



SUSTAINABLE DEVELOPMENT STANDARDS

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DECEMBER 2016

CONCERNS FROM SEPTEMBER EDC MEETING

- How does climate change impact overall economic development and small businesses (i.e. *"why should we care"?*)

SUSTAINABILITY AND ECONOMIC DEVELOPMENT

- Locally anticipated climate change impacts:
 - Sea level rise
 - More unpredictable weather patterns
 - More frequent and intense storms and weather-related disasters
- A thriving business requires a stable and productive workforce, reliable infrastructure for energy delivery, and adequate networks for the transport of good and raw materials to the market
- Businesses rely on infrastructure (power, internet, roadway, water, sewer, and solid waste) to be able to operate
- Hidden economic costs include reduced workdays and productivity, re-routing of traffic, supply chain disruptions

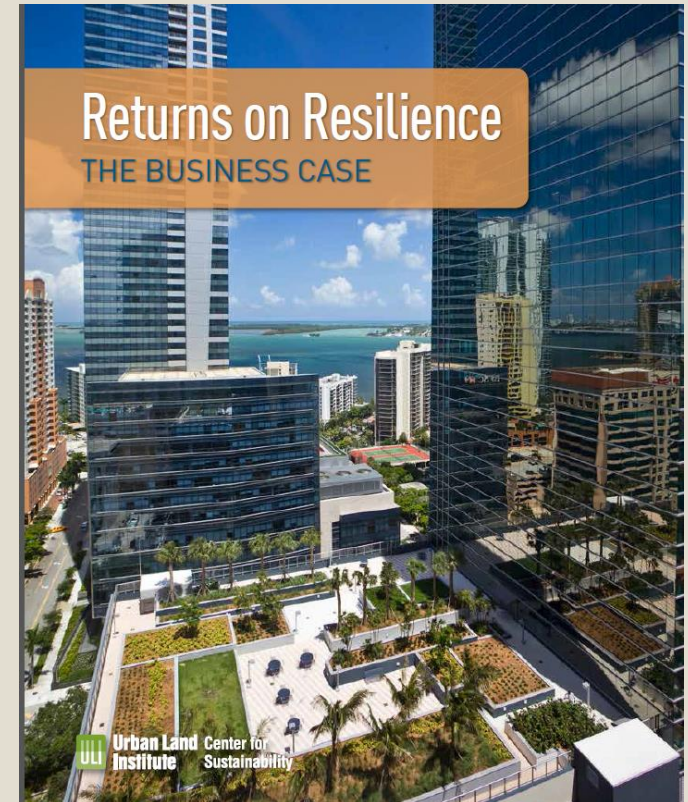
For Developers – ULI: Why Worry about Resilience?

The increasing frequency and intensity of extreme weather—from drought and wildfires on the West Coast to hurricanes and flooding on the East Coast and various natural disasters in between—have raised awareness of climate risks and have given rise to a new notion of “**building for resilience**,” so that **buildings and sites can survive and thrive despite such threats**.

Resilience plays out not just in managing risk, but also in ***maintaining value***.

The ***payback for resilience efforts*** can be measured in many ways, including cost savings from **preventing damages and reducing operating costs**, as well as revenue enhancements from improved marketing, company brand, and project image.

These efforts also demonstrate the ***private sector commitment*** and leadership that is necessary for strong public/private collaborations in tackling climate change, including in reducing buildings’ contributions to global warming.



CITY PRIORITIES

- Goal of 2012 Zoning Code re-write: “Removing barriers to sustainable practices, create incentives for sustainable practices, and enhance regulations to address sustainability.”
- What are the City’s sustainability priorities?
 - Strategic Plan, Complete Streets Manual, Parks Master Plan, Comprehensive Plan, Stormwater Master Plan, Broward County Climate Change Action Plan Report, and the Broward County Resiliency Report “Working Towards Resilient Coastal Communities: Pompano Beach (2014)”.
- City’s 5 Priorities
 1. Stormwater Management and Flood Protection
 2. Renewable Energy and Energy Conservation
 3. Water Conservation
 4. Certified Green Development
 5. Active Design (Design which encourages active and healthy lifestyles)

FLOODING

Stormwater Management and Flood Protection



DEVELOPING STORY

LOCAL
COVERAGE
YOU CAN
COUNT ON

**KING TIDE BLAMED FOR FLOODING
DELRAY BEACH**



6:14 84°



ENERGY

Renewable Energy and Conservation

Small Businesses: An Overview of Energy Use and Energy Efficiency Opportunities



Energy Use in Small Business

The nation's small businesses spend more than \$60 billion a year on energy. To reduce these costs, ENERGY STAR helps small business owners and operators improve the energy performance of their facilities. Small businesses that invest strategically can cut utility costs 10 to 30 percent without sacrificing service, quality, style, or comfort, all while making significant contributions to a cleaner environment.

