Marshall Fire Rebuild Codes and Program Compliance

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Presented By Robby Schwarz

Thinking ZERO to 360°



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Colorado Electrification Leadership Summit

Agenda

Thursday, October 27, 2022

Morning Ses	Morning Session						
8:00 AM	Registration / Breakfast / Exhibits / Networking						
9:00 AM	Welcome						
	Duane Highley, CEO, Tri-State Generation and Transmission Association						
9:05 AM	Moderator's Opening Remarks						
	Neil Kolwey, BEL-CO Director, SWEEP Building Electrification Specialist						
9:15 AM	Funding through Federal Infrastructure and Inflation Reduction Acts Incentives for New and Existing Homes Other Electrification Opportunities 						
	Keith Dennis, President, Beneficial Electrification League (BEL)						
10:00 AM	Colorado Building Electrification Policy Highlights • New State-wide Building Codes Requirements • Other Updates <i>Will Toor, Executive Director, Colorado Energy Office</i>						
10:40 AM	Break						
11:00 AM	Case Studies: Successes with Heat Pump Adoption for New and Existing Homes						
11:45 AM	Discussion – Collaborating to Optimize Our Impacts						
Noon	Lunch / Networking Induction Cooking Demonstration						
Afternoon S	ession						

Afternoon S	ession
1:00 PM	Keynote: Business Case for Building Electric New Homes Nick Jacobs, President, Diverge Homes
1:30 PM	Show Me the Money! Highlights of Federal, State, and Local/Utility Funding for Electric New Construction; State and Local Building Code Updates
2:15 PM	Panel and Attendee Discussion: Challenges/Opportunities of Building Healthy, Efficient and Electric New Homes • Not Ready for All-Electric? Why Even Installing a Heat Pump Instead of A/C Matters • Hot Water Solutions
3:30 PM	Adjourn



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October 25th

5:30 - 8:30pm

Construction Instruction Experience Center 6850 Argonne St, Unit 100,

Denver, Colorado 80249

BUILDTank/buildCast

BUI

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CI Construction Instruction

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Our Plan Ahead

- Introduction
- Rebuilding Better Website
 - Xcel and State Incentives
 - Preregistration forms
 - Material Discounts
- Energy Code Compliance
 - Louisville, Superior, UCBC
- Energy Code Requirements common to all jurisdictions
- Lunch
- EnergyStar V3.2
- NextGen
- DOE Zero Energy Ready Homes
- Maximizing incentives



https://www.orissapost.com/odisha-govt-warns-of-stringent-action-after-end-of-amnesty-scheme/







Why New Versions ?





Why New Codes/Program? Why Now?

- New residential construction matters
- 2021 IECC a reaction to our times
- HERS ERI trending towards greater efficiency
- Technology innovations and Cost Effectiveness
- Emitted and Embodies Carbon
- Increasing demand for Net Zero Energy homes
- Increasing demand for climate resilient construction
- Increased demand for better construction
- Increased demand for a clean energy economy

U.S. Residential Buildings

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Buildings are Big Contributors



other transport. 2%



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Global CO, Emissions by Sector



Issarce: © 2018 2010, Int. / Architecture: 2010. All Bights Reserved. Cala Source IN Descreptions of Global Status Report 2017; EA: International Decry Outlook 3 Cations 201 2016 Iowa GHG Emissions by Sector



Global CO₂ Emissions by Sector



https://www.patheos.com/blogs/reasonadvocates/2017/05/05/orwellian-legislative-duplicity-hb-1485

Commercial &

Residential





HERS Trends - Lower Scores & More Ratings

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How Times Have Changed?

Ten people building a balloon frame house in 1877 Nebraska

300 people building a modern-day house in 2020 (NAHB Research)



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Labor & Material Issues

BŮILDÊŘ

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Midweek Break

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5 strategies to retain construction workers in a competitive labor market





Times and Expectations Have Changed 1900's housing vs. 2019 housing



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The Apocalypse is Coming

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ESv3.2 & ZERH v2 Base Building Envelope Insulation Levels

The Apocalypse is Coming - Again

https://www.pinterest.com/pin/313774299040075743



Code Improvement



http://bcapcodes.org/compliance-portal/design/energy-mode

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Risk #1: Moisture Damage

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BUILDTanking

What Is Building Science?

