



2022 Denver Energy Code Residential Energy Code Compliance Overview

Community Planning and Development /
Office of Climate Action, Sustainability and Resiliency

May 25, 2023

INTERPRETATION INSTRUCTIONS

- This session is available in both English & Spanish. Click on the “Interpretation” icon at the bottom of the Zoom window and choose either "English" or “Spanish”
-
- Esta sesión está disponible en inglés y español. Haga clic en el icono "Interpretación" en la parte inferior de la ventana de Zoom y elija "Inglés" o "Español"

Questions?

- Time is reserved at the end of the presentation for Q&A
- Please use the Q&A feature to submit your questions



- Responses to all questions not addressed today will be sent out by email to registered participants
- Additional questions may be sent to: energy.review@denvergov.org

Training Series

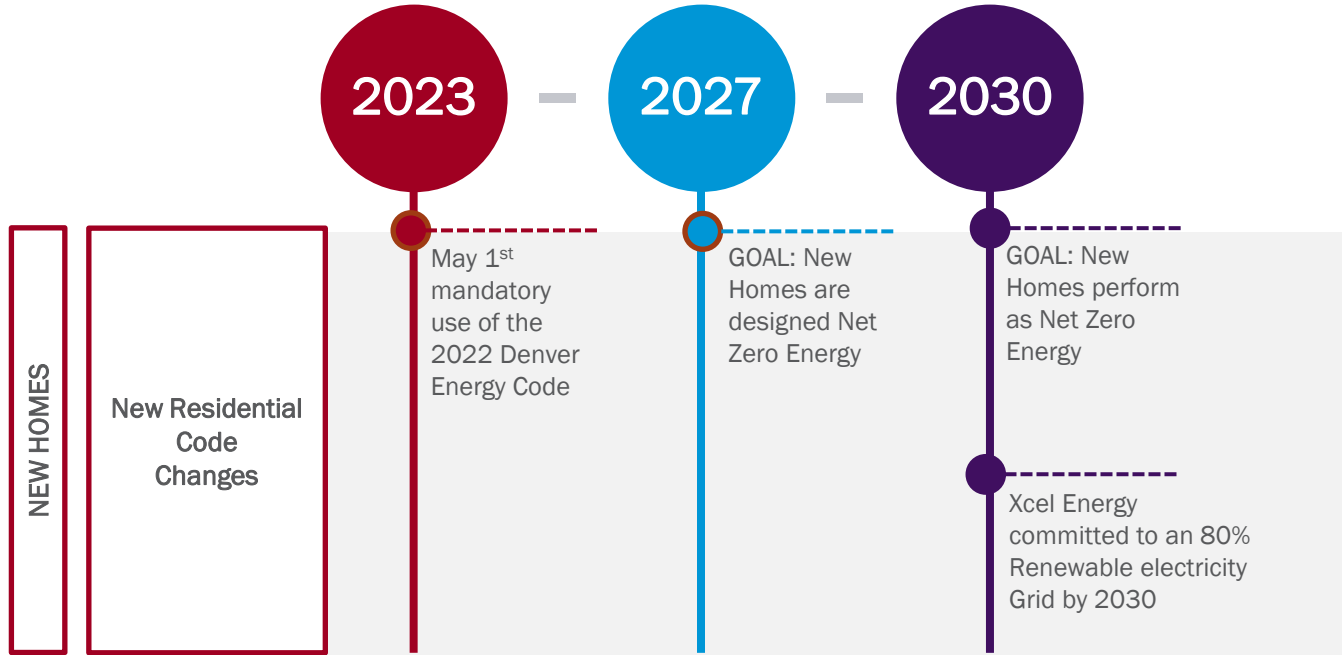


SCAN ME



	Commercial/Multifamily (Wednesdays at 12 pm)	Residential (Thursdays at 1 pm)
	Electrification May 24	Compliance Overview May 25
Prescriptive Path	May 31	June 1
Performance Paths	June 7	June 8
Contractor/Inspector Part 1	June 14	June 22
Contractor/Inspector Part 2	June 21	June 29

Timeline: Residential Electrification & Performance Goals



2022 Denver Energy Code

- This training provides a **high-level overview** of the requirements of the 2022 Denver Energy Code for Residential projects
- Does not include all changes to the 2022 Denver Energy Code. Please refer to the 2022 Denver Energy Code for specific code language [Denvergov.org/BuildingCode](https://denvergov.org/BuildingCode)
- For additional resources visit [Denvergov.org/EnergyCode](https://denvergov.org/EnergyCode)
- Denver-specific COMcheck and REScheck are anticipated for Fall 2023

Net Zero Energy Hub – Codes and Resources

www.denvergov.org/EnergyCode

Resources for:

- New provisions in the 2022 Denver Energy Code
- The Denver Energy Code compliance pathways
- Specifics to each phase of a new building project, from design and construction to alterations and additions
- Training videos to walk you through specific provisions that have been updated since the 2019 Denver Building Code
- Rebates for electrification equipment for existing homes

Home / Government / Agencies, Departments, and Offices / Climate Action, Sustainability & Resiliency / High Performance Buildings and Homes / **Net Zero Energy Hub - Codes and Resources**

Net Zero Energy Hub - Codes and Resources

This resource hub pulls together information from Denver and pairs it with resources from across the country to help building owners, professionals, and residents:

- Learn about changes in the 2022 Denver Building and Fire Code and the 2022 Denver Green Code
- Understand the importance of building electrification and energy efficiency
- See examples of successful Net Zero Energy building projects in a variety of building types and uses
- Navigate new regulations and requirements with confidence!



