



LOANSTAR TECHNICAL GUIDEBOOK

Simplified Calculation Procedures



SECO

State Energy
Conservation Office

VOLUME 2



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PURPOSE OF THIS PUBLICATION

The SECO LoanSTAR Technical Guidebook is a two-volume set that provides a road map for engineers who will be preparing utility assessment reports for the LoanSTAR Program. Volume I of the Guidebook identifies policies to be followed in preparing project calculations and the required format for presenting the projects to the State Energy Conservation Office (SECO) for technical evaluation.

Volume II provides simplified calculation methods for many common energy savings measures. These calculation methods are reduced to look-up and fill-in-the-blank procedures and are provided as an aid for all analysts who wish to use them.

Questions or comments concerning the guidelines or format should be addressed to the State Energy Conservation Office at 512-463-1931.

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SECTION I – INTRODUCTION

SIMPCALC BACKGROUND

A Simplified UCRM Calculation System (SimpCalc) was developed for the LoanSTAR Program in the 1980s. This software system was developed and supported through Version 3.0 by Apollo Data, but, in about 1993, support was terminated.

SimpCalc was intended for use on Category II UCRMs and had many good features including automated summary compilations and numerous valuable look-up tables. Some technical analysts continue to use the look-up tables developed for this system but few continue to use the software. Software disuse has occurred because it is written in a non-listable Basic language and it requires special instructions to make this DOS program work effectively in a Windows environment. Analysts must be aware of certain limitations in the software and how to overcome these limitations to make the system operate in broad applications.

QUICKCALC EMERGENCE

In 1998, the SimpCalc – 3.0 manual was upgraded for the last time. This included an appendix which addressed the issues of operating in a Windows environment and included previously undocumented procedures to produce a valid SimpCalc report. At the same time (1998), it was recognized that the SimpCalc software would soon lose its appeal, but the streamlined approach of using tabularized engineering data for input into simple equations was too beneficial to abandon. Therefore, the calculation procedures embedded in the software were reduced to manual calculation forms for use without the SimpCalc software. At the same time, these calculation forms were expanded to include energy savings from conversions that were never included in SimpCalc. These calculation procedures were named QuickCalc.

With this publication of the Texas LoanSTAR Technical Guidebook, the SimpCalc software documentation has been eliminated. Technical analysts who have the program and wish to continue using it for utility assessment reports may do so. Others are encouraged to use QuickCalc procedures whenever possible for Category II UCRM savings calculations.

SPREADSHEET APPLICATION

QuickCalc forms are included in this volume of the Guidebook along with the necessary look-up tables. They may be used for manual calculations. In addition, the QuickCalc forms are available on the SECO website (www.seco.cpa.state.tx.us) as Excel spreadsheets. The spreadsheets contain formulas that automatically calculate results based on data input by the user. Also, the reference tables are included in the spreadsheets as embedded files and can be opened by clicking on the appropriate links once macros have been enabled for that session. While the QuickCalcs allow for individual UCRM calculations, they do not provide the summary compilations previously provided in SimpCalc. Although these files have been tested for accuracy, it is up to the analyst to verify that specific results are accurate and reasonable.

SECTION II – QUICKCALC CALCULATION FORMS

FORMS BY TYPE

This section presents a list of all currently available QuickCalc forms. These forms may be used in conjunction with look-up tables in Section III of this Guidebook to calculate savings for Category II UCRMs. These forms may be duplicated. **NOTE: The spreadsheets are embedded. Click inside to see and access the complete information.** Available forms include the following:

Temperature Control

1. Temperature Control (Electric Cooling and Electric or Gas Heating)

HVAC Schedule/Control

2. Timeclock Control of Air Conditioning/Heating Units (Electric Cooling and Electric or Gas Heating)
3. Timeclock Control of Motor Loads (Non-Air Conditioned Space)

Ventilation Control

4. Ventilation Control (Electric Cooling and Gas Heating)
5. Ventilation Control (Electric Cooling and Heating)

Economizer Upgrades

6. Dry Bulb Airside Economizer (Electric Cooling)
7. Dry Bulb Airside Economizer (Gas Cooling)

Lighting Adjustments

8. Lighting Conversion (Replacement of Lamp and Ballast)
9. Interior Fixture Re-lamping/Replacing (Electric Cooling and Heating)
10. Interior Fixture Re-lamping/Replacing (Electric Cooling and Gas Heating)
11. Interior Fixture Re-lamping/Replacing (Gas Cooling and Heating)
12. Street/Security Lighting Conversion

Lighting Schedule

13. Exterior Lighting Controls
14. Interior Lighting Controls (Electric Cooling and Gas Heating)
15. Interior Lighting Controls (Electric Cooling and Heating)

Equipment Upgrades

16. Conversion to Dedicated Computer Room Cooling Unit (Electric to Electric)
17. DHW Heater Conversion (Electric to Gas)
18. Electric Efficiency Motor Replacement (Non-Air Conditioned Space)
19. Replacement of Low-Efficiency DHW Heater Units (Gas to Gas)
20. Replacement of Low-Efficiency Gas Heating (Gas to Gas)
21. Replacement of Low-Efficiency HVAC Units (Converting from Electric Cooling and Gas Heating to Heat Pumps)
22. Replacement of Low-Efficiency HVAC Units (Converting from Electric Cooling and Heating to Electric Cooling and Gas Heating)

23. Replacement of Low-Efficiency HVAC Units (Converting from Electric Cooling and Heating to Gas Cooling and Heating)
24. Replacement of Low-Efficiency HVAC Units (Converting from Electric Cooling and Heating to Heat Pumps)
25. Replacement of Low-Efficiency HVAC Units (Electric Cooling – EER and Gas Heating)
26. Replacement of Low-Efficiency HVAC Units (Electric Cooling – kW/Ton and Gas Heating)

Custom Measures

27. Attic/Ceiling Insulation (Electric Cooling and Gas Heating)
28. Attic/Ceiling Insulation (Electric Cooling and Heating)
29. Infiltration Reduction (Electric Cooling and Gas Heating)
30. Infiltration Reduction (Electric Cooling and Heating)
31. Programmable Thermostats (Electric Cooling and Electric or Gas Heating)
32. Wall Insulation (Electric Cooling and Gas Heating)
33. Wall Insulation (Electric Cooling and Heating)
34. Window Solar Gain Control for Clear, Unshaded Windows (Electric Cooling and Electric or Gas Heating)

USE AND CAUTIONS

Use of these forms allows calculation of energy savings, cost savings and simple payback if installation costs are provided. Caution: Installation costs should include equipment, material, labor, design, contractor bonding etc. QuickCalc forms in many cases require unit prices which would have to be derived from full mark-up prices. Therefore, many analysts may wish to bypass cost inputs and payback calculations on individual forms if selected UCRMs require use of multiple forms (e.g., HVAC conversions of various types of equipment). Savings can be summed from the individual forms and then divided into a total UCRM implementation cost to derive a simple payback for combined forms. One final caution is that the QuickCalc forms do not have a method of handling dependencies so it is up to the user to consider that and adjust the input data accordingly.

FORMS

The following pages contain a comprehensive collection of the available QuickCalc forms.

Temperature Control				
(Electric Cooling and Electric or Gas Heating)				
Description of UCRM:				
Data needed for calculations		Description		Resource
A)		<i>Btu/hr-ft²-°F</i>	U-Value of Walls	Table 18
B)		<i>ft²</i>	Wall Area (includes windows and doors)	
C)		<i>Btu/hr-ft²-°F</i>	U-Value of Roof	Table 18
D)		<i>ft²</i>	Roof Area	
E)		<i>°F</i>	Heating Season Thermostat Setpoint	
F)		<i>°F</i>	Heating Season Thermostat Setback	
G)		<i>hrs/yr</i>	Heating Season Hours	Table 16
H)		<i>°F</i>	Cooling Season Thermostat Setpoint	
I)		<i>°F</i>	Cooling Season Thermostat Setback	
J)		<i>hrs/yr</i>	Cooling Season Hours	Table 15
K)		<i>%</i>	Heating Equipment Efficiency	Table 3
L)		<i>\$/Mcf (orkWh)</i>	Natural Gas Rate (or \$/winter kWh for electric heat)	
M)		<i>Btuh/Watt</i>	Performance of Cooling System	Table 1
N)		<i>\$/kWh</i>	Electrical Energy Rate - Summer	
O)		<i>\$/kWh</i>	Electrical Energy Rate - Winter	
P)		<i>\$</i>	Implimentation Cost	

Calculation						
Q)	Total Envelope UA-Value	=	$A * B + C * D$	=	0.0	Btu/hr-°F
R)	Heating Energy Savings	=	$Q * (E - F) * G$	=	0.0	Btu/yr
S _e)	Gas Heating Cost Reduction ¹	=	$\frac{R * L}{(K * 1,030,000 \text{ Btu/Mcf})}$	=		\$/yr
T)	Cooling Energy Savings	=	$Q * (H - I) * J$	=	0.0	Btu/yr
U)	Cooling Cost Reduction	=	$\frac{T * (N + O) / 2}{1,000 * M}$	=	#DIV/0!	\$/yr
V)	Annual Cost Savings	=	$S + U$	=	#DIV/0!	\$/yr
W)	Simple Payback	=	P / V	=	#DIV/0!	yr

¹Use S_{Ae} for Gas Heating and S_E for Electrical Heating

S _E)	Electrical Heating Cost Reduction	=	$\frac{R * L}{3,413 \text{ Btuh/kW} * K}$	=	#DIV/0!	\$/yr
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Timeclock Control of Air Conditioning/Heating Units (Electric Cooling and Electric or Gas Heating)						
Description of UCRM:						
Data needed for calculations		Description			Resource	
A)		Tons	Cooling Unit Tonnage			
B)		hrs/yr	Annual Cooling Operating Hours Unit Will be Shut Off			
C)		Btuh/Watt	System EER			Table 1
D)		%	Estimated Cooling Load/Duty Factor			
E)		hrs/yr	Annual Heating Operating Hours Unit Will be Shut Off			
F)		kW	Heating Unit Capacity			
G)		%	Heating Efficiency			Table 3
H)		%	Estimated Heating Load/Duty Factor			
I)		\$/kWh	Electrical Energy Rate - Summer			
J)		\$/kWh	Electrical Energy Rate - Winter (Electric Heat Alternative)			
K)		\$/Mcf	Natural Gas Rate			
L)		\$	Implementation Cost			
Calculations						
Electric Heating Alternative:						
M)	Annual Cooling Savings	=	$\frac{A * 12,000 \text{ Btuh/Ton} * B * D}{C * 1,000 \text{ W/kW}}$	=	#DIV/0!	kWh/yr
N)	Annual Heating Savings	=	$\frac{E * F * H}{G}$	=	#DIV/0!	kWh/yr
O)	Annual Cost Savings	=	$(M + N) * (I + J) / 2$	=	#DIV/0!	\$/yr
P)	Simple Payback	= Simple Payback	$\frac{L}{O}$	=	#DIV/0!	yrs
Gas Heating Alternative:						
M)	Annual Cooling Savings	=	$\frac{A * 12,000 \text{ Btuh/Ton} * B * D}{C * 1,000 \text{ W/kW}}$	=		kWh/yr
N)	Annual Heating Savings	=	$\frac{E * F * H * 3,413 \text{ Btuh/kW}}{G * 1,030,000 \text{ Btu/Mcf}}$	=		kWh/yr
O)	Annual Cost Savings	=	$M * (I + J) / 2 + N * K$	=		\$/yr
P)	Simple Payback	= Simple Payback	$\frac{L}{O}$	=		yrs

Timeclock Control of Motor Loads						
(Non Air-Conditioned Space)						
Description of UCRM:						
Data needed for calculations		Description			Resource	
A)		hp	Horsepower of Motor to be Controlled			
B)		%	Motor Efficiency (Nameplate or Table 9)			Table 9
C)		%	Motor Load Factor			
D)		hrs/yr	Hours per Year that Motor will be shut off = hrs/day * days/yr			
E)		\$/kWh	Electrical Energy Rate - Summer			
F)		\$/kWh	Electrical Energy Rate - Winter			
G)		\$	Installed Cost per Timeclock			
Calculations						
Electric Heating Alternative:						
H)	kWh Saved	=	$\frac{0.746 \text{ kW/hp} * A * C * D}{B}$	=	#DIV/0!	kWh/yr
I)	Annual Cost Savings	=	$H * (E + F) / 2$	=	#DIV/0!	\$/yr
J)	Simple Payback	=	$\frac{G}{I}$	=	#DIV/0!	yrs

Ventilation Control				
(Electric Cooling and Gas Heating)				
Description of UCRM:		(Data needed: use of space, schedule, inside temperature during cooling season, inside temperature during heating season)		
Data needed for calculations		Description	Resource	
A)		cfm	Existing Ventilation Rate	
B)		cfm	Proposed Ventilation Rate	
C)		°F	Avg Inside Temp (DB/WB°F, Cooling Season)	Table 5
D)		°F	Avg Outside Temp (DB/WB°F, Cooling Season)	Table 5
E)		°F	Avg Inside Temperature (Heating Season)	Table 5
F)		°F	Avg Outside Temperature (Heating Season)	Table 5
G)		hrs/yr	Annual Cooling System Operating Hours	Table 15
H)		hrs/yr	Annual Heating System Operating Hours	Table 16
I)		kW/Ton	Performance of Cooling System	Table 1
J)		%	Efficiency of Heating System	Table 3
K)		\$/kWh	Electrical Energy Rate - Summer	
L)		\$/kWh	Electrical Energy Rate - Winter	
M)		\$/kW-mo	Electrical Demand Rate - Summer	
N)		\$/kW-mo	Electrical Demand Rate - Winter	
O)		\$/Mcf	Natural Gas Rate	
P)		mo/yr	Number of Cooling Months (for demand)	
Q)		\$	Cost of Project, Including Design	
R)		Btu/lbm	Enthalpy Inside (From Psychrometric Chart Using C)	P. Chart
S)		Btu/lbm	Enthalpy Outside (From Psychrometric Chart Using D)	P. Chart

Calculations					
T)	Adjusted Ventilation Rate	=	$A - B$	=	0.0 cfm
U)	Cooling Energy Savings	=	$\frac{4.5 * T * (R - S) * G}{12,000 \text{ Btu/Ton-hr}}$	=	0.0 Ton-hrs/yr
V)	Annual Cooling Electrical Energy Savings	=	$U * I$	=	0.0 kWh/yr
W)	Cooling Electrical Demand Savings	=	$\frac{V}{G}$	=	#DIV/0! kW
X)	Annual Cooling Cost Savings	=	$V * (K + L)/2 + W * (M + N)/2 * P$	=	#DIV/0! \$/yr
Y)	Heating Energy Savings	=	$1.085 * T * (E - F) * H$	=	0.0 Btu/yr
Z)	Annual Natural Gas Savings	=	$\frac{Y / J}{1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0! Mcf/yr
AA)	Annual Heating Cost Savings	=	$Z * O$	=	#DIV/0! \$/yr
BB)	Annual Cost Savings	=	$X + AA$	=	#DIV/0! \$/yr
CC)	Simple Payback	=	$\frac{Q}{BB}$	=	#DIV/0! yrs

Ventilation Control (Electric Cooling and Heating)			
Description of UCRM:		(Data needed: use of space, schedule, inside temperature during cooling season, inside temperature during heating season)	
Data needed for calculations		Description	Resource
A)		Existing Ventilation Rate	
B)		Proposed Ventilation Rate	
C)		Ave. Inside Air Temperature (DB/WB°F, Cooling Season)	Table 5
D)		Ave. Outside Air Temperature (DB/WB°F, Cooling Season)	Table 5
E)		Ave. Inside Air Temperature (Heating Season)	Table 5
F)		Ave. Outside Air Temperature (Heating Season)	Table 5
G)		Annual Cooling System Operating Hours	Table 15
H)		Annual Heating System Operating Hours	Table 16
I)		Performance of Cooling System	Table 1
J)		Efficiency of Heating System	Table 3
K)		Electrical Energy Rate - Summer	
L)		Electrical Energy Rate - Winter	
M)		Electrical Demand Rate - Summer	
N)		Electrical Demand Rate - Winter	
O)		Number of Cooling Months (for demand)	
P)		Number of Heating Months (for demand)	
Q)		Diversity of Cooling Demand (range 0 to 1 with 1.0 as default)	
R)		Diversity of Heating Demand (range 0 to 1 with 0.6 as default)	
S)		Cost of Project, Including Design	
T)		Enthalpy Outside (From Psychrometric Chart Using C)	P. Chart
U)		Enthalpy Inside (From Psychrometric Chart Using B)	P. Chart

Calculations					
V)	Adjusted Ventilation Rate	=	$A - B$	=	0.0 cfm
W)	Cooling Energy Savings	=	$4.5 * V * (T - U) * G$	=	0.0 Ton-hrs/yr
			12,000 Btu/Ton-hr		
X)	Cooling Electrical Energy Savings	=	$W * I$	=	0.0 kWh/yr
Y)	Cooling Electrical Demand Reduction	=	X	=	#DIV/0! kW
			G		
Z)	Annual Cooling Electrical Cost Savings	=	$X * K + Y * M * O * Q$	=	#DIV/0! \$/yr
AA)	Heating Energy Savings	=	$1.085 * V * (E - F) * H$	=	0.0 Btu/yr
BB)	Heating Electrical Energy Savings	=	$AA * J$	=	0.0 kWh/yr
			3,413 Btu/kWh		
CC)	Heating Electrical Demand Savings	=	BB	=	#DIV/0! kW
			H		
DD)	Annual Heating Electrical Cost Savings	=	$BB * L + CC * Q * N * R$	=	#DIV/0! \$/yr
EE)	Annual Cost Savings	=	$Z + DD$	=	#DIV/0! \$/yr
FF)	Simple Payback	=	S	=	#DIV/0! yrs
			EE		

Dry Bulb Airside Economizer						
(Electric Cooling)						
Description of UCRM:		(Data needed: use of space, schedule, inside temperature during cooling season, inside relative humidity during cooling season)				
Data needed for calculations		Description				Resource
A)		<i>cfm</i>	Airflow of AHUs utilizing free cooling			
B)		<i>Btu/lb</i>	Enthalpy inside the facility (Use Table 17 or Psych. Chart)			Table 17
C)		<i>Btu/lb</i>	Enthalpy outside the facility			Table 17
D)		<i>hrs/yr</i>	Annual Free Cooling Hours			Table 17
E)		<i>kW/Ton</i>	Performance of Cooling System			Table 1
F)		<i>\$/kWh</i>	Electrical Energy Rate			
G)		<i>\$</i>	Cost of Project, Including Design			
Calculations						
H)	Cooling Energy Savings	=	$\frac{4.5 * A * (B - C) * D}{12,000 \text{ Btu/Ton-hr}}$	=	0.0	Ton-hrs/yr
I)	Annual Cooling Electrical Energy Savings	=	$H * E$	=	0.0	kWh/yr
J)	Annual Cooling Cost Savings	=	$I * F$	=	0.0	\$/yr
K)	Simple Payback	=	$\frac{G}{J}$	=	#DIV/0!	yrs

Dry Bulb Airside Economizer						
(Gas Cooling)						
Description of UCRM:		(Data needed: use of space, schedule, inside temperature during cooling season, inside relative humidity during free cooling season)				
Data needed for calculations		Description				Resource
A)		<i>cfm</i>	Airflow of AHUs utilizing free cooling			
B)		<i>Btu/lb</i>	Enthalpy inside the facility (Use Table 17 or Psych. Chart)			Table 17
C)		<i>Btu/lb</i>	Enthalpy outside the facility			Table 17
D)		<i>hrs/yr</i>	Annual Free Cooling Hours			Table 17
E)		<i>COP</i>	Efficiency of Cooling System			
F)		<i>\$/Mcf</i>	Natural Gas Rate			
G)		<i>\$</i>	Cost of Project, Including Design			
Calculations						
H)	Cooling Energy Savings	=	$4.5 * A * (B - C) * D$		=	0.0 Btu/yr
I)	Annual Cooling Electrical Energy Savings	=	$\frac{H}{E * 1,030,000 \text{ Btu/Mcf}}$		=	#DIV/0! Mcf/yr
J)	Annual Cooling Cost Savings	=	$I * F$		=	#DIV/0! \$/yr
K)	Simple Payback	=	$\frac{G}{J}$		=	#DIV/0! yrs

Lighting Conversion						
(Replacement of Lamp and Ballast)						
Description of UCRM:		(Data needed: location, use, age of fixtures, type of existing lamp/ballast, type of new lamp/ballast, life of new lamp, fc level before conversion, estimated fc level after conversion ¹)				
Data needed for calculations		Description			Resource	
A)		<i>Watts/Fixture</i>	Wattage of Existing Lamp and Ballast			Table 12
B)		<i>Watts/Fixture</i>	Wattage of Replacement Lamp and Ballast			Table 12
C)		<i>hrs</i>	Summer Operating Hours			
D)		<i>hrs</i>	Winter Operating Hours			
E)		<i>Luminaires</i>	Total Number of Existing Luminaires Involved			
F)		<i>Luminaires</i>	Total Number of Replacement Luminaires Involved			
G)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
H)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
I)		<i>Luminaires</i>	Installed Cost per Luminaire/Lamp/Ballast Combination			
¹ Assume that lumens before/lumens after = fc before/fc after						
Calculations						
J)	Annual Electrical Energy Savings	=	$(A * E - B * F) * (C + D) / 1,000$	=	0.0	kWh
K)	Annual Cost Savings	=	$J * (G + H) / 2$	=	0.0	\$/yr
L)	Implementation Cost	=	$I * F$	=	0.0	\$
M)	Simple Payback	=	$\frac{L}{K}$	=	#DIV/0!	yrs

Interior Fixture Relamping/Replacing (Gas Cooling and Heating)			
Description of UCRM: (Data needed: area of building, use, typical existing light level at table height, type of existing lamp and ballast, type of replacement lamp and ballast, estimated light level after conversion ¹ , and recommended light level)			
¹ Assume that lumens before/lumens after = fc before/fc after			
Data needed for calculations		Description	Resource
A)	hrs/yr	Summer Operating Hours	
B)	hrs/yr	Winter Operating Hours	
C)	Lamps	Total Number of Lamps - Old	
D)	Lamps	Total Number of Lamps - New	
E)	Watts/Fixture	Old Lamp and Ballast Wattage	Table 12
F)	Watts/Fixture	New Lamp and Ballast Wattage	Table 12
G)	COP	Performance of Cooling System	Table 1
H)	\$/kWh	Electrical Energy Rate - Summer	
I)	\$/kWh	Electrical Energy Rate - Winter	
J)	\$/kW	Electrical Demand Rate - Summer	
K)	\$/kW	Electrical Demand Rate - Winter	
L)	%	Efficiency of Heating System	Table 3
M)	\$/Mcf	Natural Gas Rate	
N)		Seasonal Heating Factor	Table 4
O)		Seasonal Cooling Factor	Table 4
P)	\$/Lamp	New Lamp Cost	
Q)	\$/Lamps	Labor Cost for Lamp Replacement	

Calculations					
R)	Lighting Electrical Demand Reduction	=	$\frac{(C * E) - (D * F)}{1000}$	=	0.0 kW
S)	Lighting Electrical Energy Savings	=	R * (A + B)	=	0.0 kWh/yr
T)	Natural Gas Cooling Energy Savings	=	$\frac{S * 3,413 \text{ Btu/kWh} * O * 0.80^1}{G * 1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0! Mcf/yr
U)	Natural Gas Cooling Cost Savings	=	T * M	=	#DIV/0! \$/yr
V)	Natural Gas Heating Energy Cost Penalty	=	$\frac{S * 3,413 \text{ Btu/kWh} * N * M * 0.80^1}{L * 1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0! \$/yr
W)	Annual Natural Gas Cost Savings	=	U - V	=	#DIV/0! \$/yr
X)	Annual Electrical Cost Savings	=	$S * (H + I)/2 + 12 * R * (J + K)/2$	=	0.0 \$/yr
Y)	Annual Cost Savings	=	W + X	=	#DIV/0! \$/yr
Z)	Lamp Cost	=	P * D	=	0.0 \$
AA)	Labor Cost	=	Q * D	=	0.0 \$
BB)	Total Implementation Cost	=	Z + AA	=	0.0 \$
CC)	Simple Payback	=	$\frac{BB}{Y}$	=	#DIV/0! yrs
			Y		

¹Lighting cooling/heating load factor for 10-hour office use derived from data in Table 17B, pg. 26.23, 1981 ASHRAE Handbook of Fundamentals

Street/Security Lighting Conversion						
Description of UCRM:		(Data needed: location, use, age of fixtures, type of existing fixture, type of new fixture, fc, level before conversion, estimated fc level after conversion ¹)				
¹ Assume that lumens before/lumens after = fc before/fc after						
Data needed for calculations		Description			Resource	
A)		<i>Luminaires</i>	Total Number of Luminaires Involved			
B)		<i>\$/mo</i>	Existing Monthly Electrical Base Cost per Luminaire			
C)		<i>\$/mo</i>	Replacement Monthly Electrical Base Cost per Luminaire			
D)		<i>kWh/mo</i>	Existing Monthly Electrical Consumption			Table 12
E)		<i>kWh/mo</i>	Replacement Monthly Electrical Consumption			Table 12
F)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
G)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
H)		<i>\$/Luminaire</i>	Installed Cost per Luminaire/Lamp/Ballast Combination			
Calculations						
I)	Annual Base Cost Savings	=	$A * 12 \text{ mos/yr} * (B - C)$	=	0.0	\$/yr
J)	Annual Electrical Energy Savings	=	$A * 12 \text{ mos/yr} * (D - E)$	=	0.0	kWh/yr
K)	Annual Electrical Cost Savings	=	$J * (F + G)/2$	=	0.0	\$/yr
L)	Annual Cost Savings	=	$I + K$	=	0.0	\$/yr
M)	Implementation Cost	=	$A * H$	=	0.0	\$
N)	Simple Payback	=	$\frac{M}{L}$	=	#DIV/0!	yrs
			L			

Exterior Lighting Controls						
Description of UCRM:		(Data needed: use of lighted area, type of lamps)				
Data needed for calculations		Description			Resource	
A)		<i>Watts</i>	Wattage of Lamps (+ Ballasts) per Luminaire Controlled			Table 12
B)		<i>Luminaires</i>	Total Number of Luminaires Controlled			
C)		<i>hrs/summer</i>	Reduction in Summer Operating Hours Due to Controls = hrs/day * days/yr			
D)		<i>hrs/winter</i>	Reduction in Winter Operating Hours Due to Controls = hrs/day * days/yr			
E)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
F)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
G)		<i>\$/Controller</i>	Installed Cost per Lighting Controller			
H)		<i>Controllers</i>	Number of Lighting Controllers Required			
Calculations						
I)	Annual Electrical Energy Savings	=	$\frac{A * B * (C + D)}{1000}$	=	0.0	kWh/yr
J)	Annual Cost Savings	=	$I * (E + F)/2$	=	0.0	\$/yr
K)	Implementation Cost	=	$G * H$	=	0.0	\$
L)	Simple Payback	=	$\frac{K}{J}$	=	#DIV/0!	yrs

Interior Lighting Controls						
(Electric Cooling and Gas Heating)						
Description of UCRM:		(Data needed: type of lamps being controlled, use of space)				
Data needed for calculations		Description			Resource	
A)		<i>Watts/Lamp</i>	Wattage of Lamps + Ballasts			Table 12
B)		<i>Lamps/Fixture</i>	Number of Lamps/Fixture			Table 12
C)		<i>Fixtures</i>	Total Number of Fixtures Controlled			
D)		<i>hrs/summer</i>	Reduction in Summer Operating Hours Due to Controls = hrs/day * days/yr			
E)		<i>hrs/winter</i>	Reduction in Winter Operating Hours Due to Controls = hrs/day * days/yr			
F)		<i>Btuh/Watt</i>	Performance of Cooling System			Table 1
G)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
H)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
I)		<i>%</i>	Efficiency of Heating System			Table 3
J)		<i>\$/Mcf</i>	Natural Gas Rate			
K)			Seasonal Heating Factor			Table 4
L)			Seasonal Cooling Factor			Table 4
M)		<i>\$/Controller</i>	Installed Cost per Lighting Controller			
N)		<i>Controllers</i>	Number of Lighting Controllers Required			
Calculations						
O)	Lighting Electrical Energy Savings	=	$\frac{A * B * C * (D + E)}{1000}$	=	0.0	kWh/yr
P)	Cooling Electrical Energy Savings	=	$\frac{O * 3,413 \text{ Btu/kWh} * L * 0.80^1}{F * 1000}$	=	#DIV/0!	kWh/yr
Q)	Annual Electrical Energy Savings	=	O + P	=	#DIV/0!	kWh/yr
R)	Annual Electrical Cost Savings	=	Q * (G + H)/2	=	#DIV/0!	\$/yr
S)	Natural Gas Heating Cost Penalty ¹	=	$\frac{O * 3,413 \text{ Btu/kWh} * J * K * 0.80^1}{I * 1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	\$/yr
T)	Annual Cost Savings	=	R - S	=	#DIV/0!	\$/yr
U)	Implementation Cost	=	M * N	=	0.0	\$
V)	Simple Payback	=	$\frac{U}{T}$	=	#DIV/0!	yrs
¹ Lighting cooling/heating load factor for 10-hour office use derived from data in Table 17B, pg. 26.23, 1981						
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Interior Lighting Controls						
(Electric Cooling and Heating)						
Description of UCRM:		(Data needed: type of lamps being controlled, use of space)				
Data needed for calculations		Description			Resource	
A)		<i>Watts/Lamp</i>	Wattage of Lamps + Ballasts			Table 12
B)		<i>Lamps/Fixture</i>	Number of Lamps/Fixture			Table 12
C)		<i>Fixtures</i>	Total Number of Fixtures Controlled			
D)		<i>hrs/summer</i>	Reduction in Summer Operating Hours Due to Controls = hrs/day * days/yr			
E)		<i>hrs/winter</i>	Reduction in Winter Operating Hours Due to Controls = hrs/day * days/yr			
F)		<i>Btuh/Watt</i>	Performance of Cooling System			Table 1
G)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
H)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
I)		%	Efficiency of Heating System			Table 3
J)			Seasonal Heating Factor			
K)			Seasonal Cooling Factor			Table 4
L)		<i>\$/Controller</i>	Installed Cost per Lighting Controller			Table 4
M)		<i>Controllers</i>	Number of Lighting Controllers Required			
Calculations						
N)	Lighting Electrical Energy Savings	=	$\frac{A * B * C * (D + E)}{1000}$	=	0.0	kWh/yr
O)	Cooling Electrical Energy Savings	=	$\frac{N * 3,413 \text{ Btu/kWh} * K * 0.80^1}{F * 1000}$	=	#DIV/0!	kWh/yr
P)	Annual Electrical Energy Savings	=	N + O	=	#DIV/0!	kWh/yr
Q)	Annual Electrical Cost Savings	=	P * (G + H)/2	=	#DIV/0!	\$/yr
R)	Electrical Heating Cost Penalty ¹	=	0.80 ¹ * (N * J / I) * (G + H)/2	=	#DIV/0!	\$/yr
S)	Annual Cost Savings	=	Q - R	=	#DIV/0!	\$/yr
T)	Implementation Cost	=	L * M	=	0.0	\$
U)	Simple Payback	=	$\frac{I}{S}$	=	#DIV/0!	yrs
¹ Lighting cooling/heating load factor for 10-hour office use derived from data in Table 17B, pg. 26.23, 1981						
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Conversion to Dedicated Computer Room Cooling Unit						
(Electric to Electric)						
Description of UCRM:						
Data needed for calculations		Description			Resource	
A)		Tons	Existing Cooling Capacity			
B)		hrs/yr	Existing System Annual Operating Hours			
C)		Btuh/Watt	Performance of Existing Cooling System			Table 1
D)		hrs/yr	Reduced Existing System Operating Hours			
E)		Tons	Proposed Cooling Capacity			
F)		hrs/yr	Proposed Unit Annual Operating Hours			
G)		Btuh/Watt	Performance of Proposed Cooling System			Table 1
H)		\$/kWh	Electrical Energy Rate - Summer			
I)		\$/kWh	Electrical Energy Rate - Winter			
J)		\$/kW-mo	Electrical Demand Rate -Summer			
K)		\$/kW-mo	Electrical Demand Rate -Winter			
L)			Seasonal Cooling Factor			Table 4
M)		\$	Installed Cost per Unit			
Calculations						
N)	Existing Unit Consumption	=	$\frac{A * 12,000 \text{ Btu/Ton-hr} * B}{C * 1,000 \text{ W/kW}}$	=	#DIV/0!	kWh/yr
O)	Existing Unit Consumption After Conversion	=	$\frac{A * 12,000 \text{ Btu/Ton-hr} * D}{C * 1,000 \text{ W/kW}}$	=	#DIV/0!	kWh/yr
P)	Existing Unit Consumption Savings	=	N - O	=	#DIV/0!	kWh/yr
Q)	Proposed Unit Consumption	=	$\frac{E * 12,000 \text{ Btu/Ton-hr} * F}{G * 1000}$	=	#DIV/0!	kWh/yr
R)	Total Consumption Savings	=	P - Q	=	#DIV/0!	kWh/yr
S)	Demand Penalty	=	$(E * 12 / G) * L * 12$	=	#DIV/0!	kW-mo/yr
T)	Annual Cost Savings		$R * (H + I)/2 + S * (J + K)/2$	=	#DIV/0!	\$/yr
U)	Simple Payback	=	$\frac{M}{T}$	=	#DIV/0!	yrs

DHW Heater Conversion						
(Electric to Gas)						
Description of UCRM:		(Data needed: use of space, age of water heater)				
Data needed for calculations		Description			Resource	
A)		<i>gals/person-day</i>	Daily Hot Water Consumption per Capita			Table 11
B)		<i>People</i>	Number of People in Facility			
C)		<i>days/yr</i>	Day per Year of Occupancy			
D)		<i>°F</i>	Hot Water Temperature			
E)		<i>Btu/yr</i>	Existing Electric DHW Heater Standby Loss			Table 14
F)		<i>Btu/yr</i>	Replacement Gas DHW Heater Standby Loss			Table 14
G)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
H)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
I)		<i>\$/Mcf</i>	Natural Gas Rate			
J)		<i>\$</i>	Installed Cost per Gas Water Heater			
Calculations						
K)	Annual BTUs for Hot Water	=	$(8.33\text{Btu/gal}^\circ\text{F}) * A * B * C * (D - 70^\circ\text{F})$	=	0.0	Btu/yr
L)	Annual kWh to Heat Water Electrically	=	$\frac{K + E}{3,413 \text{ Btu/kWh}}$	=	0.0	kWh/yr
M)	Annual MCF to Heat Water with Gas	=	$\frac{K + F}{0.8 * 1,030,000 \text{ Btu/Mcf}}$	=	0.0	Mcf/yr
N)	Annual Electric Cost for Water Heating	=	$L * (G + H) / 2$	=	0.0	\$/yr
O)	Annual Gas Cost for Water Heating	=	$M * I$	=	#DIV/0!	\$/yr
P)	Annual Cost Savings with Gas		$N - O$	=	#DIV/0!	\$/yr
Q)	Simple Payback	=	$\frac{J}{P}$	=	#DIV/0!	yrs

Electric Efficiency Motor Replacement						
(Non Air-Conditioned Space)						
Description of UCRM:		(Data needed: motor use, motor age, is the motor in conditioned space)				
Data needed for calculations		Description				Resource
A)		<i>hp</i>	Motor Nameplate Horsepower			
B)			Estimated Load Factor			
C)		<i>hrs/yr</i>	Estimated Summer Operating Hours			
D)		<i>hrs/yr</i>	Estimated Winter Operating Hours			
E)		%	Efficiency of Old Motor (Nameplate or Table 10)			Table 10
F)		%	Efficiency of New Motor (Manufacturer or Table 10)			Table 10
G)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
H)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
I)		<i>\$/kW</i>	Electrical Demand Rate - Summer			
J)		<i>\$/kW</i>	Electrical Demand Rate - Winter			
K)		\$	Installed Cost of New Motor			
Calculations						
L)	Motor kW Reduction	=	$A * 0.746 * B * (1/E - 1/F)$	=	#DIV/0!	kW/mo
M)	Annual Motor kWh Savings	=	$L * (C + D)$	=	#DIV/0!	kWh/yr
N)	Annual Motor kW Savings	=	$L * 12 \text{ mo/yr}$	=	#DIV/0!	kW/yr
O)	Annual Cost Savings	=	$M * (G + H)/2 + N * (I + J)/2$	=	#DIV/0!	\$/yr
P)	Simple Payback	=	$\frac{K}{O}$	=	#DIV/0!	yrs
			O			

Replacement of Low-Efficiency DHW Heater Units						
(Gas to Gas)						
Description of UCRM:		(Data needed: area served, number of users, description of present unit)				
Data needed for calculations		Description			Resource	
A)		<i>Gal/person-day</i>	Daily per capita Hot Water Consumption			Table 11
B)		<i>People</i>	Number of Persons			
C)		<i>days/yr</i>	Occupancy Days per Year			
D)		<i>°F</i>	Hot Water Temperature			
E)		%	Efficiency on Present Unit			
F)		%	Efficiency on Proposed Unit			
G)		<i>Btu/yr</i>	Annual Standby Loss			Table 14
H)		%	Reduction in Standby Loss with New Unit (Default =50%)			
I)		<i>\$/Mcf</i>	Natural Gas Rate			
J)		\$	Installed Cost of Unit(s) (including Design)			
Calculations						
K)	Water Heating Required	=	$(8.33\text{Btu/gal}^\circ\text{F}) * A * B * C * (D - 70^\circ\text{F})$	=	0.0	Btu/yr
L)	Present Fuel Use	=	$\frac{(K + G)}{E}$ 1,030,000 Btu/Mcf	=	#DIV/0!	Mcf/yr
M)	Equivalent Fuel in New Heater	=	$\frac{(K + G) * (1 - H)}{F * 1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
N)	Fuel Saved	=	L - M	=	#DIV/0!	Mcf/yr
O)	Operational Savings		N * I	=	#DIV/0!	\$/yr
P)	Simple Payback	=	$\frac{J}{O}$	=	#DIV/0!	yrs

