

General Stakeholder Workgroup Meetings

June 7-15, 2022

9:00 a.m. Each Day

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

AGENDAS

June 8, 2022

(Begin at 9:00 am)

VEBC Proposals

1. EB102.2.2(2)-21
2. EB103.9-21
3. EB202-21
4. EB304.3.1-21
5. EB404.3-21
6. EB604-21
7. EB805.2-21
8. EB805.3-21
9. EB805.3(2)-21
10. EB1102-21
11. EB1201.7-21
12. EB1209.1-21

General Stakeholder Workgroup Meeting Descriptions (Subject Groupings)

VCC: Virginia Construction Code (USBC Part I) including USBC Part I administrative provisions; IBC; VCS; VADR; IBSR; and MHSR (**Proposal Designations in cdpVA:** B; BF; IB; MH; CS; AD)

VEBC: Virginia Existing Building Code (USBC Part II) including USBC Part II administrative provisions; and IEBC (**Proposal Designations in cdpVA:** EB)

Energy: All technical energy provisions of the VCC, IECC and IRC; does not include administrative provisions (**Proposal Designations in cdpVA:** EC; REC)

VMC: Virginia Maintenance Code (USBC Part III) including USBC Part III administrative provisions (**Proposal Designations in cdpVA:** PM)

SFPC: Virginia Statewide Fire Prevention Code including SFPC administrative provisions (**Proposal Designations in cdpVA:** FP)

VRC: Residential technical provisions of the VCC and the IRC; does not include administrative or trades provisions (**Proposal Designations in cdpVA:** RB)

Trades: All technical trade provisions (mechanical, electrical, plumbing and fuel gas), including residential trade provisions, of the VCC, IRC, IPC, IMC, and IFGC; does not include administrative provisions (**Proposal Designations in cdpVA:** M; P; E; RE; RM; RP)

2021 cdpVA Proposal Subject Matter Designations (cdpVA Proposal Name “Agenda Number” Prefixes)

The following prefixes will be utilized as part of each proposal name to assist in identifying the subject matter of the proposal. DHCD staff assign proposal names after they have been submitted, reviewed and before they are placed in “Ready for Public Comment” status.

B = Virginia Construction Code
EB = Virginia Existing Building Code
PM = Virginia Maintenance Code
FP = Statewide Fire Prevention Code
BF = Virginia Construction Code IFC
EC = Virginia Energy Conservation Code
M = Virginia Mechanical Code
P = Virginia Plumbing Code
E = VCC Electrical
RB = Virginia Residential Code
REC = Virginia Residential Code Energy
RE = Virginia Residential Code Electric
RM = Virginia Residential Code Mechanical
RP = Virginia Residential Code Plumbing
IB = Industrialized Building Safety Regulations
MH = Manufactured Home Safety Regulations
AD = Virginia Amusement Device Regulations
CS = Virginia Certification Standards

Example: cdpVA Proposal Agenda Number “**RM**2301.1-21” indicates a proposal to the mechanical provisions (VRC Section M2301.1) of the 2021 Virginia Residential Code.

EB102.2.2(2)-21

Proponents: Bryan Holland (bryan.holland@nema.org); Megan Hayes (megan.hayes@nema.org)

2018 Virginia Existing Building Code

Revise as follows:

102.2.2 Reconstruction, alteration, or repair in Group R-5 occupancies. Compliance with this section shall be an acceptable alternative to compliance with this code at the discretion of the owner or owner's agent. The VCC may be used for the reconstruction, *alteration*, or *repair* of Group R-5 *buildings* or *structures* subject to the following criteria:

1. Any reconstruction, *alteration* or *repair* shall not adversely affect the performance of the *building* or *structure*, or cause the *building* or *structure* to become unsafe or lower existing levels of health and safety.
2. Parts of the *building* or *structure* not being reconstructed, altered, or repaired shall not be required to comply with the requirements of the VCC applicable to newly constructed *buildings* or *structures*.
3. The installation of material or *equipment*, or both, that is neither required nor prohibited shall only be required to comply with the provisions of the VCC relating to the safe installation of such material or *equipment*.
4. Material or *equipment*, or both, may be replaced in the same location with material or *equipment* of a similar kind or capacity.
5. In accordance with § 36-99.2 of the Code of Virginia, installation or replacement of glass shall comply with Section R308 or Chapter 24 of the VCC.