- Building science applies what we know about physics and other sciences to buildings
- Focused on the flow of:
 - Heat / Thermal
 - Air

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- Moisture
- Pressure dynamics
- Biology



https://www.greenbuilt.org/the-importance-of-building-science,

What is High Performance Building

- Applied Building Science
- Focus on the Enclosure Control Layers
 - Water Control
 - Air Control
 - Thermal Control
 - Moisture Control
- Focus on People
 - Comfort
 - Efficiency
 - Durability/resiliency
 - Safety



https://newenergyworks.com/blog/high-efficiency-enclosure-a-prefabricated-wall-system

Integrated Design Process

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Integrated Design Process

- Change is hard / Change is good
- Start Early

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- Opportunity Costs
- What does integration mean?
 - Applied Building Science
 - Systems Thinking
 - Air control
 - Thermal Control
 - Moisture Control
 - Program Requirements



https://caddispc.com/our-integrated-o

Integrated Design Process

Define the project

- Zero Energy Ready Home
 - Integration of four programs
- Share responsibility
 - Bring the right team together
 - Architect, Builder, Trade Partners, Energy Rater
- Viewing things Holistically at one time
- Information sharing
 - Research materials, building practices
- Integration

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Structure, Systems, Enclosure, Climate, Occupant

Integrated Design Process



3rd Party Verification

- Provide third-party verification that homes meet DOE Zero Energy Ready Home National Program Requirements
- Program requirement
- Adds value to the process and legitimacy to the label
 - Independence
 - Government back label / Proof of compliance



https://sunridgegroup.ca/home-owners/home-energy-audits.php

Verification by approved agency

- Verification of compliance with Energy Code may be completed by an approved third party
- Often this party is also a RESNET Energy Rater
- Partnered with the DOE Zero Energy Ready Home Program



3rd Party Services

- Consulting and participation in Intergrade Design Process
 - Knowledgeable about:
 - Program requirements
 - Applied building science
 - Assemblies and materials
 - Construction Schedule impacts
- Proposed and Confirmed Energy Modeling
- Field Inspection
 - Verification
 - Quality Assurance
- Trade Partner recommendation
- Possible other services
 - HVAC Design or consulting
 - Control layer management
 - Material specification recommendations







https://homesmsp.com/2019/01/should-home-inspectors-trample-insulation-no.l

RESNET Quality Assurance

- Quality of standard creation and maintenance
- Rating Providers employ Q.A.D.'s to perform QA on their certified raters
 - 10% of all building software file inputs review
 - 1% of each certified Raters' homes are recreated and reviewed for accuracy
- RESNET performs QA on Rating Providers
 - Annual quality assurance report and review
 - RESNET enhanced quality assurance
 - 50% of all rating providers each year receive either online reviews and/or in-field site visits
- Tracking QA reviews in real time in the RESNET Registry



https://rebuildingbetter.org/

- Rebuilding Better Website
 - Xcel and State Incentives
 - Preregistration forms
 - Material Discounts

REBUILDING BETTER

tesources for planning, designing, and constructing high-performance homes that are more resilient to future climate crises.

Scroll down for more

2021 IECC R-value Table Prescriptive Compliance

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CZ	Ceiling	Wood-framed Wall	Mass Wall	Floor	Basement	Slab	Crawl Space Wall	IECC
1	30	13 or 0+10	3/4	13	0	0	0	A Worker of the reservoir of Constants
2	49	13 or 0+10	4/6	13	0	0	0	
3	49	20 or 13+5 or 0+15	8/13	19	5/13	10, 2ft	5/13	
4	60	20+5 or 13+10 or 0+15	8/13	19	10/13	10, 4ft	10/13	
5	60	30 or 20+5 or 13+10 or 0+15	13/17	30	15/19 or 13+5	10, 4ft	15/19 or 13+5	
6	60	20+5 or 13+10 or 0+20	15/20	30	15/19 or 13+5	10, 4ft	15/19 or 13+5	-
7/8	60	20+5 or 13+10 or 0+20	19/21	38	15/19 or 13+5	10, 4ft	15/19 or 13+5	

