Improvements	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Advanced Efficient Motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Industrial Motor Management	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Advanced Lubricants	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Motor System Optimization (Including ASD)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pump System Efficiency Improvements	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Fan System Improvements	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compressed Air System Management	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compressed Air - Advanced Compressor Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Process Cooling & Refrigeration																				

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Sensors & Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Information System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electric Supply System Improvements	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Improved Refrigeration	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Process Heating																				
Sensors & Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Information System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electric Supply System Improvements	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Industrial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	TRC	UCT
Computers & Office Equipment							
Energy Star Compliant Single Door Refrigerator	270	2	per unit	$250	12.0	0.70	1.40
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	858	2	$/unit	$300	4.0	7.89	15.78
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	17	1	per unit	$40	5.0	0.13	0.26
PC Network Energy Management Controls replacing no central control	135	1	per PC	$12	4.0	2.28	4.57
EZ Save Monitor Power Management Software	30	1	$/unit	$26	1.7	0.43	0.86
Energy Star UPS	105	2	per kW	$1,303	10.0	0.06	0.12
Water Heating							
Heat Pump Water Heater	154,278	2	per heater	$9,000	15.0	13.70	27.41
Booster Water Heater	625	2	$/Unit	$951	10.0	0.40	0.79
Point of Use Water Heating	345	1	$/Unit	$665	10.0	0.31	0.62
Solar Water Heating System	19,836	1	$/unit	$26,400	20.0	0.74	1.48
High Efficiency Electric Water Heater	279	2	$/unit	$70	13.0	2.93	5.86
Low Flow Pre-Rinse Spary Nozzle	1,396	1	each	$35	5.0	10.20	20.39
ES Dishwasher, High Temp, Elec Heat, Elec Booster	12,914	2	per unit	$978	16.3	10.14	20.29
ES Dishwasher, High Temp, Gas Heat, Elec Booster	5,777	2	per unit	$978	16.3	4.54	9.08
ES Dishwasher, High Temp, Gas Heat, Gas Booster	1,775	2	per unit	$1,263	18.3	1.17	2.34
ES Dishwasher, Low Temp, Elec Heat	10,520	2	per unit	$228	15.0	33.52	67.03
ES Dishwasher, Low Temp, Gas Heat	584	2	per unit	$228	20.0	2.26	4.53
Ozone Commercial laundry System	194,220	1	$/unit	$65,000	7.0	1.35	2.70
Low Flow Faucet Aerator	903	1	per unit	$3	10.0	177.40	354.81
Low Flow Showerhead	527	1	per unit	$25	10.0	10.36	20.72
Hot Water (DHW) Pipe Insulation	21	1	linear ft	$6	20.0	4.68	9.36
Tank Insulation (electric)	468	1	per square foot	$30	15.0	10.41	20.82
Drain water Heat Recovery Water Heater	251	2	$/unit	$350	20.0	0.71	1.42
Hot Water Circulation Pump Time-Clock	1,673	1	$/unit	$132	10.0	7.63	15.27
Refrigeration Heat Recovery	1,825	1	$/unit	$2,861	15.0	0.52	1.04
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	126	2	per unit	$540	7.0	0.07	0.13
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	793	2	per unit	$540	7.0	0.42	0.83
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	627	2	per unit	$540	7.0	0.33	0.66
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	1,293	2	per unit	$540	7.0	0.68	1.35
Efficient Hot Water Pump	533	1	hp	$33	15.0	11.76	23.51
Building Envelope							
Integrated Building Design	322,775	2	$/unit	$166,226	30.0	4.50	9.01
Energy Efficient Windows	342	2	100SF	$2,250	20.0	0.51	1.01
Cool Roofing	91	2	1000 sq ft roof area	$665	20.0	0.07	0.15
Ceiling Insulation R-11 to R-42	146	1	1000 sq ft roof area	$600	20.0	2.01	4.03
Below Grade Insulation	528	1	1000 sq ft basement wall area	$273	20.0	1.57	3.14
Wall Insulation R-7.5 to R13	680	1	1000 sq ft wall area	$100	20.0	87.20	174.39
Roof Insulation R-11 to R-24	76	1	1000 sq ft roof area	$1,000	20.0	0.58	1.16
Ventilation							
Enthalpy Economizer	118	2	ton	$75	10.0	0.56	1.12
Demand-Controlled Ventilation	161	2	1000 sq ft cond floor area	$75	15.0	29.32	58.64
Variable Speed Drive Control, 15 HP	10,062	1	per Unit	$2,339	10.0	1.35	2.69

Michigan Industrial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	TRC	UCT
Variable Speed Drive Control, 5 HP	3,354	1	per Unit	$780	10.0	1.35	2.69
Variable Speed Drive Control, 40 HP	26,831	1	per Unit	$6,238	10.0	1.35	2.69
Improved Duct Sealing	26	2	ton	$108	18.0	1.93	3.87
Electronically-Commutated Permanent Magnet Motors (ECPMs)	1,234	2	per motor	$78	15.0	10.16	20.32
Destratification Fan	22	1	1000 sq ft cond floor area	$375	15.0	1.28	2.57
Controled Ventilation Optimization	1,208	2	LF of Sash	$986	12.8	1.87	3.74
High Performance Air Filters	908	2	1000 cfm	$70	3.0	2.34	4.68
Space Cooling - Chillers							
Air-Cooled Recip Chiller	337	2	ton	$124	20.0	2.60	5.19
Air-Cooled Screw Chiller	332	2	ton	$128	20.0	2.48	4.96
Water-Cooled Centrifugal Chiller < 150 ton	252	2	ton	$112	20.0	2.02	4.03
Water-Cooled Centrifugal Chiller 150 - 300 ton	223	2	ton	$90	20.0	2.23	4.46
Water-Cooled Centrifugal Chiller > 300 ton	207	2	ton	$73	20.0	2.53	5.06
Water-Cooled Screw Chiller < 150 ton	251	2	ton	$113	20.0	2.08	4.16
Water-Cooled Screw Chiller 150 - 300 ton	227	2	ton	$88	20.0	2.42	4.85
Water-Cooled Screw Chiller > 300 ton	203	2	ton	$68	20.0	2.81	5.62
Chiller Tune Up/Diagnostics - 300 ton	137	1	ton	$5,100	5.0	0.01	0.02
Chiller Tune Up/Diagnostics - 500 ton	137	1	ton	$8,500	5.0	0.01	0.01
High Efficiency Pumps	201	1	per hp	$97	15.0	1.38	2.77
Efficient Chilled Water Pump	764	1	hp	$33	15.0	14.08	28.17
Chilled Hot Water Reset	113	1	ton	$5	8.3	18.91	37.82
HVAC Controls							
Programmable Thermostats	273	1	1000 sq ft cond floor area	$50	9.0	17.10	34.19
EMS install	543	1	1000 sq ft cond floor area	$7	15.0	49.08	98.17
EMS Optimization	1,720	1	1000 sq ft	$17	16.7	98.54	197.09
Hotel Guest Room Occupancy Control System	676	2	per unit	$250	8.0	1.52	3.04
Zoning	375	2	1000 sq ft cond floor area	$500	15.0	0.83	1.66
Space Cooling - Unitary and Split AC							
High Efficiency AC - Unitary & Split Systems	54	2	ton	$106	15.0	0.71	1.41
Ductless (mini split) - Cooling	251	1	ton	$802	15.0	0.27	0.55
Ground Source Heat Pump - Cooling	1,384	2	ton	$3,525	15.0	0.23	0.45
Water Loop Heat Pump (WLHP) - Cooling	36	2	ton	$25	15.0	1.02	2.05
Packaged Terminal Air Conditioner (PTAC) - Cooling	49	2	ton	$221	15.0	0.27	0.54
Lighting							
Lamp & Ballast Retrofit (HPT8 Replacing T12)	81	2	per fixture	$51	12.0	1.44	2.87
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	37	2	per fixture, Replacing standard T8 4ft 1 lamp	$46	12.0	0.73	1.46
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	63	2	per fixture, Replacing standard T12 4ft 2 lamp	$38	10.7	1.40	2.81
Fluorescent Fixture with Reflectors	159	2	$/unit	$86	13.0	1.53	3.06
T5 HP replacing T12	81	2	per fixture	$80	12.0	0.92	1.83
LED Exterior Flood and Spotlight	550	2	per fixture	$632	11.3	0.36	0.71
Parking Garage LED	1,054	2	per fixture	$754	12.0	0.89	1.77
LED Exit Sign	201	2	per fixture	$25	15.0	6.12	12.24
LED Traffic Signals	275	2	per lamp	$50	6.0	3.29	6.58
LED Pedestrian Signals	150	2	per lamp	$100	8.0	1.11	2.21