Resources for New Commercial and Multifamily Buildings

Buildings that are regulated by the Denver Commercial Building Code, which include commercial buildings and multi-unit residential buildings that are not regulated by the Denver Residential Code.



Resources for New Single Family, Duplex, and Townhomes

Any detached one- or two-family dwelling unit and townhomes three stories or less are regulated by the Denver Residential Code.

Tips for referencing code

2022 Denver Amendments

+

2021 International Energy Conservation Code (IECC)

=

2022 Denver Energy Code (DEC)

Note: Chapter 11 in the Denver Residential Code is replaced in its entirety by the Residential Provisions of the 2022 Denver Energy Code

Agenda

Review key definitions, compliance pathways, and permit submittal requirements for the 2022 DEC

Discuss the requirements common to all pathways, highlighting key Denver provisions relating to

- Construction documents
- Building Thermal Envelope
- Mechanical Systems
- Electrical Power & Lighting Systems

Purpose: This presentation provides an overview of the design and permit submittal requirements for residential building projects.

Details on installation, testing, and as-built compliance will be covered in upcoming contractor and inspector trainings

Definition: Residential Building

Residential Buildings are detached one- and two-family dwellings and multiple single-family dwellings (townhouses) and Group R-3 and R-4 buildings three stories or less in height above grade plane.



(DEC Section C202)

Definition: All-Electric Property



Photo credit: [Kalen Jesse Photography](#)

An *All-Electric Property* is one that contains no permanently installed equipment or appliances that utilize *combustion*, plumbing for fuel gas or fuel oil or *fuel gas* utility connection, installed within the *building(s)* or site, except for *emergency power systems* and *standby power systems*.

2022 DEC Compliance Pathways

Residential projects may select from three compliance options:

Prescriptive	Total Building Performance	Energy Rating Index (ERI)
Each element of the building must meet a minimum standard defined in prescriptive provisions Additional efficiency options are selected from a standard menu	Energy modeling analysis is used to show an annual energy cost savings for the proposed design over a baseline	Energy rating software is used to show the ERI of the proposed design is less than or equal to the code defined maximum

See upcoming trainings on the compliance pathways for more information on each option.

Submittal Requirements

Projects submitting for permit must provide:

- Completed **Energy Code checklist** for the selected compliance path
- **Supplemental Reports or Calculations** as required (e.g., REScheck report, ACCA Manual J, S and D Packages)
- **Construction Documents** showing all required elements, stamped & signed by licensed design professional (if applicable)

The image shows a screenshot of the '2022 Denver Energy Code - Residential Compliance Checklist' form, specifically the 'Prescriptive Compliance Option'. The form is titled '2022 Denver Energy Code - Residential Compliance Checklist Prescriptive Compliance Option' and features the Denver Community Planning & Development logo. It includes a 'Project Address' field with a 'Click or tap here to enter text.' placeholder. The main content area is divided into sections: 'READ FIRST: Checklist Instructions & Applicability', which explains the purpose of the checklist and its relation to the Denver Energy Code (DEC) and the Denver Building Code (DBC); 'Project Scope', which lists project types requiring a checklist and provides checkboxes for 'All-Electric Property', 'New Construction', 'Addition', 'Increase in conditioned space', and 'Change of Occupancy to Higher Energy Demand Category'; and 'Scope of Project', which includes instructions for calculating the increase in conditioned floor area as a percentage of the total existing above grade conditioned floor area. A 'Click or tap here to enter text.' placeholder is also present in the bottom right of the 'Scope of Project' section.

Compliance checklists for each pathway and an instructional video on how to complete the checklists can be found [here](#).

Instructions for CPD Plans Reviewers

- To facilitate inspections, record in Permit Scope of Work text box on permit:
 - One **compliance pathway** from four options
 - » Prescriptive Compliance Path
 - » Prescriptive: Total UA Alternative
 - » Total Building Performance
 - » Energy Rating Index (ERI)
 - Selected **additional energy efficiency packages** (for Prescriptive and Total UA)
 - Proposed **renewable energy system** (DEC R404.7, if applicable)
 - Record if **All-Electric Property**

Note: dedicated Accela fields for this information are in development

Code Requirements for All Pathways

- Construction documents ([DEC R103](#))
- Select* provisions from:
 - Building Thermal Envelope ([DEC R402](#))
 - Mechanical Systems ([DEC R403](#))
 - Electrical Power & Lighting Systems ([DEC R404](#))
- Certificate & Homeowner Manual ([DEC R401.3 & R401.4](#))

**“Mandatory” and “Prescriptive” labels are no longer used in 2021 IECC; all requirements are identified within each compliance path*

This presentation provides an **overview of the requirements** for all compliance pathways and **highlights some of the key provisions.**

It is not comprehensive of all provisions – refer to the 2022 Denver Energy Code for all requirements.

