



## COMMUNITY DEVELOPMENT DIVISION

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### 2018 Summit Sustainable Building Code

**TO:** Board of County Commissioners (BOCC)

**FROM:** Jeff Flynn, Interim Chief Building Official

**SUBJECT:** Summit Sustainable Building Code and 2018 International Energy Conservation Code Adoption

**DATE:** Prepared for March 31, 2020 Public Meeting

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#### **PURPOSE:**

The purpose of the March 31 public meeting is to present for the BOCC consideration to adopt the Summit Sustainable Building Code (SSBC), together with the 2018 International Energy Conservation Code (IECC) and associated amendments.

#### **BACKGROUND / CONTEXT:**

Over the past year, the County and towns have been working collaboratively to prepare for adoption and enforcement of the most current 2018 IECC, and to develop an updated version of the SSBC to serve as a new above-building code standard, requiring increased energy savings in new construction that exceeds the 2018 IECC code requirements. High Country Conservation Center (HC3) has been facilitating a collaborative inter-jurisdictional SSBC committee, with representation from the county, towns and building community, to tackle this effort.

#### Overview of SSBC - History and Current Requirements:

The first edition of the SSBC was adopted in 2008 as part of the 2006 International Code Council (ICC) code series adoption. It was developed by a collaborative group of building code officials, builders and designers, with facilitation from HC3 and Summit County Green Building Project (a community organization formed to provide education, technical support and facilitation of this effort). The 2008 SSBC provided a point-based system with a large menu of sustainable building options to choose from, to improve energy efficiency and resource conservation in construction, heating/cooling, recycling and water usage.

Over time, the energy codes have evolved to require increased building energy efficiency. Many of the original SSBC measures have been codified through the IECC and have become standard construction practices. During the 2012 ICC code adoption, the SSBC was therefore revised and condensed into a 2-page checklist. This 2-page checklist, which was applicable to all new residential construction and additions permitted under the IRC. Has been surpassed in its effectiveness with the adoption of the 2018 IECC.

There is not currently a SSBC for commercial buildings, although all residential commercial projects (i.e., large multifamily buildings) were required to be third party certified through LEED, Green Globes or another County-approved sustainable building rating system. This is a requirement of the amended 2012 International Building Code (IBC), Section 420.

### Context for Current Code Update:

Together with our Summit Climate Action Collaborative partners, Summit County adopted the Summit Community Climate Action Plan (CAP) in April 2019, which sets goals to reduce greenhouse gas (GHG) emissions in Summit County 50% by 2030 and 80% by 2050 (relative to a 2005 baseline). Summit County is actively working to develop and implement strategies to achieve these goals, in partnership with High Country Conservation Center, the towns, ski areas, utilities, and other Collaborative partners.

The County GHG emissions inventory, completed in 2018, shows that two-thirds of Summit County's emissions come from energy use in buildings - roughly one-third from residential buildings and one-third from commercial buildings. In order to reach the emissions reduction goals set forth in the CAP, we must pursue strategies to reduce building energy use and emissions from the Buildings sector. The overarching strategy outlined in the CAP is to transition to net zero energy buildings over the next decade (by 2030), to achieve highly efficient buildings powered by renewable energy and move away from natural gas. Relevant Building Energy Strategies set forth in the CAP include:

- Adopt and enforce the most updated version of the International Energy Conservation Code (IECC).
- Develop an above-building code standard for new construction.

To implement these strategies, the SSBC committee has been working collaboratively to help facilitate countywide adoption and enforcement of the most current 2018 IECC and an updated version of the Summit Sustainable Building Code (SSBC) to serve as a new above-building code standard for new construction.

### **OVERVIEW OF CODE DEVELOPMENT PROCESS AND TIMELINE :**

Over the past year (from January 2019 - March 2020), the SSBC committee has held numerous working group meetings to develop the proposed content of the updated SSBC. Representation on the committee includes town and county building officials, planners, builders, designers, engineers, and energy professionals. Technical assistance to inform the code development process has also been provided by contracted building energy consultants Jeff Dickinson and Matt Wright, the CO Energy Office, Southwest Energy Efficiency Project (SWEET), and the Department of Energy's Zero Energy Ready Home Program.

The committee concluded work to develop the proposed content of the updated SSBC in December 2019. Prior to and concurrently public hearings for code review and adoption by the BOCC and town councils were held. The following events are held to present the final draft of the proposed SSBC content to the building community, answer questions and solicit additional input.

