

# 2021 IRC LIGHTING REQUIREMENTS

R303.7 · R303.8 · N1104.1

Stairway Illumination | Exterior Stairs | High-Efficacy & Lighting Controls

HOME INSPECTION QUICK-REFERENCE GUIDE

This guide summarizes three key lighting code sections from the 2021 International Residential Code (IRC): interior stairway illumination (R303.7), exterior stairway illumination (R303.8), and energy-efficient lighting equipment requirements (N1104.1). Diagrams illustrate required fixture and switch locations in a typical single-family home. Always confirm against the locally adopted code edition.

## Quick Reference Summary

Section	Topic	Key Requirement
R303.7	Interior Stairway Illumination	Artificial light $\geq 1$ fc at tread/landing centers; wall switch at each floor level if $\geq 6$ risers
R303.7.1	Light Activation (switches)	Wall switch each floor for stairways $\geq 6$ risers; exterior stair switch inside dwelling unit
R303.8	Exterior Stairway Illumination	Light at TOP landing; basement-access stairs: light at BOTTOM landing (additional)
N1104.1	Lighting Equipment (Energy — Mandatory)	ALL permanently installed fixtures: high-efficacy only (LED or $\geq 70$ lm/W); excludes kitchen appliance lights
N1104.2	Interior Lighting Controls (Mandatory)	Dimmer, occupant sensor, or built-in control required; exceptions: bathrooms, hallways, safety/security, exterior

