

## Energy Sub-Workgroup Meeting Summary

March 24, 2022 9:00 a.m. – 2:10pm

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

### **ATTENDEES:**

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

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

Florin Moldovan: Code and Regulation Specialist, SBCO

Richard Potts: Code Development and Technical Support Administrator, SBCO

Paul Messplay: Code and Regulation Specialist, SBCO

W. Travis Luter: Code and Regulation Specialist, SBCO

Kyle Flanders: Senior Policy Analyst and Regulatory Administrator

#### **Sub-Workgroup Members:**

Andy McKinley: American Institute of Architects, Virginia

Andrew Clark: Home Builders Association of Virginia

K.C. Bleile: Viridiant

Chelsea Harnish: Virginia Energy Efficiency Council

Steve Shapiro: Apartment & Office Building Association/Virginia Apartment and Management Association

Eric Lacey: Responsible Energy Codes Alliance

Jeff Mang: Polyisocyanurate Insulation Manufacturers Association

Maggie Kelley Riggins: Southeast Energy Efficiency Alliance

William Penniman: Sierra Club

Brian Clark: Habitat for Humanity

#### **Other Interested Parties:**

Andrea Papageorge

Brandy Mueller

Charlie Gunter

David Owen

Ellen Eggerton

Jacob Newton

Jennifer Eugene

John Ainslie

Laura Baker

Linda Baskerville

Mike Hamilton

Mike O'Connor

Morgan Whayland

Richard Grace

Ross Shearer

Sean Farrell

Steve Sunderman

#### **Other Sub-Workgroup Members Not in Attendance:**

Jim Canter: Virginia Building and Code Officials Association

Bettina Bergoo: Virginia Department of Energy

Ellis McKinney: Virginia Plumbing and Mechanical Inspectors Association  
Corey Caney: International Association of Electrical Inspectors, Virginia

## **AGENDA AND DISCUSSION ITEMS**

### **Welcome and Introductions**

Richard Potts: Called the meeting to order at 9:00am and welcomed the group.

Paul Messplay: Provided an Adobe Connect features overview.

Richard Potts: Provided an overview of the background of the sub-workgroup and discussed how the sub-workgroup fits into the code development process.

### **Proposals**

#### **EC1301.1.1.1-21 – William Penniman**

William Penniman – This proposal is very simple. It's the full adoption of the 2021 International Energy Conservation Code (IECC) without weakening VA amendments. This is consistent with applicable Virginia law of being in-line with national codes and it has been shown by the work of the Department of Energy and Pacific Northwest National Laboratory (PNNL) to save money. The life cycle savings are on the order of \$8,300 on average.

Eric Lacey – This is a good proposal to kick things off because the proposal would essentially strike all of the Virginia specific amendments to the model code and get VA on track with the national codes. Others have submitted proposals to remove some of these amendments one by one. William's proposal would delete them all and if we feel some are necessary, we can add them back. I would like to see VA fully adopt the 2021 IECC. The 2021 IECC saw considerable support from public officials across the country and there's more support for this code than ever before. This would save homeowners money in the long run and will have a positive effect on the environment. I would encourage you to take a look at all the VA amendments and see if they are worthwhile going forward.

Steve Sunderman – Speaking in support of this proposal. We are looking to get into the 21<sup>st</sup> century here with energy conservation measures, which is what this is all about. Very much in favor. Strongly support.

Linda Baskerville – Arlington has a long-range energy conservation plan and to meet that by 2030, which isn't that far away now, we are going to really need to improve our energy efficiency. Going to the 2021 energy conservation criteria is going to help that.

Ross Shearer (IN CHAT) – I support this proposal for the reasons Eric mentioned. My house was built in 1964. It would have been nice if Virginia had paid just some attention to energy conservation in those days.

Andrew Clark – We do have concerns with this particular proposal with adopting the

2021 IECC in full. Staff provided a breakdown of some of the specific proposals that were included in there. Our preference would be to evaluate each of those on their own instead of adopting the 2021 IECC in full. Where our association comes down on this stuff, as builders, a lot of the messages we hear from local government officials is, “What are we doing to increase the supply of housing for folks at the lower to the middle end of the spectrum?” We’re not talking about folks who are 30% Area Median Income (AMI), we’re talking to 50-80% AMI. The Joint Legislative Audit & Review Commission (JLARC) in VA had a report this last year that home prices increased 15% and we’ve seen some that increased 35%. They found that we are 2,000 rental units short for people on the low end. The percentage of homes that sold under \$200k decreased since 2015. There’s the discussion with respect to upfront costs vs paybacks over time. The biggest impediment is for people at the lower end to be able to bring the cash to the table to cover those upfront costs. When we’re talking about reducing energy burdens the focus should be on existing homes. We’d be happy to look at some of the individual proposals but we do have concerns about adopting the 2021 IECC in full.

Steve Shapiro – We’re coming out of this terrible pandemic and I don’t think now is the time to enact things to drive costs up. Andrew did a good job of framing it and we are not in support of this proposal.

John Ainslie – Just wanted to clarify one thing that’s been mentioned. It’s been mentioned that VA is not up to the national model energy codes, and while that may be a true statement, based on what I’m looking at, only 3 states of the 50 have adopted the 2021 IECC. So, most states are on the 2009, maybe 2012 code. The reason they are not is because it substantially increases the cost of housing. It keeps people from buying new, more energy efficient homes. While we may not be up to the national energy codes, most states are not.

William Penniman – We are always willing to talk. Living expenses, the occupancy costs, are what is critical, and clearly there are savings. Yes, the costs of new homes have gone up, but the costs of all homes have gone up. We didn’t enter the market at the high-end anyway and there are plenty of options at all times. The problem is that if we don’t make houses built today and the near future energy efficient, that will haunt occupants for the lifetime of the home, particular of those areas where it’s difficult to retrofit – walls, air leakage and the like. I’ve never been in a session with builders where new regulations will be adopted “at the right time.”

Andrew Clark – I disagree that the building community says it’s never the right time for new regulations. You’ve seen significant progress with homes built in the last 10 to 20 years. We’re establishing a baseline standard for safety and features and it should be up to the homeowner to choose above-baseline features for their home. If we keep raising the baseline, the gap in homeownership will get wider and wider. Just like we did last year with Eric and Chelsea where we had a lot of discussions offline, I think we can pursue that right and look at individual components.

