

# Items to Consider Before Adoption of 2024 IECC Appendices



2024 IECC-Residential expanded the number of appendices and now includes a total of 13 appendices. A list of the appendices with a summary for each is included at the end of this document. Appendices can be categorized into two types: [1] appendices that offer additional compliance options (e.g., Appendix RF—Alternative R-value Options), and [2] appendices that include additional requirements (e.g., Appendix RE—EV Charging) or provisions with increased stringency (e.g., Appendix RC—Zero Net Energy). These appendices are not mandatory unless specifically referenced in the adopting ordinance.

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At the time of jurisdictional review and adoption of the IECC, proposals can be put forward to adopt any of the non-mandatory appendices. If adopted, provisions of the appendix become mandatory and will override the base code requirements. If not adopted, the appendices are not a part of the code requirements in the jurisdiction.

Jurisdictions reviewing proposals to adopt one or more appendices should closely consider its implications on the design and construction practices. This document provides guidance for local jurisdictions to help with review and evaluation of non-mandatory appendices and links to their actual 2024 IECC language. For questions, please contact:

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## Key Items for Consideration before Adoption of Appendices

### **Cost Effectiveness**

During the ICC code development process, appendices are not subject to the same cost-effectiveness review as the provisions in the base code. At the time of writing (Oct. 2024), the Department of Energy (DOE) has not yet published its cost-effectiveness analysis for the residential provisions of the 2024 IECC. A review of DOE publications for previous energy code cycles shows that these evaluations focus solely on mandatory and prescriptive requirements of the base code and forgo a review of any appendices. While not all appendices have a cost aspect to them, many have unknown cost impacts on municipalities, builders, and homeowners. It is recommended that multiple sources on the cost of implementing any appendix are reviewed to fully understand the impact on housing affordability within your local community. States and jurisdictions may also consider specific studies to evaluate regulatory and cost impact of proposed code changes. Home Innovation Research Labs is developing cost estimates for some of the appendices (expected to be available by the of 2024).

### **ERI Only Pathways**

Appendix RC *Zero Net Energy Residential Buildings* and Appendix RG *2024 IECC Stretch Code* utilizes the Energy Rating Index (ERI) as the sole path for compliance. Calculation of an ERI requires third party energy raters to model energy consumption. Energy rating companies that provide these services are growing in number throughout the U.S. but are often concentrated around major metropolitan areas and can be limited for markets without significant construction activity. RESNET currently lists only 205 U.S. member companies that provide energy rating services. It is recommended to review available resources and confirm that energy rating companies are locally available and can consistently meet the demand, and that builders, designers, and code officials are prepared to transition away from other compliance paths and the associated business processes.

### **Builder and Designer Education**

While appendices can provide municipalities with tools to meet their specific needs or goals, most introduce requirements that builders and designers may be unfamiliar with or eliminate common code compliance pathways. To effectively meet these alternative requirements, builders and designers need additional education about how the municipality will be handling enforcement, any approved variances, or any changes to the inspection or permitting process. NAHB recommends that Authorities Having Jurisdiction (AHJs) adopting appendices work diligently with design and construction stakeholders to facilitate a better understanding of the requirements and preempt any confusion for new projects.

### **Administrative Oversight**

Adoption of appendices may require changes to the plan review process and may increase inspection frequency and duration to cover additional items not included in the base code.

### **EPCA Preemption**

DOE is authorized by federal law to set minimum energy efficiency standards for appliances. These federal standards preempt any state and local regulations with conflicting requirements (e.g., higher levels of minimum efficiency). Energy codes that include provisions related to equipment efficiency must show that the code still allows flexibility and does not require covered appliances that exceed the federal standards. Ensuring appendix adoption does not violate this test will help municipalities avoid potential preemption lawsuits. NAHB recommends that municipalities and HBAs carefully review proposed appendix language and consult with legal counsel if there are any preemption concerns.

## Summary of Appendices

### [Appendix RA | Board of Appeals – Residential](#)

Appendix RA provides municipalities with the criteria and procedures to develop and manage a board of appeals. This board of appeals is responsible to hear requests for modifications to the enforcement of the code as allowed by Section R109 and issue orders on enforcement. The board of appeals cannot waive requirements of the code but is there to provide additional oversight if an appellant believes there has been a misinterpretation in the enforcement of the code.

### [Appendix RB | Solar-Ready Provisions – Detached One- and Two-Family Dwellings and Townhouses](#)

Appendix RB introduces requirements to prepare the home for future solar installations, either solar photovoltaic (PV) or solar thermal. The requirements can be summarized into the following: maintaining an area on the roof free from obstructions and shading, developing an interconnection pathway from the roof to the electric panel or service hot water system, reserving space on the electrical service panel, and documenting structural design loads for the roof. Each of these items are meant to simplify the permitting and installation of future potential solar systems.