Replacement of Low-Efficiency Gas Heating						
(Gas to Gas)						
Description of UCRM:		(Data needed: area served, condition/performance of unit)				
Data needed for calculations		Description			Resource	
A)		<i>Btu/hr</i>	Heating Unit Capacity			
B)		<i>hrs/yr</i>	Annual Use			
C)		%	Load Factor (Utilization Factor)			
D)		%	Efficiency on Old Unit			Table 3
E)		%	Efficiency on Proposed Unit			Table 3
F)		<i>\$/Mcf</i>	Natural Gas Rate			
G)		\$	Cost of Unit(s), including Installation and Design			
Calculations						
H)	Present Fuel Use	=	$\frac{A * B * C}{1,030,000 \text{ Btu/Mcf}}$	=	0.0	Mcf/yr
I)	Heating Effect Delivered	=	$H * D * 1,030,000 \text{ Btu/Mcf}$		0.0	Btu/yr
J)	Equivalent Fuel in New Heater	=	$\frac{(I / E)}{1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
K)	Fuel Saved	=	$H - J$	=	#DIV/0!	Mcf/yr
L)	Operational Savings	=	$K * F$	=	#DIV/0!	\$/yr
M)	Simple Payback	=	$\frac{G}{L}$	=	#DIV/0!	yrs

Replacement of Low-Efficiency HVAC Units (Converting from Electric Cooling and Gas Heating to Heat Pumps)			
Description of UCRM:		(Data needed: use of space, age of units)	
Data needed for calculations		Description	Resource
A)	Tons	Cooling Tonnage to be Replaced	
B)	Btu/hr	Natural Gas Heating to be Replaced	
C)	hrs/yr	Cooling Equivalent Full Load Operating Hours	Table 15
D)	hrs/yr	Heating Equivalent Full Load Operating Hours	Table 16
E)	mo/yr	Number of Cooling Months	
F)	mo/yr	Number of Heating Months	
G)	kW/Ton	Performance of Existing Cooling Unit	Table 1
H)	kW/Ton	Performance of Proposed Cooling Unit	Table 1
I)	%	Heating Efficiency of Existing Gas Heater	Table 3
J)	COP	Heating Efficiency (COP) of Proposed Unit ¹	
K)	\$/kWh	Electrical Energy Rate - Summer	
L)	\$/kWh	Electrical Energy Rate - Winter	
M)	\$/Mcf	Cost of Natural Gas	
N)	\$/kW-mo	Electrical Demand Rate - Summer	
O)	\$/kW-mo	Electrical Demand Rate - Winter	
P)		Electrical Demand Rate - Winter (range 0 to 1 with 0.6 as default)	
Q)	\$	Installed Cost of Unit(s)	

Calculations					
R)	Cooling Demand Reduction	=	$A * (G - H)$	=	0.0 kW
S)	Annual Cooling Energy Savings	=	$R * C$	=	0.0 kWh/yr
T)	Cooling Demand Savings	=	$R * E$	=	0.0 kW/mo-yr
U)	Annual Cooling Cost Savings	=	$S * K + T * N$	=	0.0 \$/yr
V)	Original Natural Gas Consumption	=	$\frac{B * D}{1,030,000 \text{ Btu/Mcf}}$	=	0.0 Mcf/yr
W)	Heat Pump Consumption	=	$\frac{B * D * I}{J * 3,413 \text{ Btu/kWh}}$	=	#DIV/0! kWh/yr
X)	Heating Electrical Demand	=	$\frac{W}{D * P}$	=	#DIV/0! kW
Y)	Cost for Natural Gas Heating	=	$V * M$	=	0.0 \$/yr
Z)	Cost for Heat Pump Heating	=	$W * L + X * O * F$	=	#DIV/0! \$/yr
AA)	Total Heating Savings	=	$Y - Z$	=	#DIV/0! \$/yr
BB)	Total Savings	=	$U + AA$	=	#DIV/0! \$/yr
CC)	Simple Payback	=	$\frac{Q}{BB}$	=	#DIV/0! yrs

Replacement of Low-Efficiency HVAC Units						
(Converting from Electric Cooling and Heating to Electric Cooling and Gas Heating)						
Description of UCRM:		(Data needed: use of space, age of units)				
Data needed for calculations		Description			Resource	
A)		Tons	Cooling Tonnage to be Replaced			
B)		kW	Resistance Heating to be Replaced			
C)		hrs/yr	Cooling Equivalent Full Load Operating Hours (Table 15)			Table 15
D)		hrs/yr	Heating Equivalent Full Load Operating Hours (Table 16)			Table 16
E)		mo/yr	Number of Cooling Months			
F)		mo/yr	Number of Heating Months			
G)		kW/Ton	Performance of Existing Cooling Unit (Table 1)			Table 1
H)		kW/Ton	Performance of New Cooling Unit (Table 1)			Table 1
I)		%	Efficiency of Proposed Heating Unit (Table 3)			Table 3
J)		\$/kWh	Electrical Energy Rate - Summer			
K)		\$/kWh	Electrical Energy Rate - Winter			
L)		\$/Mcf	Natural Gas Rate			
M)		\$/kW-mo	Electrical Demand Rate - Summer			
N)		\$/kW-mo	Electrical Demand Rate - Winter			
O)			Enter Diversity of Winter Demand			
P)		\$	Cost of Proposed Unit(s)			
Calculations						
Q)	Cooling Demand Reduction	=	$A * (G - H)$	=	0.0	kW
R)	Annual Cooling Energy Savings	=	$Q * C$	=	0.0	kWh/yr
S)	Cooling Demand Savings	=	$Q * E$	=	0.0	kW-mo/yr
T)	Cooling Cost Savings	=	$R * J + S * M$	=	0.0	\$/yr
U)	Original Heating Energy Use		$B * D$	=	0.0	kWh/yr
V)	Original Heating Energy Cost	=	$U * K + B * F * N * O$	=	0.0	\$/yr
W)	New Heating Energy Use	=	$\frac{U * 3,413 \text{ Btuh/kW} / I}{1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
X)	New Heating Energy Cost	=	$W * L$	=	#DIV/0!	\$/yr
Y)	Annual Energy Savings	=	$T + V - X$	=	#DIV/0!	\$/yr
Z)	Simple Payback	=	$\frac{P}{Y}$	=	#DIV/0!	yrs

Replacement of Low-Efficiency HVAC Units						
(Converting from Electric Cooling and Heating to Gas Cooling and Heating)						
Description of UCRM:		(Data needed: use of space, age of units)				
Data needed for calculations		Description			Resource	
A)		Tons	Cooling Tonnage to be Replaced			
B)		kW	Resistance Heating to be Replaced			
C)		hrs/yr	Cooling Equivalent Full Load Operating Hours			Table 15
D)		hrs/yr	Heating Equivalent Full Load Operating Hours			Table 16
E)		mo/yr	Number of Cooling Months			
F)		mo/yr	Number of Heating Months			
G)		kW/Ton	Performance of Existing Cooling Unit			Table 1
H)		COP	Performance of New Cooling Unit			
I)		%	Efficiency of Proposed Heating Unit			
J)		\$/kWh	Electrical Energy Rate - Summer			
K)		\$/kWh	Electrical Energy Rate - Winter			
L)		\$/Mcf	Natural Gas Rate			
M)		\$/kW-mo	Electrical Demand Rate - Summer			
N)			Demand Diversity - Summer Cool (0.0 to 1.0, Default 0.8)			
O)		\$/kW-mo	Electrical Demand Rate - Winter			
P)			Enter Diversity of Winter Demand			
Q)		\$	Cost of Proposed Unit(s)			
Calculations						
R)	Cooling Electrical Demand	=	A * G	=	0.0	kW
S)	Annual Cooling Energy Consumption	=	R * C	=	0.0	kWh/yr
T)	Cooling Demand Savings	=	R * E	=	0.0	kW-mo/yr
U)	Equivalent Natural Gas Use for Cooling	=	$\frac{A * C * 12,000 \text{ Btuh/Ton}}{H * 1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
V)	Annual Cost for Gas Cooling		U * L		#DIV/0!	\$/yr
W)	Annual Cost for Electrical Cooling	=	S * J + T * M * N	=	0.0	\$/yr
X)	Original Annual Heating Energy Use		B * D	=	0.0	kWh/yr
Y)	Original Annual Heating Energy Cost	=	X * K + B * F * O * P	=	0.0	\$/yr
Z)	New Annual Heating Energy Use	=	$\frac{X * 3,413 \text{ Btuh/kW} / I}{1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
AA)	New Annual Heating Energy Cost	=	Z * L	=	#DIV/0!	\$/yr
BB)	Annual Energy Savings	=	W - V + Y - AA	=	#DIV/0!	\$/yr
CC)	Simple Payback	=	$\frac{Q}{BB}$	=	#DIV/0!	yrs

Replacement of Low-Efficiency HVAC Units						
(Converting from Electric Cooling and Heating to Heat Pumps)						
Description of UCRM:		(Data needed: use of space, age of units)				
Data needed for calculations		Description				Resource
A)		Tons	Cooling Tonnage to be Replaced			
B)		kW	Resistance Heating to be Replaced			
C)		hrs/yr	Cooling Equivalent Full Load Operating Hours			Table 15
D)		hrs/yr	Heating Equivalent Full Load Operating Hours			Table 16
E)		mo/yr	Number of Cooling Months			
F)		mo/yr	Number of Heating Months			
G)		kW/Ton	Performance of Existing Cooling Unit			Table 1
H)		kW/Ton	Performance of Proposed Cooling Unit			Table 1
I)		COP	Heating Efficiency of Existing Unit (assume 1 for resistance heat)			
J)		COP	Htg Eff. of Proposed Unit (adj. for resistance heat below 30°F)			
K)		\$/kWh	Electrical Energy Rate - Summer			
L)		\$/kWh	Electrical Energy Rate - Winter			
M)		\$/kW-mo	Electrical Demand Rate - Summer			
N)		\$/kW-mo	Electrical Demand Rate - Winter			
O)			Est. of Demand Diversity in Htg Mode (0 to 1 w/ 0.6 as default)			
P)		\$	Installed Cost of Unit(s)			
Calculations						
Q)	Cooling Demand Reduction	=	$A * (G - H)$	=	0.0	kW
R)	Annual Cooling Energy Savings	=	$Q * C$	=	0.0	kWh/yr
S)	Cooling Demand Savings	=	$Q * E$	=	0.0	kW-mo/yr
T)	Annual Cooling Cost Savings	=	$R * K + S * M$	=	0.0	\$/yr
U)	Heating Demand Reduction	=	$B * (1 / I - 1 / J)$	=	#DIV/0!	kW
V)	Heating Energy Savings	=	$U * D$	=	#DIV/0!	kWh/yr
W)	Heating Demand Savings	=	$U * F * O$	=	#DIV/0!	kW-mo/yr
X)	Annual Heating Cost Savings	=	$V * L + W * N$	=	#DIV/0!	\$/yr
Y)	Annual Cost Savings	=	$T + X$	=	#DIV/0!	\$/yr
Z)	Simple Payback	=	$\frac{P}{Y}$	=	#DIV/0!	yrs
			$\frac{P}{Y}$			

Replacement of Low-Efficiency HVAC Units						
(Electric Cooling - EER and Gas Heating)						
Description of UCRM:		(Data needed: age and manufacturer of unit, use of cooled/heated space, is the building shut down for over 2 weeks at a time)				
Data needed for calculations		Description			Resource	
A)		Tons	Cooling Tonnage to be Replaced			
B)		Btuh	Capacity of Existing Gas Furnace			
C)		hrs/yr	Cooling Equivalent Full Load Operating Hours			Table 15
D)		hrs/yr	Heating Equivalent Full Load Operating Hours			Table 16
E)		mo/Yr	Number of Cooling Months			
F)		Btuh/Watt	Performance of Existing Unit			Table 1
G)		Btuh/Watt	Performance of Replacement Unit			Table 1
H)		%	Heating Efficiency - Existing Unit			Table 3
I)		%	Heating Efficiency - Replacement Unit			Table 3
J)		\$/kWh	Electrical Energy Rate - Summer			
K)		\$/kW-mo	Electrical Energy Rate - Summer			
L)		\$/Mcf	Natural Gas Rate			
M)		\$	Installed Cost of Replacement Unit			
Calculations						
N)	A.C. kW Reduction	=	$A * 12,000 \text{ Btuh/Ton} * (1/F - 1/G)/1000 \text{ W/kW}$	=	#DIV/0!	kW
O)	A.C. Annual Energy Savings	=	$N * C$	=	#DIV/0!	kWh/yr
P)	A.C. Annual Demand Savings	=	$N * E$	=	#DIV/0!	kW-mo/yr
Q)	Annual Electrical Cost Savings	=	$J * O + K * P$	=	#DIV/0!	\$/yr
R)	Heating Consumption Reduction	=	$B * (1 - H / I)$	=	#DIV/0!	Btuh
S)	Annual Heating Energy Savings	=	$R * D$	=	#DIV/0!	Mcf/yr
			1,030,000 Btu/Mcf			
T)	Annual Heating Cost Savings	=	$S * L$	=	#DIV/0!	\$/yr
U)	Annual Cost Savings	=	$Q + T$	=	#DIV/0!	\$/yr
V)	Simple Payback	=	M	=	#DIV/0!	yrs
			U			

Replacement of Low-Efficiency HVAC Units (Electric Cooling - kW/Ton and Gas Heating)						
Description of UCRM:		(Data needed: use of space, age of units)				
Data needed for calculations		Description			Resource	
A)		Tons	Cooling Tonnage to be Replaced			
B)		Btu/hr	Natural Gas Heating to be Replaced			
C)		hrs/yr	Cooling Equivalent Full Load Operating Hours			Table 15
D)		hrs/yr	Heating Equivalent Full Load Operating Hours			Table 16
E)		mo/yr	Number of Cooling Months			
F)		kW/Ton	Performance of Existing Cooling Unit			Table 1
G)		kW/Ton	Performance of Proposed Cooling Unit			Table 1
H)		%	Heating Efficiency of Existing Furnace			Table 3
I)		%	Heating Efficiency of New Furnace			
J)		\$/kWh	Electrical Energy Rate - Summer			
K)		\$/kWh	Electrical Energy Rate - Winter			
L)		\$/kW-mo	Electrical Demand Rate - Summer			
M)		\$/kW-mo	Electrical Demand Rate - Winter			
N)		\$/Mcf	Cost of Natural Gas			
O)		\$	Installed Cost of Unit(s)			
Calculations						
P)	Cooling Demand Reduction	=	$A * (F - G)$		0.0	kW
Q)	Annual Cooling Energy Savings	=	$P * C$		0.0	kWh/yr
R)	Cooling Demand Savings	=	$P * E$		0.0	kW-mo/yr
S)	Cooling Cost Savings	=	$Q * (J + K)/2 + R * (L + M)/2$		0.0	\$/yr
T)	Heating Consumption Reduction	=	$B * (1 - H / I)$		#DIV/0!	Btuh
U)	Annual Heating Energy Savings	=	$T * D$		=	#DIV/0!
			1,030,000 Btu/Mcf			
V)	Annual Heating Cost Savings	=	$U * N$		#DIV/0!	\$/yr
W)	Simple Payback	=	$\frac{Q}{S + V}$		=	#DIV/0!

Attic/Ceiling Insulation						
(Electric Cooling and Gas Heating)						
Description of UCRM:		(Data needed: age of building, floor area of building, number of floors)				
Data needed for calculations		Description			Resource	
A)		<i>hr-ft²-°F/Btu</i>	Resistance (R-value) of Existing Ceiling			Table 18
B)		<i>hr-ft²-°F/Btu</i>	Resistance (R-value) with added insulation			Table 18
C)		<i>°F</i>	Average Outdoor Temperature - Summer			Table 5
D)		<i>°F</i>	Average Outdoor Temperature - Winter			Table 5
E)		<i>°F</i>	Summer Thermostat Setpoint			
F)		<i>°F</i>	Winter Thermostat Setpoint			
G)		<i>hrs/yr</i>	Annual Cooling System Operating Hours			Table 15
H)		<i>hrs/yr</i>	Annual Heating System Operating Hours			Table 16
I)		<i>ft²</i>	Area of Ceiling			
J)		<i>Btuh/Watt</i>	Performance of Cooling System			Table 1
K)		<i>%</i>	Heating System Efficiency			Table 3
L)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
M)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
N)		<i>\$/kW</i>	Electrical Demand Rate - Summer			
O)		<i>\$/kW</i>	Electrical Demand Rate - Winter			
P)		<i>\$/Mcf</i>	Natural Gas Rate			
Q)		<i>\$/ft²</i>	Installed Cost of Insulation per Square Foot			
R)		<i>°F</i>	Summer Attic Temperature Differential - 15°F			
S)		<i>°F</i>	Winter Attic Temperature Differential - 5°F			
Calculations						
T)	Summer Attic Temperature	=	C + R	=	0.0	°F
U)	Winter Attic Temperature	=	D + S	=	0.0	°F
V)	Ceiling Load Coefficient Reduction	=	(1 / A - 1 / B) * I	=	#DIV/0!	Btu/hr-°F
W)	Cooling Energy Savings	=	V * (T - E) * G	=	#DIV/0!	Btu/yr
X)	Heating Energy Savings	=	V * (F - U) * H	=	#DIV/0!	Btu/yr
Y)	Annual Electrical Energy Savings	=	$\frac{W}{J * 1,000 \text{ W/kW}}$	=	#DIV/0!	kWh/yr
Z)	Cooling Electrical Demand Reduction	=	$\frac{Y}{G}$	=	#DIV/0!	kW/yr
AA)	Annual Natural Gas Savings	=	$\frac{X}{K * 1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
BB)	Annual Cost Savings	=	Y * (L + M)/2 + Z * (N + O)/2 + AA * P	=	#DIV/0!	\$/yr
CC)	Implementation Cost	=	Q * I	=	0.0	\$
DD)	Simple Payback	=	$\frac{CC}{BB}$	=	#DIV/0!	yrs

Attic/Ceiling Insulation						
(Electric Cooling and Heating)						
Description of UCRM:		(Data needed: age of building, floor area of building, number of floors)				
Data needed for calculations		Description			Resource	
A)		<i>hr-ft²-°F/Btu</i>	Resistance (R-value) of Existing Ceiling			Table 18
B)		<i>hr-ft²-°F/Btu</i>	Resistance (R-value) with added insulation			Table 18
C)		<i>°F</i>	Average Outdoor Temperature - Summer			Table 5
D)		<i>°F</i>	Average Outdoor Temperature - Winter			Table 5
E)		<i>°F</i>	Summer Thermostat Setpoint			
F)		<i>°F</i>	Winter Thermostat Setpoint			
G)		<i>hrs/yr</i>	Annual Cooling System Operating Hours			Table 15
H)		<i>hrs/yr</i>	Annual Heating System Operating Hours			Table 16
I)		<i>ft²</i>	Area of Ceiling			
J)		<i>Btuh/Watt</i>	Performance of Cooling System			Table 1
K)		<i>%</i>	Heating System Efficiency			Table 3
L)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
M)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
N)		<i>\$/kW</i>	Electrical Demand Rate - Summer			
O)		<i>\$/kW</i>	Electrical Demand Rate - Winter			
P)		<i>\$/ft²</i>	Installed Cost of Insulation per Square Foot			
Q)		<i>°F</i>	Summer Attic Temperature Differential - 15°F			
R)		<i>°F</i>	Winter Attic Temperature Differential - 5°F			
Calculations						
S)	Summer Attic Temperature	=	C + Q	=	0.0	°F
T)	Winter Attic Temperature	=	D + R	=	0.0	°F
U)	Ceiling Load Coefficient Reduction	=	(1 / A - 1 / B) * I	=	#DIV/0!	Btu/hr-°F
V)	Cooling Energy Savings	=	U * (S - E) * G	=	#DIV/0!	Btu/yr
W)	Heating Energy Savings	=	U * (F - T) * H	=	#DIV/0!	Btu/yr
X)	Cooling Electrical Energy Savings	=	$\frac{V}{J * 1,000 \text{ W/kW}}$	=	#DIV/0!	kWh/yr
Y)	Heating Electrical Energy Savings	=	$\frac{W}{3,413 \text{ Btu/kWh} * K}$	=	#DIV/0!	kWh/yr
Z)	Annual Electrical Energy Savings	=	X + Y	=	#DIV/0!	kWh/yr
AA)	Annual Electrical Demand Savings	=	$\frac{Z}{G + H}$	=	#DIV/0!	kW/yr
BB)	Annual Cost Savings	=	Z * (L + M)/2 + AA * (N + O)/2	=	#DIV/0!	\$/yr
CC)	Implementation Cost	=	P * I	=	0.0	\$
DD)	Simple Payback	=	$\frac{CC}{BB}$	=	#DIV/0!	yrs

Infiltration Reduction				
(Electric Cooling and Gas Heating)				
Description of UCRM:		(Data needed: use of space, schedule, inside temperature during cooling season, inside temperature during heating season)		
Table AF Area Factors				
Location Type	Length (ft)	Old Width (in)	New Width (in)	Adjusted Area ¹
				0
				0
				0
				0
				0
				0
				0
			TOTAL:	0
¹ Adjusted Area = Crack Length (ft) * Δ Crack Width (inches)				
Data needed for calculations		Description	Resource	
A)	0	Δ in-ft	Adjusted Area Factor (from Table AF above)	
B)		°F	Avg Inside Temp (DB/WB°F, Cooling Season)	
C)		°F	Avg Outside Temp (DB/WB°F, Cooling Season)	
D)		°F	Avg Inside Temperature (Heating Season)	
E)		°F	Avg Outside Temperature (Heating Season)	
F)		hrs/yr	Annual Cooling System Operating Hours	
G)		hrs/yr	Annual Heating System Operating Hours	
H)		mph	Avg. Wind Velocity (9 - 12 mph, default 10 mph)	
I)		kW/Ton	Performance of Cooling System	
J)		%	Efficiency of Heating System	
K)		\$/kWh	Electrical Energy Rate - Summer	
L)		\$/kWh	Electrical Energy Rate - Winter	
M)		\$/kW-mo	Electrical Demand Rate - Summer	
N)		\$/kW-mo	Electrical Demand Rate - Winter	
O)		\$/Mcf	Natural Gas Rate	
P)		mo/yr	Number of Cooling Months (for demand)	
Q)		\$	Cost of Project, Including Design	
R)		Btu/lbm	Enthalpy Outside (From Psychrometric Chart Using C)	
S)		Btu/lbm	Enthalpy Inside (From Psychrometric Chart Using B)	

Calculations						
T)	Adjusted Infiltration Rate	=	$1.65 * A * H$	=	0.0	cfm
U)	Cooling Energy Savings	=	$4.5 * T * (R - S) * F$	=	0.0	Ton-hrs/yr
			12,000 Btu/Ton-hr			
V)	Annual Cooling Electrical Energy Savings	=	$U * I$	=	0.0	kWh/yr
W)	Cooling Electrical Demand Savings	=	$\frac{U}{F}$	=	#DIV/0!	kW
			F			
X)	Annual Cooling Cost Savings	=	$V * (K + L)/2 + W * (M + N)/2 * P$	=	#DIV/0!	\$/yr
Y)	Heating Energy Savings	=	$1.085 * T * (D - E) * G$	=	0.0	Btu/yr
Z)	Annual Natural Gas Savings	=	$\frac{Y}{J}$	=	#DIV/0!	Mcf/yr
			1,030,000 Btu/Mcf			
AA)	Annual Heating Cost Savings	=	$Z * O$	=	#DIV/0!	\$/yr
BB)	Annual Cost Savings	=	$X + AA$	=	#DIV/0!	\$/yr
CC)	Simple Payback	=	$\frac{Q}{BB}$	=	#DIV/0!	yrs
			BB			

Infiltration Reduction				
(Electric Cooling and Heating)				
Description of UCRM:		(Data needed: use of space, schedule, inside temperature during cooling season, inside temperature during heating season)		
Table AF Area Factors				
Location Type	Length (ft)	Old Width (in)	New Width (in)	Adjusted Area ¹
				0
				0
				0
				0
				0
				0
TOTAL:				0
¹ Adjusted Area = Crack Length (ft) * Δ Crack Width (inches)				
Data needed for calculations		Description	Resource	
A)	0	Δ in-ft	Adjusted Area Factor (from Table AF above)	
B)		°F	Ave. Inside Air Temperature (DB/WB°F, Cooling Season)	Table 5
C)		°F	Ave. Outside Air Temperature (DB/WB°F, Cooling Season)	Table 5
D)		°F	Ave. Inside Air Temperature (Heating Season)	Table 5
E)		°F	Ave. Outside Air Temperature (Heating Season)	Table 5
F)		hrs/yr	Annual Cooling System Operating Hours	Table 15
G)		hrs/yr	Annual Heating System Operating Hours	Table 16
H)		mph	Ave. Wind Velocity (9 - 12 mph, default 10 mph)	
I)		kW/Ton	Performance of Cooling System	Table 1
J)		COP	Efficiency of Heating System	Table 3
K)		\$/kWh	Electrical Energy Rate - Summer	
L)		\$/kWh	Electrical Energy Rate - Winter	
M)		\$/kW-yr	Electrical Demand Rate - Summer	
N)		\$/kW-yr	Electrical Demand Rate - Winter	
O)		months	Number of Cooling Months (for demand)	
P)		months	Number of Heating Months (for demand)	
Q)			Diversity of Cooling Demand (range 0 to 1 with 1.0 as default)	
R)			Diversity of Heating Demand (range 0 to 1 with 0.6 as default)	
S)		\$	Cost of Project, Including Design	
T)		Btu/lbm	Enthalpy Outside (From Psychrometric Chart Using C)	P. Chart
U)		Btu/lbm	Enthalpy Inside (From Psychrometric Chart Using B)	P. Chart

Calculations					
V)	Adjusted Infiltration Rate	=	$1.65 * A * H$	=	0.0 cfm
W)	Cooling Energy Savings	=	$4.5 * V * (T - U) * F$	=	0.0 Ton-hrs/yr
			12,000 Btu/Ton-hr		
X)	Cooling Electrical Energy Savings	=	$W * I$	=	0.0 kWh/yr
Y)	Cooling Electrical Demand Reduction	=	$\frac{X}{F}$	=	#DIV/0! kW
Z)	Annual Cooling Electrical Cost Savings	=	$X * K + Y * M * O * Q$	=	#DIV/0! \$/yr
AA)	Heating Energy Savings	=	$1.085 * V * (D - E) * G$	=	0.0 Btu/yr
BB)	Heating Electrical Energy Savings	=	$\frac{AA * J}{3,413 \text{ Btu/kWh}}$	=	0.0 kWh/yr
CC)	Heating Electrical Demand Savings	=	$\frac{BB}{G}$	=	#DIV/0! kW
DD)	Annual Heating Electrical Cost Savings	=	$BB * L + CC * Q * N * R$	=	#DIV/0! \$/yr
EE)	Annual Cost Savings	=	$Z + DD$	=	#DIV/0! \$/yr
FF)	Simple Payback	=	$\frac{S}{EE}$	=	#DIV/0! yrs

Programmable Thermostats						
(Electric Cooling and Electric or Gas Heating)						
Description of UCRM:						
Data needed for calculations		Description			Resource	
A)		<i>Btu/hr-ft²-°F</i>	U-Value of Walls			Table 18
B)		<i>ft²</i>	Wall Area (includes windows and doors)			
C)		<i>Btu/hr-ft²-°F</i>	U-Value of Roof			Table 18
D)		<i>ft²</i>	Roof Area			
E)		<i>°F</i>	Heating Season Thermostat Setpoint			
F)		<i>°F</i>	Heating Season Thermostat Setback			
G)		<i>hrs/yr</i>	Heating Season Setback Hours			Table 16
H)		<i>°F</i>	Cooling Season Thermostat Setpoint			
I)		<i>°F</i>	Cooling Season Thermostat Setback			
J)		<i>hrs/yr</i>	Cooling Season Setback Hours			Table 15
K)		<i>%</i>	Heating Equipment Efficiency			Table 3
L)		<i>\$/Mcf (or kWh)</i>	Natural Gas Rate (or \$/winter kWh for electric heat)			
M)		<i>Btuh/Watt</i>	Performance of Cooling System			Table 1
N)		<i>\$/kWh</i>	Electrical Energy Rate - Summer			
O)		<i>\$/kWh</i>	Electrical Energy Rate - Winter			
P)		<i>\$</i>	Implimentation Cost			
Calculations						
Q)	Total Envelope UA-Value	=	$A * B + C * D$	=	0.0	Btu/hr-°F
R)	Heating Energy Savings	=	$Q * (E - F) * G$	=	0.0	Btu/yr
S _G)	Gas Heating Cost Reduction ¹	=	$\frac{R * L}{(K * 1,030,000 \text{ Btu/Mcf})}$	=		\$/yr
T)	Cooling Energy Savings	=	$Q * (H - I) * J$	=	0.0	Btu/yr
U)	Cooling Cost Reduction	=	$\frac{T * (N + O) / 2}{1,000 * M}$	=	#DIV/0!	\$/yr
V)	Annual Cost Savings	=	$S + U$	=	#DIV/0!	\$/yr
W)	Simple Payback	=	P / V	=	#DIV/0!	yrs
¹ Use S _G for Gas Heating and S _E for Electrical Heating						
S _E)	Electrical Heating Cost Reduction	=	$\frac{R * L}{3,413 \text{ Btuh/kW} * K}$	=	#DIV/0!	\$/yr

Wall Insulation						
(Electric Cooling and Gas Heating) (Part 1)						
Description of UCRM:		(Data needed: area to be treated, how, construction description)				
Data needed for calculations			Description	Resource		
A)	0.0	hrs/yr	Annual Cooling System Operating Hours (TbI ACT - (A))			
B)	#DIV/0!	°F	Avg Temp Diff Across Wall, Clg Season (TbI ACT - (B) ΔT_{cool})			
C)	0.0	hrs/yr	Annual Heating System Operating Hours (TbI AHT - (C))			
D)	#DIV/0!	°F	Avg Temp Diff Across Wall, Htg Season (TbI AHT - (D) ΔT_{heat})			
E)	#DIV/0!	Btu/(hr-ft ² -°F)	Present Heat Transfer Coefficient (U _o) (Table PTR)	Table 18		
F)	#DIV/0!	Btu/(hr-ft ² -°F)	Proposed Heat Transfer Coefficient (U _o) (Table FTR)	Table 18		
G)		ft ²	Area To Be Treated			
H)		kW/Ton	Performance of Cooling System	Table 1		
I)		%	Efficiency of Heating System	Table 3		
J)		\$/kWh	Electrical Energy Rate - Summer			
K)		\$/kW-mo	Electrical Demand Rate - Summer			
L)		\$/Mcf	Natural Gas Rate			
M)		mo/yr	Length of Cooling Season			
N)		\$	Cost of Project			
Calculations						
O)	Cooling Energy Savings	=	$(E - F) * G * A * B$	=	#DIV/0!	Btu/yr
P)	Cooling Electrical Energy Savings	=	$\frac{O * H}{12,000 \text{ Btu/Ton}}$	=	#DIV/0!	kWh/yr
Q)	Cooling Electrical Demand Reduction	=	$\frac{P}{A}$	=	#DIV/0!	kW
R)	Annual Electrical Cost Savings	=	$P * J + Q * M * K$	=	#DIV/0!	\$/yr
S)	Heating Energy Savings	=	$(E - F) * G * C * D$	=	#DIV/0!	Btu/yr
T)	Natural Gas Energy Savings	=	$\frac{S / I}{1,030,000 \text{ Btu/Mcf}}$	=	#DIV/0!	Mcf/yr
U)	Annual Natural Gas Cost Savings	=	$T * L$	=	#DIV/0!	\$/yr
V)	Annual Cost Savings	=	$R + U$	=	#DIV/0!	\$/yr
W)	Simple Payback	=	$\frac{N}{V}$	=	#DIV/0!	yrs

Wall Insulation (TABLES)												
(Electric Cooling and Gas Heating) (Part 2)												
Table PTR (Present Thermal Resistance)					Table FTR (Future Thermal Resistance)							
ELEMENT		R(hr-ft ² -°F/Btu)			ELEMENT		R(hr-ft ² -°F/Btu)					
Outside Skin (h _o)					Outside Skin (h _o)							
Inside Skin (h _i)					Inside Skin (h _i)							
TOTALS:		R _o =	0		TOTALS:		R _o =	0				
		U _o =	#DIV/0!				U _o =	#DIV/0!				
TABLE ACT - AVG CLG TEMP					TABLE AHT - AVG HTG TEMP							
Temp at which clg is initiated:					(T _{ci})	Temp at which htg is initiated:						(T _{hi})
Temp at which clg is full load:					(T _{cf})	Temp at which htg is full load:						(T _{hf})
Temp of interior, cooling:					(T _{cs})	Temp of interior, heating:						(T _{hs})
Table ACT - Average Cooling Temperature					Table AHT - Average Heating Temperature							
Temp. BIN	Cooling BIN Hrs ¹ (t)	Temp Diff	ΔT _{cool}		Heating BIN Hrs ¹ (t)	Temp Diff	ΔT _{heat}					
(Midpoint)		T _{cs} - T _{BIN}	t * (T _{cs} - T _{BIN})			T _{hs} - T _{BIN}	t * (T _{hs} - T _{BIN})					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
		0.0 °F	0.0 hrs- °F			0.0 °F	0.0 hrs- °F					
TOTALS	(A) 0.0 hrs		(B) 0.0 hrs- °F		(C) 0.0 hrs		(D) 0.0 hrs- °F					
¹ Hrs above full load temp (T _{cf} or T _{hf}) will be combined												
$\Delta \bar{T}_{cool} \approx \frac{\sum cool (BinHrs \times TempDif)}{\sum (BinHrs)} = \frac{B}{A} \times \text{°F}$					$\Delta \bar{T}_{heat} \approx \frac{\sum heat (BinHrs \times TempDif)}{\sum (BinHrs)} = \frac{D}{C} \times \text{°F}$							

Wall Insulation					
(Electric Cooling and Heating) (Part 1)					
Description of UCRM:		(Data needed: area to be treated, how, construction description)			
Data needed for calculations		Description			Resource
A)	0.0	hrs/yr	Annual Cooling System Operating Hours (Tbl ACT - (A))		
B)	#DIV/0!	°F	Avg Temp Diff Across Wall, Clg Season (Tbl ACT - (B) ΔT_{cool})		
C)	0.0	hrs/yr	Annual Heating System Operating Hours (Tbl AHT - (C))		
D)	#DIV/0!	°F	Avg Temp Diff Across Wall, Htg Season (Tbl AHT - (D) ΔT_{heat})		
E)	#DIV/0!	Btu/(hr-ft ² -°F)	Present Heat Transfer Coefficient (Uo) (Table PTR)		Table 18
F)	#DIV/0!	Btu/(hr-ft ² -°F)	Proposed Heat Transfer Coefficient (Uo) (Table FTR)		Table 18
G)		ft ²	Area To Be Treated		
H)		kW/ton	Performance of Cooling System		Table 1
I)		COP	Efficiency of Heating System		Table 3
J)		\$/kWh	Electrical Energy Rate - Summer		
K)		\$/kW-mo	Electrical Demand Rate - Summer		
L)		\$/kWh	Electrical Energy Rate - Winter		
M)		\$/kW-mo	Electrical Demand Rate - Winter		
N)			Demand Diversity for Htg Season (0 to 1 with 0.6 as default)		
O)		\$/Mcf	Natural Gas Rate		
P)		mo/yr	Length of Cooling Season		
Q)		mo/yr	Length of Heating Season		
R)		\$	Cost of Project		
Calculations					
S)	Cooling Energy Savings	=	$(E - F) * G * A * B$	=	#DIV/0! Btu/yr
T)	Cooling Electrical Energy Savings	=	$(S / 12,000 \text{ Btu/Ton}) * H$	=	#DIV/0! kWh/yr
U)	Cooling Electrical Demand Reduction	=	$\frac{I}{A}$	=	#DIV/0! kW
V)	Annual Cooling Cost Savings	=	$T * J + U * P * K$	=	#DIV/0! \$/yr
W)	Heating Energy Savings	=	$(E - F) * G * C * D$	=	#DIV/0! Btu/yr
X)	Heating Electrical Energy Savings	=	$\frac{W / 3,413 \text{ Btu/kWH}}{I}$	=	#DIV/0! kWh/yr
Y)	Heating Electrical Demand Savings	=	$\frac{X}{C}$	=	#DIV/0! kW
Z)	Annual Heating Cost Savings	=	$X * L + Y * Q * M * N$	=	#DIV/0! \$/yr
AA)	Annual Cost Savings	=	$V + Z$	=	#DIV/0! \$/yr
BB)	Simple Payback	=	$\frac{R}{AA}$	=	#DIV/0! yrs

Wall Insulation (TABLES)															
(Electric Cooling and Heating) (Part 2)															
Table PTR							Table FTR								
(Present Thermal Resistance)							(Future Thermal Resistance)								
ELEMENT			R(hr-ft ² -°F/Btu)				ELEMENT			R(hr-ft ² -°F/Btu)					
Outside Skin (h _o)							Outside Skin (h _o)								
Inside Skin (h _i)							Inside Skin (h _i)								
TOTALS:			R _o =	0			TOTALS:			R _o =	0				
			U _o =	#DIV/0!						U _o =	#DIV/0!				
TABLE ACT - AVG CLG TEMP							TABLE AHT - AVG HTG TEMP								
Temp at which clg is initiated:							(T _{ci})	Temp at which htg is initiated:							(T _{hi})
Temp at which clg is full load:							(T _{cf})	Temp at which htg is full load:							(T _{hf})
Temp of interior, cooling:							(T _{cs})	Temp of interior, heating:							(T _{hs})
Table ACT - Average Cooling Temperature							Table AHT - Average Heating Temperature								
Temp. BIN	Cooling BIN Hrs ¹ (t)	Temp Diff	ΔT _{cool}		Heating BIN Hrs ¹ (t)	Temp Diff	ΔT _{heat}								
(Midpoint)		T _{cs} - T _{BIN}	t * (T _{cs} - T _{BIN})	T _{hs} - T _{BIN}		t * (T _{hs} - T _{BIN})									
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
		0.0 °F	0.0 hrs-°F			0.0 °F	0.0 hrs-°F								
TOTALS	(A) 0.0 hrs		(B) 0.0 hrs-°F		(C) 0.0 hrs		(D) 0.0 hrs-°F								
¹ Hrs above full load temp (T _{cf} or T _{hf}) will be combined															
$\Delta \bar{T}_{cool} \approx \frac{\sum_{cool} (BinHrs \times TempDif)}{\sum (BinHrs)} = \frac{B}{A} \times \text{°F}$							$\Delta \bar{T}_{heat} \approx \frac{\sum_{heat} (BinHrs \times TempDif)}{\sum (BinHrs)} = \frac{D}{C} \times \text{°F}$								

Window Solar Gain Control for Clear, Unshaded Windows

(Electric Cooling and Electric or Gas Heating)

Description of UCRM:		
Data needed for calculations	Description	Resource
A1)	ft ² Glazing Area for North Orientation	
A2)	ft ² Glazing Area for Northeast & Northwest Orientations	
A3)	ft ² Glazing Area for East & West Orientations	
A4)	ft ² Glazing Area for Southeast & Southwest Orientations	
A5)	ft ² Glazing Area for South Orientation	
A6)	0 ft ² Total Glazing Area	
B)	Shading Coefficient of New Shading Device	Table 9
C)	Btuh/Watt Performance of Cooling System	Table 1
D)	\$/kWh Electrical Energy Rate - Summer	
E)	% Efficiency of Heating System	Table 3
F)	\$/Mcf (or kWh) Natural Gas Rate (or \$/kWh in winter if electrically heated)	
G)	\$/ft ² Installed Cost of Window Treatment per Square Foot	

Calculations

H)	Total Cooling Season Solar Heat Gain (Sum of All Orientations)	=	0.0	Btu/yr
I)	Reduction in Cooling Solar Gain	=	$H * (1 - B)$	Btu/yr
J)	Reduction in Cooling Energy	=	$\frac{I * C}{1,000 \text{ W/kW}}$	#DIV/0! kWh/yr
K)	Total Heating Season Solar Heat Gain (Sum of All Orientations)	=	0.0	Btu/yr
L)	Reduction in Heating Solar Gain	=	$K * (1 - B)$	Btu/yr
M _e)	Increase in Electrical Heating Energy ¹	=	$\frac{L}{E * 1,030,000 \text{ Btu/Mcf}}$	#DIV/0! Mcf/yr
N)	Annual Cost Savings	=	$J * D - M * F$	#DIV/0! \$/yr
O)	Implementation Cost	=	$G * A6$	\$
P)	Simple Payback	=	$\frac{O}{N}$	#DIV/0! yrs
¹ Use M _e for Gas Heating and M _e for Electrical Heating				
M _g)	Increase in Gas Heating Energy	=	$\frac{L}{3,413 \text{ Btu/h/kW} * E}$	kWh/yr

In the following tables, Table CL and Table HL, fill in all the cells that are shaded in a light yellow and do not fill in the cells shaded in gray. Cells have been shaded in gray based on the data given for A1-A5 on the previous page. The months used in Table CL and Table HL will vary with location and building. Table CL should be filled with data from months which are predominantly cooling months and Table HL should be filled with data from months which are predominantly heating months. Transition months in the spring and fall should be ignored.

