Single Stair Buildings

Building & Fire Code Draft Recommendations

- Prepared by Community Planning & Development & Denver Fire Department

Budget & Policy Committee

June 9, 2025

Agenda

- History & Current Regulatory Environment
  - National & State
- Draft Proposed Denver Code Provisions
  - Building & Fire
- Opportunities & Risks
  - Fire Safety & Preparing for Safety Questions
- Timeline
- Questions & Discussion

Current Regulatory Environment

- National – under consideration for the 2027 International Building and Fire Codes – a single exit serving up to 4-stories of residential (apartment) with 4-units per floor.
  - Approved at the committee level – requires consensus government vote in 2026

- State – ‘25 HB-1273 – passed - up to 5 stories allowed to be served by a single stair.

- Denver – aligned criteria to be comparable to the state: 5-stories, 4-units per floor, with clarifying criteria to support design teams and Denver Fire’s first responders for site access, rescue, and life safety not articulated in state language.
  - Due to precedence of State-level legislation, Denver’s code language is drafted in substantial alignment with HB 1273

What Other Jurisdictions Have Done

- Seattle is the original jurisdiction allowing for a single stairway building model. Code provisions include limiting residential to 5 stories with no more than 4 dwelling units per floor, fire resistive construction, limited travel distance from any dwelling to stairway of 20', pressurized stairways, etc.

- Honolulu, HI; NYC, NY; Austin, TX; and the states of Colorado and Montana; have similar provisions within their Codes with some variations for stair widths, non-combustible construction, and site access.

- Minnesota, allow single stairs up to four stories.

- The following have commissioned committees to research the topic and advise legislators with deadlines set for 2026 and beyond: The states of CA, CT, MN, MO, OR, PA, TN, VA, & WA.

