

Hi there, my name is Abby Wallace and I work for the Michigan Environmental Council as the Climate and Energy Policy Coordinator. This year and all of the ones following it are going to be crucial in the fight against climate change, and making our building stock more resilient and efficient is a key component of this. We will be submitting a more in depth sign on letter over email to the BCC but wanted to take the opportunity to briefly speak as well.

First off, I can't stress enough how impressive it is that LARA proposes to adopt the 2021 IECC code with no changes on the residential side and minimal changes on the commercial side. I strongly urge you folks to stick to your guns on this. Studies show that adopting the 2021 IECC is cost-effective and "could provide energy savings of 10.7% across all climate zones compared to the current [Michigan] state energy code. This equates to \$327 of annual utility bill savings for the average Michigan household." Many of these savings are related to the stricter air tightness standards and increased wall insulation requirements. The DOE estimates that adopting the 2021 IECC in Michigan will "reduce statewide CO2 emissions over 30 years by 11,460,000 metric tons, equivalent to the annual CO2 emissions of 2,493,000 cars on the road ."¹

However, the draft ruleset from LARA removed a key section from the commercial energy conservation code, which requires energy monitoring for buildings over 25,000 square feet. We strongly encourage the reinstatement of that rule, because the ability to understand how much energy your building is using is key to the operation and maintenance of buildings, particularly for large complex buildings that are regulated under the commercial code. Another important piece of the puzzle is that building performance, if not properly monitored and maintained, erodes over time, and energy monitoring ensures that high performance buildings continue to perform as designed over the building's lifetime.

Lastly, the Environmental Council encourages the inclusion of electric vehicle readiness provisions in the energy code. The number of EVs on US roads is projected to grow from 1 million vehicles at the end of 2018, to 18.7 million by 2030, and our buildings aren't equipped to handle charging all of those vehicles. Michigan currently only offers 480 publicly accessible charging stations featuring nearly 1,400 charging ports, in addition to 146 private charging stations throughout the state.² Without additional EV charging readiness amendments in the state's building code, we miss a key opportunity to help our residents transition to EVs. A major barrier to the transition to EVs is the lack of charging infrastructure at homes and the potential need for extensive electrical upgrades to accommodate charging. It is more cost-effective to make a building "EV ready" when it is being built or undergoing major renovations than trying to add equipment after the building is constructed.

Thanks so much for the opportunity to speak to you today and thanks so much for doing this important work.

¹ IBID US DOE [Cost-Effectiveness of the 2021 IECC for Residential Buildings in Michigan](#)
²https://www.michigan.gov/whitmer/0,9309,7-387-90499_90640-558822--,00.html#:~:text=Michigan%20currently%20offers%20480%20publicly,charging%20stations%20throughout%20the%20state.

Mr. Keith Lambert
Director, Bureau of Construction Codes
Michigan Department of Licensing and Regulatory Affairs
611 W Ottawa St.
Lansing, MI 48933

July 5th, 2022

Re: Michigan's 2021 Energy Conservation Code Adoption

Dear Director Lambert,

The undersigned organizations write in support of the inclusion of the following effective energy efficiency and electrification provisions in the update of Michigan's commercial and residential energy conservation codes:

1. Maintain the 2021 International Energy Conservation Code (IECC) with no weakening amendments for both commercial and residential codes
2. Add back in the energy monitoring requirement in the commercial code
3. Require electric vehicle (EV) readiness in residential code

These provisions will lower costs for Michigan residents and businesses, increase household resilience from extreme weather events, and help reduce climate impacts from the building sector. This is crucial for ensuring Michigan's building codes are equitable, delivering benefits to people facing poor housing quality, high energy burdens, and disproportionate health impacts in their homes and communities resulting from our reliance on fossil fuels.

At a time of global disruption and uncertainty impacting energy prices, the solutions we propose are forward thinking and will improve the state's energy independence and reduce cost-volatility associated with fossil fuels.

In addition, our recommendations would grow jobs in Michigan. According to the Clean Jobs Midwest report, in 2019, "clean energy jobs grew more than twice as fast as overall employment across the Midwest," with Michigan in particular adding thousands more jobs in renewable energy generation than fossil fuels.¹

1. Maintain 2021 IECC with No Weakening Amendments for Both Commercial and Residential Codes

We applaud the Bureau for adopting the 2021 IECC residential code in full. As the Bureau moves forward with the code adoption process, we ask that you maintain the full adoption of the 2021 IECC and adopt no amendments that would weaken its efficiency provisions.

As a recent US Department of Energy (DOE) analysis shows, adopting the 2021 IECC is cost-effective and "will provide statewide energy savings of 10.7% across all climate zones compared to the current [Michigan] state energy code. This equates to \$327 in annual utility bill savings for the average Michigan household."² Much of these savings come from improvements

¹ <https://www.cleanjobsmidwest.com/state/michigan>

² [Michigan Residential Code Cost Effectiveness 2021](#)

in envelope requirements in the 2021 code such as continuous exterior wall insulation and high air-tightness requirements.

Improved thermal envelopes not only save Michiganders money, but also provide a comfortable and healthy interior environment. An efficient building shell is a key mechanism for improving the comfort of the occupant and meeting the occupant's needs and preferences by reducing unwanted temperature variations. Building envelope improvements are also a key mechanism to protect residents against the extreme weather events we already experience due to climate change.³ Effective insulation and air sealing provide essential "hours of safety" during severe weather events and power outages, resulting in critical extra days before the onset of life-threatening conditions from extreme temperatures.⁴ This aspect of greater efficiency is called "passive survivability" and provides an important health and safety rationale for stronger energy codes with robust building shell provisions.

One key improvement in building shell efficiency included in the 2021 IECC is the requirement to have continuous wall insulation. Requiring continuous insulation benefits homeowners in multiple ways. First, it saves energy versus a cavity only option. More importantly, continuous insulation is an integral part of a holistic approach to insulation which doesn't simply view each section separately, but recognizes that the entire insulation system (walls, floors and ceilings) work together to maximize energy savings. Continuous insulation also provides additional comfort and resilience in the home by eliminating thermal bridges. Thermal bridges are areas of the envelope where cavity insulation doesn't reach (for example, at the studs) which allow heat to flow, which, in turn, undermines the R-value of the walls. Moreover, thermal bridges are areas that are susceptible to moisture. Continuous insulation eliminates this concern. The additional R-5 in the 2021 IECC typically amounts to 1" or less of exterior insulation. At current retail prices of \$15/32 sq. ft (contractors should be able to make bulk purchases at a lower cost⁵), this will add no more than \$750 to the cost of a home; which is a small price to pay for additional energy savings, increased comfort and reduced risk of moisture.

The efficiency improvements in the 2021 IECC also help Michigan combat climate change by reducing building sector greenhouse gas emissions. The DOE estimates that adopting the 2021 IECC in Michigan will "reduce statewide CO2 emissions over 30 years by 11,460,000 metric tons, equivalent to the annual CO2 emissions of 2,493,000 cars on the road."⁶

2. Add Back the Energy Monitoring Requirement into the Commercial Code

Unfortunately, the draft commercial code released by LARA removed a key section from the IECC commercial energy conservation code – Section C405.12 to C405.12.5, which requires energy monitoring for buildings over 25,000 square feet. The undersigned organizations and communities strongly oppose this weakening amendment. You can't manage what you don't measure. The ability to understand how much energy your building is using is key to the operation and maintenance of buildings, particularly for large complex buildings that are regulated under the commercial code. Energy monitoring also increases awareness of, and engagement with, energy efficiency measures and other energy and emissions savings opportunities. Energy monitoring has been shown to reduce energy consumption in buildings by

³ [Extreme weather events have increased significantly in the last 20 years](#)

⁴ [Hours of Safety in Cold Weather - RMI](#) and <https://www.urbangreencouncil.org/babyitscoldinside>

⁵

<https://www.lowes.com/pl/Expanded-polystyrene--Board-insulation-Insulation-accessories-Building-supplies/4294858106?refinement=4294642294>

⁶ IBID US DOE [Cost-Effectiveness of the 2021 IECC for Residential Buildings in Michigan](#)

2 to 8% by giving building owners the information they need to understand how much energy is being used and by what building operations. This is because building performance, if not properly monitored and maintained, erodes over time, and energy monitoring ensures that high performance buildings continue to perform as designed over the building's lifetime. In addition, a growing number of communities in Michigan are working to achieve carbon neutrality by 2030. For these communities to be successful they must address the energy use of existing buildings which will be much harder without energy monitoring in place. Additionally, energy monitoring requirements provide tremendous data sets for energy management professionals to study, allowing more improvement in both the predictive energy modeling efforts in the design phase and the retro-commissioning process post building occupancy, which can help to further Michigan's progress toward the 2030 goal.

Given the importance of energy monitoring we recommend Michigan add back in the energy monitoring requirement in the commercial code and strengthen it by requiring end use monitoring of EV chargers so operators can better manage both building and vehicle energy consumption.

3. Require EV Readiness for the Residential Code

The transition to EVs is well underway. The number of EVs on US roads is projected to grow from 1 million vehicles at the end of 2018, to 18.7 million by 2030.⁷ Developments in global markets are driving this increase in EV adoption. Michigan's auto manufacturers are working to maintain their leadership in the automotive industry by embracing the transition to EVs. For example, General Motors recently announced it would only produce zero-emission vehicles by 2035.⁸ To power this increase in EVs, the U.S. will need 9.6 million charge ports, a substantial portion of which will be installed in single and multi-family residential buildings.⁹ Michigan currently only offers 480 publicly accessible charging stations featuring nearly 1,400 charging ports, in addition to 146 private charging stations throughout the state.¹⁰ Without additional EV charging readiness amendments in the state's building code, we miss a key opportunity to help our residents transition to EVs.

A major barrier to the transition to EVs is the lack of charging infrastructure at homes and the potential need for extensive electrical upgrades to accommodate charging. It is more cost-effective to make a building "EV ready" when it is being built or undergoing major renovations than trying to add equipment after the building is constructed. To reduce expensive retrofit costs, and ensure Michiganders have cost-effective access to charging, Michigan's residential building code should incorporate EV-ready provisions that ensure the conduit and infrastructure is in place to support the easy installation of a charger. Approving an EV-ready amendment in the residential code will ensure people have affordable access to charging at their homes and allow customers to easily transition off of gas-powered vehicles when they are ready and able.

Ensuring buildings have EV chargers or are EV-ready is cost effective. Research undertaken by New Buildings Institute indicates that the cost of the added infrastructure to make a home

⁷ [EEI celebrates 1 million electric vehicles on US roads](#)

⁸ <https://www.nytimes.com/2021/01/28/business/gm-zero-emission-vehicles.html>

⁹ [EEI celebrates 1 million electric vehicles on US roads](#)

¹⁰ https://www.michigan.gov/whitmer/0,9309,7-387-90499_90640-558822--,00.html#:~:text=Michigan%20currently%20offers%20480%20publicly,charging%20stations%20throughout%20the%20state.

EV-ready is estimated to be \$500 at the time of construction. If a home was not made EV-ready but chose to add an EV charger later with an insufficient supply infrastructure in place, the cost of the retrofit (if the retrofit is feasible) was found to be between \$1,500 to \$3,000. Therefore, adding the infrastructure to make a home EV-ready saves \$1,000 to \$2,500 for the average homeowner who must add an EV charger later.

