Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Public Comment for BHCD re: Proposal RE402.1.2(6)

Gene Brown <gbrown@atlanticbuilders.com> Thu, Aug 13, 2020 at 1:36 PM
To: "kyle.flanders@dhcd.virginia.gov" <kyle.flanders@dhcd.virginia.gov>

Kyle-

I write to express my opposition to Code Proposal RE402.1.2(6) related to increased wall and ceiling insulation. As you know, the Home Builders Association of Virginia (HBAV) and the Responsible Energy Codes Alliance (RECA) have worked throughout the 2018 Code Development Cycle to find common-ground on several energy efficiency proposals – while the two groups sometimes have differing perspectives, they have worked together to craft proposals that balance the need to protect housing affordability with the benefits of energy efficiency. As a result of the constructive partnership between those stakeholders and others, the 2018 Code Development Cycle has advanced **consensus** energy efficiency code proposals to the full Board of Housing and Community Development related to blower door testing, residential energy certificates, and increased ceiling insulation requirements.

The RE402.1.2(6) seeks to increase the insulation requirements for both walls and ceilings – although the Home Builders Association of Virginia supports the increase in ceiling insulation, the increase in wall insulation would have a significant impact on the types of materials and building processes that are commonly used by builders in Virginia and many other states.

Modern conventional home building normally makes use of 2x4 lumber in constructing exterior walls. Increasing the wall insulation would require builders to move to 2x6 framing, which is a little more than 1.5 times wider – and to accommodate for that size increase, builders would also need to utilize extended window jambs to accommodate the larger exterior wall space, larger door jambs and extra insulation to fit the 2x6 frame, and also would need double top and bottom wall plates. All those these alterations have an impact on the overall design and size of a home and would result in an increase of several thousand dollars to the cost of construction. I believe that additional discussions between stakeholders are needed in future code cycles before Virginia advances any increase to the wall insulation proposals.

Virginia's code development process has been recognized for its transparency, inclusiveness, and also for its ability to bring together a vast array of stakeholders to make incremental advances to our building codes that keep pace with the latest building science and technology. To my knowledge, the proponents of RE402.1.2(6) did not attempt to work with the other stakeholders involved in the code development process to find common ground. With that in mind, I'd ask that the Board of Housing and Community Development **disapprove** of proposal RE402.1.2(6) and **support the consensus compromise proposal RE402.1.2(4)**, which will increase ceiling insulation requirements in our building codes to advance energy efficiency.

Gene Brown

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Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Washington Gas comments for Virginia Board of Housing and Community Development

McGeary, William <smcgeary@washgas.com> Wed, Sep 2, 2020 at 5:24 PM
To: "kyle.flanders@dhcd.virginia.gov" <kyle.flanders@dhcd.virginia.gov>

Mr. Flanders:

On behalf of Washington Gas, your transmitting the following to Members of the Virginia Board of Housing and Community Development, for their October meeting, will be appreciated. Thank you.

Washington Gas appreciates the opportunity to comment on R403.1.4. Primary Space Heating Systems, stating that new residential construction may not install HVAC systems relying on combustion of gas or other fuels as the primary systems for space heating.

Also of interest is R404.2. Electric readiness (Mandatory), stating that systems using gas or propane water heaters, dryers, or conventional cooking equipment to serve individual dwelling units shall comply with requirements of Sections R404.2.1 and R404.2.2. All water heating systems shall comply with Section R404.2.3

Both proposals were moved forward as non-consensus items. It is our view that the Board should not adopt them, as they are not in the best interests of consumers, and are inconsistent with Virginia's Energy Plan, which recognizes natural gas as an appropriate source of energy for the Commonwealth.

Worthwhile for the Board to also note are the environmental benefits of natural gas, including that 90 percent of natural gas produced is delivered to customers as useful energy, while only 30 percent of energy transformed into electricity reaches consumers.

Natural gas is the cleanest fossil fuel, and a highly efficient form of energy, promoting use of other clean energy sources as a raw material in solar panels, wind power blades, lightweight cars, and other energy-efficient materials.

Also important is that the chemical composition of natural gas results in less pollution, lending itself to fewer impurities. Compared to coal or oil, natural gas produces fewer chemicals contributing to greenhouse gases, smog, and acid rain.

According to the International Energy Agency, natural gas has helped the nation achieve major emission reductions. The U. S. Environmental Protection Agency reports "no

substantial issues associated with natural gas-fired cooking appliances for air quality concerns." Likewise, the EPA and U. S. Consumer Product Safety Commission "do not consider natural gas ranges to be major contributors to negative indoor air quality or a health hazard for consumers." The latter also declared that carbon monoxide testing on natural gas has found "no health or safety issues associated with normal operations."

For each of these good reasons, we hope you will agree that these proposals are not necessary, nor beneficial, and should not go forward. Thank you for your consideration.

W. SCOTT MCGEARY

Director, State Public Policy

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Note New Address: 1000 Maine Avenue, SW, Washington, DC 20024

ENERGY ANSWERS. ASK US.

WashingtonGas.com

To: Members of the Board of Housing and Community Development
Kyle Flanders

From: Virginia Chapter of the Sierra Club; Faith Alliance for Climate Solutions; Climate Action Alliance for the Valley; and Climate & Clean Energy Working Group, Virginia Grassroots Coalition

Re: Brief Summary of Proposals

We are forwarding for your convenience a 2-page summary of the energy-related building code amendments supported by Virginia Chapter of the Sierra Club; Faith Alliance for Climate Solutions; Climate Action Alliance for the Valley; and Climate & Clean Energy Working Group, Virginia Grassroots Coalition.

As explained more fully in our June 25 and September 14 submissions and in the statements accompanying the proposals themselves, these proposed amendments are designed to reduce residents' energy bills, conserve energy, reduce air pollution (including greenhouse gases), enhance resiliency, and help Virginia to achieve a low-carbon economy. All are consistent with applicable laws governing building codes and state energy objectives and policies.

William H. Penniman

Kate Addleson, Director
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Eric Goplerud, Chair
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Jo Anne St. Clair, Chair
Climate Action Alliance of the Valley

Sharon Shutler, Co-Chair
Climate & Clean Energy Working Group, Virginia Grassroots Coalition

BRIEF SUMMARY FOR BHCD OF BUILDING CODE ENERGY PROPOSALS SUPPORTED BY THE VIRGINIA CHAPTER OF THE SIERRA CLUB, FAITH ALLIANCE FOR CLIMATE SOLUTIONS, CLIMATE ACTION ALLIANCE OF THE VALLEY, AND CLIMATE & CLEAN ENERGY WORKING GROUP, VIRGINIA GRASSROOTS COALITION

These proposed building code amendments will "protect the health safety and welfare" of residents and are consistent with recognized standards, including the IECC and Virginia's 2020 Energy Objectives and Policies. The supporting organizations have over 30,000 members in Virginia.

E1301.1.1.1-18 - Full Adoption of 2018 IECC. This proposal would adopt the full 2018 IECC by eliminating outmoded exceptions. It would bring envelope efficiency standards and air leakage standards into compliance with the 2012-2018 IECC. Adoption would save residents energy and money continuously for 70+ years; reduce risks of evictions and utility shut-offs for low-income residents; increase resiliency; reduce harmful pollution"; and help to meet Virginia's climate goals. Compliance costs are low and far less expensive than retrofits.

RE402.1.2(6) - Building envelope efficiency. *This proposal would adopt just the envelope standards in the 2018 IECC and would be unnecessary if **E1301.1.1.1-18** is adopted.* According to an analysis by the Responsible Energy Codes Alliance (RECA) using Virginia-specific data and DOE's methodology, the incremental construction costs would be only 0.002 of average new home and be fully repaid in 6 years, on average. **Both walls and ceilings are important. Updating wall insulation is particularly important: savings are 7.5 times greater than for ceiling insulation, have a 4.4-year payback, and retrofitting would require removing/replacing/refinishing walls at huge expense.**

RE402.4.1.2(2) - Limit Air Leakage/Infiltration. *This proposal addresses a subset of the Full Adoption proposal and would be unnecessary if **E1301.1.1.1-18** is adopted.* This measure would require that blower door tests confirm that air leakage is at or below 3 air changes per hour (ACH), rather than the 5 ACH permitted by the existing USBC and the December 2019 proposal. Leaky houses are more costly to heat and cool, less resilient and less comfortable to live in. Materials (such as caulking and tape) to repair envelope leaks cost little when construction is undertaken. It is much more costly to locate and stop leakage later, which is a burden that builders should not impose on buyers.

RE407.1.1 - Builder Choice of Additional Energy Efficiency Measure. This amendment is modeled on provision in the near-final 2021 IECC, but easier to meet. Builders would choose any one of four additional building efficiency measures: **(1)** envelope insulation *equal to the 2021 IECC minimum envelope insulation* (not the higher 2021 optional level); **(2)** an ERI score *equal to the minimum 2021 IECC minimum* (not the higher 2021 optional level); **(3)** more efficient HVAC equipment (per the 2021 IECC options), or **(4)** energy-saving water heaters (per the 2021 IECC options). It would improve energy savings by approximately 5-10%.

RE403.1.2 - Eliminate Resistance as Primary Heat Source. This would prohibit use of electric resistance heat as the primary space heating in new dwellings and as a replacement for heat pumps in existing dwellings. According to DOE, ***heat pumps cut space-heating electricity usage by half compared to resistance heat, while also offering air conditioning and dehumidification in the summer***.

E403.1.4 - Eliminate On-site Combustion for Primary Space Heating. This would prohibit on-site combustion of gas or other fuels in new residential construction. (Secondary sources, such as fireplaces or back-up generators, would not be affected.) This would save money, reduce indoor and outdoor air

pollution and help implement the legislature's stated goal of achieving net-zero carbon emissions across Virginia's economy, including in the building sector, by 2045. Heat pumps are more cost-effective than combustion alternatives in Virginia. There is no difference for resiliency since gas furnaces do not operate when there is a power outage.

Electric Readiness (RE404.2). This would facilitate future electrification of appliances—and thus lower greenhouse gas emissions—by requiring builders to provide electric panel space and either wiring or raceways for future wiring to locations near gas-fired water heaters, stoves and clothes driers. These costs are low when a dwelling is constructed, walls are open and wiring is being installed. Residents will be able to substitute electric appliances for gas-fired appliances, if they so choose, without costly rewiring. It is modeled on a provision in the near-final 2021 IECC, although it has been modified to reflect technical suggestions from members of Work Group 3. Electrification is important to achieving the Commonwealth's goal of net-zero carbon by 2045.

Electric Vehicle (EV) Readiness - (E405.10). Compared to traditional vehicles (Virginia's largest source of CO2), EVs would reduce CO2 emissions by 2/3 now and more as renewable energy is added to the grid. EVs have much lower operating costs (hundreds of dollars annually) and are growing in popularity, but at-home charging is critical. This proposal (based on one in the near-final 2021 IECC) would require a new **single-family** dwelling to have **one** 40-amp branch circuit, a junction box or outlet (NEM14-50, as for an electric stove) and electric panel space to support a Level 2 charger. The likely cost is less than $50 if the panel is located on a garage wall plus $1.50/foot if the panel is farther from the outlet. Parking provided for new **multifamily** buildings would require 40-amp branch circuits and related infrastructure to serve **two** parking spaces **plus** electric panel space and raceways to make it easy to add wiring, chargers and electric service for up to 20% of the parking spaces as EV demand grows. Retrofitting would cost 3-8 times as much, discouraging building owners from adding chargers later.

E404.2 - Solar Readiness. This proposal, which is based on a 2018 IECC appendix, would to require that new dwellings be "solar ready" if they meet certain specified orientation, size and shading criteria. It would not require the builder to install solar, but it would require certain new dwellings to be "solar ready" with documented pathways to the electric panel and water heating area so that the building owner can easily add solar energy in the future. It would add little to the cost of a new home but would facilitate future solar additions. The builder would have flexibility on where to designate the solar-ready area(s). *Multifamily* dwellings up to five stories would reserve 40% of the roof as a solar ready area, leaving 60% for rooftop equipment and access, not counting areas used for other purposes. Rooftop solar will cut pollution, lower energy costs and advance zero-carbon energy.

ERB101 - Zero Energy Building Option. This proposal would set standards for construction of buildings sold as "zero energy," "zero net energy", "zero energy ready" or "zero net energy ready" To qualify as "zero energy" or "net zero energy", construction must achieve an ERI score of 47 (including the 2018 IECC envelope standards) without on-site power production and achieve an ERI of 0 with installed on-site solar energy. To be "zero energy ready" or "zero net energy ready", a dwelling would have to meet the ERI of 47 (including the 2018 IECC envelope standards) without considering on-site power production and be "solar-ready" with a solar area large enough to meet the remaining energy needs on an annual basis. A builder must comply if it markets a dwelling as "zero energy," "zero energy ready" or equivalent phrases. Setting these standards will encourage zero energy construction and protect buyers from fraud and misleading advertising. Nothing would preclude a builder from constructing according to another recognized high-efficiency model, such as Passive House, provided that the identity and characteristics of the alternative model are clearly disclosed.

September 14, 2020

To: Members of the Board of Housing and Community Development
Erik Johnston, Cindy Davis, Jeff Brown, Richard Potts, Kyle Flanders

From: Virginia Chapter of the Sierra Club; Faith Alliance for Climate Solutions; Climate Action Alliance for the Valley; and Climate & Clean Energy Working Group, Virginia Grassroots Coalition

Re: <u>Current Building Code Review</u>

The Virginia Chapter of the Sierra Club, Faith Alliance for Climate Solutions, Climate Action Alliance for the Valley, and the Climate & Clean Energy Working Group, Virginia Grassroots Coalition[1] **respectfully urge members of the Board of Housing and Community Development (Board or BHCD) to prioritize energy efficiency and clean energy preparedness in their review of proposals, *including so-called "non-consensus proposals,"* to amend Virginia's Uniform Statewide Building Code (USBC or Code).**

We urge you to adopt several specific amendments to Virginia's building code for new residential dwellings which were proposed in the CDPVA/work group process and are summarized in **Attachment A**.[2] These proposals are designed to reduce residents' energy bills, conserve energy, reduce air pollution (including greenhouse gases), enhance resiliency, and help Virginia to achieve a low-carbon economy. These proposals are based primarily on the International Energy Conservation Codes (IECC) for 2018, 2015 and 2012 and the nearly final 2021 IECC. They are fully consistent with Virginia's statutory standards for building codes and with the Commonwealth's energy objectives and policies, which agencies are directed to implement to the extent permitted by law. As documented in Governor Northam's Executive Order 43 and other reports, low-income residents are victimized by inefficient buildings with high energy and occupancy costs since utility bills consume a disproportionate share of their incomes.[3] According to EIA, one in three households has difficulty paying its energy bills or

[1] **The Virginia Chapter of the Sierra Club** has over 19,000 members. The Sierra Club is a non-profit, membership organization dedicated to exploring, enjoying and protecting wild places; to promoting the responsible use of the Earth's resources and ecosystems; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out those objectives.
The Faith Alliance for Climate Solutions is a non-profit organization with more than 75 faith communities and 2,400 faith-based activists in Northern Virginia whose mission is to develop local solutions to climate change.
Climate Action Alliance of the Valley (CAAV) is an organization of residents of the Shenandoah Valley. CAAV's mission is to limit the impact of humans on Earth's climate and minimize the effects of inevitable climate change in order to protect the future for Earth and its inhabitants. The vision of CAAV is to create and nurture climate action in our Shenandoah Valley community so that we can become a regional leader in promoting climate change mitigation and resilience. CAAV seeks to achieve policies and legislation that advances the systemic changes required to promote climate stabilization and resilience.
The Virginia Grass Roots Coalition includes over 50 grass roots organizations with over 10,000 members.
[2] The first three proposals overlap so approval of the first would obviate the need to consider the other two.

[3] See Executive Order 43, https://www.governor.virginia.gov/media/governorvirginiagov/executive-actions/EO-43-Expanding-Access-to-Clean-Energy-and-Growing-the-Clean-Energy-Jobs-of-the-Future.pdf Citing recognized

keeping their home heated.[4] Reducing energy usage through greater efficiency is the best defense to energy costs and burdens.[5] Adoption of these proposals would help to achieve a healthier, safer, lower carbon and more efficient energy future—a new Virginia Way.

Applicable legal standards

Increasing energy efficiency and clean energy in new construction and rehabilitation of existing buildings is necessary to satisfy the minimum requirements of Section 36-99A of the Virginia Code:

> "The provisions of the Building Code and modifications thereof ***shall be such as to protect the health, safety and welfare of the residents of the Commonwealth,*** provided that buildings and structures should be permitted to be constructed, rehabilitated and maintained at the least possible cost ***consistent with recognized standards of health, safety, energy conservation and water conservation***…."

Advancing energy efficiency and clean energy in the building code would also implement the goals of the Commonwealth's "energy objectives" and "energy policy" (Virginia Code Sections 67-100 to 67-102), as amended in the 2020 legislative session. In addition to the terms of Section 36-99A and B, these and other 2020 legislative actions require BHCD to revise its December 2019 code proposals. As recognized by Section 67-100, **"[c]limate change is an urgent and pressing challenge** for Virginia. **Swift decarbonization and a transition to clean energy are required to meet the urgency of the challenge**," and **"[t]he Commonwealth will benefit from being a leader in deploying a low-carbon energy economy."** Section 67-101 sets forth specific **"energy objectives"** implementation of which ***will advance the health, welfare and safety of the residents of the Commonwealth***" – ***the same legal standards that apply to building codes***. These "energy objectives" form the basis for the "Commonwealth energy policy" in Section 67-102, which "provide[s] guidance to the agencies…of the Commonwealth in taking discretionary action with regard to energy issues" within their authority. These energy policies and objectives include reducing energy usage and costs through energy efficiency, achieving net-zero greenhouse gas emissions by 2045 including in the electricity, building and transportation sectors, promoting carbon-free generation including rooftop solar, and mitigating climate impacts on disadvantaged communities.[6]

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metrics of affordability relative to income, Virginia Poverty Law Center has reported that "Virginian's higher than average electricity burden is unaffordable for over 75% of Virginia's households." https://vplc.org/electricity-burden-and-the-myth-of-virginias-rate-utopia/ According to a UNC study, "default risks are on average 32 percent lower in energy-efficient homes, controlling for other loan determinants." https://www.imt.org/wp-content/uploads/2018/02/IMT_UNC See also https://codewatcher.us/codes/low-income-housing-and-the-iecc/

[4] https://www.eia.gov/todayinenergy/detail.php?id=37072

[5] Using less energy is clearly the best, cleanest way to save money, reduce risks of energy price fluctuation and reduce pollution, including carbon pollution. Structural efficiency improvements can last the life of the building.

[6] Section 67-101's objectives include: (2) "Minimizing the Commonwealth's long-term exposure to volatility and increases in world energy prices" – which can be achieved with energy efficiency and renewable energy; (6) "Maximizing energy efficiency programs, which are the lowest-cost energy resources;" (7) "Facilitating conservation;" (9) "Increasing Virginia's reliance on energy solutions that… are less polluting of the

Through other recent legislation, Virginia has required its largest utilities to spend more than $1 billion through 2028 to improve energy efficiency, including in buildings, and committed Virginia to investing in energy efficiency half of the revenues from joining the Regional Greenhouse Gas Initiative.[7] Additional legislation in 2020 required our largest utilities to implement energy efficiency resource standards, shift steadily to zero-carbon energy and achieve zero-carbon generation by 2050.[8] With so much effort devoted to improving energy efficiency in existing buildings and to reducing emissions overall, it makes no sense for building codes to allow inefficient construction to continue with the likely need to spend vastly more for retrofits in the future. It is always cheaper to incorporate efficiency measures during construction when walls are open and crews are already present to do the work.

Highly efficient building construction and renovations are critical to reducing energy use, lowering energy costs, and combatting climate change. Buildings represent 70% of electricity consumption, 54% of gas consumption and 40% of overall energy consumption, nationally, and the average building operates for 70 or more years.[9] Pollution from energy production and combustion to serve buildings harms residents' health, safety and welfare and contributes to the many growing harms to Virginians from climate change.[10]

Revising building codes to promote energy efficiency and greater use of clean energy is essential for residents and Virginia:

- Energy efficient construction **saves residents money and increases their comfort and economic security**, every year for 7 or more decades after a dwelling is constructed.

Commonwealth's air and waters;" (10) "Establishing greenhouse gas emissions reduction goals across Virginia's economy sufficient to reach net-zero emissions by 2045, including the electric power, transportation, …[and] building…sectors;" (13) "Enabling widespread integration of distributed energy resources…including…carbon-free generation such as rooftop solar installations;" (15) "Mitigating the negative impacts of climate change and the energy transition on disadvantaged communities". Section 67-102's policies include (1) promoting "the use of renewable energy sources," (2) promoting "cost-effective conservation of energy," (6) promoting "motor vehicles that utilize alternate fuels," (9)-(11) reducing greenhouse gases "across all sectors of Virginia's economy," and (12) "minimize the negative impacts of climate change and the energy transition on economically disadvantaged or minority communities and prioritize investments in these areas."

