Green Building Policy Proposal

Draft Proposal from the Green Roofs Review Task Force

May 3rd, 2018

(An updated draft will be published with additional clarifications on May 8th. Please make final comments about that version, which will be posted at www.denvergov.org/greenroofs.)

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Overview

The Green Roof Review Task Force mission is to develop recommended modifications, clarifications, and improvements to the green roof initiative through a collaborative, consensus-based process that honors the vote and the benefits that the ordinance would have achieved. The group believes the following approach will improve flexibility, allowing each owner of an existing, large building and each new builder to find the most cost-effective way to achieve as much or greater benefits as compared to the ordinance that was on the ballot.

The following proposal is a working draft that at a high level the task force believes is taking the ordinance in the right direction for our City. It is not any of their ideal policy, but rather a compromise that all believe is getting closer to something they can all live with because it strengthens the benefits while reducing the cost. Please let them know if you agree that directionally the proposal here is an improvement upon what was on the ballot, and help them get the details right. Please be kind and constructive.

Options Today:	**Options in Task Force Proposal:**
Green Roof Green Roof – Solar Combination Solar Panels on the Roof	Green Roof Green Space on the Ground or on Terraces Financial Contribution for Off-site Green Green Roof – Solar Combination Renewable Energy anywhere on-site Community Solar Energy Efficiency Cool Roofs – now required on all buildings
Pro's: • Urban Heat Island Reductions • Green Experience Improvements. • Water and Storm Water Management Benefits • Greenhouse Gas Emission Reductions	Pro's: • Urban Heat Island Reductions: Greater benefit from cool roofs on all buildings instead of black roofs partially covered in green. • Green Experience Improvements: 3.5 million more square feet of green space by 2050 and better accessibility since green spaces can be placed in more accessible locations, not only roofs. • Water and Storm Water Management Benefits: Improved outcomes with requirements for on the ground spaces to provide multifunctional water quality benefits. • Greenhouse Gas Emission Reductions: Equal to the solar that was required, but with more flexibility. • Flexibility. Multiple options to allow each building gto choose what works best for them. • Lower cost. All compliance costs cut at least 20%, and many buildings will see only a small fraction of the original cost. New construction should see less than a 1% cost increase, and in many cases far less. Many options have a return on the investment.
Con's: • Expensive • Prescriptive • Many existing buildings can't support a green roof and would have to pay for a structural engineering study to get an exemption from that portion of the requirement. • Delays in roof replacement and in new construction projects.	Con's: • Complicated. With flexibility comes a more complicated proposal.

Current Requirement - Ordinance as on the Ballot

As a frame of reference by which to understand the task force proposal we summarize very briefly here what the current requirement is, i.e. what the ordinance is that was on the ballot November 7th, 2017. The following is a very brief summary. For all the details on the current requirement go to www.denvergov.org/greenroofs

New Buildings Current Requirement

Pick one of the following 3 options:

Compliance Options	Metric
Green roof	Green roof covering 10-60% of the roof, depending on building type and size. (See chart below)
Green and rooftop solar	Green area equivalent to at least 30% of the required area; AND onsite solar equivalent to up to 70% of required area
Rooftop solar	On-site solar covering 100% of roof area

Existing Buildings Current Requirement

Install a combination of a green roof and rooftop solar at the time of roof replacement.

Compliance Option	Metric
Green and rooftop solar	Green area equivalent to at least 30% of the required area; AND onsite solar equivalent to up to 70% of required area

Current Coverage Requirement

The following chart shows what required coverage is under the current requirement. These coverage requirements were disproportionately burdensome to large single story buildings. They also make the green roof solar combination options above confusing to understand since we are talking about a percent of a percent.

Size of Building (Gross Floor Area)	Required Area. Percent of Roof Space Required to be Covered under Ordinance that was on the ballot.
25,000 – 49,000 sq ft	20%
50,000 - 99,000 sq ft	30%
100,000 - 149,999 sq ft	40%
150,000 – 199,999 sq ft	50%
200,000 sq ft or greater	60%
New Industrial Building	10%

New Coverage Requirement Proposal

The task force proposed modifying the coverage requirements as follows. Any projects already under development following the old coverage requirements would be allowed to utilize those instead if they wish.