Exceptions:

1. This section shall not be construed to permit non-compliance with any applicable flood load or flood-resistant construction requirements of the VCC.
2. Reconstructed decks, balconies, porches, and similar *structures* located 30 inches (762 mm) or more above grade shall meet the current code provisions for structural loading capacity, connections, and structural attachment. This requirement excludes the configuration and height of handrails and guardrails.
3. Replacement of smoke alarms shall be with devices listed in accordance with UL217 and that are no more than 10 years from the date of manufacture.

302.3 Smoke alarms. ~~Repair or replacement~~ Replacement of smoke alarms shall be with devices listed in accordance with UL217 and that are no more than 10 years from the date of manufacture. ~~Battery-only powered devices shall be powered by a 10-year sealed battery.~~

Reason Statement: First, smoke alarms are not "repaired," but designed to be replaced after ten years, so this terminology is being removed from 302.3. Second, this public comment is seeking to ensure the safety of occupants in existing buildings by removing a requirement for battery-only smoke alarms to be powered by a 10-year sealed battery. Requiring sealed, ten-year devices may preclude some important safety features, such as wireless interconnection and low frequency notification. In addition, research shows that sealed products may not last 10 years. According to a 2015 NFPA Study titled "Smoke Alarms in US Home Fires" 47% of the 10-year battery smoke alarms installed in 427 homes had dead batteries. A study of smoke alarms installed in Georgia (<https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1115&context=biostat-facpubs>) found the mean survival time of sealed ten year devices was just over six years. Also, the ICC membership disapproved proposal EB80-19 for the 2021 edition of the International Existing Building Code. This proposal was seeking to permit battery operated smoke alarms (sealed ten-year) to replace existing AC/DC single-station smoke alarms in sleeping units of Group I and R occupancies. It's important to note, that the ICC Fire Code Action Committee, UL and NEMA spoke against EB80-19.

The proposed addition of Exception 3 to 102.2.2 aligns that section with the proposed change in 302.3.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

This proposal simply harmonizes section 302.3 with a new exception in 102.2.2. The editorial revisions to 302.3 do not have a cost impact.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
 - Consensus Disapproval
 - Carry Over to Next Meeting
 - Carry over to Final
 - Non-Consensus
 - None
-

Public Comments for: EB102.2.2(2)-21

This proposal doesn't have any public comments.

EB103.9-21

Proponents: Resiliency Sub-Workgroup

2018 Virginia Existing Building Code

Revise as follows:

103.9 Construction documents. Construction documents shall be submitted with the application for a permit. The work proposed to be performed on an *existing building or structure* shall be classified on the construction documents as repairs, *alterations, change of occupancy, addition, historic building, or moved building*. *Alterations* shall further be classified as Level 1 or Level 2. Any required elevation certificate shall be prepared by a certified land surveyor or registered professional civil engineer licensed in Virginia.

Exception: Construction documents or classification of the work does not need to be submitted when the building official determines the proposed work does not require such documents, classification, or identification.

Reason Statement: This proposal is being submitted on behalf of the Resiliency Sub-workgroup and it seeks to provide clarification on which professionals are permitted to complete and furnish any required flood elevation certificate.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This code change will have no impact on the cost of construction.

Resiliency Impact Statement: This proposal will increase Resiliency

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
 - Consensus Disapproval
 - Carry Over to Next Meeting
 - Carry over to Final
 - Non-Consensus
 - None
-

Public Comments for: EB103.9-21

This proposal doesn't have any public comments.

EB202-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

[A] CHANGE OF OCCUPANCY. Either of the following shall be considered a *change of occupancy* where the current VCC requires a greater degree of ~~accessibility~~, structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current *building* or *structure*:

1. Any change in the occupancy classification of a *building* or *structure*.
2. Any change in the purpose of, or a change in the level of activity within, a *building* or *structure*.

Note: The use and occupancy classification of a *building* or *structure*, shall be determined in accordance with Chapter 3 of the VCC.

Reason Statement: In the 2018 VEBC and IEBC, change of occupancy driven accessibility requirements were removed from the code. This was done because the ADA does not require accessibility upgrades based on what the code defines as change of occupancy. Since there is no change of occupancy driven accessibility requirements, it makes no sense to use accessibility as a trigger to determine change of occupancy.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
Since there are no current change of occupancy driven accessibility requirements this change will have no affect on cost.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
Since there are no current change of occupancy driven accessibility requirements this change will have no affect on cost.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
- Consensus Disapproval
- Carry Over to Next Meeting
- Carry over to Final
- Non-Consensus
- None

Public Comments for: EB202-21

This proposal doesn't have any public comments.

