Building Types	Interior Lighting Annual Hours (hours/year)	CF_{SSP}	Demand Waste Heat Factor[330]	Annual Energy Waste Heat Factor[331]
Food Sales – Gas Station Convenience Store Food Sales – Convenience Store	7,134	0.96	1.27	0.95
Food Sales – Grocery	7,134	0.96	1.27	0.95
Food Service – 1. College - Cafeteria 2. Dining: Bar Lounge/Leisure 3. Dining: Cafeteria/Fast Food 4. Dining: Family 5. Fast Food Restaurants 6. Restaurants	4,926	0.86	1.27	0.95
Food Service - Fast Food	4,926	0.86	1.27	0.95
Food Service - Full Service	4,926	0.86	1.27	0.95
Health Care – inpatient – 1. Hospitals 2. Hospitals / Health Care	3,909	0.80	1.35	0.93
Health Care – outpatient – 1. Medical Offices	3,909	0.80	1.35	0.93
Lodging – (Hotel, Motel and Dormatory) – 1. College -Dormitory 2. Lodging (Hotels/Motels) 3. Multi-Family (Common Areas) 4. Nursing Homes 5. Residential (Except Nursing Homes) 6. Commercial Condos	4,573	0.66	1.35	0.93
Mercantile (Retail, Not Mall)	4,926	0.86	1.27	0.95
Mercantile (Malls) – Mall Concourse	4,926	0.86	1.27	0.95
Office – 1. Office (General Office Types) 2. Office/Retail 3. Banks, Financial Centers	2,950	0.67	1.34	0.94
Office – Small (<40,000 sq ft)	2,950	0.67	1.34	0.94
Office – Large (>= 40,000 sq ft)	2,969	0.70	1.34	0.94

Building Types	Interior Lighting Annual Hours (hours/year)	CF_{SSP}	Demand Waste Heat Factor[330]	Annual Energy Waste Heat Factor[331]
Public Assembly – **1. Convention Center** **2. Entertainment** **3. Exercise Center** **4. Gymnasium** **5. Library** **6. Motion Picture Theatre** **7. Museum** **8. Performing Arts Theatre** **9. Sports Arena** **10. Town Hall**	4,573	0.66	1.35	0.93
Public Order and Safety (Police and Fire Station)[5] – **1. Court House** **2. Fire Station (Unmanned)** **3. Penitentiary** **4. Police / Fire Stations (24 Hr)**	4,573	0.66	1.35	0.93
Religious Worship – **1. Church** **2. Religious Building**	4,573	0.66	1.35	0.93
Service (Beauty, Auto Repair Workshop) – **1. Auto Related** **2. Laundromats** **3. Post Office** **4. Small Services** **5. Pump Stations** **6. Workshop**	3,799	0.68	1.27	0.95
Warehouse and Storage – **1. Warehouse (Not Refrigerated)** **2. Refrigerated Warehouse**	3,799	0.68	1.2	0.89
Other – **1. Industrial -1 Shift** **2. Industrial -2 Shift** **3. Industrial -3 Shift** **4. Light Manufacturers** **5. Manufacturing Facility** **6. Parking Garages & Lots** **7. Transportation** **8. Waste Water Treatment Plant**	4,116	0.70	1.35	0.93

Table 136: Non-Residential Lighting Parameters by Facility Type (for Non-residential Energy Audit Program) [332],[333]

Building Types	Interior Lighting Annual Hours (hours/year)	CF_{SSP}	Demand Waste Heat Factors[334]	Annual Energy Waste Heat Factor[335]
Education – **1. College -Classes/Administrative** **2. School / University** **3. Schools (Jr./Sr. High)** **4. Schools (Preschool/Elementary)** **5. Schools (Technical/Vocational)**	2,575	0.50	1.45	0.96
Education – College and University	2,575	0.50	1.45	0.96
Education – High School	2,575	0.50	1.45	0.96
Education – Elementary and Middle School	2,575	0.50	1.45	0.96
Food Sales – **1. Bakery** **2. Convenience Stores** **3. Food Stores**	7,134	0.96	1.27	0.95
Food Sales – Gas Station Convenience Store **Food Sales – Convenience Store**	7,134	0.96	1.27	0.95
Food Sales – Grocery	7,134	0.96	1.27	0.95
Food Service – **1. College - Cafeteria** **2. Dining: Bar Lounge/Leisure** **3. Dining: Cafeteria/Fast Food** **4. Dining: Family** **5. Fast Food Restaurants** **6. Restaurants**	4,926	0.86	1.27	0.95

[332] Full building type list was consolidated to map directly to 2003 U.S. DOE CBECS building types. Full building type list and hours of use from Mid-Atlantic TRM 2016 p. 504. Original sources: Connecticut Program Savings Document for 2012 Program Year (Sept. 2011), p. 219-220. http://www.ctenergyinfo.com/2012%20CT%20Program%20Savings%20Documentation%20FINAL.pdf. 2003 US DOE CBECS building type definitions. http://www.eia.gov/emeu/cbecs/building_types.html. Lighting hours. CF_{SSP} are mapped from the Mid-Atlantic TRM 2016, "C&I Interior Lighting Coincidence Factors by building Type". table on p. 505, with the exception of the "Public Order and Safety (Police and Fire Station)" building type, which had no lighting HOU, CF_{SSP} listed. In that case, the CT TRM (Sept 2011) HOU was used.

[333] WHFd and WHFe assume lighting is installed in spaces with air coniditioning and non-electric heating equipment. The application does not collect heating and cooling system type.

