West Virginia Fire Commission Response to Comments of State Building Code 87-04

BACKGROUND

The Fire Commission has been given authority to promulgate this Rule, pursuant to West Virginia Code 15A-11-11.

Prior to the Commission's initial filing of the Rule, a stakeholder meeting was held at the Office of the State Fire Marshal, via teleconference on April 14, 2021, May 14, 2021, and on June 9, 2021, and, along with members of the Office of the State Fire Marshal, the lists of attendees is attached as addendum 1 to this document. The proposed rule was reviewed, and revisions made, prior to the initial filing with the Secretary of State for comment.

During the public comment period, the Fire Marshal received written comments from one entity, each was considered by the Commission. The response is outlined as follows

1) The Fire Marshal submitted comments regarding technical clean up provisions.

   Answer: The Commission has adopted the proposed changes.

2) Brian Riston submitted comments stating that the air leakage rate change from 3 to 5 was inappropriate, and asks the Commission to leave it at 3.

   Answer: The Commission voted to reject the comment, as it believes that this is better for West Virginia business.

3) Brian Riston submitted comments requesting the stair tread and riser height remain the same as 2015 code.

   Answer: The Commission has rejected the suggested change, as the change is outside the scope of the Commission's changes to the current rule.

4) WV Manufacturing Association and the American Chemistry Council submitted comments supporting the recommended changes from the 2009 International Energy Conservation Code.

   Answer: No action by the Commission is necessary.

5) Aaron Gunzner submitted comments supporting the adoption of a more updated code series and requesting the Fan Efficiency Grade (FEG) within the ASHRAE 90.1, 2019 edition be used as a replacement to the language found in the ASHRAE 90.1, 2013 edition being proposed for adoption.

   Answer: The Commission voted to reject the comment, as it believes it may cause confusion to code interpretation.

6) Lisa Berger of International Code Council submitted comments supporting the recommended changes to the State Building Code adopting 2018 I-Codes and moving from the 2009 International Energy Conservation Code to 2015 version.

   Answer: No action by the Commission is necessary.

7) J.D. Stricklen submitted comments requesting no adoption of more current codes and to remain with the same 2015 codes and 2009 energy code.

Answer: The Commission has rejected the suggested change based on needs to update to standards to a more current version(s).

8) Julius Ballanco of JB Engineering submitted comments supporting the recommended changes from the 2018 International Residential Code and International Mechanical pertaining to new refrigerants being allowed for use in new HVAC units.

Answer: No action by the Commission is necessary.

9) Jennifer Greenlief of WV Dept. of Agriculture submitted comments regarding exemption of property and buildings used for agricultural purposes provisions.

Answer: The Commission has adopted the proposed changes.

10) Mary Koban of Air Conditioning Heating & Refrigeration Institute submitted comments supporting the recommended changes from the 2018 International Residential Code and International Mechanical pertaining to new refrigerants being allowed for use in new HVAC units.

Answer: No action by the Commission is necessary.

11) Robert Glass of Daikin Group submitted comments supporting the recommended changes from the 2018 International Residential Code and International Mechanical pertaining to new refrigerants being allowed for use in new HVAC units.

Answer: No action by the Commission is necessary.

12) Dominique Taudin Carrier Global Corporation submitted comments supporting the recommended changes from the 2018 International Residential Code and International Mechanical pertaining to new refrigerants being allowed for use in new HVAC units.

Answer: No action by the Commission is necessary.

13) Eric Lacey of Responsible Energy Codes Alliance submitted comments supporting the recommended changes to the State Building Code adopting 2015 version of the International Energy Conservation Code and ASHRAE Standard 90.1, 2013 version.

Answer: No action by the Commission is necessary.

14) Schuyler Pulleym of The Chemours Company submitted comments supporting the recommended changes from the 2018 International Residential Code and International Mechanical pertaining to new refrigerants being allowed for use in new HVAC units.

Answer: No action by the Commission is necessary.

Some Technical clean-up was made to the Rule.

This summarizes the topics upon which comments were made to the West Virginia State Fire Marshal on the topic of the proposed rule, State Building Code, 87-04.

First	Last	Representing	9:00am	10:30am	1:30pm
Rob	Altar	WV HBA			
Laura	Baker	RECA		x	
Larry	Baldwin	City of Morgantown			
John	Ballard	WVHDF			
Lisa	Berger	ICC			
Deputy	Blaylock	SFMO	x	x	x
Kelly	Bragg	WV Energy Office		x	
Danny	Brickles	City of Hurricane	x		
Jeff	Burge	IBEW 968			
Kathryn	Burns	SFMO	x	x	
Bob	Cannon	City of Beckley			
Brian	Childers	WV HDF			
Mike	Clowser	CAWV			
Mark	Cohorst	NEMA			
Bill	Courtemanche	WV HBA			
Steve	Crum	IBEW			
Tim	Cunningham	CES	x	x	
Lisa	Dooley				
Mary	Dulyea	WV HBA			
Kai Palmer	Dunning	NEEP			
John	Epperly	IBEW 466			x
Shane	Ferguson				
Commissioner	George	Fire Commission			x
Jim	Gillette	IBEW 317			
Tony	Harmon	City of Charleston	x	x	
David	Hartley	Eastern Panhandle HBA			x
Hunter	Hoffman	WV HDF			
Art	Hallstrom	WV ASHRAE		x	
Justin	Hunt	Development Office	x		
Don	Iverson	Schnieder Square D			x
Randall	Jaggie-Moore	City of Bridgeport			
Jack	Jamison	IAEI	x		x

Commissioner	Keffer	Fire Commission	x	x	
Andrea	Kerr	City of Bridgeport			
Karen	Lasure	WV Office of Energy		x	
David	Mann	American Chemistry			
Tim	McClintock	NEMA	x	x	
Pat	McDonald				
Rebecca	McPhail				
Stacy	Nowicki	SFMO-DAS			
Commissioner	Oldaker				x
Mike	Osborne	City of Bridgeport			
Dale	Oxley	HBAWV			
Kent	Pauley	Home Builders Association		x	
Emmett	Pepper	EEWV			
Darren	Port	NEEP			
Garrett	Reed				
Mike	Reel	WVAHI			
Moses	Riley	Energy Policy Assoc NEEP		x	
Sherry	Risk	CDBG	x		
Brian	Riston	City of Ranson			
Joe	Samples	IBEW			
Commissioner	Shriver	Fire Commission	x		x
Regina	Skeen	WV Home Builders	x	x	x
Billy	Smith	City of Charleston			
David	Smith	Eaton			x
Stephen	Spletzer	Chemours Company	x		
David	Stephens	Johnson Controls			
Dan	Taylor				
Marshal	Tyree	SFMO	x	x	x
Xavier	Walter	Energy Partners LLC		x	
Garrett	Weaver	Energy Office			
John	Welch				
Sara	Yerkes	ICC			

Josh	Young				
Todd	Zachwieja	ZDS Design			
Brian	Zanino	City of Bridgeport			
		Building Code 9:00am			
		IECC 10:30am			
		NEC 1:30pm			

First	Last	Representing	9:00am	10:30am	1:30pm
Rob	Altar	WV HBA	x		
Laura	Baker	RECA		x	
Larry	Baldwin	City of Morgantown			
John	Ballard	WVHDF			
Lisa	Berger	ICC			
Deputy	Blaylock	SFMO	x	x	x
Kelly	Bragg	WV Energy Office		x	
Danny	Brickles	City of Hurricane			
Jeff	Burge	IBEW 968			
Kathryn	Burns	SFMO			
Bob	Cannon	City of Beckley			
Brian	Childers	WV HDF			
Mike	Clowser	CAWV			
Mark	Cohorst	NEMA			
Bill	Courtemanche	WV HBA			
Steve	Crum	IBEW			
Tim	Cunningham	CES	x		
Lisa	Dooley				
Mary	Dulyea	WV HBA			
Kai Palmer	Dunning	NEEP			
John	Epperly	IBEW 466			x
Shane	Ferguson				
Commissioner	George		x	x	x
Jim	Gillette	IBEW 317			
Tony	Harmon	City of Charleston			
David	Hartley	Eastern Panhandle HBA	x	x	x
Hunter	Hoffman	WV HDF			
Art	Hallstrom	WV ASHRAE			
Don	Iverson	Schnieder Square D			x
Randall	Jaggie-Moore	City of Bridgeport			
Jack	Jamison	IAEI	x	x	x
Andrea	Kerr	City of Bridgeport			