Michigan Industrial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	TRC	UCT
Light Tube	361	2	per fixture	$500	14.0	0.74	1.49
High Intensity Fluorescent Fixture (replacing HID)	684	2	per fixture	$179	12.2	3.35	6.70
42W 8 lamp Hi Bay CFL	345	2	per fixture, Replacing 400W HID	$395	12.0	0.77	1.53
HID Fixture Upgrade - Pulse Start Metal Halide	769	2	per fixture	$175	13.0	4.09	8.18
Induction Fluorescent	47	2	Watt Reduced	$22	12.5	1.62	3.24
CFL Fixture	342	2	per fixture	$45	12.0	6.92	13.85
CFL Screw-in	213	2	per lamp	$5	2.0	7.67	15.34
LED Screw In	156	2	$/unit	$37	15.0	5.33	10.66
LED Fuel Pump Canopy Fixture	195	2	Not Found	$343	21.0	0.77	1.55
CFL Flood	202	2	per lamp	$6	2.0	6.54	13.08
LED Downlight	121	2	per fixture	$39	10.3	2.47	4.93
LED Replacing Halogen Incandescent	187	2	per lamp	$26	8.0	4.74	9.48
New Fluorescent Fixtures T5/HP T8 (replacing T12)	48	2	$/unit	$88	15.0	0.66	1.31
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	134	2	$/unit	$80	15.0	1.82	3.63
LED Roadway Lights	484	2	Not Found	$310	18.0	1.93	3.87
LED Outdoor Area Fixture (Parking Light or Street Light)	768	2	Not Found	$643	13.0	1.18	2.37
LED Pin Based Lamp	171	2	$/unit	$35	15.0	6.33	12.66
LED Wallpack	722	2	$/unit	$250	15.0	3.37	6.74
CFL Exterior Lighting	1,021	2	per fixture	$433	12.0	1.01	2.02
CFL Screw in Specialty	120	2	per lamp	$3	2.0	16.62	33.24
LED Specialty	111	2	per lamp	$43	8.8	1.72	3.45
Illuminated Signs to LED	6	2	per watt reduced	$53	9.5	0.73	1.45
LED Lighting in Refrigeration	460	2	per door	$390	16.0	0.85	1.71
Lighting Controls							
Controls for HID (Hi/Lo)	149	1	per fixture	$400	10.0	0.23	0.47
Controls for H.I.F.	195	2	$/unit	$74	10.0	2.21	4.43
Daylight Dimming	12,100	1	10,000 SF	$3,000	12.0	3.92	7.84
Remote Mounted Occupancy Sensor	994	2	per sensor	$200	10.0	2.14	4.27
Switch Mounted Occupancy Sensor	751	2	per sensor	$463	10.0	0.70	1.40
Central Lighting Control	11,500	2	10,000 SF	$2,700	12.0	3.87	7.75
Switching Controls for Multilevel Lighting (Non-HID)	8,000	2	10,000 SF	$3,000	12.0	2.59	5.18
Stairwell Bi-Level Control	4,809	2	per kW controlled	$825	9.0	2.89	5.79
Occupancy Sensors for LED Refrigerator Lighting	195	2	per door	$20	16.0	6.98	13.96
Space Heating							
High Efficiency Heat Pump	79	2	ton	$156	15.0	0.30	0.61
Ground Source Heat Pump - Heating	1,384	2	ton	$3,525	15.0	0.20	0.40
Ductless (mini split) - Heating	251	1	ton	$802	15.0	0.17	0.35
High Efficiency Pumps	201	2	per hp	$97	15.0	1.08	2.16
VFD Pump	1,724	1	per CHW pump hp	$149	10.0	4.36	8.73
ECM motors on furnaces	720	1	per Furnace	$250	20.0	1.76	3.52
Water Loop Heat Pump (WLHP) - Heating	36	2	ton	$25	15.0	0.69	1.39
Packaged Terminal Air Conditioner (PTAC) - Heating	153	2	ton	$138	15.0	0.59	1.18
Other							
Electrically Commutated Plug Fans in data centers	1,445	2	per fan	$718	15.0	1.53	3.06
NEMA Premium Transformer, single-phase	7	2	per kVA	$12	30.0	1.23	2.46
NEMA Premium Transformer, three-phase	10	2	per kVA	$10	30.0	1.29	2.58
Vendor Miser for Non-Refrig Equipment	474	1	per unit	$135	5.0	0.71	1.41
Optimized Snow and Ice Melt Controls	0	1	SF	$0	15.0	21.46	42.92
Engine Block Heater Timer	576	2	per engine block	$50	5.0	19.37	38.74
Machine Drive							
Sensors & Controls	1	1	$/kWh	$0.145	15.0	6.54	13.08

Michigan Industrial Measure Database - Electric

Measure Savings, Cost and Useful Life

Measure Name	Annual kWh Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	TRC	UCT
Energy Information System	1	1	$/kWh	$0.635	15.0	1.49	2.99
Electric Supply System Improvements	1	1	$/kWh	$0.104	15.0	9.12	18.23
Advanced Efficient Motors	1	1	$/kWh	$0.491	25.0	2.66	5.32
Industrial Motor Management	1	1	$/kWh	$0.079	5.0	5.00	9.99
Advanced Lubricants	1	1	$/kWh	$0.000	1.0	8,886.07	17772.14
Motor System Optimization (Including ASD)	1	1	$/kWh	$0.097	15.0	9.77	19.55
Pump System Efficiency Improvements	1	1	$/kWh	$0.083	15.0	11.42	22.85
Fan System Improvements	1	1	$/kWh	$0.249	15.0	3.81	7.62
Compressed Air System Management	1	1	$/kWh	$0.000	1.0	8,886.07	17772.14
Compressed Air - Advanced Compressor Controls	1	1	$/kWh	$0.001	15.0	948.16	1896.31
Process Cooling & Refrigeration							
Sensors & Controls	1	1	$/kWh	$0.145	15.0	6.54	13.08
Energy Information System	1	1	$/kWh	$0.635	15.0	1.49	2.99
Electric Supply System Improvements	1	1	$/kWh	$0.104	15.0	9.12	18.23
Improved Refrigeration	1	1	$/kWh	$0.034	15.0	27.89	55.77
Process Heating							
Sensors & Controls	1	1	$/kWh	$0.145	15.0	6.54	13.08
Energy Information System	1	1	$/kWh	$0.635	15.0	1.49	2.99
Electric Supply System Improvements	1	1	$/kWh	$0.104	15.0	9.12	18.23

Michigan Industrial Measure Database - Electric

Remaining Factor:

Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Computers and Office Equipment																				
Energy Star Compliant Single Door Refrigerator	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
PC Network Energy Management Controls replacing no central control	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
EZ Save Monitor Power Management Software	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
Energy Star UPS	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%
Water Heating																				
Heat Pump Water Heater	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
Booster Water Heater	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
Point of Use Water Heating	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
Solar Water Heating System	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
High Efficiency Electric Water Heater	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
Low Flow Pre-Rinse Spary Nozzle	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, Low Temp, Elec Heat	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
ES Dishwasher, Low Temp, Gas Heat	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Ozone Commercial laundry System	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Low Flow Faucet Aerator	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
Low Flow Showerhead	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hot Water (DHW) Pipe Insulation	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
Tank Insulation (electric)	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Drain water Heat Recovery Water Heater	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%	94%
Hot Water Circulation Pump Time-Clock	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Refrigeration Heat Recovery	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%

Michigan Industrial Measure Database - Electric

Remaining Factor:

Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
Efficient Hot Water Pump	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Pools																				
Energy Efficient Pool Pump with controls	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Solar Pool Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heat Pump Pool Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
High efficiency spas/hot tubs	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Building Envelope																				
Integrated Building Design	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Energy Efficient Windows	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Cool Roofing	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Ceiling Insulation R-11 to R-42	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%
Below Grade Insulation	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
Wall Insulation R-7.5 to R13	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Roof Insulation R-11 to R-24	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%
Ventilation																				
Enthalpy Economizer	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Demand-Controlled Ventilation	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Variable Speed Drive Control, 15 HP	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Variable Speed Drive Control, 5 HP	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Variable Speed Drive Control, 40 HP	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Improved Duct Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Destratification Fan	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
Controled Ventilation Optimization	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%	71%
High Performance Air Filters	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Space Cooling - Chillers																				
Air-Cooled Recip Chiller	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Air-Cooled Screw Chiller	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Centrifugal Chiller < 150 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Centrifugal Chiller 150 - 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Centrifugal Chiller > 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Screw Chiller < 150 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Screw Chiller 150 - 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Water-Cooled Screw Chiller > 300 ton	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Chiller Tune Up/Diagnostics - 300 ton	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Chiller Tune Up/Diagnostics - 500 ton	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
High Efficiency Pumps	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Efficient Chilled Water Pump	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%

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Chilled Hot Water Reset	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
HVAC Controls																				
Programmable Thermostats	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
EMS install	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
EMS Optimization	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Hotel Guest Room Occupancy Control System	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Zoning	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
Space Cooling - Unitary and Split AC																				
High Efficiency AC - Unitary & Split Systems	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Ductless (mini split) - Cooling	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
Ground Source Heat Pump - Cooling	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Water Loop Heat Pump (WLHP) - Cooling	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Packaged Terminal Air Conditioner (PTAC) - Cooling	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Cooking																				
HE Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Combination Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Convection Ovens	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Holding Cabinet	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%
HE Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HE Griddle	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Induction Cooktops	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Lighting																				
Lamp & Ballast Retrofit (HPT8 Replacing T12)	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Fluorescent Fixture with Reflectors	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
T5 HP replacing T12	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
LED Exterior Flood and Spotlight	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Parking Garage LED	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Exit Sign	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%	39%
LED Traffic Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Pedestrian Signals	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Light Tube	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
High Intensity Fluorescent Fixture (replacing HID)	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
42W 8 lamp Hi Bay CFL	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

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HID Fixture Upgrade - Pulse Start Metal Halide	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Induction Fluorescent	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
CFL Fixture	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
CFL Screw-in	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
LED Screw In	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
LED Fuel Pump Canopy Fixture	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CFL Flood	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
LED Downlight	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
LED Replacing Halogen Incandescent	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
LED Roadway Lights	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Outdoor Area Fixture (Parking Light or Street Light)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Pin Based Lamp	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
LED Wallpack	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
CFL Exterior Lighting	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
CFL Screw in Specialty	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
LED Specialty	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
Illuminated Signs to LED	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LED Lighting in Refrigeration	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
Lighting Controls																				
Controls for HID (Hi/Lo)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Controls for H.I.F.	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Daylight Dimming	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Daylight Dimming - New Construction	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
15% More Efficient Design - New Construction	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
30% More Efficient Design - New Construction	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Remote Mounted Occupancy Sensor	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Switch Mounted Occupancy Sensor	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Central Lighting Control	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Switching Controls for Multilevel Lighting (Non-HID)	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Lighting Power Density - Exceed Code by 10%	66%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stairwell Bi-Level Control	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

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Occupancy Sensors for LED Refrigerator Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration																				
Vending Miser for Soft Drink Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerated Case Covers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration Economizer	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
Commercial Ice-makers	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Evaporator Fan Motor Controls on S-P motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on PSC motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Evaporator Fan Motor Controls on ECM motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
H.E. Evaporative Fan Motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Zero-Energy Doors	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%	96%
Door Heater Controls	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
Discus and Scroll Compressors	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%
Floating Head Pressure Control	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
ENERGY STAR Commercial Solid Door Refrigerators	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Solid Door Freezers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ENERGY STAR Commercial Glass Door Refrigerators	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
ENERGY STAR Commercial Glass Door Freezers	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Strip Curtains	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Efficient Refrigeration Condenser	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%
Door Gaskets - Cooler and Freezer	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Reach-in Refrigerated display case door retrofit	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
Refrigeration Savings due to Lighting Savings	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ECM case fan motors	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%
Efficient low-temp compressor	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Automatic High Speed Doors - between freezer and cooler	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigerant charging correction	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Compressed Air																				
Efficient Air Compressors	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Automatic Drains	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%

Michigan Industrial Measure Database - Electric

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Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Cycling Dryers	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Low Pressure Drop-Filters	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Air-Entraining Air Nozzles	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Receiver Capacity Addition	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Barrel Wraps Inj Mold and Extruders	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Pellet Dryer Tanks and Ducts	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Compressed Air Audits & Leak Repair	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Compressed Air Pressure Flow Controller replacing no flow controller	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
High Efficiency Air Dryers	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Air Compressor Outdoor Air Intake	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Variable Displacement Air Compressor	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Space Heating																				
High Efficiency Heat Pump	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Ground Source Heat Pump - Heating	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%
Ductless (mini split) - Heating	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
High Efficiency Pumps	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
VFD Pump	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
ECM motors on furnaces	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Water Loop Heat Pump (WLHP) - Heating	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Packaged Terminal Air Conditioner (PTAC) - Heating	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Other																				
Electrically Commutated Plug Fans in data centers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NEMA Premium Transformer, single-phase	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
NEMA Premium Transformer, three-phase	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Commercial Clothes washers - Non-Water Heating Savings	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%
Vendor Miser for Non-Refrig Equipment	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Optimized Snow and Ice Melt Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Engine Block Heater Timer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Machine Drive																				
Sensors & Controls	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Energy Information System	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Electric Supply System Improvements	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Advanced Efficient Motors	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Industrial Motor Management	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Advanced Lubricants	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Motor System Optimization (Including ASD)	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Pump System Efficiency Improvements	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Fan System Improvements	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%

