



DENVER
THE MILE HIGH CITY

Green Roofs Review Task Force

City Council Meeting

April 2nd, 2018

FOR CITY SERVICES VISIT | CALL
DenverGov.org | **311**

OVERVIEW OF THE AGENDA

Scope and Authority

The Green Roofs Ordinance

Benefits, Costs, and Unintended Consequences of the Ordinance

Green Roofs Review Task Force, Recap of Discussions to Date



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SCOPE AND AUTHORITY



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ORDINANCE AND REGULATIONS

- On November 7, Denver voters passed the Green Roof Initiative (“Initiative 300”)
- The initiative generally requires a green roof for:
 - Any new building with a gross floor area of 25,000 SF or more or a building addition that causes the building to become 25,000 SF or more
 - Any existing building over 25,000 SF that is seeking to do a roof replacement
- Initiative allows for some exemptions and variances

- Shall the voters of the City and County of Denver adopt a measure that requires every building and any roof replacement of a building with a gross floor area of 25,000 square feet or greater, or a building addition that causes the building to become 25,000 square feet or greater, constructed after January 1, 2018, shall include a green roof or combination of green roof and solar energy collection; while also requiring proper permits and maintenance plans, establishing construction standards and a technical advisory group, publishing construction guidelines and best practices; also allowing for exemptions and requiring enforcement with violations and penalties?

- Community Planning and Development (CPD) has harmonized existing laws and policies with this new law, and built its requirements into our permitting and contractor licensing procedures
 - This includes developing rules and regulations to guide the administration of the ordinance.
 - New Green Roof Declaration Form as called for by the ordinance, as well as green roof submittal requirements.

Applicability: New buildings*

Size Trigger	Requirement
New building less than 25,000 sq ft in gross floor area	No green roof required
New building 25,000 sq ft gross floor area or greater	a. Residential building up to 4 stories or 50 ft in height – no green roof required b. All other building types – green roof required
Building addition a. Existing building under 25,000 sq ft, and building remains under 25,000 sq ft with addition b. Addition increases the building gross floor area from less than 25,000 sq ft to 25,000 sq ft or greater c. Existing building is already 25,000 sq ft or larger prior to the addition	a. No green roof required b. Green roof required (unless it's a residential building up to 4 stores or 50 ft in height) c. No green roof required

**New buildings do not include those defined as an industrial building.*

What's an Industrial Building?

- Industrial building is one that is used for exclusively for manufacturing, producing or processing of goods, warehousing or bulk storage of goods, self-storage facility, distribution center, truck terminal, research and development in connection with manufacturing, producing or processing of goods, and:
 - a. Includes office uses and the sale of commodities to the general public where such uses are accessory to and subordinate to an industrial uses,
 - b. Does not include:
 1. A building used exclusively for office or administrative purposes unless it is attached to an industrial building as defined above; or
 2. Warehouse clubs and retail warehouses, including commercial establishments which have as their principal use the sale of goods and merchandise in a warehouse format

Applicability: Industrial buildings

Size Trigger	Requirement
New building less than 25,000 sq ft in gross floor area	No green roof required
New building 25,000 sq ft gross floor area or greater	Provide one of the following: 1. A green roof that is equal to the lesser of 25,000 sq ft or 10% of the available roof space 2. A roof that uses solar energy collection on 80% of the available roof space and retains or collects for re-use at least the first 0.25 inches from each rainfall or 50% of annual rainfall volume falling on the roof
Building addition a. Existing building under 25,000 sq ft, and building remains under 25,000 sq ft with addition b. Addition increases the building gross floor area from less than 25,000 sq ft to 25,000 sq ft or greater c. Existing building is already 25,000 sq ft or larger prior to the addition	a. No green roof required b. No green roof required c. Green roof required – per above

Applicability: Existing buildings

Trigger	Size/Type	Requirement
Roof replacement	Building is less than 25,000 sq ft in gross floor area	No green roof required
	Residential building up to 4 stories or 50 ft in height	No green roof required
	All others	Combination green roof and solar energy collection so long as it contains no less than 30% green roof and retains or collects for re-use at least the first 0.25 inches from each rainfall or 50% of annual rainfall volume falling on the roof

Coverage Requirements

- Roof coverage based on the total building square footage

Gross Floor Area (Size of Building)	Coverage of Available Roof Space (Size of Green Roof)
25,000 – 49,999 square feet	20%
50,000 – 99,999 square feet	30%
100,000 – 149,999 square feet	40%
150,000 – 199,999 square feet	50%
200,000 square feet or greater	60%

Ordinance allows for the following exemptions:

- Building alteration or roof repair (but not roof replacement)
- Roof replacement that will result in major structural alterations
 - Evidence must be provided by an analysis by a Colorado licensed engineer documenting:
 - Load capacity of existing roof
 - Anticipated loads of green roof
 - Major structural alterations that would be required to support green roof
 - Amount of applicable % of coverage of available green roof space that could support a green roof without requiring major structural alteration.
- Commercial greenhouses
- Temporary structures
- Air-supported structures
- Residential building (60% residential) that is no greater than either 50 ft in height or 4 stories
- Addition on a building (that is not industrial) when the original building is 25,000 sq ft or greater
- Building permits received or applied for in 2017 (or earlier) but roofing permit not issued until 2018

Licensing and Permitting Changes

- Projects seeking any of the following have to be logged in for review:
 - Variance from the requirements
 - A roof replacement of an existing building requesting an exemption due to major structural alterations
 - Compliance with the initiative to install a green roof or green roof combination on a new building or existing building re-roof

Submittal Requirements

- See www.denvergov.org/greenroofs
 - Green roof declaration form contains submittal requirements for each variation of project, variance or exemption
- Also see the Commercial Permitting Guide



DEVELOPMENT SERVICES
Green Roof
Declaration Form
Page 1 of 5

Log #: (CPD use only) _____

This application is for any project that includes a green roof or is requesting an exemption or variance under the Denver Green Roofs Ordinance, found in Article XIII, Chapter 10 of the Denver Revised Municipal Code, which was approved by voters in 2017.

