Delaware Energy Code Collaborative

February 20, 2025

DELAWARE DEPARTMENT OF
NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL

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DNREC State Energy Office

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Delaware Energy Code Support Hotline:

Call us at 1-877-494-1333 or email EnergyCodesDE@psdconsulting.com

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Agenda

- Update from Tom Noyes with the DNREC State Energy Office
- Discuss the path forward for the energy code in Delaware

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Timeline

Fall 2022
DNREC convenes stakeholder groups and listening sessions to discuss 2021 IECC Adoption

2023
DNREC negotiates alternative compliance pathway to 2021 IECC to alleviate the concerns around construction costs

September 2023
DOE Announces Formula Funding under the Inflation Reduction Act September 2023- ~$6,900,000 for Delaware

January 2026
ZNE Capable Requirements for Residential Buildings go into effect per Del. Code Title 16 § 7602

Del. Code Title 16 § 7602

(c) The Delaware Energy Office, or its successor, in consultation with the Green Building Council of the Home Builders Association of Delaware, shall establish programs to promote the construction of zero net energy homes. A "zero net energy home" or "zero net energy building" is defined 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. As of December 31, 2025, all new residential building construction in the State of Delaware shall be zero net energy capable. As of December 31, 2030, all new commercial building construction must also be zero net energy capable.

What is a Zero Net Energy Capable Residential Building?

The State Energy Office has determined that either of the following meet the efficiency requirements enshrined in law:

The Energy Rating Index (ERI) Value before factoring in On-site Power Production (OPP) in Climate Zone 4 for Appendix RC of the 2024 International Energy Conservation Code (IECC) of 42

Or

An equivalent prescriptive method of compliance using additional credits in the 2024 IECC Table R408.2

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Path Forward

- Please note the following options described in the subsequent slides are under consideration but nothing has been finalized.
- We value and appreciate your input and suggestions before moving forward.

Next Code Update

Option 1: 2021 IECC

- **Performance Path:** Adopt ERI of 2024 IECC Appendix RC for Climate Zone 4 of 42
- **Prescriptive Path:** Adopt the language of Section R408 of the 2024 IECC with additional credits required
- **Alternative Performance Paths:** Add alternative compliance paths for DOE Zero Energy Ready Homes and/or Passive House
- In addition to the paths described above, adopt the language in the 2024 IECC Appendices promoting Zero Net Energy Capability

Option 2: 2024 IECC

- **Performance Path:** Adopt ERI of Appendix RC for Climate Zone 4 of 42
- **Prescriptive Path:** Require additional credits for compliance with Table R408.2 of 2024 IECC
- **Alternative Performance Paths:** Add alternative compliance paths for DOE Zero Energy Ready Homes and/or Passive House
- In addition to the paths described above, adopt the 2024 IECC Appendices promoting Zero Net Energy Capability

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Prescriptive Thermal Envelope Comparison

Component	2021 IECC	2024 IECC
	Climate Zone 4	
Vertical Fenestration U-Factor	0.30	0.30
Skylight U-Factor	0.55	0.53
Skylight SHGC	N/A	0.40
Ceiling R-Value	60	49
Insulation entirely above roof deck	N/A	30 ci
Wood Framed Wall R-Value	30 or 20 & 5ci or 13 & 10ci or 0 & 20ci	30 or 20 & 5ci or 13 & 10ci or 0 & 20ci
Mass Wall R-value	8/13	8/13
Floor R-Value	19	19 or 13 + 5ci or 15 ci
Basement Wall R Value	10ci or 13	10ci or 13
Heated Slab R-Value & Depth	10ci, 4 ft	R10ci, 3 ft and R-5 full slab
Unheated Slab R-Value & Depth	10ci, 4 ft	R10ci, 3 ft
Crawl Space Wall R-Value	10ci or 13	10ci or 13

DOE Zero Energy Ready Homes

- Optional Compliance Path
- Based on Version 2 program requirements (latest)
- Mandatory Requirements
  - ZERH National Rater Checklist
  - ENERGY STAR Baseline
  - Envelope
  - Duct Systems
  - Water Heating Efficiency
  - Lighting and Appliances
  - Indoor Air Quality
  - Renewable Ready
  - EV Ready
  - HPWH Ready
  - Heat Pump Space Heating Ready

ZERO
ENERGY READY HOME
U.S. DEPARTMENT OF ENERGY

As of 2023, 674 Homes in Delaware have been certified ZERH.

Projects with a ZERH certification are eligible for two points in the Energy Conservation Measures category for the Low-Income Housing Tax Credit Qualified Allocation Plan.

ZERH is used as an alternative compliance path in Rhode Island, Colorado, Oregon, etc.

Passive House is used as an alternative compliance path in Massachusetts, Oregon, Washington, Denver, etc.

Passive House

- Optional compliance path
- 3rd party certification program
- Certified under the latest version of:
  - Phius (CORE or ZERO) or
  - PHI
- Very high-performance building with minimum heating and cooling loads