Construction Documents

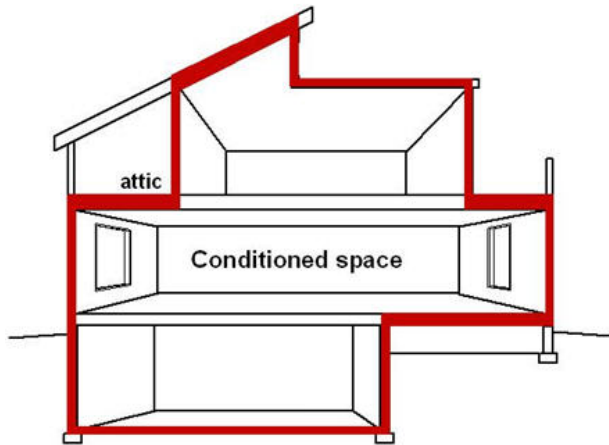
DEC R103.2 Information on Construction Documents

New in 2021 IECC
New in 2022 DEC

1. Energy compliance path.
2. Insulation materials and their *R*-values.
3. Fenestration *U*-factors and *solar heat gain coefficients* (SHGC).
4. Area-weighted *U*-factor and *solar heat gain coefficients* (SHGC) calculations.
5. Mechanical system design criteria.
6. Mechanical and service water-heating systems and equipment types, sizes and efficiencies.
7. Equipment and system controls.
8. Duct sealing, duct and pipe insulation and location.
9. Air sealing details.
10. Total area of glazed *vertical* fenestration as a percentage of conditioned floor area.

Building Thermal Envelope Depiction

DEC R103.2.1: The building thermal envelope shall be represented on the construction documents using a single continuous line.

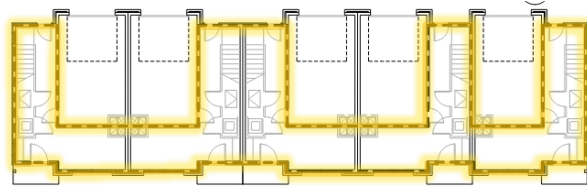


Definition: Building Thermal Envelope

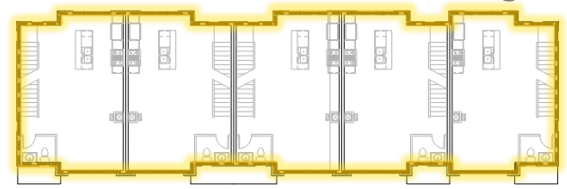
The *basement walls, exterior walls, floors, ceiling, roofs* and any other *building element assemblies* that enclose *conditioned space* or provide a *boundary between conditioned space and exempt or unconditioned space*.