By adding provisions in the energy code to aid the transition from gas-powered to electric-powered vehicles, Michigan will substantially reduce carbon emissions and other harmful pollutants. More accessible EV charging is also necessary for meeting the administration's carbon emission reduction targets and reducing local air pollution. According to the final MI Healthy Climate Plan, the transportation sector was the second largest source of Michigan's greenhouse gas emissions.¹¹ EVs can also reduce the health impact of carbon monoxide, nitrogen oxides, and other smog-causing air pollution that is typically released by conventional vehicles. Ensuring affordable access to charging is necessary for making it easier to switch over to EVs and reduce these significant emissions.

Finally, these amendments to the code will help keep Michigan at the forefront of the auto industry and help support our auto workers and the Michigan auto sector as it moves towards a fully electric future.

C.C.:

Governor Gretchen Whitmer

Jen Flood, Office of Governor Whitmer

Kara Cook, Office of Governor Whitmer

Liesl Clark, Department of Environment, Great Lakes, and Energy

Cory Connolly, Department of Environment, Great Lakes and Energy

Orlene Hawks, Department of Licensing and Regulatory Affairs

Courtney Pendleton, Department of Licensing and Regulatory Affairs

Marlon Brown, Department of Licensing and Regulatory Affairs

Dan Scripps, Michigan Public Service Commission

Charlotte Jameson

Michigan Environmental Council

Isaac Robert Elnecave

PHIUS

Dr. Laura Sherman

Michigan Energy Innovation Business Council

Mike Berkowitz

Sierra Club

¹¹ MI Healthy Climate Plan,
<https://www.michigan.gov/egle/about/organization/climate-and-energy/mi-healthy-climate-plan>

Julie Quinn
Michigan Clinicians for Climate Action

Nick Occhipinti
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Midwest Energy Efficiency Alliance



Submitted via Email: LARA-BCC-Rules@michigan.gov

July 5, 2022

Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division

American Chemistry Council Comments Supporting the Michigan Adoption of the 2021 International Energy Conservation Code for Residential and Commercial Buildings

The American Chemistry Council (ACC) thanks you for the opportunity to submit comments and recommend the adoption of the 2021 International Energy Conservation Code (IECC) with reference to ASHRAE 90.1-2019.

Chemistry is essential to the U.S. economy and plays a vital role in driving innovations that make our world safer, more sustainable, and more productive. Chemistry supports over 25% of the U.S. GDP and 9% of U.S. goods exports – a \$486 billion enterprise. 529,000 skilled American jobs are provided by the business of chemistry. The U.S. is the 2nd largest global producer, providing 13% of the world's chemicals. Chemistry in Michigan pays \$1.83 billion in wages and generates \$138 million in state and local taxes.¹

There are many reasons we support the Michigan adoption of these modern energy codes. Primarily, the energy savings that are realized by the people who live and own businesses in the state. The Department of Energy (DOE) determined the 2021 energy codes provide **cost-effective levels of energy efficiency** and performance for residential and commercial buildings in Michigan. Based on housing starts in Michigan the adoption of the 2021 Residential IECC would save \$3,873,000 in the first year alone.² Likewise, based on new commercial construction numbers in Michigan the adoption of the 2021 IECC with reference to ASHRAE 90.1-2019 for commercial buildings would save \$1,587,000 in the first year alone.³

This is especially important in order to address the **environmental justice issue of the affordable housing** needs of lower income households. According to the U.S. Energy Information Administration:

¹ See [Michigan.pdf \(americanchemistry.com\)](#)

² See Cost-Effectiveness of the 2021 IECC for Residential Buildings in Michigan ([energycodes.gov](#))

³ See Cost-Effectiveness of ANSI/ASHRAE/IES Standard 90.1-2019 for Michigan ([energycodes.gov](#))





Across the United States, high utility bills are costing homeowners a significant portion of their monthly incomes. According to the most recent EIA Residential Energy Consumption Survey,⁴ about one in five households reported reducing or forgoing basic necessities like food and medicine to pay an energy bill. Stronger energy codes and more widespread code compliance can help change the tide on this type of energy poverty. Improving compliance with residential energy codes opens up an array of economic and health benefits for homeowners, residents, local governments, and building officials, including:

- Reduced energy costs that yield monthly savings for owners and occupants, helping to boost the local economy and improving housing affordability by reducing utility costs.
- More comfortable and durable homes that better shield people from outdoor temperature extremes.
- Better protected occupant health from improved efficiency and indoor air quality.
- Greater market certainty for the building design and construction industry due to consistent implementation across jurisdictions.
- A level playing field for manufacturers, builders, and other building related industries.

Beyond the obvious energy savings benefits there are many other important reasons for Michigan to update their building energy codes:

- **Job creation**, based on U.S. Census data on residential housing permits, it is estimated that over 80,000 residential one- and two-family homes have been permitted in Michigan since the last energy code update in late 2017.⁵
- **GHG emission reductions**, DOE estimates that the 30-year cumulative reduction of CO₂ emissions that Michigan would realize with the adoption of the 2021 residential provisions is equivalent to 11,460,000 metric tons.⁶
- **Resilience**, in a 2021 report the National Institute of Building Sciences found that adopting the latest building code requirements is affordable and saves \$11 per \$1 invested. Building codes have greatly improved society's disaster resilience, while adding only about 1% to construction costs relative to 1990 standards. The greatest benefits accrue to communities using the most recent code editions.⁷
- **Energy Security**, the International Energy Agency recognizes that energy efficiency can bolster regional or national energy security. By reducing overall energy demand, efficiency can reduce

⁴ See [Residential Energy Consumption Survey \(RECS\) - Energy Information Administration \(eia.gov\)](https://www.eia.gov/energyconsumption/residential/)

⁵ See U.S. Census Bureau, Building Permits Survey, available at <https://www.census.gov/construction/bps/>

⁶ See Cost-Effectiveness of the 2021 IECC for Residential Buildings in Michigan (energycodes.gov)

⁷ See [Mitigation Saves: Mitigation Saves up to \\$13 per \\$1 Invested \(nibs.org\)](https://nibs.org/mitigation-saves)





reliance on imports of oil, gas and coal. Energy efficiency can therefore play a crucial role in ensuring both long- and short-term energy security in a cost-effective manner.⁸

ACC is grateful for the opportunity to encourage and support the adoption of the 2021 International Energy Conservation Code (IECC) for all the great benefits these new codes would bring to the people in the State of Michigan.

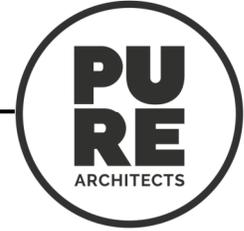
Sincerely,

A handwritten signature in black ink that reads "Amy J. Schmidt". The signature is written in a cursive style with a large initial "A".

Amy Schmidt
American Chemistry Council
Director, Building and Construction

⁸ See [Energy security – Multiple Benefits of Energy Efficiency – Analysis - IEA](#)





29 June 2022

Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division
LARA-BCC-Rules@michigan.gov

RE: 10a Michigan Energy Code (ORR# 2021-49 LR) Proposal

Andrew Queenan, with Pure Architects and AIA Grand Rapids is writing in support of including Appendix CC, as an optional appendix, in the Michigan Commercial Energy Code. Currently, unlike the ASHRAE appendices, they are not specifically included in the draft language. We are making the following proposal (added language in red):

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, 2015 2021 edition, except for sections **C104.1 to C104.5, C107.2 to C107.5, C108.2 to C108.4, C109.1 to C109.4, C110.1 to C110.3, C301.2, C301.3, C302, C401.2.1 to C408.3.2, C405.12 to C405.12.5, C502.2 to C502.2.6.2, C503.2 to C503.6** and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-2013 2019 (hereafter the standard), including appendices A, B, C, D, and G, except for sections 8.4.2, 8.4.3 to 8.4.3.2. **Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as a voluntary appendix that authorities having jurisdictions, at their discretion, may choose to adopt by ordinance as a supplement to the international energy conservation code, 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction.** With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference~~. The Michigan energy code is available for inspection at ~~the Lansing office~~ of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 W. Ottawa Street, Lansing, Michigan 48933. The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a cost ~~as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at ~~the Lansing office~~ of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, **611 W. Ottawa Street, Lansing, Michigan 48933**. The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329,~~ **180 Technology Parkway NW, Peachtree Corners, Georgia 30092,** or from <https://www.ashrae.org> at a cost ~~as of the time of adoption of these rules of \$135.00~~ **\$177.00** each*

Reasoning:

IECC 2021 Appendix CC (aka Zero Code) is a flexible framework that cities and states can use to help reach their building decarbonization goals. IECC 2021 Appendix CC combines energy efficiency and renewable energy to support the construction of code-compliant, zero carbon buildings that use clean energy. It applies to new commercial, industrial and mid- to high-rise residential buildings—the dominant building types being constructed in cities today.

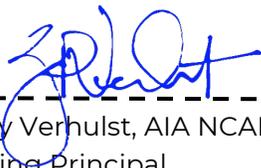
As a VOLUNTARY Appendix, it gives any Authorities Having Jurisdiction the option of adopting the appendix. Keeping the appendix voluntary provides jurisdictions an important framework to reach their decarbonization goals, if they choose to adopt the appendix.

In summary we support Appendix CC because:

- o Voluntary for jurisdictions to adopt
- o Compliance with 2021 IECC is required
- o Sets a minimum renewable energy requirement based on energy simulations or default values
- o Provides an incentive for buildings to be designed to be more energy efficient than code requires
- o Encourages on-site renewable energy when feasible
- o Supports off-site renewable energy procurement when necessary
- o 2021 IECC energy efficiency requirements cannot be traded with renewable energy
- o Establishes a consistent framework that local governments can modify for their specific needs and conditions

As members of the Grand Rapids 2030 District, AIA Grand Rapids Committee on the Environment, and AIA Michigan, we are prepared to support ongoing education programs for developers, architect, engineers and code officials who choose to implement Appendix CC.

Sincerely,



Zachary Verhulst, AIA NCARB NOMA
Managing Principal
Pure Architecture and Development, PLLC



Andrew Queenan, AIA, NCARB, LFA
Architect



D.R. Nelson & Associates

Building Science Delivered

July 5, 2022

Department of Licensing and Regulatory Affairs - Bureau of Construction Services

Re: Public hearing on amendments for the Michigan Energy Code.

For more than 40 years my company has advocated for cost-effective products and services. I have served as a paid Subject Matter Expert for the International Code Council on energy codes. Our company competes in the marketplace, providing sensible services to builders in the design, construction, and sales of cost-effective, energy efficient and environmentally sustainable homes. We serve more than 100 Michigan home builders.

It is my belief the 2021 IECC as written was significantly influenced by the North American Insulation Manufacturers Association (NAIMA). This is reflected in the fact of the removal of credits for the use of high efficiency furnace, air conditioning or water heating and that there is little opportunity for credit in reduced air leakage as that requirement is unrealistically low (3ACH@50Pa). Clearly the emphasis on this code is increasing R-value.

Building Science research is very clear – once minimum levels of insulation are achieved an emphasis on R-value alone does very little to impact efficiency of homes and reduce carbon footprint. Insulation levels have increased significantly over the past 10 years, and to achieve impactful reductions in carbon footprint, fuel use, and operating expenses we need to look at the mechanical system of the home.

The mechanical system is an extremely significant factor into the energy consumption of a home. The code as written allows for an 80% gas furnace. That means for every 100 units of energy coming into the home only 80 units are available for operation.

