

A Review of Municipal Ordinances for Sustainable Development



**Submitted to
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INTRODUCTION

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

--The Brundtland Commission report *Our Common Future* (Oxford: Oxford University Press, 1987)

BACKGROUND

The world population currently exceeds 6 billion people and within twenty years is projected to approach nearly 8 billion people.¹ The United States accounts for fewer than 300 million of this total population number and continues to grow with a net gain of one person every thirteen seconds.² In terms of impact on the environment, increasing population is not the only problem; consumption rates are typically high in developed countries. The United States is a major culprit in over consumption with only 5 percent of the world's population yet responsible for 25 percent of global energy use.³

As the U.S. population increases, urbanized areas and developments will also increase since people need places to live and work. Different regions of the country have different development rates, but the fact remains that growth will continue.⁴ Current growth patterns have destroyed community landscapes, increased congestion problems, and negatively impacted natural areas.⁵ Growth, especially unplanned growth, can consume a disproportionate amount of natural resources. For example, meeting the needs of one suburban resident leaves a larger footprint on the earth than does an urban lifestyle.⁶ Alternative growth management strategies do exist. Many communities now realize that they can conserve natural resources and natural areas while accommodating the inevitable development.⁷

Local governments have authority over zoning and development within their local boundaries and typically use two types of developmental controls. The first and most common practice is using regulatory laws or "sticks" that prevent or restrict development to particular standards. The second governmental control is providing incentives or "carrots" to developers who use alternate developmental practices. In general, though, few incentives or regulations to build more sustainably exist; most developers continue to develop in a pattern of consuming natural resources and converting land into similar suburban lawns and streets in sporadic, haphazard ways.⁸ Many states and organizations are promoting growth management techniques in order to address concerns over

¹ Total Midyear Population for the World: 1950-2050. 26 April 2005. U.S. Census Bureau. 20 March 2006
<<http://www.census.gov/ipc/www/popclockworld.html>>

² U.S. POPClock Projection. 3 March 2006. U.S. Census Bureau. 20 March 2006
<<http://www.census.gov/ipc/www/popclockworld.html>>

³ United States Population and Sustainable Development. 1996. *Population and Development Review*. 22 (2), 392.

⁴ Randall Arendt, Growing Greener: Putting Conservation into Local Plans and Ordinances (Washington D.C.: Island Press 1999) 1.

⁵ F. Kaid Benfield, Jutka Terris, Nancy Voranger, Solving Sprawl: Models of Smart Growth in Communities Across America (New York: Natural Resource Defense Council 2001) viii.

⁶ Dan Chiras and Dave Wann, 31 Ways to Create Sustainable Neighborhoods: Superbia! (Gabriola Island: New Society Publishers 2003) 18.

⁷ Arendt xiii

⁸ Randall Arendt, Growing Greener Putting Conservation into Local Plans and Ordinances. (Washington D.C. Island Press 1999) 1.

unsustainable growth.⁹ Local governments can create ordinances that either amend existing ordinances or establish entirely new regulations or standards to address issues of concern such as sprawl, brownfields, affordable housing, transit-oriented developments, and preservation of farmland and open space.¹⁰

New regulations or standards are usually better because existing ordinances can be outdated or overly complicated and often contradict innovative building, landscape, or site designs.¹¹ For example, homogenous single-family residential areas remain relatively isolated from commercial uses and distant from transit because old codes were designed around zoning land into different uses such as residential and commercial.¹²⁻¹³ Trying to fix an old code through deletions or additions may result in more confusing and harder to implement codes.¹⁴ If the old code cannot be removed, creating an alternative or optional new code is a strategy that can be enhanced by offering incentives.¹⁵ One reason new codes are needed is because many existing ordinances restrict designs that incorporate sustainable development techniques.¹⁶ Unfortunately, these new additions may conflict with existing codes or cause delays through the review process. Arguably, existing ordinances are the most significant barrier to sustainable development projects.¹⁷ Conflicts and delays often discourage developers from battling the local governments for approval.¹⁸ Any new code that is reviewed carefully to avoid conflict with existing code should actually be “easier” to get through the review process.