Building Thermal Envelope Depiction Townhouse Example

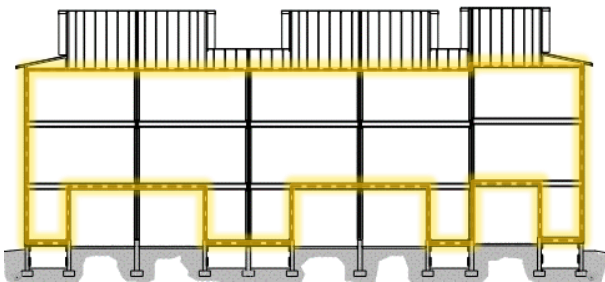
THERMAL ENVELOPE NOTES	
CLIMATE ZONE 5B	
LOCATION	R-VALUE (OPT.) R-VALUE
ROOF/CEILING	R-19 (OPT.) R-19
EXTERIOR WALL (WOOD STUDS) R-13 OR	R-13 OR R-9 RIGID CONTINUOUS
FLOORING	R-9 OR R-9 RIGID CONTINUOUS
CRUISE SPACE WALLS	R-13 OR R-9 RIGID CONTINUOUS
*PROVIDE 2" OF 1/2" HIGH R-13 RIGID INSULATION AT TOP OF FOUNDATION WALLS	
PENETRATION REQUIREMENTS	
W/ AIR	EQM
W/ GAS	NOT RATED
AIR LEAKAGE COMPLIANCE TABLE	
PER COMPONENT LISTED IN HC TABLE (TABLE 5)	
COMPONENT	AIR LEAKAGE STRATEGY / SEPARATE
GENERAL REQUIREMENTS	ACCEPTABLE AIR BARRIER MATERIALS SHALL BE PER (2019) IBC CODES (2)
CEILING	1/2" FIN GAGE, ALL JOINTS TAPPED AND SEALED.
WALLS	1/2" FIN GAGE, ALL JOINTS TAPPED AND SEALED. ALL SEALER BETWEEN ALL PLATES AND TRANSOM SHALL BE PROVIDED.
WINDOWS/DOORS	ALL SURF SPACES/ CASSETS SURROUNDING EXTERIOR DOORS AND WINDOWS SHALL BE FILLED WITH CLOSED CELL LOW EXPANSION FOAM.
RFT JOISTS	1/2" FIN GAGE, ALL JOINTS TAPPED AND SEALED. ALL SEALER BETWEEN ALL PLATES AND TRANSOM SHALL BE PROVIDED.
WINDOWS/DOORS	ALL SURF SPACES/ CASSETS SURROUNDING EXTERIOR DOORS AND WINDOWS SHALL BE FILLED WITH CLOSED CELL LOW EXPANSION FOAM.
CRUISE SPACE WALLS	EXPOSED EDGES IN UNFINISHED CRUISE SPACES SHALL BE COVERED WITH A CLASS 1 VAPOR BARRIER WITH OVERLAPPING JOINTS TAPPED.
FLOORS (INCL. ABOVE GARAGE)	THE AIR BARRIER SHALL BE INSTALLED AT ANY EXPOSED EDGE OF THE INSULATION.
SHAFT PENETRATIONS	DUCT, SHAFTS, UTILITY PENETRATIONS, AND FLUE SHAFTS OPENING TO EXTERIOR OR UNCONDITIONED SPACE SHALL BE SEALED.
RECESSED LIGHTING	DUCT, SHAFTS, UTILITY PENETRATIONS, AND FLUE SHAFTS OPENING TO EXTERIOR OR UNCONDITIONED SPACE SHALL BE SEALED.
FLOORS + WIRING	RECESSED FLOORERS SHALL BE SEALED AT JAMB AIR BARRIER WITH COMPATIBLE SEALANT, CARPETS, BOOTS, ETC.
BANK TIE ON EXTERIOR WALL	1/2" FIN GAGE BOARD SHALL BE INSTALLED AT THE EXTERIOR WALL OF BROWNS AND TIES FOR ALL W/ STUDS. ALL JOINTS SHALL BE TAPPED AND SEALED. WITH BROWNS SHALL BE SPECIFIED ON THE OTHER SIDE OF THE AIR BARRIER. 1/2" FIN GAGE HEIGHTS AND SHALL BE INSTALLED AT ALL CONCEALED SPACES (E.G. BELOW AND BEHIND ALL TIES AND BELOW ALL BULKHEAD BROWNS) AND ALL JOINTS TAPPED AND SEALED.
ELECTRICAL / PHONE BOX ON EXTERIOR WALL	AIR SEALED ELECTRICAL, PHONE DATA, AND J-BOXES SHALL BE PROVIDED AT ALL EXTERIOR WALLS.
W/ AIR REGISTER BOOTS	ALL REGISTER BOOTS OVER UNCONDITIONED SPACE SHALL BE SEALED WITH COMPATIBLE SEALANT, CARPETS, BOOTS, ETC.



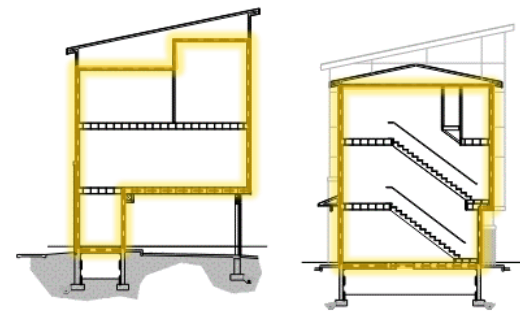
5 GROUND FLOOR PLAN - OVERALL THERMAL ENVELOPE
3/32" x 1'-0"



4 SECOND FLOOR PLAN - OVERALL THERMAL ENVELOPE
3/32" x 1'-0"



1 SECTION AT BUILDING 1 THERMAL ENVELOPE
3/32" x 1'-0"



Provisions for all pathways

Building Thermal Envelope (DEC R402)