We used Department of Energy approved software for construction modeling (REM/Rate) to compare the changes in the 2021 IECC (what I call the “R-Value approach”) to simply installing a higher efficiency furnace. We took three different size generic floorplans. Details can be found at the end of this document. What we found is the mechanical system approach is MORE impactful than the R-Value approach yet the 2021 IECC doesn’t even address this!

R-VALUE APPROACH			
	1250sf Home	2150sf Home	3000sf Home
Foundation Insulation	\$23.83	\$16.67	\$20.17
Exterior Wall Insulation	\$29.17	\$42.33	\$51.17
Ceiling Insulation	\$18.00	\$19.00	\$18.00
Window U-Value	\$7.00	\$9.00	\$27.00
TOTAL Yearly Savings	\$78.00	\$87.00	\$116.34
Reduction in CO2 emissions:	(-0.6)	(-0.8)	(-1.0)

MECHANICAL APPROACH			
	1250sf Home	2150sf Home	3000sf Home
96% Furnace Yearly Savings	\$102.00	\$111.00	\$160.00
Reduction in CO2 emissions:	(-0.7)	(-0.8)	(-1.3)

The impact of the 2021 MEC will be hardest for entry level home buyers. The incremental energy savings from adopting the 2021 IECC will not offset the increased construction costs even if current home energy costs double or triple. This will result in people remaining in older and much less energy efficient homes (with a higher carbon footprint) than those built under the current 2015 MEC.

I believe that adoption of the 2021 International Energy Conservation Code at this time will significantly increase house construction costs forcing many people out of the new home market. Affordability is an issue today – there are much more cost-effective ways to reduce carbon footprint, lower emissions, reduce fuel use, while also keeping costs down.

We want affordable, fuel efficient, reduced carbon footprint homes. 40 years ago, we saw a need for cost effectively improving performance of new construction homes. We think this code significantly misses the mark in that regard. R-value alone is not the answer. Flexibility and incentivizing builders to address total home performance, instead of the amount of insulation only is imperative.

At a minimum we propose keeping section N1101.7 (R102.1.1) of the 2015 MRC:

R102.1.1 Above code programs. The state construction code commission may evaluate and approve a national, state or local energy efficiency program to exceed the energy efficiency required by this code. Buildings approved in writing by such an energy efficiency program, such as ICC 700-2012 "silver" or energy star version 3 (rev. 07) shall be considered in compliance with this code. The requirements identified as "mandatory" in chapter shall be met.

This will allow some flexibility (construction cost savings) for builders to exceed the intention of this code.

Respectfully submitted,

Don Nelson

R-VALUE APPROACH

Prescriptive Table				
MODEL	Foundation	Ceilings	Framed Walls	Windows
2015 MRC	10ci, 13	38	20 or 13+5ci	0.32
2021 MEC	15ci, 19, or 13+5ci	60	20+5ci, 13+10ci, or 15ci	0.3

FOUNDATION (annual energy savings)						
MODEL	R-10ci to R-15ci	R-10ci to R-19	R-10ci to R-13+5ci	R-13 to R-15ci	R-13 to R-19	R-13 to R-13+5ci
1250sf	\$29	\$4	\$22	\$40	\$15	\$33
2150sf	\$22	\$4	\$17	\$20	\$12	\$25
3000sf	\$24	\$4	\$19	\$33	\$13	\$28

FRAMED WALLS (annual energy savings)						
MODEL	R-20 to R-20+5ci	R-20 to R-13+10ci	R-20 to R-15ci	R-13+5ci to R-20+5ci	R-13+5ci to R-13+10ci	R-13+5ci to R-15ci
1250sf	\$37	\$40	\$22	\$29	\$32	\$15
2150sf	\$54	\$58	\$33	\$42	\$46	\$21
3000sf	\$65	\$70	\$41	\$50	\$55	\$26

CEILING (annual energy savings)	
MODEL	R-38 to R-60
1250sf	\$18
2150sf	\$19
3000sf	\$18

WINDOWS (annual energy savings)	
MODEL	0.32 to 0.30
1250sf	\$7
2150sf	\$9
3000sf	\$27

SUMMARY

R-VALUE APPROACH			
	1250sf Home	2150sf Home	3000sf Home
Foundation Insulation	\$23.83	\$16.67	\$20.17
Exterior Wall Insulation	\$29.17	\$42.33	\$51.17
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**Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division**

P.O. Box 30254
Lansing, MI 48909
LARA-BCC-Rules @michigan.gov
(517) 482-5519

July 5, 2022

Dear Director Hawks, Deputy Director Pendleton, and Director Lambert:

Thank you for the opportunity to comment regarding the proposed rule sets (2021 – 48 LR & 2021 – 49 LR) to amend the Michigan Energy Code. The Michigan Energy Innovation Business Council (Michigan EIBC) is a business trade association representing over 140 companies across a full range of advanced energy industries, including energy efficiency, electric vehicles (EVs), renewables, demand response technologies, energy storage, and others. Michigan EIBC's mission is to grow Michigan's advanced energy economy by fostering opportunities for innovation and business growth for the advanced energy industry in the state.

Overall Comments

Updating our building codes is one of the greatest tools the State of Michigan holds to make necessary advancements in energy efficiency and advanced mobility. Michigan EIBC strongly supports the Michigan Department of Licensing and Regulatory Affairs (LARA)'s Bureau of Construction Codes (BCC)'s decision to include significant and necessary energy efficiency improvements in the residential and commercial energy code drafts. The 2021 residential edition of the International Energy Conservation Code (IECC) represents approximately a 12% improvement in efficiency through more efficient thermal envelopes, improved mechanical system efficiency, improved lighting, and other cost-effective improvements compared to the 2015 model code, which is similar to Michigan's current code. Implementing the

residential IECC will save Michigan residents money on their energy bills, continue to support the growing industry in energy efficiency, and advance the work in futureproofing Michigan's building stock.

Michigan EIBC strongly urges LARA to push further to ensure Michigan continues on this track. Specifically, Michigan EIBC recommends including amendments to require EV charging readiness in both the residential and commercial codes. And in the commercial code, we strongly urge LARA to add the energy monitoring requirements from the 2021 IECC back into the final Michigan code. These additions will ensure new homes and buildings are equipped to charge their cars and ensure new businesses and multifamily homes are properly monitored through energy monitoring, so they can be better maintained over the long-term.

EV Readiness: Residential and Commercial Codes

Michigan EIBC strongly urges the BCC to include language requiring that all new homes are EV ready and commercial buildings/multi-family housing with parking include EV ready spaces. Both of these recommendations were included in the MI Healthy Climate Plan and the Michigan Council on Future Mobility & Electrification's 2021 Report.^{1,2} Additionally, cities in Michigan are already moving in this direction: Ann Arbor adopted an EV charging and readiness ordinance for new developments last year, and Lansing is currently considering a similar ordinance.^{3,4} These additions will not only support Michigan's advanced mobility future and economy, but also, they will save residential customers and commercial building owners money and they will help to protect public health.

Due to improved technology and increased consumer demand, the transition to EVs is well underway, and Michigan's future buildings should be ready for this shift. Auto manufacturers are embracing the transition to EVs. For example, both General

¹ Michigan Department of Environment, Great Lakes, and Energy. "MI Healthy Climate Plan." April, 2022. Available at https://www.michigan.gov/egle/-/media/Project/Websites/egle/Documents/Offices/OCE/MI-Healthy-Climite-Plan.pdf?rev=d13f4adc2b1d45909bd708cafccbfffa&hash=99437BF2709B9B3471D16FC1EC692588_

² Michigan Department of Labor and Economic Opportunity. "Council on Future Mobility and Electrification 2021 Report." Available at https://www.michigan.gov/documents/leo/CFME_Report_2021_738091_7.pdf.

³ Stanton, Ryan. MLive. "Ann Arbor council Oks ordinance requiring EV parking for new developments." January 19, 2021. Available at <https://www.mlive.com/news/ann-arbor/2021/01/ann-arbor-council-oks-ordinance-requiring-ev-parking-for-new-developments.html#:~:text=For%20multi%2Dfamily%20housing%20developments,and%2065%25%20EV%2Dcapable>.

⁴ Wiewgorra, Luisa. Fox 47 News. "Lansing could adopt requirements for EV charging stations." Available at <https://www.fox47news.com/neighborhoods/downtown-old-town-reo-town/lansing-could-adopt-requirement-for-ev-charging-stations>

Motors and Ford made announcements in the past year regarding their plans to switch their manufacturing to EVs.^{5, 6} Across the U.S., EV sales increased by 80 percent from 2017 to 2018, and the number of EVs on U.S. roads is projected to grow from 1 million vehicles at the end of 2018 to 18.7 million by 2030. To charge these new EVs, the U.S. will need 9.6 million charging ports -- a substantial portion of which will be installed where they are most useful for consumers: at homes and businesses.

Unfortunately, it can be costly and challenging to install charging stations at existing residential and commercial structures due to the potential need for extensive electrical upgrades. This often requires the installation of conduit through existing concrete or drywall to connect the electric vehicle supply equipment (EVSE) to electrical service. According to research from the New Buildings Institute, making homes EV ready at the time of construction can save customers \$1,000 to \$2,500 in retrofit costs, if they choose to install a charger at a later time. For commercial buildings and multi-family residences, EV ready construction can save about \$7,000 to \$8,000 in retrofit costs according to a study conducted by the California Air Resources Board.⁷ Therefore, it is more cost-effective to ensure a new home or commercial building is EV ready when it is being built or undergoing major renovations than to conduct these extensive electrical upgrades when a charger is later installed.

More accessible EV charging infrastructure is also necessary to reduce carbon emissions and local air pollution. In 2018, the transportation sector was the second largest source of Michigan's greenhouse gas emissions, representing 28 percent of total emissions.⁸ In order to meet Governor Whitmer's goal under Executive Directive 2020-10 of 100 percent carbon neutrality in Michigan by 2050, policies must be put in place to reduce transportation sector greenhouse gas emissions and to support the transition from gas-powered vehicles to EVs in the state.

⁵ Eisenstein, Paul A. "GM to go all-electric by 2035, phase out gas and diesel engines." Available at <https://www.nbcnews.com/business/autos/gm-go-all-electric-2035-phase-out-gas-diesel-engines-n1256055>.

⁶ Wayland, Michael. "Ford ups EV investments, targets 40% electric car sales by 2030 under latest turnaround plan." Available at <https://www.cnbc.com/2021/05/26/ford-ups-ev-investments-targets-40percent-electric-car-sales-by-2030-under-latest-turnaround-plan.html#:~:text=Ford%20Motor%20said%20Wednesday%20it,than%20%2430%20billion%20through%20>

⁷ California Air Resources Board. "EV Charging Infrastructure: Nonresidential Building Standards." November 15, 2019. Available at ww2.arb.ca.gov/sites/default/files/2020-08/CARB_Technical_Analysis_EV_Charging_Nonresidential_CALGreen_2019_2020_Intervening_Code.pdf.

⁸ Michigan Department of Environment, Great Lakes, and Energy. "Draft MI Healthy Climate Plan." January 14, 2022. Available at https://www.michigan.gov/documents/egle/Draft-MI-Healthy-Climate-Plan_745872_7.pdf.

Additionally, according to the Health Effects Institute, “air pollution is one of the top-ranking factors for death and disability, with vehicle emissions [being] the main contributor to outdoor air pollution.”⁹ To both improve air quality and reduce emissions, it is necessary that Michigan prepares its future homes and businesses with the infrastructure needed to switch to EVs.

