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DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

November 27, 2024

Memorandum

To: Board of Housing and Community Development
Senator Adam Ebbin, Chair, Senate Committee on General Laws and Technology
Delegate David Bulova, Chair, House Committee on General Laws

From: Single-staircase Advisory Group

RE: Findings and Recommendations

Background

House Bill 368 and Senate Bill 195 (2024) as approved by the General Assembly and signed by the Governor (*Appendix 1*), directed the Board of Housing and Community Development (the Board) to convene a workgroup to provide recommendations for allowing a single stair exit for Group R-2 (multifamily residential) structures up to six stories in height (above grade plane). The legislation required the Single-staircase Advisory Group (Advisory Group) to submit its findings and recommendations to the Board and General Assembly by December 1, 2024. The Advisory Group met three times, and a summary of each meeting is included in the Appendix (*Appendix 2a-c*).

The Advisory Group's efforts consisted of in-person discussion, written testimony, background research, and accepting in-person and written public comments. These efforts were part of a fact-finding exercise that sought to evaluate various considerations related to a potential proposal during the regular development of the Uniform Statewide Building Code (USBC). The Advisory Group operated outside of the normal code development cycle, allowing it to focus on this singular topic in depth.

The Advisory Group did not develop a model proposal to allow a single-stair exit in multifamily residential structures up to six stories, rather, it laid out the many considerations that may need to be taken into account if a proposal comes before the Board. The Advisory Group provided thoughtful analysis of benefits of single-stair construction, the fire safety concerns associated with these structures, and the features of protection that may be needed to keep occupants safe during emergencies.



History

The Advisory Group outlined a brief history of the single-stair issue at the first meeting on September 9, 2024. The Advisory Group reviewed and heard main points from a 2021 code change proposal that had been submitted to the Board for consideration (*Appendix 4a*). This proposal was based on a code change that was approved in Seattle, and the 2018 Seattle Code (*Appendix 4b*) served as template language. The proposal received a non-consensus recommendation from a code cycle workgroup and was not approved by the Board. In addition to these efforts in Virginia, the Advisory Group noted the International Code Council (ICC) is reviewing similar proposals for allowing single-stair construction above current limits (*Appendix 4c and 5aa*). At the time of this report, ICC code change proposal E24-24 has been through the committee action hearing process, resulting in approval of the proposal by the committee as modified (*Appendix 4d*). Final actions on E24-24 will likely occur during the public comment hearing and online government consensus voting period in 2026. Lastly, the Advisory Group discussed the National Fire Protection Association’s (NFPA) single exit stair symposium and expressed interest in the recommendations from authoritative experts on this topic (*Appendix 5a*). The history of this issue demonstrates that the Advisory Group’s efforts are not occurring in a vacuum, and the Commonwealth should consider the single-stair issue with these other proposals and recommendations in mind.

Baseline

The Advisory Group found that the primary purpose of the current two-stair exit requirement for buildings over three stories is to provide occupants with an alternate means of egress during an emergency. The Advisory Group found that this is an important safety requirement in the event one of the two staircases (exits) is blocked, congested, compromised, or damaged. There are many other safety requirements in the USBC, and the Advisory Group discussed some general “baseline” provisions to determine what added features of protection may be needed if a building lacked a second stair exit. During the second Advisory Group meeting on October 15, 2024, there was discussion of the following requirements currently in the building code:

- Travel distance to exits
- Fire penetrations
- Type of construction (combustible vs. noncombustible)
- Sprinklers
- Egress width
- Occupant load formula
- Exterior access for fire department
- Elevators

The Advisory Group noted that there is a spectrum and variety of requirements for different buildings captured by the Advisory Group’s authorizing legislation (“*Group R-2 occupancies...not more than six stories above grade plane.*”) Future workgroups may need to outline in more detail the current requirements in order to determine what additional provisions may need to be added to ensure occupants are safe.