Project address: _____

Building gross floor area (include any proposed additions): _____

Please note this is NOT the same as calculating floor area under the building code. It is only used for determining green roof coverage requirements. To calculate gross floor area per the green roof ordinance, measure the total area of each floor in the building (above and below grade). Measure from the exterior of the main wall of each floor. Include voids at the level of each floor, such as an atrium, mezzanine, stairwell, elevator, ventilation duct or utility shaft, in the measurement. Do not include areas used for parking or loading. Then, sum the areas of all floors.

Class of work: (check one) ☐ New building ☐ Addition ☐ Roof repair/replace only

Scope of work—clearly indicate if this includes a new roof, roof repair, or roof replacement: _____

ROOF PERMITS FOR PROJECTS EXEMPT FROM THE GREEN ROOFS ORDINANCE

Select which of the below exemptions applies to your project and complete the "roof information" section below for a roof permit. Then skip to the signature and submittal instructions on page 3.

☐ This project submitted a complete building permit application before January 1, 2018. LOG #: _____

☐ This project submitted a complete site plan application before January 1, 2018. SDP #: _____

☐ This is a residential building that is 4 stories or less or has a height of 50 feet or less (whichever is greater).
of stories: _____ or Building height: _____

☐ This is a commercial greenhouse at grade.

☐ This is a temporary structure.

☐ This is an air-supported structure.

☐ This is an existing building where complying with the ordinance would require major structural alterations. (Make sure to include a structural analysis with this application per the guidance on page 5.)

Roof information

Roof type: (select one) ☐ 3-Tab ☐ T-Loc ☐ Built-up ☐ Tile ☐ Rolled
☐ Metal ☐ Modified ☐ Dimension/Architect ☐ Urethane ☐ Cedar
☐ Shake-Light ☐ Shake-Medium ☐ Shake-Heavy ☐ Membrane ☐ Other

of roofing squares: _____ Brand name: _____ Brand specification #: _____

Contractor license #: _____ Company name: _____ Supervisor certificate #: _____

Site contact to gain entry for inspections: _____ Phone: _____ Email: _____

Valuation of work (for projects not doing a green roof—include labor, profit, overhead, materials, equipment & install): \$ _____

Contractor remarks: _____

Ordinance and further clarified in the rules and regs, a variance may be requested to Planning Board for projects that are “unable to provide” a green roof if at least one of the following conditions exist:

- Slope of roof or limited access to roof
- Building is used for seasonal purposes and there are no funds for off-season maintenance
- The proposed roof of a non-residential structure contains an amount of area that is intended for recreational or social use by occupants of the building, and that results in inability to comply
- Building is historic (and not otherwise exempt due to major structural alteration) and the applicant provides documentation that the green roof would threaten, degrade or destroy the contributing historic character or features
- The applicant is able to provide the green roof combination coverage (new and existing buildings) or solar energy collection (industrial buildings), but is not able to meet the retention and re-use requirement due to conflicting state law
- The available roof space does not allow for the required amount of coverage due to the existence of rooftop equipment, skylights or other impediments not covered by the exemptions in the available roof space definition
- The applicant presents other substantial evidence that shows they are unable to comply

- Requires a posting and a public hearing at Planning Board
- Planning Board may grant a variance but applicant must pay a cash-in-lieu fee of \$25/SF for each SF of coverage of available roof space that is no longer required to provide a green roof or green roof combination



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CHALLENGES WITH IMPLEMENTATION

Implementation Challenges

- Language copied from another jurisdiction that did not address existing buildings - existing buildings added without sufficiently addressing challenges this poses
 - Available roof space – Definition does not allow for the exclusion of rooftop mechanical, electrical or other equipment. Equipment would have to be relocated or this could allow one to request a variance.
- State water law conflict related to the requirement for water retention and re-use

Implementation Challenges

- Planning Board is not equipped or knowledgeable enough on building code to be the appropriate body to consider variance requests
- Conflict with IFC Section 317.3 which requires a 6 ft separation between equipment and a green roof
- Not all existing buildings can do solar
- Definition of terms that conflict with similar definitions in the City's zoning and building codes