[7] Under Virginia law, Virginia's largest utilities are required to spend over $1 billion on energy efficiency improvements in the 10 years ending July 1, 2028. https://lis.virginia.gov/cgi-bin/legp604.exe?181+ful+CHAP0296 In addition, pursuant to the Clean Energy and Community Flood Preparedness Act half the funds received by the Commonwealth from RGGI carbon dioxide auctions will go to energy efficiency. https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+CHAP1280 Those are only two of the measures Virginia has devoted to energy efficiency.

[8] Enacted in 2020, the *Virginia Clean Economy Act*, for example, requires our largest electric utilities to achieve significant increases in customers' energy efficiency electric and to implement annual increases in zero-carbon generation so as to achieve zero-carbon generation by 2050. https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+CHAP1193 .

[9] Alliance to Save Energy, https://www.ase.org/buildings .

[10] The risks of climate change to Virginia are addressed in Executive Order 43, as well as in findings by many others. E.g., Georgetown Climate Center https://www.georgetownclimate.org/files/report/understanding-virginias-vulnerability-to-climate-change.pdf; NRDC, https://assets.nrdc.org/sites/default/files/climate-change-health-impacts-virginia-ib.pdf ; States At Risk, https://statesatrisk.org/virginia/all ; Virginia Department of Health, https://www.vdh.virginia.gov/commissioner/administration/climate-and-health/ .

- Low-income residents and communities of color **experience disproportionately high energy cost burdens** as a result of poor energy efficiency in their residences, as recognized by Governor Northam's Executive Order 43 and by others.
- **High energy cost burdens increase the likelihood of rent or mortgage defaults, terminations of utility service, and reduced funds for food and other essentials**. Those events harm community property values, businesses, landlords and lenders, not just the displaced residents. Inefficient buildings become less economically attractive over time.
- Code requirements for high efficiency levels are critical because **building inefficiencies are hidden** in walls, attics, invisible air leakage, and appliances, as well as behind technical jargon poorly understood by buyers. When buyers are told that new or rehabilitated buildings "meet Code", they should be able to rely on that as an assurance that the buildings meet the highest standards for energy efficiency—at least as high as in the latest IECC.
- **Efficiency retrofits invariably cost more** than installing efficiency measures when a dwelling is constructed, walls are open and workmen are there anyway. Some efficiency retrofits, such as reinsulating walls, can be prohibitively expensive to residents.
- **Landlords and builders cannot be counted on to voluntarily undertake efficiency upgrades** because residents bear the energy costs, not landlords or builders.

Building Code Process

The BHCD is responsible for updating Virginia's building codes consistent with applicable statutory standards and goals in of Section 36-99 and elsewhere (as discussed above). On that basis, the BHCD should adopt <u>all</u> standards "consistent with" the latest IECC and approve additional measures that will further "protect the health, safety and welfare of residents of the Commonwealth" and advance Virginia's energy objectives and policies.

Unfortunately, it appears that, once weakening exceptions were made to the 2012 IECC's insulation and air leakage standards for residences, the BHCD has allowed the exceptions to continue, absent unanimous consent ("consensus") within work groups, even though the succeeding iterations of the national standards reaffirmed the validity of the standards previously ignored in Virginia. Thus, the decisions made years ago not to implement the 2012 IECC building envelope and air leakage standards were extended in the 2015 USBC and were proposed by the BHCD, in December 2019, to override the same provisions of the 2018 IECC.[11] That apparent, unwritten practice of extending past mistakes absent work group unanimity violates the standards in Virginia Code 36-99A and B. It allows opponents of code modernization to block changes or extract unreasonable compromises just by saying "no" in the informal work group process.

[11] The December 2019 proposal did incorporate a modified blower door test, but it left the air leakage rate at 5 ACH rather implement than the 2012-2018 IECC standard of 3 ACH. That is, it reduced the risks of violations of the old standard, but did not bring the code to the IECC's recognized standards of energy conservation.

Although the BHCD may benefit from work-group input that points to better ways to implement or exceed recognized building standards, work group participants must not be allowed to veto code updates that would "protect the health, safety and welfare of residents of the Commonwealth" or are "consistent with recognized standards of health, safety, [and] energy conservation." Nor should the BHCD defer to the work-group labels "consensus" and "non-consensus." Work groups include a small group of participants, some of whom have a vested interest in blocking or delaying implementation of new building code standards. An opponent of code modernization merely has to say "no" in a work group meeting in order to get a proposal labeled "non-consensus," and a belated agreement to accept a part-way amendment (under pressure for unanimity) still does not protect the public even though it may be labeled "consensus" in the work group.

As demonstrated by the many public comments submitted, in June 2020, concerning the BHCD's December 2019 proposals, **the *public consensus is that Virginia should implement the full 2018 IECC or exceed it***, notwithstanding home builder opposition that has kept the USBC behind the IECC since 2012.[12] More recently, in July and August 2020 work group meetings, builder opposition caused the "non-consensus" label to be applied to all 10 amendments that we and others endorsed even though all of our proposals would "protect the health, safety and welfare of residents of the Commonwealth" and are "consistent with recognized standards of health, safety, energy conservation or water conservation," including the 2018 or pending 2021 IECC or important elements of Virginia's Energy Objectives and Policy or E.O. 43.

In their opposition to code progress, representatives of home builders have repeatedly taken out of context a statutory phrase about reducing construction costs—when, in fact, the full quote from Virginia Code 36-99A **requires compliance with recognized standards**: "The provisions of the Building Code and modifications thereof shall be such as to protect the health, safety and welfare of the residents of the Commonwealth, *provided that buildings and structures should be permitted to be constructed, rehabilitated and maintained **at the least possible cost consistent with recognized standards of health, safety, energy conservation and water conservation***…." Virginia Code Section 36-99B specifically identifies the International Code Council, which issues the IECC, as a source of "recognized standards" to guide the BHCD.

Myths and Realities

Just as automobile manufacturers spent years opposing seat belts and air bags, the home builders promote a misleading narrative of residential efficiency requirements. Better efficiency standards will not drive people out of the home-buying market any more than safety measures undermined auto sales. Home builders ignore the net savings to residents from reducing ongoing ownership costs, as well as the health and safety benefits from reducing air pollution and getting

[12] When the public was given notice and the opportunity to comment on the BHCD's December 2019 proposal, written comments urging full compliance with the 2018 or even stronger energy measures were filed by hundreds of individuals, as well as by organizations including the Virginia Chapter of the Sierra Club, Faith Alliance for Climate Solutions, Climate Action Alliance of the Valley, the Natural Resources Defense Council, and the Virginia Clinicians for Climate Action. The Virginia Chapter of the Sierra Club has nearly 20,000 members. At the June 26 public hearing, many spoke in support of full compliance with the 2018 IECC.

to net-zero carbon emissions.[13] They treat efficiency as a frill, not a basic element of sound construction needed to protect residents and the public. Their own national trade association (National Association of Home Builders (NAHB)) has recognized that buyers increasingly want greater energy efficiency and are willing to pay higher prices for houses that provide future energy savings.[14] Rather than skimping on efficiency and clean energy, builders can better market dwellings based on future energy-cost savings, and they can cut costs in many other ways as needed to adjust new-home costs (*e.g*., modify dwelling size, amenities, lot sizes, locations and mark-ups).[15]

Covid-19 has shown how vulnerable residents are to needlessly high energy bills which increase the risks of evictions and losing utility services. And, research shows that low-income residents are disproportionately harmed by high energy burdens.[16] This is a building code issue because harms from building inefficiencies (*e.g*. poor wall insulation or resistance heat) will last for decades, long after Covid-19.

The reality is that energy efficiency measures save residents money and provide many other benefits. DOE and others have documented that building code efficiency standards—including measures that Virginia's builders have blocked since 2012—reduce energy usage and save residents money year in and year out, even considering mortgage costs (which are lower today than when DOE examined the 2012 IECC).[17] The improved efficiency benefits all residents, especially the most vulnerable.

Reducing energy consumption in buildings and encouraging clean energy usage will also benefit the Commonwealth as a whole. Reducing air pollution from fossil fuel combustion to

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[13] The upfront costs of our proposals are low – well within the 2-3% extra that most buyers are willing to spend in order to reduce future utility costs—and far below the costs of retrofitting in the absence of our proposals. https://codewatcher.us/codes/why-do-builder-associations-fight-energy-efficiency-improvements/ Paybacks will be rapid from energy-saving measures, and money will be saved if residents choose to add rooftop solar or convert to clean electric options for vehicles or appliances in the future. *See* Appendix A.

[14] https://codewatcher.us/codes/why-do-builder-associations-fight-energy-efficiency-improvements/

[15] The average cost of constructing a new home in Maryland ($200,000-$380,000), which implements the 2018 IECC, is equal to or less than in Virginia ($200,000-$560,000). *See* "How Much Does It Cost to Build a House?" https://www.homeadvisor.com/cost/architects-and-engineers/build-a-house/ Home construction costs typically range from $100-$200 per square foot, which demonstrates both builders' wide discretion in the choices of materials, design and appliances and how small changes in dwelling size can make a large difference in total cost. Insulation represents less than 1% of construction costs. *Id*. Mark-ups have grown in recent years: "The 2019 edition of the [2019 *Builders' Cost of Doing Business Study]* shows that profit margins have "continued to increase, reaching their highest point since 2006." http://eyeonhousing.org/2019/03/builders-profit-margins-continue-to-slowly-increase/

[16] As recognized in Governor Northam's Executive Order 43 (fn. 3), high energy burdens are disproportionately born by low-income residents, greater building energy efficiency will reduce residents' risks of eviction, mortgage default and losing utility services. See also https://codewatcher.us/codes/low-income-housing-and-the-iecc/

[17] DOE, National Energy Cost Savings for New Single and Multifamily Homes, A Comparison of the 2006, 2009, and 2012 Editions of the IECC, https://www.energycodes.gov/sites/default/files/documents/NationalResidentialCostEffectiveness.pdf

heat, cool or otherwise power buildings and appliances will improve residents health.[18] Greater energy efficiency and clean energy generation are needed to achieve the Commonwealth's goals of reducing greenhouse gases, which is essential to the "health, safety and welfare" of Virginia residents, including health benefits from cleaner air and lower temperatures and greater resiliency for residents and communities. Wise building codes should help residents shift from wasteful energy use and fossil fuel combustion to less energy use (a zero-pollution solution) and to electric energy, which, by law, will be increasingly generated zero-pollution sources until zero-carbon generation will be achieved by 2050 (fn. 8) --less than halfway through the 70-year lives of dwellings built today. Since the last electricity dispatched is the most expensive, reducing usage through increased building efficiency will reduce average energy costs for all Virginians. Virginia's economy, in turn, will benefit from residents having more discretionary income to spend, having less risk of eviction or utility cut-offs, and relying increasingly on zero-carbon energy produced in Virginia.

In sum, Virginia's BHCD should adopt the full 2018 IECC plus additional measures that we propose to advance the health, safety and welfare of residents of the Commonwealth. As summarized in Appendix A to these Comments, each of the proposed amendments that we support meet these standards.

We would be glad to answer questions and provide further input as requested.

William H. Penniman

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Cc: Trieste Lockwood

[18] Health benefits are described in June 2020 comments filed by Dr. Samantha Ahdoot for the Virginia Clinicians for Climate Action. Climate change will markedly increase the health dangers from rising temperatures, shifting disease vectors, storms and flooding.

APPENDIX A

SUMMARY OF ENERGY PROPOSALS
SUPPORTED BY THE VIRGINIA CHAPTER OF THE SIERRA CLUB, ET AL

The June 25, 2020 Comments of the Virginia Chapter of the Sierra Club, Faith Alliance for Climate Solutions and Climate Action Alliance of the Valley (a) urged full adoption of the 2018 for construction of new and existing buildings and (b) recommended several energy-related code provisions designed to protect the health, safety and welfare of residents of the Commonwealth. These proposals would advance the legislature's goals of reducing energy usage, utility bills, energy burdens, greenhouse gas pollution and reliance on carbon-emitting fuels in buildings and transportation. Representatives of the Virginia Grassroots Coalition, along with many other speakers, endorsed these goals in the June 26 public hearing.

Subsequently, William Penniman[i] submitted 9 specific proposals through the official channel for code proposals (CDPVA) to address new residential construction. In meetings of Work Groups 2 and 3, Mr. Penniman sponsored these proposals plus a previously submitted proposal to fully comply with the 2018 IECC (E1301.1.1.1-18). Despite support voiced by a number of participants, each proposal was deemed "non-consensus" because of objections by builder representatives. No opponent offered constructive alternatives that would provide as good or better protection for the health, safety and welfare of residents of the Commonwealth or would be consistent with health, safety or energy conservation standards in recognized building codes.

These proposals, which are summarized below, meet all relevant statutory standards and should be adopted by the Board on their merits notwithstanding the "non-consensus" label emerging from the work group process. These summaries supplement the terms and statements of reasons, resiliency and costs submitted in the underlying proposals.

A. Adopt 2018 IECC Building Efficiency Standards

E1301.1.1.1-18 - Full Adoption of 2018 IECC. This proposal, which was originally submitted by Mr. Andrew Grigsby, would adopt the full 2018 IECC and eliminate out-of-date code standards that date back to 2009.[ii] Most significantly, this proposal would update building envelope efficiency standards (for walls, ceilings and fenestration) and air leakage standards. For dwelling envelopes, it would raise the ceiling insulation to R49 (IECC since 2012) from R38 (current USBC) and wall insulation to R20 or R15+5 from R15 or R13+1 (current USBC). For air leakage, it would require blower door tests capped at 3 air changes per hour (ACH) (IECC since 2012) rather than the outdated 5 ACH (current USBC), which undermines insulation benefits. These money-saving standards have been blocked by builders since they were first included in the 2012 IECC. As a matter of law, this proposal to implement the 2018 IECC should be adopted because (a) it is manifestly "consistent with recognized standards of …energy conservation," and (b) the greater energy conservation would help "protect the health, safety and welfare of the residents of the Commonwealth," particularly in light of the Commonwealth's Energy Objectives and Policy. Written and oral public comments strongly supported full adoption of the 2018 IECC. **Why Important?** Implementation of the full 2018 IECC standards

will save residents energy and money and increase resiliency, while also reducing harmful pollution from fossil-fuel combustion. DOE and others found that these would provide net savings for residents even after considering construction and mortgage costs (which are lower today).[iii] (*Details concerning costs and benefits from updating envelope and air leakage standards are more fully discussed below in connection with RE402.1.2(6) and RE402.4.1.2(2)*.) Reducing ongoing energy costs benefits all residents and reduces high energy burdens, particularly risks of evictions and utility shut-offs, for the most vulnerable residents.[iv] Full compliance with the IECC meets all statutory standards for Virginia's building code and would advance Virginia's Energy Objectives and Policy as updated by legislation in 2020. Retrofits—particularly of walls and windows and to locate and reduce air leakage—would be much more costly than during construction, when walls are open and workers are present. Efficient buildings are more resilient as they retain tolerable temperatures longer during power outages. Adopting the full 2018 IECC is manifestly "consistent with recognized standards for health, safety, energy conservation and water conservation" as required by Virginia Code Section 36-99.

RE402.1.2(6) - Building envelope efficiency. *This proposal addresses a subset of the Full Adoption proposal above and would be unnecessary if* ***E1301.1.1.1-18*** *is adopted, as it should be.* Implementing the building envelop (wall, ceiling and window) insulation requirements of the 2018 IECC is vital to saving energy, reducing residents' homeownership costs and improving resiliency. [Compliance can be achieved by alternative means if appropriate for an individual building (*e.g*., RESCHECK, ERI index, Simulated Performance, Ufactor (which should be conformed to the 2018 wall/ceiling standards), etc.).] Currently, Virginia code only meets the 2009 IECC standards for building envelopes. **Why Important?** As noted above, better insulated walls, ceilings and windows save energy, reduce monthly utility bills, reduces risks of evictions and utility shut-offs for the most vulnerable residents, and reduce air pollution in including greenhouse gases. When DOE evaluated the same standards in the 2012 IECC, it found that the 2012-2018 building envelope efficiency standards will save residents money continuously from the time of occupancy even after accounting for initial construction and borrowing costs.

According to an analysis by the Responsible Energy Codes Alliance (RECA) using Virginia-specific data and DOE's methodology,[v] the incremental costs of complying with the higher wall and ceiling insulation levels in the 2012-2018 codes (compared to Virginia's current, outdated code) would be paid back in an average of 6 years. If these had been implemented back in 2012, they would have completely paid for themselves from savings by 2018. The Virginia-specific cost increases identified by RECA would be about 0.002 of the average cost of a new home in Virginia, but would reduce occupants' energy costs by approximately 6% annually, which would be particularly significant for low-income residents who are at greater risk of eviction or failing to pay utility bills. The standards can be met with either 2X4 or 2X6 construction (the latter permits wider spacing between studs) or met by other means, such as RESNET or Energy Rating Index. The following summarizes RECA's Virginia-specific data[vi]:

VA (Climate zone 4)	Ceiling insulation	Wall Insulation	Total net savings
Current USBC (and December 2019 proposal)	R38	R15 or R13+1	
2012-2018 IECC standard	R49	R20 or R15+5	

Incremental cost / annual savings (varies by location with faster payback in NoVa)	Cost $215 Saves $10-14/yr	Cost $399 Saves $78-103/yr	Cost $614 Saves $88-117/yr Ave $102.50/yr
Payback period	Ave 17.9 years	Ave 4.4 years	Ave 6 years
Net savings over 30/50years (not counting utility rate increases)	$145/385	$2316/$4126	$2461/$4511

As shown in the table, **total savings are large, with the biggest savings and most rapid paybacks being associated with wall insulation, which is also much more costly and difficult to retrofit since it requires opening and repairing walls. Annual savings from the 2018 wall insulation standards would be 7.5 times greater than for ceiling insulation.** *Thus, residents would be poorly served by a compromise announced August 4 by some work group participants* pursuant to which one participant withdrew its proposal to have wall insulation meet IECC standards in exchange for the builders finally agreeing to drop opposition to the participant's other proposal for IECC ceiling insulation levels. Although we obviously support adoption of IECC ceiling insulation standards and understand other participants' fears that nothing gets past builder opposition, we opposed that *compromise* and we continue to urge BHCD to implement the full IECC envelope standards. ***Failing to adopt the 2018 IECC wall insulation standards would be a life-of-the-dwelling mistake, harming every resident for the 70+ years the house is in use. Consequently, the BHCD should adopt the IECC's full envelope standards, including for walls, as we proposed here and in E1301.1.1.1-18.***

RE402.4.1.2(2) - Limit Air Leakage/Infiltration. *This proposal addresses a subset of the Full Adoption proposal and would be unnecessary if* ***E1301.1.1.1-18*** *is adopted, as it should be.* This measure would require that blower door tests confirm that air leakage is at or below 3 air changes per hour (ACH), rather than the 5 air changes permitted by the existing USBC. The IECC has required 3 ACH since 2012, but Virginia has still not caught up. In December 2019, the Board proposed a compromise to require blower door tests but leave air leakage standards at 5 ACH. The air leakage difference is substantial: 5 ACH is 67% worse (*i.e.*, leakier) than 3 ACH. Our June 25, 2020 comments and our public hearing comments supported blower-door tests, but opposed the proposal to remain at 5 ACH because it will raise residents' costs of heating, cooling and dehumidification and because air leakage is much more difficult to locate and fix as a retrofit. Our proposals here and in E1301.1.1.1-18 would correct that omission. **Why Important?** Leaky houses require more energy for heating, cooling and dehumidification. They are more costly to heat, cool and dehumidify, less resilient and less comfortable to live in. Air leaks undermine the savings from insulation. Unsealed gaps can also increase access by insects and rodents. Materials (such as caulking) to repair leaks cost little when construction is undertaken, particularly when care is taken at the framing stage.[vii] Post-occupancy retrofitting to reduce leakage is much more difficult and costly since it may require reopening and repairing walls. It is unfair for builders to leave to future residents the problems of identifying and repairing air leakage/infiltration.

