



SAN FRANCISCO
PLANNING
DEPARTMENT

ZONING ADMINISTRATOR BULLETIN NO. 11

Better Roofs Ordinance

A Better Roof Project Guide

Date:
April 2017

Relevant Ordinance:
Better Roofs Ordinance

Relevant Code Section:
Section 149 Better Roofs; Living Roof Alternative

Section 307 of the Planning Code mandates the Zoning Administrator to issue and adopt such rules, regulations and interpretations as are in the Zoning Administrator's opinion, necessary to administer and enforce the provisions of the Planning Code.

PURPOSE:

Pursuant to the Planning Code and Green Building Code, there are requirements for new building construction to facilitate the development of renewable energy facilities and Living Roofs. These standards require that 15% of the roof space on most new construction is solar. These requirements can also be met by providing 30% of the roof space as a Living Roof (i.e. green or vegetated roof), or installing a combination of both solar and Living Roof. The Living Roof option will allow a project sponsor to replace the required solar with Living Roof at a ratio of 2 square feet of living roof for every 1 square foot of solar.

APPLICABILITY:

The Better Roofs requirements apply to all projects proposing new construction that meet all of the following below:

- (1) are non-residential with a gross floor area of 2,000 square feet or more, or residential of any size;
- (2) has 10 or fewer occupied floors; and
- (3) applies for a site permit or building permit on or after January 1, 2017.

ALLOWED BETTER ROOF USES:

The Better Roofs requirement must be filled, at the time of construction, with any combination of the following technologies, such that the performance requirements for each installed technology are met:

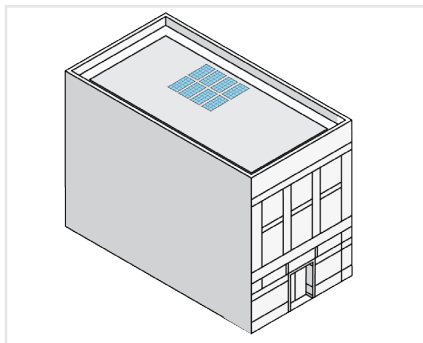
- Photovoltaics (PV), with a minimum 10 Watts Direct Current (DC) per sq. ft. of roof area allocated to PV
- Solar thermal systems (i.e solar hot water), with minimum 100 kBtu/sq ft of roof area allocated to solar thermal systems
- Living Roof, such that 2 sq. ft. of living roof is installed to satisfy 1 sq. ft. of the minimum solar zone area.

A project sponsor may use a Living Roof as an alternative means of meeting some or all of the Better Roof's solar requirements for any building that includes the above criteria, *when any new development or redevelopment project is subject to the San Francisco Stormwater Management Ordinance (SMO)*. The Allowable Living Roof Area shall comply with the SMO and per the Stormwater Control Plan (SCP) as approved by the San Francisco Public Utilities Commission (SFPUC). See page 3 of this document for additional information on the SMO and SFPUC.

BETTER ROOF PROJECT EXAMPLES:

Below are several examples of potential Better Roof designs. These diagrammatic concepts are ways to meet the Better Roof Requirements, but are not inclusive of all possible solutions.

Better Roof Use: Solar



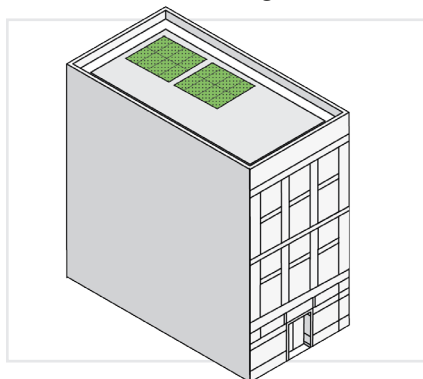
New commercial/office

> 2,000 sq. ft.
Not subject to SMO

15% of the roof as solar

38 Dolores

Better Roof Use: Living Roof



New commercial/office

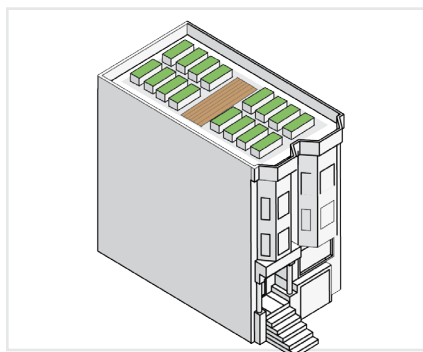
Subject to SMO

30% of the roof as living roof

Matarozzi Pelsinger Headquarters

Other examples of living roofs can be found here: <http://sf-planning.org/betterroof>. The Living Roof Manual also provides guidelines and recommendations for San Francisco specific Living Roof designs.