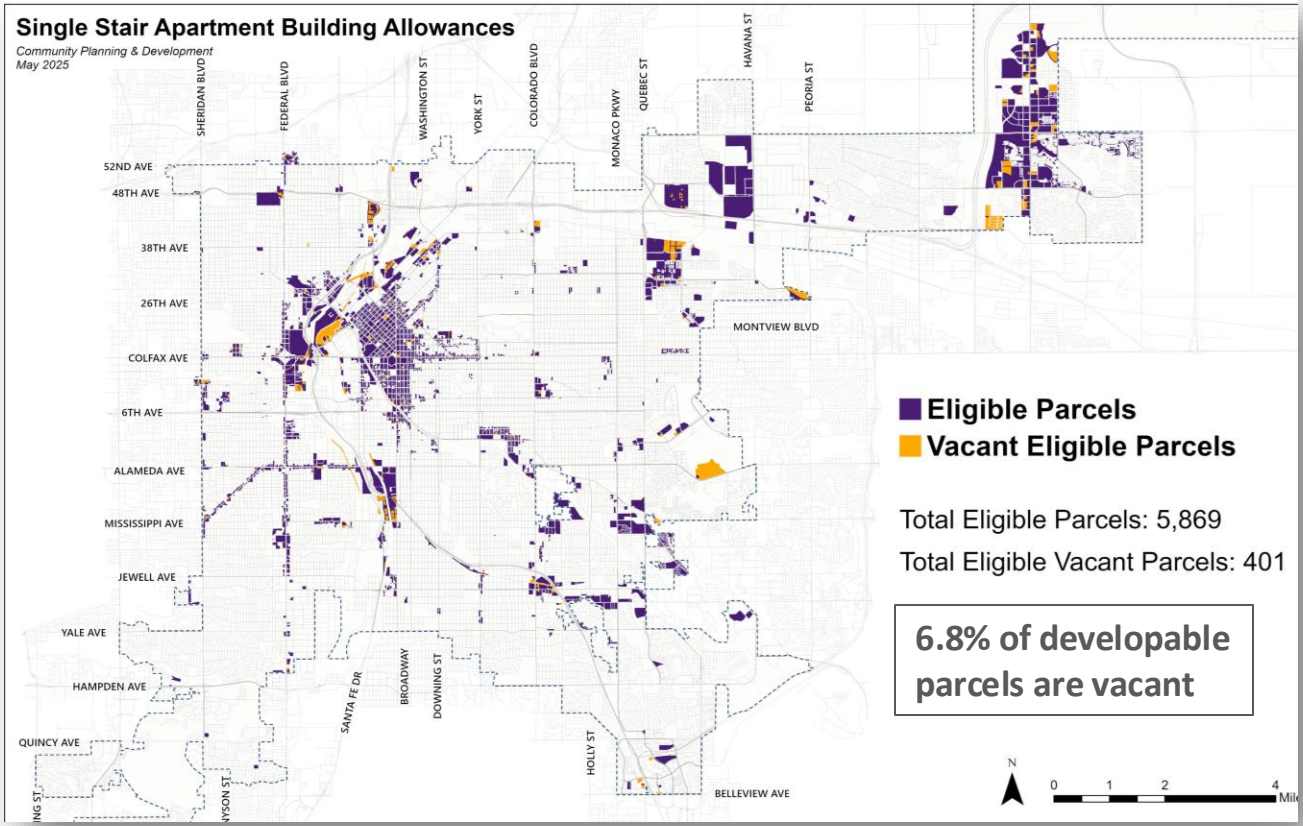
Other Jurisdictions

- Limited number of stories
- Noncombustible construction
- High performing fire sprinklers
- Wider stairways
- Residential buildings
- Pressurized stairways & hoistways to keep smoke from infiltrating & spreading throughout the building
- Reduced distances from living units to protected stairway
- Only two single stairway buildings allowed per lot
- Limit unit quantity and size to keep number of occupants to minimums, e.g., 4000 sq ft floorplate would have ~20 people

- ***Denver's building and fire code criteria are in close alignment with those noted above***

Current Development Opportunity - Zoning

- There are almost 6,000 parcels that could potentially support the single stair building configuration (built out and vacant). Less than 7% are currently vacant.



Draft Denver Specific Code Provisions

These criteria apply to new residential (apartment / condominium) buildings

1. 5-stories allowed above the level of fire department access
   a. If the building has an occupied roof, 4-stories are allowed
   b. + one basement level is also allowed
2. 2-buildings per lot
3. 4-dwelling units per story
4. Max 6,000 square feet per story
5. Type I, II, or IV construction (limited combustibles & heavy timber)
6. Sprinkler protected throughout
7. The single stairway is 54-inches in width
8. Distance from a unit door to the exit stair door is < 20-feet

Draft Denver Specific Code Provisions

9. Specific fire resistive ratings for walls, floors, doors, stairs, and elevators
10. Electrical receptacles not allowed in corridors, stair, or lobby
11. Elevator and stair shaft pressurization
12. One emergency escape and rescue opening per unit with at least one opening (per building) facing a street
13. No storage or trash/recycling in common areas
14. Manual fire alarm and automatic smoke detection that activates occupant notification
15. Smoke detectors in all common areas
16. Landscaping limitations and Fire Department aerial apparatus access criteria
17. Periodic inspections of building and systems

DFD OPPOSED DUE TO ADDED RISKS
What are the concerns?

- Single exit route (one way out...) concept changed since the 1911 Triangle Shirtwaist fire in NYC that killed 146
- Need to reduce probability of fire occurring
- Timeline response to emergency from both occupants and first responders
- Fire control (limit spread & get FF's more time for deploying & extinguishment)
- Smoke spread throughout the building (limit spread & get FF's more time for rescues)
- Fire access to allow firefighters to create 2nd egress route (ground & aerial ladders to building windows)

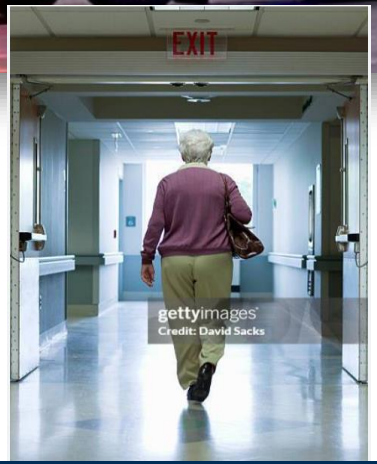
MITIGATING CONCERNS

What do our regulations accomplish?

- Need to reduce probability of fire occurring
  - Construct with non-combustible materials
  - Fire rated shafts
  - Control combustibles and incendiary hazards in common areas
  - Fully fire sprinklered (NFPA 13)
  - More robust system inspection & maintenance (IT&M) to ensure life safety systems operate when needed

MITIGATING CONCERNS
What do our regulations accomplish?

- Timeline for response to the emergency from occupants and first responders
  - Manual pulls and smoke detection in common areas (subject to nuisance alarms) with fire sprinklers throughout occupancy
  - Provide early detection of an emergency
  - Immediately activate occupant notification (horn/strobes in each dwelling unit & common areas) to start evacuation ASAP and revert to shelter-in-place protocols
  - Automatically notify the central station & dispatch DFD (upgrade Group response for SUS buildings), proper staffing & awareness of single stair building
  - More robust system inspection & maintenance (IT&M) to ensure life safety systems operate when needed



MITIGATING CONCERNS
What do our regulations accomplish?