Linda Baskerville – It seems that Andrew’s comments are putting the burden on the energy code of making homes affordable to lower- and middle-income people. It may be a part, but there are so many other factors that come into play regarding the affordable of homes for first time homebuyers and middle-lower income homebuyers. It seems unwarranted to put it on the back of the energy code, which not only makes things better in the current environment but improving things for the future buyers as well.

Andrew Clark – Linda, thank you for those comments. For clarity I don’t think we are putting it entirely on the back of the energy code and I don’t think that will make or break the housing market for affordability. We’re looking at this in totality with land costs, material costs, labor costs. The energy codes are a significant factor. It’s not our perspective that affordability challenges are all on the energy codes.

Steve Sunderman – Andrew mentioned the big picture and, remember, the big picture really is where we’re going in the future and what we’re going to leave our children and grandchildren and climate change is the big issue. If we’re not going to do this now, then when? When should we wait to make a substantial difference for the future? I think the time is now.

Chelsea Harnish – Someone was talking about the need to make existing homes more energy efficient and I want to point out that the two are not mutually exclusive. Organizations like mine are working on policies and initiatives to get older homes weatherized and retrofitted.

Ross Shearer (IN CHAT) – To follow up on affordability, it seems most fair to lower income and first-time buyers to include the benefits of higher energy efficiency like many luxury builders do for their wealthier clients.

Mike O’Connor (VA Petroleum Marketers) – Our concern is the issue of rate-payer subsidization of conversion. We’re seeing that through things like the Regional Greenhouse Gase Initiative (RGGI) and other initiatives. We’re also concerned that there are about 400,000 homes that continue to be heated by heating oil, kerosene, or propane, and those people have made substantial investments and those people will not be pleased when the government wants to come in and pull out those gas cooktops, heaters, etc. We are opposed to anything that would make rate-payers subsidize those costs.

Richard Potts – Asks the sub-workgroup members to provide positions on this proposal.

Votes:

Opposed:

Steve Shapiro

Andrew Clark

In favor:

William Penniman

Jeff Mang  
Eric Lacey  
Chelsea Harnish  
Brian Clark  
Andrew McKinney  
Maggie Kelley Riggins

Richard Potts – This will be non-consensus.

#### **EC-C407.6-21 – William Penniman**

William Penniman – This proposal simply makes a positive statement about two appendices that are included in the 2021 IECC. Those are appendices are CC (Zero Energy Commercial Construction) and RC (Zero Energy Residential Construction). It simply requires that if a builder wants to build and sell a home as zero energy then they have to meet these standards.

Eric Lacey – Just a bit of background on these two appendices that are both new to the 2021 IECC, on the commercial side this appendix came out of AIA's 2030 challenge and based on your occupancy type you're required to install a certain amount of renewable energy to bridge the gap between the efficiency of the building and getting it to net zero. On the residential side this is kind of an extension of the Energy Rating Index (ERI) and the home must demonstrate a net zero ERI score. A reason these go into appendices is that a lot of states create net-zero paths and standardizing these paths have value. In VA, I'm not sure whether DHCD could adopt a stretch code or if localities would, but what I like about this proposal is that this is basically some truth in advertising. If you're going to call a home or building "Net Zero" you should meet these standards. This is a good proposal and I support it.

Andrew Clark – I'm not really opposed, I'm somewhere in between. I remember this came up last year and I thought that Kenny Payne or someone raised some questions. Are there other provisions in the code that are "truth in advertising" as Eric said? I don't really have a position, just curious if this is something the code has weighted into before.

William Penniman – When I put this together, I did find examples of "truth in advertising", but I don't remember where.

Ellen Eggerton – We already have a truth-in-advertising type of provision with the required certificate. This isn't a new idea in the code.

Steve Shapiro – I'm willing to look at whatever can be provided if this is carried over. I've got some concerns with this but I'm willing to give it a shot.

William Penniman – Even if there were no prior examples, I think it's important to include this to mitigate people selling their product under false pretenses.

William Penniman – Moves to have this carried over to meet with other members to discuss.

Richard Potts – This proposal is Carried Over.

**REC-R402.1.2(1)-21 – Laura Baker**

Laura Baker – This proposal essentially moves the wall insulation from VA’s current amended level of R-15 to the levels in the 2021 IECC. We did an analysis using the Department of Energy’s (DOE) methodology and found this would be a 13.1% energy cost saving with a payback period of less than 5 years. Wall insulation has been a topic of discussion in past cycles and I think it’s time to move forward on wall insulation. We’ve had enough time to be ready and it’s important to note that this proposal does not mandate using a specific stud size. You can use a 2x4 or a 2x6 wall. Wall insulation is something that doesn’t change unless you’re doing a major renovation so it’s important to have strong wall insulation now.

Jeff Mang – Laura’s proposal is a good one. I’ll point out that there’s a lot of interest in moving toward all electric use in the home and having a strong envelope will reduce the burden on the grid by a large amount.

William Penniman – I clearly support Laura’s proposal. Fixing the walls now is very critical because it’s difficult to do later. There are public benefits in reducing climate pollution and holding down energy costs, which enables residents, particularly low-income residents, to keep up with their mortgages and rents. This is a clear long-term win.

Andrew Clark – I think going to Mr. Penniman’s comment, I really would be interested in seeing if any of the proponents have any data for homes built in the 2000’s that occupants have any increased cost burdens associated with energy use. We had this discussion last year and I’d suggest we carry over these two proposals to allow some of our builders to meet with Mr. Penniman and Eric and Laura to educate us to see if we are maybe missing something. The feedback we’ve gotten from our members is very different than what’s in the reason statement.

