

Resiliency Sub Workgroup Meeting Summary

February 23, 2022 9:00 a.m. – 11:00 a.m.

Virtual Meeting: <https://vadhcd.adobeconnect.com/va2021cdc/>

ATTENDEES:

VA Department of Housing and Community Development (DHCD) Staff:

Jeff Brown: State Building Codes Director, State Building Codes Office (SBCO)

Richard Potts: Code Development and Technical Support Administrator, SBCO

Paul Messplay: Code and Regulation Specialist, SBCO

Florin Moldovan: Code and Regulation Specialist, SBCO

Travis Luter: Code and Regulation Specialist, SBCO

Jeanette Campbell: Administrative Assistant, Division of Building and Fire Regulations (BFR)

Sub Workgroup Members:

Charles Baker: Federal Emergency Management Agency (FEMA) Region 3

Debbie Messmer: Virginia Department of Emergency Management (VDEM)

Ellis McKinney: Virginia Plumbing and Mechanical Inspectors Association (VPMIA)

George Homewood: City of Norfolk, Planning Director

Joel Andre: American Institute of Architects (AIA), Virginia

John Harbin: Hampton Roads Planning District Commission (HRPDC)

Kenneth Somerset: Virginia Floodplain Management Association (VFMA)

Richard Gordon: Virginia Building and Code Officials Association (VBCOA)

Steve Shapiro: Apartment and Office Building Association (AOBA); Virginia Apartment and Management Association (VAMA)

Steve Sunderman: Resilient Virginia

Traci Munyan: DHCD, Resiliency

Interested Parties

Andrew Grigsby: Viridiant

Brandy Buford: Virginia Division of Conservation and Recreation (DCR)

Chris Stone: Clark Nexson, Virginia Beach, VP, Resiliency

Fred Kirby*: Virginia Department of General Services (DGS), Division of Engineering and Buildings (DEB) *standing in for Raka Goyal today

Maggie Odom-Goeller

Study Group Members not in attendance:

Raka Goyal: Virginia Department of General Services (DGS), Division of Engineering and Buildings (DEB)

Angela Davis: Virginia Division of Conservation and Recreation (DCR)

Casey Littlefield: International Association of Electrical Inspectors (IAEI), Virginia

Andrew Clark: Home Builders Association of Virginia (HBAV)

DISCUSSION:

Welcome and Introductions

Paul Messplay: Welcomed everyone to the meeting and thanked them for their time. He noted that the meeting is open to all for discussion, however, only the Sub Workgroup members will vote and be eligible to take official actions. He discussed features of the Adobe Connect meeting room, and asked the group to stay muted when not speaking and to identify themselves before speaking. He let the group know that there would be 5 minute breaks each hour and an hour for lunch at noon. At his invitation, the DHCD staff and participants introduced themselves.

Overview of VA Code Development Process

Paul: Shared a short slide presentation with the 2021 Code Cycle notable dates; description of Study Groups, Sub Workgroups and Workgroups; website for cdpVA, and where to find Virginia codes online at the ICC website.

Background

Paul: Gave background information about the Resiliency Sub Workgroup formation and prior areas of focus:

- Executive Order 24 - Governor Northam created in 2018, stating that DHCD shall consult with relevant stakeholders and subject matter experts to identify and suggest resiliency improvements to the USBC for the 2018 code update. This process is continuing to the 2021 cycle, even though the group is no longer bound by the 2018 order.
- Prior Sub Workgroup Focus – They considered multiple resiliency topics and how buildings and structures are impacted by events like flooding, moving & rising water, high winds, hurricanes and tornadoes, wildfires, seismic activity and terrorism. The group settled on 2 main threats – flooding and high wind.

Group Discussion

1. What is resiliency?

Paul: Asked the group to begin by discussing what resiliency means to them.

George Homewood: Thinks in terms of shocks & stresses. Hurricanes and other big events are shocks. Stresses are not big disasters for the community, but they can be a disaster for some individuals. To achieve resiliency, we want to not only survive, but thrive. Climate change and sea level rise is real. Storms are getting more frequent, longer and more intense. Our building environment isn't designed in a way to effectively manage these things, especially in low lying areas and coastal areas. He's concerned about where and why water accumulates rapidly.