- Fire control
  - NFPA 13 system (hardier than 13R)
    - Required for more than 4-stories in national codes/standards
  - Residential & quick response sprinklers activate within 90 to 120 seconds
  - Downside: NFPA stats indicate 88% reliability
  - More robust system inspection & maintenance (IT&M) to ensure life safety systems operate when needed would drive need for additional Fire Inspector positions

Figure 8. Sprinkler operation and effectiveness: 2015–2019

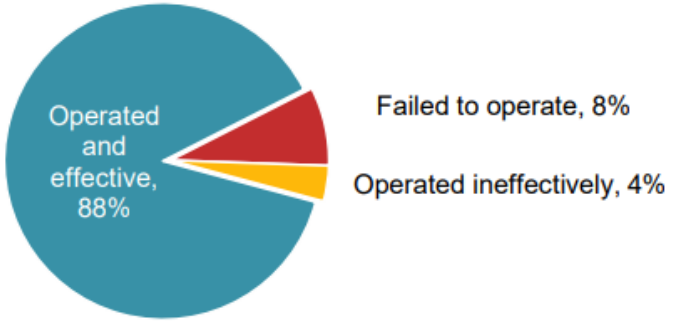
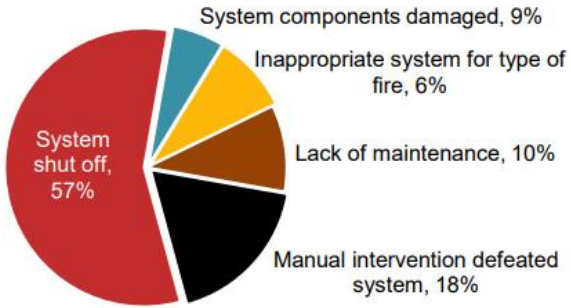
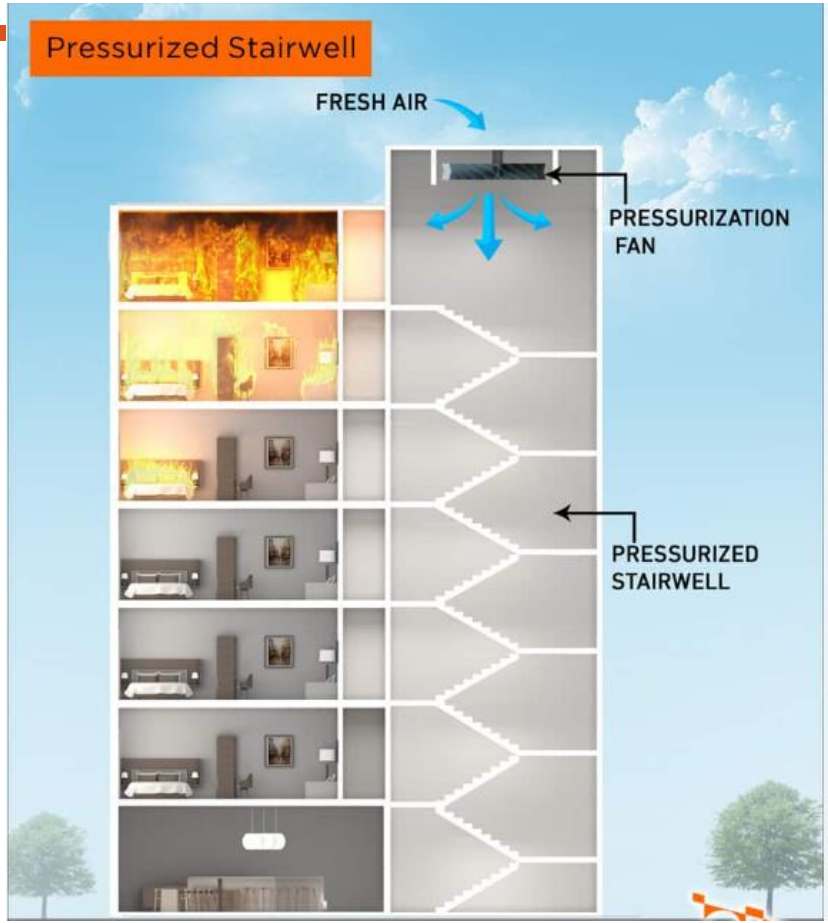


Figure 11. Reasons for sprinkler failure: 2015–2019



MITIGATING CONCERNS
What do our regulations accomplish?