## Required Lighting Locations — Typical Home Floor Plan

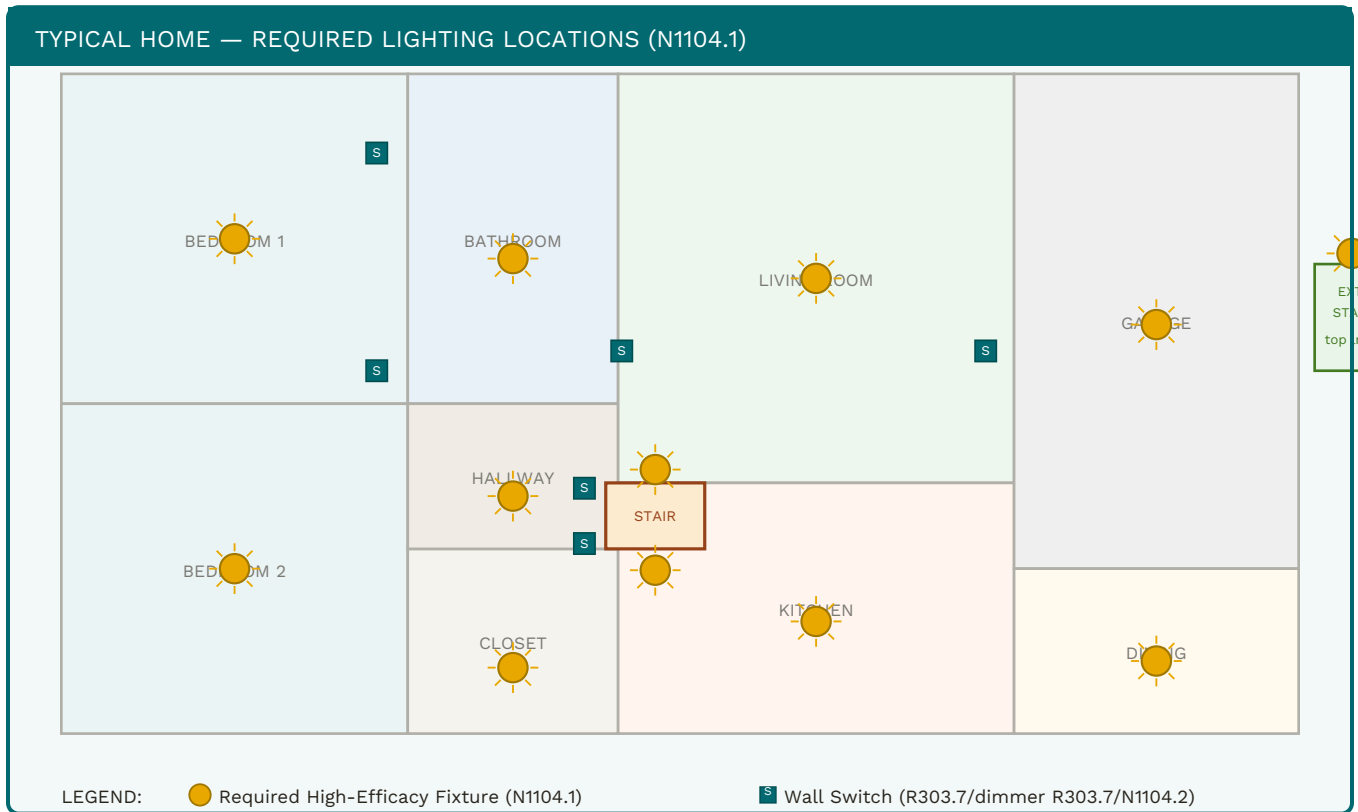


Figure 1: Schematic floor plan illustrating required high-efficacy lighting fixture locations (N1104.1) and wall switch positions (R303.7 / N1104.2). Every permanently installed fixture must be high-efficacy. Fixtures in living areas require a dimmer or occupant sensor control.

## R303.7 — Interior Stairway Illumination

### Code Text (2021 IRC R303.7):

Interior stairways shall be provided with an artificial light source to illuminate the landings and treads. The light source shall be capable of illuminating treads and landings to levels of not less than **1 foot-candle (11 lux)** as measured at the center of treads and landings. There shall be a wall switch at each floor level to control the light source where the stairway has **six or more risers**.

Exception: A switch is not required where remote, central, or automatic control of lighting is provided.

Key Point	Detail
Minimum illumination	1 foot-candle (11 lux) — measured at center of each tread and landing
Measurement location	At the walking surface (tread/landing center), not at 30" height
Wall switch required when	Stairway has 6 or more risers
Switch location	At each floor level served by the stairway
Exception	Switch not required with remote, central, or automatic lighting control
Cross-reference	R311.7.9 requires stair illumination per R303.7; also R303.7.1 (switch activation)

### R303.7.1 — Light Activation (Switch Requirements)

#### Code Text (2021 IRC R303.7.1):

Where lighting outlets are installed in interior stairways, there shall be a wall switch at each floor level to control the lighting outlet where the stairway has six or more risers. The illumination of exterior stairways shall be controlled from inside the dwelling unit.

Exception: Lights that are continuously illuminated or automatically controlled.

