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**EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS:  
2019 CBC**

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**Disciplines:** Fire and Life Safety**History:**

Revised 02/19/20 under 2019 CBC

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**PURPOSE:** This Interpretation of Regulations (IR) clarifies when the installation of Fire Emergency Voice/Alarm Communication Systems (EV/ACS) is required on construction projects under the jurisdiction of the Division of the State Architect (DSA), and what portions of the system/design DSA will plan review.

**BACKGROUND:** California Code of Regulations, Title 24, Part 2, California Building Code (CBC) Section 907, and Part 9, California Fire Code (CFC) Section 907 require EV/ACS systems in Group E occupancies and some specific Group A occupancies.

**INTERPRETATION:****1. GENERAL REQUIREMENTS:**

- 1.1** EV/ACS are dedicated systems for originating and distributing voice instructions and alert/evacuation signals pertaining to fire emergencies. Alternate uses other than for fire emergencies are allowed in compliance with CBC/CFC Section 907.5.2.2.3.
  - 1.2** The system shall be designed as a one-way in-building emergency voice/alarm communication system and installed in compliance with CBC and NFPA 72: National Fire Alarm and Signaling Code, as amended in CBC Chapter 35.
  - 1.3** The automated voice instructions shall be initiated when the EV/ACS is activated by any automatic fire or smoke detection device, sprinkler waterflow device or manual fire alarm box. There shall also be a manual override and live voice message capability in compliance with CBC/CFC Sections 907.5.2.2.1 and 907.5.2.2.2.
- 2. REQUIREMENTS BY OCCUPANCY GROUPS:** EV/ACS shall be provided in Group 'A' and 'E' occupancies, and high-rise buildings housing Group 'A' and/or 'E' occupancies in accordance with CBC/CFC Section 907, except as modified herein.

**2.1 Existing Campuses:**

Conditions that require retrofit for EV/ACS compliance:

- **Alterations or replacement** of the entire campus-wide fire alarm system.

**2.1.1** Conditions that **do not** require retrofit for EV/ACS compliance:

- **No work.** If no work is performed.
- **Alterations.** Unless the alteration includes alteration to, or replacement of, the entire campus-wide fire alarm system.
- **Reconstruction.** Unless the reconstruction includes alteration to, or replacement of, the entire campus-wide fire alarm system.

**2.2 Existing Campuses–New Buildings or Assembly Uses:**

All new buildings or Assembly uses must comply with the provisions of CBC/CFC Section 907.

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**EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS: 2019 CBC****2.3 Existing Campuses—Existing Buildings or Assembly Uses:**

Conditions that require retrofit for EV/ACS compliance:

- **Additions.** The new area must comply, but the existing area is not required to be retrofitted.
- **Alterations.** Only if the entire campus-wide fire alarm system is altered or replaced.
- **Reconstruction.** Only if the entire campus-wide fire alarm system is being altered or replaced.
- **Rehabilitation** of non-conforming buildings or facilities.

**2.3.1** Conditions that **do not** require retrofit for EV/ACS compliance:

- **No Work.** If no work is being performed.
- **Alterations.** Unless the alteration includes alteration to, or replacement of, the entire campus-wide fire alarm system.
- **Reconstruction.** Unless the alteration includes alteration to, or replacement of, the entire campus-wide fire alarm system.

**2.4 Exceptions:****2.4.1** The following buildings on new or existing campuses are exempt from EV/ACS requirements and thus do not require EVAC systems:

- Short-term use relocatable buildings sited for less than three years.
- Buildings with no more than one classroom with an occupant load of 49 or less, as long as the building has a minimum separation of 20 feet from any adjacent building, or can otherwise be considered a separate building by code analysis.
- Buildings with an occupant load of 100 or less, provided that activation of the manual fire alarm system will initiate an approved occupant notification signal.
- Detached buildings used for non-instructional purposes or incidental to instruction purposes. Such buildings include, but are not limited to:
  - Concession stands, snack bars, ticket booths, press boxes, dugouts, batting cages, shade structures, storage buildings, agricultural buildings, barns, greenhouses, pump stations, mechanical buildings, and other similar buildings or areas.

**3. COMMUNITY COLLEGES:**

**3.1 New Buildings:** EV/ACS systems shall be provided in new buildings containing Group 'A' occupancies, and high-rise buildings housing Group 'A' occupancies in accordance with CBC/CFC Sections 907.2.1, 907.2.1.1, 907.2.1.2 and 907.2.13.

**3.2 Existing Buildings:** EV/ACS systems shall be provided in existing buildings containing Group 'A' occupancies and high-rise buildings housing Group 'A' occupancies in accordance with CBC/CFC Sections 907.2.1, 907.2.1.1, 907.2.1.2 and 907.2.13 as follows:

**3.2.1** Conditions that require retrofit for EV/ACS compliance:

- **Additions.** The new area must comply but the existing area is not required to be retrofitted.

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- **Alterations.** Only if the entire campus-wide fire alarm system is being altered or replaced.
- **Reconstruction.** Only if the entire campus-wide fire alarm system is being altered or replaced.
- **Rehabilitation** of non-conforming buildings/facilities.

**3.2.2** Conditions that **do not** require retrofit for EV/ACS compliance:

- **No work.** If no work is being performed.
- **Alterations.** Unless the alteration includes the alteration or replacement of the entire campus-wide fire alarm system.
- **Reconstruction.** Unless the alteration includes the alteration or replacement of the entire campus-wide fire alarm system.