Table CL - Cooling Load

Month	Daily Solar Heat Gain: Table 7					% Sun	Days	Monthly Solar Heat Gain (Btu/ft ² -mo)				
	N	NE,NW	E,W	SE,SW	S	Table 8	Month	N	NE,NW	E,W	SE,SW	S
Jan							31	0	0	0	0	0
Feb							28	0	0	0	0	0
Mar							31	0	0	0	0	0
Apr							30	0	0	0	0	0
May							31	0	0	0	0	0
Jun							30	0	0	0	0	0
Jul							31	0	0	0	0	0
Aug							31	0	0	0	0	0
Sep							30	0	0	0	0	0
Oct							31	0	0	0	0	0
Nov							30	0	0	0	0	0
Dec							31	0	0	0	0	0
Totals (Btu/ft ² -yr):								0	0	0	0	0
Total Solar Heat Gain (Btu/yr):								0	0	0	0	0

Table HL - Heating Load

Month	Daily Solar Heat Gain: Table 7					% Sun	Days	Monthly Solar Heat Gain (Btu/ft ² -mo)				
	N	NE,NW	E,W	SE,SW	S	Table 8	Month	N	NE,NW	E,W	SE,SW	S
Jan							31	0	0	0	0	0
Feb							28	0	0	0	0	0
Mar							31	0	0	0	0	0
Apr							30	0	0	0	0	0
May							31	0	0	0	0	0
Jun							30	0	0	0	0	0
Jul							31	0	0	0	0	0
Aug							31	0	0	0	0	0
Sep							30	0	0	0	0	0
Oct							31	0	0	0	0	0
Nov							30	0	0	0	0	0
Dec							31	0	0	0	0	0
Annual Totals (Btu/ft ² -yr):								0	0	0	0	0
Total Solar Heat Gain (Btu/yr):								0	0	0	0	0

SECTION III – QUICKCALC DATA TABLES

This section includes the data tables that are used in conjunction with the QuickCalc calculation forms, which may be used to perform calculations for Category II UCRMs.

Table 1: Normal Efficiency Range for Cooling Equipment (Full Load)

COMPRESSOR + AUXILLAIRES				
SYSTEM	HEATING TYPE	SEER	EER (BTUh/watt)	IEER (BTUh/watt)
Through-the-Wall Units				
Split System Air Conditioners, air cooled, <65,000 BTUh	All	8.6 - 13	-	-
Single-package Air Conditioners, air cooled, <65,000 BTUh	All	8.6 - 14	-	-
Split system and single-package, Air Conditioners, air cooled, ≥65,000 and <135,000 BTUh	Electric resistance, or none	-	6.6 - 11.2	N/A 12.9
Split system and single-package, Air Conditioners, air cooled, ≥65,000 and <135,000 BTUh	All Other	-	6.6 - 11	N/A 12.7
Split system and single-package, Air Conditioners, air cooled, ≥135,000 and <240,000 BTUh	Electric resistance, or none	-	6.6 - 11	N/A 12.4
Split system and single-package, Air Conditioners, air cooled, ≥135,000 and <240,000 BTUh	All Other	-	6.6 - 10.8	N/A 12.2
Split system and single-package, Air Conditioners, air cooled, ≥240,000 and <760,000 BTUh	Electric resistance, or none	-	8.6 - 10	N/A 11.6
Split system and single-package, Air Conditioners, air cooled, ≥240,000 and <760,000 BTUh	All Other	-	8.6 - 9.8	N/A 11.4

Notes:
1. Derived and updated from data in ASHRAE Standard 90.1-2019, table 6.8.1-1
2. Efficiencies valid until 2023; refer to standard for efficiencies post-2023.
3. Not all municipalities and Authorities Having Jurisdiction (AHJs) have adopted the 2019 requirement; refer to the adoption standard for your project for appropriate higher value efficiencies.
4. Lower efficiencies relate to equipment now reaching the end of its useful life and in poor condition. Higher efficiencies relate to the minimum requirements of ASHRAE 90.1-2019. In some cases the efficiency of existing equipment may be lower than the values shown. Also, new equipment may be purchased with efficiencies higher than shown. When efficiencies outside the values shown are used, justification should be provided.

CURRENT OPERATING EFFICIENCY OF AGED AIR COOLED UNITS CALCULATION

The Texas Department of Housing and Community Affairs published a white paper, “Best Practice – SEER and EER Determination,” in January 2017. The paper illustrates a mathematical process for determining the existing EER or SEER of certain types of HVAC equipment when the exact performance of the existing equipment is unknown and cannot be measured. The formula includes an assessment of the base EER or SEER, which is then degraded based on an assessment of the maintenance factor for the unit and the unit’s age:

$$EER = (\text{new condition EER}) * (1 - \text{maintenance factor})^{\text{age}}$$

The paper recommends using a maintenance factor of 0.01 or 0.02 depending upon the maintenance history of residential units. The SECO LoanSTAR Guidelines have historically allowed poor-condition, air-cooled, 3-25-ton air conditioning units that have reached the end of their useful life expectancies to be modeled with

current operating efficiencies as low as 6.6 EER, or 1.8 kW/ton. ASHRAE indicates that these types of units have reached the end of their useful life expectancies when they are 15 years old. In 2005, (15 years ago as of this writing), typical Trane, Lennox or Carrier catalog data indicate the new-condition EER for these types of units was approximately 9. By reverse calculating the maintenance factor that results in an energy efficiency approximating 6.6 EER after the useful life expectancy of 15 years has passed, it is determined that the most appropriate commercially applied maintenance factor to be used in the formula is 0.02.

$$\text{Current operating EER, 3-25-ton air cooled air conditioners} = (9) * (1-0.02)^{15} = 6.6471$$

This formula, adjusted for the current age for the specific unit to be replaced and a maintenance factor of 0.02 may be used to estimate the current operating efficiency for 3-25-ton split systems or rooftop units to be replaced in LoanSTAR projects when direct measurement techniques are not possible.

Table 2: Normal Efficiency Range for Heat Pumps				
SYSTEM	HEATING TYPE	COMPRESSOR + AUXILLAIRES		
		SEER	EER (BTUh/watt)	IEER (BTUh/watt)
Through-the-Wall Units				
Split System Air Conditioners, air cooled, <65,000 BTUh	All	9 - 14	-	-
Single-package Air Conditioners, air cooled, <65,000 BTUh	All	9 - 14	-	-
Split system and single-package, Air Conditioners, air cooled, ≥65,000 and <135,000 BTUh	Electric resistance, or none	-	6.6 - 11	N/A - 12.2
Split system and single-package, Air Conditioners, air cooled, ≥65,000 and <135,000 BTUh	All Other	-	6.6 - 10.8	N/A - 12
Split system and single-package, Air Conditioners, air cooled, ≥135,000 and <240,000 BTUh	Electric resistance, or none	-	6.6 - 10.6	N/A - 11.6
Split system and single-package, Air Conditioners, air cooled, ≥135,000 and <240,000 BTUh	All Other	-	6.6 - 10.4	N/A - 11.4
Split system and single-package, Air Conditioners, air cooled, ≥240,000 BTUh	Electric resistance, or none	-	8.6 - 9.5	N/A - 10.6
Split system and single-package, Air Conditioners, air cooled, ≥240,000 BTUh	All Other	-	8.6 - 9.3	N/A - 10.4

Notes:
1. Derived and updated from data in ASHRAE Standard 90.1-2019, table 6.8.1-2
2. Efficiencies valid until 2023; refer to standard for efficiencies post-2023.
3. Not all municipalities and Authorities Having Jurisdiction (AHJs) have adopted the 2019 requirement; refer to the adoption standard for your project for appropriate higher value efficiencies.
4. Lower efficiencies relate to equipment now reaching the end of its useful life and in poor condition. Higher efficiencies relate to the minimum requirements of ASHRAE 90.1-2019. In some cases the efficiency of existing equipment may be lower than the values shown. Also, new equipment may be purchased with efficiencies higher than shown. When efficiencies outside the values shown are used, justification should be provided.

Table 3: Normal Heating System Efficiencies*	
HEATING PLANT TYPE	SEASONAL EFFICIENCY (%)
Gas Furnace	60 - 80
Oil-fired Boiler	60 - 80
Gas-fired Boiler	65 - 80
Steam Converter	90 - 95
Electric Resistance Boiler	95 - 100
Electric Resistance Strip Heaters	100
Water Loop Heat Pumps	175 - 370
Air Source Heat Pumps	200 - 330
Water Source Heat Pumps	300 - 420
Source: Derived and updated from ASHRAE Standard 90.1-2010, Table 6.8.1B, Table 6.8.1E, and Table 6.8.1F, pp. 58-59, 62, 63	
*Lower efficiencies relate to equipment now reaching the end of its useful life and in poor condition. Higher efficiencies relate to the minimum requirements of ASHRAE Standard 90.1-2010. In some cases the efficiency of existing equipment may be lower than the values shown. Also, new equipment may be purchased with efficiencies higher than shown. When efficiencies are used outside the values shown, justification should be provided.	

Table 4: Seasonal Cooling and Heating Factors (12-Month Operating Schedule for Thermally Light Buildings)				
CITY	LIGHTS CONTROLLED DURING DAYTIME		LIGHTS CONTROLLED OVER 24-HOUR PERIOD	
	CF	HF	CF	HF
Abilene	0.54	0.30	0.43	0.39
Amarillo	0.44	0.40	0.30	0.52
Austin	0.62	0.22	0.51	0.30
Big Spring	0.53	0.31	0.42	0.40
Brownsville	0.82	0.08	0.68	0.14
Corpus Christi	0.70	0.14	0.62	0.18
Del Rio	0.64	0.20	0.55	0.28
El Paso	0.56	0.27	0.43	0.39
Fort Worth	0.56	0.28	0.46	0.36
Houston	0.66	0.17	0.53	0.27
San Antonio	0.63	0.20	0.52	0.29
Sherman	0.51	0.32	0.42	0.39
Waco	0.60	0.25	0.49	0.33

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 4: (Continued) Seasonal Cooling and Heating Factors				
(10-Month Operating Schedule for Thermally Light Buildings)				
CITY	LIGHTS CONTROLLED DURING DAYTIME		LIGHTS CONTROLLED OVER 24-HOUR PERIOD	
	CF	HF	CF	HF
Abilene	0.45	0.36	0.33	0.47
Amarillo	0.34	0.47	0.21	0.61
Austin	0.54	0.27	0.42	0.37
Big Spring	0.44	0.37	0.32	0.48
Brownsville	0.78	0.09	0.62	0.16
Corpus Christi	0.64	0.17	0.54	0.22
Del Rio	0.56	0.24	0.46	0.34
El Paso	0.52	0.29	0.39	0.42
Fort Worth	0.47	0.34	0.36	0.44
Houston	0.60	0.21	0.46	0.32
San Antonio	0.55	0.24	0.43	0.34
Sherman	0.42	0.39	0.32	0.47
Waco	0.52	0.29	0.39	0.40

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 4: (Continued) Seasonal Cooling and Heating Factors (12-Month Operating Schedule for Thermally Heavy Buildings)				
CITY	LIGHTS CONTROLLED DURING DAYTIME		LIGHTS CONTROLLED OVER 24-HOUR PERIOD	
	CF	HF	CF	HF
Abilene	0.89	0.07	0.83	0.12
Amarillo	0.81	0.14	0.71	0.22
Austin	0.94	0.03	0.90	0.06
Big Spring	0.87	0.08	0.82	0.12
Brownsville	0.99	0.00	0.98	0.01
Corpus Christi	0.98	0.01	0.97	0.01
Del Rio	0.96	0.02	0.92	0.04
El Paso	0.93	0.03	0.84	0.10
Fort Worth	0.89	0.06	0.85	0.09
Houston	0.97	0.01	0.93	0.04
San Antonio	0.95	0.02	0.91	0.05
Sherman	0.87	0.08	0.82	0.12
Waco	0.92	0.04	0.88	0.07

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 4: (Continued) Seasonal Cooling and Heating Factors (10-Month Operating Schedule for Thermally Heavy Buildings)				
CITY	LIGHTS CONTROLLED DURING DAYTIME		LIGHTS CONTROLLED OVER 24-HOUR PERIOD	
	CF	HF	CF	HF
Abilene	0.86	0.09	0.79	0.14
Amarillo	0.77	0.16	0.65	0.26
Austin	0.93	0.04	0.87	0.07
Big Spring	0.84	0.10	0.78	0.15
Brownsville	0.99	0.00	0.97	0.00
Corpus Christi	0.98	0.01	0.97	0.01
Del Rio	0.95	0.02	0.91	0.05
El Paso	0.92	0.04	0.81	0.12
Fort Worth	0.88	0.07	0.82	0.11
Houston	0.96	0.02	0.91	0.04
San Antonio	0.94	0.02	0.89	0.06
Sherman	0.85	0.09	0.79	0.14
Waco	0.91	0.05	0.85	0.09

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 5: Average Cooling/Heating Temperatures and Cooling/Heating Hours

6 am to 6 pm, 5 Days/Week				
CITY	Cooling Temperature Average	Cooling Hours	Heating Temperature Average	Heating Hours
Lubbock	82	705	47	1,925
Austin	82	1,411	53	1,042
Brownsville	82	1,267	56	339
Fort Worth	83	1,203	51	1,470
Houston	81	1,238	55	756

6 am to 6 pm, 6 Days/Week				
CITY	Cooling Temperature Average	Cooling Hours	Heating Temperature Average	Heating Hours
Lubbock	81	818	47	1,985
Austin	81	1,523	53	1,106
Brownsville	80	1,492	57	354
Fort Worth	82	1,212	51	1,544
Houston	80	1,456	54	790

6 am to 6 pm, 7 Days/Week				
CITY	Cooling Temperature Average	Cooling Hours	Heating Temperature Average	Heating Hours
Lubbock	81	931	47	2,045
Austin	81	1,634	53	1,169
Brownsville	80	1,718	57	368
Fort Worth	82	1,221	51	1,617
Houston	80	1,675	54	823

24 Hours/Day, 7 Days/Week				
CITY	Cooling Temperature Average	Cooling Hours	Heating Temperature Average	Heating Hours
Lubbock	81	2,900	46	2,800
Austin	81	3,073	53	1,847
Brownsville	80	4,549	57	588
Fort Worth	82	3,229	51	2,401
Houston	80	3,336	54	1,470

Table 6: Latitudes Of Selected Texas Cities	
CITY	NORTH LATITUDE
Amarillo	35 Deg. - 14'
Austin	30 Deg. - 12'
Brownsville	25 Deg. - 54'
Fort Worth	32 Deg. - 47'
Corpus Christi	27 Deg. - 42'
Abilene	32 Deg. - 25'
Houston	29 Deg. - 37'
El Paso	31 Deg. - 51'
San Antonio	29 Deg. - 23'
Sherman	33 Deg. - 43'
Waco	31 Deg. - 38'

Table 7: Clear Day Solar Heat Gain Through Vertical Glazing At Various Orientations (Btu/Sq. Ft. - Day)

28 DEG. NORTH LATITUDE						
MONTH	N	NE, NW	E, W	SE, SW	S	HORIZ
Jan	168	192	634	1172	1558	1454
Feb	206	310	816	1191	1350	1832
Mar	248	464	923	1074	912	2184
Apr	306	658	989	893	492	2428
May	402	809	1023	758	368	2576
Jun	464	861	1019	695	360	2610
Jul	416	808	1006	741	372	2494
Aug	324	656	961	862	482	2386
Sep	260	456	883	1029	884	2110
Oct	214	311	788	1143	1296	1796
Nov	170	194	625	1151	1526	1444
Dec	152	162	564	1151	1586	1306

32 DEG. NORTH LATITUDE						
MONTH	N	NE, NW	E, W	SE, SW	S	HORIZ
Jan	152	166	574	1146	1560	1288
Feb	192	278	772	1200	1424	1688
Mar	240	433	904	1116	1034	2084
Apr	302	636	997	955	600	2390
May	396	789	1040	823	422	2582
Jun	450	841	1038	758	390	2634
Jul	408	789	1024	803	420	2558
Aug	320	636	968	920	582	2352
Sep	250	426	864	1067	1000	2014
Oct	200	280	746	1151	1364	1654
Nov	154	168	567	1125	1528	1280
Dec	136	144	518	1128	1574	1136

36 DEG. NORTH LATITUDE						
MONTH	N	NE, NW	E, W	SE, SW	S	HORIZ
Jan	136	147	528	1123	1550	1120
Feb	178	247	722	1197	1474	1534
Mar	230	404	882	1153	1146	1974
Apr	298	615	1002	1016	720	2338
May	390	769	1054	888	500	2574
Jun	442	822	1056	823	446	2644
Jul	402	768	1037	867	492	2552
Aug	318	616	973	978	694	2304
Sep	242	399	842	1100	1102	1906
Oct	186	250	697	1147	1410	1506
Nov	140	150	522	1101	1516	1114
Dec	120	125	463	1083	1526	960

Source: Taken from computer studies by M. Steven Baker, University of Oregon, Eugene, Oregon, 1977

Table 8: Monthly Average Percent Of Possible Sunshine In Major Texas Locations												
CITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Abilene	64	68	73	66	73	86	83	85	73	71	72	66
Amarillo	71	71	75	75	75	82	81	81	79	76	76	70
Austin	46	50	57	60	62	72	76	79	70	70	57	49
Brownsville	44	49	51	57	65	73	78	78	67	70	54	44
Del Rio	53	55	61	63	60	66	75	80	69	66	58	52
El Paso	74	77	81	85	87	87	78	78	80	82	80	73
Ft. Worth	56	57	65	66	67	75	78	78	74	70	63	58
Galveston	50	50	55	61	69	76	72	71	70	74	62	49
San Antonio	48	51	56	58	60	69	74	75	69	67	55	49

Source: Climatic Atlas of the United States

Table 9: Typical Shading Coefficients	
SHADING DEVICE	SHADING COEFFICIENT
Venetian Blinds (fully closed)	
Medium	0.64
Light	0.55
Roller Shades (fully closed)	
Dark, Opaque	0.59
Light, Opaque	0.25
Light, Translucent	0.39
Drapes Semi-Open Weave	
Average Fabric Transmittance and Reflectance (fully closed)	0.55
Reflective Polyester Film*	0.23 to 0.56
Louvered Sunscreens*	
-23 Louvers/In.	0.15 - 0.35
-17 Louvers/In.	0.18 - 0.51

*See manufacturer's literature for exact values.

Table 10: Electrical Motor Efficiencies						
Motor Horsepower	Energy Efficient (%)			NEMA Premium		
	1200 RPM	1800 RPM	3600 RPM	1200 RPM	1800 RPM	3600 RPM
1	82.5	85.5	77.0	80.0	82.5	75.5
1.5	87.0	86.5	84.0	84.8	84.0	82.5
2	88.0	86.5	85.5	86.0	84.0	84.0
3	89.0	89.5	86.0	87.0	87.0	84.8
5	89.5	89.5	87.5	87.5	87.5	86.5
7.5	90.6	91.4	89.0	89.0	89.0	88.0
10	91.4	91.7	89.9	89.9	89.5	89.0
15	91.7	92.7	90.6	90.2	91.0	89.9
20	92.1	93.0	91.0	90.6	91.0	90.2
25	93.0	93.6	91.7	91.7	92.1	91.0
30	93.3	93.9	91.7	92.1	92.4	91.0
40	94.1	94.1	92.4	93.0	93.0	91.7
50	94.1	94.5	93.0	93.0	93.0	92.4
60	94.5	95.0	93.6	93.6	93.6	93.0
75	94.5	95.2	93.6	93.6	94.1	93.0
100	95.0	95.4	93.9	94.1	94.3	93.3
125	95.0	95.4	94.6	94.1	94.5	94.1
150	95.6	95.8	94.6	94.8	95.0	94.1
200	95.6	96.0	95.2	94.8	95.0	94.8
250	95.6	96.0	95.4	95.2	95.2	95.0
300	95.6	96.0	95.6	95.2	95.4	95.2

Source: Department of Energy (DOE) MotorMaster+ Software, September 2010

Table 11: Hot Water Consumption For Various Occupancies

TYPE OF BUILDING	SIZE FACTOR	AVERAGE DAY DEMAND
Apartment Dwellings	No. of Apartments:	
	Up to 20	42.0 Gal. per apt.
	21 to 50	40.0 Gal. per apt.
	51 to 75	38.0 Gal. per apt.
	76 to 100	37.0 Gal. per apt.
	101 to 200	36.0 Gal. per apt.
	201 and up	35.0 Gal. per apt.
Dormitories	Men	13.1 Gal. per man
	Women	12.3 Gal. per woman
Hospitals	Per Bed	90.0 Gal. per patient
Hotels	Single Room with Bath	50.0 Gal. per unit
	Double Room with Bath	80.0 Gal. per unit
Motels	No. of Units:	
	Up to 20	20.0 Gal. per unit
	21 to 100	14.0 Gal. per unit
	101 and up	10.0 Gal. per unit
Nursing Homes		18.4 Gal. per bed
Office Buildings		1.0 Gal. per person
Restaurants	Full Meal Type	2.4 Gal. per meal
	Drive-in Snack Type	0.7 Gal. per meal
Schools	Elementary	0.6 Gal. per student
	Secondary and High School	1.8 Gal. per student

Source: Means Electrical Cost Data, 13th Annual Edition

Table 12: Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
CF		Compact Fluorescent Fixtures						
CF100/1-SCRW	CF100W	Compact Fluorescent, (1) 100W screw-in lamp/base	Mag. or Elec.	1	100	100	Integrated-ballast CFL Lamps	0
CF11/1-SCRW	CF11W	Compact Fluorescent, (1) 11W screw-in lamp/base	Mag. or Elec.	1	11	11	Integrated-ballast CFL Lamps	0
CF125/1-SCRW	CF125W	Compact Fluorescent, (1) 125W screw-in lamp/base	Mag. or Elec.	1	125	125	Integrated-ballast CFL Lamps	0
CF13/1-SCRW	CF13W	Compact Fluorescent, (1) 13W screw-in lamp/base	Mag. or Elec.	1	13	13	Integrated-ballast CFL Lamps	0
CF14/1-SCRW	CF14W	Compact Fluorescent, (1) 14W screw-in lamp/base	Mag. or Elec.	1	14	14	Integrated-ballast CFL Lamps	0
CF15/1-SCRW	CF15W	Compact Fluorescent, (1) 15W screw-in lamp/base	Mag. or Elec.	1	15	15	Integrated-ballast CFL Lamps	0
CF150/1-SCRW	CF150W	Compact Fluorescent, (1) 150W screw-in lamp/base	Mag. or Elec.	1	150	150	Integrated-ballast CFL Lamps	0
CF16/1-SCRW	CF16W	Compact Fluorescent, (1) 16W screw-in lamp/base	Mag. or Elec.	1	16	16	Integrated-ballast CFL Lamps	0
CF17/1-SCRW	CF17W	Compact Fluorescent, (1) 17W screw-in lamp/base	Mag. or Elec.	1	17	17	Integrated-ballast CFL Lamps	0
CF18/1-SCRW	CF18W	Compact Fluorescent, (1) 18W screw-in lamp/base	Mag. or Elec.	1	18	18	Integrated-ballast CFL Lamps	0
CF2/1-SCRW	CF2W	Compact Fluorescent, (1) 2W screw-in lamp/base	Mag. or Elec.	1	2	2	Integrated-ballast CFL Lamps	0
CF20/1-SCRW	CF20W	Compact Fluorescent, (1) 20W screw-in lamp/base	Mag. or Elec.	1	20	20	Integrated-ballast CFL Lamps	0
CF200/1-SCRW	CF200W	Compact Fluorescent, (1) 200W screw-in lamp/base	Mag. or Elec.	1	200	200	Integrated-ballast CFL Lamps	0
CF23/1-SCRW	CF23W	Compact Fluorescent, (1) 23W screw-in lamp/base	Mag. or Elec.	1	23	23	Integrated-ballast CFL Lamps	0
CF25/1-SCRW	CF25W	Compact Fluorescent, (1) 25W screw-in lamp/base	Mag. or Elec.	1	25	25	Integrated-ballast CFL Lamps	0
CF26/1-SCRW	CF26W	Compact Fluorescent, (1) 26W screw-in lamp/base	Mag. or Elec.	1	26	26	Integrated-ballast CFL Lamps	0
CF27/1-SCRW	CF27W	Compact Fluorescent, (1) 27W screw-in lamp/base	Mag. or Elec.	1	27	27	Integrated-ballast CFL Lamps	0
CF28/1-SCRW	CF28W	Compact Fluorescent, (1) 28W screw-in lamp/base	Mag. or Elec.	1	28	28	Integrated-ballast CFL Lamps	0
CF32/1-SCRW	CF32W	Compact Fluorescent, (1) 32W screw-in lamp/base	Mag. or Elec.	1	32	32	Integrated-ballast CFL Lamps	0
CF4/1-SCRW	CF4W	Compact Fluorescent, (1) 4W screw-in lamp/base	Mag. or Elec.	1	4	4	Integrated-ballast CFL Lamps	0
CF42/1-SCRW	CF42W	Compact Fluorescent, (1) 42W screw-in lamp/base	Mag. or Elec.	1	42	42	Integrated-ballast CFL Lamps	0
CF44/1-SCRW	CF44W	Compact Fluorescent, (1) 44W screw-in lamp/base	Mag. or Elec.	1	44	44	Integrated-ballast CFL Lamps	0
CF52/1-SCRW	CF52W	Compact Fluorescent, (1) 52W screw-in lamp/base	Mag. or Elec.	1	52	52	Integrated-ballast CFL Lamps	0
CF60/1-SCRW	CF60W	Compact Fluorescent, (1) 60W screw-in lamp/base	Mag. or Elec.	1	60	60	Integrated-ballast CFL Lamps	0
CF65/1-SCRW	CF65W	Compact Fluorescent, (1) 65W screw-in lamp/base	Mag. or Elec.	1	65	65	Integrated-ballast CFL Lamps	0

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/FIXT	WATT/LAMP	Actual WATT/FIXT	LAMP TYPE	LAMP EUL
CF7/1-SCRW	CF7W	Compact Fluorescent, (1) 7W screw-in lamp/base	Mag. or Elec.	1	7	7	Integrated-ballast CFL Lamps	0
CF80/1-SCRW	CF80W	Compact Fluorescent, (1) 80W screw-in lamp/base	Mag. or Elec.	1	80	80	Integrated-ballast CFL Lamps	0
CF85/1-SCRW	CF85W	Compact Fluorescent, (1) 85W screw-in lamp/base	Mag. or Elec.	1	85	85	Integrated-ballast CFL Lamps	0
CF9/1-SCRW	CF9W	Compact Fluorescent, (1) 9W screw-in lamp/base	Mag. or Elec.	1	9	9	Integrated-ballast CFL Lamps	0
CFC2/1-SCRW	CFC2W	Compact Fluorescent, Cold Cathode, (1) 2W screw-in lamp/base	Electronic	1	2	2	Integrated-ballast CCFL Lamps	0
CFC2/2-SCRW	CFC2W	Compact Fluorescent, Cold Cathode, (2) 2W screw-in lamp/base	Electronic	2	2	4	Integrated-ballast CCFL Lamps	0
CFC3/1-SCRW	CFC3W	Compact Fluorescent, Cold Cathode, (1) 3W screw-in lamp/base	Electronic	1	3	3	Integrated-ballast CCFL Lamps	0
CFC3/2-SCRW	CFC3W	Compact Fluorescent, Cold Cathode, (2) 3W screw-in lamp/base	Electronic	2	3	6	Integrated-ballast CCFL Lamps	0
CFC4/1-SCRW	CFC4W	Compact Fluorescent, Cold Cathode, (1) 4W screw-in lamp/base	Electronic	1	4	4	Integrated-ballast CCFL Lamps	0
CFC4/2-SCRW	CFC4W	Compact Fluorescent, Cold Cathode, (2) 4W screw-in lamp/base	Electronic	2	4	8	Integrated-ballast CCFL Lamps	0
CFC5/1-SCRW	CFC5W	Compact Fluorescent, Cold Cathode, (1) 5W screw-in lamp/base	Electronic	1	5	5	Integrated-ballast CCFL Lamps	0
CFC5/2-SCRW	CFC5W	Compact Fluorescent, Cold Cathode, (2) 5W screw-in lamp/base	Electronic	2	5	10	Integrated-ballast CCFL Lamps	0
CFC8/1-SCRW	CFC8W	Compact Fluorescent, Cold Cathode, (1) 8W screw-in lamp/base	Electronic	1	8	8	Integrated-ballast CCFL Lamps	0
CFC8/2-SCRW	CFC8W	Compact Fluorescent, Cold Cathode, (2) 8W screw-in lamp/base	Electronic	2	8	16	Integrated-ballast CCFL Lamps	0
CFC13/1-SCRW	CFC13W	Compact Fluorescent, Cold Cathode, (1) 13W screw-in lamp/base	Electronic	1	13	13	Integrated-ballast CCFL Lamps	0
CFC18/1-SCRW	CFC18W	Compact Fluorescent, Cold Cathode, (1) 18W screw-in lamp/base	Electronic	1	18	18	Integrated-ballast CCFL Lamps	0
CFD10/1	CFD10W	Compact Fluorescent, 2D, (1) 10W lamp	Mag-STD	1	10	16	Modular CFL and CCFL Fixtures	16
CFD10/1-L	CFD10W	Compact Fluorescent, 2D, (1) 10W lamp	Electronic	1	10	14	Modular CFL and CCFL Fixtures	16
CFD16/1	CFD16W	Compact Fluorescent, 2D, (1) 16W lamp	Mag-STD	1	16	26	Modular CFL and CCFL Fixtures	16
CFD16/1-L	CFD16W	Compact Fluorescent, 2D, (1) 16W lamp	Electronic	1	16	18	Modular CFL and CCFL Fixtures	16
CFD21/1	CFD21W	Compact Fluorescent, 2D, (1) 21W lamp	Mag-STD	1	21	26	Modular CFL and CCFL Fixtures	16
CFD21/1-L	CFD21W	Compact Fluorescent, 2D, (1) 21W lamp	Electronic	1	21	22	Modular CFL and CCFL Fixtures	16

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
CFD28/1	CFD28W	Compact Fluorescent, 2D, (1) 28W lamp	Mag-STD	1	28	35	Modular CFL and CCFL Fixtures	16
CFD28/1-L	CFD28W	Compact Fluorescent, 2D, (1) 28W lamp	Electronic	1	28	29	Modular CFL and CCFL Fixtures	16
CFD38/1	CFD38W	Compact Fluorescent, 2D, (1) 38W lamp	Mag-STD	1	38	46	Modular CFL and CCFL Fixtures	16
CFD38/1-L	CFD38W	Compact Fluorescent, 2D, (1) 38W lamp	Electronic	1	38	32	Modular CFL and CCFL Fixtures	16
CFG13/1-L	CFG13W	Compact Fluorescent, Multi, GU24 with Integrated Ballast, (1) 13W lamp	Electronic	1	13	13	Modular CFL and CCFL Fixtures	16
CFG18/1-L	CFG18W	Compact Fluorescent, Multi, GU24 with Integrated Ballast, (1) 18W lamp	Electronic	1	18	18	Modular CFL and CCFL Fixtures	16
CFG23/1-L	CFG23W	Compact Fluorescent, Multi, GU24 with Integrated Ballast, (1) 23W lamp	Electronic	1	23	23	Modular CFL and CCFL Fixtures	16
CFG26/1-L	CFG26W	Compact Fluorescent, Multi, GU24 with Integrated Ballast, (1) 26W lamp	Electronic	1	26	26	Modular CFL and CCFL Fixtures	16
CFG32/1-L	CFG32W	Compact Fluorescent, Multi, GU24 with Integrated Ballast, (1) 32W lamp	Electronic	1	32	32	Modular CFL and CCFL Fixtures	16
CFG42/1-L	CFG42W	Compact Fluorescent, Multi, GU24 with Integrated Ballast, (1) 42W lamp	Electronic	1	42	42	Modular CFL and CCFL Fixtures	16
CFM13/1-L	CFM13W	Compact Fluorescent, Multi, 4-pin, (1) 13W lamp	Electronic	1	13	16	Modular CFL and CCFL Fixtures	16
CFM13/2-L	CFM13W	Compact Fluorescent, Multi, 4-pin, (2) 13W lamps	Electronic	2	13	30	Modular CFL and CCFL Fixtures	16
CFM18/1-L	CFM18W	Compact Fluorescent, Multi, 4-pin, (1) 18W lamp	Electronic	1	18	20	Modular CFL and CCFL Fixtures	16
CFM18/2-L	CFM18W	Compact Fluorescent, Multi, 4-pin, (2) 18W lamps	Electronic	2	18	40	Modular CFL and CCFL Fixtures	16
CFM26/1-L	CFM26W	Compact Fluorescent, Multi, 4-pin, (1) 26W lamp	Electronic	1	26	29	Modular CFL and CCFL Fixtures	16
CFM26/2-L	CFM26W	Compact Fluorescent, Multi, 4-pin, (2) 26W lamps	Electronic	2	26	51	Modular CFL and CCFL Fixtures	16
CFM32/1-L	CFM32W	Compact Fluorescent, Multi, 4-pin, (1) 32W lamp	Electronic	1	32	35	Modular CFL and CCFL Fixtures	16
CFM42/1-L	CFM42W	Compact Fluorescent, Multi, 4-pin, (1) 42W lamp	Electronic	1	42	46	Modular CFL and CCFL Fixtures	16
CFM42/2-L	CFM42W	Compact Fluorescent, Multi, 4-pin, (2) 42W lamps	Electronic	2	42	93	Modular CFL and CCFL Fixtures	16
CFM42/8-L	CFM42W	Compact Fluorescent, Multi, 4-pin, (8) 42W lamps, (4) 2-lamp ballasts	Electronic	8	42	372	Modular CFL and CCFL Fixtures	16
CFM57/1-L	CFM57W	Compact Fluorescent, Multi, 4-pin, (1) 57W lamp	Electronic	1	57	59	Modular CFL and CCFL Fixtures	16
CFM60/1-L	CFM60W	Compact Fluorescent, Multi, 4-pin, (1) 60W lamp	Electronic	1	60	70	Modular CFL and CCFL Fixtures	16
CFM70/1-L	CFM70W	Compact Fluorescent, Multi, 4-pin, (1) 70W lamp	Electronic	1	70	73	Modular CFL and CCFL Fixtures	16
CFM85/1-L	CFM85W	Compact Fluorescent, Multi, 4-pin, (1) 85W lamp	Electronic	1	85	96	Modular CFL and CCFL Fixtures	16
CFM120/1-L	CFM120W	Compact Fluorescent, Multi, 4-pin, (1) 120W lamp	Electronic	1	120	135	Modular CFL and CCFL Fixtures	16
CFQ10/1	CFQ10W	Compact Fluorescent, quad, (1) 10W lamp	Mag-STD	1	10	15	Modular CFL and CCFL Fixtures	16

