

## **Sec. 18-23 Sustainable Building Regulations**

(a) Purpose. The intent of the Sustainable Building Regulations program for all new construction and some remodels, and reconstruction in the Town of Basalt is to encourage cost-effective sustainable building methods to create durable, energy efficient structures that conserve natural resources, promote the efficient use of building materials, and improve indoor air quality.

The Building Official may prepare and maintain a SBR Commentary as defined herein to help administer the the Sustainable Building Regulations.

(b) Definitions:

*Air Barrier* - Materials assembled & joined together to provide a barrier to air leakage through the building envelope. An air barrier may be a single material or a combination of materials.

*Biomass Fuel* - Any plant-derived fuel available on a renewable or recurring basis, including agricultural crops and trees, wood and wood waste and residues (including wood pellets), plants (including aquatic plants), grasses, residues, and fibers.

*Building component* is one of the following: framing, wall, siding, flooring, trim, and other primary elements of a building as determined by the Town Building Official.

*Building Thermal Envelope* - The basement walls, exterior walls, floor, roof & any other building elements that enclose conditioned space or provide a boundary between conditioned space & exempt or unconditioned space.

*Conditioned building area or space* is the area in building, inside insulated walls, being heated or cooled, containing uninsulated ducts, or with a fixed opening directly into an adjacent conditioned space.

*Construction element* is one of the following: framing material, siding, flooring, trim, and other primary elements of a building as determined by the Town Building Official.

*Continuous Air Barrier* - A combination of materials & assemblies that restrict or prevent the passage of air through the building thermal envelope.

*Continuous Insulation (ci)* - Insulating material that is continuous across all structural members without thermal bridges other than fasteners & service openings. It is installed on the interior or exterior of is integral to any opaque surface of the building envelope.

*Engineered lumber* is a composite wood product made from pieces of recycled/reconstituted/scrap wood and fibers bonded together with adhesive to create a durable and resource friendly substitute for raw-sawn lumber.

*Occupancy* is the occupancy as designated by the building code in effect at the time of permit submittal.

*Occupied Area* - An area where one or more individuals normally spend time (more than three hours per person per day on average) seated or standing as they work, study, or perform other focused activities inside a building.

*New Construction* - refers to site preparation for, and construction of, entirely new structures and/or significant extensions to existing structures whether or not the site was previously occupied.

*Performance* - is one of the allowed paths under the International Energy Code for satisfying the requirements of that code. The definition used in this Article is the same as included in version of the International Energy Code adopted by the Town of Basalt.

*Prescriptive* - is one of the allowed paths under the International Energy Code for satisfying the requirements of that code. The definition used in this Article is the same as included in version of the International Energy Code adopted by the Town of Basalt.

*Recycled content* is the sum of post consumer recycled content plus one-half the pre consumer recycled content, based on cost.

*Renewable energy source* is incoming solar radiation and photosynthetic processes; natural phenomenon including wind, hydropower, and lake or pond thermal differences; from decomposition of waste material; and processes that use regenerative materials, including wood and bio-based products; and from the internal heat of the earth.

*SBR Commentary* - A document prepared by the Building Official to highlight and summarize knowledge and facts relating to the implementation of the Town's Sustainable Building Regulations. It may also include summaries of the IECC as the Town's Sustainable Building Regulations is built on the existing requirements and a knowledge of the IECC requirements is essential to successful implementation of the Town's Sustainable Building Regulations. The Commentary may also include the list of eligible training opportunities.

*Zero Energy Ready Home Program* - means the program developed by the Department of Energy (DOE) which includes a robust set of guidelines to create high performance homes that conserve natural resources and have a limited impact on the environment, are healthy for occupants, comfortable and durable.

(c) SBR regulations address requirements for the following subjects which are used in both the Type I and the Type II Sustainability Building Regulations:.

- Part 1: Site/Water Conservation
- Part 2: Recycling and Reuse
- Part 3: Framing and Materials
- Part 4: Energy
- Part 5: Renewable Energy
- Part 6: Indoor Air Quality
- Part 7: Innovation

(d) Education Requirements: All applicants for a building permit subject to SBR I or SBR II Regulations within the Town of Basalt, including contractors and owner/builders, must provide documentation from the SBR program of completing 2 hours of eligible SBR training within the 18 month period preceding the building permit issuance subject to those SBR Requirements. This requirement will apply to all building permits submitted after January 1, 2019. The Building Official will maintain a list of eligible training opportunities. Applicants are allowed to submit proof of attendance at training events not on the list for review and approval by the Building Official and potential addition to the list of eligible training opportunities.

(e) Powers and Duties of the SBR Review Committee: A SBR Review Committee, made up of the Town Manager, Town Planner, Building Official, or their designee and a representative of CORE, has the authority to review and decide requests for interpretations and appeals of the SBR regulations. For more complex or significant reviews, the SBR Review Committee may refer the request to the Town Council for Action, or an applicant may appeal a decision of the SBR Review Committee to the Town Council utilizing the procedures established in Section 16-11 of the Zoning Code. Interpretations and exemptions shall be reviewed in accordance with the following standards and procedures.

1. Compliance with the purpose of intent of this Article.
2. Any special conditions, circumstances or hardships that warrant the exemption and/or appropriate conditions of approval

The SBR Review Committee may place reasonable conditions on an interpretation or exemption request. The applicant for a SBR Review shall pay

and application fee and shall reimburse the Town for costs as provided in the Town's Fee Schedule.