EB304.3.1-21

Proponents: Allison Cook (acook1@arlingtonva.us); Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

304.3.1 Operational constraints. Where bars, grilles, grates, or similar devices are installed over emergency escape and rescue openings as permitted by Section 1030.5 of the VCC, smoke alarms shall also be provided in accordance with Section 907.2.10 of the VCC. In R-5 occupancies, bars, grilles, grates, or similar devices are permitted to be installed over emergency escape and rescue openings in accordance with section R310.4.4 of the VRC.

Reason Statement: There should be the correct pointer for R-5 to the VRC

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a clarification with a pointer to the correct VRC section. So, there is no change in cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
- Consensus Disapproval
- Carry Over to Next Meeting
- Carry over to Final
- Non-Consensus
- None

Public Comments for: EB304.3.1-21

This proposal doesn't have any public comments.

EB404.3-21

Proponents: Ronald Clements (clementsro@chesterfield.gov)

2018 Virginia Existing Building Code

Revise as follows:

404.3 Alterations affecting an area containing a primary function. Where an *alteration* affects or could affect the usability of or access to an area containing a *primary function*, the route to the *primary function* area shall be accessible. ~~The accessible route to the *primary function* area shall include toilet facilities and drinking fountains that shall also be accessible to and usable by individuals with disabilities, serving the area of primary function.~~ Toilet facilities and drinking fountains that shall also be accessible to and usable by individuals with disabilities, serving the area of primary function, including the route from the area of primary function to these facilities, shall be accessible.

Exceptions:

1. The cumulative costs of providing the accessible route, toilet facilities and drinking fountains are not required to exceed 20 percent of the costs of the *alterations* affecting the area of *primary function*.
2. This provision does not apply to *alterations* limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to *alterations* limited solely to mechanical systems, electrical systems, installation or *alteration* of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to *alterations* undertaken for the primary purpose of increasing the accessibility of a facility.
5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

Reason Statement: The aspect of this provision that addresses toilet facilities and drinking fountains has been a source of confusion that predates the VEBC. It is also a source of confusion nationally. This code change is identical to code change EB25-22 that was approved by the ICC IEBC committee at the 2022 spring committee action hearings. This clarifies how to apply the code provision to existing toilet facilities and drinking fountains by addressing the requirement to upgrade toilet facilities and drinking fountains separately from the requirement to upgrade the accessible route to the primary function area. This code change is not changing the technical requirement of the code, it is simply an editorial change to clarify how to apply the current requirement.

Cost Impact: The code change proposal will not increase or decrease the cost of construction. This is editorial and therefore has no affect on the cost of construction.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency. This is editorial and therefore has no affect on the cost of construction.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
- Consensus Disapproval
- Carry Over to Next Meeting
- Carry over to Final
- Non-Consensus
- None

Public Comments for: EB404.3-21

This proposal doesn't have any public comments.

EB604-21

VEBC: 604 (New)

Proponents: Shahriar Amiri (samiri@arlingtonva.us)

2018 Virginia Existing Building Code

Add new text as follows:

604 Energy Storage Systems. Proponents: Shahriar Amiri (samiri@arlingtonva.us)

4/24/2021

2021 Virginia Existing Building Code

Section 604

Energy Storage Systems

604.1 Retrofits. Retrofitting of an existing ESS shall comply with the following:

1. A construction permit shall be obtained in accordance with Section 105.6.5 of VCC.
2. New batteries, battery modules, capacitors and similar ESS components shall be *listed*.
3. Battery management and other monitoring systems shall be connected and installed in accordance with the manufacturer's instructions.
4. The overall installation shall continue to comply with UL 9540 listing requirements, where applicable.
5. Retrofits shall be documented in the service records log.

604.1.1 Retrofitting lead acid and nickel cadmium. This section shall not apply to retrofitting of lead-acid and nickel-cadmium batteries with other lead-acid and nickel-cadmium batteries at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC.

604.2 Replacements. Replacements of ESS shall be considered new ESS installations and shall comply with the provisions of Section 432 as applicable to new ESS. The ESS being replaced shall be decommissioned in accordance with Section 432.2.3.

604.3 Reused and repurposed equipment. Equipment and materials shall only be reused or reinstalled as permitted in Section 112.4. Storage batteries previously used in other applications, such as electric vehicle propulsion, shall not be reused in applications regulated by Chapter 4 unless approved by the code official and unless the equipment is refurbished by a battery refurbishing company approved in accordance with UL 1974.

