

Proposal Summary

Indoor Lighting Power Density

Updated Monday, June 16, 2025

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Measure Description

This code change proposal aims to update the prescriptive requirements on lighting power density (LPD) for nonresidential indoor spaces. The LPD requirements dictate the maximum lighting power allowed in each building type or space type within a building. Consideration of the following three factors is the basis for updating the LPD values:

- 1) The increase in light source luminous efficacy due to advancements in LED technologies since the last update in the 2022 code cycle.
- 2) Area categories where the national standards (2025 ASHRAE 90.1) and other model codes (2024 IECC) have more stringent LPD requirements than 2025 Title 24, Part 6.
- 3) Alignment with current industry practice in the lamp lumen depreciation (LLD) assumptions used in deriving the LPD requirements.

This proposal also includes the creation of a new data center-related building type or a new area category for the complete building method or the area category method, respectively, along with the development of corresponding LPD values..

The current LPD values of all building types and area categories will be reviewed and updated as necessary. The update would apply to new construction, additions, and alterations of nonresidential buildings as well as non-dwelling spaces within multifamily buildings.

Table 1 summarizes the scope of the proposed code change.

Table 1: Scope of Proposed Code Change

An "X" indicates the proposed code change is relevant.

Building Type(s)		single family	Construction Type(s)	X	new construction
	X	multifamily		X	additions
	X	nonresidential		X	alterations

Type of Change		mandatory	Updates to Compliance Software		no updates
	X	prescriptive		X	update existing feature
		performance			add new feature
Third Party Verification	X	no changes to third party verification			
		update existing verification requirements			
		add new verification requirements			

Justification for Proposed Change

Indoor LPD requirements underwent a significant update in the 2019 code cycle and were slightly updated for a limited set of area categories in the 2022 code cycle. The Statewide CASE Team reviewed the current LED light source efficacy and requirements in national standards and other model codes. The LPD values for certain spaces in these standards and model codes are already lower than the LPD values in the 2025 Title 24. Concurrently, the committees developing ASHRAE 90.1 and IECC are also looking to lower the LPD values for the coming update cycle. The Statewide CASE Team also recognized that the light loss factors, specifically, the lamp lumen depreciation (LLD) values used to derive the LPD values for past code cycles, have been based on factors for traditional light sources, despite the underlying technology for the LPD values already being LED. This appears to be inconsistent with current industry practices and should be updated accordingly.

Current code requirements have not explicitly addressed LPDs for data centers and the related spaces. Given the rapid growth in data center construction to support cloud computing and artificial intelligence, it is critical to ensure illumination services are provided with high energy efficiency in data centers. Therefore, the Statewide CASE Team recommends including data centers and related spaces as part of the effort in updating the LPD requirements.

Updating the LPD requirements presents a significant opportunity for savings, highlighting that lighting remains one of the most impactful building end-uses for reducing energy demand and the carbon footprint of nonresidential buildings.

Data Needs / Information Requests

The Statewide CASE Team is seeking the following information to inform the code change proposal. Data may be provided anonymously. To participate or provide information, please email Yao-Jung Wen, ywen@energy-solution.com directly and copy info@title24stakeholders.com.

- Lamp lumen depreciation (LLD) and other light loss factors (LLF) assumptions used in the current lighting design practice.
- Latest cost data on high-efficacy LED lamps and luminaires.
- The LPDs achieved in lighting designers' project portfolios.
- Any trade-offs lighting designers may have made in lighting quality or performance to achieve the LPDs in their portfolio.
- Lighting specifiers to volunteer for an advisory committee and provide guidance to the Statewide CASE Team on specifications, including—but not limited to—energy modeling assumptions and methodologies.

Draft Code Language

1.1 Guide to Marked Up Language

The proposed changes to the Standards and Reference Appendices are provided below. Changes to the 2025 documents are marked with [blue underlining](#) (new language) and [strikethroughs](#) (deletions).

1.2 Title 24, Part 1

There are no proposed changes to Title 24, Part 1.

1.3 Title 24, Part 6

The main updates to the code language will be to the values in Table 140.6-B and Table 140.6-C of Title 24, Part 6, Section 140.6. The markup shows the scope of the updates. All the stricken-through values in the tables will be reviewed and updated as needed. The stricken-through values should not be construed as such LPD requirement is being eliminated. Similarly, the cells labeled as TBD are new additions to building types or area categories. Not all the values will be updated. The values that will be updated and the exact updated values will be determined and presented in the CASE Report.