[334] Mid-Atlantic TRM 2016, p. 506-507. Selected waste heat factors from "Washington, D.C. All utilities", AC (utility) WHFd and heat pump WHF_e. Waste heat factors were provided for only 5 building types (1. Office, 2. Retail, 3. School, 4. Warehouse, 5. Other), therefore they were mapped to the full list of building types in Table 135 as appropriate. Original source of waste heat factor values are from the "EmPOWER Maryland DRAFT Final Impact Evaluation Report Evaluation Year 4 (June 1, 2012 – May 31, 2013) Commercial & Industrial Prescriptive & Small Business Programs, Navigant, March 31, 2014. Values for Washington D.C. and Delaware assume values from Maryland, Pepco and Maryland, DPL, respectively."

[335] Ibid.

Building Types	Interior Lighting Annual Hours (hours/year)	CF_{SSP}	Demand Waste Heat Factors[334]	Annual Energy Waste Heat Factor[335]
Food Service - Fast Food	4,926	0.86	1.27	0.95
Food Service - Full Service	4,926	0.86	1.27	0.95
Health Care – inpatient – 1. Hospitals 2. Hospitals / Health Care	3,909	0.80	1.35	0.93
Health Care – outpatient – 1. Medical Offices	3,909	0.80	1.35	0.93
Lodging – (Hotel, Motel and Dormatory) – 1. College -Dormitory 2. Lodging (Hotels/Motels) 3. Multi-Family (Common Areas) 4. Nursing Homes 5. Residential (Except Nursing Homes) 6. Commercial Condos	4,573	0.66	1.35	0.93
Mercantile (Retail, Not Mall)	4,926	0.86	1.27	0.95
Mercantile (Malls) – Mall Concourse	4,926	0.86	1.27	0.95
Office – 1. Office (General Office Types) 2. Office/Retail 3. Banks, Financial Centers	2,950	0.67	1.34	0.94
Office – Small (<40,000 sq ft)	2,950	0.67	1.34	0.94
Office – Large (>= 40,000 sq ft)	2,969	0.70	1.34	0.94
Public Assembly – 1. Convention Center 2. Entertainment 3. Exercise Center 4. Gymnasium 5. Library 6. Motion Picture Theatre 7. Museum 8. Performing Arts Theatre 9. Sports Arena 10. Town Hall	4,573	0.66	1.35	0.93

Building Types	Interior Lighting Annual Hours (hours/year)	CF_{SSP}	Demand Waste Heat Factors[334]	Annual Energy Waste Heat Factor[335]
Public Order and Safety (Police and Fire Station)[5] – **1. Court House** **2. Fire Station (Unmanned)** **3. Penitentiary** **4. Police / Fire Stations (24 Hr)**	4,573	0.66	1.35	0.93
Religious Worship – **1. Church** **2. Religious Building**	4,573	0.66	1.35	0.93
Service (Beauty, Auto Repair Workshop) – **1. Auto Related** **2. Laundromats** **3. Post Office** **4. Small Services** **5. Pump Stations** **6. Workshop**	3,799	0.68	1.27	0.95
Warehouse and Storage – **1. Warehouse (Not Refrigerated)** **2. Refrigerated Warehouse**	3,799	0.68	1.2	0.89
Other – **1. Industrial -1 Shift** **2. Industrial -2 Shift** **3. Industrial -3 Shift** **4. Light Manufacturers** **5. Manufacturing Facility** **6. Parking Garages & Lots** **7. Transportation** **8. Waste Water Treatment Plant**	4,116	0.70	1.35	0.93

Table 137: Full Load Cooling Hours for Buildings in Non-Residential Duct Sealing and Testing Program, only

System Type	Location	FLH_{cool}[336]
Heat Pump	Baltimore, MD – Reference city (Source for FLH: Mid-Atlantic TRM 2016 p.396)	< 135 kBtu/h = 1,014 ≥ 135 kBtu/h = 1,823
	Richmond, VA	< 135 kBtu/h = 1,191 ≥ 135 kBtu/h = 2,141
	Charlotte, NC	< 135 kBtu/h = 1,314 ≥ 135 kBtu/h = 2,363
Packaged AC Unit	Baltimore, MD – Reference city (Source for FLH: Mid-Atlantic TRM 2016 p.396)	< 135 kBtu/h = 1,014 ≥ 135 kBtu/h = 1,823
	Richmond, VA	< 135 kBtu/h = 1,191 ≥ 135 kBtu/h = 2,141
	Charlotte, NC	< 135 kBtu/h = 1,314 ≥ 135 kBtu/h = 2,363

Table 138: Heat pump, Unitary AC, VRF, and Mini Split Full Load Cooling Hours for Non-Residential Buildings (for all programs other than Non-Residential Duct Sealing and Testing program)[337]

Building Type	Baltimore, MD	Richmond, VA	Charlotte, NC
Education – Elementary and Middle School	295	347	382
Education – High School	340	399	441
Education – College and University[338]	756	888	979
Food Sales - Grocery	678	796	879
Food Sales – Convenience Store	923	1,084	1,196
Food Sales – Gas Station Convenience Store	923	1,084	1,196
Food Service - Full Service	768	902	996
Food Service - Fast Food	730	858	946
Health Care - Inpatient	1,223	1,437	1,585
Health Care - Outpatient	650	764	843

[336] Richmond VA and Charlotte NC values are calculated from Baltimore FLH_{cool} and cooling degree days (CDD-65 °F) using TMY3 data for weather stations at Baltimore BLT-Washington International AP (Weather station number 724060; CDD = 1,233), Richmond International AP (Weather station number 724010; CDD = 1,448), and Charlotte Douglas International Airport (Weather station number 723140; CDD = 1,598). Baltimore FLHcool for equipment capacity < 135 kBtu/h = 1,014 hours/year and ≥ 135 kBtu/h = 1,823 hours/year. Example calculation for Richmond FLHcool for equipment capacity <135 kBtu/h = 1014 hours x (1448 / 1233) = 1,191 hours/year.