John Ainslie – I heard the proponent say the payback is 5 years. I’ve been building houses for more than 40 years and I know what the costs are. Though I haven’t done a cost benefit analysis on these proposals, I find it very difficult to believe that the payback period would be 5 years. My costs under the current codes are \$0.92 per square foot. The only way I can see getting these R-values in a 2x4 wall is spray foam, but the square footage cost for that is over \$5 per square foot. If you go to a 2x6 wall, there are whole other hosts of cost to consider – window and door jams increasing 2 inches, lost square footage, increased lumber costs. In the area that I build, Hampton Roads, we have to have structural sheathing to meet the wall bracing requirements. So doing the continuous insulation on the outside would be very cost prohibitive in still having to meet the wall bracing requirements. I’d guess the payback is closer to 50 years. I did a cost benefit analysis on ceiling insulation from R-30 to R-49 and I came up with 88 years. The National Association of Homebuilders (NAHB) came up with 92 years for payback. If people want

increased wall insulation they should do it, but it should not be in the base code.

Steve Sunderman – My experience, with respect to 2x4 vs 2x6, is that building with 2x6 was actually more economical because you can space them 24” on center instead of 16” on center. The point being that as an architect I’ve felt the most economical thing we can do is use insulation. Insulation is typically not a very expensive material for what you get in return for its use. For every inch of increased insulation, you reduce energy use by half. I’m curious to see if anyone has done a recent study where it benefits you to stay with 2x4’s instead of 2x6’s.

David Owen – To clarify some of the things that John brought up with costs, the difference in cost of 2x4 vs 2x6 is minimal. But you have to consider the loss of square footage. If you go from 2x4 to 2x6 you reduce the square footage in the house which makes it less attractive to buyers. When you go to 2x6 you have to go to larger window openings and builders have to redo their plans.

Ross Shearer (IN CHAT) – As to wall insulation, Virginia is 3 iterations behind the model. The builders' claims of lengthy return on investment are not supported by all studies, some show a 5-year return. Perhaps the sub workgroup should request the Pacific Northwest Lab perform the cost benefit analysis comparing where Virginia is today to the model.

Laura Baker – The software we used was “BOP” which is the DOE’s software. I’m happy to meet with Andrew and David and John and whomever else and bring this back next time if we can find an area where we can meet and hear each other.

Maggie Kelley Riggins - SEEA (IN CHAT) - I am happy to pull the information from PNNL. We have a funded relationship with their teams to be able to get information for groups like this. We can get data needed for a meeting as Laura referenced.

Andrew McKinley – I would like to be a part of that conversation, too, Laura, because I’m having a hard time seeing how these walls are actually going to be built. I also agree with Mr. Sunderman’s comments with respect to law of diminishing return. Continuing to put insulation in the walls will not have the same payback when considering other components such as the facades and in the roof.

Richard Potts – This proposal is Carried Over.

### **REC-R402.1.2(2)-21 – William Penniman**

William Penniman – My proposal parallels Laura’s proposal. Wall insulation is incredibly important and it’s very unfortunate that VA lags behind the national standards, which can be met in neighboring states like Maryland and that builders who work in VA and Maryland can meet those standards. The aggregate data for full compliance with the IECC says it can be done. The data provided by RECA in Laura’s proposal also says it can be done. As others have noted, this is a

problem that will last the life of the building since it is very difficult to upgrade wall insulation compared to ceiling insulation. VA currently operates under the 2009 standard, so we're already a decade behind. But, like Laura, I'm also willing to talk.

Richard Potts – If the proposals end up being identical, we like to have them merged and have the proponents for each listed as co-proponents on one proposal. Is it your position that you're willing to carry it over to continue the discussion or do you want an up or down vote on this proposal?

William Penniman – I'm willing to carry this over in order to engage in discussions. As far as combining the two, we can certainly discuss that, and I have no objection if we end up in the same place.

Laura Baker – Would it be possible to ask PNNL to take a look at these wall insulation requirements and do a cost benefit analysis for us? That way we don't have to take a SWG member's word for it and we can have someone provide that data.

Jeff Brown – Anyone is welcome to solicit a study from a laboratory or a group. DHCD won't reach out to specific laboratories or groups, but anyone else can do that.

Richard Potts – Reminds the group of the timeline we're operating under.

Maggie Kelley Riggins – SEEA (IN CHAT) – I am happy to pull the information from PNNL. We have a funded relationship with their teams to be able to get information for groups like this. We can get data needed for a meeting as Laura referenced.

Richard Potts – This proposal is Carried Over.

### **REC-R402.2-21 – William Penniman**

Richard Potts – Briefly mentioned the appeal at the national level during the 2021 cycle that dealt with similar subject matter. Those proposals were CE217-19 parts 1 and 2.

William Penniman – This proposal is for EV readiness in residential properties. This would require wiring in the wall that could be converted later by the resident to an EV charging unit. That's one branch circuit per garage, not two. In the case of multi-family, the concept is to have gradations with a few initially installed chargers and then a few initial EV readiness stations and lastly, with the remaining units having the base infrastructure and the panel space. The numbers and percentages for multifamily are tied to the number of dwelling units. EV charging is coming. 80% is done at home. It saves \$800 – 2,000 per year in operating and maintenance costs and reduces emissions by 2/3rds. Lack of this infrastructure will be a barrier to adoption and a barrier that will harm both residents and the public. With regard to the 2021 appeal, it is my understanding that since then the IECC has reversed its position and is open to having EV charging as a part of it next round, but even if it's not, the VA law that was enacted last year clearly says that the goal is to have energy codes at least as stringent as the IECC but can go above the IECC, especially if it is a marginal increase in the



cost of construction for what you get. In multi-family, the range of potential costs varies depending on design. One study from San Francisco showed that the costs were quite manageable.

Eric Lacey – I just want to be clear I'm speaking on behalf on myself with this proposal. The appeal was kind of a technicality. The ICC determined that the scope of the IECC at the time did not cover EV. This proposal received 82% of the vote for these provisions. ICC has since changed its scope and there is a similar proposal for the 2024 code. Like William said, this doesn't really matter in VA because states can adopt the provisions they want. This looks like the same language that was advanced in the 2021 process. ICC also has a page of resources dedicated to EV charging and has a summary of the state and cities that have adopted these provisions. There's a lot of data available for people and it's very popular around the country.

Ben Rabe – I just want to reiterate New Building Institute's support for this proposal.

John Ainslie – Just for the benefit of the call, can you briefly explain the significance of the appeal and how this will affect VA.

