GREEN ROOF ADVISORY GROUP

Extension Resolution Report

Report to Austin City Council
November 2011

Table of Contents

Introduction

In August 2009, the Austin City Council declared its support for green roofs by passing **Resolution 20090827-057** (see Appendix A), directing the City Manager to convene an advisory green roof stakeholder group to explore the feasibility of offering energy and stormwater credits and other incentives, based on performance, to encourage the creation of green roofs in Austin. At the end of one year, the Green Roof Advisory Group (GRAG), working with City staff, produced a Final Report that was presented to Council in August 2010. It included a Five-Year Policy Implementation Plan, first year of which covered from October 2010 to October 2011.

GRAG requested an extension to initiate implementation of the group's recommendations regarding outreach and education, design considerations, and existing and proposed development incentives outlined in the Five-Year Plan. The Council, recognizing the need for continued GRAG support in order to complement staff efforts to promote green roofs in the City, passed **Resolution 20101104-023**, **extending the Advisory Group** (see Appendix B) until October 28, 2011. In this resolution City Council charged GRAG with assisting staff in accomplishing three specific tasks:

1. A downtown density bonus proposal by the end of December 2010;
2. Green roof performance standards by the end of April 2011; and
3. Publication of web support materials by the end of August 2011.

This report summarizes the progress on Year 1 of the Five-Year Policy Implementation Plan and the three 2010 City Council Resolution tasks. This work was accomplished by GRAG stakeholders, in collaboration with City staff from the Watershed Protection Department, Austin Energy, Planning & Development Review, and Austin Water. All three of these tasks have been accomplished and significant progress has been made on the activities of the Policy Implementation Program.

Green Roof Density Bonus

Benchmarking

To arrive at a recommendation for a green roof density bonus component for the Downtown Austin Plan Density Bonus Program (see Appendix C), staff examined density bonus programs in Portland, Chicago, and San Diego. The following table summarizes the density bonus awards in those three cities.

Table 1. Benchmarked Cities with Green Roof Programs

PORTLAND, OREGON & SAN DIEGO, CALIFORNIA	
Percent Vegetated Roof Cover*	**Density Bonus**
At least 10% but less than 30%	1:1 FAR
At least 30% but less than 60%	2:1 FAR
At least 60%	3:1 FAR
*of the building's footprint	
CHICAGO, ILLINOIS	
Bonus FAR = (Area of roof landscaping in excess of 50% of net roof area / lot area) X 0.30 X Base FAR	

Austin's Green Roof Density Bonus Proposal

Staff briefed GRAG stakeholders on their findings, and together they developed the recommendations described in Table 2 and Figures 1 & 2.

The proposed Green Roof Density Bonus starts by offering two (2) to three (3) square feet (SF) feet of bonused area for each 1 SF of vegetated roof cover that is not publicly accessible (Table 2).

The Austin program differs significantly from those in Portland, San Diego, and Chicago by including **public accessibility** as a factor in calculating the green roof density bonus. Since Austinites have consistently expressed interest in creating and maintaining public open space, GRAG designed the green roof bonus to incorporate this value.

When the Green Roof Density Bonus is applied to space that also meets the criteria for the Downtown Austin Plan's "On-Site Publicly Accessible Open Space"[1] Density Bonus, the **total density bonus** is: seven (7) SF of bonused area per 1 SF of vegetated roof cover for a green roof that covers 30-49% of the roof area; and eight (8) SF of bonused area per 1 SF of vegetated roof cover for a green roof that covers 50% or greater of the roof area.

A green roof that has open space with different levels of accessibility than those prescribed in the criteria for "On-Site Publicly Accessible Open Space," is eligible for a total of between three (3) and six (6) SF of bonused area per 1 SF of vegetated roof cover.

In December 2010, GRAG presented their recommendations to Planning & Development Review for inclusion in the Downtown Austin Plan. This accomplishment met the first request in the Council Resolution.

Table 2. Austin Green Roof Density Bonus Recommendation

Percent Vegetated Roof Cover	Square Feet of Bonused Floor Area : Square Feet of Vegetated Roof Cover			
	No Public Access	3rd Floor Public Access or Higher	2nd Floor Public Access	"On-Site Publicly Accessible Open Space"†
30 - 49%	2:1	3:1	5:1	7:1
50% or greater	3:1	4:1	6:1	8:1

†I.e.: This is the only case where both Green Roof *and* Open Space bonuses apply to a single area.

[1] Eligible open space may be in the form of plazas, gardens, paseos, courtyards, or other useable urban spaces that meet the following criteria: (1) Public Use: The space is open to the public for at least 12 hours each day, to be enforced by a deed restriction; (2) Accessibility and Visibility: The space is accessible and visible from the public sidewalk with a grade change no greater than 18 inches from the sidewalk; (3) Size: The space has a minimum area of 600 square feet with no dimension less than 15 feet. (*Downtown Austin Plan Phase One: Downtown Density Bonus Program*, Draft July 6, 2009, p. 26.)

