# How-to Guide:
# *Supporting Documentation*

In Compliance with

2025 New York City Energy Conservation Code

- GENERAL
- BUILDING ENVELOPE
- MECHANICAL SYSTEMS
- **LIGHTING & ELECTRICAL POWER**
- OTHER REQUIREMENTS

NOTE: In this *How-To Guide: Supporting Documentation*, selected Energy Code provisions have been generalized, summarized, rephrased, and/or highlighted. This guide is intended: 1) To provide general guidance for the job applications seeking compliance with the 2025 NYCECC; 2) Not to replace or represent the entire 2025 NYCECC and related regulations of the City of New York and the Department of Buildings; and 3) Not to provide complete compliance solutions for any particular type of job or work. Comprehensive mandates, applicability, exemptions, exceptions and options will be found in the 2025 NYCECC and related regulations of the City of New York and the Department of Buildings.

# RESIDENTIAL BUILDINGS - INTERIOR LIGHTING POWER

## High-Efficacy Lamps or Luminaires

*R404.1*
*C405.3.3*

- For Residential buildings, also for Dwelling units within Commercial buildings, 100% of the permanently installed lighting fixtures must have:
  - Lamp efficacy ≥ 65 lumens/watt, or
  - Luminaire efficacy ≥ 45 lumens/watt
- To validate the above, light fixture schedules must clearly identify lamp/luminaire efficacy of each light fixture, and lamp/luminaire counts of all lighting fixtures
- **Exceptions:**
  - Lighting integral to other appliances
  - Antimicrobial lighting
  - Luminaires with rating < 3 watts
  - General service lamps complying with DOE 10 CFR, Part 430.32
- **Dwelling units within commercial buildings** have the same requirement as residential buildings

*Figure LE-1-b. High-Efficacy Lamp examples*
*Source: basc.pnnl.gov*

## To Show Compliance:

- Provide a lighting schedule, add note indicating "All permanently installed lighting fixtures are high efficacy lamps or luminaires"

*Refer to LE-3*

| LIGHTING FIXTURE SCHEDULE* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Fixture ID | LOCATION | MANUFACTURER/ MODEL | LAMP TYPE | # OF LAMPS/ FIXTURE | *LAMP EFFICACY* (Lumens/Watt) | *FIXTURE EFFICACY* (Lumens/Watt) | Control | NOTES |
| A1 | Apt Foyer | QWERT/ Model-number-LE-1234-5678 | LED | 1 | 98 | --- | Automatic shutoff | |
| A2 | Apt Bathroom | WERTY/ Model-number-LE-2345-6789 | LED | 1 | 92 | --- | Dimmer | |
| A3 | Living Room | ERTYU/ Model-number-LE-3456-7890 | LED | 2 | --- | 83 | Dimmer | |
| A4 | Kitchen | RTYUI/ Model-number-LE-4567-8901 | LED | 2 | --- | 87 | Dimmer | |
| A5 | Bedroom | TYUIO/ Model-number-CFL-5678-9012 | Compact FL | 2 | 91 | --- | Dimmer | |

* All permanently installed lighting fixtures are high efficacy lamps or luminaires

*Figure LE-1-a. Sample Lighting Fixture Schedule for Residential Building*

# RESIDENTIAL BUILDINGS - EXTERIOR LIGHTING POWER

## Exterior Lighting Power

*R404.1.1*
*R404.1.2*
*R404.1.3*

- Exterior lighting must comply with power allowances in Table R404.1 (where applicable)
- The following building types **do not** have exterior lighting power allowance requirements:
  - One-and-two family dwellings
  - Townhouses
- This requirement **does not** apply to the following:
  - Approved safety or emergency lighting
  - Lamps or luminaires that comply with interior lighting power requirements
  - Solar powered lamps
  - Other specialized lighting fixtures

## To Show Compliance:

*Refer to LE-3*

- Provide a lighting schedule, include fixture wattage and area and show to total wattage allowance as per the following:

**Total Allowable Exterior Lighting Power = Base Site Allowance (280 W) + Σ (Area/Length × Allowance from Table R404.1)**

| EXTERIOR LIGHTING FIXTURE SCHEDULE | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Fixture ID** | **LOCATION** | **AREA/LENGTH** | **ALLOWANCE** | **ALLOWED WATTAGE SUBTOTAL** | **MANUFACTURER/ MODEL** | **# OF LAMPS/ FIXTURE** | **W/FIXTURE** | **INSTALLED W** | **CONTROL** | **NOTES** |
| P1 | Uncovered Parking | 5000 $ft^2$ | 0.026 W/$ft^2$ | 130 | OLWX1 LED 40W 50K | 1 | 37 | 37 | Daylight controls | |
| P2 | Pedestrian entrance | 20 ft | 9.8/ft | 196 | Rab VXBRLED13 | 2 | 13 | 26 | Daylight controls | |
| L1 | Landscaping | 1,500 $ft^2$ | 0.025/$ft^2$ | 37.5 | Kichler 15384AZT | 4 | 35 | 140 | Daylight controls | |
| **Total Allowable Exterior Lighting Power (280 W) + Σ (Area/Length × Allowance )** | | | | 643.5 | **Total Exterior Lighting power to be installed** | | | 203 | | **Complies** |

*Figure LE-2. Sample Exterior Lighting Fixture Schedule for Residential Building*

# RESIDENTIAL BUILDINGS - LIGHTING POWER CONTROLS, DWELLING ELECTRICAL METER AND REC

## Interior Lighting Controls

*R404.2*

- **Habitable spaces must have:**
  - Dimmer or
  - Automatic shutoff controls (turn lights off after 15 min) incorporated with manual controls
- **Garages, unfinished basements, laundry and utility rooms must have:**
  - Automatic shutoff controls (turn lights off after 15 min) incorporated with manual controls

## Exterior Lighting Controls

*R404.3*

- Required when total exterior lighting power is > 30 watts
- Must provide manual controls with automatic shutdown actions that shut off when daylight is present
- Controls that override automatic shutoff actions are not allowed

## Dwelling Electrical Meter

*R404.5*

- Each dwelling unit must have its own electric meter.