Karen	Lasure	WV Office of Energy			
David	Mann	American Chemistry			
Tim	McClintock	NEMA	x	x	x
Pat	McDonald				
Rebecca	McPhail				
Stacy	Nowicki	SFMO-DAS			
Commissioner	Oldaker				x
Mike	Osborne	City of Bridgeport			
Dale	Oxley	HBAWV		x	
Kent	Pauley	Home Builders Association	x	x	
Emmett	Pepper	EEWV			
Darren	Port	NEEP			
Garrett	Reed				
Mike	Reel	WVAHI			
Moses	Riley	Energy Policy Assoc NEEP	x	x	
Sherry	Risk	CDBG	x		
Brian	Riston	City of Ranson			
Joe	Samples	IBEW			
Commissioner	Shriver	Fire Commission	x	x	x
Regina	Skeen	WV Home Builders	x	x	x
Billy	Smith	City of Charleston			
David	Smith	Eaton			x
Stephen	Spletzer	Chemours Company	x		
David	Stephens	Johnson Controls	x		
Dan	Taylor				
Marshal	Tyree	SFMO			
Xavier	Walter	Energy Partners LLC		x	
Garrett	Weaver	Energy Office		x	
John	Welch				
Sara	Yerkes	ICC			
Josh	Young				
Todd	Zachwieja	ZDS Design			

Brian	Zanino	City of Bridgeport			
		Building Code 9:00am			
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Larry	Baldwin	City of Morgantown			
John	Ballard	WVHDF			
Robin	Blakeman	EEWV		x	
Lisa	Berger	ICC	x	x	
Deputy	Blaylock	SFMO	x	x	x
Kelly	Bragg	WV Energy Office		x	
Danny	Brickles	City of Hurricane		x	x
Jeff	Burge	IBEW 968			
Kathryn	Burns	SFMO			
Bob	Cannon	City of Beckley			
Brian	Childers	WV HDF			
Mike	Clowser	CAWV			
Mark	Cohorst	NEMA			
David	Cotton	Allegheny Design			
Bill	Courtemanche	WV HBA	x		x
Steve	Crum	IBEW			
Tim	Cunningham	CES	x	x	
Lisa	Dooley				
Mary	Dulyea	WV HBA			
Kai Palmer	Dunning	NEEP			
John	Epperly	IBEW 466			
Shane	Ferguson				
Commissioner	George				
Jim	Gillette	IBEW 317			
Tony	Harmon	City of Charleston	x		
David	Hartley	Eastern Panhandle HBA	x	x	x
Hunter	Hoffman	WV HDF			
Art	Hallstrom	WV ASHRAE	x	x	
Amanda	Hickman	Hickman Group/AHRI			x
Don	Iverson	Schnieder Square D	x	x	
Randall	Jaggie-Moore	City of Bridgeport			
Jack	Jamison	IAEI	x	x	x
Andrea	Kerr	City of Bridgeport	x	x	x
Mary	Koban	AHRI	x		
Karen	Lasure	WV Office of Energy		x	
David	Mann	American Chemistry			
Tim	McClintock	NEMA			x
Pat	McDonald				
Rebecca	McPhail				
Stacy	Nowicki	SFMO-DAS			
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Emmett	Pepper	EEWV			
Darren	Port	NEEP			
Garrett	Reed				
Mike	Reel	WVAHI			
Moses	Riley	Energy Policy Assoc NEEP	x	x	
Sherry	Risk	CDBG			
Brian	Riston	City of Ranson			
Joe	Samples	IBEW			
Commissioner	Shriver	Fire Commission	x	x	
Regina	Skeen	WV Home Builders	x	x	x
Billy	Smith	City of Charleston	x		
David	Smith	Eaton			x
Stephen	Spletzer	Chemours Company	x		
David	Stephens	Johnson Controls			
Dan	Taylor				
Marshal	Tyree	SFMO	x	x	x
Xavier	Walter	Energy Partners LLC		x	
Garrett	Weaver	Energy Office		x	
John	Welch				
Sara	Yerkes	ICC			
Josh	Young				
Todd	Zachwieja	ZDS Design			
Brian	Zanino	City of Bridgeport			
		Building Code 9:00am			
		IECC 10:30am			
		NEC 1:30pm			

From:	Tyree, Kenneth E
To:	Burns, Kathryn L
Cc:	Nowicki, Stacy L
Subject:	RE: Title 87, Series 4- State Building Code Public Comments
Date:	Wednesday, June 30, 2021 3:38:38 PM

Please find the following public comment pertaining to Section 4.1.1 pertaining to GFCI protection requirements for HVAC mini-split units and other HVAC units with power conversion equipment capabilities:

4.1.1.1. Section 210.8(F), GFCI Protection shall not be required on all mini-split heating/ventilating/air-conditioning (HVAC) equipment and other HVAC units employing power conversion equipment as a means to control compressor speed until January 1, 2023.

This will correct the concern as noted in the previous State Fire Commission meeting.

Sincerely,

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston WV 25301
304.558.2191, Ext 20740 (office)
304.558.2537 (fax)
Kenneth.E.Tyree@wv.gov (E-mail)
www.firemarshal.wv.gov (web)

Challenges build character; anyone can hold the helm when the sea is calm.

From:	Tyree, Kenneth E
To:	Burns, Kathryn L
Cc:	Nowicki, Stacy L
Subject:	RE: Title 87, Series 4 - State Building Code Public Comments # 2
Date:	Wednesday, June 30, 2021 3:39:04 PM

The following comment should address correcting a grammatical concern within Section 4.1.1 of the State Building Code:

4.1.1. The ~~2017~~ 2020 edition of the National Electrical Code, NFPA 70, with the following exception:

This should read "Electrical" instead of Electric as currently noted within the above proposed changes.

Sincerely,

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston WV 25301
304.558.2191, Ext 30740 (office)
304.558.2537 (fax)
Kenneth.E.Tyree@wv.gov (E-mail)
www.firemarshal.wv.gov (web)

Challenges build character; anyone can hold the helm when the sea is calm.

office of technology

Burns, Kathryn L <kathryn.l.burns@wv.gov>

Fwd: [EXTERNAL] Code changes

1 message

Tyree, Kenneth E <kenneth.e.tyree@wv.gov> Wed, Jul 21, 2021 at 8:24 AM
To: "Burns, Kathryn L." <kathryn.l.burns@wv.gov>

From: **Brian Riston** <BRiston@ransonwv.us>
Date: Tue, Jul 20, 2021 at 9:47 AM
Subject: [EXTERNAL] Code changes
To: Kenneth.e.tyree@wv.gov <Kenneth.e.tyree@wv.gov>

Good morning Mr Tyree, I wanted to send you some comments on the code changes that are proposed.

1. I would like to see the air leakage rate stay at three air changes an hr, because it has been proving to produce a better built home, save energy for the homeowners and keeps WV consistent with other states. The city counsel here in Ranson has voted and approved my recommendation to stay at the rate of three air changes an hr on all new housing after learning of the benefits to our community. My hope is that WV as a whole starts to uphold the current codes and moves our state out of the dark ages to protect all who live here.

2. I would also like to see the riser height and tread depth stay the same as written in the 2015 code that requires max 7 ¾ and 10 tread. I do not understand why the state would want to be less restrictive then the rest of the country and less consistent.

I often hear from contractors who work in Maryland and Virginia say why do I need to meet min code this is WV no one cares here. This is very disturbing when I hear this statement and it needs to change.

This perception of WV is out there in the contracting world and the state needs to do a better job enforcing the codes written, not allowing for exceptions to the rule for the health, safety and welfare of the public.

Thank you,

Brian Riston

City of Ranson Building Official

briston@ransonwv.us

312 s Mildred St

Ranson, WV 25438

City Hall: 304-725-1010

Office: 304-724-3882

Received
JUL 12 2021
State Fire Marshal

American Chemistry Council Plastics Division

WVMA

July 12, 2021

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston WV 25301

Via Email: kenneth.e.tyree@wv.gov

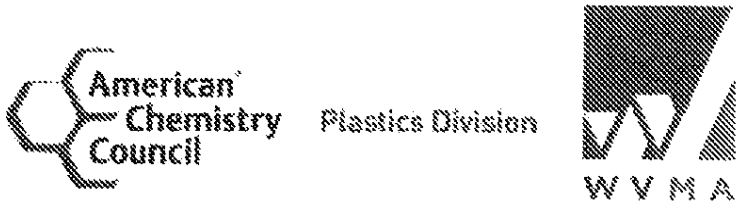
RE: State Building Code Rule

Dear Fire Marshall Tyree,

Thank you for the opportunity to provide comments on the "State Building Code" rule. ACC and WVMA represent leading companies engaged in manufacturing and the business of chemistry, covering almost 10% of the State's output and employing 48,500 people. We support the proposed rule to update West Virginia's energy code.

We have been grateful for the opportunity to participate in the development of this proposed rule. Over the course of the last four years, ACC and WVMA have highlighted the benefits of updating the energy code in West Virginia. The proposed rule would update West Virginia's energy code from the 2009 International Energy Conservation Code (IECC) to the 2015 IECC, generating tremendous savings:

Summary of U.S. DOE Analysis Comparing 2015 IECC to 2009 IECC (Residential)	
Metric	Compared to 2009 IECC
Annual (first year) energy cost savings of the 2015 IECC	25.5%
Average (30 year) life-cycle cost savings of 2015 IECC	$9,027.42
Simple payback period of the 2015 IECC	2.9 years
Annual (first year) energy cost savings of the 2015 IECC	$588.93



While the rule does contain a weakening amendment that reduces the stringency of the air tightness requirements, we are pleased to see West Virginia move ahead with this important update.