By becoming more energy efficient, small businesses help reduce greenhouse gas emissions and improve their own financial bottom line. Small businesses can typically save as much money and prevent as much pollution, per square foot, as large corporations.



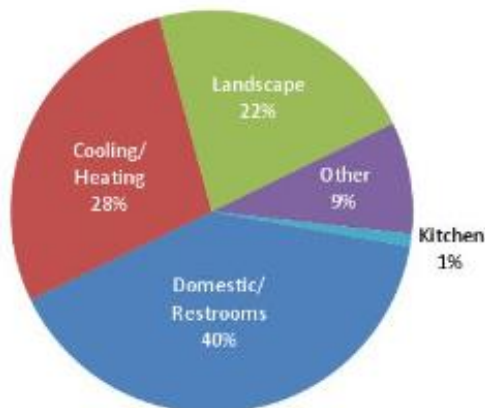
WATER

Water Conservation

Office Buildings

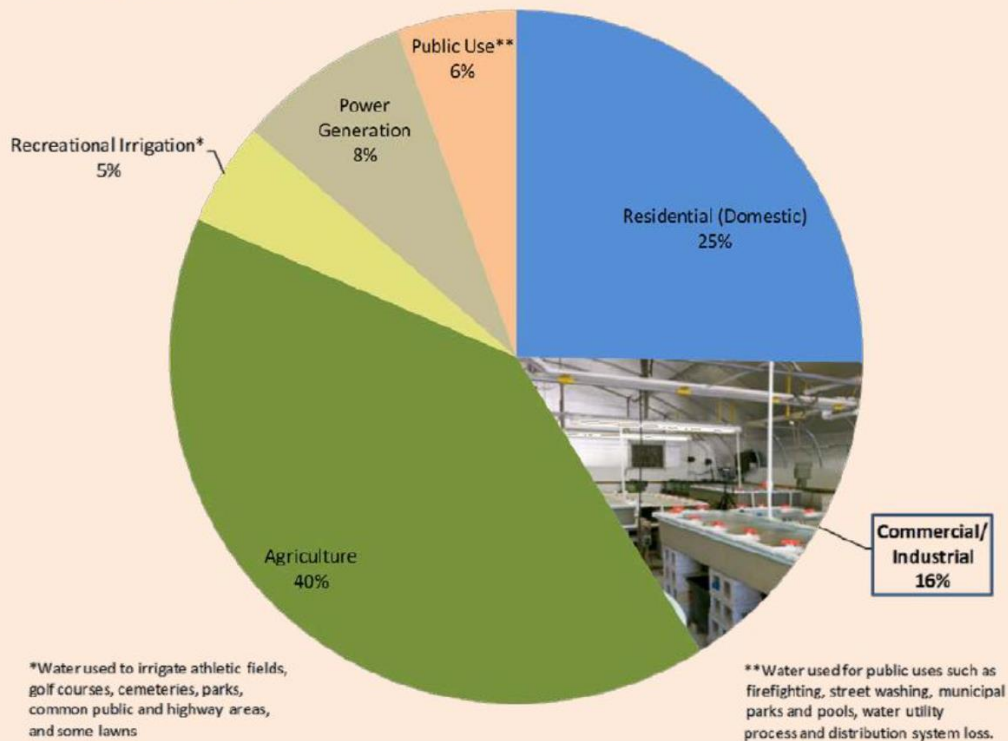
Restroom/domestic, cooling and heating, and landscape use account for approximately 90 percent of the water use in a typical office building. Effective conservation measures for office buildings often include:

- Bathroom fixture replacement
- Public education promoting conservation among building tenants
- Cooling tower efficiency retrofits such as improved system controls
- Irrigation efficiency measures such as weather- or moisture-based irrigation controllers and landscaping changes using native or climate adaptive plants



Florida Focus

According to the U.S. Geological Survey (USGS), commercial and industrial facilities in Florida consume over 1 billion gallons of fresh water each day (USGS 2009). This is approximately 16 percent of the total fresh water used in the state.