## Renewable Energy Certificate (REC)

*R404.4*

- When renewable energy is used for compliance, documentation must show that associated RECs/EACs are secured through a valid agreement.
- RECs/EACs must be retained or retired on behalf of the building owner to count toward code compliance.

# COMMERCIAL BUILDINGS - INTERIOR LIGHTING POWER

## Maximum Allowed Interior Lighting Power

*C405.3*
*9.2.2.1*

- Light fixture layout plans and light fixture schedules must demonstrate that the proposed interior lighting power density (watts/sf) is not greater than the maximum allowed interior lighting power density.

*1 RCNY §5000-01(g)(3)*

- Light fixture schedules must be complete with the fixture identification key, lamp/fixture type, number of lamps per fixture, fixture wattage, lamp/fixture efficacy (in lumens/watt), and quantities that match the light fixture layout plans.

*C405.1*
*9.1.1*

- Light fixture schedules must support the lighting energy analysis report: e.g., *Lamps/Fixture*, *# of Fixtures*, and *Fixture Wattage* listed in Lighting COMcheck report on EN- drawings and must match those values in light fixture schedules on RCP drawings. If not using COMcheck provide a manual calculation showing fixture schedule, total connected lighting power (TCLP), applicable LPD allowance, and confirmation that proposed lighting power does not exceed the allowed limit.

- Fixture efficacy values (lumens/watt), and/or fixtures' low-voltage information, when pertaining to exemption of certain lighting power/controls requirements, must also be listed in the light fixture schedules.

## Total Connected Lighting Power (TCLP)

*C405.3.1*
*9.1.3*
*9.1.4*

- Total interior lighting power must include all input power to lighting systems, including:
  - Lamps, drivers/ballasts, transformers, and associated control devices
- Additional lighting not covered above must be included using manufacturer-rated wattage
- The following lighting is not included in TCLP calculations:
  - Emergency and safety lighting
  - Lighting for specialized applications (e.g., medical, theatrical, display, signage)
  - Lighting integral to equipment or used for specific processes

## Allowance Calculation Method

*C405.3.2*
*9.2.1*

- The maximum allowed interior Lighting Power Density (LPD) must be determined by *either* the Building Area Method, *or* the Space-by-Space Method. These may not be used in combination.
- The selection of one method between the two, by which the allowed LPD of the job application is determined, must be justified by the building/space programs and work scope of the job application.

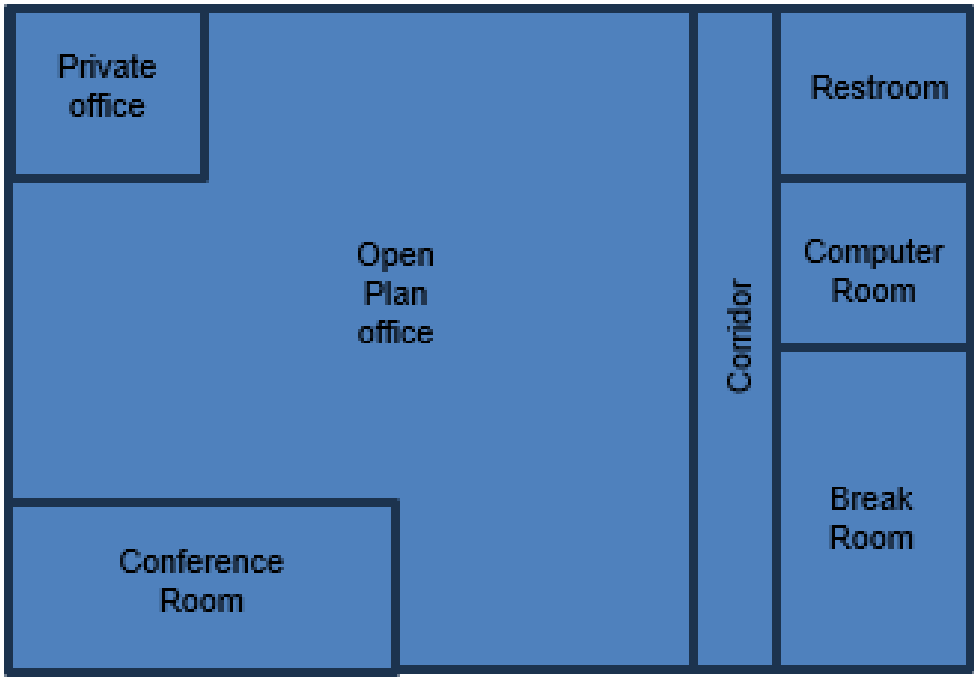
# COMMERCIAL BUILDINGS - INTERIOR LIGHTING POWER

*C405.3.2.1*
*9.5.1*

## Building Area Method

Interior Lighting Power Allowance = Total floor area by building use × LPD from Table C405.3.2(1) / Table 9.5.1

- Applies a single LPD value to large building areas grouped by primary use
- Simpler method, but less precise (limited ability to reflect space differences)
- Does not allow trade-off between areas




Value from Table C405.3.2 (1)