Figure 1. Thirty to Forty-nine Percent Vegetated Roof Cover

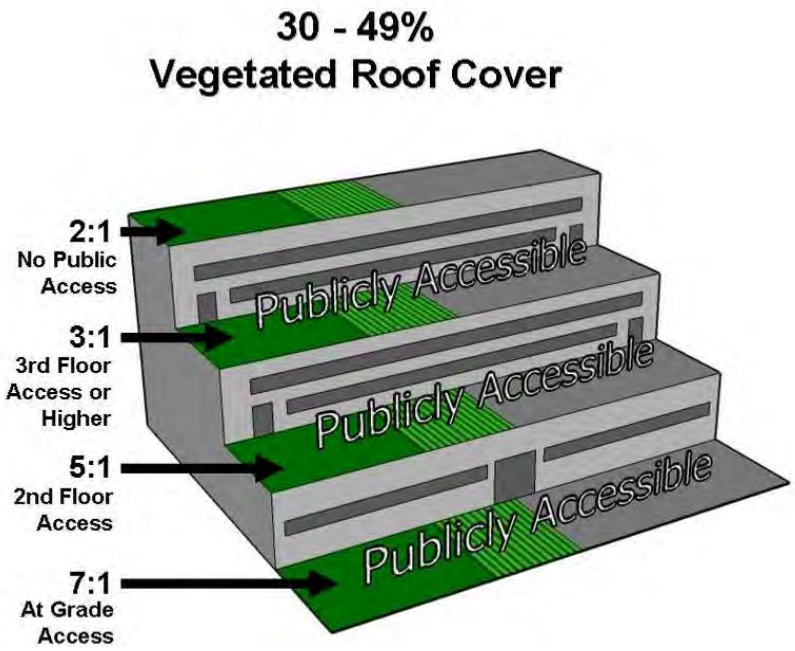
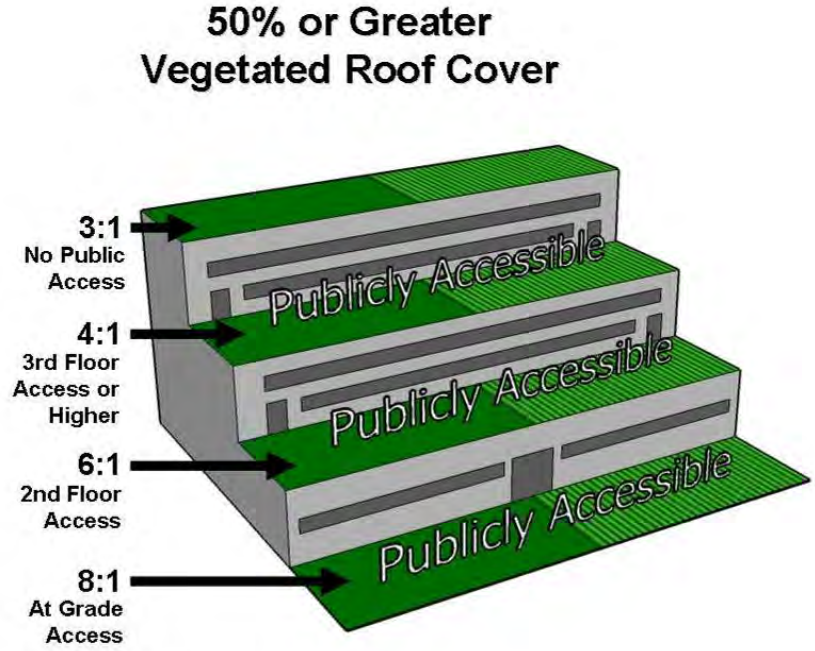
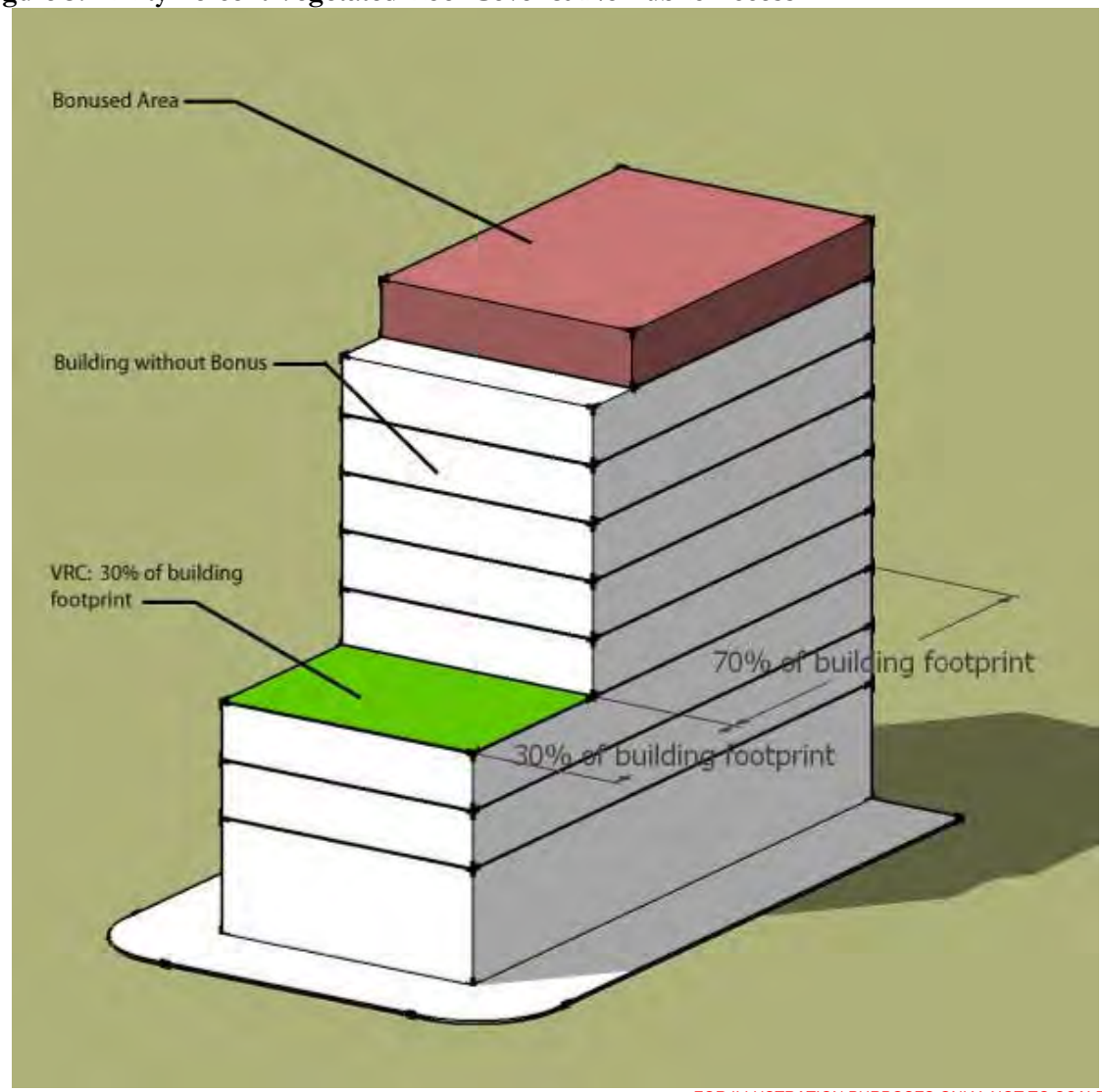


