

Meeting Summary
Single-staircase Advisory Group
October 15, 2024
10:00 AM
Virginis Housing Center
4222 Cox Rd, Glen Allen, VA

Advisory Group Members Present:

William Abrahamson, American Institute of Architects Virginia
Hampton Barclay, Private Developer
Eric Cavallo, Private Contractor
Ron Clements, Virginia Building and Code Officials Association
Rick Hinson, American Council of Engineering Companies of Virginia
Alex Horowitz, Pew Charitable Trusts
Andrew Milliken, Virginia Fire Services Board
Lyle Solla-Yates, Charlottesville Planning Commission

DHCD staff attending for all or part of meeting:

Jeff Brown, State Building Codes Office Director
Andrew Malloy, Policy Analyst
Florin Moldovan, Code and Regulation Specialist
Richard Potts, Code Development and Technical Support Administrator
Chase Sawyer, Policy and Legislative Services Manager

Key Takeaways

- The Advisory Group discussed in more detail the list of topics to be reviewed when considering allowing a single stair exit in certain structures.
- Advisory Group members discussed additional fire safety measures, above and beyond what is already included in the code for multifamily residential structures above three and up to six stories. Consensus was not reached on which additional fire safety measures would ensure health/safety/welfare of residents in these structures if the second staircase was not required.

Summary

Department of Housing and Community Development (DHCD) staff opened the floor for public comments at the beginning of the second meeting of the Single-staircase Advisory Group (Advisory Group). During public comment, three fire services professionals expressed concerns that a single-staircase structure above three stories would jeopardize the safety of occupants. They said if one exit was lost or blocked during a fire, it would be very difficult to get occupants at higher levels out of the building. They said it would be even more difficult for smaller fire departments with fewer resources to evacuate occupants at high levels. These fire services professionals expressed understanding that the single-stair proposal seeks to address housing affordability, and they urged those in attendance to seek other solutions to lower the cost of

housing that do not affect safety. The fire services professionals also expressed opposition to efforts that “legislate the building code” and urged legislators to not move forward proposals like this one that the International Code Council (ICC) has not included in the model codes. They said if a proposal does come before the Board of Housing and Community Development (the Board), additional fire protection features should be added. They asked Advisory Group members to trust the professional advice of those who work in fire safety. They shared that the International Association of Firefighters, the Metropolitan Fire Chiefs Association, and the Virginia Professional Fire Fighters have stated opposition to single-stair construction in large multifamily dwellings.

A private citizen also spoke during public comment and expressed opposition to a single-stair proposal above current limits because of some non-fire related safety concerns. She expressed concerns that handicap residents may not be able to evacuate during all kinds of emergencies. The private citizen said events such as an active shooter, domestic violence, flooding and other natural disasters would put residents at additional risk if there were only one stair/exit for higher levels. She also said single-stair design would create higher density and other problems associated with it such as, public utility challenges (sewer, water, etc.), loss of community (open space), parking challenges, and traffic.

After public comment, DHCD staff provided a brief recap of the takeaways from the first Advisory Group meeting held on September 9, 2024, including the recommendation that any findings or recommendations from the Advisory Group should be reviewed and considered during the normal code development process. Staff outlined the structure of the meeting and pointed to the list of topics for consideration made during the previous meeting. Advisory Group members were prompted to determine if each item listed was an issue worth considering in a future code proposal, fire protection features to potentially include in a future proposal, and/or if there are any noteworthy pieces of research related to each topic that will aid workgroups in the normal code development process.

During the discussion of topics, the Advisory Group recognized that a variety of fire safety protections currently exist in the building code for multifamily structures up to six stories. The Advisory Group noted that these fire safety protections are developed with two staircases in mind when the structure is more than three stories. Advisory Group members discussed fire safety protection features that should be required (added) in order to mitigate the additional risk associated with a single-stair exit when a second staircase/exit is removed from a structure.

