

4 Innovation in Regulations and Opportunities + Provided by Incentives

BUILDING AND DESIGNING FOR GREEN COMMUNITIES

With the current redevelopment trend in Pinellas County, there are many opportunities to use more sustainable practices. Pinellas County can encourage their use by implementing such practices on County-owned sites and projects. By setting an example for others, Pinellas County can become a model for environmental sustainability in every day practices.

In light of the concerns surrounding water quality, flooding problems, and recent discussions surrounding climate change and the potential impacts that all of the above can have on the County, it is becoming recognized that every day habits can have an impact on the state of the environment, especially if everyone changes their daily practices to live life in a more sustainable manner. There are a number of programs and practices in place that encourage sustainable living, whether it be through constructing better development projects, retrofitting existing homes, or even altering irrigation methods.

FLORIDA GREEN BUILDING COALITION

The Florida Green Building Coalition (FGBC), founded by the Florida Solar Energy Center, is a non-profit organization dedicated to improving the built environment. The FGBC has developed standards that local governments can use to implement green practices into their everyday functions, such as by offering guidance on how to maintain landscaping and environmentally-friendly fleet management practices. Through these standards, the FGBC hopes to develop quantifiable results regarding the success of green practices, which is lacking in some areas because the technology is relatively new to the development community. With the passage of HB 7123 in June 2007, local governments must now ensure that all buildings constructed with the use of State funds are developed in a sustainable manner. The standards developed by the FGBC may serve as a guideline for such development and assist with the improvement of the overall quality of our environment.

In 2006, Pinellas County became the first jurisdiction in the State to be designated a Green Local Government by FGBC, as a silver award winner. Pinellas County received this award in recognition of the County's exceptional environmental stewardship. The award looked at a number of factors, including: ordinances and incentives that support green practices; in-house environmental practices; and educational activities that foster environmental stewardship. The FGBC encourages local governments to amend codes and land development regulations that will focus on conservation and preservation of the natural Florida ecosystem, and to develop partnerships with the private sector to foster even greater awareness of environmental sustainability. Pinellas County has committed to meet or exceed the requirements of the Green Local Government designation and to strive for a platinum designation by 2008. This can be achieved through an increased focus on low impact development and other sustainable building practices.

LOW IMPACT DEVELOPMENT

Low Impact Development (LID) is one example of a new program direction that contributes to the County's sustainability commitment, and which can contribute to improving the quality of our surface waters and the environment as a whole.

Low impact development practices can reduce the quantity of stormwater leaving a site, improve the quality of stormwater, and have a positive impact on the surrounding natural systems in general. It is generally recognized that there needs to be more than just retention ponds in a development to successfully deal with stormwater runoff and poor water quality. LID looks at natural systems within a watershed, such as the natural flow of water, and attempts to reduce the negative impacts of development to mimic these natural systems and the site's pre-development hydrology. LID practices can serve to remove pollutants from surface waters, including nitrogen, and help improve the quality of the surface waters throughout the County. LID also offers suggestions for individual lot owners to improve surface water quality and quantity, instead of traditional methods that focus more on the greater development as a whole. In the redevelopment atmosphere that is present in Pinellas County, individual lot solutions may be the best answer for stormwater management issues, such as water quality and flooding problems.

LID can be both encouraged and/or required, depending upon the situation. By offering incentives to developers to use sustainable practices, Pinellas County would be better capable of achieving the goals desired in the area of surface water management. Such development would also serve to protect, enhance and improve upon the native habitat and natural environment that is so important to the quality of living in the County. Some development incentives may include the fast-tracking of permitting, the reduction of permitting fees and other tools in order to encourage sustainable development and improve upon the surface water quality despite the built-out status of the County. Disincentives have also been known to function well in other jurisdictions, stopping short of requiring sustainable development, but definitely pushing for the use of such development practices.

The County continues to determine how LID may be able to fit into the urban landscape, as we enter a time of rapid redevelopment. There have already been two LID projects completed within the County. New swale systems have been installed at Walsingham Road from 119th-125th St., and a no-curb system was constructed in the Wall Springs Park Phase I development and in the Extension Services/Botanical Gardens parking lot. While the role of LID in Pinellas County has yet to be determined, further research is being collected and analyzed, especially by the Stormwater Management Academy at the University of Central Florida, and the concept continues to be refined.

One of the drawbacks to LID is that the methodology behind the technology is not as readily accepted by the mainstream as structural stormwater management techniques. Pinellas County has committed to begin discussions with the SWFWMD regarding a partnership to explore LID techniques and to quantify the impacts of LID on stormwater management. In such a partnership, the County could become a model community for LID demonstrations, from which data could be gathered and criteria developed for future LID projects. This data is necessary to show statistical proof that LID concepts and techniques are a viable alternative to standard, structural methods of stormwater control and treatment. This partnership may one

day lead to the acceptance and addition of LID techniques to State guidelines for stormwater management.

Redevelopment presents a particularly suitable opportunity for implementing LID practices on a lot-by-lot level. Some examples of LID practices that apply to individual lots include green roofs, cisterns or rain barrels, micro-irrigation, bioretention systems, and pervious pavers.