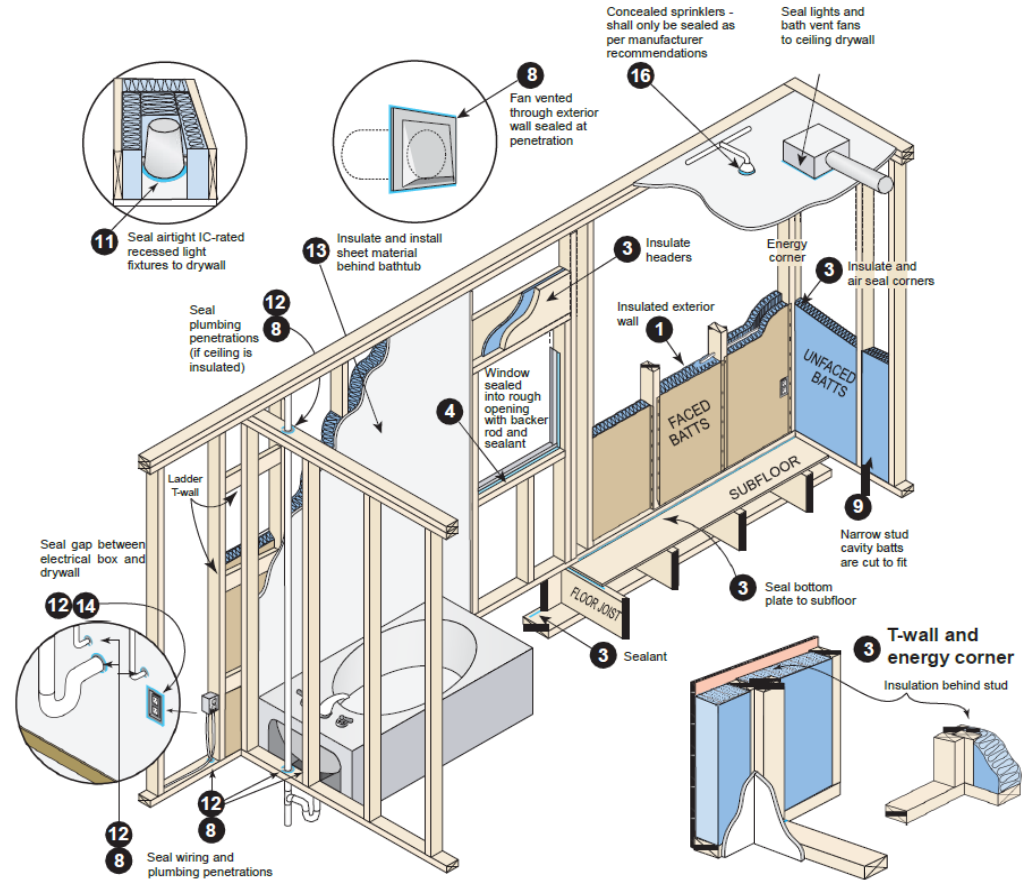
**DEC amends 2021 IECC*

Section	Description	Section	Description
R402.1.1	Vapor retarder	R402.4.1.2	Testing (Air Barrier)*
R402.2.3	Eave baffle	R402.4.2	Fireplaces
R402.2.4.1	Access hatches and doors	R402.4.3	Fenestration air leakage
R402.2.8.1	Basement Wall Insulation Installation*	R402.4.4	Rooms containing fuel burning appliances
R402.2.9.1	Slab-on-grade floor insulation installation	R402.4.5	Recessed lighting
R402.2.10.1	Crawl space wall insulation installation*	R402.4.6	Electrical and communication outlet boxes (air Sealed boxes)
R402.4.1.1	Air barrier, air sealing, and insulation installation*		

Air Sealing Details

DEC R402.4.1.1 Air barrier, air sealing, and insulation installation

- This graphic shows examples of air sealing requirements for the building thermal envelope
- Provide air sealing details that meet the requirements of DEC Table R402.4.1.1



Rooms containing fuel-burning appliances

DEC R402.4.4: Rooms containing fuel-burning appliances fed by combustion air ducts shall be:

- Located outside the building thermal envelope, or
- Enclosed in a room that is isolated from inside the thermal envelope
 - The room must be sealed and insulated per the envelope requirements of DEC Table 402.1.3, the door must be fully gasketed, and water lines and ducts in the room must be insulated per DEC Section R403 (the combustion air duct shall be insulated with minimum R-8 in conditioned space)



Exceptions:

- Direct vent appliances with both intake and exhaust pipes installed continuous to the outside
- Fireplaces and stoves complying with DEC Section R402.4.2 and DRC Section R1006

Provisions for all pathways

Mechanical Systems (DEC R403)

*DEC amends 2021 IECC
**2022 DEC Specific Provision

Section	Description	Section	Description
R403.1	Controls*	R403.6	Mechanical ventilation*
R403.2	Hot water boiler temperature reset	R403.7	Equipment sizing and efficiency rating
R403.3	Ducts*	R403.8	Systems serving multiple dwelling units
R403.4	Mechanical system piping insulation	R403.9	Snow melt and ice systems
R403.5.1	Heated water circulation and temperature maintenance systems	R403.10	Energy consumption of pools and spas
R403.5.3	Drain water heat recovery units	R403.11	Portable spas
R403.5.4	Water heating equipment location**	R403.12	Residential pools and permanent residential spas
R403.5.5	Demand responsive water heating**		

Controls

*DEC specific
provision*

DEC R403.1.3 Continuously burning pilot lights

- The natural gas systems and equipment listed below **shall not be permitted to have continuously burning pilot lights:**
 1. Mechanical or natural draft furnaces, boilers, and water heaters.
 2. Household cooking appliances.
 - » **Exception:** Household cooking appliances without electrical supply voltage connections and in which each pilot light consumes less than 150 Btu/hr
 3. Pool heaters.
 4. Spa heaters.
 5. Fireplaces.