### **Sec. 18-25 Type II Sustainable Building Regulations (SBR) - Non-Residential, and Multi-family Residential Construction**

(a) Applicability. Type II SBR apply to:

- (1) All new non-residential, mixed use, townhome (non-single family construction) and/or multi-family construction not covered by the Type I Sustainable Building Regulations.
- (2) Tenant finish to buildings covered by the Type II SBRs previously built as a core and shell
- (3) Remodels to building covered by the Type II SBRs at Level 2 Category, per the International Existing Building Code.
- (4) Remodels to buildings covered by the Type II SBRs at Level 3 Category or greater per the International Existing Building Code or include more than 2,000 square feet of conditioned floor area
- (5) Additions and detached garages to building covered by Type II SBRs of conditioned building area, greater than 500 square feet

Applicants for construction subject to the SBR Regulations must demonstrate ability to comply with the appropriate threshold level established by Subsection (c) below and to meet the items marked as **REQUIRED** prior to building permit based on conditioned building area and must demonstrate ability to comply before any new construction, remodel, addition or tenant finish begins; this compliance must be verified prior to a certificate of occupancy or certificate of completion is granted by the Building Official.

(b) Exceptions:

- (1) Remodels to buildings covered by the Type II SBRs at the Level 1 Category.
- (2) New Manufactured housing approved by Colorado Department of Housing; and which comes from plants certified to produce ENERGY STAR qualified manufactured homes on an ongoing basis. This process includes utilizing home designs that meet ENERGY STAR design guidelines.
- (3) One-story attached or detached additions of conditioned space, provided that the floor area does not exceed 500 square feet or detached additions of any space provided the space is not conditioned.
- (4) Remodels that fall under the Level 1 and Level 2 Categories per the International Existing Building Code.

(c) Mandatory Requirements and Paths: Building Permit Applicants must inform the building official at the time of building permit application which of the following paths will be used to satisfy the SBR II point thresholds.

- (1) Prescriptive which has the following subpaths plus one Efficiency Option.
  - R-Value Based

- Assembly U,C & F-factor
  - Component Performance Alternative/COM Check
- (2) ANSI/IESNA/ASHRAE/90.1  
(3) Building Performance as defined in Section 23  
(4) LEED GOLD or better per the most recent version by the USGBC. The Town's fee schedule provides for rebates in the building permit fee for this compliance path.

Conditioned building space subject to Type II SBR must satisfy all IECC Mandatory requirements for the path chosen by the Applicant. The conditioned building space must satisfy the point thresholds as shown below in Table 1 for each type of development subject to SBR Type II regulations. In addition all New Construction subject to SBR II regulations must satisfy items identified as **REQUIRED**. All Tenant finishes and remodels subject to SBR II requirements must satisfy the items identified as **REQUIRED** unless they are not applicable.

Table 1  
Type II SBR Point Thresholds

<b>Required Threshold by Building Type</b>	<b>Points</b>
NC: Commercial - New Construction	66
NC: Commercial - Core & Shell	63
NC: Commercial - Hotel & Hospitality	66
NC: Commercial - Schools & Major Child Care	66
NC: Commercial - Healthcare	66
NC: Commercial - Data Centers	66
TF: Commercial Tenant Finish (non-restaurant)	3
TFR: Commercial - Tenant Finish (restaurants)	20
R1: Commercial - Remodels (Level 1 under the IEBC)	0
R2: Commercial - Remodels (Level 2 under the IEBC)	10
R3: Commercial - Remodels (Level 3 or Change of Occupancy under the IEBC OR > 2,000 SF)	20
A: Commercial - Additions & Detached Garages (accessory), greater than 500 SF	20
W: Commercial - Warehouses & Distribution Centers, primary use	25
MF: Multi-family (apartments or condominiums)	63
H2: Commercial - Remodels, Historic Landmark Buildings (Level 2 under the IEBC)	7
H3: Commercial - Remodels, Historic Landmark Buildings (Level 3 or Change of Occupancy under the IEBC OR > 2,000 SF)	15

Notes:

- [1] Points in excess of the minimum points may be applied to each subsequent commercial tenant finish.
- [2] The abbreviations used in the left column are also used in the SBR Commentary prepared by the Building Official. NC stands for New Construction. TF stands for tenant finish for non-restaurants. TFR stands for tenant finish for restaurants. R1 Commercial stands for Level 1 remodels under the IEBC. R2 stands for Level 2 remodels under the

IECC. R3 stands for Level 3 remodels under the IEBC, or change of occupancy under the IEBC or remodels involving more than 2,000 square feet. A stands for additions and detached garages of conditioned building area greater than 500 square feet. W stands for new construction of warehouses and distribution centers. MF stands for new construction of multi-family apartment or condominiums. H2 means remodels at Level 2 under the IECC to historic landmarked buildings designated under Article XVIII of Chapter 16 of the Municipal Code under the IECC . H3 means remodels to historic landmarked building at level 3 under the IECC or a change of occupancy under the IEBC or additions or a historic building greater than 2,000 square feet.

[3] For specific developments subject to Type II SBR which do not fit into a category listed above, the Building Official shall determine the appropriate number of points required based on the similarity to the listed developments types.

Projects not meeting the minimum points shall pay a mitigation fee as follows:

Fee = Square footage of project x number of points short x \$ .15.