[337] Baltimore, MD full load cooling hours taken from Mid-Atlantic TRM 2017 p.351, 352 for different building types. Richmond VA and Charlotte NC hours are adjusted using cooling degree day estimates from TMY3 data from the weather stations Richmond International Airport (Weather station number 724010; CDD=1,448), Charlotte Douglas International Airport (Weather station number 723140; CDD=1,598), and Baltimore BLT – Washington International Airport (Weather station number 724060; CDD=1,233). See Appendix A for CDD and HDD.

[338] "Education – College and University" Baltimore, MD full load cooling hours is an average of the hours for "Education – Community College"(718 hours/year) and "Education – University" (793 hours/year) in the Mid-Atlantirc TRM 2017, p. 351

Building Type	Baltimore, MD	Richmond, VA	Charlotte, NC
Lodging – (Hotel, Motel and Dormitory)	1,831	2,151	2,373
Mercantile (mall)	887	1,042	1,150
Mercantile (Retail, not mall)	911	1,070	1,181
Office – Small (<40,000 sq ft)	634	745	822
Office – Large (>= 40,000 sq ft)	733	861	950
Other[339]	245	288	318
Public Assembly	945	1,110	1,225
Public Order and Safety (Police and Fire Station)	245	288	318
Religious Worship	245	288	318
Service (Beauty, Auto Repair Workshop)	923	1,084	1,196
Warehouse and Storage[340]	2,081	2,445	2,697

Table 139. Heat pump, VRF, and Mini Split Full Load Heating Hours for Non-Residential Buildings [341]

Building Type	Baltimore, MD	Richmond, VA	Charlotte, NC
Education – Elementary and Middle School	668	559	456
Education – High School	719	602	491
Education – College and University	622	520	424
Food Sales - Grocery	980	820	669
Food Sales – Convenience Store	623	521	425
Food Sales – Gas Station Convenience Store	623	521	425
Food Service - Full Service	1,131	947	772
Food Service - Fast Food	1,226	1,026	837
Health Care-inpatient	214	179	146
Health Care-outpatient	932	780	636
Lodging – (Hotel, Motel and Dormitory)	2,242	1,876	1,531
Mercantile (mall)	591	495	404
Mercantile (Retail, not mall)	739	618	505

[339] "Other" building type is mapped to the building type with the most conservative full load heating hours in the Mid-Atlantic TRM 2017, "Manufacturing – Bio Tech/High Tech."

[340] "Warehouse and Storage" Baltimore, MD full load heating hours is an average of the hours for "Storage - Conditioned"(854 hours/year) and "Warehouse - Refrigerated" (342 hours/year) in the Mid-Atlantirc TRM 2017, p. 353

[341] Baltimore, MD full load cooling hours taken from Mid-Atlantic TRM 2017 p.352-353 for different building types. Richmond VA and Charlotte NC hours are adjusted using cooling degree day estimates from TMY3 data from the weather stations Richmond International Airport (Weather station number 724010; HDD=3,849), Charlotte Douglas International Airport (Weather station number 723140; HDD=3,140), and Baltimore BLT – Washington International Airport (Weather station number 724060; HDD=4,600). See Appendix A for CDD and HDD.

Building Type	Baltimore, MD	Richmond, VA	Charlotte, NC
Office – Small (<40,000 sq ft)	440	368	300
Office – Large (>= 40,000 sq ft)	221	185	151
Other	146	715	583
Public Assembly[342]	1,114	932	761
Public Order and Safety (Police and Fire Station)[343]	146	715	583
Religious Worship	146	715	583
Service (Beauty, Auto Repair Workshop)	623	521	425
Warehouse and Storage	598	500	408

[342] "Public Order and Safety (Police and Fire Station)" building type is mapped to the building type with the most conservative full load heating hours in the Mid-Atlantic TRM 2017, "Manufacturing – Bio Tech/High Tech."

[343] "Regligous Worship" building type is mapped to the building type with the most conservative full load heating hours in the Mid-Atlantic TRM 2017, "Manufacturing – Bio Tech/High Tech."

22 APPENDIX D: DEFINITION OF TERMS

ADJ_{heat} = Adjustment to heating degree days to account for typical versus default internal gains for residential insulation measures

ADJ_{cool} = Adjustment to cooling degree days to account for typical versus default internal gains for residential insulation measures

Annual Op= Annual operating time, in min/yr, of the residential central A/C fan

Area (ft^2) = Insulated area measured in square feet

Baseline condition = The less efficient system that is being replaced (pre-retrofit)

Bedrooms/unit = Number of bedrooms per residential unit

CDD = Annual cooling degree days

CEE = Consortium for Energy Efficiency

CF = Peak coincidence factor

$CFL_{hours/day}$ = Average hours of use per day per CFL

$CFM_{baseline}$ = Baseline leakage rate in cubic feet per minute

CFM_{sealed} = Post-sealing leakage rate in cubic feet per minute

COP = The Coefficient of Performance (COP) of a heat pump is a dimensionless ratio of the change in heat at the system output to the energy input of the heat pump

$ECool_{pre}$ = Pre-sealing electric space cooling consumption in kWh

$EHeat_{pre}$= Pre-sealing electric space heating consumption in kWh

EER = The Energy Efficiency Ratio (EER) is the ratio of cooling output to electric input at a prescribed set of interior and exterior conditions that reflect peak operation

EF_{eff} = Assumed efficiency of electric tank with tank wrap installed [344]

EF_{base} = Assumed efficiency of electric tank without tank wrap installed

EFF_{AC} = Combined efficiency of the A/C system drive, motor, and fan

EFF_{HW} = Domestic hot water system efficiency, without piping and/or standby losses.