The Dream

BENEFITS OF THE ORDINANCE

Benefits of the Ordinance

URBAN HEAT ISLAND

Urban Heat Island

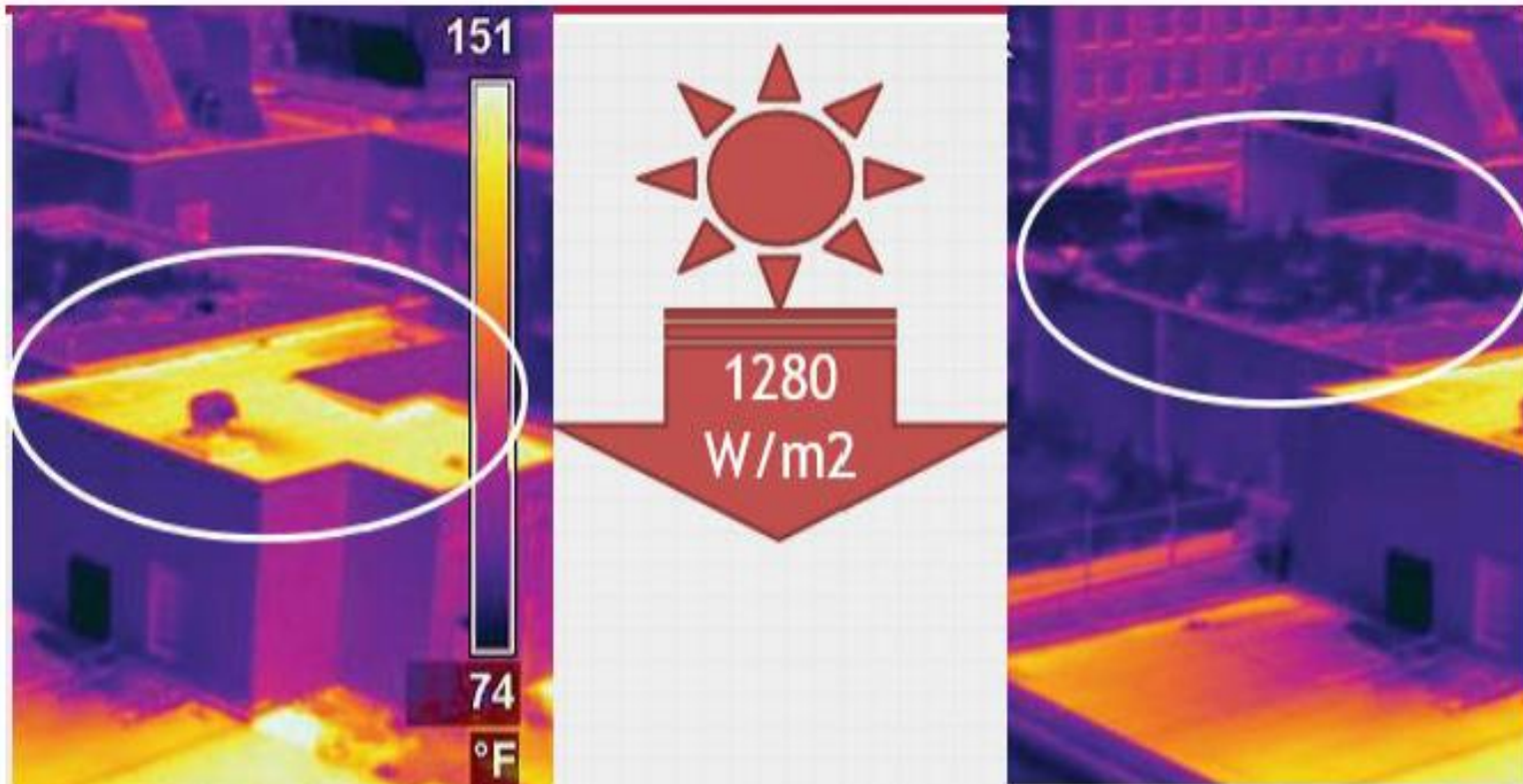


Image Source: Heidarinejad, Ghassem, and Arash Esmaili. 2016. "Assessment of green roof energy savings compared to conventional roof." eSim.

An aerial photograph of Denver, Colorado, showing a mix of urban development, green spaces, and mountains in the background. The foreground features a large green park area with trees and a winding path. In the middle ground, there are several tall apartment buildings and a mix of residential and commercial structures. The background shows a dense urban area with many skyscrapers and a range of mountains under a clear blue sky.

**50% of Denver
homes do not have
air conditioning**

Human Health and Wellbeing

GREEN EXPERIENCE



Benefits of the Ordinance

WATER AND STORMWATER MANAGEMENT

Denver Water Quality Goal

Make all Denver creeks and rivers swimmable and fishable.

Air Quality  Attain all National Ambient Air Quality Standards	Climate  Reduce Denver CO2 emissions to below 1990 levels	Energy  Hold total energy usage below 2012 levels, while cutting fossil fuels by 50%	Food  Grow and/or process at least 20% of food purchased in Denver in Colorado
Health  Increase the % of youth in Denver at a healthy weight from 69% to 74%	Housing  Ensure 80% of neighborhoods are rated as affordable	Land Use  Move Denver's Walk Friendly rating to Platinum from Gold	Materials  Increase the citywide recycling rate to 34% or greater
Mobility  Reduce trips in single-occupant vehicles to no more than 60% of commuters	Water Quality  Make all Denver creeks and rivers swimmable and fishable	Water Quantity  Reduce water usage by 22%	Workforce  Help at least 40% of workers living in transit deserts get to work without driving alone



