

# DENVER'S GREEN BUILDINGS ORDINANCE



Denver Botanic Gardens

FEB 5TH, 2019

1-R

1

---

---

---

---

---

---

---

---

## TODAY'S AGENDA AND OBJECTIVES

### DENVER'S GREEN BUILDINGS ORDINANCE

(CB18-1134)

- Brief History
- Denver's GBO Provisions
- Draft Rules & Regulations
- Insurance Claims
- Resources

2-R

2

---

---

---

---

---

---

---

---

## PRESENTERS

- **RICH BOON**  
PROFESSIONAL ENGINEER | CONSTRUCTION SUPPORT SERVICES
- **DAN CUPIT**  
PROFESSIONAL ROOFING CONSULTANT | PROFESSIONAL CONSULTING SERVICES
- **KADE GROMOWSKI**  
PROFESSIONAL ENGINEER, RRC, RWC | PIE CONSULTING & ENGINEERING
- **WADE TUFT**  
PUBLIC ADJUSTER | PARAMOUNT LOSS CONSULTING

3-R

3

---

---

---

---

---

---

---

---

## RESOURCES

- **SCOTT PRISCO**  
CPD ENGINEER AND ARCHITECT DIR | COMMUNITY PLANNING AND DEVELOPMENT | CITY AND COUNTY OF DENVER
- **DANIEL KRAUS**  
SENIOR ARCHITECT | COMMUNITY PLANNING AND DEVELOPMENT | CITY AND COUNTY OF DENVER
- **KATRINA MANAGAN**  
ENERGY EFFICIENT BUILDINGS LEAD | DENVER DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT - ENVIRONMENTAL QUALITY DIVISION | CITY AND COUNTY OF DENVER

4-R

4

---

---

---

---

---

---

---

---

## RULES OF THE DAY

- No arguments over the Green Building Ordinance
- No arguments over roof types
- No product or manufacturer names
- Constructive input



5-R

5

---

---

---

---

---

---

---

---

## GOALS

- Provide information and resources to assist you in planning for and complying with Denver's new Green Buildings Ordinance "GBO".
- Learn what buildings are subject to the new ordinance and what is required to meet the new law and regulations.
- Effect of GBO on insurance claims and how to maximize lay and ordinance coverage.

6-K

6

---

---

---

---

---

---

---

---

## HISTORY

- Green Roof Initiative (GRI) Passed by voters on November 2017
- GRI Enacted January 1, 2018
- Green Roof Advisory Group worked on revisions to GRI February through June 2018
- Focus groups for ordinance language including Cool Roofs were in progress July through October 2018
- Revised Green Buildings Ordinance (GBO) passed October 29, 2018
- GBO Effective on November 1, 2018

7-K

7

---

---

---

---

---

---

---

---

## HISTORY

### Roofing Industry Involvement:

- Green Roof Advisory Group
- Roofing Experts / Advisors to C&C Denver
- Colorado Roofing Association
  - CRA Code & Standards Committee
  - CRA Education Committee
  - Members at Large
- RCI Denver Chapter (Building Envelope Consultants)
- Industry Manufacturers, Contractors & Professionals

8-K

8

---

---

---

---

---

---

---

---

## GREEN BUILDINGS ORDINANCE (GBO)

9-K

9

---

---

---

---

---

---

---

---

The majority of this ordinance is the responsibility of the building owner,  
**Not The Contractor**

...But you need to be aware to advise owners of what to do.

10-K

10

---

---

---

---

---

---

---

---

You can final the roofing permit **without** the owner's completion of the green/energy portion of the ordinance

11-K

11

---

---

---

---

---

---

---

---



12

---

---

---

---

---

---

---

---

Ordinance, Rules and Regulations, and Permitting Instructions are available at

[denvergov.org/greenroofs](http://denvergov.org/greenroofs)

13-K

13

---

---

---

---

---

---

---

---

### Applicability

Buildings of 25,000 square feet or more:

1. New buildings
2. Additions
  - o Additions of 25,000–49,999 sq. ft. have different requirements than additions ≥ 50,000 sq. ft. or more
3. Existing buildings – only if recovering/replacing roof
  - o Roof recovers have different requirements than roof replacements

**Most projects must do a cool roof and select one compliance option**

14-K

14

---

---

---

---

---

---

---

---

### Exemptions – Ordinance does not apply

- Buildings or additions under 25,000 square feet
- Parking structures
- Temporary buildings, air-supported structures, greenhouses
- Single-family homes or duplexes
- Groups of 3 or more attached dwelling units in which each unit extends from the foundation to roof and is not more than 3 stories above grade plane
- Roof replacements of less than 5% of the roof or roof section area (annually)

15-K

15

---

---

---

---

---

---

---

---

## Partially Exempt – Must still do a Cool Roof

### Exempt from the compliance options:

- Residential buildings 4-5 stories, or under 62.5 feet in height
- Roof recover only
- Existing green roof or the building/campus has already met the ordinance
- Emergency roof replacement (wind or fire damage, not hail)
- Hail damage with insufficient insurance coverage (ONLY until Nov. 2, 2019)

16-K

16

---

---

---

---

---

---

---

---

## Gross Floor Area (GFA)

- Building/addition square footage = GFA
- Calculate GFA the same as under the building code, minus any area used exclusively to park or store vehicles

