

International Energy Conservation Code / Wisconsin Commercial Building Code
Division of Industry Services Wisconsin Department of Safety & Professional Services

Project Name

Energy Efficiency Worksheets (Check-mark as appropriate)

- L-1 Index Sheet - Energy Conservation
- L-2 Mandatory Controls - Locations and Types
- L-3 Lighting Schedule
- L-4 Interior Lighting Power Allowance
- L-5 Exterior Lighting Summary Worksheet
- L-6 Exterior Lighting Summary Worksheet
- L-7 Installed Exterior Lighting Allowance Worksheet

Supplemental Information:

Worksheet L-2 or similar information is required on the drawings or on a separate form for all lighting energy submittals.

Worksheets L-3 to L-7 are optional. The information may be included on the drawings, or as part of COMcheck* calculations.

Additional worksheets may be added if needed.

Ink signature and either registration stamp or Master Electrician credential number

Per SPS 361.20(2), plans, specifications, and calculations require the original signature and seal of a Wisconsin Registered Architect, Professional Engineer, or Electrical Designer per SPS 361.31(1), or an original signature and credential identification number of the Master Electrician who designs and installs the system.

Please print name and telephone number of signer

*COMcheck is a federal Department of Energy computer program that can be used to demonstrate energy conservation code compliance online. The program may be downloaded to individual computers. The most recent version of COMcheck must be used to demonstrate IECC compliance with lighting in Wisconsin.

COMcheck may be found at: <http://www.energycodes.gov/comcheck/index.stm>

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Mandatory Controls and Locations

Mandatory Provisions Checklist		
<ul style="list-style-type: none"> <input type="checkbox"/> Each space enclosed by ceiling-height partitions has an independent, accessible control that operates general lighting in the space. <input type="checkbox"/> Exception: The control is located in a remote location for safety or security reasons. <input type="checkbox"/> Exception: The control addresses stairways or corridors that are elements of means of egress <input type="checkbox"/> Light reduction controls capable of reducing connected lighting by 50% installed. <input type="checkbox"/> Exception: Single luminaire. <input type="checkbox"/> Exception: Area controlled by occupancy sensor <input type="checkbox"/> Exception: Corridors, restrooms, or public lobbies <input type="checkbox"/> Exception: Sleeping unit <input type="checkbox"/> Exception: Spaces that use less than 0.6 W/sf <input type="checkbox"/> Automatic lighting shutoff controls are provided based on either a scheduling device or an occupant sensor. <input type="checkbox"/> Exception: Bldg is smaller than 5,000 ft². <input type="checkbox"/> Exception: Sleeping unit <input type="checkbox"/> Exception: Space for patient care. <input type="checkbox"/> Exception: Space where automatic lighting shutoff would endanger safety or security. 	<ul style="list-style-type: none"> <input type="checkbox"/> Spaces, not exceeding 25,000 sf and are not more than one floor, are independently programmed. <input type="checkbox"/> Occupant override installed on automatic time switch control device which is accessible, located so the person using the device can see the lights controlled or is annunciated, manually operated, remains on for no more than 2 hrs, controls an area not exceeding 5,000 sf. <input type="checkbox"/> Exception: Use of captive-key override permitted to exceed 2 hours for special occupancies <input type="checkbox"/> Exception: Special occupancies shall not exceed 20,000 sf. <input type="checkbox"/> Automatic time switch incorporates an automatic holiday scheduling feature. <input type="checkbox"/> Daylight zones provided with independent controls. <input type="checkbox"/> Exception: Space has 2 or fewer light fixtures. <input type="checkbox"/> Exception: Space is less than 250 sf. <input type="checkbox"/> Exception: Effective aperture too small. <input type="checkbox"/> Exception: Spaces that use less than 0.6 W/sf. 	<ul style="list-style-type: none"> <input type="checkbox"/> Hotel/motel guest rooms have a master switch at the main entry; while suites have switch at the entry to each room or at the primary entry to the suite. <input type="checkbox"/> Either a photosensor or an astronomical time switch controls exterior lighting applications. <input type="checkbox"/> Exception: Lights must remain on for safety, security or eye adaptation reasons. <input type="checkbox"/> Exterior building grounds luminaires greater than 100 W have lamps with minimum efficacy of 60 lumens/W. <input type="checkbox"/> Exception: Luminaire is activated with a motion sensor. <input type="checkbox"/> Display lighting has a separate control. <input type="checkbox"/> Case lighting has a separate control. <input type="checkbox"/> Two-lamp tandem-wired ballasts. <input type="checkbox"/> Exit signs do not exceed 5 W per face.