Fire Safety Considerations

A key takeaway from the Advisory Group meetings was that fire safety concerns are the primary reasons for currently not allowing a single-stair exit for multifamily residential structures above three stories. Advisory Group members said that the building code's redundancy in egress options exists for occupant escape and first responder access during emergencies. At four stories and above, Emergency Escape and Rescue Openings (EEROs) start to become technically and functionally infeasible. EEROs are windows or doors that provide occupants a means of escape and rescue. Advisory Group members noted that at four stories and above, there are no requirements for EEROs because these floors not only have a minimum requirement for two exits, but fire service access and rescue may not be practical or possible at that height. The Advisory Group found that at levels at and above four stories, if the only means of egress was blocked/compromised, occupants would have to use "defend in place" strategies, e.g. wait until emergency help arrives to escape. Advisory Group members found that performing emergency response operations in a single stairwell, that is simultaneously being used for occupant escape, negatively impacts rescue and fire suppression efforts.

In addition to concerns raised at the Advisory Group meetings from members associated with fire service organizations, three organizations shared written statements: a letter from the Virginia Professional Fire Fighters (*Appendix 3a*), a joint statement from the International Association of Fire Fighters and Metropolitan Fire Chiefs Association (*Appendix 3b*), and a statement from the National Association of State Fire Marshals (*Appendix 3c*)

Advisory Group members discussed potential (upgraded) fire safety protections when only one stair is present in structures with four to six stories. To compensate for a lack of a second means of egress, all or some of these added protections may make up the elements of a future single-staircase proposal:

- 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 (ISO Class 1 rating)
- Wider egress width. Advisory Group discussed a 60-inch requirement. See study on wider egress width in *Appendix 5z*
- Limiting the number of units per floor or net floor area (*Appendix 4d*) to control occupant load
- Limiting and clearly defining occupied floors, roofs, stories, podiums, and grade
- Pressurizing exit stair enclosure to prevent smoke from entering
- Mechanical smoke ventilation systems (*Appendix 5d*)
- Higher sprinkler density above and beyond current requirements
- Early smoke detection in common areas (stairwell itself)
- Special inspections for penetrations of rated assemblies

The Advisory Group discussed in further detail the considerations related to these added fire safety features. These considerations can serve as areas of further research for future workgroups in the building code update cycle to deliberate. Advisory group members emphasized the importance of performing a cost-benefit analysis on these added fire safety protections. The list captures some of the various factors that need to be considered when analyzing a single-stair proposal with the health, safety, and welfare of occupants in mind. Details on each individual consideration is included in the October 15, 2024 meeting summary (*Appendix 2b*).

When considering added protections and requirements, the advisory group finds that the provisions of floor modification E24-MC1 (*Appendix 4d*) may provide a beneficial framework for a future single-staircase code change proposal.

Other Topics Discussed

Benefits - Part of the Advisory Group's fact-finding exercise was outlining the benefits of single-stair construction and the reasons to consider this code change on its merits. Advisory Group members advocated that single-stair buildings are needed to fit more units/living space on small urban lots. Advisory Group members pointed to a section in the City of Charlottesville's Inclusionary Zoning Analysis that highlights parcels of land that would benefit from this development (*Appendix 5e*). The Virginia Zoning Atlas also shows parcels where localities allow taller multifamily development by right, potentially creating opportunities for single-stair construction above current limits to increase housing stock (*Appendix 5bb*). Additional research was shared detailing the benefits of these structures in Oregon (*Appendix 5f*), Massachusetts (*Appendix 5g-h*), Tennessee (*Appendix 5i*), Minnesota (*Appendix 5j-k*), Montana (*Appendix 5l*), Australia (*Appendix 5q*), Vancouver and across Canada (*Appendix 5m-p*). Examples of single-stair construction in Seattle were also shared (*Appendix 5b-c*).