Thank you for your continued service and leadership. We are available to answer any questions you may have and look forward to continuing our work together in support of a safe, efficient building stock in West Virginia.

Sincerely,

Rebecca R. McPhail
President
West Virginia Manufacturers Association
2001 Quarrier Street
Charleston, WV 25311
304-342-2123

Josh Young
Senior Director, Government Affairs, State Affairs and Political Mobilization
American Chemistry Council
700 2nd St. NE
Washington D.C. 20002

Burns, Kathryn L <kathryn.l.burns@wv.gov>

Fwd: Proposal for WV Commercial Energy Code

1 message

Burns, Kathryn L <kathryn.l.burns@wv.gov> Tue, Jul 27, 2021 at 3:58 PM
To: "Burns, Kathryn L" <kathryn.l.burns@wv.gov>

On Mon, Jul 26, 2021 at 11:01 AM Gunzner, Aaron - AMCA International, Inc. <agunzner@amca.org> wrote:

> Hello Fire Marshal Tyree,
>
> My name is Aaron Gunzner, advocacy manager with the Air Movement and Control Association (AMCA) International. I wanted to submit a proposal for the WV Commercial Energy Code update regarding fan efficiency provisions.
>
> **In short, my organization promotes that when states adopt the 2013 or 2016 editions of ASHRAE 90.1, that they swap the fan efficiency metric found in ASHRAE 90.1-2013 (Fan Efficiency Grade, or FEG) with the fan efficiency metric found in ASHRAE 90.1-2019 (Fan Energy Index, or FEI).**
>
> **To this end, I have attached a template with the exact strike-out/underline wording that this code change would entail. Also attached is an advocacy brief further explaining the FEI metric.**
>
> The newer FEI metric has already been adopted in Florida and Oregon state codes, and is currently in the draft 2022 language of California's Title 24 (Building Energy Efficiency Standards).
>
> AMCA has many other resources explaining the benefits of this metric, available on a page of its website dedicated to FEI – www.amca.org/fei.
>
> Thank you for your consideration of this proposal. If you have any questions, please do not hesitate to call or email me.
>
> Best regards,
>
> Aaron

Aaron Gunzner

Advocacy Manager

amca INTERNATIONAL

30 West University Drive
Arlington Heights, IL 60004 U.S.A.
direct : +1 (847) 704-8537
office : +1 (847) 394-0150
fax :
agunzner@amca.org
https://www.amca.org

Let's chat on Teams!

Fan Efficiency Grade (FEG) is being replaced by the Fan Energy Index (FEI). Are YOU ready? AMCA has developed peer-reviewed training to help you know all there is to know about FEI. Learn more!

Update your engineering library for AMCA standards and publications at https://www.amca.org/store.

Visit the AMCA whitepaper library at https://www.amca.org/whitepapers.

AMCA International
Air Movement and Control Association International, Inc.
The International Authority on Air System Components Since 1917

30 West University Drive
Arlington Heights, IL 60004, USA
847-394-0150
communications@amca.org
www.amca.org

Template for Replacing the Fan Efficiency Grade (FEG) Metric in ANSI/ASHRAE/IES Standard 90.1-2013 and -2016 with the Fan Energy Index (FEI) Metric in ANSI/ASHRAE/IES Standard 90.1-2019

July 2021

AMCA International Advocacy Team

Contact: Aaron Gunzner, Advocacy Manager, AMCA International, agunzner@amca.org

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Contents

Call to Action

Effective with the 2019 edition of ANSI/ASHRAE/IES Standard 90.1, the Fan Energy Index (FEI) metric replaces the Fan Efficiency Grade (FEG) metric in Section 6.5.3.1.3 Fan Efficiency, along with applicable definitions and references. If updating energy codes to 2013 or 2016 editions of ASHRAE 90.1, AMCA International urges jurisdictions to replace the FEG-based provision with the FEI-based provision.

To help facilitate the phaseout of the FEG metric, AMCA International, with permission from ASHRAE, has developed this template showing the underline-strikeout changes that would need to be made.

Reason Statement

Replacing the FEG metric with the FEI metric in energy codes will save energy by enabling fan selections that include effects of motors, drives, and part-load performance. Enforcement also is made easier because the "sizing and selection window" based on peak total efficiency is removed.

Resources

- AMCA Advocacy Brief – FEI – for detailed rationale for energy code updates from FEG to FEI.
- AMCA FEI microsite – for more information about the FEI metric.
- Find AMCA FEI-certified products – for confidence that sufficient third-party-certified products are available to meet demand.
- Addendum *ao* to ANSI/ASHRAE/IES Standard 90.1-2016 – link is to PDF containing the FEI Addendum *ao* and other addenda integrated into a single document. Search for "FEI" to navigate to relevant content.

Contact Information

Please send any questions about this template or FEI to Aaron Gunzner, advocacy manager, AMCA International, at agunzner@amca.org or +1 847-704-6337.

Itemized Changes to Fan-Efficiency Language

Updates to the fan-efficiency provisions in the 2019 version of ANSI/ASHRAE/IES 90.1 encompass definitions, core language, and references. The relevant changes are detailed on the following pages, with new text underlined and deleted text struck through.

Definitions

3 Definitions, Abbreviations, and Acronyms

fan, embedded: A fan that is part of a manufactured assembly where the assembly includes functions other than air movement.

fan array: multiple fans in parallel between two *plenum* sections in an air *distribution system.*

fan nameplate electrical input power: the nominal electrical input power rating stamped on a fan assembly nameplate.

~~***fan efficiency grade (FEG):*** the fan efficiency without consideration of drives, as defined in AMCA 205.~~

fan energy index (FEI): the ratio of the electric input power of a reference fan to the electric input power of the actual fan as calculated per AMCA 208.

fan system electrical power: the sum of the fan electrical power of all fans that are required to operate at *fan system design conditions* to supply air from the heating or cooling source to the *conditioned spaces* and/or return it to the source or exhaust it to the outdoors.

Core Language

For the sake of simplicity, the obsolete ASHRAE 90.1-2013 and -2016 sections are shown below in their entirety in strikeout format, preceded by the ASHRAE 90.1-2019 section recommended for replacement in underline format.

ADDITIONS PER ASHRAE 90.1-2019

6.5.3.1.3 Fan Efficiency

Each fan and *fan array* shall have a *fan energy index (FEI)* of 1.00 or higher. Each fan and *fan array* used for a *variable-air-volume system* that meets the requirements of Section 6.5.3.2.1 shall have an *FEI* of 0.95 or higher. The *FEI* for *fan arrays* shall be calculated in accordance with AMCA 208 Annex C.

Exceptions to 6.5.3.1.3

1. Fans that are not *embedded fans* with a motor *nameplate horsepower* of less than 1.0 hp or with a *fan nameplate electrical input power* of less than 0.89 kW.
2. *Embedded fans* and *fan arrays* with a combined motor *nameplate horsepower* of 5 hp or less or with a fan system electrical input power of 4.1 kW or less.
3. *Embedded fans* that are part of *equipment* listed under Section 6.4.1.1.
4. *Embedded fans* included in *equipment* bearing a third-party-certified seal for air or *energy* performance of the *equipment* package.
5. Ceiling fans.
6. Fans used for moving gases at temperatures above 482°F.
7. Fans used for operation in explosive atmospheres.
8. Reversible fans used for tunnel ventilation.
9. Fans outside the scope of AMCA 208.
10. Fans that are intended to only operate during emergency conditions.