New Buildings Coverage

The new proposed amount of coverage required on a site will be 10% of the roof area times the number of floors (or Roof Area Ratio, RAR), up to a maximum required coverage of 60%. This formula will increase total coverage city-wide by an estimated 14.5% if every new building selected the green roof option in this proposal. This would result in an estimated additional 3.5 million square feet of green space, by 2050 while more equitably distributing coverage across buildings.

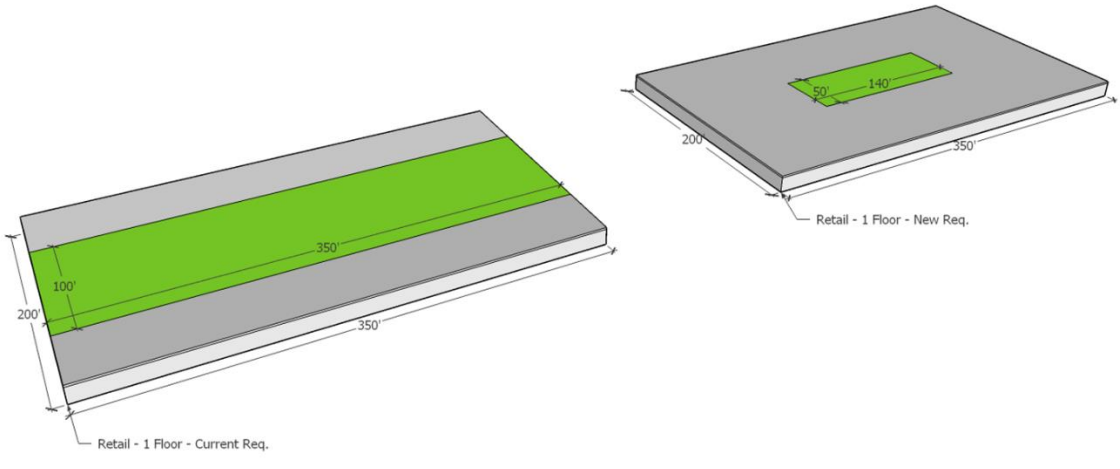
New Proposed Coverage Requirement:

Height of Building	Percent of Roof Space Required to be Covered under New Proposal
1 story	10%
2 stories	20%
3 stories	30%
4 stories	40%
5 stories	50%
6 stories and higher	60%

The following is an example of how this calculation would work for an 80,000 square foot building, with 2 floors, and an across the board percentage of 10%:

Building Area/Roof Area (RAR) = 80,000sf/40,000sf = 2
10% (Across the Board Percentage) x 2 (RAR) = 20% of Roof
40,000 sf Available Roof x 20% = 8,000sf Required Coverage

The following image shows how the coverage requirement under the new proposal compares to the ordinance requirement for a 70,000 sq ft single story retail building.



Existing Requirement Proposed Requirement

New Building Proposal

Summary

All new buildings will have a cool roof unless the roof is a character defining architectural feature regardless of roof angle. See the cool roof definition section at the end of this proposal for details. The proposal does not include major renovations unless they include a roof replacement, in which case they would be covered under the existing building section.

All new buildings will also pick one of the eight options shown here. e:

	Compliance Option (Select One)	Location	Metric
Green	**Green roof/green space only**	Roof, terraces, podiums, green walls, or grade-level	Green area equivalent to 10% of roof area x no. of floors (max 60% of roof area required)
	Financial contribution for off-site green	Offsite	~$17/sf contribution for required green area (10% of roof area x no. of floors, max 60% of roof area) (Actual costs to be determined through a rate study.)
Green + Energy	**Green and solar**	Roof, terraces, podiums, grade-level, green walls, off-site	Green area equivalent to 3% of roof area x no. of floors (max 18% of roof area required); AND on-site solar (or other renewable energy) or community solar total system production equivalent to 7% of roof area x no. of floors (max 42% of roof area required)
	Green and energy efficiency	Roof, terraces, podiums, grade-level, off-site (green); building (efficiency)	Green area equivalent to 3% of roof area x no. of floors (max 18% of roof area required) AND minimum 8% estimated energy savings vs current City of Denver energy code at the time of permitting
Energy	**Solar**	Roof, building, site, community	On-site solar (or other renewable energy) or community solar or Xcel Renewable Connect for a total system production equivalent to 70% of roof area
	Energy efficiency	Building	Minimum 19% estimated energy savings vs current City of Denver energy code at the time of permiting.
Certification	**LEED certification**	Building	Minimum Gold level certification
	Enterprise Green Communities certification	Building	Minimum certification

Details

Green Only

On the ballot: Building installs a green roof covering at least a certain percentage (10-60%) of available roof space.

