

July 11, 2020

North Carolina Building Code Council  
Office of State Fire Marshal  
1202 Mail Service Center  
Raleigh NC 27699-1202

Dear Members of the North Carolina Building Code Council,

On behalf of our member companies and partner organizations, North Carolina Building Performance Association (NCBPA) would like to inform you that we do not support the four residential B-item energy code change [proposals submitted](#) for the July 14, 2020 meeting by Robert Privott of North Carolina Home Builders Association and Jeff Tiller, formerly of Appalachian State University.

The proposals include:

1. **Item B-2:** “Add definition to SECTION R202 GENERAL DEFINITIONS for Air-impermeable insulation to correspond with the definition in the 2018 NC Residential Code.”
2. **Item B-3:** “This amendment allows permit holders who choose to follow the Energy Rating Index (ERI) option to substitute R-20 insulation under or above the roof deck in place of attic floor insulation when installing an unvented attic that complies with Section R806.5 of the 2018 NC Residential Code.”
3. **Item B-4:** “Add reference standard to CHAPTER 6 [RE] REFERENCED STANDARDS to be consistent with the 2018 NC Residential Code.”
4. **Item B-22:** “This amendment allows permit holders who choose to follow the Energy Rating Index (ERI) option to substitute R-20 insulation under or above the roof deck in place of attic floor insulation when installing an unvented attic that complies with Section N1106.2 Mandatory Requirements of the 2018 NC Residential Code.”

To summarize our position, we offer these four points:

1. These proposals contain technical inaccuracies and errors that alone are cause for rejection.
2. The proposals that Council members received in early June have been substantially amended since, which we believe is also cause for rejection.
3. We do not disagree with all of the intent of these proposals but strongly believe that a more open and informed process is needed to enable the Council to perform its duties in evaluating these proposals.
4. These proposals are evidence of the growing complexity of North Carolina’s residential energy code that should provide reason for the Council to consider forming an Energy Subcommittee that would prioritize requiring third-party energy performance testing, which would smooth out many issues with these types of code requirements and reduce many of the difficulties and costs that code officials, builders and others face in ensuring compliance.

Below, we have outlined our reasons for not supporting these proposals based on their technical merits. Additionally, we have outlined some of the considerations that our members have taken into account in forming their lack of support for these proposals.

## **Background on these Proposals:**

These proposals follow similar proposals submitted in late 2018 and approved by the Council in late 2019 but later denied by Rules Review as there was not sufficient financial analysis performed. Since this time, the proposals have been refined and the financial analysis performed. With this new information provided, we have determined that the proposals are not beneficial for North Carolina as they overly incentivize one product type, spray foam insulation, over others including fiberglass and cellulose insulation.

The intent of these proposals is not unique to North Carolina's codes - proposals like these have been used by industry parties across the country to lessen energy efficiency requirements and create a lack of insulation product parity with regard to spray foam versus fiberglass and cellulose, in particular. On a call we held on June 10, 2020 to discuss these proposals with energy code stakeholders in our membership and outside experts, these proposals were quickly flagged as being technically sophisticated attempts to further weaken energy efficiency requirements that favor spray foam insulation. We support energy efficiency and product parity in North Carolina homes - these proposals go against those values.

In addition, there are many considerations about the intent of these proposals that are not clear in the submittal forms or cost-benefit analyses provided. To truly understand these considerations, significant discussion with knowledgeable experts is needed. Unfortunately, without an active Energy Ad Hoc Committee or an Energy seat on the Council itself, there is too limited of an opportunity to recognize these considerations in order to properly evaluate their intent, costs and benefits.

## **Point #1: Technical Inaccuracies and Errors**

Regarding the technical changes that the proposals seek to make, we are concerned that these proposals:

1. Complicate and confuse the newly available Energy Rating Index (ERI) pathway, which builders, trade contractors and code officials are only recently becoming accustomed to using, when selected by the builder as an energy code compliance pathway option. The ERI pathway is intended to be a straight-forward method to achieve energy code compliance via a single number (ERI or HERS Rating) that is created through careful software-aided energy modeling and in-field hands-on inspections. This proposal seeks to change those standards and complicate how stakeholders will be able to follow them and, importantly, validate them for code compliance.
2. Contain technical errors that must be amended. In one example, the proposed R-value changes in the forms' tables do not match the proposed U-factor values. This is an egregious error that would have to be amended in order for the proposal to properly reference code requirements.
3. Exempt minimum standards that must be provided to ensure a minimum level of energy efficiency, as required by code. In one example, the unvented attic sections of the international code standards referenced have multiple compliant constructions, which have different

performance with the same R-value. Referencing these standards is confusing and does not establish a minimum.

4. Exclude requirements for air leakage and whole-home performance testing, which are used to verify that energy efficiency measures in this performance-based pathway meet minimum code requirements.
5. Exclude requirements for mechanical systems to be in conditioned spaces, which is an agreed-upon best practice for code requirements where ducts will be placed in conditioned spaces.
6. Does not state whether the popular U-Factor Analysis (“UA”) performance-based reporting process can be used along with the changes proposed in this proposal. This is a second egregious error that will cause confusion amongst builders, trade contractors and code officials.
7. Create a lack of parity between product types, which in this case involves favoritism towards spray foam over fiberglass and cellulose insulation.

