Delaware Energy Code Collaborative

May 19, 2025

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NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL

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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 on anticipated energy code adoption timeline
- Review proposed energy code amendments in the draft 2101 Regulations for State Energy Conservation Code
- Opportunity for questions and group discussion

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Timeline

May 2, 2025
DNREC distributes Start Action Notice

July 1, 2025
Draft regulations published in monthly *Register of Regulations*

July 22, 2025
DNREC holds public hearing

October 1, 2025
Final regulations published in monthly *Register of Regulations*

December 31, 2025
All new residential building construction shall be zero net energy capable

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.

Zero Net Energy Capable Residential Buildings Compliance Paths

Path 1: Prescriptive

- Requires compliance with R401-R404 and R408
- Requires 30 additional credits in the 2024 IECC Table R408.2, which must come from at least 4 measures from Table R408.2.

Path 2: Simulated Building Performance

- Requires compliance with R405
- Requires the annual energy cost of the dwelling unit to be less than or equal to 60% of the annual energy cost of the standard reference design for dwelling units with fuel burning appliances for space heating, water heating or both and 65% for all other dwellings

Path 3: Energy Rating Index (ERI)

- Requires compliance with R406
- The required Energy Rating Index (ERI) Value before factoring in On-site Power Production (OPP) is 42, and 0 after factoring in OPP
- Note that the ERI value is taken from Appendix RC for Climate Zone 4, but the appendix was not adopted to allow for continued use of the prescriptive and simulated building performance paths

Path 4: Passive House Path

- Requires compliance with R407
- 3rd party certification program
- Very high-performance building with minimum heating and cooling loads

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Path 5: Department of Energy Zero Energy Ready Homes Path

- Requires compliance with R409
- 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

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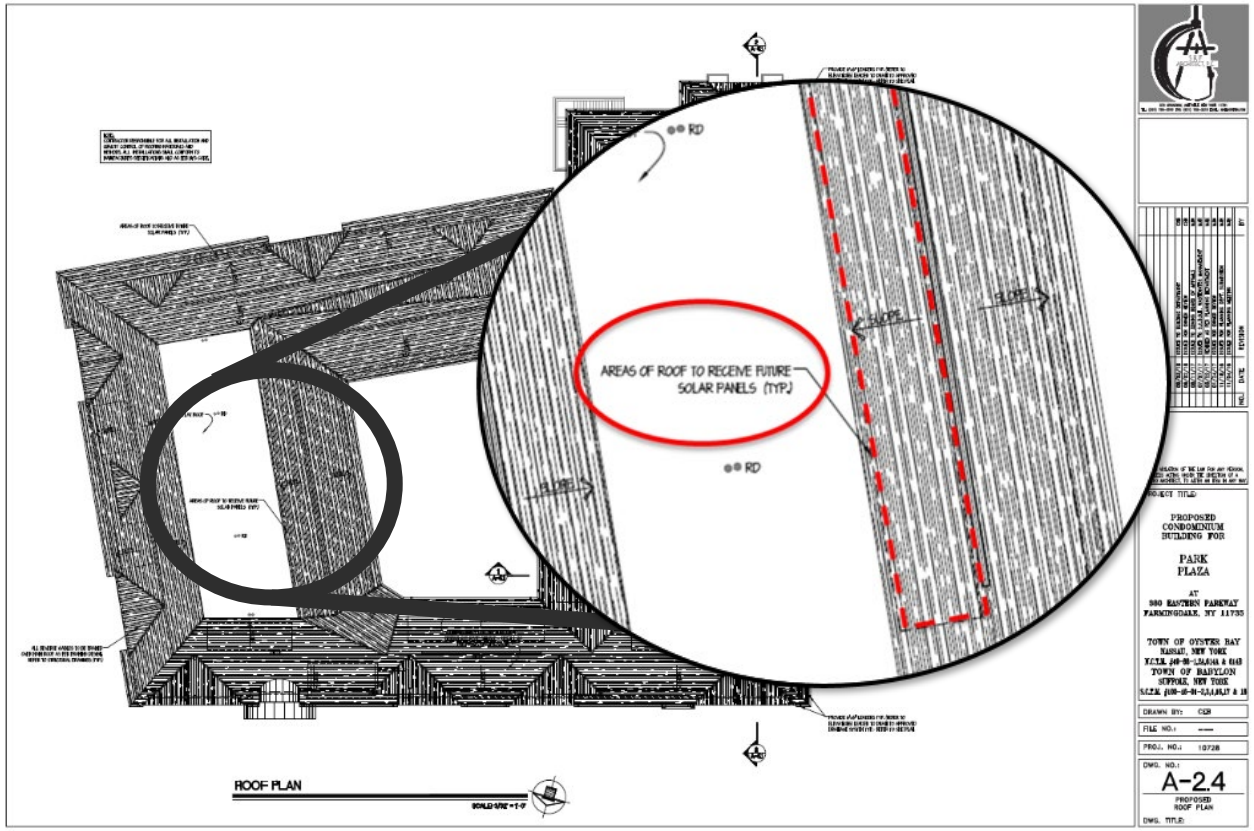
Appendices