**Interior Lighting Power Allowance =** (Total Area X 0.62)

*Figure LE-5. Building Area Method*

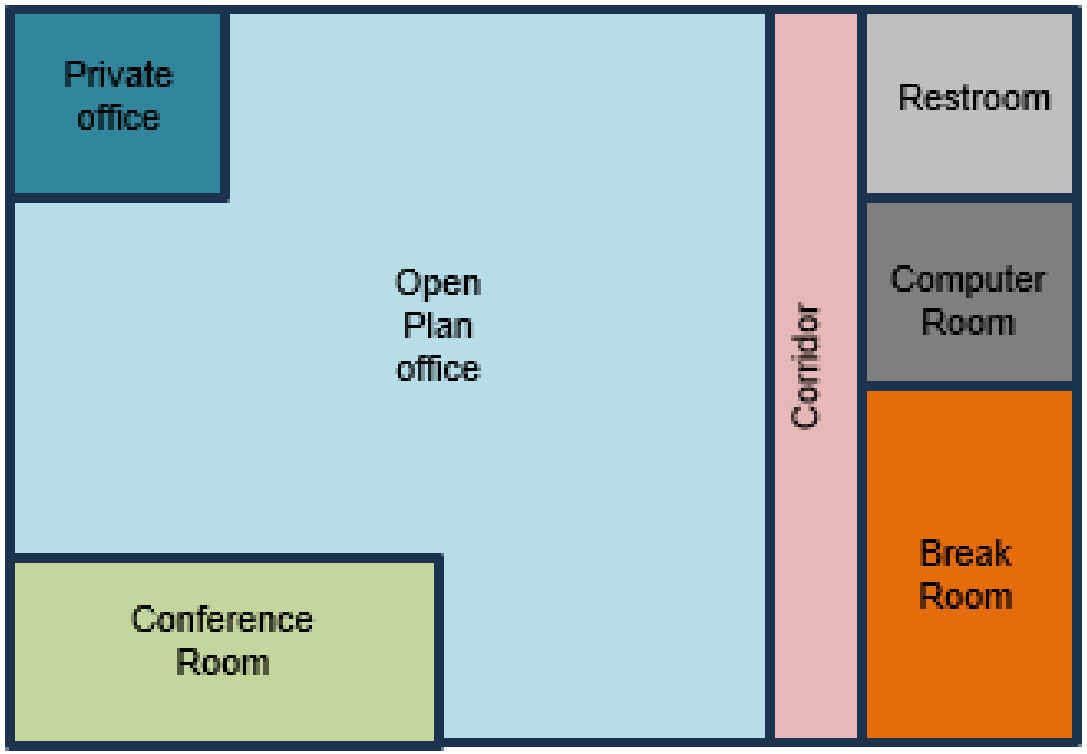
# COMMERCIAL BUILDINGS - INTERIOR LIGHTING POWER

*C405.3.2.2*
*9.5.2*

## Space-by-Space Method

Interior Lighting Power Allowance = Sum of (floor area of each space× LPD from Table C405.3.2(2) / Table 9.5.2.1

- Applies specific LPD values to individual space types (e.g., office, corridor, storage)
- More detailed and flexible, allowing trade-offs between spaces




Values from Table C405.3.2 (2)

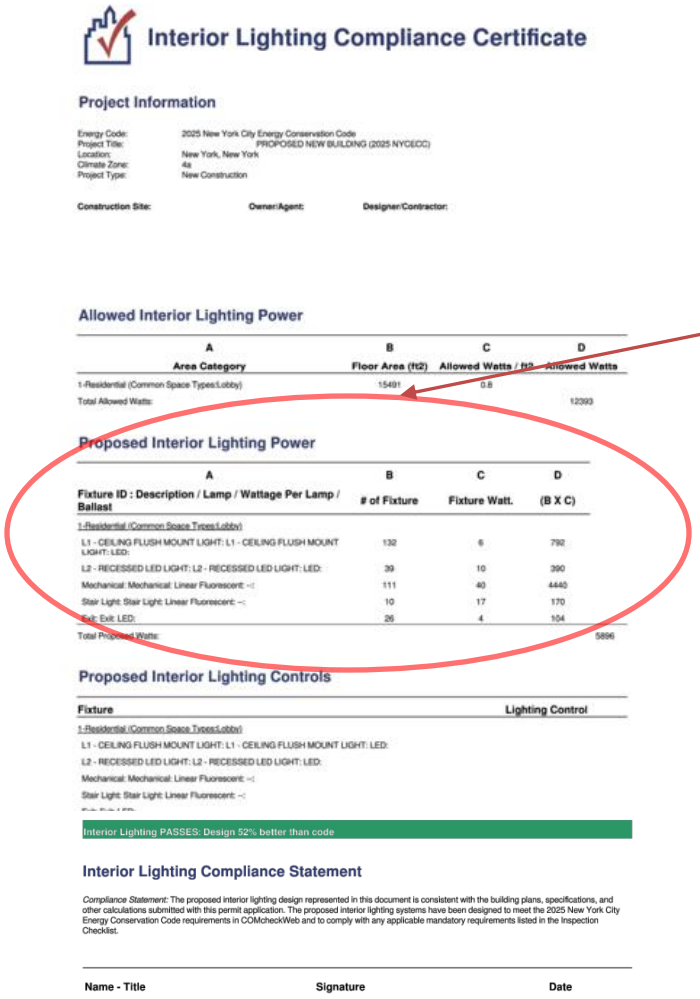
**Interior Lighting Power Allowance** = (Private office X 0.73) + (Open Plan office X 0.56) + (Conference Room X 0.88) + (Corridor X 0.44) + (Restroom X 0.74) + (Computer Room X 0.75) + (Break room X 0.44)

*Figure LE-6. Space-by-Space Method*

# COMMERCIAL BUILDINGS - INTERIOR LIGHTING POWER

*C405.3.2.2*
*9.5.2*

- **To Show Compliance:**
  - Provide a COMcheck report or a manual calculation that matches lighting schedules and RCPs



Interior Lighting Compliance Certificate

Project Information

Energy Code: 2025 New York City Energy Conservation Code
Project Title: PROPOSED NEW BUILDING (2025 NYCECC)
Location: New York, New York
Climate Zone: 4a
Project Type: New Construction

Construction Site: Owner/Agent: Designer/Contractor:

Allowed Interior Lighting Power

| A Area Category | B Floor Area (ft2) | C Allowed Watts / ft2 | D Allowed Watts |
|---|---|---|---|
| 1-Residential (Common Space Types:Lobby) | 15491 | 0.8 | |
| Total Allowed Watts: | | | 12393 |

Proposed Interior Lighting Power

| A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast | B # of Fixture | C Fixture Watt. | D (B X C) |
|---|---|---|---|
| 1-Residential (Common Space Types:Lobby) | | | |
| L1 - CEILING FLUSH MOUNT LIGHT: L1 - CEILING FLUSH MOUNT LIGHT: LED: | 132 | 6 | 792 |
| L2 - RECESSED LED LIGHT: L2 - RECESSED LED LIGHT: LED: | 39 | 10 | 390 |
| Mechanical: Mechanical: Linear Fluorescent: -: | 111 | 40 | 4440 |
| Stair Light: Stair Light: Linear Fluorescent: -: | 10 | 17 | 170 |
| Exit: Exit: LED: | 26 | 4 | 104 |
| Total Proposed Watts: | | | 5896 |