Richard Potts – What it ultimately came down to was a Board decision. Our scopes are different from the I-Codes, so VA has its own scopes. I felt it was important to at least mention those appeals since it did affect those proposals.

Richard Grace – Speaking basically for myself and not really speaking in opposition. I like the idea, but as a code geek, and I don't know what the proposal looked like at the national level, but looking at this here I'm a little confused. I'm looking at these definitions and the odd part I'm looking at is that the "EV Ready Space" should have everything in that definition plus the equipment required to plug that vehicle in. It really confuses me how this is laid out. If I'm confused, I'm sure others will be confused as well. If I go down to section 402.2, I'm not sure how many times I've seen the word "facilitate" in the code. If I'm facilitating future installation, I'm pretty much just have a 40amp space in my panel, but I'm not sure that is all this section is really requiring. Down to 402.2.2, how am I supposed to enforce something like this? This sounds like a contractual issue, not a code issue. Again, not opposed to the idea, just opposed to what I'm reading here and trying to get it from concept to code.

Andrew Clark – Not to belabor the point, but some of the language issues brought up by Richard Grace were also mentioned at the national level. I'd like to get some incite from government officials because it looks like there are some zoning ordinance requirements like parking. I'm not sure where else we've done this. Developers on the multifamily side are starting to incorporate these things already, so maybe looking at incentives vs. mandates is the way to go. We do have some concerns with this proposal.

Michael O'Connor (IN CHAT) - Question 1 Who pays for the EV mandate?

Ben Rabe – To that question, I'll let William give a more robust answer. I know that NBI has framed this is that we are trying to save building owners money by doing this upgrade when it's most cost effective instead of down the road when you'd have to dig up concrete. Folks

are asking for these types of changes.

William Penniman – A couple of things in terms of clarifying language to make it work better in the code. I'd be happy to spend time offline going through this and trying to fix this. There is a concept that's in here that's built in called "EVSE Installed" which means the whole package is installed. The question about who pays, it's picked up in the initial cost of construction which is paid for by the buyer, however, the savings are huge and it's a great benefit to residents. EV sales are increasing and major manufacturers are talking about no longer producing fossil fuel vehicles within the next 5 years. GM has said it's only going to build EV. As mentioned, the retrofit costs are huge and would be a barrier to EV adoption. In terms of single-family homes, if a builder puts the electric panel in the garage, you're only talking about as little as 2' to extend a wire to provide an outlet to plug in, which would only cost about \$50. It's a tiny fraction of the cost for a new home and the benefits are huge. The idea that this is a zoning question is interesting, but there are provisions for parking in the building code for accessible spaces. If it's left to zoning and you're saying that it's up to each locality to set their own rules, please put that in writing, because if this doesn't pass here, I'll be sure to use it.

Richard Grace – The whole purpose of my comments was to make sure we can clean this up and make it presentable and I'm happy to work on that with you.

William Penniman – Okay, then I will defer the vote and bring it back later.

Andrew Clark – Requiring this, and not just giving consumers the option to work with a builder who is willing to provide these things, doesn't seem like the right approach.

Michael O'Connor (IN CHAT) - By mandating EV, how do you propose to replace the 32 per gallon motor fuels tax that funds about 40 percent of Virginia's transportation budget each year.

William Penniman – In terms of the fuels tax, the Governor is talking about getting rid of that anyway. But in the meantime, the huge run up of the cost of gas is even more of a reason to provide support for EV vehicles.

Michael O'Connor (IN CHAT) - Who pays to install the chargers? My question was not answered.

Mike Hamilton (IN CHAT) - All-electric vehicles (EVs) registered in Virginia are subject to a \$88.20 annual license tax at time of registration.

Michael O'Connor (IN CHAT) - Electric vehicles pay \$ 90 annually less than 1/3 of what a typical gasoline or diesel vehicle pays.

Richard Potts – So it sounds like the proponent is willing to work with Richard Grace and other entities to work on the language. It does sound like there is some objection to it, but we don't want to prevent anyone from moving forward and cleaning up language to make

compromises. So, we will mark this as Carried Over.

#### **REC-R402.4-21 – William Penniman**

William Penniman – This proposal is simply to bring the VA code up to the air leakage standards to those in the IECC, which have been in the code for the last decade. It's beneficial to residents in heating costs savings, air quality, health, and keeping out vermin, as pointed out by the EPA. It's viable, it's been implemented, the material costs are low. There's some additional time for installation since you have to pay attention.

Ellen Eggerton – I'm in support of this proposal since neighboring states have already gotten to this. It's not a big leap for us to go to this level when we're already going to a level of air leakage control where we do this same process, we just have to do a better job at it. We already have to seal and tape everything anyway so I support this.

Laura Baker – I'd like to note my proposal does the same thing, but incorporates some additional new things in the 2021 IECC. There are a couple things in the 2021 IECC that make it easier to comply with these. First, the 2021 IECC adds a tradeoff limit so not every building has to meet 3 air changes per hour. There's also an exception to let small buildings and buildings under 1,500 square feet to not have to meet these provisions. We did a great job last cycle with getting mandatory blower door testing, and now that builders and officials have experience doing this, I think it's time to bring this into the code.

Andrew Clark – I was under the assumption that both proposals were identical, but as of right now I think we do have concerns with this proposal but would like some opportunity to talk with Laura about some of the tradeoffs that were in her proposal. We had not reviewed those. I will say that last year, like Laura mentioned, we discussed this at length and settled on 5 air changes per hour and I'd be curious how many states have gone to 3 air changes per hour. But at the moment we are non-consensus on these proposals but would like to talk with Laura more about hers.

William Penniman – I had assumed that the full deletion here would bring in the full IECC so I didn't think I needed to mention the tradeoffs.

Richard Potts – That is correct. When a state amendment is deleted, by default, the national language is used. So that code language would become the default in the 2021 cycle.

Andrew Clark – That's a helpful clarification.

Ellen Eggerton – If we approve this one and then approve Laura's would then the enhancements in Laura's override what we've approved in this one.

