STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development

Standard Energy Code Proposal Form

Jan 2022

Log No.24-GP1-292 Revision 2
Received 3/12/25

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # **C405.5** _____

Brief Description: Revises exterior lighting zones to match new definitions from the Illuminating Engineering Society. Reduces lighting power density values for exterior areas.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

C405.5 Exterior lighting power requirements. The total connected exterior lighting power calculated in accordance with Section C405.5.2 shall not be greater than the exterior lighting power allowance calculated in accordance with Section C405.5.3.

C405.5.1 Exterior lighting. All exterior luminaires that operate at greater than 10 ~~25~~ watts shall have a minimum efficacy of 100 lumens per watt.

Exceptions:

~~1. Luminaires controlled by a motion sensor.~~

2. Luminaires that qualify for one of the exceptions under Section C405.5.2.

C405.5.2 Total connected exterior lighting power. The total exterior connected lighting power shall be the total maximum rated wattage of all exterior lighting that is powered through the energy service for the building and building site lighting or which the *building owner* is responsible.

Exception: Lighting used for the following applications shall not be included:

1. Lighting approved because of safety considerations.
2. Emergency lighting automatically off during normal business operation.
3. Exit signs.
4. Specialized signal, directional and marker lighting associated with transportation.
5. Advertising signage or directional signage.
6. Integral to equipment or instrumentation and is installed by its manufacturer.
7. Lighting in any location that is specifically used for video broadcasting, video or film recording, or live theatrical and music performances.
8. Athletic playing areas.
9. Temporary lighting.
10. Industrial production, material handling, transportation sites and associated storage areas.
11. Theme elements in theme/amusement parks.
12. Lighting integrated within or used to highlight features of art, public monuments, and the national flag.
13. Lighting for water features and swimming pools.
14. Lighting that is controlled from within *sleeping* units and *dwelling units*.
15. Lighting of the exterior means of egress as required by the *International Building Code*.

C405.5.3 Exterior lighting power allowance. The exterior lighting power allowance (watts) is calculated as follows:

1. Determine the Lighting Zone (LZ) for the building according to Table C405.5.3(1), unless otherwise specified by the *code official*.
2. For each exterior area that is to be illuminated by lighting that is powered through the energy service for the *building* and building site lighting for which the *building owner* is responsible, determine the applicable area type from Table C405.5.3(2). For area types not listed, select the area type that most closely represents the proposed use of the area. Covered parking garage lighting is not considered exterior lighting for the purposes of this calculation.
3. Determine the total area or length of each type and multiply by the value for the area type in Table C405.5.3(2) to determine the lighting power (watts) allowed for each area type.
4. The total exterior lighting power allowance (watts) is the sum of the base site allowance determined according to Table C405.5.3(2), plus the watts from each area type.

TABLE C405.5.3(1)
EXTERIOR LIGHTING ZONES

LIGHTING ZONE	~~DESCRIPTION~~	DESCRIPTION
0		1. Agricultural and rural residential areas 2. Visitor centers or lodges within or adjacent to wilderness, natural parks, protected wildlife areas 3. Areas surrounding astronomical observatories 4. Municipal parks in rural areas 5. All other similar areas
1	~~Developed areas of national parks, state parks, forest land, and rural areas~~	1. Rural town centers 2. Single-family, mobile home, and low-rise multi-family in low pedestrian activity areas 3. Low-activity institutional, commercial, campus, and light industrial areas 4. Municipal parks in low and moderate pedestrian activity areas All other similar areas
2	~~Areas predominantly consisting of residential zoning, neighborhood business districts, light industrial with limited nighttime use and residential mixed use areas~~	5. Moderate-activity commercial corridors and suburban town centers 6. Single and multi-family residential areas in moderate an high-pedestrian activity areas 7. Moderate-activity institutional and industrial uses in suburban or urban areas 8. Urban parks and campuses in high pedestrian activity areas 9. All other similar areas
3	~~All other areas not classified as lighting zone 1, 2 or 4~~	1. Commercial corridors and central business districts in urban areas with high pedestrian activity 2. Urban hospitality and entertainment districts 3. Urban areas with convention centers, sports arenas, and public transportation facilities 4. Heavy industrial areas 5. All others similar areas
4	~~High-activity commercial districts in major metropolitan areas as designated by the local land use planning authority~~	1. Very high-activity urban entertainment, hospitality and retail areas, specifically designated as LZ4 by the local land use planning authority