B. Adopt Additional Efficiency Requirements

RE407.1.1 - Builder Choice of Additional Energy Efficiency Measure. This amendment is modeled on the additional-energy-efficiency provision in the near-final 2021 IECC; however, our proposal is easier for builders to implement than under the 2021 IECC. The amendment would require builders to choose any one of four additional building efficiency measures, which would improve energy savings by approximately 5-10%. **Choices include (1)** better envelope insulation *equal to the 2021 IECC minimum envelope insulation* (not the higher 2021 optional level); **(2)** an ERI score *equal to the minimum level in the 2021 IECC* (not the higher 2021 optional extra level) with the builder able to designing its mix of energy saving measures; **(3)** more efficient HVAC equipment (per the 2021 IECC options), or **(4)** energy-saving water heaters (per the 2021 IECC options). **Why important**? This amendment will reduce energy usage and utility bills, help mitigate climate impacts and prepare Virginia's buildings and economy for a future that requires the least possible energy usage and pollution. It is reasonable step toward "swift decarbonization" which has been recognized by the legislature and Executive Order 43 as necessary to address the urgent challenge posed to Virginia by climate change. The public should get the benefit of the 2021 IECC's protections as soon as possible, not three years after IECC adoption. By offering options, this proposal also enables the BHCD to *incentivize* builders to install high-efficiency HVAC and water heating appliances, even though it cannot impose minimum efficiency standards higher than the federal efficiency standards for appliances.

RE403.1.2 - Eliminate Resistance as Primary Heat Source. This measure would prohibit use of electric resistance heat as the primary space heating in new dwelling, and it would prohibit replacing a heat pump with a resistance heating system in existing dwellings. This proposal, which is based on a provision in Georgia's residential building code, would utilize the BHCD's express authority under Virginia Code Section 36-99.6:3 to establish standards for HVAC systems in new residential dwellings, and it would use its more general code authority to protect residents from having high-cost resistance heating technology replace existing heat pumps during renovations of existing buildings. **Why important?** Heat pumps, including mini-splits, save residents money and energy in heating their homes and they distribute heat more evenly. ***According to DOE, heat pumps cut space-heating electricity usage by half compared to resistance heat, while also offering air conditioning and dehumidification in the summer***.[viii] **Adopting this proposal would yield *huge savings* on heating bills**, greater comfort, and large reductions of pollution from fuel combustion. Heat pumps have evolved to efficiently permit heating and cooling on a whole-house basis or on a room-by-room basis (*e.g*., with mini-splits). There is no good reason to saddle residents in new dwellings with higher cost resistance heat, when much greater benefits can be obtained with heat pumps. Nor should resistance heat be substituted when a heat pump is already being used in an existing building.

RE403.1.4 - Eliminate On-site Combustion for Primary Space Heating. This proposal would amend the building code to prohibit installation of primary heating systems that rely upon on-site combustion of gas or other fuels in new residential construction. (Secondary sources, such as fireplaces or back-up generators, would not be affected.) **Why Important?** This proposed amendment would save Virginians money, reduce indoor and outdoor air pollution and help implement the legislature's stated goal of achieving net-zero carbon emissions across Virginia's

economy, including in the building sector, by 2045. Heat pumps are more cost-effective than combustion alternatives in Virginia.[ix] On-site combustion of fuels is much less energy efficient than electric heat pumps, which have a coefficient of performance exceeding 3.0. Gas furnaces must also be supplemented by construction of a gas line and a separately installed air conditioning system, raising initial costs. On-site combustion increases outdoor air pollution and can create harmful indoor air pollution, such as carbon monoxide and methane leakage.[x] Heat pumps have a clean energy advantage over on-site combustion due to their higher efficiency and Virginia's existing mix of nuclear and renewable energy. The clean energy advantages of electric heat pumps will continue to grow as Virginia steadily closes its coal plants in the next few years and increases zero-carbon electricity generation annually until it, reaches 100% zero-carbon energy by 2050. Indeed, electrification of homes and the economy with zero-carbon energy is critical to addressing climate change, which is largely driven by CO2 from fossil fuel combustion. The problem of emissions from natural gas combustion is magnified by the fact that methane, which is leaked at every stage from gas exploration to the point of use, traps 86 times more heat than natural gas over a 20-year period, which is devastating when we need to rapidly slash greenhouse gas emissions.[xi] There is no difference for resiliency (unless a residence has solar and storage) since gas furnaces do not operate when there is a power outage.

C. Adopt "Future Readiness" Standards For New Construction, Which Is Expected To Last For 70+ Years

Electric Readiness (RE404.2). This proposal would amend the code to facilitate future electrification of appliances—and thus lower greenhouse gas emissions—by making it easy for customers to substitute electric appliances for gas-fired appliances if they so choose in the future. It is modeled on a provision in the near-final 2021 IECC, although it has been modified to reflect technical suggestions from members of Work Group 3. This would only require builders to provide electric panel space and either wiring or raceways for future wiring from the panel to locations near gas-fired water heaters, stoves and clothes driers. These costs are minimal when a dwelling is being constructed, walls are open and workers are present. **Why important**? As noted above, Virginia's electric energy is cleaner than on-site gas combustion and will get even cleaner as coal plants are closed and more solar and wind come online. These changes are required for Virginia's large electric utilities, whose generation will reach zero-carbon within 30 years. Virginia's largest utility, Dominion, will exceed 50% zero-carbon generation within 10 years. Some electric appliances, like induction stoves and heat-pump water heaters, are especially energy efficient compared to gas. Increasingly, customers may want to switch for environmental and economic reasons. And, the legislature has found that the state needs to swiftly cut greenhouse gases in all sectors, including buildings. Raceways and wiring are inexpensive, and it is much easier and less expensive to install the wiring or raceways when a house is being built and walls are open than to tear up walls to retrofit later.

Electric Vehicle (EV) Readiness - (E405.10). This proposal, which is based on one in the near-final 2021 IECC, would require that new residences with parking, including multifamily buildings, undertake basic preparations for electric vehicle charging by residents. Parking for a

new **single-family** dwelling would require installation of only **one** 40-amp branch circuit, a junction box or outlet (NEM14-50, as for an electric stove) and electric panel space to support a Level 2 charger. Parking provided for new **multifamily** buildings would require 40-amp branch circuits and related infrastructure for only **two** parking spaces plus electric panel space and raceways to make it easy to add wiring, chargers and electric service for up to 20% of the parking spaces as EV demand grows. **Why important? (a) Carbon emissions.** Vehicles are Virginia's largest source of CO2 emissions from fossil-fuel combustion.[xii] According to DOE, Virginia-based electric vehicles already reduce CO2 emissions by roughly two-thirds compared to gasoline-powered vehicles.[xiii] Emissions of CO2 and other pollutants associated with the electricity used by EVs will decline further as electricity is increasingly generated with non-polluting renewables.[xiv] **(b) Benefit to residents.** This proposal would benefit residents and the Commonwealth by reducing barriers to future EV growth, which is clearly desirable. EVs have much lower operating costs and emissions. DOE estimates that Virginia's equivalent price is $1.19 per "E-gallon" and annual maintenance costs are extremely low for an electric vehicle due to the greater simplicity and reliability of an electric motor.[xv] EVs sales are growing and are currently projected to reach 20% (possibly over 30%) of new vehicle sales in 2030.[xvi] Every car maker has announced plans to significantly expand EV production. Carnegie Mellon researchers estimate that the average cost of an EV will be equal to or less than gasoline vehicles in the next 3-5 years.[xvii] This will address a major barrier to EV adoption based on potential buyers' concerns about the availability of convenient charging. **(c) Savings**. Installing basic wiring, raceways and panels to support Level 2 EV charging in garages or other building parking spaces will enable residents to conveniently charge EVs at home during utilities' off-peak periods, which will potentially reduce electric rates to all utility customers. Installing the basic wiring for a charger is cheap when a **single-family** home is built. Based on advertised retail pricing, the material costs could be as low as $50 if the electric panel is in the garage or perhaps $100 depending on the length of wiring from panel to outlet at roughly $1.50/foot. In contrast, retrofitting can require panel upgrades, snaking lines behind walls and opening/closing/refinishing walls, which would drive costs much higher. In **multifamily** projects that provide parking, installing two branch circuits plus panel space and raceways for 20% of parking spaces is also vastly cheaper when the projects are constructed compared to retrofitting later. In submissions to the IECC in connection with the EV proposal, it was estimated that retrofitting would cost 3-8 times as much as setting up the infrastructure at the outset. Such high retrofit costs increase the danger that multifamily residents will have either no access or long-delayed access to EV charging, which would hurt them and the public's interest in reducing pollution.

E404.2 - Solar Readiness. This proposal would amend the building code to require that new dwellings be "solar ready" if they meet certain specified orientation, size and shading criteria. It would incorporate into the body of the USBC an Appendix in the 2018 IECC. The proposal would not require the builder to install solar, but it would require certain new dwellings to be "solar ready" so that the building owner can easily add solar energy in the future. Assuming a new dwelling meets specified criteria (oriented toward the sun, above a certain size and are not shaded most of the time), the roof would need a solar-ready area strong enough to support solar panels, adequate electric panel space and a construction documents identifying pathways for

conduit or plumbing extending from the roof to the electrical panel and to the area of the water heater. The builder would have flexibility on where to designate the solar-ready area, which could be broken into small areas if desired. The proposal also calls for new *multifamily* dwellings up to five stories to reserve up to 40% of the roof as a solar ready area, leaving 60% for equipment and access that may be located on the roof. (The areas for solar and equipment may be modified if a portion of the roof is used for amenities or green roofing.) **Why important?** Distributed solar energy production (rooftop solar for electricity or water heating) will save residents money on utility bills, and it is critical to reducing carbon emissions which are the primary driver of climate change. Virginia's Energy Objectives specifically encourage distributed solar generation including rooftop solar. Solar capabilities can also enhance resiliency. The costs of compliance are low – mainly a reservation of roof space and electric panel space and construction documents identifying pathways for conduit or plumbing from the roof, leaving the solar technology choice to the building owner. By reducing demands on utilities, rooftop solar energy performs a function similar to energy efficiency.[xviii] Making it easy to add solar will benefit both individual residents and the Commonwealth.

ERB101 - Zero Energy Building Option. This proposal is modeled on a provision in the pending 2021 IECC (simplifying it and adding a "zero energy ready" option). It would amend the code to clarify the standards for a builder's claiming that construction qualifies as "zero energy," "zero net energy", "zero energy ready" or "zero net energy ready". The standards are not complex. To qualify as "zero energy" or "net zero energy", construction must achieve an ERI score of 47 (including the 2018 IECC envelope standards) without on-site power production and achieve an ERI of 0 including installed on-site solar energy. To be "zero energy ready" or "zero net energy ready", a dwelling would have to meet the ERI of 47 (including the 2018 IECC envelope standards) without considering on-site power production and be "solar-ready" with a solar area large enough to meet the remaining energy needs on an annual basis. The proposal does not require a builder to construct zero energy or zero energy ready dwellings, but it must meet the proposed standards if it markets a dwelling as "zero energy," "zero energy ready" or equivalent phrases. This could be implemented by requiring that the builder state in the building permit application whether the building will be marketed as "zero energy" or the equivalent specified terms. **Why important?** Residents are increasingly interested in the savings, added resiliency and added comfort and resiliency that come with zero energy housing. Standardizing the terminology will avoid consumer fraud and misleading advertising of non-compliant construction. It will also make it easier for potential buyers to seek and for willing sellers to offer high-quality zero energy products. Consequently, incorporating the option into the code would help to protect the health, safety and welfare of residents of the Commonwealth. The Commonwealth also benefits from encouraging zero energy housing, which will cut carbon and energy use for decades. Nothing would preclude a builder from constructing according to another recognized high-efficiency model, such as Passive House, provided that the identity and characteristics of the alternative model are clearly disclosed.

[i] Mr. Penniman is the Sustainability Issues Chair for the Virginia Chapter of the Sierra Club and a member of the Chapter Executive Committee.
[ii] The proposal was labeled non-consensus when presented at the March 31, 2020 meeting of Work Group 2 and at the July 15 meeting of Work Group 3.
[iii] DOE, National Energy Cost Savings for New Single and Multifamily Homes, A Comparison of the 2006, 2009, and 2012 Editions of the IECC, https://www.energycodes.gov/sites/default/files/documents/NationalResidentialCostEffectiveness.pdf

[iv] See Gov. Northam's Executive Order 43; https://codewatcher.us/codes/low-income-housing-and-the-iecc/

[v] RECA's analysis was submitted its analysis in support of proposals (RE402.1.2(4)-18 and RE402.1.2(5)-18) to adopt 2018 IECC standards for walls and ceilings. The data shown in our table is drawn from that information. In connection with another proposal (RE402.1.2(1)-18), RECA used a DOE formula with national data and came out with slightly higher initial costs but greater lifecycle savings over 30 years. It does not alter the basic analysis.
[vi] Set forth in supporting statements for proposals RE402.1.2(5)-18 (walls) and RE402.1.2(4)-18 (ceilings).
[vii] https://codewatcher.us/building-science/when-is-the-best-time-to-air-seal/
[viii] "Today's heat pump can reduce your electricity use for heating by approximately 50% compared to electric resistance heating such as furnaces and baseboard heaters. High-efficiency heat pumps also dehumidify better than standard central air conditioners, resulting in less energy usage and more cooling comfort in summer months." https://www.energy.gov/energysaver/heat-and-cool/heat-pump-systems
[ix] https://www.trane.com/residential/en/resources/heat-pump-vs-furnace-what-heating-system-is-right-for-you/
[x] Indirectly, installing a natural gas furnace will increase the probability that a gas stove and other appliances will be installed. Gas stoves are a particularly large source of harmful indoor air pollution. https://rmi.org/insight/gas-stoves-pollution-health
[xi] "The drilling and extraction of the fuel from wells, as well as its processing, transmission, distribution, and storage, also result in the leakage of methane—a primary component of natural gas that is 34 times stronger than carbon dioxide at trapping heat over a 100-year period and 86 times stronger over 20 years (Myhre et al. 2013)." Union of Concerned Scientists, The Natural Gas Gamble: A Risky Bet on America's Clean Energy Future (March 2015), p. 16. The report adds: "Although there is still uncertainty about the precise quantity of these so-called fugitive methane emissions, preliminary studies and field measurements range from 1 to 9 percent of total natural gas production.
[xii] https://www.epa.gov/sites/production/files/2019-11/documents/co2ffc_2017.pdf
[xiii] DOE estimates that an EV in Virginia emits (via electric generation) roughly one-third as much as a gasoline-driven vehicle. https://afdc.energy.gov/vehicles/electric_emissions.html .See https://evtool.ucsusa.org/ (estimates an EV in Virginia has approximately 70% lower global warming emissions than gasoline vehicles).

[xv] https://www.forbes.com/sites/sap/2018/09/06/seven-reasons-why-the-internal-combustion-engine-is-a-dead-man-walking-updated/#259021ec603f
[xvi] https://www.edisonfoundation.net/-/media/Files/IEI/publications/IEI_EEI-EV-Forecast-Report_Nov2018.ashx
[xvii] https://insideclimatenews.org/news/29072020/inside-clean-energy-electric-vehicle-agriculture-truck-costs . One manufacturer announced plans to sell an EV in the U.S. for $13,000 after incentives later this year. https://electrek.co/2020/07/30/kandi-cheapest-electric-cars-us/
[xviii] Energy efficiency has the added benefit of reducing demand continuously.

COMMONWEALTH of VIRGINIA

Office of the Governor

Matthew J. Strickler
Secretary of Natural Resources

September 29, 2020

Chairman Sonny Abbasi
c/o Mr. Kyle Flanders
Virginia Board of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219

Subject: Comments in support of Proposals recommended as Non-Consensus by the Resiliency Subworkgroup in response to update of the Commonwealth of Virginia 2018 USBC Building Code Cycle

Chairman Abbasi,

Thank you for the opportunity to provide comments in support of the Resiliency Subworkgroup proposals for the 2018 Building Code Cycle Process. We commend the group for their work throughout this process and for the eleven proposals recommended for Consensus Approval.

We would in addition most strongly recommend the Board's favorable consideration and approval of the five Non-consensus Proposals. These five proposals are consistent with the Commonwealth's strong desire to increase resilience to natural hazards, in particular flooding and storm damage state wide, as documented in Governor Northam's Executive Order 24, *Increasing Virginia's Resilience to Sea Level Rise and Natural Hazards*, and Executive Order 45, *Floodplain Management Requirements and Planning Standards for State Agencies, Institutions, and Property*.

As you know, 2019 research from the National Institute of Building Sciences found, on average, a savings of 13 dollars for every one dollar invested in natural hazard resilience code updates. Further, recent conversations between the Commonwealth and reinsurance industry executives have included their estimates of seven to eight dollars in return for every dollar spent in risk reduction.

These five proposals, two of which have been brought forward from the 2021 I-Code, all serve to reduce risk and increase the resilience of structures across the Commonwealth. In doing so, they protect both public and private property, which saves both building owners and taxpayers the costs of re-construction by building in resilience up front.

Again, all of these proposals serve to increase resilience and reduce risk for the people and property of the Commonwealth. We urge you to consider approval of the Non-Consensus Proposals in the 2018 USBC revisions.

Sincerely,

Matthew J. Strickler

Ann C. Phillips

cc: Brett Meringoff, Vice Chair
Abigail Johnson, Congressional district 1
Andrew Friedman, Congressional district 2
Claudia Cotton, Congressional district 3
Monique Johnson, Congressional district 4
Sylvia Hallock, Congressional district 5
Mimi Elrod, Congressional district 6
Richard Gregory, Congressional district 7
Patricia Shields, Congressional district 8
Mark Jackson, Congressional district 9
Keith Johnson, Virginia Fire Services Board
Susan F. Dewey, Executive Director, VHDA
Sean Farrell, Virginia Building and Code Officials Association

Proposals Recommended as Non-consensus by Workgroups

B1612.2.1 – Increases the minimum building elevation (lowest floor or lowest horizontal structural member of the lowest floor) from base flood elevation plus 1 ft to BFE plus 2 ft. **(EO 45 Directs 3 feet above BFE for State-owned Buildings, higher in Sea Level Rise inundation zones.)**

B1804.8 – Adds requirements to the IBC and IRC for the top surface of floors of all buildings to be elevated to one foot above the highest adjacent grade to protect from local storm water/drainage flooding. Also incorporates ASCE 24 definition for "Highest Adjacent Grade", but definition is modified to specify above the "finished ground".

(Strengthens resilience to flash flooding events, more common under Virginia's increased rainfall trends.)

RB332 – Requires power inlet to be installed, for an optional (portable) generator, for all new one and two-family homes, and for existing one and two-family homes when the electric service is being upgraded.

(This supports revised shelter in place preferences from FEMA guidelines under COVID 19 and other conditions.)

B1612.4 – Adds additional documentation for construction in flood hazard and coastal high hazard areas. This includes a flood emergency plan as specified in Chapter 6 of ASCE 24 and a requirement to meet engineered flood opening requirements of Section 2.7.2.2 of ASCE 24. **[From 2021 I-Code]**

(Oversight of a flood emergency plan in support of engineered flood opening requirements, ensures functional operation of those requirements and structures at construction,)

RB703.11.1 – Improves the wind performance of soffits by clarifying installation requirements for the most common types of soffits. **[From 2021 I-Code]**

(Improved wind performance of soffits increases resilience and reduces risk from wind and storm damage.)

October 1, 2020

Subject: Support for Provisions that Require Qualified Individuals for Sampling, Testing, and Inspection of Concrete, Proposal No. [#441]

To Whom It May Concern:

This letter is to recommend approval provisions that set minimum requirements for individuals engaged in the sampling and testing of concrete and inspection of structural elements to the *Virginia Building Codes (VBC)* as presented in the code change proposal initiated by the American Concrete Institute.

The Virginia Chapter of the American Concrete Institute represents Virginians involved in concrete design, construction, production, testing, inspection, and repair. These individuals directly contribute to the Virginia economy.

Cast-in-place concrete is one of the few building materials formed, cured, and otherwise conditioned to create the final product on the construction site. Proper sampling and testing of cast-in-place concrete and specimens is crucial to assure quality concrete that will satisfy the intent of the building code. The code, directly or indirectly through referenced standards, establishes minimum requirements for the type and frequency of sampling, testing, and inspection. However, the code is remiss in that it does not establish or provide necessary direction to the building official regarding minimum qualifications for individuals conducting sampling, tests and inspections of structural concrete. The proposed modification to the VBC identifies qualified individuals to perform these duties and establishes a level of competency to aid the building official approving other persons for the purpose of sampling, testing and inspecting.

Examples of specific existing referenced standard language are:

- ACI 318 *Code Requirements for Structural Concrete*, referenced in the VBC:
  26.13.1.2 Inspection of concrete construction shall be conducted by the licensed design professional responsible for the design, a person under the supervision of the licensed design professional, or a qualified inspector.
- ASTM C94 *Standard Specification for Ready-Mixed Concrete* referenced in ACI 318:
  7.2 Tests of concrete required to determine compliance with this specification shall be made by a certified technician in accordance with Practice C1077.
- ASTM C1077 *Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation*:
  6.1.3 Personnel performing laboratory and field testing shall possess current certification(s) that includes a written and performance examination for each relevant standard identified

These standards are applicable to any use of structural concrete, not just buildings. Thus, the needed guidance to assist the building official in the approval process of qualified personnel is not specifically included in the standards. This proposed modification is extremely important for the building officials, owners, public and all effected entities in the building design and construction process to understand the appropriate levels of competency to perform sampling, testing and inspection.

