C. Kimo Alameda, Ph.D.
Mayor

William V. Brilhante, Jr.
Managing Director

Neil A. Azevedo
Acting Director

County of Hawai'i
DEPARTMENT OF PUBLIC WORKS
Aupuni Center
101 Pauahi Street, Suite 7 · Hilo, Hawai'i 96720-4224
(808) 961-8321 · Fax (808) 961-8630
public_works@hawaiicounty.gov

BULLETIN No. LD-25-001

Smoke Alarm Placement Requirements for Rooms with Ceiling Fans.

This bulletin provides clarification on the installation requirements for smoke alarms in rooms containing ceiling fans, in accordance with the 2018 International Residential Code (IRC) and the 2019 Edition of NFPA 72: National Fire Alarm and Signaling Code. This guidance includes requirements for peaked, sloped, flat, coffered, and pop-up ceilings, and addresses the placement of smoke alarms in relation to ceiling fans.

Effective June 9, 2025, all smoke alarms in rooms containing ceiling fans shall comply with the following code interpretations and directives.

Code References:

- **2018 International Residential Code (IRC)**
  - **Section R314:** Smoke Alarms.
- **NFPA 72 (2019 Edition)**
  - **Section 29.8.3.4:** Smoke alarm power supply.
  - **Section 29.11.3.1:** Peaked ceilings – location requirements.
  - **Section 29.11.3.2:** Sloped ceilings – location requirements.
  - **Section 29.11.3.3:** Wall mounting – location requirements.

- **Section 17.7.3.2.1.1 & 17.7.3.2.1.3:** Flat ceilings.
- **Section 17.7.3.2.4.2:** Coffered ceilings.
- **Section 17.7.3.2.5:** Pop-up ceilings.

Definitions:

Ceiling Fan	A mechanical device, typically electrically powered, suspended from the ceiling of a room and designed to circulate air. Airflow from the ceiling fan can affect smoke movement and smoke alarm operation.
Ceiling-Mounted Smoke Alarm	A smoke alarm installed directly on the ceiling surface.
Coffered Ceiling	A ceiling with a series of sunken panels, usually in the shape of squares, rectangles, or octagons, formed by beams or decorative trim. This design creates a grid of recessed areas (coffers) above the main ceiling plane.
Flat Ceiling	A ceiling with a slope less than or equal to 1 in 8 (the rise is 1 foot or less for every 8 feet of horizontal distance). Sometimes referred to as a level ceiling.
Peaked Ceiling	A type of sloped ceiling that slopes in two directions from a central high point (the peak), forming an inverted "V" shape.
Pop-Up Ceiling	A ceiling that features a central raised portion above the surrounding area, also known as a tray ceiling. The main ceiling surface steps or "pops up" to a higher elevation, often with a vertical or angled transition between the lower and higher surfaces.
Sloped Ceiling	A ceiling that rises at a slope greater than 1 in 8 (meaning the ceiling rises more than 1 foot for every 8 feet of horizontal distance). Sloped ceilings are either *peaked* (slopes in two directions from a peak) or *shed* (slopes in one direction from one side to the other).
Smoke Alarm	A single or multiple-station alarm device that detects visible or invisible particles of combustion and includes both a smoke sensor and an integrated audible alarm signal in one unit. Smoke alarms operate independently and are designed to alert occupants directly when smoke is detected.

Smoke Detector	Device that detects smoke and initiates a signal in a fire alarm system. Part of a fire alarm system, designed to sense smoke and initiate a response (alarm, notification, or control function).
Soffit	The underside of a structural element, such as an arch, balcony, beam, or overhanging eaves. In residential construction, a soffit most commonly refers to the underside of a ceiling drop or projection. Soffits can affect airflow and the accumulation of smoke, which is relevant for the placement of smoke alarms.
Wall	A vertical structural element that defines and encloses spaces within a building. For smoke alarm placement, a wall is the vertical surface where wall-mounted smoke alarms may be installed.
Wall-Mounted Smoke Alarm	A smoke alarm installed on a wall rather than the ceiling.

County Interpretation & Requirements:

1. **Smoke Alarms in Peaked or Sloped Ceilings.**
   - Where a smoke alarm is required in a room with a peaked or sloped ceiling, it shall always be located near the highest point of the ceiling in accordance with:
     - NFPA 72 Section 29.11.3.1 (Peaked Ceilings).
     - NFPA 72 Section 29.11.3.2 (Sloped Ceilings).
2. **Smoke Alarms in Flat, Coffered, and Pop-Up Ceilings.**
   - Where a smoke alarm is required in a room with a Flat, Coffered, or Pop-up Ceiling, it shall be installed in accordance with:
     - NFPA 72 Section 17.7.3.2.1.1 & 17.7.3.2.1.3: Flat ceilings.
     - NFPA 72 Section 17.7.3.2.4.2: Coffered ceilings.
     - NFPA 72 Section 17.7.3.2.5: Pop-up ceilings.
3. **Smoke Alarms and Ceiling Fans.**
   - If a room requiring a smoke alarm also contains a ceiling fan, and the required smoke alarm location cannot be at least 36-inches from the tip of the ceiling fan blades per NFPA 72, then:
   - In addition to items #1 and #2 above, a second smoke alarm shall be installed at least 36-inches clear from the tip of the ceiling fan blades.
   - The second smoke alarm may be located on the soffit or wall, as permitted by applicable code sections.

4. **Interconnection and Power Source.**
   - All smoke alarms shall be:
     - Interconnected.
     - Hardwired with battery backup.
     - Compliant with relevant provisions of the 2018 IRC Section R314 and NFPA 72.

5. **Interpretation.**
   - This interpretation also applies to smoke detectors as part of an approved fire alarm system as prescribed by R314.7 and NFPA 72.

Scenario	Required Action
Peaked/sloped ceiling, no fan.	Smoke alarm near the peak/highest point per NFPA 72.
Peaked/sloped ceiling with ceiling fan.	Smoke alarm near peak; if <36-inches to fan blade, add second smoke alarm, may be on soffit or wall.
Flat ceiling.	Smoke alarm ceiling-mounted or wall-mounted.
Pop-up ceiling.	Smoke alarms on both raised and lower surfaces.
All smoke alarms.	Interconnected, hardwired with battery backup.

For further clarification or questions, please contact the County of Hawai'i Building Division at (808) 961-8331, (808) 323-4720, or email cohbuild@hawaiicounty.gov.

Mahalo for your cooperation in keeping our community safe!