17-K

17

---

---

---

---

---

---

---

---

## Compliance Options

18-R

18

---

---

---

---

---

---

---

---

## Overview

- Cool roof **and** choose a compliance option:

|   |   |                 |
|---|---|-----------------|
| <b>New Buildings</b> <ul style="list-style-type: none"> <li>Green space/roof</li> <li>Solar onsite or purchase</li> <li>Energy efficiency</li> <li>Green building certification</li> <li>Payment to fund</li> <li>Combination approaches</li> </ul> | <b>Existing Buildings</b> <ul style="list-style-type: none"> <li>Green space/roof</li> <li>Solar onsite</li> <li>Energy efficiency (additions only)</li> <li>Green building certification</li> <li>Payment to fund</li> <li>Energy program (roof permits only)</li> </ul> | <b>Campuses</b> |
| ↑<br>Additions 50,000+ sf<br>follow new building req's  | ↑<br>Additions 25,000-49,999 sf<br>follow existing bldg. req's  |                 |

19-R

19

---

---

---

---

---

---





---

---

---

---

## Compliance Options for New Buildings

|   |   |  |
|---|---|--|
| <b>Green Space:</b><br>              | Green space on the roof, terraces, podiums, or at grade*                                      | \$ Payment for same amount of off-site green space         |
| <b>Energy Conservation:</b><br>      | Solar production equal to 70% of roof area – onsite, community solar, or purchased from Xcel* | A minimum of <b>12%</b> energy savings above current codes |
| <b>Combination Approaches:</b><br> | Green space and solar*  | Green space and <b>5%</b> energy savings above codes       |
| <b>Certifications:</b><br>         | Third-party green building certifications<br>*Campus option                                   |  |

20-R

20

---

---

---

---

---

---





---

---

---

---

## Options Proposed for Existing Buildings

|   |   |  |
|---|---|--|
| <b>Green Space:</b><br>    | Green space on the roof, terraces, podiums, or at grade*  | \$ Payment for same amount of off-site green space |
| <b>Onsite Solar:</b><br>   | Install solar to cover 42% of the roof, 5% of GFA, or an area sufficient to meet 100% of the building's annual electricity consumption* |  |
| <b>Energy Program:</b><br> | Enroll in a flexible energy program to achieve similar greenhouse gas emission reductions as onsite solar                               |  |
| <b>Certifications:</b><br> | Third-party green building certifications<br>*Campus option   |  |

21-R

21

---

---

---

---

---

---

---

---

---

---

## Green Space Options for New Buildings



### Green Space:

Green space on the roof, terraces, podiums, or at grade

Payment for same amount of offsite green space at \$50/sq. ft.

Amount required is the lesser of the following:

1. 10% of the gross floor area of the building;
2. 60% of the total roof area of the building; or
3. Available roof space of the building.

22-R

22

---

---

---

---

---

---

---

---

---

---

## Green Space Options for Existing Buildings



- Green space on the roof, terraces, podiums, or at grade
- \$50/sq. ft. payment for offsite space

For a **total roof replacement**, required amount is lesser of:

1. 2% of the gross floor area,
2. 18% of the total roof area, or
3. All available roof space

To replace a **roof section**, required amount is lesser of:

1. 2% of the GFA multiplied by the area of the roof section(s) being replaced, divided by the total roof area of the building,
2. 18% of the individual roof section(s) being replaced, or
3. All available roof space

23-R

23

---

---

---

---

---

---

---

---

---

---

## EXCEPTIONS:

- One or two -family Dwelling built to the IRC
- 3 or more Dwellings that are less than 3 stories and extend from foundation to roof
- Temporary structures, Air Supported Structures, and greenhouses

24-R

24

---

---

---

---

---

---

---

---

---

---



### DOES NOT APPLY TO:

PORTIONS OF A PROPOSED ROOF THAT INCLUDE THE FOLLOWING:

- Photovoltaic Systems or Components
- Solar, air, or water heating systems or components
- Vegetated roofs
- Above-roof decks or walkways or



25-R

25

---

---

---

---

---

---

---

---

### DOES NOT APPLY TO:

PORTIONS OF A PROPOSED ROOF THAT INCLUDE THE FOLLOWING:

- HVAC systems and components and other opaque objects mounted above the roof.
- Portions of a proposed roof shaded at summer solstice
- Ballasted roofs with 15 psf stone
- Up to 25% of a section when the rest of the section is a cool roof
- Visible roofs up to 10%



26-R

26

---

---

---

---

---

---

---

---

### Calculating "Available Roof Space"

Start with the total roof area and **deduct** the following:

- Private terraces equal to or smaller than the GFA of the abutting unit at the roof level
- Outdoor amenity spaces, including areas for recreational or social use
- Rooftop equipment, including cell towers and other equipment leasing space on the roof, and all required clearances around these areas
- Skylights
- Glass-covered atriums
- Glazing (windows)
- Areas covered by renewable energy devices

27-R

27

---

---

---

---

---

---

---

---

### Section 2.05 Outdoor Amenity Spaces

**Available Roof Space** shall be calculated according to the definition with the following clarification. Green space that is not accessible to an owner or tenant of a building shall not be included in the calculation of available roof space unless the green space is within 30-feet of an accessible outdoor amenity space and no greater in size than the accessible amenity space area.