Ducts and Air Handlers

DEC R403.3: Ducts and air handlers shall be installed in accordance with Sections R403.3.1 through R403.3.7. **The air handler shall be installed within conditioned space.**

Ducts located outside conditioned space	Ducts located in conditioned space	Ducts within ceiling insulation
Must be insulated to an R -value or not less than $R-8$ and meet requirements for ducts within ceiling insulation	Must meet all requirements of R403.3.2 to be considered within conditioned space, including location requirements and insulation minimums for the duct and cavity	Must have $R-8$ insulation and be installed close to ceiling finish material. The sum of the ceiling insulation R -value at the top and sides of the ducts shall match the proposed ceiling insulation R -value.

New in 2021 IECC

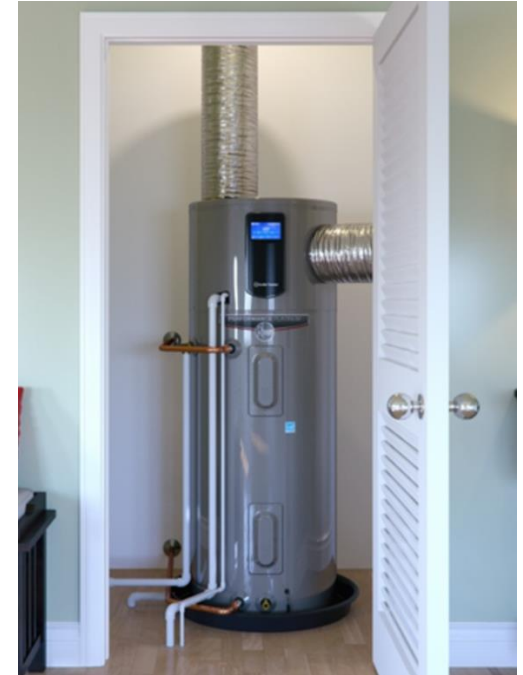
R403.3.6 Duct testing

All ducts are required to be tested, regardless of location (specifics will be covered in Contractor & Inspector trainings)

Water heating equipment location

New in 2022 DEC

- **DEC R403.5.4:** Water heaters shall be located in a space (i.e. closet) with the following characteristics:
 - Minimum 3 ft by 3 ft by 7 ft high
 - Minimum 760 cubic feet with a grill to a heated space and a duct for cool exhaust air
- **Exceptions:**
 - Electric water heaters with a rated storage volume less than 20 gallons
 - Where space and ventilation requirements conform with manufacturer's recommendation for a specific heat pump water heater that complies with section R403.5



Demand responsive water heating

New in 2022 DEC

- **DEC R403.5.5:** Electric storage water heaters (40-120 gallons and nameplate input rating no greater than 12 kW) are required to have **demand responsive controls** listed for participation in a demand response program that serves the building site.
- **Exceptions:**
 - Water heaters providing hot water of 180 deg F or greater
 - Water heaters that comply with Section IV, Part HLW or Section X of the ASME Boiler and Pressure Vessel Code
 - Water heaters that use 3-phase electric power

Intermittent Exhaust Control

New in 2022 DEC

DEC R403.6.4: Bathroom/Toilet room exhaust system with intermittent operation must be provided with **manual-on controls** AND one or more of the following:

1. **Timer control** with a setpoint of 30 minutes
2. **Occupant sensor** to turn fans off within 30 minutes of occupants leaving a space
3. **Humidity control** capable of manual or automatic adjustment for a relative humidity of minimum 50% and maximum 80%
4. **Contaminant control** for particle or gaseous concentration

Exception: Exhaust systems serving as an integral part of a ventilation systems (i.e. energy recovery ventilators) are only required to have manual controls.

An off setpoint cannot be used to meet a minimum setpoint requirement



Provisions for all pathways

Electrical Power & Lighting Systems (DEC R404)

Section	Description
R404.1	Lighting equipment
R404.2	Interior lighting controls
R404.4	Electric Vehicle Charging Requirements**
R404.5	Additional Electrical Infrastructure**
R404.6	Solar Ready Zone**
R404.7	Minimum renewable energy system capacity**

New in 2022 DEC

These provisions will help simplify future building electrification for homeowners and contribute to Denver's decarbonization goals

**2022 DEC Specific Provision

Lighting Equipment & Controls

New in 2021 IECC

DEC R404.1 Lighting equipment. All permanently installed lighting fixtures, excluding kitchen appliance lighting fixtures, shall contain **only high-efficacy lighting sources**.

DEC R404.2 Interior lighting controls. Permanently installed lighting fixtures shall be **controlled with either a dimmer, an occupant sensor control or other control** that is installed or built into the fixture

- Exceptions for bathrooms, hallways, exterior lighting fixtures, and lighting designed for safety or security

Electric Vehicle (EV) Charging

DEC specific provision

DEC R404.4 One- and two-family dwellings and townhouses EV charging requirements

- Provide a **minimum of one electric vehicle ready space**, meeting outlined infrastructure requirements, for each new dwelling unit, new garage/carport, or new on-site parking space
- Construction documents must **graphically indicate and label all EV ready spaces** and associated termination locations.
- The total number of EV ready spaces is not required to exceed one EV ready space per dwelling unit on a given lot.