Steve Sunderman: Climate change is real and the question is how to deal with it, besides just mitigation. People use the term "natural disasters", and he thinks they are really natural hazards. The issue is being prepared for a hazard, so that it doesn't become a disaster. Sustainability and resiliency seem to be conflated often. Sustainability is about resource conservation and the triple bottom line - prosperity, human activity and environment. Resiliency is more about preservation and preparation - being strong enough to withstand hazards. Destruction is the biggest problem with sustainability. To prevent destruction, something needs to be resilient.

Paul: There will be some energy proposals for the group to look at, and understanding the relationship between resiliency and sustainability will be helpful.

Andrew Grigsby: Thinks that Chris Stone shared a good comment in the chat box:

"Sustainability does not include the ability to respond and recover, but resilience does not include the ability for future generations to have resources."

Over the years, he's noticed that sustainability has been about how to maintain a certain quality of life and allow future generations to enjoy the same quality. It was about utilization of resources. Climate change is doing damage to that movement. Resiliency is about bouncing back and recovering in a way to thrive. We want a sustainable society, we realize failures due to increasing hazards, shocks and stresses, so we need to build more resilient systems due to those increased hazards.

Steve Shapiro: Would want the group to look at cost impact, as well as resiliency impact. As we all know, chapter 1 of the USBC talks about constructing with the least cost to maintain standards.

2. Area(s) of focus for this code cycle:

Paul: Last cycle, the Sub Workgroup found flooding and high wind to be the most important topics. Do we still want those, or focus on something else? Chris Stone put a list in the chat box of possible topics (stressors & shocks):

“Hurricanes, Earthquakes, Wildfires, Heat Waves, Blizzard, Pandemics, Flooding, Tornadoes, Acts of Terrorism, Civil Unrest, Dam Failure, Drought, Affordability, Aging Population, Food Scarcity, Sea Level Rise, Wealth Gap, Land Subsidence, Aging Infrastructure, Population Growth, Melting Polar Ice, Global Warming, Increasing Pollution.”

Chris Stone: This list was developed by the American Institute of Architects in 2017. He would also add the impact of increasing temperatures. Richmond and Norfolk are doing heat island studies. More people die from heat than any of these other listed items.

George: Thinks that flooding and wind should continue to be discussed. He also agrees with Chris that heat island impacts are important. Heat impact is felt more by lower income communities and also disproportionately impacts the aging population. He thinks that universal design would be a good way to have fewer barriers in construction and address all segments. There’s also a risk of wildfire and there are many things that can be done through the building code to reduce the potential of disaster due to wildfire.

Paul: There are some things that won’t be able to be addressed through the USBC (such as civil unrest, wealth gap, increasing population, etc.). Northern Virginia did an urban heat islands analysis last year, and he shared a link to the online report in the chat box. He asked the group what information they could share on this topic.

Chris: One of the issues is the design parameters. For example, NOAA Atlas 14, which hasn’t been updated since 2006, is used for precipitation. There is about a 20% increase in the IDF precipitation curves. It is similar with heat. Facilities are being designed with weather data that is stagnated, it will not be helpful for the long term of about 20 or 30 years.

George: Heat island can be addressed by how buildings are sited, like including areas of shade, which may also protect from rain and snow.

Chris: There was legislation that failed in the General Assembly this year, involving tree canopies. Tree canopies in urban areas do help with the heat island effect. Materials used can also help, such as reflective roofs.

Andrew: Storm water management can also help.

Paul: Heat islands does sound like an interesting topic to look at, and we can still look at the flooding and winds topics.

Steve Sh: George mentioned wildfires. ICC does have the Wildland-Urban Interface Code, which describes different ways to mitigate wildfires.

Steve Su: US Green Building Council has addressed heat island effects for many years, and we can look to them for recommendations.

Richard Gordon: Discussions about heat island may tend towards site design and also building design. Other things that lean towards site design are fire access and fire response, wind damage, trees falling, etc. Mitigating hazards through site design as a way of resiliency is important.