Michigan EIBC recommends the following EV readiness language be added to the residential code, including new definitions, and new Section R404.5 and revisions to Table R405.2 and Table R406.2:

Add new definitions as follows:

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current. Plug-in hybrid electric vehicles are electric vehicles having a second source of motive power. Off-road, self-propelled electric mobile equipment, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats and the like, are not considered electric vehicles.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors and the *electric vehicle* connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*.

LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (Level 2 EVSE). *Electric Vehicle Supply Equipment* capable of providing AC Level 2 EV charging.

EV READY SPACE. A designated *parking space* that is provided with an electrical circuit capable of supporting an installed *Level 2 EVSE* in close proximity to the proposed location of the EV parking space.

Add new section as follows:

⁹ GreenBiz. “Electric bus fleets are the latest tool for improving air quality.” Available at <https://www.greenbiz.com/article/electric-bus-fleets-are-latest-tool-improving-air-quality>.

R404.5 Electric vehicle charging infrastructure. Electric infrastructure for the current and future charging of *electric vehicles* shall be installed in accordance with this section. *EV ready spaces* are permitted to be counted toward meeting minimum parking requirements.

R404.5.1 One- and two- family dwellings and townhouses.

One- and two-family dwellings and townhouses with a dedicated attached or detached garage or on-site parking spaces and new detached garages shall be provided with one *EV ready space per dwelling unit*. The branch circuit shall meet the following requirements:

1. A 208/240-volt circuit installations, including panel capacity, raceway wiring, receptacle, and circuit overprotection devices that are able to provide Level 2 charging
2. Terminates at a junction box or receptacle located within 3 feet (914 mm) of the parking space, and
3. The electrical panel directory shall designate the branch circuit as "For electric vehicle charging" and the junction box or receptacle shall be labelled "For electric vehicle charging".

R404.5.2 Group R occupancies. Parking facilities serving Group R-2, R-3 and R-4 occupancies shall comply with Section C405.15.

Revise table as follows:

**TABLE R405.2
REQUIREMENTS FOR TOTAL BUILDING PERFORMANCE**

SECTION ^a	TITLE
Electrical Power and Lighting Systems	
R404.1	Lighting equipment
R404.2	Interior lighting controls
<u>R404.5</u>	<u>Electric vehicle charging infrastructure</u>

Revise table as follows:

**TABLE R406.2
REQUIREMENTS FOR ENERGY RATING INDEX**

SECTION ^a	TITLE
Electrical Power and Lighting Systems	
R404.1	Lighting equipment
R404.2	Interior lighting controls
<u>R404.5</u>	<u>Electric vehicle charging infrastructure</u>
R406.3	Building thermal envelope

Michigan EIBC recommends the following EV readiness language be added to the commercial code, including new definitions, revisions to C401.2.2 and and Table C405. 12.2, and new section C405.14:

Add new definitions as follows:

AUTOMATIC LOAD MANAGEMENT SYSTEMS (ALMS). A control system that allows multiple connected EVSE to share a circuit or panel and automatically reduce power at each charger, reducing the total connected electrical capacity of all EVSE.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current. Plug-in hybrid electric vehicles are electric vehicles having a second source of motive power. Off-road, self-propelled electric mobile equipment, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats and the like, are not considered electric vehicles.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors and the *electric vehicle* connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) SPACE. A parking space that is provided with a dedicated *EVSE*.

EV CAPABLE SPACE. A parking space that is provided with some of the infrastructure necessary for the future installation of an *EVSE* – such as conduit, raceways, electrical capacity, or signage – or reserved physical space for such infrastructure.

EV READY SPACE. A parking space that is provided with an electrical circuit capable of supporting an installed *EVSE*.

Revise text as follows:

C401.2.2 ASHRAE 90.1

Commercial buildings shall comply with the requirements of ANSI/ASHRAE/IESNA 90.1 and Section C405.14.

Revise table as follows:

**TABLE
C405.12.2 ENERGY USE CATEGORIES**

LOAD CATEGORY	DESCRIPTION OF ENERGY CUSE
Total HVAC system	Heating, cooling and ventilation, including but not limited to fans, pumps, boilers, chillers, and water heating. Energy used by 120-volt equipment, or by 208/120-volt equipment that is located in a building where the main service is 480/277-volt power, is permitted to be

	excluded from total HVAC system energy use.
Interior lighting	Lighting systems located within the building.
Exterior lighting	Lighting systems located on the building site but not within the building.
Plug loads	Devices, appliances and equipment connected to convenience receptacle outlets.
Process load	Any single load that is not included in HVAC, lighting or plug load category and that exceeds 5 percent of the peak connected load of the whole building, including but not limited to data centers, manufacturing equipment, and commercial kitchens.
<u>Electric vehicle charging</u>	<u>Electric vehicle charging loads.</u>
Building operations and other miscellaneous	The remaining loads not included in this table, including but not limited to vertical transportation systems, automatic doors, motorized shading systems, ornamental fountains, ornamental fireplaces, swimming pools, in-ground spas and snow-melt systems.

Add new sections as follows:

C405.14 Electric vehicle charging infrastructure. Parking facilities shall be provided with electric vehicle charging infrastructure in accordance with this section and Table C405.14 based on the total number of parking spaces and rounded up to the nearest whole number. EVSE, EV ready spaces and EV capable spaces may be counted toward meeting minimum parking requirements. EVSE spaces may be used to meet requirements for EV ready spaces and EV capable spaces. EV ready spaces may be used to meet

requirements for EV capable spaces. An ALMS may be used to reduce the total electrical capacity required by EVSE spaces provided that all EVSE spaces are capable of simultaneously charging at a minimum rate of 1.4 kW. Where more than one parking facility is provided on a building site, the number of parking spaces required shall be calculated separately for each parking facility.

Exception: In parking garages, the conduit required for EV capable spaces may be omitted provided the parking garage electrical service has no less than 1.8 kVA of additional reserved capacity per EV capable space.

**TABLE C405.14
ELECTRIC VEHICLE CHARGING INFRASTRUCTURE REQUIREMENTS**

<u>OCCUPANCY</u>	<u>EVSE SPACES</u>	<u>EV READY SPACES</u>	<u>EV CAPABLE SPACES</u>
<u>Group B Occupancies</u>	<u>15%</u>	<u>NA</u>	<u>40%</u>
<u>Group M Occupancies</u>	<u>25%</u>	<u>NA</u>	<u>40%</u>
<u>R-2 Occupancy</u>	<u>NA</u>	<u>100%^a</u>	<u>NA</u>
<u>All other Occupancies</u>	<u>10%</u>	<u>NA</u>	<u>40%</u>

a. Or one EV ready space per dwelling unit.

C405.14.1 EV Capable Spaces. EV Capable Spaces shall be provided with electrical infrastructure that meets the following requirements:

1. Conduit that is continuous between a junction box or outlet located within 3 feet (914 mm) of the parking space and an electrical panel serving the area of the parking space
2. The electrical panel to which the conduit connects shall have sufficient dedicated physical space for a dual-pole, 40-amp breaker

3. The conduit shall be sized and rated to accommodate a 40-amp, 208/240-volt branch circuit and have a minimum nominal trade size of 1 inch
4. The electrical junction box and the electrical panel directory entry for the dedicated space in the electrical panel shall have labels stating "For future *electric vehicle* charging"

C405.14.2 EV Ready Spaces. The branch circuit serving *EV Ready Spaces* shall meet the following requirements:

1. Wiring capable of supporting a 40-amp, 208/240-volt circuit,
2. Terminates at an outlet or junction box located within 3 feet (914 mm) of the parking space,
3. A minimum capacity of 1.8 kVA.
4. The electrical panel directory shall designate the branch circuit as "For electric vehicle charging" and the junction box or receptacle shall be labelled "For electric vehicle charging."

C405.14.2 EVSE Spaces. The *EVSE* serving *EVSE spaces* shall be capable of supplying not less than 6.2 kW to an electric vehicle and shall be located within 3 feet (914 mm) of the parking space.

Energy Monitoring Requirements: Commercial Code

It is critical that LARA add the energy monitoring requirements from the 2021 IECC model code, which were removed from the draft, back into Michigan's final commercial energy code. Removing this requirement would significantly impede commercial building owners from maintaining their high-performance buildings at the level originally designed, losing out on cost savings. According to a report from the American Council for an Energy-Efficient Economy focused on energy management in industrial and commercial facilities, some programs are capable of saving building owners between two and five percent annually.¹⁰ Building energy performance, if not properly monitored and maintained, erodes over time, and therefore energy monitoring, in addition to commissioning, would ensure the level of energy efficiency, as designed, is met over the life of the building. If LARA decides

¹⁰ American Council for an Energy-Efficient Economy. "Energy Management Proves Cost Effective in Industrial and Commercial Facilities." May 6, 2021. Available at <https://www.aceee.org/press-release/2021/05/energy-management-proves-cost-effective-industrial-and-commercial-facilities>.

to maintain the removal of this important part of the 2021 IECC model code from Michigan's commercial energy code, it has the very real potential to erode much of the carbon impact of the new code as the energy savings associated with the new commercial buildings will not be maintained over time. Additionally, the energy monitoring requirements would provide tremendous data sets for energy management professionals to study and improve both the predictive energy modeling efforts in the design phase and the retro-commission process post building occupancy.

Michigan EIBC recommends LARA add Section 405.12 to C405. 12.5 from the IECC 2021 code back into the state's commercial energy code, which requires energy monitoring for buildings over 25,000 square feet.

Conclusion

Thank you for the opportunity to comment on the importance of improving Michigan's energy code. To reiterate, Michigan EIBC is strongly supportive of the advancements the second drafts have already made toward improving energy efficiency of Michigan's homes and buildings, and it is necessary that these advancements remain as LARA makes additional EV charging and energy monitoring improvements to the residential and commercial energy codes. We look forward to working with you throughout the remainder of this process.

Thank you,

Michigan EIBC

5 July 2022

Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division
LARA-BCC-Rules@michigan.gov

RE: 10a Michigan Energy Code (ORR# 2021-49 LR) Proposal

Michigan 2030 Districts are writing in support of including Appendix CC, as an optional appendix, in the Michigan Commercial Energy Code. Currently, unlike the ASHRAE appendices, Appendix CC is not specifically included in the draft language. We are making the following proposal (added language in red):

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, ~~2015~~ **2021** edition, except for sections **C104.1 to C104.5, C107.2 to C107.5, C108.2 to C108.4, C109.1 to C109.4, C110.1 to C110.3, C301.2, C301.3, C302, C401.2.1 to C408.3.2, C405.12 to C405.12.5, C502.2 to C502.2.6.2, C503.2 to C503.6** and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-~~2013~~ **2019** (hereafter the standard), including appendices A, B, C, D, and G, except for sections ~~8.4.2, 8.4.3 to 8.4.3.2.~~ **Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as a voluntary appendix that authorities having jurisdictions, at their discretion, may choose to adopt by ordinance as a supplement to the international energy conservation code, 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction.** With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference.~~ The Michigan energy code is available for inspection at ~~the Lansing office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 W. Ottawa Street, Lansing, Michigan 48933.~~ The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a cost ~~as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at ~~the Lansing office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 W. Ottawa Street, Lansing, Michigan 48933.~~ The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329,~~ **180 Technology Parkway NW, Peachtree Corners, Georgia 30092,** or from <https://www.ashrae.org> at a cost ~~as of the time of adoption of these rules of \$135.00~~ **\$177.00** each.*

Reasoning:

IECC 2021 Appendix CC (aka Zero Code) is a flexible framework that cities and states can use to help reach their building decarbonization goals. IECC 2021 Appendix CC combines energy efficiency and renewable energy to support the construction of code-compliant, zero carbon buildings that use clean energy. It applies to new commercial, industrial and mid- to high-rise residential buildings—the dominant building types being constructed in cities today.