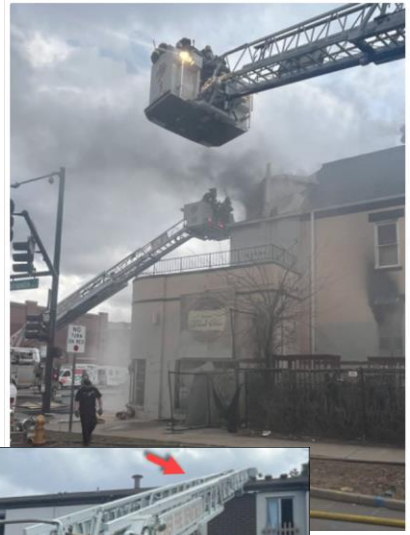
- Limit smoke spread to unit of origin
  … affords Firefighters more time for rescues
  - Limit smoke proliferation by pressurizing shafts (keep smoke to unit of origin)
  - Sprinklers suppress fire to limit smoke generation
  - More robust system inspection & maintenance (IT&M) to ensure life safety systems operate when needed



FIRE ACCESS

- Rescue windows allow occupants a 2nd route of egress during an emergency. Fire crews require allocated space and street frontage for the use of ground and aerial ladders. For example...NYC requires "25% of building height width" to allow ground ladder deployment. Denver requires a 5' setback.
- Three-story and below are served by ground ladders and aerial apparatus. 4th and 5th story windows require DFD aerial apparatus.
- Wider stairways allow egress for occupants and ingress by fire crews and equipment. Typical stairways are 44" wide.

March 3, 2024 at 1600 E Colfax

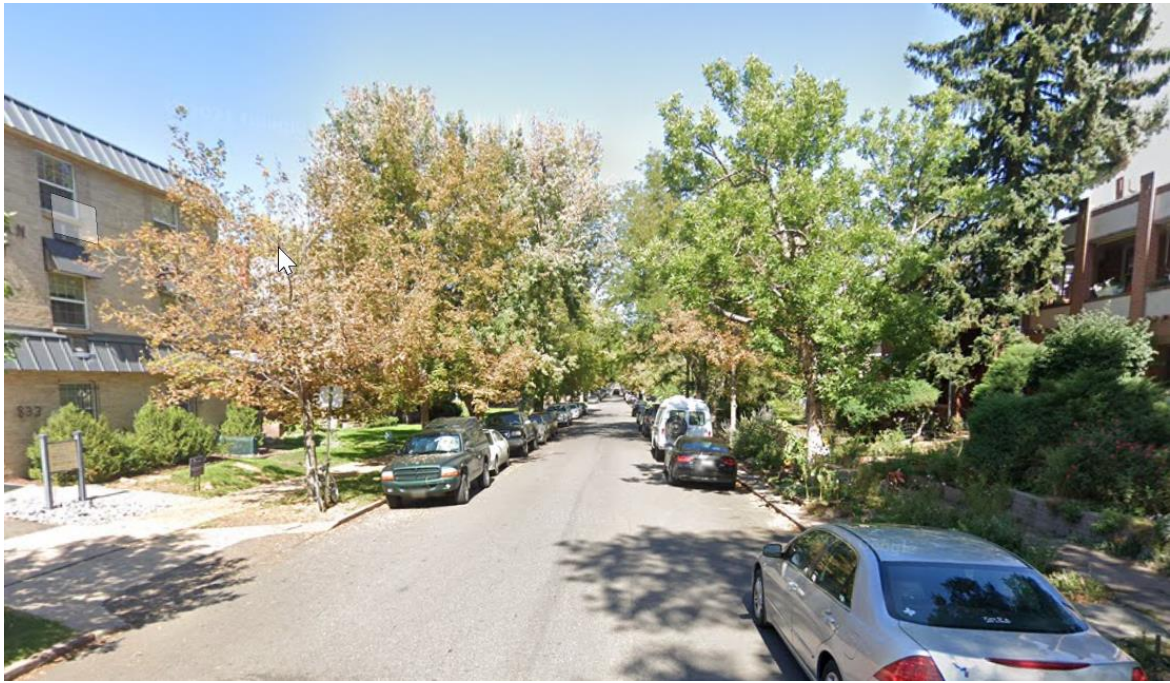


March 2, 2024
at 420 E Colfax

February 26, 2024
at 600 S Dayton

TACTICAL CHALLENGES/IMPACTS

- Narrow frontage (lot widths) would restrict the number of operating apparatus capable of rescue. Denver utilizes 20’ street widths
- Access from street to buildings has become impeded, e.g., greenery, power lines, zoning setbacks, etc.
- Densities of neighborhoods



Typical street on Capitol Hill

Timeline

- Single Stair presented to Budget & Policy Committee …….. 06/09/25
- External stakeholder engagement review estimated completion…… 09/30/25
- Final revisions and confirmation from Council sponsors …….. 10/31/25
- Legislative Process …….. 11/01/25 to
  - LUTI → M/C → 1st Reading → Final Vote …….. 12/31/25

- Adoption & Implementation …….. 12/31/25

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