Figure 2. Fifty Percent or Greater Vegetated Roof Cover



Green Roof Density Bonus Proposal Example I

Figure 3. Thirty Percent Vegetated Roof Cover & No Public Access



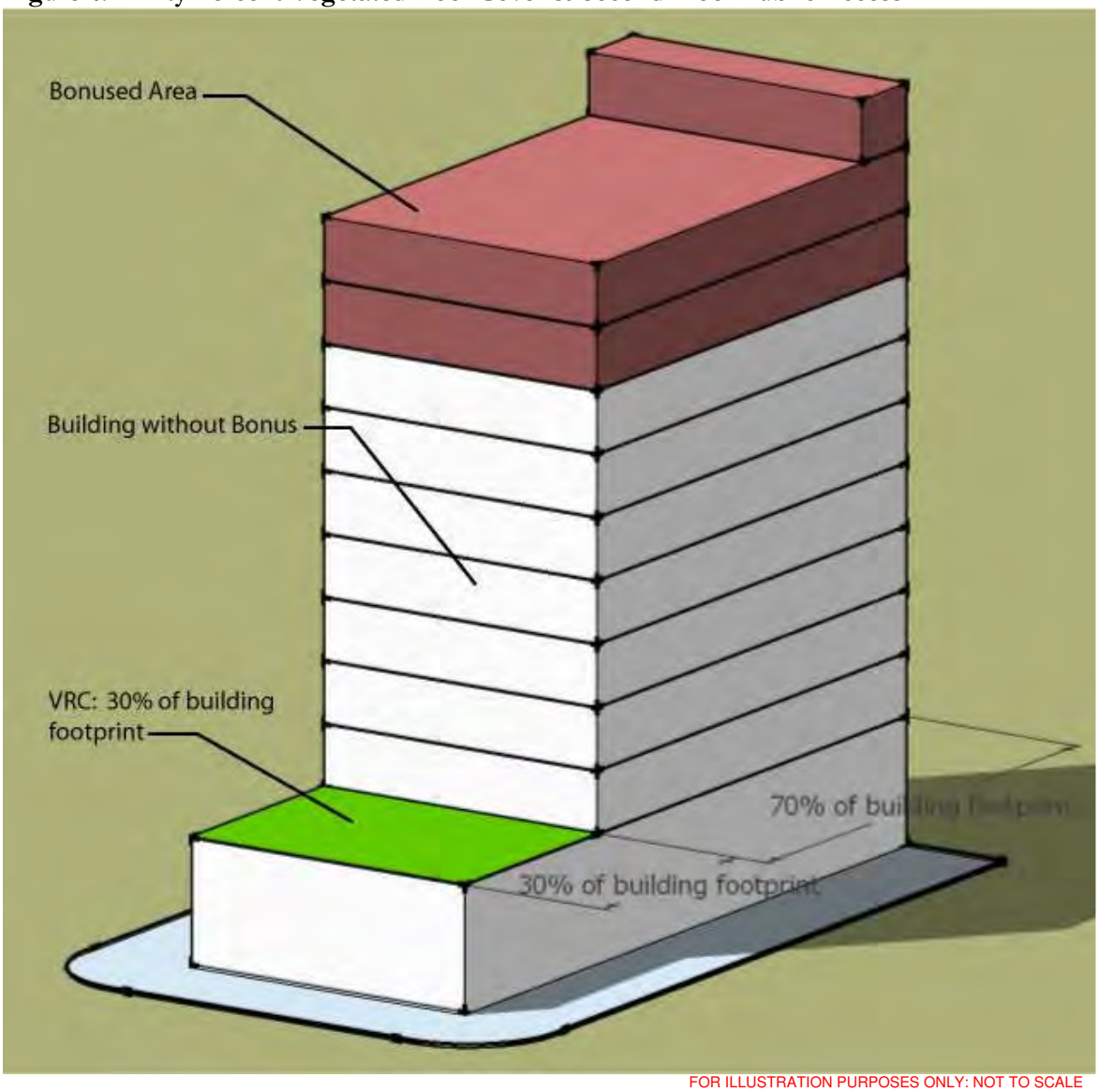
FOR ILLUSTRATION PURPOSES ONLY: NOT TO SCALE

Percent Vegetated Roof Cover (VRC)	Public Access	Bonused Area
• **30%** of building footprint	• No Public Access	• 2 SF of bonused area per 1 SF of no public access VRC

Percent Vegetated Roof Cover	Square Feet of Bonused Floor Area : Square Feet of Vegetated Roof Cover			
	No Public Access	3rd Floor Public Access or Higher	2nd Floor Public Access	"On-Site Publicly Accessible Open Space"†
30 - 49%	2:1	3:1	5:1	7:1
50% or greater	3:1	4:1	6:1	8:1

Green Roof Density Bonus Proposal Example II

Figure 4. Thirty Percent Vegetated Roof Cover & Second Floor Public Access



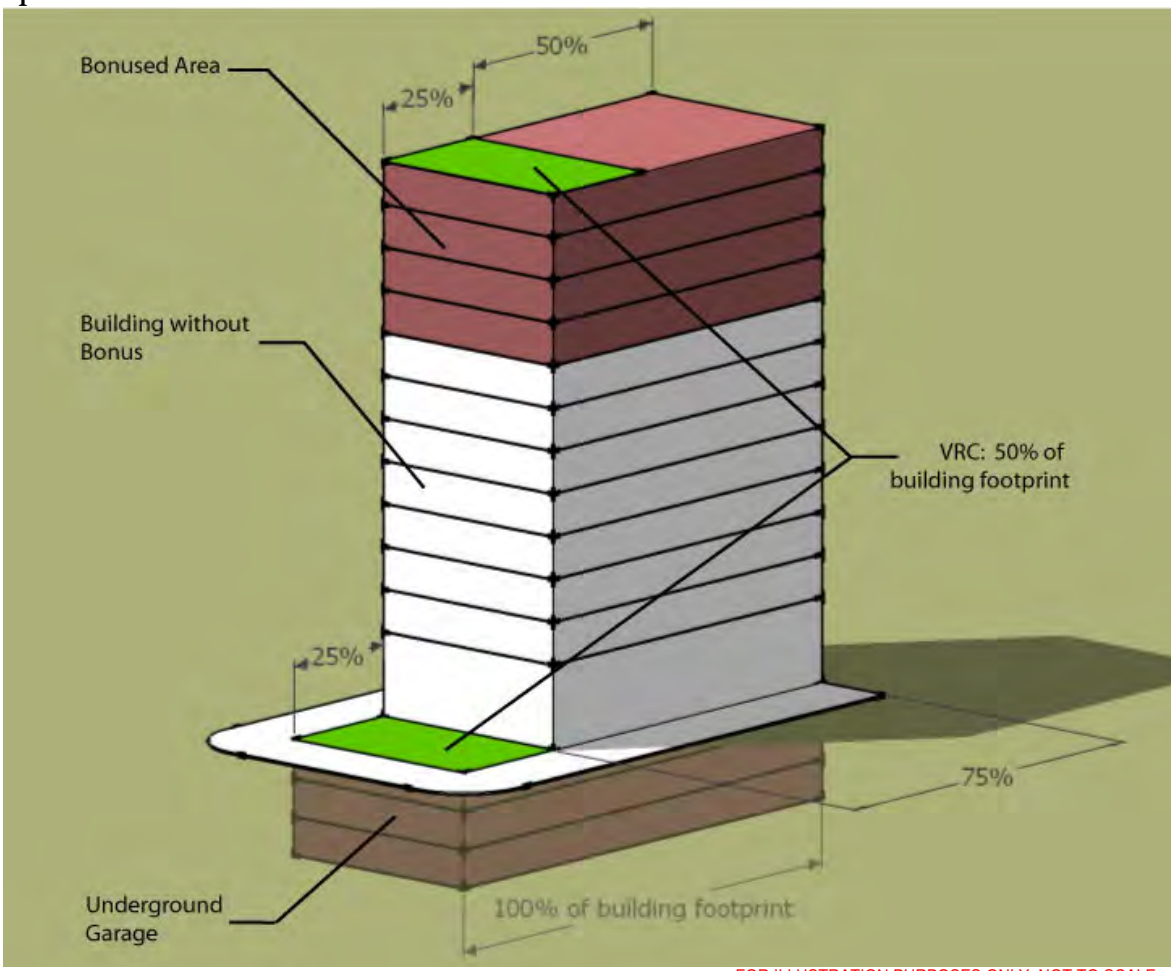
FOR ILLUSTRATION PURPOSES ONLY: NOT TO SCALE

Percent Vegetated Roof Cover (VRC)	Public Access	Bonused Area
• **30%** of building footprint	• 2nd Floor Public Access	• 5 SF of bonused area per 1 SF of publicly accessible VRC

Percent Vegetated Roof Cover	Square Feet of Bonused Floor Area : Square Feet of Vegetated Roof Cover			
	No Public Access	3rd Floor Public Access or Higher	2nd Floor Public Access	"On-Site Publicly Accessible Open Space"†
30 - 49%	2:1	3:1	5:1	7:1
50% or greater	3:1	4:1	6:1	8:1

Green Roof Density Bonus Proposal Example III

Figure 5. Fifty Percent Vegetated Roof Cover with *both* "On-Site Publicly Accessible Open Space" & No Public Access