As a VOLUNTARY Appendix, it gives any Authorities Having Jurisdiction the option of adopting the appendix. Keeping the appendix voluntary provides jurisdictions an important framework to reach their decarbonization goals, if they choose to adopt the appendix.

In summary we support Appendix CC because:

- Voluntary for jurisdictions to adopt
- Compliance with 2021 IECC is required
- Sets a minimum renewable energy requirement based on energy simulations or default values
- Provides an incentive for buildings to be designed to be more energy efficient than code requires
- Encourages on-site renewable energy when feasible
- Supports off-site renewable energy procurement when necessary
- 2021 IECC energy efficiency requirements cannot be traded with renewable energy
- Establishes a consistent framework that local governments can adjust for their specific needs and conditions

All three Michigan 2030 Districts, in collaboration with AIA Michigan, are prepared to provide ongoing education for developers, architect, engineers and code officials who choose to implement Appendix CC. We need to bring on new buildings with no additional carbon emission to give existing buildings the time to increase their efficiency, electrify and procure/install renewables.

Sincerely,



Jan K. Culbertson, FAIA, LEED AP
Leadership Council Chair, Ann Arbor 2030 District



Connie Lilly

Connie Lilly, Executive Director
Detroit 2030 District



Cheri Holman

Cheri Holman, Executive Director
Grand Rapids 2030 District

June 5, 2022

Public Hearing Testimony

RE: 10a Michigan Energy Code (ORR# 2021-49 LR)

Jan Culbertson, FAIA
Ann Arbor 2030 District Leadership Chair
Scio Township Planning Commission Chair

I am proposing that the State of Michigan adopt **IECC Appendix CC** (AKA Zero Code) as a **voluntary appendix** in the Michigan Commercial Energy Code thereby giving enforcing Authorities Having Jurisdiction the option to adopt the appendix.

Appendix CC is a flexible framework to help reach building decarbonization goals. It adds the requirement of on-site and/or off-site renewable energy to support the construction of code-compliant, zero carbon buildings that use clean energy.

Appendix CC provides a standard formula to calculate how much renewable energy is needed to meet a building's energy demand after satisfying the energy-efficiency requirements of the ASHRAE Standard 90.1-2019 / IECC 2021.

Appendix CC provides **technical guidance on different strategies and options for procuring renewable energy** including power purchase agreements and renewable energy credits.

Why is this important?

MI Healthy Climate Plan has the goal of achieving economy-wide carbon neutrality no later than 2050. The goal includes interim reductions of 28% by 2025, 52% by 2030, and maintaining net negative greenhouse gas emissions (GHG) after 2050.

Washtenaw County has the goal of achieving community-wide carbon neutrality no later than 2035.

Ann Arbor has the goal of achieving community-wide neutrality by 2030.

Adding new buildings, without them bring on additional renewable energy to offset their emissions, **ADDS** to the carbon that we are trying to eliminate, increasing the environmental burden. Adopting Appendix CC means new commercial buildings would essentially be net zero energy and would not generate additional operational carbon emissions—carbon that we will later have to sequester.

As a planning commission chair, I struggle to develop ordinances that will meet decarbonization goals with the limited policy tools available. **Appendix CC** would make a tremendous difference—Net Zero Energy Buildings going from being incentivized to being required. It would also allow jurisdictions to focus on improving the efficiency of and decarbonizing the existing building stock, which is already a significant challenge.

Why a Voluntary Appendix?

I recognize that Michigan as a whole may not be ready to adopt such a provision, but many cities where many of the larger, new developments are happening, would readily adopt a requirement for new commercial construction to be net zero energy.

Voluntary adoption would provide a proof of concept for a new energy code provision, paving the way for state-wide adoption in the next code update cycle.

Would Appendix CC create an economic burden?

Adding solar PV or the purchase of renewable energy need not create additional costs for new construction. Commercial solar installations can create a positive cash flow, especially when the building is designed for on-site solar. I am a member of a solar LLC that owns a solar system on a non-profit building's roof. The non-profit is saving on their current electricity rates AND will be able to purchase the system for minimal cost within 5 years reaping additional savings well into the future.

Off-site renewable procurement has become a thriving market. Just in Washtenaw County, Washtenaw Community College, the University of Michigan and the Ann Arbor Public Schools have entered into long term contracts with the DTE MIGreen Power Program to offset their electricity, with projected overall SAVINGS in their energy costs.

On the other hand, constructing new buildings without renewable energy adds to our decarbonization burden that will result in increased future costs.

Proposal:

Add the following language "in Red" to the Michigan Commercial Energy Code, Rule 1087:

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, 2015 2021 edition, except for sections C104.1 to C104.5, C107.2 to C107.5, C108.2 to C108.4, C109.1 to C109.4, C110.1 to C110.3, C301.2, C301.3, C302, C401.2.1 to C408.3.2, C405.12 to C405.12.5, C502.2 to C502.2.6.2, C503.2 to C503.6 and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-2013 2019 (hereafter the standard), including appendices A, B, C, D, and G, except for sections 8.4.2, 8.4.3 to 8.4.3.2. Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as a voluntary appendix that authorities having jurisdictions, at their discretion, may choose to adopt by ordinance as a supplement to the international energy conservation code; 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction. With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference~~. The Michigan energy code is available for inspection at the ~~Lansing office~~ of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611W. Ottawa Street, Lansing, Michigan 48933. The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a cost ~~as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at the ~~Lansing office~~ of the Michigan Department of Licensing and Regulatory Affairs; Bureau of Construction Codes, **611 W. Ottawa Street, Lansing, Michigan 48933**. The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329~~, **180 Technology Parkway NW, Peachtree Corners, Georgia 30092**, or from <https://www.ashrae.org> at a cost ~~as of the time of adoption of these rules of \$135.00~~ **\$177.00** each.*

Comment: The proposed rule change is a significant change to the Michigan Commercial Energy Code. It is a change that will have a significant impact on the construction industry. The proposed rule change is a change that will have a significant impact on the construction industry. The proposed rule change is a change that will have a significant impact on the construction industry.

Alternatively, I urge adoption of Appendix CC in the Michigan Commercial Energy Code as a state-wide requirement as necessary to eliminate the future economic burden of the people of this state for sequestering the additional emissions of new buildings.

June 5, 2022

Public Hearing Testimony

RE: 10a Michigan Energy Code (ORR# 2021-49 LR)

Jan Culbertson, FAIA

Ann Arbor 2030 District Leadership Chair

Scio Township Planning Commission Chair

I am proposing that the State of Michigan adopt **IECC Appendix CC** (AKA Zero Code) as a **voluntary appendix** in the Michigan Commercial Energy Code thereby giving enforcing Authorities Having Jurisdiction the option to adopt the appendix.

Appendix CC is a flexible framework to help reach building decarbonization goals. It adds the requirement of on-site and/or off-site renewable energy to support the construction of code-compliant, zero carbon buildings that use clean energy.

Appendix CC provides a standard formula to calculate how much renewable energy is needed to meet a building's energy demand after satisfying the energy-efficiency requirements of the ASHRAE Standard 90.1-2019 / IECC 2021.

Appendix CC provides technical guidance on different strategies and options for procuring renewable energy including power purchase agreements and renewable energy credits.

Why is this important?

MI Healthy Climate Plan has the goal of achieving economy-wide carbon neutrality no later than 2050. The goal includes interim reductions of 28% by 2025, 52% by 2030, and maintaining net negative greenhouse gas emissions (GHG) after 2050.

Washtenaw County has the goal of achieving community-wide carbon neutrality no later than 2035.

Ann Arbor has the goal of achieving community-wide neutrality by 2030.

Adding new buildings, without them bring on additional renewable energy to offset their emissions, **ADDS** to the carbon that we are trying to eliminate, increasing the environmental burden. Adopting Appendix CC means new commercial buildings would essentially be net zero energy and would not generate additional operational carbon emissions—carbon that we will later have to sequester.

As a planning commission chair, I struggle to develop ordinances that will meet decarbonization goals with the limited policy tools available. **Appendix CC** would make a tremendous difference—Net Zero Energy Buildings going from being incentivized to being required. It would also allow jurisdictions to focus on improving the efficiency of and decarbonizing the existing building stock, which is already a significant challenge.

Why a Voluntary Appendix?

I recognize that Michigan as a whole may not be ready to adopt such a provision, but many cities where many of the larger, new developments are happening, would readily adopt a requirement for new commercial construction to be net zero energy.

Voluntary adoption would provide a proof of concept for a new energy code provision, paving the way for state-wide adoption in the next code update cycle.

Would Appendix CC create an economic burden?

Adding solar PV or the purchase of renewable energy need not create additional costs for new construction. Commercial solar installations can create a positive cash flow, especially when the building is designed for on-site solar. I am a member of a solar LLC that owns a solar system on a non-profit building's roof. The non-profit is saving on their current electricity rates AND will be able to purchase the system for minimal cost within 5 years reaping additional savings well into the future.

Off-site renewable procurement has become a thriving market. Just in Washtenaw County, Washtenaw Community College, the University of Michigan and the Ann Arbor Public Schools have entered into long term contracts with the DTE MIGreen Power Program to offset their electricity, with projected overall SAVINGS in their energy costs.

On the other hand, constructing new buildings without renewable energy adds to our decarbonization burden that will result in increased future costs.

Proposal:

Add the following language "in Red" to the Michigan Commercial Energy Code, *Rule 1087*:

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, 2015 2021 edition, except for sections C104.1 to C104.5, C107.2 to C107.5, C108.2 to C108.4, C109.1 to C109.4, C110.1 to C110.3, C301.2, C301.3, C302, C401.2.1 to C408.3.2, C405.12 to C405.12.5, C502.2 to C502.2.6.2, C503.2 to C503.6 and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-2013 2019 (hereafter the standard), including appendices A, B, C, D, and G, except for sections 8.4.2, 8.4.3 to 8.4.3.2. **Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as a voluntary appendix that authorities having jurisdictions, at their discretion, may choose to adopt by ordinance as a supplement to the international energy conservation code, 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction.** With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference~~. The Michigan energy code is available for inspection at ~~the Lansing office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611W. Ottawa Street, Lansing, Michigan 48933.~~ The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a cost ~~as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at ~~the Lansing office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 W. Ottawa Street, Lansing, Michigan 48933.~~ The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329,~~ **180 Technology Parkway NW, Peachtree Corners, Georgia 30092, or from <https://www.ashrae.org>** at a cost ~~as of the time of adoption of these rules of \$135.00~~ **\$177.00** each.*

Alternatively, I urge adoption of Appendix CC in the Michigan Commercial Energy Code as a state-wide requirement as necessary to eliminate the future economic burden of the people of this state for sequestering the additional emissions of new buildings.