Energy efficient condition = The more efficient replacement system (post-retrofit)

$Flow_{baseline}$ = Flow rate in gallons per minute of baseline showerhead

[344] "Meeting the Challenge: The Prospect of Achieving 30 percent Energy Savings Through the Weatherization Assistance Program" by the Oak Ridge National Laboratory, May 2002. http://www.cee1.org/eval/db_pdf/309.pdf. This Oak Ridge study predicted that wrapping a 40 gallon water heater would increase Energy Factor of a 0.86 electric DHW tank by 0.02 (to 0.88).

$Flow_{installed}$ = Flow rate in gallons per minute of installed showerhead

HDD = Annual heating degree days

HSPF = The Heating Seasonal Performance Factor (HSPF) is an estimate of seasonal heating energy efficiency that represents the total heating output of a heat pump, including supplementary electric heat, during the normal heating season (in Btu) as compared to the total electricity consumed (in wattWatt-hours) during the same period

ISR_{CFL} = In-service rate per CFL

kWh_{base} = Average annual energy consumption for electric hot water heating[345].

kW/ton $_{baseline}$ = Chiller system baseline efficiency in kW/ton

kW/ton $_{installed}$ = Chiller system installed efficiency in kW/ton

ODP = Motor enclosure type. Open drip-proof (ODP)

ΔP (lbf/ft²) = Delta P represents the change in average pressure drop from the baseline filter case to the newly installed filter case. ΔP (lbf/ft^2) = $AVGdP_{base}$ – $AVGdP_{eff}$, where $AVGdP_{base}$ = the average of the initial pressure drop across the baseline filter and the pressure drop across the filter at the time of replacement, and $AVGdP_{eff}$ = the average of the initial pressure drop across the new filter and the recommended pressure drop projected at time of replacement

Pascal = A Pascal is a derived SI unit of pressure equal to 1 kg/(m·s2) or 1 N/m2

Q (cfm) = The flow across the filter in cubic feet per minute

$R_{existing}$ = Baseline R value of existing insulation, use R=4.8 if baseline condition is uninsulated[346]

R_{new} = R value of installed insulation (Existing and new material R values added together – the total attic assembly R value)

RPM = Motor speed unit. Revolutions per minute (RPM)

Size in tons - Cooling capacity (output) of the installed chiller system in tons

Size in Btu/h - The cooling capacity or heating capacity (output) of the installed non-residential HVAC system. These data are obtained from the Application Form based on the model number. Note that unit size or cooling capacity may be expressed in terms of "tons" of cooling, a unit of power equivalent to 12,000 Btu/h, on the Application Form

SEER – The Seasonal Energy Efficiency Ratio (SEER) is the total cooling output divided by the total electric input across a typical cooling season

SVGe – Percentage of annual lighting energy saved by lighting control

SVGd – Percentage of lighting demand saved by lighting control

---

[345] Mid-Atlantic TRM, p. 46.

[346] New York Residential TRM. Prepared for New York Department of Public Service by New York Evaluation Advisory Contractor Team, p. 27.

ΔT = Average difference in temperature between cold intake water and shower water

TEFC = Motor enclosure type. Totally enclosed fan-cooled (TEFC)

TRM = Technical Reference Manual

Time of sale[347] = Time at which new equipment purchase takes place when an older existing piece of equipment reaches the end of its life. Also called "replace on burn-out"

$\Delta Water$ = Customer annual water savings per residential unit in gallons

$watts_{CFL}$ = Wattage of rebated CFL.

$\Delta watts_{CFL}$ = Δ watts (delta watts), or the difference in wattage or total load between the energy efficient product and that of the baseline product

WHFd = Waste Heat Factor for Demand to account for cooling savings from efficient lighting[348]

WHFe = Waste Heat Factor for Energy to account for cooling savings from efficient lighting[349]

[347] Mid-Atlantic TRM 2016, p. 97.

[348] Mid-Atlantic TRM, p. 22.

[349] Mid-Atlantic TRM, p. 23.

23 APPENDIX E: GENERAL EQUATIONS

Equation 1: Cooling Capacities – kBtu/h to tons

$$Capacity_{ton} = \frac{Capacity_{kBtu/h}}{12}$$

Equation 2: Cooling Capacities – tons to Btu/h

$$Capacity_{Btu/h} = Capacity_{ton} \times 12{,}000$$

Equation 3: Energy Efficiencies - EER to SEER,[350] for systems <65,000 Btu/h (65 kBtu/h)

$$EER \cong 1.12\, SEER - 0.02\, SEER^2$$

Equation 4: Energy Efficiencies – EER to IEER, for systems ≥ 65,000 Btu/h (65 kBtu/h)

$$IEER = \frac{EER}{0.9}$$

Equation 5: Energy Efficiencies - COP to HSPF[351]

$$COP = -0.0255 \times HSPF^2 + 0.6239 \times HSPF$$

Equation 6: Energy Efficiencies - COP to EER

$$EER \cong 3.412\, COP$$

[350] A Component-Based Model for Residential Air Conditioner and Heat Pump Energy Calculations. Master's Thesis, University of Colorado at Boulder, Wassmer, M. (2003).

[351] A Component-Based Model for Residential Air Conditioner and Heat Pump Energy Calculations. Master's Thesis, University of Colorado at Boulder, Wassmer, M. (2003).

