



Comments by Isaac Elnecave of

Phius to

Delegate Vanessa E. Atterbeary,

Chair, Ways and Means Committee

On SB045 – Income Tax Credit Energy Efficient Upgrades Passive Houses

Position: Favorable

January 14, 2022

Phius appreciates the opportunity to submit comments in support of SB045. Legislation such as SB045 helps move the market towards the construction of more energy efficient residences.

Phius (Passive House Institute US) is a non-profit 501(c)(3) organization committed to making high-performance passive building the mainstream market standard. Phius trains and certifies professionals, maintains the Phius climate-specific passive building standard, certifies and quality assures passive buildings, and conducts research to advance high-performance building. Buildings constructed to the Phius standard provide superior indoor air quality, resilience during power outages, and an extremely quiet, comfortable indoor environment. Project teams are increasingly adopting passive building principles and the Phius standard for single-family, multifamily, and commercial buildings to achieve Net Zero buildings.

Projects receiving the Phius 2021 certification are among the most energy efficient buildings and also reduce the energy burden on low-income households, ensure a healthy living environment and provide resilience as Phius 2021 buildings maintain their indoor temperature for a much longer time than buildings built to the energy code.

The following comments will briefly suggest three amendments to the legislation.

1. Suggested Amendments to the Legislation

Phius would like to suggest three amendments to the legislation.

1. **Include Phius as Part of the Definition of Passive House.** Phius (formerly Passive House Institute U S) has developed multiple passive house standards including the current Phius 2021 standard and is an internationally respected passive house standard. Please see below for a description of the Phius standard.
2. **Include a Tax Credit for New Construction.** Passive house standards are an integrated approach to achieving deep energy savings. Because the standard recognizes that the various components (envelope, mechanical and water heating) work together, homes built to the Phius standard use less than half the energy used in homes built to the energy code.

Already, six single-family residences meeting the Phius standard have been built in Maryland (along with a set of Rowhouses in Baltimore). Incentivizing the construction of homes to the Phius standard would form an important part of meeting Maryland's climate goals.

3. **Include a Tax Credit for Home Retrofits to Passive House Standards.** Much like the standard for new construction, the Phius REVIVE standard provides an integrated approach to home retrofits/renovations in which the various components work together to ensure deep energy savings.

2. THE PHIUS STANDARD PROVIDES AN INTEGRATED PATH TO DEEP ENERGY SAVINGS, NET ZERO ENERGY USE AND HEALTHY, COMFORTABLE HOMES.

All buildings built to the Phius standard foreground **five** principles:

- Using continuous insulation throughout the building envelope to minimize or eliminate thermal bridging.
- Building a well-detailed and airtight building envelope, preventing infiltration of outside air and loss of conditioned air while increasing envelope durability and longevity.
- Using high-performance windows (double or triple-paned windows depending on climate and building type) and doors - solar gain is managed to exploit the sun's energy for heating purposes in the heating season and to minimize overheating during the cooling season.
- Using balanced heat- and moisture-recovery ventilation to significantly enhance indoor air quality.

- Minimizing the space conditioning system because of lower space conditioning loads.

Moreover, to receive certification, all residential buildings must meet the criteria laid out in these pre-requisite programs:

- Environmental Protection Agency (EPA) Energy Star Program
- EPA Indoor airPLUS program
- EPA WaterSense Program
- Department of Energy Zero Energy Ready Home program
- ASHRAE 62.2 ventilation requirements

All buildings seeking Phius certification go through a two-part process - design and construction review:

PART 1: Design Review

Certification staff at Phius reviews construction drawings, product specifications, and modeling to ensure that the energy use is below the stringent values specified in the standard. In addition to reviewing energy performance, building envelope components and details are evaluated for moisture and condensation performance. After all issues are resolved, the building is pre-certified (design certified).

PART 2: Construction Review

After pre-certification, actual construction is reviewed on-site by a Phius trained Rater/Verifier who ensures that the building is constructed to the pre-certified plans and that it meets the criteria of the programs listed above. If changes to the design occur, the modeling is updated, and the new energy use of the building must still meet the Phius standards for certification. This process ensures both quality construction and deep energy efficiency.

As a result, multi-family homes built to the Phius standard provide comfort, health, excellent indoor air quality, and resiliency. The passive building methodology provides a cost-effective path for achieving net-zero energy in buildings.

3. CONCLUSION

Thank you for the opportunity to present these brief comments. Phius staff would be happy to provide any additional information.