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Louisville Rebuilds Department of Planning and Building Safety







2018 Prescriptive Energy Code Path

- 90% Furnaces/ Boilers, 14 SEER AC
- R-49 Ceiling
- R-21 Walla

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- R-19 Basement walls
- R-3 Hot water
- R-38 Under Floors





INTERNATIONAL ENERGY CONSERVATION CODE®



- 2021 Prescriptive Energy Path
 - 96% Furnaces, 90% Boilers, 14 SEER AC
 - R-60 Ceiling
 - R-21 all walls
- R-5 hot water lines
- R-38 Under Floors
- Electrical to all gas appliances
 - 2 EV charging stations, furnace, water heater, dryer, oven, range

2021 IECC using a HERS of 50 with Electrical to all gas fire Appliances

• 2 EV charging stations, furnace, water heater, dryer, oven, range



2021 IECC with Appendix RB and RC

- RB SOLAR-READY PROVISIONS—DETACHED ONE- AND TWOFAMILY DWELLINGS AND TOWNHOUSES
- RC ZERO ENERGY RESIDENTIAL BUILDING PROVISIONS
- HERS of 47 Before onsite power production
- HERS Zero with onsite power production
 - With Combination of Community Renewable Energy facilities
 - Renewable Energy Purchase Contract



Passive Home (Fire Rebuild)

- Project Certification
 - PHIUS Core
 - The Legacy Certification optimizing in passive and active conservation
 - PHIUS Core Prescriptive
 - Prescriptive standard takes a hybrid approach for both envelope and mechanical and allows some trade offs
 - PHIUS ZERO
 - Net source energy target of ZERO, does not allow fossil-fueled combustion on site and allows both on and off-site renewable energy options to get zero
 - PHI Low Energy
 - Slightly reduced energy consumption and performance requirements
 - PHI Classic





Electrification

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Electrification

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Town of Superior

The 2021 IECC is the adopted code in Superior Exception:

- The 2018 IECC, as amended, may be used within the Town of Superior impacted by the 2021 Marshall Fire
- The intent is to allow the owner of a residential property impacted by the 2021 Marshall Fire to "opt out" of the 2021 IECC
 - If the residential property is still owned by the record owner(s) of the residential property as of December 30, 2021.
 - Subsequent owners of the residential property ARE NOT eligible to "opt out" of the 2021 IECC.







https://wildfiretoday.com/2022/01/05/photos-before-and-after-the-marshall-fire-in-boulder-county-colorad

2018 IECC Not Amended

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Choose to build:

All Electric or with Gas mechanical equipment

Section R401.2. - Application.

Residential buildings shall be all-electric buildings unless the fuel gas options of R403. 7 and the additional electric infrastructure requirements of R404.5 are met.



R403.7 Equipment Sizing and Efficiency Rating.

- Heating and cooling *equipment* shall be sized in accordance with ACCA Manual S based on *building* loads calculated in accordance with ACCA Manual J or other *approved* heating and cooling calculation methodologies......
- In addition to R403.7, New and replacement electrical heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed.
- New gas heating equipment shall comply with the following efficiencies:
 - Gas furnaces 96% AFUE
 - Gas Boilers 90%AFUE
 - Tankless water heaters 92% AFUE
 - Storage water heater dependent on draw patterns 0.64 0.80 UEF

R404.5 Additional Electric Infrastructure

- R404.5.1 Combustion Equipment and end use:
 - Shall be prewired for a comparable electric appliance with labeled reserved circuit breaker
 - Wiring within 6 feet of existing mechanical equipment
 - Both ends of the conductor or conduit shall be labeled "For Future Eclectic Equipment"
 - Necessitates electric panel capacity









Section R404.1.1. Fuel gas lighting equipment

- Fuel gas <u>pilot lighting</u> systems are prohibited
 - Gas stoves/oven, fireplace, outdoor fire pit etc.