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Compressed Air System Management	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Compressed Air - Advanced Compressor Controls	71%	71%	72%	72%	72%	76%	64%	64%	72%	72%	80%	83%	74%	74%	76%	77%	77%	81%	72%	72%
Process Cooling & Refrigeration																				
Sensors & Controls	72%	72%	86%	86%	86%	78%	64%	64%	86%	86%	82%	83%	76%	76%	78%	80%	80%	84%	86%	86%
Energy Information System	72%	72%	86%	86%	86%	78%	64%	64%	86%	86%	82%	83%	76%	76%	78%	80%	80%	84%	86%	86%
Electric Supply System Improvements	72%	72%	86%	86%	86%	78%	64%	64%	86%	86%	82%	83%	76%	76%	78%	80%	80%	84%	86%	86%
Improved Refrigeration	72%	72%	86%	86%	86%	78%	64%	64%	86%	86%	82%	83%	76%	76%	78%	80%	80%	84%	86%	86%
Process Heating																				
Sensors & Controls	69%	69%	81%	81%	81%	70%	64%	64%	81%	81%	75%	83%	67%	67%	71%	72%	72%	77%	81%	81%
Energy Information System	69%	69%	81%	81%	81%	70%	64%	64%	81%	81%	75%	83%	67%	67%	71%	72%	72%	77%	81%	81%
Electric Supply System Improvements	69%	69%	81%	81%	81%	70%	64%	64%	81%	81%	75%	83%	67%	67%	71%	72%	72%	77%	81%	81%

Michigan Industrial Measure Database - Electric

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Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Computers and Office Equipment																				
Energy Star Compliant Single Door Refrigerator	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
PC Network Energy Management Controls replacing no central control	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
EZ Save Monitor Power Management Software	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Energy Star UPS	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Water Heating																				
Heat Pump Water Heater	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Booster Water Heater	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Point of Use Water Heating	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Solar Water Heating System	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
High Efficiency Electric Water Heater	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Low Flow Pre-Rinse Spary Nozzle	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
ES Dishwasher, High Temp, Elec Heat, Elec Booster	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
ES Dishwasher, High Temp, Gas Heat, Elec Booster	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
ES Dishwasher, High Temp, Gas Heat, Gas Booster	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
ES Dishwasher, Low Temp, Elec Heat	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
ES Dishwasher, Low Temp, Gas Heat	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Ozone Commercial laundry System	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Low Flow Faucet Aerator	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
Low Flow Showerhead	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Hot Water (DHW) Pipe Insulation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Tank Insulation (electric)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
Drain water Heat Recovery Water Heater	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Hot Water Circulation Pump Time-Clock	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Refrigeration Heat Recovery	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Clothes Washer ENERGY STAR, Gas water heater, Gas dryer	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Clothes Washer ENERGY STAR, Gas water heater, Electric dryer	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Clothes Washer ENERGY STAR, Electric Water heater, Gas Dryer	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%

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Clothes Washer ENERGY STAR, Electric Water heater, Electric Dryer	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Efficient Hot Water Pump	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
Pools																				
Energy Efficient Pool Pump with controls	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%	67%
Solar Pool Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heat Pump Pool Heater	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%	61%
High efficiency spas/hot tubs	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Building Envelope																				
Integrated Building Design	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Energy Efficient Windows	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Cool Roofing	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Ceiling Insulation R-11 to R-42	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Below Grade Insulation	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Wall Insulation R-7.5 to R13	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Roof Insulation R-11 to R-24	8%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Ventilation																				
Enthalpy Economizer	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Demand-Controlled Ventilation	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Variable Speed Drive Control, 15 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Variable Speed Drive Control, 5 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Variable Speed Drive Control, 40 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Improved Duct Sealing	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
Destratification Fan	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
Controled Ventilation Optimization	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
High Performance Air Filters	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Space Cooling - Chillers																				
Air-Cooled Recip Chiller	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Air-Cooled Screw Chiller	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Water-Cooled Centrifugal Chiller < 150 ton	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Water-Cooled Centrifugal Chiller 150 - 300 ton	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Water-Cooled Centrifugal Chiller > 300 ton	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Water-Cooled Screw Chiller < 150 ton	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
Water-Cooled Screw Chiller 150 - 300 ton	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Water-Cooled Screw Chiller > 300 ton	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
Chiller Tune Up/Diagnostics - 300 ton	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Chiller Tune Up/Diagnostics - 500 ton	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
High Efficiency Pumps	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Efficient Chilled Water Pump	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Chilled Hot Water Reset	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%

Michigan Industrial Measure Database - Electric

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Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
HVAC Controls																				
Programmable Thermostats	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
EMS install	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
EMS Optimization	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Hotel Guest Room Occupancy Control System	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Zoning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Space Cooling - Unitary and Split AC																				
High Efficiency AC - Unitary & Split Systems	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Ductless (mini split) - Cooling	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%
Ground Source Heat Pump - Cooling	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
Water Loop Heat Pump (WLHP) - Cooling	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Packaged Terminal Air Conditioner (PTAC) - Cooling	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Cooking																				
HE Steamer	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
HE Combination Oven	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
HE Convection Ovens	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
HE Holding Cabinet	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%
HE Fryer	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
HE Griddle	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Induction Cooktops	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Lighting																				
Lamp & Ballast Retrofit (HPT8 Replacing T12)	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Fluorescent Fixture with Reflectors	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
T5 HP replacing T12	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
LED Exterior Flood and Spotlight	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%	38%
Parking Garage LED	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
LED Exit Sign	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
LED Traffic Signals	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
LED Pedestrian Signals	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Light Tube	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
High Intensity Fluorescent Fixture (replacing HID)	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
42W 8 lamp Hi Bay CFL	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
HID Fixture Upgrade - Pulse Start Metal Halide	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%

Michigan Industrial Measure Database - Electric

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Induction Fluorescent	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
CFL Fixture	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%
CFL Screw-in	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
LED Screw In	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%
LED Fuel Pump Canopy Fixture	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%	73%
CFL Flood	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%	63%
LED Downlight	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
LED Replacing Halogen Incandescent	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
New Fluorescent Fixtures T5/HP T8 (replacing T12)	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
LED Roadway Lights	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
LED Outdoor Area Fixture (Parking Light or Street Light)	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%
LED Pin Based Lamp	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%
LED Wallpack	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%
CFL Exterior Lighting	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%
CFL Screw in Specialty	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%
LED Specialty	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%	86%
Illuminated Signs to LED	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
LED Lighting in Refrigeration	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Lighting Controls																				
Controls for HID (Hi/Lo)	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Controls for H.I.F.	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%
Daylight Dimming	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Daylight Dimming - New Construction	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
15% More Efficient Design - New Construction	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
30% More Efficient Design - New Construction	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Remote Mounted Occupancy Sensor	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Switch Mounted Occupancy Sensor	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Central Lighting Control	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Switching Controls for Multilevel Lighting (Non-HID)	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%	18%
Lighting Power Density - Exceed Code by 10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Stairwell Bi-Level Control	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
Occupancy Sensors for LED Refrigerator Lighting	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Refrigeration																				

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Vending Miser for Soft Drink Vending Machines	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Refrigerated Case Covers	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Refrigeration Economizer	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Commercial Ice-makers	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Evaporator Fan Motor Controls on S-P motors	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Evaporator Fan Motor Controls on PSC motors	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Evaporator Fan Motor Controls on ECM motors	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
H.E. Evaporative Fan Motors	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Zero-Energy Doors	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Door Heater Controls	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%
Discus and Scroll Compressors	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Floating Head Pressure Control	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
ENERGY STAR Commercial Solid Door Refrigerators	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
ENERGY STAR Commercial Solid Door Freezers	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
ENERGY STAR Commercial Glass Door Refrigerators	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
ENERGY STAR Commercial Glass Door Freezers	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Strip Curtains	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Efficient Refrigeration Condenser	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Door Gaskets - Cooler and Freezer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reach-in Refrigerated display case door retrofit	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Refrigeration Savings due to Lighting Savings	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ECM case fan motors	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
Efficient low-temp compressor	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Automatic High Speed Doors - between freezer and cooler	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Refrigerant charging correction	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
Compressed Air																				
Efficient Air Compressors	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Automatic Drains	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cycling Dryers	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Low Pressure Drop-Filters	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Air-Entraining Air Nozzles	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%	42%
Receiver Capacity Addition	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

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Barrel Wraps Inj Mold and Extruders	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%
Pellet Dryer Tanks and Ducts	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Compressed Air Audits & Leak Repair	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Compressed Air Pressure Flow Controller replacing no flow controller	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
High Efficiency Air Dryers	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Air Compressor Outdoor Air Intake	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Variable Displacement Air Compressor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Space Heating																				
High Efficiency Heat Pump	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
Ground Source Heat Pump - Heating	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
Ductless (mini split) - Heating	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%	62%
High Efficiency Pumps	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VFD Pump	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%	41%
ECM motors on furnaces	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
Water Loop Heat Pump (WLHP) - Heating	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Packaged Terminal Air Conditioner (PTAC) - Heating	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Other																				
Electrically Commutated Plug Fans in data centers	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
NEMA Premium Transformer, single-	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
NEMA Premium Transformer, three-phase	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%	36%
Commercial Clothes washers - Non-Water Heating Savings	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Vendor Miser for Non-Refrig Equipment	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
Optimized Snow and Ice Melt Controls	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
Engine Block Heater Timer	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
Machine Drive																				
Sensors & Controls	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Energy Information System	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Electric Supply System Improvements	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Advanced Efficient Motors	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Industrial Motor Management	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Advanced Lubricants	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Motor System Optimization (Including ASD)	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
Pump System Efficiency Improvements	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%	16%
Fan System Improvements	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Compressed Air System Management	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Compressed Air - Advanced Compressor Controls	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Process Cooling & Refrigeration																				

Michigan Industrial Measure Database - Electric

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Sensors & Controls	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Energy Information System	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Electric Supply System Improvements	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Improved Refrigeration	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Process Heating																				
Sensors & Controls	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Energy Information System	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Electric Supply System Improvements	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%