Electric-Ready Infrastructure

New in 2022 DEC

DEC R404.5 Additional electric infrastructure

- A junction box or receptacle shall be **located within one foot of ALL fossil fuel appliances and equipment**, capable of serving equivalently sized electric equipment.
- The electric infrastructure shall meet the requirements of this section, and dedicated circuit breaker space shall be **labeled “For future electric equipment”**
- **Exceptions:**
 - Fossil fuel space heating equipment where sufficient capacity exists for space cooling equipment
 - Large water heating equipment that serves multiple dwellings

While full electrical plans are not required at permit (electrical work subject to separate permitting), the **costs of additional electric infrastructure** may be helpful to consider when selecting building fuel sources.

Solar-Ready Zone

DEC specific provision

DEC R404.6 Solar-Ready Zone

- **New detached one- and two-family dwelling and townhouse** projects with optimally oriented* or low-sloped **roofs over 600 square feet** must provide a zone that is ready for future installation of a solar photovoltaic (PV) system
- Solar-ready zone must be **at least 300 SF** (or 150 SF for a townhouse)

**Oriented between 110° and 270° of true north*

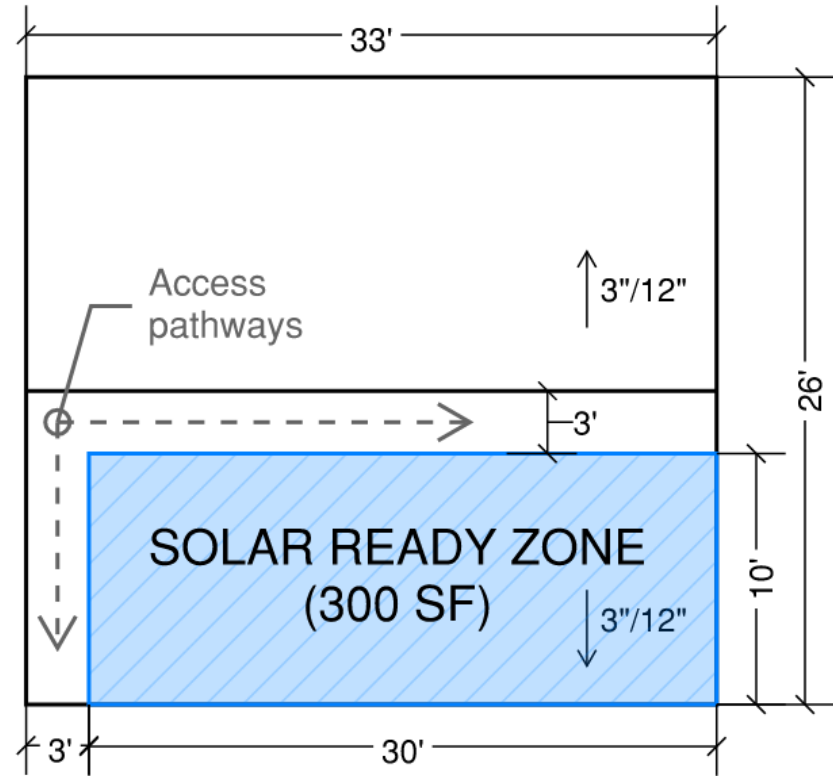
Exceptions:

- Projects with a permanently installed onsite renewable energy system (see *DEC Section R404.7*)
- Buildings with suboptimal roof orientation
- Buildings where the roof is in full or partial shade for > 70% of annual daylight hours

Solar-Ready Zone

Submittal Requirements

- Graphically illustrate and label the **solar ready zones**, as well as the roof access, pathways, and setbacks in accordance with DRC Section R324.6
- Provide **structural design loads** for roof dead load and roof live load
- Provide the **roof pitch** on the roof plan and the **building orientation** on the site plan



Minimum Onsite Renewables

New in 2022 DEC

DEC R404.7 Minimum renewable energy system capacity

- New dwelling units must **install an onsite renewable energy system**
 - Renewable production cannot be included in energy modeling calculations (R405 or R406)
 - Roof areas that are shaded for more than 70% of the daylight hours annually may not be used
 - Projects that comply with this provision are exempt from the solar-ready requirements (DEC R404.6)

Required Renewable System Production
7.2 kBtu/yr (2.1 kWh/yr) per SF
OR
0.12 ft ² of panel per SF

Minimum Onsite Renewables

What does this mean for my project?

New in 2022 DEC

- **Options for renewable energy systems:** solar photovoltaic (PV), micro wind turbine, biogas generators
- Geothermal is not available in Denver
- Ground source heat pumps are not considered renewable energy

Definition: Renewable Energy Resources
Energy derived from solar radiation, wind, waves, tides, landfill gas, biogas, biomass or extracted from hot fluid or steam heated within the earth.



Minimum Onsite Renewables Exceptions

New in 2022 DEC

- All-electric properties
- Increased performance over requirements of R405, R406, or R408 (see table)
- Dwelling units with a conditioned floor area of less than 1,000 SF

Exceptions for Increased Performance			
Compliance Pathway	Total Building Performance (R405)	Energy Rating Index (ERI) (R406)	Prescriptive (R408)
Additional required performance	9% lower energy use	5 points lower	13 additional credits
Total required performance	27% total energy reduction over baseline	Maximum ERI 45	31 total credits

See next slide for additional exceptions.