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https://www.designerappliances.com/blog/best-induction-ranges/



- Appendix RB Solar-Ready Provisions for Detached One- and Two-Family Dwellings and Townhouses
- Appendix RD Electric Vehicle Readiness





0202



https://www.anernstore.com/products/20kw-mppt-off-grid-solar-power-system-with-batter

Superior Green Building Ordinance #0-10

The purpose of this Article is to create a Green Building Program to promote and encourage high-performing sustainable development and redevelopment within the Town through education, regulations and incentives.

This Article is intended to promote cost-effective, energy-efficient structures that reduce the production of greenhouse gases from residential buildings structures and commercial multi-family structures, to conserve and protect water and other natural resources and to limit the amount of material sent to landfills.



Superior Green Building

Residential structures shall comply with Section R401.2.5 and the compliance, reporting and documentation requirements of Sections R401.2.1, R401.2.2, or R401.2.3 of the 2021 IECC

R401.2.5 Additional energy efficiency

R401.2.1 Prescriptive Compliance Option

The Prescriptive Compliance Option requires compliance with Sections R401 through R404.

R401.2.2 Total Building Performance Option

• The Total Building Performance Option requires compliance with Section R405.

R401.2.3 Energy Rating Index Option

The Energy Rating Index (ERI) Option requires compliance with Section R406.

Construction Waste Recycling

- An applicant for a building permit for construction of a new residential structure shall demonstrate that a minimum of 50% of construction waste is recycled.
- Waste diversion <u>calculations and tracking</u> <u>spreadsheet forms must be provided to the Town</u> <u>at project completion</u> to demonstrate that the minimum recycling requirements have been met.



Green Points

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Project Description	Square Footage	Point Requirements
New construction of single-family dwelling units	1,501-3,000	20
	3,001-5,000	40
	5,001 and up	60

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Green Points

- Energy Rating Index one (1) green point is awarded for each HERS <u>ERI</u> rating score that the residential structure scores below the HERS index is less than the ERI rating requirement.
- Site development
- Waste management
- Energy Efficiency
- Solar
- Water Efficiency
- Material Efficient Framing & Structure
- Sustainable products
- Indoor air Quality
- Electric Vehicle Charging
- Homeowner education
- Innovation credit

HERS ERI vs IECC ERI

<u>Climate</u> <u>Zone</u>	2021 IECC Energy Rating Index
<u>0-1</u>	<u>52</u>
<u>2</u>	<u>52</u>
<u>3</u>	<u>51</u>
<u>4</u>	<u>54</u>
<u>5</u>	<u>55</u>
<u>6</u>	<u>54</u>
<u>7</u>	<u>53</u>
<u>8</u>	<u>53</u>

Unincorporated Boulder County



Boulder County BuildSmart Code



Boulder County BuildSmart (2015 IRC Chapter 11) Effective January 1, 2016 Updated October 10, 2017



Land Use Department: Courthouse Annex Building • 2045 13th Street • PO Box 471 • Boulder, CO 80302

Building Safety & Inspection Services: Phone: 303-441-3925 • Fax: 303-441-4856 • Email: building_official@bouldercounty.org • www.bouldercounty.org/lu

Office Hours: Monday - Monday, Wednesday, Thursday, Friday 8 a.m. to 4:30 p.m. | Tuesday 10 a.m. to 4:30 p.m. Building Permits can be applied for and issued until 4 p.m. Plan review services by the Building Safety and Inspection Services Team are unavailable on Tuesdays. Building permits that require a plan review and counter questions will not be accepted on Tuesdays. Over the counter EZBP building permits are available on Tuesdays from 10 a.m.-4:30 p.m.

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N1101.13 Compliance.

Projects shall comply based on house size:

N1101.13.1 New Buildings.

 New buildings shall comply with the requirements of Figure N1101.13.1, "Options for New Buildings".



FIGURE N1101.13.1

a. Buildings with glazing to floor area ratios that exceed 18% may not use the prescriptive path.

Exception: Passive solar designs in which 50% or more of the total glazing faces south.