Modifications to increase flexibility/reduce cost: The same amount of green space could be on the roof, terrace, podium, or ground anywhere onsite. Or, the building could make a financial contribution towards off-site green. The percentages are adjusted to be simpler and more equitable.

Details on 'Green Roof/Green Space':
The new proposed amount of green roof/green space required on a site will be 10% of the roof area times the number of stories in thef building (or RAR), up to a maximum required coverage of 60%. The green space will be included in the site plan. The site plan may be amended to remove the green space in the future as needed by making an equivalent financial contribution for off-site green space, or replacing the existing green space with adjacent green space on the current site.

Green roof /green space must be above-and-beyond the storm water required areas and above-and-beyond any green space currently required in zoning setback areas or open space. The green space will be included in the site plan.

The following are allowable strategies that could be implemented anywhere on the site to meet the Green roof/green space requirements:

- Green roof
- Trees
- Green walls and hedges
- Groundcover and shrubs
- Ground-level food production
- Financial contribution for off-site green space at ~$17/sq ft. (Actual costs to be determined through a rate study.)

Green and Solar (OR) Green and Energy Efficiency

On the ballot: Building installs a combination of green roof and solar panels, covering at least a certain percentage (10-60%) of available roof space. Of that, the green roof must be at least 30% and the solar could be the remaining 70%.

Modifications to increase flexibility/reduce cost: The same amount of green space could be on the roof, terrace, podium, or ground anywhere on-site, or a financial contribution could be made towards off-site green. The solar energy part could be another renewable energy technology or some mild efficiency upgrades above code. The percentages are adjusted to be simpler and more equitable. The 70%/30% split between solar and green will remain.

Details on 'Green' in this option:
The amount of green space required on a site will be 3% of the roof area times the number of stories in the building, up to a maximum required coverage of 18%. The green space will be included in the site plan. The site plan may be amended to remove the green space in the future as needed by making an

equivalent financial contribution for off-site green space, or replacing the existing green space with adjacent green space on the current site.

Green roof /green space must be above-and-beyond the storm water required areas and above-and-beyond any green space currently required in zoning setback areas or open space. The green space will be included in the site plan.

Details for 'Solar OR Energy Efficiency' in this option:

- On-site solar or community solar total system area equivalent to 7% of roof area x no. of floors (max 42% of roof area required) Or, such lesser space as required to meet 100% of average estimated electricity used at the location.
- Other on-site renewable options with similar generation capacity.
- Community solar or Xcel Renewable*Connect with a 25-year contract
- Minimum estimated 8% energy savings vs current City of Denver energy code
- Other equivalent certifications/programs may be added by CPD in the future (Denver Stretch Code)

Solar or Energy Efficiency

On the ballot: Building covers 100% of the available roof space with solar.

Modifications to increase flexibility/reduce cost: Solar or other renewable energy could be anywhere on-site. Community solar could be purchased. The building could achieve similar greenhouse gas emission reductions with deep energy efficiency above code.

Details:
The following are strategies that a building owner could implement to meet the 'Solar or Energy Efficiency' Option:

- On-site solar or community solar total system area equivalent to 70% of roof area. Or, such lesser space as required to meet 100% of estimated average electricity used at the location.
- Other on-site renewable options with similar generation capacity.
- Community solar or Xcel Renewable*Connect with a 25-year contract
- Minimum 19% estimated energy savings vs current City of Denver energy code

Green Building Certification

On the ballot: No certification option.

Modifications to increase flexibility/reduce cost: The building could meet LEED Gold, Enterprise Green Communities. Other equivalent certifications/programs may be added by the City in the future such as a Denver Stretch Code.

Details: The LEED design package must be submitted at the time of permitting the building to pursue this option. To get the certificate of occupancy, the building must be pre-certified or submit the LEED design review with a plan for how any requested changes will be made. Proof of green certification would need to be submitted 18 months after the certificate of occupancy is given. After 18 months there would be a 6-month grace period. If the LEED certification isn't submitted a citation will be issued equivalent to the financial contribution for off-site green that could have been paid for the 'green' compliance option initially. ($17 x 10% x number of floors (to a maximum of 60%) (Actual costs to be determined through a rate study.).) Equivalent parameters would apply to Enterprise Green Communities certification.