Advisory Group members found that projects on these small lots would otherwise be financially infeasible if sellable living space was taken up by a second staircase. Advisory Group members reasoned that the current two-stair requirement is limiting housing stock because of the challenges fitting the necessary number of units onto small lots for the project to make financial sense. In addition to financial considerations, Advisory Group members shared additional benefits of single-stair construction and design. These benefits include the flexibility to add more types of multifamily housing, more natural light and ventilation, and the ability to build structures consistent with historically significant architectural design, aiding municipalities in their historical preservation goals. Advisory Group members shared additional articles and reports detailing these benefits (*Appendix 5r-y*). Advisory Group members proposed that added fire safety requirements may not be needed in single-stair structures because of the relative safety of multifamily residential buildings. Advisory Group members pointed to the current fire safety standards and data on fire fatalities in multifamily building (*Appendix 5r-s*).

The American Institute of Architects Virginia shared a written statement that reiterated the benefits of single-stair construction. The statement also supports efforts to further evaluate single-stair proposals (*Appendix 3d*).

Legislating the Building Code – Advisory Group members shared concerns that efforts from the General Assembly to approve a code-change proposal allowing a single-stair exit above current limits may undermine the building code development process in Virginia. Advisory Group members warned that “legislating the building code” does not support Virginia’s robust stakeholder-based building code development process.

Recommendations to the Board

The Advisory Group recommends that any proposal to allow a single stair exit above current limits should be considered by the Board during the normal building code development process. The Advisory Group discussed a variety of considerations related to the health, safety, and welfare of occupants for future workgroups to deliberate in more detail. The Advisory Group presents these considerations as a big-picture overview of this issue and a summary of all the different factors that may arise when considering a single-stair exit proposal. The Advisory Group recommends the Board convene a special workgroup during the 2024 building code update cycle to continue discussing this topic, ICC code change proposal E24-24 as modified, and any related proposals.



Appendix

1. Authorizing Legislation - HB360/SB195
2. Meeting Summaries
 - a) September 9, 2024
 - b) October 15, 2024
 - c) November 6, 2024
3. Statements
 - a) [Virginia Professional Fire Fighters](#)
 - b) [International Association of Fire Fighters & Metropolitan Fire Chiefs Association](#)
 - c) [National Association of State Fire Marshals](#)
 - d) [American Institute of Architects Virginia](#)
4. Proposals
 - a) [2021 Proposal Virginia](#)
 - b) [2018 Seattle Code](#)
 - c) [2024 Proposal ICC](#)
 - d) [Draft Floor Modification 2024 ICC Proposal E24-24-SHAPIRO-MC1](#)
5. Research and Analysis
 - a) [National Fire Protection Association \(NDPA\) - Single Exit Stair Symposium](#)
 - b) [Single Staircase Examples in Seattle - American Institute of Architects](#)
 - c) [Single Staircase Example in Seattle - Habitat for Humanity + News article](#)
 - d) [How Mechanical Smoke Ventilation Systems Work](#)
 - e) [City of Charlottesville's Inclusionary Zoning Analysis](#)
 - f) [Benefit analysis for small-footprint apartment buildings in Oregon – Sightline Institute](#)
 - g) [Could Legalizing Mid-Rise Single-Stair Housing Expand and Improve Housing Supply? – Joint Center for Housing Studies \(JCHS\) of Harvard University](#)
 - h) [Legalizing Mid-Rise Single-Stair Housing in Massachusetts – JCHS of Harvard University](#)
 - i) [Single Stair Design & 2024 Legislation – AIA Tennessee](#)
 - j) [Single-egress stairway apartment building study – Minnesota](#)
 - k) [Advocacy Update: Commercial Code TAG Approves Single-Stair Apartments – Housing First Minnesota](#)
 - l) [Governor's Housing Task Force -Montana](#)
 - m) [Unlocking livable, resilient, decarbonized housing with Point Access Blocks – Larch Lab for the City of Vancouver](#)
 - n) [Optimizing Form & Function with Michael Eliason – The Passive House Network](#)
 - o) [Single Egress Stair Building Designs: Policy and Technical Options Report – British Columbia](#)
 - p) [The Second Egress: Building a Code Change – Conrad Speckert, McGill University](#)
 - q) [Australian Apartment Shows How Single Stairs Make Small Buildings Better – Treehugger](#)