TABLE C405.5.3(2)
LIGHTING POWER DENSITY VALUES ~~ALLOWANCES~~ FOR BUILDING EXTERIORS

		LIGHTING ZONES			
	Zone 0	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**
Base Site Allowance	40 W	~~160~~ 135 W	~~280~~ 240 W	~~400~~ 340 W	~~560~~ 475 W

Uncovered Parking Areas					
Parking areas and drives	0.006 W/ft^2	~~0.015~~ 0.013 W/ft^2	~~0.026~~ 0.022 W/ft^2	~~0.037~~ 0.031 W/ft^2	~~0.052~~ 0.042 W/ft^2
Building Grounds					
Walkways and ramps less than 10 feet wide		0.04 W per linear foot	0.05 W per linear foot	0.10 W per linear foot	0.14 W per linear foot
Walkways and ramps 10 feet wide or greater, plaza areas special feature areas		0.028 W/ft^2	0.049 W/ft^2	0.070 W/ft^2	0.098 W/ft^2
Dining areas	0.026 W/ft^2	~~0.156~~ 0.069 W/ft^2	~~0.273~~ 0.137 W/ft^2	~~0.390~~ 0.276 W/ft^2	~~0.546~~ 0.350 W/ft^2
Stairways	Exempt	Exempt	Exempt	Exempt	Exempt
Pedestrian tunnels	---	0.063 W/ft^2	0.110 W/ft^2	0.157 W/ft^2	0.220 W/ft^2
Landscaping	---	0.014 W/ft^2	0.025 W/ft^2	0.036 W/ft^2	0.050 W/ft^2
Building Entrances and Exits					
Pedestrian and vehicular entrances and exists		5.6 W per linear foot of opening	9.8 W per linear foot of opening	14.0 W per linear foot of opening	19.6 W per linear foot of opening
Entry canopies		0.072 W/ft^2	0.126 W/ft^2	0.180 W/ft^2	0.252 W/ft^2
Loading docks	---	0.104 W/ft^2	0.182 W/ft^2	0.260 W/ft^2	0.364 W/ft^2
Sales Canopies					
Free-standing and attached	---	0.20 W/ft^2	0.35 W/ft^2	0.50 W/ft^2	0.70 W/ft^2
Outdoor Sales					
Open areas (including vehicle sales lots)		0.072 W/ft^2	0.126 W/ft^2	0.180 W/ft^2	0.252 W/ft^2
Street frontage for vehicle sales lots in addition to “open area” allowance		No allowance	7 W per linear foot	10.3 W per linear foot	14.4 W per linear foot

For SI: 1 foot = 304.8 mm, 1 watt per square foot = 10.76 W per m^2.

TABLE C405.5.3(3)
INDIVIDUAL LIGHTING POWER ALLOWANCES FOR BUILDING EXTERIORS

	LIGHTING ZONES				
	Zone 0	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**
Building facades	---	~~No Allowance~~ ---	0.075 W/ft^2 of gross above-grade wall area	0.113 W/ft^2 of gross above-grade wall area	0.150 W/ft^2 of gross above-grade wall area
Automated teller machines (ATM) and night depositories	---	80 W per location plus 25 W per additional ATM per location	80 W per location plus 25 W per additional ATM per location	80 W per location plus 25 W per additional ATM per location	80 W per location plus 25 W per additional ATM per location
Uncovered entrances and gatehouse inspection stations at guarded facilities	---	~~0.144~~ 0.115 W/ft^2	~~0.252~~ 0.202 W/ft^2	~~0.360~~ 0.288 W/ft^2	~~0.504~~ 0.403 W/ft^2
Uncovered loading areas for law enforcement, fire, ambulance and other emergency service vehicles	---	~~0.104~~ 0.088 W/ft^2	~~0.182~~ 0.155 W/ft^2	~~0.260~~ 0.221 W/ft^2	~~0.364~~ 0.309 W/ft^2
Drive-up windows/doors	---	~~53~~ 42 W per drive-through	~~92~~ 74 W per drive-through	~~132~~ 106 W per drive-through	~~185~~ 148 W per drive-through
Parking near 24-hour retail entrances	---	~~80~~ 64 W per main entry	~~140~~ 112 W per main entry	~~200~~ 160 W per main entry	~~280~~ 224 W per main entry

C405.5.3.1 Additional exterior lighting power. Additional exterior lighting power allowances are available for the specific lighting applications listed in Table C405.5.3(3). These additional power allowances shall be used only for the luminaires serving these applications and shall not be used to increase any other lighting power allowance.