Campuses

Campuses will be allowed to comply at the campus level. To do so campuses will need to document compliance with the green roof initiative in the following ways. A campus is one or multiple owners of contiguous property that consists of at least 5 acres *(10 acres is our current GDP threshold, but that may be revised down to 5 acres soon, this will remain consistent with the current GDP threshold)* that seeks to create a unified master plan for development of the entire property which will occur in phases over multiple years. This development may be undertaken by others following entitlement efforts (getting the property ready for development).

1. During an infrastructure master plan/general development plan or similar effort, a campus could submit a campus wide energy plan documenting such things as on-site renewables (location and amount of generation), alternate heating and cooling sources with specific information about how they will be provided, and what building systems will be required as a result.
    a. DDPHE staff would review this component of the IMP/GDP/similar effort to determine if it will comply with the modified green roof initiative
    b. A development agreement or similar tool would have to be entered into between the developer and city to document requirements for when this energy system would come online such that individual buildings could be permitted without otherwise showing compliance with the green roof initiative.
    c. An energy plan could be submitted following IMP approval but prior to any building permitting, and could be treated as an amendment to that document
2. Campus wide provision of additional at-grade green spaces beyond what is required (Current requirements are 10% green space on a campus. The amount must also be in excess of water quality requirements for site.) to meet revised green roof requirements
    a. To meet the green roof initiative requirement of providing additional at-grade green space, a campus could include in their open space plan in an IMP/GDP/similar effort, a document of this additional at-grade green space that is beyond any code requirement for open space. This would include such things as setback areas, a requirement to provide 10% of the net developable area as open space, etc.
    b. A development agreement or similar tool would be required to document when this additional green space will be required to be provided.
    c. This would allow buildings to move ahead with permitting without providing other elements of green roof compliance, unless that building was required to provide the open space with the construction of the building.
    d. At time of permitting, the open space will need to be shown and permitted with the site development plan for the applicable building.