Better Roof Use: Living Roof



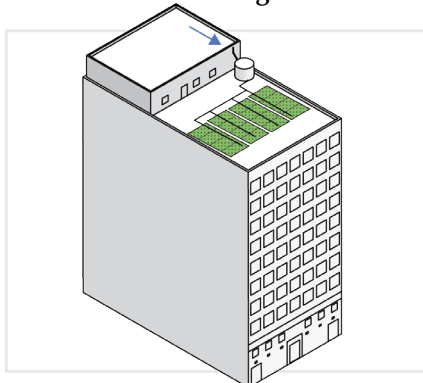
New residential

Subject to SMO

30% of the roof as living roof with roof deck & integrated planters

38 Dolores

Better Roof Use: Living Roof with Stormwater Runoff Irrigation



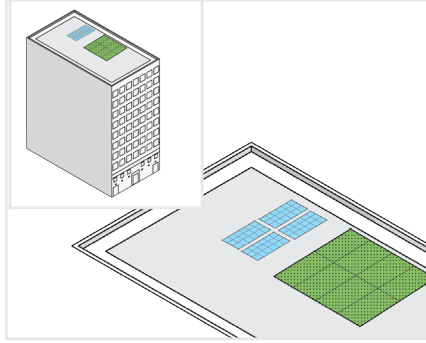
New commercial/office

Subject to SMO

30% of the roof as living roof using stormwater runoff from impervious roof area harvested and used to irrigate roof

1 South Van Ness

Better Roof Use: Combination



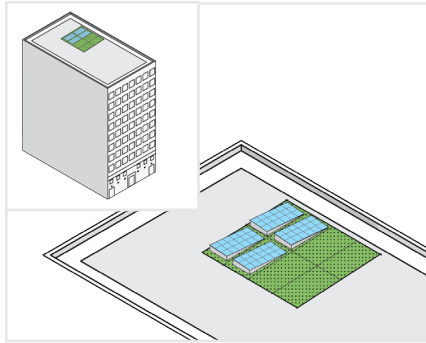
New commercial/office

Subject to SMO

$S_{area} + (2 \times LR_{area}) =$
30% Roof Area

Fourth Street Apartments, San Jose

Research shows that living roofs make solar panels more efficient by cooling the area beneath the panels.



When PV and living roof are co-located, both systems can benefit. Living roofs moderate roof temperatures - helping PV output. PV can be designed to direct rainwater to vegetation. If PV and living roof overlap, each square foot of roof can only be counted toward one system or the other.

50 UN Plaza

California's Title 24 Energy Standards for buildings to be "solar ready", meaning 15% of roof area is unshaded for solar to be installed is still applicable. Living roofs count as "solar ready" area.

OTHER REGULATIONS:

Department of Building Inspection

The Department of Building Inspection reviews the technical details of the solar hot water or photovoltaic systems. For more information on these requirements please contact the Department of Building Inspection, Technical Services Division.

Fire Department

Firefighter pathways and other access requirements must be maintained in the design of all systems installed in the solar zone. The Living Roof Manual contains information on Fire Code requirements, but for more detailed information please contact the Fire Department.

Stormwater Management Ordinance

The Stormwater Management Ordinance requires all new development or redevelopment projects to install and maintain stormwater management controls (i.e. Best Management Practices or BMPs) for projects that create and/or replace 5,000 square feet or more of impervious surface in the combined sewer areas, or 2500 square feet in the separate sewer areas. The stormwater management controls selection typically depends on the project type, development footprint, and location within the City's sewer-shed (i.e. combined or separate sewer areas). Living Roofs are one of many typically selected BMPs to meet compliance with the SMO. For more information please refer to the San Francisco Stormwater Management Requirements and Design Guidelines (SMR) and associated Appendixes, online at <http://sfwater.org/smr>.