Sent via Electronic Mail

June 27, 2022

Amanda Johnson, Rules Analyst
Michigan Department of Licensing and Regulatory Affairs
Bureau of Construction Code, Administrative Services Division
611 W. Ottawa Street
Lansing, Michigan 48933
LARA-BCC-Rules@michigan.gov

Re: Support for Adoption of the 2021 International Energy Conservation Code
(Pending Rule Sets 2021-48LR and 2021-49LR)

Dear Ms. Johnson,

The Polyisocyanurate Insulation Manufacturers Association (PIMA) is writing in support of the proposed rules for adopting the 2021 IECC for residential and commercial buildings. Keeping the State's energy code updated to the current version of the IECC is an important and cost-effective policy for addressing the negative economic and environmental consequences of energy waste in buildings – a sector that is responsible for 40% of total U.S. energy use. Importantly, Michigan will benefit from the removal of several previously adopted amendments that in the past weakened the code's stringency and undermined the achievement of State's climate goals. Also, adopting the 2021 IECC will help Michigan achieve a range of benefits, including:

- Reduced air pollution;
- Consumer and business cost savings;
- Increased flexibility and reliability of our energy system and grid;
- Improved resiliency;
- Reduced peak energy demand; and
- Improved energy productivity and a stronger economy.

Staying current with the model energy code ensures that Michigan will benefit from the regular improvements in construction practices and building technology. This is especially true for alterations performed on commercial buildings and ensures that the energy code will drive energy efficiency improvements in existing buildings when components are replaced or when buildings are otherwise altered.

Moving from Michigan's current energy code, which is based on the 2015 IECC (and the ASHRAE Standard 90.1-2013), to the 2021 IECC will save Michigan residents money and increase employment. Also, this change is clearly cost effective. For commercial buildings, this change has a simple payback that is immediate, and for residential buildings purchased with a mortgage, there would

be a positive net savings within 5 years. Over 30 years, about 15,000 jobs would result from these stronger energy codes.¹

Most of the country views stronger building energy codes as an effective policy that benefits the environment and the economy. Like Michigan, your neighbors -- Illinois and Ohio -- are in the midst of adopting the 2021 IECC for both residential and commercial buildings and Wisconsin is close to adopting this code for commercial buildings and will soon start its review for residential buildings.

Buildings are responsible for 74% of total electricity consumption in the United States. Twenty-seven percent of Michigan's electricity is still generated by burning coal, a product that comes entirely from out-of-state.² As a result, weak building energy codes send money out of Michigan to purchase coal. Adopting the 2021 IECC will improve building energy efficiency, reduce energy use and waste, and result in investments that benefit the state and local economies.

About PIMA

PIMA is the trade association for North American manufacturers of rigid polyiso foam insulation – a product that is used in most low-slope commercial roofs as well as in commercial and residential walls. Polyiso insulation products and the raw materials used to manufacture polyiso are produced in over 50 manufacturing facilities across North America. The insulation industry overall employs over 12,000 workers in the Michigan.

Thank you for the opportunity to submit these comments. Please contact me should additional information be necessary (jkoscher@pima.org; (703) 224-2289).

Sincerely,



Justin Koscher
President

¹ U.S. Department of Energy, see "State Energy Code Fact Sheet-Michigan", https://www.energycodes.gov/sites/default/files/2021-07/EED_1365_BROCH_StateEnergyCodes_states_MICHIGAN.pdf

² U.S. Energy Information Administration, <https://www.eia.gov/beta/states/states/mi/analysis>



Building Codes & Regulations Committee
Professional Chapter of the International Code Council

MEMORANDUM

7-5-2022

Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division
LARA-BCC-Rules@michigan.gov

RE: 10a Michigan Energy Code (ORR# 2021-49 LR) Proposal

The American Institute of Architects, Detroit Chapter, Building Codes and Regulations Committee, AIAD BC&RC, is writing in support of including Appendix CC, as an optional appendix, in the Michigan Commercial Energy Code. Currently, unlike the ASHRAE appendices, they are not specifically included in the draft language. We are making the following proposal (added language in red):

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, ~~2015~~ **2021** edition, except for sections **C104.1 to C104.5**, ~~C107.2 to C107.5~~, ~~C108.2 to C108.4~~, **C109.1 to C109.4**, **C110.1 to C110.3**, ~~C301.2~~, ~~C301.3~~, ~~C302~~, ~~C401.2.1 to C408.3.2~~, **C405.12 to C405.12.5**, ~~C502.2 to C502.2.6.2~~, ~~C503.2 to C503.6~~ and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-~~2013~~ **2019** (hereafter the standard), including appendices A, B, C, D, and G, except for sections ~~8.4.2~~, ~~8.4.3~~ to 8.4.3.2.*

Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as a voluntary appendix that authorities having jurisdictions, at their discretion, may choose to adopt by ordinance as a supplement to the international energy conservation code, 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction. With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference~~. The Michigan energy code is available for inspection at ~~the Lansing office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611W. Ottawa Street, Lansing, Michigan 48933.~~ The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a cost ~~as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at ~~the Lansing office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 W. Ottawa Street, Lansing, Michigan 48933.~~ The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329,~~ **180 Technology Parkway NW, Peachtree Corners, Georgia 30092**, or from <https://www.ashrae.org> at a cost ~~as of the time of adoption of these rules of \$135.00~~ **\$177.00** each.

Reasoning:

IECC 2021 Appendix CC (aka Zero Code) is a flexible framework that cities and states can use to help reach their building decarbonization goals. IECC 2021 Appendix CC combines energy efficiency and renewable energy to support the construction of code-compliant, zero carbon buildings that use clean energy. It applies to new commercial, industrial and mid- to high-rise residential buildings—the dominant building types being constructed in cities today.

As a VOLUNTARY Appendix, it gives any Authorities Having Jurisdiction the option of adopting the appendix. Keeping the appendix voluntary provides jurisdictions an important framework to reach their decarbonization goals, if they choose to adopt the appendix.

In summary we support Appendix CC because:

- Voluntary for jurisdictions to adopt
- Compliance with 2021 IECC is required
- Sets a minimum renewable energy requirement based on energy simulations or default values
- Provides an incentive for buildings to be designed to be more energy efficient than code requires
- Encourages on-site renewable energy when feasible
- Supports off-site renewable energy procurement when necessary
- 2021 IECC energy efficiency requirements cannot be traded with renewable energy
- Establishes a consistent framework that local governments can modify for their specific needs and conditions

AIA Detroit is prepared to provide ongoing education for developers, architect, engineers and code officials who choose to implement Appendix CC.

Sincerely,

A handwritten signature in black ink that reads "Justin James Bialek". The signature is written in a cursive, flowing style.

Justin James Bialek, AIA, NCARB, AIAD BC&RC Chair



Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division
LARA-BCC-Rules@michigan.gov

July 5, 2022

RE: 10a Michigan Energy Code (ORR# 2021-49 LR) Proposal

AIA Detroit is writing in support of including Appendix CC, as an optional appendix, in the Michigan Commercial Energy Code. Currently, unlike the ASHRAE appendices, they are not specifically included in the draft language. We are making the following proposal (added language in red):

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, ~~2015~~ **2021** edition, except for sections **C104.1 to C104.5**, ~~C107.2 to C107.5~~, ~~C108.2 to C108.4~~, **C109.1 to C109.4**, **C110.1 to C110.3**, ~~C301.2, C301.3, C302, C401.2.1 to C408.3.2, C405.12 to C405.12.5, C502.2 to C502.2.6.2, C503.2 to C503.6~~ and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-~~2013~~ **2019** (hereafter the standard), including appendices A, B, C, D, and G, except for sections ~~8.4.2, 8.4.3 to 8.4.3.2~~. **Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as a voluntary appendix that authorities having jurisdictions, at their discretion, may choose to adopt by ordinance as a supplement to the international energy conservation code, 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction.** With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference~~. The Michigan energy code is available for inspection at ~~the Lansing office of~~ the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611W. Ottawa Street, Lansing, Michigan 48933. The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a ~~cost as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at ~~the Lansing office of~~ the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, **611 W. Ottawa Street, Lansing, Michigan 48933**. The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329~~, **180 Technology Parkway NW, Peachtree Corners, Georgia 30092**, or from <https://www.ashrae.org> at a ~~cost as of the time of adoption of these rules of \$135.00~~ **\$177.00** each.*

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As a VOLUNTARY Appendix, it gives any Authorities Having Jurisdiction the option of adopting the appendix. Keeping the appendix voluntary provides jurisdictions an important framework to reach their decarbonization goals, if they choose to adopt the appendix.

In summary we support Appendix CC because:

- Voluntary for jurisdictions to adopt
- Compliance with 2021 IECC is required
- Sets a minimum renewable energy requirement based on energy simulations or default values
- Provides an incentive for buildings to be designed to be more energy efficient than code requires
- Encourages on-site renewable energy when feasible
- Supports off-site renewable energy procurement when necessary
- 2021 IECC energy efficiency requirements cannot be traded with renewable energy
- Establishes a consistent framework that local governments can modify for their specific needs and conditions

All three Michigan 2030 Districts and AIA Michigan are prepared to provide ongoing education for developers, architect, engineers and code officials who choose to implement Appendix CC.

Sincerely,



Megan Martin-Campbell, AIA
2022 AIA Detroit President



Katie Johnson, AIA
2022 AIA Detroit Vice President / President Elect



Mr. Keith Lambert
Director, Bureau of Construction Codes
Michigan Department of Licensing and Regulatory Affairs
611 W Ottawa St.
Lansing, MI 48933

June 30, 2022
Re: Michigan's Energy Code Adoption

Dear Director Lambert,

RMI (formerly Rocky Mountain Institute) and the New Buildings Institute (NBI) respectfully submit the following comments to the Department of Licensing and Regulatory Affairs (LARA) on the amendments for the Michigan Energy Code. RMI is an independent, non-partisan, non-profit organization whose mission includes researching the business models, policies, technologies, and financing mechanisms necessary to advance an equitable clean energy transition. New Buildings Institute (NBI) works collaboratively with industry market players—governments, utilities, energy efficiency advocates and building professionals—to promote advanced design practices, innovative technologies, public policies, and programs that improve energy efficiency at the highest levels and decarbonize the built environment.

Michigan will benefit from 2021 IECC with commercial energy monitoring, efficiency packages, EV-readiness, and all-electric amendments.

We applaud LARA for including 2021 IECC in this initial draft for Michigan's updated energy codes. 2021 IECC is necessary for Michigan to have modern, affordable new construction. With the adoption of 2021 IECC, we encourage LARA to consider the following amendments:

1. Include the energy monitoring section – Section C405.12 to C405.12.5, which requires energy monitoring for buildings over 25,000 square feet in the commercial code. This amendment is a key tool for tracking energy use and helping commercial buildings reduce consumption.
2. Require EV-readiness in both the residential and commercial code. EV-readiness in new homes will enable customer choice for their transportation without homeowners having to pay up to x3-4 more later to retrofit compared to building to EV-readiness standards.¹
3. Include an amendment to the proposed code to require at least three options be selected from the list of Additional Efficiency Package Options. This amendment can generate high energy savings at low costs while providing builders with flexibility in complying with a high efficiency code.

In addition, we strongly recommend that Michigan adopt an all-electric new construction amendment in climate zones 5 and 6 alongside an electric-ready amendment in climate zone 7. All-electric new construction benefits Michiganders because it has lower upfront costs than a mixed fuel home built to current code and can help keep utility bills stable amid rising, volatile gas prices. At minimum, an electric-ready amendment enables customers to use best in class technology. Failure to at least require electric readiness will create logistical and economic hurdles for customers to gain access to modern, efficient, healthy appliances like heat pumps in the future.

