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MEMORANDUM

TO: Theresa Smith, Hearing Officer

THROUGH: Kimberly Cole, Director
Thomas Noyes, Administrator Thomas Noyes (Sep 2, 2025 15:18:30 EDT)

FROM: Anna Keating, Planner II

DATE: September 2, 2025

SUBJECT: Technical Response Memorandum - Docket No. 2025-R-CCE-0008/7 DE Admin. Code 2101 Regulations for State Energy Conservation Code

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The proposed 2101 Regulations for State Energy Conservation Code amends the state energy code to adopt the 2024 International Energy Conservation Code (IECC) with zero net energy capable amendments for residential buildings and the 2024 IECC and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2022 for commercial and high-rise residential buildings. The regulation also proposes adopting Appendix RE: EV Charging Infrastructure and Appendix CB: Solar-Ready Zone with amendments to align with corresponding statutory requirements.

A public hearing for the proposed regulation was held on July 22, 2025, beginning at 6:00 pm. The public comment period closed on August 6, 2025. A total of 40 verbal and written comments were received by the Department. This Technical Response Memorandum (TRM) contains responses from the Delaware State Energy Office (SEO) to the public comments received. This TRM is intended to assist with the completion of the Hearing Officer's Report and recommendations to the Secretary of the Delaware Department of Natural Resources and Environmental Control (DNREC).

Public comments are compiled, summarized, and answered below:

Comment: Zero Net Energy (ZNE) Capable Amendments

Public commenters expressed opposition to the residential ZNE capable amendments to the 2024 IECC base code. Commenters claimed that the performance parameters for ZNE capable were

never thoroughly defined, that the SEO failed to establish programs to promote ZNE construction, and that the amendments are forced stretch codes. Public commenters also commended the proposed ZNE capable amendments for having the ability to provide energy, economic, reliability, health, and climate benefits.

Department Response:

The ZNE capable amendments are required to comply with state law. Pursuant to 16 Del. C. §7602, all new residential building construction must be zero net energy capable as of December 31, 2025. ZNE capable is defined in 16 Del. C. §7602 as "a residence or commercial building that, through the use of energy efficient construction, lighting, appliances and on-site renewable energy generation, results in zero net energy consumption from the utility provider. Therefore, a net zero energy capable home must be energy efficient enough that if the home or building owner chooses to add on-site generation, net zero energy consumption could be achieved." Since the 2024 IECC base code does not meet Delaware's ZNE capable mandate, amendments to the base code are required to ensure compliance with this law. The proposed amended code serves as the SEO's technical definition of ZNE capable construction. Any building built to these criteria will meet the statutory requirement.

The SEO administers the Green Energy Program for customers of Delmarva Power. This program promotes ZNE construction through renewable energy rebates, which provide incentives for onsite renewable energy generation.

The amendments to the 2024 IECC are not forced stretch codes. According to Delaware Code, stretch codes go beyond the minimum requirements of the state base code and may be voluntarily adopted by local jurisdictions, provided that the stretch code does not entirely replace the state energy code.

Comment: Affordability

Public commenters raised concerns regarding the potential impacts of the proposed regulation on affordability, particularly related to higher upfront construction and compliance costs. Other public commenters found that the 2024 IECC base code will save homeowners approximately $200 per year in energy costs, before factoring in expected energy price increases. Commenters questioned the costs of retrofits and the ability of homeowners to manage energy costs under the updated code.

Department Response:

The purpose of the proposed regulation is to reduce the energy burden on Delaware households. Housing affordability includes the long-term cost of energy, which is expected to rise due to market conditions. Electricity bills across Delaware began rising in November 2024. Auction prices contributed to additional increases in June 2025, and customers could see another increase in June 2026. The proposed 2101 Regulations for State Energy Conservation Code will result in more energy efficient homes and reduced energy bills for homeowners.

While compliance with the proposed regulation may result in higher upfront costs, building to the updated code avoids higher retrofit expenses later and provides long-term utility savings. Given that energy prices are expected to continue rising, these savings will grow over time, making the proposed code beneficial for long-term affordability. The positive effects of reducing energy bills are felt more by lower-income households, which spend three times more of their household income on energy costs.[1] Therefore, the impacts of the proposed state energy code can help to reduce housing inequity.