FOR ILLUSTRATION PURPOSES ONLY: NOT TO SCALE

Fifty Percent Total Vegetated Roof Cover

Percent "On-Site Publicly Accessible Open Space" Vegetated Roof Cover (VRC)

- 25% of building footprint

Public Access

- On-Site Publicly Accessible Open Space (assumes underground parking structure)

Bonused Area

- 8 SF of bonused area per 1 SF of "On-Site Publicly Accessible Open Space" VRC

Percent No Public Access Vegetated Roof Cover (VRC)

- 25% of building footprint

Public Access

- No Public Access

Bonused Area

- 3 SF of bonused area per 1 SF of no public access VRC

Percent Vegetated Roof Cover	Square Feet of Bonused Floor Area : Square Feet of Vegetated Roof Cover			
	No Public Access	3rd Floor Public Access or Higher	2nd Floor Public Access	"On-Site Publicly Accessible Open Space"†
30 - 49%	2:1	3:1	5:1	7:1
50% or greater	3:1	4:1	6:1	8:1

Green Roof Performance Standards

Once a green roof requirement for the Downtown Density Bonus had been proposed, there remained the concern of how to hold a project seeking additional density using a green roof to the high standards that Austin expects. For example, in exchange for additional density entitlements, a project should be held to minimum standards to ensure long-term maintenance, prevention of water waste, appropriate plant selection and soil depth, and so forth. In consultations with GRAG stakeholders, staff developed a performance matrix that establishes standards that would apply to green roof components. These standards will be incorporated into the Environmental Criteria Manual, or equivalent, at a future date (the Five Year Plan has been updated to reflect this incorporation). This accomplishment met the second request in the Council Resolution.

Table 3. Green Roof Performance Standards

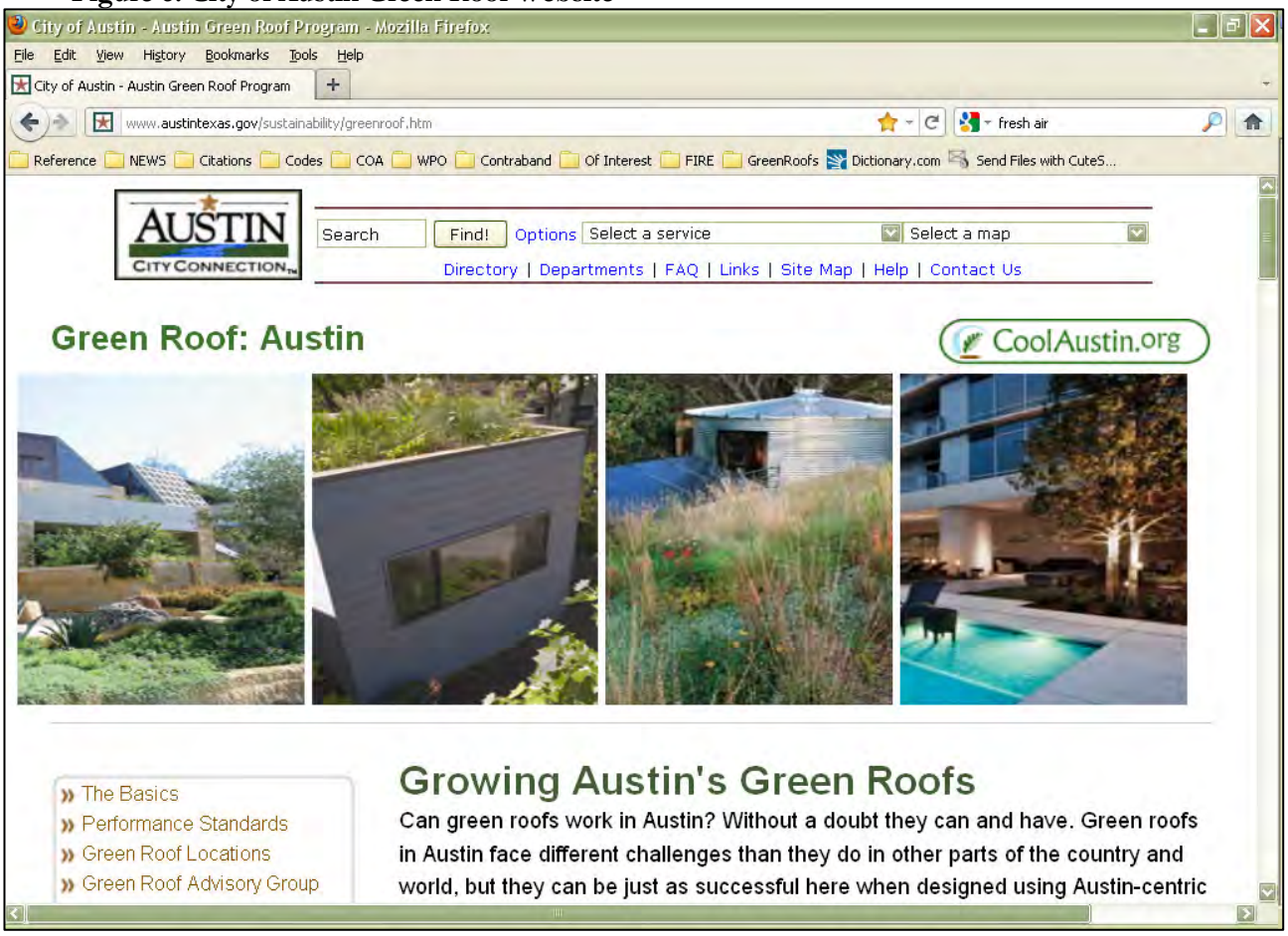
CONSIDERATION	INTENT	REQUIREMENTS FOR DENSITY BONUS CREDIT
Planted Bed Area	Ensure planted area is large enough to merit green roof classification & credit.	• 30 - 49%: Lower Density Bonus Credit • 50% or more: Maximum Density Bonus Credit
Public Access	Provide places for the public to enjoy.	• Must be clearly understood (e.g., marked with signage) as publicly accessible.
Water Use	Demonstrate facility wisely uses potable water.	• Use drip irrigation when needed. Direct rainfall runoff to adjacent landscape at grade and/or collect & recycle back to green roof. • Meet at least 50% of green roof irrigation using non-potable sources such as HVAC condensate, rain-water collection, or other auxiliary water sources.
Soil Depth	Conserve water by retaining moisture for plant health.	• Minimum: 6 inches or demonstrate additional potable irrigation reduction. • Demonstrabley sustainable with structural loading capability.
Plant Species	Provide appropriate plant species to save water, celebrate Central Texas flora & avoid invasives.	• 90% native or adapted species (e.g., from Grow Green list). • No federal or state invasives. • Suited to soil depth.
Maintenance Access / Safety	Ensure can be properly maintained, safely used.	• Provide maintenance access (incl. transport of needed replacement materials in future, e.g., plants, soil, etc.) and safe conditions for users (per Building Code compliance).
Operations & Maintenance (O&M)	Ensure longevity of system & benefits to community.	• Provide permanent, ongoing maintenance of green roof elements. • Must maintain at least 80% plant coverage of planted beds (within 2 years of installation). • Document O&M commitment in a Restrictive Covenant. • Grant City staff right of entry for periodic inspections
IPM Plan	Reduce risk of water quality impacts.	• Include Integrated Pest Management (IPM) Plan with submittal.