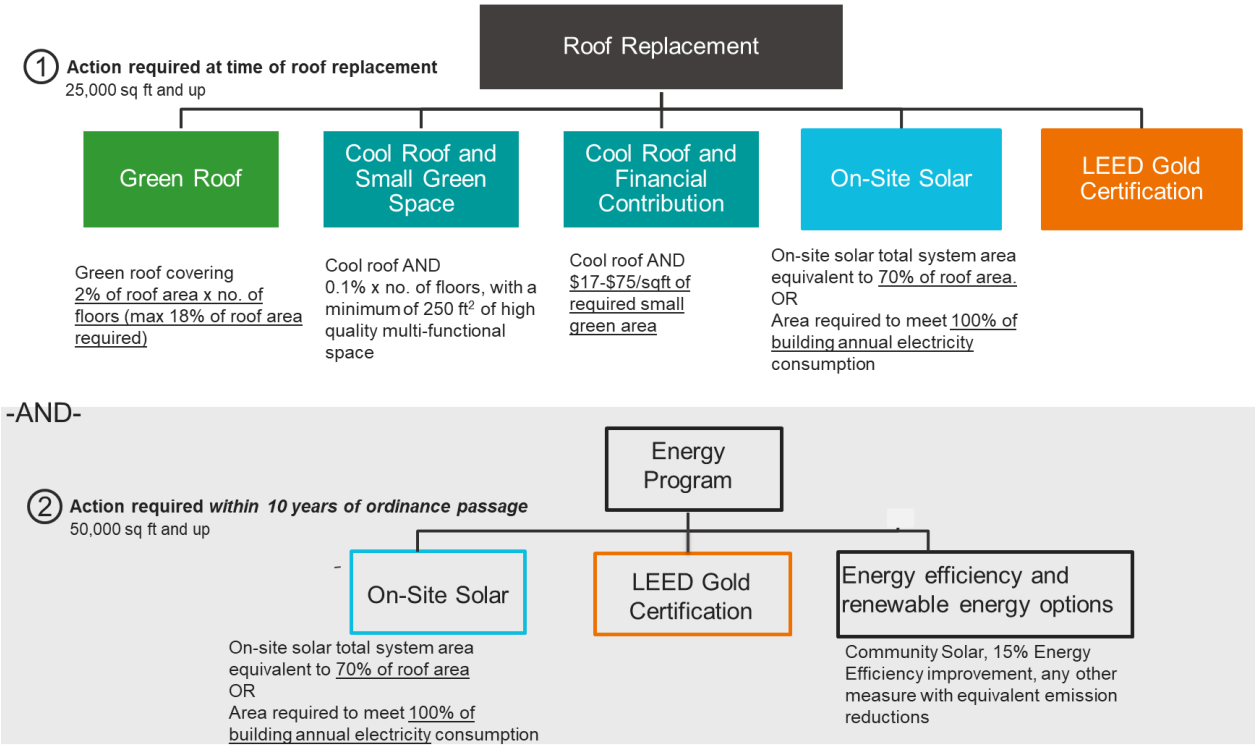
Exemptions

- Residential buildings under four floors, same as was on the ballot.
- Mechanical exclusion: The 60% maximum coverage requirement in the first two columns above results in an automatic 40% of space excluded for mechanical equipment and other items on the roof. The third column above requires 70% solar coverage as one compliance option, thereby giving an automatic 30% exclusion for mechanical equipment. If mechanical equipment takes up more than 30-40% of the roof then the building will still need to find space for the green or solar elsewhere if they choose the green or solar compliance pathways.
- No cool roof required if the roof is a character defining architectural feature.

Existing Building Proposal

Summary

All buildings over 50,000 square feet do one option from both items 1 and 2 shown here. All buildings 25,00-50,000 square feet do only option 1 shown here.



Details

Roof Replacement

On the ballot: Green roof/solar combination required at the time of roof replacement with at least 30% of the required area a green roof. An alternate compliance pathway exists if the whole roof is covered in solar panels, then there is 'no available roof space' according to the ballot initiative, and so there isn't a green requirement in this case.

Modifications to increase flexibility/reduce cost: Solar panels are no longer required at the time of roof replacement. Instead, the greenhouse gas reduction benefits the solar panels would have achieved will be achieved through the Energy Program detailed below. A green roof or a cool roof plus a small green space are still required at the time of roof replacement. Alternately, the whole roof could be covered with solar panels, similar to what was an option in the ballot initiative.

Details: Building owners will have four options for how they can comply at the time of roof replacement.

Roof Replacement Who: All buildings over 25,000 sq ft Benefits: Green, Urban Heat Island, Stormwater	
Compliance Option (Select One)	**Metric**
Green Roof	2% of the roof area x the number of floors (RAR), with a maximum required coverage of 18%.
Cool Roof + Small Green Space	Small green space anywhere on the site (0.1% x no. of floors, with a minimum of 250 ft^2 of high quality multi-functional space). -OR- financial contribution of ~$17-$75/sq ft for off-site local green space. (Amounts to be determined from a rate study.)
Solar	70% of roof space covered in solar panels on site (30% automatic exclusion for mechanical equipment). Or, such lesser space as required to meet 100% of average electricity used
LEED certification	Minimum Gold level certification
Enterprise Green Communities certification	Minimum certification

Small Green Space: Would be defined as follows in the second option above when placed on an existing buildings in combination with a cool roof. Additional green space anywhere on the site would be required with a 0.1 across the board percentage x number of floors or RAR with a maximum coverage required of 0.9% of the roof. (This number is 5% of and green square footage city-wide as compared to what would have been required.) Every building would also be required to install a minimum of 250 sq ft of high quality multi-functional space (or the minimum effective sizing necessary based on UDFCD and CCD Green Infrastructure guidelines). If more than 250 is required based on the 0.1% x the number of floors, then the additional space could be ornamental. This option keeps water quality capture volume at over 80% of was what was on the ballot since high quality multifunctional space captures >10x the volume.

- Multifunctional space would be a water quality, detention, and amenity space. It would include some of the following features:
  - BMPs with infiltration to subgrade
  - Reduce WQCV through unconnected impervious area (MDCIA)
  - Treatment offsite flow
  - Provide excess urban runoff volume (EURV)
  - Or other features with equivalent water quality capture volume.

For any existing building providing on-the ground green space, a site development plan will be required. This site development plan must show that the required parking is not being lost, and document the location of any new on-the ground green space. This new green space must exist outside required setback areas, and be new green space that was not previously provided.

