Illinois Smoke & Carbon Monoxide Detector Requirements

Utica Fire Protection District – Fire Prevention Bureau

Date: July 1, 2026

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1. Illinois Smoke Alarm Law

Primary Authority: Illinois Smoke Detector Act (as amended; key update effective January 1, 2023). The minimum state requirement is working smoke alarms in dwelling units.

Key Requirements

- **Since 1988:** All dwelling units (single-family, multi-family, rentals, etc.) must have working smoke alarms.
- **As of January 1, 2023:** Any *new* smoke alarm installed must have a **10-year sealed (non-removable) battery**.
  - Existing alarms with removable batteries may remain in service until they are 10 years old from the manufacture date, fail a test, or malfunction.
  - Homes built after 1988 with hardwired alarms (with battery backup) generally comply.
- **Power Source:** New installations should prefer hardwired with battery backup where feasible. 10-year sealed battery units are now the standard for battery-only replacements.

Placement (State minimum: working alarms; detailed placement per NFPA 72, manufacturer instructions, and local/adopted codes)

- **Inside every bedroom** and sleeping room.
- **Outside each sleeping area** in the immediate vicinity (commonly interpreted as within ~15 feet, similar to CO rules).
- **On every level** of the home, including basements and habitable attics.
- Interconnected alarms are strongly recommended (when one sounds, all sound).
- Mount on the **ceiling** or high on the wall (top of alarm no more than 12 inches from ceiling). Avoid dead air spaces near walls/ceiling junctions in some cases.

Maintenance: Test monthly (push test button). Replace per manufacturer date (typically 10 years). Educate occupants on this.

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2. Illinois Carbon Monoxide (CO) Alarm Law

Primary Authority: Carbon Monoxide Alarm Detector Act (Public Act 094-0741, effective January 1, 2007).

Illinois State Fire Marshal Guidance: Install within 15 feet of any room used for sleeping, in accordance with manufacturer's instructions.

Key Requirements

- Every dwelling unit must have at least one **approved** CO alarm in operating condition **within 15 feet of every room used for sleeping purposes**.
- Applies to occupancies that:
  - Use fossil fuels (natural gas, propane, oil, wood, etc.) for cooking, heating, or hot water, **or**
  - Are connected to an enclosed garage.
- **Approved Alarm:** Must bear the label of a nationally recognized testing laboratory (UL or CSA) and comply with current standards.
- **Power Options:** Battery-operated, plug-in with battery backup, or hardwired with secondary battery backup. Combo smoke/CO units are common and acceptable if they differentiate the alarm sound.
- **Responsibility:**
  - **Owner/Landlord:** Supply and install all required alarms. Provide written info on testing/maintenance to tenants.
  - **Tenant:** Test regularly, replace batteries (except at move-in when owner ensures working condition), and report deficiencies in writing.

Exemptions: Units without combustion appliances or garage connection, as determined by the local building commissioner/AHJ.

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3. CO Detector Placement – Science & Practical Guidance

State law does **not** prescribe an exact mounting height. Installation must follow the **manufacturer's instructions**.

Recommended Placement (EPA, NFPA, Manufacturers)

- **Wall-mounted:** Approximately 5 feet above the floor (eye level).
- **Ceiling-mounted:** Fully acceptable and common, especially for combo units.
- Avoid: Direct proximity to kitchens, garages, furnaces, bathrooms (steam), or areas with poor air circulation.

Why ceiling or mid-wall works: Carbon monoxide **mixes readily with air** and does not reliably "pool" at floor level.

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4. Vapor Density Comparison: CO vs. Air, Oxygen & Propane

Vapor density (specific gravity relative to air = 1.0) tells us how a gas behaves in still air.

Gas	Vapor Density (Air = 1.0)	Molecular Weight	Behavior in Air	Detector Placement Implication
Carbon Monoxide (CO)	**0.97**	28.01 g/mol	Slightly lighter; mixes evenly & rises with warm air	Wall (~5 ft) **or ceiling** – both effective
Air	1.00	~28.97 g/mol	Reference	—
Oxygen (O_2)	~1.11	32.00 g/mol	Heavier than air	N/A (not a detection gas here)
Propane (C_3H_8)	~1.55	44.10 g/mol	Significantly heavier; sinks & pools near floor	**Low** mounting (near floor) for LP detectors

Key Takeaway:
CO is **only about 3% lighter than air** and diffuses throughout a space. It does **not** sink like propane. This is why ceiling-mounted CO detectors are valid and why the old myth of "always mount CO low" is incorrect. Propane detectors, by contrast, should be mounted low because propane sinks.

Real-World Factors: Air currents from HVAC, doors opening, temperature differences, and diffusion often make small density differences less important than proper coverage and following the device instructions.

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5. Common Myths, Mistakes & Best Practices

Myths to Correct

- **"CO is heavier than air and pools on the floor."** → False. It is slightly lighter and mixes well.
- **"All detectors must be mounted low."** → Applies mainly to propane/LP; not standard CO alarms.
- **"One detector anywhere is enough."** → Must be within 15 ft of sleeping areas (CO); proper coverage for smoke.

Always refer to current statutes, adopted codes, and manufacturer instructions for official enforcement. Information current as of June/July 2026.

Utica Fire Protection District – Protecting Lives Through Prevention & Education

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