CONSIDERATION	INTENT	REQUIREMENTS FOR DENSITY BONUS CREDIT
Fertilizer Use	Reduce risk of water quality impacts.	• Use of compost tea is acceptable for long-term maintenance. • May use a one-time, slow-release fertilizer application during plant establishment at conservative rate. • Must not use fast-release fertilizers. • Fertilizer use not restricted if use closed-loop rainwater harvesting system or discharge to landscaping at grade.
Adequate Drainage	Reduce risk of structural problems.	• Commission the roof drainage system (must sustain 100-year storm, be able to handle blocked flows).

City of Austin Green Roof Website

The third and final charge of Resolution 20101104-023 was to publish a website to encourage the building of green roofs in Austin. In August 2011, the site ***Green Roof: Austin*** was officially launched at http://www.austintexas.gov/sustainability/greenroof.htm. The site is comprised of basic information for the general public on the benefits of green roofs; explanations of incentives, credits, and building standards for developers and others considering installing a green roof; and examples of City support for green roofs in Austin, including data on existing green roof locations, as well as resource lists. The site will be periodically updated as new green roof information and policies are developed.

Figure 6. City of Austin Green Roof Website



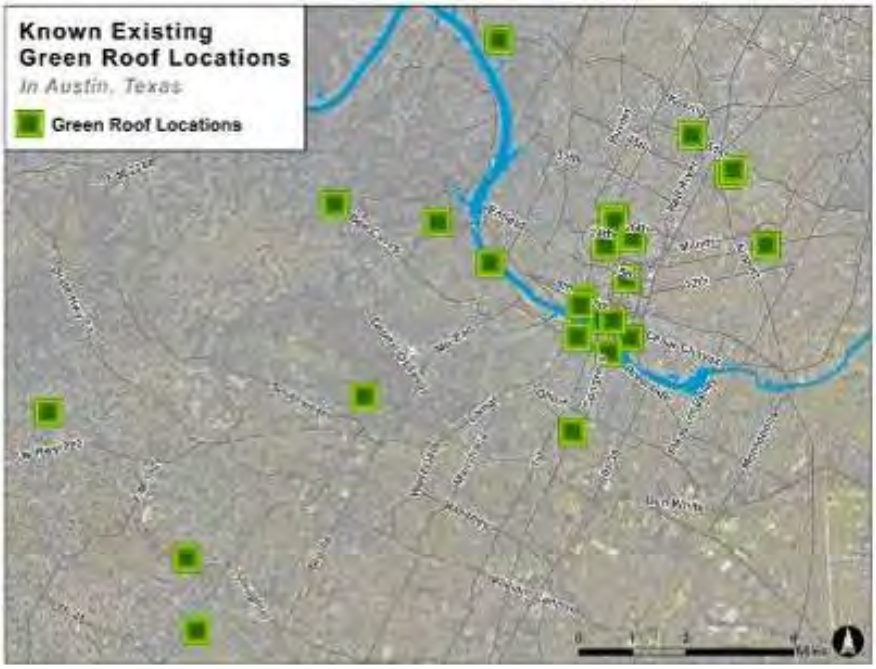
Year One of the Five-Year Policy Implementation Plan (FY 2010-2011)

Council's extension of the Green Roof Advisory Group from October 2010 to October 2011 coincided with the first year of implementation of the Five-Year Policy Implementation Plan for green roofs in Austin. This Plan was developed by GRAG in its Final Report, presented to Council on October 2010. The sections below document the progress of the implementation of the first year of this Plan. See Appendix D for the complete text of the Five-Year Plan.

I. Outreach & Education

- A green roof website has been developed.
- This present green roof program report of first-year accomplishments has been drafted for submittal to Council in Fall 2011 (target date October 28, 2011).
- In November, 2011, Watershed Protection Department staff is scheduled to present information on existing incentives for green roofs to Planning & Development Review and Parks & Recreation staff.
- The Heat Island Program has been re-worked to include six (6) Cooling Strategies as part of the Cool Austin Campaign. Green roofs are one of those cooling strategies and are featured in presentations, and will be part of the new Heat Island collateral and website. The green roof section on the Heat Island website will also link directly to the new Office of Sustainability Green Roof webpage (http://www.ci.austin.tx.us/sustainability/greenroof.htm) created in August 2011.
- An inventory of green roofs in Austin has been created and will be updated as new projects are reported. From this database, a map of green roof locations throughout the city was created and is displayed on the website. (Note: Locations of green roofs on private residences are not shown with high accuracy to maintain the privacy of the owners.)

Figure 7. Green Roof Inventory Map



- An educational flyer for the City of Austin City Hall green roof system has not yet been completed but is in the planning stage and is expected to be completed in Year 2 of the 5-Year Plan.
- The new Cool Austin Campaign and its cooling strategies were presented to the Austin Energy Green Building Seminar in August 2011 in a 40-minute presentation. More presentations will be made over the next year to design-build professionals and students, interested citizens, and City staff.

II. Green Roof Design Considerations

- Baseline performance criteria were developed (see page 6 above).

III. Existing Development Options with Green Roofs

The City of Austin offers a number of incentives for projects incorporating green roofs. These options are not widely known by the design community or even City staff, and an increase in publicity of these potential incentives could encourage the use of more green roofs in Austin. The various options were catalogued and presented in a summary format for inclusion on the website. These items will also be the focus of the training for City staff in November 2011.

As shown in Table 4, are currently available for Planned Unit Development, Impervious Cover, Open Space, Building Design, Parkland Dedication, Reflective Roofing, Green Building, and Stormwater Management.

Information about these potential options is currently listed on the website under the heading "Green Roof Performance Standards" (http://www.austintexas.gov/sustainability/greenroof.htm#matrix).

Table 4. Existing Credits for Green Roof Projects in Austin

Planned Unit Development (PUD)

• Tier 1 Open Space Requirements (§2.3.1.C)
10-20% of the total project area must be open space. The definition of open space includes roofs, allowing accessible green roofs to count as open space.

• Tier 1 Green Building Requirements (§2.3.1.D)
Projects must achieve a PUD 2-Star Green Building Rating. Green roofs can help achieve one basic requirement and up to six additional points on the rating scale (see Green Building below).

• Tier 1 Landscaping Requirements (§2.3.1.H)
Projects must exceed the minimum landscaping requirements of the City Code. The "over and above" landscaping can be met using a green roof.

• Tier 2 Options (§2.4)
Green roofs can qualify as "other creative or innovative [environmental] measures."

Impervious Cover

• Impervious Cover Measurement (§25-1-23) Soil and landscaping above a subsurface garage may consitute a form of green roof. Subsurface parking structures are not considered impervious if the average soil depth above the structure is at least 4 feet, with a minimum depth of 2 feet. This option is eligible only to structures located within the urban roadway boundary and outside the Barton Springs Zone. The structure must be below the grade of the land that existed before the construction of the structure, and must not comprise an area greater than 15% of the site.