- r) [Single-Stair Construction: New Data on Costs, Benefits, and Outcomes - Pew Charitable Trusts](#)
- s) [Fire Death Rate Trends: An International Perspective – U.S. Fire Administration](#)
- t) [Early Zoning and the War on Multifamily Housing – Strong Towns](#)
- u) [Why we can't build family-sized apartments in North America – Center for Building in North America](#)
- v) [How to build more family-sized apartments – Niskanen Center](#)
- w) [The Olympic Village: High-Performance Housing Illegal to Build in the U.S. – Medium](#)
- x) [Point Access Block Building Design: Options for Building More Single-Stair Apartment Buildings in North America – U.S. Department of Housing and Urban Development](#)
- y) [Why North America Can't Build Nice Apartments \(because of one rule\) – Urbanarium For Smart Cities](#)
- z) [Means of Escape in Residential Buildings](#)
- aa) [The International Code Council's Role in Code Development and Building Safety – ICC](#)
- bb) [Virginia Zoning Atlas](#)

VIRGINIA ACTS OF ASSEMBLY -- 2024 SESSION

CHAPTER 384

An Act to direct the Board of Housing and Community Development to convene a stakeholder advisory group to evaluate and recommend revisions to the Uniform Statewide Building Code to permit Group R-2 occupancies to be served by a single exit.

[H 368]

Approved April 4, 2024

Be it enacted by the General Assembly of Virginia:

1. *§ 1. The Board of Housing and Community Development (the Board) shall convene a stakeholder advisory group including fire code officials to evaluate and recommend revisions to the Uniform Statewide Building Code (§ 36-97 et seq. of the Code of Virginia) to permit Group R-2 occupancies to be served by a single exit, provided that the building has not more than six stories above grade plane. The advisory group shall submit its findings and recommendations to the Board and to the Chairmen of the House Committee on General Laws and the Senate Committee on General Laws and Technology no later than December 1, 2024.*

VIRGINIA ACTS OF ASSEMBLY -- 2024 SESSION

CHAPTER 385

An Act to direct the Board of Housing and Community Development to convene a stakeholder advisory group to evaluate and recommend revisions to the Uniform Statewide Building Code to permit Group R-2 occupancies to be served by a single exit.

[S 195]

Approved April 4, 2024

Be it enacted by the General Assembly of Virginia:

1. *§ 1. The Board of Housing and Community Development (the Board) shall convene a stakeholder advisory group including fire code officials to evaluate and recommend revisions to the Uniform Statewide Building Code (§ 36-97 et seq. of the Code of Virginia) to permit Group R-2 occupancies to be served by a single exit, provided that the building has not more than six stories above grade plane. The advisory group shall submit its findings and recommendations to the Board and to the Chairmen of the House Committee on General Laws and the Senate Committee on General Laws and Technology no later than December 1, 2024.*

Meeting Summary
Single-staircase Advisory Group
September 9, 2024
10:00 AM
Virginis Housing Center
4224 Cox Rd, Glen Allen, VA

Advisory Group Members Present:

William Abrahamson, American Institute of Architects Virginia
Hampton Barclay, Private Developer
Eric Cavallo, Private Contractor
Andrew Clark, Home Builders Association of Virginia
Rick Hinson, American Council of Engineering Companies of Virginia
Alex Horowitz, Pew Charitable Trusts
Billy Hux, State Fire Marshal
Jason Laws, Virginia Building and Code Officials Association
Andrew Milliken, Virginia Fire Services Board
Steven Sites, Virginia Fire Services Board
Lyle Solla-Yates, Local Planning Professional
Schuyler Van Valkenburg, Senate of Virginia (16th District)
Dan Willham, Virginia Building and Code Officials Association