Local government policies can play a major role in creating opportunities for adoption/implementation of sustainable practices. In addition, governments can take the lead in sustainable planning and development by designing public facilities or government office buildings according to sustainable design standards.¹⁹ By taking the lead in crafting unique policies and implementing ways for government to reduce energy consumption and negative environmental impacts, a local government can initiate small changes that will lead to a more sustainable community.

The benefits of sustainable or green development are numerous for both the environment and the economy. Typical costs and resources used to maintain a flawless landscape could be reduced with careful planning.²⁰ Open space created by sustainable developments could provide habitat for species in the area and create a pervious area for storm water to penetrate.²¹ Also, since most developments are designed around using a car as a major mode of transportation, smart growth can reduce

⁹ Ajay M. Garde, (2004) *New Urbanism as Sustainable Growth? A Supply Side Story and Its Implications for Public Policy* (*Journal of Planning Education and Research* 24) 158.

¹⁰ Ajay M. Garde, (2004) *New Urbanism as Sustainable Growth? A Supply Side Story and Its Implications for Public Policy* (*Journal of Planning Education and Research* 24) 161

¹¹ Andres Duany, Elizabeth Plater-Zyberk, and Jeff Speck, *Suburban Nation: The Rise of Sprawl and The Decline of the American Dream* (New York: North Point Press 2000) 221-222.

¹² Yan Song, (2005) *Smart Growth and Urban Development Pattern: A Comparative Study* (*International Regional Science Review* 28, 2) 261.

¹³ Chiras 5.

¹⁴ Duany 223

¹⁵ Duany 224

¹⁶ Benfield 94

¹⁷ Garde 166

¹⁸ Alex Wilson, et. al., *Green Development: Integrating Ecology and Real Estate* (New York: John Wiley & Sons 1998) 194.

¹⁹ Duany 225

²⁰ Chiras 29

²¹ F. Kaid Benfield, Jutka Terris, Nancy Voranger, *Solving Sprawl: Models of Smart Growth in Communities Across America* (New York: Natural Resource Defense Council 2001) 113

dependence on the automobile and by doing so will reduce pollution levels from automobiles.²²⁻²³ Non-toxic paints, finishes, and carpets will not only make places more environmentally friendly, but will also improve indoor air quality for people.²⁴ Appropriate designs and management plans can encourage integration of community members and foster a better sense of community among residence.²⁵

So why aren't all developments constructed under these types of practices? One of the primary reasons is because of inadequate awareness and lack of understanding about how to build these developments and realize the potential benefits.²⁶ Creating new codes or amending old codes must first begin by educating local government officials about the benefits and methods for sustainable development.²⁷ Local policies can help the private sector to implement sustainable designs and management practices by allowing variance of old codes.²⁸ Learning from the experiences of sustainable developments in different counties will help local governments increase their awareness and implement successful development ordinances.²⁹

PURPOSE

The purpose of this document is to compile and summarize city and county ordinances that provide incentives or regulations to promote sustainable development. City or county officials can use this document to aid in drafting sustainable development policies for their local area. The goal of this booklet is to increase knowledge and awareness of current policies and ordinances created around the theme of sustainable development and conservation.

BOOKLET ORGANIZATION

The booklet is divided into fact sheets that summarize each ordinance. The ordinances are grouped together into three categories: building envelope, landscaping, and site development. For each ordinance, a web link to the original language of the ordinance is provided; if the original language is not available online, the original language is included in an Appendix. Discussion about how to promote sustainable practices through policy initiatives follows the fact sheets. The end of the booklet contains a glossary to define terms that may be unfamiliar to the reader.