For example, a 4000 square foot project that is 5 points short would be assessed a fee as follows:

$$4000 \times 5 \times \$ .15 = \$3000$$

(d) Type II Sustainable Building Regulations - Point Details

Information on the benefits of the tool used to satisfy the SBR point requirements for Type II SBR Developments, the qualification of what is required by the Applicant and at what point in the building permit process compliance will be confirmed is provided in this subsection.

**(1) Part 1: Site / Water Conservation**

**(a) Part 1.01 Construction Activity Pollution Prevention (CAPP)**

Benefit: Proper erosion control measures prevent off-site sedimentation in storm sewers, and ultimately, our rivers.

Qualification: Include on construction management plan, and field implement. Limits of disturbance to have sediment fencing, stacked hay bales in swales/drainage ditches, and revegetation matting in any areas outside fencing disturbed by construction.

Points: **REQUIRED**

Confirmation will be at plan review and footing inspection.

**(b) Part 1.02 Redevelopment or Brownfield Redevelopment. Requires Deconstruction.**

Benefit: Redevelopment is preferable to sprawl. Brownfields are previously developed industrial and commercial sites that are potentially contaminated. Brownfield redevelopment additionally eliminates the hazard of contaminants.

Qualification: Show on site plan location of existing or pre-existing structures. Deconstruction is required for at least 25% of existing structure(s) for any reusable/recyclable items for both redevelopment and brownfield. For brownfield redevelopment, show documentation demonstrating previous or existing site contamination and clean-up.

Points: Redevelopment 5 points. Brownfield redevelopment 10 points

Confirmation will be at plan review and at final for contamination and clean-up as part of the building permit..

### **(c) Part 1.03 Development Density and Community Connectivity**

Benefit: High-density development, as defined in the Location & Transportation per the latest version of LEED; limits sprawl and preserves our natural surroundings and Community connectivity encourages basic services within easy reach of residential neighborhoods as defined.

Qualification: Demonstrate at Plan Review that they satisfy both density and connectivity.

Points: 5

Confirmation will be at plan review.

### **(d) Part 1.04 RFTA Bus Stop**

Benefit: Convenience promotes bus ridership.

Qualification: Development is within ¼ mile of a RFTA bus stop. Measurement will be along the most direct pedestrian route with a sidewalk or improved trail.

Points: 1

Confirmation will be at plan review.

### **(e) Part 1.05 Proximity to Schools**

Benefit: A close proximity to schools allows children to easily bike or walk to school and alleviates need for use of vehicles.

Qualification: Demonstrate that property is within ½ mile of schools

Points: 1

Confirmation will be at plan review.

**(f) Part 1.06 Walkability/bikeability: The site/design provides connection to a multi-use path network.**

Benefit: A close proximity to bike paths allows employees to easily bike, or walk, to work; or to get to work easily and safely from a bus stop.

Qualification: Show direct connection to path network on site/vicinity plan that are within  $\frac{1}{2}$  of a mile of a RFTA bus stop. Measurement shall be along the most direct pedestrian with a sidewalk or improved trail.

Points: 2

Confirmation will be at plan review.

**(g) Part 1.07 Bike Share Facility**

Benefit: Having bikes readily available promotes their use for short trips as an alternative to driving.

Qualification: Development must be within  $\frac{1}{4}$  mile (measurement will be along the most direct bicycle route) of a bike share facility. If the facility is on-site, 3 points will be awarded. If facility is not on site, up to 3 points may be awarded if the applicant has made a financial contribution.

Points: Within  $\frac{1}{4}$  mile, 1 pt. Onsite, 3 pts. Financial contribution, up to 3 pts.

Confirmation will be at plan review and final inspection.

**(h) Part 1.08 LEED AP on Project Team**

Benefit: Having an individual on the team that has a current LEED Accreditation can help streamline the efficiency of the building.

Qualification: Individual must be an employee of the Contractor and hold a current LEED AP Accreditation.

Points: 2

Confirmation will be ongoing throughout the project.

**(i) Part 1.09 Fill/Excavation Transport Reduction**

Benefit: Reduces truck traffic necessary to haul excavation spoils and bring in fill.



Qualification: Dispose of or store excavation spoils within 1 mile of development. Source fill materials within 1 mile of development. Trip tickets, logs or visual confirmation is required.

Points: 1

Confirmation will be at plan review & foundation inspection.

**(j) Part 1.10 Green Vehicles: Preferred Parking**

Benefit To reduce pollution by promoting alternatives to conventionally fueled vehicles.

Qualification: Designate 5% of all parking spaces used by the project as preferred parking for green vehicles. Clearly identify and enforce for sole use by green vehicles. Distribute preferred parking spaces proportionally among various parking sections (e.g. between short term and long term spaces). Green vehicles must achieve a minimum green score of 45 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide.

Points: 2

Confirmation will be at plan review & the final inspection.

**(k) Part 1.11 Green Vehicles: Charging Stations**

Benefit: To reduce pollution by promoting alternatives to conventionally fueled vehicles.

Qualification: Provide charging stations for 5% or more of all parking spaces. Type 2 station, 3 pts.; "Fast-charging" station, 5 pts., max at 15. Type 2 stations is 208 - 240V; "Fast-charging" stations are greater than 240V.

Points: 3 to 15

Confirmation will be at plan review & the final inspection.

**(l) Part 1.12 Covered Bicycle racks**

Benefit: Convenient weather protection and security for bikes.