- All compliance paths are also required to follow these appendices:
  - Appendix RB: Solar-Ready Provisions
  - Appendix RD: Electric Energy Storage Provisions
  - Appendix RE: EV Charging Infrastructure
  - Appendix RJ: Demand Responsive Controls
  - Appendix RK: Electric-Ready Residential Building Provisions

Appendix RB:
Solar-Ready Provisions

- Does not explicitly require solar installation or wiring
- The construction documents must indicate the solar-ready zone area and pathways for routing conduit
- Reserved space on the electrical panel



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Appendix RD: Electric Energy Storage Provisions

- 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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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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Appendix RJ: Demand Responsive Controls

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).

Appendix RK: Electric-Ready Residential Building Provisions

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

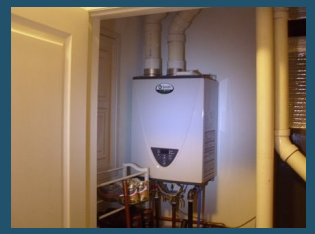
Cooking Appliances

RK101.1.2

Household Clothes Dryers

RK101.1.3

Water Heaters



RK101.1.4

Electrification Ready Circuits

+

Commercial Energy Code Updates

Compliance Paths

- ASHRAE 90.1-2022
- 2024 IECC
- Appendices (required for both paths)
  - Appendix CB: Solar-Ready Zone
  - Appendix CG: EV Charging Infrastructure
  - Appendix CH: Electric-Ready Commercial Building Provisions
  - Appendix CI: Demand Responsive Controls
  - Appendix CJ: Electrical Energy Storage System

Appendix CB: Solar-Ready Zone

- Does not explicitly require solar installation or wiring
- Construction documents must indicate the solar-ready zone area and pathways for routing conduit
- Reserved space on the electrical panel
- Solar-ready zone area is 40% of the roof area with orientation between 110 and 270 degrees of true north

Image Source: PSD

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Appendix CG: EV Charging Infrastructure

Group A

Group B

Group E

Group F

Group H

Group I

Group M

Group R-1

Group R-2

Group R-3 and R-4

Group S exclusive of parking garages

Group S-2 parking garages

Minimum percentage of spaces determined in accordance with

Table CG101.2.1

EV Requirements:

EV Capable
CG101.2.2

EV Ready
CG101.2.3

EVSE Space
CG101.2.4

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Appendix CH: Electric-Ready Commercial Building Provisions

Any equipment or appliance used for space heating, service water heating, cooking, clothes drying or lighting that uses a fossil fuel need to install the electrical infrastructure for electric equipment.

CH103.1.1

Combustion Space Heating

CH103.1.2

Combustion Service Water Heating

CH103.1.3

Combustion Cooking

CH103.1.4

Combustion Clothes Drying

CH103.1.5

On-Site Transformers

Specific requirements depend on equipment type, but typically require one or more of the following:

- Designated Location
- Dedicated Branch Circuits
- Infrastructure Sizing

Buildings also need to be prepared to serve the additional electrical loads by having sufficient space to accommodate new transformers

Construction documents must provide details for:

- Branch circuits
- Conduit
- Prewiring
- Panel capacity
- Electrical service capacity
- Interior and exterior spaces designated for future electric equipment

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Appendix CI: Demand Responsive Controls

- Includes demand responsive control requirements for:
  - Heating and cooling systems (CI101)
  - Water heating (CI102)
  - Lighting controls (CI103)
- With exceptions for certain building types

Image Source: PNNL

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Appendix CJ: Electrical Energy Storage System

- Prepares commercial buildings for the future installation of On-Site Energy Storage Systems (ESS).
- Primarily relates to having:
  - A dedicated location
  - Minimum area size
  - Electrical distribution equipment that can allow the installation of overcurrent devices and wiring for a future ESS
  - A minimum system energy and power capacity sized in accordance with CJ101.1.1 or CJ101.1.2.4