DELETIONS FROM ASHRAE 90.1-2013

~~6.5.3.1.3 Fan Efficiency~~

~~Fans shall have a fan efficiency grade (FEG) of 67 or higher based on manufacturers' certified data, as defined by AMCA 205. The total efficiency of the fan at the design point of operation shall be within 15 percentage points of the maximum total efficiency of the fan.~~

~~Exceptions:~~

~~1. Single fans with a motor nameplate kilowatts of 5 hp or less~~

~~2. Multiple fans in series or parallel (e.g., fan arrays) that have a combined motor nameplate kilowatts of 5 hp or less and are operated as the functional equivalent of a single fan~~

~~3. Fans that are part of equipment listed under Section 6.4.1.1~~

~~4. Fans included in equipment bearing a third-party-certified seal for air or energy performance of the equipment package~~

~~5. Powered wall/roof ventilators (PRV)~~

~~6. Fans outside the scope of AMCA 205~~

~~7. Fans that are intended to only operate during emergency conditions~~

DELETIONS FROM ASHRAE 90.1-2016

~~6.5.3.1.3 Fan Efficiency~~

~~Fans shall have a *fan efficiency grade (FEG)* of 67 or higher based on *manufacturers'* certified data, as defined by AMCA 205. The total *efficiency* of the fan at the design point of operation shall be within 15 percentage points of the maximum total *efficiency* of the fan.~~

~~Exceptions to 6.5.3.1.3~~

~~1. Individual fans with a motor *nameplate horsepower* of 5 hp or less that are not part of a group operated as the functional equivalent of a single fan.~~

~~2. Multiple fans in series or parallel (e.g., fan arrays) that have a combined motor *nameplate horsepower* of 5 hp or less and are operated as the functional equivalent of a single fan.~~

~~3. Fans that are part of *equipment* listed under Section 6.4.1.1.~~

~~4. Fans included in *equipment* bearing a third-party-certified seal for air or *energy* performance of the *equipment* package.~~

~~5. Powered *wall/roof* ventilators (*PRV*)~~

~~6. Fans outside the scope of AMCA 205.~~

~~Fans that are intended to only operate during emergency conditions..~~

References

12 Normative References

Air Movement and Control Association International, Inc. (AMCA)
30 West University Drive, Arlington Heights, IL 60004-1806

~~AMCA 205-12~~	~~Energy Efficiency Classification for Fans~~
AMCA 208-18	Calculation of the Fan Energy Index

ADVOCACY BRIEF

NEW FAN ENERGY INDEX (FEI) METRIC AND SCOPE FOR ENERGY CODES (JULY 2021)

Overview:

Fan Energy Index (FEI) has replaced Fan Efficiency Grade (FEG) as the metric for efficiency provisions for commercial and industrial fans and blowers in the latest editions of the model energy codes and standards and is making its way into state energy codes.

Formalized in ANSI/AMCA Standard 208-18, Calculation of the Fan Energy Index, FEI was developed after the U.S. Department of Energy in an as-yet-unfinished rulemaking concluded FEG is not an appropriate metric for a federal appliance/equipment regulation.

Fan-efficiency provisions based on FEI have been approved for the following model energy codes:

- 2021 International Energy Conservation Code (IECC)
- 2021 International Green Construction Code (IgCC)
- ANSI/ASHRAE/ICC/USGBC/IES 189.1-2020, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings
- ANSI/ASHRAE/IES 90.1-2019, Energy Standard for Buildings Except Low-Rise Residential Buildings

Meanwhile, FEI is in the 2019 Florida Energy Code, the 2021 Oregon Energy Code, and advanced drafts of the California and Connecticut energy codes. Additionally, FEI has been proposed for U.S. Department of Energy and California Energy Commission fan-efficiency regulations.

This advocacy brief advises jurisdictions to replace FEG-based provisions with FEI-based provisions during their next energy-code cycles.

Basics of Fan Energy Index

FEI is a measure of the efficiency of an entire fan system—the fan, the motor, and the drive—not just the fan. FEI is calculated using data from performance tests conducted in laboratories and contained in manufacturer sizing software and product catalogs. It establishes a baseline efficiency and resulting baseline power that varies with both airflow and pressure and can be applied to most types of commercial and industrial fans and blowers. FEI establishes a "range of compliant operations," rather than a peak-efficiency threshold. In other words, FEI optimizes fan, motor, and drive selections for the conditions under which they will operate.

Benefits

1. ***Clarity for buyers and specifiers***
   FEG ratings apply to a range of sizes of a particular fan model, which obscures the lower actual efficiencies of smaller fans. The FEG 67 rating, for example, covers a range of efficiencies from approximately 45% to 65%, depending on the impeller diameter. Typically, the larger the fan, the higher the efficiency. To make up for this, a sizing window must be applied by designers to nudge fan selections to larger diameters. FEI solves this problem with values that inherently track the actual efficiency of a fan.

2. ***Flexible application***
   When a designer inputs a fan selection or duty point, manufacturer software offers compliant fans of varying types, sizes, materials, and motor/drive combinations. These options make performing cost-benefit analyses for fans with higher FEI ratings easy.

ADVOCACY BRIEF

NEW FAN ENERGY INDEX (FEI) METRIC AND SCOPE FOR ENERGY CODES (JULY 2021)

3. ***Simpler design and enforcement***
   FEG requires a sizing window of "15 percentage points from peak total efficiency." This requires that fans be rated for total efficiency when, in fact, static-pressure ratings are more common. For every covered fan, designers must document, and code officials must check for, compliance. If the window is ignored, smaller fan sizes likely will be selected because of lower first cost, but higher energy consumption and life-cycle cost will result. FEI works for static and total efficiency and eliminates the cumbersome window.

4. ***Greater energy savings***
   Because it is easier to use and enforce and encourages more-efficient fan types, sizes, and motor/drive combinations, FEI saves energy over FEG.

Savings Beyond the Metric

With the reduction of the lower fan-motor limit from 5.0 HP to 1.0 HP and the removal of the exemption for powered roof and wall ventilators, the scope of covered fans in the fan-efficiency sections of the IECC and ANSI/ASHRAE/IES 90.1 was broadened. These changes will lead to fan energy savings above and beyond those resulting from the transition from FEG to FEI.

Certified Ratings

The fan-efficiency provision in the 2021 IECC requires that FEI ratings be certified by an approved third-party laboratory. AMCA International's Certified Ratings Program covers more than 400 fan models from nearly 20 manufacturers, with more on the way. For a complete list of certified manufacturers and links to certified FEI ratings, visit www.amca.org/find-FEI.

Calls to Action

- If your jurisdiction references the IECC, consider the approach taken by Florida, which, in adopting the 2018 IECC for Florida Building Code, Energy Conservation, 7th Edition (Section C403.2.12.3), replaced the fan-efficiency section with the language in the 2021 IECC. An underline-strikeout template for doing this is available at www.amca.org/fei.
- If your jurisdiction is updating to the 2013 or 2016 edition of ANSI/ASHRAE/IES 90.1, consider swapping the fan-efficiency section with the corresponding section in the 2019 edition. An underline-strikeout template for doing this is available at www.amca.org/fei.
- View recorded webinars and download technical papers on FEI at www.amca.org/fei.
- Specify AMCA-certified FEI ratings when possible, even if not required by code, as manufacturers must exercise great care when updating their sizing/selection software to accommodate the motor and drive combinations available across fan types and sizes. AMCA-certified FEI ratings can be found at www.amca.org/find-FEI.

AMCA International would be happy to answer any questions you may have about replacing FEG with FEI. Contact AMCA Advocacy Manager Aaron Gunzner at agunzner@amca.org.

To Learn More:

- AMCA International: www.amca.org
- FEI: www.amca.org/FEI
- FEI-certified products: www.amca.org/find-FEI
- FEI training: https://bit.ly/FEI_Modules

International Code Council
500 New Jersey Avenue, NW
Sixth Floor
Washington, DC 20001
t: 888.ICC.SAFE (422.7233)
t: 202.370.1800
f: 202.783.2348
www.iccsafe.org

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston, WV 25301

Dear Marshal Tyree:

The International Code Council (ICC) is pleased that West Virginia is proposing to adopt the 2018 International Building Code (IBC), International Residential Code (IRC), International Mechanical Code (IMC), International Plumbing Code (IPC), International Property Maintenance Code (IPMC), International Fuel Gas Code (IFGC), International Existing Building Code (IEBC), International Swimming Pool and Spa Code (ISPSC), and the 2015 International Energy Conservation Code (IECC). The Code Council commends the State Fire Marshal's Office and the State Fire Commission's work to ensure the health and wellbeing of the residents of West Virginia.

Building codes are often the difference between preservation and destruction and life and death, and the application of strong building codes and standards play a large part in ensuring West Virginia's communities remain safe and strong for generations to come. The reality is, science and technology are constantly changing; and, as a result, the building community also needs to stay current with construction standards for the safety and economic benefit of West Virginia.

As you are aware, the Code Council utilizes an inclusive three-year cycle for I-Code updates that ensures our model codes contain the most up to date references to construction materials, methods, and processes. The 2018 editions of the I-Codes are model codes and represent a consensus of building safety experts from across the U.S. establishing minimum safeguards for people at home, at school, and in the workplace. We thank you for being an ICC governmental member and encourage further state participation in the development of the national model codes.

The International Code Council is happy to have West Virginia as a partner in the national pursuit for resilient and efficient construction. We look forward to assisting the State Fire Marshal's Office during the adoption process and are happy to offer assistance as needed by the Department.