Qualification: Planned and constructed bike storage must be covered, at a minimum, and include rack space or other means of security for at least one bike per 10 occupants as defined by the building code.

Points: 1

Confirmation will be at plan review and final inspection.

**(m) Part 1.13 Employee Shower and Employee Changing Rooms**

Benefit: This may encourage employees to bike to work which benefits not only the environment, but also the employees' fitness level.

Qualification: Changing rooms must have lockers and shower facilities for employees in commercial buildings.

Points: 2

Confirmation will be at plan review and final inspection.

**(n) Part 1.14 On-site affordable housing unit, live-work mixed use beyond code-required minimum.**

Benefit: Living where you work makes for a short commute.

Qualification: Show on-site dwelling unit(s) that meet the Town of Basalt Affordable Housing Guidelines for either a deed restricted for sale unit or rental unit, which are beyond the code-required minimum mitigation and beyond any requirement contained in a land use approval ordinance for that development.

Points: 5 per unit; 25 maximum

Confirmation will be at plan review and final inspection.

**(o) Part 1.15 Maximize Open Space and Habitat**

Benefit: Lessens visual impact of development; increases visual appeal. Natural habitat supports biodiversity.

Qualification: Total lot coverage is less than 75% of maximum allowable for lot and total surface parking and hardscape area is less than building footprint(s).

Points: 2

Confirmation will be at plan review and final inspection.

**(p) Part 1.16 Stormwater Design**

Benefit: Provides a portion of irrigation needs from natural precipitation, eliminates direct discharge of potential pollutants or sediment, and promotes groundwater recharge.

Qualification: 100% of surface water runoff travels through bioswales, landscaped detention areas, engineered systems (such as the StormTech System) or combination thereof.

Points: 3

Confirmation will be at plan review and final inspection.

#### **(q) Part 1.17 Diverse Native Landscaping**

Benefit: Increases survivability rate of plantings; and limits invasive species.

Qualification: Landscaping plan includes 10 or more native species over 90% of landscaped area.

Points: 1

Confirmation will be at plan review and final inspection.

#### **(r) Part 1.18 Water Efficient Landscaping**

Benefit: Reduces irrigation demands and conserves water.

Qualification:

- Limited Turf: Irrigated turf area must be equal or less than 40% of landscaped area, or 1000 square feet, whichever is smaller. Show turf areas and drip-irrigation lines/beds on landscaping plan. Irrigation systems shall be controlled with automatic timer and rain sensors. Any turf area shall use species that utilizes at least 25% less water than Kentucky Bluegrass. The Town Building Official may determine whether this standard is applied on a lot by lot basis or whether the common area on a project may be considered in satisfying this standard. The intent is that an entire planned development meets the requirement.
- Xeriscaped: Landscaping plan must only show xeriscape plants listed by [Colorado Waterwise](#), or source recognized by the Town Building Official. Landscape plan must meet landscaping minimum standards. Temporary irrigation is permissible during plant establishment period. Landscaping must be planted prior to CO to be eligible.

Points: limited turf: 2 pts., xeriscaped: 4 pts.

Confirmation: will be at plan review and final inspection.

#### **(s) Part 1.19 Interior Water Use Reduction**

Benefit: Conserves water.

Qualification: Demonstrate all water use reductions on interior fixtures, including but not limited to: toilets, showers, sinks, faucets, dishwashers, clothes washers and urinals. Baselines are based on average occupant usage pursuant to the current EPA WaterSense requirements.

Points: 2 pts. for 20% reduction; 3 pts. for 30% reduction; 4 pts. for 40% reduction

Confirmation will be at plan review and final inspection.

#### **(t) Part 1.20 Heat Island Reduction**

Benefit: Limits heat island effects on microclimates, the built environment, and nature.

Qualification: Shade greater than 75% of parking, use solar-reflective building materials on 100% of roof or implement a green roof for 50% or more of the roof.

Points: : 2 pts max.

Confirmation will be at plan review and final inspection.

### **(2) Part 2.0: Recycling and Reuse**

#### **(a) Part 2.01 Storage and Collection of Recyclables / Compost in Design**

Benefit: Provides for convenient recycling and composting.

Qualification: Show on construction plans areas for storage of recycling and composting containers next to trash container(s). Adequate space for a cardboard 2-yard minimum container, and totes for co-mingled and newspaper/mixed paper required. Area must be dedicated and accessible to haulers.

Points Required

Confirmation will be at plan review and final inspection.

#### **(b) 2.02 Construction Waste Recycling**

Benefit: Reduces construction waste to landfills.

Qualification: Provide labeled containers during construction for recycling cardboard, wood waste, and/or metal scrap.

Points: 1 per material type; 3 maximum

Confirmation: Labeled containers clean of trash with evidence of use must be in place during all inspections.

**(c) Part 2.03 Reclaimed and/or Recycled Content Materials**

Benefit: Supports recycling market and reduces use of virgin materials.

Qualification: Use of construction materials that are either reclaimed from another structure, and/or any materials with recycled-content in them qualify. Materials that are purchased from a reclaimed materials distributor, deconstructed by the owner/applicant from another structure, or that are purchased from a used building materials exchange all qualify as reclaimed materials (must provide documentation). Some common recycled-content materials include steel studs, composite decking, recycled-content faux shake/slate roofing, cellulose or shredded cotton batt insulation, recycled-content carpets, countertops, recycled-content tile, etc. Provide material info onsite; field inspected. More than 50% of the material type in place must be reclaimed, recycled and/or recycled-content; recycled content minimum for material shall be 50% post or pre-consumer.