Restaurants

Kitchen use accounts for just under half of the water used in restaurants with domestic/restroom use accounting for almost a third. Water use efficiency measures applicable to restaurants include:

- Water efficiency training and information for kitchen staff
- Use air-cooled equipment such as icemakers
- Bathroom fixture replacement
- Water efficient appliances and best management practices during their use

Laundries

Virtually all water use in laundries is in the wash process. Possible efficiency measures include:

- Replace conventional washing machines with high efficiency front-load machines
- Install a reclaim system to capture rinse water for use in the wash cycle
- Install a continuous-batch washer for large laundry operations

GREEN

Certified Green Development

Did you know? . . .

ENERGY STAR certified buildings use 35 percent less energy and cost 50 cents less per square foot to operate than average buildings ?

The Blackfeet Community Hospital in Browning, Montana, received the EPA's ENERGY STAR Certification for the second year in a row. This would not have been possible without the hard work of the Blackfeet Community Hospital maintenance staff. For their effort they won a 2011 HHS Green Champions Award in the Energy & Fleet Management category!



Energy efficiency is the fastest, cheapest, and greatest unused resource for saving energy and preventing greenhouse gas emissions.



PLACE

Active Design



SUSTAINABLE DEVELOPMENT STANDARDS MANUAL

- 1st Goal – to assist property owners and developers in selecting and implementing the optimal sustainable design options for their projects.
- 2nd Goal - Help elected officials, staff members, and other stakeholders determine and prioritize sustainable design in City projects.
- Provides an explanation as to the method for assigning points to the design options.
- Breaks down the five sustainability categories into 36 design options.
- Includes a the recommended list of preferred locations for the design options, based on certain project types or locations.



Sustainable Development Standards Manual



August 2016

Development Services Department

SUSTAINABLE DEVELOPMENT STANDARDS MANUAL

B. DESIGN OPTIONS

Increased Pervious Area with LID Design is a site that provides twice the required amount (200%) of the minimum pervious area and designs the pervious area with Low Impact Development (LID) design techniques. ****Specific LID design requirements are included in the appendix, however applicants may request to utilize other LID best practices.**



Preferred Locations: Increased Pervious Area with LID Design is preferred for industrial uses, residential uses, and any location in the city that has increased vulnerability to flooding.

Vehicular Use Area Designed with LID Design Techniques are parking lots and other vehicular use areas designed in order to manage stormwater on site through a vegetated treatment network. Techniques including shallow bio-retention, rain gardens, curb cuts and inverted medians that direct stormwater into vegetated areas, drought tolerant ground covering in lieu of sod, and increased use of trees. Pervious pavement may also be used. ****Specific LID design requirements are included in the appendix, however applicants may request to utilize other LID best practices.**



Preferred Locations: Vehicular Use Area Designed with LID Design Techniques is preferred for sites with large parking lots, such as shopping centers, institutional uses, office buildings, and municipal parking lots. However the benefits of low impact design for parking lots are beneficial citywide.

Dry Retention Area Designed with LID Design Techniques are dry retention areas designed as either rain gardens or other bio-retention areas. Both of these LID techniques utilize soil, plants, and microbes to treat stormwater. Rain gardens are depressions filled with soil media (referred to as bio-retention soil), topped with mulch, and planted with dense Florida-Friendly Landscaping vegetation. If designed properly, LID dry retention areas are capable of removing nitrogen, phosphorous, metals, hydrocarbons, and pathogens through filtration, sedimentation, plant uptake, and biological processes. Ideally dry retention areas designed with LID design techniques should be located to receive runoff from hard surfaces such as roofs, downspouts, parking lots, or driveways. Preferred plant species include deep-rooted plants and grasses which grow naturally in wetland habitats, but which can also withstand periods of drought. Dry retention areas designed with LID design techniques are not intended to be ponds. Their design should limit retaining water for no more than 72 hours after rain ceases. ****Specific**



LID design requirements are included in the appendix, however applicants may request to utilize other LID best practices.

Preferred Locations: Dry Retention Area Designed with LID Design Techniques are preferred for sites with dry retention.

Roof Runoff Diverted to Planter Boxes are a bio-retention treatment control device specifically located to capture the stormwater runoff from roofs. The boxes can be comprised of a variety of materials, such as brick or concrete, (usually chosen to be the same material as the adjacent building or sidewalk) and are filled with gravel on the bottom (to house an underdrain system), planting soil media, and vegetation. ****Specific LID design requirements are included in the appendix, however applicants may request to utilize other LID best practices.**



Preferred Locations: Preferred locations for Roof Runoff Diverted to Planter Boxes are sites along Dixie Highway, Downtown Pompano Beach, East Atlantic Boulevard, and other locations within the City with minimal setbacks and reduced pervious requirements. The image on the left shows that planter boxes can be very minimal in width and are therefore complimentary to an active pedestrian realm.