### [Appendix RC | Zero Net Energy Residential Building Provisions](#)

Appendix RC provides requirements for the construction of residential buildings with an annual net zero energy consumption. This appendix sets more stringent energy rating index values for residential buildings: an ERI of 42 before renewable energy power production and an ERI of 0 with renewable energy power production. Along with onsite power production, this appendix allows for offsite renewable energy from either a community renewable energy facility (CREF) or contracted from a physical or financial renewable energy power purchase agreement (PPA).

### [Appendix RD | Electric Energy Storage Provisions](#)

Appendix RD requires the installation of electrical energy storage (EES) or installation of EES-readiness measures, which include reserving space for future EES installations and isolation equipment along with installation of raceways for EES connections to the panel and branch circuits to serve key end uses.

### [Appendix RE | Electric Vehicle Charging Infrastructure](#)

Appendix RE provides requirements for the installation of electric vehicle (EV) charging infrastructure in single family and low-rise multifamily buildings. One- and two-family dwellings and townhouses are required to install (at a minimum) one EV capable, EV ready, or EV supply equipment (EVSE) space per dwelling unit. R-2 occupancies are required to provide an EV capable space, EV ready space, or EVSE space for 40 percent of the dwelling units or parking spaces (whichever is less). EV capable spaces need to have distribution for future electrical charging infrastructure including raceways and reserved circuit space in the panel. EV ready spaces must have electrical distribution near the parking space. EVSE spaces must have electrical vehicle charging infrastructure fully installed.

### [Appendix RF | Alternative Building Thermal Envelope Insulation R-Value Options](#)

Appendix RF provides additional U-factors for above grade walls and basement/crawlspace walls, and F-factors for slab on grade assemblies. These values are organized in tables based on different framing factors, continuous insulation R-value, depth of continuous insulation (slab F-factors only) and cavity insulation installed R-values. This simplifies the process for U-factor and component performance alternative compliance by calculating the U-factors or F-factors for common assemblies. Space is

reserved in this appendix to include U-factors for roofs, floors, mass walls, and steel frame walls in the future.

#### [Appendix RG | 2024 IECC Stretch Code](#)

Appendix RG includes requirements intended to reduce the energy consumption of buildings by additional 10 percent. The appendix offers provisions for each of the three available code compliance pathways: prescriptive, performance, and ERI. The prescriptive code compliance pathway increases the minimum number of R408 additional energy efficiency credits from 10 to 20. The simulated building performance compliance pathway reduces the energy cost target by an additional 10 percent compared to the base code. The ERI compliance pathway reduces the maximum ERI targets by 10 points.

#### [Appendix RH | Operational Carbon Rating and Energy Reporting](#)

Appendix RH eliminates the prescriptive and simulated building performance pathways and requires that buildings comply through the ERI pathway and introduces the CO<sub>2</sub>e Index as an additional compliance metric. Also known as the Carbon Rating Index, it utilizes hourly CO<sub>2</sub>e emission rates associated with electricity generation to calculate a home's emissions from energy consumption. A comparison between the rated home and a reference home allows for a 0-100 index like the ERI. Electric dwelling units must achieve a the maximum ERI values from Table R406.5 and a maximum CO<sub>2</sub>e Index of 65 not including onsite power production (OPP). Mixed-fuel dwelling units must meet a maximum CO<sub>2</sub>e Index set by the jurisdiction.

#### [Appendix RI | On-Site Renewable Energy](#)

Appendix RI sets minimum capacity requirements for onsite renewable energy generation systems and includes provisions for compliance following the prescriptive, simulated building performance, or Energy Rating Index pathway. Minimum system capacity requirements for one- and two-family dwellings, townhouses, and R-3 residential buildings is 2 kilowatts and minimum capacity for R-2 or R-4 residential buildings is 0.75 watts per square foot of gross conditioned floor area. The capacities can vary when compliance is achieved using the building performance or the ERI pathway.

#### [Appendix RJ | Demand Responsive Controls](#)

Appendix RJ introduces requirements for demand responsive controls on electric storage water heaters 40 gallons and larger. This feature would allow the home to participate in current or future utility demand management programs.

#### [Appendix RK | Electric-Ready Residential Building Provisions](#)

Appendix RK provides requirements to provide dedicated branch circuits within 3 feet of water heaters, clothes dryers, and cooking appliances that use fuel gas or liquid fuel. The purpose of the additional circuits is to allow homeowners to install electric appliances in place of fuel gas appliances in the future.

#### [Appendix RL | Renewable Energy Infrastructure](#)

Appendix RL provides the same type of requirements as Appendix RB but differs in that this appendix includes requirements for R-2 low-rise multifamily buildings while Appendix RB is limited to detached one- and two-family dwellings and townhouses.