Exemptions that Apply to the Roof Replacement Requirements

- Affordable housing and non-profits would be exempt from the small green space requirements.
- Residential buildings under four floors would be exempt, same as was on the ballot.
- Only a cool roof would be required under the following circumstances
    - A roof that must be replaced due to an emergency such as fire or wind.
    - A roof that must be replaced in the first year after the ordinance passes when the building owner can demonstrate a gap in insurance coverage. A gap would exist where the building has coverage that includes the cost of meeting any new code requirements, but had a cost limit on that coverage that is insufficient to meet the additional costs of this ordinance.
- Mechanical exclusion: The 18% maximum coverage requirement above in the 'green roof' option results in an automatic 82% of space excluded for mechanical equipment and other items on the roof Green Roof option above. If mechanical equipment takes up more than 82% of the roof then the building will still need to pick another compliance option. The 70% maximum solar requirement for that option at roof replacement has an automatic 30% exclusion for mechanical equipment. If a building has more than 30% of it's roof covered in mechanical equipment or other items then they will need to put the solar elsewhere on site, or pick a different compliance option for the time of roof replacement.
- No cool roof would be required if the roof is a character defining architectural feature.

Energy Program

On the ballot: Green roof/solar combination required at the time of roof replacement with at least 30% of the required area a green roof. Even if a structural engineering study shows the building can't support a green roof, covering 70% of the required area with solar panels is required at the time of roof replacement.

Modifications to increase flexibility/reduce cost: Solar panels are no longer required at the time of roof replacement. Instead, the greenhouse gas reduction benefits the solar panels would have achieved will be achieved through the Energy Program detailed here.

Details: All Buildings over 50,000 square feet are enrolled an Energy Program to honor the Climate/Energy/Emission Reduction benefits. The program will be designed to achieve similar emission reductions citywide as what was on the ballot, which would have required 70% solar coverage of the required area. Approximately the same emission reductions as the ballot language would be achieved by including all buildings over 50,000 sq ft and requiring them to improve 15% in 10 years. Strategies where the emission reductions result from operational improvement will need to be verified every 10 years.

The following are strategies that a building owner could implement in the Energy Program. The building owner could pick any <u>one</u> of these strategies.

- Net Zero building
- ENERGY STAR score of 85 of higher
- On-site renewable energy (coverage of 70% of required roof area with solar or equivalent, up to 100% of electricity used on the site)
- Off-site solar PV (15% of energy use offset with solar, min. 10-year contract)
- EUI 15% below baseline from 2017
- Retrocommissioning

- 15% total estimated energy savings from any improvements to the building. May include:
  - Lighting upgrades to LEDs
  - Mechanical system upgrades
  - Electric vehicle charging stations, would be credited with how far they move a building towards the 15% goal.
- If none of the options are possible for a building owner to pursue they could make a financial contribution to support low-income and affordable housing customer solar adoption through rooftop or community solar.

Credit will be given for energy actions take in the past 5 years.

Exemptions that Apply to the Energy Program

- Residential buildings under four floors would be exempt, same as was on the ballot.

Campuses in the Energy Program

Campuses may submit one project to comply with the Energy Program for the whole campus as long as the emission reductions from that one project are equivalent to the emissions reductions that would have been required across the whole campus. At the time of submission the submitter will need to designate and document exactly which buildings on the campus will be credited with compliance for the project.

Cool Roof Definition

All buildings would be required to have a cool roof. A cool roof would need to use roofing materials that have a Solar Reflectance Index (SRI) equal to or greater than the values in the table shown here for the three-year-aged SRI value. If the three-year-aged value information is not available, use materials that meet the initial SRI value. This is modeled on the IECC and LEED V4.

Minimum solar reflectance index value, by roof slope			
	Slope	Initial SRI	3-year aged SRI
Low-Sloped Roof	< 2:12	82	64
Steep-sloped roof	>2:12	39	32

No cool roof would be required if the roof is a character defining architectural feature.

Financial Contribution to Off-site Green Space, or Fee-in-lieu

Financial contributions for off-site green space should be placed in a special revenue fund to be managed by the Denver Department of Public Health and Environment. $17 is the landscaping cost from three recent projects completed by a local contractor based on native species, including crusher fines, plants, and irrigation, but does not include future operation and maintenance. $75 is the estimated cost for high quality multi-functional space required if existing buildings select the 'cool roof plus small green space' option. The Actual costs will be determined through a rate study conducted by a 3rd party. Funds will not be spent on administrative costs, but only projects as outlined below.