Green Roofs

Green roofs, or rooftop gardens, are believed to have originated with the Hanging Gardens of Babylon. For many years, these roofs have been used throughout the world to cool and to heat buildings, including homes. During the 1900's, modern green roofs became very popular in Europe, especially Germany, and have recently begun their rise in popularity in the United States. Green roofs have gained popularity for their ability to insulate homes, retain stormwater runoff, provide aesthetic beauty and to help counter the urban heat island effect.

Green roofs consist of modules laid on a roofing surface. These modules contain plants and soil, the depth of which depends upon the desired intensity of the roof system. Green roofs can be designed to hold small plants or medium sized trees, depending upon the soil depth and strength of the original roof structure. By providing an extra layer on top of a building, green roofs are able to absorb the rays of the sun, keeping the outer layer of the roof from become heated during the day, and keeping the inside of the building cooler. When it rains, the stormwater does not run off the roof and onto the street below; the rainwater is partially absorbed into the green roof system. This allows water to be retained within the roof system and not contribute runoff to the stormwater system, potentially alleviating flooding and pollution issues.



***Green roof on top of the
Chicago City Hall.***

A number of jurisdictions throughout the country have already begun offering incentives, and in some cases requiring, the installation of green roofs in development projects. The City of Chicago, for example, requires any development receiving public assistance to install a green roof, with the exception of schools and community centers. Other developments not receiving public assistance (planned developments and lakefront protection ordinance developments) are also required to install green roofs. The City of Chicago has created a Building Green/Green Roof Matrix to explain their policy and how it applies to certain types of development. Chicago is also setting an example for the community. The roof of their City Hall (seen above) has been converted into a green roof. The City of Portland, Oregon is offering incentives for green roof development, offering one bonus square foot of additional floor area for each square foot of rooftop garden area constructed. The City of Toronto created the Green Roof incentive Pilot Program, offering financial incentives for eligible applicants to construct green roofs.

Here in Florida, the University of Central Florida installed an intensive green roof on top of the Student Union in 2005. Graduate students at the University concluded that the system can reduce runoff volume by 90 percent. A second green roof was installed by the Stormwater

Management Academy, the New American Home, where a 300 sq. ft. green roof and cistern system was designed. According to the Stormwater Management Academy, this Orlando home, where an average of 50 inches of precipitation falls each year, will contribute only 2.5 inches of runoff to the surrounding stormwater system while retaining the difference onsite for reuse.

While green roofs are still being studied to determine exactly how much stormwater is retained by different systems, they are becoming more and more popular within the United States and can offer a viable alternative to stormwater retention and treatment in a built-out area such as Pinellas County, where redevelopment on a lot-by-lot basis lends itself to small-scale stormwater solutions.

Rain Barrels and Cisterns

Some green roof systems are also incorporating rain barrels and cisterns to retain any excess stormwater onsite for use as irrigation when rainfall is scarce. Individual homeowners have also begun to utilize rain barrels and cisterns to capture stormwater runoff from their roofs via the gutter system for yard and landscape irrigation later. Stormwater is captured in the gutters along the sides of roofs and diverted into holding tanks instead of onto impervious surfaces, which allow the stormwater to capture pollutants on its way into the storm sewer system. The Florida Extension service in Pinellas County holds rain barrel workshops for citizens once a month, to teach them how to capture the stormwater from their roofs and utilize it for irrigation purposes. These workshops also cover the maintenance of the systems and how to avoid algae growth and the appearance of pests.



Rain barrel designed to capture water from a gutter downspout for irrigation purposes.

It is also possible for the retained stormwater to be utilized for a household gray water system, routing the stormwater indoors to be used for flushing of toilets. Cisterns capture the water much like a rain barrel, but are larger in size and made up of a more highly engineered container. Many are also able to offer a small level of treatment to the stormwater before it enters the home through a retrofit of the existing plumbing system, or is pumped out for other non-potable water uses. Pinellas County does not encourage those cistern systems that are placed below the ground surface, which do not offer treatment to stormwater runoff. Such systems have actually shown to degrade the quality of the surface waters to which they outlet and are discouraged from being incorporated into stormwater systems.

By educating residents on how to develop and maintain their own alternative irrigation techniques, such as through the use of rain barrels and cisterns, there can be less dependence upon the finite potable water resources for such uses as irrigation, and less of an impact on the storm sewer system as residents will be able to capture a greater portion of stormwater runoff on their properties to utilize at a later time.



Swales allow for the filtration and treatment of stormwater

Micro-irrigation

Micro-irrigation is a method to deliver water right to the roots of plants, in small volumes. This is accomplished through porous tubes laid in the ground from which water seeps when it is turned on, or through a bubbler system, adapted to existing sprinkler heads. This type of system is in contrast to traditional sprinkler systems, where the systems may not be calibrated or maintained, often sending water on impervious surfaces and creating runoff into the stormwater system. While these systems do require regular maintenance to ensure that the lines do not clog and malfunction, they use significantly less water and contribute far less to the waste of potable water resources.