Open Space

• Commercial Design Standards (§25-2, Subchapter E, Section 2.7) Proposed - Pending Adoption
Private common open space or pedestrian amenities are required for a minimum of 5% of the site for all commercial projects over 2 acres and all multifamily and condominium uses with more than 10 dwelling units. The definition of open space includes roofs, allowing accessible green roofs to count as open space. Only 30% of the required open space may be located on a roof, except in the CBD, DMU, VMU, V, and UNO zoning districts where no restrictions apply.

Table 4. Existing Credits for Green Roof Projects in Austin (continued)

Building Design

• Commercial Design Standards (§25-2, Subchapter E, Section 3.3)
Under the commercial design standards, buildings must earn one base point and may be required to earn additional points if certain design features are present. Buildings can earn two points by providing a sustainable roof – which includes an option where a minimum of 50 percent of the total roof surface is vegetated (or "green").

Parkland Dedication

• Standards for Dedicated Parkland (§25-1-603)
The Director of the Parks and Recreation Department determines whether land offered for parkland dedication complies with the standards for dedication. Green roofs can potentially qualify for this credit if they are publicly accessible, provide proper signage, and provide three traditional park amenities. A green roof park would require private ownership and maintenance and such private facilities can receive no more than 50% dedication credit.

Reflective Roofing

• Austin Energy Code (§25-12-263, 502.5)
The Energy Code requires a high reflectivity for flat roofs. However, there is an exception to this requirement for vegetated (or "green") roofs.

Green Building

• Austin Energy Green Building Rating System
Green roofs can help achieve one basic requirement and up to four additional points under the Green Building rating system, including:

- Current Regulations (BR2)
- Integrated Design (T1)
- Protect or Restore Habitat (S6)
- Beneficial Open Space (S7)
- Access to Local and Regional Produce (S8)
- Additional Heat Island Reduction (S9)
- Stormwater Management (W3)

Stormwater Management

• Parking Lot Detention (DCM 8.3.4.J)
Flood detention requirements may be met on a site using "parking lot detention." This method of engineered shallow ponding could be employed on a green roof.

• Innovative Water Quality (ECM 1.6.7)Biofiltration, rainwater harvesting, or other adopted water quality controls could be integrated into green roof design.

IV. Potential Development Incentives (require code change & Council approval)

- Green Roof component has been accepted by Planning & Development Review Department as a recommendation for inclusion in the Downtown Density Bonus Program (see above). Supportive criteria will be included in the Environmental Criteria Manual, or equivalent.
- GRAG recommended in its October 2010 Report to City Council that green roofs be considered to offset potential building cover increases. This will be deferred to a future date.

V. Energy Impacts

Austin Adopted a new energy code April 8, 2010 which included requirements for reflective roofing for new and replacement roof surfaces. An exception is vegetated roofs.

Austin Energy bases rebates for energy efficiency on avoided energy demand measured beyond energy code. Vegetated roofs are considered equivalent to meeting the energy code. Austin Energy cannot justify providing incentives for meeting energy code and does not recommend energy rebates for vegetated roofs.

VI. Innovative Stormwater Management

- **Green Roof Hydrologic Study**

- Watershed Protection Department staff, in conjunction with the Lady Bird Johnson Wildflower Center, are in the process of carrying out a hydrologic study of green roofs. At this time, data collection is complete, and staff are in the midst of data analysis, evaluating the amount of detention and storage, and the timing of peak runoff. A summary report of the findings is expected to be available by late 2011.

- **Green Roof Industry Water Quality Control**
  - Green roofs can potentially be used for credit as a water quality control. The green roof manufacturer and/or project engineer proposing such a system would have to demonstrate its effectiveness in the development review process. No such systems were forwarded in the past year, but continue to be an option.

VII. Green Roofs for New Buildings

- The City of Austin City Council has demonstrated its commitment to sustainable building values by passing Resolution 000608-43 (2000) requiring that City construction projects to apply **green builder initiatives** and that new construction of municipal buildings to acquire LEED Silver certification; Resolution 20071129-045 (2007) extending the **LEED Silver certification** requirement to major renovations and additions of municipal buildings; and Resolution 20071129-046 requiring that the development process for any City buildings seek opportunities to include **green infrastructure**. As one of the possible means to satisfying the requirements, these resolutions encourage consideration of green roofs.
- **Upcoming Projects Considering Green Roofs**:
  - **Waller Creek Tunnel Inlet Building**
    - While there is as yet no definitive plan, there is a possibility that the roof of the Inlet Building will be partially green. This is just one of the design elements to be address in an international design competition to kickoff November 2011. (http://www.wallercreek.org/competition)
  - **New Central Library**
    - Library design plans are also still in a nascent stage. Nonetheless it is expected that a portion of the roof of the new downtown building will be a green roof, potentially incorporating a butterfly garden.

Appendices

A. Resolution 20090827-057

RESOLUTION NO. 20090827-057

WHEREAS, green roofs, as a component of green infrastructure, can conserve energy, mitigate stormwater runoff volume, provide wildlife habitat, and reduce the urban heat island effect; **NOW, THEREFORE,**

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

The City Manager is directed to convene and work with a green roofs stakeholder group to explore the feasibility of offering energy and stormwater credits and other incentives, based on performance, to encourage the creation of green roofs in the City.

1. The stakeholder group shall produce a policy report that includes recommendations regarding credits and other incentives to promote green roofs in the City.

2. The stakeholder group shall work with City staff.

3. The stakeholder group shall provide Council with an interim progress report on or before February 25, 2010 and shall present a final report to Council on or before August 26, 2010.

4. The stakeholder group shall be drawn from the fields of design, development, and green building, and include input from local

green roof organizations and the University of Texas at Austin's Lady Bird Johnson Wildflower Center.

ADOPTED: August 27, 2009 **ATTEST:** Shirley A. Gentry
City Clerk

B. Resolution 20101104-023

RESOLUTION NO. 20101104-023

WHEREAS, green roofs, as a component of green infrastructure, can conserve energy, mitigate stormwater runoff volume, provide wildlife habitat, and reduce the urban heat island effect; and

WHEREAS, on August 26, 2009, the City Council directed the City Manager to convene and work with a Green Roof Advisory Group (GRAG) to explore the feasibility of offering energy and stormwater credits and other incentives, based on performance, to encourage the creation of green roofs in the City; and

WHEREAS, on October 28, 2010, GRAG presented their final report to Council, which included recommendations regarding credits and incentives that would be appropriate for promoting green roofs in Austin; and

WHEREAS, other cities such as Portland and Chicago have density bonus programs in place that offer green roofs as a public benefit option for increased entitlements; and

WHEREAS, GRAG requested an extension to initiate the implementation of the group's recommendations regarding outreach and education, design considerations, and existing and proposed development incentives outlined in the Five-Year Plan; and

WHEREAS, the City Council recognizes the need for continued GRAG activities to complement future staff efforts and most effectively promote green roofs in the City; **NOW, THEREFORE,**

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

The Green Roof Advisory Group (GRAG) is hereby extended until October 28, 2011.