604.4 Deployment documents. The following information shall be provided with the permit applications for mobile ESS deployments:

1. Relevant information for the mobile ESS equipment and protection measures in the *construction documents* required by Section 432.1.3 of VCC.
2. Location and layout diagram of the area in which the mobile ESS is to be deployed, including a scale diagram of all nearby exposures.
3. Location and content of signage, including no smoking signs.
4. Description of fencing to be provided around the ESS, including locking methods.
5. Details on fire suppression, smoke and automatic fire detection, system monitoring, thermal management, exhaust ventilation and explosion control, if provided.
6. For deployment, the intended duration of operation, including anticipated connection and disconnection times and dates.
7. Location and description of local staging stops during transit to the deployment site. See Section 432.10.7.5 of VCC.
8. Description of the temporary wiring, including connection methods, conductor type and size, and circuit overcurrent protection to be provided.
9. Description of how fire suppression system connections to water supplies or extinguishing agents are to be provided.

10. Contact information for personnel who are responsible for maintaining and servicing the equipment and responding to emergencies as required by Section 432.1.6.1 of VCC.

432.3.8 Replacements. Replacements of ESS shall be considered new ESS installations and shall comply with the provisions of Section 432 of VCC as applicable to new ESS. The ESS being replaced shall be decommissioned in accordance with Section 432.2.3 of VCC.

432.2.1 Commissioning. Commissioning of existing ESS that have been retrofitted, replaced or previously decommissioned and are returning to service shall be subject to *special inspection* and conducted prior to the ESS being placed in service in accordance with a commissioning plan that has been *approved* prior to initiating commissioning. The commissioning plan shall include the following:

1. A narrative description of the activities that will be accomplished during each phase of commissioning, including the personnel intended to accomplish each of the activities.
2. A listing of the specific ESS and associated components, controls and safety-related devices to be tested, a description of the tests to be performed and the functions to be tested.
3. Conditions under which all testing will be performed, which are representative of the conditions during normal operation of the system.
4. Documentation of the owner's project requirements and the basis of design necessary to understand the installation and operation of the ESS.
5. Verification that required equipment and systems are installed in accordance with the *approved* plans and specifications.
6. Integrated testing for all fire and safety systems.
7. Testing for any required thermal management, ventilation or exhaust systems associated with the ESS installation.
8. Preparation and delivery of operation and maintenance documentation.
9. Training of facility operating and maintenance staff.
10. Identification and documentation of the requirements for maintaining system performance to meet the original design intent during the operation phase.
11. Identification and documentation of personnel who are qualified to service, maintain and decommission the ESS, and respond to incidents involving the ESS, including documentation that such service has been contracted for.
12. A decommissioning plan for removing the ESS from service, and from the facility in which it is located. The plan shall include details on providing a safe, orderly shutdown of energy storage and safety systems with notification to the code officials prior to the actual decommissioning of the system. The decommissioning plan shall include contingencies for removing an intact operational ESS from service, and for removing an ESS from service that has been damaged by a fire or other event.

Exception: Commissioning shall not be required for lead-acid and nickel-cadmium battery systems at facilities under the exclusive control of communications utilities that comply with NFPA 76 and operate at less than 50 VAC and 60 VDC. A decommissioning plan shall be provided and maintained where required by the *fire code official*.

432.10.6 Charging and storage. Installations where mobile ESS are charged and stored shall be treated as permanent ESS indoor or outdoor installations and shall comply with the applicable sections of VCC.

Reason Statement: An increased number of electrical energy storage systems (ESS) utilizing stationary storage batteries are appearing on the market to help meet the energy needs of society. This proposal does not mandate that ESS or stationary battery storage systems be provided but includes basic safety requirements and minimum safeguards for the installation that should be applied if such systems are provided.

This proposal incorporates the building related provisions from the 2021 edition of the International Fire Code into the Virginia Existing Building Code. Doing so is intended to reduce confusion and clearly define the building parameters necessary for the evolving technology, distinct from the operational needs.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The code change proposal will not increase or decrease the cost of construction. Some of the requirements in this proposal have the potential to increase the cost of providing ESS installations. However, the provisions in this proposal better address risks and owner/user needs in buildings and outdoor installations. Any increased cost addresses the hazards that were not contemplated in previous code editions due to energy storage technology advancements.

EB805.2-21

Proponents: Ben Rabe (ben@newbuildings.org)

2021 International Energy Conservation Code

Revise as follows:

R502.3.2 Heating and cooling systems. HVAC ducts newly installed as part of an *addition* shall comply with Section R403.

Exception: Where ducts from an existing heating and cooling system are extended to an ~~addition~~ addition, Sections R403.3.5 and R403.3.6 shall not be required.