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
CFQ13/1	CFQ13W	Compact Fluorescent, quad, (1) 13W lamp	Mag-STD	1	13	17	Modular CFL and CCFL Fixtures	16
CFQ13/1-L	CFQ13W	Compact Fluorescent, quad, (1) 13W lamp, BF=1.05	Electronic	1	13	15	Modular CFL and CCFL Fixtures	16
CFQ13/2	CFQ13W	Compact Fluorescent, quad, (2) 13W lamps	Mag-STD	2	13	31	Modular CFL and CCFL Fixtures	16
CFQ13/2-L	CFQ13W	Compact Fluorescent, quad, (2) 13W lamps, BF=1.0	Electronic	2	13	28	Modular CFL and CCFL Fixtures	16
CFQ13/3	CFQ13W	Compact Fluorescent, quad, (3) 13W lamps	Mag-STD	3	13	48	Modular CFL and CCFL Fixtures	16
CFQ15/1	CFQ15W	Compact Fluorescent, quad, (1) 15W lamp	Mag-STD	1	15	20	Modular CFL and CCFL Fixtures	16
CFQ17/1	CFQ17W	Compact Fluorescent, quad, (1) 17W lamp	Mag-STD	1	17	24	Modular CFL and CCFL Fixtures	16
CFQ17/2	CFQ17W	Compact Fluorescent, quad, (2) 17W lamps	Mag-STD	2	17	48	Modular CFL and CCFL Fixtures	16
CFQ18/1	CFQ18W	Compact Fluorescent, quad, (1) 18W lamp	Mag-STD	1	18	26	Modular CFL and CCFL Fixtures	16
CFQ18/1-L	CFQ18W	Compact Fluorescent, quad, (1) 18W lamp, BF=1.0	Electronic	1	18	20	Modular CFL and CCFL Fixtures	16
CFQ18/2	CFQ18W	Compact Fluorescent, quad, (2) 18W lamps	Mag-STD	2	18	45	Modular CFL and CCFL Fixtures	16
CFQ18/2-L	CFQ18W	Compact Fluorescent, quad, (2) 18W lamp, BF=1.0	Electronic	2	18	38	Modular CFL and CCFL Fixtures	16
CFQ18/4	CFQ18W	Compact Fluorescent, quad, (4) 18W lamps	Mag-STD	2	18	90	Modular CFL and CCFL Fixtures	16
CFQ20/1	CFQ20W	Compact Fluorescent, quad, (1) 20W lamp	Mag-STD	1	20	23	Modular CFL and CCFL Fixtures	16
CFQ20/2	CFQ20W	Compact Fluorescent, quad, (2) 20W lamps	Mag-STD	2	20	46	Modular CFL and CCFL Fixtures	16
CFQ22/1	CFQ22W	Compact Fluorescent, Quad, (1) 22W lamp	Mag-STD	1	22	24	Modular CFL and CCFL Fixtures	16
CFQ22/2	CFQ22W	Compact Fluorescent, Quad, (2) 22W lamps	Mag-STD	2	22	48	Modular CFL and CCFL Fixtures	16
CFQ22/3	CFQ22W	Compact Fluorescent, Quad, (3) 22W lamps	Mag-STD	3	22	72	Modular CFL and CCFL Fixtures	16
CFQ23/1	CFQ23W	Compact Fluorescent, Quad, (1) 23W lamp	Mag-STD	1	23	27	Modular CFL and CCFL Fixtures	16
CFQ25/1	CFQ25W	Compact Fluorescent, Quad, (1) 25W lamp	Mag-STD	1	25	33	Modular CFL and CCFL Fixtures	16
CFQ25/2	CFQ25W	Compact Fluorescent, Quad, (2) 25W lamps	Mag-STD	2	25	66	Modular CFL and CCFL Fixtures	16
CFQ26/1	CFQ26W	Compact Fluorescent, quad, (1) 26W lamp	Mag-STD	1	26	33	Modular CFL and CCFL Fixtures	16
CFQ26/1-L	CFQ26W	Compact Fluorescent, quad, (1) 26W lamp, BF=0.95	Electronic	1	26	27	Modular CFL and CCFL Fixtures	16
CFQ26/2	CFQ26W	Compact Fluorescent, quad, (2) 26W lamps	Mag-STD	2	26	66	Modular CFL and CCFL Fixtures	16
CFQ26/2-L	CFQ26W	Compact Fluorescent, quad, (2) 26W lamps, BF=0.95	Electronic	2	26	50	Modular CFL and CCFL Fixtures	16
CFQ26/3	CFQ26W	Compact Fluorescent, quad, (3) 26W lamps	Mag-STD	3	26	99	Modular CFL and CCFL Fixtures	16
CFQ26/6-L	CFQ26W	Compact Fluorescent, quad, (6) 26W lamps, BF=0.95	Electronic	6	26	150	Modular CFL and CCFL Fixtures	16
CFQ28/1	CFQ28W	Compact Fluorescent, quad, (1) 28W lamp	Mag-STD	1	28	33	Modular CFL and CCFL Fixtures	16
CFQ28/1-L	CFQ28W	Compact Fluorescent, quad, (1) 28W lamp	Electronic	1	28	31	Modular CFL and CCFL Fixtures	16
CFQ28/2-L	CFQ28W	Compact Fluorescent, quad, (2) 28W lamps	Electronic	2	28	60	Modular CFL and CCFL Fixtures	16

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
CFQ9/1	CFQ9W	Compact Fluorescent, Quad, (1) 9W lamp	Mag-STD	1	9	14	Modular CFL and CCFL Fixtures	16
CFQ9/2	CFQ9W	Compact Fluorescent, Quad, (2) 9W lamps	Mag-STD	2	9	23	Modular CFL and CCFL Fixtures	16
CFT13/1	CFT13W	Compact Fluorescent, twin, (1) 13W lamp	Mag-STD	1	13	17	Modular CFL and CCFL Fixtures	16
CFT13/1-L	CFT13W	Compact Fluorescent, twin, (1) 13W lamp	Electronic	1	13	15	Modular CFL and CCFL Fixtures	16
CFT13/2	CFT13W	Compact Fluorescent, twin, (2) 13W lamps	Mag-STD	2	13	31	Modular CFL and CCFL Fixtures	16
CFT13/2-L	CFT13W	Compact Fluorescent, twin, (2) 13W lamps	Electronic	2	13	28	Modular CFL and CCFL Fixtures	16
CFT13/3	CFT13W	Compact Fluorescent, twin, (3) 13 W lamps	Mag-STD	3	13	48	Modular CFL and CCFL Fixtures	16
CFT18/1	CFT18W	Compact Fluorescent, Long twin., (1) 18W lamp	Mag-STD	1	18	24	Modular CFL and CCFL Fixtures	16
CFT18/1-L	CFT18W	Compact Fluorescent, twin, (1) 18W lamp	Electronic	1	18	20	Modular CFL and CCFL Fixtures	16
CFT18/2	CFT18W	Compact Fluorescent, twin, (2) 18 W lamps	Mag-STD	2	18	38	Modular CFL and CCFL Fixtures	16
CFT22/1	CFT22W	Compact Fluorescent, twin, (1) 22W lamp	Mag-STD	1	22	27	Modular CFL and CCFL Fixtures	16
CFT22/2	CFT22W	Compact Fluorescent, twin, (2) 22W lamps	Mag-STD	2	22	54	Modular CFL and CCFL Fixtures	16
CFT22/4	CFT22W	Compact Fluorescent, twin, (4) 22W lamps	Mag-STD	4	22	108	Modular CFL and CCFL Fixtures	16
CFT24/1	CFT24W	Compact Fluorescent, long twin, (1) 24W lamp	Mag-STD	1	24	32	Modular CFL and CCFL Fixtures	16
CFT26/1	CFT26W	Compact Fluorescent, twin, (1) 26W lamp	Mag-STD	1	26	32	Modular CFL and CCFL Fixtures	16
CFT26/1-L	CFT26W	Compact Fluorescent, twin, (1) 26W lamp	Electronic	1	26	27	Modular CFL and CCFL Fixtures	16
CFT26/2-L	CFT26W	Compact Fluorescent, twin, (2) 26W lamps	Electronic	2	26	51	Modular CFL and CCFL Fixtures	16
CFT28/1	CFT28W	Compact Fluorescent, twin, (1) 28W lamp	Mag-STD	1	28	33	Modular CFL and CCFL Fixtures	16
CFT28/2	CFT28W	Compact Fluorescent, twin, (2) 28W lamps	Mag-STD	2	28	66	Modular CFL and CCFL Fixtures	16
CFT32/1-L	CFM32W	Compact Fluorescent, twin or multi, (1) 32W lamp	Electronic	1	32	34	Modular CFL and CCFL Fixtures	16
CFT32/2-L	CFM32W	Compact Fluorescent, twin or multi, (2) 32W lamps	Electronic	2	32	62	Modular CFL and CCFL Fixtures	16
CFT32/6-L	CFM32W	Compact Fluorescent, twin or multi, (2) 32W lamps	Electronic	6	32	186	Modular CFL and CCFL Fixtures	16
CFT36/1	CFT36W	Compact Fluorescent, long twin, (1) 36W lamp	Mag-STD	1	36	51	Modular CFL and CCFL Fixtures	16
CFT40/1	CFT40W	Compact Fluorescent, long twin, (1) 40W lamp	Mag-STD	1	40	46	Modular CFL and CCFL Fixtures	16
CFT40/1-L	CFT40W	Compact Fluorescent, long twin, (1) 40W lamp	Electronic	1	40	43	Modular CFL and CCFL Fixtures	16
CFT40/2	CFT40W	Compact Fluorescent, long twin, (2) 40W lamps	Mag-STD	2	40	85	Modular CFL and CCFL Fixtures	16
CFT40/2-L	CFT40W	Compact Fluorescent, long twin, (2) 40W lamps	Electronic	2	40	72	Modular CFL and CCFL Fixtures	16
CFT40/3	CFT40W	Compact Fluorescent, long twin, (3) 40 W lamps	Mag-STD	3	40	133	Modular CFL and CCFL Fixtures	16
CFT40/3-L	CFT40W	Compact Fluorescent, long twin, (3) 40W lamps	Electronic	3	40	105	Modular CFL and CCFL Fixtures	16
CFT40/5-L	CFT40W	Compact Fluorescent, long twin, (5) 40W lamps	Electronic	5	40	177	Modular CFL and CCFL Fixtures	16

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
CFT5/1	CFT5W	Compact Fluorescent, twin, (1) 5W lamp	Mag-STD	1	5	9	Modular CFL and CCFL Fixtures	16
CFT5/2	CFT5W	Compact Fluorescent, long twin, (2) 5W lamps	Mag-STD	2	5	18	Modular CFL and CCFL Fixtures	16
CFT50/1-L	CFT50W	Compact Fluorescent, long twin, (1) 50W lamp	Electronic	1	50	54	Modular CFL and CCFL Fixtures	16
CFT50/2-L	CFT50W	Compact Fluorescent, long twin, (2) 50W lamps	Electronic	1	50	108	Modular CFL and CCFL Fixtures	16
CFT55/1-L	CFT55W	Compact Fluorescent, long twin, (1) 55W lamp	Electronic	1	55	58	Modular CFL and CCFL Fixtures	16
CFT55/2-L	CFT55W	Compact Fluorescent, long twin, (2) 55W lamps	Electronic	2	55	108	Modular CFL and CCFL Fixtures	16
CFT55/3-L	CFT55W	Compact Fluorescent, long twin, (3) 55W lamps	Electronic	3	55	168	Modular CFL and CCFL Fixtures	16
CFT55/4-L	CFT55W	Compact Fluorescent, long twin, (4) 55W lamps	Electronic	4	55	220	Modular CFL and CCFL Fixtures	16
CFT80/1-L	CFT80W	Compact Fluorescent, long twin, (1) 80W lamp	Electronic	1	80	90	Modular CFL and CCFL Fixtures	16
CFT7/1	CFT7W	Compact Fluorescent, twin, (1) 7W lamp	Mag-STD	1	7	10	Modular CFL and CCFL Fixtures	16
CFT7/2	CFT7W	Compact Fluorescent, twin, (2) 7W lamps	Mag-STD	2	7	21	Modular CFL and CCFL Fixtures	16
CFT9/1	CFT9W	Compact Fluorescent, twin, (1) 9W lamp	Mag-STD	1	9	12	Modular CFL and CCFL Fixtures	16
CFT9/2	CFT9W	Compact Fluorescent, twin, (2) 9W lamps	Mag-STD	2	9	23	Modular CFL and CCFL Fixtures	16
CFT9/3	CFT9W	Compact Fluorescent, twin, (3) 9W lamps	Mag-STD	3	9	34	Modular CFL and CCFL Fixtures	16
ECF		EXIT Sign Fixtures						
ECF5/1	CFT5W	EXIT Compact Fluorescent, (1) 5W lamp	Mag-STD	1	5	9	Modular CFL and CCFL Fixtures	16
ECF5/2	CFT5W	EXIT Compact Fluorescent, (2) 5W lamps	Mag-STD	2	5	20	Modular CFL and CCFL Fixtures	16
ECF6/1	CFT6W	EXIT Compact Fluorescent, (1) 6W lamp	Mag-STD	1	6	13	Modular CFL and CCFL Fixtures	16
ECF6/2	CFT6W	EXIT Compact Fluorescent, (2) 6W lamps, (2) ballasts	Mag-STD	2	6	26	Modular CFL and CCFL Fixtures	16
ECF7/1	CFT7W	EXIT Compact Fluorescent, (1) 7W lamp	Mag-STD	1	7	10	Modular CFL and CCFL Fixtures	16
ECF7/2	CFT7W	EXIT Compact Fluorescent, (2) 7W lamps	Mag-STD	2	7	21	Modular CFL and CCFL Fixtures	16
ECF9/1	CFT9W	EXIT Compact Fluorescent, (1) 9W lamp	Mag-STD	1	9	12	Modular CFL and CCFL Fixtures	16
ECF9/2	CFT9W	EXIT Compact Fluorescent, (2) 9W lamps	Mag-STD	2	9	20	Modular CFL and CCFL Fixtures	16
EF2/2	F2T1	EXIT Sub-miniature T-1 Fluorescent, (2) lamps	Electronic	2	2	5	Modular CFL and CCFL Fixtures	16
EF6/1	F6T5	EXIT Miniature Bi-pin Fluorescent, (1) 6W lamp, (1) ballast	Mag-STD	1	6	9	Modular CFL and CCFL Fixtures	16
EF6/2	F6T5	EXIT Miniature Bi-pin Fluorescent, (2) 6W lamps, (2) ballasts	Mag-STD	2	6	18	Modular CFL and CCFL Fixtures	16
EF8/1	F8T5	EXIT T5 Fluorescent, (1) 8W lamp	Mag-STD	1	8	12	Modular CFL and CCFL Fixtures	16
EF8/2	F8T5	EXIT T5 Fluorescent, (2) 8W lamps	Mag-STD	2	8	24	Modular CFL and CCFL Fixtures	16