Proposed Interior Lighting Controls

| Fixture | Lighting Control |
|---|---|
| 1-Residential (Common Space Types:Lobby) | |
| L1 - CEILING FLUSH MOUNT LIGHT: L1 - CEILING FLUSH MOUNT LIGHT: LED: | |
| L2 - RECESSED LED LIGHT: L2 - RECESSED LED LIGHT: LED: | |
| Mechanical: Mechanical: Linear Fluorescent: -: | |
| Stair Light: Stair Light: Linear Fluorescent: -: | |

Interior Lighting PASSES: Design 52% better than code

Interior Lighting Compliance Statement

*Compliance Statement:* The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2025 New York City Energy Conservation Code requirements in COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

Must match lighting schedule and RCP

**Interior lighting schedule**

| Fixture ID | Location | Manufacturer / Model | Description | Lamp Type | Qty | W/Fixture | Installed Watts | Control | Notes |
|---|---|---|---|---|---|---|---|---|---|
| L1 | Lobby | Lithonia FMML 7 840 M4 | Ceiling flush mount | LED | 132 | 6 W | 792 W | Occupancy sensor | General lighting |
| L2 | Lobby | Lithonia LDN4 10LM MVOLT GZ10 | Recessed downlight | LED | 39 | 10 W | 390 W | Occupancy sensor | Accent / general |
| L3 | Lobby | Lithonia ZL1N L48 4000LM F-MVOLT | Linear strip fixture | Fluorescent/LED equiv. | 111 | 40 W | 4,440 W | Time switch | Continuous rows |
| L4 | Lobby | Lithonia IBG 17L MVOLT | Stair lighting | LED | 10 | 17 W | 170 W | Occupancy sensor | Stair illumination |
| L5 | Lobby | Lithonia EXR LED EL N | Exit sign | LED | 26 | 4 W | 104 W | Always on | Emergency / egress |

*Figure LE-7. COMcheck report*

# COMMERCIAL BUILDINGS - OCCUPANT SENSOR CONTROLS*

## Where Required

*C405.2.1*
*Table 9.5.2.1-1*

- Occupant sensor controls are required in spaces including classrooms, conference rooms, copy rooms, lounges/ break rooms, enclosed offices, open plan offices, restrooms, storage rooms, locker rooms, warehouse storage areas, janitor closets, corridors/transition areas, cafeteria/fast food dining areas, egress illumination (stairways, exit access), and other spaces ≤ 300 sf.

- Light fixture layout plans, fixture schedules, and the controls narrative must clearly identify the location of occupant-sensor-controlled light fixtures and the connected sensor/control devices.

## Occupant Sensor (OS) Control Function Typical Spaces (See separate requirements for large/open areas)

*C405.2.1.1*
*9.4.1.1*

- Automatic-Off: Drawings must specify that occupant sensor-controlled luminaires are automatically turned off within 15 minutes of all occupants leaving the space.

- Manual-On or Maximum 50% Automatic-On: Lights turned off by occupant sensor controls must be either manually on or controlled to be automatically on maximum 50% of the lighting power in the space.

- Manual-On ONLY: Lights turned off by occupant sensor controls must be only manually on – i.e., max. 50% automatic-on is not allowed – in the following spaces: classrooms, conference/meeting rooms, employee break rooms, and offices < 200 sf. The sensors and controls in these spaces must not have an override switch that converts from manual-on to automatic-on functionality.

- Full Automatic-On: Only in the following spaces, occupant sensors with full automatic-on are allowed: open plan offices, public corridors, stairways, restrooms, primary building entrance areas and lobbies, and areas where manual-on operation would endanger the safety or security of the building occupants.

- Manual Control to Turn Off: Occupant-sensor-controlled luminaires must also be equipped with manual controls that allow occupants to turn lights off.

- **ASHRAE 90.1 Approach:**
  - Lighting control requirements are determined by space type using Table 9.5.2.1-1
  - Each space must implement:
    - All “REQ” (required) control functions
    - At least one “ADD1/ADD2” option, where applicable
    - For occupant sensors:
      - Typically requires automatic OFF
      - Allows either: Manual-ON, or Partial Auto-ON (≤ 50%), depending on space type

# COMMERCIAL BUILDINGS - OCCUPANT SENSOR CONTROLS

## OS Controls in Open Plan Offices, Cafeteria, and Fast-Food Dining Areas ≥ 300 sf

*C405.2.1.2*
*C405.2.1.3*
*9.4.1.1*

- The maximum control zone area controlled by one (1) occupant sensing device is 600 sf.
- Controls must turn off all lighting within 15 minutes when all occupants leave all zones
- Controls must either turn off lighting or uniformly reduce lighting to ≤ 20% of full power in unoccupied zones within 15 minutes after occupants leave those zones.
- Controls that automatically turn on lighting within an occupied zone are allowed; lighting in other unoccupied zones within the same open space may be automatically turned on up to 20% of full power.
- Daylight responsive control shall not activate general lighting controls when no occupancy is detected in these spaces.

*NOTE: Warehouse storage areas: lighting must be controlled by aisle, with automatic reduction to ≤ 30% power within 15 minutes of vacancy (time-switch control required if lights do not turn off)*

## OS Controls for Egress Illumination

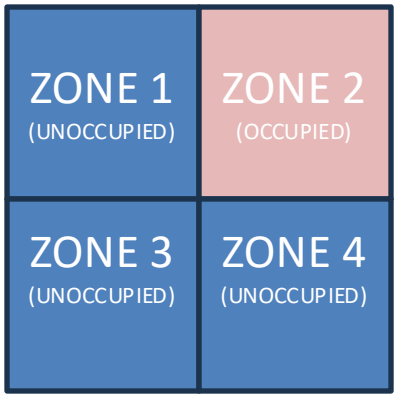
*C405.2.1.5*
*9.4.1.1*

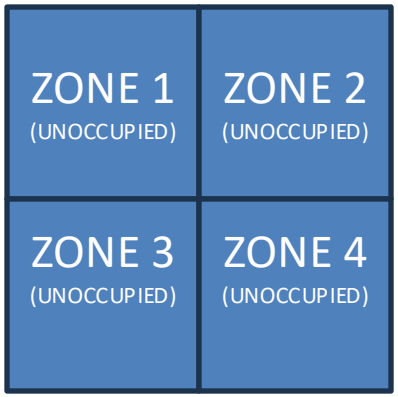
- Luminaires servicing exit access and providing means of egress illumination must have controls that automatically reduce the lighting power by 50 % when unoccupied for more than 15 minutes.
- OS with Full Automatic-On of the lighting are allowed
- Means of egress illumination of < 0.02 watt/sf and the Building-Code-designated emergency lighting are exempt from this requirement