24 APPENDIX F: RESIDENTIAL RETAIL LED LIGHTING PROGRAM ELIGIBLE LAMPS

Measure: Model Number	Measure: Product Description	STEP Bulb Type
37590	General Electric 6.5 Candelabra Base	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
73998	OSRAM SYLVANIA 10 Indoor Fixture	Recessed Downlight Luminaire
74054	OSRAM SYLVANIA 8 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74056	OSRAM SYLVANIA 8 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74060	OSRAM SYLVANIA 11.7 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74062	OSRAM SYLVANIA 11.7 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74069	OSRAM SYLVANIA 15.2 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74071	OSRAM SYLVANIA 15.2 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74090	LEDVANCE 7.3 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
74175	LEDVANCE 9 Multifaceted Reflector	Reflector with medium screw bases w/ diameter <=2.25"
75329	OSRAM SYLVANIA 10.6 Downlight Solid State Retrofit	Reflector with medium screw bases w/ diameter <=2.25"
77318	OSRAM SYLVANIA 4.5 A-Line	Standard A-Type
78046	OSRAM SYLVANIA 9 Bulged Reflector	Reflector with medium screw bases w/ diameter <=2.25"
78048	OSRAM SYLVANIA 9 Bulged Reflector	Reflector with medium screw bases w/ diameter <=2.25"
78711	LEDVANCE 13 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
79289	LEDVANCE 6 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
99647	General Electric 3.5 Candelabra Base	Reflector with medium screw bases w/ diameter <=2.25"
1001653683	Leedarson America, Inc. 11.8 A-Line	Standard A-Type
1001653693	Leedarson America, Inc. 11.4 A-Line	Standard A-Type
11W/LED/OMNI/D30K	Greenlite 11 A-Line	Standard A-Type
11W/LED/PAR30D/FL	Greenlite 11 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
11W/LED/RC-5/6-D	Greenlite 11.1 Downlight Solid State Retrofit	Recessed Downlight Luminaire
12643	Globe Electric Company 5 Fixture	Recessed Downlight Luminaire

Measure: Model Number	Measure: Product Description	STEP Bulb Type
12644	Globe Electric Company 5 Fixture	Recessed Downlight Luminaire
12645	Globe Electric Company 5 Fixture	Recessed Downlight Luminaire
12646	Globe Electric Company 5 Fixture	Recessed Downlight Luminaire
12W/LED/OMNI/3W	Greenlite 12 A-Line	Standard A-Type
13193	General Electric 15 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
14812	General Electric 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
15W/LED/OMNI/D30K	Greenlite 15 A-Line	Standard A-Type
15W/LED/PAR38D/FL	Greenlite 15 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
16200	L'Image Home Products Inc 14.5 A-Line	Standard A-Type
16W/LED/OMNI/3W	Greenlite 16 A-Line	Standard A-Type
21940	General Electric 10 Bulged Reflector	*BR30, BR40, or ER40
22237	General Electric 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
271430	TCP 9 Bulged Reflector	*BR30, BR40, or ER40
30374	Globe Electric Company 9.5 A-Line	Standard A-Type
30374	Globe Electric Company 9.5 A-Line	Standard A-Type
37505	General Electric 4 Candle	Decorative (Shapes B, BA, C, CA, DC, F, G, medium and intermediate bases less than 750 lumens)
37507	General Electric 4 Candle	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
37508	General Electric 5 Globe	Globe (medium and intermediate bases less than 750 lumens)
37906	General Electric 5 Globe	Globe (medium and intermediate bases less than 750 lumens)
3902401	Globe Electric Company 9 Bulged Reflector	*BR30, BR40, or ER40
45639	General Electric 7.5 Multifaceted Reflector	Reflector with medium screw bases w/ diameter <=2.25"
4BEMW LED 30K	Lithonia 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
4W/LED/CTC-D/FIL	Greenlite 4 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)

Measure: Model Number	Measure: Product Description	STEP Bulb Type
4W/LEDX/CTCD/CL	Greenlite 4 Candelabra Base	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
5aSA-A460ST-Q1D-01	Leedarson America, Inc. 6.5 A-Line	Standard A-Type
5aSA-A460ST-Q1D-04	Leedarson America, Inc. 6.5 A-Line	Standard A-Type
5aSA-A810SS-Q1D-01	Leedarson America, Inc. 9 A-Line	Standard A-Type
5aSA-A810SS-Q1D-02	Leedarson America, Inc. 9 A-Line	Standard A-Type
5aSA-A810SS-Q1D-04	Leedarson America, Inc. 9 A-Line	Standard A-Type
5bSA1600STQ1D01	Leedarson America, Inc. 15.4 A-Line	Standard A-Type
5bSA1600STQ1D03	Leedarson America, Inc. 15.7 A-Line	Standard A-Type
5bSA1600STQ1P01	Leedarson America, Inc. 14.8 A-Line	Standard A-Type
5bSA1600STQ1P03	Leedarson America, Inc. 14.9 A-Line	Standard A-Type
5bSM350SGU1011	Leedarson America, Inc. 4.5 Multifaceted Reflector	*All reflector lamps below lumen ranges specified above
5bSM450SGU1002	Leedarson America, Inc. 5 Parabolic Aluminized Reflector	*All reflector lamps below lumen ranges specified above
5W/LEDX/OMNI/D	Greenlite 5 A-Line	Standard A-Type
5W/LEDX/OMNI/D/A15/CL	Greenlite 5 A-Line	Standard A-Type
5W/LEDX/OMNI/D/CL	Greenlite 5 A-Line	Standard A-Type
5WOMNI/ XA15/11B-2/17	Greenlite 5 A-Line	Standard A-Type
61601	GE LED Bright Stik 9 watt Soft White 6 Pack 60-watt replacement	Standard A-Type
61956	General Electric 5 A-Line	Standard A-Type
61961	General Electric 5 A-Line	Standard A-Type
61962	General Electric 9 A-Line	Standard A-Type
61966	General Electric 9 A-Line	Standard A-Type
61973	General Electric 5 A-Line	Standard A-Type
61986	General Electric 9 A-Line	Standard A-Type
63871	GE LED9LS5K-S6 LED Bright Stik 9W 5000K Daylight 60W Replacement 6 Pack	Standard A-Type
65721	General Electric 12 A-Line	Standard A-Type
65722	General Electric 12 A-Line	Standard A-Type
65729	General Electric 15 A-Line	Standard A-Type
65735	General Electric 12 A-Line	Standard A-Type
65743	General Electric 12 A-Line	Standard A-Type
65764	General Electric 15 A-Line	Standard A-Type
65935	General Electric 15 A-Line	Standard A-Type
65939	General Electric 15 A-Line	Standard A-Type
65BEMW LED 30K	Lithonia 12 Downlight Solid State Retrofit	Recessed Downlight Luminaire
67500	General Electric 6 A-Line	Standard A-Type
67500	General Electric 6 A-Line	Standard A-Type
67502	General Electric 6 A-Line	Standard A-Type
67511	General Electric 10 A-Line	Standard A-Type
67515	General Electric 10 A-Line	Standard A-Type
67607	General Electric 6 A-Line	Standard A-Type
67614	General Electric 6 A-Line	Standard A-Type

