



# Eugene Water & Electric Board Energy Smart Design – New Construction 2012 Commerical Lighting Savings Worksheet

This worksheet is intended to assist applicants and owners in determining the cost effectiveness of an efficient lighting design and is to be used when preparing [EWEB's Energy Smart Design Lighting Worksheet](#). It is for information only and does not need to be submitted to EWEB.

Facility: \_\_\_\_\_ Applicant: \_\_\_\_\_

**1) Estimated annual lighting electricity use for Code designed building.**

A	X	B	/	C	=	D
Lighting power budget (watts) <1>	X	Lighting operating hours <2>	/	Conversion	=	Annual electricity use before design
	X		/	1,000	=	kWh

**2) Estimated annual lighting electricity use after efficient design.**

A	X	B	/	C	-	D	=	E
Total adjusted lighting power (watts) <3>	X	Lighting operating hours <2>	/	Conversion	-	Per unit rebate savings <4>	=	Annual electricity use after design (A x B) / 1,000 - D
	X		/	1,000	-		=	kWh

**3) Estimated annual lighting electricity use saved from efficient design.**

A	-	B	=	C
Annual electricity use before design (see 1-D)	-	Annual electricity use after design (see 2-E)	=	Annual lighting electricity savings
	-		=	kWh

**4) Annual Cost Savings**

A	X	B	=	C
Annual lighting electricity savings (see 3-C)	X	Utility rate <5>	=	Annual cost savings
kWh	X	\$0.07	=	\$

**5) Simple Payback Period**

A	/	B	=	C
Upgrade cost <6>	/	Annual cost savings (see 4-C)	=	Simple payback
\$	/	\$ per year	=	years

Notes:

- <1> Lighting power budget (watts) shown in Column A of the Energy Smart Design (ESD) Lighting Worksheet.
- <2> Lighting operating hours refers to the total number of hours the lighting system will be on during a year. For typical hours based on building type, see Table 1 below.
- <3> Total adjusted lighting power (watts) shown in Column B of the ESD Lighting Worksheet.
- <4> See Table 2 below for per unit kWh rebate savings. Savings are estimates. Actual savings will vary depending on usage patterns. If there are no per unit rebates, enter 0.
- <5> Commercial utility rates vary depending on the size of service and usage patterns. This utility rate includes kWh (energy), kW (demand), and basic charges. Rates typically vary from 0.05/kWh to 0.11/kWh.
- <6> Upgrade cost shown in Column E of the ESD Lighting Worksheet.
- <7> See "Total Rebate" on the ESD Lighting Worksheet.

<b>Table 1 Typical Lighting Hours</b>	
<b>Building Type</b>	<b>Hours/Year</b>
Church	2200
Convenience Store	6500
Hotel/Motel Commons	8760
Hotel/Motel Guest Rooms	1500
Industrial – Large	8760
Industrial – 2 Shifts	6500
Manufacturing – 1 Shift	3000
Office Building	2800
Restaurant	4000
Retail (Food)	5800
Retail (Non-Food)	4500
Shopping Strip Mall	4800
Warehouse	3600
Other Spaces (Estimated hours/wk x 52)	

<b>Table 2 Per Unit Rebate kWh Savings</b>			
<b>Upgrade Item</b>	<b># of Units (A)</b>	<b>kWh/Year (B)</b>	<b>Savings kWh (A x B)</b>
Occupancy Sensor or Multi-level Switching		192	
Occupancy Sensor or Multi-level Switching over 300W Controlled		360	
Photocell on w/ Astronomical Time off 300W – 1250W		885	
Photocell on w/ Astronomical Time off over 1250W		1770	
<b>Per Unit Rebate kWh Total</b>			