28-R

28

---

---

---

---

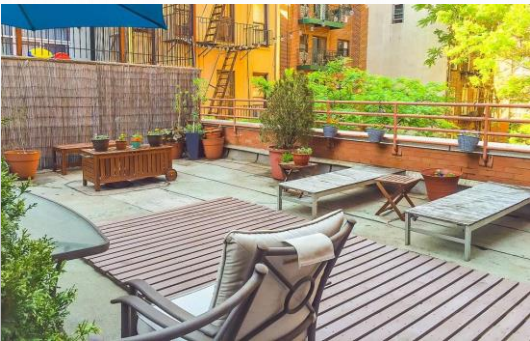
---

---

---

---

### PRIVATE TERRACES



29-R

29

---

---

---

---

---

---

---

---

### REDUCE AREA DUE TO UNITS



2018/10/02

30

---

---

---

---

---

---

---

---

### SKYLIGHTS



31-R

31

---

---

---

---

---

---

---

---

### Green Space on the Roof (Vegetated or green roofs)



- Must comply with the Denver Building and Fire Code and the standards in the Rules and Regulations
- Must include vegetation, growing medium, filter fabric, drainage layer, root barrier, waterproofing membrane and other elements as required by code
  - Growing media must be a minimum 4-inch depth unless demonstrated to meet the vegetated roof performance criteria and approved by the Building Official
- Maintenance plan
- Irrigation system

32-R

32

---

---

---

---

---

---

---

---

### Green Space *not* on Roof



- May be located anywhere on the site except the roof
- Document on a site development plan
  - Submittal requirements are listed online
- May include trees, groundcover, shrubs, urban agriculture, turfgrass (not artificial), and xeric grasses
- Rules and regulations outline minimum planting area sizes, climate-appropriate vegetation, and soil and irrigation requirements

33-R

33

---

---

---

---

---

---

---

---

### What About Existing Green Space?

- ✓ New buildings may count zoning-required open space and vegetated storm water treatment areas, if it meets green space/bioretenion standards
- ✓ Existing trees may count if protected and approved by the City Forester as a desirable species, healthy, in a location capable of supporting the mature size of the tree, etc.
- ✗ Existing green space **will not** count for existing buildings, unless it is improved with new trees or a new above-grade, vegetated, water quality facility



34-R

34

---

---

---

---

---

---

---

---

### Energy Conservation Options for New Buildings



#### Energy Conservation:

Onsite (or offsite) solar production equal to 70% of roof area or 100% of the average estimated annual electricity used

A minimum of 12% energy savings above current codes

*\* Additions 25,000 – 49,999 sq. ft. can do a minimum 4% energy savings above current codes*

35-R

35

---

---

---

---

---

---

---

---

### Onsite Solar Options for Existing Buildings



#### For a total roof replacement, the lesser of:

- Install solar to cover 42% of the roof, 5% of the gross floor area, or sufficient to meet 100% of the building's annual electricity consumption

#### To replace individual roof sections, the lesser of:

- 42% of the roof section(s) being replaced,
- 5% of the GFA multiplied by the area of the roof section(s) being replaced, divided by the total roof area of the building, or
- An amount sufficient to meet 100% of the building's annual electricity consumption

36-R

36

---

---

---

---

---

---

---

---

### Off-site Solar for Existing Buildings



- This is not a compliance option on its own for existing buildings
- Enroll in the Energy Program to purchase offsite solar



37-R

37

---

---

---

---

---

---

---

---

### Onsite Solar / Energy Conservation



- Can be located anywhere on the building or zone lot
- Can use other renewable energy devices that generate similar capacity
- Can be a net-zero-energy building
- Can count existing solar panels if they have a minimum efficiency rating of 16%



38-R

38

---

---

---

---

---

---

---

---

### Off-site Solar Energy



- 5-year contract minimum
- Must be renewed and submitted to DDPHE every 5 years for the life of the building
- Must cover the equivalent energy production of either
  - the estimated 100% of electricity the building will use or
  - the amount that would have been provided with on-site solar panels **and** you must demonstrate a decreased energy consumption measured as an estimated cost savings of at least 6% above requirements in the applicable Denver Building & Fire Code



39-R

39

---

---

---

---

---

---

---

---

### Combination Approaches for New Buildings



- Green space and onsite solar
- Green space and purchase offsite solar
- Green space and 5% energy savings above codes
- Green space and payment into Green Building Fund (must install at least 75% of the required green space and can pay for the other 25%)

40-R

40

---

---

---

---

---

---

---

---

### Energy Program for Existing Buildings



- Have your the Owners enroll *before* it's time for a roof replacement

#### Why??

- Choose a "baseline year" from the last five years
- Get credit for energy-efficient improvements made before it's time for a roof replacement
- Get specialized guidance on the optimal path for your building
- Enrollment is valid for 20 years or through one roof replacement, whichever is longer

#### Enroll now:

[www.denvergov.org/EnergizeDenver](http://www.denvergov.org/EnergizeDenver) > Energy Program

41-D

41

---

---

---

---

---

---

---

---

### Energy Program for Existing Buildings



Enroll in a flexible energy program to achieve greenhouse gas emission reductions over the course of 5 years

- ENERGY STAR score of 85 or higher
- 10%-15% improvement in energy use intensity (EUI)
- Green building certification
- On-site solar
- Off-site solar

#### Enroll now:

[www.denvergov.org/EnergizeDenver](http://www.denvergov.org/EnergizeDenver) > Energy Program

42-D

42

---

---

---

---

---

---

---

---

### Green Building Certifications for New Buildings



- At plan review:
  - Demonstrate the points needed to meet certification
- Before C/O:
  - Pre-certify or submit design review with a plan for how any requested changes will be made
- 18 months after C/O:
  - Submit proof of certification to DDPHE

- Minimums:**
- \* LEED v4 BD+C Gold
  - \* National Green Building Standard ICC/ASHRAE 700 Gold
  - \* Enterprise Green Communities
  - \* Other

43-D

43

---

---

---

---

---

---

---

---

---

---

### Green Building Certifications for Existing Buildings



- At plan review:
  - Project must provide the building certification indicating that the building has the appropriate certification level

- Minimums:**
- \* LEED BD+C or O&M Silver
  - \* National Green Building Standard ICC/ASHRAE 700 Silver
  - \* Enterprise Green Communities
  - \* Other

44-D

44

---

---

---

---

---

---

---

---

---

---

### CASH IN LIEU



- \$50/square foot of required green space
  - Calculated by City of Denver
  - To be paid prior to the issuance of permits
  - Paid to Green Building Fund
  - Amount may change over time
  - Payment once grandfathers compliance for life of the building