Warmest regards,

Lisa Berger

Lisa Berger
Government Relations Associate
International Code Council

Stricklen Realty
P.O. Box 106
Blue Creek, WV 25026

Received
JUL 22 2021
State Fire Marshal

July 22, 2021

Ken Tyree WV, Fire Marshal
1207 Quarrier Street
Charleston, WV 25301

Please accept my comments on the pending changes to the IRC 2015, I ECC 2009 and NEC 2017 building codes. In a perfect world more rigid codes can be an improvement. However, at this time in West Virginia we do not live in a perfect world. Never before seen circumstances such as Covid-19, all time high material prices and a labor shortage has negatively affected our ability to provide affordable new housing for the citizens of our state who need it desperately. We have also not been able over the last five years to even replace the homes lost in the 2016 floods. The existing codes are an improvement to 98% of the existing housing inventory in our state. The proposed upgrading of the current codes would only raise the bar higher for our citizens to obtain newer housing, which will result in these folks being forced to remain in older homes without any or little insulation and outdated, inefficient HVAC equipment because they cannot afford newer housing.

As mentioned above, approximately 98% of our existing homes do not meet current codes but people do not have an affordable newer home option even before upgrading our code standards.

In summary, I am opposed to the pending upgrading of the building code because there is no doubt it will place the citizens of West Virginia further away from their hope and need to be able to obtain newer housing.

Respectfully Submitted,

J.D. Stricklen, Homebuilder

JB ENGINEERING AND CODE CONSULTING, P.C.
1661 Cardinal Drive • Munster, IN 46321
Phone: 219-922-6171 Fax: 219-922-6172
E-Mail: JBEngineer@aol.com

JULIUS A. BALLANCO, P.E.
President

July 22, 2021

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston WV 25301

Dear State Fire Marshal Tyree:

I would like to express my support of the proposed updates to the State Building Code regarding the changes to the Mechanical Code. The addition of UL/CSA 60335-2-40, UL/CSA 60335-2-89, and the updating of ASHRAE 15 and ASHRAE 34 are imperative in providing public health and safety as our country transitions to low global warming potential refrigerants.

I have been actively involved in the updating of these standards and I can attest that they provide the necessary level of safety to protect the citizens of West Virginia. The updated standards will allow for the safe use of low global warming potential Group A2L refrigerants.

In accordance with the engineering code of ethics, I must inform you that one of my clients is Daikin US, a major manufacturer of air conditioning equipment. Daikin has been in the forefront of supporting the safe transition to low global warming potential Group A2L refrigerants. Daikin has supported changes to update these standards in Mechanical Codes throughout the United States.

In closing, I would like to thank the West Virginia State Fire Marshal's Office for taking the lead in developing these important updates to the State Building Code.

Cordially your,

Julius Ballanco, P.E.
President

Building Code

I think the same changes should be workable in the Building Code with some modifications. Here's my thoughts:

1.6. Exemptions. – The State Building Code has no application to buildings or structures used primarily for agricultural purposes, including agritourism purposes.

87-4-9. Exemption for agricultural purposes.

18.1. If a property owner or other responsible party claims exemption from the applicable Building Code based on the agricultural purposes exemption identified in section 1.6 of this rule, the question shall be submitted to the Commissioner of Agriculture for a determination of eligibility.

18.2. The property owner or responsible party shall submit to the Commissioner of Agriculture sufficient information to allow the Commissioner to determine the primary use of the property. This information shall include, but is not limited to, location of the property and buildings, types of agricultural use or uses, percentage or frequency of use, and any other information that the Commissioner requires to make a decision.

18.3. Upon making a determination, the Commissioner of Agriculture shall provide a copy of his or her determination to the property owner or responsible party, and to the entity that has adopted and is enforcing the Building Code.

Happy to discuss further, and sorry for taking so long to get back to you! Hopefully this (or something similar) is acceptable to y'all. Once it gets adopted, WVDA will need to come up with some procedural guidelines, but we can do that pretty handily.

Talk soon,

Jennifer

~~~

Jennifer S. Greenlief, J.D.

Assistant Commissioner and General Counsel

West Virginia Department of Agriculture

(o) 304.558.3200

(c) 304.859.1139

jgreenlief@wvda.us
~~~

AIR-CONDITIONING, HEATING, & REFRIGERATION INSTITUTE

we make life better®

2311 Wilson Boulevard Suite 400 Arlington VA 22201 USA
Phone 703 524 8800 | Fax 703 562 1942
www.ahrinet.org

July 23, 2021

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston, WV 25301

Via email: Kenneth.E.Tyree@wv.gov

Subject: Proposed Amendments to the West Virginia Building Code

Dear Mr. Tyree,

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) is writing in support of proposed amendments to the West Virginia Building Code made by The Chemours Company (Chemours).

The *American Innovation and Manufacturing (AIM) Act was* signed into law by President Trump on December 27, 2020. The AIM Act mandates that the U.S. Environmental Protection Agency (EPA) phase down the supply of hydrofluorocarbons (HFCs), including refrigerants.[1] AHRI represents more than 300 of the equipment, component, and refrigerant manufacturers in the Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) industry that must now transition to next generation refrigerants due to the new federal legislation.

Together with the U.S. Department of Energy and other stakeholders, AHRI and its members have invested over $7 million in research carefully analyzing refrigerant and equipment behavior related to this transition.[2] In fact, AHRI just completed a project with the standard-setting organization Underwriter Laboratories (UL) and fire service representatives to develop training for first responders to ensure that they have the information needed for this transition.[3] In light of the passage of the AIM Act, AHRI believes that it is prudent for all stakeholders to start preparing for the transition.[4]

It is essential that State building codes enable the use of next generation refrigerants required by the AIM Act. If State building codes are not properly amended to accommodate next generation

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[1] American Innovation and Manufacturing Act of 2020, H.R. 133, sec. 103, 116th Cong. (2021) (passed as part of Consolidated Appropriations Act of 2021 (P.L. 116-260)), https://www.epa.gov/sites/default/files/2021-03/documents/aim_act_section_103_of_h.r._133_consolidated_appropriations_act_2021.pdf

[2] *See* AHRI, Flammable Refrigerants Research Initiative, https://www.ahrinet.org/resources/research/ahri-flammable-refrigerants-research-initiative.

[3] *See* UL Firefighting Safety Research Institute, Advancing Fire Safety Science, https://ulfirefightersafety.org/.

[4] *See* AHRI, Safe Refrigerant Transition Task Force, https://www.ahrinet.org/saferefrigerant.

refrigerants, then manufacturers, distributors, and end-users may find themselves unable to simultaneously comply with both federal and state law. It is important for building code changes to be addressed through the amendment process so that all stakeholders know how to comply with state building codes as soon as reasonably possible.

In addition, it is important to note that manufacturers will soon be required to use the equipment standard, UL 60335-2-40, instead of the equipment standard UL 1995 that is currently in effect in West Virginia. UL will withdraw UL 1995 as a national standard effective January 1, 2024.[5] The newest 3rd edition of UL 60335-2-40, published November 2019, has many new requirements for electrical and refrigerant safety, including requirements for UV-C germicidal lamp systems, CO_2 systems, photovoltaic systems, new marking requirements, water ingress rating system, and allowances for next generation refrigerants. Manufacturers are already working to certify equipment to the new standard.

Additionally, ASHRAE Standard 34-2019 includes many next generation refrigerants that do not appear in previous editions of the standard. ASHRAE 15-2019 incorporates specific requirements for the use of next generation A2L refrigerants (Addenda d and h), alignment with Standard 34 (Addendum c), clarifications on requirements when changing the refrigerant, new details for discharge line piping, and other minor changes (Addendum b, e, f). Hence, standard references to ASHRAE 34-2019 and ASHRAE 15-2019 need to be updated. It should be noted that the 2021 ICC International Mechanical Code references ASHRAE 15-2019 and ASHRAE 34-2019 which incorporate these changes to the ASHRAE standards.

Finally, the Mechanical Code needs to be updated to allow Group A2L refrigerants listed in the 2019 edition of ASHRAE 34 to be used in high probability (direct) systems. The safety requirements in ASHRAE 15-2019 address the concerns regarding the use of a Group A2L refrigerants. There are provisions for listing of equipment, installation of refrigerant detectors, and ventilation to mitigate any leak of refrigerant. By referencing ASHRAE 15-2019 directly, these safety requirements become an enforceable part of the code. ASHRAE 15 requires an A2L appliance or equipment to be listed to UL/CSA 60335-2-40-2019.

AHRI wishes to caution you that if the changes above are not included in the West Virginia Building Code there may be limited options (or even no option) to provide HVACR equipment in West Virginia that complies with the federal refrigerant transition required by the AIM Act or even to provide equipment that complies with industry safety standards after the withdrawal of UL 1995. It is AHRI's understanding that West Virginia is on a 6-year code cycle, meaning the state will not go through an entire code review/adoption cycle until 2024 which is too late for the withdrawal of the UL 1995 standard and could be too late to comply with the federal regulations in 2025.

Also of note, there are several U.S manufacturers that have installed manufacturing capacity within West Virginia that could be negatively impacted if these codes are not updated.