**OPEN SPACE OFFICE > 300 SF**

**Scenario 1:**
**Zone 1:** unoccupied
**Zone 2:** occupied
**Zone 3:** unoccupied
**Zone 4:** unoccupied

**Zone 2:** ON (occupied zone)
**Zone 1, 3 and 4:**
OFF or ≤ 20% power within 15 minutes of vacancy




**Scenario 2:**
**Zone 1:** unoccupied
**Zone 2:** unoccupied
**Zone 3:** unoccupied
**Zone 4:** unoccupied

**All zones:** OFF within 15 minutes of vacancy

*Figure LE-9. Occupancy Sensor Control Scenarios*

# COMMERCIAL BUILDINGS - TIME-SWITCH CONTROLS

## Where Required

*C405.2.2*

- Spaces where "Occupant Sensor Control Function" in page [LE-3] are not provided, and
- Open Plan Offices, Cafeteria, and Fast-Food Dining Areas ≥ 300 sf

*Both* Time-switch controls *and* Dimming controls must be provided. The controls' function and locations must be clearly specified on drawings.

## Time-Switch Controls (Programmed)

*C405.2.2.1*

Time-switch controls must be designed to:

1) Have a minimum 7-day clock,
2) Allow to program 7-different day types/week,
3) Have an automatic holiday 'shutoff' feature,
4) Have program backup capabilities in case of power interruption, *and*
5) Include a manually-controlled override switch that, when initiated, permits the controlled lighting to remain on for a maximum of 2 hours, and that individually controls a maximum area of 5,000 sf.
6) Be programed to automatically turn off lights when space is scheduled to be unoccupied, and where schedules are not defined, they shall be programed by default to turn off lights no less than 12 hours per day.

- **ASHRAE 90.1 Approach:**
  - Lighting must be controlled by scheduled shutoff using time-switch controls or an equivalent automatic control system
  - Controls must:
    - Automatically turn lighting OFF when the space is scheduled to be unoccupied
    - Allow a manual override of ≤ 2 hours
    - Be capable of independent control zones (limited area and typically one floor)
  - Time-switch control may be integrated with:
    - Building automation systems, or
    - Occupant sensor systems

# COMMERCIAL BUILDINGS - DIMMING CONTROLS*

## Where Required

*C405.2.3*

- Dimming controls are required for general lighting in the following space types:
  - Classrooms, meeting rooms, dining areas, fitness spaces, healthcare spaces, laboratories, libraries, lobbies, break rooms, and offices
  - See Section C405.2.3 for full list
  - Dwelling units: dimming controls are required for permanently installed lighting
- Dimming controls are also required in spaces not provided with occupant sensor controls complying with Section C405.2.1.1
- Exception: luminaires controlled by special application controls complying with Section C405.2.5

## Dimming Controls

- Dimming controls must be designed to:

1) Provide manual control in each space
2) Allow lighting to be reduced from full output to: ≤ 10% of full power, or lowest achievable continuous dimming level
3) Allow full ON and OFF control

- **ASHRAE 90.1 Approach:**
  - Dimming requirements are determined by space type using Table 9.5.2.1
  - For applicable spaces:
    - Must provide multilevel lighting control
    - May be achieved through:
      - Continuous dimming, or
      - Stepped control (e.g., intermediate light levels)
    - Control requirements vary by space type:
      - All “REQ” control functions must be implemented
      - At least one “ADD1”/“ADD2” function must be selected where applicable
    - Dimming may be integrated with:
      - Occupant sensor controls, and/or
      - Daylight-responsive controls

** For complete controls requirements on ASHRAE 90.1 per space type, refer to Section 9.4.1 and Table 9.5.2.1-1.*

# COMMERCIAL BUILDINGS - DAYLIGHT-RESPONSIVE CONTROLS*

## Where Required

*C405.2.4*
*9.4.1.1.e & f*
*9.7.3.3*

- Primary sidelit daylight zones: total general lighting > 75 W
- Combined sidelit daylight zones (primary + secondary): total general lighting > 150 W
- Toplit daylight zones: total general lighting > 75 W

## Control Function

*C405.2.4.2*
*3.2*

- Lighting plans must clearly *delineate the boundary of each daylight zone and* indicate separate circuiting and switch control for each zone boundary.

Daylight-responsive controls must:

- Control daylight zones independently
- Provide continuous dimming to ≤ 15% of full power and full OFF
- Be calibratable by authorized personnel, with controls located for ready access
- Continue to respond to daylight after occupancy-based reduction, without exceeding the unoccupied setpoint
- Up to 100 W per daylight zone may be controlled together with another daylight zone of the same type but different orientation
- Identify daylight-responsive control type and sequence of operation on drawings or schedule

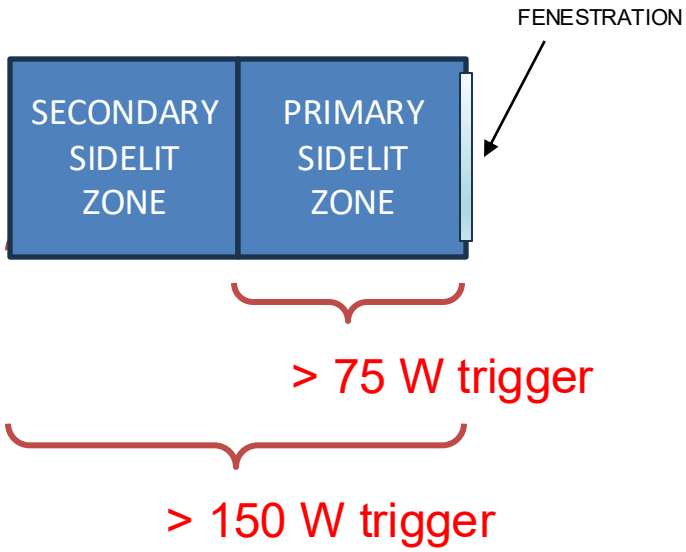



*Figure LE-12. Primary and Secondary sidelit zone triggers*

# COMMERCIAL BUILDINGS - DAYLIGHT-RESPONSIVE CONTROLS*

## Sidelit Zone - What is it? (ECC)

*C405.2.4*
*9.4.1.1.e & f*
*9.7.3.3*

- Floor area adjacent to vertical fenestration (windows) that receives usable daylight
- Two zones must be identified:
  - Primary sidelit zone (closest to window)
  - Secondary sidelit zone (extends beyond primary zone)