**4. DSA PLAN REVIEW:****4.1 Items DSA Will Plan Review:**

DSA plan review will be limited to verifying that the following are correctly shown on the project drawings or within the specifications:

**4.1.1** The Sequence of Operation matrix includes EV/ACS.

EV/ACS shall be activated by any automatic fire or smoke detection device, sprinkler waterflow device or manual fire alarm box and shall sound an alert tone followed by voice instructions. (CBC, § 907.5.2.2)

**4.1.2** EV/ACS notifications take priority over non-emergency notifications. (NFPA 72, Section 24.3.5.1) Using one speaker system for multiple communication systems is acceptable when a risk analysis shows that emergency voice messages programmed for priority over fire alarm audible signals will revert back to fire alarm signals after the message cycle is complete. The best place to show these items is on the Sequence of Operation matrix.**4.1.3** State Fire Marshal (CSFM) listing numbers are listed on the drawings for EV/ACS equipment, appliances and devices. They should match the CSFM listing sheets.**4.1.4** EV/ACS voltage drop/battery calculations are provided. NFPA 72 Section 10.6.7.2.1.2 requires emergency backup power capable of operating the system for a minimum of 24 hours under quiescent load and then 15 minutes at maximum connected load.**4.1.5** The plans show EV/ACS speaker locations and power settings. Although it is important for EV/ACS speaker locations to provide a “distributed sound level with minimal sound intensity variation to achieve an intelligible voice message,” intelligibility is a design/inspection issue, not a plan review issue. The intelligibility of the system is required per NFPA 72 Section 24.3.1 and is the responsibility of the EV/ACS designer. DSA will not review or comment on intelligibility.**4.1.6** The plans show EV/ACS paging zones. (CBC, § 907.5.2.2) Paging zones must have one or more speakers provided throughout the building per paging zone:

1. Elevator groups, i.e., elevators physically adjacent to each other that answer to common hall call buttons (but not elevator cabs; see NFPA 72, § 24.4.8.4.1).
2. Interior exit stairways (but not in enclosed stairways; see NFPA 72, § 23.8.6.2).
3. Each E and A occupancy room on each floor.

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4. Areas of refuge.
  5. At areas for assisted rescue, speakers in addition to those listed above may be required to achieve intelligibility, but DSA will not review their number or location.
- 4.1.7 A permanent sign is posted next to the microphone with instructions on its proper use. (NFPA 72, § 24.3.2)
  - 4.1.8 EV/ACS control location is indicated. (NFPA 72, § 24.4.5.1) System controls must function properly during an emergency event. EV/ACS controls shall be located so they are accessible to authorized personnel and secure from tampering.
  - 4.1.9 UL/CSFM listed wiring is provided. Shielded wire is required; fire protected wire is not required except to connect control equipment to areas of refuge and areas for assisted rescue.(NFPA 72, § 24.3.13.9)
  - 4.1.10 A note is provided that all notification appliances within a signaling zone are synchronized. (NFPA 72, § 24.4.9.2)
  - 4.1.11 A note is provided that all system documents must be collected and stored on site in the documentation cabinet. (NFPA 72, § 7.7.2.3)
  - 4.1.12 A microphone is provided in the campus administrative area, and is accessible to staff.
- 4.2 Items That Must Be Submitted As Supporting Documentation:**
- 4.2.1 The fire alarm control panel (FACP) has EV/ACS capability. Existing older model FACP's do not have this capability.
  - 4.2.2 Current manufacturer's cut sheets and CSFM listing sheets are provided showing UL/CSFM approved EV/ACS equipment, appliances and devices.
- 4.3 Items DSA Will Not Plan Review:**
- 4.3.1 Risk Analysis report.
  - 4.3.2 Acoustics Report.
  - 4.3.3 Acoustically Distinguishable Space (ADS) locations.
  - 4.3.4 Speaker spacing – DSA will not review speaker spacing and its impact on intelligibility. A proper design will depend on the engineer's clear understanding of the interior finish materials and the volumetric geometry of every space.
  - 4.3.5 Circuit pathway survivability – Since schools are intended to be fully vacated, circuit survivability is not required except as noted in Section 4.1.9 above. (NFPA 72, § 24.3.13)
  - 4.3.6 Alternate uses of the EV/ACS – DSA reviews for code minimum compliance. Code minimum use for EV/ACS is for originating and distributing voice instructions and alert/evacuation signals pertaining to fire emergencies. Therefore, DSA will not plan review alternate uses of the system.
- 5. TESTING AND INSPECTIONS:**
1. Testing and inspection shall be performed by qualified persons as required by NFPA 72, Section 10.5.3. The "System Record of Completion" form and other NFPA 72 forms and documents shall be utilized as applicable. (NFPA 72, § 7.8)
  2. The Project Inspector (PI) shall witness the tests and sign forms as the "AHJ representative."
  3. Noncompliant tests shall be reported as a deviation by the PI.

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4. Documentation of the testing and inspection of the EVAC, and Fire Alarm system, shall be attached to the NFPA 72 System Record of Completion and a copy shall be placed in the PI's job file.
5. All documents shall be stored in the documentation cabinet as required by NFPA 72.
6. Documentation of the testing and inspection is not required to be submitted to DSA unless requested in writing by a DSA Supervising Structural Engineer or Supervising Architect.

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**REFERENCES:**

2019 California Code of Regulations (CCR) Title 24  
Part 2: California Building Code (CBC), Section 907  
Part 9: California Fire Code (CFC), Section 907  
2016 NFPA 72, National Fire Alarm and Signaling Code, Chapter 24

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This IR is intended for use by DSA staff and by design professionals to promote statewide consistency for review and approval of plans and specifications as well as construction oversight of projects within the jurisdiction of DSA, which includes State of California public schools (K–12), community colleges and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is subject to revision at any time. Please check DSA's website for currently effective IRs. Only IRs listed on the webpage at <https://www.dgs.ca.gov/dsa/publications> at the time of project application submittal to DSA are considered applicable.