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[5] *See* UL, UL Works with Industry to Propose an Effective Date Extension for UL 60335-2-40 (notinghttps://www.ul.com/news/ul-works-industry-propose-effective-date-extension-ul-60335-2-40

However, most importantly, tens of millions of units have been installed and operate internationally without incident (even in developing nations) in compliance with the International Electrical Code (IEC) 60335-2-40, which is much more liberal than UL/CSA 60335-2-40. Significant research has been completed to inform the more restrictive requirements in UL/CSA 60335-2-40 including a project confirming the functionality of the standard. Training has been developed for both first responders and technicians. Stakeholders are solely waiting for direction from state mechanical codes to prepare for this transition.

AHRI greatly appreciates your consideration of this matter and would be happy to provide further information if helpful.

Sincerely,

Helen Walter-Terrinoni

Helen Walter-Terrinoni
VP Regulatory Affairs
Air-Conditioning, Heating and Refrigeration Institute (AHRI)
Hwalter-terrinoni@ahrinet.org
302-598-4608

Goodman
a member of DAIKIN group

July 22, 2021

Mr. Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston WV 25301

Dear State Fire Marshal Tyree:

Goodman is a member of Daikin Group, the largest heating, ventilation, and air conditioning manufacturer in the world. Goodman is headquartered in Houston, Texas, and employs thousands of workers across the United States. The company manufactures residential and light commercial heating and cooling equipment, and its products are sold and installed by contractors in every American state, as well as in Canada. Daikin has been in the forefront of supporting the safe transition to low global warming potential Group A2L refrigerants. Daikin has supported changes to update these standards in Mechanical and Residential Codes throughout the United States.

We would like to express our support of the proposed updates to the West Virginia State Building Code regarding the changes to the Mechanical Code. The addition of UL/CSA 60335-2-40, UL/CSA 60335-2-89, and the updating of ASHRAE 15 and ASHRAE 34 are imperative in providing public health and safety as our country transitions to low global warming potential refrigerants.

We have been actively involved in the updating of these standards and we can attest that they provide the necessary level of safety to protect the citizens of West Virginia. The updated standards will allow for the safe use of low global warming potential Group A2L refrigerants in compliance with the AIM Act which was signed into law by President Trump in December 2020.

In closing, I would like to thank the West Virginia State Fire Marshal's Office for taking the lead in developing these important updates to the State Building Code.

Sincerely,

Robert S. Glass
Manager, State Regulatory Affairs

July 22, 2021

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street
Charleston, WV 25301

Dear State Fire Marshal Tyree,

On behalf of Carrier Global Corporation, I would like to express my support of the proposed changes to the State Building Code, essentially consisting in an update of the list of referenced standards:

- Adddition of UL/CSA 660335-2-40 - 2019
- Update to the latest Edition (2019) of ASHRAE Standards 15 and 34.

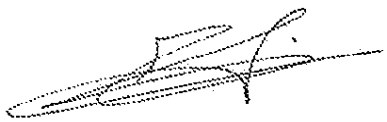
Not only these changes have become necessary with the migration to the new generation of Low GWP refrigerants but also provide an increased level of safety for the users, the contractors and service companies, and the first responders.

Over the past few years, many experts from Carrier have been actively involved in the development of the new safety standards through ASHRAE and UL technical committees. The requirements set in these standards are based on factual research results conducted by Carrier and other manufactures, by ASHRAE and Industry Associations, most recently in collaboration with UL and Fire Service organizations.

13995 Pasteur Boulevard, Palm Beach Gardens, FL 33418

Under the leadership of your Office, I am confident that these updates will be soon implemented in the State Building Code of West Virginia and I remain at your disposal for any additional information you may need.

Respectfully yours



Dominique Taudin
Senior Director, Codes & Standards
Carrier Global Corporation

RECA
Responsible Energy Codes Alliance

VIA ELECTRONIC MAIL

July 21, 2021

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier Street, Second Floor
Charleston WV 25301

RE: RECA Comments Supporting Residential and Commercial Energy Code Updates in West Virginia

Dear Fire Marshal Tyree:

The Responsible Energy Codes Alliance (RECA) submits the following comments in support of the proposed State Building Code rule published in the June 23, 2021 Notice of Public Comment Period (Notice). **Specifically, we support the adoption of the 2015 *IECC* and *ASHRAE* Standard 90.1-2013 as the statewide building energy codes.**

RECA's representatives have been directly involved in this update over several years, and while we continue to believe that additional energy and cost savings could be achieved with the complete adoption of the latest *IECC*, we view the proposed update as an important step in the right direction. As published in the Notice, the update to the state's energy conservation standards will yield significant long-term energy and cost savings to owners of homes and commercial buildings.

Looking ahead, we hope to continue to work together with the State Fire Marshal's Office to explore additional efficiency and cost savings for West Virginia citizens. RECA's members and supporters have been involved in energy code development and adoption for decades, and we offer our assistance and experience as you work to maximize energy efficiency in residential and commercial buildings. Please contact us if you have any questions or would like to discuss how RECA can be of assistance.

Sincerely,

Eric Lacey
RECA Chairman

The Chemours Company
1007 Market Street
PO Box 2047
Wilmington, DE 19899

302-773-1000
chemours.com

July 23, 2021

Kenneth E. Tyree Jr.
State Fire Marshal
West Virginia State Fire Marshal's Office
1207 Quarrier St., 2nd Floor
Charleston, WV 25301

Re: Amendment to State Building Code

Dear State Fire Marshal Tyree:

Chemours greatly appreciates the opportunity to add our support for the proposed additions/updates of UL/CSA 60335-2-40, UL/CSA 60335-2-89, ASHRAE 15 and ASHRAE 34 to the State Building Code. These standards allow the use of low global warming potential A2L refrigerants in a safe and practical way. The proposed code changes represent broad stakeholder consensus and ensure a diversity of technical solutions to benefit the residents West Virginia. Thank you for your forward-thinking actions to incorporate the state-of-the-art standards into the State Building Code.

Respectfully,

Schuyler Pulleyn
Regulatory Consultant
The Chemours Company

WEST VIRGINIA SECRETARY OF STATE
MAC WARNER
ADMINISTRATIVE LAW DIVISION

eFILED
6/23/2021 1:49:34 PM
Office of West Virginia
Secretary Of State

NOTICE OF PUBLIC COMMENT PERIOD

AGENCY: Fire Commission TITLE-SERIES: 87-04

RULE TYPE: Legislative Amendment to Existing Rule: Yes Repeal of existing rule: No

RULE NAME: State Building Code

CITE STATUTORY AUTHORITY: 15A-11-11

COMMENTS LIMITED TO:

Written

DATE OF PUBLIC HEARING:

LOCATION OF PUBLIC HEARING:

DATE WRITTEN COMMENT PERIOD ENDS: 07/26/2021 4:00 PM

COMMENTS MAY BE MAILED OR EMAILED TO:

NAME: Ken Tyree, Fire Marshal

ADDRESS: 1207 Quarrier Street

Charleston, WV 25301

EMAIL: kenneth.e.tyree@wv.gov

PLEASE INDICATE IF THIS FILING INCLUDES:

RELEVANT FEDERAL STATUTES OR REGULATIONS: No

(IF YES, PLEASE UPLOAD IN THE SUPPORTING DOCUMENTS FIELD)

INCORPORATED BY REFERENCE: Yes

(IF YES, PLEASE UPLOAD IN THE SUPPORTING DOCUMENTS FIELD)

PROVIDE A BRIEF SUMMARY OF THE CONTENT OF THE RULE:

this will update standards to 2015, with the exception of a few which will be 2018.

SUMMARIZE IN A CLEAR AND CONCISE MANNER CONTENTS OF CHANGES IN THE RULE AND A STATEMENT OF CIRCUMSTANCES REQUIRING THE RULE:

The codes are outdated.

SUMMARIZE IN A CLEAR AND CONCISE MANNER THE OVERALL ECONOMIC IMPACT OF THE PROPOSED RULE:

A. ECONOMIC IMPACT ON REVENUES OF STATE GOVERNMENT:

0

B. ECONOMIC IMPACT ON SPECIAL REVENUE ACCOUNTS:

0

C. ECONOMIC IMPACT OF THE RULE ON THE STATE OR ITS RESIDENTS:

0

D. FISCAL NOTE DETAIL:

Effect of Proposal	Fiscal Year		
	2021 Increase/Decrease (use "-")	2022 Increase/Decrease (use "-")	Fiscal Year (Upon Full Implementation)
1. Estimated Total Cost	0	0	0
Personal Services	0	0	0
Current Expenses	0	0	0
Repairs and Alterations	0	0	0
Assets	0	0	0
Other	0	0	0
2. Estimated Total Revenues	0	0	0

E. EXPLANATION OF ABOVE ESTIMATES (INCLUDING LONG-RANGE EFFECT):

It is not believed that this will increase costs

BY CHOOSING 'YES', I ATTEST THAT THE PREVIOUS STATEMENT IS TRUE AND CORRECT.