- b. The energy efficiency requirements of BuildSmart are deemed to be met by buildings with an annual space conditioning requirement of less than 5kBtu/sqft/year.
- c. When unconditioned floor area is being converted to *conditioned floor area* (except for basement finishes), the project is to meet the requirements for an addition.
- d. All "sqft" numbers refer to conditioned floor area ("CFA") in square feet as defined in Section N1101.6.



Homes up to 3500 sqft

Four Prescriptive Compliance Options

Footnote a.

- Buildings with glazing to floor area ratios that exceed 18% may not use the prescriptive path.
- Exception: Passive solar designs in which 50% or more of the total glazing faces south.

Up to 3500 sqft (Choose 1)
Precriptive Path ^a
Performance Path (ERI Path)

N1102.1.2 Insulation & Fenestration Criteria

- The building thermal envelope shall meet the requirements of Table N1102.1.2 based on the climate zone specified in Section N1101.7.
- This is an assembly R-value approach

CLIMATE ZONE	FENESTRATION U-FACTOR ^b	SKYLIGHT ^₅ U-FACTOR	GLAZED FENESTRATION SHGC ^b ,-*	ceiling <i>R</i> -value	WOOD FRAME WALL <i>R</i> -VALUE	MASS WALL <i>R</i> -VALUE ^{IJ}	FLOOR <i>R</i> -VALUE	BASEMENT [®] WALL <i>R</i> -VALUE	SLAB ⁴ <i>R</i> -VALUE & DEPTH	CRAWL SPACE® WALL <i>R</i> -VALUE
Boulder County (modified 5 & Marine 4)	0.30	0.43	NR	54	19 + 5 ^{h,k}	18/24	428	15/20	15, 3 ft	15/20

TABLE N1102.1.2 INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT^{a. I.m}

Uncompressed R-54 over the top plate

Bι

NH1102.1.3 R-Value Computation

This is a cavity R-value approach

- Insulation material used in layers, such as framing cavity insulation, or continuous insulation shall be summed to compute the corresponding component *R*-value.
- The manufacturer's settled *R*-value shall be used for blown insulation.
- Computed *R*-values shall not include an *R*-value for other building materials or air films.
- Where insulated siding is used for the purpose of complying with the continuous insulation requirements of Table N1102.1.2, the manufacturer's labeled *R*-value for insulated siding shall be reduced by R-0.6 unless typical installation includes air gaps between siding and substrate. If such gaps exist, R-value shall be reduced by 60% or R-0.6 (whichever is greater).

COMPARE INSULATION R-VALUES R-38 R-23 R-18 RAYCORE SIPS CONVENTIONAL FRAMING CONVENTIONAL FRAMING CLOSED CELL 5 1/2" FIBERGLASS FLASH & BATT 2" SPRAY FOAM AND INSULATION OLYURETHANE FOAM 1/2" FIBERGLASS INSU NSULATION R-23 R-19 R-24 SANDWICH PANEL SIPS CONVENTIONAL FRAMING CONVENTIONAL FRAMING WITH EXPANDED CELLULOSE INSULATION CELLULOSE INSULATION POLYSTYRENE FOAM INSUL WITH 1" EXTERIOR FOAM R-21 R-36 CONVENTIONAL FRAMING JCTURAL STEEL STUD WITH CLOSED CELL FRAMING WITH PRAY FOAM INSULATION CELLULOSE INSULATION INSULATED CONCRETE URAYCORE CON VALUES PER ASTM C518 STANDARDS # 159

https://raycore.com/compare-insulation-r-values/

N1102.1.4 U-Factor Alternative

This is a cavity U-Factor approach

• An assembly with a *U*-factor equal to or less than that specified in Table N1102.1.4 shall be permitted as an alternative to the *R*-value in Table N1102.1.2.