45-D

45

---

---

---

---

---

---

---

---

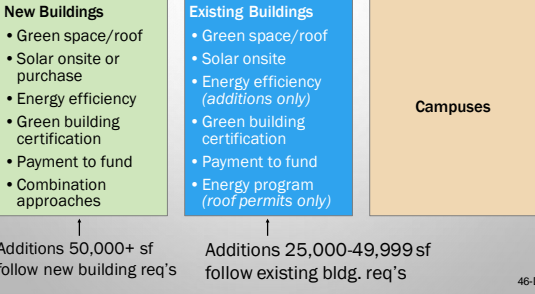
---

---



## Overview

- Cool roof **and** choose a compliance option:



46

---

---

---

---

---

---

---

---

---

---

## Cool Roofs

47-D

47

---

---

---

---

---

---

---

---

---

---

## Cool Roofs

- Most buildings will need a cool roof unless the roof is a character-defining architectural feature
- Table 1 of the rules and regulations (next slide) outlines solar reflectivity requirements for various roofing materials



48-D

48

---

---

---

---

---

---

---

---

---

---



| Low-sloped Roofs (Slope less than 2:12)                        |  |                            |                     |                    |
|--|--|----------------------------|---------------------|--------------------|
|  | Initial Minimum Reflectance                      | 3-Year Minimum Reflectance | Initial SRI Minimum | 3-Year SRI Minimum |
| Low-slope roofs (except materials specified below)             | 0.70   | 0.55                       | 78                  | 64                 |
| Low-slope metal roofs  | 0.50   | not available              | not available       | not available      |
| Low-slope concrete pavers or a concrete surface or stone roofs | 0.20   | not available              | not available       | not available      |
| Character-defining roof  | Per section 3.02(a) of the Rules and Regulations |                            |                     |                    |
| Steep-sloped Roofs (Slope 2:12 or steeper)                     |  |                            |                     |                    |
|  | Initial Minimum Reflectance                      | 3-Year Minimum Reflectance | Initial SRI Minimum | 3-Year SRI Minimum |
| Steep-slope roofs (except materials specified below)           | 0.25   | 0.15                       | 39                  | 32                 |
| Clay or concrete roof tile installed on elevated battens       | None required                                    | not available              | not available       | not available      |
| Character-defining roof  | Per section 3.02(a) of the Rules and Regulations |                            |                     |                    |

49-D

49

---

---

---

---

---

---

---

---

---

---

### Draft Footnotes to Cool Roof Requirements

Where a roof recover or roof replacement project introduces a cool roof where none previously existed, the roof shall be demonstrated, or modified, to meet one of the following designs:

- (1) Steep sloped roofs shall be designed and installed to meet

**IBC 1203.2 Ventilation Requirements.**



50-D

50

---

---

---

---

---

---

---

---

---

---

### Draft Footnotes to Cool Roof Requirements

Where a roof recover or roof replacement project introduces a cool roof where none previously existed, the roof shall be demonstrated, or modified, to meet one of the following designs:

- (2) Low sloped roofs shall be **designed and installed to include at least a Class III vapor retarder at the roof deck in addition to an air barrier at the roof deck**, a single layer may be used to provide both preventative measures. The roof shall also be installed with **insulation on top of the roof deck that exceeds the R-value of any interior insulation by a minimum of R-18** thermal insulating value, and all other requirements of the International Energy Conservation Code, as amended.



51-D

51

---

---

---

---

---

---

---

---

---

---

**Draft** Footnotes to Cool Roof Requirements

Where a roof recover or roof replacement project introduces a cool roof where none previously existed, the roof shall be demonstrated, or modified, to meet one of the following designs:

(3) The roofing system shall be designed by a professional roofing consultant, architect, or engineer who must submit an analysis of the existing roofing system. The analysis shall calculate and identify the dew-point, and include a section-detail of the roofing system documenting the vapor retarder, air barrier and other roof components used to minimize condensation within the roof system.



52-D

52

---

---

---

---

---

---

---

---

**NOTICE: EPDM AND GRAVEL-SURFACED BUR DO NOT MAKE THE CUT**

Most cap sheets and granulated modified bitumen roofs also will not comply



53-D

53

---

---

---

---

---

---

---

---

**COATINGS ARE PERMITTED TO ACHIEVE REFLECTIVITY REQUIREMENTS, EVEN ON BRAND NEW MEMBRANES**

**CAUTION:** Work with manufacturers on compatibility requirements and proper application



54-D

54

---

---

---

---

---

---

---

---

### Roof Sections

- Roof section = bounded on all sides by a wall, parapet, edge, expansion joint, or roof divider.
- Only the roof section(s) being replaced need to comply with the cool roof and the compliance option (for green roof/solar)
- 5% RULE: If less than 5% of a roof section is being repaired then it is considered a roof repair. This still requires a permit.

55-D

55

---

---

---

---

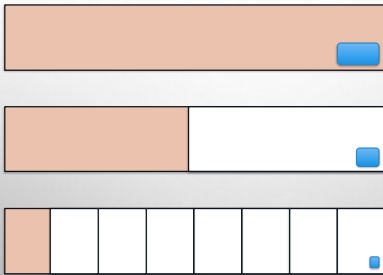
---

---

---

---

### Roof Sections



5% of a roof section can be repaired without complying with the Green Bldg. Ordinance... Work still requires a permit!