Richard Potts – We would try to head that off or we would try to get all of that ironed out before the full workgroups. If there are true differences between the two, we would want to work out the competing proposals. We wouldn't want two proposals doing different things

to the same section going to the Board. The purpose of this group is to vet these technical changes and correct them before they go to the workgroups. Ideally, we would like to see proposals like this merged into one proposal. So, I think I'm hearing that this proposal and REC-402.4.1.2 would like to be discussed with Andrew and his group before making a decision, so we will mark this as Carried Over.

#### **REC-R402.4.1.2-21 – Laura Baker**

Carried Over based on conversations from REC-R402.4-21

#### **REC-R403.1.2-21 – William Penniman**

William Penniman – This proposal removes the option to use electric resistance heat as the primary electric heat source for space heating in new residential construction and it prohibits electric resistance heat as a replacement for a heat pump in existing homes.

Ellen Eggerton – I just wanted to add that there is the cost to install that primary resistance heat that wouldn't happen with an air conditioner. The heat pumps that are on the market today can go down to 17 degrees Fahrenheit so this is a good proposal to take out electric resistance heat since heat pumps can now meet probably 99% of the heating needs.

Ben rabe – I would encourage support for this proposal.

Mike O'Connor – Who is going to pay for all of these heat pumps and will it be funded by rate-payer subsidization.

William Penniman – This doesn't prohibit gas heat at all. This just prevents resistance heat as a heat source. So, I don't think you have any reason to oppose this.

John Ainslie – I have an issue with this. I can't see how this is a big issue. How many people are strictly using resistance heat? I think there are some cases where it may be the best option, but I don't like removing a perfectly viable option from the code. I don't see this as a huge energy efficiency option at all. Heat pumps have gotten much better over the years, but the resistance heat, although it's less efficient, there are times where it may be the best possible choice based on the size of the area being heated. I don't think it warrants just removing the ability to use that option.

David Owen – Where it says, "R403.1.2 Heat pump" and we cross out the word supplementary heat and adding the word "Mandatory". I think the market place will take care of this so I don't think we need to put this in the code.

Ellen Eggerton – I think that if you look at the change, the "Mandatory" was already there, that's not a change. It says that if you use heat pump heat, these requirements are mandatory. It's not changing the word mandatory, since it's already there, what it's changing is that the resistance heat can't be the supplemental heat and can't be the

emergency heat. It's saying electric resistance heat can only be used during the default cycle. Is that what I'm understanding?

William Penniman – It's actually more generous than that. It still allows the supplementary electric resistance heat as the backup since many heat pumps are designed that way.

David Owen – I still don't understand why the word supplementary is crossed out since you are still talking about the supplementary heat to the heat pump. I just think the language could be cleaned up so there wouldn't be misinterpretation.

Steve Shapiro – So this is only applying to level 2 alterations in the existing building code, correct? You're not applying it to any other type of alteration?

William Penniman – I can't recall the different levels of alterations, so I can't say it's definitely limited to a Level 2 alteration.

Mike Hamilton – I had one comment about Section 403.1.2 and the last sentence. There are other ways for the controls to know that the load can't be met beyond just the outdoor temperature. 40 degrees seems pretty high, but I just wanted to point out that that's something we should consider here.

Eric Lacey – I'm wondering if that first section should be R503.1.2 or somewhere thereabouts in the existing building section of the IECC, rather than the IEBC.

Richard Potts – We did go through an exercise last cycle on how to get to Chapter 5. The effort was to move all of the Existing Building requirements to the VEBC.

#### Votes

##### In opposition:

Brian Clark

Andrew Clark

Steve Shapiro

##### In Favor:

Andrew McKinley

Chelsea Harnish

Eric Lacey

KC Bleile

William Penniman

##### Other stakeholders in opposition:

John Ainslie

Richard Potts – This proposal is Non-Consensus

#### **REC-R403.3.3-21 – Eric Lacey**

Eric Lacey – Here are the five changes, and I think the first three are non-controversial. The first is

that the IECC requires duct testing, and I believe these are the standards that are already being used. So, this just refers to those standards. The second is that it adds a significant digit to the duct leakage, which is 4.0 cubic feet per minute. The third change is that you aren't required to test ducts serving ventilation systems. The last two may prompt some discussion. Virginia still allows building framing cavities to be used as ducts or plenums, and this change removes that ability. The last change requires all duct systems to be tested whether they are located in conditioned space or not. When DOE conducted field studies throughout the country, we noticed a trend that in homes not required to be tested for air leakage, the leakage rate was 2x higher and those homes met the exemption for having all of their ducts within conditioned space. The goal is to make this section read as close as possible to the IECC.

Richard Potts – One thing I do want to mention with regard to this proposal was the section dealing with building cavities. The reason this was deleted was because there was a competing provision in the IRC, so there might be a conflict here and there may need to be some cleanup.

Andrew Clark – We don't have a position one way or another with this one, but we will probably rope this into the conversation we'll be having with respect to other proposals.

William Penniman – I would indicate that we support this proposal. This is a classic situation where buyers have no idea what's behind the walls and the technical and economic implications of those concealed features. Catching up to the 2021 IECC is entirely appropriate.

David Owen – If I understand this correctly, we're saying that if we are in a conditioned crawlspace where the air handler and the ducts are down there, we want a little bit of leakage from the duct work for balancing the pressure in that space. I will agree where it's in another concealed space where you could get mold issues. We just got VA used to duct testing, so if we start eliminating some of these sections, we would be causing some confusion for the duct testers.

Eric Lacey – I believe builders have been successfully testing ducts for some time now. The only difference here is for builders using the exemption for ducts entirely within conditioned space, you would be required to test to 8cfm, twice the level of leakage. I'm sure you've been in a house with a room further from the source and the reality is the conditioned air is not always getting to the intended spaces. I think this would also reduce the occurrences of builder call back from customers who were uncomfortable.

Ben Rabe – This is common practice across the country and seems like a good way for Virginia to update their codes.

David Owen – I stand corrected with what Eric said with respect to when duct testing came into effect. I think testing the ductwork when it's completely within conditioned space is an issue. The other issue from a practical standpoint is that most of the leakage is within the unit itself and, if that's in conditioned space, that's an advantage. Sealing those units is difficult and manufacturers haven't caught up with us.

Richard Grace (On behalf of VPMIA) – The section where we’re looking at building framing cavities for ducts and plenums, I just want to point out that currently I did a quick search in the IRC and did not see the stud cavities. From what I remember, this was taken out of the IRC but it still exists in the Virginia Mechanical Code.