Occupied Floors, Stories, Podiums, Grade

Advisory Group members discussed the nuances and differences between occupied stories, occupied floors, stories above grade, and podium construction as it relates to parameters defined in the authorizing legislation. Advisory Group members agreed that a proposal allowing a single stair exit structure up to six stories would need to consider these factors and may need to impose restrictions in order to provide adequate fire access above a certain height. When considering podium construction, Advisory Group members suggested that building code language clearly define the *lowest occupied floor*. Advisory Group members also noted that the different ways localities calculate grade may need to be considered.

Construction Type

Advisory Group members reviewed the variety of construction material requirements for different multifamily residential structures up to six stories. Some Advisory Group members suggested that any single-stair structures above current limits should be type 1 or 2 construction (noncombustible materials). They stated the reason for this is to support “defend in place” strategies in which a resident may be forced to remain in their unit until emergency help arrives due to a blocked/inaccessible exit. Some Advisory Groups members noted that noncombustible construction types are important to prevent a contents fire from turning into a structural fire, making a “defend in place” strategy more difficult. Other Advisory Group members pointed out the financial costs of noncombustible construction and the challenges this creates for developers of small lots. Some Advisory Group members suggested a higher fire safety rating for only the materials used to construct the stairwell. Other Advisory Group members noted that this does not mitigate risk because occupants do not “defend in place” in the stairwell, but rather they would be forced to stay in occupied rooms, supporting the argument for noncombustible construction throughout. Additionally, it was noted that the building code already requires a two-hour fire rating for stairs four stories and above.

Egress

Advisory Group members discussed expanding egress width beyond current requirements in single-stair structures. Advisory Group members noted that a Canadian study (British Columbia) recommended a single-stair egress width of 5 feet (60 inches). Advisory Group members noted that alternate means of egress may be needed if a structure was built with only one staircase. Other Advisory Group members pointed out that there are no emergency escape rescue openings (EEROs) above three stories, so if a single exit is blocked, the only other egress options would be ariel apparatuses which are challenging and risky for fire departments of varying resources. Some Advisory Group members again emphasized the “defend in place” strategy because a single stair building would be cutting in half the available egress that would otherwise be required for four stories and above.

Occupant Load

Advisory Group members discussed occupant load in the context of number of units. Advisory Group members noted that the current building code establishes occupant load based on square footage calculations. Some Advisory Group members expressed that establishing limits on the number of units allowed should be the primary metric for controlling occupant loads in single-stair construction.

Fire Sprinklers and Fire Alarms

Advisory Group members noted that fire sprinklers and fire alarms are already required in multifamily structures. Some Advisory Group members offered that specific requirements for higher sprinkler densities could be considered to go above and beyond the current building code requirements to mitigate risk in single-stair construction. Advisory Group members also suggested requiring early detection systems in common areas, including the stairwell itself.

Special Inspections

Advisory Group members noted that even though special inspections of fire penetrations are included in the ICC model code, they are not required in Virginia. Advisory Group members indicated that requiring these inspections for single-stair construction could be considered to mitigate risk.

Prop Alarms

Advisory Group members discussed prop alarms as a way to ensure that open doors do not compromise a single stair exit during a fire. Some Advisory Group members remarked that prop alarms are not used to mitigate fire risk from a life safety perspective and that they are primarily used for security. Advisory Group members pointed out the primary issue with prop alarms in residential buildings is tampering.

Smoke Control

Advisory Group members discussed pressurized smoke systems in the single stairway to make it safer during a fire. Some Advisory Group members noted the lack of research on the prevalence of these systems. Other Advisory Group members highlighted the cost associated with these systems. They said pressurized smoke systems are required in Seattle's single-stair buildings; however, rents are high, and the costs are likely recouped by these higher rents. Advisory Group members also pointed out examples in other jurisdictions of smoke control related to ventilation. Other Advisory Group members noted that ventilation and exhaust systems should only be used for post-fire salvage, and they are not meant to keep a stairwell safe for escaping occupants. They said the reason for this is ventilation systems pull smoke through the stairwell, while pressurization systems keep smoke out of the stairwell entirely.