56-D

56

---

---

---

---

---

---

---

---

### Cool Roof Exemptions

- Roof recovers where the roof would need to be replaced to control condensation
- Portions of the roof covered by...
  - Solar or solar air or water-heating components
  - Green roofs
  - Above-roof decks or walkways
  - HVAC and other opaque objects
  - Swimming pools, sport surfaces, and glazing
  - Shade during the peak sun angle on the summer solstice



57-D

57

---

---

---

---

---

---

---

---

### Cool Roof Exemptions (continued)

- Portions of roof ballasted with a minimum stone ballast of 15 pounds/sq. ft. or the weight of ballast for which an existing ballasted roof was designed
- Roof sections visible from a public vantage point (like a publicly accessible street, park, or campus).
  - This portion cannot exceed 10% of the total roof area
- The remainder of a roof section where at least 75% of the section is exempt, is a character-defining roof, or is a cool roof



58-D

58

---

---

---

---

---

---

---

---

---

---

### Character-Defining Roofs

- Must be at least partially visible from a public vantage point, like a publicly accessible street, park, or campus
- If the materials, color, or shape of the roof were to change, it would impact the visual character of the building
- Will be reviewed by Landmark, Urban Design, and Architectural/Structural staff
- Decisions can be appealed to the Board of Appeals



59-D

59

---

---

---

---

---

---

---

---

---

---

### Summary of Cool Roof Requirement

- Membranes (Reflectance 0.70 / 0.55, SRI 78 / 64)
- Low Slope Metal Roofs (Reflectance 0.50)
- Concrete Pavers / Stone (Reflectance 0.20)
- Steep Slope Roofs Except Tile (Reflectance 0.25 / 0.15, SRI 37 / 32)
- Concrete or Clay Tile (No Requirement)
- Character Defining Roof (Reflectance may be reduced for qualifying roof)

60-D

60

---

---

---

---

---

---

---

---

---

---

**Summary of Exceptions to Cool Roof Requirement:**

1. Character Defining Roofs
2. Concrete / Clay Tile Roofs
3. Ballasted Roofs (min 15 psf)
4. Shaded Roof Areas
5. Swimming Pools (deducted from roof area)
6. Vegetative Roofs (deducted from roof area)
7. Roof Decks / Walkways (deducted from roof area)
8. Mechanical Units (HVAC) (deducted from roof area)
9. Solar (deducted from roof area)

61-D

61

---

---

---

---

---

---

---

---

---

---

**Campuses**

62-K

62

---

---

---

---

---

---

---

---

---

---

**What is a campus?**

A tract of contiguous property with one or more owners that contains or will contain more than one building

- Office park
- Multi-family complex
- Multi-tenant industrial parks
- Medical centers/hospitals
- Universities/colleges



63-K

63

---

---

---

---

---

---

---

---

---

---

### Campus Approach

- Campuses with both new and existing buildings have to meet the ordinance according to each building type
- New buildings - green space or solar aggregated across a campus, or through the combination of green space and solar/renewable energy.
- Existing buildings – green space or solar aggregated across a campus



64-K

64

---

---

---

---

---

---

---

---

### Campus Approach (cont.)

- Use of solar or other renewable energy devices requires submittal of an energy master plan
- Compliance documented via a site development plan, infrastructure master plan or similar document
- Compliance cannot be phased
- Cool roofs must still be provided for each individual building

65-K

65

---

---

---

---

---

---

---

---

### DRAFT RULES AND REGULATIONS

- Licensing Requirements
- Permit Procedures
- Inspections

66-K

66

---

---

---

---

---

---

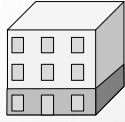
---

---

### OK...I HAVE 3 PROJECTS. WHAT NOW?

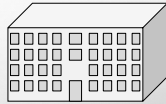
**Project 1:**

- 3-Story Small Commercial Office
- 7,000 SF gross area per floor



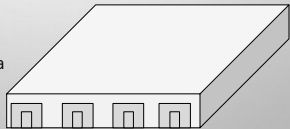
**Project 2:**

- 4-story multi-family residential
- 10,000 SF gross area per floor



**Project 3:**

- 1-story Retail store
- 50,000 SF gross floor area



67-K

---

---

---

---

---

---

---

---

---

---

67

### PERMITTING

Green building declaration form required for **all permits subject to the Ordinance**

- New Buildings (available)
- Existing Buildings (available)
- ROOF REPLACEMENT (available)
- Campus Projects (coming soon)



68-K

2 3

---

---

---

---

---

---

---

---

---

---

68

### PERMITTING SUBJECT TO GBO

All projects subject to the green building ordinance **must log in for a review**

- **No counter roof permits for reroofing buildings over 25,000 sq. ft.**
- Projects currently in review under the old green roofs ordinance can continue under those rules or choose to comply with the Green Buildings Ordinance
- Log in by email
- Check your electronic signatures & seals against our tutorial



69-K

2 3

---

---

---

---

---

---

---

---

---

---

69



**PERMITS NOT SUBJECT TO THE GBO**  
(LESS THAN 25,000 GFA) **CAN STILL GET A COUNTER PERMIT**

...but you still need a Green Buildings Declaration Form showing that you are exempt

Use published document (insurance form, assessor's data, appraisal, etc.) to prove gross floor area



70-K

1

70

---

---

---

---

---

---

---

---

**PERMITS TO BE ISSUED FOR GREEN ROOFS**

- Vegetated roof permits
  - Commercial construction permit for a green roof
  - Roof permit for the underlying roof/waterproof membrane
  - Must be issued to a Denver licensed green roof installer.
- Additional permits required for vegetated roofs
  - Plumbing permit for irrigation and backflow preventer
    - Must be licensed plumber or irrigation contractor.
    - Irrigation contractors must obtain separate plumbing permit for backflow preventer
  - Fire prevention for extension of standpipes on existing buildings.