Measure: Model Number	Measure: Product Description	STEP Bulb Type
67615	General Electric 10 A-Line	Standard A-Type
67616	General Electric 10 A-Line	Standard A-Type
6W/LED/GLOBE	Greenlite 6.3 Globe	Globe (medium and intermediate bases less than 750 lumens)
6W/LED/OMNID	Greenlite 6 A-Line	Standard A-Type
74067	OSRAM SYLVANIA 14 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
74311	OSRAM SYLVANIA 5.5 A-Line	Standard A-Type
74312	OSRAM SYLVANIA 5.5 A-Line	Standard A-Type
74313	OSRAM SYLVANIA 9.1 A-Line	Standard A-Type
74314	OSRAM SYLVANIA 9.1 A-Line	Standard A-Type
74315	OSRAM SYLVANIA 9.1 A-Line	Standard A-Type
74316	OSRAM SYLVANIA 12 A-Line	Standard A-Type
74317	OSRAM SYLVANIA 12 A-Line	Standard A-Type
74318	OSRAM SYLVANIA 16 A-Line	Standard A-Type
74319	OSRAM SYLVANIA 16 A-Line	Standard A-Type
74454	OSRAM SYLVANIA 14 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
78041	OSRAM SYLVANIA 4.5 A-Line	Standard A-Type
78044	OSRAM SYLVANIA 9 A-Line	Standard A-Type
78045	OSRAM SYLVANIA 9.1 A-Line	Standard A-Type
79116	Sylvania 6 Parabolic Aluminized Reflector	*All reflector lamps below lumen ranges specified above
79166	Sylvania 11 Bulged Reflector	*BR30, BR40, or ER40
79169	Sylvania 9 Bulged Reflector	*BR30, BR40, or ER40
79174	Sylvania 7 Reflector	*R20
79490	OSRAM SYLVANIA 9.6 A-Line	Standard A-Type
79493	OSRAM SYLVANIA 14.8 A-Line	Standard A-Type
79635	Sylvania 6 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, medium and intermediate bases less than 750 lumens)
79636	Sylvania 6 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
79655	Sylvania 15 Bulged Reflector	*BR30, BR40, or ER40
79683	OSRAM SYLVANIA 17 A-Line	Standard A-Type
7W/LED/PAR20D/FL	Greenlite 7 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/

Measure: Model Number	Measure: Product Description	STEP Bulb Type
		diameter >2.5" (*see exceptions below)
7W/LED/R20/D	Greenlite 7 Reflector	*R20
7W/LED/R20-D/S	Greenlite 7 Reflector	*R20
7W/LED/RC-4-D	Greenlite 7.1 Downlight Solid State Retrofit	Recessed Downlight Luminaire
7W/LEDX/OMNI/D	Greenlite 7.2 A-Line	Standard A-Type
7W/LEDX/OMNI/D/CL	Greenlite 7.2 A-Line	Standard A-Type
7W/LEDX/OMNID/CL	Greenlite 7 A-Line	Standard A-Type
8W/LED/BR/EXT/D	Greenlite 8.2 Retrofit Kit	Recessed Downlight Luminaire
8W/LED/BR30/D/30K	Greenlite 8 Bulged Reflector	*BR30, BR40, or ER40
8W/LED/BR30-D/S	Greenlite 8.5 Bulged Reflector	*BR30, BR40, or ER40
91949	GE 10 Watt A19 LED Light Bulbs - Sof White (4pk)	Standard A-Type
92117	General Electric 16.8 A-Line	Standard A-Type
92118	General Electric 16.8 A-Line	Standard A-Type
92915	General Electric 12 A-Line	Standard A-Type
92917	General Electric 12 A-Line	Standard A-Type
92919	General Electric 12 A-Line	Standard A-Type
92924	General Electric 15 A-Line	Standard A-Type
92930	General Electric 15 A-Line	Standard A-Type
92932	General Electric 15 A-Line	Standard A-Type
97230	General Electric 4.2 Candle	Decorative (Shapes B, BA, C, CA, DC, F, G, medium and intermediate bases less than 750 lumens)
98591	General Electric 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
98812	General Electric 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
99114	GE LED9LS-S6 LED Bright Stik 9W 5000K Daylight 60W Replacement 6 Pack	Standard A-Type
99681	GE LED 65W BR30 Soft White Flood Light (4-pk.)	*BR30, BR40, or ER40
9W/LED/OMNI/D/30K	Greenlite 9 A-Line	Standard A-Type
9W/LED/OMNID/*	Greenlite 9 A-Line	Standard A-Type
9W/LEDOMNI//D	Greenlite 9 A-Line	Standard A-Type
A6A19A60WUL01	Leedarson America, Inc. 9.5 A-Line	Standard A-Type
A6A19A60WUL02	Leedarson America, Inc. 9.5 A-Line	Standard A-Type
A6GU10M50WESD02	The Home Depot Mfg 5.3 Parabolic Aluminized Reflector	Reflector with medium screw bases w/ diameter <=2.25"
A7A19A40WESD01	EcoSmart 40W Equivalent Soft White A19 Energy Star and Dimmable LED Light Bulb (4-Pack)	Standard A-Type
A7A19A40WESD02	EcoSmart 40W Equivalent Daylight A19 Energy Star and Dimmable LED Light Bulb (4-Pack)	Standard A-Type