BE IT FURTHER RESOLVED:

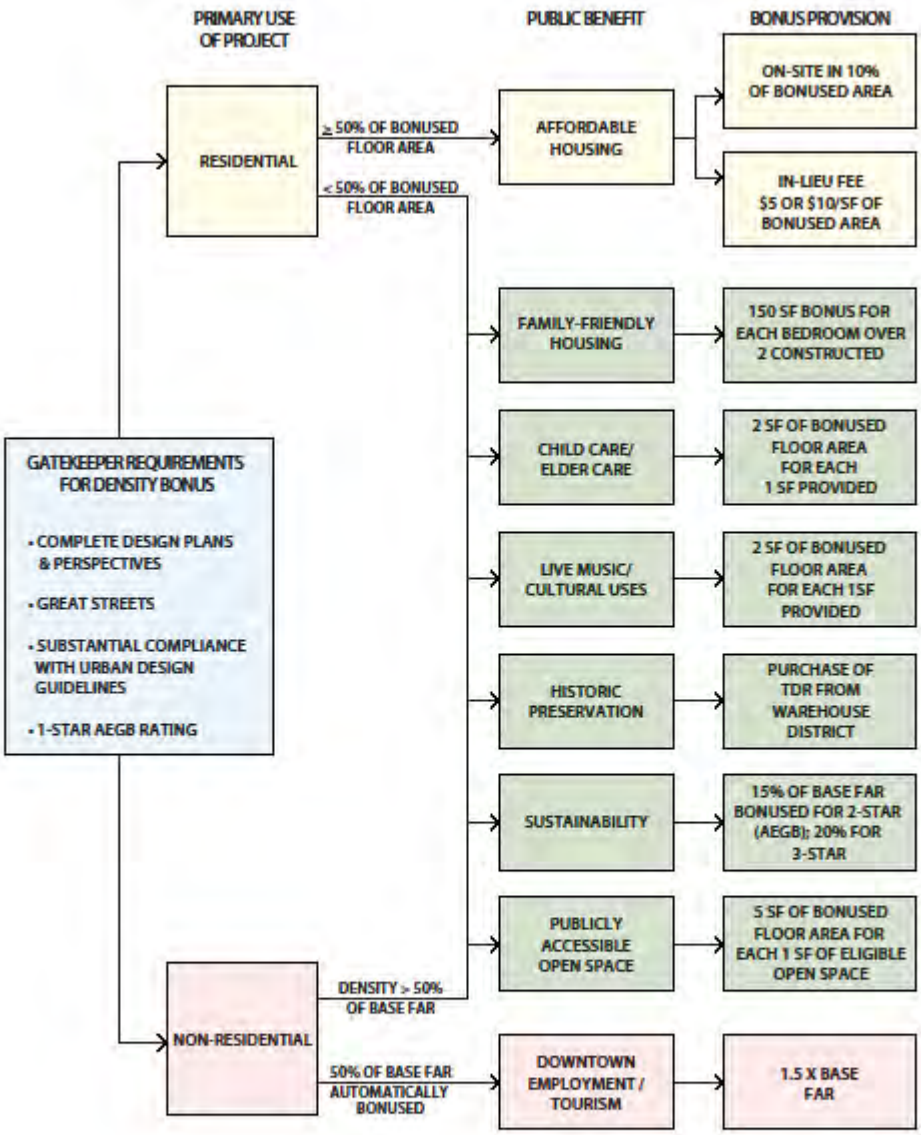
The City Manager is directed to work with GRAG to support the Five-Year Plan by providing staff assistance for and review of:

1. A downtown density bonus proposal by the end of December, 2010;
2. Green roof performance standards by the end of April, 2011; and
3. Publication of web support materials by the end of August, 2011.

ADOPTED: November 4, 2010 **ATTEST:** Shirley A. Gentry
Shirley A. Gentry
City Clerk

C. Downtown Austin Plan Density Bonus Program Pathways

http://www.ci.austin.tx.us/downtown/downloads/2009-09_DB_recommended_amendments.pdf



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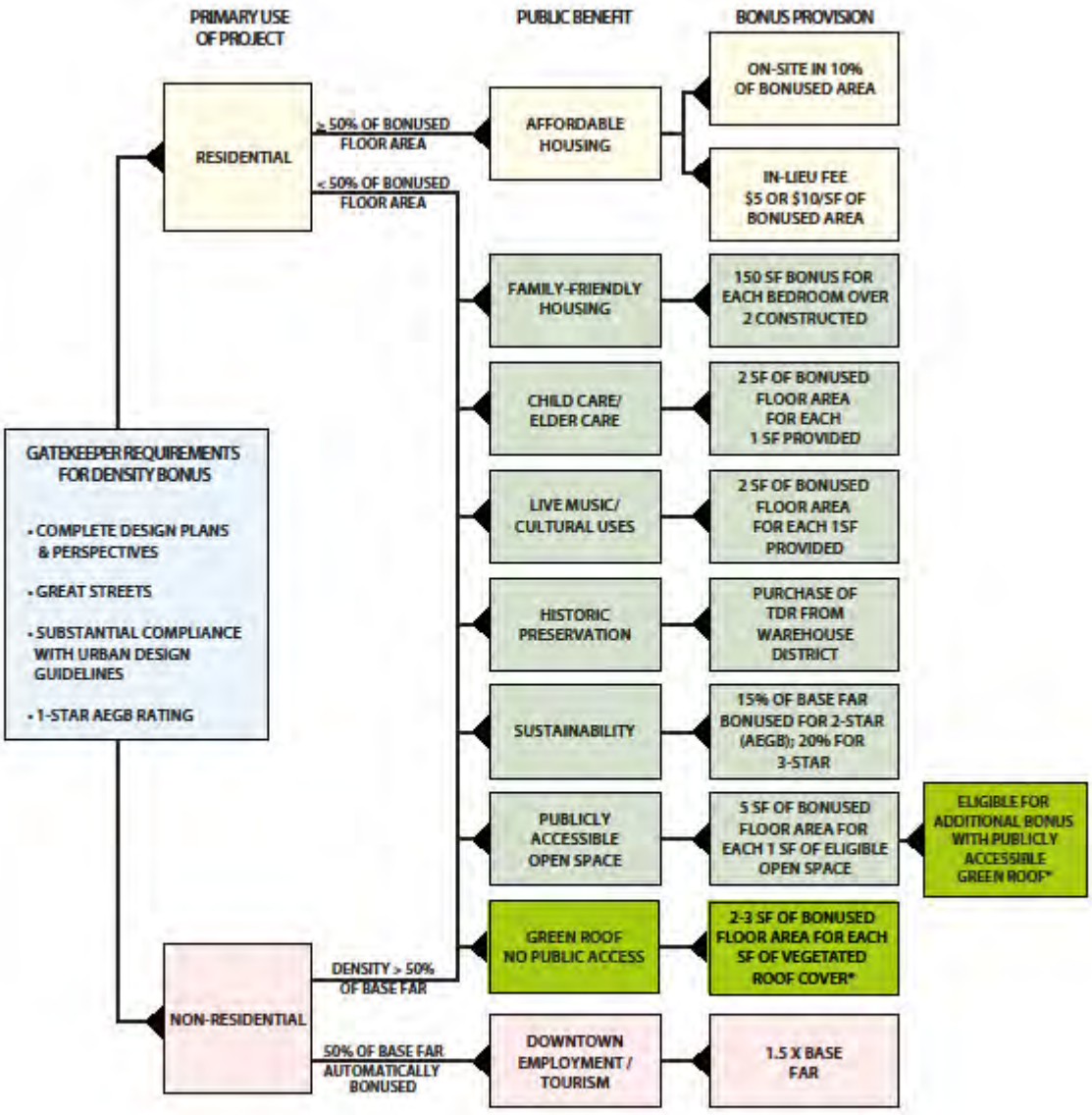
PROPOSED DENSITY BONUS PROGRAM PATHWAYS

Downtown Austin Plan

Prepared by ROMA Austin for the City of Austin

Revised September 15, 2009

D. Downtown Austin Plan Density Bonus Program Pathways With Green Roof Bonus



PROPOSED DENSITY BONUS PROGRAM PATHWAYS
WITH PROPOSED GREEN ROOF BONUS INCLUDED

*For details, see pp. 3-7 of this report.