\* Denver needs contractor licenses and job valuations for any trade permits and the ROOFSIDE permit before subcontractors can pay/print their permits online.\*

3 (?)

71-D

71

---

---

---

---

---

---

---

---

**PERMITS TO BE ISSUED FOR GREEN SPACES**

- Site development plan (SDP) and resulting zoning permit

\* Denver needs contractor licenses and job valuations for any trade permits and the ROOFSIDE permit before these subcontractors can pay/print their permits online.\*



72-D

3 (?)

72

---

---

---

---

---

---

---

---



### PERMITS TO BE ISSUED AS REQUIRED

Additional permits or approvals (if applicable) required for:

- General Construction
- Roofing
- Fire Protection systems
- Mechanical systems
- Plumbing systems
- Electrical systems
- Irrigation systems
- Zoning permits
- Landmark approval as needed



1 2 3

73-D

73

---

---

---

---

---

---

---

---

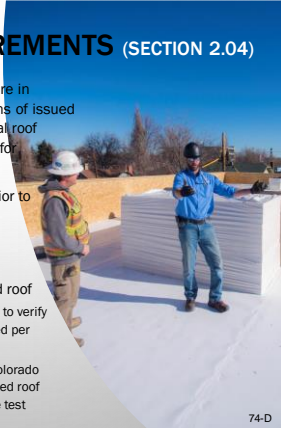
---

---

### INSPECTION REQUIREMENTS (SECTION 2.04)

The following inspection requirements are in addition to any other required inspections of issued permits, including but not limited to, final roof inspection and final building inspection for vegetated roof.

- Pre-construction meeting required prior to beginning construction for
  - Roofing permit
  - Vegetated roof permit
- Leakage testing report for a vegetated roof
  - Inspection required prior to installation to verify membrane and appurtenances installed per approved plans.
  - Leakage testing report required by a Colorado licensed architect, engineer, or registered roof consultant showing successful leakage test



74-D

74

---

---

---

---

---

---

---

---

---

---

### INSPECTION REQUIREMENTS (CONT.)

The following inspection requirements are in addition to any other required inspections of issued permits, including but not limited to, final roof inspection and final building inspection for vegetated roof.

- Vegetated roof irrigation inspection required for
  - Backflow preventer
  - Control system
  - Irrigation system water test
  - Connection to irrigation main
- Green space not on the roof shall be inspected by CPD Zoning / Neighborhood Inspection to ensure compliance with:
  - Site development plan and/or
  - Zoning Permit that documents compliance with green space requirements

75-D

75

---

---

---

---

---

---

---

---

---

---

### SPECIALTY CLASS D SUPERVISOR CERTIFICATES FOR GREEN ROOFS (CONTRACTOR LICENSING)

- **Lawn Irrigation**
  - Landscape irrigation for graywater systems and rooftop vegetation (not for backflow preventers or inside taps)
- **Green Roof**
  - To install landscaped rooftop Vegetated systems
- **Roof Covering/Waterproofing**  
(not specific to green roofs)



76-D

76

---

---

---

---

---

---

---

---

### SO...PROJECT 1 ?

- Step 1: Need Denver licensed roofing contractor (D Commercial)
- Step 2: EXEMPT FROM GBO **Entirely** – select system
- Step 3: Online or Counter Permit for roofing
- Step 4: Other permits as required
- Step 5: Pre-roof inspection
- Step 6: install a roof (with proper inspections)
- Step 7: Done!

77-R

77

---

---

---

---

---

---

---

---

### PROJECT 2 ?

- Step 1: Need Denver licensed roofing contractor (d Commercial)
- Step 2: Fill Out Green Buildings Declaration Form (if not clear that it is exempt)
- Step 3: EXEMPT FROM GBO **except** cool roof requirement – select system, including proper cool roofing product. May need consultant for system design.
- Step 4: Online Permit for roofing
- Step 5: Other permits as required
- Step 6: Pre-roof inspection
- Step 7: install a roof (with proper inspections)
- Step 8: Done!

78-R

78

---

---

---

---

---

---

---

---

### PROJECT 3 ?

- Step 1: Need Denver licensed roofing contractor (d Commercial) AND applicable green roof, landscaping, Plumbing, and irrigation licenses
- Step 2: Fill Out Green Buildings Declaration Form
- Step 3: Not EXEMPT FROM GBO – select cool roof system, and green/energy/fee compliance option. May need consultant for system design.
- Step 4: Online Permit for roofing
- Step 5: Other permits as required
- Step 6: Pre-roof inspection
- Step 7: install a roof (with proper inspections)
- Step 8: Done!

79-R

79

---

---

---

---

---

---

---

---

### KEEP IN MIND:

- The cool roof requirement and the compliance option you choose stays with the building for the life of the building
- Cannot value engineer out something required for compliance
- Penalties could include: **revoking occupancy/permits, civil fines, liens on the property, and legal action**
- So...the property owner **must sign the Green Buildings Declaration Form**. **It is binding.**

80-R

80

---

---

---

---

---

---

---

---

### DRAFT RULES & REGULATIONS

- Download it from [www.denvergov.org/GreenRoofs](http://www.denvergov.org/GreenRoofs)
- Final rules expected in February 2019

81-R

81

---

---

---

---

---

---

---

---

How does GBO affect insurance claims, particularly related to Ordinance & Law coverage?