TABLE 140.6-B COMPLETE BUILDING METHOD LIGHTING POWER DENSITY VALUES

TYPE OF BUILDING	ALLOWED LIGHTING POWER DENSITY (WATTS PER SQUARE FOOT)
Assembly Building	0.65
Bank or Financial Institution Building	0.65
Data Center	TBD
Grocery Store Building	0.90
Gymnasium Building	0.60
Healthcare Facility	0.90
Industrial/Manufacturing Facility Building	0.60
Library Building	0.70
Motion Picture Theater Building	0.60
Museum Building	0.65
Office Building	0.60
Parking Garage Building	0.13
Performing Arts Theater Building	0.75
Religious Facility Building	0.70
Restaurant Building	0.65
Retail Store Building	0.90
School Building	0.60
Sports Arena Building	0.75
All other buildings	0.40

TABLE 140.6-C AREA CATEGORY METHOD - LIGHTING POWER DENSITY VALUES (WATTS/FT²)

Building Type/Use	Primary Function Area	Allowed Lighting Power Density for General Lighting (W/ft²)	Additional Lighting Power Qualified Lighting Systems	Additional Lighting Power Additional Allowance³ (W/ft², unless noted otherwise)
Aging Eye/Low-vision ¹¹	Corridor Area	0.70	Decorative/Display	0.30
Aging Eye/Low-vision ¹¹	Dining	0.80	Decorative/Display	0.30
Aging Eye/Low-vision ¹¹	NA	0.80	Tunable white or dim-to-warm ¹⁰	0.10
Aging Eye/Low-vision ¹¹	Lobby, Main Entry	0.85	Decorative/Display	0.30
Aging Eye/Low-vision ¹¹	Lobby, Main Entry	0.85	Transition Lighting OFF at night ¹²	0.95
Aging Eye/Low-vision ¹¹	Lobby, Main Entry	0.85	Tunable white or dim-to-warm ¹⁰	0.10
Aging Eye/Low-vision ¹¹	Lounge/Waiting Area	0.80	Decorative/Display	0.30
Aging Eye/Low-vision ¹¹	Lounge/Waiting Area	0.80	Tunable white or dim-to-warm ¹⁰	0.10
Aging Eye/Low-vision ¹¹	Multipurpose Room	0.85	Decorative/Display	0.30
Aging Eye/Low-vision ¹¹	Multipurpose Room	0.85	Tunable white or dim-to-warm ¹⁰	0.10
Aging Eye/Low-vision ¹¹	Religious Worship Area	1.00	Decorative/Display	0.30
Aging Eye/Low-vision ¹¹	Religious Worship Area	1.00	Tunable white or dim-to-warm ¹⁰	0.10
Aging Eye/Low-vision ¹¹	Restroom	1.00	Decorative/Display	0.20
Aging Eye/Low-vision ¹¹	Stairwell	0.80	Decorative/Display	0.30
Audience Seating Area	NA	0.50	Decorative/Display	0.25
Auditorium Area	NA	0.70	Decorative/Display	0.45
Auto Repair / Maintenance Area	NA	0.55	Detailed Task Work ⁷	0.20
Barber, Beauty Salon, Spa Area	NA	0.70	Detailed Task Work ⁷	0.30
Barber, Beauty Salon, Spa Area	NA	0.70	Decorative/Display	0.25
Civic Meeting Place Area	NA	0.90	Decorative/Display	0.25
Classroom, Lecture, Training, Vocational Area	NA	0.60	White or Chalk Board ¹	7 W/ft
Concourse and Atria Area	NA	0.60	Decorative/Display	0.25
Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Decorative	0.25

Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Wall Display MH <= 10'6"	2 W/ft
Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Wall Display MH 10'7" - 14'	2.35 W/ft
Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Wall Display MH > 14'	2.66 W/ft

CONTINUED: TABLE 140.6-C AREA CATEGORY METHOD - LIGHTING POWER DENSITY VALUES (WATTS/FT²)

Building Type/Use	Primary Function Area	Allowed Lighting Power Density for General Lighting (W/ft²)	Additional Lighting Power Qualified Lighting Systems	Additional Lighting Power Additional Allowance³ (W/ft², unless noted otherwise)
Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Floor Display & Task MH <= 10'6"	0.30
Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Floor Display & Task MH 10'7" - 14'	0.35
Convention, Conference, Multipurpose and Meeting Area	NA	0.75	Floor Display & Task MH > 14'	0.40
Copy Room	NA	0.50	NA	NA
Corridor Area	NA	0.40	Decorative/Display	0.25
Data Center	Server Room	TBD	TBD	TBD
Data Center	Power Room	TBD	TBD	TBD
Data Center	Network Operations Center	TBD	TBD	TBD
Dining Area	Bar/Lounge and Fine Dining	0.45	Decorative/Display	0.35
Dining Area	Bar/Lounge and Fine Dining	0.45	Wall Display MH <= 10'6"	1.25 W/ft
Dining Area	Bar/Lounge and Fine Dining	0.45	Wall Display MH 10'7"-14'	1.5 W/ft
Dining Area	Bar/Lounge and Fine Dining	0.45	Wall Display MH > 14'	1.7 W/ft
Dining Area	Bar/Lounge and Fine Dining	0.45	Floor Display & Task MH <= 10'6"	0.45