Michigan Industrial Measure Database - Electric

Electric Measure Sources

Source Number	Source
1	Michigan Master Database of Deemed Savings - 2013 - Non-Weather Sensitive Commercial
2	Michigan Master Database of Deemed Savings - 2013 - Weather Sensitive
3	Michigan Baseline 2011: Commercial Baseline Report
4	http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/appliance_calculator.xlsx
5	Big Ass Fan Company Calculations, http://www.todaysfacilitymanager.com/articles/the-hvac-factor-high-volume-low-speed-fans.php
6	2009 MPRP EE Potential Study - June 2009
7	Vermont TRM - Manual No. 2011-73b
8	Vermont Energy Efficiency Potential Study - January 2007
9	Natural Gas Energy Efficiency Potential in Massachusetts, Prepared for GasNetworks by GDS Associates, April 22, 2009
10	Energy Efficiency and Renewable Energy Resource Development Potential in New York State - Final Report, Volume 5 Energy Efficiency Technical Appendices, August 2003.
11	GDS Benefit Cost Model
12	Federal Energy Management Program (FEMP), Energy Cost Calculator for Electric and Gas Water Heaters
13	http://www.aceee.org/consumer/water-heating
14	GDS Associates estimate based upon review of various customer and vendor surveys, baseline studies and potential studies conducted by GDS in other states
15	GDS New Hampshire Potential Study
16	Efficiency Vermont Technical Reference User Manual (TRM) No. 2006-41
17	Efficiency Vermont Technical Reference User Manual (TRM) No. 2010-64
18	Efficiency Maine Commercial Technical Reference Manual No. 2007-01
19	Efficiency Maine Commercial Technical Reference Manual No. 2010-01
20	Refrigerant Heat Recovery System Learning Center Dining Facility, PG&E Food Services Technology Center, April 1993
21	http://apps1.eere.energy.gov/consumer/your_home/space_heating_cooling/index.cfm/mytopic=12430
22	http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13200
23	US DOE, EERE Consumer's Guide to Energy Efficiency and Renewable Energy, "Solar Swimming Pool Heaters" http://apps1.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=13230
24	ES Analysis-ResDWH: ENERGY STAR® Residential Water Heaters: Final Criteria Analysis (www.energystar.gov). April 2008.
25	http://web.archive.org/web/20061006153904/http://www.energy.ca.gov/appliances/2003rulemaking/documents/case_studies/CASE_Portable_Spa.pdf
26	City of Keene NH, Cities for Climate Protection Campaign, Local Action Plan, February 19, 2004
27	EPA Energy Star Program
28	DC SEU Technical Reference Manual 2012-1.2
29	Maryland Baseline Study – Commercial and Industrial Sectors, ITRON, December 3, 2010
30	Delaware Statewide Commercial & Industrial End Use & Saturation Study - July 26, 2012
31	Independent Assessment of Conservation and Energy Efficiency Potential for Connecticut and the Southwest Connecticut Region, GDS Associates, June
32	Building Commissioning - A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions. Lawrence Berkeley National Laboratory. Report Prepared for: California Energy Commission Public Interest Energy Research (PIER) - July 21, 2009
33	DTE Non-Residential Potential Study - 2010. Cadmus
34	Efficiency Maine Commercial Technical Reference Manual - Version 2013.1, January 1, 2013, Efficiency Maine Trust
35	Mid-Atlantic Technical Reference Manual - Version 3.0, March, 2013, NEEP
36	MEMD Support Documentation - 2014 - Workbooks and Algorithms
37	ENERGY STAR Qualified Office Equipment Calculator
38	Energy Consumption by Commercial Office and Telecommunication Equipment, ACEEE August 18, 2002
39	U.S. Department of Energy, Office of Industrial Technologies, United States Industrial Electric Motor Systems Market Opportunities, December 2002.
40	U.S. Department of Energy, Office of Industrial Technologies, Assessment of the Market for Compressed Air Efficiency Services, 2002.
41	Advancing Energy Efficeincy In Arkansas, ACEEE, March 2011, p. 173
42	GDS Maine Potential Study (GDS Engineering Estimates)
43	U.S. Energy Information Administration, Model Documentation Report: Industrial Demand Module of the National Energy Modeling System, May 2013.

Michigan Industrial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/Unit	Effective Measure Life	Savings Factor	Remaining Factor
Computers & Office Equipment					
Energy Star office equipment including computers, monitors, copiers, multi-function machines.	26	27	27	26,29	3
Energy Efficient "Smart" Power Strip for PC/Monitor/Printer	1	1	1	36	14
EZ Save Monitor Power Management Software	16	16	16	16	14
Ventilation					
Dual Enthalpy Economizer	2	2	2	10	3
Demand-Controlled Ventilation	2	2	2	14	3
Variable Speed Drive Control, 15 HP	2	2	2	8	14
Variable Speed Drive Control, 5 HP	2	2	2	8	14
Variable Speed Drive Control, 40 HP	2	2	2	8	14
Improved Duct Sealing	2	2	2	7	3
Electronically-Commutated Permanent Magnet Motors (ECPMs)	1	1	1	36	14
Desrtratification Fan	2	2	2	5	14
Controlled Ventilation Optimization	2	2	2	2	14
High Performance Air Filters	2	2	2	2	14
Building Envelope					
Energy Efficient Windows	2	2	2	2	3
Ceiling insulation to R32	2	2	2	2	3
Below Grade Insulation to R6	2	2	2	14	3
Wall Insulation to R12	2	2	2	14	3
Roof Insulation to R-18	2	2	2	14	3
Water Heating					
Heat Pump Water Heater	1	1	1	1, 36	3
Booster Water Heater	10	10	10	10	3
Point of Use Water Heating	10	10	10	10	3
Solar Water Heating System	9	9	3	14	14
High Efficiency Electric Water Heater	12	13	12	14	3
Low Flow Pre-Rinse Spray Nozzle (included in 2006 Federal Standards) (Electric HW)	1	1	1	36	14
Faucet Aerators	1	1	1	36	3
Low-Flow Showerheads	1	1	1	36	3
Commercial Dishwasher (Under Counter Hi-Temp, Electric DHW)	1	1	1	36	33
Commercial Dishwasher (Single Tank Conveyor Hi-Temp, - Electric DHW)	1	1	1	36	33
Commercial Clothes washers - Water Heating Savings	1	1	1	36	33
Ozone Commercial laundry System	14	15	8	14	15
Drain water Heat Recovery Water Heater	10	10	10	10	3
Hot Water Circulation Pump Time-Clock	9	9	9	9	9
Hot Water (DHW) Pipe Insulation	1	1	1	14	3
Refrigeration Heat Recovery	20	20	9	14	3
Space Cooling - Chillers					

Michigan Industrial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/Unit	Effective Measure Life	Savings Factor	Remaining Factor
Air-Cooled Recip Chiller	2	2	2	2	14
Air-Cooled Screw Chiller	2	2	2	2	14
Water-Cooled Centrifugal Chiller < 150 ton	2	2	2	2	14
Water-Cooled Centrifugal Chiller 150 - 300 ton	2	2	2	2	14
Water-Cooled Centrifugal Chiller > 300 ton	2	2	2	2	14
Water-Cooled Screw Chiller < 150 ton	2	2	2	2	14
Water-Cooled Screw Chiller 150 - 300 ton	2	2	2	2	14
Water-Cooled Screw Chiller > 300 ton	2	2	2	2	14
Chiller Tune Up/Diagnostics - 300 ton	2	2	2	8	3
Chiller Tune Up/Diagnostics - 500 ton	2	2	2	8	3
High Efficiency Pumps	1	1	1	2	29
Efficient Chilled Water Pump	2	2	2	2	29
Chilled Hot Water Reset	2	2	2	14	29
HVAC Controls					
Programmable Thermostats	2	2	2	8	3
EMS install	2	2	2	8	3
EMS Optimization	2	2	2	14	3
Space Cooling - Unitary & Split AC					
High Efficiency AC - Unitary & Split Systems	2	2	2	2	14
Ductless (mini split) - Cooling	2	2	2	2	3
Ground Source Heat Pump - Cooling	2	2	2	2	14
Water Loop Heat Pump (WLHP) - Cooling	2	2	2	2	14
Packaged Terminal Air Conditioner (PTAC) - Cooling	2	2	2	2	14
Lighting					
Lamp & Ballast Retrofit (HPT8 Replacing T12)	1	1	1	36	3
Lamp & Ballast Retrofit (HPT8 Replacing Standard T8)	1	1	1	36	3
Lamp & Ballast Retrofit (Low Wattage HPT8 Replacing Standard T8)	1	1	1	36	3
Fluorescent Fixture with Reflectors	19	19	19	14	3
T5 HP replacing T12	1	1	1	36	3
LED Exterior Flood and Spotlight	1	1	1	36	3
Parking Garage LED	1	1	1	36	30
LED Exit Sign	1	1	1	36	3
LED Traffic Signals	1	1	1	36	30
LED Pedestrian Signals	1	1	1	36	30
Light Tube	1	1	1	14	3
High Intensity Fluorescent Fixture (replacing HID)	1	1	1	36	3
42W 8 lamp Hi Bay CFL	1	1	1	36	3
HID Fixture Upgrade - Pulse Start Metal Halide	1	1	1	36	3
Induction Fluorescent	1	1	1	36	3
CFL Fixture	1	1	1	36	3
CFL Screw-in	1	1	1	36	3
LED Screw In	28	28	28	14	3
LED Fuel Pump Canopy Fixture	35	35	35	14	14
CFL Flood	1	1	1	36	3