## INSURANCE CLAIMS



82-W

82

---

---

---

---

---

---

---

---

## INSURANCE COVERAGE AND THE GBO

- INSURANCE POLICIES ARE COMPLICATED BY DESIGN AND HAVE MANY EXCLUSIONS AND ENDORSEMENTS
- WHEN A PROPERTY IS DAMAGED BY A COVERED EVENT THAT LOSS MAY TRIGGER THE GBO WHEN WORK STARTS AND THE GBO SHOULD BE PART OF THE SCOPE FROM THE BEGINNING
- MANY OWNERS AND ROOFING CONTRACTORS BELIEVE THAT REGARDLESS OF THE DAMAGED BEING COVERED BY THEIR PROPERTY INSURANCE THAT THEIR POLICY DOES NOT HAVE ENOUGH O&L COVERAGE TO COVER THE INCREASED COST TO COMPLY WITH THE GBO.
- COMMERCIAL POLICIES ARE COMPLICATED AND MANY TIMES DO HAVE THE COVERAGE
- O&L COVERAGE IN MANY CASES WILL COVER THE COSTS AND AT ANYTIME A PROPERTY OWNER CAN INCREASE THEIR O&L COVERAGE IF THEY DO NOT CURRENTLY HAVE SUFFICIENT COVERAGE

83-W

83

---

---

---

---

---

---

---

---

## WHAT IS AN INSURANCE POLICY

- IN BROAD TERMS, THE ENTIRE PRINTED INSURANCE CONTRACT. GENERALLY, AN INSURANCE POLICY IS ASSEMBLED WITH A COMBINATION OF VARIOUS STANDARD FORMS, INCLUDING A DECLARATIONS PAGE, COVERAGE FORM, AND **ENDORSEMENTS**. SOMETIMES A CAUSES OF LOSS FORM IS ALSO REQUIRED. TOGETHER THESE FORMS DELINEATE THE COVERAGE TERM, THE INSURANCE POLICY LIMITS, THE GRANT OF COVERAGE, EXCLUSIONS AND OTHER LIMITATIONS OF COVERAGE, AND THE DUTIES AND RESPONSIBILITIES OF THE INSURED IN THE EVENT OF A LOSS. *IRMI.COM*
- A DOCUMENT THAT CONTAINS THE AGREEMENT THAT AN INSURANCE COMPANY AND A PERSON HAVE MADE. *WEBSTER'S DICTIONARY*

**IT'S A CONTRACT!**

84-W

84

---

---

---

---

---

---

---

---

## WHAT IS UNDERWRITING AND WHY IS IT IMPORTANT

### WHAT IS UNDERWRITING

- IT IS THE PROCESS OF EVALUATING A RISK (BUILDING) TO DETERMINE IF ITS PROFITABLE FOR THE INSURANCE COMPANY TO TAKE A CHANCE ON INSURING SAID RISK.
- THIS IS IMPORTANT IN REGARDS TO THE GBO FOR AS IT SHOULD BE NOTED BY THE UNDERWRITER THAT IF YOU DO NOT COMPLY WITH THE GBO THAT THE BROKER SHOULD INCLUDE THAT COVERAGE. (MANY TIMES O&L IS STANDARD TO COMMERCIAL POLICIES BUT RARELY INTERPRETED CORRECTLY.)

85-W

85

---

---

---

---

---

---

---

---

---

---

## WHAT YOUR POLICY WILL COVER

MOST POLICIES ARE WRITTEN BY THE INSURANCE SERVICES ORGANIZATION (ISO). THE IS TYPICALLY STANDARD ACROSS A FEW TYPES OF ISO FORMS. THE STANDARD LANGUAGE IS BELOW.

### A. COVERAGE

WE WILL PAY FOR DIRECTLY PHYSICAL LOSS OF OR DAMAGE TO COVERED PROPERTY AT THE PREMISES DESCRIBED IN THE DECLERATIONS CAUSED BY OR RESULTING FROM ANY COVERED CAUSE OF LOSS

THAT MEANS THAT YOU POLICY WILL NOT ONLY COVER ANY OBVIOUS DAMAGE BUT WILL ALSO COVER ANY COVERED LOSS WETHER COSMETIC OR A LOSS (COST YOU INCUR) YOU SUFFER FROM A COVERED LOSS AS LONG AS YOU HAVE THE COVERAGE I.E. GBO, LOSS OF INCOME ETC.

86-W

86

---

---

---

---

---

---

---

---

---

---

## WHAT YOUR POLICY WILL COVER

ONCE YOU HAVE SUFFERED THE COVERED LOSS THE POLICY WILL INFORM YOU HOW YOU WILL BE PAID FOR THE LOSS/DAMAGE. TYPICALLY A ISO FORM WILL READ THE FOLLOWING:

### LOSS PAYMENT:

- (1) IN THE EVENT OF LOSS COVERED BY THIS POLICY WE WILL PAY EITHER:
  - THE VALUE OF DAMAGED PROPERTY
  - COST OF REPAIRING OR REPLACING THE LOST OR DAMAGED PROPERTY
  - TAKE ALL OR ANY PART OF THE PROPERTY AT AN AGREED VALUE
  - **REPAIR, REBUILD OR REPLACE THE PROPERTY WITH OTHER PROPERTY OF LIKE KIND AND QUALITY** AND/OR
- (4) .(A).1.2
  - **THE COST TO REPLACE ON THE DESCRIBED PREMISES, THE LOST OR DAMAGED PROPERTY WITH OTHER PROPERTY OF COMPARABLE MATERIAL QUALITY USED FOR THE SAME PURPOSE, OR**

87-W

87

---

---

---

---

---

---

---

---

---

---

# THE GBO, O&L COVERAGE, WHAT IT REALLY COVERS AND WHY ITS SO IMPORTANT TO APPLY THE RIGHT ONE:

O&L COVERAGES:  
THERE ARE GENERALLY 3 TYPES OF CODE COVERAGE ON A BUSINESS POLICY  
• COVERAGE C - INCREASED COST OF COVERAGE CONSTRUCTION