- Open House: Thursday, January 29, 2020, 3:30 - 5pm, Summit Community & Senior Center
- Presentation at Summit County Builders Association Meeting: February 12, 2020
- Board of Review Meeting: February 18, 2020
- Countywide Planning Commission Meeting: March 2, 2020

### **REVIEW & ADOPTION by BOCC :**

We presented at four work sessions prior to this public meeting.

- BOCC Work Sessions on January 28, February 4, February 25 and March 10, 2020
- March 31, 2020 - Public Hearing for BOCC review and adoption

**Education & Trainings:** The SSBC committee also plans to continue working with the building

community after code adoption, to help educate and train local builders and designers on the new code requirements and compliance pathways. The committee will be offering a series of educational trainings from April - June 2020, prior to the proposed July 1, 2020 SSBC effective date. These trainings are being coordinated with support from the Colorado Energy Office and their code consultant, NORESKO. Additional trainings can also be scheduled as needed to address common questions that may arise throughout the proposed 6-month grace period / testing period for residential code compliance (from July 1, 2020 - January 1, 2021). In addition to live trainings, the Department of Energy's website provides instant access to expert information on hundreds of high-efficiency construction topics.

These are the training dates and classes we have scheduled.

- **April 1:**  
Building Science + Ventilation + Res Real World Application  
Lunch workshop: ZERH for Designers and Architects
- **May 7**  
Advanced Framing technique + Assemblies + Building envelopes
- **June 3:**  
ZERH for builders with someone from the DOE

#### **OVERVIEW OF SUMMIT SUSTAINABLE BUILDING CODE (SSBC) :**

The following five key elements are the body of the proposed SSBC.

1. **Zero Energy Ready Home National Program** - requiring all residential construction up to 5-story multifamily buildings to obtain a certification of compliance with the Department of Energy's Zero Energy Ready Home National Program.  
**Residential** : Homes certified through this program as Zero Energy Ready demonstrate increased energy efficiency and are designed to easily accommodate future installation of renewable energy systems that could then make the home fully net zero energy. Certification is verified by qualified third-party raters.  
Certification through the Zero Energy Ready Home Program requires meeting the standards of two federal building programs - ENERGY STAR for Homes and EPA Indoor airPLUS. In addition, homes are required to have ENERGY STAR appliances, WaterSense fixtures (or an efficient hot water distribution system), and solar PV ready design.  
Builders can meet the requirements of the Zero Energy Ready Home program using either the Prescriptive Path or the Performance Path. The Prescriptive Path requires compliance with a specific set of measures and requires no energy modeling. The Performance Path allows builders to choose from a number of measures, provided an energy model is submitted showing the home has achieved a pre-determined target Home Energy Rating System (HERS) score. The HERS Index is a nationally recognized system for calculating a home's energy performance. The index is based on a scale of 0 - 150, with 0 being a net-zero energy home. Each point is equivalent to a one percent increase/decrease in energy efficiency. Within the Zero Energy Ready Homes program, the target HERS score for each home is calculated based on application of a preferred set of energy measures to the respective home size. Larger homes require lower HERS scores (i.e., larger homes require more energy-efficient design),
  - **July 1 - December 31, 2020:** 6-month grace period / training period for SSBC and Zero Energy Ready Home Program compliance.
    - Applicants will be required to submit all required application materials and go through the full review process, but failure to obtain a final certification of

compliance with the Zero Energy Ready Home Program will not be cause for withholding County building permit approvals during the initial training period. This is a practice period for builders and designers to learn the new code requirements and practice taking homes through the new program to achieve compliance. The grace period will also provide an opportunity to work out any kinks with the Zero Energy Ready Home Program with the DOE before full compliance is required for all homes.

- o **January 1, 2021:** Effective date for full implementation of the Residential SSBC with Zero Energy Ready Home Program compliance required for all building permit approvals.

2. **EV charging infrastructure requirements** for residential and commercial developments. In addition to Zero Energy Ready Home Program certification, the proposed SSBC requirements for residential also include a requirement for electric vehicle (EV) charging infrastructure to be roughed into newly constructed homes and garages meeting the scope of the IRC. This includes an electrical box, conduit to run wire and a blank in the service panel. This would be an approximately \$100 improvement, which would allow for the installation of an EV charging station to be added to the residence in the future without tearing into the wall.

For one to two-family dwellings, the proposed SSBC requires at least one EV ready space per dwelling unit. EV ready spaces have installed electrical panel capacity and a raceway with conduit that terminates in a junction box or 240-volt charging outlet (typical clothing dryer outlet).

For multifamily dwellings (three or more units), the proposed SSBC includes the following requirements for a minimum number of electric vehicle supply equipment (EVSE) installed spaces and EV capable spaces to be provided, based upon the total number of parking spaces.