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
EI10/2	I10	EXIT Incandescent, (2) 10W lamps		2	10	20	Baseline	0
EI15/1	I15	EXIT Incandescent, (1) 15W lamp		1	15	15	Baseline	0
EI15/2	I15	EXIT Incandescent, (2) 15W lamps		2	15	30	Baseline	0
EI20/1	I20	EXIT Incandescent, (1) 20W lamp		1	20	20	Baseline	0
EI20/2	I20	EXIT Incandescent, (2) 20W lamps		2	20	40	Baseline	0
EI25/1	I25	EXIT Incandescent, (1) 25W lamp		1	25	25	Baseline	0
EI25/2	I25	EXIT Incandescent, (2) 25W lamps		2	25	50	Baseline	0
EI34/1	I34	EXIT Incandescent, (1) 34W lamp		1	34	34	Baseline	0
EI34/2	I34	EXIT Incandescent, (2) 34W lamps		2	34	68	Baseline	0
EI40/1	I40	EXIT Incandescent, (1) 40W lamp		1	40	40	Baseline	0
EI40/2	I40	EXIT Incandescent, (2) 40W lamps		2	40	80	Baseline	0
EI5/1	I5	EXIT Incandescent, (1) 5W lamp		1	5	5	Baseline	0
EI5/2	I5	EXIT Incandescent, (2) 5W lamps		2	5	10	Baseline	0
EI50/2	I50	EXIT Incandescent, (2) 50W lamps		2	50	100	Baseline	0
EI6/1	6S6	EXIT Incandescent, (1) 6 W lamp		1	6	6	Baseline	0
EI6/2	6S6	EXIT Incandescent, (2) 6 W lamps		2	6	12	Baseline	0
EI7.5/1	I7.5	EXIT Tungsten, (1) 7.5 W lamp		1	7.5	8	Baseline	0
EI7.5/2	I7.5	EXIT Tungsten, (2) 7.5 W lamps		2	7.5	15	Baseline	0
ELED2/1	LED2W	EXIT Light-Emitting Diode, (1) 2W lamp, Single Sided		1	2	6	Light-Emitting Diode (LED)	15
ELED2/2	LED2W	EXIT Light-Emitting Diode, (2) 2W lamps, Dual Sided		2	2	9	Light-Emitting Diode (LED)	15
ELED3	LED3W	EXIT Light-Emitting Diode, (1) 3W lamp, Single Sided		1	3	3	Light-Emitting Diode (LED)	15
EP	P0W	EXIT Photoluminescent, 0W		0	0	0	Light-Emitting Diode (LED)	15
F		Linear Fluorescent Fixtures						
FT8		T8 Linear Fluorescent Systems						
F1.51LS	F15T8	Fluorescent, (1) 18" T-8 lamp	Mag-STD	1	15	19	Linear Fluorescent	15
F1.52LS	F15T8	Fluorescent, (2) 18" T-8 lamps	Mag-STD	2	15	36	Linear Fluorescent	15
F21ILL	F17T8	Fluorescent, (1) 24", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	18	Linear Fluorescent	15
F21ILL/T2	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	17	Linear Fluorescent	15
F21ILL/T2-R	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	17	15	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F21ILL/T3	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	16	Linear Fluorescent	15
F21ILL/T3-R	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 3-lamp IS Ballast, RLO (BF< 0.85)	Electronic	1	17	14	Linear Fluorescent	15
F21ILL/T4	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	15	Linear Fluorescent	15
F21ILL/T4-R	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 4-lamp IS Ballast, RLO (BF< 0.85)	Electronic	1	17	13	Linear Fluorescent	15
F21ILL-R	F17T8	Fluorescent, (1) 24", T-8 lamp, Instant Start Ballast, RLO (BF< 0.85)	Electronic	1	17	17	Linear Fluorescent	15
F21ILU	F17T8	Fluorescent, (1) 24", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	17	17	Linear Fluorescent	15
F21ILU-R	F17T8	Fluorescent, (1) 24", T-8 lamp, Instant Start Ballast, RLO (BF< 0.85)	Prem. Elec.	1	17	15	Linear Fluorescent	15
F21ILU-V	F17T8	Fluorescent, (1) 24", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	1	17	22	Linear Fluorescent	15
F21LL	F17T8	Fluorescent, (1) 24", T-8 lamp, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	16	Linear Fluorescent	15
F21LL/T2	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 2-Lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	16	Linear Fluorescent	15
F21LL/T3	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 3-Lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	17	Linear Fluorescent	15
F21LL/T4	F17T8	Fluorescent, (1) 24", T-8 lamp, Tandem 4-Lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	17	17	Linear Fluorescent	15
F21LL-R	F17T8	Fluorescent, (1) 24", T-8 lamp, Rapid Start Ballast, RLO (BF< 0.85)	Electronic	1	17	15	Linear Fluorescent	15
F21SL	F17T8	Fluorescent, (1) 24", T-8 lamp, Standard Ballast	Mag-STD	1	17	24	Linear Fluorescent	15
F22ILL	F17T8	Fluorescent, (2) 24", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	17	33	Linear Fluorescent	15
F22ILL/T4	F17T8	Fluorescent, (2) 24", T-8 lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	17	30	Linear Fluorescent	15
F22ILL/T4-R	F17T8	Fluorescent, (2) 24", T-8 lamps, Tandem 4-lamp IS Ballast, RLO (BF<.85)	Electronic	2	17	27	Linear Fluorescent	15
F22ILL-R	F17T8	Fluorescent, (2) 24", T-8 lamps, Instant Start Ballast, RLO (BF< 0.85)	Electronic	2	17	30	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F22ILU	F17T8	Fluorescent, (2) 24", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	17	30	Linear Fluorescent	15
F22ILU/T4-R	F17T8	Fluorescent, (2) 24", T-8 lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	17	26	Linear Fluorescent	15
F22ILU-R	F17T8	Fluorescent, (2) 24", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	2	17	27	Linear Fluorescent	15
F22ILU-V	F17T8	Fluorescent, (2) 24", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	2	17	41	Linear Fluorescent	15
F22LL	F17T8	Fluorescent, (2) 24", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	17	31	Linear Fluorescent	15
F22LL/T4	F17T8	Fluorescent, (2) 24", T-8 lamps, Tandem 4-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	17	34	Linear Fluorescent	15
F22LL-R	F17T8	Fluorescent, (2) 24", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	2	17	28	Linear Fluorescent	15
F23ILL	F17T8	Fluorescent, (3) 24", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	17	47	Linear Fluorescent	15
F23ILL-H	F17T8	Fluorescent, (3) 24", T-8 lamps, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	3	17	51	Linear Fluorescent	15
F23ILL-R	F17T8	Fluorescent, (3) 24", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	3	17	41	Linear Fluorescent	15
F23ILU	F17T8	Fluorescent, (3) 24", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	17	45	Linear Fluorescent	15
F23ILU-R	F17T8	Fluorescent, (3) 24", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	3	17	40	Linear Fluorescent	15
F23ILU-V	F17T8	Fluorescent, (3) 24", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	3	17	59	Linear Fluorescent	15
F23LL	F17T8	Fluorescent, (3) 24", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	17	52	Linear Fluorescent	15
F23LL-R	F17T8	Fluorescent, (3) 24", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	3	17	41	Linear Fluorescent	15
F24ILL	F17T8	Fluorescent, (4) 24", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	17	59	Linear Fluorescent	15
F24ILL-R	F17T8	Fluorescent, (4) 24", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	4	17	53	Linear Fluorescent	15
F24ILU	F17T8	Fluorescent, (4) 24", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	4	17	57	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F24ILU-R	F17T8	Fluorescent, (4) 24", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	4	17	52	Linear Fluorescent	15
F24LL	F17T8	Fluorescent, (4) 24", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	17	68	Linear Fluorescent	15
F24LL-R	F17T8	Fluorescent, (4) 24", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	4	17	57	Linear Fluorescent	15
F31ILL	F25T8	Fluorescent, (1) 36", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	26	Linear Fluorescent	15
F31ILL/T2	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	23	Linear Fluorescent	15
F31ILL/T2-H	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 3-lamp IS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	1	25	26	Linear Fluorescent	15
F31ILL/T2-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	25	21	Linear Fluorescent	15
F31ILL/T3	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	23	Linear Fluorescent	15
F31ILL/T3-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	25	20	Linear Fluorescent	15
F31ILL/T4	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	22	Linear Fluorescent	15
F31ILL/T4-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	25	20	Linear Fluorescent	15
F31ILL-H	F25T8	Fluorescent, (1) 36", T-8 lamp, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	1	25	28	Linear Fluorescent	15
F31ILL-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Instant Start Ballast, RLO (BF < 0.85)	Electronic	1	25	22	Linear Fluorescent	15
F31ILU	F25T8	Fluorescent, (1) 36", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	25	23	Linear Fluorescent	15
F31ILU/T2	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	25	22	Linear Fluorescent	15
F31ILU/T2-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	20	Linear Fluorescent	15
F31ILU/T3-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	19	Linear Fluorescent	15
F31ILU/T4-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	19	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F31ILU-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	20	Linear Fluorescent	15
F31LL	F25T8	Fluorescent, (1) 36", T-8 lamp, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	24	Linear Fluorescent	15
F31LL/T2	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 2-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	23	Linear Fluorescent	15
F31LL/T3	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 3-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	24	Linear Fluorescent	15
F31LL/T4	F25T8	Fluorescent, (1) 36", T-8 lamp, Tandem 4-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	25	22	Linear Fluorescent	15
F31LL-H	F25T8	Fluorescent, (1) 36", T-8 lamp, Rapid Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	1	25	26	Linear Fluorescent	15
F31LL-R	F25T8	Fluorescent, (1) 36", T-8 lamp, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	1	25	23	Linear Fluorescent	15
F32ILL	F25T8	Fluorescent, (2) 36", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	25	46	Linear Fluorescent	15
F32ILL/2-R	F25T8	Fluorescent, (2) 36", T-8 lamps, (2) Instant Start Ballasts, RLO (BF < 0.85)	Electronic	2	25	44	Linear Fluorescent	15
F32ILL/T4	F25T8	Fluorescent, (2) 36", T-8 lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	25	44	Linear Fluorescent	15
F32ILL/T4-R	F25T8	Fluorescent, (2) 36", T-8 lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Electronic	2	25	39	Linear Fluorescent	15
F32ILL-H	F25T8	Fluorescent, (2) 36", T-8 lamps, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	2	25	52	Linear Fluorescent	15
F32ILL-R	F25T8	Fluorescent, (2) 36", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	2	25	42	Linear Fluorescent	15
F32ILU	F25T8	Fluorescent, (2) 36", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	25	44	Linear Fluorescent	15
F32ILU/T4-R	F25T8	Fluorescent, (2) 36", T-8 lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	25	39	Linear Fluorescent	15
F32ILU-R	F25T8	Fluorescent, (2) 36", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	2	25	39	Linear Fluorescent	15
F32LL	F25T8	Fluorescent, (2) 36", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	25	46	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F32LL/T4	F25T8	Fluorescent, (2) 36", T-8 lamps, Tandem 4-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	25	45	Linear Fluorescent	15
F32LL-H	F25T8	Fluorescent, (2) 36", T-8 lamps, Rapid Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	2	25	50	Linear Fluorescent	15
F32LL-R	F25T8	Fluorescent, (2) 36", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	2	25	42	Linear Fluorescent	15
F32LL-V	F25T8	Fluorescent, (2) 36", T-8 lamps, Rapid Start Ballast, VHLO (BF > 1.1)	Electronic	2	25	70	Linear Fluorescent	15
F33ILL	F25T8	Fluorescent, (3) 36", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	25	68	Linear Fluorescent	15
F33ILL-R	F25T8	Fluorescent, (3) 36", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	3	25	61	Linear Fluorescent	15
F33ILU	F25T8	Fluorescent, (3) 36", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	25	65	Linear Fluorescent	15
F33ILU-R	F25T8	Fluorescent, (3) 36", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	3	25	58	Linear Fluorescent	15
F33LL	F25T8	Fluorescent, (3) 36", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	25	72	Linear Fluorescent	15
F33LL-R	F25T8	Fluorescent, (3) 36", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	3	25	62	Linear Fluorescent	15
F34ILL	F25T8	Fluorescent, (4) 36", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	25	88	Linear Fluorescent	15
F34ILL/2-R	F25T8	Fluorescent, (4) 36", T-8 lamps, (2) Instant Start Ballasts, RLO (BF < 0.85)	Electronic	4	25	84	Linear Fluorescent	15
F34ILL-R	F25T8	Fluorescent, (4) 36", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	4	25	78	Linear Fluorescent	15
F34ILU	F25T8	Fluorescent, (4) 36", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	4	25	86	Linear Fluorescent	15
F34ILU-R	F25T8	Fluorescent, (4) 36", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	4	25	77	Linear Fluorescent	15
F34LL	F25T8	Fluorescent, (4) 36", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	25	89	Linear Fluorescent	15
F34LL-R	F25T8	Fluorescent, (4) 36", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	4	25	84	Linear Fluorescent	15
F36ILL/2	F25T8	Fluorescent, (6) 36", T-8 lamps, (2) Instant Start Ballasts, NLO (0.85 < BF < 0.95)	Electronic	6	25	135	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F36ILL/2-R	F25T8	Fluorescent, (6) 36", T-8 lamps, (2) Instant Start Ballasts, RLO (BF < 0.85)	Electronic	6	25	121	Linear Fluorescent	15
F41GELL	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	1	30	28	Linear Fluorescent	15
F41GELL-R	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	1	30	24	Linear Fluorescent	15
F41GLL	F32T8	Fluorescent (1) 48" T-8 lamp, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	1	32	30	Linear Fluorescent	15
F41GLL-R	F32T8	Fluorescent (1) 48" T-8 lamp, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	1	32	25	Linear Fluorescent	15
F41GNLL	F32T8-25W	Fluorescent (1) 48" T-8 @ 25W lamp, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	1	25	24	Linear Fluorescent	15
F41GNLL-R	F32T8-25W	Fluorescent (1) 48" T-8 @ 25W lamp, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	1	25	21	Linear Fluorescent	15
F41GRLL	F32T8-28W	Fluorescent (1) 48" T-8 @ 28W lamp, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	1	28	26	Linear Fluorescent	15
F41GRLL-R	F32T8-28W	Fluorescent (1) 48" T-8 @ 28W lamp, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	1	28	22	Linear Fluorescent	15
F41IELL	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	30	29	Linear Fluorescent	15
F41IELL/T2	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	30	28	Linear Fluorescent	15
F41IELL/T3	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	30	27	Linear Fluorescent	15
F41IELL/T4	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	30	27	Linear Fluorescent	15
F41IELL-H	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	1	30	34	Linear Fluorescent	15
F41IELL-R	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Instant Start Ballast, RLO (BF < 0.85)	Electronic	1	30	26	Linear Fluorescent	15
F41IELU	F32T8-30W	Fluorescent, (1) 48", T-8 @ 30W lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	30	27	Linear Fluorescent	15
F41IELU/T2	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	30	26	Linear Fluorescent	15
F41IELU/T2-R	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	30	23	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F41IELU/T3	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	30	26	Linear Fluorescent	15
F41IELU/T3-R	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	30	23	Linear Fluorescent	15
F41IELU/T4	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	30	25	Linear Fluorescent	15
F41IELU/T4-R	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	30	22	Linear Fluorescent	15
F41IELU-H	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Prem. Elec.	1	30	32	Linear Fluorescent	15
F41IELU-R	F32T8-30W	Fluorescent (1) 48" T-8 @ 30W lamp, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	1	30	24	Linear Fluorescent	15
F41ILL	F32T8	Fluorescent, (1) 48", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	31	Linear Fluorescent	15
F41ILL/T2	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	29	Linear Fluorescent	15
F41ILL/T2-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp IS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	1	32	33	Linear Fluorescent	15
F41ILL/T2-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	32	26	Linear Fluorescent	15
F41ILL/T3	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	28	Linear Fluorescent	15
F41ILL/T3-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp IS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	1	32	31	Linear Fluorescent	15
F41ILL/T3-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	32	25	Linear Fluorescent	15
F41ILL/T4	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	28	Linear Fluorescent	15
F41ILL/T4-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	32	25	Linear Fluorescent	15
F41ILL-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	1	32	36	Linear Fluorescent	15
F41ILL-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Instant Start Ballast, RLO (BF < 0.85)	Electronic	1	32	27	Linear Fluorescent	15
F41ILU	F32T8	Fluorescent, (1) 48", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	32	28	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F41ILU/T2	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	32	27	Linear Fluorescent	15
F41ILU/T2-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	32	24	Linear Fluorescent	15
F41ILU/T3	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	32	27	Linear Fluorescent	15
F41ILU/T3-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	32	24	Linear Fluorescent	15
F41ILU/T4	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	32	27	Linear Fluorescent	15
F41ILU/T4-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	32	24	Linear Fluorescent	15
F41ILU-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Prem. Elec.	1	32	35	Linear Fluorescent	15
F41ILU-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	1	32	25	Linear Fluorescent	15
F41INLU	F32T8-25W	Fluorescent, (1), T-8 @ 25W lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	25	23	Linear Fluorescent	15
F41INLU/T3-R	F32T8-25W	Fluorescent, (1) 48", T-8 @ 25W lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	19	Linear Fluorescent	15
F41INLU/T4-R	F32T8-25W	Fluorescent, (1) 48", T-8 @ 25W lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	19	Linear Fluorescent	15
F41INLU-R	F32T8-25W	Fluorescent, (1), T-8 @ 25W lamp, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	1	25	21	Linear Fluorescent	15
F41INLU-V	F32T8-25W	Fluorescent, (1), T-8 @ 25W lamp, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	1	25	32	Linear Fluorescent	15
F41IRLL	F32T8-28W	Fluorescent, (1) 48" T-8 @ 28W lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	28	27	Linear Fluorescent	15
F41IRLL-V	F32T8-28W	Fluorescent, (1) 48" T-8 @ 28W lamp, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	1	28	35	Linear Fluorescent	15
F41IRLU	F32T8-28W	Fluorescent, (1), T-8 @ 28W lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	28	25	Linear Fluorescent	15
F41IRLU/T3-R	F32T8-28W	Fluorescent, (1) 48", T-8 @ 28W lamp, Tandem 3-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	28	21	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F41IRLU/T4-R	F32T8-28W	Fluorescent, (1) 48", T-8 @ 28W lamp, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	1	28	21	Linear Fluorescent	15
F41IRLU-R	F32T8-28W	Fluorescent, (1), T-8 @ 28W lamp, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	1	28	22	Linear Fluorescent	15
F41IRLU-V	F32T8-28W	Fluorescent, (1), T-8 @ 28W lamp, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	1	28	33	Linear Fluorescent	15
F41LE	F32T8	Fluorescent, (1) 48", T-8 lamp	Mag-ES	1	32	35	Linear Fluorescent	15
F41LHL	F48T8/HO	Fluorescent, (1) 48", T-8 HO lamps, (1) Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	44	59	Linear Fluorescent	15
F41LL	F32T8	Fluorescent, (1) 48", T-8 lamp, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	32	Linear Fluorescent	15
F41LL/T2	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 2-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	30	Linear Fluorescent	15
F41LL/T2-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp RS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	1	32	35	Linear Fluorescent	15
F41LL/T2-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 2-lamp RS Ballast, RLO (BF < 0.85)	Electronic	1	32	27	Linear Fluorescent	15
F41LL/T3	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	31	Linear Fluorescent	15
F41LL/T3-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp RS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	1	32	33	Linear Fluorescent	15
F41LL/T3-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 3-lamp RS Ballast, RLO (BF < 0.85)	Electronic	1	32	25	Linear Fluorescent	15
F41LL/T4	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	32	30	Linear Fluorescent	15
F41LL/T4-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Tandem 4-lamp RS Ballast, RLO (BF < 0.85)	Electronic	1	32	26	Linear Fluorescent	15
F41LL-H	F32T8	Fluorescent, (1) 48", T-8 lamp, Rapid Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	1	32	39	Linear Fluorescent	15
F41LL-R	F32T8	Fluorescent, (1) 48", T-8 lamp, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	1	32	27	Linear Fluorescent	15
F42GELL	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	2	30	56	Linear Fluorescent	15
F42GELL-R	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	2	30	43	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F42GLL	F32T8	Fluorescent (2) 48" T-8 lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	2	32	59	Linear Fluorescent	15
F42GLL-R	F32T8	Fluorescent (2) 48" T-8 lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	2	32	47	Linear Fluorescent	15
F42GLL-V	F32T8	Fluorescent, (2) 48" T-8 lamps, Prog. Start or PRS Ballast, VHLO (BF > 1.1)	Electronic	2	32	74	Linear Fluorescent	15
F42GNLL	F32T8-25W	Fluorescent (2) 48" T-8 @ 25W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	2	25	44	Linear Fluorescent	15
F42GNLL-R	F32T8-25W	Fluorescent (2) 48" T-8 @ 25W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	2	25	38	Linear Fluorescent	15
F42GRLL	F32T8-28W	Fluorescent (2) 48" T-8 @ 28W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	2	28	49	Linear Fluorescent	15
F42GRLL-R	F32T8-28W	Fluorescent (2) 48" T-8 @ 28W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	2	28	40	Linear Fluorescent	15
F42IELL	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	30	55	Linear Fluorescent	15
F42IELL/T4	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	30	53	Linear Fluorescent	15
F42IELL/T4-R	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Electronic	2	30	46	Linear Fluorescent	15
F42IELL-H	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	2	30	62	Linear Fluorescent	15
F42IELL-R	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	2	30	49	Linear Fluorescent	15
F42IELU	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	30	52	Linear Fluorescent	15
F42IELU/T4	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	30	51	Linear Fluorescent	15
F42IELU/T4-R	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	30	45	Linear Fluorescent	15
F42IELU-R	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Instant Start, RLO (BF < 0.85)	Prem. Elec.	2	30	45	Linear Fluorescent	15
F42IELU-V	F32T8-30W	Fluorescent (2) 48" T-8 @ 30W lamps, Instant Start, VHLO (BF > 1.1)	Prem. Elec.	2	30	70	Linear Fluorescent	15
F42ILL	F32T8	Fluorescent, (2) 48", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	32	58	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F42ILL/2	F32T8	Fluorescent, (2) 48", T-8 lamps, (2) 1-lamp Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	32	62	Linear Fluorescent	15
F42ILL/2-R	F32T8	Fluorescent, (2) 48" T-8 lamps, (2) 1-lamp Instant Start Ballasts, RLO (BF < 0.85)	Electronic	2	32	54	Linear Fluorescent	15
F42ILL/T4	F32T8	Fluorescent, (2) 48", T-8 lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	32	56	Linear Fluorescent	15
F42ILL/T4-R	F32T8	Fluorescent, (2) 48", T-8 lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Electronic	2	32	49	Linear Fluorescent	15
F42ILL-H	F32T8	Fluorescent, (2) 48", T-8 lamp, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	2	32	66	Linear Fluorescent	15
F42ILL-R	F32T8	Fluorescent, (2) 48", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	2	32	51	Linear Fluorescent	15
F42ILL-V	F32T8	Fluorescent, (2) 48", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	2	32	77	Linear Fluorescent	15
F42ILU	F32T8	Fluorescent, (2) 48", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	32	54	Linear Fluorescent	15
F42ILU/T4	F32T8	Fluorescent, (2) 48", T-8 lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	32	54	Linear Fluorescent	15
F42ILU/T4-R	F32T8	Fluorescent, (2) 48", T-8 lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	32	48	Linear Fluorescent	15
F42ILU-R	F32T8	Fluorescent, (2) 48", T-8 lamps, Instant Start, RLO (BF < 0.85)	Prem. Elec.	2	32	48	Linear Fluorescent	15
F42ILU-V	F32T8	Fluorescent, (2) 48", T-8 lamps, Instant Start, VHLO (BF > 1.1)	Prem. Elec.	2	32	73	Linear Fluorescent	15
F42INLL	F32T8-25W	Fluorescent, (2) 48", T-8 @ 25W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	25	46	Linear Fluorescent	15
F42INLL-V	F32T8-25W	Fluorescent, (2) 48" T-8 @ 25W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	2	25	65	Linear Fluorescent	15
F42INLU	F32T8-25W	Fluorescent, (2), T-8 @ 25W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	25	43	Linear Fluorescent	15
F42INLU/T4-R	F32T8-25W	Fluorescent, (2) 48", T-8 @ 25W lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	25	38	Linear Fluorescent	15
F42INLU-R	F32T8-25W	Fluorescent (2) 48" T8 @ 25W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	2	25	38	Linear Fluorescent	15
F42INLU-V	F32T8-25W	Fluorescent, (2) 48", T-8 @ 25W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	2	25	60	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F42IRLL	F32T8-28W	Fluorescent, (2) 48", T-8 @ 28W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	28	52	Linear Fluorescent	15
F42IRLL-V	F32T8-28W	Fluorescent, (2) 48" T-8 @ 28W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	2	28	68	Linear Fluorescent	15
F42IRLU	F32T8-28W	Fluorescent, (2), T-8 @ 28W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	28	48	Linear Fluorescent	15
F42IRLU/T4-R	F32T8-28W	Fluorescent, (2) 48", T-8 @ 28W lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	28	42	Linear Fluorescent	15
F42IRLU-R	F32T8-28W	Fluorescent, (2) 48", T-8 @ 28W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	2	28	43	Linear Fluorescent	15
F42IRLU-V	F32T8-28W	Fluorescent, (2) 48", T-8 @ 28W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	2	28	65	Linear Fluorescent	15
F42LE	F32T8	Fluorescent, (2) 48", T-8 lamp	Mag-ES	2	32	71	Linear Fluorescent	15
F42LHL	F48T8/HO	Fluorescent, (2) 48", T-8 HO lamps, (1) Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	44	98	Linear Fluorescent	15
F42LL	F32T8	Fluorescent, (2) 48", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	32	60	Linear Fluorescent	15
F42LL/2	F32T8	Fluorescent, (2) 48", T-8 lamps, (2) 1-lamp Rapid Start Ballasts, NLO (0.85 < BF < 0.95)	Electronic	2	32	64	Linear Fluorescent	15
F42LL/T4	F32T8	Fluorescent, (2) 48", T-8 lamps, Tandem 4-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	32	59	Linear Fluorescent	15
F42LL/T4-R	F32T8	Fluorescent, (2) 48", T-8 lamp, Tandem 4-lamp RS Ballast, RLO (BF < 0.85)	Electronic	2	32	53	Linear Fluorescent	15
F42LL-H	F32T8	Fluorescent, (2) 48", T-8 lamp, Rapid Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	2	32	70	Linear Fluorescent	15
F42LL-R	F32T8	Fluorescent, (2) 48", T-8 lamp, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	2	32	54	Linear Fluorescent	15
F42LL-V	F32T8	Fluorescent, (2) 48", T-8 lamp, Rapid Start Ballast, VHLO (BF > 1.1)	Electronic	2	32	85	Linear Fluorescent	15
F43GELL	F32T8-30W	Fluorescent (3) 48" T-8 @ 30W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	3	30	83	Linear Fluorescent	15
F43GELL-R	F32T8-30W	Fluorescent (3) 48" T-8 @ 30W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	3	30	67	Linear Fluorescent	15
F43GLL	F32T8	Fluorescent (3) 48" T-8 lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	3	32	88	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F43GLL-R	F32T8	Fluorescent (3) 48" T-8 lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	3	32	72	Linear Fluorescent	15
F43GLL-V	F32T8	Fluorescent, (3) 48" T-8 lamps, Prog. Start or PRS Ballast, VHLO (BF > 1.1)	Electronic	3	32	108	Linear Fluorescent	15
F43GNLL	F32T8-25W	Fluorescent (3) 48" T-8 @ 25W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	3	25	66	Linear Fluorescent	15
F43GNLL-R	F32T8-25W	Fluorescent, (3) 48" T-8 @ 25W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	3	25	56	Linear Fluorescent	15
F43GRLL	F32T8-28W	Fluorescent (3) 48" T-8 @ 28W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	3	28	75	Linear Fluorescent	15
F43GRLL-R	F32T8-28W	Fluorescent, (3) 48" T-8 @ 28W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	3	28	62	Linear Fluorescent	15
F43IELL	F32T8-30W	Fluorescent (3) 48" T-8 @ 30 W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	30	81	Linear Fluorescent	15
F43IELL/2	F32T8-30W	Fluorescent (3) 48" T-8 @ 30 W lamps, (1) 1-lamp and (1) 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	30	84	Linear Fluorescent	15
F43IELL/2-H	F32T8-30W	Fluorescent (3) 48" T-8 @ 30 W lamps, (1) 2-lamp, (1) 3-lamp IS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	3	30	96	Linear Fluorescent	15
F43IELL/2-R	F32T8-30W	Fluorescent (3) 48" T-8 @ 30 W lamps, (1) 1-lamp and (1) 2-lamp IS Ballast, RLO (BF < 0.85)	Electronic	3	30	75	Linear Fluorescent	15
F43IELL-H	F32T8-30W	Fluorescent (3) 48" T-8 @ 30 W lamps, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	3	30	86	Linear Fluorescent	15
F43IELL-R	F32T8-30W	Fluorescent (3) 48" T-8 @ 30 W lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	3	30	71	Linear Fluorescent	15
F43IELU	F32T8-30W	Fluorescent (3) 48" T-8 @ 30W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	30	77	Linear Fluorescent	15
F43IELU-R	F32T8-30W	Fluorescent (3) 48" T-8 @ 30W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	3	30	68	Linear Fluorescent	15
F43IELU-V	F32T8-30W	Fluorescent (3) 48" T-8 @ 30W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	3	30	104	Linear Fluorescent	15
F43ILL	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	32	85	Linear Fluorescent	15
F43ILL/2	F32T8	Fluorescent, (3) 48" T-8 lamps, (2) Instant Start Ballasts, NLO (0.85 < BF < 0.95)	Electronic	3	32	89	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F43ILL/2-H	F32T8	Fluorescent (3) 48" T-8 lamps, (1) 2-lamp and (1) 3-lamp IS Ballast, 1 lead capped, HLO (0.95 < BF < 1.1)	Electronic	3	32	102	Linear Fluorescent	15
F43ILL/2-R	F32T8	Fluorescent, (3) 48" T-8 lamps, (1) 1-lamp and (1) 2-lamp IS Ballast, RLO (BF < 0.85)	Electronic	3	32	78	Linear Fluorescent	15
F43ILL-H	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, HLO (0.95 < BF < 1.1)	Electronic	3	32	93	Linear Fluorescent	15
F43ILL-R	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	3	32	76	Linear Fluorescent	15
F43ILL-V	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	3	32	112	Linear Fluorescent	15
F43ILU	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	32	81	Linear Fluorescent	15
F43ILU-R	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	3	32	72	Linear Fluorescent	15
F43ILU-V	F32T8	Fluorescent, (3) 48" T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	3	32	108	Linear Fluorescent	15
F43INLL	F32T8-25W	Fluorescent, (3) 48" T-8 @ 25W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	25	66	Linear Fluorescent	15
F43INLL-V	F32T8-25W	Fluorescent, (3) 48" T-8 @ 25W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	3	25	95	Linear Fluorescent	15
F43INLU	F32T8-25W	Fluorescent, (3) 48" T-8 lamps @ 25W, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	25	64	Linear Fluorescent	15
F43INLU-R	F32T8-25W	Fluorescent, (3) 48" T-8 @ 25W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	3	25	57	Linear Fluorescent	15
F43INLU-V	F32T8-25W	Fluorescent, (3) 48" T-8 @ 25W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	3	25	93	Linear Fluorescent	15
F43IRLL	F32T8-28W	Fluorescent, (3) 48" T-8 @ 28W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	28	76	Linear Fluorescent	15
F43IRLL-H	F32T8-28W	Fluorescent, (3) 48" T-8 @ 28W lamps, Instant Start Ballast, HLO (.95 < BF < 1.1)	Electronic	3	28	82	Linear Fluorescent	15
F43IRLL-V	F32T8-28W	Fluorescent, (3) 48" T-8 @ 28W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	3	28	97	Linear Fluorescent	15
F43IRLU	F32T8-28W	Fluorescent, (3) 48" T-8 lamps @ 28W, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	28	72	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F43IRLU-R	F32T8-28W	Fluorescent, (3) 48" T-8 @ 28W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	3	28	63	Linear Fluorescent	15
F43IRLU-V	F32T8-28W	Fluorescent, (3) 48" T-8 @ 28W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	3	28	96	Linear Fluorescent	15
F43LE	F32T8	Fluorescent, (3) 48", T-8 lamp	Mag-ES	3	32	110	Linear Fluorescent	15
F43LHL	F48T8/HO	Fluorescent, (3) 48", T-8 HO lamps, (2) Instant Start Ballasts, NLO (0.85 < BF < 0.95)	Electronic	3	44	141	Linear Fluorescent	15
F43LL	F32T8	Fluorescent, (3) 48", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	32	93	Linear Fluorescent	15
F43LL/2	F32T8	Fluorescent, (3) 48", T-8 lamps, (1) 1-lamp and (1) 2-lamp RS Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	32	92	Linear Fluorescent	15
F43LL-H	F32T8	Fluorescent, (3) 48", T-8 lamp, Rapid Start Ballast, HLO (.95 < BF < 1.1)	Electronic	3	32	98	Linear Fluorescent	15
F43LL-R	F32T8	Fluorescent, (3) 48", T-8 lamp, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	3	32	76	Linear Fluorescent	15
F44GELL	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	4	30	109	Linear Fluorescent	15
F44GELL-R	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	4	30	86	Linear Fluorescent	15
F44GLL	F32T8	Fluorescent (4) 48" T-8 lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	4	32	115	Linear Fluorescent	15
F44GLL-R	F32T8	Fluorescent (4) 48" T-8 lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	4	32	92	Linear Fluorescent	15
F44GLL-V	F32T8	Fluorescent, (4) 48" T-8 lamps, Prog. Start or PRS Ballast, VHLO (BF > 1.1)	Electronic	4	32	144	Linear Fluorescent	15
F44GNLL	F32T8-25W	Fluorescent (4) 48" T-8 @ 25W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	4	25	85	Linear Fluorescent	15
F44GNLL-R	F32T8-25W	Fluorescent (4) 48" T-8 @ 25W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	4	25	73	Linear Fluorescent	15
F44GRLL	F32T8-28W	Fluorescent (4) 48" T-8 @ 28W lamps, Prog. Start or PRS Ballast, NLO (0.85 < BF < 0.95)	PRS Elec.	4	28	99	Linear Fluorescent	15
F44GRLL-R	F32T8-28W	Fluorescent (4) 48" T-8 @ 28W lamps, Prog. Start or PRS Ballast, RLO (BF < 0.85)	PRS Elec.	4	28	80	Linear Fluorescent	15
F44IELL	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	30	106	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F44IELL/2	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, (2) 2-lamp IS Ballasts, NLO (0.85 < BF < 0.95)	Electronic	4	30	110	Linear Fluorescent	15
F44IELL/2-H	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, (2) 3-lamp IS Ballasts, 1 lead capped, HLO (.95 < BF < 1.1)	Electronic	4	30	124	Linear Fluorescent	15
F44IELL/2-R	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, (2) 2-lamp IS Ballasts, RLO (BF < 0.85)	Electronic	4	30	98	Linear Fluorescent	15
F44IELL-R	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	4	30	92	Linear Fluorescent	15
F44IELU	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	4	30	101	Linear Fluorescent	15
F44IELU-R	F32T8-30W	Fluorescent (4) 48" T-8 @ 30W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	4	30	89	Linear Fluorescent	15
F44ILL	F32T8	Fluorescent, (4) 48", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	32	112	Linear Fluorescent	15
F44ILL/2	F32T8	Fluorescent, (4) 48", T-8 lamps, (2) 2-lamp IS Ballasts, NLO (0.85 < BF < 0.95)	Electronic	4	32	116	Linear Fluorescent	15
F44ILL/2-H	F32T8	Fluorescent, (4) 48", T-8 lamps, (2) 3-lamp IS Ballasts, 1 lead capped, HLO (.95 < BF < 1.1)	Electronic	4	32	132	Linear Fluorescent	15
F44ILL/2-R	F32T8	Fluorescent, (4) 48", T-8 lamps, (2) 2-lamp IS Ballasts, RLO (BF < 0.85)	Electronic	4	32	102	Linear Fluorescent	15
F44ILL/2-V	F32T8	Fluorescent, (4) 48", T-8 lamps, (2) 2-lamp IS Ballasts, VHLO (BF > 1.1)	Electronic	4	32	154	Linear Fluorescent	15
F44ILL-R	F32T8	Fluorescent, (4) 48", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	4	32	98	Linear Fluorescent	15
F44ILL-V	F32T8	Fluorescent, (4) 48", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	4	32	151	Linear Fluorescent	15
F44ILU	F32T8	Fluorescent, (4) 48", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	4	32	107	Linear Fluorescent	15
F44ILU-R	F32T8	Fluorescent, (4) 48", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	4	32	95	Linear Fluorescent	15
F44ILU-V	F32T8	Fluorescent, (4) 48", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	4	32	146	Linear Fluorescent	15
F44INLL	F32T8-25W	Fluorescent, (4) 48", T-8 @ 25W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	25	86	Linear Fluorescent	15
F44INLU	F32T8-25W	Fluorescent, (4) 48", T-8 @ 25W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	4	25	85	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F44INLU-R	F32T8-25W	Fluorescent, (4) 48" T-8 @ 25W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	4	25	75	Linear Fluorescent	15
F44INLU-V	F32T8-25W	Fluorescent, (4) 48" T-8 @ 25W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	4	25	122	Linear Fluorescent	15
F44IRLL	F32T8-28W	Fluorescent, (4) 48", T-8 @ 28W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	28	99	Linear Fluorescent	15
F44IRLL-R	F32T8-28W	Fluorescent, (4) 48", T-8 @ 28W lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	4	28	85	Linear Fluorescent	15
F44IRLU	F32T8-28W	Fluorescent, (4) 48", T-8 @ 28W lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	4	28	94	Linear Fluorescent	15
F44IRLU-R	F32T8-28W	Fluorescent, (4) 48" T-8 @ 28W lamps, Instant Start Ballast, RLO (BF < 0.85)	Prem. Elec.	4	28	83	Linear Fluorescent	15
F44IRLU-V	F32T8-28W	Fluorescent, (4) 48" T-8 @ 28W lamps, Instant Start Ballast, VHLO (BF > 1.1)	Prem. Elec.	4	28	131	Linear Fluorescent	15
F44LE	F32T8	Fluorescent, (4) 48", T-8 lamps	Mag-ES	4	32	142	Linear Fluorescent	15
F44LHL	F48T8/HO	Fluorescent, (4) 48", T-8 HO lamps, (2) Instant Start Ballasts, NLO (0.85 < BF < 0.95)	Electronic	4	44	168	Linear Fluorescent	15
F44LL	F32T8	Fluorescent, (4) 48", T-8 lamps, Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	32	118	Linear Fluorescent	15
F44LL/2	F32T8	Fluorescent, (4) 48", T-8 lamps, (2) 2-lamp Rapid Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	32	120	Linear Fluorescent	15
F44LL-R	F32T8	Fluorescent, (4) 48", T-8 lamps, Rapid Start Ballast, RLO (BF < 0.85)	Electronic	4	32	105	Linear Fluorescent	15
F45ILL/2	F32T8	Fluorescent, (5) 48", T-8 lamps, (1) 3-lamp and (1) 2-lamp IS ballast, NLO (0.85 < BF < 0.95)	Electronic	5	32	143	Linear Fluorescent	15
F45GLL/2-V	F32T8	Fluorescent, (5) 48", T-8 lamps, (1) 3-lamp and (1) 2-lamp Prog. Start Ballast, VHLO (BF > 1.1)	Electronic	5	32	182	Linear Fluorescent	15
F46GLL/2	F32T8	Fluorescent (6) 48" T-8 lamps, (2) Prog. Start or PRS Ballasts, NLO (0.85 < BF < 0.95)	PRS Elec.	6	32	175	Linear Fluorescent	15
F46GLL/2-R	F32T8	Fluorescent (6) 48" T-8 lamps, (2) Prog. Start or PRS Ballasts, RLO (BF < 0.85)	PRS Elec.	6	32	142	Linear Fluorescent	15
F46GLL/2-V	F32T8	Fluorescent (6) 48" T-8 lamps, (2) Prog. Start or PRS Ballasts, VHLO (BF > 1.1)	PRS Elec.	6	32	217	Linear Fluorescent	15
F46IELU/2	F32T8-30W	Fluorescent (6) 48" T-8 @ 30W lamps, (2) IS Ballasts, NLO (0.85 < BF < 0.95)	Prem. Elec.	6	30	154	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F46IELU/2-R	F32T8-30W	Fluorescent (6) 48" T-8 @ 30W lamps, (2) IS Ballasts, RLO (BF < 0.85)	Prem. Elec.	6	30	135	Linear Fluorescent	15
F46ILL/2	F32T8	Fluorescent, (6) 48", T-8 lamps, (2) IS Ballasts, NLO (0.85 < BF < 0.95)	Electronic	6	32	170	Linear Fluorescent	15
F46ILL/2-R	F32T8	Fluorescent, (6) 48", T-8 lamps, (2) IS Ballasts, RLO (BF < 0.85)	Electronic	6	32	151	Linear Fluorescent	15
F46ILL/2-V	F32T8	Fluorescent (6) 48" T-8 lamps, (2) IS Ballasts, VHLO (BF > 1.1)	Electronic	6	32	226	Linear Fluorescent	15
F46ILU/2	F32T8	Fluorescent (6) 48" T-8 lamps, (2) IS Ballasts, NLO (0.85 < BF < 0.95)	Prem. Elec.	6	32	162	Linear Fluorescent	15
F46ILU/2-R	F32T8	Fluorescent (6) 48" T-8 lamps, (2) IS Ballasts, RLO (BF < 0.85)	Prem. Elec.	6	32	144	Linear Fluorescent	15
F46ILU/2-V	F32T8	Fluorescent (6) 48" T-8 lamps, (2) IS Ballasts, VHLO (BF > 1.1)	Prem. Elec.	6	32	218	Linear Fluorescent	15
F46INLU/2-R	F32T8-25W	Fluorescent (6) 48" T-8 @ 25W lamps, (2) IS Ballasts, RLO (BF < 0.85)	Prem. Elec.	6	25	114	Linear Fluorescent	15
F46INLU/2-V	F32T8-25W	Fluorescent (6) 48" T-8 @ 25W lamps, (2) IS Ballasts, VHLO (BF > 1.1)	Prem. Elec.	6	25	184	Linear Fluorescent	15
F46IRLU/2-R	F32T8-28W	Fluorescent (6) 48" T-8 @ 28W lamps, (2) IS Ballasts, RLO (BF < 0.85)	Prem. Elec.	6	28	126	Linear Fluorescent	15
F46IRLU/2-V	F32T8-28W	Fluorescent (6) 48" T-8 @ 28W lamps, (2) IS Ballasts, VHLO (BF > 1.1)	Prem. Elec.	6	28	194	Linear Fluorescent	15
F46LL/2	F32T8	Fluorescent, (6) 48", T-8 lamps, (2) Rapid Start Ballasts, NLO (0.85 < BF < 0.95)	Electronic	6	32	182	Linear Fluorescent	15
F48GLL/2	F32T8	Fluorescent (8) 48" T-8 lamps, (2) Prog. Start or PRS Ballasts, NLO (0.85 < BF < 0.95)	PRS Elec.	8	32	230	Linear Fluorescent	15
F48GLL/2-R	F32T8	Fluorescent (8) 48" T-8 lamps, (2) Prog. Start or PRS Ballasts, RLO (BF < 0.85)	PRS Elec.	8	32	184	Linear Fluorescent	15
F48GLL/2-V	F32T8	Fluorescent (8) 48" T-8 lamps, (2) Prog. Start or PRS Ballasts, VHLO (BF > 1.1)	PRS Elec.	8	32	288	Linear Fluorescent	15
F48ILL/2	F32T8	Fluorescent, (8) 48", T-8 lamps, (2) 4-lamp IS Ballasts, NLO (0.85 < BF < 0.95)	Electronic	8	32	224	Linear Fluorescent	15
F48ILL/2-R	F32T8	Fluorescent, (8) 48", T-8 lamps, (2) 4-lamp IS Ballasts, RLO (BF < 0.85)	Electronic	8	32	196	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F48ILU/2	F32T8	Fluorescent, (8) 48", T-8 lamps, (2) 4-lamp IS Ballasts, NLO (0.85 < BF < 0.95)	Prem. Elec.	8	32	214	Linear Fluorescent	15
F48ILU/2-R	F32T8	Fluorescent, (8) 48", T-8 lamps, (2) 4-lamp IS Ballasts, RLO (BF < 0.85)	Prem. Elec.	8	32	190	Linear Fluorescent	15
F51ILL	F40T8	Fluorescent, (1) 60", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	40	36	Linear Fluorescent	15
F51ILL/T2	F40T8	Fluorescent, (1) 60", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	40	36	Linear Fluorescent	15
F51ILL/T3	F40T8	Fluorescent, (1) 60", T-8 lamp, Tandem 3-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	40	35	Linear Fluorescent	15
F51ILL/T4	F40T8	Fluorescent, (1) 60", T-8 lamp, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	40	34	Linear Fluorescent	15
F51ILL-R	F40T8	Fluorescent, (1) 60", T-8 lamp, Instant Start Ballast, RLO (BF < 0.85)	Electronic	1	40	43	Linear Fluorescent	15
F52ILL	F40T8	Fluorescent, (2) 60", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	40	72	Linear Fluorescent	15
F52ILL/T4	F40T8	Fluorescent, (2) 60", T-8 lamps, Tandem 4-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	40	67	Linear Fluorescent	15
F52ILL-H	F40T8	Fluorescent, (2) 60", T-8 lamps, Instant Start Ballast, HILO (.95 < BF < 1.1)	Electronic	2	40	80	Linear Fluorescent	15
F52ILL-R	F40T8	Fluorescent, (2) 60", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	2	40	73	Linear Fluorescent	15
F53ILL	F40T8	Fluorescent, (3) 60", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	40	106	Linear Fluorescent	15
F53ILL-H	F40T8	Fluorescent, (3) 60", T-8 lamps, Instant Start Ballast, HILO (.95 < BF < 1.1)	Electronic	3	40	108	Linear Fluorescent	15
F54ILL	F40T8	Fluorescent, (4) 60", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	40	134	Linear Fluorescent	15
F54ILL-H	F40T8	Fluorescent, (4) 60", T-8 lamps, Instant Start Ballast, HLO (.95 < BF < 1.1)	Electronic	4	40	126	Linear Fluorescent	15
F81IERU	F96T8-RW	Fluorescent, (1) 96" T-8 reduced-wattage lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	54	61	Linear Fluorescent	15
F81ILL	F96T8	Fluorescent, (1) 96", T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	59	69	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F81ILL/T2	F96T8	Fluorescent, (1) 96", T-8 lamp, Tandem 2-lamp IS Ballast, NLO (0.85 < BF < 0.95)	Electronic	1	59	55	Linear Fluorescent	15
F81ILL/T2-R	F96T8	Fluorescent, (1) 96", T-8 lamp, Tandem 2-lamp IS Ballast, RLO (BF < 0.85)	Electronic	1	59	50	Linear Fluorescent	15
F81ILL-H	F96T8	Fluorescent, (1) 96", T-8 lamp, Instant Start Ballast, HILO (.95 < BF < 1.1)	Electronic	1	59	70	Linear Fluorescent	15
F81ILL-R	F96T8	Fluorescent, (1) 96", T-8 lamp, Instant Start Ballast, RLO (BF < 0.85)	Electronic	1	59	67	Linear Fluorescent	15
F81ILL-V	F96T8	Fluorescent, (1) 96", T-8 lamp, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	1	59	72	Linear Fluorescent	15
F81ILU	F96T8	Fluorescent, (1) 96" T-8 lamp, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	59	67	Linear Fluorescent	15
F81LHL/T2	F96T8/HO	Fluorescent, (1) 96", T-8 HO lamp, Tandem 2-lamp Ballast	Electronic	1	86	80	Linear Fluorescent	15
F82IERU	F96T8-RW	Fluorescent, (2) 96" T-8 @ reduced-wattage lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	54	93	Linear Fluorescent	15
F82ILL	F96T8	Fluorescent, (2) 96", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	2	59	110	Linear Fluorescent	15
F82ILL-R	F96T8	Fluorescent, (2) 96", T-8 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	2	59	100	Linear Fluorescent	15
F82ILL-V	F96T8	Fluorescent, (2) 96", T-8 lamps, Instant Start Ballast, VHLO (BF > 1.1)	Electronic	2	59	149	Linear Fluorescent	15
F82ILU	F96T8	Fluorescent, (2) 96" T-8 ES lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	59	107	Linear Fluorescent	15
F82LHL	F96T8/HO	Fluorescent, (2) 96", T-8 HO lamps	Electronic	2	86	160	Linear Fluorescent	15
F83ILL	F96T8	Fluorescent, (3) 96", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	3	59	179	Linear Fluorescent	15
F84ILL	F96T8	Fluorescent, (4) 96", T-8 lamps, Instant Start Ballast, NLO (0.85 < BF < 0.95)	Electronic	4	59	219	Linear Fluorescent	15
F84ILL/2-V	F96T8	Fluorescent, (4) 96", T-8 lamps, (2) Instant Start Ballasts, VHLO (BF > 1.1)	Electronic	4	59	298	Linear Fluorescent	15
F84LHL	F96T8/HO	Fluorescent, (4) 96", T-8 HO lamps	Electronic	4	86	320	Linear Fluorescent	15
F86ILL	F96T8	Fluorescent, (6) 96", T-8 lamps, (2) 3-lamp IS Ballasts, NLO (0.85 < BF < 0.95)	Electronic	6	59	330	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
FT5		T5 Linear Fluorescent Systems						15
F21GPHL-H	F24T5/HO	Fluorescent (1) 22" (563mm) T-5 HO lamp; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	24	27	Linear Fluorescent	15
F21GPL-H	F14T5	Fluorescent (1) 22" (563mm) T-5 lamp; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	14	18	Linear Fluorescent	15
F22GPHL-H	F24T5/HO	Fluorescent (2) 22" (563mm) T-5 HO lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	24	52	Linear Fluorescent	15
F22GPL-H	F14T5	Fluorescent (2) 22" (563mm) T-5 lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	14	33	Linear Fluorescent	15
F22PS	F13T5	Fluorescent, (2) 21", Preheat T5 lamps, (1) Magnetic ballasts with integral starter, (BF=0.80)	Mag-STD	2	13	26	Linear Fluorescent	15
F23GPHL/2-H	F24T5/HO	Fluorescent (3) 22" (563mm)T-5 HO lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	24	79	Linear Fluorescent	15
F23GPL/2-H	F14T5	Fluorescent (3) 22" (563mm)T-5 lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	14	51	Linear Fluorescent	15
F23GPL-H	F14T5	Fluorescent (3) 22" (563mm)T-5 lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	3	14	50	Linear Fluorescent	15
F24GPHL/2-H	F24T5/HO	Fluorescent (4) 22" (563mm)T-5 HO lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	24	104	Linear Fluorescent	15
F24GPL/2-H	F14T5	Fluorescent (4) 22" (563mm)T-5 lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	14	66	Linear Fluorescent	15
F24PS	F13T5	Fluorescent, (4) 21", Preheat T5 lamps, (2) Magnetic ballasts with integral starter (BF=0.80)	Mag-STD	4	13	53	Linear Fluorescent	15
F31GPHL-H	F39T5/HO	Fluorescent (1) 34" (863mm) T-5 HO lamp; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	39	44	Linear Fluorescent	15
F31GPL-H	F21T5	Fluorescent (1) 34" (863mm) T-5 lamp; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	21	25	Linear Fluorescent	15
F32GPHL-H	F39T5/HO	Fluorescent (2) 34" (863mm) T-5 HO lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	39	86	Linear Fluorescent	15
F32GPL-H	F21T5	Fluorescent (2) 34" (863mm) T-5 lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	21	48	Linear Fluorescent	15
F33GPHL/2-H	F39T5/HO	Fluorescent (3) 34" (863mm)T-5 HO lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	39	130	Linear Fluorescent	15
F33GPL/2-H	F21T5	Fluorescent (3) 34" (863mm)T-5 lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	21	73	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F34GPHL/2-H	F39T5/HO	Fluorescent (4) 34" (863mm)T-5 HO lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	39	172	Linear Fluorescent	15
F34GPL/2-H	F21T5	Fluorescent (4) 34" (863mm)T-5 lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	21	96	Linear Fluorescent	15
F41GPHL/T2-H	F54T5/HO	Fluorescent (1) 45.8" T-5 HO lamp, Tandem 2-lamp PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	54	59	Linear Fluorescent	15
F41GPHL-H	F54T5/HO	Fluorescent (1) 45.8" T-5 HO lamp, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	54	64	Linear Fluorescent	15
F41GPRL-H	F54T5/HO-RW	Fluorescent (1) 45.8" T-5 HO reduced-wattage lamp, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	50	61	Linear Fluorescent	15
F41GPL/T2-H	F28T5	Fluorescent (1) 45.8" (1163mm) T-5 lamp; Tandem 2-lamp PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	28	32	Linear Fluorescent	15
F41GPL-H	F28T5	Fluorescent (1) 45.8" (1163mm) T-5 lamp; (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	28	33	Linear Fluorescent	15
F410GPHL/3-H	F54T5/HO	Fluorescent, (10) 45.8" T-5 HO lamps, (3) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	10	54	577	Linear Fluorescent	15
F410GPHL/5-H	F54T5/HO	Fluorescent, (10) 45.8" T-5 HO lamps, (5) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	10	54	585	Linear Fluorescent	15
F410GPRL/3-H	F54T5/HO-RW	Fluorescent, (10) 45.8" T-5 HO reduced-wattage lamps, (3) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	10	50	537	Linear Fluorescent	15
F410GPRL/5-H	F54T5/HO-RW	Fluorescent, (10) 45.8" T-5 HO reduced-wattage lamps, (5) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	10	50	545	Linear Fluorescent	15
F412GPHL/3-H	F54T5/HO	Fluorescent, (12) 45.8" T-5 HO lamps, (3) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	12	54	690	Linear Fluorescent	15
F412GPHL/6-H	F54T5/HO	Fluorescent, (12) 45.8" T-5 HO lamps, (6) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	12	54	702	Linear Fluorescent	15
F412GPRL/3-H	F54T5/HO-RW	Fluorescent, (12) 45.8" T-5 HO reduced-wattage lamps, (3) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	12	50	642	Linear Fluorescent	15
F412GPRL/6-H	F54T5/HO-RW	Fluorescent, (12) 45.8" T-5 HO reduced-wattage lamps, (6) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	12	50	654	Linear Fluorescent	15
F42GPHL-H	F54T5/HO	Fluorescent (2) 45.8" T-5 HO lamps, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	54	117	Linear Fluorescent	15
F42GPRL-H	F54T5/HO-RW	Fluorescent (2) 45.8" T-5 HO reduced-wattage lamps, PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	50	109	Linear Fluorescent	15
F42GPL-H	F28T5	Fluorescent (2) 45.8" (1163mm) T-5 lamps; (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	28	63	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F43GPHL/2-H	F54T5/HO	Fluorescent (3) 45.8" T-5 HO lamps, (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	54	181	Linear Fluorescent	15
F43GPHL-H	F54T5/HO	Fluorescent, (3) 45.8" T-5 HO lamps, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	3	54	181	Linear Fluorescent	15
F43GPRL-H	F54T5/HO-RW	Fluorescent, (3) 45.8" T-5 HO reduced-wattage lamps, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	3	50	172	Linear Fluorescent	15
F43GPL/2-H	F28T5	Fluorescent (3) 45.8" (1163mm)T-5 lamps; (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	28	96	Linear Fluorescent	15
F44GPHL/2-H	F54T5/HO	Fluorescent (4) 45.8" T-5 HO lamps, (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	54	234	Linear Fluorescent	15
F44GPHL-H	F54T5/HO	Fluorescent, (4) 45.8" T-5 HO lamps, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	4	54	230	Linear Fluorescent	15
F44GPRL-H	F54T5/HO-RW	Fluorescent, (4) 45.8" T-5 HO reduced-wattage lamps, (1) PRS Electronic Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	4	50	214	Linear Fluorescent	15
F44GPL/2-H	F28T5	Fluorescent (4) 45.8" (1163mm)T-5 lamps; (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	28	126	Linear Fluorescent	15
F46GPHL/2-H	F54T5/HO	Fluorescent, (6) 45.8" T-5 HO lamps, (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	6	54	362	Linear Fluorescent	15
F46GPHL/3-H	F54T5/HO	Fluorescent, (6) 45.8" T-5 HO lamps, (3) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	6	54	351	Linear Fluorescent	15
F48GPHL/2-H	F54T5/HO	Fluorescent, (8) 45.8" T-5 HO lamps, (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	8	54	460	Linear Fluorescent	15
F48GPRL/2-H	F54T5/HO-RW	Fluorescent, (8) 45.8" T-5 HO reduced-wattage lamps, (2) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	8	50	428	Linear Fluorescent	15
F48GPHL/4-H	F54T5/HO	Fluorescent, (8) 45.8" T-5 HO lamps, (4) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	8	54	468	Linear Fluorescent	15
F48GPRL/4-H	F54T5/HO-RW	Fluorescent, (8) 45.8" T-5 HO reduced-wattage lamps, (4) PRS Electronic Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	8	50	436	Linear Fluorescent	15
F51GPHL-H	F80T5/HO	Fluorescent (1) 57.6" (1463mm) T-5 HO lamp; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	80	90	Linear Fluorescent	15
F51GPL-H	F35T5	Fluorescent (1) 57.6" (1463mm) T-5 lamp; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	1	35	40	Linear Fluorescent	15
F52GPHL/2-H	F80T5/HO	Fluorescent (2) 57.6" (1463mm) T-5 HO lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	80	180	Linear Fluorescent	15
F52GPL-H	F35T5	Fluorescent (2) 57.6" (1463mm) T-5 lamps; (1) Prog. Start or PRS Ballast, HLO (.95 < BF < 1.1)	PRS Elec.	2	35	78	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F53GPL/2-H	F35T5	Fluorescent (3) 57.6" (1463mm)T-5 lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	3	35	118	Linear Fluorescent	15
F54GPL/2-H	F35T5	Fluorescent (4) 57.6" (1463mm)T-5 lamps; (2) Prog. Start or PRS Ballasts, HLO (.95 < BF < 1.1)	PRS Elec.	4	35	156	Linear Fluorescent	15
FT12		T12 and Other Linear Fluorescent Systems						
F1.51SS	F15T12	Fluorescent, (1) 18" T12 lamp	Mag-STD	1	15	19	Linear Fluorescents: Replacing T12 Fixtures	8
F1.52SS	F15T12	Fluorescent, (2) 18", T12 lamps	Mag-STD	2	15	36	Linear Fluorescents: Replacing T12 Fixtures	8
F21HS	F24T12/HO	Fluorescent, (1) 24", HO lamp	Mag-STD	1	35	62	Linear Fluorescents: Replacing T12 Fixtures	8
F21SS	F20T12	Fluorescent, (1) 24", STD lamp	Mag-STD	1	20	25	Linear Fluorescents: Replacing T12 Fixtures	8
F22HS	F24T12/HO	Fluorescent, (2) 24", HO lamps	Mag-STD	2	35	90	Linear Fluorescents: Replacing T12 Fixtures	8
F22SS	F20T12	Fluorescent, (2) 24", STD lamps	Mag-STD	2	20	50	Linear Fluorescents: Replacing T12 Fixtures	8
F23SS	F20T12	Fluorescent, (3) 24", STD lamps	Mag-STD	3	20	71	Linear Fluorescents: Replacing T12 Fixtures	8
F24SS	F20T12	Fluorescent, (4) 24", STD lamps	Mag-STD	4	20	100	Linear Fluorescents: Replacing T12 Fixtures	8
F26SS/2	F20T12	Fluorescent, (6) 24", STD lamps, (2) ballasts	Mag-STD	6	20	146	Linear Fluorescents: Replacing T12 Fixtures	8
F31EE/T2	F30T12/ES	Fluorescent, (1) 36", ES lamp, Tandem 2-lamp ballast	Mag-ES	1	25	33	Linear Fluorescents: Replacing T12 Fixtures	8
F31EL	F30T12/ES	Fluorescent, (1) 36", ES lamp	Electronic	1	25	26	Linear Fluorescents: Replacing T12 Fixtures	14
F31ES	F30T12/ES	Fluorescent, (1) 36", ES lamp	Mag-STD	1	25	42	Linear Fluorescents: Replacing T12 Fixtures	8
F31ES/T2	F30T12/ES	Fluorescent, (1) 36", ES lamp, Tandem 2-lamp ballast	Mag-STD	1	25	33	Linear Fluorescents: Replacing T12 Fixtures	8
F31SE/T2	F30T12	Fluorescent, (1) 36", STD lamp, Tandem 2-lamp ballast	Mag-ES	1	30	37	Linear Fluorescents: Replacing T12 Fixtures	8
F31SHS	F36T12/HO	Fluorescent, (1) 36", HO lamp	Mag-STD	1	50	70	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F31SL	F30T12	Fluorescent, (1) 36", STD lamp	Electronic	1	30	31	Linear Fluorescents: Replacing T12 Fixtures	14
F31SS	F30T12	Fluorescent, (1) 36", STD lamp	Mag-STD	1	30	46	Linear Fluorescents: Replacing T12 Fixtures	8
F31SS/T2	F30T12	Fluorescent, (1) 36", STD lamp, Tandem 2-lamp ballast	Mag-STD	1	30	41	Linear Fluorescents: Replacing T12 Fixtures	8
F32EE	F30T12/ES	Fluorescent, (2) 36", ES lamps	Mag-ES	2	25	66	Linear Fluorescents: Replacing T12 Fixtures	8
F32EL	F30T12/ES	Fluorescent, (2) 36", ES lamps	Electronic	2	25	50	Linear Fluorescents: Replacing T12 Fixtures	14
F32EL/T4	F25T12	Fluorescent, (2) 36" ES lamps, Tandem 4-lamp ballast, NLO (0.85 < BF < 0.95)	Electronic	2	25	50	Linear Fluorescents: Replacing T12 Fixtures	14
F32ES	F30T12/ES	Fluorescent, (2) 36", ES lamps	Mag-STD	2	25	73	Linear Fluorescents: Replacing T12 Fixtures	8
F32SE	F30T12	Fluorescent, (2) 36", STD lamps	Mag-ES	2	30	74	Linear Fluorescents: Replacing T12 Fixtures	8
F32SHS	F36T12/HO	Fluorescent, (2) 36", HO, lamps	Mag-STD	2	50	114	Linear Fluorescents: Replacing T12 Fixtures	8
F32SL	F30T12	Fluorescent, (2) 36", STD lamps	Electronic	2	30	58	Linear Fluorescents: Replacing T12 Fixtures	14
F32SS	F30T12	Fluorescent, (2) 36", STD lamps	Mag-STD	2	30	75	Linear Fluorescents: Replacing T12 Fixtures	8
F33ES	F30T12/ES	Fluorescent, (3) 36", ES lamps	Mag-STD	3	25	115	Linear Fluorescents: Replacing T12 Fixtures	8
F33SE	F30T12	Fluorescent, (3) 36", STD lamps, (1) STD ballast and (1) ES ballast	Mag-ES	3	30	120	Linear Fluorescents: Replacing T12 Fixtures	8
F33SS	F30T12	Fluorescent, (3) 36", STD lamps	Mag-STD	3	30	127	Linear Fluorescents: Replacing T12 Fixtures	8
F34EE	F30T12/ES	Fluorescent, (4) 36", ES lamps	Mag-ES	4	25	132	Linear Fluorescents: Replacing T12 Fixtures	8
F34SE	F30T12	Fluorescent, (4) 36", STD lamps	Mag-ES	4	30	148	Linear Fluorescents: Replacing T12 Fixtures	8
F34SL	F30T12	Fluorescent, (4) 36", STD lamps	Electronic	4	30	116	Linear Fluorescents: Replacing T12 Fixtures	14
F34SS	F30T12	Fluorescent, (4) 36", STD lamps	Mag-STD	4	30	150	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/FIXT	WATT/LAMP	Actual WATT/FIXT	LAMP TYPE	LAMP EUL
F36EE	F30T12/ES	Fluorescent, (6) 36", ES lamps	Mag-ES	6	30	198	Linear Fluorescents: Replacing T12 Fixtures	8
F36ES	F30T12/ES	Fluorescent, (6) 36", ES lamps	Mag-STD	6	30	219	Linear Fluorescents: Replacing T12 Fixtures	8
F36SE	F30T12	Fluorescent, (6) 36", STD lamps	Mag-ES	6	30	213	Linear Fluorescents: Replacing T12 Fixtures	8
F36SS	F30T12	Fluorescent, (6) 36", STD lamps	Mag-STD	6	30	225	Linear Fluorescents: Replacing T12 Fixtures	8
F40SE/D1	None	Fluorescent, (0) 48" lamps, completely de-lamped fixture with (1) hot ballast	Mag-ES	1	0	4	Linear Fluorescents: Replacing T12 Fixtures	8
F40SE/D2	None	Fluorescent, (0) 48" lamps, completely de-lamped fixture with (2) hot ballast	Mag-ES	1	0	8	Linear Fluorescents: Replacing T12 Fixtures	8
F41EE	F40T12/ES	Fluorescent, (1) 48", ES lamp	Mag-ES	1	34	43	Linear Fluorescents: Replacing T12 Fixtures	8
F41EE/D2	F40T12/ES	Fluorescent, (1) 48", ES lamp, 2 ballast	Mag-ES	1	34	43	Linear Fluorescents: Replacing T12 Fixtures	8
F41EE/T2	F40T12/ES	Fluorescent, (1) 48", ES lamp, Tandem 2-lamp ballast	Mag-ES	1	34	36	Linear Fluorescents: Replacing T12 Fixtures	8
F41EHS	F48T12/HO/ES	Fluorescent, (1) 48", ES HO lamp	Mag-STD	1	55	80	Linear Fluorescents: Replacing T12 Fixtures	8
F41EIS	F48T12/ES	Fluorescent, (1) 48" ES Instant Start lamp. Magnetic ballast	Mag-STD	1	30	51	Linear Fluorescents: Replacing T12 Fixtures	8
F41EL	F40T12/ES	Fluorescent, (1) 48", T12 ES lamp, Electronic Ballast	Electronic	1	34	32	Linear Fluorescents: Replacing T12 Fixtures	14
F41IAL	F25T12	Fluorescent, (1) 48", F25T12 lamp, Instant Start Ballast	Electronic	1	25	25	Linear Fluorescents: Replacing T12 Fixtures	14
F41IAL/T2-R	F25T18	Fluorescent, (1) 48", F25T12 lamp, Tandem 2-Lamp IS ballast, RLO (BF < 0.85)	Electronic	1	25	19	Linear Fluorescents: Replacing T12 Fixtures	14
F41IAL/T3-R	F25T17	Fluorescent, (1) 48", F25T12 lamp, Tandem 3-Lamp IS ballast, RLO (BF < 0.85)	Electronic	1	25	20	Linear Fluorescents: Replacing T12 Fixtures	14
F41IAL/T4-R	F25T17	Fluorescent, (1) 48", F25T12 lamp, Tandem 4-Lamp IS ballast, RLO (BF < 0.85)	Electronic	1	25	20	Linear Fluorescents: Replacing T12 Fixtures	14
F41SHS	F48T12/HO	Fluorescent, (1) 48", STD HO lamp	Mag-STD	1	60	85	Linear Fluorescents: Replacing T12 Fixtures	8
F41SIL	F40T12	Fluorescent, (1) 48", STD IS lamp, Electronic ballast	Electronic	1	39	46	Linear Fluorescents: Replacing T12 Fixtures	14