### Interior Stairway Illumination Diagram

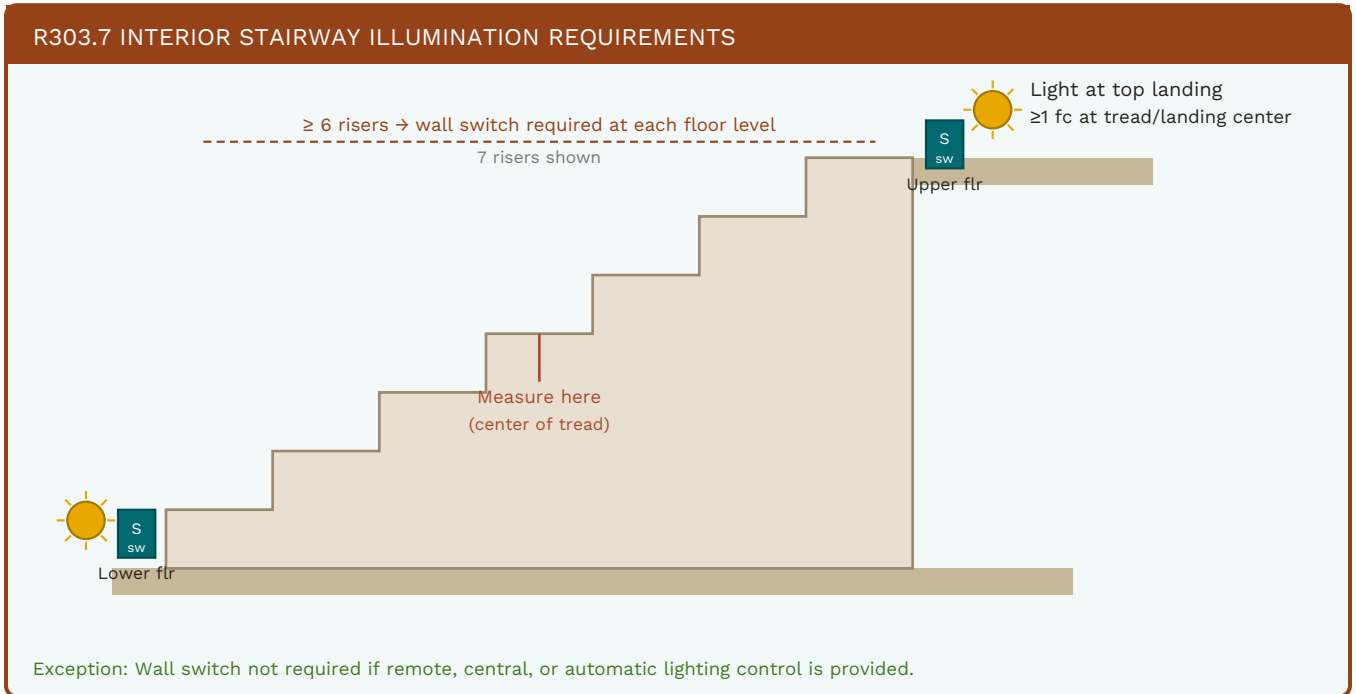


Figure 2: Interior stairway cross-section (side view). A minimum of 1 fc must be achieved at the center of every tread and landing. With 6+ risers, a wall switch is required at each floor level. Automatic or remote controls substitute for wall switches.

## R303.8 — Exterior Stairway Illumination

### Code Text (2021 IRC R303.8):

Exterior stairways shall be provided with an artificial light source located at the **top landing** of the stairway. Exterior stairways providing access to a basement from the outdoor grade level shall be provided with an artificial light source located at the **bottom landing** of the stairway.

Stair Type	Required Light Location(s)
Standard exterior stair (entrance, deck, patio)	Light at TOP landing only
Basement-access exterior stair (below grade)	Light at BOTTOM landing (required) + Top landing light also typical practice
Switch control (per R303.7.1)	Exterior stairway illumination controlled from INSIDE the dwelling unit (Exception: continuously lit or automatically controlled)