Perviousness / Imperviousness

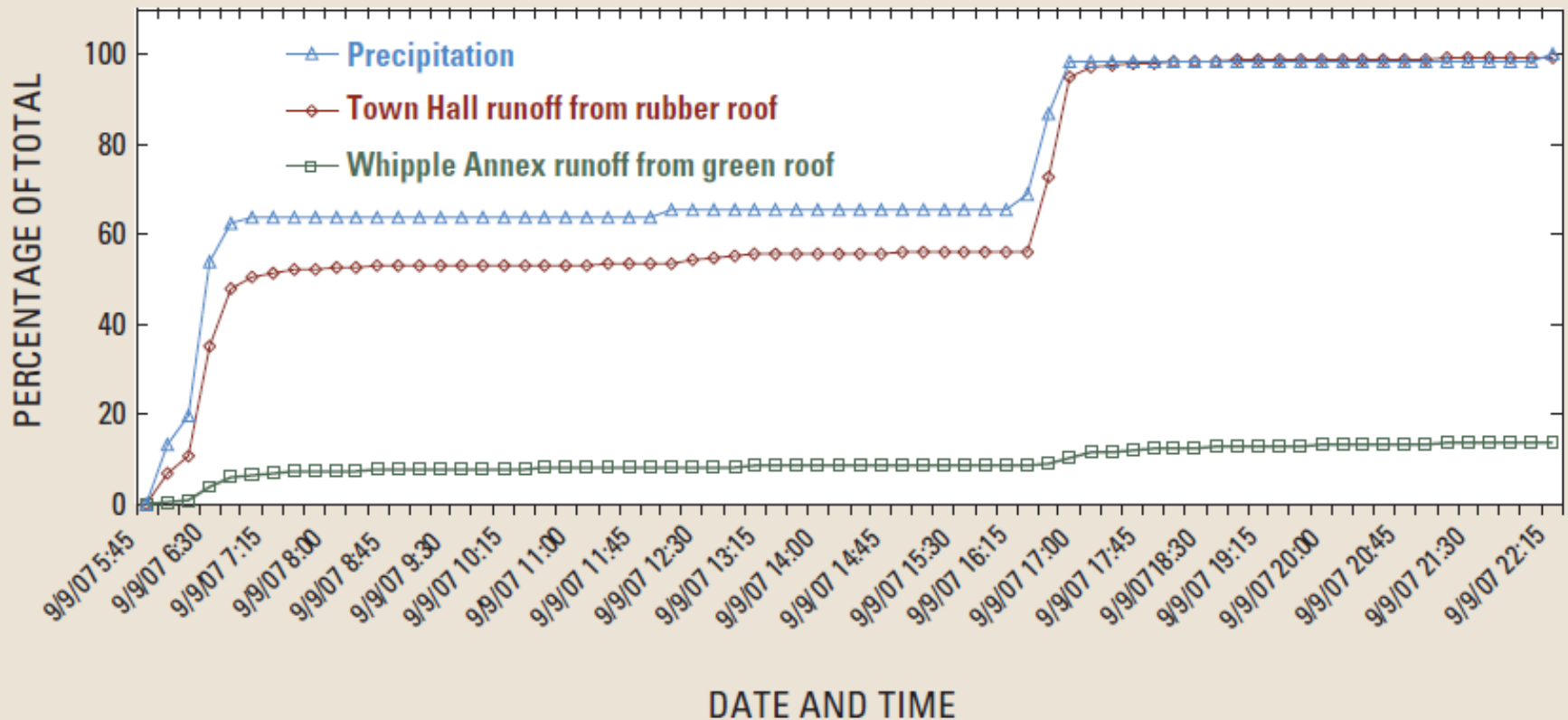
Pervious Surfaces	Impervious Surfaces
Grass	Roads and Sidewalks
Dirt, Sand, or Gravel	Roofs
	Parking Lots and Driveways

- Pervious Surface
 - Allows water to soak into the ground.
- Impervious Surface
 - Does not allow water to soak into the ground, instead it creates runoff.



Runoff Reduction

B 0.61-inch storm, 531.5-hour antecedent dry period, 16.75-hour duration, and 0.036-inch-per-hour intensity