In addition, the fiscal notes provided contain inaccurate and misleading information. The lack of a complete and accurate fiscal note is what caused the original proposals to be denied by Rules Review earlier this year. Unfortunately, the new fiscal notes still lack accurate and clear information, as follows:

1. The footnotes referenced in these proposals are applicable only in the performance path, not this pathway with the ERI. They were also not modeled in the fiscal note. Including them will further weaken the energy efficiency requirements of the ERI pathway and complicate our code in many ways that are not clearly or accurately stated in the proposals. Whereas our current code states to use the backstop values in order to meet energy code compliance, these proposals seek to introduce further complexities that will be difficult for anyone to follow.
2. The fiscal note assumes HVAC and duct locations that are not in the existing code nor changed by the proposal. The energy model and fiscal note provided do not reflect the code changes included in the proposal. To correct this issue, an amendment would need to be made that makes this exception only applicable to homes with mechanical equipment and ducts fully located in conditioned spaces.
3. The fiscal note assumes improved building and duct air leakage, though the proposal does not require it. To correct this issue, an amendment would need to be made that limits these options only to homes with improved leakage.

## **Point #2: Major Amendments Have Been Made to the Proposals**

In the time since the proposals were provided to Council members in early June, industry stakeholders have found many inaccuracies and egregious errors in the proposals that we believe have not been properly amended by the authors. We believe these amendments are significant enough to warrant rejection by the Council.

## **Point #3: Key Considerations Not Found in the Proposals Themselves**

While we find many issues and concerns with these proposals, we would like to point out some of the key considerations that Council members and industry stakeholders should acknowledge in the details of these proposals, as they are not clearly evident to the layperson. As detailed by one of our member companies, these considerations include:

1. Some stakeholders object to any proposal to lower the minimum R-value standards for unvented attic assemblies based on a lower perceived performance threshold. This argument may seem appealing but is misleading and incomplete. Unvented attic assemblies are already subjected to a much higher standard than simple R-value requirements. An unvented attic assembly is required to use a certified air barrier product applied directly to the roof deck. If properly installed, this higher standard helps mitigate air infiltration and duct loss, and effectively eliminates R-value as the only standard for evaluating the compliance of an unvented attic assembly. Moreover, this argument is overcome by a standardized ERI/HERS field inspection/rating requirement that verifies proper installation and performance.
2. Some stakeholders object to lowering minimum R-value standards as this might favor one product over another (i.e., spray foam over fiberglass batt or cellulose insulation). This argument is also misleading and incomplete, as it can overlook a number of key factors that include:
  - a. The fact that unvented attic assemblies already impose a higher standard by requiring that unvented attic assemblies use an air barrier product such as spray foam as indicated above.
  - b. The fact that current performance-based inspection standards already favor fiberglass batt and cellulose over spray foam by allowing inspectors to “close the attic door” during testing. This in turn ignores the volume of the attic space, which is the super-heated / super-cooled environment in which any HVAC equipment in the attic must perform throughout the year. The conductive hot/cold transfer or “radiation effect” of solid mass materials and the ceiling plane in vented attic assemblies.
  - c. If absolute equivalency is the objective and not performance, then this argument logically would lead to requiring that all attic assemblies use both an air barrier product and the same R-value standards regardless of whether or not the product is applied in a vented or an unvented attic assembly. This would be an absurd conclusion and could lead to a number of other problems.
  - d. Finally, if absolute equivalency is the standard, then this argument necessarily must also lead to further scrutiny of the actual R-value performance of non-air barrier products. Industry research and product manufacturers have recently acknowledged that conventional insulation products such as fiberglass batts do not reach or maintain published nominal R-values due to compression during packing, improper configuration when installed and settlement, compaction and dislocation over time.
3. The bottom line is that actual building performance is what matters and the only way to reliably verify performance is through third-party in-field inspection and testing of all installed assemblies using clear ERI/HERS rating standards that account for the differences in the type of product and the type of assembly.

## **Point #4: Recommendation for Energy Subcommittee and Required Testing**

As evidenced in these proposals, North Carolina's residential energy code continues to become more complicated. We as energy code industry advocates struggle to keep up with the many footnotes and exemptions in the current version of our code and know that any additional changes would make it all the more confusing, and potentially hazardous, for builders and code officials to follow.

In addition, these proposals provide clear examples of veiled attempts to create an unlevel playing field in product parity, in this case favoring spray foam insulation over fiberglass batt and cellulose insulation. We do not believe this issue would be clear to the average Council member nor would it be to an average builder or code official. This is why we recommend a new process for evaluation of these proposals by an Energy Subcommittee that can make recommendations to the Council and/or other Committees.

Our association and its members know that a simple but significant opportunity exists to streamline compliance for North Carolina's residential energy code that would help reduce the difficult task of evaluating technical proposals like these. The solution is to require energy performance testing via the existing Energy Rating Index (ERI) platform that includes minimum energy efficiency backstop requirements. As opposed to having code officials reviewing technical tables and footnotes to verify energy code compliance, they would have one number and one certificate that provides approved evidence of compliance.

We will provide a formal proposal of this opportunity at a later time for the Council to consider.

## **Our Recommendations:**

1. We request that the Council reject these proposals due to the many technical inaccuracies and errors contained in the proposal forms and fiscal notes provided, and for their intent to create a lack of parity between spray foam insulation, fiberglass batt and cellulose insulation.
2. We request consideration for the formation of an Energy Subcommittee that can be used to properly evaluate proposals like these and consider new requirement for third-party energy performance testing to begin in 2022.

Thank you for your consideration. Please let me know if you need any further information.

Sincerely,



**D. Ryan Miller**

Founder & CEO

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