In addition to appropriate quality assurances, qualified individuals are necessary to reduce the frequency of improper sampling and testing which results in additional direct costs related to more expensive sampling (coring) and testing and indirect costs due to construction delays.

We find that it is increasingly more important to require qualified individuals because of significant changes in and increased complexities of mix designs, use of high strength and high-performance concrete, combined with improved engineering procedures that permit more economical use and sizing of concrete elements. Sampling and testing of concrete needs to have a level of precision commensurate with the current design and construction requirements.

We have reviewed the code change proposal initiated by ACI and respectfully request that this proposal be approved for inclusion in the VBC.

Thank you in advance for your consideration of this recommendation.

Sincerely,

Theron Fluker, PE
ACI Virginia Chapter Vice President

Eric P. Koehler, Ph.D., P.E.*
Director of Quality
Titan America, LLC
*FL and VA PE

5700 Lake Wright Drive, Suite 300
Norfolk, VA 23502
(617) 957-8588
ekoehler@titanamerica.com

September 30, 2020

Subject: Support for Provisions that Require Qualified Individuals for Sampling, Testing, and Inspection of Concrete

Proposal: #440 and #441

Dear Council Members:

This letter is to recommend approval of the above referenced proposals for the *Virginia Building Code (VBC)* as initiated by the American Concrete Institute (ACI).

Titan America is a cement and concrete manufacturer, operating through our Roanoke Cement, Titan Virginia Ready Mix, Powhatan Ready Mix, and Separation Technologies businesses in Virginia. We operate 25 locations across the state and the volume of concrete produced directly and with our products is approximately 3 million cubic yards annually in Virginia. As Director of Quality for Titan America, I oversee all aspects of quality companywide. I am also a Fellow of the American Concrete Institute where I am a voting member on ACI 301, *Specification for Concrete Construction*. I am a voting member in ASTM committees C09 and C01 for concrete, aggregates, and cement.

Concrete is tested on the jobsite by field inspectors for acceptance and to ensure conformance with the Virginia Building Code. Therefore, the inspectors on the jobsite play a critical role to ensure the safety of buildings and facilitate the construction process and it is critical that they are properly qualified and perform testing to relevant standards. The code, directly or indirectly through referenced standards, establishes minimum requirements for the type and frequency of sampling, testing, and inspection. However, the code is remiss in that it does not establish or provide necessary direction the building official regarding minimum qualifications for individuals conducting sampling, tests and inspections of structural concrete. The proposed modification to the VBC identifies qualified individual to perform these duties and establishes a level of competency to aid the building official approving other persons for the purpose of sampling, testing and inspecting.

While the majority of inspectors and testing labs in the state operate with high integrity and accuracy, our company and our customers must deal with delays, costs, and uncertainty due to improper sampling and testing of concrete by improperly qualified inspectors. A common issue is that strength test samples are left too long on the jobsite and exposed to extreme temperatures or rough handling, resulting in concrete that fails acceptance testing but is of acceptable quality. This typically triggers extensive, time-consuming investigations and additional testing to confirm the adequacy of the concrete. Given the increasing complexity of concrete structures and the life-safety nature of the work we do, it is essential that manufacturers, owners, engineers, building officials, and the public have a high level of confidence in the testing results.

I have reviewed the code change proposal initiated by ACI and respectfully request that this proposal be approved for inclusion in the Virginia Building Code. Thank you in advance for your consideration of this recommendation.

Respectfully,

Eric P. Koehler, Ph.D., P.E.*, FACI
*FL and VA P.E.

VIRGINIA READY MIXED CONCRETE ASSOCIATION

August 27, 2020

To Whom It May Concern:

This letter is to recommend approval provisions that set minimum requirements for individuals engaged in the sampling and testing of concrete and inspection of structural elements to the Virginia Building Codes (VBC) as presented in the code change proposal initiated by the American Concrete Institute.

The Virginia Ready Mixed Concrete Association (VRMCA) represents more than 60 companies involved in concrete production and supply in the Commonwealth.

Cast-in-place concrete is one of the few building materials formed, cured, and otherwise conditioned to create the final product on the construction site. Proper sampling and testing of cast-in-place concrete and specimens is crucial to assure quality concrete that will satisfy the intent of the building code. The code, directly or indirectly through referenced standards, establishes minimum requirements for the type and frequency of sampling, testing, and inspection. However, the code is remiss in that it does not establish or provide necessary direction the building official regarding minimum qualifications for individuals conducting sampling, tests and inspections of structural concrete. The proposed modification to the VBC identifies qualified individual to perform these duties and establishes a level of competency to aid the building official approving other persons for the purpose of sampling, testing and inspecting.

Examples of specific existing referenced standard language are:

- ACI 318 Code Requirements for Structural Concrete, referenced in the VBC: 26.13.1.2 Inspection of concrete construction shall be conducted by the licensed design professional responsible for the design, a person under the supervision of the licensed design professional, or a qualified inspector.
- ASTM C94 Standard Specification for Ready-Mixed Concrete referenced in ACI 318: 7.2 Tests of concrete required to determine compliance with this specification shall be made by a certified technician in accordance with Practice C1077.
- ASTM C1077 6.1.3 Personnel performing laboratory and field testing shall possess current certification(s) that includes a written and performance examination for each relevant standard identified

These standards are applicable to any use of structural concrete, not just buildings. Thus, the needed guidance to assist the building official in the approval process of qualified personnel is not specifically included in the standards. This proposed modification is extremely important for the building officials, owners, public and all effected entities in the building design and construction process understand the appropriate levels of competency to perform sampling, testing and inspection.

250 West Main Street Suite 100 | Charlottesville, VA 22902
p. (434) 977-3716 f. (434) 979-2439 | vrmca.com

In addition to appropriate quality assurances, qualified individuals are necessary to reduce the frequency of improper sampling and testing which results in additional direct costs related to more expensive sampling (coring) and testing and indirect costs due to construction delays.

We find that it is increasingly more important to require qualified individuals because of significant changes in and increased complexities of mix designs, use of high strength and high-performance concrete, combined with improved engineering procedures that permit more economical use and sizing of concrete elements. Sampling and testing of concrete needs to have a level of precision commensurate with the current design and construction requirements.

We have reviewed the code change proposal initiated by ACI and respectfully request that this proposal be approved for inclusion in the VBC.

Thank you in advance for your consideration of this recommendation.

Sincerely,

Doug Easter
Executive Director

WACEL
7508 Wisconsin Avenue, 4th Floor, Bethesda, MD 20814; 301-652-7925; www.wacel.org

Subject: Support for Provisions that Require Qualified Individuals for Sampling, Testing, and Inspection of Concrete Proposal No. 441

To Whom It May Concern:

WACEL: An Association of Engineering Laboratories, Inspection Agencies and Building Officials is a nonprofit trade association that represents more than 80 offices that offer construction observation and testing services in the Commonwealth of Virginia. WACEL members contribute millions of dollars to the Virginia economy and are responsible for thousands of jobs.

WACEL recommends that the Virginia Building Code set minimum requirements for individuals involved in the sampling and testing of concrete and observation of structural elements as proposed initially by the American Concrete Institute.

Proper sampling and testing of cast-in-place concrete and specimens are essential for a professional engineer to state that the concrete meets the requirements of the approved plans and specifications and intent of the building code. The approved plans and specifications and directly or indirectly the code establishes the requirements for the number of samples and frequency of testing and construction observation services. The code does not, however, establish or provide building officials with guidance to establish qualifications of those who sample, test and provide construction observation services for structural concrete or other structural materials used in construction. The proposed changes to the VBC identifies baseline minimum qualifications for individuals to perform those duties and assists building officials in helping determine who should be permitted to sample, test and inspect construction materials.

Requiring baseline minimum qualifications for individuals providing construction observation and testing services is required for every project that is covered by Chapter 17 of the IBC: Structural Tests and Special Inspections. Baseline minimum qualifications are also required by ASTM E329, C1077 and D3740. ASTM C1077 states that Personnel performing laboratory and field testing shall possess current certification(s) that includes a written and performance examination for each relevant standard identified

These standards are applicable to any use of structural concrete, not just buildings. Thus, the needed guidance to assist the building official in the approval process of qualified personnel is not specifically included in the standards. This proposed modification is extremely important for the building officials, owners, public and all effected entities in the building design and construction process understand the appropriate levels of competency to perform sampling, testing and inspection.

In addition to appropriate quality assurances, qualified individuals are necessary to reduce the frequency of improper sampling and testing which results in additional direct costs related to more expensive sampling (coring) and testing and indirect costs due to construction delays.

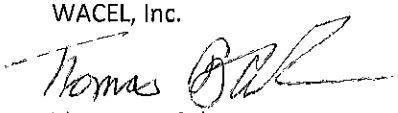
WACEL members find that it is increasingly more important to require qualified individuals because of significant changes in and increased complexities of mix designs, use of high strength and high-performance concrete, combined with improved engineering procedures that permit more economical use and sizing of concrete

elements. Sampling and testing of concrete needs to have a level of precision commensurate with the current design and construction requirements.

WACEL has reviewed the code change proposal initiated by ACI and respectfully request that this proposal be approved for inclusion in the VBC.

Thank you in advance for your consideration of this recommendation.

Sincerely,
WACEL, Inc.



Thomas B. Cohn
Executive Director

October 5, 2020

Subject: Support for Adoption by Reference of ACI 562 in the Virginia Building Codes, Proposal Number: [#442]

To Whom It May Concern:

This letter is in support of approval of adoption by reference of ACI 562 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* in the *Virginia Building Codes (VBC)* as presented in the code change proposal [#442] submitted by the American Concrete Institute.

The Virginia Chapter of the American Concrete Institute represents Virginians involved in concrete design, construction, production, testing, inspection, and repair. These individuals directly contribute to the Virginia economy.

We find that it is increasingly more important to establish minimum requirements for evaluation, repair, and rehabilitation of structural concrete in existing buildings undergoing alternations, additions, renovations, or changes in occupancy to safeguard the public and minimize disruption of businesses. The requirements provided in ACI 562 improve the clarity of expectations by owners, designers, contractors, officials, material providers, and other relevant parties regarding repairs and rehabilitation of structural concrete and, where appropriate, provide a benchmark for use by building officials responsible for approving other means and methods.

Helping to assure that delivery of products and services are consistent with the expectations of all parties involved saves costs associated with unnecessary direct costs and indirect costs associated due to construction delays when there are discrepancies in the various expectations.

Adoption by reference of ACI 562 helps ensure minimum levels of life safety, health and general welfare are being provided for the public. In addition, adoption of ACI 562 will improve the confidence for building owners, developers, and officials regarding the extended life and re-use of concrete buildings. This is not only important for the specific project but also is typically more sustainable than demolition and replacement.

The use of ACI 562 provides an increased level of anticipated outcome associated with repairs and rehabilitation regarding the ability to satisfy the intent of the code and provides information that can facilitate the efforts of officials involved in the project. Where repairs meet minimum requirements for life safety, businesses will have increased confidence that they may be able to safely operate with less frequent interruptions while remaining in or relocating to existing buildings.

Other jurisdictions have adopted ACI 562. ACI 562 has been adopted in Hawaii, Ohio, and Florida. It is also referenced by the New York City building department.

While this proposal simply establishes a minimum level of expected performance of structural concrete for a design service life specified for the project, the change does not specify a design service life. Selection of a design service life continues to reside with the owners, owner's representatives, and where applicable, officials of the authority having jurisdiction. Also, the proposal is permissive and does not exclude other means and methods approved by the building official.

We have reviewed the code change proposal submitted by ACI and recommend the code change proposal be approved as submitted. We believe that this addition to the VBC will help ensure repairs to structural concrete will satisfy the intent of the code, result in affordable repairs with reasonable minimum levels of life safety, and support business operations with minimal disruption. The latter is important, not just for business operations, but also to maintain a consistent flow of revenue to the state resulting from these businesses.

Thank you in advance for your consideration of this recommendation.

Sincerely,

Theron Fluker, PE
ACI Virginia Chapter Vice President

cvm

September 9, 2020

Virginia Board of Housing and Community Development
600 East Main St. Suite 300
Richmond, VA 23219

RE: Letter in Support of Proposal to Adopt ACI 562

Attn: Virginia Building Code Council Members

Dear Council Members,

I am writing this letter in support of the proposal to allow use of ACI 562-19 in Commonwealth of Virginia Building Code for Existing Structures. As the chair of the ACI 562 committee that developed ACI 562-19, I strongly believe that design professionals in Virginia will benefit from the use of ACI 562-19. I attained my initial registration as a professional engineer in Virginia and am familiar with the challenges of working on existing structures in a state with significant regional variations in weather and exposure conditions. Design professionals in the chloride-exposed coastal and mountain regions of Virginia will benefit from the durability provisions in ACI 562-19. ACI 562-19, and the documents developed that support the standard are important tools for design professionals working on these types of structures.

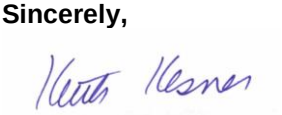
When I began my career as a civil/structural engineer, it was never my intention to become the chair of a committee responsible for the development of an ACI Standard. I initially got involved with the American Concrete Institute to improve my technical knowledge related to repair and rehabilitation of existing structures. Hearing, and witnessing the variations in repair practice, I soon recognized a need for minimum standards for the repair and rehabilitation of existing concrete structures.

The ACI 562-19 Standard provides code minimum requirements for evaluation of existing structures and provisions that will improve the repair design practice, and the durability and reliability of repaired structures. These requirements have the potential to improve repair practice and decrease the likelihood of repair failure. Further, by encouraging evaluation of existing structures, use of ACI 562-19 on concrete repair projects will potentially reduce repair scope uncertainty. Repair failure and changes in scope are major sources of cost uncertainty.

In my opinion, use of ACI 562-19 will be cost-neutral or potentially reduce the total cost of concrete repairs. In examining the cost of concrete repairs, the greatest risk to the owner is having to re-repair a structure due to a repair failure. ACI 562-19 implementation has the potential to mitigate the widespread premature failure of repairs. Use of ACI 562-19 for repair also provides design professionals a standard to follow, potentially allowing existing structures to be repaired rather than replaced.

Please feel free to contact me if you have any comments regarding the material discussed in this letter.

Sincerely,



Keith Kesner, PhD, PE, SE, FACI
Chair ACI 562-19
Senior Project Manager – CVM Engineers

1002 west 9th Avenue
King of Prussia, PA 19406

phone 610.989.3800
fax 610.989.3677

cvmprofessional.com

CONCRETE REPAIR
Restore | Repurpose | Renew

September 9, 2020

Board of Housing and Community Development
600 East Main Street, Suite 300
Richmond, VA 23219
Attn: Board Members

RE: Support for Adoption by Reference of ACI 562
In the Virginia Existing Building Code
Proposal #442, EB 502.1.1-18

Dear Board Member:

I am writing this letter as President of the International Concrete Repair Institute (ICRI) in support of approval of adoption by reference of ACI 562-19 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* into the *Virginia Existing Building Code* as presented in the code change proposal submitted by the American Concrete Institute (ACI).

ICRI is the only non-profit organization that is dedicated solely to the repair of concrete structures. ICRI has over 2500 members and 39 local chapters across the United States and Canada, with a local chapter in the state of Virginia.

For the past 32 years, ICRI has developed and promoted best practices for concrete repair and has developed consensus document guidelines for the repair of deteriorated concrete structures. These guidelines have been published and used to result in more durable concrete repairs. It has been proven that poor performance of concrete repairs is a serious issue in the industry, and improvements are needed in concrete repair practices. Several studies indicate that **less than 50%** of concrete repairs perform satisfactorily, posing a significant danger to the health, safety and welfare of the public. This is a tremendous burden on owners, municipalities and the economy.

As a repair industry professional and the President of an organization that represents contractors, design professionals and material manufacturers that are involved in the repair of existing concrete buildings, both I and ICRI as an organization recognize the need for standards that will help design professionals and contractors improve the design, implementation and performance of concrete repairs.

The ACI 562-19 code provides minimal requirements for assessment, design and construction, and implementation of repairs and rehabilitation, including quality assurance requirements, for structural concrete **in service.** ACI 562 encourages evaluation of the structure, and a better evaluated structure is potentially less risky to repair. ACI 562 also requires consideration of durability in design, likely leading to better repair performance and less premature repair failure.

The concrete repair industry utilizes many unique repair strategies. The Code provides latitude and flexibility to the licensed design professional to prepare a design to address the specific issues encountered on an existing building while still meeting the requirements of ACI 562. The ACI 562 code will serve to unify and strengthen concrete evaluation, repair, and rehabilitation projects while accommodating the diverse and unique repair strategies and materials used in the repair industry, making existing structures safer. All of these goals are consistent with the mission of ICRI.

In examining the cost of concrete repairs, the greatest cost to the owner is having to remove and replace previous repairs to a structure due to premature repair failure. I believe the adoption of the ACI 562-19 code has the potential to significantly reduce the long-term life cycle cost of maintaining a structure. I also believe it will provide safer structures with minimal impact on initial cost of repairs.

Any standard that improves the quality of the completed repair work will be a welcome addition to the building code and the concrete repair industry. Use of ACI 562 also contributes to increased sustainability, increasing the probability that a concrete structure will be restored rather than demolished and replaced.

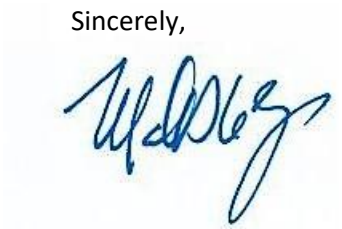
Many leaders in the repair industry support the ACI 562 code and other states, including Hawaii, Ohio and Florida, and jurisdictions have already adopted it. This code complements the *Virginia Existing Building Code* by providing specific direction on how to evaluate and design concrete repairs and how to address the unique construction methods and issues associated with repair. In addition, ACI 562 provides building code officials with a means to evaluate rehabilitation designs.

On behalf of the Board of Directors and members of ICRI, I recommend and hope that the State of Virginia will also realize the benefit of this code and adopt code change proposal into the Virginia Existing Building Code.

If you have any questions regarding my comments or would like to discuss my viewpoints in more detail, please feel free to contact me at your convenience.

Thank you in advance for your time and consideration of this recommendation for support of the proposed building code change.

Sincerely,



Mark D. LeMay, AIA, FICRI, LEED AP
2020 ICRI President
817-505-4304
mlemay@jqeng.com

NDT CORPORATION
Concrete & Geophysical Testing

NDT CORPORATION
153 Clinton Road, Sterling, MA 01564
Main: 978-563-1327 | Fax: 978-563-1340
Email: Info@NDTCorporation.com

October 8, 2020

Subject: Support for Adoption by Reference of ACI 562 in the Virginia Building Codes
Proposal Number: #442

To Whom It May Concern:

This letter is in support of approval of adoption by reference of ACI 562 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* in the *Virginia Building Codes (VB*C) as presented in the code change proposal #442 submitted by the American Concrete Institute.

NDT Corporation performs investigations of post-tensioned concrete structures and recommends the adoption of the repair code to help standard expectations and requirements for the repair of concrete structures.

We find that it is increasingly more important to establish minimum requirements for evaluation, repair, and rehabilitation of structural concrete in existing buildings undergoing alternations, additions, renovations, or changes in occupancy to safeguard the public and minimize disruption of businesses. The requirements provided in ACI 562 improve the clarity of expectations by owners, designers, contractors, officials, material providers, and other relevant parties regarding repairs and rehabilitation of structural concrete and, where appropriate, provide a benchmark for use by building officials responsible for approving other means and methods.

Helping to assure that delivery of products and services are consistent with the expectations of all parties involved saves costs associated with unnecessary direct costs and indirect costs associated with due to construction delays when there are discrepancies in the various expectations.

Adoption by reference of ACI 562 helps ensure minimum levels of life safety, health and general welfare are being provided for the public. In addition, adoption of ACI 562 will improve the confidence for building owners, developers, and officials regarding the extended life and re-use of concrete buildings. This is not only important for the specific project but also is typically more sustainable than demolition and replacement.

The use of ACI 562 provides an increased level of anticipated outcome associated with repairs and rehabilitation regarding the ability to satisfy the intent of the code and provides information that can facilitate the efforts of officials involved in the project. Where repairs meet minimum requirements for life safety, for businesses will have increased confidence that they may be able to safely operate with less frequent interruptions while remaining in or relocating to existing buildings.

Other jurisdictions have adopted ACI 562. ACI 562 has been adopted in Hawaii, Ohio, and Florida. It is also referenced by the New York City building department.