**Group R occupancies.** Group R occupancies with three or more dwelling units and/or sleeping units shall be provided with EV charging in accordance with Table C405.11.1. Calculations for the number of spaces shall be rounded up to the nearest whole number.

Total Number of Parking Spaces	Number of EVSE Installed Spaces	Number of EV Ready Spaces	Number of EV Capable Spaces
1	None	1	None
2 - 9	None	1	20% of spaces
> 10	5% of spaces (minimum one dual-port charging station)	10% of spaces	40% of remaining spaces

For commercial buildings, the proposed SSBC includes the following requirements for a minimum number of electric vehicle supply equipment (EVSE) installed spaces and EV capable spaces to be provided, based upon the total number of parking spaces.

**Group A, B, E, I, M and S-2 occupancies.** Group A, B, E, I, M and open or enclosed parking garages under S-2 occupancy shall be provided with electric vehicle charging in accordance with Table C405.11.2. Calculations for the number of spaces shall be rounded up to the nearest whole number.

**Exception:** The number of electric vehicle supply equipment (EVSE) installed spaces may be reduced by up to five provided that the building includes not less than one parking space equipped with an EV fast charger and not less than one EV ready space.

Total Number of Parking Spaces	Number of EVSE Installed Spaces	Number of EV Ready Spaces	Number of EV Capable Spaces
1	None	1	None
2 - 25	None	1	1
> 25	5% of spaces (minimum one dual-port charging station)	10% of spaces	40% of remaining spaces

3. **Requiring all commercial development to be 10% less energy consuming than the 2018 IECC** baseline code requirements, with the three proposed pathways for compliance.
  - Since adoption of the first SSBC in 2008, the SSBC has applied only to residential construction. Given that the 2020 code adoption will create the first sustainable code standards for commercial buildings in Summit County, the SSBC committee is recommending that above-code energy efficiency requirements for commercial buildings be provided within the structure of the 2018 IECC.
  - The SSBC committee hired a code consultant, Carbondale-based architect Jeff Dickinson of BioSpaces, to facilitate development of the recommended commercial sustainable code requirements. Mr. Dickinson suggested an energy modeling exercise to determine whether it would be feasible to require commercial new construction to achieve an additional 10 percent energy savings compared to the 2018 IECC. The engineering firm, Energetics, completed this modeling project, which demonstrated that 10 percent energy savings can be achieved following a number of different pathways.
  - Based on the work performed, the SSBC committee is recommending that Summit County jurisdictions require new commercial buildings to demonstrate 10 percent energy savings above the 2018 IECC, by following either the Prescriptive or Performance Pathway. Prescriptively, buildings will have to either install onsite solar PV to offset 10 percent of building energy use or install three energy efficiency packages as outlined in the 2018 IECC. If complying via the Performance Path, energy modeling must show that the proposed design will achieve 10 percent energy savings compared to the 2018 IECC code-defined baseline buildings.
  
4. **Water reduction fixture and appliance** requirements for commercial buildings. The SSBC for commercial buildings includes added water reduction requirements for commercial occupancies, to achieve water efficient plumbing fixtures and fittings, and efficient water-using appliances such as clothes washers and dishwashers. Recommended code came from the International Green Construction Code (IgCC).
  
5. **Requiring an energy audit** prior to building permit issuance for any residential remodels and additions valued at \$50,000 or more.
  - **Incentivizing Energy Efficiency Upgrades in Remodels & Additions:** Based on direction received from the BOCC and town councils, the SSBC committee was tasked with developing recommended strategies to help incentive energy efficiency upgrades during remodels and additions to existing structures.
  - The SSBC is to require a home energy assessment to obtain a building permit for residential additions and remodels valued at \$50,000 or more. This is intended to

provide the applicant (i.e., homeowner, designer and/or builder) with information on key opportunities to integrate recommended energy efficiency upgrades into the renovation project. Applicants will receive information on the recommended energy efficiency upgrades, the projected energy cost savings and payback period for each improvement, and information on available Xcel Energy and local rebates available to offset the out-of-pocket costs of the respective improvements. The goal of this approach is to encourage informed decision-making and catalyze energy efficiency upgrades through rebates and education on projected cost savings and return on investment. The energy audit recommendations and conclusions will not be required to be incorporated into the scope of work for the building permit.

**STAFF REQUEST AND RECOMMENDATION :** Staff is recommending the adoption of the Summit Sustainable Building Code and 2018 IECC code amendments to the BOCC with the changes discussed above.

cc: Jim Curnutte, Community Development Director  
Keely Ambrose, Assistant County Attorney  
Bentley Henderson, Assistant County Manager