Eric Lacey – I would like to do some more research into the use of framing cavities being used as ducts or plenums.

Andrew Clark – There’s a lot of good stuff put in the chat throughout the meeting. Are the contents of the chat going to be a part of the meeting minutes?

Richard Potts – Yes, we do include all of the substantive parts of the chat into the summary. This proposal is Carried Over.

### **REC-R404.2-21 – William Penniman**

William Penniman – The 2021 IECC includes a solar ready appendix for detached 1-and 2-family dwellings and townhouses. Since VA doesn’t allow localities to adopt and enforce appendices, the only way to activate the appendix and make it relevant is to include it in the body of the code, which is what this proposal would do. The solar ready provisions are very simple, basically requiring a conduit from a location on the roof to the panel. It doesn’t require the installation of solar, but it makes it easier to install solar.

Andrew Clark – Our concerns are similar to what we expressed last year. Again, to my earlier point, allowing the consumers to make the personal financial decisions to incorporate these provisions instead of making it a baseline requirement is more beneficial.

Linda Baskerville – What Andrew is saying is only relevant to the first owner of a home and does not provide an ability to less expensively incorporate solar into their home.

Ben Rabe – Just to piggy-back off of previous commentary, this is another proposal where it’s way more cost effective to do these readiness provisions on the front end than incorporating them later on. It makes it easier for people who want to add solar later and would not cost much on the front end.

Votes:

In opposition:

Andrew Clark  
Steve Shapiro

In favor:

Brian Clark  
Eric Lacey  
Maggie Kelley Riggins

KC Bleile  
William Penniman

Other stakeholders in opposition:

John Ainslie

Richard Potts – This proposal is Non-Consensus.

**REC-R401.2-21 – Ben Rabe**

Ben Rabe – This proposal requires that all new residential construction is all electric. Heat pumps are perfectly capable to efficiently heat and cool buildings in Virginia’s climate year-round. An aggressive measure like this is something the New Buildings Institute supports.

William Penniman – I support this proposal. It will save residents money, it will reduce pollution, it’s a critical measure for climate change, and will create a healthier house without the fumes from burning fossil fuels.

Andrew Clark – We’re non-consensus. Will natural gas be excluded?

Ben Rabe – Yes.

Andrew Clark – This would be a prohibition on natural gas in Virginia?

Ben Rabe – Yes.

Andrew Clark – We are unequivocally non-consensus.

Michael O’Connor (IN CHAT) - non consensus from VPCGA and VA Propane Gas Association

Morgan Whayland – Virginia Natural Gas: We are opposed to this. Natural Gas is a critical path for us to achieve net-zero. When we think about energy efficiency, we have to think about the entire supply chain and natural gas is an efficient energy source.

Steve Shapiro (IN CHAT) - AOBA/VAMA in opposition as well

David Owen – Just clarification, is Mr. O’Connor’s group not a representative and is no one from his group a representative?

Richard Potts – He is not a representative. We did our best to pare down the membership to a well-rounded group.

Jeff Brown – We started out by looking at stakeholders from previous years and asking them if they want to participate again. We’re always open to having groups reach out to us and ask to be a part of this group but we have not heard from him asking to be a part of the group.



Andrew Clark – Weren't there bills recently passed that included natural gas as an important component of reaching net zero? I think one of those bills even said that natural gas could not be prohibited. I'm not sure how we this proposal would jive with state law.

William Penniman – I believe it's in the state energy policy to get to zero net carbon emissions, not just for the electric utilities who are supposed to hit it by 2045. The reality is, to combat climate change, we've got to stop burning fossil fuels. Sea-level rise on the coast of Virginia is projected to rise 2ft by 2050 and that should scare all of us. Natural gas may be clean, but burning it leaks methane.

John Ainslie – I'm, personally, having a hard time hearing participants with this online process. This online process is not the same as the face-to-face interaction that we used to enjoy prior to Covid. I think we need to get back to these meetings in person. I've heard participants saying that it will be cleaner to move away from gas. I've read those homes burning gas leave a smaller carbon footprint than those using electric. You have to look at the full life-cycle cost.

Ross Shearer (IN CHAT) - 401.2-21 There are countless environmental, health and safety issues associated with natural gas. Earlier this week the Washington Post reported a story of family experiencing illnesses including nausea. It turned out to be carbon monoxide leaking from a loose connection to the exhaust line of the gas furnace. Natural gas should not be used for any new construction. As to the natural gas stakeholders' question, who are the representative for the public stakeholders, home buyer, tenants and users of buildings? The construction code exists to protect Virginians.

Ben Rabe – One final point I'd like to make is that there's obviously a carbon impact and an environmental loss impact of electrical energy. However, as the grid continues to clean and as we build more buildings, there will be a very net positive impact on these buildings being all electric over their lives.

Andrew Clark – I did not hear a direct answer to whether this proposal is a direct conflict with the net-zero path that Virginia is on.

William Penniman – I don't think this conflicts with the path that Virginia is on. When I was referencing natural gas earlier, I was referring to possibly some manufacturing processes where it may still be required. I wasn't referring to residential properties.

Chelsea Harnish (IN CHAT) - To Andrew's question- The VCEA regulates electric utilities and sets carbon goals for that sector. The VCEA does not set carbon goals for the built environment.

Maggie Kelley Riggins – SEEA (IN CHAT) - Ross- VAEEC, Viridiant, and SEEA also serves as a representative of public stakeholders/building occupants, as well as building operators & technical needs in the field. There may be a few others as well.

Michael O'Connor (IN CHAT) - To the proponents: What would you propose to do with more

than 60,000 generators in operation in Virginia fueled by natural gas and propane fueling hospitals, first responders nursing homes, etc. How would you propose to serve those essential sectors in times of emergency when the electricity is not available?

Ben Rabe – So obviously this wouldn't be an instantaneous change. Hospitals will still need backup generators. This is a very gradual change and won't happen overnight, which is why we need to address this now.