Points: 2 per material type; 6 maximum

Confirmation: Material information/documentation must be on job site with field set of plans for inspection.

**(d) Part 2.04 Use of Beetle Kill Pine**

Benefit: Use of cosmetically blemished natural resource from Colorado. Left in forests the timber will either decay or burn in forest fires, either way releasing the CO<sub>2</sub> they stored while growing.

Qualification: Structural use as dimensional framing material, or as cross laminated timber (CLT); and/or nonstructural uses such as siding, flooring, trim, etc. Material must be used for over 50% of total construction element.

Points: 2 for structural; 2 for nonstructural; 4 maximum

Confirmation will be at framing and/or final inspection.

**(3) Part 3.0: Framing and Materials**

**(a) Part 3.01 Insulated Concrete Forms (ICFs) for foundation**

Benefit: Insulated Concrete Forms (ICFs) are expanded-polystyrene foam blocks which are stacked with concrete poured into the internal void. ICFs provide improved insulation and reduced moisture transport over conventional foundation walls.

Qualification: ICFs shown on structural drawings and used for over 75% of the foundation.

Points: 5

Confirmation will be at plan review and foundation inspection.

**(b) Part 3.02 Efficient Framing Techniques**

Benefit: Optimum value engineering (OVE) reduces building materials and can increase overall energy envelope performance.

Qualification: Design and construct using advanced framing techniques consistent with OVE. Some methods include 24" OC framing, 2-stud corners, insulated headers on exterior walls & no headers in non-load bearing walls.

Points: 2

Confirmation will be at plan review and the framing inspection.

**(c) Part 3.03 FSC or SFI Certified Materials, Engineered Lumber and/or Steel Studs**

Benefit: Conserves resources. Using FSC or SFI materials promotes sustainable stewardship of forest resources. Engineered lumber uses smaller, fast-growing, tree species and there is little or no waste involved in the production and end use of the products. Engineered lumber products are an innovative alternative to the solid sawn lumber materials that have to be harvested in diminishing old growth forests. Steel framing requires less lumber, is recyclable, and reduces scrap material.

Qualification: FSC (Forest Stewardship Council) or SFI (Sustainable Forestry Initiative) stamped certification on material(s) required. Use of FSC or SFI materials, engineered lumber, pre-fab trusses and/or steel studs must be used in over 50% of each construction element.

Points: 2 per material type, 7 maximum

Confirmation will be at plan review and the framing inspection.

**(d) Part 3.04 Materials manufactured within Colorado and/or rapidly renewable materials**

Benefit: Reducing travel distance reduces carbon footprint. Rapidly renewable materials have less of an environmental impact.

Qualification: Show documentation for any materials used that were manufactured within Colorado, or that consist of rapidly renewable materials

(naturally reproducing within 15 years). Material type must be used in over 50% of the building component.

Points: 2 per material type, 6 maximum

Confirmation: Plan review and framing inspection

#### **(e) Part 3.05 Structural Insulated Panels (SIPs)**

Benefit: SIPs (a foam core laminated to oriented strand board) provide superior R-values and reduced air-infiltration / thermal bridging compared to conventional 2x6" wall construction.

Qualification: Must be used for > 75% of exterior walls.

Points: 10

Confirmation will be at plan review and framing inspection.

### **(4) Part 4 Energy**

#### **(a) Part 4.01 Continuous Air Barrier**

Benefit: Airflow carries moisture that impacts a material's long-term performance (serviceability) and structural integrity (durability). Airflow also affects building behavior in a fire (spread of smoke and other toxic gases, supply of oxygen), indoor air quality (distribution of pollutants and location of microbial reservoirs) and thermal energy use. One of the key strategies in the control of airflow is the use of air barriers. For more information visit: <https://buildingscience.com/documents/digests/bsd-104-understanding-air-barriers>

Qualification: A continuous air barrier is required around the entire thermal envelope & must be shown on construction drawings.

Points: **REQUIRED**

Confirmation will be at plan review.

#### **(b) Part 4.02 Fenestration**

Benefit: A lot of heat transfer occurs at the windows. Reducing the window area decreases energy transfer resulting in increased efficiency.

Qualification: Gross window to wall area cannot exceed 30% for vertical glazing and 3% for skylights.

Points: **REQUIRED**

Confirmation will be at plan review.

#### **(c) Part 4.03 Vestibules**

Benefit: Vestibules minimize heat loss or heat gain at the entrance.

Qualification: Where entering a tempered space larger than 3,000 SF, a vestibule is required. It is not required if revolving doors are utilized.

Points: **REQUIRED**

Confirmation will be a plan review.

#### **(d) Part 4.04 Exterior Ducts**

Benefit: Insulating the ducts on the exterior minimize the temperature gap between the inside & outside air, therefore making the mechanical systems work more efficiently.

Qualification: Ducts outside the building or integral to the building envelope requires R12 insulation.

Points: **REQUIRED**

Confirmation will be at plan review & mechanical rough-in.

#### **(e) Part 4.05 Exterior Insulation - Required if using steel framing**

Benefit: Reduces thermal bridging & increases efficiency & indoor comfort.

Qualification: Exterior insulation must be installed if steel framing is utilized.