Measure: Model Number	Measure: Product Description	STEP Bulb Type
A7A19A60WESD01	EcoSmart 60W Equivalent Soft White A19 Energy Star and Dimmable LED Light Bulb (4-Pack)	Standard A-Type
A7A19A60WESD02	EcoSmart 60W Equivalent Bright White A19 Energy Star and Dimmable LED Light Bulb (4-Pack)	Standard A-Type
A7A19A60WESD03	EcoSmart 60W Equivalent Daylight A19 Energy Star and Dimmable LED Light Bulb (4-Pack)	Standard A-Type
B6A19100WESD01	The Home Depot Mfg 15 A-Line	Standard A-Type
B6A19100WESD02	The Home Depot Mfg 15 A-Line	Standard A-Type
BA19-04527OMF-12DE26-2U100	Cree Inc. 6 A-Line	Standard A-Type
BB13-02027OMC-12DE12-1C600	Cree Inc. 3.2 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
BB13-03527OMC-12DE12-1C600	Cree Inc. 5.3 Candle	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
BPAR30L-0803025C-12DE26-1C100	Cree Inc. 10.5 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
BPAR30L-0803040C-12DE26-1C100	Cree Inc. 10.5 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
BPAR30S-0803040C-12DE26-1C100	Cree Inc. 10.5 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
C5A19A75WESD04	The Home Depot Mfg 12.5 A-Line	Standard A-Type
C5A19A75WESD06	The Home Depot Mfg 12.5 A-Line	Standard A-Type
FMLRL 11 14840	Lithonia 20 Fixture	Recessed Downlight Luminaire
FMLRL 14 20840	Lithonia 30 Fixture	Recessed Downlight Luminaire
FMLSL 11 14840	Lithonia 20 Fixture	Recessed Downlight Luminaire
FMLSL 14 20840	Lithonia 30 Fixture	Recessed Downlight Luminaire
FMLWL 24 840	Lithonia 20.1 Downlight Solid State Retrofit	Recessed Downlight Luminaire
FMLWL 48 840	Lithonia 39.7 Downlight Solid State Retrofit	Recessed Downlight Luminaire
FMML 7 830	Lithonia 10 Fixture	Recessed Downlight Luminaire
FMML 7 840	Lithonia 10	Recessed Downlight Luminaire
GVLAO10027D4	TCP 15.4 A-Line	Standard A-Type
GVLAO10050D	Great Value 100W General Purpose LED 4 Pack	Standard A-Type
GVLAO7527D4	TCP 11 A-Line	Standard A-Type

Measure: Model Number	Measure: Product Description	STEP Bulb Type
GVRLA6027ND	TCP 9 A-Line	Standard A-Type
GVRLA6027ND4	TCP 9 A-Line	Standard A-Type
GVRLA6050ND	TCP 9 A-Line	Standard A-Type
GVRLA6050ND4	TCP 9 A-Line	Standard A-Type
GVRLAO1027D	TCP 10 A-Line	Standard A-Type
GVRLAO1027D2	TCP 10.2 A-Line	Standard A-Type
GVRLAO1027D4	TCP 10.2 A-Line	Standard A-Type
GVRLAO1050D	TCP 10 A-Line	Standard A-Type
GVRLAO1050D4	TCP 10 A-Line	Standard A-Type
GVRLAO1850D	TCP 18 A-Line	Standard A-Type
GVRLAO727D	TCP 7 A-Line	Standard A-Type
GVRLAO750D	TCP 7 A-Line	Standard A-Type
GVRLBR3065W50KD2	TCP 9 Bulged Reflector	*BR30, BR40, or ER40
GVRLG2540W27K	TCP 4.3 Globe	Globe (medium and intermediate bases less than 750 lumens)
GVRLG2540W50K	TCP 4.3 Globe	Globe (medium and intermediate bases less than 750 lumens)
KL9906L6ES	Uninex 9 A-Line	Standard A-Type
KL9907L3ES	Uninex 7 A-Line	Standard A-Type
KL9907L5ES	Uninex 6 A-Line	Standard A-Type
KL9907L6ES	Uninex 6 A-Line	Standard A-Type
KL9910L4ES	Bas	*BR30, BR40, or ER40
KL9911L2ES	Uninex 6 Globe	Globe (medium and intermediate bases less than 750 lumens)
KL9911LES	Uninex 6 Globe	Globe (medium and intermediate bases less than 750 lumens)
KL9922L6ES	Uninex 11 A-Line	Standard A-Type
KL9923L6ES	Uninex 15 A-Line	Standard A-Type
KLFC4CL	Uninex 4 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
KLFG4.5CL	Uninex 4.5 Globe	Globe (medium and intermediate bases less than 750 lumens)
KLL4DLF-410WP	Uninex 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
KLL4DLF-610WP	Uninex 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
KLL6DLF-611WP	11 Downlight Solid State Retrofit	Recessed Downlight Luminaire
LED BR30 9W 33966	Globe Electric Company 9 Bulged Reflector	*BR30, BR40, or ER40
LK3BMW LED	Lithonia 7.5 Downlight Recessed	Recessed Downlight Luminaire
LK4BMW LED	Lithonia 8.2 Downlight Recessed	Recessed Downlight Luminaire
LK4G2MW LED	Lithonia 8.2 Downlight Recessed	Recessed Downlight Luminaire
LK5BMW LED	Lithonia 10.6 Downlight Recessed	Recessed Downlight Luminaire