Votes:

In Opposition:

Andrew Clark  
Brian Clark  
Steve Shapiro

In Favor:

Laura Baker  
William Penniman

Abstain:

Chelsea Harnish (IN CHAT)  
Maggie Kelley Riggins (IN CHAT)

Other stakeholders in opposition:

John Ainslie

Richard – This proposal is Non-Consensus.

### **REC-R401.2.5-21 – Ben Rabe**

Ben Rabe – This is similar to the previous proposal in that it encourages buildings to be all electric but does not require them to be electric.

Richard Potts – Looking at what you've revised here, which has revisions to Ch. 1 of the I-codes, we would need to address these in Ch. 1 of the Virginia codes.

Ben Rabe – I'd be happy to work with staff on that correlation.

William Penniman – Speaks in support of the change.

Michael O'Connor (IN CHAT) - VPCMA and VA Propane gas association opposed

Votes:

In Opposition:

Andrew Clark  
Steve Shapiro

In Favor:

William Penniman  
Laura Baker  
Maggie Kelley Riggins  
Brian Clark

Abstains:

Chelsea Harnish (IN CHAT)

Other stakeholders in opposition:

John Ainslie

Richard – This proposal is Non-Consensus.

### **REC-R403.1.1.1-21 – Ben Rabe**

Ben Rabe – This is the reboot of the thermostatic demand control response. This would require new buildings to have thermostats that communicate with the grid to avoid peak-outs, brown-outs, etc. This will have added climate benefits as well as great resiliency impacts of lessening stress on the grid.

Chelsea Harnish – I'm neutral and I have some questions. Ben, I'm very curious with how this proposal is written. I'm very familiar with how DSM programs work and am an expert witness for Dominion. Who will run the DSM programs for this? I'm only familiar with utility companies running DSM programs.

Ben Rabe – This proposal even more so than others is meant to start a conversation around different opportunities to get demand response, grid controllable ideas in the code. Our proposal is not meant to regulate utility companies. We think these would be the best controls, but obviously the utility companies know what set points are most beneficial for the grid.

Votes:

In Opposition:

Andrew Clark  
Brian Clark  
KC Bleile  
Maggie Kelley Riggins  
Steve Shapiro

In Favor:

William Penniman

Richard Potts – This proposal is Non-Consensus.

### **REC-R403.5.4-21 – Ben Rabe**

Ben Rabe – This would require demand responsive controls on water heaters, knowing that water heaters are able to self-regulate and heat up when there's cheaper energy on the grid based on time of day, overall use, etc. This would allow utilities to pour excess energy into something and reverse it when there's higher energy demand on the grid.

William Penniman – Demand response on water heaters is very simple technology. Could the demand response be used by other than the utility?

Ben Rabe – It's implied, but the intent is that the utility would be the best to control the demand response.

Michael O'Connor (IN CHAT) - VPCMA and Virginia Propane Gas Association opposed.

Andrew Clark (IN CHAT) - HBAV opposed

Chelsea Harnish (IN CHAT) - Currently, no utility in VA has a DR hot water heater program.

Votes:

In Opposition:

Andrew Clark (IN CHAT)

Brian Clark

KC Bleile

Maggie Kelley Riggins

Steve Shapiro

In Favor:

William Penniman

Richard Potts – This proposal is Non-Consensus.

#### **REC-R404.4-21 – Ben Rabe**

Ben Rabe – Very similar to an earlier proposal. This would require new homes to be solar-ready. Based on previous conversations I think we would be willing to pull this and work with the groups discussing the other proposal.

Richard Potts – Is this similar to the ones moving through the ICC process?

Ben Rabe – Yes.

Richard Potts –The ones I checked on haven't had a decision yet rendered by their committees, so keep us updated on that process. I do want you to know that we have the same issues here with Ch. 1 so those would need to be relocated as appropriate.

Steve Shapiro – Just to clarify, the other solar-ready proposal went through as non-consensus. That wasn't listed as a carry over, so I'm not sure what Ben is Referring to.

Richard Potts – That's correct. So, let's discuss this and take a vote.

William Penniman – I support this for the reasons I mentioned during my proposal.

Andrew Clark – Our opposition is for the reasons stated on the prior proposal.

Votes:

In Opposition:

Steve Shapiro

Brian Clark

Andrew Clark (as stated above)

In Favor:

Maggie Kelley Riggins

William Penniman

Other stakeholders in opposition:

John Ainslie

Richard Potts – This proposal is Non-Consensus.

### **EC-C401.2-21 – Ben Rabe**

Ben Rabe – This is similar to the residential proposal for all-electric buildings, but for all buildings.

William Penniman – Support for the reasons previously given.

Votes:

In Opposition:

Andrew Clark

Brian Clark

Maggie Kelley Riggins

Steve Shapiro

In Favor:

William Penniman

Other stakeholders in opposition:

John Ainslie

Michael O'Connor (IN CHAT) - VPCMA and Virginia Propane Gas Association

Richard Potts – This proposal is Non-Consensus.

### **EC-C403.3-21 – Ben Rabe**

Ben Rabe – This proposal would require more efficient heating and cooling equipment in commercial buildings.

Richard Potts – It's time for a 5-minute break.

Steve Shapiro (IN CHAT) - I have to jump off for a doctor's appointment, but would note that I am in opposition to the remaining proposals...thanks everyone for the discussion.

Ross Shearer (IN CHAT) - Covid has taught us the importance of fresh air in commercial spaces when occupied. EC C403.3-21 would provide an important remedy for this feature. CO2 sensors can provide the needed proxy, but good quality current designs do not normally monitor for CO2 levels except when there is a call for heating or cooling. This proposal should be supported.

Ben Rabe – Separating ventilation from air condition get better ventilation to the spaces that we all occupy and reduces energy use as a result of lower powered fans. This additional ventilation has ability to reduce the spread of pathogens with separate airways for ventilation and conditioned air.

Richard Potts – Asks if Ben has reviewed the Virginia Mechanical Code for any conflicts.

Ben Rabe – I cross-referenced the Virginia Mechanical Code. I should also note that I could not get the tables to look the way they are supposed to look.

William Penniman (IN CHAT) - I will need to leave shortly for another, pre-existing commitment. I support Mr. Rabe's proposals.