## Zone Extents (Typical - Wall Condition)

*C405.2.4.2*
*3.2*

For windows located in a wall:

- Primary zone extends:
  - Depth: up to 1.0 × window head height (H)
  - Width: up to 0.5 × H from each side of the window
- Secondary zone extends:
  - From edge of primary zone
  - Additional depth up to 2.0 × H total from floor to window head

## What Must Be Shown on Drawings

Construction documents must clearly indicate:

- Primary and secondary sidelit daylight zone boundaries
- Window height (H) used to define zones
- Adjacent obstructions or walls affecting zone limits
- Lighting fixtures located within each daylight zone
- Separate control zones corresponding to daylight zones

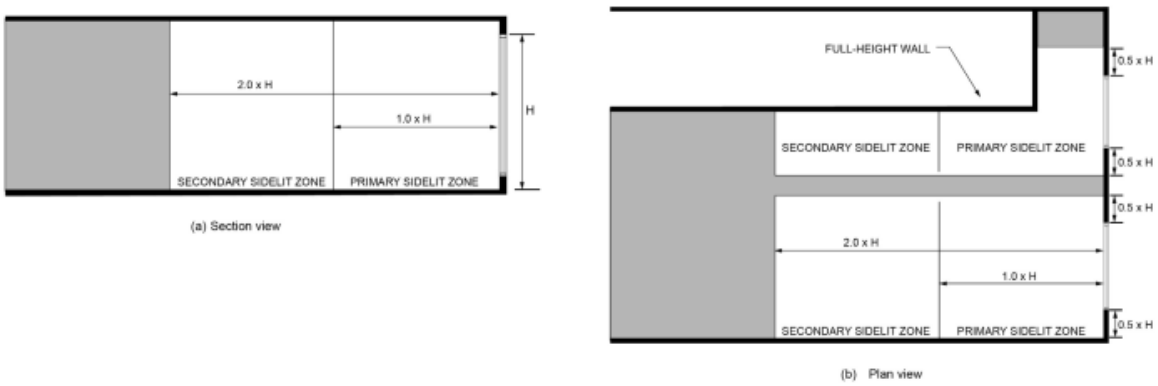



*Figure LE-13. Sidelit Zones*

# COMMERCIAL BUILDINGS - DAYLIGHT-RESPONSIVE CONTROLS*

## Toplit Zone - What is it? (ECC)

*C405.2.4.3*
*3.2*

- Floor area directly below roof fenestration (skylights, monitors, etc.) that receives daylight
- Applies where roof openings provide sufficient daylight contribution

## Zone Extents (Typical - Wall Condition)

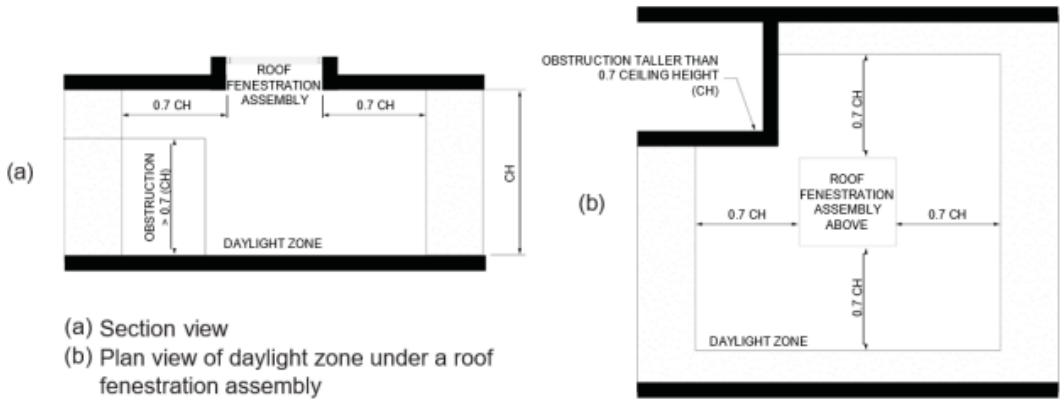
For windows located in a wall:

- Toplit daylight zone extends:
  - Laterally and longitudinally from the skylight
  - Up to the nearest obstruction taller than 0.7 × ceiling height, or
  - Up to 0.7 × ceiling height, whichever is less

## What Must Be Shown on Drawings

Construction documents must clearly indicate:

- Toplit daylight zone boundaries
- Location and size of skylights/roof fenestration
- Ceiling height used to define zone limits
- Obstructions affecting daylight distribution
- Lighting fixtures located within toplit zones
- Control zones aligned with toplit daylight zones




(a) Section view
(b) Plan view of daylight zone under a roof fenestration assembly

**FIGURE C405.2.4.3**
**TOPLIT DAYLIGHT ZONE**

*Figure LE-14. Toplit zones*

# COMMERCIAL BUILDINGS - EXTERIOR LIGHTING POWER

## Maximum Allowed Exterior Lighting Power

*C405.5*
*9.4.2*

- Light fixture layout plans and light fixture schedules must demonstrate:
  - Proposed exterior lighting power density (watts/sf) ≤ Maximum allowed exterior lighting power density
- Light fixture schedules must be complete with fixture identification keys, fixture/lamp type, number of lamps per fixture, and fixture wattages and quantities that match the light fixture layout plans.