Benefits of the Ordinance

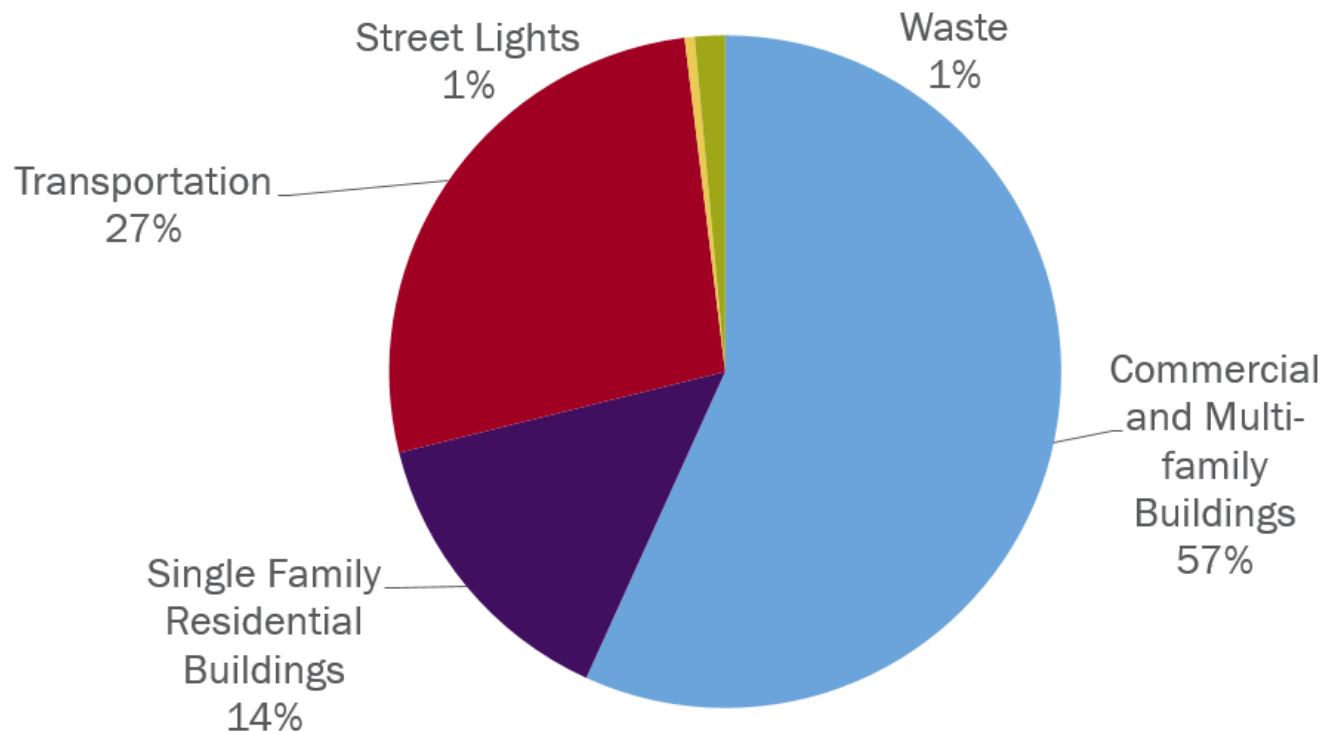
CLIMATE CHANGE

Denver Climate Change Goal

Air Quality  Attain all National Ambient Air Quality Standards	Climate  Reduce Denver CO2 emissions to below 1990 levels	Energy  Hold total energy usage below 2012 levels, while cutting fossil fuels by 50%	Food  Grow and/or process at least 20% of food purchased in Denver in Colorado
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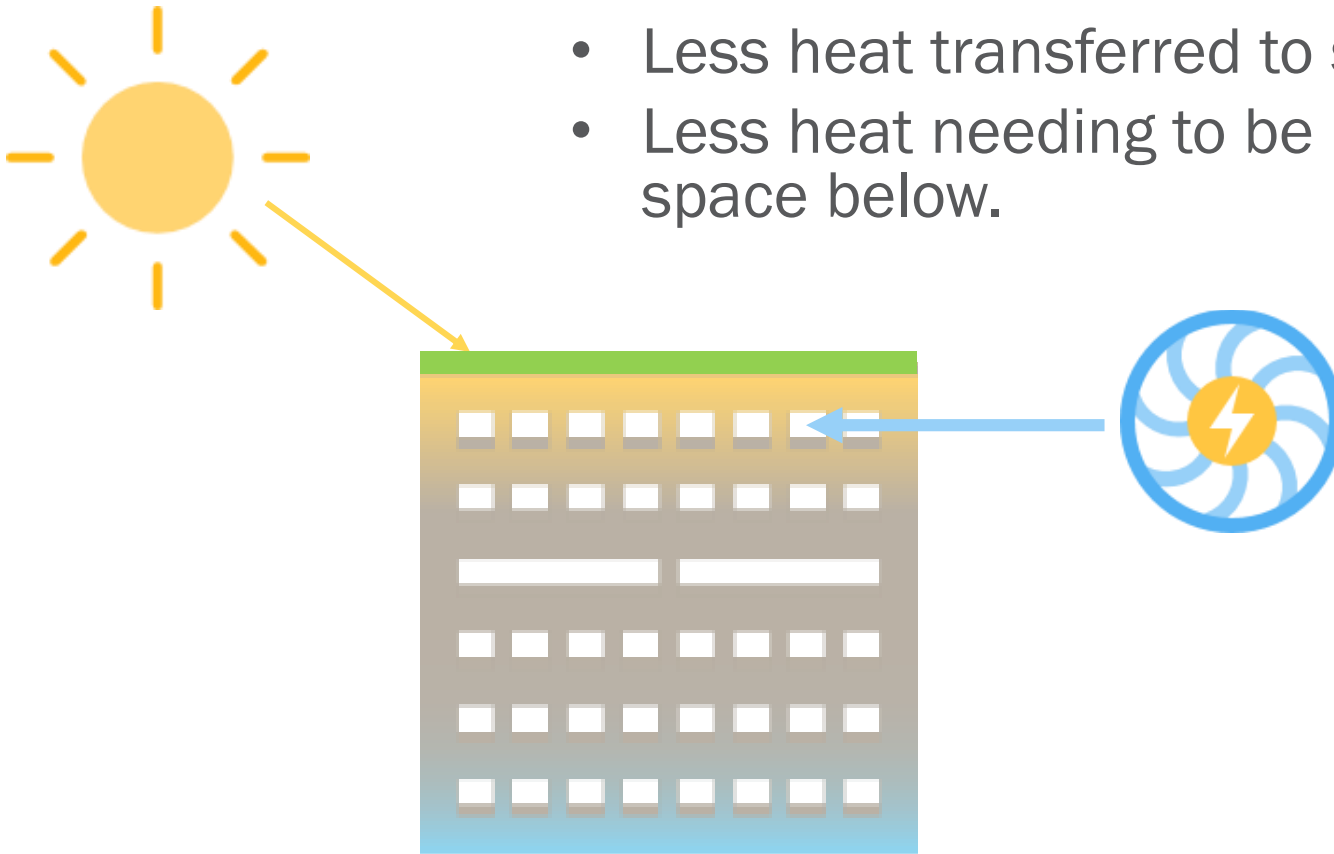


Denver's Greenhouse Gas Emissions Sources



Green Roof Cooling Energy Savings Greenhouse Gas Emission Reductions

- Lower roof temperatures during the summer months
- Less heat transferred to space below
- Less heat needing to be removed from space below.



Solar Greenhouse Gas Emission Reductions

New Buildings

- Option to do a green roof solar combination
- Option to cover 100% of roof area with solar panels so there is 'no available roof space' for a green roof.