Control Location (Name and/or Room #)	Space Controlled	Control Type (Occupancy Sensor, Duel Switches, Dimmer Switch, Photosensor, Time Clock, etc)	Control Purpose (Interior Lighting Control, Light Reduction, Automatic Shut-Off, Daylight Zone, Display, etc)

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Lighting Schedule

A	B	C	D	E	F
Fixture ID	Luminaire Description including Fixture Type, Lamp, Wattage per lamp, Ballast*	Lamps/ Fixture	# of Fixture	Fixture Watts	D x E
TOTAL = Watts					

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Interior Lighting Power Allowance IECC 505.5.2 based on Area Method

Note: If using ASHRAE 90.1-2007, allowable watts/sq ft will vary. Use ASHRAE 90.1 - Table Section 9.6.1 and revise as needed depending on use of Building Area Method or Space-by-Space Method.

A	B	C	D
Building Area Type	Watts/ft²	Area (sq. ft)	Allowed Watts
Automotive Facility	0.9		
Convention Center	1.2		
Court House	1.2		
Dining: Bar Lounge/Leisure	1.3		
Dining: Cafeteria/Fast Food	1.4		
Dining: Family	1.6		
Dormitory	1.0		
Exercise Center	1.0		
Gymnasium	1.1		
Healthcare-Clinic	1.0		
Hospital	1.2		
Hotel	1.0		
Library	1.3		
Manufacturing Facility	1.3		
Motel	1.0		
Motion Picture Facility	1.3		
Multi-Family	0.7		
Museum	1.1		
Office	1.0		
Parking Garage	0.3		
Penitentiary	1.0		
Performing Arts Theater	1.6		
Police/Fire Station	1.0		
Post Office	1.1		
Religious Building	1.3		
Retail	1.5		
Retail Display(floor area)	1.6		
Retail Display(display case/shelf area)	3.9		
School/University	1.2		
Sports Arena	1.1		
Town Hall	1.1		
Transportation	1.0		
Warehouse	0.8		
Workshop	1.4		
TOTALS			

Ft² Area

Watts

Total Allowed Interior Power Allowance _____ W > Proposed Interior Lighting _____ W

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Exterior Lighting Power Allowance IECC 505.6.2

**TABLE 505.6.2(1)
 EXTERIOR LIGHTING ZONES**

INDICATE LIGHTING ZONE	DESCRIPTION
<input type="checkbox"/> 1	Developed areas of national parks, state parks, forest land, and rural areas.
<input type="checkbox"/> 2	Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed use areas.
<input type="checkbox"/> 3	All other areas
<input type="checkbox"/> 4	High-activity commercial districts in major metropolitan areas as designated by the local land use planning authority