While this proposal simply establishes a minimum level of expected performance of structural concrete for a design service life specified for the project, the change does not specify a design service life. Selection of a design service life continues to reside with the owners, owner's representatives, and where applicable, officials of the authority having jurisdiction. Also, the proposal is permissive and does not exclude other means and methods approved by the building official.

We have reviewed the code change proposal submitted by ACI and recommend the code change proposal be approved as submitted. We believe that this addition to the VBC will help ensure repairs to structural concrete will satisfy the intend of the code, result in affordable repairs with reasonable minimum levels of life safety, and support business operations with minimal disruption. The latter is important, not just for business operations, but also to maintain a consistent flow of revenue to the state resulting from these businesses.

Thank you in advance for your consideration of this recommendation.

Sincerely,

Bill Horne
President
NDT Corporation

VECTOR CONSTRUCTION INC.
2504 Main Avenue West, West Fargo, ND 58078
Main: 701-280-9697 | Fax: 701-232-2763
Fargo@Vector-Construction.com

October 8, 2020

Subject: Support for Adoption by Reference of ACI 562 in the Virginia Building Codes
Proposal Number: #442

To Whom It May Concern:

This letter is in support of approval of adoption by reference of ACI 562 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* in the *Virginia Building Codes (VB*C) as presented in the code change proposal #442 submitted by the American Concrete Institute.

As a concrete repair contractor, Vector Construction Inc. recommends the adoption of the repair code to help standardize expectations and requirements for the repair of concrete structures. This will lead to better quality and longer lasting repairs and ultimately extend the life of existing buildings.

We find that it is increasingly more important to establish minimum requirements for evaluation, repair, and rehabilitation of structural concrete in existing buildings undergoing alternations, additions, renovations, or changes in occupancy to safeguard the public and minimize disruption of businesses. The requirements provided in ACI 562 improve the clarity of expectations by owners, designers, contractors, officials, material providers, and other relevant parties regarding repairs and rehabilitation of structural concrete and, where appropriate, provide a benchmark for use by building officials responsible for approving other means and methods.

Helping to assure that delivery of products and services are consistent with the expectations of all parties involved saves costs associated with unnecessary direct costs and indirect costs associated with due to construction delays when there are discrepancies in the various expectations.

Adoption by reference of ACI 562 helps ensure minimum levels of life safety, health and general welfare are being provided for the public. In addition, adoption of ACI 562 will improve the confidence for building owners, developers, and officials regarding the extended life and re-use of concrete buildings. This is not only important for the specific project but also is typically more sustainable than demolition and replacement.

The use of ACI 562 provides an increased level of anticipated outcome associated with repairs and rehabilitation regarding the ability to satisfy the intent of the code and provides information that can facilitate the efforts of officials involved in the project. Where repairs meet minimum requirements for life safety, for businesses will have increased confidence that they may be able to safely operate with less frequent interruptions while remaining in or relocating to existing buildings.

Other jurisdictions have adopted ACI 562. ACI 562 has been adopted in Hawaii, Ohio, and Florida. It is also referenced by the New York City building department.

While this proposal simply establishes a minimum level of expected performance of structural concrete for a design service life specified for the project, the change does not specify a design service life. Selection of a design service life continues to reside with the owners, owner's representatives, and where applicable, officials of the authority having jurisdiction. Also, the proposal is permissive and does not exclude other means and methods approved by the building official.

We have reviewed the code change proposal submitted by ACI and recommend the code change proposal be approved as submitted. We believe that this addition to the VBC will help ensure repairs to structural concrete will satisfy the intend of the code, result in affordable repairs with reasonable minimum levels of life safety, and support business operations with minimal disruption. The latter is important, not just for business operations, but also to maintain a consistent flow of revenue to the state resulting from these businesses.

Thank you in advance for your consideration of this recommendation.

Sincerely,

Jeff Jezzard
VP US Construction Operations
Vector Construction Inc.

VECTOR CORROSION SERVICES, INC.
8413 Laurel Fair Circle, Ste 200B, Tampa, FL 33610
Main: 813-501-0050 | Fax: 813-501-1412
eMail: Info@VCServices.com

October 8, 2020

Subject: Support for Adoption by Reference of ACI 562 in the Virginia Building Codes
Proposal Number: #442

To Whom It May Concern:

This letter is in support of approval of adoption by reference of ACI 562 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* in the *Virginia Building Codes (VB*C) as presented in the code change proposal #442 submitted by the American Concrete Institute.

Vector Corrosion Services Inc. performs investigations and evaluations of reinforced concrete structures. Clearer requirements for investigation are outlined in the code which will improve quality and improve the industry.

We find that it is increasingly more important to establish minimum requirements for evaluation, repair, and rehabilitation of structural concrete in existing buildings undergoing alternations, additions, renovations, or changes in occupancy to safeguard the public and minimize disruption of businesses. The requirements provided in ACI 562 improve the clarity of expectations by owners, designers, contractors, officials, material providers, and other relevant parties regarding repairs and rehabilitation of structural concrete and, where appropriate, provide a benchmark for use by building officials responsible for approving other means and methods.

Helping to assure that delivery of products and services are consistent with the expectations of all parties involved saves costs associated with unnecessary direct costs and indirect costs associated with due to construction delays when there are discrepancies in the various expectations.

Adoption by reference of ACI 562 helps ensure minimum levels of life safety, health and general welfare are being provided for the public. In addition, adoption of ACI 562 will improve the confidence for building owners, developers, and officials regarding the extended life and re-use of concrete buildings. This is not only important for the specific project but also is typically more sustainable than demolition and replacement.

The use of ACI 562 provides an increased level of anticipated outcome associated with repairs and rehabilitation regarding the ability to satisfy the intent of the code and provides information that can facilitate the efforts of officials involved in the project. Where repairs meet minimum requirements for life safety, for businesses will have increased confidence that they may be able to safely operate with less frequent interruptions while remaining in or relocating to existing buildings.

Other jurisdictions have adopted ACI 562. ACI 562 has been adopted in Hawaii, Ohio, and Florida. It is also referenced by the New York City building department.

While this proposal simply establishes a minimum level of expected performance of structural concrete for a design service life specified for the project, the change does not specify a design service life. Selection of a design service life continues to reside with the owners, owner's representatives, and where applicable, officials of the authority having jurisdiction. Also, the proposal is permissive and does not exclude other means and methods approved by the building official.

We have reviewed the code change proposal submitted by ACI and recommend the code change proposal be approved as submitted. We believe that this addition to the VBC will help ensure repairs to structural concrete will satisfy the intend of the code, result in affordable repairs with reasonable minimum levels of life safety, and support business operations with minimal disruption. The latter is important, not just for business operations, but also to maintain a consistent flow of revenue to the state resulting from these businesses.

Thank you in advance for your consideration of this recommendation.

Sincerely,

Matt Miltenberger
President
Vector Corrosion Services Inc.

VECTOR CORROSION TECHNOLOGIES, INC.
8413 Laurel Fair Circle, Ste 200A, Tampa, FL 33610
Main: 813-830-7566 | Fax: 813-830-7565
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October 8, 2020

Subject: Support for Adoption by Reference of ACI 562 in the Virginia Building Codes
Proposal Number: #442

To Whom It May Concern:

This letter is in support of approval of adoption by reference of ACI 562 *Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures* in the *Virginia Building Codes (VB*C) as presented in the code change proposal #442 submitted by the American Concrete Institute.

Vector Corrosion Technologies Inc. is a supplier of corrosion protection products to the concrete repair industry.

We find that it is increasingly more important to establish minimum requirements for evaluation, repair, and rehabilitation of structural concrete in existing buildings undergoing alternations, additions, renovations, or changes in occupancy to safeguard the public and minimize disruption of businesses. The requirements provided in ACI 562 improve the clarity of expectations by owners, designers, contractors, officials, material providers, and other relevant parties regarding repairs and rehabilitation of structural concrete and, where appropriate, provide a benchmark for use by building officials responsible for approving other means and methods.

Helping to assure that delivery of products and services are consistent with the expectations of all parties involved saves costs associated with unnecessary direct costs and indirect costs associated with due to construction delays when there are discrepancies in the various expectations.

Adoption by reference of ACI 562 helps ensure minimum levels of life safety, health and general welfare are being provided for the public. In addition, adoption of ACI 562 will improve the confidence for building owners, developers, and officials regarding the extended life and re-use of concrete buildings. This is not only important for the specific project but also is typically more sustainable than demolition and replacement.

The use of ACI 562 provides an increased level of anticipated outcome associated with repairs and rehabilitation regarding the ability to satisfy the intent of the code and provides information that can facilitate the efforts of officials involved in the project. Where repairs meet minimum requirements for life safety, for businesses will have increased confidence that they may be able to safely operate with less frequent interruptions while remaining in or relocating to existing buildings.

Other jurisdictions have adopted ACI 562. ACI 562 has been adopted in Hawaii, Ohio, and Florida. It is also referenced by the New York City building department.

While this proposal simply establishes a minimum level of expected performance of structural concrete for a design service life specified for the project, the change does not specify a design service life. Selection of a design service life continues to reside with the owners, owner's representatives, and where applicable, officials of the authority having jurisdiction. Also, the proposal is permissive and does not exclude other means and methods approved by the building official.

We have reviewed the code change proposal submitted by ACI and recommend the code change proposal be approved as submitted. We believe that this addition to the VBC will help ensure repairs to structural concrete will satisfy the intend of the code, result in affordable repairs with reasonable minimum levels of life safety, and support business operations with minimal disruption. The latter is important, not just for business operations, but also to maintain a consistent flow of revenue to the state resulting from these businesses.

Thank you in advance for your consideration of this recommendation.

Sincerely,

David Whitmore
President
Vector Corrosion Technologies Inc.

Proposed Modification to Code Change Proposal 441

Eric Koehler, P.E.
Titan America
5700 Lake Wright Drive, Suite 300, Norfolk, VA 23502
ekoehler@titanamerica.com

1703.1.3.1 Concrete Testing Personnel. Individuals with current credentials as provided in Table 1704.2 or ~~equivalent credentials~~ otherwise approved by the building official. ~~shall be considered qualified for sampling and testing of concrete.~~

1704.2.1 Special inspector qualifications. Prior to the start of the construction, the approved agencies shall provide written documentation to the building official demonstrating the competence and relevant experience or training of the special inspectors who will perform the special inspections and tests during construction. Experience or training shall be considered relevant where the documented experience or training is related in complexity to the same type of special inspection or testing activities for projects of similar complexity and material qualities. The special inspector shall be qualified in accordance with Table 1704.2 or ~~demonstrate equivalent qualifications for approval~~ otherwise approved by the building official. ~~These qualifications are in addition to qualifications specified in other sections of this code.~~
The registered design professional in responsible charge and engineers of record involved in the design of the project are permitted to act as the approved agency and their personnel are permitted to act as special inspectors for the work designed by them, provided they qualify as special inspectors.

Reason: This editorial modification is proposed to improve and simplify the language. I recommend this proposal be approved as modified by this public comment.

Code change proposal 441 is a needed addition to the Virginia Uniform Statewide Building Code for the reasons stated below:

This proposal addresses the need to better ensure proper sampling, testing, and inspection of structural concrete. Improper testing and inspection may result in deficiencies regarding the performance of structural concrete.

Concrete is one of the few structural materials that is not in its final form and condition until after being placed on the construction site. It is important that sampling, testing, and inspection are conducted by qualified individuals to ensure proper performance. Improper sampling and testing can lead to costly additional testing and construction delays. In some instances, unnecessary removal and replacement of concrete. The latter may result in challenges to ensure proper structural integrity and load paths.

This proposal adds provisions for individuals qualified through ACI, ICC or WACEL programs to conduct sampling, testing and inspections. The intent of this proposal is to assist the building official in identifying qualified personnel. The existing provisions of the code are not preempted by this proposal. Any individual approved as qualified by the building official remains permitted to conduct inspections and tests.

By citing specific certification programs which are regularly accepted in the construction industry, this proposal establishes a baseline for qualifications of individuals for consideration by the building official when approving individuals to conduct sampling, testing and special inspection.

Other authorities having jurisdiction are adding these requirements to their codes. For example, the Georgia Building Code now includes certified inspectors. See pages 11 through 15 of the attached Georgia Building Code. https://dca.ga.gov/sites/default/files/2014_ibcamendments.pdf

The Pennsylvania Structural Technical Advisory Committee has modified the Georgia table and will be making a recommendation to their Review and Advisory Committee.
The two co-proponents that develop and maintain certification programs are the American Concrete Institute (ACI) and the Washington Area Council of Engineering Laboratories (WACEL)

The American Concrete Institute. as a professional society whose mission includes working to facilitate the use and adoption of current concrete technology to assure the desired performance for the benefit of the public, encourages the committee to approve of this code change as submitted.

WACEL is an association of engineering laboratories, inspection agencies and building officials and has been certifying engineering technicians providing special inspection services since 1974 and pioneered the development of the nation's first special inspections program with Fairfax County, VA in 1975. The purpose of the WACEL Technician Certification program is to assess an individual's knowledge of information deemed critical to the proper performance of the special inspection services tasks for which certification is sought. Certification implies solely that an individual has met WACEL criteria and prerequisites and has passed a written examination and in some cases, a performance exam. A certification is valid for five years. WACEL criteria, prerequisites and examinations are compatible with guidelines established by ACI, ASTM, NICET, ICC and local governments.

The ACI requirements are provided in the attachment files as follows:
Concrete Special Inspector:
CPP-630.1-15 https://www.concrete.org/Portals/0/Files/PDF/cpp_6301-15.pdf
Concrete Laboratory Testing Technician Level 1 and Level 2:
CPP 620.1-19 https://www.concrete.org/Portals/0/Files/PDF/cpp_6201-19.pdf
Concrete Strength Testing Technician:
CPP 620.2-19 https://www.concrete.org/Portals/0/Files/PDF/cpp_6202-19.pdf
Concrete Field Testing Technician – Grade I
CPP 610.1-18 https://www.concrete.org/Portals/0/Files/PDF/cpp_6101-18.pdf
ICC certification requirements can be found at: https://www.iccsafe.org/certification-exam-categories/national-certification-exams/
WACEL certification requirements are provided in the attached certification concept statement:
https://www.wacel.org/WACEL/document-server/?cfp=WACEL/assets/File/Certificatation_Concept_Statement.pdf

Home Builders Association of Virginia

Opposition to E404.2-18

- The decision to install solar panels (or to have 'solar ready zones') should be left to the consumer – this proposal would require that certain homes be constructed with a solar ready zone even if the future homebuyer never intends to install a solar panel.
- This proposal exempts any "building with a solar-ready zone that is shaded for more than 70 percent of daylight hours annually" from the requirement to have a solar ready zone. Prior to construction, how is it possible to determine whether or not a roof would be shaded for more than 70% of daylight hours annually?
- Proposal requires that solar ready zones shall be free from obstructions "including but not limited to vents, chimneys, and roof-mounted equipment". Would this requirement prohibit a builder or homebuyer from preserving any existing tree canopy that could potentially obstruct the solar ready zone?
- Are their local zoning ordinances or HOA covenants/bylaws that prohibit or restrict the installation of rooftop solar panels? If so, this proposal would require a homebuyer incur the additional expense to install a solar ready zone without being able to actually install a solar panel.

Chesterfield County, Virginia
Department of Building Inspection

9800 Government Center Parkway – P.O. Box 40 – Chesterfield, VA 23832
Phone: (804) 748-1057 – Fax: (804) 751-2249 – Internet: chesterfield.gov/bi

Ronald W. Clements Jr.
Building Official

8 October 2020

VIA Email

Board of Housing and Community Development
C/O Jeff Brown, State Building Codes Office Director

Honorable Members of the Board:

I am the proponent of code change proposal RB403.1.6-18 regarding sill plate anchorage, which is part of the 2018 USBC final regulations. After further review of the code change proposal by DHCD staff for resiliency impacts, a question was raised regarding how the proposed 1.75 inch measurement shall be measured. The intent is for the 1.75 inch to be measured from the edge of the plate to the centerline of the bolt, not to the edge of the bolt diameter.

The staff concern can be resolved with a simple clarification to the proposed text. Please consider modifying the code change as follows with the addition of the double underlined text:

> The centerline of the bolts shall be located ~~in the middle third of the width of the~~ a minimum of 1.75 inches (44.45 mm) from the edge of the sill plate.

I have discussed this issue, and the solution proposed in this letter, with representatives of the VBCOA Residential Code Review Committee and the Home Builders Association of Virginia; both organizations support the suggested clarification. Please feel free to contact me if you have any questions.

Best regards,

Ronald W. Clements Jr.
Building Official

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Comments from Virginia Natural Gas - R403.1.4 & R404.2

1 message

Whayland, Morgan <MAWHAYLA@southernco.com> Fri, Oct 9, 2020 at 4:51 PM
To: "Kyle Flanders (kyle.flanders@dhcd.virginia.gov)" <kyle.flanders@dhcd.virginia.gov>, "Jeff Brown (Jeff.Brown@dhcd.virginia.gov)" <Jeff.Brown@dhcd.virginia.gov>, "Cindy Davis (Cindy.Davis@dhcd.virginia.gov)" <Cindy.Davis@dhcd.virginia.gov>

Good Afternoon,

Thank you for the opportunity to comment and Virginia Natural Gas appreciates the DHCD safely hosting the workgroup meetings virtually this summer. Virginia Natural Gas participated in the workgroup meetings and expressed our concerns with R403.1.4 and R404.2.

Virginia Natural Gas is proud to be the company that our customers depend on each day to fuel their daily lives. **R403.1.4** would ban the installation of clean, efficient natural gas furnaces and heat pumps in new residential construction. Natural gas is a low-cost, clean fuel for heating and cooling you home, cooking meals, cleaning clothes, and warming your shower or tub. Natural Gas is recognized as a key energy source in Virginia's Energy Plan now and in the future. As electricity rates continue to rise, natural gas provides an affordable energy source for Virginians.

The proposal also does not meet the intent of the residential building coverage of the IECC: "R101.3 Intent. This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances." The proposal does not demonstrate conservation of energy in buildings.

R404.2 would increase residential costs of construction on Virginians for "electrification-ready" electrical wiring and other components. Virginia Natural Gas supports energy efficiency and works with customers to take control of their energy use at home. The proposal does not include any justifications that this change would enhance energy efficiency, conservation, or savings.

The proposal does not meet the intent statement of the residential building coverage of the IECC: "R101.3 Intent. This code shall regulate the design and construction of buildings for the effective use and conservation of energy over the useful life of each building. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve this objective. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances."

Instead, the proposal offers speculative benefits of the proposed requirements such as retrofitting, gas price fluctuation, and indoor air quality without any data on energy savings. The proposal also states that it is based on language that will *probably* be in the 2021 IECC". This provision from the 2021 edition of the IECC is currently being appealed to the Board of Directors of the International Code Council (ICC).

In summary, removing gas from Virginia homes will not measurably improve either indoor or outdoor air quality or reduce emissions. Residents will lose the flexibility, efficiency and low-cost operation of gas appliances. Natural Gas is a key partner to renewable energy and ensures that Virginians have access to a clean, reliable, and affordable energy source. For these reasons, we ask the board to reject R403.1.4 and R404.2.

Thank you,

Morgan

Morgan Whayland

Director, Government Affairs

757-319-2350 mobile

mawhayla@southernco.com

Virginia Natural Gas

TOWN OF
Blacksburg
VIRGINIA

Leslie Hager-Smith
Mayor
lhagersmith@blacksburg.gov

Donna Boone-Caldwell
Town Clerk
dcaldwell@blacksburg.gov

October 12, 2020

To: Chairman Sonny Abbasi, Board of Housing and Community Development
c/o Kyle Flanders, Department of Housing & Community Development

From: Mayor Leslie Hager-Smith, Town of Blacksburg

Re: **Current Building Code Review; Proposed Amendments**

I am writing to you today to respectfully urge members of the Board of Housing and Community Development to prioritize energy efficiency and clean energy preparedness in their review of proposals to amend Virginia's Uniform Statewide Building Code (Code).