Bioretention

Bioretention is a best management practice that utilizes soils and vegetation to filter and absorb stormwater runoff on a site. Runoff is directed to vegetated areas, where pollutants are filtered out and the water is absorbed into the ground, instead of being directed into the storm sewer. These areas are usually depressed into the ground to allow for ponding in times of significant rainfall. Bioretention areas can be constructed on virtually any site. In parking lots, medians can be constructed so that they are depressed beneath the height of the rest of the parking lot. These medians can be either built without curbs or with curb cuts around it, to protect the plants from automobiles. On individual lots, bioretention areas can be built on the property and filled in with native vegetation to mask the depression in the ground. Neighborhood streets can be constructed without curbs, allowing water to flow over them and onto the adjacent vegetated right-of-way or into the swales along property lines. Some communities in the unincorporated County, such as Lealman, use swale systems to deal with stormwater runoff. Residents in these areas need to be better educated about the purpose of these bioretention systems in order to properly maintain them and understand their functions.



Bioretention areas in parking lots allow for stormwater treatment and retention.

Additional bioretention projects would allow for more stormwater runoff to be treated and retained on-site, improving the overall quality of the surface waters of the County.

Pervious Pavers

Another LID concept that has been gaining in popularity across the country is the use of pervious pavers for stormwater management. Pervious pavers allow stormwater to filter through the pavers and be absorbed into the ground, instead of contributing to the storm sewer system. The pavers also act as a filter, capturing pollutants before they enter the ground. Pervious pavers have also been used to cover the drip line of mature trees so that the trees do not have to be removed during construction and can be retained and maintained onsite. These pavers do require regular maintenance to ensure they retain their porosity, and are



Pervious pavers offer an alternative to impervious surfaces in parking areas, and allow for the infiltration of stormwater runoff.

normally recommended for lower-traffic areas such as parking lots, low-traffic neighborhood streets or driveways. By encouraging the use of pervious surfaces on individual lots, Pinellas County would be able to improve water quality of the surrounding surface waters and decrease the volume of stormwater runoff into the storm sewer system.

LEED

Leadership in Environmental and Energy Design (LEED) is a program developed by the U.S. Green Building Council to serve as a roadmap to constructing buildings in an energy efficient manner. LEED is designed to assign points to a number of different sustainable building methods. A building must earn a given number of points in order to achieve a 'Bronze', 'Silver', 'Gold' or 'Platinum' rating. LEED offers points in five key areas: water savings; sustainable site development; energy efficiency; materials selection; and indoor air quality. Points are earned based upon outdoor plant selections, use of carpeting indoors, building orientation, and for other methods. A number of jurisdictions already require some form of LEED certification for development within their borders. The State of California requires all new State-funded buildings to achieve LEED Silver ratings, Maryland requires new capital projects greater than 5,000 square feet to earn LEED certification, and the City of Portland, Oregon requires City-owned construction projects to meet LEED Gold requirements.

FLORIDA YARDS AND NEIGHBORHOODS

Florida Yards and Neighborhoods (FYN), a program in partnership with the University of Florida, has played a vital role in the education of local residents in regard to how their landscaping choices affect the environment and can be Florida-friendly. FYN seeks to address the problems of pollution in stormwater runoff, disappearing habitats and water shortages by educating the public and teaching conservation practices that can be utilized by every resident. By landscaping individual properties with native vegetation, the individual property-owner can contribute to controlling the quantity of surface water runoff and improving the quality of that runoff into surrounding bodies of water.

Pinellas County is also working on encouraging, or eventually requiring, that a Florida-Friendly landscape plan be included with the submission of each new permit application that is filed with the County. This plan will outline how the landscaping on the property will be maintained, and must be consistent with the FYN program. The County can set an example here by requiring that all County projects be constructed in accordance with the principles of FYN.



An example of a Florida-Friendly landscape in Pinellas County.

OTHER METHODS

There are a number of other practices that both the County and individual residents can undertake to help promote environmental sustainability.

The preservation of the tree canopy in Pinellas County is of great importance to promoting environmental sustainability. Trees capture carbon dioxide and convert it to oxygen through photosynthesis. Trees also provide much needed habitat for native wildlife and shade for residents and wildlife alike. The shade from the tree canopy can assist in the reduction in energy usage, as homes do not heat as much when out of direct sunlight, requiring less energy for cooling. The County can set an example for the preservation of the tree canopy by preserving as many trees as possible on all County-led and funded projects. The County could also develop a strict tree canopy ordinance to protect the trees from development. Individual residents can preserve the tree canopy by properly trimming their trees each year and by preserving healthy trees already on their properties.

In the coming years, Pinellas County will begin developing requirements for energy efficient design in all new buildings, beginning first with County facilities and State-funded buildings, reflecting the passage of HB 7123 in 2007. The County will also begin to actively promote environmental sustainability to both residents and private companies. The County will establish an environmentally preferred purchasing policy and program, evaluate and amend, as necessary, County practices and land development regulations to focus more on sustainability, incorporate sustainability into new employee orientation programs, partner with the Convention and Visitors Bureau to produce a 'green map' of hotels and businesses that implement sustainable practices, and will require energy efficiency in all of its operations, buildings, and leased spaces.