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F41SIL/T2	F40T12	Fluorescent, (1) 48", STD IS lamp, Tandem 2-lamp IS ballast	Electronic	1	39	37	Linear Fluorescents: Replacing T12 Fixtures	14
F41SVS	F48T12/VHO	Fluorescent, (1) 48", STD VHO lamp	Mag-STD	1	110	140	Linear Fluorescents: Replacing T12 Fixtures	8
F41TS	F40T10	Fluorescent, (1) 48", T-10 lamp	Mag-STD	1	40	51	Linear Fluorescents: Replacing T12 Fixtures	8
F42EE	F40T12/ES	Fluorescent, (2) 48", ES lamp	Mag-ES	2	34	72	Linear Fluorescents: Replacing T12 Fixtures	8
F42EE/2	F40T12/ES	Fluorescent, (2) 48", ES lamps, (2) 1-lamp ballasts	Mag-ES	2	34	86	Linear Fluorescents: Replacing T12 Fixtures	8
F42EE/D2	F40T12/ES	Fluorescent, (2) 48", ES lamps, 2 Ballasts (de-lamped)	Mag-ES	2	34	76	Linear Fluorescents: Replacing T12 Fixtures	8
F42EHS	F42T12/HO/ES	Fluorescent, (2) 42", HO lamps (3.5' lamp)	Mag-STD	2	55	135	Linear Fluorescents: Replacing T12 Fixtures	8
F42EIS	F48T12/ES	Fluorescent, (2) 48" ES instant start lamps. Magnetic ballast	Mag-STD	2	30	82	Linear Fluorescents: Replacing T12 Fixtures	8
F42EL	F40T12/ES	Fluorescent, (2) 48", T12 ES lamps, Electronic Ballast	Electronic	2	34	60	Linear Fluorescents: Replacing T12 Fixtures	14
F42IAL/T4-R	F25T12	Fluorescent, (2) 48", F25T12 lamps, Tandem 4-lamp IS Ballast, RLO (BF < 0.85)	Electronic	2	25	40	Linear Fluorescents: Replacing T12 Fixtures	14
F42IAL-R	F25T12	Fluorescent, (2) 48", F25T12 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	2	25	39	Linear Fluorescents: Replacing T12 Fixtures	14
F42SHS	F48T12/HO	Fluorescent, (2) 48", STD HO lamps	Mag-STD	2	60	145	Linear Fluorescents: Replacing T12 Fixtures	8
F42SIL	F40T12	Fluorescent, (2) 48", STD IS lamps, Electronic ballast	Electronic	2	39	74	Linear Fluorescents: Replacing T12 Fixtures	14
F42SVS	F48T12/VHO	Fluorescent, (2) 48", STD VHO lamps	Mag-STD	2	110	252	Linear Fluorescents: Replacing T12 Fixtures	8
F43EE	F40T12/ES	Fluorescent, (3) 48", ES lamps	Mag-ES	3	34	115	Linear Fluorescents: Replacing T12 Fixtures	8
F43EE/T2	F40T12/ES	Fluorescent, (3) 48", ES lamps, tandem 2-lamp ballasts	Mag-ES	3	34	108	Linear Fluorescents: Replacing T12 Fixtures	8
F43EHS	F42T12/HO/ES	Fluorescent, (3) 42", HO lamps (3.5' lamp)	Mag-STD	3	55	215	Linear Fluorescents: Replacing T12 Fixtures	8
F43EIS	F48T12/ES	Fluorescent, (3) 48" ES instant start lamps. Magnetic ballast	Mag-STD	3	30	133	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F43EL	F40T12/ES	Fluorescent, (3) 48", T12 ES lamps, Electronic Ballast	Electronic	3	34	92	Linear Fluorescents: Replacing T12 Fixtures	14
F43IAL-R	F25T12	Fluorescent, (3) 48", F25T12 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	3	25	60	Linear Fluorescents: Replacing T12 Fixtures	14
F43SHS	F48T12/HO	Fluorescent, (3) 48", STD HO lamps	Mag-STD	3	60	230	Linear Fluorescents: Replacing T12 Fixtures	8
F43SIL	F40T12	Fluorescent, (3) 48", STD IS lamps, Electronic ballast	Electronic	3	39	120	Linear Fluorescents: Replacing T12 Fixtures	14
F43SVS	F48T12/VHO	Fluorescent, (3) 48", STD VHO lamps	Mag-STD	3	110	377	Linear Fluorescents: Replacing T12 Fixtures	8
F44EE	F40T12/ES	Fluorescent, (4) 48", ES lamps	Mag-ES	4	34	144	Linear Fluorescents: Replacing T12 Fixtures	8
F44EE/D3	F40T12/ES	Fluorescent, (4) 48", ES lamps, 3 ballasts (de-lamped)	Mag-ES	4	34	148	Linear Fluorescents: Replacing T12 Fixtures	8
F44EE/D4	F40T12/ES	Fluorescent, (4) 48", ES lamps, 4 ballasts (de-lamped)	Mag-ES	4	34	152	Linear Fluorescents: Replacing T12 Fixtures	8
F44EHS	F48T12/HO/ES	Fluorescent, (4) 48", ES HO lamps	Mag-STD	4	55	270	Linear Fluorescents: Replacing T12 Fixtures	8
F44EIS	F48T12/ES	Fluorescent, (4) 48" ES instant start lamps. Magnetic ballast	Mag-STD	4	30	164	Linear Fluorescents: Replacing T12 Fixtures	8
F44EL	F40T12/ES	Fluorescent, (4) 48", T12 ES lamps, Electronic Ballast	Electronic	4	34	120	Linear Fluorescents: Replacing T12 Fixtures	14
F44EVS	F48T12/VHO/ES	Fluorescent, (4) 48", VHO ES lamps	Mag-STD	4	0	420	Linear Fluorescents: Replacing T12 Fixtures	8
F44IAL-R	F25T12	Fluorescent, (4) 48", F25T12 lamps, Instant Start Ballast, RLO (BF < 0.85)	Electronic	4	25	80	Linear Fluorescents: Replacing T12 Fixtures	14
F44SHS	F48T12/HO	Fluorescent, (4) 48", STD HO lamps	Mag-STD	4	60	290	Linear Fluorescents: Replacing T12 Fixtures	8
F44SIL	F40T12	Fluorescent, (4) 48", STD IS lamps, Electronic ballast	Electronic	4	39	148	Linear Fluorescents: Replacing T12 Fixtures	14
F44SVS	F48T12/VHO	Fluorescent, (4) 48", STD VHO lamps	Mag-STD	4	110	484	Linear Fluorescents: Replacing T12 Fixtures	8
F46EE	F40T12/ES	Fluorescent, (6) 48", ES lamps	Mag-ES	6	34	216	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F46EL	F40T12/ES	Fluorescent, (6) 48", ES lamps	Electronic	6	34	180	Linear Fluorescents: Replacing T12 Fixtures	14
F46SL	F40T12	Fluorescent, (6) 48", STD lamps	Electronic	6	40	186	Linear Fluorescents: Replacing T12 Fixtures	14
F48EE	F40T12/ES	Fluorescent, (8) 48", ES lamps	Mag-ES	8	34	288	Linear Fluorescents: Replacing T12 Fixtures	8
F51SHE	F60T12/HO	Fluorescent, (1) 60", STD HO lamp	Mag-ES	1	75	88	Linear Fluorescents: Replacing T12 Fixtures	8
F51SHL	F60T12/HO	Fluorescent, (1) 60", STD HO lamp	Electronic	1	75	69	Linear Fluorescents: Replacing T12 Fixtures	14
F51SHS	F60T12/HO	Fluorescent, (1) 60", STD HO lamp	Mag-STD	1	75	92	Linear Fluorescents: Replacing T12 Fixtures	8
F51SL	F60T12	Fluorescent, (1) 60", STD lamp	Electronic	1	50	44	Linear Fluorescents: Replacing T12 Fixtures	14
F51SS	F60T12	Fluorescent, (1) 60", STD lamp	Mag-STD	1	50	63	Linear Fluorescents: Replacing T12 Fixtures	8
F51SVS	F60T12/VHO	Fluorescent, (1) 60", VHO ES lamp	Mag-STD	1	135	165	Linear Fluorescents: Replacing T12 Fixtures	8
F52SHE	F60T12/HO	Fluorescent, (2) 60", STD HO lamps	Mag-ES	2	75	176	Linear Fluorescents: Replacing T12 Fixtures	8
F52SHL	F60T12/HO	Fluorescent, (2) 60", STD HO lamps	Electronic	2	75	138	Linear Fluorescents: Replacing T12 Fixtures	14
F52SHS	F60T12/HO	Fluorescent, (2) 60", STD HO lamps	Mag-STD	2	75	168	Linear Fluorescents: Replacing T12 Fixtures	8
F52SL	F60T12	Fluorescent, (2) 60", STD lamps	Electronic	2	50	88	Linear Fluorescents: Replacing T12 Fixtures	14
F52SS	F60T12	Fluorescent, (2) 60", STD lamps	Mag-STD	2	50	128	Linear Fluorescents: Replacing T12 Fixtures	8
F52SVS	F60T12/VHO	Fluorescent, (2) 60", VHO ES lamps	Mag-STD	2	135	310	Linear Fluorescents: Replacing T12 Fixtures	8
F61ISL	F72T12	Fluorescent, (1) 72", STD lamp, IS electronic ballast	Electronic	1	55	68	Linear Fluorescents: Replacing T12 Fixtures	14
F61SHS	F72T12/HO	Fluorescent, (1) 72", STD HO lamp	Mag-STD	1	85	106	Linear Fluorescents: Replacing T12 Fixtures	8
F61SS	F72T12	Fluorescent, (1) 72", STD lamp	Mag-STD	1	55	76	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F61SVS	F72T12/ VHO	Fluorescent, (1) 72", VHO lamp	Mag-STD	1	160	180	Linear Fluorescents: Replacing T12 Fixtures	8
F62ISL	F72T12	Fluorescent, (2) 72", STD lamps, IS electronic ballast	Electronic	2	55	108	Linear Fluorescents: Replacing T12 Fixtures	14
F62SE	F72T12	Fluorescent, (2) 72", STD lamps	Mag-ES	2	55	122	Linear Fluorescents: Replacing T12 Fixtures	8
F62SHE	F72T12/HO	Fluorescent, (2) 72", STD HO lamps	Mag-ES	2	85	194	Linear Fluorescents: Replacing T12 Fixtures	8
F62SHL	F72T12/HO	Fluorescent, (2) 72", STD HO lamps	Electronic	2	85	167	Linear Fluorescents: Replacing T12 Fixtures	14
F62SHS	F72T12/HO	Fluorescent, (2) 72", STD HO lamps	Mag-STD	2	85	200	Linear Fluorescents: Replacing T12 Fixtures	8
F62SL	F72T12	Fluorescent, (2) 72", STD lamps	Electronic	2	55	108	Linear Fluorescents: Replacing T12 Fixtures	14
F62SS	F72T12	Fluorescent, (2) 72", STD lamps	Mag-STD	2	55	142	Linear Fluorescents: Replacing T12 Fixtures	8
F62SVS	F72T12/ VHO	Fluorescent, (2) 72", VHO lamps	Mag-STD	2	160	330	Linear Fluorescents: Replacing T12 Fixtures	8
F63ISL	F72T12	Fluorescent, (3) 72", STD lamps, IS electronic ballast	Electronic	3	55	176	Linear Fluorescents: Replacing T12 Fixtures	14
F63SS	F72T12	Fluorescent, (3) 72", STD lamps	Mag-STD	3	55	202	Linear Fluorescents: Replacing T12 Fixtures	8
F64ISL	F72T12	Fluorescent, (4) 72", STD lamps, IS electronic ballast	Electronic	4	55	216	Linear Fluorescents: Replacing T12 Fixtures	14
F64SE	F72T12	Fluorescent, (4) 72", STD lamps	Mag-ES	4	55	244	Linear Fluorescents: Replacing T12 Fixtures	8
F64SHE	F72T12/HO	Fluorescent, (4) 72", HO lamps	Mag-ES	4	85	388	Linear Fluorescents: Replacing T12 Fixtures	8
F64SS	F72T12	Fluorescent, (4) 72", STD lamps	Mag-STD	4	56	244	Linear Fluorescents: Replacing T12 Fixtures	8
F81EE	F96T12/ES	Fluorescent, (1) 96" ES lamp	Mag-ES	1	60	75	Linear Fluorescents: Replacing T12 Fixtures	8
F81EE/T2	F96T12/ES	Fluorescent, (1) 96", ES lamp, tandem 2-lamp ballast	Mag-ES	1	60	62	Linear Fluorescents: Replacing T12 Fixtures	8
F81EHL	F96T12/ HO/ES	Fluorescent, (1) 96", ES HO lamp	Electronic	1	95	80	Linear Fluorescents: Replacing T12 Fixtures	14

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F81EHS	F96T12/HO/ES	Fluorescent, (1) 96", ES HO lamp	Mag-STD	1	95	113	Linear Fluorescents: Replacing T12 Fixtures	8
F81EL	F96T12/ES	Fluorescent, (1) 96", ES lamp	Electronic	1	60	69	Linear Fluorescents: Replacing T12 Fixtures	14
F81EL/T2	F96T12/ES	Fluorescent, (1) 96", ES lamp, tandem 2-lamp ballast	Electronic	1	60	55	Linear Fluorescents: Replacing T12 Fixtures	14
F81EVS	F96T12/VHO/ES	Fluorescent, (1) 96", ES VHO lamp	Mag-STD	1	185	205	Linear Fluorescents: Replacing T12 Fixtures	8
F81SGS	F96T17	Fluorescent, (1) 96", T17 grooved lamp	Mag-STD	1	215	235	Linear Fluorescents: Replacing T12 Fixtures	8
F81SHS	F96T12/HO	Fluorescent, (1) 96", STD HO lamp	Mag-STD	1	110	121	Linear Fluorescents: Replacing T12 Fixtures	8
F81SL	F96T12	Fluorescent, (1) 96", STD lamp	Electronic	1	75	69	Linear Fluorescents: Replacing T12 Fixtures	14
F81SL/T2	F96T12	Fluorescent, (1) 96", STD lamp, tandem 2-lamp ballast	Electronic	1	75	55	Linear Fluorescents: Replacing T12 Fixtures	14
F81SVS	F96T12/VHO	Fluorescent, (1) 96", STD VHO lamp	Mag-STD	1	215	205	Linear Fluorescents: Replacing T12 Fixtures	8
F82EE	F96T12/ES	Fluorescent, (2) 96", ES lamps	Mag-ES	2	60	123	Linear Fluorescents: Replacing T12 Fixtures	8
F82EHE	F96T12/HO/ES	Fluorescent, (2) 96", ES HO lamps	Mag-ES	2	95	207	Linear Fluorescents: Replacing T12 Fixtures	8
F82EHL	F96T12/HO/ES	Fluorescent, (2) 96", ES HO lamps	Electronic	2	95	173	Linear Fluorescents: Replacing T12 Fixtures	14
F82EHS	F96T12/HO/ES	Fluorescent, (2) 96", ES HO lamps	Mag-STD	2	95	207	Linear Fluorescents: Replacing T12 Fixtures	8
F82EL	F96T12/ES	Fluorescent, (2) 96", ES lamps	Electronic	2	60	110	Linear Fluorescents: Replacing T12 Fixtures	14
F82EVS	F96T12/VHO/ES	Fluorescent, (2) 96", ES VHO lamps	Mag-STD	2	195	380	Linear Fluorescents: Replacing T12 Fixtures	8
F82SHE	F96T12/HO	Fluorescent, (2) 96", STD HO lamps	Mag-ES	2	110	207	Linear Fluorescents: Replacing T12 Fixtures	8
F82SHL	F96T12/HO	Fluorescent, (2) 96", STD HO lamps	Electronic	2	110	173	Linear Fluorescents: Replacing T12 Fixtures	14
F82SHS	F96T12/HO	Fluorescent, (2) 96", STD HO lamps	Mag-STD	2	110	207	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
F82SL	F96T12	Fluorescent, (2) 96", STD lamps	Electronic	2	75	110	Linear Fluorescents: Replacing T12 Fixtures	14
F82SVS	F96T12/ VHO	Fluorescent, (2) 96", STD VHO lamps	Mag-STD	2	215	380	Linear Fluorescents: Replacing T12 Fixtures	8
F83EE	F96T12/ES	Fluorescent, (3) 96", ES lamps	Mag-ES	3	60	198	Linear Fluorescents: Replacing T12 Fixtures	8
F83EHE	F96T12/ HO/ES	Fluorescent, (3) 96", ES HO lamps, (1) 2-lamp ES Ballast and (1) 1-lamp STD Ballast	Mag-ES/STD	3	95	319	Linear Fluorescents: Replacing T12 Fixtures	8
F83EHS	F96T12/ HO/ES	Fluorescent, (3) 96", ES HO lamps	Mag-STD	3	95	319	Linear Fluorescents: Replacing T12 Fixtures	8
F83EL	F96T12/ES	Fluorescent, (3) 96", ES lamps	Electronic	3	60	179	Linear Fluorescents: Replacing T12 Fixtures	14
F83EVS	F96T12/ VHO/ES	Fluorescent, (3) 96", ES VHO lamps	Mag-STD	3	185	585	Linear Fluorescents: Replacing T12 Fixtures	8
F83SHE	F96T12/HO	Fluorescent, (3) 96", STD HO lamps	Mag-ES	3	110	319	Linear Fluorescents: Replacing T12 Fixtures	8
F83SHS	F96T12/HO	Fluorescent, (3) 96", STD HO lamps	Mag-STD	3	110	319	Linear Fluorescents: Replacing T12 Fixtures	8
F83SL	F96T12	Fluorescent, (3) 96", STD lamps	Electronic	3	75	179	Linear Fluorescents: Replacing T12 Fixtures	14
F83SVS	F96T12/ VHO	Fluorescent, (3) 96", STD VHO lamps	Mag-STD	3	215	585	Linear Fluorescents: Replacing T12 Fixtures	8
F84EE	F96T12/ES	Fluorescent, (4) 96", ES lamps	Mag-ES	4	60	246	Linear Fluorescents: Replacing T12 Fixtures	8
F84EHE	F96T12/ HO/ES	Fluorescent, (4) 96", ES HO lamps	Mag-ES	4	95	414	Linear Fluorescents: Replacing T12 Fixtures	8
F84EHL	F96T12/ HO/ES	Fluorescent, (4) 96", ES HO lamps	Electronic	4	95	346	Linear Fluorescents: Replacing T12 Fixtures	14
F84EHS	F96T12/ HO/ES	Fluorescent, (4) 96", ES HO lamps	Mag-STD	4	95	414	Linear Fluorescents: Replacing T12 Fixtures	8
F84EL	F96T12/ES	Fluorescent, (4) 96", ES lamps	Electronic	4	60	220	Linear Fluorescents: Replacing T12 Fixtures	14
F84EVS	F96T12/ VHO/ES	Fluorescent, (4) 96", ES VHO lamps	Mag-STD	4	185	760	Linear Fluorescents: Replacing T12 Fixtures	8
F84SHE	F96T12/HO	Fluorescent, (4) 96", STD HO lamps	Mag-ES	4	110	414	Linear Fluorescents: Replacing T12 Fixtures	8

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/FIXT	WATT/LAMP	Actual WATT/FIXT	LAMP TYPE	LAMP EUL
F84SHL	F96T12/HO	Fluorescent, (4) 96", STD HO lamps	Electronic	4	110	346	Linear Fluorescents: Replacing T12 Fixtures	14
F84SHS	F96T12/HO	Fluorescent, (4) 96", STD HO lamps	Mag-STD	4	110	414	Linear Fluorescents: Replacing T12 Fixtures	8
F84SL	F96T12	Fluorescent, (4) 96", STD lamps	Electronic	4	75	220	Linear Fluorescents: Replacing T12 Fixtures	14
F84SVS	F96T12/VHO	Fluorescent, (4) 96", STD VHO lamps	Mag-STD	4	215	760	Linear Fluorescents: Replacing T12 Fixtures	8
F86EE	F96T12/ES	Fluorescent, (6) 96", ES lamps	Mag-ES	6	60	369	Linear Fluorescents: Replacing T12 Fixtures	8
F86EHS	F96T12/HO/ES	Fluorescent, (6) 96", ES HO lamps	Mag-STD	6	95	519	Linear Fluorescents: Replacing T12 Fixtures	8
F88EHE	F96T12/HO/ES	Fluorescent, (8) 96", ES HO lamps	Mag-ES	8	95	828	Linear Fluorescents: Replacing T12 Fixtures	8
F88SHS	F96T12/HO	Fluorescent, (8) 96", STD HO lamps	Mag-STD	8	110	828	Linear Fluorescents: Replacing T12 Fixtures	8
FC		<i>Circline Fluorescent Fixtures</i>						
FC12/1	FC12T9	Fluorescent, (1) 12" circular lamp, RS ballast	Mag-STD	1	32	31	Linear Fluorescent	8
FC12/2	FC12T9	Fluorescent, (2) 12" circular lamps, RS ballast	Mag-STD	2	32	62	Linear Fluorescent	8
FC16/1	FC16T9	Fluorescent, (1) 16" circular lamp	Mag-STD	1	40	35	Linear Fluorescent	15
FC20	FC6T9	Fluorescent, circline, (1) 20W lamp, preheat ballast	Mag-STD	1	20	20	Linear Fluorescent	15
FC22	FC8T9	Fluorescent, circline, (1) 22W lamp, preheat ballast	Mag-STD	1	22	20	Linear Fluorescent	15
FC32	FC12T9	Fluorescent, circline, (1) 32W lamp, preheat ballast	Mag-STD	1	32	40	Linear Fluorescent	8
FC40	FC16T9	Fluorescent, circline, (1) 32W lamp, preheat ballast	Mag-STD	1	32	42	Linear Fluorescent	15
FC6/1	FC6T9	Fluorescent, (1) 6" circular lamp, RS ballast	Mag-STD	1	20	25	Linear Fluorescent	15
FC8/1	FC8T9	Fluorescent, (1) 8" circular lamp, RS ballast	Mag-STD	1	22	26	Linear Fluorescent	15
FC8/2	FC8T9	Fluorescent, (2) 8" circular lamps, RS ballast	Mag-STD	2	22	52	Linear Fluorescent	15
FEI		<i>Fluorescent Electrodeless Induction Fixtures</i>						
FEI40/1	CFT40W	Electrodeless Fluorescent System, (1) 40W lamp	Electronic	1	40	45	Linear Fluorescent	15
FEI55/1	CFT55W	Electrodeless Fluorescent System, (1) 55W lamp	Electronic	1	55	55	Linear Fluorescent	15
FEI70/1	CFT70W	Electrodeless Fluorescent System, (1) 70W lamp	Electronic	1	70	76	Linear Fluorescent	15
FEI80/1	CFT80W	Electrodeless Fluorescent System, (1) 80W lamp	Electronic	1	80	84	Linear Fluorescent	15
FEI85/1	CFT85W	Electrodeless Fluorescent System, (1) 85W lamp	Electronic	1	85	88	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
FEI100/1	CFT100W	Electrodeless Fluorescent System, (1) 100W lamp	Electronic	1	100	109	Linear Fluorescent	15
FEI150/1	CFT150W	Electrodeless Fluorescent System, (1) 150W lamp	Electronic	1	150	157	Linear Fluorescent	15
FEI165/1	CFT165W	Electrodeless Fluorescent System, (1) 165W lamp	Electronic	1	165	165	Linear Fluorescent	15
FEI200/1	CFT200W	Electrodeless Fluorescent System, (1) 200W lamp	Electronic	1	200	210	Linear Fluorescent	15
FEI250/1	CFT250W	Electrodeless Fluorescent System, (1) 250W lamp	Electronic	1	250	263	Linear Fluorescent	15
FEI300/1	CFT300W	Electrodeless Fluorescent System, (1) 300W lamp	Electronic	1	300	315	Linear Fluorescent	15
FEI400/1	CFT400W	Electrodeless Fluorescent System, (1) 400W lamp	Electronic	1	400	420	Linear Fluorescent	15
FU		U-Tube Fluorescent Fixtures						
FU1EE	FU40T12/ES	Fluorescent, (1) U-Tube, ES lamp	Mag-ES	1	35	43	Linear Fluorescent	15
FU1ES	FU40T12/ES	Fluorescent, (1) U-Tube, ES Lamp	Mag-STD	1	34	43	Linear Fluorescent	15
FU1ILL	FU31T8/6	Fluorescent, (1) U-Tube, T-8 lamp, Instant Start ballast	Electronic	1	32	31	Linear Fluorescent	15
FU1ILU	FU32T8/6	Fluorescent, (1) 6" spacing U-Tube, T-8 lamp, IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	1	32	29	Linear Fluorescent	15
FU1ILU-H	FU32T8/6	Fluorescent, (1) 6" spacing U-Tube, T-8 lamp, IS Ballast, HLO (.95 < BF < 1.1)	Prem. Elec.	1	32	34	Linear Fluorescent	15
FU1LL	FU31T8/6	Fluorescent, (1) U-Tube, T-8 lamp	Electronic	1	32	32	Linear Fluorescent	15
FU1LL-R	FU31T8/6	Fluorescent, (1) U-Tube, T-8 lamp, RLO (BF < 0.85)	Electronic	1	31	27	Linear Fluorescent	15
FU1SE	FU40T12	Fluorescent, (1) U-Tube, STD lamp	Mag-ES	1	40	43	Linear Fluorescent	15
FU1SS	FU40T12	Fluorescent, (1) U-Tube, ES Lamp	Mag-STD	1	40	43	Linear Fluorescent	15
FU2EE	FU40T12/ES	Fluorescent, (2) U-Tube, ES lamps	Mag-ES	2	35	72	Linear Fluorescent	15
FU2EL	FU40T12/ES	Fluorescent (2) 48" U-bent ES lamps, Electronic ballast, NLO (0.85 < BF < 0.95)	Electronic	2	34	63	Linear Fluorescent	15
FU2ES	FU40T12/ES	Fluorescent, (2) U-Tube, ES lamps	Mag-STD	1	35	72	Linear Fluorescent	15
FU2ILL	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, Instant Start Ballast	Electronic	2	32	59	Linear Fluorescent	15
FU2ILL/T4	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, Instant Start Ballast, Tandem 4-lamp ballast	Electronic	2	32	56	Linear Fluorescent	15
FU2ILL/T4-R	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, Instant Start Ballast, RLO, Tandem 4-lamp ballast	Electronic	2	32	49	Linear Fluorescent	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
FU2ILL-H	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, Instant Start HLO Ballast	Electronic	2	32	65	Linear Fluorescent	15
FU2ILL-R	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, Instant Start RLO Ballast	Electronic	2	32	52	Linear Fluorescent	15
FU2ILU	FU32T8/6	Fluorescent, (2) 6" spacing U-Tube, T-8 lamps, IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	2	32	55	Linear Fluorescent	15
FU2ILU-R	FU32T8/6	Fluorescent, (2) 6" spacing U-Tube, T-8 lamps, IS Ballast, RLO (BF < 0.85)	Prem. Elec.	2	32	48	Linear Fluorescent	15
FU2ILU-V	FU32T8/6	Fluorescent, (2) 6" spacing U-Tube, T-8 lamps, IS Ballast, VHLO (BF > 1.1)	Prem. Elec.	2	32	73	Linear Fluorescent	15
FU2LL	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps	Electronic	2	32	60	Linear Fluorescent	15
FU2LL/T2	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, Tandem 4-lamp ballast	Electronic	2	32	59	Linear Fluorescent	15
FU2LL-R	FU31T8/6	Fluorescent, (2) U-Tube, T-8 lamps, RLO (BF < 0.85)	Electronic	2	31	54	Linear Fluorescent	15
FU2SE	FU40T12	Fluorescent, (2) U-Tube, STD lamps	Mag-ES	2	40	72	Linear Fluorescent	15
FU2SL	FU40T12	Fluorescent (2) 48" U-bent Standard lamps, Electronic ballast, NLO (0.85 < BF < 0.95)	Electronic	2	40	63	Linear Fluorescent	15
FU2SS	FU40T12	Fluorescent, (1) U-Tube, STD lamp, STD Mag Ballast	Mag-STD	2	40	72	Linear Fluorescent	15
FU3EE	FU40T12/ES	Fluorescent, (3) U-Tube, ES lamps	Mag-ES	3	35	115	Linear Fluorescent	15
FU3ILL	FU31T8/6	Fluorescent, (3) U-Tube, T-8 lamps, Instant Start Ballast	Electronic	3	32	89	Linear Fluorescent	15
FU3ILL-R	FU31T8/6	Fluorescent, (3) U-Tube, T-8 lamps, Instant Start RLO Ballast	Electronic	3	32	78	Linear Fluorescent	15
FU3ILU	FU32T8/6	Fluorescent, (3) 6" spacing U-Tube, T-8 lamps, IS Ballast, NLO (0.85 < BF < 0.95)	Prem. Elec.	3	32	81	Linear Fluorescent	15
FU3ILU-R	FU32T8/6	Fluorescent, (3) 6" spacing U-Tube, T-8 lamps, IS Ballast, RLO (BF < 0.85)	Prem. Elec.	3	32	73	Linear Fluorescent	15
FU3SE	FU40T12	Fluorescent, (3) U-Tube, STD lamps	Mag-ES	3	40	115	Linear Fluorescent	15
H		Halogen Incandescent Fixtures						
H100/1	H100	Halogen, (1) 100W lamp		1	100	100	Halogen	1
H150/1	H150	Halogen, (1) 150W lamp		1	150	150	Halogen	1
H20/1	H20	Halogen, (1) 20W lamp		1	20	20	Halogen	1
H250/1	H250	Halogen, (1) 250W lamp		1	250	250	Halogen	1
H300/1	H300	Halogen, (1) 300W lamp		1	300	300	Halogen	1

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
H30/1	H30	Halogen, (1) 30W lamp		1	30	30	Halogen	1
H35/1	H35	Halogen, (1) 35W lamp		1	35	35	Halogen	1
H37/1	H37	Halogen, (1) 37W lamp		1	37	37	Halogen	1
H40/1	H40	Halogen, (1) 40W lamp		1	40	40	Halogen	1
H42/1	H42	Halogen, (1) 42W lamp		1	42	42	Halogen	1
H45/1	H45	Halogen, (1) 45W lamp		1	45	45	Halogen	1
H50/1	H50	Halogen, (1) 50W lamp		1	50	50	Halogen	1
H500/1	H500	Halogen, (1) 500W lamp		1	500	500	Halogen	1
H52/1	H52	Halogen, (1) 52W lamp		1	52	52	Halogen	1
H55/1	H55	Halogen, (1) 55W lamp		1	55	55	Halogen	1
H60/1	H60	Halogen, (1) 60W lamp		1	60	60	Halogen	1
H70/1	H70	Halogen, (1) 70W lamp		1	70	70	Halogen	1
H72/1	H72	Halogen, (1) 72W lamp		1	72	72	Halogen	1
H75/1	H75	Halogen, (1) 75W lamp		1	75	75	Halogen	1
H80/1	H80	Halogen, (1) 80W lamp		1	80	80	Halogen	1
H90/1	H90	Halogen, (1) 90W lamp		1	90	90	Halogen	1
HPS		High-Pressure Sodium Fixtures						
HPS100/1	HPS100	High-Pressure Sodium, (1) 100W lamp		1	100	138	High-Intensity Discharge (HID)	15
HPS1000/1	HPS1000	High-Pressure Sodium, (1) 1000W lamp		1	1000	1100	High-Intensity Discharge (HID)	15
HPS150/1	HPS150	High-Pressure Sodium, (1) 150W lamp		1	150	188	High-Intensity Discharge (HID)	15
HPS200/1	HPS200	High-Pressure Sodium, (1) 200W lamp		1	200	250	High-Intensity Discharge (HID)	15
HPS250/1	HPS250	High-Pressure Sodium, (1) 250W lamp		1	250	295	High-Intensity Discharge (HID)	15
HPS310/1	HPS310	High-Pressure Sodium, (1) 310W lamp		1	310	365	High-Intensity Discharge (HID)	15
HPS35/1	HPS35	High-Pressure Sodium, (1) 35W lamp		1	35	46	High-Intensity Discharge (HID)	15
HPS360/1	HPS360	High-Pressure Sodium, (1) 360W lamp		1	360	414	High-Intensity Discharge (HID)	15
HPS400/1	HPS400	High-Pressure Sodium, (1) 400W lamp		1	400	465	High-Intensity Discharge (HID)	15
HPS50/1	HPS50	High-Pressure Sodium, (1) 50W lamp		1	50	66	High-Intensity Discharge (HID)	15
HPS70/1	HPS70	High-Pressure Sodium, (1) 70W lamp		1	70	95	High-Intensity Discharge (HID)	15
I		Standard Incandescent Fixtures						
I100/1	I100	Incandescent, (1) 100W lamp		1	100	100	Baseline	0