- 3. Coverage C - Increased Cost Of Construction Coverage
  - a. With respect to a covered building that has sustained covered direct physical damage, we will pay the increased cost to:
    - (1) Repair or reconstruct damaged portions of that building; and/or
    - (2) Reconstruct or remodel undamaged portions of that building, whether or not demolition is required when the increased cost is a consequence of enforcement of the minimum requirements of the ordinance or law.

| ORDINANCE OR LAW          | Limit   |          |          |
|---------------------------|---------|----------|----------|
| Coverage C-Increased Cost | \$1,000 | \$60,000 | Included |

88-W

88

---

---

---

---

---

---

---

---

---

---

# THE GBO, O&L COVERAGE, WHAT IT REALLY COVERS AND WHY ITS SO IMPORTANT TO APPLY THE RIGHT ONE:

O&L COVERAGES:  
THERE ARE GENERALLY 3 TYPES OF CODE COVERAGE ON A BUSINESS POLICY  
• COVERAGE A - LOSS TO THE UNDAMAGED PORTION

- 1. Coverage A - Coverage For Loss To The Undamaged Portion Of The Building
 

With respect to a covered building that has sustained covered direct physical damage, we will pay under Coverage A for the loss in value of the undamaged portion of the building as a consequence of enforcement of an ordinance or law that requires demolition of undamaged parts of the same building.

Coverage A is included within the Limit of Insurance shown in the Declarations as applicable to the covered building. Coverage A does not increase the Limit of Insurance. The Coinsurance Additional Condition does not apply to the undamaged portion of the building when the Limit of Insurance shown in the Declarations for Coverage A is less than the applicable building Limit of Insurance shown in the Declarations.

WHICH COVERAGE WOULD YOU PUT THE COST OF THE GBO INTO?  
WHY ITS SO IMPORTANT!

| ORDINANCE OR LAW             | Limit   |                    |          |
|------------------------------|---------|--------------------|----------|
| Coverage A-Undamaged Portion | \$1,000 | Incl in Bldg Limit | Included |

| COVERAGE | COINSURANCE | DEDUCTIBLE | LIMIT       | RATE | PREMIUM |
|----------|-------------|------------|-------------|------|---------|
| BUILDING |             |            | \$1,087,262 |      |         |

89-W

89

---

---

---

---

---

---

---

---

---

---

# THE GBO, O&L COVERAGE, WHAT IT REALLY COVERS AND WHY ITS SO IMPORTANT TO APPLY THE RIGHT ONE:

O&L COVERAGES:  
THERE ARE GENERALLY 3 TYPES OF CODE COVERAGE ON A BUSINESS POLICY  
• COVERAGE B - DEMOLITION COST COVERAGE

- 2. Coverage B - Demolition Cost Coverage
 

With respect to a covered building that has sustained covered direct physical damage, we will pay the cost to demolish and clear the site of undamaged parts of the same building, as a consequence of enforcement of an ordinance or law that requires Demolition of such undamaged property. The Coinsurance Additional Condition does not apply to Demolition Cost Coverage.

| ORDINANCE OR LAW      | Limit   |          |          |
|-----------------------|---------|----------|----------|
| Coverage B-Demolition | \$1,000 | \$60,000 | Included |

90-W

90

---

---

---

---

---

---

---

---

---

---

## BURDEN OF PROOF / WHAT IS DAMAGE

- IT IS UP THE THE INSURED TO PROVE THEIR EXTENT OF DAMAGE.
- CARRIER HAS A LEGAL RESPONSIBILITY TO TO A PROMPT INVESTIGATION AND PAYMENT
- IF THERE IS A DISAGREEMENT IN THAT INVESTIGATION OR PAYMENT ITS ON THE INSURED/PROPERTY MANAGER/CONTRACTOR/PA TO PROVE IT
- REMEMBER THAT THE POLICY STATES THAT IT WILL PAY FOR LOSS OR DAMAGE.
- DAMAGE IS WHEN MATERIAL NO LONGER PERFORMS AS INTENDED INCLUDING BOTH COSMETICALLY AND FUNCTIONALLY
- IF YOU ARE NOT BEING PROPERLY COMPENSATED FOR THE UPGRADE AND YOUR CLIENT HAS CODE COVERAGE YOUR CLIENT OR THEIR REPRESENTATIVE MUST KNOW AND MAKE THE CORRECT ARGUMENT. DONE CORRECTLY IT CAN BE PROPERLY PAID OUT ON MOST PROJECTS WHERE GBO APPLIES



91-W

91

---

---

---

---

---

---

---

---

---

---

---

---

## NEXT STEPS ?

- Obtain any desired licenses to meet requirements
- Partner with licensed subcontractors to provide other services as needed to meet green building requirements in GBO
- Partner with one or more design professionals to meet cool roof design guidelines
- Inform customers of their responsibilities. Explain options and provide links to information and online forms on city website. Work with a consultant or the C&C of Denver as needed to answer questions
- Fill out your proper Green Building Declaration Form
- **Get back to work!**

92-D

92

---

---

---

---

---

---

---

---

---

---

---

---

## QUESTIONS



93-D

93

---

---

---

---

---

---

---

---

---

---

---

---

## REFERENCES

[denvergov.org/greenroofs](http://denvergov.org/greenroofs)

Ordinance, declaration forms, submittal requirements, and rules and regulations

[denvergov.org/DS](http://denvergov.org/DS)

Sign up for the "Code and Policy Alert" email list for updates on the rules and regulations, and other news that impacts building/zoning permits in Denver (~1-2 emails/month)

[www.denvergov.org/EnergizeDenver](http://www.denvergov.org/EnergizeDenver)

Sign up for energy program

## COPY OF PRESENTATION

<http://coloradoroofing.org/member/education/>

94-D

---

---

---

---

---

---

---

---