Existing Buildings

- Required to do a green roof – solar combination. If the building can't support the green roof without major structural modifications, then solar on 70% of the required covered area may still be necessary.



Buildings GHG Reduction Comparison at Year 2050



~3.1 million mtCO₂e was emitted in 2017 from the energy used in buildings over 25,000 square feet.



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COSTS AND UNINTENDED CONSEQUENCES

Denver Buildings Covered by the Green Roofs Ordinance.					1.5% annual growth assumed	
Commercial, Office, School, Govt, Church, Hotel, etc						
Gross Sqft Category	Count of Buildings in this category 2014	Sum of Building Gross sqft 2014	Sum of roof sqft 2014	Sum of Building Gross sqft 2050	Sum of roof sqft 2050	Size of green roof required
25,000-49,999 sqft	624	22,238,736	10,093,708	38,009,103	17,251,555	20%
50,000-99,999 sqft	448	31,506,676	11,398,145	53,849,306	19,481,020	30%
100,000-149,999 sqft	200	24,253,442	7,090,332	41,452,517	12,118,367	40%
150,000-199,999 sqft	101	17,612,433	4,544,787	30,102,106	7,767,675	50%
200,000 sqft or greater	271	153,477,564	22,289,298	262,314,573	38,095,520	60%
Residential (does not apply to residential building with "a height less than or equal to the greater of four stories or 50 feet.")						
Gross Sqft Category	Count of Buildings in this category 2014	Sum of Building Gross sqft 2014	Sum of roof sqft 2014	Sum of Building Gross sqft 2050	Sum of roof sqft 2050	Size of green roof required
25,000-49,999 sqft	77	2,875,797	532,014	4,915,138	909,286	20%
50,000-99,999 sqft	136	9,831,811	1,604,404	16,803,937	2,742,150	30%
100,000-149,999 sqft	49	6,091,488	808,066	10,411,203	1,381,098	40%
150,000-199,999 sqft	25	4,319,764	499,047	7,383,079	852,941	50%
200,000 sqft or greater	41	17,705,586	1,870,327	30,261,317	3,196,650	60%
Industrial						
Gross Sqft Category	Count of Buildings in this category 2014	Sum of Building Gross sqft 2014	Sum of roof sqft 2014	Sum of Building Gross sqft 2050	Sum of roof sqft 2050	Size of green roof required
25,000-249,999 sqft	869	70,575,009	33,968,542	120,622,538	58,056,978	10%
greater than 250,000 sqft	165	90,114,205	31,222,077	154,017,751	53,362,886	capped at 25,000

Building Size: 55,000 sq ft

Number of Floors: 5

Roof Size: 11,000 sq ft

	Existing	New
Required Roof Coverage	30%	30%
Required Roof Coverage	3,300 ft ²	3,300 ft ²
Roof Replacement Cost	\$137,700	N/A
New Construction Cost	N/A	\$6,990,500
Green Only – Cost Increase	N/A	2%
Solar/Green Combo – Cost Increase	68% - 102%	1%
Solar Only*- Cost Increase	40%	4%

*Solar Only: Solar area is same as Solar/Green Combo case for existing buildings. Solar area is 100% of roof area for new buildings.

Building Size: 150,000 sq ft
Number of Floors: 1
Roof Size: 150,000 sq ft

	Existing	New
Required Roof Coverage	10%	10%
Required Roof Coverage	15,000 ft ²	15,000 ft ²
Roof Replacement Cost	\$1,539,900	N/A
New Construction Cost	-	\$19,642,500
Green Only – Cost Increase	N/A	2%
Solar/Green Combo – Cost Increase	20% - 32%	2%
Solar Only*- Cost Increase	11%	12%

*Solar Only: Solar area is same as Solar/Green Combo case for existing buildings. Solar area is 100% of roof area for new buildings.

Building Size: 150,000 sq ft
Number of Floors: 1
Roof Size: 150,000 sq ft

	Existing	New
Required Roof Coverage	50%	50%
Required Roof Coverage	75,000 ft ²	75,000 ft ²
Roof Replacement Cost	\$1,539,900	N/A
New Construction Cost	N/A	\$15,000,000
Green Only – Cost Increase	N/A	15%
Solar/Green Combo – Cost Increase	87% - 144%	9%
Solar Only*- Cost Increase	44%	13%

*Solar Only: Solar area is same as Solar/Green Combo case for existing buildings. Solar area is 100% of roof area for new buildings.

Building Size: 300,000 sq ft

Number of Floors: 15

Roof Size: 6,000 sq ft

	Existing	New
Required Roof Coverage	60%	60%
Required Roof Coverage	3,600 ft ²	3,600 ft ²
Roof Replacement Cost	\$102,750	N/A
New Construction Cost	N/A	\$56,007,000
Green Only – Cost Increase	N/A	0.2%
Solar/Green Combo – Cost Increase	93% - 131%	0.2%
Solar Only*- Cost Increase	59%	0.3%

*Solar Only: Solar area is same as Solar/Green Combo case for existing buildings. Solar area is 100% of roof area for new buildings.

The difference between the current value of the future cash flows from an investment and the amount of investment.