**TABLE 505.6.2(2)
 INDIVIDUAL LIGHTING POWER ALLOWANCES FOR BUILDING EXTERIORS**

		Zone 1	Zone 2	Zone 3	Zone 4
Base Site Allowance (Base allowance may be used in tradable or nontradable surfaces.)		500 W	600 W	750 W	1300 W
Tradable Surfaces (Lighting power densities for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs and outdoor sales areas may be traded.)	Uncovered Parking Areas				
	Parking areas and drives	0.04 W/ft ²	0.06 W/ft ²	0.10 W/ft ²	0.13 W/ft ²
	Building Grounds				
	Walkways less than 10 feet wide	0.7 W/linear foot	0.7 W/linear foot	0.8 W/linear foot	1.0 W/linear foot
	Walkways 10 feet wide or greater, plaza areas special feature areas	0.14 W/ft ²	0.14 W/ft ²	0.16 W/ft ²	0.2 W/ft ²
	Stairways	0.75 W/ft ²	1.0 W/ft ²	1.0 W/ft ²	1.0 W/ft ²
	Pedestrian tunnels	0.15 W/ft ²	0.15 W/ft ²	0.2 W/ft ²	0.3 W/ft ²
	Building Entrances and Exits				
	Main entries	20 W/linear foot of door width	20 W/linear foot of door width	30 W/linear foot of door width	30 W/linear foot of door width
	Other doors	20 W/linear foot of door width	20 W/linear foot of door width	20 W/linear foot of door width	20 W/linear foot of door width
	Entry canopies	0.25 W/ft ²	0.25 W/ft ²	0.4 W/ft ²	0.4 W/ft ²
	Sales Canopies				
	Free-standing and attached	0.6 W/ft ²	0.6 W/ft ²	0.8 W/ft ²	1.0 W/ft ²

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TABLE 505.6.2(2) Continued

Tradable Surfaces	Outdoor Sales				
	Open areas (including vehicle sales lots)	0.25 W/ft ²	0.25 W/ft ²	0.5 W/ft ²	0.7 W/ft ²
	Street frontage for vehicle sales lots in addition to "open area" allowance	No allowance	10 W/linear foot	10 W/linear foot	30 W/linear foot
Non-Tradable Surfaces (Lighting power density calculations for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the "Tradable Surfaces" section of this table.)	Building facades	No allowance	0.1 W/ft ² for each illuminated wall or surface or 2.5 W/linear foot for each illuminated wall or surface length	0.15 W/ft ² for each illuminated wall or surface or 3.75 W/linear foot for each illuminated wall or surface length	0.2 W/ft ² for each illuminated wall or surface or 5.0 W/linear foot for each illuminated wall or surface length
	Automated teller machines and night depositories	270 W per location plus 90 W per additional ATM per location	270 W per location plus 90 W per additional ATM per location	270 W per location plus 90 W per additional ATM per location	270 W per location plus 90 W per additional ATM per location
	Entrances and gatehouse inspection stations at guarded facilities	0.75 W/ft ² of covered and uncovered area	0.75 W/ft ² of covered and uncovered area	0.75 W/ft ² of covered and uncovered area	0.75 W/ft ² of covered and uncovered area
	Loading areas for law enforcement, fire, ambulance and other emergency service vehicles	0.5 W/ft ² of covered and uncovered area	0.5 W/ft ² of covered and uncovered area	0.5 W/ft ² of covered and uncovered area	0.5 W/ft ² of covered and uncovered area
	Drive-up windows/doors	400 W per drive-through	400 W per drive-through	400 W per drive-through	400 W per drive-through
	Parking near 24-hour retail entrances	800 W per main entry	800 W per main entry	800 W per main entry	800 W per main entry

Tradable Exterior Lighting Power Allowance IECC 505.6.2

A	B	C	D
Tradable Surfaces Area Description	Allowance (Table 505.6.2)	Area or Linear Feet in Proposed Design	Total (B X C)
Total Watts			

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Non-Tradable Exterior Lighting Power Allowance IECC 505.6.2

A	B	C	D
Non-Tradable Surfaces Area Description	Allowance (Table 505.6.2)	Area or Linear Feet in Proposed Design	Total (B X C)
Total Wattage			

Tradable Installed Exterior Lighting Power IECC 505.6

A	B	C	D
Fixture Type	Number of Luminaires Installed	Watts per Luminaire (including ballast)	Installed Watts (B X C)
Total Watts			

Total Allowed Exterior Power Allowance _____ W > Proposed Exterior Lighting _____ W

Forms for use with ASHRAE 90.1-2007 as allowed by IECC 501.2, may be downloaded for use at: <http://www.ashrae.org/technology/page/97>