Purpose of code change:

Lights on motion sensor should exceed 100 lm/W.

LED light sources are over 100 lm/W. The original motion sensor exclusion related to high-intensity discharge (HID) lamps which don't work well with motion sensors. In contrast, LED sources can easily be controlled by motion sensors. This requirement removes the motion sensor exclusion.

Definitions of lighting zones

The Illuminating Engineering Society (IES) recently changed the definitions for lighting zones. The changes in the table that relate to the definitions of the lighting zones relate to the new definitions developed by the IES. An amendment to ASHRAE/IES Standard 90.1-2022 (for the 2025 version) uses these same exterior lighting definitions.

Changes exterior lighting power density values

LED fixtures have increased in efficacy (lm/W) since the last version of WSEC. These reduced values reflect changes in LED efficacy that occurred in the industry. These values are similar to an amendment to ASHRAE/IES Standard 90.1-2022 (for the 2025 version).

The dining area values were initially established TOO high. The original values exceeded the INTERIOR dining values. The previous values were 10x the amount of power allowed in the parking application. Simply stated, the original values were incorrectly established. The significant reduction in this space type reflects that exterior lighting does not need to be as much as interior lighting. This is a realignment with proper design considerations. These values are similar to an amendment to ASHRAE/IES Standard 90.1-2022 (for the 2025 version).

Your amendment must meet one of the following criteria. Select at least one:

- ☐ Addresses a critical life/safety need.
- ☐ The amendment clarifies the intent or application of the code.
- ☒ Addresses a specific state policy or statute. (Note that energy conservation is a state policy)
- ☐ Consistency with state or federal regulations.
- ☐ Addresses a unique character of the state.
- ☐ Corrects errors and omissions.

Check the building types that would be impacted by your code change:

- ☐ Single family/duplex/townhome
- ☐ Multi-family 1 – 3 stories
- ☒ Multi-family 4 + stories
- ☒ Commercial / Retail
- ☒ Institutional
- ☒ Industrial

Your name	Michael Myer	Other contact name	Click here to enter text.
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Economic Impact Data Sheet

Is there an economic impact: ☐ Yes ☒ No

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants, and businesses. If you answered "No" above, explain your reasoning.

Adding specificity to the lighting zone definitions does not add any costs.

Removing the motion sensor exclusion for exterior light sources does not change costs.

The reduced exterior LPD values reflect changes in the both the mean and median exterior lighting efficacy. Manufacturers are already making equipment that can meet these values.

The change in value for dining spaces reflects a realignment of design considerations. The original value was too high, and projects can meet their lighting needs with no new costs and meet these new requirements.

Provide your best estimate of the **construction cost** (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

See description above, these changes do not result in increased construction costs. The zone definitions do not change the costs of construction.

The cost of construction for dining or other spaces that have a decreased lighting power density value do not increase costs as current equipment would be used to meet those values and the equipment is not more costly for construction. However, this will result in lower costs over the life of the system.

A project meeting the dining area values of the previous code and this proposed change *could* experience a 50% reduction in costs.

$0.0/square foot (For residential projects, also provide $Click here to enter text./ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

Provide your best estimate of the **annual energy savings** (or additional energy use) for your code change proposal?

0.02 KWH/ square foot (or) ~~Click here to enter text.KBTU/ square foot~~

(For residential projects, also provide Click here to enter text.KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

Assumes the medium office (53,000 ft^2) prototype which has 86,670 ft^2 of parking (214 spaces). Assuming 4380 hours of operation and 50% reduction from 12 am – 6 am. For zone 3, reducing from 0.037 W/ft^2 to 0.031 W/ft^2 results in 0.02 kWh / ft^2 saved.

List any **code enforcement** time for additional plan review or inspections that your proposal will require, in hours per permit application:

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9255.

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.

This requirement already existed in WSEC, the values and definitions changed.

Small Business Impact. Describe economic impacts to small businesses:

(none)

Housing Affordability. Describe economic impacts on housing affordability:

(None – multifamily units are not significantly affected by the lighting power requirements)

Other. Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

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