Non-Potable Water Ordinance

Living roofs may be used in conjunction with rainwater harvesting systems. It is generally best to harvest rainwater from portions of the roof that are impervious and not connected to the same drainage system as the living roof. Harvested rainwater may then be stored, filtered, and used for non-potable applications, including irrigation of the living roof. Visit www.sfwater.org/np for more information on the Public Utilities Commission's Non-potable Water Program and the requirements to comply with the Non-potable Water Ordinance.

DEFINITIONS:

Rooftop Area

Pursuant to Planning Code Section 149, a roof is considered all outside coverings of a building or structure, including the structural supports, decking, and top layer exposed to the outside, at all levels of building, excluding roof area designated for skylights, vehicle traffic, or heliport.

Number of Floors

The number of floors is measured from the first occupied floor to the uppermost occupied floor. Buildings with more than 10 occupied floors are not subject to Better Roofs requirements. The total height of the building is measured to the top of all structures. Where there may be a podium less than 10 floors, but a tower greater than 10 floors, the Better Roofs requirements does not apply to the overall building.

Living Roof

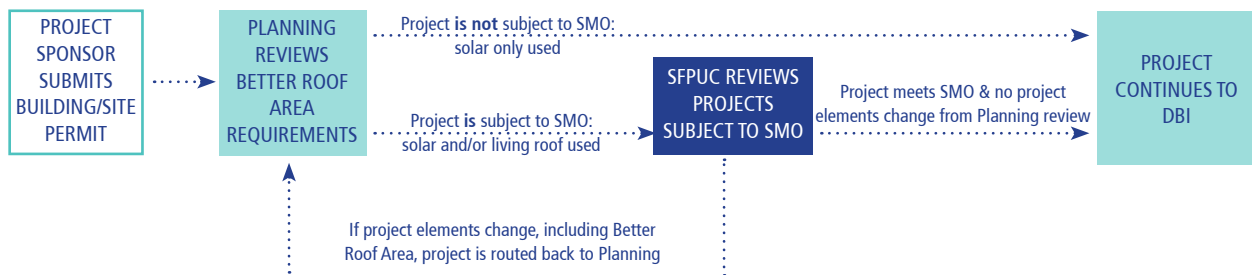
The media for growing plants, as well as the set of related components installed exterior to a facility's roofing membrane. "Living Roof" includes both "roof gardens" and "landscaped roofs" as referenced in the California Building Code. Please reference the Living Roof Manual on the Planning Department's webpage for more information on living roof designs. For purposes of compliance to the Better Roof Ordinance and for determining equivalence toward the Better Roof Area, a Living Roof is considered the sum of contained planted greenspace surface areas located on structure and used for SMO compliance: Vegetated Roof, Traditional Planters on Podium, and Flow Through Planters. *Please note that living roof area may not be counted towards a project's Usable Open Space depending on design and accessibility. This will be determined on a case-by-case basis, please review with the assigned planner, or a planner at the Planning Information Counter.*

PROCESS:

A Project Sponsor must select and exhibit clearly in the submitted drawings the method of compliance with the Better Roof requirements before Planning Department approval. Planning staff will check that the required Better Roof area is met, and will record related project information in the permit tracking system including: roof area, size of solar area, and/or size of living roof.

The San Francisco Public Utilities Commission (SFPUC) will review projects which are subject to the Stormwater Management Ordinance for compliance with the Stormwater Management Requirements via the Stormwater Control Plan review and approvals process.

The Department of Building Inspection will review the technical solar requirements of solar hot water and photovoltaics.



QUESTIONS:

Planning Department and Department of the Environment are committed to helping Project Sponsors better utilize rooftop space. Staff will work with the Project Sponsor to ensure that the Better Roof requirements are complied with to the furthest extent possible in each case. The Better Roof Project Guide contains more detailed information on the policy context, related codes, and possible designs for a Better Roof.



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FOR MORE INFORMATION: Call or visit the San Francisco Planning Department

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San Francisco CA 94103-2479

TEL: **415.558.6378**
FAX: **415 558-6409**
WEB: <http://www.sfplanning.org>

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TEL: **415.558.6377**
*Planning staff are available by phone and at the PIC counter.
No appointment is necessary.*