Paul: Topics don’t need to be decided on now, but group members should consider topics to consider between now and the next meeting. He asked the group for more thoughts.

Fred Kirby: A primary interest may be in the existing building code 502.1.1 regarding structural concrete. Retrofitting a weak first story for seismic activity can be part of resiliency and structural sustainability as well.

Paul: Posted a link in the chat box to chapter 11 of the existing building code about retrofitting.

3. Proposals for Consideration:

Paul: There are proposals on the cdpVA website now, which have resiliency impact statements. The task for the group is to discuss and determine if the proposals actually do have an impact on resiliency.

a) B1206.2-21

George: Whose definition of resiliency should we use? The writer of this proposal equates quality of life and resilience as the same thing. We may not all agree. In this case, I do not agree. Are we the arbiter of what resilience is in this case?

Paul: This group will determine what is resiliency and what is not. It is not defined in the code of Virginia.

Steve Su: Quality of life is part of resiliency, as in the case of protecting life and safety issues. As an example, if electric is lost for a period of time due to not being resilient, quality of life is impacted. Environment, people and cost are the trifecta that should be balanced.

Paul: Since there were no other comments, he asked for a vote of thumbs up or down to see if noise as a quality of life issue is part of resiliency. Eight down, two up (Charles, Traci), Kenneth abstained.

Steve Sh: He doesn't think this is resiliency, but even if he did think it was, he would still need to define noise level.

Paul: According to the vote, proposition B1206.2-21 does not rise to level of resiliency.

b) EB502.1.1-21

Paul: Fred mentioned the structural concrete in existing building code 502.1.1.

Fred: He is interested to find out when to upgrade, and what triggers the requirement.

Paul: This proponent references ACI 562 about additions and repair to structural concrete. The bottom of page 2 says that use of ACI code 562 standard helps ensure that repairs are properly performed and will satisfy an acceptable service life. Without minimum standards, repairs may not satisfy the intent of the code or expectations of the owners or public. Proper evaluation and repairs will improve resiliency of the building. News coverage demonstrates that there is a potential risk to life due to deteriorating concrete and inappropriate repairs. ACI 562 is referenced as a document for assessing and designing repairs and additions to structural concrete.

Richard G: Hasn't reviewed extensively ACI 562, but he has encountered poor concrete construction in older buildings, and proper repair would be beneficial. It leads to discussion about the condition of existing buildings

Ellis Mckinney: They have a lot of concrete repair in Arlington. He is not an expert in ACI 562, but he has experienced a lot of slab and garage repair in mixed use developments. Another tool to evaluate would be helpful. Much of the repair takes place at night, when after-hours inspections are needed to verify. This would be another tool in the toolbox, but may not rise totally to the level of resiliency in the long term. He does think the proposal itself is a good one.

Paul: The group will vote thumbs up or down to decide if the resiliency statement in the proposal is impactful, and should be discussed from a resiliency standpoint.

Steve Sh: To clarify, is the voting to determine if the proposal is resilient, or for support of the proposal as a whole?

Paul: The thumbs up will indicate agreement with the resiliency impact statement and thumbs down means disagreement with the resiliency impact statement. The group will not necessarily vote to show agreement with the proposal, but if it is part of resiliency, the group will provide an analysis for the Board of Housing and Community Development.

Steve Sh: Last cycle, the group did or didn't support individual proposals based on their content. Will the group not do that this time?

Jeff Brown: Last cycle, the group developed some proposals, and did some analysis of other proposals submitted. The group could also take a position on the proposals submitted if desired, when they do have a positive impact on resiliency. The group could actually become proponents or co-proponents of the proposals. If the group does not support a proposal, that could also be documented to bring to the full Workgroups.

Fred: Looking at the resiliency impact statement, he takes issue because the existing building code already covers it. He wonders if or what more the group can add to the statement. In California, they had weak first story buildings, and they evaluated them preemptively, since they are in a seismic area. In Virginia, the buildings stay as they are, unless something changes which requires a building permit, and then would trigger the existing building code. He would

ask if the existing building stock or a segment thereof would have an issue that would cause this type of proposal to be needed over and above triggering the existing building code provision.