R503.1.2 Heating and cooling systems. ~~HVAC ducts newly~~ New heating, cooling and duct systems newly installed as part of an *alteration* shall comply with Section ~~R403~~ R403. Alterations to heating, cooling and duct systems shall comply with this section. **Exception:** Where ducts from an existing heating and cooling system are extended to an *addition*.

R503.1.2.1 Duct Leakage. Where an *alteration* includes any of the following, ducts shall be tested in accordance with Section R403.3.5 and shall have a total leakage less than or equal to 12.0 cubic feet per minute (339.9 L/min) per 100 square feet (9.29 m²) of conditioned floor area:

1. Where 25% or more of the registers that are part of the duct system are relocated.
2. Where 25% or more of the total length of the ducts in the system are relocated.
3. Where the total length of all ducts in the system is increased by 25% or more.

Exception: Duct systems located entirely inside a *conditioned space* in accordance with R403.3.2.

Reason Statement: This proposal requires that existing ductwork serving new equipment in additions and alterations is tested. In an alteration, all ductwork serving new equipment will need to be tested. In additions, the ductwork serving the addition, both existing and new ductwork, will need to be tested if it increases the total volume of the ductwork serving the addition by more than 20%. The proposal does not include a performance criterion for the testing; the testing is informational.

The requirements for duct construction and sealing in the IECC have developed substantially over recent code cycles. Fiberboard materials, cloth tape, un-sealed duct joints, cavity plenum returns and other materials and approaches that can lead to very leaky ducts were once commonplace but are not now allowed by the IECC. The result is that the ductwork in many existing buildings fall far below modern standards.

Cost Impact: The code change proposal will increase the cost of construction

Duct tightening can be a very cost-effective energy retrofit. The replacement of equipment or substantial expansion of existing ductwork present prime opportunities to undertake this testing and will provide project teams and building owners important information about the relative need and savings opportunity that could come from duct tightening projects. It will also give project teams important information for configuring new equipment and ductwork to ensure the whole system performs effectively.

Resiliency Impact Statement: This proposal will increase Resiliency

Resiliency is an essential component of adapting to the effects of climate change. Requiring duct testing for alterations increases efficiency and wasted energy though leaky ducts. As explained in reason statement, by delivering air where it was intended and not into wall cavities, homeowners benefit from proper temperature distribution in their homes, which should also decrease the amount of energy needed to overheat or overcool some parts of the home to get others to the right temperature. This also reduces the buildings overall reliance on energy, reducing carbon emissions directly and indirectly, lessening the impact on climate change and climate related events. By reducing overall energy use, this measure may contribute to a reduction in peak demand increasing the resiliency of the grid during high usage events.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
- Consensus Disapproval
- Carry Over to Next Meeting

- Carry over to Final
 - Non-Consensus
 - None
-

Public Comments for: EB805.2-21

This proposal doesn't have any public comments.

Proposal # 1074

EB805.3-21

Proponents: Ben Rabe (ben@newbuildings.org); Kimberly Newcomer (kim@newbuildings.org)

2021 International Energy Conservation Code

Add new text as follows:

C502.2.3.1 Mechanical systems acceptance testing. New mechanical systems that serve additions shall comply with Sections C408.2.2, C408.2.3 and C408.2.5.

Exceptions:

1. Mechanical systems and service water heater systems in buildings where the total mechanical equipment capacity is less than 480,000 Btu/h (140.7 kW) cooling capacity and 600,000 Btu/h (175.8 kW) combined service water-heating and space-heating capacity.

2. Systems included in Section C403.5 that serve individual dwelling units and sleeping units .

C502.2.4.1 Service hot water systems acceptance testing. New service hot water systems that serve additions shall comply with Sections C408.2.3 and C408.2.5.

Exceptions:

1. Service water heater systems in buildings where the total mechanical equipment capacity is less than 600,000 Btu/h (175.8 kW) combined service water-heating and space-heating capacity.

2. Systems included in Section C403.5 that serve individual dwelling units and sleeping units.

C502.2.6.3 Lighting acceptance testing. New lighting systems that serve additions shall comply with Section C408.3.

Reason Statement: Due to the way that the charging language in the IECC is structured, new mechanical, water heating and lighting systems in additions do not need to meet the commissioning / acceptance testing requirements that the same systems in new construction would need to meet. This allows new systems in additions to go without this vital installation step and leaves them vulnerable to poor performance from installation. This proposal closes that loophole.