The fund must be spent on the following uses and purposes:

- Green space acquisition
- Green space improvement. Improvements may include ecosystem protection and restoration (items such as native plantings, invasive species control).
- Water quality improvements and green infrastructure

- Urban forest protection and expansion
- Creating green roofs in city in partnership with land owners/developers that are excited to utilize the technology
- Low-income and affordable housing customer solar adoption through rooftop or community solar.

The guiding principles on what projects should receive priority are:

- Low income areas that currently have less green space and trees
- Highest impact projects
- Green spaces located near the buildings that paid into the fund where feasible.

Non-Controversial Proposed Changes

While the proposal makes significant changes to the green roofs ordinance that was on the ballot, some of the following tweaks to the green roof requirements in the ordinance will still be needed since green roofs are still one possible compliance pathway. The task force believes the following small tweaks are needed in addition to the more major changes above and that these should not be very controversial.

1. Ensure definitions in the ordinance are consistent with existing zoning and building code definitions. For example, modify the Gross Floor Area (GFA) calculation to not include open area in atriums above first floor (Webb Building example)
2. Remove water re-use/collect from anywhere the ordinance reads collect and reuse as it conflicts with state law.
3. Change Section 10-303 B.6 on 'Fire Safety' to require a vegetation free border zone that is 6 ft around roof penetrations, intersecting walls, parapets, upturns or mechanical equipment that are clad with combustible material. IFC 317.3 requires a 6 ft separation.
4. Remove Section 10-303 A3 because it implies a green roof project that meets the Green Roof Construction Standard would potentially not have to follow Denver Building Code as well. All projects need to follow Denver Building Code.
5. Green Roof Construction Standard Item 11 b – remove the word 'un-irrigated', as IFC requires irrigation.
6. At the request of Denver Fire the following section would be changed. 317.2.1 Rooftop garden or landscaped roof assembly material. Where buildings of Type V, III, IV or II-B construction rooftop gardens or landscaped roof or similar uses or locations shall provide for all the following:
    a. Assembly shall be constructed with modular trays or containers with size not to exceed four square feet (4 sf.)
    b. Unit weight of each modular tray or container shall not exceed 120 pounds when fully saturated and vegetated.
    c. Modular trays or containers rating shall be of Class A-rated roof system complying with ASTM E-108 or UL 790
7. Remove Planning Board from all items related to reporting out to City Council, recommending changes to green roof construction standard, and the cost per SF to base the fee on. These can be handled by the Technical Advisory Group and staff.
8. If variance applications are still needed then change Planning Board to Board of Appeals for variance requests.
    a. The current proposal may have enough options that variances aren't needed.
    b. If we still have variances, then we will need clear criteria for variance decisions – both at staff level and at Board of Appeals
9. Edit the green roof construction standard to allow new green roof technology that meets the water detention standards for the green roof compliance pathway.

10. Rename Green Roof Technical Advisory Group in Sec. 10-305 to the Green Building Technical Advisory Group

    B.2. Membership in the GBTA shall be representative of various sectors including the following:
    (add) (g) Renewable energy industry sector being individuals working in the commercial solar industry.
    [assuming committee recommends EE compliance measures]
    (add) (h) Energy Efficiency industry sector being individuals working in the energy efficiency industry.
    (*add) (i)* Water quality / capture requirements expert

Public input:

Please provide comments via our survey monkey form found at www.denvergov.org/greenroofs so that they can easily be sorted by topic and given to the task force. Comments may also be sent via email to katrina.managan@denvergov.org and will be shared with the task force. Any comments received by May 18th at noon will be shared with the task force ahead of their meeting May 23rd. Public comment will remain open through noon on June 3rd and the remaining comments will be sent to the task force at that time.

Questions:

Is the proposal here directionally an improvement over what was on the ballot?

We have an exemption from the cool roof requirement if the roof is a 'character defining architectural feature'. What should the definition and criteria be for a roof that is a 'character defining architectural feature'?

For new buildings selecting the green building certification pathway in order to get the certificate of occupancy should the building be required to pursue pre-certification by LEED, or should they just have to submit the LEED design review with a plan for how any requested changes will be made?

Would this proposal end up preventing density?

In existing buildings, will the cool roof and small green space option still result in delays in rooftop replacement?

Do you see an option here that will work for all the buildings you work with? Are there any remaining unintended consequences we should mitigate? What needs to change to get the details right?