Points: **REQUIRED**

Confirmation will be at plan review & insulation inspection.

#### **(f) Part 4.06 Controls**

Benefit: Daylight-responsive controls shall be provided within each space for control of lights in that space and comply with each requirement per current IECC Code.



Qualification: Required only for lights located in daylight zones (receiving ample daylight) and where there is at least 150W of lighting to be controlled.

Points: **REQUIRED**

Confirmation will be at plan review & final inspection.

### **(g) Part 4.07 Building Energy, Envelope and Systems Commissioning**

Benefit: Confirms performance levels of design and construction that may not be obvious from visual inspection.

Qualification: A commissioning plan must be provided for buildings over 5000 s.f. the plan must be followed by an inspection report.

Points: **REQUIRED** (For all new systems)

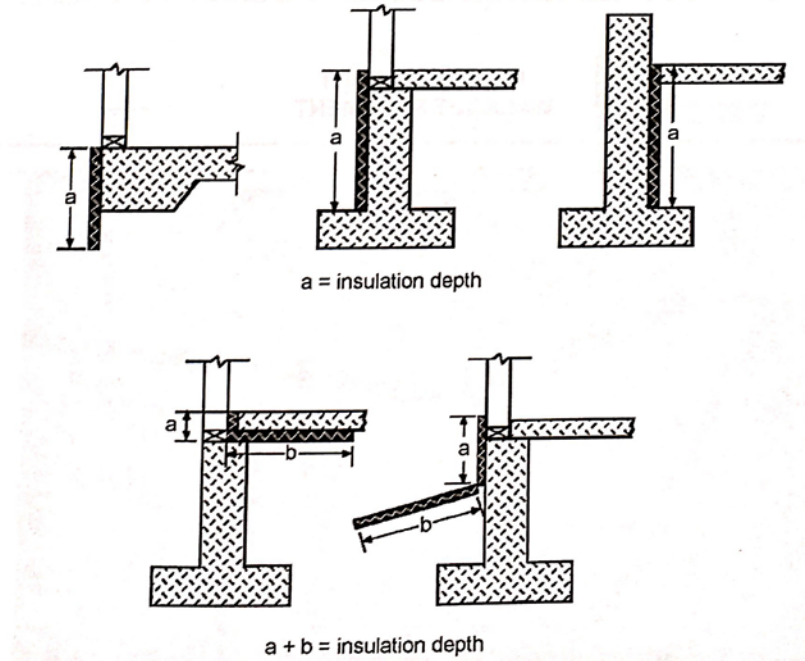
Confirmation will be prior to certificate of occupancy. (Opportunity for innovation points for providing ongoing monitoring system.)

### **(h) 4.08 Slab Insulation**

Benefit: Increased insulation levels reduce heat loss.

Qualification:

- Under-Slab: Must show horizontal under-slab insulation in addition to required slab-edge insulation on drawings and install accordingly.
- Slab-Edge (Perimeter): Must show slab-edge (perimeter) insulation greater than minimum IECC requirement on drawings and install accordingly. Methods shown in figure R402.2.8 below.



**Figure R402.2.8  
SLAB INSULATION METHODS**

Points: 4 pts. max

- Under-Slab: R5, 2 pts.; R10, 3 pts.
- Slab-Edge (Perimeter): R5 over current IECC minimum, 1 pt.

Confirmation will be prior to slab pour.

**(i) Part 4.09 HVAC Equipment Performance**

Benefit: Increased HVAC efficiency results in cheaper utility bills & saves energy.

Qualification: Increased efficiency above what is listed in current IECC Code.

Points: 2 pts for 10% increase; 4 pts for 15% increase.

Confirmation will be at plan review & mechanical rough-in.

**(j) Part 4.10 No recessed lights within building envelope**

Benefit: Ceiling penetrations allow heat loss and moisture transfer.

Qualification: Avoid recessed light fixtures in the ceiling of the building envelope.

Points: 2

Confirmation will be at plan review & at rough-in.

**(k) Part 4.11 Efficient Boiler/Furnace**

Benefit: Energy saving.

Qualification: Design and install heating equipment with an efficiency rating percentage over current IECC minimum. For multiple boilers/furnaces, ratings area averaged.

Points: 1 to 7 (1 point for each percent increase over an AFUE efficiency rating percentage minimum.)

Confirmation will be at plan review & mechanical rough-in.

**(l) Part 4.12 Cold Climate Heat Pump**

Benefit: Heat pump technology heats and cools efficiently and is cheaper to operate.

Qualification: Specify and install heat pump(s) for primary heating and cooling.

Points: 1 per unit, 10 maximum

Confirmation will be at plan review and mechanical rough-in.

**(m) Part 4.13 Geexchange System**

Benefit: Reduces use of fossil fuels.

Qualification: Must be designed and constructed to serve the entire building

Points: 6

Confirmation will be at plan review & rough-in.

**(n) Part 4.14 Tankless Water Heater(s) / Boiler Side Arm**

Benefit: Energy saving.

Qualification: Gas or electric tankless on-demand water heater models qualify, must meet over 50% of total hot water needs. Units must have an intermittent ignition device (IID) instead of a standing pilot light to qualify.

Points: 1 to 3 (Tankless systems get 3 points. Side-arm boilers qualify for one point as part of a modulating condensing boiler with AFUE efficiency above the current IECC minimum.)

Confirmation will be at plan review & rough-in.