The proposal includes specific references to the appropriate commissioning /acceptance testing requirements in section C408:

- The balancing (C408.2.2), functional testing (C408.2.3) and documentation (C408.2.5) requirements for HVAC systems.
- The functional testing (C408.2.3) and documentation (C408.2.5) requirements for water heating systems
- The functional testing, documentation and reporting requirements for lighting (C408.3).

It repeats the system-size thresholds in the charging language in C408. The proposal also does not include references to the commissioning plan requirement (C408.2.1) for HVAC equipment. In this way, it has the same scope as the requirements for new construction. Since it references only new equipment in the addition itself, it avoids potentially requiring changes to the existing building systems.

Cost Impact: The code change proposal will increase the cost of construction

The proposal will increase the cost of construction. However, these requirements have already been found to be sufficiently cost effective to be included in the code for new construction.

Resiliency Impact Statement: This proposal will increase Resiliency

Resiliency is an essential component of adapting to the effects of climate change. Commissioning for existing building alterations helps building owners to understand the operations of their building systems and areas or operating sequences of concern. By understanding how systems will respond under a variety of operation conditions, building managers will be better equipped to adjust schedules or settings if needed in response to a climate, emergency, or resilience event. Systems that are commissioned additionally are operating at optimized conditions, meaning parts and pieces of the system will not "short-cycle" or run longer or more frequently than intended in design. This will provide for overall longevity of the building systems as well – creating a different type of resilience and reliability for everyday operations and the building owner.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
- Consensus Disapproval
- Carry Over to Next Meeting
- Carry over to Final
- Non-Consensus
- None

Public Comments for: EB805.3-21

This proposal doesn't have any public comments.

EB805.3(2)-21

Proponents: Ben Rabe (ben@newbuildings.org); Kimberly Newcomer (kim@newbuildings.org)

2021 International Energy Conservation Code

Add new text as follows:

C503.4.2 Mechanical system acceptance testing.

Where an alteration requires compliance with Section C403 or any of its subsections, mechanical systems that serve the alteration shall comply with Sections C408.2.2, C408.2.3 and C408.2.5.

Exceptions:

1. Mechanical systems and service water heater systems in buildings where the total mechanical equipment capacity is less than 480,000 Btu/h (140.7 kW) cooling capacity and 600,000 Btu/h (175.8 kW) combined service water-heating and space-heating capacity.
1. Systems included in Section C403.5 that serve individual dwelling units and sleeping units.

C503.5.1 Service hot water system acceptance testing. Where an alteration requires compliance with Section C404 or any of its subsections, service hot water systems that serve the alteration shall comply with Sections C408.2.3 and C408.2.5.

C503.6.1 Lighting acceptance testing. Where an alteration requires compliance with Section C405 or any of its subsections, lighting systems that serve the alteration shall comply with Section C408.3.

Reason Statement: The IECC requires that new mechanical, hot water and lighting systems comply with the acceptance testing requirements of C408. However, the IECC commentary for C503 states that unaltered portions of systems do not have to be brought into compliance with the code. This means that the requirements of C408 only apply to the new portions of existing systems. However, the whole purpose of C408 is to ensure that building systems meet and document a minimum level of system configuration. Even when only part of a system is replaced, there is still the need to ensure this minimum level of system configuration for the whole building. Even in like-for-like replacements, new equipment can have different operating characteristics. It is therefore important to ensure that the whole system is operating appropriately after new components are installed, not just the new components.

Additionally, all systems see their performance degrade over time as components wear, operational parameters change and modifications accumulate. The installation of new portions of equipment also presents the most reasonable and cost-effective opportunity to recalibrate the system based on current operations. Therefore, this proposal requires that the whole system meet relevant C408 requirements, rather than just the new components. The proposal is tailored to focus on the parts of C408 that are relevant to existing buildings rather than just a blanket reference to C408 and includes specific references to the appropriate commissioning /acceptance testing requirements:

- The balancing (C408.2.2), functional testing (C408.2.3) and documentation (C408.2.5) requirements for HVAC systems.
- The functional testing (C408.2.3) and documentation (C408.2.5) requirements for water heating systems
- The functional testing, documentation and reporting requirements for lighting (C408.3).
- It repeats the system-size thresholds in the charging language in C408. In this way, it has the same scope as the requirements for new construction.

The proposal does not include references to the commissioning plan requirement (C408.2.1) for HVAC and SHW equipment (C408.2.4) since these requirements are most appropriate for new construction.