TABLE N1102.1.4

EQUIVALENT U-FACTORS^{a, c}

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR ^b	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
Boulder County (modified 5 & Marine 4)	0.30	0.43	0.020	0.045	0.056	0.026	0.067/0.05	0.05

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N1102.1.5 Total UA Alternative

This is a UA trade off approach

- If the total *building thermal envelope* UA (sum of *U*-factor times assembly area) is less than or equal to the total UA resulting from using the *U*-factors in Table N1102.1.4 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table N1102.1.2.
- The UA calculation shall be done using a method consistent with the ASHRAE *Handbook of Fundamentals* and shall include the thermal bridging effects of framing materials.

Problem:

Boulder County does not allow REScheck

There is no Software so this must be done by hand

ENERGY

REScheck[™]

Homes up to 3500 sqft

One Performance Compliance Option

Section N1106

- Energy Rating Index Compliance Alternative
- Boulder County is using a HERS ERI
 - Creation of the ERI based on the 2015 IECC

Up to 3500 sqft (Choose 1)
Precriptive Path ^a
Performance Path (ERI Path)

TOTAL CONDITIONED FLOOR AREA

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FIGURE N1106.4 MAXIMUM ENERGY RATING INDEX (HERS INDEX), GRAPHICAL

TABLE N1106.4 MAXIMUM ENERGY RATING INDEX, TABULAR

CFA, SQ FTª	MAXIMUM ERI	CFA, SQ FTª	MAXIMUM ERI	CFA, SQ FT³	MAXIMUM ERI
1500 or					
below	60	2700	48	3900	32
1600	59	2800	47	4000	30
1700	58	2900	46	4100	28
1800	57	3000	45	4200	26
1900	56	3100	44	4300	24
2000	55	3200	43	4400	22
2100	54	3300	42	4500	20
2200	53	3400	41	4600	16
2300	52	3500	40	4700	12
2400	51	3600	38	4800	8
2500	50	3700	36	4900	4
				5000 and	
2600	49	3800	34	above	0

^a Conditioned Floor Area ("CFA") is to be rounded to the nearest 100 square feet.

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Homes over 3500 sqft (CHOOSE 2)

- Performance Compliance option
 - Same as for home under 3500 sqft
- EnergyStar
 - Marshall Fire rebuilds EnergyStar v3.2
- Passive House
 - Passive house software calculations accepted
- LEED Platinum
- Living Building Challenge



Homes over 3500 sqft (CHOOSE 2)

- Performance Compliance option
 - Same as for home under 3500 sqft
 - Must report ERI with and without PV
- DOE Zero Energy Ready Homes
 For Marshall Fire rebuilds v2
- Passive House
 - Passive house software calculations accepted
- LEED Platinum
- Living Building Challenge

(Over 5000 sqft (Choose 2)
$\left \right $	Performance Path (ERI Path) Max ERI = 50 (Before PV) Max ERI = 0 (With PV)
$\left \right $	DOE Zero Energy Ready Home Certification
L	Passive House, LEED Platinum, or Living Building Challenge

N1106.16 Construction Waste

N1101.16 Construction jobsite waste reduction and recycling (Mandatory).

- All construction jobsite waste must be recycled including wood, scrap metal, cardboard, and concrete.
- Labeled containers must be provided at the construction-site for use in capturing recyclable material.
- A mixed load container may be used if that container is being sent to a waste/recycling center that will verify the weight of recycled material recovered from that mixed load.



N101.1.16.2 Verification

- Field inspection will be made by the Boulder County Building Division during the construction process to assure that recycling containers have been placed on-site.
- Prior to the final inspection, documentation must be provided to the Building Division office by the owner or waste/recycling contractor indicating the weight or volume of materials diverted from the waste stream.
- Materials that must be recycled include:
 - appliances, concrete, metals, cardboard, and wood (except pressure treated or painted wood), and thermostats and other devices containing mercury.
 - Other materials which are accepted by the waste/recycling contractor must also be recycled.



N1101.17 Indoor Water Conservation (Mandatory)

New and replacement bathroom sink faucets, shower heads, toilets, and urinals must be labeled as meeting EPA Water Sense (www.epa.gov/WaterSense/) criteria.