Michigan Industrial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/Unit	Effective Measure Life	Savings Factor	Remaining Factor
LED Downlight	1	1	1	36	3
LED Replacing Halogen Incandescent	1	1	1	36	3
New Fluorescent Fixtures T5/HP T8 (replacing T12)	19	19	28	14	3
New Fluorescent Fixtures T5/HP T8 reduced wattage (replacing T8)	19	19	28	14	3
LED Roadway Lights	35	35	35	14	30
LED Outdoor Area Fixture (Parking Light or Street Light)	34	34	34	14	30
LED Pin Based Lamp	28	28	28	14	3
LED Wallpack	28	28	28	14	3
CFL Exterior Lighting	1	1	1	36	3
CFL Screw in Specialty	1	1	1	36	3
LED Specialty	1	1	1	36	3
Illuminated Signs to LED	1	1	1	14	3
LED Lighting in Refrigeration	1	1	1	36	3
Lighting Controls					
Controls for HID (Hi/Lo)	1	1	1	36	3
Controls for H.I.F.	19	19	19	19	3
Daylight Dimming	1	1	1	36	3
Remote Mounted Occupancy Sensor	1	1	1	36	3
Switch Mounted Occupancy Sensor	1	1	1	36	3
Central Lighting Control	1	1	1	36	3
Switching Controls for Multilevel Lighting (Non-HID)	1	1	1	36	3
Stairwell Bi-Level Control	1	1	1	36	3
Occupancy Sensors for LED Refrigerator Lighting	1	1	1	36	3
Space Heating					
High Efficiency Heat Pump	2	2	2	2	14
Ground Source Heat Pump - Heating	2	2	2	2	14
Ductless (mini split) - Heating	2	2	2	2	14
High Efficiency Pumps	1	1	1	36	29
VFD Pump	2	2	2	8	14
ECM motors on furnaces	1	1	1	2	29
Water Loop Heat Pump (WLHP) - Heating	2	2	2	2	14
Packaged Terminal Air Conditioner (PTAC) - Heating	2	2	2	2	14
Transformers					
Energy Efficient Transformers - CEE Tier 1	1	1	1	36	14
Energy Efficient Transformers - CEE Tier 2	1	1	1	36	14
Other					
Electrically Commutated Plug Fans in data centers	1	1	1	36	14
Vendor Miser for Non-Refrig Equipment	1	1	1	36	3
Optimized Snow and Ice Melt Controls	1	1	1	36	14
Engine Block Heater Timer	1	1	1	36	14
Machine Drive					
Sensors & Controls	41	41	41	41	43
Energy Information System	41	41	41	41	43
Electric Supply System Improvements	41	41	41	41	43

Michigan Industrial Measure Database - Electric
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Electric Measure Source List

Measure Name	Annual kWh Savings	Cost/Unit	Effective Measure Life	Savings Factor	Remaining Factor
Advanced Efficient Motors	41	41	41	41	43
Industrial Motor Management	41	41	41	41	43
Advanced Lubricants	41	41	41	41	43
Motor System Optimization (Including ASD)	41	41	41	41	43
Pump System Efficiency Improvements	41	41	41	41	43
Fan System Improvements	41	41	41	41	43
Compressed Air System Management	41	41	41	41	43
Compressed Air - Advanced Compressor Controls	41	41	41	41	43
Process Cooling & Refrigeration					
Sensors & Controls	41	41	41	41	43
Energy Information System	41	41	41	41	43
Electric Supply System Improvements	41	41	41	41	43
Improved Refrigeration	41	41	41	41	43
Process Heating					
Sensors & Controls	41	41	41	41	43
Energy Information System	41	41	41	41	43
Electric Supply System Improvements	41	41	41	41	43

Michigan Industrial Measure Database - Natural Gas

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Conventional Boiler Use																				
High Efficiency Hot Water Boiler (<=300,000 Btu/h) (AFUE = 85%-90%)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Condensing Boiler (<=300,000 Btu/h) (AFUE>90%)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
High Efficiency Steam Boiler (<=300,000 Btu/h) (AFUE >=82%)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Boiler Tune-Up	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Pipe Insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Reset Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler O2 Trim Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electronic Parallel Positioning Controls (linkage less)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Blowdown Heat Exchanger (Steam)	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Repair Malfunctioning Steam Traps	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Insulate Steam Lines / Condensate Tank	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%	47%
Process Heating																				
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
Direct Fired Make-up Air System	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
Direct Contact Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Tune-Up	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Pipe Insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler Reset Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Boiler O2 Trim Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electronic Parallel Positioning Controls (linkage less)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Waste-Heat Recovery	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Regenerative Thermal Oxidizer vs. STO	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Regenerative Thermal Oxidizer vs. CTO	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%

Michigan Industrial Measure Database - Natural Gas

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Improved Sensors & Process Controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Refrigeration Heat Recovery	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Facility HVAC																				
High Efficiency Furnace (<=300,000 Btu/h) (AFUE >=92%)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Gas Unit Heater - Condensing	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Infrared Heater (low intensity - two stage)	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Insulate and Seal Ducts (New Aerosl Duct Sealing)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stack Heat Exchanger (Standard Economizer)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stack Heat Exchanger (Condensing Economizer)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heat Recovery: Air to Air	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Direct Fired Make-up Air System	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	0%	0%	100%	0%	0%
Building Envelope																				
Integrated Building Design	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Energy Efficient Windows	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Cool Roofing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ceiling Insulation R-11 to R-42	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Below Grade Insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Wall Insulation R-7.5 to R13	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Roof Insulation R-11 to R-24	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Ventilation																				
Enthalpy Economizer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Demand-Controlled Ventilation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Variable Speed Drive Control, 15 HP	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Variable Speed Drive Control, 5 HP	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Variable Speed Drive Control, 40 HP	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
Improved Duct Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Destratification Fan	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Controled Ventilation Optimization	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
High Performance Air Filters	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
HVAC Controls																				
Programmable Thermostats	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
EMS install	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
EMS Optimization	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Hotel Guest Room Occupancy Control System	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Michigan Industrial Measure Database - Natural Gas

Base Case Factor:

Is the fraction of the end use energy that is applicable for the efficient technology in a given market segment. For example, for fluorescent lighting, this would be the fraction of all lighting kWh in a given market segment that is associated with fluorescent fixtures.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Zoning	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Machine Drive																				
Sensors & Controls	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Energy Information System	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
Advanced Lubricants	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pump System Efficiency Improvements	23%	23%	23%	23%	0%	12%	33%	3%	59%	28%	34%	9%	9%	16%	16%	51%	51%	25%	1%	20%
Fan System Improvements	11%	11%	7%	7%	13%	8%	21%	7%	10%	12%	2%	5%	15%	3%	2%	1%	1%	8%	18%	15%
Compressed Air System Management	11%	11%	14%	14%	24%	8%	5%	7%	15%	30%	13%	25%	14%	24%	16%	23%	23%	19%	13%	16%
Compressed Air - Advanced Compressor Controls	11%	11%	14%	14%	24%	8%	5%	7%	15%	30%	13%	25%	14%	24%	16%	23%	23%	19%	13%	16%
Process Cooling & Refrigeration																				
Sensors & Controls	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
Energy Information System	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Improved Refrigeration	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Michigan Industrial Measure Database - Natural Gas

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Conventional Boiler Use																				
High Efficiency Hot Water Boiler (<=300,000 Btu/h) (AFUE = 85%-90%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Condensing Boiler (<=300,000 Btu/h) (AFUE>90%)	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
High Efficiency Steam Boiler (<=300,000 Btu/h) (AFUE >=82%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Boiler Tune-Up	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Boiler Pipe Insulation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Boiler Reset Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Boiler O2 Trim Controls	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
Electronic Parallel Positioning Controls (linkage less)	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
Boiler Blowdown Heat Exchanger (Steam)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Repair Malfunctioning Steam Traps	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Insulate Steam Lines / Condensate Tank	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Process Heating																				
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Direct Fired Make-up Air System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Direct Contact Water Heater	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Boiler Tune-Up	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Boiler Pipe Insulation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Boiler Reset Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Boiler O2 Trim Controls	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
Electronic Parallel Positioning Controls (linkage less)	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
Waste-Heat Recovery	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Regenerative Thermal Oxidizer vs. STO	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Regenerative Thermal Oxidizer vs. CTO	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Improved Sensors & Process Controls	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Refrigeration Heat Recovery	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%
Facility HVAC																				

Michigan Industrial Measure Database - Natural Gas

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
High Efficiency Furnace (<=300,000 Btu/h) (AFUE >=92%)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Gas Unit Heater - Condensing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Infrared Heater (low intensity - two stage)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Insulate and Seal Ducts (New Aerosl Duct Sealing)	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Stack Heat Exchanger (Standard Economizer)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%
Stack Heat Exchanger (Condensing Economizer)	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%
Heat Recovery: Air to Air	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	35.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%	45.0%
Direct Fired Make-up Air System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Building Envelope																				
Integrated Building Design	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Energy Efficient Windows	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Cool Roofing	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Ceiling Insulation R-11 to R-42	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%	57.0%
Below Grade Insulation	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%
Wall Insulation R-7.5 to R13	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Roof Insulation R-11 to R-24	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%	43.0%
Ventilation																				
Enthalpy Economizer	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%	86.0%
Demand-Controlled Ventilation	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%
Variable Speed Drive Control, 15 HP	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
Variable Speed Drive Control, 5 HP	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
Variable Speed Drive Control, 40 HP	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
Improved Duct Sealing	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Destratification Fan	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
Controled Ventilation Optimization	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%	67.0%
High Performance Air Filters	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
HVAC Controls																				
Programmable Thermostats	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
EMS install	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
EMS Optimization	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Hotel Guest Room Occupancy Control System	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Zoning	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Machine Drive																				
Sensors & Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Information System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Advanced Lubricants	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Pump System Efficiency Improvements	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Fan System Improvements	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Michigan Industrial Measure Database - Natural Gas

Convertible Factor:
Is the fraction of the equipment or practice that is technically feasible for conversion to the efficient technology from an engineering perspective (e.g., it may not be possible to install VFDs on all motors in a given market segment).

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Compressed Air System Management	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Compressed Air - Advanced Compressor Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Process Cooling & Refrigeration																				
Sensors & Controls	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Energy Information System	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Improved Refrigeration	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Michigan Industrial Measure Database - Natural Gas