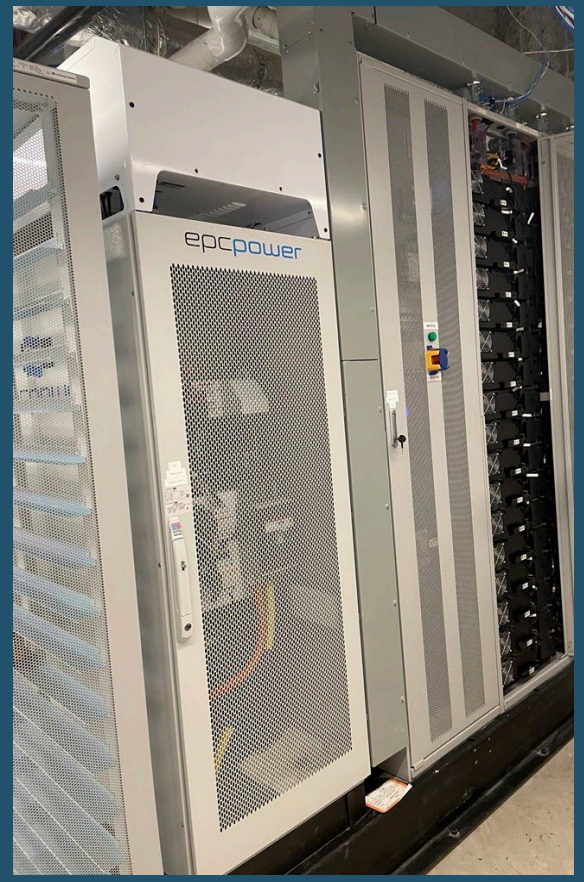

Image Source: PSD

Draft Regulatory Flexibility Analysis and Impact Statement

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Purpose

- The Regulatory Transparency and Accountability Acts of 2015 (see 80 Del. Laws, c. 112 and 113) require a Regulatory Flexibility Analysis and Impact Statement to be submitted with any new or amended regulations that affect small businesses or individuals
- Regulatory Flexibility Analysis
  - Considers methods of reducing the burdens of the regulation on individuals and/or small businesses
- Regulatory Impact Statement
  - Describes the purpose of the regulation, those subject to it, the potential costs, and any alternative methods

Draft Regulatory Impact Statement

- Purpose of regulation:
  - To adopt the 2024 IECC with zero net energy capable amendments for residential buildings and the 2024 IECC/ASHRAE 90.1-2022 with amendments for commercial and high-rise residential buildings. These proposed updates are prompted by the requirement in Delaware's Energy Conservation Code Act (16 Del.C. §7602) that mandates a triennial review of the state energy codes to adopt newer versions of the IECC and ASHRAE. 16 Del.C. §7602 also requires that all new residential buildings be zero net energy capable effective December 31, 2025. This requirement necessitates the adoption of a new energy conservation code.
- Anticipated benefits of regulation:
  - Increased energy efficiency, reduced emissions, cost reductions for building owners, and improved health and comfort for building occupants.
- Individuals and/or small businesses likely to be impacted:
  - Those subject to compliance include homebuilders, contractors, installation companies, architects, engineers, real estate developers, and property managers.
- Alternative methods to a regulation:
  - There are no alternative methods. Amending the regulation is both a legal requirement and the only way for the state to update its building energy codes.

Draft Regulatory Flexibility Analysis

- Mechanisms considered:
  1. Less stringent compliance or reporting requirements
  2. Less stringent schedules or deadlines for compliance or reporting requirements
  3. Consolidated or simplified compliance or reporting requirements
  4. Performance standards to replace design or operational standards
  5. Exemption of certain individuals or small businesses
  6. Alternative regulatory methods that will accomplish the objectives of the proposed regulation while minimizing the adverse impact upon individuals and small businesses
- Our analysis found the six methods listed above are not applicable, lawful, feasible, and desirable for this draft regulation due to:
  - Legal mandate (16 Del.C. §7602)
  - Long-term energy efficiency goals
  - Desire for uniform code / consistency across the state
  - Existing flexibility within the 2024 IECC and ASHRAE 90.1-2022

Group Discussion

Discussion Questions

- What are your thoughts on these proposed code changes?
- Do you have any questions or concerns about the RFA/RIS?
- How does this compare to other states you work with?