Roof Runoff Diverted to Bio-Retention Area is the diversion of 100% of roof runoff to either a rain garden, bio-swale, or similar LID landscaped area. ****Specific LID design requirements are included in the appendix, however applicants may request to utilize other LID best practices.**



Preferred Locations: Preferred locations for Roof Runoff Diverted to Bio-Retention Area is preferred for industrial developments, or other developments with expansive roof areas. The image shows a rain garden at the University of Florida. The downspouts of the roof were realigned to direct all runoff to the rain garden. The sunny location helps ensure the rain garden can dry in between periods of rain events.

Dune Restoration is the reestablishment of the City's beachfront dune system in a design that achieves the optimal dune width, height, slope, elevation, and vegetation and dirt materials. These standards will result in a sustainable interconnected dune system which helps stabilize shorelines. The dunes act as flexible barriers to ocean storm surges and waves. In addition, they provide a habitat for many animals, including migratory birds. ****Specific design requirements are included in the appendix.**



Preferred Locations: Dune Restoration are ideal for all oceanfront uses.

SUSTAINABLE DEVELOPMENT STANDARDS MANUAL

Industrial and Warehouse Developments

Large expansive buildings, large parking lots needed to accommodate trucks and heavy equipment, and sites developed prior to annexation have resulted in areas of City which are more flood prone and should implement design options focused on stormwater management and flood protection. Below are the preferred design options for Industrial and Warehouse Developments:

- Double Pervious Area Designed with LID Design Techniques
- Vehicular Use Area Designed with LID Design Techniques
- Dry Retention Area Designed with LID Design Techniques
- Bio-swales
- Roof Runoff Diverted to Bio-Retention Area
- Green Roofs
- Onsite Photovoltaic Energy production
- Energy Star Rated Roofing
- LEED Certification
- Florida Green Building Coalition Certification
- Energy Star Rated Building
- Water Conservation Via Landscape Design
- Florida Water Star Certification
- Stormwater Harvesting
- Energy Commissioning

Oceanfront and Waterfront Development

Properties abutting the City's beach or waterways offer specific opportunities to implement design options that address coastal hazards and improve the City's natural resources. Below are the preferred design options for ocean and waterfront development:

- Dune restoration
- Access to Waterways or Beach
- Public Recreation Spaces
- Parking Garages
- Solar Heating of Water
- Photovoltaic Energy Production
- Wind Driven Energy Production
- Double Pervious Area Designed with LID Design Techniques
- Vehicular Use Area Designed with LID Design Techniques
- Florida Water Star Certification
- Stormwater Harvesting
- Pervious Pavement
- LEED Certification
- Florida Green Building Coalition Certification
- Energy Star Rated Building
- Enhanced Recreation Paths
- Bicycle Shelters

APPENDIX

Design Requirements

Compliance with the following standards is required in order to receive applicable design option points.

Dune Restoration:

1. Dune width: 50 to 100 feet as measured perpendicular (shore-normal) to the shoreline.
2. Dune height: 3 to 4 feet above the back beach berm (surface of sand).
3. Dune Crest Elevation (NAVD): +11.5 to +13.0 feet above mean sea level.
4. Distance from mean high water line: landward of the ECL or minimum 100 feet landward of mean high water line.
5. Slope: 1:10 to 1:5 on seaward slope; 1:1.5 max. on dune ridge (peak); average 1:3 on landward slope.
6. Vegetation: minimum 3 species indigenous to area; > 70 percent composed of dune grasses; zoned seaward pioneers (railroad vine, seaside purslane), middle sand trapping grasses (sea oats, bitter panicum, marshhay), landward dune grasses and shrubs (saw palmetto, sea grape, bay cedar, sea lavender, necklace pod, etc.); invasive plant removal qualifies for mitigation.
7. Sand: Sand placed on the beach or seaward of the frontal dune shall be predominately of quartz, carbonate or similar material and shall meet the following criteria:
 - a. Silt, clay or colloids passing the #230-sieve (4.0phi) shall not exceed 5% by weight;
 - b. Not contain greater than 5% by weight of fine gravel retained on the #4-sieve (- 2.25phi);
 - c. Not contain coarse gravel, cobbles or material retained on the three-quarter inch sieve in a percentage or size greater than found on the native beach;
 - d. Not contain construction debris, toxic material above background levels, clay balls, or other foreign matter;
 - e. Not contain friable carbonate material that would result in cementation of the beach;
 - f. Material shall have a moist Munsell color value of 6 or lighter; and
 - g. Mean grain sizes shall fall between 0.25 mm and 0.55 mm.
8. Access: angle paths toward Southeast; sand paths 3 ft. wide for single family, 5-ft max. width MFD; walkovers 4-ft wide max. SFD, 6-ft. wide max MFD; sand paths acceptable for lower height dunes (<11.5 ft NAVD); beach mats ok in dune areas.
9. Post and rope: ok in high traffic areas if meet DEP guideline.
10. Sand fences: not recommended due to concerns with interference with sea turtle nesting.