Yes

Stacy L Nowicki-Eldridge -- By my signature, I certify that I am the person authorized to file legislative rules, in accordance with West Virginia Code §29A-3-11 and §39A-3-2.

TITLE 87
LEGISLATIVE RULE
STATE FIRE COMMISSION

SERIES 4
STATE BUILDING CODE

§87-4-1. General.

1.1. Scope. -- This rule establishes the standards considered necessary by the State Fire Commission for the safeguarding of life and property and to ensure compliance with the minimum standards of safe construction of all structures erected or renovated throughout this state.

1.2. Authority. -- W. Va. Code ~~§29-3-5b, repealed effective May 28, 2020,~~ §15A-11-11, ~~effective May 28, 2020~~.

1.3. Filing Date. -- ~~May 5, 2020~~.

1.4. Effective Date. -- ~~August 1, 2020~~.

1.5. Sunset Provision. -- This rule shall terminate and have no further force or effect on ~~August 1, 2025~~.

1.6. Exemptions. – The State Building Code has no application to farm structures and structures used in the agritourism industry as defined in the applicable codes and statutes, as determined by the State Department of Agriculture.

1.~~6~~7. Incorporation of Other Documents. -- This rule does not include a reprinting of all the requirements imposed by statute or by the incorporation of various nationally recognized standards and codes cited in Subsection 4.1 of this rule. For ascertaining these additional standards and requirements, it is necessary to make reference to the other documents.

§87-4-2. Definitions.

2.1. "ANSI" means American National Standards Institute, 25 West 43rd St., Fourth Floor, New York, NY 10036.

2.2. "ASTM" means American Society of Testing and Materials.

2.3. "Fire Commission" means the thirteen (13) appointed members of the West Virginia State Fire Commission.

2.4. "Fire Marshal" means the West Virginia State Fire Marshal and/or his or her designated representatives.

2.5. "ICC" or "International" means International Code Council.

2.6. "Local jurisdiction" means municipal, county, or other local government.

2.7. "NFPA" means National Fire Protection Association.

2.8. "State Building Code" means the entire contents of this rule and the referenced national standards and codes.

2.9. "State Fire Code" means the entire contents of the State Fire Code, 87CSR1, and the referenced standards and codes.

§87-4-3. Conflicts.

3.1. Whenever there is a conflict between the State Fire Code and the State Building Code, the State Fire Code takes precedence.

3.2. Whenever there is a conflict between the International Plumbing Code requirements of the State Building Code and the rules of the West Virginia State Department of Health and Human Resources, the rules of the Department of Health and Human Resources take precedence.

3.3. Whenever there is a conflict between the State Building Code and statutory laws of the State of West Virginia, the laws of the State of West Virginia take precedence.

§87-4-4. National Standards and Codes.

4.1. The standards and requirements as set out and as published by the International Code Council, and American National Standards Institute, and the National Fire Protection Association as listed in this subsection, have the same force and effect as if set out verbatim in this rule.

4.1.a. The ~~2015~~ 2018 edition, International Building Code, with the following exceptions:

4.1.a.1. Provided; that the section entitled "Fire Prevention" and identified as Section 101.4.5 is deleted and not considered to be a part of this rule.

4.1.a.2. Further provided that the entire subsection entitled "Qualifications" and identified as Section 113.3 is deleted and replaced with the following:

"Section 113.3. Board of Appeals

113.3. Qualifications. The board of appeals shall consist of five members, with up to three alternates, who are qualified by experience and training to pass on matters pertaining to building construction and are not employees of the jurisdiction. They may include, but are not limited to, a WV Registered Professional Architect or Engineer, or a WV Licensed General

Building, Residential, Electrical, Piping, Plumbing, Mechanical or Fire Protection Contractor, with at least 10 years experience, five of which shall be in responsible charge of work. No less than one of the members of such Board of Appeals shall be a WV Registered Professional Architect or Engineer, or a WV Licensed General Building, Residential, Electrical, Piping, Plumbing, Mechanical or Fire Protection Contractor."

4.1.b. The ~~2015~~ 2018 edition of the International Plumbing Code.

4.1.c. The ~~2015~~ 2018 edition of the International Mechanical Code. The following shall be in addition to the current language found in the said edition of the reference code and section:

4.1.c.1. See International Mechanical Code, Section 908, Cooling Towers, Evaporative Condensers and Fluid Coolers.

4.1.c.1.A. 908.1 General- A cooling tower used in conjunction with an air-conditioning appliance shall be installed in accordance with the manufacturer's instructions. Factory-built cooling towers shall be listed in accordance with UL 1995 or UL/CSA 60335-2-40.

4.1.c.1.B. Section 916 Pool and Spa Heaters

4.1.c.1.B.1. 916.1 General- Pool and spa heaters shall be installed in accordance with the manufacturer's instructions. Oil-fired pool and spa heaters shall be tested in accordance with UL 1261. Pool and spa heat pump water heaters shall comply with UL 1995, UL/CSA 60335-2-40 or CSA C22.2 No. 236.

4.1.c.1.B.1.(a). Exception: Portable residential spas and portable residential exercise spas shall comply with UL 1563 or CSA C22.2 No. 218.1.

4.1.c.1.C. Section 918 Forced-Air Warm-Air Furnaces

4.1.c.1.C.1. 918.1 Forced-Air furnaces- Oil-fired furnaces shall be tested in accordance with UL 727. Electric furnaces shall be tested in accordance with UL 1995 or UL/CSA 60335-2-40. Solid fuel furnaces shall be tested in accordance with UL 391. Forced-air furnaces shall be installed in accordance with the listings and the manufacturer's instructions.

4.1.c.1.C.2. 1918.2 Heat Pumps- Electric heat pumps shall be tested in accordance with UL 1995 or UL/CSA 60335-2-40.

4.1.c.1.D. Section 1101 General

4.1.c.1.D.1. 1101.2 Factory-Built Equipment and Appliances- Listed and labeled self-contained, factory-built equipment and appliances shall be tested in accordance with UL 207, 412, 471, 1995, UL/CSA 60335-2-40, or UL/CSA 60335-2-89. Such equipment and appliances are deemed to meet the design, manufacture and factory test requirements of this code if installed in accordance with their listing and the manufacturer's instructions.

4.1.c.1.D.2. 1101.6 General. Refrigeration systems shall comply with the requirements of this code and, except as modified by this code, ASHRAE 15. Ammonia-refrigerating systems shall comply with this code and, except as modified by this code, ASHRAE 15, IIAR 2. High probability systems utilizing A2L refrigerants shall comply with ASHRAE 15.

4.1.c.1.E. Chapter 15 REFERENCED STANDARDS

4.1.c.1.E.1. 1501.3 Referenced Standards – See Table 1

ASHRAE	ASHRAE 1791 Tullie Circle, NE Atlanta, GA 30329
Standard reference number	Title
15—~~2013~~ 2019	Safety Standard for Refrigeration Systems
34—~~2013~~ 2019 Refrigerants	Designation and Safety Classification of
CSA	CSA Group 8501 East Pleasant Valley Road Cleveland, OH 44131-5516
Standard reference number	Title
CSA C22.2 No. 60335-2-40—19	Household And Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers – 3rd Edition
CSA C22.2 No. 60335-2-89—21	Household And Similar Electrical Appliances - Safety - Part 2-89: Particular Requirements for Commercial Refrigerating Appliances with an Incorporated or Remote Refrigerant Unit or Compressor

Table 1

UL	UL LLC 333 Pfingsten Road Northbrook, IL 60062-2096
Standard reference number	Title
UL/CSA 60335-2-40—19	Household And Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers – 3rd Edition
UL/CSA 60335-2-89—21	Household And Similar Electrical Appliances - Safety - Part 2-89: Particular Requirements for Commercial Refrigerating Appliances with an Incorporated or Remote Refrigerant Unit or Compressor

Table 1

4.1.d. The ~~2015~~ 2018 edition of the International Fuel Gas Code, with the following exception:

4.1.d.1. Section 404.10 Underground piping systems shall be installed a minimum depth of 12 inches (305 mm) below grade. If the minimum depth cannot be maintained, the piping system shall be installed in conduit or shielded in an approved manner.

4.1.e. The ~~2015~~ 2018 edition of the International Property Maintenance Code. This code may be rejected at the option of the local jurisdiction.

4.1.e.2. This code may be adopted by the local jurisdiction without requiring adoption of the other national codes and standards listed in this rule.

4.1.f. The ~~2009~~ 2015 edition of the International Energy Conservation Code for residential buildings, with the following exception:

4.1.f.1. Section. R402.4.1.2. Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding ~~three~~ five air changes per hour in Climate Zones 3 through 8. Testing shall be conducted and a written report shall be provided following the same requirements as identified in Section R402.4.1.2.