The Pacific Northwest National Lab (PNNL) found the 2024 IECC to be cost-effective in all climate zones. The core provisions of the base code demonstrate significant lifecycle cost savings compared to the previous code editions.[2]

Comment: Training and Industry

Public commenters raised concerns about the potential negative effects of the proposed regulation on housing production and jobs and also about the need for training, implementation and compliance.

Department Response:

In Delaware, the clean energy sector employs approximately 12,400 workers and is projected to grow by 14% annually through 2030, adding nearly 1,800 new jobs per year.[3]

The role of the SEO is to promulgate the updated state energy code in accordance with the Delaware Code. Counties and municipalities are responsible for compliance and enforcement of the state energy code.

Training is being developed to assist municipalities, code officials and builders to ensure consistent, effective implementation at the local level.

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[1] Ariel Drehobl and Lauren Ross, "Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities" (American Council for an Energy-Efficient Economy, April 2016), https://www.aceee.org/sites/default/files/pdfs/u1602.pdf

[2] Vivian R. Salcido, Yulong Chen, Yufei Xie, Young Jae Jung, Fei Feng, Chris Faulkner, and Jing Xie, *National Cost-Effectiveness of the Residential Provisions of the 2024 IECC* (Pacific Northwest National Laboratory, January 2025), https://documents.dnrec.delaware.gov/Admin/Hearings/2025-R-CCE-0008/Exhibits/2024-IECC-PNNL-National-Cost-Effectiveness.pdf

[3] Delaware Department of Natural Resources and Environmental Control, Division of Climate, Coastal and Energy, *The 2024 Delaware Clean Energy and Climate-Related Jobs Workforce Development Assessment* (BW Research Partnership, 2024), https://documents.dnrec.delaware.gov/energy/climate/2024-Clean-Energy-and-Climate-Related-Jobs-Workforce-Development-Assessment.pdf

Comment: Fossil Methane (Natural Gas) and Consumer Choice

Public commenters expressed concern that the proposed regulation bans natural gas systems, removes consumer choice, mandates the Department of Energy Zero Energy Ready Homes (DOE ZERH) program, and violates the Environmental Policy and Conservation Act (EPCA).

Department Response:

The proposed regulation is fuel neutral. It does not require the use of any particular fuel source and does not ban natural gas systems in any of the optional compliance pathways or proposed amendments.

The updated energy code does not mandate participation in the DOE ZERH program. The regulation provides five pathways to comply with the proposed energy code. Builders may choose to comply with the prescriptive compliance option, simulated building performance option, energy rating index option, passive house option, or the ZERH option. Section R409 is only required if this optional ZERH pathway is chosen.

Comment: Appendices

Public commenters requested the removal of Appendix RE and Appendix CB. Commenters also requested the adoption of additional appendices in addition to what was included in the proposed regulation.

Department Response:

Appendix RE and Appendix CB are required to comply with state law. 16 Del. C. §7605 includes solar-ready zone requirements for new commercial buildings. 16 Del. C. §8004 and 16 Del. C. §8005 require EV charging infrastructure in single- and multi-family dwellings. 84 Del. Laws, c 145 §1 indicates that the SEO is responsible for updating Regulation 2101 of Title 7 of the Delaware Administrative Code to match or exceed these standards. These legal mandates are written by the Delaware General Assembly.

In order to balance the statutory requirements with feasibility for the industry, the SEO only included appendices that are required by statute in the proposed regulation. This decision was driven by stakeholder feedback. The SEO believes that requiring additional appendices would not be feasible for the building industry at this time.

Comment: Engagement and Procedure

Public commenters asserted that there was a lack of collaboration with stakeholders and a failure to fulfill procedural responsibilities, including a failure to conduct an impact analysis on small businesses.