**(o) Part 4.15 No Mechanical Air Conditioning or Evaporative Cooling Only**

Benefit: Evaporative cooling works efficiently in arid dry climates in Colorado and is considered more energy efficient than air conditioning.

Qualification: HVAC design must specify evaporative cooling. Evaporative cooling is defined as cooling which relies only on evaporation of water for its cooling needs.

Points: 2 for evaporative cooling; 4 for other less energy consumptive alternatives such as passive cooling or ceiling fans.

Confirmation will be at final inspection.

**(p) Part 4.16 HVAC Economizer System**

Benefit: Saves energy by using unconditioned outside air for cooling. Use of outside air also improves indoor air quality.

Qualification: Specify and install an economizer system for over 50% of heated area of the structure.

Points: 1 for 50% of heated area, 2 for 100% of heated area

Confirmation will be at plan review and final inspection.

**(q) Part 4.17 Radiant Floor Heating**

Benefit: Radiant heat warms building occupants rather than the air, which allows boiler to operate at lower temperatures, thus saving energy.

Qualification: Hydronic in-floor heating in over 50% of the heated area of the structure

Points: 15

Confirmation will be at plan review and final inspection.

**(r) Part 4.18 Air-to-Air Heat Exchanger**

Benefit: An air-to-air heat exchanger (also referred to as a Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV)) pre-warms or cools outside air by providing a heat exchange with exhaust air.

Qualification: Majority of total mechanical ventilation must go through a heat exchanger for points.

Points: 2

Confirmation will be at plan review and final inspection.

#### **(s) Part 4.19 High Performance Windows**

Benefit: Reduce heat loss and solar gain.

Qualification: Specify U-values for all glazing designed and installed.

Points: 1-8 (1 point for each U-.01 below IECC minimum)

Confirmation will be at plan review and insulation inspection.

#### **(t) Part 4.20 Roof/Ceiling Insulation**

Benefit: Reduces heat loss.

Qualification: One point awarded for each manufacturer-rated R-value of insulation, above current IECC minimum, installed in the roof assembly. For structures/roof assemblies with multiple different R-values, a weighted average is used.

Points: 1 to 8

Confirmation will be at plan review and insulation inspection.

#### **(u) Part 4.21 Wall Insulation**

Benefit: Reduces heat loss.

Qualification: One point awarded for each manufacturer-rated R-value of insulation, above current IECC minimum, installed in the exterior wall assembly. For multiple wall types with different R-values, a weighted average is used.

Points: 1 to 8

Confirmation will be at plan review and insulation inspection.

#### **(v) Part 4.22 Crawl Space/Basement Foundation Wall Insulation**

Benefit: Reduces heat loss. Most of the heat loss occurs at the upper walls. Placing the insulation on the exterior is preferred for better thermal performance and moisture control.

Qualification: Insulate crawl space or basement foundation walls (either inside or outside) beyond current IECC code minimums.

Points: 0.5 for each manufacturer-rated R-value of insulation, *above IECC minimum*; 1 additional point for exterior applied insulation, 3 maximum.

Confirmation will be at plan review and insulation inspection.

#### **(w) Part 4.23 Blown or Sprayed Insulation**

Benefit: The higher density of these types of insulation reduces airflow (infiltration and exfiltration).

Qualification: Blown-in, or minimum 2.0 pcf density foam, insulation specified and installed in attics/ceilings, walls, and basements/crawl spaces qualifies.

Points: 1-4 (1 per Quantity Level). For example, if 80% of the insulated area of a structure is blown-in, then quantity level 4 (76-100%) or 4 points would be given.

Confirmation will be at plan review and insulation inspection.

#### **(x) Part 4.24 Restaurant Equipment Efficiency: Energy Star Appliances**

Benefit: Energy savings.

Qualification: Appliances must be Energy Star certified.

Points: 2 pts. per appliance, 10 pts. max

Confirmation will be at plan review and final inspection.

#### **(y) Part 4.25 Restaurant Equipment Reuse**

Benefit: Reusing equipment saves money as well as keeps units out of the landfill.

Qualification: Equipment must be less than 3 years old and/or refurbished. Appliance must show that it has been serviced.

Points: 2 pts. per appliance, 6 pts. max

Confirmation will be at plan review and final inspection.

### **(z) Part 4.26 Insulating Window Shades**

Benefit: Reduce window heat loss.

Qualification: 75% or more of total windows must have insulating window coverings installed.

Points: 2

Confirmation will be at plan review and final inspection.

### **(aa) Part 4.27 Infrared Heat Loss Analysis and Remediation**

Benefit: Infrared cameras can be effective tools for pinpointing areas of heat loss (interior-exterior temperature difference must be at least 25 degrees).

Qualification: Provide detailed report from an accredited professional on analysis performed, areas of heat loss, and demonstrated remediation (if stated in analysis).

Points: 3

Confirmation will be prior to certificate of occupancy

## **(5) Part 5: Renewable Energy**

### **(a) Part 5.01 Onsite Renewable Energy**

Benefit: This is the epitome of sustainability.

Qualification: Provide calculations demonstrating any onsite renewable energy systems as a function of total energy use offset for that energy source (total electricity or total gas).

Points: **REQUIRED** for 2% of energy budget or 25% of common load for core and shell buildings

- Over 2% - 5% offset: 3 points
- Over 5% - 10% offset: 5 points
- Over 10% - 25% offset: 10 points
- Over 25% - 50% offset: 15 points
- Over 50% - 75% offset: 20 points
- Over 75% offset 25 points

Confirmation will be at plan review and final inspection.