DHCD staff attending for all or part of meeting:

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

Key Takeaways

- Advisory Group members agree that any findings or recommendations from the Advisory Group should be reviewed and considered during the normal code development process.
- The primary reasons discussed for not allowing a single stair exit for multifamily residential structures above current limits are fire safety concerns.
- Advisory Group members created a preliminary list of topics to be reviewed by the Advisory Group when considering allowing a single-staircase above current limits. The topics relate to fire safety, resident health/safety/welfare, accessibility, and general building code considerations.

Summary

Department of Housing and Community Development (DHCD) staff provided a summary of the purpose of the meeting and introduced the topic before the Single-staircase Advisory Group

(Advisory Group). During the 2024 General Assembly Session, [HB368](#) and [SB195](#) were approved by the General Assembly and signed by the Governor. The identical bills directed the Board of Housing and Community Development (Board) to convene a stakeholder advisory group to provide findings and recommendations for allowing a single stair exit for Group R-2 (multifamily residential) structures up to six stories in height. The Advisory Group is directed to submit its findings and recommendations to the Board and General Assembly by December 1, 2024. DHCD staff emphasized that the Advisory Group is tasked with only making findings of fact and recommendations. The findings of the Advisory Group could then be used by the Board when considering proposals during the normal code development process. DHCD staff further emphasized that the Advisory Group is not a part of the normal code development cycle, rather it serves as an opportunity to discuss this topic in more detail, laying some groundwork for future code cycle workgroups.

The Advisory Group discussed the background and history of the single-staircase proposal. Advisory Group members shared examples of single-staircase construction in other parts of the country such as Seattle, Washington, and New York City, as well as internationally in Europe. The Advisory Group discussed how many single-staircase buildings are being built in these areas; however, there is a lack of information on the prevalence of these structures in the United States. Some Advisory Group members questioned whether single-staircase construction would be used if allowed by the building code. Advisory Group members discussed alternative methods for complying with the current staircase requirements that could also yield similar benefits as allowing a single staircase, such as interlocking stairwells or stairs connected to an elevator lobby with an alternative stairwell only for residents. Advisory Group members also noted that a proposal of this nature related to residential buildings could have implications associated with non-residential building uses.

The Advisory Group discussed the benefits and safety concerns associated with allowing a single staircase for multifamily structures up to six stories. Advisory Group members noted that the current building code, which allows a single exit in multifamily structures up to three stories, creates challenges for builders in some areas due to zoning constraints. Some Advisory Group members shared that single-staircase structures can in some instances be more economically feasible in higher-density localities where lots are small and zoning restrictions prevent larger production-style multifamily development. Advisory Group members reasoned that single-stair structures could be more economically feasible because they allow for additional square footage, more units, and more efficient use of space, which creates more revenue opportunities and higher margins for builders/developers. Some Advisory Group members also suggested that allowing these structures could rehabilitate existing structures and provide opportunities for in-fill units on lots that would otherwise go untouched, which would increase the housing supply, making housing more affordable generally. Advisory Group members acknowledged that additional fire safety measures would be required for single-staircase buildings greater than three stories, including, but not limited to, sprinklers, mechanical smoke ventilation systems, and higher fire-rating building materials.

The Advisory Group discussed concerns that exist related to allowing a single staircase for buildings up to six stories. The reasons for concern shared by Advisory Group members were

primarily regarding the health, safety and welfare of residents in addition to the safety of firefighters and other first responders accessing a building with a single staircase during emergencies. Some Advisory Group members noted that one point of entry and exit for firefighters and evacuating residents is a significant concern. Advisory Group members also noted that some city lots do not have adequate fire department access, making the need for at least two means of egress more important. Concerns were also raised that the capabilities and resources of individual fire departments may vary, creating problems of access for fire departments with fewer resources or inadequate equipment. Advisory Group members shared that a reason for allowing a single staircase for up to three stories is because self-evacuation and exterior escape ladders are still options at that height and may not be viable options for taller heights.