Department Response:

Throughout the regulatory development process, the SEO engaged stakeholders to gather feedback and inform the proposed regulation. The SEO facilitated a Code Collaborative meeting on February 20, 2025. Meetings were held with the Home Builders Association of Delaware (November 26, 2024), Green Building United (December 2, 2024), New Castle County (December 3, 2024), the City of Lewes (December 17, 2024), the City of Newark (December 20, 2024), the Energy Efficiency Advisory Council (January 15, 2025), the Sierra Club (February 20, 2025), and K Hovnanian Homes (March 13, 2025) to determine whether to move forward with the 2021 or 2024 IECC. The decision to adopt the 2024 IECC was a direct result of the preferences expressed in these meetings. An additional Code Collaborative meeting was held on May 19, 2025, to review the draft regulation prior to publication in the *Register of Regulations*. Concerns that were raised at this meeting by builders and industry representatives informed several changes to the draft regulation, including the removal of a requirement for an ERI value of zero after factoring in on-site power production, the removal of an amendment that required two additional measures to achieve credits in the 2024 IECC Table R408.2, and the removal of appendices that are not supported by statutory requirements.

The SEO adhered to all of the procedural requirements outlined by the DNREC Regulatory Development Process. This process included Secretary approval of the Start Action Notice, legal review of the draft regulation conducted by a Deputy Attorney General from the Environmental Unit of the Department of Justice, Deputy Secretary approval of the draft regulation, multilingual legal notices advertising the public hearing, publication of the proposed regulation, the Register Notice, and the Regulatory Flexibility Analysis and Impact Statement in the July edition of the *Register of Regulations*, and a public hearing and comment period. The published Regulatory Flexibility Analysis and Impact Statement analyzed the proposed regulation's impact on small businesses.

Comment: Support for Proposed Regulation and Adopting 2024 IECC

Public commenters expressed support for the proposed regulation in its entirety or for specific aspects of the updated energy code. There was a broad consensus among the public commenters that supported the adoption of the 2024 IECC base code. Public commenters also indicated approval of the proposed regulation for its anticipated reduction of overall monthly and annual building ownership and energy costs. Supporters described the code's provisions, including EV charging infrastructure requirements, as minimally intrusive and cost-effective for homeowners. Commenters also mentioned the proposed code's ability to reduce energy usage and support the reliability of the regional electric grid, while also promoting the health, welfare, safety, and equity of building occupants. Commenters supported the proposed regulation for providing consistency across the state, flexibility for the construction industry, and the opportunity for Delaware to demonstrate leadership in energy efficiency and sustainability within the region.

Department Response:

The SEO is in agreement with public commenters stating that the proposed regulation will improve building quality, occupant health, resiliency, sustainability, affordability, energy efficiency, asset value, and performance.

Comment: Compliance Pathways and Appendix RE

A public commenter requested clarification on whether Section 3.1 (R401.2) requires the use of one of the five listed compliance pathways in addition to Appendix RE, and whether Section 4.2 supersedes the alternative compliance paths.

Department Response:

Projects adhering to the state energy code must follow one of the five compliance pathways. Projects are also required to comply with Appendix RE. Section 4.2 does not supersede the compliance pathways listed in Section 3.1.

Comment: EV Charging Requirements

A public commenter raised concern that the EV charging requirements outlined in 16 Del. C. c. 80 may remain in place if the SEO's amendments to Appendix RE are not at least as stringent as the statute.

Department Response:

The SEO's amendments to Appendix RE are aligned with 16 Del. C. c. 80.

Comment: Implementation and Enforcement Timeline

Public commenters requested clarification regarding the implementation and enforcement timeline in the proposed regulation.

Department Response:

Counties and municipalities have 12 months after the date of promulgation to meet the requirements of the updated code, except new residential construction, which must comply with the updated code as of December 31, 2025. Counties and municipalities are responsible for implementation and enforcement.

Comment: Phius Certification Guidebook

A public commenter noted that Section R407.2.1 (2e) references the "Phius 2021 Certification guidebook" but should include "or newer" to align with other sections.

Department Response:

The proposed regulation will be revised to read "Phius 2021 Certification guidebook (or newer)" for consistency.

Comment: Sections R408.2.2.1 and R408.2.1.4

A public commenter requested clarification on the addition of Section R408.2.2.1 and the omission of R408.2.1.4.

Department Response:

Section R408.2.2.1 was added to provide builders with greater flexibility. The omission of R408.2.1.4 was inadvertent and will be corrected in the final regulation.