- Exceptions:
 - Showerheads with a maximum flow of 2.0 gallons per minute (gpm).
 - Urinals with a maximum flush rate of 0.5



#actonclimate

www.epa.gov

Exterior Energy use Systems

- N1103.9 Snow melt system controls (Mandatory)
- N1103.9.2 Design criteria for supporting on-site renewable energy equipment (Mandatory).
- N1103.10 Pools energy consumption (Mandatory).
- N1103.11 Portable spas (Mandatory).
- N1103.14 Other exterior energy uses.
 - Exterior energy uses, with the exception of cooking appliances, must be offset with on-site renewable energy production.
 - For purposes of calculating renewable energy offset requirements, the minimum usage of exterior, fossil-fuelconsuming, fireplaces and firepits shall be considered to be 50 hours per year, and exterior space heating devices shall be assumed to operate a minimum of 150 hours per year.





Retrofit Measures:

Existing New	Existing New	Existing New	Existing New	Existing New	Existing New	Existing New	Existing New	Existing New	Existing New
** Replace Furnace ^o	** Replace Boiler ^o	** Replace Water Heater ^p	+ Air Sealing ⁹	+ Electric Vehicle Charging Outlet	+++ Balanced Mechanical Ventilation	+ Water Efficiency Retrofits ^t	++ Radon System"	PV System [*]	•••• Conditioned Crawlspace*
						Bathroom Fixtures			
						Dishwasher and Washing Machine			

Submittal Requirements:

** Provide the manufacturers cut sheet listing the energy factor.

+ List this item on the construction documents.

++ Existing systems list them on the construction documents / New systems provide the design.

*** Provide details for this on the construction documents

+++ Provide the manufacturers cut sheets for the system, include the duct layout and details on the construction documents.

Note: There have been recent changes to the Boulder County EnergySmart program EnergySmart will continue to provide energy advising services to homeowners interested in undertaking a major energy efficiency or renewable energy improvements but will no longer be working with code compliance matters. For this reason, effective immediately, the Energy Smart Assessment and Advising requirements of BuildSmart will be waived for all projects.

Notes:

- If your project involves multiple project types (such as an addition and a remodel, or a Kitchen Remodel that is over \$50,000) you will need to
 meet the requirements of each category.
- 2) Individual efficiency or retrofit measures may be used to satisfy multiple requirements.
- For Additions greater than 200 sq. ft., which result a structure that has more than 3,500 sq. ft. of Conditioned Floor Area, the HERS Rating
 pathway is required.
- 4) If the Prescriptive Path is selected, provide calculations and graphics, plans and elevations, showing the glazing to floor area ratio. Note the maximum glazing to floor area ratio is limited to 18% per BuildSmart Prescriptive Path.

5) If HERS Rating Path is selected, provide the full building file and the fuel summary report.

Updated January 12, 2022

chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://assets.bouldercounty.gov/wp-content/uploads/2017/03/buildsmart-checklist-2015.pdf



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Planning and Zoning

Article 19

- Exempts Marshall fire rebuilds from Site Plan Review by allowing prescribed changes that can be reviewed concurrently as part of the review for the building permit
- Provides flexibility for rebuilding by providing allowances for changes to preexisting Structures
 - Increase is floor area
 - Change in location on building site
 - Change in height of structure
 - Mitigation of the risk or wildfire

Questions: contact Hannah Hippely

- Community Planning and Permitting / CPP PZD Planning Zoning
- hhippely@bouldercounty.org
- **720-564-2298**

Conclusion

Compliance

- Louisville
- Superior
- Unincorporated Boulder County

Next

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Common IECC Requirements



https://stock.adobe.com/search?k=conclusior

Thank you!

Robby Schwarz robby@btankinc.com 303-927-0025

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build<u>CAST</u>



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A Colorado Based Pragmatic Building Think Tank

Analyst . Synergist . Catalyst Thinking ZERO to 360°

Services







From Inspection and diagnostics, to IECC or program compliance, our applied building science approach in the field influences everything we

We learn from our field work to effect meaningful change in the construction industry in order to take sustainable building to mainstream building.

Think Tank

Spending time outside rejuvenates the soul and is part of my story. Find out more....

About



Thinking ZERO to 360°

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