There was consensus within the Advisory Group that any proposals or recommendations related to the Uniform Statewide Building Code (USBC) should still go through the standard code development process. Advisory Group members expressed concerns with efforts to “legislate the building code.” Advisory Group members suggested establishing a specific workgroup during the next code update cycle related to the single-staircase issue. Additionally, there was consensus that the USBC should still be uniform in nature and not have exceptions or different building requirements for different regions of the Commonwealth.

During public comment, a member of the public spoke in opposition to a single-staircase code change. He said this change would lead to reduced public safety. He expressed concerns that the proposed systems designed to protect residents in single-staircase buildings (i.e. mechanical smoke ventilation) might fail in the future due to maintenance issues. He shared that safety should be the main priority.

Future Considerations

A key takeaway of the meeting was that fire safety concerns are the primary reasons for not allowing a single staircase for multifamily residential structures above current limits. Advisory Group members created a list of topics to consider in more detail at future meetings regarding the proposal to allow a single exit for Group R-2 (multifamily residential) structures up to six stories in height.

- Fire Safety Considerations
 - Building construction/design:
 - Exterior grades; stories at or above grade; podium construction; occupied roofs
 - Construction type; combustible vs non-combustible construction materials
 - Locations and types of fire separations (fire barrier, fire wall, fire partition)
 - Egress:
 - Egress width; exit configuration; exit access; and exit travel distance
 - Egress above ground/patio egress; egress through mixed occupancy

- External vs. internal stairs
 - Areas of refuge; emergency communications
- Fire sprinkler and fire alarm requirements
- Special inspection (IBC Chapter 17) of fire rated assembly penetrations
- Providing prop alarms on stairway doors
- Providing smoke control in stairway; skylight technology; pressurization
- Mixed uses (occupancy classifications)
- Occupant loads (maximum)
- Capacity and capability of jurisdiction and fire department(s), including fire apparatus and water availability
- Firefighter and first responder access to the building (internal and external)
 - Open perimeters
 - Elevator size and type
 - Emergency escape and rescue openings (EERO)
- Other Considerations
 - Cross connection within units
 - Accessibility (non-firefighter)
 - Relative safety for different housing types
 - Benefits

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

Meeting Summary
Single-staircase Advisory Group
November 6, 2024
12:00 PM
Twin Hickory Area Library
5001 Twin Hickory Road, Glen Allen, VA

Advisory Group Member 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
Billy Hux, State Fire Marshal
Jason Laws, Virginia Building and Code Officials Association
Andrew Milliken, Virginia Fire Services Board
Lyle Solla-Yates, Charlottesville Planning Commission
Dan Willham, Virginia Building and Code Officials Association

DHCD staff attending for all or part of the meeting:

Jeff Brown, State Building Codes Office Director
Andrew Malloy, Policy Analyst
Florin Moldovan, Code and Regulation Specialist
Chase Sawyer, Policy and Legislative Services Manager

Key Takeaways

- The Advisory Group made technical corrections to the draft report to improve its accuracy and limit potential misunderstandings.
- The Advisory Group made additions to the report to provide future workgroups more research and information on this topic.
- The Advisory Group agreed on the contents of the report and the recommendations included within it.

Summary

Department of Housing and Community Development (DHCD) staff opened the floor for public comments at the beginning of the third meeting of the Single-staircase Advisory Group (Advisory Group). DHCD staff shared the draft Advisory Group report with the public prior to the meeting, allowing them the opportunity to comment on its contents.