Dining Area	Bar/Lounge and Fine Dining	0.45	Floor Display & Task MH 10'7"- 14'	0.52
Dining Area	Bar/Lounge and Fine Dining	0.45	Floor Display & Task MH >14'	0.60
Dining Area	Bar/Lounge and Fine Dining	0.45	General Lighting in the enclosed space of ceiling height > 10'	0.25
Dining Area	Cafeteria/Fast Food	0.45	Decorative/Display	0.25
Dining Area	Family and Leisure	0.40	Decorative/Display	0.25
Electrical, Mechanical, Telephone Rooms	NA	0.40	Detailed Task Work ⁷	0.20
Exercise/Fitness Center and Gymnasium Area	NA	0.50	NA	NA
Financial Transaction Area	NA	0.70	Decorative/Display	0.25
Healthcare Facility and Hospitals	Exam/Treatment Room	1.15	NA	NA
Healthcare Facility and Hospitals	Imaging Room	0.60	Decorative/Display	0.20
Healthcare Facility and Hospitals	Imaging Room	0.60	Tunable white or dim- to-warm ¹⁰	0.10
Healthcare Facility and Hospitals	Medical Supply Room	0.55	NA	NA
Healthcare Facility and Hospitals	Nursery	0.80	Tunable white or dim- to-warm ¹⁰	0.10

**CONTINUED: TABLE 140.6-C AREA CATEGORY METHOD - LIGHTING POWER
DENSITY VALUES (WATTS/FT²)**

Building Type/Use	Primary Function Area	Allowed Lighting Power Density for General Lighting (W/ft²)	Additional Lighting Power Qualified Lighting Systems	Additional Lighting Power Additional Allowance³ (W/ft², unless noted otherwise)
Healthcare Facility and Hospitals	Nurse's Station	0.85	Tunable white or dim- to-warm ¹⁰	0.10
Healthcare Facility and Hospitals	Nurse's Station	0.85	Detailed Task Work ⁷	0.20
Healthcare Facility and Hospitals	Operating Room	1.90	NA	NA
Healthcare Facility and Hospitals	Patient Room	0.70	Decorative/Display	0.15
Healthcare Facility and Hospitals	Patient Room	0.70	Tunable white or dim- to-warm ¹⁰	0.10

Healthcare Facility and Hospitals	Physical Therapy Room	0.75	Tunable white or dim-to-warm ¹⁰	0.10
Healthcare Facility and Hospitals	Recovery Room	0.90	Tunable white or dim-to-warm ¹⁰	0.10
Hotel Function Area	NA	0.85	Decorative/Display	0.25
Kitchen/Food Preparation Area	NA	0.95	NA	NA
Laboratory, Scientific	NA	0.90	Specialized Task Work ⁸	0.35
Laundry Area	NA	0.45	-	-
Library	Reading Area	0.80	Decorative/Display	0.25
Library	Stacks Area	1.00	NA	NA
Lobby, Main Entry	NA	0.70	Decorative	0.25
Lobby, Main Entry	NA	0.70	Wall Display MH ≤ 10'6"	3 W/ft
Lobby, Main Entry	NA	0.70	Wall Display MH 10'7"-14'	3.5 W/ft
Lobby, Main Entry	NA	0.70	Wall Display MH > 14'	4 W/ft
Locker Room	NA	0.45	NA	NA
Lounge, Breakroom, or Waiting Area	NA	0.55	Decorative/Display	0.25
Manufacturing, Commercial & Industrial Work Area	Low Bay	0.60	Detailed Task Work ⁷	0.20
Manufacturing, Commercial & Industrial Work Area	High Bay	0.65	Detailed Task Work ⁷	0.20
Manufacturing, Commercial & Industrial Work Area	Precision	0.85	Precision Specialized Work ⁹	0.70
Museum Area	Exhibition/Display	0.60	Decorative/Display	0.45
Museum Area	Restoration Room	0.70	Detailed Task Work ⁷	0.35
Office Area	> 250 square feet	0.60	Decorative/Display and Portable lighting for office areas ⁶	0.20
Office Area	≤ 250 square feet	0.65	Decorative/Display and Portable lighting for office areas ⁶	0.20