## Calculation of Maximum Allowance

*C405.5.2*
*1 RCNY §5000-01 (g)(3)(ii)*
*9.4.2*

- The maximum allowed building exterior lighting power must be computed based on Table C405.5.2(2) or Table 9.4.2-2 for the applicable Exterior Lighting Zone per 1 RCNY §5000-01(g)(3)(ii).

| Maximum Allowed Exterior Lighting Power | = | Base Site Allowance (per Lighting Zone) | + | Individual Allowance per Area Type (Tradable/Non-Tradable Surfaces) |
|---|---|---|---|---|

- Trade-offs are allowed only among exterior lighting applications in the Tradable Surfaces of Table C405.5.2(2), or Table 9.4.2-2.

Lighting Zone 1: Park land
Lighting Zone 2: All R districts, R districts with C overlays and MX districts
Lighting Zone 3: M districts, except MX; C districts, except C5, C6 and C overlays on R districts
Lighting Zone 4: C5 and C6 districts

Exterior Lighting Zone

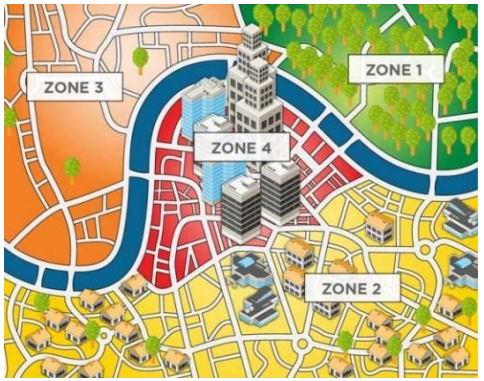



*Figure LE-15.* ***Exterior Lighting Zone*** *per 1 RCNY §5000-01 (g)(3)(ii)*

*Source: energycodes.gov*

# COMMERCIAL BUILDINGS - EXTERIOR LIGHTING POWER

## Exterior Lighting Controls

*C405.2.7*
*9.4.1.2*
*9.4.1.4*

(a) Daylight shutoff: Lights automatically turned off when daylight satisfies the lighting needs

(b) Decorative lighting shutoff: Building façade and landscape lighting automatically shut off within 1 hour of business closing and until 1 hour or less prior to business opening

(c) Lighting setback: For lighting not controlled per the (b) above, controls to automatically reduce the lighting by minimum 50% during 12am - 6am, or from 1-hr after the business closing to 1-hr before opening, or when no activity detected for 15 minutes

(d) Exterior time-switch control function: Controls with 7-different-day-type-programmable clock and automatic holiday setback

(e) Outdoor parking area lighting control: Luminaires of wattage > 78 W and mounted at 24' or less above the ground controlled to automatically reduce the power by minimum 50% when no activity detected for 15 minutes

## Narrative on Lighting System and Controls

*1 RCNY §5000-01 (g)(3)*

On drawings where light fixture layout plans and schedules are documented; a narrative must be provided to describe the function and operation of mandatory lighting and power controls.

## Lighting System Functional Testing

*C408.2.3*
*9.7.3.1*

Drawings must specify the requirements that:

- The approved agency must certify that the installed lighting control systems including occupant sensor controls, time-switch controls, and daylight-responsive controls have been tested and perform as intended.
- Documents certifying the installed lighting controls meet documented performance criteria of Section C405 must be provided to the building owner within 90 days of the receipt of the certificate of occupancy.

# COMMERCIAL BUILDINGS - OTHER LIGHTING REQUIREMENTS

## Hotel Guestrooms

For hotel and motel guestrooms (sleeping units or guest suites), drawings must specify a master control device that is capable of automatically switching off all installed luminaires and switched receptacles *within 15 minutes* of all occupants leaving the guestroom.

*C405.2.10.1*
*9.4.1.3*

## Display and Accent Lighting

Display lights, accent lights, and lighting in display cases must be controlled by a dedicated control that is independent of the controls for other lighting within the room or space. Controls' locations must be clearly noted on the light fixture layout plans.

*C405.2.5*
*9.4.1.3*

## Parking Garage

Parking garage lighting must be designed so that:

*C405.2.9*
*9.4.1.2*

1) Lighting must be controlled by occupant sensors and time-switch controls that automatically shut off lighting during scheduled unoccupied periods.
2) Luminaire lighting power is automatically reduced by minimum 30% within 15 minutes of no activity detected in each lighting zone of maximum 3,600 sf. (ECC only)
3) Luminaire lighting power is automatically reduced by minimum 50% within 10 minutes of no activity detected in each lighting zone of maximum 3,600 sf. (ASHRAE only)
4) Luminaires for covered garage entrances and exits are separately controlled, so the lighting power is automatically reduced by minimum 50% from sunset to sunrise.
5) Lighting within 20 ft of perimeter wall openings or skylights must automatically reduce by at least 50% in response to daylight, unless exempt due to limited daylight access or obstructions.

# COMMERCIAL BUILDINGS - ELECTRICAL POWER REQUIREMENTS

## Voltage Drop

*C405.11*
*8.4.1*

The total voltage drop across the feeder conductors and branch circuits combined must not exceed 5%, unless the feeder conductors and branch circuits are dedicated to emergency services.

## Inverters

*C405.16*

Inverters serving on-site renewable energy systems or ESS must comply with IEEE 1547 and UL 1741

## Automatic Receptacle Control

*8.4.2*

Drawings must specify that:

- Minimum 50% of receptacles in spaces including private offices, conference rooms, and classrooms, etc., *and*
- Minimum 25% of branch circuit feeders in modular furniture are automatically controlled:

  a) On a scheduled basis, *or*
  b) By occupant sensors, *or*
  c) By an automated signal from another control or alarm system.

## Separate Metering for Dwelling Units and Large Tenant Spaces

*R404.5*
*C405.6*
*8.4.5*
*8.4.6*

Drawings must indicate that:

- *Each dwelling unit* in a Group *R-2* building must be provided with *a separate electrical meter*.
- *Each covered tenant space* in a new building must be provided with *a separate meter or sub-meter* to measure the electrical consumption of each space. Refer to Section 28-311.2 of the Administrative Code of the City of New York for definitions.
- Locations of electrical meters must be shown on plan drawings.