Measure: Model Number	Measure: Product Description	STEP Bulb Type
RA406930WHR	Cooper Lighting 9.8 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RA5606930WHR	Cooper Lighting 9.9 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL460WH830	Cooper Lighting 8.8 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL460WH835	Cooper Lighting 8.8 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL460WH840	Cooper Lighting a Division of Cooper Industries 9.5 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL460WH930	Cooper Lighting a Division of Cooper Industries 9.6 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL460WH935	Eaton's Cooper Lighting Business 8 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL460WH940	Cooper Lighting a Division of Cooper Industries 9.6 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH6835R	Cooper Lighting 9.4 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH6840R	Cooper Lighting 9 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH6930R	Eaton's Cooper Lighting Business 8.8 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH6935R	Eaton's Cooper Lighting Business 8.9 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH6940R	Eaton's Cooper Lighting Business 9.2 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH9835R	Cooper Lighting 13 Downlight Solid State Retrofit	Recessed Downlight Luminaire
RL560WH9935R	Cooper Lighting 13 Retrofit Kit	Recessed Downlight Luminaire
RL560WH-R	Cooper Lighting 9.4 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SA19-04627MDFD-12DE26-1-14	Cree Inc. 5.6 A-Line	Standard A-Type
SA19-04650MDFD-12DE26-1-14	Cree Inc. 5.2 A-Line	Standard A-Type
SA19-08127MDFD-12DE26-1-14	Cree Inc. 9.5 A-Line	Standard A-Type
SA19-08150MDFD-12DE26-1-14	Cree Inc. 8.5 A-Line	Standard A-Type
SA19-11027MDFD-12DE26-1-11	Cree Inc. 11.2 A-Line	Standard A-Type
SA19-11050MDFD-12DE26-1-11	Cree Inc. 10.4 A-Line	Standard A-Type
SA21-16027MDFD-12DE26-1-11	Cree Inc. 16.5 A-Line	Standard A-Type
SA21-16027MDFD-12WE26-1-11	Cree Inc. 16.5 A-Line	Standard A-Type

Measure: Model Number	Measure: Product Description	STEP Bulb Type
SA21-16050MDFD-12DE26-1-11	Cree Inc. 15 A-Line	Standard A-Type
SB13-02427MDCH-12GE12-1-12	Cree Inc. 3.1 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
SB13-03427MDCH-12GE12-1-12	Cree Inc. 5 Specialty	Decorative (Shapes B, BA, C, CA, DC, F, G, candelabra bases less than 1050 lumens)
SBR30-06527FLFD-12DE26-1-13	Cree Inc. 8 Bulged Reflector	*BR30, BR40, or ER40
SBR30-06550FLFD-12DE26-1-13	Cree Inc. 7 Bulged Reflector	*BR30, BR40, or ER40
SBR30-15027FLFH-12DE26-1-11	Cree 100W Equivalent Soft White (2700K) BR30 Dimmable LED Light Bulb	*BR30, BR40, or ER40
SBR30-15050FLFH-12DE26-1-11	Cree 100W Equivalent Daylight (5000K) BR30 Dimmable LED Light Bulb	*BR30, BR40, or ER40
SBR40-11027FLFD-12DE26-1-11	Cree Inc. 12.5 Bulged Reflector	*BR30, BR40, or ER40
SBR40-11050FLFD-12DE26-1-11	Cree Inc. 12 Bulged Reflector	*BR30, BR40, or ER40
SLD405830WHR	Cooper Lighting 12.2 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SLD405930WHR	Eaton's Cooper Lighting Business 12.1 Downlight Recessed	Recessed Downlight Luminaire
SLD606830WHR	Cooper Lighting 12.2 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SLD606930WHR	Eaton's Cooper Lighting Business 13.2 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SPAR38-1503025TD-12DE26-1-11	Cree Inc. 16.9 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
SPAR38-1503045TD-12DE26-1-11	Cree Inc. 16.9 Parabolic Aluminized Reflector	R, PAR, ER, BR, BPAR or similar bulb shapes with medium screw bases w/ diameter >2.5" (*see exceptions below)
SR20-10027FLFH-12DE26-1-11	Cree 75W Equivalent Soft White (2700K) R20 Dimmable LED Light Bulb	*R20
SRDL4-0572700FH-12DE26-1-11	Cree Inc. 9 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SRDL4-0575000FH-12DE26-1-11	Cree Inc. 8 Retrofit Kit	Recessed Downlight Luminaire
SRDL6-0652700FH-12DE26-1-11	Cree Inc. 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SRDL6-0652700FH-12DE26-1-12	Cree Inc. 10 Downlight Solid State Retrofit	Recessed Downlight Luminaire

Measure: Model Number	Measure: Product Description	STEP Bulb Type
SRDL6-0655000FH-12DE26-1-11	Cree Inc. 8.5 Downlight Solid State Retrofit	Recessed Downlight Luminaire
SRDL6-0655000FH-12DE26-1-12	Cree Inc. 8.5 Retrofit Kit	Recessed Downlight Luminaire
SRDL6-1102700FH-12DE26-1-11	Cree Inc. 16 Retrofit Kit	Recessed Downlight Luminaire