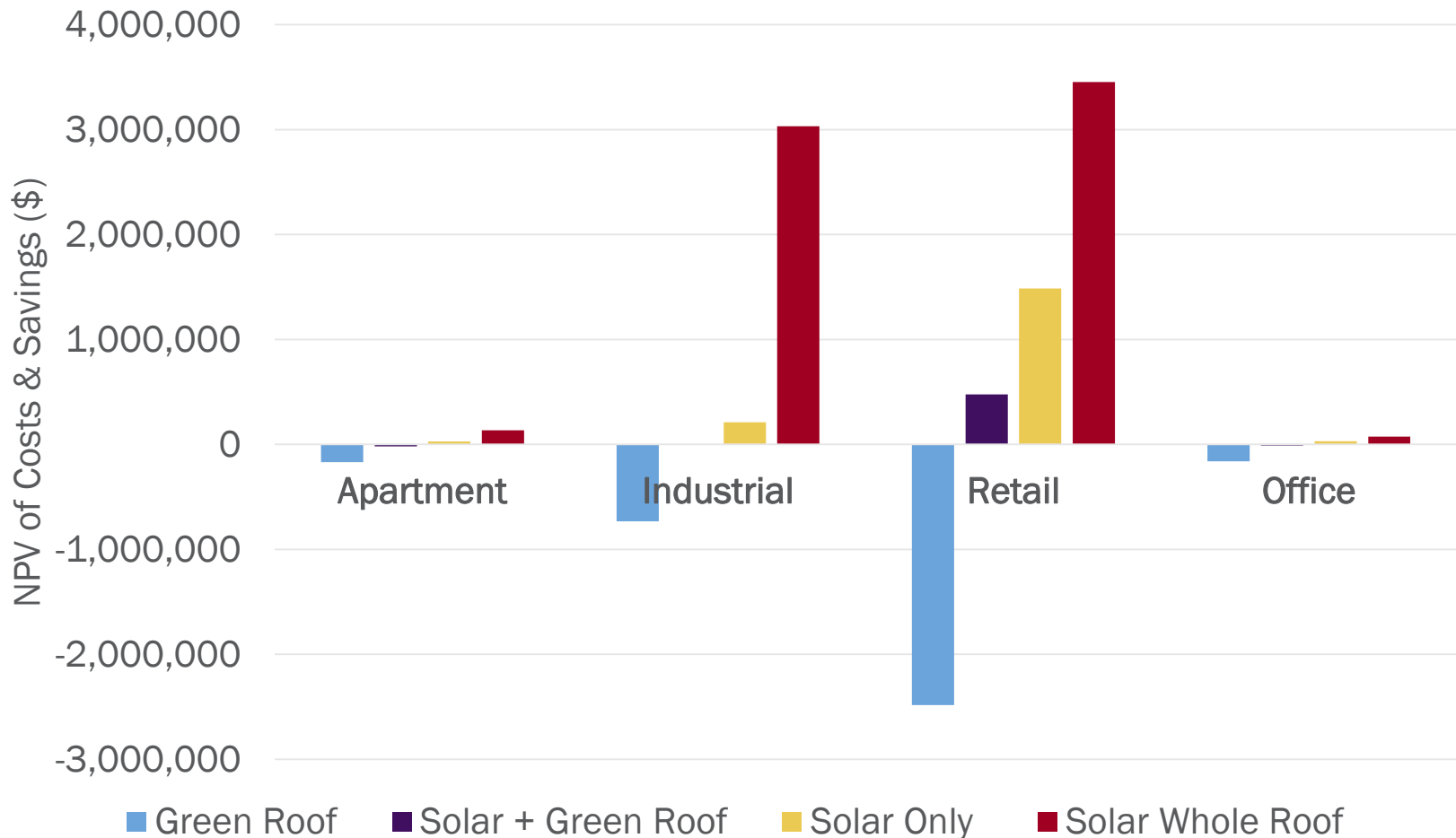
Positive Value

- Revenues are greater than the costs

Negative Value

- Costs are greater than the revenues

Net Present Value for Green Roofs



*Solar Only: solar area is same as in "Solar + Green Roof" case.

Unintended Consequences

- Many existing buildings likely to get an exemption from the green portion because they can't support the load.
- Market adjustment time
 - New buildings waiting to submit a permit until greater clarity on revisions to the ordinance are in place.
 - Existing building are delaying roof replacement. Learning curve now while people get used to needing a major structural alteration exemption and solar panels, likely with a power purchase agreement, at the time of roof replacement.



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OTHER CITIES

Cities with Policies that include Green Roofs

San Francisco

Toronto

Seattle

Chicago

- San Francisco, Seattle, and Chicago offer green roofs as just one of many compliance options in a larger green building policy.

New Construction Policies with Similar Benefits

New Construction Requirements:

- Green Roofs
- Solar Panels
- Cool roofs
- Green Amenity Spaces
- Stormwater Management e.g. street gardens planters
- Net Zero Energy Building
- Green Building Certifications

Existing Building Policies with Similar Benefits

Existing Building Requirements:

- Retro-Commissioning
- Energy Audits
- Lighting Upgrades
- Cool roofs

Chicago Sustainable Development Policy 2017.01.12



Compliance Options		Points Required	Sustainable Strategies Menu																													
Compliance Paths	Starting Points	Number of Optional Points Required New Construction / Substantial Rehab / Moderate Rehab	Health		Energy					Stormwater					Landscapes			Green Roofs		Water		Transportation					Solid Waste	Work Force	Wildlife			
			1.1 Achieve WELL Building Standard	2.1 Designed to earn the Energy Star	Choose one			Choose one		Choose one			4.1 Working Landscapes	4.2 Natural Landscapes	4.3 Tree Planting	4.4 Achieve Sustainable Sites Certification	Choose one		Choose one		7.1 Proximity to Transit Service	7.2 Bikeshare Sponsorship	7.3 Bike Parking Residential	7.4 Bike Parking Commercial & Industrial	7.5 EV Charging Stations	7.6 EV Charger Readiness	7.7 CTA Digital Displays	8.1 80% Waste Diversion	8.2 Workforce Development	Choose one		
Options Without Certification																																
All Options Available	0	100 / 50 / 25	40	30	20	30	40	50	10	20	10	20	40	5	5	5	5	5	5	5	5	5	5	5	5	5	5	10	10	5	10	
Options With Certification																																
LEED Platinum	95	5 / 0 / 0	40	NA	NA	NA	NA	NA	NA	10	20	40	5	5	5	5	NA	NA	NA	20	10	20	NA	NA	NA	5	5	NA	10	5	10	
LEED Gold	90	10 / 0 / 0	40	NA	NA	NA	NA	50	10	20	10	20	40	5	5	5	5	NA	5	20	10	20	NA	NA	NA	10	5	5	10	10	5	10
LEED Silver	80	20 / 0 / 0	40	NA	NA	NA	40	50	10	20	10	20	40	5	5	5	5	5	5	20	10	20	NA	20	NA	5	5	10	10	5	10	
Green Globes 4-Globes	90	10 / 0 / 0	40	NA	NA	NA	NA	50	10	20	10	20	40	5	5	5	5	NA	5	20	10	20	NA	NA	NA	10	5	5	10	10	5	10
Green Globes 3-Globes	80	20 / 0 / 0	40	NA	NA	NA	40	50	10	20	10	20	40	5	5	5	5	NA	5	20	10	20	NA	NA	NA	10	5	5	10	10	5	10
Green Globes 2-Globes	70	30 / 0 / 0	40	NA	NA	NA	40	50	10	20	10	20	40	5	5	5	5	5	5	20	10	20	NA	20	NA	10	5	5	10	10	5	10
Living Building Challenge	100	0 / 0 / 0	40	NA	NA	NA	NA	NA	NA	10	20	40	5	5	5	NA	NA	NA	20	NA	NA	NA	NA	NA	NA	10	5	NA	NA	10	5	10
Living Building Challenge Petal	90	10 / 0 / 0	40	NA	20	30	40	50	NA	NA	10	20	40	5	5	5	5	NA	5	20	10	20	10	20	NA	5	5	10	10	5	10	
Enterprise Green Communities*	80	20 / 0 / 0	40	NA	NA	NA	NA	NA	10	20	10	20	40	5	5	5	5	5	5	20	10	20	10	20	5	5	NA	NA	10	5	10	
PassiveHouse	70	30 / 0 / 0	40	NA	NA	NA	NA	NA	10	20	10	20	40	5	5	5	5	5	5	20	10	20	10	20	5	5	10	5	10	10	5	10

*only available to affordable housing projects funded by DPD's Housing Bureau

Compliance Options	Points Required										
	Starting Points	Number of Optional Points Required New Construction / Substantial Rehab / Moderate Rehab	Health	Energy							
			1.1 Achieve WELL Building Standard	2.1 Designed to earn the Energy Star	2.2 Exceed Energy Code (5%)	2.3 Exceed Energy Code (10%)	2.4 Exceed Energy Code (25%)	2.5 Exceed Energy Code (40%)	2.6 Onsite Renewable Energy (3%)	2.7 Onsite Renewable Energy (5%)	
Compliance Paths						Choose one			Choose one		
Options Without Certification											
All Options Available	0	100 / 50 / 25	40	30	20	30	40	50	10	20	10
Options With Certification											
LEED Platinum	95	5 / 0 / 0	40	NA	NA	NA	NA	NA	NA	NA	10
LEED Gold	90	10 / 0 / 0	40	NA	NA	NA	NA	50	10	20	10
LEED Silver	80	20 / 0 / 0	40	NA	NA	NA	40	50	10	20	10
Green Globes 4-Globes	90	10 / 0 / 0	40	NA	NA	NA	NA	50	10	20	10
Green Globes 3-Globes	80	20 / 0 / 0	40	NA	NA	NA	40	50	10	20	10
Green Globes 2-Globes	70	30 / 0 / 0	40	NA	NA	NA	40	50	10	20	10
Living Building Challenge	100	0 / 0 / 0	40	NA	NA	NA	NA	NA	NA	NA	10
Living Building Challenge Petal	90	10 / 0 / 0	40	NA	20	30	40	50	NA	NA	10
Enterprise Green Communities*	80	20 / 0 / 0	40	NA	NA	NA	NA	NA	10	20	10
PassiveHouse	70	30 / 0 / 0	40	NA	NA	NA	NA	NA	10	20	10

*only available to affordable housing projects funded by DPD's Housing Bureau



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THE TASK FORCE

“To develop recommended modifications, clarifications, and improvements to the initiative through a collaborative, consensus-based process that will honor the vote.”



Who is on the Task Force

Council Members

Jolon Clark

Mary Beth Susman

City Staff

Katrina Managan

Scott Prisco

Adam Hernandez

Jon Novick

Green Roof

Proponents

Brandon Rietheimer

Jennifer Bousselot

Andy Creath

Real Estate

Tami Door

Kathie Barstnar

Mark Windhager

Joe Havey

Grant Nelson

Amy Mayhew

Jeannie Renne-Malone

Additional Experts

Austin Krcmarik

Chris Parr

Christine Brinker

Jamaca Berman

John Bringenberg

Lindsey Arell

Prem Sundharam

Tyler Smith

Task Force Meeting Timeline