Capacity and Capability of Fire Department(s), Fire Apparatus, and Water Availability

Advisory Group members again noted that EEROs do not exist at four stories above grade and up. It was noted that occupants at these levels need alternate means of escape if a single staircase is blocked or compromised during a fire. Advisory Group members shared that fire departments may use aerial apparatuses to rescue occupants at these levels, but smaller (often more rural) fire departments may not have the resources to perform these rescues effectively. Advisory Group members highlighted that since the building code is statewide, it should be written for the minimum resources available. Other Advisory Group members speculated that single-stair buildings would not be built in areas with minimal firefighting resources. It was discussed whether there are any self-regulating mechanisms in the market or the building code itself that would ensure these structures are only built as infill in urban areas (with adequate resources). Advisory Group members pointed out that fire department access in these urban areas is still challenging, even if the fire department has ample resources. Advisory Group members suggested only allowing single-stair construction in areas where fire departments receive certain accreditations. Other Advisory Group members said tying the building code to fire department accreditation may not be beneficial since fire departments can fall in and out of accreditation, while the structures stand for long periods of time.

Firefighter and First Responder Access to the Building

Advisory Group members discussed challenges with firefighter access when only one staircase exists. Topics included access to the perimeter of the building (distance requirements) and alternate forms of access such as fire service elevators. Advisory Group members discussed the challenges with these measures including the costs of fire service elevators.

Benefits

Some Advisory Group members presented on the benefits of single-stair structures including more natural light, more ventilation, space for family size apartments, fitting in small infill lots, and benefits for main streets. Data was presented on the fire safety of single-stair buildings in other jurisdictions and the relative safety of multifamily housing compared to other housing types (single family, older multifamily, etc.). Advisory Group members discussed the relative safety of various housing types and limitations associated with each.

In a second public comment period, a fire service professional highlighted the variety of firefighting resources in different areas of the state and reminded the Advisory Group that the building code is uniform statewide. The fire service professional shared additional thoughts on the challenges of small fire departments, the data presented regarding the relative safety of different housing types, the prevalence of fire sprinklers in multifamily structures, and the ever-changing challenges from new fire hazards (ex. e-bikes and electric vehicles). He further remarked that the problem with single stairwell congestion (firefighters going up, occupants going down) will be very difficult to address even with additional safety features.

Future Considerations

Advisory Group members agreed that structures above three stories with two or more stairs currently have certain fire safety protection measures in place with the understanding that two or more stairs will be present. The Advisory Group acknowledged that there are additional safety challenges and considerations when a staircase is removed from a structure that would otherwise require two staircases under the current building code. The Advisory Group questioned what additional fire safety protection measures need to be present to ensure the safety of residents when a structure (four to six stories) is limited to a single-staircase. Advisory Group members noted that there is currently a spectrum of requirements for structures four to six stories, so it could be possible for a building code proposal to have a spectrum of added requirements for single stair construction (ex. a maximum build for six stories, a minimum build for four stories).

Throughout the meeting, Advisory Group members discussed potential (upgraded) fire safety protections when only one staircase is present in a structure four to six stories. A future single-staircase code proposal could include, but would not be limited to, the following added fire safety protections:

- Requiring construction type 1 or 2 (non-combustible materials) for any single-stair building over three stories
- Closer exterior access to building for fire departments
- Capability of fire department (accreditation)
- Wider egress width. Advisory Group discussed a 60-inch requirement

- Limiting the number of units per floor or net floor area to control occupant load
- Limiting and clearly defining occupied floors
- Pressurizing exit stair enclosure to prevent smoke from entering
- Mechanical smoke ventilation system
- Higher sprinkler density above and beyond current requirements
- Early smoke detection in common areas (stairwell itself)
- Special inspections for penetrations of rated assemblies

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