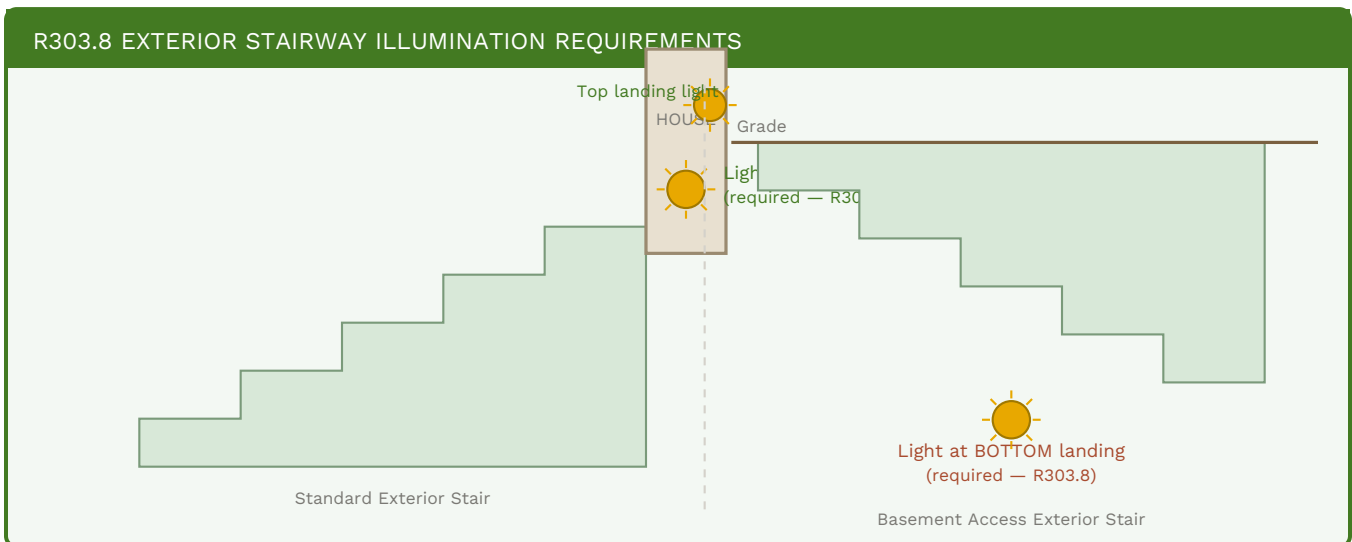


Figure 3: Exterior stairway illumination requirements. Standard entrance/deck stairs require a fixture at the top landing. Stairs accessing a basement from grade require a fixture at the bottom landing; a top-landing fixture is also good practice.

## N1104.1 — Lighting Equipment (Mandatory)

### Code Text (2021 IRC N1104.1):

All permanently installed lighting fixtures, excluding kitchen appliance lighting fixtures, shall contain only **high-efficiency lighting sources**.

## N1104.2 — Interior Lighting Controls (Mandatory)

### Code Text (2021 IRC N1104.2):

Permanently installed lighting fixtures shall be controlled with either a **dimmer**, an **occupant sensor control**, or other control that is installed or built into the fixture.

Exception — controls not required for: 1. Bathrooms · 2. Hallways · 3. Exterior lighting fixtures · 4. Lighting designed for safety or security

### What Qualifies as High-Efficacy?

Lamp Type	Compliant?	Notes
LED (any color temperature)	YES	Most common compliant lamp
T-8 or smaller linear fluorescent	YES	Must be $\geq 70$ lm/W
Compact fluorescent (CFL)	YES	$\geq 70$ lm/W versions comply
Any lamp $\geq 70$ lumens per watt	YES	Efficacy printed on packaging
Standard incandescent / halogen	NO	Typically $< 20$ lm/W
T-12 fluorescent	NO	Older, lower-efficacy lamp
Kitchen appliance fixtures	Exempt	Specifically excluded by N1104.1

### N1104.1 & N1104.2 — REQUIRED LIGHTING CONTROLS AT A GLANCE

ROOM / LOCATION	HIGH-EFFICACY REQUIRED?	DIMMER / SENSOR REQUIRED?	NOTES
Bedrooms	YES	YES	Dimmer or occupant sensor
Living / Family	YES	YES	Dimmer or occupant sensor
Kitchen (general)	YES	YES	Dimmer or occupant sensor
Kitchen appliance fixtures	NO	N/A	Excluded from N1104.1
Dining Room	YES	YES	Dimmer or occupant sensor
Bathrooms	YES	NO	High-efficacy YES; controls ex...
Hallways	YES	NO	High-efficacy YES; controls ex...
Closets	YES	YES	Dimmer or occupant sensor
Garage (interior)	YES	YES	Dimmer or occupant sensor
Safety / Security	YES	NO	Controls not required
Exterior fixtures	YES	NO*	*Separate R404.3/daylight shuto...