E. Green Roofs Five-Year Policy Implementation Plan

GREEN ROOFS FIVE-YEAR POLICY IMPLEMENTATION PLAN

(Key to acronyms follows.)

Year One (FY 2011-12)

Activity	*Lead*	*Discussion*
Outreach and Education		
• Roof Web page & support Green materials	AE	Develop; includes items below w/ asterisk (*)
• Green Roof program tracking & report*	AE/WPD/PDRD	Track GR initiatives/5-Year Plan progress
• Staff education and coordination*	Multiple	Done for each initiative; internal web page
• Urban Heat Island integration*	AE	Integrate GR into program
• Green Roof database*	AE/PDRD	Track projects in City maintained database
• City Hall educational model*	AE	Develop educational flyer and tours
• Outreach to focus areas	GRAG	Meet with professional organizations
Green Roof Design Considerations		
• Baseline Performance Criteria	GRAG/AE/ WPD	Define minimum standards for City incentivized projects; extend GRAG to accomplish task
Existing Development Options with Green Roofs		
• PUD Open space & landscaping*	PDRD	Show can meet requirements with GRs
• PUD Green Building requirements	AEGB	Show GRs can contribute to score
• PUD use of GR in Tier 2*	PDRD/AE	Show GRs can be "other creative or innovative [environmental] measures"
• Multifamily open space*	PDRD	Show can meet requirements with GRs
• Subsurface parking garage*	PDRD	Show GRs over subsurface garages do not count as impervious
• Parkland dedication using GRs*	PARD	Show can use privately owned and maintained GRs to meet requirements
Potential Development Incentives (require code change & Council approval)		
• GR Density Bonus: Downtown	PDRD	Add green roofs to program

• Building cover increase with GR	PDRD	Allow more building cover if offset. | *(GRAG elected to move this item to a future date)*
Energy Impacts		
• Austin Energy rebates	AE	Evaluate energy impacts & potential rebate incentives | *Evaluation made by Austin Energy and determined no rebates will be granted*
Innovative Stormwater Management		
• GR hydrologic study	WPD/WFC	Research of detention & runoff control by LBJ Wildflower Center (WFC) | *Field work complete; results ready in Year Two*
• GR industry water quality control	Industry/WPD	Coordinate with staff to verify hydrologic model for WQ credit (option exists throughout 5year period)
Green Roofs for New Buildings		
• GR on City Buildings	PWD	Evaluate feasibility & funding of green roofs for all new City buildings per Council resolutions 20071129-045 & 20071129-046

Year Two (FY 2011-12)

Activity	*Lead*	*Discussion*
Outreach and Education		
• Green Roof Web page & support materials	AE	Continue funding allocation
• Green Roof program tracking & report	AE/WPD/PDRD	Track GR initiatives to show progress
• Green Roof project database*	AE	Track projects to show progress
Incentives for Green Roofs		
• Austin Energy rebates	AE	Implement rebate if warranted, pending evaluation results from Year One. *Rebates not granted. Item no longer applicable*
• North Burnet/Gateway GR density bonus	PDRD	Needs Council approval; follows Downtown density bonus
• *Airport Blvd. Corridor GR density bonus*	*PDRD*	*Needs Council approval; follows Downtown & N. Burnet/Gateway density bonuses*
Innovative Stormwater Management		
• Water quality evaluation	WPD	Evaluate option to allow a limited number of pilot projects in DDZ *[Desired Development Zone]* Watersheds to receive partial WQ credit on condition of monitoring | *Combine item with Industry Water Quality Control (see above); need to work out technical details on case-by-case basis*

• Plan for GR/LID design competition	WPD/GRAG	Follow City of Houston example / *needs to be led by private industry as done in Houston due to funding constraints for City of Austin; City could lend support role*
Planning for Green Roof for City Building		
• Collect, evaluate data on buildings	PWD	Create inventory of existing & proposed COA buildings/roof, select subset for further GR consideration per Council resolutions 20071129-045 & 20071129-046 / *GR subset will be ready in Year Two*
Green Roofs for New Buildings		
• GR on New Commercial Buildings	GRAG/PDRD	Evaluate feasibility of green roofs for all new buildings within the Central Business District
Potential Development Incentives (require code change & Council approval)		
• *GR Density Bonus: Downtown*	*PDRD*	*Conclusion of Year 1 item; Density Program delayed by Council past Year 1. Will need to determine how performance standards will be required of individual projects proposing green roofs to increase density*
• *Building cover increase with GR*	*PDRD*	*Allow more building cover if offset by green roof*

Year Three (FY 2011-12)

Activity	*Lead*	*Discussion*
Outreach and Education		
• Green Roof program tracking & report*	AE/WPD/PDRD-	Track GR initiatives to show progress
• Green Roof project database*	AE	Track projects to show progress
~~Incentives for Green Roofs~~ *(moved to Year Two)*		
• ~~Airport Blvd. Corridor GR density bonus~~	~~PDRD~~	~~Needs Council approval; follows Downtown & N. Burnet/Gateway density bonuses~~
Innovative Stormwater Management		
• Flood detention and/or WQ sizing credit	WPD	Pending Wildflower Center results & possible other follow-up studies
• Hold GR/LID design competition	WPD/GRAG	Follow City of Houston example

Year Four (FY 2011-12)

Activity	*Lead*	*Discussion*
Outreach and Education		
• Green Roof program tracking & report*	AE/WPD/PDRD	Track GR initiatives to show progress

• Green Roof project database*	AE	Track projects to show progress
Innovative Water Quality Controls		
• Green Roof as WQ control	WPD	Evaluate feasibility to add ECM Criteria for green roofs; pending Wildflower Center results & additional follow-up studies
Subsidies, Grants, Low-Interest Loans		
• Funding Allocation	EGRSO	Develop criteria pending staff review

Year Five (FY 2011-12)

Activity	*Lead*	*Discussion*
Outreach and Education		
• Green Roof program tracking & report*	AE/WPD/PDRD	Track GR initiatives to show progress
• Green Roof project database*	AE	Track projects to show progress
Development Process Incentives		
• Fee Rebates, Expedited Process & Design Support	PDRD	Develop Incentive Program

Key to Acronyms

AE	Austin Energy
COA	City of Austin
DDZ	Desired Development Zone (Urban & Suburban watersheds)
EGRSO	Economic Growth & Redevelopment Services Office
FY	Fiscal Year
GR	Green Roof
GRAG	Green Roof Advisory Group
LID	Low Impact Development (design strategy to limit environmental impact)
PDRD	Planning and Development Review Department
PWD	Public Works Department
WFC	Lady Bird Johnson Wildflower Center
WPD	Watershed Protection Department
WQ	Water Quality