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
I1000/1	I1000	Incandescent, (1) 1000W lamp		1	1000	1000	Baseline	0
I100E/1	I100/ES	Incandescent, (1) 100W ES lamp		1	90	90	Baseline	0
I100EL/1	I100/ES/LL	Incandescent, (1) 100W ES/LL lamp		1	90	90	Baseline	0
I11/1	I11	Incandescent, (1) 11W lamp		1	11	11	Baseline	0
I110/1	I110	Incandescent, (1) 110W lamp		1	110	110	Baseline	0
I116/1	I116	Incandescent, (1) 116W lamp		1	116	116	Baseline	0
I120/1	I120	Incandescent, (1) 120W lamp		1	120	120	Baseline	0
I120/1	I120	Incandescent, (1) 120W lamp		1	120	120	Baseline	0
I125/1	I125	Incandescent, (1) 125W lamp		1	125	125	Baseline	0
I130/1	I130	Incandescent, (1) 130W lamp		1	130	130	Baseline	0
I135/1	I135	Incandescent, (1) 135W lamp		1	135	135	Baseline	0
I15/1	I15	Incandescent, (1) 15W lamp		1	15	15	Baseline	0
I150/1	I150	Incandescent, (1) 150W lamp		1	150	150	Baseline	0
I1500/1	I1500	Incandescent, (1) 1500W lamp		1	1500	1500	Baseline	0
I150E/1	I150/ES	Incandescent, (1) 150W ES lamp		1	135	135	Baseline	0
I150EL/1	I150/ES/LL	Incandescent, (1) 150W ES/LL lamp		1	135	135	Baseline	0
I160/1	I160	Incandescent, (1) 160W lamp		1	160	160	Baseline	0
I170/1	I170	Incandescent, (1) 170W lamp		1	170	170	Baseline	0
I20/1	I20	Incandescent, (1) 20W lamp		1	20	20	Baseline	0
I200/1	I200	Incandescent, (1) 200W lamp		1	200	200	Baseline	0
I2000/1	I2000	Incandescent, (1) 2000W lamp		1	2000	2000	Baseline	0
I200L/1	I200/LL	Incandescent, (1) 200W LL lamp		1	200	200	Baseline	0
I25/1	I25	Incandescent, (1) 25W lamp		1	25	25	Baseline	0
I250/1	I250	Incandescent, (1) 250W lamp		1	250	250	Baseline	0
I30/1	I30	Incandescent, (1) 30W lamp		1	30	30	Baseline	0
I300/1	I300	Incandescent, (1) 300W lamp		1	300	300	Baseline	0
I34/1	I34	Incandescent, (1) 34W lamp		1	34	34	Baseline	0
I36/1	I36	Incandescent, (1) 36W lamp		1	36	36	Baseline	0
I40/1	I40	Incandescent, (1) 40W lamp		1	40	40	Baseline	0
I400/1	I400	Incandescent, (1) 400W lamp		1	400	400	Baseline	0

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
I40E/1	I40/ES	Incandescent, (1) 40W ES lamp		1	34	34	Baseline	0
I40EL/1	I40/ES/LL	Incandescent, (1) 40W ES/LL lamp		1	34	34	Baseline	0
I42/1	I42	Incandescent, (1) 42W lamp		1	42	42	Baseline	0
I448/1	I448	Incandescent, (1) 448W lamp		1	448	448	Baseline	0
I45/1	I45	Incandescent, (1) 45W lamp		1	45	45	Baseline	0
I50/1	I50	Incandescent, (1) 50W lamp		1	50	50	Baseline	0
I500/1	I500	Incandescent, (1) 500W lamp		1	500	500	Baseline	0
I52/1	I52	Incandescent, (1) 52W lamp		1	52	52	Baseline	0
I54/1	I54	Incandescent, (1) 54W lamp		1	54	54	Baseline	0
I55/1	I55	Incandescent, (1) 55W lamp		1	55	55	Baseline	0
I60/1	I60	Incandescent, (1) 60W lamp		1	60	60	Baseline	0
I60E/1	I60/ES	Incandescent, (1) 60W ES lamp		1	52	52	Baseline	0
I60EL/1	I60/ES/LL	Incandescent, (1) 60W ES/LL lamp		1	52	52	Baseline	0
I65/1	I65	Incandescent, (1) 65W lamp		1	65	65	Baseline	0
I65/1	I65	Incandescent, (1) 65W lamp		1	65	65	Baseline	0
I67/1	I67	Incandescent, (1) 67W lamp		1	67	67	Baseline	0
I69/1	I69	Incandescent, (1) 69W lamp		1	69	69	Baseline	0
I7.5/1	I7.5	Tungsten exit light, (1) 7.5 W lamp, used in night light application		1	7.5	8	Baseline	0
I72/1	I72	Incandescent, (1) 72W lamp		1	72	72	Baseline	0
I75/1	I75	Incandescent, (1) 75W lamp		1	75	75	Baseline	0
I750/1	I750	Incandescent, (1) 750W lamp		1	750	750	Baseline	0
I75E/1	I75/ES	Incandescent, (1) 75W ES lamp		1	67	67	Baseline	0
I75EL/1	I75/ES/LL	Incandescent, (1) 75W ES/LL lamp		1	67	67	Baseline	0
I80/1	I80	Incandescent, (1) 80W lamp		1	80	80	Baseline	0
I85/1	I85	Incandescent, (1) 85W lamp		1	85	85	Baseline	0
I90/1	I90	Incandescent, (1) 90W lamp		1	90	90	Baseline	0
I93/1	I93	Incandescent, (1) 93W lamp		1	93	93	Baseline	0
I95/1	I95	Incandescent, (1) 95W lamp		1	95	95	Baseline	0
LEDT		LED Traffic Signal Fixtures						

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDT12GA	LED 12" Green Arrow	LED Traffic Signal Light, 12" Green Arrow	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LEDT12GB	LED 12" Green Ball	LED Traffic Signal Light, 12" Green Ball	Electronic	1	12	12	Light-Emitting Diode (LED)	15
LEDT12RA	LED 12" Red Arrow	LED Traffic Signal Light, 12" Red Arrow	Electronic	1	7	7	Light-Emitting Diode (LED)	15
LEDT12RB	LED 12" Red Ball	LED Traffic Signal Light, 12" Red Ball	Electronic	1	10	10	Light-Emitting Diode (LED)	15
LEDT12YA	LED 12" Yellow Arrow	LED Traffic Signal Light, 12" Yellow Arrow	Electronic	1	9	9	Light-Emitting Diode (LED)	15
LEDT12YB	LED 12" Yellow Ball	LED Traffic Signal Light, 12" Yellow Ball	Electronic	1	17	17	Light-Emitting Diode (LED)	15
LED8GB	LED 8" Green Ball	LED Traffic Signal Light, 8" Green Ball	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LED8RB	LED 8" Red Ball	LED Traffic Signal Light, 8" Red Ball	Electronic	1	6	6	Light-Emitting Diode (LED)	15
LED8YB	LED 8" Yellow Ball	LED Traffic Signal Light, 8" Yellow Ball	Electronic	1	12	12	Light-Emitting Diode (LED)	15
LEDTPCOUNT	Countdown Led	LED, P(edestrian), COUNT(down timer) (Side by Side or dedicated fixture)	Electronic	1	7	7	Light-Emitting Diode (LED)	15
LEDTPH12OF	Overlay Filled Hand	LED, P(edestrian), H(and), in 12" x 12" enclosure, O(overlay), F(illed)	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LEDTPH12OO	Overlay Outline Hand	LED, P(edestrian), H(and), in 12" x 12" enclosure, O(overlay), O(utline)	Electronic	1	6	6	Light-Emitting Diode (LED)	15
LEDTPH12F	Filled Hand Only	LED, P(edestrian), H(and), 12" x 12" enclosure, H(and) Only, F(illed)	Electronic	1	7	7	Light-Emitting Diode (LED)	15
LEDTPH12O	Outline Hand Only	LED, P(edestrian), H(and), 12" x 12" enclosure, H(and) Only, O(utline)	Electronic	1	6	6	Light-Emitting Diode (LED)	15
LEDTPH12SF	Side by Side Filled Hand	LED, P(edestrian), H(and), one half of 12" x 12" enclosure, S(ide by Side), F(illed)	Electronic	1	7	7	Light-Emitting Diode (LED)	15
LEDTPH16OF	Overlay Filled Hand	LED P(edestrian), H(and), in 16" x 18" enclosure, O(overlay), F(illed)	Electronic	1	9	9	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDTPH1600	Overlay Outline Hand	LED P(edestrian), H(and), in 16" x 18" enclosure, O(verlay), O(utline)	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LEDTPH16SF	Side by Side Filled Hand	LED P(edestrian), H(and), one half of 16" x 18" enclosure, S(ide by side), F(illed)	Electronic	1	11	11	Light-Emitting Diode (LED)	15
LEDTPH16SO	Side by Side Outline Hand	LED P(edestrian), H(and), one half of 16" x 18" enclosure, S(ide by side), O(utline)	Electronic	1	6	6	Light-Emitting Diode (LED)	15
LEDTPP120F	Overlay Filled Person	LED, P(edestrian), P(erson), in 12" x 12" enclosure, O(verlay), F(illed)	Electronic	1	7	7	Light-Emitting Diode (LED)	15
LEDTPP1200	Overlay Outline Person	LED, P(edestrian), P(erson), 12" x 12" enclosure, O(verlay), O(utline)	Electronic	1	6	6	Light-Emitting Diode (LED)	15
LEDTPP12F	Filled Person Only	LED, P(edestrian), P(erson), 12" x 12" enclosure, P(erson) Only, F(illed)	Electronic	1	7	7	Light-Emitting Diode (LED)	15
LEDTPP120	Outline Person Only	LED, P(edestrian), P(erson), 12" x 12" enclosure, P(erson) Only, O(utline)	Electronic	1	5	5	Light-Emitting Diode (LED)	15
LEDTPP12SO	Side by Side Outline Person	LED, P(edestrian), P(erson), one half of 12" x 12" enclosure, S(ide by Side), O(utline)	Electronic	1	4	4	Light-Emitting Diode (LED)	15
LEDTPP160F	Overlay Filled Person	LED, P(edestrian), P(erson), in 16" x 18" Enclosure, O(verlay), F(illed)	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LEDTPP1600	Overlay Outline Person	LED, P(edestrian), P(erson), in 16" x 18" Enclosure, O(verlay), O(utline)	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LEDTPP16SF	Side by Side Filled Person	LED, P(edestrian), P(erson), one half of 16" x 18" enclosure, S(ide by side), F(illed)	Electronic	1	8	8	Light-Emitting Diode (LED)	15
LEDTPP16SO	Side by Side Outline Person	LED, P(edestrian), P(erson), one half of 16" x 18" enclosure, S(ide by side), O(utline)	Electronic	1	7	7	Light-Emitting Diode (LED)	15
MH		Metal Halide Fixtures - Standard, Pulse Start, or Ceramic						
MH20/1-L	MH20	Metal Halide, (1) 20W lamp	Electronic	1	20	23	High-Intensity Discharge (HID)	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
MH22/1-L	MH22	Metal Halide, (1) 22W lamp	Electronic	1	22	26	High-Intensity Discharge (HID)	15
MH32/1	MH32	Metal Halide, (1) 32W lamp, magnetic ballast	Magnetic	1	32	42	High-Intensity Discharge (HID)	15
MH39/1	MH39	Metal Halide, (1) 39W lamp, magnetic ballast	Magnetic	1	39	51	High-Intensity Discharge (HID)	15
MH39/1-L	MH39	Metal Halide, (1) 39W lamp	Electronic	1	39	44	High-Intensity Discharge (HID)	15
MH50/1	MH50	Metal Halide, (1) 50W lamp, magnetic ballast	Magnetic	1	50	64	High-Intensity Discharge (HID)	15
MH50/1-L	MH50	Metal Halide, (1) 50W lamp	Electronic	1	50	56	High-Intensity Discharge (HID)	15
MH70/1	MH70	Metal Halide, (1) 70W lamp, magnetic ballast	Magnetic	1	70	91	High-Intensity Discharge (HID)	15
MH70/1-L	MH70	Metal Halide, (1) 70W lamp	Electronic	1	70	78	High-Intensity Discharge (HID)	15
MH100/1	MH100	Metal Halide, (1) 100W lamp, magnetic ballast	Magnetic	1	100	124	High-Intensity Discharge (HID)	15
MH100/1-L	MH100	Metal Halide, (1) 100W lamp	Electronic	1	100	108	High-Intensity Discharge (HID)	15
MH125/1	MH125	Metal Halide, (1) 125W lamp, magnetic ballast	Magnetic	1	125	148	High-Intensity Discharge (HID)	15
MH150/1	MH150	Metal Halide, (1) 150W lamp, magnetic ballast	Magnetic	1	150	183	High-Intensity Discharge (HID)	15
MH150/1-L	MH150	Metal Halide, (1) 150W lamp	Electronic	1	150	163	High-Intensity Discharge (HID)	15
MH175/1	MH175	Metal Halide, (1) 175W lamp, magnetic ballast	Magnetic	1	175	208	High-Intensity Discharge (HID)	15
MH175/1-L	MH175	Metal Halide, (1) 175W lamp	Electronic	1	175	196	High-Intensity Discharge (HID)	15
MH200/1	MH200	Metal Halide, (1) 200W lamp, magnetic ballast	Magnetic	1	200	228	High-Intensity Discharge (HID)	15
MH200/1-L	MH200	Metal Halide, (1) 200W lamp	Electronic	1	200	219	High-Intensity Discharge (HID)	15
MH250/1	MH250	Metal Halide, (1) 250W lamp, magnetic ballast	Magnetic	1	250	288	High-Intensity Discharge (HID)	15
MH250/1-L	MH250	Metal Halide, (1) 250W lamp	Electronic	1	250	275	High-Intensity Discharge (HID)	15
MH320/1	MH320	Metal Halide, (1) 320W lamp, magnetic ballast	Magnetic	1	320	362	High-Intensity Discharge (HID)	15
MH320/1-L	MH320	Metal Halide, (1) 320W lamp	Electronic	1	320	343	High-Intensity Discharge (HID)	15
MH350/1	MH350	Metal Halide, (1) 350W lamp, magnetic ballast	Magnetic	1	350	391	High-Intensity Discharge (HID)	15
MH350/1-L	MH350	Metal Halide, (1) 350W lamp	Electronic	1	350	375	High-Intensity Discharge (HID)	15
MH360/1	MH360	Metal Halide, (1) 360W lamp, magnetic ballast	Magnetic	1	360	418	High-Intensity Discharge (HID)	15
MH400/1	MH400	Metal Halide, (1) 400W lamp, magnetic ballast	Magnetic	1	400	448	High-Intensity Discharge (HID)	15
MH400/1-L	MH400	Metal Halide, (1) 400W lamp	Electronic	1	400	429	High-Intensity Discharge (HID)	15
MH450/1	MH450	Metal Halide, (1) 450W lamp, magnetic ballast	Magnetic	1	450	499	High-Intensity Discharge (HID)	15
MH450/1-L	MH450	Metal Halide, (1) 450W lamp	Electronic	1	450	486	High-Intensity Discharge (HID)	15
MH750/1	MH750	Metal Halide, (1) 750W lamp, magnetic ballast	Magnetic	1	750	812	High-Intensity Discharge (HID)	15
MH875/1	MH875	Metal Halide, (1) 875W lamp	Magnetic	1	875	939	High-Intensity Discharge (HID)	15
MH1000/1	MH1000	Metal Halide, (1) 1000W lamp, magnetic ballast	Magnetic	1	1000	1078	High-Intensity Discharge (HID)	15

Table 12: (Continued) Standard Lighting Wattages

FIXTURE CODE	LAMP CODE	DESCRIPTION	BALLAST	LAMP/ FIXT	WATT/ LAMP	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
MH1000/1-L	MH1000	Metal Halide, (1) 1000W lamp	Electronic	1	1000	1067	High-Intensity Discharge (HID)	15
MH1500/1	MH1500	Metal Halide, (1) 1500W lamp, magnetic ballast	Magnetic	1	1500	1605	High-Intensity Discharge (HID)	15
MH1650/1	MH1650	Metal Halide, (1) 1650W lamp	Magnetic	1	1650	1765	High-Intensity Discharge (HID)	15
MH2000/1	MH2000	Metal Halide, (1) 2000W lamp	Magnetic	1	2000	2140	High-Intensity Discharge (HID)	15
MV		Mercury Vapor Fixtures						
MV100/1	MV100	Mercury Vapor, (1) 100W lamp		1	100	125	High-Intensity Discharge (HID)	15
MV1000/1	MV1000	Mercury Vapor, (1) 1000W lamp		1	1000	1075	High-Intensity Discharge (HID)	15
MV160/1	MV160-SB	Mercury Vapor, self-ballasted, (1) 160W self-ballasted lamp		1	160	160	High-Intensity Discharge (HID)	15
MV175/1	MV175	Mercury Vapor, (1) 175W lamp		1	175	205	High-Intensity Discharge (HID)	15
MV250/1	MV250	Mercury Vapor, (1) 250W lamp		1	250	290	High-Intensity Discharge (HID)	15
MV40/1	MV40	Mercury Vapor, (1) 40W lamp		1	40	50	High-Intensity Discharge (HID)	15
MV400/1	MV400	Mercury Vapor, (1) 400W lamp		1	400	455	High-Intensity Discharge (HID)	15
MV50/1	MV50	Mercury Vapor, (1) 50W lamp		1	50	74	High-Intensity Discharge (HID)	15
MV700/1	MV700	Mercury Vapor, (1) 700W lamp		1	700	780	High-Intensity Discharge (HID)	15
MV75/1	MV75	Mercury Vapor, (1) 75W lamp		1	75	93	High-Intensity Discharge (HID)	15
NEON		NEON Fixtures						
NEONEPH	Neon	NEON E(lectronic ballast) P(edestrian) H(and)		1	26	26	Modular CFL and CCFL Fixtures	16
NEONEPP	Neon	NEON E(lectronic ballast) P(edestrian) P(erson)		1	26	26	Modular CFL and CCFL Fixtures	16
NEONMPDW	Neon	NEON M(magnetic transformer) P(edestrian) D(on't) W(alk)		1	81	81	Modular CFL and CCFL Fixtures	16
NEONMPH	Neon	NEON M(magnetic transformer) P(edestrian) H(and)		1	45	45	Modular CFL and CCFL Fixtures	16
NEONMPP	Neon	NEON M(magnetic transformer) P(edestrian) P(erson)		1	38	38	Modular CFL and CCFL Fixtures	16