High-Efficacy Definition (N1104.1): LED, T-8 or smaller fluorescent, or any lamp  $\geq 70$  lumens per watt

Figure 4: Room-by-room summary of N1104.1 high-efficacy requirements and N1104.2 lighting control requirements. Green = required, gray = exempt. Bathrooms and hallways require high-efficacy lamps but are exempt from dimmer/sensor controls.

## Home Inspector Field Notes

Use the checklist below during inspections. Each item corresponds directly to the code sections in this guide.

#	Inspection Item	Code Ref	Flag If
1	Interior stairway has artificial light source	R303.7	No light present on any stairway
2	Stair illumination achieves $\geq 1$ fc at tread/landing centers	R303.7	Dim, single low-watt lamp, inadequate coverage
3	Wall switch present at each floor level ( $\geq 6$ risers)	R303.7	No switch at bottom or top floor landing
4	Switch operates from inside dwelling (exterior stairs)	R303.7.1	Exterior stair light only switched outside
5	Exterior stair: light at top landing	R303.8	No fixture present at top landing
6	Basement exterior stair: light at bottom landing	R303.8	Basement stair has no bottom-landing fixture
7	All permanently installed fixtures are high-efficacy (LED)	N1104.1	Incandescent, halogen, or T-12 fluorescent lamps found
8	Kitchen appliance fixtures noted as exempt	N1104.1	Only flag if non-appliance kitchen fixtures are non-LED
9	Bedroom/living/kitchen fixtures have dimmer or occupant sensor	N1104.2	Standard toggle switch only (no dimmer/sensor) in required areas
10	Bathrooms/hallways: high-efficacy lamp, no control required	N1104.2	Non-LED lamp in bathroom or hallway fixture
11	Safety/security lighting exempt from controls	N1104.2	Only flag if lamp is not high-efficacy

### Key Definitions (2021 IRC)

Term	Definition
Foot-candle (fc)	Illuminance unit: 1 lumen/sq ft (1 fc = 10.76 lux). R303.7 requires $\geq 1$ fc measured at center of treads and landings.
High-Efficacy Lamp	LED, T-8 or smaller fluorescent, or any lamp with efficacy $\geq 70$ lumens/watt (N1104.1 / N1101.6).
Dimmer	A control device that continuously varies light output and energy use of light sources (N1101.6).
Occupant Sensor Control	Automatic control that detects presence/absence of people and regulates lighting accordingly (N1101.6).
Habitable Room	A space used for living, sleeping, eating, or cooking (R202). Excludes bathrooms, closets, hallways, utility spaces.
Permanently Installed Fixture	A hardwired light fixture — not a portable plug-in lamp. This is the scope of N1104.1.

Landing	A level floor or platform at top/bottom of a stair, or between flights (R311.7).
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## Sources & References

1. 2021 International Residential Code (IRC) — ICC, <https://codes.iccsafe.org/content/IRC2021>
2. Stairway Illumination Diagram Reference — weknowcodes.com, <https://www.weknowcodes.com/wp-content/uploads/2021/07/Residential-Stair-Geometry-2.pdf>
3. 2021 I-Codes Adoption Kit (NAHB) — N1104.1/N1104.2 changes, <https://www.nahb.org/advocacy/top-priorities/building-codes/code-adoption-kits/2021-i-codes-adoption-kit>
4. IRC R303.7/R303.8 — Mike Holt Enterprises Forum, <https://forums.mikeholt.com/threads/residential-light-requirement-and-standards-for-stairs-irc-303.2582530/>
5. 2021 IRC Significant Changes — City of Laramie, <https://www.cityoflaramie.org/DocumentCenter/View/16965/2018-International-Residential-Code-Significant-Changes>
6. Clackamas County 2021 Residential Code Summary (R303.7, R303.8), <https://dochub.clackamas.us/documents/drupal/ce083cbf-7834-40e1-a79e-0d46bd7989ad>
7. City of Boise IRC R303 Handout, <https://www.cityofboise.org/media/3923/433-irc-code-section-r303-light-ventilation.pdf>