**(b) Part 5.02 Future solar**

Benefit: Eases future installation of a solar system.

Qualification: Provide a chase from the mechanical room to the roof. Space must be provided on the roof and in the mechanical room.

Points: **REQUIRED**

Confirmation will be at plan review and final inspection.

**(5) Part 6. Indoor Air Quality**

**(a) Part 6.01 Mold Prevention: Moisture Management Strategy**

Benefit: Most building durability attributes can be affected by moisture. Uncontrolled moisture may reduce the structural soundness of buildings through dry rot in wood, corrosion in steel, freeze-thaw cycles, spalling and efflorescence in masonry, among other damage mechanisms. Moisture also can affect the health of occupants, typically through the potential for breeding harmful organisms. In other words, uncontrolled moisture will adversely affect the most vital attributes of buildings.

Qualification: Submit drawings detailing the thermal envelope and showing how the walls and roof will be able to dry. For remodels, source of mold must be identified and mitigated.

Points: **REQUIRED**

Confirmation will be at plan review and insulation inspection.

**(b) Part 6.02 Fuel Burning Appliances**

Benefit: Keeping fuel-burning appliances outside of the thermal envelope reduces the chance of carbon monoxide contaminating the inside air.

Qualification: Where open combustion air ducts provide combustion air to open combustion space conditioning fuel-burning appliances, the appliances & their combustion air openings must be outside the thermal envelope or enclosed in a room isolated from inside the thermal envelope.

Points: **REQUIRED**

Confirmation will be at plan review and insulation inspection.

**(c) Part 6.03 Radon Mitigation System**



Benefit: High concentrations of radon gas are considered to be a health risk by the EPA, ranking high as a carcinogen.

Qualification: Install a passive radon mitigation system that eliminates potential for radon or other soil gases from entering habitable areas of the structure. Must ventilate below floor or slab vapor barrier to exterior. Mechanical ventilation of radon system is not necessary unless otherwise specified.

Points: **REQUIRED**

Confirmation will be at framing and final inspection.

#### **(d) Part 6.04 Indoor Chemical and Pollutant Control**

Benefit: Prevents contamination of indoor air.

Qualification: Any onsite hazardous material storage must be air-tight; provided with an exhaust fan; and must provide spill/leakage containment. Also, install a minimum 4x4' grated area with void below for all major entryways that reduces potential for dirt and other pollutants from entering the structure. Ventilation method (exhaust fan or negative pressure) must be provided at plan review.

Points: **REQUIRED**

Confirmation will be at plan review and final inspection.

#### **(e) Part 6.05 Construction Indoor Air Quality (IAQ) Plan**

Benefit: Protects construction workers as well as eventual occupants of the building.

Qualification: Provide and implement plan (need to elaborate on what's to be included on plan.)

Points: 1

Confirmation: Is ongoing; It is important to remember that IAQ management is not a one-time compliance event that can be checked off a list—it must be an ongoing effort for the duration of the construction process.

#### **(f) Part 6.06 High Efficiency Filters in HVAC**

Benefit: Improves indoor-air quality.

Qualification: Specify and install a High Efficiency Particulate Air (HEPA) or Minimum Efficiency Reporting Value (MERV) 8 or higher filter that effectively filters 100% of HVAC system.

Points: 1

Confirmation will be at plan review and final inspection.

**(g) Part 6.07 Low- or Non-Toxic Floor Coverings**

Benefit: Improves indoor-air quality.

Qualification:: Materials are either listed on [www.greenguard.org](http://www.greenguard.org); or otherwise demonstrated to be below EPA thresholds for low toxicity. In general, most tile, wood, and natural carpets meet low-toxic standards. For other coverings, provide documentation demonstrating compliance.

Points: 1-4 (1 point per Quantity Level) Quantity Level is determined by the percentage of total floor area meeting the above criteria. For example, if 80% of the total flooring was non-toxic, than quantity level 4 (76-100%) would apply, so 4 points would be given.

Confirmation will be at plan review & final inspection.

**(h) Part 6.08 Mechanical Ventilation Beyond Code**

Benefit: Improves indoor air quality by removing contaminants.

Qualification: Provide mechanical ventilation at least 20% over ASHRAE Standard 62.1-2013 that operates on occupancy controls (motion activated or CO2 activated). An air-to-air heat exchanger (ERV or HRV) that pre-heats or cools fresh intake air is required with this option.

Points: 2

Confirmation will be at plan review and final inspection.

**(i) Part 6.09 Daylighting**

Benefit: Provides building occupants with a daylight connection to outdoors.

Qualification: Bring daylight to occupied areas of the building without hindering tasks.

Points: 4 maximum, 1 per each 25% of occupied area to which daylight is provided

Confirmation will be at plan review and final inspection.

**(j) Part 6.10 Quality Views**

Benefit: Provides building occupants with a visual connection to outdoors.

Qualification: 75% of occupied spaces have a direct line of sight to the outdoor environment.

Points: 1

Confirmation will be at plan review and final inspections.

## **(7) Part 7: Innovation Points**

Innovative product use and/or design points will be given points on a case by case basis. The item must specifically meet the intent of the SBR guidelines as stated in Section 23 and points will be scaled as the item would apply to similar comparable items in this code part.