If Blacksburg and Virginia as a whole are to meet their targets to reduce greenhouse gas emissions and put us on a pragmatic and expedient path to a clean energy future, significant changes are needed to Virginia's Uniform Statewide Building Code. I urge you to adopt a number of specific amendments to the Code for new residential dwellings. These changes will save occupants' money, reduce both indoor and outdoor air pollution, and help implement the legislature's stated goal of achieving net-zero carbon emissions across Virginia's economy, including the building sector, by 2045. Specifically, Blacksburg supports adoption of the following proposed building code amendments:

- **Full Adoption of 2018 IECC** and elimination outmoded exceptions to **envelope efficiency and air leakage standards**. Adoption would save residents energy and money continuously for the life of any newly constructed home for 70+ years, reduce air pollution, and put Virginia on a path to meet its climate goals. According to an analysis by the Responsible Energy Codes Alliance (RECA), using Virginia-specific data and DOE methodology, the incremental construction costs of meeting the 2018 **building envelope efficiency standard** would be only 0.002 of an average new home, which will be fully repaid in 6 years, on average.
- **Builder choice of Additional Energy Efficiency Measure.** This amendment is modeled on a provision in the near-final 2021 IECC. Builders would be able to choose from four additional building efficiency measures (enhanced envelope insulation, enhanced ERI score, more efficient HVAC equipment, or energy saving water heaters). Adoption of this proposed amendment would improve energy savings on newly constructed buildings by approximately 5-10%.
- **Eliminate Resistance-Type Primary Heat Sources.** According to DOE, compared to electric-resistance heat, heat pumps cut space-heating electricity usage by half, while also offering air conditioning and dehumidification to occupants in summer months.
- **Eliminate On-Site Combustion for Primary Space Heating**. This would prohibit on-site combustion of gas or other fuels as the primary source of space heating for new residential construction without affecting secondary sources such as woodstoves or backup generators.
- **Building for Electric Readiness**. This would facilitate future electrification of appliances by requiring builders to provide electric panel space and either wiring or providing raceways for future wiring to locations near gas-fired water heaters, stoves, and clothes driers. These costs

are low during construction, while walls are open. Residents will be able to substitute electric appliances, if they so choose, without incurring burdensome rewiring costs. This proposed amendment is modeled on a provision in the near-final 2021 IECC.

- **Electric Vehicle (EV) Readiness**. Compared to traditional vehicles (Virginia's largest source of CO2), electric vehicles would reduce CO2 emissions by 2/3 now (even with the current high-carbon intensity fuel mix available from most utilities) and more as renewable energy is added to the grid. EVs also have much lower operating costs for owners (hundreds of dollars annually). The single greatest determining factor for driver EV adoption is availability of residential charging infrastructure. This proposed amendment is based on the near-final 2021 IECC and would require:
    - **New single-family** dwellings to have the wiring necessary to support a Level 2 charger. The likely cost is less than $50 if the panel is located on a garage wall plus $1.50/foot if the panel is farther from the outlet.
    - **New multi-family buildings** to have wiring and related infrastructure to serve two parking spaces at time of construction plus electrical panel space and raceways to enable easy expansion of EV charging infrastructure to serve up to 20% of parking spaces as EV demand grows. It is estimated that retrofitting multi-family developments with EV charging infrastructure would cost 3-8 times as much as if it were done at time of construction, which will discourage building owners from adding EV chargers later.
- **Solar Readiness**. This proposal, which is based on a 2018 IECC appendix, would require new dwellings to be built "solar ready" if they meet certain specified orientation, size and shading criteria. This would require the builder to provide and document pathways to the electrical panel and water heating area so that the building owner can easily and cost-effectively add solar energy in the future. It would not require the builder to install solar. For multifamily dwellings up to five stories, the builder would be required reserve 40% of the roof as a solar-ready area, leaving 60% for rooftop equipment and access.
- **Zero Energy Building Option**. This proposed amendment would set standards for construction of buildings sold as "zero energy", "zero net energy", "zero energy ready" or "zero net energy ready" with specific requirements for ERI scores for all of these designations with and without on-site power production. This would require a builder to comply with these standards in order to market a dwelling as "zero energy," "zero energy ready" or equivalent phrases. This will both accelerate adoption of zero energy construction and protect buyers from fraud and misleading advertising. Nothing in this provision would preclude a builder from constructing according to another recognized high-efficiency model, such as Passive House.

Thank you for your thoughtful consideration of these proposed amendments to Virginia's Uniform Statewide Building Code.

Sincerely yours,

L Hager-Smith

Leslie Hager-Smith
Mayor

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Virginia's Building Code and EV charging station readiness-Consumer Reports

1 message

Susan Stillman <stillman.susan@gmail.com> Wed, Oct 14, 2020 at 10:42 AM
To: "Flanders, Kyle" <kyle.flanders@dhcd.virginia.gov>

If you could forward this to the members of the BHCD it would be greatly appreciated. This is an article from Consumers Report that was just published.

Susan

Attached is the October 2020 Consumer Reports article on the huge savings for electric vehicle (EV) owners compared to gasoline vehicles. The savings far exceed the low costs for making dwellings EV-ready per the pending proposal for EV-readiness **(E405.10-18)** in new single and multi-family dwellings. Additional benefits are the great reductions in carbon pollution (67%) and other pollution from switching to EVs. Highlights of EV benefits identified in the CR report include:

- "massive lifetime savings" of operating costs equal to $15-17,000 over vehicle life;
- Annual fuel cost savings of 60% ($800-$1,000) ***assuming at-home charging*;**
- Annual maintenance costs just half those of gasoline vehicles;
- Depreciation equal to or better than gasoline vehicles;
- Lower-priced EVs coming on the market.

The key to maximizing savings is at-home charging, which can be conveniently undertaken during off-peak hours if the Level 2 charging is installed. It costs very little to install the wiring and electrical box needed for one EV charger in a new single-family dwelling unit (perhaps $50-100 depending on distance to electrical panel), but vastly more if wiring has to be installed after walls are closed. The pending proposal (E405.10-18) for single-family units would be one EV Ready space per unit. The proposal for multifamily would require two EV Ready spaces plus raceways from electrical panel space to serve 20% of parking spaces as demand grows. Once that infrastructure is in place, landlords will be much more willing to install chargers as demand evolves. Later installation would cost 3-8 times as much which would impede EV growth for multi-family residents and harm low-income families that need savings.

With large annual savings for EV owners and with GM, Ford and VW planning to spend $65 billion on EV manufacturing by 2025 (plus spending by other companies), EV demand will grow provided that it is not inhibited by the lack of at-home Level 2 chargers. Estimates of EV sales rising to 25% or more of new car sales by 2030 are reasonable, assuming that on-site Level 2 charging is available.

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Susan Stillman
703 623 1422 (cell)
Help promote solar on Fairfax County Schools!
Sign the petition at: http://vasierra.club/solarschoolsfcps

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Sign the petition at: http://vasierra.club/solarschoolsfcps

2 attachments

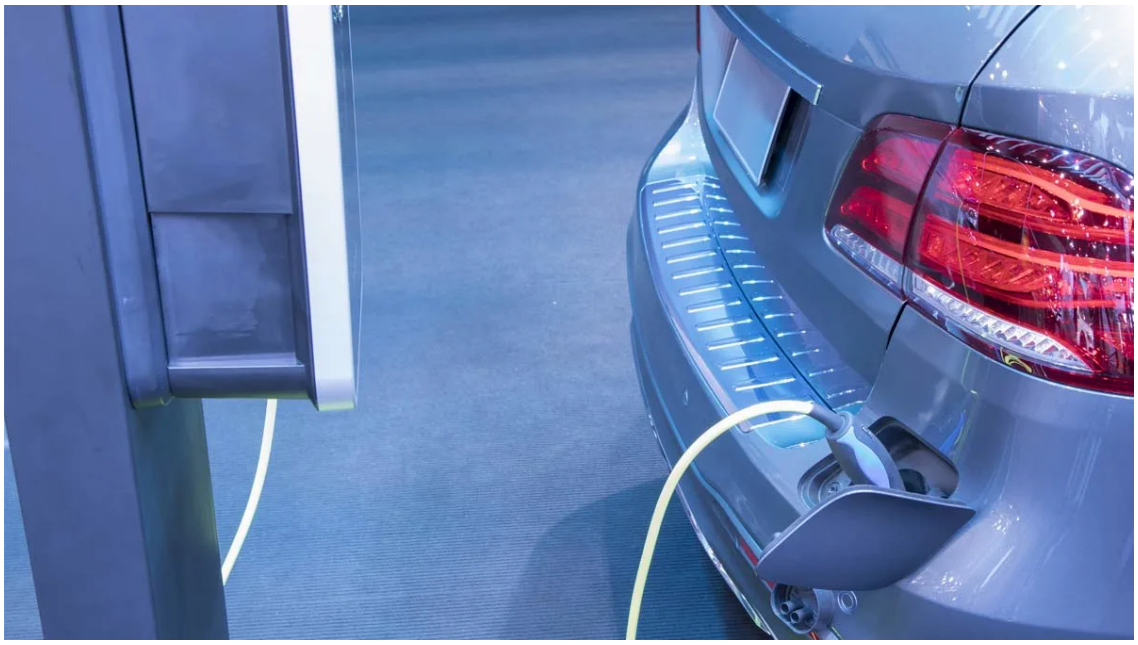
EVs Offer Big Savings Over Traditional Gas-Powered Cars - Consumer Reports-1.pdf
1297K

EVs Offer Big Savings Over Traditional Gas-Powered Cars - Consumer Reports-1.pdf
1297K

EVs Offer Big Savings Over Traditional Gas-Powered Cars

A CR study shows that total ownership cost savings can more than make up for an electric vehicle's typically higher purchase price

By Benjamin Preston
October 08, 2020



When it comes to buying an electric vehicle, many consumers might like the idea, but they sometimes balk at the purchase price, which is typically higher than that of an equivalent gasoline-powered vehicle. However, new research from Consumer Reports shows that when total ownership cost is considered–including such factors as purchase price, fueling costs, and maintenance expenses–EVs come out ahead, especially in more affordable segments. (Download a PDF of the fact sheet and the complete report.)

The savings advantage can be compelling in the first few years and continues to improve the longer you own the EV. Our study shows that fuel savings alone can be $4,700 or more over the first seven years.

When comparing vehicles of similar size and from the same segment, an EV can cost anywhere from 10 percent to over 40 percent more than a similar gasoline-only model, according to CR's analysis. The typical total ownership savings over the life of most EVs ranges from $6,000 to $10,000, CR found. The exact margin of savings would depend on the price difference between the gas-powered and EV models that are being compared.

MORE ON ELECTRIC CARS

Pay Less for Vehicle Maintenance With an EV

California Says New Cars Sold in the State Must Be Zero Emissions by 2035

Tesla Plans to Offer a $25,000 EV in 3 Years, With Improved Battery Technology

How to Choose the Best Home Wall Charger for Your Electric Vehicle

Electric and Hybrid Car Ratings

For lower-priced models, the savings on ownership costs over the lifetime of the vehicle (200,000 miles) usually exceed the extra money paid for a comparable EV. For example, a Chevrolet Bolt costs $8,000 more to purchase than a Hyundai Elantra GT, but the Bolt costs $15,000 less to operate over a 200,000-mile lifetime, for a savings of $7,000, our study found. In the luxury segment, operating cost savings are often

aided by a tighter price differential. The Tesla Model 3 is priced lower than the gas-powered BMW 330i, and priced only about $2,000 more than an Audi A4. But the savings on operating costs for the Model 3 are about $17,000 when compared with either of the popular German gas-powered sedans.

“No matter how you look at it, the massive lifetime savings potential of EVs could be a game changer for consumers,” says Chris Harto, CR’s senior policy analyst for transportation and energy, and the leader of the study. “As battery prices and technology improve, prices come down, and more attractive models hit the market, it’s only going to get better.”

What We Found

Fuel savings: The study shows that a typical EV owner who does most of their fueling at home can expect to save an average of $800 to $1,000 a year on fueling costs over an equivalent gasoline-powered car.

Maintenance and repair: The study also found that maintenance and repair costs for EVs are significantly lower over the life of the vehicle—about half—than for gasoline-powered vehicles, which require regular fluid changes and are more mechanically complex. The average dollar savings over the lifetime of the vehicle is about $4,600.

Depreciation: CR’s analysts also found that newer long-range EVs are holding their value as well as or better than their traditional gasoline-powered counterparts as most new models now can be relied on to travel more than 200 miles on a single full charge. As with traditional gasoline-powered

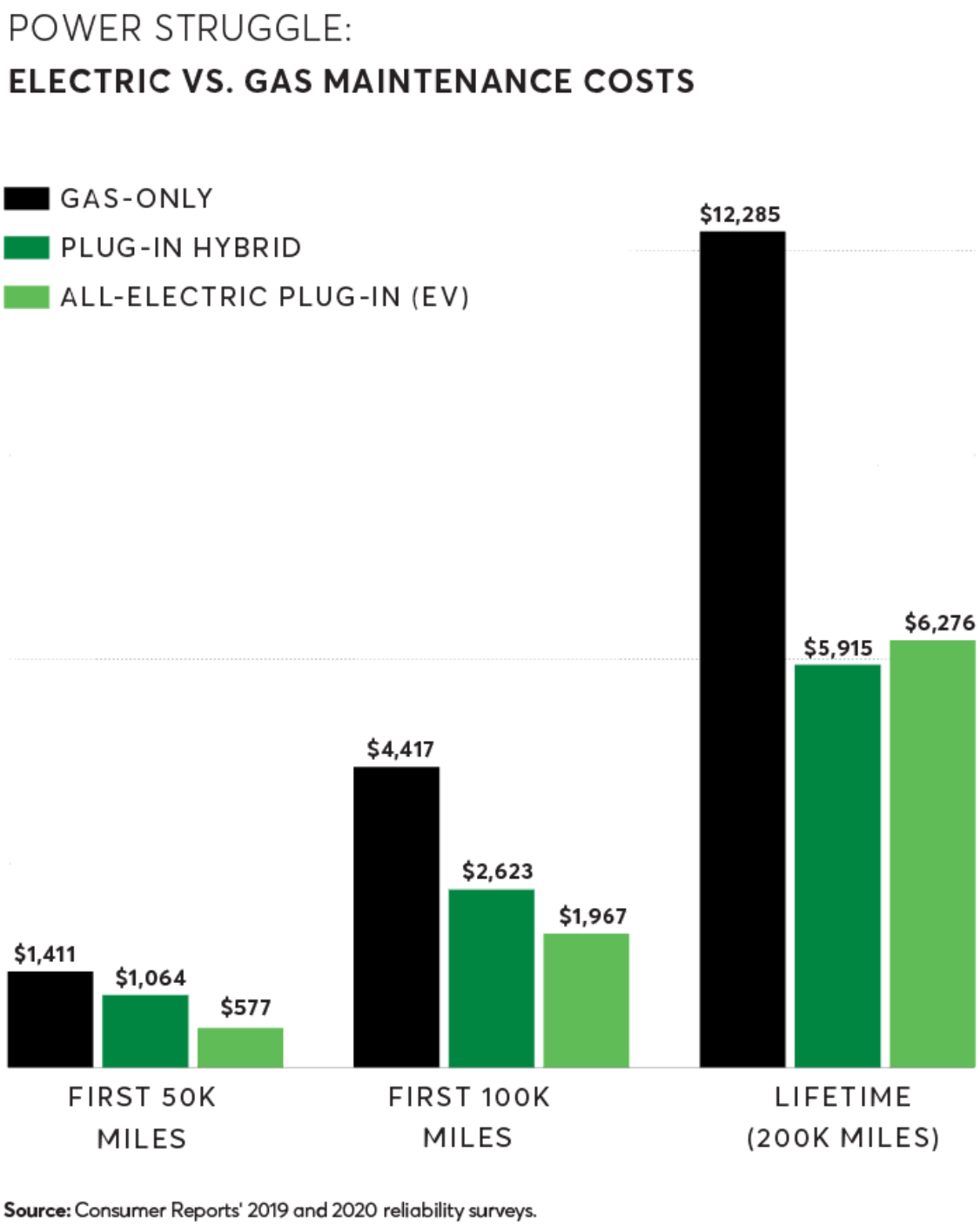
vehicles, not all EVs will lose value at the same rate as they age. Class, features, and the reputation of the vehicle's manufacturer all have an impact on depreciation.

Currently, EVs and plug-in hybrids account for less than 2 percent of overall new vehicle sales, although that number has been on the rise since the first viable EV models began to appear on the market almost a decade ago. EVs have been forecasted to constitute anywhere from 8 to 25 percent of the new-car market by 2030. Falling manufacturing costs for the lithium-ion batteries used to power EVs and plug-in hybrids has also brought down prices, although many consumers may still balk at the price difference between EVs and the most fuel-efficient gasoline-powered cars. Tesla announced this month that it would introduce a $25,000 EV within the next year, signaling that EV prices could be falling in the near future.

To be sure, total cost of ownership can vary depending upon region, electricity-service rates, access to charging, and a number of other variables. For example, someone who lives in an extremely cold region with high electricity rates and low EV incentives from state and local government agencies will pay more over the life of the vehicle than someone who lives in an area with a mild climate, inexpensive electricity, and favorable tax incentives.

And Harto says there are several factors beyond price and potential savings that will affect buying decisions. Aside from access to home charging, it's a good idea to look at your state's EV incentives, where applicable. Some states—such as New York and California—are more generous than others. It is also important to consider that some states—such as Arizona,

Texas, Alabama, and Arkansas—impose high fees on EVs that could hurt the economics of EV ownership. Also, some EV models are eligible for a federal tax incentive of up to $7,500.



Source: Consumer Reports' 2019 and 2020 reliability surveys.

Fuel Savings Can Depend on Car Size

The amount of money a consumer can save on fueling depends on the size of the vehicle and length of ownership, according to the study. Car owners could save an average of $800 the first year, whereas pickup owners could save $1,300 in the same period. Savings in the SUV class falls in between. After seven years of ownership, an EV in the car category will save its owner $4,700, while overall savings for electric pickup owners balloons to almost $9,000. Savings over the lifetime of a vehicle approach $9,000 in the car category and $15,000 for trucks.

Naturally, there are regional differences in gasoline and electricity prices that can make one person's EV fueling price advantage more appealing than another's. But for those who can charge at home–where overnight charging lowers the cost of fueling the vehicle–charging an EV will net savings over gassing up an internal combustion car even in the first year, with big savings piling up after a few years. CR found that in most states, the amount of money EV owners could save on fueling costs were within 10 percent of the national average.

EV Fueling Savings by Class

Car

1 YEAR (15K MILES)	FIRST OWNER (7 YEARS)	LIFETIME (200K MILES)
$800	$4,700	$9,000

CR's fueling cost model assumes a $3.02-per-gallon price over the next decade, based on Department of Energy projections, but fuel prices can change quickly, as seen when the nationwide average spiked to the $4-per-gallon range several times in the wake of the 2008 to 2009 recession. A price spike further increases an EV's fueling cost advantage. CR also looked at the effect of long-term lower gas prices on consumer savings. Utilizing the DOE's low gas price scenario—which assumes an average price of $2.33 per gallon over the next 10 years—consumers are still expected to save many thousands of dollars over a typical ownership period, or most of the savings CR projected.

Sam Abuelsamid, the principal research analyst for Guidehouse Insights, a firm that tracks automotive industry trends, noted that at national average prices for electricity, most consumers would come out ahead with an EV, although not necessarily by all that much, depending on the model.

"Bottom line, at current gas prices, the argument for operating-cost savings is complicated if you are comparing similar-sized vehicles with some of the more efficient powertrain options," he says. "If we tax fuel more heavily, it would definitely tilt the equation in the direction of the EV."

Charging-at-Home Sweet Spot

CR found that although longer-range EVs make it possible for most EV owners to do more of their charging at home, where it would presumably cost less than at a public charging station, cars with a 250-mile range were in a "sweet spot" best suited for saving money. At that range, 92 percent of charging

can be done at home, requiring only six stops at a public charging station per year. Vehicles with ranges above 300 miles add approximately 20 percent to vehicle cost and battery weight, while only decreasing the amount of public charging needed by 2 percent. Ranges below 200 miles significantly increased the amount of more expensive public charging that would likely be required, to the tune of 11 charging sessions per year for a 200-mile-range EV, and 20 charging sessions for a 150-mile-range model. Most EVs on the market now offer more than 200 miles of range.

Still, higher purchase prices and lack of access to home charging can cause many consumers to shy away from EVs. Although sales have been on the rise since the first viable models appeared in the U.S. in 2011, pure electric and plug-in hybrid sales are still just a sliver of the market.

Abuelsamid and other experts say that in order for consumers to adopt EVs with more fervor, a few things need to happen. First, they need to become less expensive—a scenario that could become reality as battery prices fall. Second, charging needs to be a lot more convenient, he says.

“It’s fine today if you live in a single-family home with access to a charger in the driveway or garage, but if you rely on street parking or live in a multi-unit dwelling, it’s not practical,” he says. “Charging from a public Level 2 (240V) charger takes way too long.”

Level 2 chargers are the type typically found in residential settings and are cheaper to use than DC fast chargers, which are generally found at public charging stations and can charge a vehicle in 30 to 45 minutes. The DC chargers cost two to three times more to use.

Modernizing the Grid

An added benefit of EV fueling is its potential impact on the nation's electric grid. Donald Hillebrand, director of the Argonne National Laboratory's energy systems division, says that currently, less intensive electricity use at night means powering down electric plants.

"The grid is a gigantic tool that turns way up during the day and down at night," he says. "It's inefficient because it's got all this equipment that's not running all night and not producing revenue."