{BREAK: 10:07-10:12}

Paul: Steve Sunderman sent a document about the relationship between resiliency and sustainability. Paul dropped it in the document pod for anyone to view or download. He asked if Richard Gordon wanted to comment verbally on what Fred said earlier. Richard Gordon commented in the chat box:

"I think Mr. Kirby's comments speak to the greater issue of evaluating existing buildings, which is an important component of the resiliency discussion. This specific proposal would only provide guidance on assessment and repairs; it would not require any assessments on existing buildings. Any requirements for evaluation of existing buildings not undergoing alteration or repair should be in the Maintenance Code, not the VEBC"

Richard G: Supports the idea of including a discussion about evaluating existing buildings. Hazards related to existing buildings have not been specifically called out as a discussion item.

Fred: He wants to be careful to watch costs and not have unfunded mandates. He wants to keep the community safe, but watch costs, especially in existing building code requirements.

Paul: He could try to get a copy of ACI 562 if the group wants to see it. He asked the group to vote on if they want to see ACI 562 before voting on the resiliency impact statement. 8 yes and 3 no (George, John & Steve Sunderman)

Jeff: posted in the chat box:

"Note from ACI: COMPLIMENTARY COPIES OF ACI 562-21 are available upon request for DHCD staff, BHCD and Workgroup members. Those who would like a copy, please email Kerry Sutton at kerry.sutton@concrete.org and a link will be sent to you from ACI to access the document."

Paul: Asked those who voted thumbs down why they thought it was not necessary to wait to review the ACI before voting.

Steve Su: Thinks the ACI standards are well researched and documented, he has no need to look at the details. He thinks the concept is viable, and doesn't need to look at the ACI.

George, John and Andrew: all agreed with Steve.

Paul: Will still defer the vote until the rest of group who wants to look at the ACI gets to review it. He asked people with thumbs up to ask Kerry Sutton for the ACI, and be ready to vote on the proposal's resiliency impact at next meeting.

Steve Su: Asked if Paul could request the ACI from Kerry once and supply it to the group.

Paul: Licenses are done on an individual basis, so anyone who wants to see it has to request it themselves.

c) EB1102-21

Paul: This proposal is in regards to lithium ion technology energy storage systems. The purpose is to address protection shortcomings in the design, installation and maintenance of existing lithium ion energy storage systems by requiring a hazard analysis. This analysis would provide an early warning notification about a thermal runaway event, where none currently exists. This would increase resiliency of existing ESS by requiring an assessment of potential hazards that could destroy the ESS and provide unwanted exposure. Addressing these potential hazards upfront, provides for long term resilience of the systems and buildings where they are housed. After a few minutes review, he asked for thumbs up or down vote on resiliency.

Andrew: He's curious about table 1207.1.1. What is the capacity of the batteries? Would larger ones need it and not smaller ones? Is there a threshold?

Paul: Florin Moldovan posted a link to IFC chapter 12 in the chat box, answering the question.

Paul: 11 thumbs up, Steve Shapiro – thumbs down.

Andrew: It looks like the noted 12kwh applies only to a residential size battery. Would this hazard analysis be required from the manufacturer or the installer? For a larger system (industrial), he would definitely want it.

Paul: Residential applications are excluded via exception.

d) FP901.4.8-21

Paul: The proponent says that resiliency will be impacted because there will be better tools available to fire code officials to identify building construction features that must be maintained. The SFPC Sub Workgroup looked at it last week; some language was modified, but that did not affect the resiliency statement. He asked for thumbs up or down. 13 thumbs up, none down.

Steve Sh: His opposition to the last one, (EB1102-21) was because it seems retroactive – even before deciding on resiliency statement.

George: Isn't the point to decide on the resiliency statement only, or is it to include other things?

Paul: The mission is to decide on resiliency. Comments about other things can be made and captured.

George: Also, even if we like it for resiliency, we can still not like the proposal.

Paul: Yes, it goes both ways. The proposal can be liked or disliked, but the group still has to vote on resiliency.