Minimum Onsite Renewables

Exceptions (continued)

New in 2022 DEC

- Projects that comply with both of the following requirements may reduce the required system output (see table):
 - A. Install high performance or premium performance **electric space heating** (*Section R408.8.2 or Section R408.8.3*)
 - B. Install high or premium efficiency **electric water heating** (*One of the four sections of R408.10.2 through R408.10.5*)

Reduced Renewable System Production for Exception
1.2 kBtu/yr (0.35 kWh/yr) per SF
OR
0.02 ft ² of panel per SF

Minimum Onsite Renewables

Solar PV Calculation Example

2,500 SF One-Family Dwelling

Typical Calculation (Using Panel Area Metric)

$0.12 \text{ ft}^2 \times 2,500 \text{ SF} =$
300 SF of PV panel area
(Typical panel size = 17.5 SF)
 $300 \text{ SF} \div 17.5 \text{ SF} = 17 \text{ PV panels required}$



Calculation for Home with Electric Heat and Water*

$0.02 \text{ ft}^2 \times 2,500 \text{ SF} =$
50 SF of PV panel area
(Typical panel size is 17.5 SF)
 $50 \text{ SF} \div 17.5 \text{ SF} = 3 \text{ PV panels required}$



*DEC R404.7 Exception 6

Minimum Onsite Renewables

Permit Submittal Requirements

New in 2022 DEC



- State the **proposed renewable energy system** (or exception used)
- For proposed system, **provide calculations** to show output meets the required minimum
- *NOTE: Renewable energy systems are subject to separate permits*

Certificate & Homeowner Manual

DEC R401.3: Certificate

A **permanent certificate** shall be posted that includes the following:

- R-values for exterior envelope
- U-factors and SHGC of fenestration
- Results from duct and air leakage testing
- Mechanical and service hot water equipment efficiencies
- PV information if applicable
- ERI score if applicable
- Code edition

DEC R401.4: Homeowner Manual

The owner shall be provided with a binder of all equipment and appliance manufacturers instructions, all information included in the certificate, any energy assessment report and/or ERI certificate.

DEC specific provision

Existing Home Support and Resources

www.denvergov.org/HomeEnergy

- Resources for:
 - Rebates for existing homes
 - How to electrify your home and work with contractors
 - Income Qualified Rebates

www.denvergov.org/CAREContractorResources

- Resources for:
 - Instructions for Installers Applying for Rebates



Space Heating and Cooling

Heating and cooling account for the majority of energy we use in our homes. As the grid moves to 100% renewable power, electric appliances like heat pumps are the clear path to reducing carbon emissions generated by our homes.



Water Heating

Your water heater might not be the first thing you think of when changing your home appliances to electric. But it can be a great place to try a heat pump and improve efficiency and indoor air quality!



Home Solar

Adding solar to your home or subscribing to a solar co-op is a great way to save money on your utilities bills and reduce carbon emissions from your house. Learn about all the ways we can help you become a solar household as well!



Income Qualified Rebates

Qualified households are eligible for additional rebates and incentives to offset the costs of equipment upgrades. Learn whether you might qualify, and find out how to work with our partners at Energy Resource Center to start saving.



Healthy Homes Program

The Healthy Homes Program will provide extensive home energy and weatherization upgrades for income qualified homes where someone in the household also has a respiratory condition. If you think you might qualify, reach out to our program partners.



Electric Vehicles

Electrifying your home includes more than just the house itself. Your transportation can also be electrified, which improves our city's air quality and eliminates expensive trips to the gas station. Learn about the other benefits of electric vehicles and how you can save money when you purchase one.

How is electrification in existing buildings going for you?

CASR's existing building electrification team would love to hear stories and feedback from contractors and building professionals about how heat pump installation is going for you!

If you'd like to share your experience with CASR email electrification@denvergov.org

Summary

Projects may **follow one of three pathways** to comply with the 2022 DEC

- Prescriptive, Total Building Performance, Energy Rating Index
- This presentation covered code requirements common to all pathways

Successful permit submittals include a completed Energy Code checklist, supplemental reports or calculations, and construction documents that show how all requirements are met in the proposed design

Updates to the 2022 DEC are **designed to support electrification**

- Key new provisions: Minimum Onsite Renewables, Electric-Ready infrastructure, Demand responsive water heating

Questions?

- Please use the Q&A feature to submit your questions



- Responses to all questions not addressed today will be sent out by email to registered participants
- Additional questions may be sent to: energy.review@denvergov.org

Thank you!

For more information, visit:

[Denvergov.org/EnergyCode](https://denvergov.org/EnergyCode)

[Denvergov.org/BuildingCode](https://denvergov.org/BuildingCode)

Contact us:

Questions about energy code: energy.review@denvergov.org

Questions about programs & resources: sustainability@denvergov.org