²² Benfield 94

²³ Benfield 20

²⁴ Chiras 108

²⁵ Benfield 85

²⁶ Wilson 23

²⁷ Chiras 165

²⁸ Kenneth Hall, and Gerald Porterfield, Community by Design: New Urbanism for Suburbs and Small Communities (New York: McGraw-Hill 2001) 28.

²⁹ Wilson 231

Gainesville Green Building Program Ordinance

Implemented: 14 October 2002
Gainesville, FL

Population 2002: 109,361*
Population 2005: 108,184

* All population data for the entire booklet came from Population Finder tool at U.S. Census Bureau website: <http://www.census.gov/>



Purpose

To promote energy efficient construction and design practices through incentive based rewards for private sector developers and mandatory compliance for city owned facilities.

Summary

To promote energy efficient construction, this ordinance provides the following incentives for building new energy efficient homes: 1) Fast-track permitting for building permits and 2) 50% reduction in building permit fee. To receive these incentives, an independent third party must certify the building. The city government also provides marketing incentives including erection of building signs at the site, placing participants on city website and press releases. Finally, a Green Building Award from the City of Gainesville recognizes one participant each year that demonstrates commitment to the program.

Standards for development certification follow the Florida Green Building Coalition and the U. S. Green Building Council standards and can be found at the following sites:

- <http://floridagreenbuilding.org/standard/Default.htm>
- <http://www.usgbc.org/>

Tom Ankersen, Director of University of Florida Conservation Clinic, along with two law students, developed the language for the ordinance. A member of the Gainesville City Council presented the idea for the ordinance to members at the University of Florida. The authors intended to give Building and Inspection Department Officials authority to provide incentives for new residential, commercial buildings and residential remodeling that comply with green building standards.

Current Impact

Currently a total of 28 green building permits have been issued and eleven of these permits have been finalized. The first was issued in January 2003. Nearly half of the total number of green building permits was applied for in 2006 from January to April. One commercial project, Kangaroo Station, is currently undergoing the green building process. A new cancer ward for Shands hospital also intends building an energy-efficient building according to the ordinance standards.

Projected 88 energy efficient homes to be built in the Madera Community. Currently 9 homes built in the community.

Pros and Cons

The authors held a stakeholder workshop before drafting the ordinance. In that workshop the majority of the stakeholders expressed interest in a voluntary program. The city council members decided to make the program mandatory for all new government buildings and voluntary for private construction. Because the program was voluntary in the private sector and city officials decided to mandate it for city buildings, the ordinance was accepted with open arms.

The first builder to use the program found the process confusing because the entire program was new. The clerks at the city department did not know how to process the first permit. Confusion in the initial stages added to the time for permitting. Now, the program is faster and can take between one to two weeks to receive a permit as opposed to 6 or 8 weeks.

The only hesitation came from Gainesville Regional Utilities (GRU) over providing incentives for remodeling and retrofitting (a sub-program in the ordinance). GRU did not immediately agree to include incentives in the local ordinance because of funding issues. As a compromise, the wording in the actual ordinances states that the incentives are “subject to availability of funds.”

Viewpoints from Developers

The first developer to use the Gainesville Green Building Ordinance found the initial process slow and cumbersome. The program was so new that the clerks in the city building department needed assistance to complete the paper work. The fast tracking did not occur

initially because the process was new, but now the city can turn around a building permit within 1-2 weeks. This developer has built 5 single resident homes as of summer 2006 under the Gainesville Green Building Program.

The 50% permit fee reduction incentive is the largest incentive. This roughly pays for the “green” building certification process that would otherwise come out of the developer’s pocket.

One developer mentioned that the checklist was cumbersome and even redundant with the Energy Star certification. Initially, some developers needed help understanding the checklist and other forms to submit for the certification. A smaller concise checklist would appeal more with developers. Several developers would like to see the county adopt similar incentives when building “green” developments.

The majority of developers interviewed (2 out of 3) have been using some “green” building techniques before the ordinance was passed. These two developers were already using Energy Star construction standards as a minimum. One developer also used Florida Yards and Neighborhoods Program (<http://hort.ufl.edu/fyn/>) as a landscaping standard.