Enhanced Recreation Paths:

- 1) Minimum Length is ¼ linear mile;
- 2) Minimum width is 10 feet;
- 3) Pervious pavement and/or heat reducing pavement is required;
- 4) The use of differing pavement materials, markings, or other means that demarcate space for various modes of pedestrian traffic is required;

PROJECTS REQUIRED TO IMPLEMENT SUSTAINABILITY

Current Standards:

- ✓ *Required for all Major Site Plans, even for additions*
 - ✓ Multifamily residential development = 10 points
 - ✓ Nonresidential and mixed-use development = 12 points
 - ✓ Nonresidential and mixed-use development in the TO district = 18 points

Proposed Standards:

TABLE 155.5802.A: SUSTAINABLE DEVELOPMENT POINT APPLICABILITY AND REQUIRED POINTS

Development Type	Applicability	Minimum Points Required
New Multifamily development	Required to obtain Major Site Plan approval	10
Additions to existing Multifamily development	Required to obtain Major Site Plan approval	10 <i>(to the maximum extent practicable)</i>
New nonresidential and mixed-use development	Required to obtain Major Site Plan approval	15
Additions to existing nonresidential and mixed-use development	Required to obtain Major Site Plan approval	15 <i>(to the maximum extent practicable)</i>
Development in TO Zoning District	Required to obtain Major Site Plan approval	5 additional points
Planned Development Rezoning	All	10 additional points

Next slide – Which projects are required to obtain Major Site Plan approval

PROPERTY TYPE	RESIDENTIAL USE		NONRESIDENTIAL USE	
Designated Brownfield Area or Brownfield site	New Development	More than 15 new multifamily dwelling units	New Development	More than 7,500 sq ft gfa
	Existing Development	Addition of more than 15 new multifamily dwelling units	Existing Development that is 7,500 sq ft gfa or less	An addition that results in development that contains more than 7,500 sq ft gfa
			Existing Development that is more than 7,500 sq ft gfa	One of the following, whichever is less: <ul style="list-style-type: none"> • An addition that adds more than 37,500 sq ft gfa. • An addition that increases the amount of lot coverage of such existing development by more than 37.5%. • An addition that increases the gross floor area of the primary building of such existing development by more than 37.5%.
All Other Property Types	New Development	More than 10 new multifamily dwelling units	New Development	More than 5,000 sq ft gfa
	Existing Development	Addition of more than 10 new multifamily dwelling units	Existing Development that is 5,000 sq ft gfa or less:	An addition that results in development that contains more than 5,000 sq ft gfa
			Existing Development that is more than 5,000 sq ft gfa:	One of the following, whichever is less: <ul style="list-style-type: none"> • An addition that adds more than 25,000 sq ft gfa. • An addition that increases the amount of lot coverage of such existing development by more than 25%. • An addition that increases the gross floor area of the primary building of such existing development by more than 25%.