Votes:

In Opposition:

Andrew Clark

In Favor:

Laura Baker

Brian Clark

KC Bleile

Maggie Kelley Riggins

William Penniman

Other stakeholders in opposition:

John Ainslie

Richard Potts – This proposal is Non-Consensus.

#### **EC-C403.4.1.6-21 – Ben Rabe**

Ben Rabe – Similar to other proposals we discussed, this is a commercial proposal for grid controllable thermostats. The intent is for these to be controlled by the utility to reduce stress on the electrical grid.

Votes:

In Opposition:

Andrew Clark

Brian Clark

Maggie Kelley Riggins

In Favor:  
William Penniman  
KC Bleile  
Laura Baker

Richard Potts – This proposal is Non-Consensus.

**EC-C403.15-21 – Ben Rabe**

Ben Rabe – This proposal would require dehumidification systems for indoor horticulture, which, as you all know, Virginia recently decriminalized marijuana. This has tremendous impacts on the energy system so this would require dehumidification for those indoor grow operations. The dehumidifier costs about \$8.11 per square foot of the canopy and results in between \$2.30 and \$2.80 in maintenance cost over the life of the system.

William Penniman – Marijuana growing operations are huge consumers of energy. I would support both of those.

Votes:

In Opposition:

Andrew Clark  
KC Bleile

In Favor:

William Penniman  
Brian Clark  
Laura Baker  
Maggie Kelley Riggins

Other stakeholders in opposition:

John Ainslie

Richard Potts – This proposal is Non-Consensus.

**EC-C404.11-21 – Ben Rabe**

Ben Rabe – This proposal is similar to the residential demand control water heater proposal but would apply to commercial. This is intended to start a conversation on what the grid will look like in the future.

Votes:

In Opposition:

Andrew Clark  
Brian Clark  
KC Bleile  
Maggie Kelley Riggins

In Favor:  
William Penniman

Abstain:  
Laura Baker

Other stakeholders in opposition:  
John Ainslie  
Michael O'Connor (IN CHAT) - VPCMA and Propane association opposed

Richard Potts – This proposal is Non-Consensus.

#### **EC-C405.4-21 – Ben Rabe**

Ben Rabe – Similar to my prior proposal, this deals with horticultural lighting in marijuana growing facilities. These operations use a tremendous amount of energy, especially with respect to lighting.

Votes:  
In Opposition:  
Andrew Clark  
In Favor:  
Brian Clark  
William Penniman  
Other stakeholders in opposition:  
John Ainslie

Richard Potts – This proposal is Non-Consensus.

#### **EC-C405.13-21 – Ben Rabe**

Ben Rabe – This may be similar to a proposal by William Penniman that was carried over. This would require a very small amount of solar on commercial buildings where it would be determined to be cost effective. These costs are much lower during the construction phase instead of later on. The only way to get payback would be to have some solar installed at the time of construction.

Richard Potts – You asked if this was similar to the proposal that William Penniman carried over.

Ben Rabe – Yes. If so, I'd like to work with that group and working out this language.

Ross Shearer (IN CHAT) - This should be supported. It is more useful of geographic space to place solar on roofs than in former farmland or other cleared areas.

Richard Potts – Ben, I'm failing to find the carry-over proposal that you were referencing.



Ben Rabe – I may be mis-remembering.

Richard Potts – We double-checked and couldn't find a similar proposal that was carried over so we will take it to a vote.

Votes:

In Opposition:

Andrew Clark

In Favor:

Brian Clark

Abstain:

Laura Baker (IN CHAT)

KC Bleile (IN CHAT)

Chelsea Harnish (IN CHAT)

Other stakeholders in opposition:

John Ainslie

Richard Potts – This proposal is Non-Consensus.

### **EC-C405.16-21 – Ben Rabe**

Ben Rabe – This is similar to other proposals you've heard. This is the commercial electric-ready proposal that would require buildings to have the infrastructure to convert to all electric energy in the future.

Michael O'Connor (IN CHAT) - VPCMA and VA Propane Gas opposed

Votes:

In Opposition:

Andrew Clark

Brian Clark

Richard Potts – This will be non-consensus. Going back to William Penniman's proposal EC407.6-21, since he had to leave, that proposal will be Carried Over.

### **Assignments and Next Steps**

Richard Potts – Asks those who will be working on carry-over proposals to get together and workout appropriate language. Encourages members to reach out to staff if we can be of

assistance.

## **Next Meeting**

Richard Potts – We'd like to get the next meeting scheduled as soon as possible to get this carry-over proposals worked out before the deadline to get them before the general workgroup meetings.

Andrew Clark – In terms of the next meeting date, are you planning on sending out a Doodle Poll or some sort of survey? There's got to be a lot of interim conversations.

Richard Potts – We may be able to move some things around and rearrange schedules to provide options to the group.

Jeff Brown – We definitely want to give everyone time to discuss those carry-over proposals. We have to meet before the 12<sup>th</sup> because the 12<sup>th</sup> through the 14<sup>th</sup> is when our next general workgroup meetings start. If it happens that only one day can work, it may have to be what it is.

Chelsea Harnish – Can you clarify that the intent is to meet before April 12<sup>th</sup>?

Richard Potts – Yes, the goal is to get all of these carry-over proposals worked out so we can get them on the agenda for the full workgroup meetings.

Jeff Brown – If there are proposals that people are working on and they can't be there, there's still the option on the 14<sup>th</sup> to have them carried over again to the following meeting. If it doesn't work out to get them done before the next round of workgroup meetings, the proponent can still carry it over again.

Andrew Clark – Jeff's comment actually clarified what I was going to state. Just given the volume of stuff that's been carried over, it's going to be very challenging to get anything done before the 12<sup>th</sup>.

Jeff Brown – For the ones that didn't get decided today, the proponent can carry them all over. I'm imagining we're going to get another influx of meetings before the final deadline, so we still have some time, but not a lot of time.

Richard Potts – There are a number of energy proposals that have been submitted that we will need to work through.

John Ainslie – Do you have an approximate timeline for when these will go to the Codes and Standards Committee?

Jeff Brown – The tentative schedule is for them to be heard by the Codes and Standards Committee in September.

Richard Potts – Thanks the sub-workgroup members for their work and participation and adjourns the meeting at 2:10pm.