Argonne's data show that Americans already have gotten wise to using electricity during times when demand is low and rates are less expensive. During the 1980s, consumers used an average of 3,000 hours of the highest-priced electricity. Over the past decade, that number dropped to 1,000 hours as the average consumer has spread out their electric load to save money.

Hillebrand says that the grid is likely to grow and modernize as EVs become more widespread—not solely because of an EV push but because there are so many other battery-powered technologies people rely on. As more people use the grid to recharge batteries for various products, day and night prices are likely to even out, making EV charging less expensive during the day, he says, adding that there is also likely to be more widespread adoption of home solar panels and electric storage batteries as consumers seek to find new ways to reduce their electricity costs.

"People are going to want solar panels and storage batteries regardless of whether or not there's an EV parked in the

driveway," he says. "But it's something that could be a boon to EV sales, and vice versa."

Recently Tested hybrids-evs

See our full list of hybrids/evs ratings

57	**83**	**80**	**68**
Tesla	**Tesla**	**Tesla**	**Nissan**
Model X	Model S	Model 3	Leaf
81	**77**	**63**	**81**
Audi	**Porsche**	**Kia**	**Kia**
e-tron	Taycan	Niro	Niro Electric
71	**79**		
BMW	**Toyota**		
i3	Prius		

TO: *Members, Board of Housing and Community Development*

FROM: *Andrew Clark, Home Builders Association of Virginia (HBAV)*

SUBJECT: *HBAV Positions on Code Proposals for October 19th Board Meeting*

Dear Members of the Board of Housing and Community Development,

On behalf of the Home Builders Association of Virginia (HBAV), I am writing to convey the housing industry's position on several of the code proposals that will come before the Board of Housing and Community Development (BHCD) during the October 19th meeting.

The meeting documents that were prepared and distributed by DHCD staff are indicative of the extensive, rigorous, and consensus-oriented review process that has occurred since April 2019. As you know, numerous stakeholders are involved in the code development process through their participation in the workgroup and sub-workgroup meetings. Despite a wide array of opinions and perspectives among the stakeholders, the workgroups and sub-workgroups were able to work towards considerable consensus on many proposals during both phases of this code development cycle:

- **Final Phase:**
  - 61 USBC proposals recommended as *consensus for approval*
  - 31 USBC proposals recommended as *non-consensus*
- **Proposed Phase:**
  - 103 proposals recommended as *consensus for approval*
  - 18 proposals recommended as *non-consensus*

As reflected by the number of consensus and non-consensus proposals coming to the Board on October 19th, the workgroup and sub-workgroup system is an effective way to bring together technical experts from various fields to evaluate and build consensus around many of the code proposals that are submitted during the cycle. The stakeholders involved in the process, along with the staff at DHCD, devote a significant amount of time working to build consensus on proposals which can often be contentious subjects, including energy efficiency, resiliency, and fire safety. An overview of the consensus proposals in those areas can be found below.

The Building Code "Balancing Test" - Housing Affordability and Advancements in Building Science:

Like many states, Virginia is amid a dire housing affordability crisis, which is partially rooted in a significant supply and demand imbalance. Demand for new rental and for-sale housing is surging but production is not keeping up. Harvard University's Joint Center for Housing Studies (JCHS) reported in 2019: "Since reaching bottom in 2011 at just 633,000 new units, additions to the housing stock have grown at an average annual rate of just 10 percent. Despite these steady gains, ***completions and placements totaled only 1.2 million units last year—the lowest annual production, excluding 2008–2018, going back to 1982***.[1]" (emphasis added)

The shortfall in new housing units – for sale and rental – has kept upward pressure on home prices and rents. The erosion of affordability impacts the entire Commonwealth, but places greater burden on low and modest-

[1] Harvard University Joint Center for Housing Studies: 2019 State of the Nation's Housing Report

income homeowners and renters. For example, 44% of renters in **Richmond** are considered "cost burdened", meaning that they pay more than 30% of their income on housing. Renters in the **Blacksburg-Christiansburg-Radford** region (49.8%), **Roanoke** (47.1%), **and Lynchburg** (46.5%) are cost burdened. **Virginia Beach- Norfolk-Newport News** region, according to Harvard University's JCHS, has the highest percentage of renters who are cost burdened (50.8%)[2].

Although research has shown that renters are more burdened by housing costs than homeowners, the homeowner household statistics are still staggering: In **Richmond**, 67,714 homeowner households are paying more than 30% of their income on housing. In **Virginia Beach-Norfolk-Newport News** (96,444 homeowner households), **Washington-Arlington-Alexandria** (325,570 homeowner households), **Roanoke** (17,835 homeowner households) are cost burdened[3].

The erosion of housing affordability in the Commonwealth is the result of many factors; and it is difficult to determine which factors play a primary or secondary role in restricting the supply of housing available for individuals across the income spectrum. However, many private-sector and non-profit builders of "and "market rate" housing attribute the rising cost of land, construction (and construction materials), and the complexity and length of the entitlement/permitting process as a significant impediment to meeting the surging demand for "affordable housing", "workforce housing", or "starter homes".

Virginia's code development process is nationally recognized for its deliberateness, inclusiveness, and most importantly, for its emphasis on **balancing the need to ensure new building technologies, methods, and materials are incorporated into Virginia's next generation of buildings, with the reality that decisions made by the Board of Housing and Community Development will have a real-world impact on Virginia homebuyer's and renter's ability to find a place they can call home.** HBAV recognizes that, as building science and technologies evolve, so does Virginia's Uniform Statewide Building Code – however, we continue to urge the Board to keep that "balancing test" in mind as we conclude the 2018 Code Development Cycle and head into the next cycle.

Overview of Consensus Proposals:

Energy Efficiency:

Both phases of the 2018 Code Development Cycle have resulted in significant improvements to Virginia's building codes in the areas of energy efficiency, resiliency, and fire safety. Although the building industry and energy efficiency community share the common goal of enhancing the energy efficiency characteristics of new homes and apartments there is often varying perspectives on how that goal can be achieved and how to do so in a way that does not significantly increase the cost of housing. Over the course of this code development cycle, HBAV has partnered with the Responsible Energy Codes Alliance (Eric Lacey) and the Virginia Energy Efficiency Council (Chelsea Harnish) to build consensus on several energy efficiency-oriented code proposals. Although these proposals will increase the cost of construction, we believe that homebuilders will be able to adapt to the new requirements over time. **We hope that the Board will support the following proposals at the October 19th meeting:**

- Increase ceiling insulation requirements (R-38 to R-49) for all new residential buildings;

[2] Harvard University Joint Center for Housing Studies: Many Renters Burdened by Housing Costs
[3] Harvard University Joint Center for Housing Studies: Many Households Burdened By Housing Costs

- Remove visual option for verifying building envelope air tightness and require blower door testing for all new residential buildings;
- Require an "energy certificate" in all new residential buildings to inform current and future homeowners about the key energy characteristics of their home.

Resiliency:

In 2018, Governor Northam issued Executive Order 24 *("Increasing Virginia's Resilience to Sea Level Rise and Natural Hazards"*) which included a directive for the Department of Housing and Community Development to identify "resilience-specific improvements to the Uniform Statewide Building Code (USBC) for inclusion in the 2018 code update[4]". As a result, a new sub-workgroup was formed during this code change cycle specifically for the purpose of evaluating resiliency-oriented code proposals. We are pleased to report that 11 of the 16 resiliency proposals that were introduced this cycle are being sent to the Board with unanimous support from the sub-workgroup. We believe that the 2018 Code Development Cycle has made meaningful progress in the area of resiliency; and moving forward, HBAV looks forward to continuing the dialogue with the sub-workgroup to advance common-sense code proposals aimed at increasing resiliency in a way that passes the previously-mentioned "balancing test".

Fire Safety:

Over the last several code developments cycles, there have been extensive discussions on various code proposals related to fire safety. We are pleased to report that the workgroups were able to find consensus on several fire safety code proposals during the 2018 Code Development Cycle, including a long-debated proposal to incrementally expand AFCI protections in new homes, as well as several proposals that provide voluntary incentives to install fire sprinklers in townhomes:

- Arc-fault protection with GFCI exception
- Specific 10-year battery life for smoke alarm power source exception
- Townhouses compliance section numbers – 2021 change
- Adds exception for structural independence where protected by a sprinkler system
- Sprinkler piping in common walls allowance

Overview of Non-Consensus Proposals:

Despite the high number of proposals coming to the Board as "Consensus for Approval", there are 31 USBC proposals where consensus among the stakeholders and technical experts **could not be reached**, for varying reasons. We respectfully request that the Board of Housing and Community Development **reject** these proposals to allow our Association – and other members of the construction industry – additional time to discuss our concerns with the proponents and other stakeholders after the conclusion of the 2018 Code Development Cycle, and attempt to find common ground during the next code development cycle. As you can tell, many of the code proposals below would have a measurable impact on the residential and commercial development and construction industry, homeowners, design professionals, and local governments. Given the highly technical nature of many of the proposals below and the high likelihood that they would adversely impact efforts to address housing affordability, it is our opinion that these proposals require greater scrutiny from a broader group of technical experts during the next code development cycle.

[4] Governor Northam Executive Order 24

Again, we respectfully request the Board of Housing and Community Development reject the proposals listed below.

I'd be happy to speak with your further about our concerns with the following code proposals, at your convenience.

A113.8(2)	Requirement to energize during final inspection
B1612.2.1	Elevation requirements in accordance with ACSE 24 or BFE plus 2 feet
B1612.4	Flood Hazard Documentation
B1804.8	Highest adjacent grade definition
ERB101	Zero Energy Standards for buildings. Adds Appendix.
E404.2	Mandatory solar readiness
E405.10	Requires EV ready spaces in commercial and residential occupancies
E1301.1.1.1	Removes all energy code state amendments
RE402.1.2(6)	Removes wall and ceiling R-value state amendments
RE402.4.1.2(2)	Limiting air infiltration to 3 air changes per hour
RE403.1.2	Prohibits electric resistance heat as primary heat source
RE403.1.4	Prohibits fuel-fired HVAC as primary heat source
RE404.2	Requires electric readiness
RE407.1.1	Additional energy requirements
RB313.1	Sprinkler system requirement in townhouses
RB325.1	Habitable attics 2021 change
RB332(2)	Standby power systems
RB703.11.1	Clarifies soffit installation requirements
EB202	Change of occupancy definition to include electrical
EB701.4	Moves VECC existing building provisions to VEBC
RTE3902.16(1)	Arc-fault protection, similar to RTE3902.16(2), but does not include an exception for GFCI

Thank you for your service to the Board of Housing and Community Development and for your consideration of our perspective on the various code proposals. Please do not hesitate to reach out to me if you have any additional questions, comments, or concerns.

Sincerely,

Andrew C. Clark
Vice President, Government Affairs
Home Builders Association of Virginia

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Arianna Royster <Arianna.Royster.360390847@p2a.co> Thu, Oct 15, 2020 at 3:33 PM
Reply-To: aroyster@borgermanagement.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

First, I ask that you oppose changes that would make it mandatory for existing buildings to comply with the latest model code energy efficiency requirements for new construction. Our industry supports energy efficiency, and property owners and managers continue to lead the way in adopting innovative technologies and approaches to cost-saving and protecting our environment. However, this proposed change would discourage renovation and rehabilitation projects by driving up costs and diverting funds to energy projects from other, more badly needed building priorities, at a time when property owners are facing tremendous uncertainty about when – or if – financial equilibrium might be restored to our industry. Moreover, it will drive up rent for struggling Virginia businesses and renters already facing extreme hardship resulting from the ongoing pandemic and economic shutdown.

Furthermore, the proposed change is contrary to the General Assembly's explicit legislative edict to regulate new and existing buildings separately, and not subject the latter to new code requirements. Existing buildings are to be regulated "at the least possible cost." Now is not the time to saddle them with costly energy efficiency mandates.

Second, I urge you to oppose radical changes to the USBC's in-building emergency communications systems (IBECs) provisions. The current code provisions on IBECs are the result of years of deliberation by a General Assembly task force, DHCD workgroups, and ultimately, the BHCD, which correctly allocated responsibilities between housing providers and localities. They should not be undone by adopting code change proposals submitted late in the process that have received little deliberation.

Many reasons for signal issues are beyond the control of the building owner, such as the natural terrain, the later erection of a new building or cell tower nearby that causes signal inadequacy, and wide variations in the emergency communications capabilities of fire departments. Additionally, no Virginia fire data was submitted to support the assertion that drastic changes in the current code are needed to protect building occupants and firefighters. Current code provisions on IBECs provide building code officials-- who have the responsibility for applying them-- with latitude to require or accept alternative "equivalent" equipment that is compatible for specific installations.

As Virginia's real estate industry deals with the uncertainties caused by the COVID-19 pandemic, we need steady leadership. We ask that the Board reject rushed regulatory changes that would have a severe impact on our industry as we navigate today's unprecedented challenges.

Regards,
Arianna Royster
1500 S Fern St
Arlington, VA 22202

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Lindsay Anderson <Lindsay.Anderson.382369577@p2a.co> Thu, Oct 15, 2020 at 7:01 PM
Reply-To: landerson@comstockcompanies.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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As Virginia's real estate industry deals with the uncertainties caused by the COVID-19 pandemic, we need steady leadership. We ask that the Board reject rushed regulatory changes that would have a severe impact on our industry as we navigate today's unprecedented challenges.

Regards,
Lindsay Anderson
1886 Metro Center Dr
Reston, VA 20190

THE APARTMENT AND OFFICE BUILDING ASSOCIATION
OF METROPOLITAN WASHINGTON

THE VIRGINIA APARTMENT MANAGEMENT
ASSOCIATION

October 16, 2020

Mr. Sonny Abbasi, Chairman
Virginia Board of Housing and Community Development
c/o Kyle Flanders, Senior Policy Analyst
VA Dept. of Housing and Community Development
Main Street Centre
600 East Main Street, Suite 300
Richmond, VA 23219

RE: Uniform Statewide Building Code, Statewide Fire Prevention Code

Dear Chairman Abbasi and Members of the Board:

The Apartment and Office Building Association of Metropolitan Washington, DC (AOBA), represents owners and managers of commercial office buildings and multi-family rental housing in the Washington, DC area. Our members currently manage 185 million square feet of office space and more than 350,000 apartment homes. In addition, AOBA represents the Virginia Apartment Management Association (VAMA) before the Virginia General Assembly and state regulatory agencies. VAMA members currently own or manage over 230,000 apartments across the Commonwealth.

We are in our fourth decade as an active participant stakeholder in Virginia's famously deliberative and effective codes development process. As completion of its current phase nears, I would like to, on behalf of all AOBA and VAMA members, commend each and every one of the staff of the Department of Housing and Community Development who have been shepherding that process on their simply outstanding performance. The description found in your Book 6, pp. 13-15 describes a body of work that would have been astonishingly formidable in the best of times. And these have not been the best of times. Cindy Davis and her team have been truly remarkable.

I am pleased to share the views of AOBA/VAMA below on various Non-Consensus code change proposals that make up the Board's agenda today.

In-Building Emergency Communications Systems (IBECs) - B916 and B918.1

The USBC's current IBECs provisions are the result of an extensive process initiated by the General Assembly in 2003. It created a 45-member task force with State and local members from the Commonwealth, as well as local and national stakeholders and experts in the field. The Task Force met several times over the next year and produced a 71-page report to assist the Board of Housing and Community Development in developing building code regulations. DHCD then convened extensive deliberations, over many months, in the next code development cycle to come up with what the Board ultimately adopted.

The Board adopted the first-ever building code requirements for IBECs in 2006. They apply to all new buildings greater than one story. They have undergone minor revisions since then, but their fundamental provisions, reflecting the Board's essential policy decisions, have remained intact. Those are:

- IBECs are an important part of building fire and life safety for protection of both occupants and firefighters.

- There is wide variation in the reasons for, and sources of, radio signal attenuation in buildings. Many of these reasons are beyond the control of the building owner—the natural terrain, the later erection of a new building or cell tower nearby that causes signal inadequacy, to name a few.

- There are similarly wide variations in the emergency communications capabilities of the many career, volunteer and combination fire departments across the Commonwealth. Many have only a single radio channel to handle all functions; many use dual function police/fire services dispatchers; differences in staffing, tactics, equipment and training among departments also adversely affect emergency communications.

- The most equitable way of addressing these wide variations in both property characteristics and fire department needs is through a jurisdiction's general tax revenues. Building owner obligations are to uniformly provide basic infrastructure at their own cost, and subsequent access to that infrastructure. All localities are, in turn, obliged to determine the communication equipment necessary for its firefighters and command center to communicate with each other; and to then acquire, deploy, test and maintain their systems in the spaces provided by building owners.

Late in the current process, representatives of Virginia's Fire Services submitted two code change proposals that would 1) drastically increase the requirements on building owners by making them provide the communications equipment a fire department says it needs; and 2) completely reverse the financial responsibility for meeting those fire department demands—equipment acquisition and installation, maintenance and periodic testing thereafter.

Absolutely no Virginia fire data was submitted to support the assertion that, after fourteen years, such drastic changes in current code are needed to protect building occupants and firefighters. As importantly, building code officials-- who have the responsibility for applying current code requirements for IBECs-- have not indicated that there are technical problems with their ability to do so. Current code provisions provide them with latitude to require or accept alternative "equivalent" equipment that is "compatible for specific installations."

Moreover, the Fire Services proponents, in their reason statement, make insulting, slanderous allegations against the Board which adopted the first code provisions addressing IBECs, and against each successive Board which has reaffirmed those provisions. They assert that the code provisions adopted by these Board members are "unconscionable… and tantamount to placing career and volunteer firefighters… in harm's way without the most basic of abilities to call a MayDay… or for an incident commander to call for an evacuation…"

This Board is urged to reject such a dishonest and misplaced litmus test of whether you and your predecessors support firefighters and effective fire prevention. The current code provisions on IBECs are the result of years of deliberation by a General Assembly task force, DHCD work groups and, ultimately, the BHCD. They should not be undone by adopting code change proposals submitted late in the process, with no evidence, that could be given little deliberation.

Energy Efficiency Standards and Existing Buildings

Various code change proposals have been put before you which, if adopted, would mean that alterations and repairs to existing buildings would require those buildings to comply with the **latest** model code energy efficiency requirements for **newly** constructed buildings. Proponents argue that such massive retrofit requirements are necessary to achieve energy efficiency goals because, without such mandatory regulation forcing them to do so, owners of existing buildings will simply not make energy efficiency upgrades when making building improvements.

AOBA/VAMA believe that adopting such proposals would violate the intent, purpose and spirit of policies previously adopted by the General Assembly—**policies which the General Assembly pointedly did not modify when it recently enacted the Virginia Clean Economy Act.**

Sec. 36-103 of the Code of Virginia reads, in part, as follows:

"[The] Board may adopt and promulgate as part of the Building Code, building regulations that facilitate the maintenance, rehabilitation, development and reuse of existing buildings **at the least possible cost** (emphasis added) to ensure the protection of the public health, safety and welfare."

In short, the General Assembly, as a policy matter, premised the Board's authority to develop and adopt an existing buildings code on the provisions of such a code representing the least possible costs while encouraging, rather than possibly discouraging, continued reinvestment in existing buildings. Code change proposals which would increase the costs of "construction" or "development" of existing buildings beyond the "least possible" cost are antithetical on their face to the policy prescribed by the General Assembly; and, thus, cannot be validly adopted. The only exceptions to this "safe harbor" policy for existing buildings are regulations which are shown to be essential "to ensure the protection of the public health, safety and welfare."

One code change proponent has asserted that the Board has no choice under Virginia law but to require that new and existing buildings meet the very latest model code energy standards. The Board should not be persuaded: this is simply wrong as a matter of law.

Specifically, CoVA Sec. 36-99B reads:

"In formulating the Code provisions, the Board shall have **due regard for** (emphasis added) generally accepted standards as recommended by nationally recognized organizations, including, but not limited to, the standards of the International Code Council and the National Fire Protection Association."

"Due regard for" does not mean blind obeisance to the latest standards "recommended by" these or other organizations; nor does it require absolute consistency with the latest such standards. In fact, Virginia's BHCD has a proud history of declining to adopt various provisions found in the latest editions of "model" codes and standards where, in its collective judgment, the Commonwealth would be better served by a different approach.

Moreover, those departures from model code provisions have gone in both directions: after giving "due regard for" a model code provision, the Board has sometimes declined to adopt that version in favor of a modified version of it; or retained the then-current provision found in the USBC; or adopted a provision that mirrors a proposal being considered, but not yet adopted, by a nationally recognized organization.

Thus, while proponents might claim that adoption of the latest IECC standards would arguably "protect the residents of the Commonwealth" more than, say, the standards from 2015 or even 2009, giving "more" or "the most" protection is not the standard which the General Assembly has placed on the Board.