¹ <https://newbuildings.org/wp-content/uploads/2022/04/BuildingDecarbCostStudy.pdf>

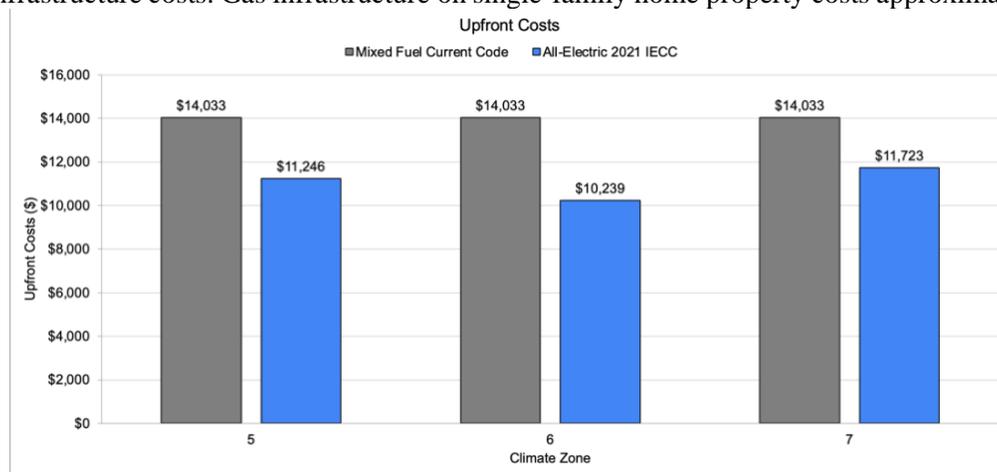
All-electric and electric-ready codes are being passed across the U.S.

States and cities across the United States are passing all-electric or electric-ready codes giving new home residents access to innovative, efficient appliance technologies, like heat pumps and induction stoves. Over 60 jurisdictions across 11 States have already adopted policies that require or encourage building electrification.² The most recent example in the codes space is Washington state which just passed an all-electric heating mandate in commercial and multifamily buildings.³ Colorado passed a law requiring cities and counties to update their building codes to be electric-ready.⁴ Alongside states, local jurisdictions, like New York City, have passed all-electric new construction bills as well.⁵ Michigan is positioned to join these states and cities as a leader in the new construction sector.

All-electric codes will economically benefit Michiganders

All-electric construction codes in Michigan can reduce costs for residents. RMI and NBI submitted analysis to LARA, in service of the Stille-Derossett-Hale Single State Construction Code Act⁶, examining the upfront and life cycle costs of all-electric new construction codes in Michigan.⁷ Our study concludes that for single-family new construction:

- 1. All-electric new construction could reduce upfront costs by over \$2,000 compared to a mixed fuel home built to current code.** All-electric homes reduce upfront costs because they avoid gas infrastructure costs. Gas infrastructure on single-family home property costs approximately \$6000.



- 2. All-electric new construction is cost neutral over seven years in climate zones 5 and 6.** The costs a homeowner would pay in the first seven years (including utility bills, mortgage bills, property taxes, and a down payment on upfront costs) are comparative to a single-family mixed

² <https://www.buildingdecarb.org/zeb-ordinances.html>

³ <https://grist.org/buildings/washington-state-requires-electric-heat-pumps-buildings/>

⁴ <https://www.bouldercounty.org/news/boulder-county-commissioners-welcome-landmark-energy-codes-legislation/>

⁵ <https://www.urbangreencouncil.org/content/projects/local-law-154-nycs-all-electric-new-buildings-law#:~:text=With%20Local%20Law%20154%2C%20New,and%20making%20occupants%20more%20comfortable>

⁶ [http://www.legislature.mi.gov/\(S\(ervayhjbbvqjiirehphhi4dk\)\)/mileg.aspx?page=getobject&objectname=mcl-act-230-of-1972&queryid=40215&highlight=](http://www.legislature.mi.gov/(S(ervayhjbbvqjiirehphhi4dk))/mileg.aspx?page=getobject&objectname=mcl-act-230-of-1972&queryid=40215&highlight=)

⁷ <https://www.michigan.gov/lara/-/media/Project/Websites/lara/bcc-media/Rules-Info/Part-10-Michigan-Energy-Code/Compiled-2021-Energy-Codes-Advisory-Meeting-Comments-322.pdf?rev=9fe80d902fc547ac864918012652d6a2&hash=061E4101D96506D30961ABDF9D2A84F9>

fuel home built to current code. This finding indicates new construction can benefit from the health and comfort benefits of an all-electric home without a cost premium.⁸

- 3. Cost-effectiveness for all-electric new construction is improving.** Our analysis was conservative using rates from November 2021 and minimum code compliant appliances. The cost-effectiveness of all-electric codes will improve with high performance cold climate heat pumps, heat pump friendly electric rates, and utility incentives, which this analysis did not include to comply with the Stille-Derossett-Hale Single State Construction Code Act.

In conclusion, our study finds that all-electric code amendments in Michigan can reduce upfront costs making housing more accessible to more Michiganders. This benefit comes with comparable lifecycle costs and will be subject to less gas price volatility.

All-electric new construction avoids rising, volatile gas prices

Michigan utilities are warning that rising natural gas prices will lead to utility bill hikes for residents.⁹ These claims are backed by new research from the Michigan Public Service Commission which expects natural gas prices to increase by 89% between 2021 and 2022, a stark difference from the 6.4% increase of electric rates between May 2021 and May 2022.¹⁰ Low-income Michiganders, who already spend 15% of their income on energy, can't afford to be subject to volatile, rising gas prices.¹¹ Since heat pumps are highly efficient and leverage steadier electricity prices, all-electric new construction can help keep bills low and steady for Michigan residents. All-electric codes, which leverage the benefits of electric appliances, can help ease these concerns and mitigate future price hikes from the continued build out of gas infrastructure. As Michigan adds more renewable resources to the grid, these prices will become even more stable because it is not dependent on imported fuels.

All-electric or electric-ready codes benefit Michigan's economy and enable customer choice.

Considering the results of this analysis, we recommend that all-electric 2021 IECC be adopted in Climate Zones 5 and 6. In Climate Zone 7, we recommend that Michigan adopt electric-ready 2021 IECC. All-electric codes will provide residents with low-upfront costs while reducing indoor air pollution emissions and keeping utility bills stable. At minimum, electric-ready will enable Michigan to leverage modern technologies when homeowners are ready to do so. Electric-ready construction provides residents with the most consumer choice when it is time to decide how they will heat their home, water, and food. It provides them with the option to use heat pumps and induction stoves which are innovative technologies that can keep Michigan warm and comfortable on the coldest days and keep utility bills and mortgage payments low and steady.

Lauren Reeg

Associate
RMI
lreeg@rmi.org

Diana Burk

Project Manager
New Buildings Institute
diana@newbuildings.org

⁸ https://rmi.org/wp-content/uploads/2022/02/all_electric_buildings_healthy_factsheet.pdf

⁹ <https://www.thedailyreporter.com/story/news/2021/09/10/michigan-gas-utility-rates-increase-2022/8264271002/>

¹⁰ https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/regulatory/reports/energy-appraisal/2022_Summer_Energy_Appraisal.pdf

¹¹ <https://www.elevatenp.org/wp-content/uploads/Energy-Burden-in-MI.pdf>



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July 1, 2022

Keith Lambert
Bureau of Construction Codes
Department of Licensing and Regulatory Affairs
Administrative Services Division
P.O. Box 30254
Lansing, MI 48909

Re: MEEA's comments in support of the adoption of the 2021 International Energy Conservation Code for residential and commercial buildings

Dear Mr. Lambert and the Bureau of Construction Codes,

Thank you for the opportunity to provide comments on current update to the Michigan Energy Code. The Midwest Energy Efficiency Alliance (MEEA) is a member-based non-profit organization promoting energy efficiency to optimize energy generation, reduce consumption, create jobs and decrease carbon emissions in all Midwest communities. We have submitted numerous comments on this process, and thus will be brief in this round.

MEEA recommends the adoption of the 2021 International Energy Conservation Code (IECC) without weakening amendments as the statewide minimum building energy code for residential and commercial buildings. Adopting the 2021 IECC without weakening amendments would establish a number of benefits for Michiganders and result in more efficient, resilient buildings, plus put the state on track to meet its established climate goals.

The proposed energy code released by LARA on June 16, 2022, appears to have a few amendments that weaken the 2021 IECC. In the residential energy code, R408.301066 and R408.31071 remain; these amendments have previously impacted the alternative performance path and systems sections in Michigan's energy code and will continue to reduce the efficiency and efficacy of the residential energy code. In addition, a referenced table is now numbered differently and could be problematic if not updated. The proposed commercial energy code removes monitoring requirements and some requirements for lighting alterations. If these sections remain in the upcoming code, Michiganders will not be able to realize the full benefits of the 2021 IECC.

The 2021 IECC has proven to be cost-effective and will save residents and business owners on their utility bills. According to reports from the US Department of Energy and the Pacific Northwest National Laboratory, "adopting the 2021 IECC in Michigan is expected to result in homes that are energy efficient, more affordable to own and operate, and *based on current industry standards* for health, comfort and resilience."¹ Additionally, moving to the commercial 2021 IECC will reduce statewide CO2 emissions by 10.0 MMT (30 years cumulative), equivalent to the CO2 emissions of 2,182,000 cars driven for one year, and stimulate the creation of high-

¹ https://www.energycodes.gov/sites/default/files/2021-07/MichiganResidentialCostEffectiveness_2021_0.pdf

quality jobs across the state². Only if adopted in full, with no amendments, will Michiganders realize these intended benefits.

Increasingly Michigan municipalities have expressed interest to MEEA for the ability to adopt advanced energy codes. One option the state of Michigan has would be to adopt the 2021 IECC Appendices so that municipalities are given the choice of more stringency in energy efficiency beyond the state energy code. MEEA recommends that the state of Michigan strongly consider giving municipalities this option and can provide technical expertise on stretch code adoption and implementation. Please let us know if you if you need more information on that option.

The adoption of the 2021 IECC is a cost-effective way to gradually increase the level of efficiency of residential and commercial buildings and remain a leader in the Midwest. We recommend the full unamended adoption of the 2021 IECC as a way to reduce long-term energy use and costs for residents and businesses, create healthier and more comfortable indoor environments, and increase the resiliency of the building stock so new residential dwellings and commercial buildings last for the next 75-100 years.

If you have any questions about this testimony, noted reports and references or general impact and analysis of building energy codes, please contact Alison Lindburg, Senior Building Policy Manager for MEEA at alindburg@mwalliance.org.

Sincerely,



Stacey Paradis

Executive Director

² https://www.energycodes.gov/sites/default/files/2021-07/Cost-effectiveness_of_ASHRAE_Standard_90-1-2019-Michigan.pdf



Mr. Keith Lambert
Director, Bureau of Construction Codes
Department of Licensing and Regulatory Affairs
Administrative Services Division
611 W. Ottawa Street, Lansing, MI 48933

Re: Administrative Rules for Construction Code – Part 10a. Michigan Energy Code, Rule Set 2021-49 LR

Dear Director Lambert,

Thank you for the opportunity to provide comments and feedback on proposed changes to the Construction Code – Part 10a Michigan Energy Code rule set. This regulatory framework and proposed updates are important in ensuring safe and affordable workplaces and living spaces for thousands of Michigan families. In today's economic climate, housing attainability is a top priority for the business community and a critical component in addressing labor capacity challenges.