Measure Savings, Cost and Useful Life

Measure Name	Annual MMBTU Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	UCT	TRC
Conventional Boiler Use							
High Efficiency Hot Water Boiler (<=300,000 Btu/h) (AFUE = 85%-90%)	1.00	2	$/MMBtu	$55.64	20	2.11	1.18
Condensing Boiler (<=300,000 Btu/h) (AFUE>90%)	1.00	2	$/MMBtu	$55.59	18	1.98	1.10
High Efficiency Steam Boiler (<=300,000 Btu/h) (AFUE >=82%)	1.00	2	$/MMBtu	$68.14	25	1.97	1.10
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	1.00	2	$/MMBtu	$21.20	25	6.33	3.53
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	1.00	2	$/MMBtu	$24.91	18	4.41	2.46
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	1.00	2	$/MMBtu	$46.99	25	2.85	1.59
Boiler Tune-Up	1.00	1	$/MMBtu	$7.79	2	2.29	1.27
Boiler Pipe Insulation	1.00	1	$/MMBtu	$24.25	15	4.00	2.23
Boiler Reset Controls	1.00	1	$/MMBtu	$47.63	20	2.47	1.38
Boiler O2 Trim Controls	1.00	1	$/MMBtu	$129.30	20	0.91	0.51
Electronic Parallel Positioning Controls (linkage less)	1.00	1	$/MMBtu	$187.48	20	0.63	0.35
Boiler Blowdown Heat Exchanger (Steam)	1.00	1	$/MMBtu	$51.68	20	2.27	1.27
Repair Malfunctioning Steam Traps	1.00	1	$/MMBtu	$5.86	5	7.03	3.90
Insulate Steam Lines / Condensate Tank	1.00	1	$/MMBtu	$14.43	15	6.72	3.74
Process Heating							
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	1.00	2	$/MMBtu	$21.20	25	6.33	3.53
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	1.00	2	$/MMBtu	$24.91	18	4.41	2.46
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	1.00	2	$/MMBtu	$46.99	25	2.85	1.59
Direct Fired Make-up Air System	1.00	1	$/MMBtu	$59.01	20	1.99	1.11
Direct Contact Water Heater	1.00	1	$/MMBtu	$24.98	20	4.70	2.62
Boiler Tune-Up	1.00	1	$/MMBtu	$7.79	2	2.29	1.27
Boiler Pipe Insulation	1.00	1	$/MMBtu	$14.05	15	6.90	3.85
Boiler Reset Controls	1.00	1	$/MMBtu	$47.63	20	2.47	1.38
Boiler O2 Trim Controls	1.00	1	$/MMBtu	$129.30	20	0.91	0.51
Electronic Parallel Positioning Controls (linkage less)	1.00	1	$/MMBtu	$187.48	20	0.63	0.35
Waste-Heat Recovery	1.00	1	$/MMBtu	$163.93	10	0.44	0.24
Regenerative Thermal Oxidizer vs. STO	1.00	1	$/MMBtu	$4.06	10	17.61	9.81
Regenerative Thermal Oxidizer vs. CTO	1.00	1	$/MMBtu	$34.38	10	2.08	1.16
Improved Sensors & Process Controls	1.00	1	$/MMBtu	$34.29	5	1.20	0.67
Refrigeration Heat Recovery	1.00	1	$/MMBtu	$20.40	15	4.75	2.65
Facility HVAC							
High Efficiency Furnace (<=300,000 Btu/h) (AFUE >=92%)	1.00	2	$/MMBtu	$19.31	18	5.69	3.17
Gas Unit Heater - Condensing	1.00	2	$/MMBtu	$65.27	22	1.91	1.06
Infrared Heater (low intensity - two stage)	1.00	2	$/MMBtu	$18.83	17	5.61	3.13
Insulate and Seal Ducts (New Aerosl Duct Sealing)	1.00	1	$/MMBtu	$501.67	20	0.23	0.13
Stack Heat Exchanger (Standard Economizer)	1.00	1	$/MMBtu	$16.54	20	7.10	3.96
Stack Heat Exchanger (Condensing Economizer)	1.00	1	$/MMBtu	$11.16	20	10.53	5.87
Heat Recovery: Air to Air	1.00	1	$/MMBtu	$163.93	20	0.72	0.40
Direct Fired Make-up Air System	1.00	1	$/MMBtu	$59.01	20	1.99	1.11
Building Envelope							

Michigan Industrial Measure Database - Natural Gas

Measure Savings, Cost and Useful Life

Measure Name	Annual MMBTU Savings	Cost Type: 1=Full 2=Inc.	Cost/Unit Descriptor	Cost/Unit	Effective Measure Life	UCT	TRC
Energy Efficient Windows	11.97	2	100SF	$2,250	20	0.63	0.35
Cool Roofing	-1.64	2	1000 sq ft roof area	$665	20	-0.29	-0.16
Ceiling Insulation R-11 to R-42	15.51	1	1000 sq ft roof area	$600	20	3.04	1.69
Below Grade Insulation	2.07	1	1000 sq ft basement wall area	$273	20	0.89	0.50
Wall Insulation R-7.5 to R13	123.42	1	1000 sq ft wall area	$100	20	145.02	80.84
Roof Insulation R-11 to R-24	7.07	1	1000 sq ft roof area	$1,000	20	0.83	0.46
Ventilation							
Enthalpy Economizer	-0.05	2	ton	$75	10	-0.05	-0.03
Demand-Controlled Ventilation	37.16	2	1000 sq ft cond floor area	$75	15	48.04	26.77
Variable Speed Drive Control, 15 HP	-11.98	1	per Unit	$2,339	10	-0.37	-0.20
Variable Speed Drive Control, 5 HP	-3.99	1	per Unit	$780	10	-0.37	-0.20
Variable Speed Drive Control, 40 HP	-31.96	1	per Unit	$6,238	10	-0.37	-0.20
Improved Duct Sealing	2.53	2	ton	$108	18	2.58	1.44
Electronically-Commutated Permanent Magnet Motors (ECPMs)	0.00	2	per motor	$78	15	0.00	0.00
Destratification Fan	8.66	1	1000 sq ft cond floor area	$375	15	2.24	1.25
Controled Ventilation Optimization	17.52	2	LF of Sash	$986	12.7778	1.53	0.85
High Performance Air Filters	0.00	2	1000 cfm	$70	3	0.00	0.00
HVAC Controls							
Programmable Thermostats	20.75	1	1000 sq ft cond floor area	$50	9	27.45	15.29
EMS install	1.37	1	1000 sq ft cond floor area	$7	15	18.81	10.48
EMS Optimization	8.71	1	1000 sq ft	$17	16.6667	53.43	29.78
Hotel Guest Room Occupancy Control System	3.05	2	per unit	$250	8	0.73	0.41
Zoning	4.28	2	1000 sq ft cond floor area	$500	15	0.83	0.46

Michigan Industrial Measure Database - Natural Gas

Remaining Factor:
Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Conventional Boiler Use																				
High Efficiency Hot Water Boiler (<=300,000 Btu/h) (AFUE = 85%-90%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Condensing Boiler (<=300,000 Btu/h) (AFUE>90%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
High Efficiency Steam Boiler (<=300,000 Btu/h) (AFUE >=82%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Tune-Up	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Pipe Insulation	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Reset Controls	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler O2 Trim Controls	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Electronic Parallel Positioning Controls (linkage less)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Blowdown Heat Exchanger (Steam)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Repair Malfunctioning Steam Traps	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Insulate Steam Lines / Condensate Tank	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Process Heating																				
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Direct Fired Make-up Air System	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Direct Contact Water Heater	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Tune-Up	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Pipe Insulation	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler Reset Controls	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Boiler O2 Trim Controls	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Electronic Parallel Positioning Controls (linkage less)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Waste-Heat Recovery	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Regenerative Thermal Oxidizer vs. STO	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Regenerative Thermal Oxidizer vs. CTO	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Improved Sensors & Process Controls	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Refrigeration Heat Recovery	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Facility HVAC																				

Michigan Industrial Measure Database - Natural Gas

Remaining Factor:
Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
High Efficiency Furnace (<=300,000 Btu/h) (AFUE >=92%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Gas Unit Heater - Condensing	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Infrared Heater (low intensity - two stage)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Insulate and Seal Ducts (New Aerosl Duct Sealing)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Stack Heat Exchanger (Standard Economizer)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Stack Heat Exchanger (Condensing Economizer)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Heat Recovery: Air to Air	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Direct Fired Make-up Air System	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Building Envelope																				
Integrated Building Design	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%	82.6%
Energy Efficient Windows	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%	29.0%
Cool Roofing	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Ceiling Insulation R-11 to R-42	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%
Below Grade Insulation	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%	54.0%
Wall Insulation R-7.5 to R13	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Roof Insulation R-11 to R-24	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%	51.0%
Ventilation																				
Enthalpy Economizer	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%
Demand-Controlled Ventilation	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%	99.3%
Variable Speed Drive Control, 15 HP	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%
Variable Speed Drive Control, 5 HP	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%
Variable Speed Drive Control, 40 HP	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%	89.1%
Improved Duct Sealing	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%	90.0%
Destratification Fan	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%	93.0%
Controled Ventilation Optimization	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%	71.0%
High Performance Air Filters	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
HVAC Controls																				
Programmable Thermostats	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%
EMS install	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
EMS Optimization	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%
Hotel Guest Room Occupancy Control System	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Zoning	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%
Machine Drive																				
Sensors & Controls	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%
Energy Information System	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%
Advanced Lubricants	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%
Pump System Efficiency Improvements	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%
Fan System Improvements	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%

Michigan Industrial Measure Database - Natural Gas

Remaining Factor:
Is the fraction of applicable kWh or therm sales that are associated with equipment that has not yet been converted to the energy efficiency measure; that is, one minus the fraction of the market segment that already have the energy-efficiency measure installed.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Compressed Air System Management	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%
Compressed Air - Advanced Compressor Controls	71.1%	71.1%	72.1%	72.1%	72.1%	76.2%	63.8%	63.8%	72.1%	72.1%	80.2%	82.6%	73.7%	73.7%	76.4%	77.3%	77.3%	80.9%	72.1%	72.1%
Process Cooling & Refrigeration																				
Sensors & Controls	71.6%	71.6%	86.2%	86.2%	86.2%	77.9%	63.8%	63.8%	86.2%	86.2%	82.2%	82.6%	76.2%	76.2%	78.3%	80.3%	80.3%	84.0%	86.2%	86.2%
Energy Information System	71.6%	71.6%	86.2%	86.2%	86.2%	77.9%	63.8%	63.8%	86.2%	86.2%	82.2%	82.6%	76.2%	76.2%	78.3%	80.3%	80.3%	84.0%	86.2%	86.2%
Improved Refrigeration	71.6%	71.6%	86.2%	86.2%	86.2%	77.9%	63.8%	63.8%	86.2%	86.2%	82.2%	82.6%	76.2%	76.2%	78.3%	80.3%	80.3%	84.0%	86.2%	86.2%

Michigan Industrial Measure Database - Natural Gas

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Conventional Boiler Use																				
High Efficiency Hot Water Boiler (<=300,000 Btu/h) (AFUE = 85%-90%)	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%
Condensing Boiler (<=300,000 Btu/h) (AFUE>90%)	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%	15.8%
High Efficiency Steam Boiler (<=300,000 Btu/h) (AFUE >=82%)	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%
Boiler Tune-Up	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Boiler Pipe Insulation	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Boiler Reset Controls	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Boiler O2 Trim Controls	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Electronic Parallel Positioning Controls (linkage less)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Boiler Blowdown Heat Exchanger (Steam)	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%
Repair Malfunctioning Steam Traps	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Insulate Steam Lines / Condensate Tank	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Process Heating																				
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%	13.3%
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%	4.8%
Direct Fired Make-up Air System	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%
Direct Contact Water Heater	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%	34.0%
Boiler Tune-Up	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Boiler Pipe Insulation	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Boiler Reset Controls	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Boiler O2 Trim Controls	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Electronic Parallel Positioning Controls (linkage less)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Waste-Heat Recovery	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%
Regenerative Thermal Oxidizer vs. STO	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Regenerative Thermal Oxidizer vs. CTO	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%	69.0%
Improved Sensors & Process Controls	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Refrigeration Heat Recovery	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%	50.3%
Facility HVAC																				
High Efficiency Furnace (<=300,000 Btu/h) (AFUE >=92%)	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%	15.2%
Gas Unit Heater - Condensing	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%