POINTS TABLE

Stormwater Management and Flood Protection

TABLE 155.5802.B: SUSTAINABLE DEVELOPMENT OPTIONS AND POINTS		
Design Option	Maximum Points	Requirements
Provide 200% of required pervious area and utilize LID Design techniques	25	100% of provided pervious area
Vehicular Use Area designed with LID Design techniques	10	100% of VUA (including pervious areas associated with VUA)
Site's Pervious Areas (except those associated with VUA) designed with LID Design techniques OR Dry Retention Area designed with LID Design techniques	10	100% of non-VUA pervious areas or 100% of Dry Retention area
Roof Runoff diverted to Planter Boxes	5	100% of roof runoff
Roof Runoff diverted to Bio-retention Area	7	100% of roof runoff
Dune Restoration	20	See Manual for requirements
Green Roof	20	2 points per 10% of roof area which is pervious
Parking Garages	5	1 per 20% of required parking located in garage
Pervious Pavement	15	<ul style="list-style-type: none"> • 5 points for 100% of internal pedestrian / bicycle circulation system utilizes pervious pavement. • 10 points for 100% of off-street parking spaces utilize pervious pavement.
Modular Suspended Pavement System	15	100% of trees impacted by hardscaping are planted within a modular suspended pavement system
Florida Water Star Certification	25	Site or Building is certified
Stormwater Harvesting	10	<ul style="list-style-type: none"> • 7 points for 100% of roof runoff diverted for re-use as irrigation. • Or 10 points for 100% of roof runoff diverted for re-use as irrigation and for a/c cooling towers.
<u>Photovoltaic</u> Energy Production	25	1 point per 100 KW produced
Wind Driven Energy Production	25	1 point per 100 KW produced
Solar Heating for Indoor Water Use	10	100% of indoor water
Solar Heating for Pool Water	2	100% of heated pools utilize solar heating
Solar Outdoor Lighting (for Vehicular Use Area and Security Lighting)	5	1 point per 20% of outdoor lighting is solar powered
Electric Vehicle Charging Station	25	2 points per station Plus additional 1 point per station if station is solar powered.
Energy Star Rated Appliances (for residential developments only)	4	2 Points per 50% of clothes washer, dryer, and dishwasher which are energy star rated

Water Conservation

Renewable Energy and Energy Conservation

POINTS TABLE

Renewable Energy and Energy Conservation

Certified Green Development

Active Design

TABLE 155.5802.B: SUSTAINABLE DEVELOPMENT OPTIONS AND POINTS

Design Option	Maximum Points	Requirements
Energy Star Rated Roofing	3	100% of roof materials
Energy Star Rated or Insulated Impact Windows	3	100% of windows
Energy Commissioning Plan	25	<ul style="list-style-type: none"> 3 Points for a Commissioning Plan demonstrating building is achieving minimum Florida Building Code passing energy calculation for buildings not otherwise required to submit a Commissioning Plan per the Florida Building Code 5 Points per a Commissioning Plan demonstrating building is 5% above minimum Florida Building Code passing energy calculation.
Heat Reducing Pavement	5	100% of VUA utilizes heat reducing pavement.
LEED Certification	25	Site or Building is certified
Florida Green Building Coalition Certification	15	Site or Building is certified
Energy Star Certified Building	25	Site or Building is certified
Enhanced Recreation Paths	15	5 Points per 1/4 linear mile (1/4 linear mile minimum). See Manual for additional requirements.
Enhanced Private Recreation Spaces at residential developments	3	See Manual for requirements
Public Recreation Spaces	5	See Manual for requirements
Access to Public Park	5	See Manual for requirements
Access to Waterways or Beach	15	<ul style="list-style-type: none"> 10 points for entire intracoastal or other waterway frontage dedicated to public 3 points for linear only access to waterfront or beach. 5 points in addition if public boat dockage is installed. See Manual for additional requirements
Streetscape-Oriented Site Design (for B Districts only)	5	1 point per 20% of front or street side property line (or within five feet of front or street side property line) that contains a principal structure.
Public Art	5	See Manual for requirements
Bicycle Lockers	2	100% of required bicycle parking
Bicycle Shelters	2	100% of required bicycle parking
Indoor Bicycle Parking	4	100% of required bicycle parking
Other / Unlisted Design Option	10	See Manual for point determination criteria

COSTS

- Some of the least expensive options include:
 - Roof runoff diverted to planter boxes
 - Solar outdoor lighting
 - Energy Star rated appliances
 - Energy Star rated roofing
 - Bicycle Lockers
 - Indoor Bicycle Parking
- Other options decrease long term costs (such as irrigation or cooling costs) and may make more land available for development, thereby increasing land value:
 - LID Design of landscaping
 - Green roof
 - Stormwater Harvesting
 - Solar Heating of indoor water or pool water
 - Energy Star or Insulated Windows
 - Energy Star Roofing
 - Energy Commissioning Plan
- For more information on the cost benefits related to LID:
http://www.ces.ncsu.edu/depts/agecon/WECO/nemo/documents/WECO_LID_econ_factsheet.pdf



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