Steve Sh: He still stands on his comments, and if it's retroactive, why bother voting on resiliency, because it shouldn't be considered anyway.

e) FP901.6.3.2-21

Paul: This proposal calls for a required annual inspection sticker to be placed on fire protection systems in a location determined by the fire official. The proponent says it will increase resiliency since it will provide inspection status awareness. He asked for comments, and thumbs vote when ready. 9 thumbs up, 2 down (George and Richard).

Fred: Thinks it's already addressed in NFPA 25, so he would not consider it to be an impact to resilience.

Richard: Looked in NFPA 25 and can't find this requirement in there. He agrees with the proposal itself, but doesn't think it impacts resiliency, because the inspections and documentation are in NFPA, so the sticker isn't very important.

George: Agrees that it's only convenient for a glance, and doesn't help with resilience, since inspections have to be done anyway and documented elsewhere.

Steve Su: Can there be three voting categories: agree with resiliency impact, disagree with resiliency impact, and no impact to resiliency?

Paul: Yes. He asked the group if anyone considered this proposal to be neutral – with no impact either way on resiliency. There were no additional comments.

f) FP1201.3-21

Paul: The proposal references the building code for hazardous material quantities, and allows the fire code official to require a hazard mitigation analysis for quantities in excess of those limits cited. The proponent says resiliency will be increased by improving correlation between the SFPC and applicable building code for energy storage system requirements.

George: Asked for a neutral voting option symbol (besides thumbs up or down).

Paul: Suggested that the group use the smiling face symbol to vote that there was a neutral impact on resiliency (neither yes nor no).

Richard G: Doesn't think that any of the propositions will be likely to decrease resiliency – they will probably all be an increase to resiliency or neutral.

Paul: That will probably be the case, but since cdpVA gives all 3 options, we should vote accordingly.

Andrew: Kilowatt hour energy is referenced. Wouldn't the issue be about kilowatts used (instantaneous power), not hours (which would be over time)?

Fred: There can be a large kilowatt available for a short period of time, which would require a relatively small battery. However, it's about storage, so hours would be needed for total capacity.

Andrew: Agrees, but the energy systems in the building would be rate of flow. If hours was removed, it would make more sense.

Richard G: kwh is total storage and the standard measure used. It does seem that the hazard they are trying to address is the potential total storage in the system.

Steve Su: Focusing on the resiliency impact statement, does the increase in correlation of fire and building codes increase resiliency? If it does, it seems like it would be positive on the resiliency scale and a good resiliency statement.

Paul: Yes, that is what the vote should be about. Namely, whether or not correlating the SFPC and the applicable building code increases resiliency.

Andrew: To sum it up, it sounds like they are saying don't have too big of a battery. He will take it on faith that it follows the model code.

Paul: There was some discussion about this in the SFPC Sub Workgroup, and they agreed that the proposal was technically correct. They agreed to support the proposal.

Paul: Resiliency impact vote resulted in 10 thumbs up, one down – Charles.

Assignments and Next Steps

Paul: Looking for volunteers to work on the three projects below. Is there anything people know about that's coming soon (2024), which will have a positive resiliency impact, and which the group may want to talk about and consider making a proposal? What about proposals in cdpVA now, particularly ones marked with neutral impacts? Reviewing George's additions?

1. Looking ahead to the 2024 Codes

Ellis: Asked Paul to clarify this assignment.

Paul: wants someone to go into cdp Access on the national level to look for anything set for the 2024 cycle that might impact resiliency?

Ellis: Volunteered to do this. He participates in the ICC region 7 meetings on this topic.

2. Reviewing other proposals in cdpVA

Steve Su: Will look in cdpVA for anything that is neutral in resiliency to see if there is a positive or negative impact to resiliency.

Paul: will send a report to the group with how many are out there. Steve Sunderman can work on this, and if there are a lot, someone else can help. He doesn't think there are too many, but he will send the report.

3. Review proposed amendments provided by George Homewood

John: will look at George's proposals. Charles and George will also help.

Next Meeting

Paul: Thanked everyone. Asked group members to send new information as soon as it is available. He will send a poll for the next meeting date.