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LED		Approved LED Fixtures					
LEDPA1	LBP-CW-CLR-PND-G4-Black	Lighting Science Pyramid LowBay LBP-CW-CLR-PND-G4-Black Generation 4	Parking Garage or Canopy	4700	78.3	Light-Emitting Diode (LED)	15
LEDPA2	LS-B244-02ACM-C79	Albeo Technologies LS-B244-02ACM-C79	Parking Garage or Canopy	5000	140.0	Light-Emitting Diode (LED)	15
LEDPA3	PKG-304-5M-DM-06-C-UL-XX	BetaLED PKG-304-5M-DM-06-C-UL-XX	Parking Garage or Canopy		77.0	Light-Emitting Diode (LED)	15
LEDPA4	PKG-EDG-5M-04-C-UL	BetaLED PKG-EDG-5M-04-C-UL	Parking Garage or Canopy		51.0	Light-Emitting Diode (LED)	15
LEDPA5	PKG-EDG-5M-06-C-UL	BetaLED PKG-EDG-5M-06-C-UL	Parking Garage or Canopy		73.0	Light-Emitting Diode (LED)	15
LEDPA6	PKG-EDG-5M-08-C-UL	BetaLED PKG-EDG-5M-08-C-UL	Parking Garage or Canopy		96.0	Light-Emitting Diode (LED)	15
LEDPA7	TLEDFSN24WLUMHP	Daybrite TLEDFSN24WLUMHP	Track or Mono-point Directional	4100	22.0	Light-Emitting Diode (LED)	15
LEDPA8	EGMS-*-WM-N-60-P-**-**_**	GE EGMS-*-WM-N-60-P-**-**_**	Parking Garage or Canopy	6000	95.0	Light-Emitting Diode (LED)	15
LEDPA9	LB36CWS	Infinilux LB36CWS	Parking Garage or Canopy		58.4	Light-Emitting Diode (LED)	15
LEDPA10	FLB CW CLR SRF BLK	Lighting Science Group FLB CW CLR SRF BLK	Parking Garage or Canopy		86.0	Light-Emitting Diode (LED)	15
LEDPA11	LED SHB CW CLR	Lighting Science Group LED SHB CW CLR	Outdoor Pole/Arm Parking or Roadway	6145	84.8	Light-Emitting Diode (LED)	15
LEDPA12	XPGD HL 5 LED 68 CW UE MSV	LSI XPGD HL 5 LED 68 CW UE MSV	Parking Garage or Canopy		82.0	Light-Emitting Diode (LED)	15
LEDPA13	XPGD S LED 50 CW UE MSV	LSI XPGD S LED 50 CW UE MSV	Parking Garage or Canopy		62.0	Light-Emitting Diode (LED)	15
LEDPA14	ELG-5-85LA-CW-NP	Philips Gardco ELG-5-85LA-CW-NP	Parking Garage or Canopy		93.0	Light-Emitting Diode (LED)	15
LEDPA15	TLED121CWL**50LACW	Philips Gardco TLED121CWL**50LACW	Outdoor Wall-mount	4300 or 6500	60.0	Light-Emitting Diode (LED)	15
LEDPA16	TLED121CWL**50LANW	Philips Gardco TLED121CWL**50LANW	Outdoor Wall-mount	4301 or 6500	48.0	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDPA17	PGH-5050LED	Ringdale PGH-5050LED	Parking Garage or Canopy		53.0	Light-Emitting Diode (LED)	15
LEDPA18	C0820-100	Sansi C0820-100	Outdoor Pole/Arm Parking or Roadway		93.5	Light-Emitting Diode (LED)	15
LEDQPL1	LS-B144-010C0	Albeo Technologies LS-B144-010C0	Parking Garage or Canopy	5564	55	Light-Emitting Diode (LED)	15
LEDQPL2	CNTRV33-24-LED-E-WT-120/277-NF 3000/3500/4000	Amerlux CNTRV33-24-LED-E-WT-120/277-NF 3000/3500/4000	Track or Mono-point Directional	2857 (3000/3500/4000)	23.34	Light-Emitting Diode (LED)	15
LEDQPL3	BLD-STR-T2-HT-025-LED-B	BetaLED LEDway Street Light BLD-STR-T2-HT-025-LED-B	Outdoor Pole/Arm Parking or Roadway	6500	60	Light-Emitting Diode (LED)	15
LEDQPL4	VTS-A09-LED-E1-5WQ	Cooper Lighting McGraw-Edison VTS-A09-LED-E1-5WQ	Outdoor Pole/Arm Parking or Roadway	4222	236.5	Light-Emitting Diode (LED)	15
LEDQPL5	VTS-A09-LED-E1-SL3	Cooper Lighting McGraw-Edison VTS-A09-LED-E1-SL3	Outdoor Pole/Arm Parking or Roadway	4219	235.4	Light-Emitting Diode (LED)	15
LEDQPL6	VTS-A09-LED-E1-T4	Cooper Lighting McGraw-Edison VTS-A09-LED-E1-T4	Outdoor Pole/Arm Parking or Roadway	4191	233.8	Light-Emitting Diode (LED)	15
LEDQPL7	L805MEDSP830	Cooper Lighting Halo Track L805MEDSP830/840	Track or Mono-point Directional	3000	18.57	Light-Emitting Diode (LED)	15
LEDQPL8	L805MEDNF830	Cooper Lighting Halo Track L805MEDNF830/840	Track or Mono-point Directional	3000	17.83	Light-Emitting Diode (LED)	15
LEDQPL9	L805MEDFL830	Cooper Lighting Halo Track L805MEDFL830/840	Track or Mono-point Directional	3000	19.01	Light-Emitting Diode (LED)	15
LEDQPL10	L805SMLSP830	Cooper Lighting Halo Track L805SMLSP830/840	Track or Mono-point Directional	3000	8.48	Light-Emitting Diode (LED)	15
LEDQPL11	L805SMLNF830	Cooper Lighting Halo Track L805SMLNF830/840	Track or Mono-point Directional	3000	9.53	Light-Emitting Diode (LED)	15
LEDQPL12	L805SMLFL830	Cooper Lighting Halo Track L805SMLFL830/840	Track or Mono-point Directional	3000	9.51	Light-Emitting Diode (LED)	15
LEDQPL13	SL2C4ELGH	Dialight SL2C4ELGH	Outdoor Pole/Arm Parking or Roadway	5592	131.4	Light-Emitting Diode (LED)	15
LEDQPL14	SL2C4BLGH	Dialight SL2C4BLGH	Outdoor Pole/Arm Parking or Roadway	5855	65.67	Light-Emitting Diode (LED)	15
LEDQPL15	ILE-HB-3	Digital Lumens ILE-HB-3	High-bay and Low-bay Fixture	6500	159.88	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDQPL16	TLC-15***RS	Electra LED TLC Series TLC-15***RS	Track or Mono-point Directional	2700	38.2	Light-Emitting Diode (LED)	15
LEDQPL17	TLC-15***DD	Electra LED TLC Series TLC-15***DD	Track or Mono-point Directional	2700	37.4	Light-Emitting Diode (LED)	15
LEDQPL18	TLC-15***MM	Electra LED TLC Series TLC-15***MM	Track or Mono-point Directional	2700	36.5	Light-Emitting Diode (LED)	15
LEDQPL19	TLC-10***RS	Electra LED TLC Series TLC-10***RS	Track or Mono-point Directional	2700	26.2	Light-Emitting Diode (LED)	15
LEDQPL20	TLC-10***DD	Electra LED TLC Series TLC-10***DD	Track or Mono-point Directional	2700	25.25	Light-Emitting Diode (LED)	15
LEDQPL21	TLC-10***MM	Electra LED TLC Series TLC-10***MM	Track or Mono-point Directional	2700	26.3	Light-Emitting Diode (LED)	15
LEDQPL22	TLC-05***RS	Electra LED TLC Series TLC-05***RS	Track or Mono-point Directional	2700	13.6	Light-Emitting Diode (LED)	15
LEDQPL23	TLC-05***DD	Electra LED TLC Series TLC-05***DD	Track or Mono-point Directional	2700	13.5	Light-Emitting Diode (LED)	15
LEDQPL24	TLC-05***MM	Electra LED TLC Series TLC-05***MM	Track or Mono-point Directional	2700	13.6	Light-Emitting Diode (LED)	15
LEDQPL25	739D-8.4LED-LPARNSP-***_**	Janmar Lighting Track 739D-8.4LED-LPARNSP-***_**	Track or Mono-point Directional	3000	8.6	Light-Emitting Diode (LED)	15
LEDQPL26	Ultra 3	LED LIGHTING SOLUTIONS LLC SANSI Ultra 3	Outdoor Pole/Arm Parking or Roadway	5034	62.72	Light-Emitting Diode (LED)	15
LEDQPL27	LP3	LED-Era Inc. LED-Era LP3	Outdoor Wall-mount	5734	52.6	Light-Emitting Diode (LED)	15
LEDQPL28	LP5	LED-Era Inc. LED-Era LP5	Outdoor Wall-mount	5830	85.1	Light-Emitting Diode (LED)	15
LEDQPL29	LS5	LED-Era Inc. LED-Era LS5	Outdoor Pole/Arm Parking or Roadway	5830	85.1	Light-Emitting Diode (LED)	15
LEDQPL30	LS7	LED-Era Inc. LED-Era LS7	Outdoor Pole/Arm Parking or Roadway	5723	119.5	Light-Emitting Diode (LED)	15
LEDQPL31	LP4	LED-Era Inc. LED-Era LP4	Outdoor Wall-mount	5849	68.7	Light-Emitting Diode (LED)	15
LEDQPL32	SHB CW CLR	Lighting Science Group Shoe box SHB CW CLR	Outdoor Pole/Arm Parking or Roadway	6222	84.81	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDQPL33	LSR4 CW R2 2B	Lighting Science Group Prolific RoadWay LSR4 CW R2 2B	Outdoor Pole/Arm Parking or Roadway	5061	145.5	Light-Emitting Diode (LED)	15
LEDQPL34	LSR3 CW R3 2B	Lighting Science Group LSR3 CW R3 2B	Outdoor Pole/Arm Parking or Roadway	4959	101.3	Light-Emitting Diode (LED)	15
LEDQPL35	LSR3 CW R2 2B	Lighting Science Group LSR3 CW R2 2B	Outdoor Pole/Arm Parking or Roadway	5013	101.4	Light-Emitting Diode (LED)	15
LEDQPL36	LSR2 CW R3 2B	Lighting Science Group LSR2 CW R3 2B	Outdoor Pole/Arm Parking or Roadway	5145	75.48	Light-Emitting Diode (LED)	15
LEDQPL37	LSR1 CW R3 2B	Lighting Science Group LSR1 CW R3 2B	Outdoor Pole/Arm Parking or Roadway	5220	49.81	Light-Emitting Diode (LED)	15
LEDQPL38	LSR4 CW R3 2B	Lighting Science Group LSR4 CW R3 2B	Outdoor Pole/Arm Parking or Roadway	5095	150.4	Light-Emitting Diode (LED)	15
LEDQPL39	BYL CW CLR PND 48	Lighting Science Group BYL CW CLR PND 48	Parking Garage or Canopy	4982	104.8	Light-Emitting Diode (LED)	15
LEDQPL40	BYL CW CLR PND 24	Lighting Science Group BYL CW CLR PND 24	Parking Garage or Canopy	4887	58.74	Light-Emitting Diode (LED)	15
LEDQPL41	GPLS-90W49LED4K-LE2	Philips Lumec GPLS-90W49LED4K-LE2	Outdoor Pole/Arm Parking or Roadway	4167	101.5	Light-Emitting Diode (LED)	15
LEDQPL42	GPLS-90W49LED4K-LEDH2	Philips Lumec GPLS-90W49LED4K-LEDH2	Outdoor Pole/Arm Parking or Roadway	4167	101.3	Light-Emitting Diode (LED)	15
LEDQPL43	GPLS-90W49LED4K-LE3	Philips Lumec GPLS-90W49LED4K-LE3	Outdoor Pole/Arm Parking or Roadway	4049	101.7	Light-Emitting Diode (LED)	15
LEDQPL44	GPLM-180W98LED4K-LE2	Philips Lumec GPLM-180W98LED4K-LE2	Outdoor Pole/Arm Parking or Roadway	4168	204.6	Light-Emitting Diode (LED)	15
LEDQPL45	GPLM-180W98LED4K-LEH2	Philips Lumec GPLM-180W98LED4K-LEH2	Outdoor Pole/Arm Parking or Roadway	4150	204.7	Light-Emitting Diode (LED)	15
LEDQPL46	GPLM-180W98LED4K-LE3	Philips Lumec GPLM-180W98LED4K-LE3	Outdoor Pole/Arm Parking or Roadway	4168	204.0	Light-Emitting Diode (LED)	15
LEDQPL47	GPLM-180W98LED4K-LE4	Philips Lumec GPLM-180W98LED4K-LE4	Outdoor Pole/Arm Parking or Roadway	4223	205.0	Light-Emitting Diode (LED)	15
LEDQPL48	S55-90W49LED4K-LE3	Philips Lumec S55-90W49LED4K-LE3	Outdoor Pole/Arm Decorative	4083	101.9	Light-Emitting Diode (LED)	15
LEDQPL49	WPLED13*	Rab Lighting RAB WPLED13*	Outdoor Wall-mount	4828	14.9	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDQPL50	ALED13	Rab Lighting RAB ALED13	Outdoor Pole/Arm Parking or Roadway	4828	14.9	Light-Emitting Diode (LED)	15
LEDES1	CRL6K-14-30K-CLR6B-BLK	Capri Lighting CRL6K-14-30K-CLR6B-BLK	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES2	CRL6K-14-30K-CRL6B-WHT	Capri Lighting CRL6K-14-30K-CRL6B-WHT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES3	CRL6K-14-30K-CRL6R-BLK	Capri Lighting CRL6K-14-30K-CRL6R-BLK	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES4	CRL6K-14-30K-CRL6R-CLR	Capri Lighting CRL6K-14-30K-CRL6R-CLR	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES5	CRL6K-14-30K-CRL6R-GLD	Capri Lighting CRL6K-14-30K-CRL6R-GLD	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES6	CRL6K-14-30K-CRL6R-WHT	Capri Lighting CRL6K-14-30K-CRL6R-WHT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES7	EL405830	Cooper Lighting, a Division of Cooper Industries, HALO EL405830	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES8	EL405835	Cooper Lighting, a Division of Cooper Industries, HALO EL405835	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES9	EL405840	Cooper Lighting, a Division of Cooper Industries, HALO EL405840	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES10	ML706830	Cooper Lighting, a Division of Cooper Industries, HALO ML706830	Recessed downlights	3000	15	Light-Emitting Diode (LED)	15
LEDES11	ML706830-493	Cooper Lighting, a Division of Cooper Industries, HALO ML706830-493	Recessed downlights	3000	15	Light-Emitting Diode (LED)	15
LEDES12	ML706835	Cooper Lighting, a Division of Cooper Industries, HALO ML706835	Recessed downlights	3500	15	Light-Emitting Diode (LED)	15
LEDES13	ML706835-493	Cooper Lighting, a Division of Cooper Industries, HALO ML706835-493	Recessed downlights	3500	15	Light-Emitting Diode (LED)	15
LEDES14	ML706840	Cooper Lighting, a Division of Cooper Industries, HALO ML706840	Recessed downlights	4000	15	Light-Emitting Diode (LED)	15
LEDES15	ML706840-493	Cooper Lighting, a Division of Cooper Industries, HALO ML706840-493	Recessed downlights	4000	15	Light-Emitting Diode (LED)	15
LEDES16	ML709830	Cooper Lighting, a Division of Cooper Industries, HALO ML709830	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES17	ML709830-493	Cooper Lighting, a Division of Cooper Industries, HALO ML709830-493	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES18	ML709835	Cooper Lighting, a Division of Cooper Industries, HALO ML709835	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES19	ML709835-493	Cooper Lighting, a Division of Cooper Industries, HALO ML709835-493	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES20	ML709840	Cooper Lighting, a Division of Cooper Industries, HALO ML709840	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES21	ML709840-493	Cooper Lighting, a Division of Cooper Industries, HALO ML709840-493	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES22	ML712830	Cooper Lighting, a Division of Cooper Industries, HALO ML712830	Recessed downlights	3000	25	Light-Emitting Diode (LED)	15
LEDES23	ML712835	Cooper Lighting, a Division of Cooper Industries, HALO ML712835	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15
LEDES24	ML712840	Cooper Lighting, a Division of Cooper Industries, HALO ML712840	Recessed downlights	4000	25	Light-Emitting Diode (LED)	15
LEDES25	LR4E-15	Cree LED Lighting Solutions LR4E-15	Recessed downlights	2700	11	Light-Emitting Diode (LED)	15
LEDES26	LR4E-15C	Cree LED Lighting Solutions LR4E-15C	Recessed downlights	3500	11	Light-Emitting Diode (LED)	15
LEDES27	LR4E-30	Cree LED Lighting Solutions LR4E-30	Recessed downlights	2700	11	Light-Emitting Diode (LED)	15
LEDES28	LR4E-30C	Cree LED Lighting Solutions LR4E-30C	Recessed downlights	3500	11	Light-Emitting Diode (LED)	15
LEDES29	LR5E	Cree LED Lighting Solutions LR5E	Recessed downlights	2700	11	Light-Emitting Diode (LED)	15
LEDES30	LR5E-15C	Cree LED Lighting Solutions LR5E-15C	Recessed downlights	3500	11	Light-Emitting Diode (LED)	15
LEDES31	LR6	Cree LED Lighting Solutions LR6	Recessed downlights	2700	12	Light-Emitting Diode (LED)	15
LEDES32	LR6-GU24	Cree LED Lighting Solutions LR6-GU24	Recessed downlights	2700	12	Light-Emitting Diode (LED)	15
LEDES33	LR6C	Cree LED Lighting Solutions LR6C	Recessed downlights	3500	12	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES34	LR6C-GU24	Cree LED Lighting Solutions LR6C-GU24	Recessed downlights	3500	12	Light-Emitting Diode (LED)	15
LEDES35	QMP40-INW-TWRSVN	Digital Lighting, Inc. Q-RAY QMP40-INW-TWRSVN	Desk Lamps	3000	7	Light-Emitting Diode (LED)	15
LEDES36	E-T6A1143WW	E-conolight E-T6A1143WW	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES37	LPELD3L17	EEMA Lighting Group Liton LPELD3L17	Pendant-mounted downlights	3000	10.2	Light-Emitting Diode (LED)	15
LEDES38	LR3L17	EEMA Lighting Group Liton LR3L17	Recessed downlights	3000	10.2	Light-Emitting Diode (LED)	15
LEDES39	B5IC-LED-14W120V-DIM-FL-30K-AT	Elite Lighting B5IC-LED-14W120V-DIM-FL-30K-AT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES40	B5RIC-LED-14W120V-DIM-FL-30K-AT	Elite Lighting B5RIC-LED-14W120V-DIM-FL-30K-AT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES41	B6IC-LED-14W120V-DIM-FL-30K-AT	Elite Lighting B6IC-LED-14W120V-DIM-FL-30K-AT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES42	B6RIC-LED-14W120V-DIM-FL-30K-AT	Elite Lighting B6RIC-LED-14W120V-DIM-FL-30K-AT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES43	H6IC-LED-14W	Elite Lighting H6IC-LED-14W	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES44	LD6IC-AT	Elite Lighting LD6IC-AT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES45	LD6RIC-AT	Elite Lighting LD6RIC-AT	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES46	RL607-14W-120V-DIM-FL-30K	Elite Lighting RL607-14W-120V-DIM-FL-30K	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES47	RL630-14W-120V-DIM-FL-30K	Elite Lighting RL630-14W-120V-DIM-FL-30K	Recessed downlights	3000	14.0	Light-Emitting Diode (LED)	15
LEDES48	DL6-TC/2700K-120V	enLux Lighting DL6-TC/2700K-120V	Recessed downlights	2700	15.0	Light-Emitting Diode (LED)	15
LEDES49	DL6-TC/2700K-220V	enLux Lighting DL6-TC/2700K-220V	Recessed downlights	2700	15.0	Light-Emitting Diode (LED)	15
LEDES50	DL6-TC/2700K-277V	enLux Lighting DL6-TC/2700K-277V	Recessed downlights	2700	15.0	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES51	DL6-TC/3500K-120V	enLux Lighting DL6-TC/3500K-120V	Recessed downlights	3500	15.0	Light-Emitting Diode (LED)	15
LEDES52	DL6-TC/3500K-220V	enLux Lighting DL6-TC/3500K-220V	Recessed downlights	3500	15.0	Light-Emitting Diode (LED)	15
LEDES53	DL6-TC/3500K-277V	enLux Lighting DL6-TC/3500K-277V	Recessed downlights	3500	15.0	Light-Emitting Diode (LED)	15
LEDES54	GS6-50-1710	Gallium Lighting GS6-50-1710	Recessed downlights	5000	21.1	Light-Emitting Diode (LED)	15
LEDES55	GS6-CXRE-27-1180	Gallium Lighting GS6-CXRE-27-1180	Recessed downlights	2700	21.1	Light-Emitting Diode (LED)	15
LEDES56	GS6-CXRE-30-1290	Gallium Lighting GS6-CXRE-30-1290	Recessed downlights	3000	21.1	Light-Emitting Diode (LED)	15
LEDES57	GS6-CXRE-35-1290	Gallium Lighting GS6-CXRE-35-1290	Recessed downlights	3500	21.1	Light-Emitting Diode (LED)	15
LEDES58	GS6-CXRE-35-1400	Gallium Lighting GS6-CXRE-35-1400	Recessed downlights	3500	21.1	Light-Emitting Diode (LED)	15
LEDES59	GS6-CXRE-40-1400	Gallium Lighting GS6-CXRE-40-1400	Recessed downlights	4000	21.1	Light-Emitting Diode (LED)	15
LEDES60	GS6-CXRE-50-1825	Gallium Lighting GS6-CXRE-50-1825	Recessed downlights	5000	21.1	Light-Emitting Diode (LED)	15
LEDES61	DL6	Intematix DL6	Recessed downlights	3000	14.0	Light-Emitting Diode (LED)	15
LEDES62	DL6-07	Intematix DL6-07	Recessed downlights	3000	15.0	Light-Emitting Diode (LED)	15
LEDES63	DL6-08	Intematix DL6-08	Recessed downlights	2700	20.0	Light-Emitting Diode (LED)	15
LEDES64	700 Series	Janmar 700 Series	Recessed downlights	3000	9.4	Light-Emitting Diode (LED)	15
LEDES65	IC20LED-35K	Juno IC20LED-35K	Recessed downlights	3500	14.0	Light-Emitting Diode (LED)	15
LEDES66	IC20LED-35K-120	Juno IC20LED-35K-120	Recessed downlights	3500	14.0	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES67	IC20LED-3K	Juno IC20LED-3K	Recessed downlights	3000	14.0	Light-Emitting Diode (LED)	15
LEDES68	IC20LED-3K-120	Juno IC20LED-3K-120	Recessed downlights	3000	14.0	Light-Emitting Diode (LED)	15
LEDES69	IC20LED-41K	Juno IC20LED-41K	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES70	IC20LED-41K-120	Juno IC20LED-41K-120	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES71	IC20RLED-35K	Juno IC20RLED-35K	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES72	IC20RLED-35K-120	Juno IC20RLED-35K-120	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES73	IC20RLED-3K	Juno IC20RLED-3K	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES74	IC20RLED-3K-120	Juno IC20RLED-3K-120	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES75	IC20RLED-41K	Juno IC20RLED-41K	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES76	IC20RLED-41K-120	Juno IC20RLED-41K-120	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES77	IC22LED-35K	Juno IC22LED-35K	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES78	IC22LED-35K-120	Juno IC22LED-35K-120	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES79	IC22LED-3K	Juno IC22LED-3K	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES80	IC22LED-3K-120	Juno IC22LED-3K-120	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES81	IC22LED-41K	Juno IC22LED-41K	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES82	IC22LED-41K-120	Juno IC22LED-41K-120	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES83	IC22RLED-35K	Juno IC22RLED-35K	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES84	IC22RLED-35K-120	Juno IC22RLED-35K-120	Recessed downlights	3500	14	Light-Emitting Diode (LED)	15
LEDES85	IC22RLED-3K	Juno IC22RLED-3K	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES86	IC22RLED-3K-120	Juno IC22RLED-3K-120	Recessed downlights	3000	14	Light-Emitting Diode (LED)	15
LEDES87	IC22RLED-41K	Juno IC22RLED-41K	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES88	IC22RLED-41K-120	Juno IC22RLED-41K-120	Recessed downlights	4000	14	Light-Emitting Diode (LED)	15
LEDES89	T253LED-3K-NFL-WH	Juno Lighting T253LED-3K-NFL-WH	Surface-mounted downlights	3000	21.75	Light-Emitting Diode (LED)	15
LEDES90	T253LED-3K-SP-BL	Juno Lighting T253LED-3K-SP-BL	Recessed downlights	3000	22.8	Light-Emitting Diode (LED)	15
LEDES91	T253LED-4K-FL-BL	Juno Lighting T253LED-4K-FL-BL	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES92	T253LED-4K-FL-SL	Juno Lighting T253LED-4K-FL-SL	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES93	T253LED-4K-FL-WH	Juno Lighting T253LED-4K-FL-WH	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES94	T253LED-4K-NFL-BL	Juno Lighting T253LED-4K-NFL-BL	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES95	T253LED-4K-NFL-SL	Juno Lighting T253LED-4K-NFL-SL	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES96	T253LED-4K-NFL-WH	Juno Lighting T253LED-4K-NFL-WH	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES97	T253LED-4K-SP-BL	Juno Lighting T253LED-4K-SP-BL	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES98	T253LED-4K-SP-SL	Juno Lighting T253LED-4K-SP-SL	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES99	T253LED-4K-SP-WH	Juno Lighting T253LED-4K-SP-WH	Surface-mounted downlights	4000	22.8	Light-Emitting Diode (LED)	15
LEDES100	TC920LED35K-1	Juno TC920LED35K-1	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES101	TC920LED35K-1-CP	Juno TC920LED35K-1-CP	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15
LEDES102	TC920LED3K-1	Juno TC920LED3K-1	Recessed downlights	3000	25	Light-Emitting Diode (LED)	15
LEDES103	TC920LED41K-1	Juno TC920LED41K-1	Recessed downlights	4000	25	Light-Emitting Diode (LED)	15
LEDES104	TC920LED41K-1-CP	Juno TC920LED41K-1-CP	Recessed downlights	4000	25	Light-Emitting Diode (LED)	15
LEDES105	TC922LED35K-1	Juno TC922LED35K-1	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15
LEDES106	TC922LED35K-1-CP	Juno TC922LED35K-1-CP	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15
LEDES107	TC922LED35K-2	Juno TC922LED35K-2	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15
LEDES108	TC922LED35K-2-CP	Juno TC922LED35K-2-CP	Recessed downlights	3500	25	Light-Emitting Diode (LED)	15
LEDES109	TC922LED3K-1	Juno Lighting TC922LED3K-1	Recessed downlights	3000	25	Light-Emitting Diode (LED)	15
LEDES110	TC922LED3K-1-CP	Juno Lighting TC922LED3K-1-CP	Recessed downlights	3000	25	Light-Emitting Diode (LED)	15
LEDES111	TC922LED3K-2	Juno Lighting TC922LED3K-2	Recessed downlights	3000	25	Light-Emitting Diode (LED)	15
LEDES112	TC922LED3K-2-CP	Juno Lighting TC922LED3K-2-CP	Recessed downlights	3000	25	Light-Emitting Diode (LED)	15
LEDES113	TC922LED41K-1	Juno TC922LED41K-1	Recessed downlights	4000	25	Light-Emitting Diode (LED)	15
LEDES114	TC922LED41K-1-CP	Juno TC922LED41K-1-CP	Recessed downlights	4000	25	Light-Emitting Diode (LED)	15
LEDES115	TC922LED41K-2	Juno TC922LED41K-2	Recessed downlights	4000	25.0	Light-Emitting Diode (LED)	15
LEDES116	TC922LED41K-2-CP	Juno TC922LED41K-2-CP	Recessed downlights	4000	25.0	Light-Emitting Diode (LED)	15
LEDES117	12051	Kichler Lighting Pro Series Direct Wire 12051	Under-cabinet kitchen	3000	4.0	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES118	12052	Kichler Lighting Pro Series Direct Wire 12052	Under-cabinet kitchen	3000	6.0	Light-Emitting Diode (LED)	15
LEDES119	12053	Kichler Lighting Pro Series Direct Wire 12053	Under-cabinet kitchen	3000	9.0	Light-Emitting Diode (LED)	15
LEDES120	12054	Kichler Lighting Pro Series Direct Wire 12054	Under-cabinet kitchen	3000	11.8	Light-Emitting Diode (LED)	15
LEDES121	2018070217	Light Engine Ltd. Optiled 2018070217	Recessed downlights	4000	12.4	Light-Emitting Diode (LED)	15
LEDES122	L56LED09S271	Lightolier Lytecaster L56LED09S271	Recessed downlights	2700	18.9	Light-Emitting Diode (LED)	15
LEDES123	L56LED09S271	Lightolier Lytecaster L56LED09S271	Recessed downlights	2700	18.9	Light-Emitting Diode (LED)	15
LEDES124	L56LED09S27D1	Lightolier Lytecaster L56LED09S27D1	Recessed downlights	2700	23.7	Light-Emitting Diode (LED)	15
LEDES125	L56LED09S27D1	Lightolier Lytecaster L56LED09S27D1	Recessed downlights	2700	23.9	Light-Emitting Diode (LED)	15
LEDES126	L56LED09S351	Lightolier Lytecaster L56LED09S351	Recessed downlights	3500	19.4	Light-Emitting Diode (LED)	15
LEDES127	L56LED09S351	Lightolier Lytecaster L56LED09S351	Recessed downlights	3500	19.4	Light-Emitting Diode (LED)	15
LEDES128	L56LED09S35D1	Lightolier Lytecaster L56LED09S35D1	Recessed downlights	3500	24.7	Light-Emitting Diode (LED)	15
LEDES129	L56LED09S35D1	Lightolier Lytecaster L56LED09S35D1	Recessed downlights	3500	24.7	Light-Emitting Diode (LED)	15
LEDES130	DOM 6 LED 600L	Lithonia Lighting DOM 6 LED 600L	Recessed downlights	3500	15.7	Light-Emitting Diode (LED)	15
LEDES131	DOM 6 LED 900L	Lithonia Lighting DOM 6 LED 900L	Recessed downlights	3500	23.0	Light-Emitting Diode (LED)	15
LEDES132	DOM 8 LED 1200L	Lithonia Lighting DOM 8 LED 1200L	Recessed downlights	3500	25.0	Light-Emitting Diode (LED)	15
LEDES133	DOM 8 LED 1500L	Lithonia Lighting DOM 8 LED 1500L	Recessed downlights	3500	35.0	Light-Emitting Diode (LED)	15
LEDES134	RAZ12	Lithonia Lighting RAZ12	Under-cabinet kitchen	3000	7.1	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES135	RAZ18	Lithonia Lighting RAZ18	Under-cabinet kitchen	3000	9.7	Light-Emitting Diode (LED)	15
LEDES136	RAZ24	Lithonia Lighting RAZ24	Under-cabinet kitchen	3000	13.1	Light-Emitting Diode (LED)	15
LEDES137	B0611	Neo-Neon B0611	Recessed downlights	3000	12.9	Light-Emitting Diode (LED)	15
LEDES138	NTR-6LED30	Nora Lighting NTR-6LED30	Recessed downlights	3000	16.9	Light-Emitting Diode (LED)	15
LEDES139	NTR-6LED42	Nora Lighting NTR-6LED42	Recessed downlights	4000	16.9	Light-Emitting Diode (LED)	15
LEDES140	523-000004-14	Philips Color Kinetics 523-000004-14	Under-cabinet shelf	2700	6	Light-Emitting Diode (LED)	15
LEDES141	523-000004-22	Philips Color Kinetics 523-000004-22	Under-cabinet shelf	3000	6	Light-Emitting Diode (LED)	15
LEDES142	523-000004-24	Philips Color Kinetics 523-000004-24	Under-cabinet shelf	3500	6	Light-Emitting Diode (LED)	15
LEDES143	523-000005-06	Philips Color Kinetics 523-000005-06	Under-cabinet shelf	2700	4	Light-Emitting Diode (LED)	15
LEDES144	523-000009-00	Philips Color Kinetics 523-000009-00	Surface-mounted downlights	2700	15.0	Light-Emitting Diode (LED)	15
LEDES145	523-000009-01	Philips Color Kinetics 523-000009-01	Surface-mounted downlights	4000	15.0	Light-Emitting Diode (LED)	15
LEDES146	523-000050-02	Philips Color Kinetics 523-000050-02	Under-cabinet shelf	2700	12.0	Light-Emitting Diode (LED)	15
LEDES147	523-000050-14	Philips Color Kinetics 523-000050-14	Under-cabinet shelf	4000	12.0	Light-Emitting Diode (LED)	15
LEDES148	D4LED4-4D9LED435K8****	Prescolite D4LED4-4D9LED435K8****	Recessed downlights	3500	12.0	Light-Emitting Diode (LED)	15
LEDES149	D4LED4-4D9LED440K8****	Prescolite D4LED4-4D9LED440K8****	Recessed downlights	4000	12.0	Light-Emitting Diode (LED)	15
LEDES150	D4LED4-4D9LED450K8****	Prescolite D4LED4-4D9LED450K8****	Recessed downlights	5000	12.0	Light-Emitting Diode (LED)	15
LEDES151	D6LED4-6D9LED435K8****	Prescolite D6LED4-6D9LED435K8****	Recessed downlights	3500	29.5	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES152	D6LED4-6D9LED440K8****	Prescolite D6LED4-6D9LED440K8****	Recessed downlights	4000	29.5	Light-Emitting Diode (LED)	15
LEDES153	D6LED4-6D9LED450K8****	Prescolite D6LED4-6D9LED450K8****	Recessed downlights	5000	29.5	Light-Emitting Diode (LED)	15
LEDES154	LB6LED327K BL	Prescolite LB6LED327K BL	Recessed downlights	2700	15.0	Light-Emitting Diode (LED)	15
LEDES155	LB6LED327K WH	Prescolite LB6LED327K WH	Recessed downlights	2700	15.0	Light-Emitting Diode (LED)	15
LEDES156	LB6LED335K BL	Prescolite LB6LED335K BL	Recessed downlights	3500	15.6	Light-Emitting Diode (LED)	15
LEDES157	LB6LED335K WH	Prescolite LB6LED335K WH	Recessed downlights	3500	15.7	Light-Emitting Diode (LED)	15
LEDES158	RD6LED4-6D9LED435K8***	Prescolite RD6LED4-6D9LED435K8***	Recessed downlights	3500	29.5	Light-Emitting Diode (LED)	15
LEDES159	RD6LED4-6D9LED440K8***	Prescolite RD6LED4-6D9LED440K8***	Recessed downlights	4000	29.5	Light-Emitting Diode (LED)	15
LEDES160	RD6LED4-6D9LED450K8***	Prescolite RD6LED4-6D9LED450K8***	Recessed downlights	5000	29.5	Light-Emitting Diode (LED)	15
LEDES161	P8022-30	Progress Lighting P8022-30	Recessed downlights	2700	13.0	Light-Emitting Diode (LED)	15
LEDES162	P8022-30/35K	Progress Lighting P8022-30/35K	Recessed downlights	3500	13.0	Light-Emitting Diode (LED)	15
LEDES163	P8071-28/35KSTR	Progress P8071-28/35KSTR	Recessed downlights	3500	15.7	Light-Emitting Diode (LED)	15
LEDES164	P8071-28STR	Progress P8071-28STR	Recessed downlights	2700	15.0	Light-Emitting Diode (LED)	15
LEDES165	P8071-31/35KSTR	Progress P8071-31/35KSTR	Recessed downlights	3500	15.6	Light-Emitting Diode (LED)	15
LEDES166	P8071-31STR	Progress P8071-31STR	Recessed downlights	2700	15	Light-Emitting Diode (LED)	15
LEDES167	P8095-EB**/P8098-***/35K	Progress Lighting P8095-EB**/P8098-***/35K	Recessed downlights	3500	29.5	Light-Emitting Diode (LED)	15
LEDES168	4DR3-30K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 4DR3-30K-DL-SPC-CL	Recessed downlights	3000	10.1	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES169	4DR3-30K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 4DR3-30K-DL-SSP-CL	Recessed downlights	3000	10.1	Light-Emitting Diode (LED)	15
LEDES170	4DR3-35K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 4DR3-35K-DL-SPC-CL	Recessed downlights	3500	10.2	Light-Emitting Diode (LED)	15
LEDES171	4DR3-35K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 4DR3-35K-DL-SSP-CL	Recessed downlights	3500	10.2	Light-Emitting Diode (LED)	15
LEDES172	4DR3-41K-DL-DIF-CL	Renaissance Lighting, Inc. REVIA 4DR3-41K-DL-DIF-CL	Recessed downlights	4000	10.5	Light-Emitting Diode (LED)	15
LEDES173	4DR3-41K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 4DR3-41K-DL-SPC-CL	Recessed downlights	4000	10.5	Light-Emitting Diode (LED)	15
LEDES174	4DR3-41K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 4DR3-41K-DL-SSP-CL	Recessed downlights	4000	10.5	Light-Emitting Diode (LED)	15
LEDES175	4DR4-27K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DR4-27K-S-MD-DIF-CL	Recessed downlights	2700	11.9	Light-Emitting Diode (LED)	15
LEDES176	4DR4-27K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DR4-27K-S-MD-SPC-CL	Recessed downlights	2700	11.9	Light-Emitting Diode (LED)	15
LEDES177	4DR4-27K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DR4-27K-S-MD-SSP-CL	Recessed downlights	2700	11.9	Light-Emitting Diode (LED)	15
LEDES178	4DR4-30K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DR4-30K-S-MD-DIF-CL	Recessed downlights	3000	10.7	Light-Emitting Diode (LED)	15
LEDES179	4DR4-30K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DR4-30K-S-MD-SPC-CL	Recessed downlights	3000	10.7	Light-Emitting Diode (LED)	15
LEDES180	4DR4-30K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DR4-30K-S-MD-SSP-CL	Recessed downlights	3000	10.7	Light-Emitting Diode (LED)	15
LEDES181	4DR4-35K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DR4-35K-S-MD-DIF-CL	Recessed downlights	3500	10.8	Light-Emitting Diode (LED)	15
LEDES182	4DR4-35K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DR4-35K-S-MD-SPC-CL	Recessed downlights	3500	10.8	Light-Emitting Diode (LED)	15
LEDES183	4DR4-35K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DR4-35K-S-MD-SSP-CL	Recessed downlights	3500	10.8	Light-Emitting Diode (LED)	15
LEDES184	4DR4-41K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DR4-41K-S-MD-DIF-CL	Recessed downlights	4000	12.1	Light-Emitting Diode (LED)	15
LEDES185	4DR4-41K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DR4-41K-S-MD-SPC-CL	Recessed downlights	4000	12.1	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES186	4DR4-41K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DR4-41K-S-MD-SSP-CL	Recessed downlights	4000	12.1	Light-Emitting Diode (LED)	15
LEDES187	4DR5-41K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DR5-41K-S-MD-DIF-CL	Recessed downlights	4000	17	Light-Emitting Diode (LED)	15
LEDES188	4DR5-41K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DR5-41K-S-MD-SPC-CL	Recessed downlights	4000	17	Light-Emitting Diode (LED)	15
LEDES189	4DR5-41K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DR5-41K-S-MD-SSP-CL	Recessed downlights	4000	17	Light-Emitting Diode (LED)	15
LEDES190	4DS4-27K-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DS4-27K-MD-SPC-CL	Recessed downlights	2700	11.7	Light-Emitting Diode (LED)	15
LEDES191	4DS4-27K-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DS4-27K-MD-SSP-CL	Recessed downlights	2700	11.7	Light-Emitting Diode (LED)	15
LEDES192	4DS4-27K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DS4-27K-S-MD-DIF-CL	Recessed downlights	2700	11.7	Light-Emitting Diode (LED)	15
LEDES193	4DS4-30K-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DS4-30K-MD-SPC-CL	Recessed downlights	3000	11.7	Light-Emitting Diode (LED)	15
LEDES194	4DS4-30K-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DS4-30K-MD-SSP-CL	Recessed downlights	3000	11.7	Light-Emitting Diode (LED)	15
LEDES195	4DS4-30K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DS4-30K-S-MD-DIF-CL	Recessed downlights	3000	11.7	Light-Emitting Diode (LED)	15
LEDES196	4DS4-35K-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DS4-35K-MD-SPC-CL	Recessed downlights	3500	11.97	Light-Emitting Diode (LED)	15
LEDES197	4DS4-35K-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DS4-35K-MD-SSP-CL	Recessed downlights	3500	11.97	Light-Emitting Diode (LED)	15
LEDES198	4DS4-35K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DS4-35K-S-MD-DIF-CL	Recessed downlights	3500	11.97	Light-Emitting Diode (LED)	15
LEDES199	4DS4-41K-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DS4-41K-MD-SPC-CL	Recessed downlights	4000	12.03	Light-Emitting Diode (LED)	15
LEDES200	4DS4-41K-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DS4-41K-MD-SSP-CL	Recessed downlights	4000	12.03	Light-Emitting Diode (LED)	15
LEDES201	4DS4-41K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DS4-41K-S-MD-DIF-CL	Recessed downlights	4000	12.03	Light-Emitting Diode (LED)	15
LEDES202	4DS5-41K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 4DS5-41K-S-MD-DIF-CL	Recessed downlights	4000	17	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES203	4DS5-41K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 4DS5-41K-S-MD-SPC-CL	Recessed downlights	4000	17	Light-Emitting Diode (LED)	15
LEDES204	4DS5-41K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 4DS5-41K-S-MD-SSP-CL	Recessed downlights	4000	17	Light-Emitting Diode (LED)	15
LEDES205	6DR4-30K-S-MD-DIF-CL	Renaissance Lighting, Inc. Solia 6DR4-30K-S-MD-DIF-CL	Recessed downlights	3000	23	Light-Emitting Diode (LED)	15
LEDES206	6DR4-30K-S-MD-SPC-CL	Renaissance Lighting, Inc. Solia 6DR4-30K-S-MD-SPC-CL	Recessed downlights	3000	23	Light-Emitting Diode (LED)	15
LEDES207	6DR4-30K-S-MD-SSP-CL	Renaissance Lighting, Inc. Solia 6DR4-30K-S-MD-SSP-CL	Recessed downlights	3000	23	Light-Emitting Diode (LED)	15
LEDES208	7DR3-30K-DL-DIF-CL	Renaissance Lighting, Inc. REVIA 7DR3-30K-DL-DIF-CL	Recessed downlights	3000	28.5	Light-Emitting Diode (LED)	15
LEDES209	7DR3-30K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 7DR3-30K-DL-SPC-CL	Recessed downlights	3000	28.5	Light-Emitting Diode (LED)	15
LEDES210	7DR3-30K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 7DR3-30K-DL-SSP-CL	Recessed downlights	3000	28.5	Light-Emitting Diode (LED)	15
LEDES211	7DR3-35K-DL-DIF-CL	Renaissance Lighting, Inc. REVIA 7DR3-35K-DL-DIF-CL	Recessed downlights	3500	28.4	Light-Emitting Diode (LED)	15
LEDES212	7DR3-35K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 7DR3-35K-DL-SPC-CL	Recessed downlights	3500	28.4	Light-Emitting Diode (LED)	15
LEDES213	7DR3-35K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 7DR3-35K-DL-SSP-CL	Recessed downlights	3500	28.4	Light-Emitting Diode (LED)	15
LEDES214	7DR3-41K-DL-DIF-CL	Renaissance Lighting, Inc. REVIA 7DR3-41K-DL-DIF-CL	Recessed downlights	4000	28.1	Light-Emitting Diode (LED)	15
LEDES215	7DR3-41K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 7DR3-41K-DL-SPC-CL	Recessed downlights	4000	28.1	Light-Emitting Diode (LED)	15
LEDES216	7DR3-41K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 7DR3-41K-DL-SSP-CL	Recessed downlights	4000	28.1	Light-Emitting Diode (LED)	15
LEDES217	7DS3-35K-DL-DIF-CL	Renaissance Lighting, Inc. REVIA 7DS3-35K-DL-DIF-CL	Recessed downlights	3500	28.3	Light-Emitting Diode (LED)	15
LEDES218	7DS3-35K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 7DS3-35K-DL-SPC-CL	Recessed downlights	3500	28.3	Light-Emitting Diode (LED)	15
LEDES219	7DS3-35K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 7DS3-35K-DL-SSP-CL	Recessed downlights	3500	28.3	Light-Emitting Diode (LED)	15

Table 12: (Continued) Standard Lighting Wattages

Texas Commercial SOP Listing of Approved LED Fixtures (Please note heading changes.)

FIXTURE CODE	MANUFACTURER PART NUMBER	DESCRIPTION (MANUFACTURER - BRAND - FIXTURE TYPE - PART NUM - GENERATION)	APPROVED CATEGORY	COLOR TEMP (°K)	Actual WATT/ FIXT	LAMP TYPE	LAMP EUL
LEDES220	7DS3-41K-DL-DIF-CL	Renaissance Lighting, Inc. REVIA 7DS3-41K-DL-DIF-CL	Recessed downlights	4000	28.1	Light-Emitting Diode (LED)	15
LEDES221	7DS3-41K-DL-SPC-CL	Renaissance Lighting, Inc. REVIA 7DS3-41K-DL-SPC-CL	Recessed downlights	4000	28.1	Light-Emitting Diode (LED)	15
LEDES222	7DS3-41K-DL-SSP-CL	Renaissance Lighting, Inc. REVIA 7DS3-41K-DL-SSP-CL	Recessed downlights	4000	28.1	Light-Emitting Diode (LED)	15
LEDES223	EDL-NC-WW	Troy-CSL Lighting Inc. CSL EDL-NC-WW	Recessed downlights	3000	15.9	Light-Emitting Diode (LED)	15
LEDES224	EDL-RM-WW	Troy-CSL Lighting Inc. CSL EDL-RM-WW	Recessed downlights	3000	15.9	Light-Emitting Diode (LED)	15
LEDES225	DFN 38 WW NFL 120	Lighting Science Group, Corp. Definity DFN 38 WW NFL 120	Integral Lamp	3000	18	Integrated-ballast LED Lamps	0
LEDES226	DFN 38 WW SP 120	Lighting Science Group, Corp. Definity DFN 38 WW SP 120	Integral Lamp	3000	18	Integrated-ballast LED Lamps	0
LEDES227	AE26R3083025	Nexus Lighting Inc. Array Lighting AE26R3083025	Integral Lamp	3000	7.8	Integrated-ballast LED Lamps	0
LEDES228	AE26R3083060	Nexus Lighting Inc. Array Lighting AE26R3083060	Integral Lamp	3000	7.8	Integrated-ballast LED Lamps	0

Table 13: Footcandle Requirements By Area/Activity			
Space	IES Recommended Light Level (footcandles)	Texas UIL Lighting Requirements (fc)	2015 IECC Maximum Power Density (watts/sf)
General Classroom	30-50	-	1.24
Conference Room	30-50	-	1.23
Corridor	5-10	-	0.66
Office-Open	30-50	-	0.98
Office-Private	30-50	-	1.11
Cafeteria	20-30	-	0.65
Educational Laboratory	50-75	-	1.43
Kitchen (Food Prep)	30-75	-	1.21
Library - Stacks	20-50	-	1.71
Library - Reading	30-50	-	1.06
Lounge/Breakroom	10-30	-	0.73
Restroom	10-30	-	0.98
Workshop	30-75	-	1.59
Mechanical/Electrical	20-50	-	0.95
General Storage	5-20	-	0.63
Recreational Gymnasium	30-50	50	1.2
Competition Gymnasium (Texas UIL Standards)	N/A	80	N/A
Football Field (<2000 spectators)	N/A	30	N/A
Football Field (>2000 spectators)	N/A	50	N/A
Baseball Field	N/A	50 infield/30 outfield	N/A
Retail Sales	30-50	-	1.59
Interior Parking	5-10	-	0.19
Dormitory Bedroom	20-30	-	0.38

Table 14: Standby Losses For Water Heaters			
Electric		Gas	
Gallons	106 Btu/Yr Loss	Gallons	106 Btu/Yr Loss
30	4.20	30	5.29
42	5.50	40	6.04
52	6.08	50	6.81
82	7.84	76	11.57

Table 15: Equivalent Full-Load Heating Hours (12-Month Operating Schedule for Thermally Heavy Buildings)			
LOCATION	8 am to 5 pm 5 Days/Week	7 am to 6 pm 5 Days/Week	24 Hours/Day 7 Days/Week
Abilene	1,036	1,213	3,338
Amarillo	867	997	2,605
Austin	1,155	1,360	3,784
Big Spring	939	1,102	3,028
Brownsville	1,516	1,787	4,977
Corpus Christi	1,369	1,636	4,729
Del Rio	1,110	1,317	3,737
El Paso	999	1,161	3,124
Fort Worth	1,078	1,267	3,524
Houston	1,200	1,408	3,854
San Antonio	1,176	1,384	3,859
Sherman	928	1,092	3,036
Waco	1,162	1,366	3,795

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 15: (Continued) Equivalent Full-Load Heating Hours (10-Month Operating Schedule (August-May) for Thermally Heavy Buildings)			
LOCATION	8 am to 5 pm 5 Days/Week	7 am to 6 pm 5 Days/Week	24 Hours/Day 7 Days/Week
Abilene	755	879	2,382
Amarillo	607	694	1,761
Austin	864	1,013	2,792
Big Spring	681	793	2,150
Brownsville	1,196	1,405	3,894
Corpus Christi	1,057	1,261	3,631
Del Rio	841	993	2,791
El Paso	727	841	2,220
Fort Worth	785	920	2,526
Houston	917	1,069	2,901
San Antonio	884	1,039	2,873
Sherman	669	784	2,155
Waco	925	1,086	3,013

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 15: (Continued) Equivalent Full-Load Heating Hours (12-Month Operating Schedule for Thermally Light Buildings)			
LOCATION	8 am to 5 pm 5 Days/Week	7 am to 6 pm 5 Days/Week	24 Hours/Day 7 Days/Week
Abilene	641	729	1,850
Amarillo	501	556	1,295
Austin	741	849	2,181
Big Spring	559	636	1,616
Brownsville	1,107	1,259	3,170
Corpus Christi	919	1,071	2,900
Del Rio	698	811	2,188
El Paso	599	676	1,666
Fort Worth	688	788	2,030
Houston	760	859	2,117
San Antonio	748	856	2,214
Sherman	549	628	1,607
Waco	671	764	1,943

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 15: (Continued) Equivalent Full-Load Heating Hours (10-Month Operating Schedule (August-May) for Thermally Light Buildings)			
LOCATION	8 am to 5 pm 5 Days/Week	7 am to 6 pm 5 Days/Week	24 Hours/Day 7 Days/Week
Abilene	415	467	1,147
Amarillo	306	335	748
Austin	500	567	1,424
Big Spring	361	407	997
Brownsville	825	933	2,306
Corpus Christi	650	756	2,013
Del Rio	484	557	1,468
El Paso	380	425	1,010
Fort Worth	444	504	1,262
Houston	529	593	1,421
San Antonio	509	580	1,466
Sherman	350	396	985
Waco	446	505	1,248

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 16: Equivalent Full-Load Heating Hours (10- and 12-Month Operating Schedule for Thermally Heavy Buildings)			
LOCATION	8 am to 5 pm 5 Days/Week	7 am to 6 pm 5 Days/Week	24 Hours/Day 7 Days/Week
Abilene	102	140	513
Amarillo	211	292	1,125
Austin	38	54	215
Big Spring	112	150	541
Brownsville	5	6	23
Corpus Christi	7	8	31
Del Rio	22	33	131
El Paso	55	87	407
Fort Worth	74	101	378
Houston	17	27	119
San Antonio	26	38	170
Sherman	101	135	498
Waco	55	74	285

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 16: (Continued) Equivalent Full-Load Heating Hours (10- and 12-Month Operating Schedule for Thermally Light Buildings)			
LOCATION	8 am to 5 pm 5 Days/Week	7 am to 6 pm 5 Days/Week	24 Hours/Day 7 Days/Week
Abilene	313	415	1,481
Amarillo	478	639	2,323
Austin	200	267	988
Big Spring	334	438	1,548
Brownsville	57	82	326
Corpus Christi	95	126	428
Del Rio	166	224	836
El Paso	250	351	1,379
Fort Worth	279	369	1,310
Houston	140	197	775
San Antonio	172	235	889
Sherman	330	430	1,498
Waco	230	309	1,128

Thermally light building: Typically ranges from 30 to 80 pounds of building material and content per square foot of floor area. For example, a light building might have a steel siding exterior and gypsum board interior wall, a 4-inch lightweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and a 4-inch lightweight concrete exterior floor.

Thermally heavy building: Typically ranges from 80 to 130 pounds of building material and content per square foot of floor area. For example, a heavy building might have a face brick and 8-inch heavyweight concrete exterior and gypsum board interior wall, an 8-inch heavyweight concrete exterior and acoustic tile interior roof, an acoustic tile interior and an 8-inch heavyweight concrete exterior floor.

NOTE: For further details on building weight, refer to the 2009 ASHRAE Fundamentals Handbook, pp. 18.20-18.30, taking note of Tables 16, 17 and 21.

Table 17: Typical Free Cooling Weather Data and Enthalpy Values for Certain Texas Cities

Table 17: Typical Free Cooling Weather Data and Enthalpy Values for Certain Texas Cities						
Typical Inside Enthalpy at 75°F and 50% rh: $h_{\text{inside}} = 28.2$ BTU/b						
City & Temp Range	Hours per Time of Day			Total	MCWB ¹	h_{outside} ²
	01-08	09-16	17-24	01-24		
Austin 55-64°F	499 hrs	400 hrs	472 hrs	1371 hrs	54 °F	22.6
El Paso 55-64°F	525 hrs	481 hrs	503 hrs	1509 hrs	46 °F	18.2
Fort Worth 55-64°F	490 hrs	416 hrs	466 hrs	1372 hrs	53 °F	22.0
Houston 55-64°F	545 hrs	381 hrs	524 hrs	1450 hrs	56 °F	23.8
San Antonio 55-64°F	511 hrs	413 hrs	472 hrs	1396 hrs	54 °F	22.6

Source: Derived from the Facility Design and Planning ENGINEERING WEATHER DATA Manual created by the Departments of the Air Force, The Army, and The Navy

¹MCWB is the Mean Coincident Wet Bulb Temperature

²Outside Enthalpy, h_{outside} , has units BTU/lb

Table 18: Reference Table for "U" Values ¹		
Walls		
Material	Description	U-Factor
Flat Metal	0" Fiberglass Insulation	1.2
	1" Fiberglass Insulation	0.22
	2" Fiberglass Insulation	0.12
	3" Fiberglass Insulation	0.09
	4" Fiberglass Insulation	0.07
	6" Fiberglass Insulation	0.05
	8" Fiberglass Insulation	0.041
	12" Fiberglass Insulation	0.027
Masonry	8" Brick	0.41
	12" Brick	0.31
	16" Brick	0.25
	8" Conic Block, Solid	0.39
	12" Conic Block, Solid	0.36
	4" Conic Block, Hollow	0.51
	8" Conic Block, Hollow	0.39
	12" Conic Block, Hollow	0.37
Poured Concrete (140 lb/ft ³)	2" Thick	0.99
	4" Thick	0.86
	6" Thick	0.75
	8" Thick	0.67
	10" Thick	0.61
	12" Thick	0.55
Poured Concrete (80 lb/ft ³)	2" Thick	0.62
	4" Thick	0.42
	6" Thick	0.31
	8" Thick	0.25
	10" Thick	0.21
	12" Thick	0.18

Doors		
Material	Description	U-Factor
Steel	No Fiberglass Insulation	1.2
	Insulated	0.65
Wood	1" Thick	0.64

Floors - Exterior Exposure		
Material	Description	U-Factor
Exterior Exposure	Insulated	0.55
	Un-Insulated	0.81

¹The "U" Value is the coefficient of heat transfer through a material.
Equation: $U = 1/R$

Table 18: (Continued) Reference Table for "U" Values ¹		
Roofs		
Material	Description	U-Factor
Flat Metal - Roof	0" Fiberglass Insulation	0.9
	1" Fiberglass Insulation	0.26
	2" Fiberglass Insulation	0.16
	3" Fiberglass Insulation	0.11
	4" Fiberglass Insulation	0.071
	6" Fiberglass Insulation	0.05
	8" Fiberglass Insulation	0.039
	12" Fiberglass Insulation	0.027
Wood - Roof	0" Fiberglass Insulation	0.48
	1" Fiberglass Insulation	0.21
	2" Fiberglass Insulation	0.12
	3" Fiberglass Insulation	0.1
	4" Fiberglass Insulation	0.075
	6" Fiberglass Insulation	0.052
	8" Fiberglass Insulation	0.04
	12" Fiberglass Insulation	0.027
Concrete Deck - Roof	2" Thick	0.3
	3" Thick	0.23
	4" Thick	0.18
Sky Lights	Single Wall	1.15
	Double Wall	0.7

Windows		
Material	Description	U-Factor
Glass	Single Pane	1.22
	Double Pane	0.7
Fiberglass Panels		1.09

Cold Mass Specific Gravity	
Material	Specific Gravity
Steel	0.12
Aluminum	0.23
Copper	0.09
Cast Iron	0.11
Cement	0.19
Concrete (140 lb/ft ³)	0.16
Sand & Stone	0.19
Glass	0.16
Rubber	0.48
Wood	0.5

Psychrometric charts can be obtained at this website:

<https://www.ashrae.org/resources--publications/bookstore/psychrometrics>



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