Two fire service professionals made public comments. The first fire service professional listed the fire service organizations that oppose single-staircase proposals and the concerns they have with escape and rescue operations in single-stair structures. He commended the current code

development process in Virginia and emphasized that Virginia has a consensus-based approach. The fire service professional further noted the lack of consensus among stakeholders and urged attendees to hear the concerns of fire safety professionals. He highlighted that current limits on single-stair construction are based on decades of research and investigations of fires in multifamily buildings. The second fire service professional supported the intentions behind this proposal to help address housing affordability. She shared her concerns that more people are experiencing homelessness because of unaffordable housing, especially in northern Virginia. However, she shared concerns that single-stair construction would put occupants at risk. She shared her experience as a first responder needing to block/shut down a staircase in order to transport a patient. She also shared concerns that victims of domestic violence would be limited in their escape options if only one staircase/exit were available.

After the public comments, DHCD staff provided a brief overview of the draft report. DHCD staff invited Advisory Group members to share feedback, comments, edits and additions to the report.

During the discussion, the following edits were made to the draft report:

- i. In the background section, Advisory Group members clarified that a model single-staircase proposal was not *developed* by the Advisory Group. Even though different model proposals were discussed in general terms, it would not be accurate to say that the Advisory Group disagreed on specific elements of a proposal.
- ii. In the history section, updates were made to reflect the recent efforts of the ICC at the 2024 International Code Council's Committee Action Hearings in Long Beach, CA.
- iii. In the section on fire safety considerations, the description and definition of Emergency Escape and Rescue Openings (EEROs) was corrected.
- iv. In the list of potential (upgraded) fire safety protections, "ISO class 1 rating" was added to describe the capability of fire departments. This was added to reflect the official industry designation.
- v. In the list of potential (upgraded) fire safety protections, Advisory Group members added clarification that future workgroups should work to define occupied floors, roofs, stories, podiums, and grades. As discussed in prior Advisory Group meetings, there are several nuances and differences between occupied stories, occupied floors, occupied roofs, stories above grade, and podium construction as it relates to the parameters defined in the authorizing legislation.
- vi. Regarding the list of potential fire safety protections, Advisory Group members said that a cost/benefit analysis should be performed on these requirements. Advisory Group members shared concerns that some of these potential requirements would be overly burdensome for builders and would make single-staircase structures too costly. Advisory Group members also shared that some items on the list may have negligible fire safety benefits that would not outweigh the costs they would impose. Advisory Group members

clarified that the list of added fire safety protections is not exhaustive, nor should it be interpreted that all of these protections need to be added in order to reach consensus on this issue. Additionally, the fire safety protections may not all be necessary to mitigate safety risks. DHCD staff also noted that the list of upgraded protections is not presented in any particular order, level of importance, or effectiveness. The list serves as a starting point for future workgroups to consider.

- vii. The Advisory Group discussed the specific elements of ICC code change proposal E24-24 as modified by AMC2 (Shapiro MC-1). This proposal as modified would allow single-staircase (exit) buildings up to four stories with additional requirements including limiting net floor area, requiring sprinklers compliant with combustibile stairways regardless of construction type, prohibiting electrical receptacles in the stairway, certain requirements for fire alarms and smoke detection systems, and certain requirements for the openings to the stairway. The Advisory Group added to the report that the provisions of floor modification E24-MC1 may provide a beneficial framework for a future single staircase code change proposal.
- viii. Advisory Group members suggested additions to the benefits sections to more fully summarize the positions in the attached research articles included in the appendix of the report. Advisory Group members shared benefits of single-stair construction including the flexibility to add more types of multifamily housing, more natural light and ventilation, and adding to the historical appeal of downtown areas.
- ix. The Advisory Group made one edit to the recommendations. Advisory Group members specifically named the ICC code change proposal E24-24 as modified as a proposal that a special workgroup in the 2024 building code update cycle should discuss and consider.

After no other edits or additions were proposed by Advisory Group members, DHCD staff again opened the floor for public comments. No additional public comments were made.

Next Steps

The Advisory Group approved of the report's contents following the incorporation of the revisions discussed and agreed to during the meeting. DHCD staff discussed a deadline for accepting additional statements and research items to be included in the report appendix.