4.1.g. The ANSI/ASHRAE/IESNA Standard 90.1 ~~2010~~ 2013 edition for commercial buildings.

4.1.g.1. Using building energy benchmarking in all commercial structures means

measuring a building's energy use and then comparing it to the energy use of similar buildings, its own historical energy usage, or a reference performance level, is an allowable option for improved energy efficiency and performance.

4.1.h. The ~~2015~~ 2018 edition of the International Residential Code for One- and Two-Family Dwellings, with the following exceptions:

4.1.h.1. Chapter 11 of the ~~2015~~ 2018 edition of the International Residential Code for One- and Two-Family Dwellings, Seventh Printing, entitled "Energy Efficiency", is exempt from this rule.

4.1.h.2. Section G2415.12 (404.10) Minimum Burial Depth. Underground piping systems shall be installed a minimum depth of 12 inches (305 mm) below grade. If the minimum depth cannot be maintained, the piping system shall be installed in conduit or shielded in an approved manner.

4.1.h.1. Section M1402 Central Furnaces.

4.1.h.1.A. M1402.1 General- Oil-fired central furnaces shall conform to ANSI/UL 727. Electric furnaces shall conform to UL 1995 or UL/CSA 60335-2-40.

4.1.h.1.B. Section M1403 Heat Pump Equipment

4.1.h.1.B.1. M1403.1 Heat pumps- Electric heat pumps shall be listed and labeled in accordance with UL 1995 or UL/CSA 60335-2-40.

4.1.h.1.C. Section M1412 Absorption Cooling Equipment

4.1.h.1.C.1. M1412.1 Approval of equipment- Absorption systems shall be installed in accordance with the manufacturer's instructions. Absorption equipment shall comply with UL 1995 or UL/CSA 60335-2-40.

4.1.h.1.D. Section M1413 Evaporative Cooling Equipment

4.1.h.1.D.1. M1413.1 General- Evaporative cooling equipment and appliances shall comply with UL 1995 or UL/CSA 60335-2-40 and shall be installed in accordance with 4401.3 Referenced standard list:

4.1.h.1.E. Chapter 44 Referenced standards

4.1.h.1.E.1. 4401.3 Referenced standard list – See table 2

ASHRAE	ASHRAE 1791 Tullie Circle NE Atlanta, GA 30329
Standard referenced	Title

Table 2

34—~~2016~~ 2019:	Designation and Safety Classification of Refrigerants
CSA	CSA Group 8501 East Pleasant Valley Road Cleveland, OH 44131-5516
Standard referenced	Title
CAN/CSA/C22.2 No. 60335-2-40-~~2012~~-2019	Safety of Household and Similar Electric Appliances, Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers-3rd edition
UL	UL LLC 333 Pfingsten Road Northbrook, IL 60062
Standard referenced	Title
1995—~~2011~~2015:	Heating and Cooling Equipment—~~with revisions through July 2015~~
UL/CSA/~~ANCE~~ 60335-2-40-~~2012~~-2019:	Safety of Household and Similar Electrical Appliances, Part 2-40: Particular Requirements for ~~Motor-Compressors~~ Electrical Heat Pumps, Air-Conditioners and Dehumidifiers-3rd Edition

Table 2

4.1.i.2. Section R311.7.5 Stair Treads and Risers

4.1.i.2.A. 311.7.5.1 Riser Heights -- The maximum riser height shall be eight and one-quarter (8 ¼) inches.

4.1.i.2.B. 311.7.5.2 Tread Depth -- The minimum tread depth shall be nine (9) inches.

4.1.i.3. Section R403.1.7.1: Building Clearances from Ascending Slopes is not applicable to this rule.

4.1.i.4. Section R403.1.7.2: Footings Setbacks from Descending Slope Surfaces is not applicable to this rule.

4.1.j. The 2017 ICC/ANSI A117.1 American National Standards for Accessibility & Usable Buildings & Facilities.

4.1.k. The ~~2015~~ 2018 International Existing Building Code, with the following exception:

4.1.k.1. Omit reference to International Fire Code and substitute NFPA Life Safety Code 201~~5~~8 edition.

4.1.l. The ~~2017~~ 2020 edition of the National Electric Code, NFPA 70, with the following exception:

4.1.1.1. Section 210.8(F) GFCI Protection shall not be required on all new HVAC systems including but not limited to mini-split and A/C units until January 1, 2023.

4.1.1.~~1~~2. For renovations in one- and two-family homes where no new square footage is involved, arc-fault circuit interrupter (AFCI) protection shall not be required, except for in bedrooms. For renovation in one- and two-family homes where square footage is added but no electrical service is installed, arc-fault circuit interrupter (AFCI) protection shall not be required.

4.1.~~l~~m. The ~~2015~~ 2018 edition of the International Swimming Pool and Spa Code.

4.2. Wherever referenced in the several ICC codes adopted above, any reference to the International Fire Code should be substituted with the NFPA Life Safety Code ~~2018~~ 2021 edition.

4.3. Whenever a certificate of occupancy is required of a commercial structure greater in size than 7,600 feet, the project documents shall be designed by an Architect licensed by the WV Board of Architects, or a Professional Engineer licensed by the WV State Board of Registration for Professional Engineers.

§87-4-5. Fire Protection of Floors in Residential Buildings

5.1. New One and Two Family Dwellings over one level in height, New One and Two Family Dwellings containing a basement, and New One and Two Family Dwellings containing a crawl space containing a fuel burning appliance below the first floor, shall provide one of the following methods for fire protection of floors: (1) A 1/2 inch (12.7 mm) gypsum wallboard membrane, 5/8 inch (16 mm) wood structural panel membrane, or equivalent on the underside of the floor framing member; (2) Wood floor assemblies using dimension lumber or structural composite lumber equal or greater than 2 inch by 10 inch (50.8 mm by 254 mm) nominal dimension, or other approved floor assemblies demonstrating equivalent fire performance; or (3) An Automatic Fire Sprinkler System as set forth in section R313.1 or R313.2 of the 2015 edition of the International Residential Code for One and Two Family Dwellings: *Provided*, That floor assemblies located directly over a space protected by an automatic sprinkler system as set forth in section R313.1 or R313.2 of the 2015 edition of the International Residential Code for One and Two Family Dwellings are exempt from this requirement.

5.2. Townhouses meeting the Fire-Resistant Construction Standard R302.2 will be treated as New One- and Two-Family Dwellings and shall comply with Section 5.1 above.

§87-4-6. Exceptions.

6.1. The following structures are not subject to inspection by local jurisdictions:

6.1.a. Group U utility structures and storage sheds comprising an area not more than 200 sq. ft. which have no plumbing or electrical connections and are used only for residential storage purposes. (Examples include sheds that are for the residential storage of lawnmowers, tools, bicycles or furniture.) Not included are those utility structures and storage sheds which have plumbing or electrical connections are a non-residential use or for the storage of explosives or other hazardous or explosive materials.

§87-4-7. Adoption by Local Jurisdiction.

7.1. Each local jurisdiction adopting the State Building Code shall notify the State Fire Commission in writing. The local jurisdiction shall send a copy of the ordinance or order to the State Fire Marshal, West Virginia State Fire Commission, 1207 Quarrier Street, 2nd floor, Charleston, West Virginia 25301, within thirty (30) days of adoption.

7.2. Each local jurisdiction which adopts the State Building Code is responsible for the enforcement of the building code as provided in West Virginia Code 7-1-3n and 8-12-13.

7.3. Throughout the national codes, adopted in subsection 4.1 of this rule, there are discretionary provisions or amendments which require further action by the adopting local jurisdiction in order to adapt these codes to various local conditions. The appendices are not a part of the code and must also be adopted by the local jurisdiction to be enforceable. It is therefore the intent of this rule to further authorize each local jurisdiction to further complete, by order or ordinance, those respective areas which are indicated to be completed by the adopting "jurisdiction" and any of the appendices the local jurisdiction wishes to adopt.

7.4. Within the penalty sections of each of the national codes, adopted in Section 4.1 of this rule, there is a penalty for imprisonment. The provision of imprisonment for any violation of this rule is optional with each adopting local jurisdiction.

7.5. Each of the national codes adopted in subsection 4.1 of this rule provides for a separate appeals board. However, the intent and requirements for an appeal board may be met with the creation by the local jurisdiction of a single appeals board for the entire "State Building Code."

7.6. Each local jurisdiction adopting the State Building Code shall comply with the requirements set forth in Title 87, Series 7 "Standards for the Certification and Continuing Education of Municipal, County, and Public-Sector Building Code Officials, Building Code Inspectors and Plans Examiners."

7.7. All questions of interpretation and enforcement of the State Building Code are delegated to the local jurisdiction unless expressly provided by State Code, by this Rule, or by the incorporated codes and standards referenced in this Rule.

§87-4-8. Existing Building Codes.

8.1. All building codes previously adopted by local jurisdictions are null and void.