Having given the required "due regard for" the latest IECC, you can, and should, determine to adopt a different approach for existing buildings-- a decision well within your legal authority.

We urge the Board to reject the assertion that, absent a regulatory mandate, property owners will just ignore the economic benefits that proponents claim will result, and will, instead, only do what proponents consider to be "the wrong thing." Property owners and managers, in fact, continue to lead the way in adopting innovative technologies and approaches to cost-saving and protecting our environment. If the claimed benefits are truly there, property owners who can manage the "first costs" required to meet higher energy standards will do so-- and much of the so-called "low hanging fruit" in existing buildings will be harvested, without a "shove it down their throats" mandate.

Finally, AOBA/VAMA ask the Board to keep in mind that the effects of the pandemic have caused substantial disruption in building operating revenues for both commercial and residential properties of all types across the Commonwealth. The code change proposals addressed above, if adopted, would discourage renovation and rehabilitation projects by driving up costs and diverting funds to emergency communications and energy projects, away from other badly needed building priorities. They will drive up rents for struggling Virginia businesses and renters already facing extreme hardship resulting from the ongoing pandemic and economic shutdown. Now is not the time.

Briefly, the following are AOBA/VAMA's recommendations to the Board on certain other Non-Consensus proposals:

- B905.5.3 Support adoption, in light of the views of Vernon Hodge quoted in the proponent's reason statement.

- ERB101 Oppose adoption as premature (not yet adopted by ICC), also due to the numerous issues/concerns identified by VA AIA in its comments, and enforceability questions raised by code officials.

- E404.2 Oppose adoption, required construction will be wasted money if never utilized; a better approach would be for localities interested in doing so to offer incentives to encourage participation.

- E405.10 Oppose adoption, premature (not yet adopted by ICC), demand forecasts

too speculative to support mandatory set-asides at this time, both Presidential candidates have said they will build hundreds of thousands of charging stations, share concerns in VA AIA and HBAV comments.

- E1301.1.1.1 Oppose adoption, for reasons explained in earlier section above.

- RE402.1.2(6) Oppose adoption, for reasons explained in earlier section above and because Virginia's excellent codes development process is premised on mutual trust and respect by its participants-- of and for each other, and for the process, including agreements reached in the spirit of compromise. Such an agreement was reached here, and should be maintained by the Board.

- RE402.4.1.2(2) Oppose adoption, for reasons stated above; Board should stand by its prior action.

- RE403.1.2 Oppose adoption, for reasons stated by HBAV, AIA VA and others.

- RE403.1.4 Oppose adoption, for reasons stated by HBAV, AIA VA and others.

- RE404.2 Oppose adoption, premature, for reasons stated by code officials, HBAV, AIA VA and others in work group

- RE407.1.1 Oppose adoption, premature, costs from additional mandates, language issues identified by AIA VA and enforcement concerns voiced by code officials

- RB302.3(2) Support adoption, based on extensive deliberations of subwork group, creates another affordable housing option

- EB701.4 Oppose adoption, for reasons identified by AIA VA; change of occupancy, with no building alterations, should not trigger energy conservation requirements

- EB704.1 Support adoption, will give needed clarification to section and minimize its misapplication by code officials

Thank you for your consideration of AOBA/VAMA members' views.

W. Shaun Pharr, Esq.

Senior Policy Advisor

National Electrical Manufacturers Association

The association of electrical equipment
and medical imaging manufacturers
www.nema.org

October 19, 2020

To: Virginia Board of Housing and Community Development
Cindy Davis – Deputy Director, Division of Building and Fire Regulations
Kyle Flanders – Senior Policy Analyst

Subject: Public Comment on Recommended Changes to the Final Regulations

NEMA has been an active participant in the 2018 Code Development Cycle and appreciates the opportunity to share our public comment on the Final Phase. We first would like congratulate Ms. Davis and her team on a job well done. Despite all the challenges created by the pandemic and all the other craziness 2020 has present us with, Ms. Davis and her team managed to respond and adapt seamlessly. We also continue to appreciate the use, functionality, and information provided on the cdpVA portal.

In general, NEMA supports all the workgroup recommendations listed in Book 5 and Book 6. However, there are a few individual proposals that we would like to comment on separately, as follows:

T2701.1.1(2): NEMA strongly urges the Board to approve the recommendation on Page 133 of Tab #1 to replace Article 555 of the 2017 NEC with Article 555 of the 2020 NEC. This action would result in enhanced electrical safety associated with marinas, boatyards, and docking facilities. The code changes requested in proposal T2701.1.1(1) (Tab #3) and in the follow-up letter by the proponent dated on June 26, 2020 would actually result in an increased hazard of shock and electrocution. Their recommended solutions will not mitigate nor eliminate the occurrence of stray voltage around bodies of water. We ask you to reject T2701.1.1(1).

A113.8(2): NEMA urges the Board to approve proposal A113.8(2) (Tab #4) that would mandate the building official to require the electrical service to a building to be energized prior to final inspection. We agree with the reason statement provided by the proponent and would supplement the list of electrical equipment that needs to be energized at time of inspection with lighting control devices that require functional testing and commissioning in accordance with the energy code. Please approve this life and property safety proposal.

RTE3902.16(1): While NEMA appreciates the workgroup consensus to approve RTE3902.16(2) (Tab #1) that adopts an amended E3902.16 related to AFCI protection, we ask you to consider adopting all the electrical provisions of the 2018 IRC into the 2018 VRC, as published, and with no amendments as proposed in RTE3902.16(1) (Tab #4). There is no technical justification to eliminate AFCI protection of branch circuits that happen to supply GFCI protected outlets. GFCIs provide shock protection, AFCIs provide fire protection. We do agree that RTE3902.16(2) is a positive step forward and will result in greater protection against electrical fires in one- and two-family dwellings, though we do feel RTE3902.(1) is a better solution that would align the Commonwealth with the national consensus for electrical safety and fire protection in dwellings.

NEMA sincerely appreciates the opportunity to participate in the Virginia code development process. Thank you again for your time and consideration of our public comment. Please take care and be safe.

Regards,

Bryan P. Holland

Bryan P. Holland, MCP, CStd.
Senior Field Representative, Southern Region
NEMA Codes and Standards

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Sue Hartley <Sue.Hartley.346049248@p2a.co> Fri, Oct 16, 2020 at 9:55 AM
Reply-To: shartley@slnusbaum.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Sue Hartley
5215 Reids Pointe Rd
Glen Allen, VA 23060

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Julia Pape <Julia.Pape.346672787@p2a.co> Fri, Oct 16, 2020 at 9:59 AM
Reply-To: jpape@druckerandfalk.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Julia Pape
11824 Fishing Point Dr
Newport News, VA 23606

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Brian Chase <Brian.Chase.346057195@p2a.co> Fri, Oct 16, 2020 at 10:04 AM
Reply-To: bchase@landmark-property.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Brian Chase
3226 Park Ave
Richmond, VA 23221

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Felicia Williams <Felicia.Williams.382804807@p2a.co> Fri, Oct 16, 2020 at 10:07 AM
Reply-To: fwilliams@druckerandfalk.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Felicia Williams
200 Ranalet Dr
Hampton, VA 23664

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Sheila Hitt <Sheila.Hitt.346064999@p2a.co> Fri, Oct 16, 2020 at 10:19 AM
Reply-To: sheila.gandb@comcast.net
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Sheila Hitt
16419 Woodman Hall Rd
Montpelier, VA 23192

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Mary Thurston <Mary.Thurston.382808678@p2a.co> Fri, Oct 16, 2020 at 10:24 AM
Reply-To: eva.thurston63@gmail.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Mary Thurston
7125 Ellerson Mill Rd
Mechanicsville, VA 23111

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please forward to my DHCD Bd. representative - Mark Jackson

1 message

Rees Shearer <rrshearer@gmail.com> Fri, Oct 16, 2020 at 10:24 AM
To: kyle.flanders@dhcd.virginia.gov

Mr. Jackson,

As my Ninth District's representative on the DHCD Board, I ask that you stand up tall to the building industry's short-term, self-serving thinking and update Virginia's building code to comply with international building code standards. We need to do this for future homeowners and tenants and for the future of life on our only planet.

Thank you,

Rees Shearer
12042 Waterhouse Ln.
Emory, VA 24327

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Cheryl Hamm <Cheryl.Hamm.345932851@p2a.co> Fri, Oct 16, 2020 at 10:40 AM
Reply-To: cherylhamm1906@gmail.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Cheryl Hamm
1906 Hickoryridge Rd
Richmond, VA 23238

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Trey Steigman <Trey.Steigman.359175154@p2a.co> Fri, Oct 16, 2020 at 11:02 AM
Reply-To: tsteigman@msc-rents.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Trey Steigman
1436 Cedarwood Ct
Charlottesville, VA 22903

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Crystal Spaulding <Crystal.Spaulding.382823040@p2a.co> Fri, Oct 16, 2020 at 11:06 AM
Reply-To: cspaulding1@gmail.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

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Regards,
Crystal Spaulding
638 River Bend Ct
Newport News, VA 23602

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Crystal Kasey <Crystal.Kasey.359176144@p2a.co> Fri, Oct 16, 2020 at 11:05 AM
Reply-To: rvaa@outlook.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

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Regards,
Crystal Kasey
3739 New Spring Branch Rd SE
Roanoke, VA 24014

Health, Safety and Welfare

William Penniman column: Building code updates are needed to protect Virginians

https://richmond.com/opinion/columnists/william-penniman-column-building-code-updates-are-needed-to-protect-virginians/article_5df595fb-a258-5477-93a1-e244c14823ed.html

By William Penniman

Virginia's Uniform Statewide Building Code is required by law to "protect the health, safety and welfare of residents of the commonwealth" and to be, at least, "consistent with recognized standards for health, safety, energy conservation and water conservation." Unfortunately, today's statewide building code does not protect Virginians from either high energy costs or the growing harms from climate change, which the governor and legislature have recognized are urgent threats to residents' health, safety and welfare, and to the commonwealth's future.

Nearing the end of its three-year, code-review cycle, the Board of Housing and Community Development (BHCD) should more effectively protect residents' health, safety and welfare by maximizing energy efficiency, removing impediments to carbon-free energy resources, and helping Virginia achieve "swift decarbonization" consistent with the purposes of the code and the commonwealth's energy objectives and policies.

Smart, efficient building construction and renovations are critical. Buildings represent 70% of electricity consumption, 54% of gas consumption and 40% of overall energy consumption. Inefficient buildings do long-term harm since the average building operates for 70 years, and retrofits are far more costly than maximizing efficiency during initial construction when walls are open and workers are present. Structural efficiency, like wall insulation, saves money for the life of a building, while high-efficiency appliances save money for their 10- to 20-year lifetimes.

Low-income residents and communities of color disproportionately are burdened with high energy costs from poor energy efficiency in single- and multi-family dwellings. Their high energy-cost burdens increase the risks of defaulting on rent, mortgages and utility services, in addition to diverting funds from food and other essentials. Laid-off workers face similar risks. Late payments and evictions also harm landlords and lenders, as well as ratepayers who end up covering utilities' losses.

Builders should be required to maximize energy efficiency in new construction rather than imposing higher costs on residents and the public. Just this decade, Virginia and its utilities will spend hundreds of millions of dollars to subsidize retrofits of inefficient structures and appliances, and to help residents avoid defaulting on rent, mortgages and utility bills.

Virginia law requires building code standards for energy conservation because, like fire and water hazards, building inefficiencies are hidden in walls, attics, invisible air leakage and shiny but inefficient appliances. When buyers are told that new or rehabilitated buildings "meet code," they should be assured that construction meets the highest standards for energy efficiency, whether in the International Energy Conservation Code (IECC) or other recognized standards, such as EarthCraft or Leadership in Energy and Environmental Design.

Global warming's accelerating threats to Virginians' health, safety and welfare are urgent, and require action now to mitigate the long-term impacts of buildings. The arithmetic is simple: New buildings will consume energy and contribute to carbon pollution for 70 years or more, and we have 25 years (or less) to achieve a net-zero carbon economy in order to avoid probable catastrophes. If the building code fails to maximize efficiency and to facilitate conversions to zero-carbon energy, the harms will be felt long after the buildings themselves are gone.

Unfortunately, BHCD has followed a process that favors builders, not residents. Home builders blocked compliance with the 2012 IECC standards, raising residents' energy costs ever since, and their lobbyists have continued to hold Virginia back by refusing to consent to sensible updates offered in advisory group meetings, often without any analytic support. Given very little time to review the many proposals before it, the board has defaulted to approving just the unopposed ("consensus") proposals, rarely taking up "non-consensus" proposals, regardless of the merits. The results disserve buyers, tenants and the commonwealth, and are inconsistent with recognized building standards.

Now pending before the board are multiple proposals to update the building code to reduce residents' energy costs through greater efficiency, and to make it easier and less costly for residents to reduce energy costs and carbon footprints in the future. These include proposals to fully comply with 2018 IECC standards for building envelope efficiency and air leakage; make dwellings ready for additions of solar energy and for electrification of appliances and vehicles; require heat pumps instead of resistance heating that uses twice the energy; establish clear performance standards for dwellings marketed as "zero-energy" or "zero-energy ready"; and require builders to install one energy-saving measure chosen from a list of options.

These measures will protect the health, safety and welfare of residents and the commonwealth, and are supported by grassroots organizations with more than 30,000 members. They will produce benefits exceeding costs and are based on recognized standards. It is vital that BHCD members step up to consider and approve these proposals or stronger ones.

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

HRPDC Comments on Proposed Building Code Amendments

Ben McFarlane <bmcfarlane@hrpdcva.gov> Fri, Oct 16, 2020 at 11:36 AM
To: "Erik.johnston@dhcd.Virginia.gov" <Erik.johnston@dhcd.virginia.gov>, "Kyle.flanders@dhcd.Virginia.gov" <Kyle.flanders@dhcd.virginia.gov>
Cc: "Robert A. Crum, Jr." <rcrum@hrpdcva.gov>, Keith Cannady <kcannady@hrpdcva.gov>, Whitney Katchmark <wkatchmark@hrpdcva.gov>

Mr. Johnston and Mr. Flanders,

The Hampton Roads Planning District Commission supports deferring consideration of the resiliency non-consensus items to the next code cycle process. Resiliency is a major priority for Hampton Roads communities and for the Commonwealth and should be broadly incorporated into the Virginia Uniform Statewide Building Code. The next code cycle should include a robust effort to evaluate the non-consensus items and additional best practices from other states and to fully engage stakeholders at the local, regional, and state levels, including both governmental and non-governmental organizations.

We appreciate the opportunity to provide comments and look forward to working with DHCD on resiliency efforts in the future.

Sincerely,

Benjamin J. McFarlane

Senior Regional Planner

Benjamin J. McFarlane, AICP, CFM | Senior Regional Planner | Hampton Roads Planning District Commission

723 Woodlake Dr | Chesapeake, VA 23320 | Office 757-420-8300 | Fax 757-523-4881

Email: bmcfarlane@hrpdcva.gov Web: http://www.hrpdcva.gov

HAMPTON ROADS PDC PLANNING DISTRICT COMMISSION

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Nicole Haines <Nicole.Haines.345927613@p2a.co> Fri, Oct 16, 2020 at 12:33 PM
Reply-To: nikkihaines82@gmail.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Nicole Haines
4740 Wedgemere Rd
Chesterfield, VA 23832

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Erin Ditto <Erin.Ditto.349349413@p2a.co> Fri, Oct 16, 2020 at 1:32 PM
Reply-To: ejoditto@hotmail.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

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Regards,
Erin Ditto
607 Lincoln Ave
Falls Church, VA 22046

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Whitney Armenia <Whitney.Armenia.382868320@p2a.co> Fri, Oct 16, 2020 at 1:34 PM
Reply-To: warmenia@mrprealty.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Whitney Armenia
7501 Parkwood Ct
Falls Church, VA 22042

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Kristin Clegg <Kristin.Clegg.345860842@p2a.co> Fri, Oct 16, 2020 at 1:36 PM
Reply-To: kjclegg@rentdittmar.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Kristin Clegg
8321 Old Courthouse Rd
Tysons, VA 22182

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Ray Poole <Ray.Poole.382870516@p2a.co> Fri, Oct 16, 2020 at 1:42 PM
Reply-To: rpoole@ffres.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Ray Poole
3811 Fairfax Dr
Arlington, VA 22203

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Mallory Napier <Mallory.Napier.382873540@p2a.co> Fri, Oct 16, 2020 at 1:53 PM
Reply-To: mallory@bradenproperty.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
Mallory Napier
1500 Early St
Charlottesville, VA 22902

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

James Wezensky <James.Wezensky.382874062@p2a.co> Fri, Oct 16, 2020 at 1:55 PM
Reply-To: james.wezensky@druckerandfalk.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

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Regards,
James Wezensky
3201 Washington Ave
Newport News, VA 23607

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

James Flanagan <James.Flanagan.382874747@p2a.co> Fri, Oct 16, 2020 at 1:58 PM
Reply-To: jflanagan@ffres.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
James Flanagan
3811 Fairfax Dr
Arlington, VA 22203

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Suzanne Hillman <Suzanne.Hillman.382875007@p2a.co> Fri, Oct 16, 2020 at 1:59 PM
Reply-To: suzanne@smcmail.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Suzanne Hillman
1950 Old Gallows Rd
Vienna, VA 22182

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Nicole Halbreiner <Nicole.Halbreiner.345910242@p2a.co> Fri, Oct 16, 2020 at 2:33 PM
Reply-To: nhalbreiner@arcdevco.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

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Regards,
Nicole Halbreiner
11250 Roger Bacon Dr
Reston, VA 20190

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Heather Pedersen <Heather.Pedersen.382886032@p2a.co> Fri, Oct 16, 2020 at 2:37 PM
Reply-To: hpedersen@druckerandfalk.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

Dear Chairman Abbasi and Members of the Board,

I am a proud member of Virginia's real estate industry, and I am writing today to voice my opposition to certain proposed changes to the Uniform Statewide Building Code (USBC) and Statewide Fire Prevention Code (SFPC). As the Commonwealth continues to cope with the enormous societal and economic impacts of the COVID-19 pandemic, our industry can ill-afford being saddled with costly new regulatory mandates.

First, I ask that you oppose changes that would make it mandatory for existing buildings to comply with the latest model code energy efficiency requirements for new construction. Our industry supports energy efficiency, and property owners and managers continue to lead the way in adopting innovative technologies and approaches to cost-saving and protecting our environment. However, this proposed change would discourage renovation and rehabilitation projects by driving up costs and diverting funds to energy projects from other, more badly needed building priorities, at a time when property owners are facing tremendous uncertainty about when – or if – financial equilibrium might be restored to our industry. Moreover, it will drive up rent for struggling Virginia businesses and renters already facing extreme hardship resulting from the ongoing pandemic and economic shutdown.

Furthermore, the proposed change is contrary to the General Assembly's explicit legislative edict to regulate new and existing buildings separately, and not subject the latter to new code requirements. Existing buildings are to be regulated "at the least possible cost." Now is not the time to saddle them with costly energy efficiency mandates.

Second, I urge you to oppose radical changes to the USBC's in-building emergency communications systems (IBECs) provisions. The current code provisions on IBECs are the result of years of deliberation by a General Assembly task force, DHCD workgroups, and ultimately, the BHCD, which correctly allocated responsibilities between housing providers and localities. They should not be undone by adopting code change proposals submitted late in the process that have received little deliberation.

Many reasons for signal issues are beyond the control of the building owner, such as the natural terrain, the later erection of a new building or cell tower nearby that causes signal inadequacy, and wide variations in the emergency communications capabilities of fire departments. Additionally, no Virginia fire data was submitted to support the assertion that drastic changes in the current code are needed to protect building occupants and firefighters. Current code provisions on IBECs provide building code officials-- who have the responsibility for applying them-- with latitude to require or accept alternative "equivalent" equipment that is compatible for specific installations.

As Virginia's real estate industry deals with the uncertainties caused by the COVID-19 pandemic, we need steady leadership. We ask that the Board reject rushed regulatory changes that would have a severe impact on our industry as we navigate today's unprecedented challenges.

Regards,
Heather Pedersen
6001 Terrell Ln
Hampton, VA 23666

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Richard Brown <Richard.Brown.382894961@p2a.co> Fri, Oct 16, 2020 at 3:03 PM
Reply-To: rbrown6@ffres.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

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Regards,
Richard Brown
3811 Fairfax Dr
Arlington, VA 22203

Commonwealth of Virginia

Flanders, Kyle <kyle.flanders@dhcd.virginia.gov>

Please Oppose Harmful Code Changes

1 message

Melissa Thomas <Melissa.Thomas.382900350@p2a.co> Fri, Oct 16, 2020 at 3:24 PM
Reply-To: mthomas@ffres.com
To: Kyle Flanders <kyle.flanders@dhcd.virginia.gov>

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Melissa Thomas
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