Retro-commissioning and building re-tuning is generally accepted as one of the most cost-effective energy efficiency measures for existing buildings. Average savings for building re-tuning is 12%, and studies have found savings as high as 52%.¹

Cost Impact:

Retro-commissioning and building re-tuning is generally accepted as one of the most cost-effective energy efficiency measures for existing buildings. Average savings for building re-tuning is 12%, and studies have found savings as high as 52%. According to "Improving Commercial Building Operations through Building Re-tuning: Meta-Analysis," the median costs for building re-tuning was \$0.16/sf.

Resiliency Impact Statement:

This proposal will increase Resiliency. Resiliency is an essential component of adapting to the effects of climate change. Requiring energy efficiency through lighting controls in alterations helps to reduce overall building energy use. This reduces the buildings overall reliance on energy, reducing carbon emissions directly and indirectly, lessening the impact on climate change and climate related events. For the building's own resilience, the proposed efficiency credits focus on more efficient systems overall – even in an event like a black out, these more efficient systems require less energy to run, making any back up generation energy source last longer – providing extended comfort and safety to building users. For energy infrastructure resilience, the electric grid's ability to deliver capacity to an increasing number of buildings will become increasingly important. By reducing overall energy use, this measure may contribute to a reduction in peak demand increasing the resiliency of the grid during high usage events.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
 - Consensus Disapproval
 - Carry Over to Next Meeting
 - Carry over to Final
 - Non-Consensus
 - None
-

Public Comments for: EB805.3(2)-21

This proposal doesn't have any public comments.

EB1102-21

Proponents: Scott Lang (scott.lang@honeywell.com); Richard Roberts (richard.roberts@systemsensor.com); Robert Davidson (rjd@davidsoncodeconcepts.com)

2018 Virginia Existing Building Code

Add new text as follows:

1102 Energy Storage Systems

1102.1 Lithium-ion technology energy storage systems. The owner of an energy storage system (ESS) utilizing lithium-ion battery technology having capacities exceeding the values in Table 1207.1.1 of the IFC and that was installed prior to the jurisdiction's adoption of the 2018 or later edition of the International Fire Code shall provide the fire code official a failure modes and effects analysis (FMEA) or other approved hazard mitigation analysis for review and approval.

Exception: Detached one- and two-family dwellings and townhouses.

1102.1.1 Early Detection. In addition to the requirements of Section 1207.1.4.1 and 1207.1.4.2 of the IFC, the analysis shall include an assessment of the ability of the installed protection systems to provide for early detection and notification of a thermal runaway event in relation to the ability of emergency responders to safely mitigate the size and impact of a thermal runaway event.

1102.1.2 Corrective action plan. Where hazards are identified by the analysis, a plan that includes a timetable for corrective action shall be submitted to the fire code official for review and approval. The plan shall include actions and system improvements necessary for eliminating or mitigating any identified hazards, including listed methods for early detection and notification of a thermal runaway event.

Reason Statement: Note: this proposal has been accepted for the 2024 edition of the International Fire Code.

Though both the 2018 International Fire Code, 2018 NFPA 1 Fire Code received significant enhancements to provide necessary protection levels which were improved further with the provisions of the 2020 NFPA 855 Energy Storage Systems, the 2021 International Fire Code and the 2021 NFPA 1 Fire Code, there are numerous installations that do not meet the new and necessary safety requirements. Even after the printing of the 2018 International Fire Code installers continued to install systems that did not meet the new standard of care, taking advantage of earlier editions of the codes that were still being enforced locally. A glaring example of a system that did not meet the requirements of the 2018 or 2021 editions of the International Fire Code was located in Surprise, Arizona where a thermal runaway event seriously injured 4 members of the fire service.

The purpose of this proposal is to start to address potential protection shortcomings in the design, installation and maintenance of existing energy storage systems employing lithium-ion technology by requiring that a hazard analysis conforming to the requirements of Sections 1207.1.4.1 and 1207.1.4.2 of the current ESS requirements.

Proposed Section 1102.1 sets the scoping to those systems installed prior to the local adoption of the 2018 IFC or later that exceed the thresholds in Table 1207.1.1 which is the trigger for new installations. It utilizes similar language for the hazard analysis as currently exists for new systems at 1207.1.4 for consistency in application. An exception for one- and two-family dwellings and townhouses is included.

Proposed Section 1102.1.1, in addition to the requirements of Sections 1207.1.4.1 and 1207.1.4.2, requires the inclusion of an assessment of the ability of the installed protection to provide an early warning of a thermal runaway event and to provide notification of that event in relation to the ability of responders to safely mitigate the event. Early detection of a thermal runaway utilizing listed methods of early detection, such as sensing cell off-gassing or other compliant methods, is essential to mitigation efforts and the safety of responders.