Comment: New HVAC Systems, Insulation, and Mechanical Components

A public commenter raised concerns that the proposed regulation requires new HVAC systems, insulation assemblies, and mechanical components.

Department Response:

The proposed regulation establishes performance standards that can be met through multiple compliance pathways. Builders retain flexibility to select the most cost-effective approach to achieve compliance with the regulation.

Comment: Metrics and Expected Construction Costs

A public commenter asked what metrics were used to evaluate the cost-effectiveness of compliance pathways and what the expected average additional construction cost (using a 2018 IECC baseline and a representative 2,000 sq. ft. home) would be to comply with:

- Unamended 2024 IECC
- 2024 IECC with ZNE capable amendments
- Phius Certification
- DOE ZERH

Department Response:

The SEO has considered the available data and metrics used by the National Cost-Effectiveness of Residential Provisions of the 2024 IECC PNNL Report.

Comment: Subsidy Program

A public commenter suggested the creation of a subsidy program to offset costs for builders.

Department Response:

It is outside the SEO's scope to create housing subsidy programs. However, the SEO will continue to work with Delaware State Housing Authority in order to help market affordable housing programs for qualified individuals and projects.

Comment: 30-Credits

A public commenter asked how the 30-credit threshold was determined to be equivalent to an ERI of 42. Another public commenter asked for evidence that residential buildings can achieve 30 credits with minimum efficiency equipment.

Department Response:

Appendix RC of the 2024 IECC, which provides ZNE requirements for residential buildings, establishes an ERI of 42. The SEO did not adopt Appendix RC because it would limit the number of available compliance paths. Instead, the SEO used methods found in Appendix RC and Appendix RG to determine an equivalent number of credits and percentage reductions using the zero net energy appendix as a baseline.

Appendix RG establishes an ERI value of 48 for Climate Zone 4. It also increases credits in the Prescriptive Path (from 10 to 20) and adjusts percentage reductions in the Simulated Building Performance Path (from 80% to 70% and from 85% to 75%). Given that the ERI progresses from 53 to 48 to 42 and knowing that an ERI of 48 corresponds to 20 credits in the Prescriptive Path and a 10% reduction in the Simulated Building Performance Path, the SEO interpolated the equivalent values for an ERI of 42. This resulted in 30 credits for the Prescriptive Path and 60/65% reductions for the Simulated Building Performance Path.

The SEO modeled six scenarios where 30 credits could be achieved for both mixed-fuel and all-electric buildings, with and without renewable energy.

Comment: Passive House and ERI

A public commenter asked about the intent behind including Passive House (Phius or PHI) as a compliance path, whether it is equivalent to an ERI of 42 or the DOE ZERH program, and the SEO's view on the ERI performance of a DOE ZERH certified house versus a Phius certified house in Climate Zone 4.

Department Response:

Passive House was included to provide additional flexibility for builders. While not equivalent to an ERI of 42 or the DOE ZERH program, Passive House certification typically results in lower ERI scores and better performance. The SEO anticipates that DOE ZERH scores will be in the early to mid-40s, while Phius scores will be in the mid to late 30s.

Comment: ENERGY STAR and ZERH Certificates

A public commenter asked why Section R407.3(e) requires Phius projects to provide ENERGY STAR and ZERH certificates when those programs have distinct requirements.

Department Response:

All Phius certified projects are required to achieve ENERGY STAR and DOE ZERH certifications as prerequisites under the Phius Certification program.

Comment: Consistent Terminology

A public commenter noted inconsistencies regarding the use of "fossil fuel" versus "gas-fired" and references to Phius verifiers versus raters.

Department Response:

The SEO will review terminology for consistency and make revisions as appropriate.

Comment: Stacking Credit Measures

A public commenter requested clarification on whether multiple credit measures can be stacked under R408.2.1.

Department Response:

Credit is permitted from only one measure under R408.2.1, consistent with the 2024 IECC model code.

Comment: Window U-Factor Values

A public commenter asked whether window U-factor values should be expressed as "0.25 or less" in Table R408.2.1.2.

Department Response:

This section is taken directly from the 2024 IECC Table R408.2.1.2 for Climate Zone 4, which notes that the values shall be "equal or less than the values specified in Table R408.2.1.2." The SEO will make this requested revision to the proposed regulation for clarity.