# COMMERCIAL BUILDINGS - ENERGY MONITORING

## Energy Monitoring

*C405.14*
*8.4.1*

New buildings with a gross conditioned floor area ≥ 10,000 sf must include systems to:

- Measure energy consumption
- Monitor end-use categories
- Record and store data
- Provide graphical energy reporting

## Electrical & Non-Electrical End-Use Monitoring

Construction documents must identify meters/submeters for the following end-use categories, as applicable:

- **Electrical end uses**
  - Total HVAC systems
  - Interior lighting
  - Exterior lighting
  - Plug loads
  - Process loads
  - Building operations & miscellaneous loads
  - Electric service water heating
  - Electric vehicle charging
- **Non-electrical end uses**
  - HVAC thermal energy
  - Process loads
  - Service water heating
  - Other fuel-fired systems

# COMMERCIAL BUILDINGS - ENERGY MONITORING

## Data Acquisition & Reporting Requirements

*C405.14*
*8.4.1*

The energy monitoring system must:

- Automatically communicate meter/submeter data to a data acquisition system
- Store a minimum of 36 months of data
- Provide:
  - Real-time energy consumption
  - Hourly, daily, monthly, and yearly data
  - Peak demand and time-of-peak information
- Include a permanent graphical reporting interface accessible to building operators

## What Must Be Shown on Drawings

Construction documents must clearly indicate:

- Meter and submeter locations
- Associated end-use category
- Metering diagrams/risers
- Data acquisition system architecture
- Communication method between meters and DAS
- Renewable energy metering (where applicable)
- Graphical reporting/dashboard interface or narrative
- Sequence of operation for energy monitoring systems

*Renewable Energy Monitoring*
*On-site renewable energy systems must be separately metered*
*Renewable generation data must be integrated into the reporting system with the same reporting frequency as other monitored energy sources*

# COMMERCIAL BUILDINGS - ELECTRICAL POWER REQUIREMENTS

## Elevator Cabs

*C405.10.1*
*10.4.3*

Drawings must specify that:

- Lighting efficacy: For each elevator cab's interior lighting, total lumens divided by total watts must be ≥ 35 lumens/watt.
- Ventilation fan power: Ventilation fans in elevator cabs without their own air-conditioning system must not consume power > 0.33 watts/cfm.
- Controls to de-energize: When stopped and unoccupied with doors closed for over 15 minutes, cab interior lighting and ventilation systems must be automatically controlled to be de-energized.

## Traction Elevator Power Conversion System

*C405.10.1.1*
*10.4.3.5*

New traction elevators with a rise ≥ 75' in new buildings must have a power conversion system with the following:

- Induction Motors with a Class IE2 efficiency rating or approved alternative technologies.
- Transmissions not reducing the efficiency of the combined motor/transmission below that shown for the Class IE2 motor for elevators with capacities below 4,000 lbs.
- Regenerative Drive recovering potential energy released during motion and supplying it to the building electrical system.

## Escalators and Moving Walks

*C405.10.2*
*10.4.4*

- Automatic speed reduction: Drawings must specify that *escalators and moving walks* have controls to *automatically reduce speed* when not conveying passengers.
- Regenerative drive: An *escalator* designed either for *one-way down operation only* or for *reversible operation* must have a *variable frequency regenerative drive* that supplies electrical energy to the building electrical system when the escalator is loaded with passengers whose combined weight > 750 lbs. See Figure below.

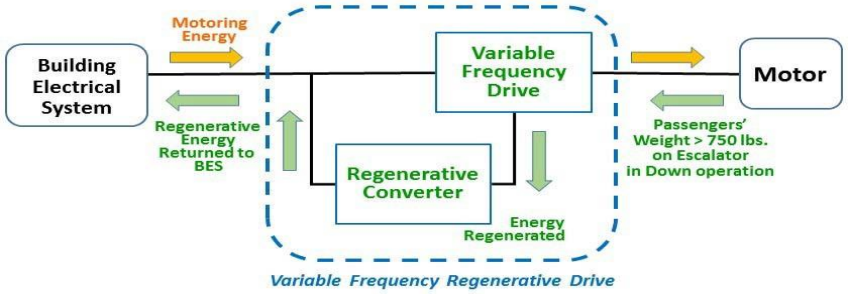



*Figure LE-21.*
*Escalator Variable Frequency Regenerative Drive*

# Commercial Buildings - Renewable Energy Systems

## Applicability

New buildings must comply with renewable energy requirements through either: *C405.15 10.5.1*

- On-site renewable energy systems, or
- Qualified off-site renewable energy procurement

👉 Requirements generally apply to buildings ≥ 5,000 sf gross conditioned floor area.

## On-Site Renewable Energy Systems (ECC)

*C405.15.1 10.5.1.1*

Buildings must provide on-site renewable electricity generation systems with a minimum rated capacity based on:

- 0.75 W/ft² × gross conditioned floor area

Typical systems include:

- Photovoltaic (PV) systems
- Building-mounted renewable energy systems

## Off-Site Renewable Energy Compliance (ECC)

*C405.15.2*

Where on-site systems cannot fully comply, buildings may use qualified off-site renewable energy procurement.

Acceptable procurement methods include:

- Physical renewable energy purchase agreements (PPAs)
- Financial renewable energy purchase agreements
- Community renewable energy facilities
- Off-site renewable energy systems
- Renewable energy investment funds
- Green retail tariffs

👉 Off-site renewable energy contracts must have a duration of at least 15 years.

# COMMERCIAL BUILDINGS - RENEWABLE ENERGY SYSTEMS

## Renewable Energy Certificate (REC/EAC) Documentation

Construction documents and supporting submissions must demonstrate: *C405.15.1 10.5.1*

- RECs/EACs are associated with the required renewable energy generation
- Certificates are retained or retired on behalf of the building owner or tenant
- RECs/EACs are:
  - Created within 12 months of use
  - From systems placed in service within the previous 5 years

👉 Signed attestations and supporting agreements must be provided

## What Must Be Shown on Drawings / Submissions

Construction documents must clearly indicate::

- Proposed renewable energy system type and capacity
- Roof plans showing renewable energy layout and available roof area
- Shading or obstruction analysis (if claiming exemption)
- Electrical interconnection and inverter information
- Renewable energy procurement method (if off-site)
- REC/EAC documentation and agreements
- Renewable energy calculations demonstrating compliance

👉 Narratives and calculations should clearly explain whether compliance is achieved through on-site systems, off-site procurement, or REC purchases.

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