CONTINUED: TABLE 140.6-C AREA CATEGORY METHOD - LIGHTING POWER DENSITY VALUES (WATTS/FT²)

Building Type/Use	Primary Function Area	Allowed Lighting Power Density for General Lighting (W/ft ²)	Additional Lighting Power Qualified Lighting Systems	Additional Lighting Power Additional Allowance ³ (W/ft ² , unless noted otherwise)
Parking Garage Area	Parking Zone and Ramps	0.10	First ATM or Ticket Machine	100 W
Parking Garage Area	Parking Zone and Ramps	0.10	Additional ATM or Ticket Machine	50 W/each
Parking Garage Area	Daylight Adaptation Zones ²	1.00	NA	NA
Pharmacy Area		1.00	Specialized Task Work ⁸	0.35
Retail Sales Area	Grocery Sales	1.00	Decorative	0.35
Retail Sales Area	Grocery Sales	1.00	Wall Display MH ≤ 10'6"	6.6 W/ft
Retail Sales Area	Grocery Sales	1.00	Wall Display MH 10'7"-14'	7.76 W/ft
Retail Sales Area	Grocery Sales	1.00	Wall Display MH > 14'	8.8 W/ft
Retail Sales Area	Grocery Sales	1.00	Floor Display & Task MH ≤ 10'6"	0.60
Retail Sales Area	Grocery Sales	1.00	Floor Display & Task MH 10'7"- 14'	0.70
Retail Sales Area	Grocery Sales	1.00	Floor Display & Task MH > 14'	0.80
Retail Sales Area	Grocery Sales	1.00	General Lighting in the enclosed space of ceiling height > 10'	0.10
Retail Sales Area	Retail Merchandise Sales	0.95	Decorative/Display	0.35
Retail Sales Area	Retail Merchandise Sales	0.95	Wall Display MH ≤ 10'6"	9.5 W/ft
Retail Sales Area	Retail Merchandise Sales	0.95	Wall Display MH 10'7"-14'	11.2 W/ft
Retail Sales Area	Retail Merchandise Sales	0.95	Wall Display MH > 14'	12.7 W/ft
Retail Sales Area	Retail Merchandise Sales	0.95	Floor Display & Task MH ≤ 10'6"	0.45
Retail Sales Area	Retail Merchandise Sales	0.95	Floor Display & Task MH 10'7"- 14'	0.52
Retail Sales Area	Retail Merchandise Sales	0.95	Floor Display & Task MH > 14'	0.60

Retail Sales Area	Retail Merchandise Sales	0.95	Valuable Display Case	0.50
Retail Sales Area	Retail Merchandise Sales	0.95	General Lighting in the enclosed space of ceiling height > 10'	0.10
Retail Sales Area	Fitting Room	0.60	External Illuminated Mirror ⁵	40 -W/ea
Retail Sales Area	Fitting Room	0.60	Internal Illuminated Mirror ⁵	120 -W/ea
Religious Worship Area		0.95	Decorative/Display	0.25
Restrooms		0.65	Decorative/Display	0.35
Stairwell		0.60	Decorative/Display	0.35
Storage, Commercial/Industrial	Warehouse	0.40	NA	NA

CONTINUED: TABLE 140.6-C AREA CATEGORY METHOD - LIGHTING POWER DENSITY VALUES (WATTS/FT²)

Building Type/Use	Primary Function Area	Allowed Lighting Power Density for General Lighting (W/ft²)	Additional Lighting Power Qualified Lighting Systems	Additional Lighting Power Additional Allowance³ (W/ft², unless noted otherwise)
Storage, Commercial/Industrial	Shipping & Handling	0.60	NA	NA
Sports Arena – Playing Area	Class I Facility ¹³	2.25	NA	NA
Sports Arena – Playing Area	Class II Facility ¹³	1.45	NA	NA
Sports Arena – Playing Area	Class III Facility ¹³	1.10	NA	NA
Sports Arena – Playing Area	Class IV Facility ¹³	0.75	NA	NA
Theater Area	Motion picture	0.50	Decorative/Display	0.25
Theater Area	Performance	0.80	Decorative/Display	0.25
Transportation Function	Baggage Area	0.40	NA	NA
Transportation Function	Ticketing Area	0.45	Decorative/Display	0.20
Videoconferencing Studio	NA	0.90	Videoconferencing ¹⁴	1.00
All other	NA	0.40	NA	NA

1.4 Reference Appendices

There are no proposed changes to the reference appendices.