Michigan Industrial Measure Database - Natural Gas

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Infrared Heater (low intensity - two stage)	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%	25.5%
Insulate and Seal Ducts (New Aerosl Duct Sealing)	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%	6.5%
Stack Heat Exchanger (Standard Economizer)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Stack Heat Exchanger (Condensing Economizer)	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Heat Recovery: Air to Air	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%
Direct Fired Make-up Air System	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%
Building Envelope																				
Integrated Building Design	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Energy Efficient Windows	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%	64.6%
Cool Roofing	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Ceiling Insulation R-11 to R-42	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Below Grade Insulation	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Wall Insulation R-7.5 to R13	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
Roof Insulation R-11 to R-24	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Ventilation																				
Enthalpy Economizer	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%
Demand-Controlled Ventilation	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
Variable Speed Drive Control, 15 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Variable Speed Drive Control, 5 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Variable Speed Drive Control, 40 HP	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Improved Duct Sealing	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Electronically-Commutated Permanent Magnet Motors (ECPMs)	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%	47.9%
Destratification Fan	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Controled Ventilation Optimization	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%	42.8%
High Performance Air Filters	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%	32.4%
HVAC Controls																				
Programmable Thermostats	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
EMS install	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
EMS Optimization	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%	6.9%
Hotel Guest Room Occupancy Control System	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Zoning	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Machine Drive																				
Sensors & Controls	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Energy Information System	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Advanced Lubricants	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%
Pump System Efficiency Improvements	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%
Fan System Improvements	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Compressed Air System Management	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%
Compressed Air - Advanced Compressor Controls	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Process Cooling & Refrigeration																				
Sensors & Controls	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Michigan Industrial Measure Database - Natural Gas

Savings Factor:
Is the percentage reduction in electricity or gas consumption resulting from application of the efficient technology.

Measure Name	FOOD	BEVERAGE	TEXTILE MILLS	TEXTILE MILL PRODUCTS	APPAREL & LEATHER	WOOD	PAPER	PRINTING	PETROLEUM	CHEMICALS	PLASTICS & RUBBER	NONMETALLIC MINERAL	PRIMARY METALS	FABRICATED METALS	MACHINERY	COMPUTER & ELECTRONICS	ELEC. EQUIP.	TRANS. EQUIP.	FURNITURE	MISC.
Energy Information System	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Improved Refrigeration	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%

Michigan Industrial Measure Database - Natural Gas

Natural Gas Measure Sources

Source Number	Source
1	Michigan Master Database of Deemed Savings - 2013 - Non-Weather Sensitive Commercial
2	Michigan Master Database of Deemed Savings - 2013 - Weather Sensitive
3	Federal Energy Management Program (FEMP), Energy Cost Calculator for Electric and Gas Water Heaters
4	GDS Associates estimate based upon review of various customer and vendor surveys, baseline studies and potential studies conducted by GDS in other states
5	Therma-Stor Return On Investment Calculation Form, http://www.thermastor.com/Heat-Recovery-water-Heaters/Heat-Recovery-ROI-Form.pdf
6	Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006, Appendix C
7	US DOE- Federal Energy Management Program (FEMP): Heat Recovery from Wastewater Using a Gravity-Film Heat Exchanger
8	Food Service Technology Center, Pre-Rinse Spray Valve/Water Cost Calculator
9	Energy Efficiency Potential of Gas-Fired Commercial Hot Water Heating Systems in Restaurants, An Emerging Technology Field Monitoring Study, FSTC Report 5011.07.04, Food Service Technology Center, April 2007
10	US DOE - Energy Efficiency And Renewable Energy - Estimating a Solar Water Heater System's Cost
11	Gene Dedick - East Coast VP Sales - AquaRecycle - ph: 210-325-9258: 1,248,000 lbs/yr = 30 gpm washer-extractor system with lint shaker.
12	http://www.aquarecycle.com/laundry-water-energy-savings.php
13	Commercial Laundry Conservation Technologies, Bill Hoffman, James Riesenberger
14	Trevor Brown Southeastern Laundry/Commercial Laundry Conservation Technologies - Bill Hoffman, James Riesenberger
15	US DOE - Energy Efficiency And Renewable Energy - Determining Gas Swimming Pool Heating Efficiency - http://apps1.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=13170
16	NYSERDA Deemed Savings Database, Rev 09-082006.
17	Revised DEER Measure Cost Summary (05_30_2008) Revised (06_02_2008)
18	Gas Solutions for the Foodservice Industry, http://www.gfen.info/pdf/cookinggas0107.pdf
19	CALIFORNIA STATEWIDE COMMERCIAL SECTOR NATURAL GAS ENERGY EFFICIENCY POTENTIAL STUDY, Study ID #SW061, Prepared for Pacific Gas & Electric Company, Prepared by Mike Rufo and Fred Coito KEMA-XENERGY Inc., May 14, 2003; Questar 2006 DSM Market Characterization Report, Nexant, Appendix D (sq ft) & E (cost/sq ft).
20	Cost of the most common type of steam trap (Inverted bucket trap) according to Grainger catalog ranges from $125 - $147, plus one hour of labor @ $100/hr. http://www.grainger.com/Grainger/ecatalog/N-bkg/No-16/Ntt-inverted+bucket+trap?Ns=List+Price%7C0
21	Greenheck sales representative cost and measure life information on 5,000 CFM model. ($4,500 materials, $1,000 labor, and $400 crane rental (to lift onto roof))
22	http://www.cleanboiler.org/Eff_Improve/Efficiency/Boiler_Reset_Control.asp
23	Measure information from Nexant's "Gas Energy Efficiency Measure Analysis to Support NYSERDA's Con Edison Gas Efficiency Program" reported in August 2005. Savings unit is MMBtu/unit. Baseline efficiency from DOE
24	Natural Gas Boiler/Burner Consortium - http://www.energysolutionscenter.org/boilerburner/Eff_Improve/Efficiency/Oxygen_Control.asp
25	Found a wide range (4% - 16%) of savings estimates based on literature review Used a mid-range savings estimate factor of 10%
26	5% - 10% improvement in energy associated with losses (Optimizing Steam Systems: Saving Energy and Money in Mexican Hotels, by David Jaber, Alliance to Save Energy) GDS estimates that poor insulation represents 15%- 20% of total gas input.
27	Review of various internet sites including Zoo Fans (25%), Big Ass Fan Company (30%) and Energy Wales (20%)
28	Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006 - Appendix C -MD ENERGY SAVINGS FRACTIONS
29	Flex Your Power, Demand Ventilation Control Reduces Kitchen Fan Energy Consumption by 50% to 70% and makeup air heating energy by 25%: http://www.fypower.org/news/?p=682
30	Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006 Appendix C - RET ENERGY SAVINGS FRACTIONS. (Average across all building types - varies significantly based on occupancy and ventilation requirements)
31	ACEE, Emerging Energy Saving Technologies & Practices for the Buildings Sector, 2004 (6 zones at $575 per zone) p 102.
32	Assessment of Energy and Capacity Savings Potential in Iowa', Prepared for The Iowa Utility Association February 15, 2008. In Collaboration with Summit Blue Consulting, Nexant, Inc., A-TEC Energy Corporation, and Britt/Makela Group; Natural Gas Energy Efficiency Resource Development Potential in New York, Final Report for NYSERDA, by Optimal Energy, ACEEE, VEIC, Resource Insight and Energy & Environmental Analysis, October 2006 Appendix B p 40-44
33	Actual average project cost provided by NGRID for NY projects
34	ACEE, Emerging Energy Saving Technologies & Practices for the Buildings Sector, 2004
35	Energy Efficiency and Renewable Energy Resource Development Potential in New York State - Final Report, Volume 5 Energy Efficiency Technical
36	http://www.toolbase.org/Technology-Inventory/HVAC/hvac-smart-zoning-controls
37	Energy Star Cost Calculator, Energy Star Website, www.energystar.gov.
38	GasNetworks Aug08update - "Validating the Impacts of Programmable Thermostats." GasNetworks, January 2007
39	EIA, 2003 CBECS, New England, Non Mall saturation, square footage
40	For Combo Heating / Water Heating Units costs and savings add up similar separate equipment from water heating tab and space heating tab. Literature claims combined system equipment costs are higher, installation costs lower compared to separate systems.
41	Gas Fired water Heater Screening Tool http://bea.ugi.esource.com/BEA1/PA/PA_WaterHeating/PA-41_calc
42	Building Commissioning - A Golden Opportunity for Reducing Energy Costs and Greenhouse Gas Emissions. Lawrence Berkeley National Laboratory. Report Prepared for: California Energy Commission Public Interest Energy Research (PIER) - July 21, 2009
43	GDS Natural Gas Energy Efficiency Potential in Massachusetts - April 2009
44	MEMD Support Documentation - 2014 - Workbooks and Algorithms
45	Michigan Baseline 2011: Commercial Baseline Report

Michigan Industrial Measure Database - Natural Gas

Natural Gas Measure Sources

Source Number	Source
46	Codes and Standards Enhancement Initiative for PY2004: Title 20 Standards Development, Analysis of Standards Options for Portable Electric Spas, Davis Energy Group Energy Solutions, May 12, 2004
47	Massachusetts Farm Energy Guides by Farm Sector: Best Management Practices for Greenhouses, 2010
48	Public Service New Mexico Electric Energy Efficiency Potential Study; Itron, Inc., September 2006
49	DTE Energy Commercial Baseline Study; Opinion Dynamics Corporation, October 2010
50	GDS Maine Potential Study (GDS Engineering Estimates)
51	U.S. Energy Information Administration, Model Documentation Report: Industrial Demand Module of the National Energy Modeling System, May 2013.
52	GDS Maryland Gas Potential Study, 2011.