Comment: Blower Door Requirements

A public commenter asked whether blower door requirements in Section R408.2.5 (2, 4, and 5) should be adjusted on a per-square-foot basis.

Department Response:

The SEO adopted this section directly from the 2024 IECC and, based on stakeholder feedback, will not make additional variations from the model code at this time.

Comment: ICC Council Policy 49

Public commenters requested commentary on ICC Council Policy 49.

Department Response:

The SEO does not believe the proposed regulation is federally preempted by the Energy Policy and Conservation Act.

Comment: Compliance for Certain Buildings

A public commenter raised concern that certain home types may not be able to comply with the updated energy code.

Department Response:

The proposed regulation allows for flexibility across diverse building types and construction methods by offering multiple compliance pathways.

Comment: Certified Green Appraisers and Energy-Efficient Features

A public commenter expressed concern that there are no Certified Green Appraisers currently in Delaware. Realtors reportedly struggle to identify and communicate critical energy features in new homes unless builders align with established programs such as ENERGY STAR or DOE ZERH. Additionally, it was noted that lenders are not fully utilizing advanced underwriting tools available for energy-efficient homes.

Department Response:

Advancing energy codes and overcoming first costs through proper valuation is essential for encouraging investment in energy efficiency. Energy-Efficient Mortgages (EEMs) provide an important mechanism to finance the incremental costs of energy-efficient features while enabling borrowers to realize long-term utility savings. However, availability of these tools remains limited, and greater adoption is needed. Increased use of HERS scores in real estate listings, along with the Residential Green and Energy Efficient Addendum for appraisals, can improve recognition of efficiency measures in the housing market. By properly valuing energy-efficient homes, appraisers, lenders, builders, and homeowners can all benefit. The SEO will review opportunities to promote these tools with stakeholders.

Comment: Phius Design Certification Letter

A public commenter expressed concern that Section R407.2.1.1(a) requires a design certification letter from Phius at the time of permit and then allows either a final certification letter or another design certification letter at the time of certificate of occupancy. It was noted that a design certification letter does not reflect “as-built” conditions and therefore may not be appropriate for use at the occupancy stage.

Department Response:

This is consistent with approaches used in other jurisdictions and has been effective for approximately two years. The purpose of requiring a design certification letter at the permitting stage is to ensure that builders intending to use the Phius pathway have verified design compliance

prior to construction. This prevents projects from attempting to claim the Phius pathway late in the process without adequate verification. At the occupancy stage, a final certification letter remains the standard of compliance, but the design certification letter is retained as an option to document pre-certification to the Phius standard when appropriate.

Conclusion and Recommendation

The State Energy Office has carefully reviewed and considered all of the public comments that were received during the hearing and written public comment period. As a result, the following technical revisions will be made to the proposed regulation:

- The omission of Section R408.2.1.4 will be corrected in the final regulation.
- Section R407.2.1 (2e) will be updated to read "Phius 2021 Certification guidebook (or newer)" to align with other sections of the regulation.
- The use of "fossil fuel" versus "gas-fired" and "Phius verifiers" versus "Phius raters" will be made consistent throughout the regulation.
- Section R408.2.1.2 will explicitly clarify that the value shall be "0.25 or less."

The SEO proposes to amend the 2101 Regulations for State Energy Conservation Code to adopt the 2024 IECC with ZNE capable amendments for residential buildings, the 2024 IECC and ASHRAE 90.1-2022 for commercial and high-rise residential buildings, and both Appendix RE: EV Charging Infrastructure and Appendix CB: Solar-Ready Zone with amendments to align with statutory requirements. The adoption of the 2024 IECC is widely supported. The adoption of ZNE capable amendments, Appendix RE, and Appendix CB are required to comply with state law. Throughout the regulatory development process, the SEO heard the concerns raised by stakeholders and made adjustments to the proposed regulation to reduce unintended impacts while also ensuring compliance with Delaware Code. The proposed 2101 Regulations for State Energy Conservation Code reflects the evolving demands of energy affordability, energy security, housing quality, public health, and climate resilience.