Proposed Section 1102.1.2 requires the submission of a corrective action plan for the review and approval of the fire code official that includes actions and system improvements necessary for eliminating or mitigating identified hazards.

This retroactive provision is consistent with activities for a similar requirement during the current cycle of NFPA 855 Energy Storage Systems.

Cost Impact: The code change proposal will not increase or decrease the cost of construction

The code change proposal will not increase or decrease the cost of construction. The proposed language does not address new construction. It addresses the safety of existing systems. Though there will not be a construction increase, there will be an increased operational cost to have the analysis conducted, and a cost to remedy and existing safety hazards typical of any other identified safety issue in a regulated occupancy.

Resiliency Impact Statement: This proposal will increase Resiliency

This proposal would increase the resiliency of existing ESS by requiring an assessment of potential hazards that could lead to large events

destroying the ESS and exposures. Addressing those hazards provides for increased long term resilience.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
 - Consensus Disapproval
 - Carry Over to Next Meeting
 - Carry over to Final
 - Non-Consensus
 - None
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Public Comments for: EB1102-21

This proposal doesn't have any public comments.

EB1201.7-21

Proponents: DHCD Staff (sbco@dhcd.virginia.gov)

2018 Virginia Existing Building Code

Delete without substitution:

~~1201.7 Facilities required. Sanitary facilities shall be provided during construction or demolition activities in accordance with the *International Plumbing Code*.~~

Reason Statement: As per the IEBC Commentary related to these provisions (Section 1501.7 of the 2018 IEBC), the intent of the section is to provide toilet facilities for construction workers. The Commentary reads, in part, "Construction employees must have plumbing facilities available during the construction or demolition process of a building". The IPC provisions related to toilet facilities for workers (Section 311 of the 2018 IPC/VPC) have been long deleted in Virginia. Thus, the VEBC Section 1201.7 has no bearing. Given this and to be in line with the Virginia's long standing on this subject, the section is proposed to be deleted.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
This is a cleanup proposal with no technical changes. Thus, the construction costs will not be affected by the proposed change.

Resiliency Impact Statement: This proposal will neither increase nor decrease Resiliency
This is a cleanup proposal with no technical changes. The proposal has no impact on resiliency.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
- Consensus Disapproval
- Carry Over to Next Meeting
- Carry over to Final
- Non-Consensus
- None

Public Comments for: EB1201.7-21

This proposal doesn't have any public comments.

EB1209.1-21

Proponents: VFSB Codes and Standards Committee (amilliken@staffordcountyva.gov)

2018 Virginia Existing Building Code

Add new text as follows:

1201.8 Separations between construction areas. Separations used in Type I and Type II construction to separate construction areas from occupied portions of the building shall be constructed of materials that comply with one of the following:

1.Noncombustible materials.

2.Materials that exhibit a flame spread index not exceeding 25 when tested in accordance with ASTM E84 or UL 723.

3.Materials exhibiting a peak heat release rate not exceeding 300 kW/m²when tested in accordance with ASTM E1354 at an incident heat flux of 50 kW/m²in the horizontal orientation on specimens at the thickness intended for use

Revise as follows:

1209.1 When required. An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material arrives on the ~~site-site,~~ on commencement of vertical combustible construction, and on installation of a standpipe system during alterations, repairs, or additions to any building or structure in accordance with the Virginia Statewide Fire Prevention Code.

Reason Statement: Clean up of Section 1209.1 to provide 2021 language and reference the SFPC for fire flow and associated details. It also correlates better with the VCC and SFPC.

Section 1201.8 has been added due to comments during the SFPC Sub-workgroup where it was recommended to add this section to the VEBC rather than just the VCC since it could involve an already occupied area. This language is identical to the language removed from the SFPC and belongs in the VEBC.

Cost Impact: The code change proposal will not increase or decrease the cost of construction
No cost impact.

Resiliency Impact Statement: This proposal will increase Resiliency

By improving the fire safety provisions of the VEBC, the resiliency of communities is increased by protecting them from the hazards associated with poor fire safety practices during construction.

Workgroup Recommendation

2021 Workgroups Workgroup Action: None

2021 Workgroups Reason:

Workgroup Action

- Consensus Approval
 - Consensus Disapproval
 - Carry Over to Next Meeting
 - Carry over to Final
 - Non-Consensus
 - None
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Public Comments for: EB1209.1-21

This proposal doesn't have any public comments.