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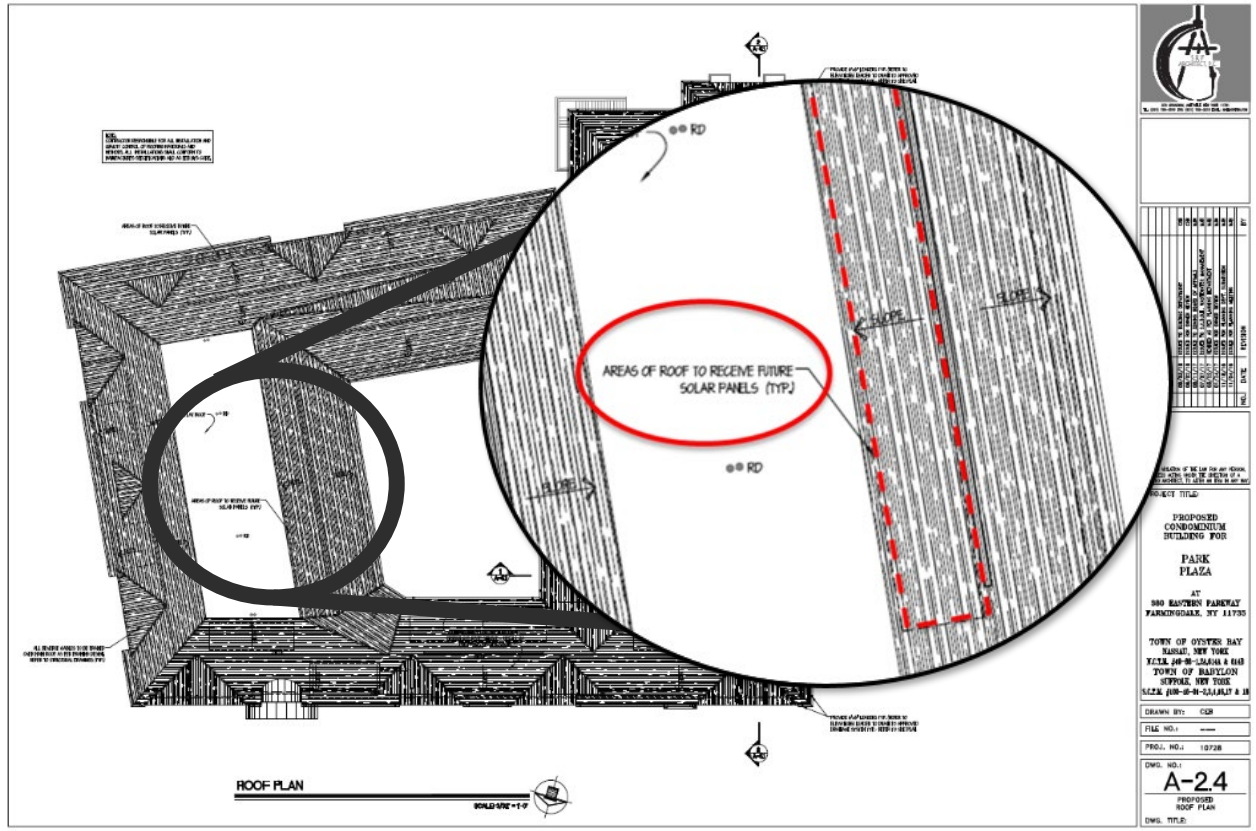
Appendix RB:
Solar Readiness

- Appendix RB does not explicitly require solar installation or wiring
- The appendix requires the construction documents to indicate the solar ready zone area and pathways for routing conduit
- Reserved space on the electrical panel



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NEW: Appendix RD: Electrical Energy Storage Energy Capacity

- Appendix RD prepares buildings for the future installation of On-Site Energy Storage Systems (ESS).
- Primarily relates to having dedicated space and raceways for these systems to make them easier to install in the future without having to undergo a massive retrofit.

- Examples of ESS:
  - Tesla Powerwall
  - Battery storage

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NEW: Appendix RE: EV Charging Infrastructure

New 1- and 2- Family Dwelling Units and Townhouses with:

A designated attached or detached garage

Or

Other On-site private parking provided adjacent to the dwelling unit

→ 1 EV Capable, EV Ready, or EVSE Space per dwelling unit

R-2 Occupancies

or

Allocated parking for R-2 Occupancies in Mixed Use Buildings

→ 40% EV Capable, EV Ready, or EVSE Space per dwelling units or automobile parking spaces, whichever is less

EV Requirements:

- EV Capable RE101.2.2
- EV Ready RE101.2.3
- EVSE Space RE101.2.4

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NEW: Appendix RJ: Demand Responsive Water Heating

Electric storage water heaters with a rated water storage volume of 40 gallons to 120 gallons and a nameplate input rating ≤ 12 kW shall be provided with demand responsive controls in accordance with Table RJ101.1.

Exceptions:

1. Water heaters that are capable of delivering water at a temperature of 180°F or greater.

2. Water heaters that comply with Section IV, Part HLW or Section X of the ASME Boiler and Pressure Vessel Code.

3. Water heaters that use three-phase electric power.

Table RJ101.1 Demand Responsive Controls for Water Heating

Equipment Type	Controls	
	Manufactured before 7/1/25	Manufactured on or after 7/1/25
Electric Storage Water Heaters	AHRI 1430 (I-P) or ANSI/CTA-2045-B Level 1 and also capable of initiating water heating to meet the temperature set point in response to a demand response signal	AHRI 1430 (I-P).

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NEW: Appendix RK: Electric Readiness

Water heaters, household clothes dryers and cooking appliances that use fuel gas or liquid fuel shall comply with Sections RK101.1.1 through RK101.1.4.

RK101.1.1

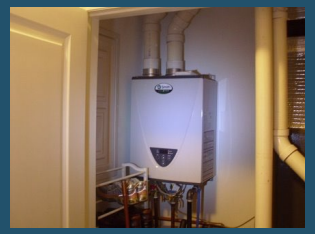
Cooking Appliances

RK101.1.2

Household Clothes Dryers

RK101.1.3

Water Heaters



RK101.1.4

Electrification Ready Circuits

Group Discussion

Discussion Questions

- Do you have a preference on the 2021 IECC or the 2024 IECC?
- Do you have any ideas on how to meet the ZNE Capable Requirements using the prescriptive path?
- Do you have any recommendations or feedback on the proposed direction of code updates?
- How can we best support you?