Michigan Industrial Measure Database - Natural Gas
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Natural Gas Source List

Measure Name	Annual MMBTU Savings	Cost/Unit	Effective Measure Life	Savings Factor	Remaining Factor
Building Envelope					
Energy Efficient Windows	2	2	3	4	45
Cool Roofing	2	2	3	2	45
Ceiling Insulation R-11 to R-42	4	4	3	4	45
Below Grade Insulation	2	2	3	4	45
Wall Insulation R-7.5 to R13	2	2	3	4	45
Roof Insulation R-11 to R-24	2	2	3	4	45
HVAC Controls					
Programmable Thermostats	38	37	3	43	45
EMS install	2	2	3	48	45
EMS Optimization	4	35	3	35	4
Zoning	4	36	3	48	4
Conventional Boiler Use					
High Efficiency Hot Water Boiler (<=300,000 Btu/h) (AFUE = 85%-90%)	52	52	52	52	51
Condensing Boiler (<=300,000 Btu/h) (AFUE>90%)	52	52	52	52	51
High Efficiency Steam Boiler (<=300,000 Btu/h) (AFUE >=82%)	52	52	52	52	51
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	52	52	52	52	51
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	52	52	52	52	51
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	52	52	52	52	51
Boiler Tune-Up	52	52	52	52	51
Boiler Pipe Insulation	52	52	52	52	51
Boiler Reset Controls	52	52	52	52	51
Boiler O2 Trim Controls	52	52	52	52	51
Electronic Parallel Positioning Controls (linkage less)	52	52	52	52	51
Boiler Blowdown Heat Exchanger (Steam)	52	52	52	52	51
Repair Malfunctioning Steam Traps	52	52	52	52	51
Insulate Steam Lines / Condensate Tank	52	52	52	52	51
Process Heating					
High Efficiency Hot Water Boiler (>300,000 Btu/h) (Th. Eff. =85%-90%)	52	52	52	52	51
Condensing Boiler (>300,000 Btu/h) (EF>90%) (Th. Eff. >=90%)	52	52	52	52	51
High Efficiency Steam Boiler (>300,000 Btu/h) (Th. Eff. >=80%)	52	52	52	52	51
Direct Fired Make-up Air System	52	52	52	52	51
Direct Contact Water Heater	52	52	52	52	51
Boiler Tune-Up	52	52	52	52	51
Boiler Pipe Insulation	52	52	52	52	51
Boiler Reset Controls	52	52	52	52	51
Boiler O2 Trim Controls	52	52	52	52	51

Michigan Industrial Measure Database - Natural Gas
Measure Savings, Cost and Useful Life, Savings Factor, Remaining Factor Sources
Reference numbers designate source for information from Natural Gas Source List

Measure Name	Annual MMBTU Savings	Cost/Unit	Effective Measure Life	Savings Factor	Remaining Factor
Electronic Parallel Positioning Controls (linkage less)	52	52	52	52	51
Waste-Heat Recovery	52	52	52	52	51
Regenerative Thermal Oxidizer vs. STO	52	52	52	52	51
Regenerative Thermal Oxidizer vs. CTO	52	52	52	52	51
Improved Sensors & Process Controls	52	52	52	52	51
Refrigeration Heat Recovery	52	52	52	52	51
Facility HVAC					
High Efficiency Furnace (<=300,000 Btu/h) (AFUE >=92%)	52	52	52	52	51
Gas Unit Heater - Condensing	52	52	52	52	51
Infrared Heater (low intensity - two stage)	52	52	52	52	51
Insulate and Seal Ducts (New Aerosl Duct Sealing)	52	52	52	52	51
Stack Heat Exchanger (Standard Economizer)	52	52	52	52	51
Stack Heat Exchanger (Condensing Economizer)	52	52	52	52	51
Heat Recovery: Air to Air	52	52	52	52	51
Direct Fired Make-up Air System	52	52	52	52	51

General Modeling Assumptions Avoided Costs

UCT GLOBAL ASSUMPTIONS - NO CARBON TAX ADDER

Analysis Start Year	2014		Nominal Discount Rate	6.405%
Length of Analysis	10	Years	Inflation Rate	2.0%
			Reserve Margin Multiplier	14.2%
			Carbon Tax Adder ($/kWh)	$0.0000
			Carbon Tax Adder ($/MMBtu)	$0.0000

Avoided Costs (Nominal Dollars)

	Natural Gas Wholesale Forecast		Winter Peak Energy	Winter Off-Peak Energy	Summer Peak Energy	Summer Off-Peak Energy	Summer Capacity	Winter Capacity	Avoided T&D
Data Year	$/MMBTU	Data Year	$/kWh	$/kWh	$/kWh	$/kWh	$/kW-yr	$/kW-yr	$/kW-yr
2013	4.58	2013	0.033	0.033	0.033	0.033	164.55	0.00	36.24
2014	4.58	2014	0.036	0.036	0.036	0.036	166.66	0.00	36.96
2015	4.63	2015	0.034	0.034	0.034	0.034	168.34	0.00	37.70
2016	4.76	2016	0.035	0.035	0.035	0.035	170.18	0.00	38.46
2017	4.94	2017	0.035	0.035	0.035	0.035	171.42	0.00	39.23
2018	4.32	2018	0.034	0.034	0.034	0.034	172.34	0.00	40.01
2019	4.41	2019	0.035	0.035	0.035	0.035	173.91	0.00	40.81
2020	4.49	2020	0.036	0.036	0.036	0.036	175.64	0.00	41.63
2021	4.62	2021	0.037	0.037	0.037	0.037	176.94	0.00	42.46
2022	4.84	2022	0.038	0.038	0.038	0.038	178.24	0.00	43.31
2023	5.03	2023	0.038	0.038	0.038	0.038	179.59	0.00	44.18
2024	5.15	2024	0.039	0.039	0.039	0.039	181.11	0.00	45.06
2025	5.23	2025	0.041	0.041	0.041	0.041	182.95	0.00	45.96
2026	5.38	2026	0.043	0.043	0.043	0.043	185.06	0.00	46.88
2027	5.45	2027	0.044	0.044	0.044	0.044	187.01	0.00	47.82
2028	5.58	2028	0.045	0.045	0.045	0.045	188.63	0.00	48.77
2029	5.66	2029	0.045	0.045	0.045	0.045	190.09	0.00	49.75
2030	5.77	2030	0.046	0.046	0.046	0.046	191.77	0.00	50.74
2031	5.89	2031	0.047	0.047	0.047	0.047	193.66	0.00	51.76
2032	6.01	2032	0.048	0.048	0.048	0.048	195.56	0.00	52.79
2033	6.13	2033	0.050	0.050	0.050	0.050	197.72	0.00	53.85
2034	6.25	2034	0.051	0.051	0.051	0.051	199.88	0.00	54.93
2035	6.37	2035	0.053	0.053	0.053	0.053	201.89	0.00	56.03
2036	6.50	2036	0.055	0.055	0.055	0.055	204.05	0.00	57.15
2037	6.63	2037	0.056	0.056	0.056	0.056	206.22	0.00	58.29
2038	6.76	2038	0.058	0.058	0.058	0.058	208.33	0.00	59.46
2039	6.90	2039	0.060	0.060	0.060	0.060	210.44	0.00	60.64
2040	7.04	2040	0.061	0.061	0.061	0.061	212.60	0.00	61.86
2041	7.18	2041	0.063	0.063	0.063	0.063	216.85	0.00	63.09

Electric Line Losses

	Winter On Peak	Winter Off Peak	Summer On Peak	Summer Off Peak
Residential	1.08	1.08	1.08	1.08
C&I	1.08	1.08	1.08	1.08

Demand Line Losses

Winter Gen.	Summer Gen.	T&D Capacity
1.09	1.09	1.09
1.09	1.09	1.09

TRC GLOBAL ASSUMPTIONS - INCLUDES A CARBON TAX ADDER

Analysis Start Year	2014		Nominal Discount Rate	6.405%
Length of Analysis	10	Years	Inflation Rate	2.0%
			Reserve Margin Multiplier	14.2%
			Carbon Tax Adder ($/kWh)	$0.0139
			Carbon Tax Adder ($/kWh)	$0.9600

Avoided Costs (Nominal Dollars)

	Natural Gas Wholesale Forecast		Winter Peak Energy	Winter Off-Peak Energy	Summer Peak Energy	Summer Off-Peak Energy	Summer Capacity	Winter Capacity	Avoided T&D
Data Year	$/MMBTU	Data Year	$/kWh	$/kWh	$/kWh	$/kWh	$/kW-yr	$/kW-yr	$/kW-yr
2011		2011							
2012		2012							
2013	5.060	2013	0.040	0.040	0.040	0.040	164.55	0.00	36.24
2014	5.070	2014	0.043	0.043	0.043	0.043	166.66	0.00	36.96
2015	5.129	2015	0.042	0.042	0.042	0.042	168.34	0.00	37.70
2016	5.269	2016	0.042	0.042	0.042	0.042	170.18	0.00	38.46
2017	5.460	2017	0.042	0.042	0.042	0.042	171.42	0.00	39.23
2018	4.850	2018	0.041	0.041	0.041	0.041	172.34	0.00	40.01
2019	4.951	2019	0.042	0.042	0.042	0.042	173.91	0.00	40.81
2020	5.041	2020	0.044	0.044	0.044	0.044	175.64	0.00	41.63
2021	5.182	2021	0.045	0.045	0.045	0.045	176.94	0.00	42.46
2022	5.414	2022	0.046	0.046	0.046	0.046	178.24	0.00	43.31
2023	5.615	2023	0.047	0.047	0.047	0.047	179.59	0.00	44.18
2024	5.747	2024	0.048	0.048	0.048	0.048	181.11	0.00	45.06
2025	5.839	2025	0.049	0.049	0.049	0.049	182.95	0.00	45.96
2026	6.001	2026	0.052	0.052	0.052	0.052	185.06	0.00	46.88
2027	6.083	2027	0.053	0.053	0.053	0.053	187.01	0.00	47.82
2028	6.226	2028	0.054	0.054	0.054	0.054	188.63	0.00	48.77
2029	6.319	2029	0.054	0.054	0.054	0.054	190.09	0.00	49.75
2030	6.445	2030	0.056	0.056	0.056	0.056	191.77	0.00	50.74
2031	6.574	2031	0.057	0.057	0.057	0.057	193.66	0.00	51.76
2032	6.706	2032	0.058	0.058	0.058	0.058	195.56	0.00	52.79
2033	6.840	2033	0.060	0.060	0.060	0.060	197.72	0.00	53.85
2034	6.977	2034	0.062	0.062	0.062	0.062	199.88	0.00	54.93
2035	7.116	2035	0.063	0.063	0.063	0.063	201.89	0.00	56.03
2036	7.258	2036	0.066	0.066	0.066	0.066	204.05	0.00	57.15
2037	7.404	2037	0.068	0.068	0.068	0.068	206.22	0.00	58.29
2038	7.552	2038	0.069	0.069	0.069	0.069	208.33	0.00	59.46
2039	7.703	2039	0.071	0.071	0.071	0.071	210.44	0.00	60.64
2040	7.857	2040	0.073	0.073	0.073	0.073	212.60	0.00	61.86
2041	8.850	2041	0.075	0.075	0.075	0.075	216.85	0.00	63.09

Electric Line Losses

	Winter On Peak	Winter Off Peak	Summer On Peak	Summer Off Peak
Residential	1.08	1.08	1.08	1.08
C&I	1.08	1.08	1.08	1.08

Demand Line Losses

Winter Gen.	Summer Gen.	T&D Capacity
1.09	1.09	1.09
1.09	1.09	1.09