In general, we support the agency's efforts to strengthen and modernize Michigan's Energy Code by utilizing the 2021 International Energy Conservation Code. Revised standards to increase energy efficiency such as building envelope improvements provide increased resiliency to our state's buildings and housing. Promoting technologies that improve structural energy efficiency demonstrate chemistry and advanced manufacturing as climate and clean energy solutions that spur innovation and hold long-term economic benefits.

While we support the general direction the bureau has taken, we also would like to offer cautionary analyses of attempts by some advocacy organizations to push beyond the Bureau's current draft rule by adopting appendices within the 2021 IECC that allow for local units of government to put further restrictive codes and standards in place. These 'stretch codes,' specifically referenced in Appendices RC and CC, would allow local governments to take extraordinary measures that would negatively impact affordability, such as reducing a customer's ability to use natural gas for new construction to favor electrification in homes and businesses. As such, we do not support the inclusion of appendices RC 101 and CC 101 when adopting these updated codes even as a voluntary option for local governments.

If leveraged, these voluntary appendices would serve as de facto mandates, and would inhibit business retention and attraction statewide and put the dream of new homeownership out of reach for thousands of Michiganders. Manufacturing and service-based industries like the restaurant and lodging sectors rely heavily upon natural gas as an efficient energy solution. Additionally, a de facto mandate of electrification would also be detrimental to the pocketbooks of thousands of Michigan



residents utilizing natural gas and propane to heat their homes. In fact, according to the [Energy Information Administration \(EIA\)](#), nearly a third of U.S. households faced energy insecurity for affordability-related reasons. In the U.S. Department of Energy’s 2020 forecast, “natural gas remains the lowest cost way to heat your home and is the most immediate way to reduce the energy burden for low-income households.” Finally, these mandates myopically favor electrification over the use of other clean and cost-effective solutions to lowering the carbon intensity of Michigan’s building and housing stock, such as carbon offsets, renewable natural gas and more.

Allowing for more restrictive codes within specific local jurisdictions would inhibit safety and reliability, as it would create a patchwork of distinct policy landscapes that don’t necessarily align with the statewide management of the electric distribution and gas distribution systems. Municipalities that adopt stretch codes would likely require costly utility infrastructure upgrades to handle increased electric load for new construction, and thus would place a new burden on existing customers within that municipality. We are therefore deeply concerned that allowing for this regulatory structure can create cross-subsidization of costs within the same customer rate class. A single, uniform statewide energy code(s) will help provide the most equitable regulatory structure, and we encourage the Bureau to not include the previously mentioned stretch code appendices. , We appreciate the opportunity to speak to their potentially unintended and costly consequences.

Thank you again for the opportunity to provide this written comment. If we can serve as a resource in the future, please do not hesitate to reach out.

Sincerely,

Mike Alaimo

Director, Environmental and Energy Affairs
Michigan Chamber of Commerce

Caroline Liethen

Director, Environmental and Regulatory Policy
Michigan Manufacturers Association

7/2/2022

Department of Licensing and Regulatory Affairs
Bureau of Construction Codes
Administrative Services Division
Telephone (517) 582-5519
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My name is Roger Papineau. I live at 1901 Beulah Highway, PO Box 574, Beulah, MI 49617. I am writing today to give comments and questions on the proposed Part 10 and 10a Energy Code Rules.

1. If the proposed rules are promulgated, will residential provisions of the Michigan Energy Code (Part 10) and the Michigan Residential Code (Chapter 11) conflict?
2. If provisions of the Michigan Energy Code (Part 10) and Michigan Residential Code (Chapter 11) do conflict, will the Michigan Residential Code provisions take precedence over the Michigan Energy Code?
3. Do the proposed rules amend Chapter 11 (Energy Efficiency) of the 2015 Michigan Residential Code?

Retain and amend R 408.31060e.

Reason: Parts 10 & 10a are unique to Michigan. It makes no sense to list over 3140 counties, boroughs, and parishes across the United States in a code book dedicated to Michigan. Also, the current copy of ASHRAE 169-2013 puts Marquette in Zone 6A, not 7A. This change is required to maintain consistency across the various codes. Additionally, Figure R301.1 is nearly impossible to read.

Code change proposal CE36-19 Part II revised the makeup of the climate zones.

IECC: FIGURE R301.1 (IRC N1101.7), TABLE R301.1 (IRC N1101.7), R301.3 (IRC N1101.7.2), TABLE R301.3(1) [IRC N1101.7.2(1)], TABLE R301.3(2) [IRC N1101.7.2(2)]

Proponent: David Collins, representing SEHPCAC (SEHPCAC@iccsafe.org); David Collins, representing The American Institute of Architects (dcollins@preview-group.com)

Reason:

Currently approximately 10% of the counties across the US have different climate zones under the IECC and ASHRAE 90.1, ASHRAE 90.2, and the IgCC. This proposal updates the climate zones to correspond with the release of ASHRAE Standard 169-2013, which is referenced in both the 2018 IgCC and ASHRAE 90.1 and ASHRAE 90.2. Approximately 10% of the counties in the United States have a change in Climate Zone designation due to this change. ICC has a licensing agreement with ASHRAE to include the climate zone map, definitions and tables for consistency with ASHRAE Standard 169-2013.

ANSI/ASHRAE Addendum a to ANSI/ASHRAE Standard 169-2013 shows Marquette County MI to be in Climate Zone 6A. See Figure A-1 and Table A-3.

Delete without substitution Section R404.2.

Reason: This section increases the cost of construction with no return on investment due to the requirement that all lamps be hi-efficacy.



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RE: 10a Michigan Energy Code (ORR# 2021-49 LR)

Thank you for the opportunity to submit comments pertaining to the code adoption process. The City of Ann Arbor is writing to encourage the inclusion of the following in the Michigan Energy Code:

- 1) All energy monitoring requirements, specifically section C405.12 Energy Monitoring. This section appropriately equips large buildings with the means of measuring and tracking energy consumption in the interest of reducing wasted energy. These energy monitoring requirements will help owners of new buildings understand their energy consumption and clarify similar goals for existing building owners.
- 2) All IECC appendices, specifically Appendix CC. Unlike the ASHRAE appendices, Appendix CC is not specifically included in the current draft language. The IECC 2021 Appendix CC (aka Zero Code) is a critically important framework that allows Michigan and its cities to more easily reach their carbon neutrality goals. IECC 2021 Appendix CC combines energy efficiency and renewable energy to support the construction of code-compliant, zero carbon buildings that use clean energy. It applies to new commercial, industrial and mid- to high-rise residential buildings—the dominant building types being constructed in cities today.
- 3) Maintain the inclusion of all sections pertaining to the requirements for all-electric buildings. The buildings we construct today will be the buildings we occupy and operate for many years. Given the goals of the State of Michigan, the Federal government, and the local jurisdictions throughout Michigan, it is imperative that we eliminate fossil fuel reliance immediately.

A²ZERO is Ann Arbor's plan for a just transition to carbon neutrality by 2030. Because two-thirds of Ann Arbor's greenhouse gas emissions come from buildings, the inclusion of the above key components in the Michigan Energy Code will help Ann Arbor best serve its residents & businesses by creating a pathway toward safer, healthier, more comfortable, and more efficient buildings, all while preserving our state for future generations.

We intend for our comments to be interpreted as minimum suggestions; we eagerly express our willingness to explore additional requirements to enable everyone achieve carbon neutrality.

Thank you for your time and consideration.

Sincerely,

Zach Waas Smith

Jeffrey S. Ferweda, AIA, NCARB

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American Institute of Architects (AIA) Michigan Government Affairs Co-Chair

Vienna Township Planning Commission Chair

June 5th, 2022

Public Hearing Testimony

RE: 10a Michigan Energy Code (ORR# 2021-49 LR)

I am proposing that the State of Michigan adopt **IECC Appendix CC** (AKA Zero Code) as a required **appendix** in the Michigan Commercial Energy Code. The American Institute of Architects (AIA) and Architecture 2030 have

AIA Michigan supports policies, programs, and practices that promote adaptable, resilient, and regenerative buildings and communities. This includes creating zoning and planning policies and practices that recognize historic patterns of discrimination, the impacts of climate change, and environmental justice concerns.

Michigan recognizes its need to lead the industry in advocating for building a better and more resilient built environment. Buildings account for up to 40% of the world's energy use, easily indicating the need to create and improve the efficiency of these buildings and other elements of the built environment.

The appendix gives jurisdictions the option to adopt a zero-net-carbon standard as their community's minimum energy code. Local jurisdictions that adopt the appendix could require all new commercial, institutional, and mid- and high-rise residential buildings to produce or procure enough renewable energy to achieve zero-net-carbon annually. Additionally, the appendix encourages on-site renewable energy systems but also supports off-site renewable energy when on-site generation is not feasible, such as for high-rise buildings with insufficient roof area, or buildings in densely built and shaded areas.

Power companies are asking people to lessen the burden on the grid at peak times. Around the country, there have been significant grid power outages. Buildings, as the largest single energy siphon we have, are the logical target to help restore a balance and set our State as a leader in resilient building practices.

Proposal:

Add the following language "in Red" to the Michigan Commercial Energy Code, *Rule 1087*:

R 408.31087 Applicable code.

*Rule 1087. Rules governing the energy efficiency for the design and construction of buildings and structures, not including residential buildings, shall be those contained in the international energy conservation code, 2015 2021 edition, except for sections **C104.1 to C104.5, C107.2 to C107.5, C108.2 to C108.4, C109.1 to C109.4, C110.1 to C110.3, C301.2, C301.3, C302, C401.2.1 to C408.3.2, C405.12 to C405.12.5, C502.2 to C502.2.6.2, C503.2 to C503.6 and the ASHRAE energy standard for buildings except low-rise residential buildings, ANSI/ASHRAE/IESNA standard 90.1-2013 2019 (hereafter the standard), including appendices A, B, C, D, and G, except for sections 8.4.2, 8.4.3 to 8.4.3.2. **Additionally, Appendix CC of the international energy conservation code, 2021 edition, is included as an appendix as a*****

supplement to the international energy conservation code, 2021 edition, to require renewable energy systems of adequate capacity to achieve net zero carbon emissions in applicable new buildings as defined in the scope of Appendix CC within that jurisdiction. With the amendments noted, the international energy conservation code and the standard are adopted **by reference** in these rules ~~by reference~~. The Michigan energy code is available for inspection at ~~the Lansing office of~~ the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 611 W. Ottawa Street, Lansing, Michigan 48933. The code may be purchased from the International Code Council, through the bureau's website at www.michigan.gov/bcc, at a cost ~~as of the time of adoption of these rules of \$44.00~~ **\$52.00**. The ASHRAE 90.1- ~~2013~~ **2019** standard is available for inspection at ~~the Lansing office of~~ the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, **611 W. Ottawa Street, Lansing, Michigan 48933**. The standard may be purchased from the American Society of Heating, Refrigeration and Air- Conditioning Engineers, Inc., ~~1791 Tullie Circle, NE, Atlanta, Georgia 30329~~, **180 Technology Parkway NW, Peachtree Corners, Georgia 30092**, or from <https://www.ashrae.org> at a cost ~~as of the time of adoption of these rules of \$135.00~~ **\$177.00** each.

Alternatively, I urge the adoption of **Appendix CC** as a **voluntary appendix** in the Michigan Commercial Energy Code, as a minimum step that empowers local communities to take action on climate change through building codes.

Sincerely,



Jeffrey S. Ferweda, AIA, NCARB