These developers believe that others have not taken advantage of the Green Building Program because they do not even know about the program. One suggestion to spread the word would be to present the program at the monthly Builder’s Association meeting. Other developers may choose not to use the program because they believe that using these techniques is cumbersome and not worth changing current building practices. Some also see certification of a “green” building as an additional obstacle.

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Original Ordinance Language

<http://www.municode.com/resources/gateway.asp?pid=10819&sid=9>

Search Under; Chapter 6 Buildings and
Building Regulations; Article I.5. Gainesville
Green Building Program

Sarasota Green Building Program Resolution

Implemented: 15 March 2005
Sarasota County, FL

Population 2005: 366,256



Purpose

To provide Sarasota County community with a certification-based “green building” program. This ordinance encourages the county to design and construct sustainable, energy efficient buildings through mandatory compliance of new county buildings. It also encourages voluntary green building in private development through incentive based programs.

Summary

To promote energy efficient construction, this ordinance provides the following incentives for building new energy efficient homes: 1) Fast-track permitting for building permits and 2) 50% reduction in building permit fee with a maximum of \$1,000 per building but no person or organization shall receive more than \$5,000 in permit fee refunds. The government will also provide marketing incentive including erection of building signs at the site, placing participants on city website and press releases. Finally, a Green Building Award from the Board of County Commissioners will recognize one participant each year that demonstrates commitment to the program. An independent third party must certify buildings in order to retain the above benefits.

Standards for development certification follow the Florida Green Building Coalition

and the U. S. Green Building Council standards and can be found at the following sites:

- <http://floridagreenbuilding.org/standard/Default.htm>
- <http://www.usgbc.org/>

The resolution was adopted from the Gainesville Green Building Ordinance in Gainesville, FL (see pages 7-8). The language is nearly identical with only a few modifications in order to adjust the resolution to meet the needs of the area.

Current Impact

County Building office addition in Twin Lakes Park received a Leadership in Energy and Environmental Design (LEED) rating of gold from the U. S. Green Building Council standards. North Sarasota Library also achieved the LEED gold rating. The Girl Scouts building and a Whole Foods Store are both are certified under the LEED standards.

Pros and Cons

Before the resolution, the county already had several green building projects underway. The county commission hopes to encourage even more builders to use green building standards for future developments. The ordinance was accepted with open arms because the program was voluntary in the

private sector. Sarasota County is already a progressive community with certified green developments before the adoption of this resolution such as the Venetian Golf and River Club, Lakewood Ranch community and Waterford development.

The county commissioners hope to encourage more green building by setting maximum monetary allotment in building permit fee reductions. Only \$50,000 per year shall be spent on permit fee refunds. The resolution limits \$1,000 per building and \$5,000 per person or organization. This limitation will allow more refunds to be spread across a higher number of different developers.

The program has guaranteed that the fast track permitting will be turned around in two days. Also, the building department also gives priority to all inspections to any green building.

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Original Ordinance Language

Appendix A

Green Points Program

Implemented: 1996
Boulder, CO

Population 2000: 94,673
Population 2005: 91,685



Purpose

To mandate standards that encourage cost-effective and sustainable residential building methods that conserve fossil fuels and water, promote reuse and recycling of construction materials, reduce solid waste and promote enhanced indoor air quality.

Summary

The ordinance is required for all residential building and is based on a point system to include: 1) new construction up to 1,500 sq. ft. requires 50 points 2) new construction between 1,501 and 2,500 sq. ft. requires 65 points 3) new construction over 2,500 sq. ft. requires one additional point for every 50 sq. ft. 4) Interior remodeling ranges from 10 to 25 points depending on size 5) additions range from 25 to maximum number of points in ordinance based on size.

Green points fall into 11 categories including: construction/demolition and use of recycled materials; land use and water conservation; framing; energy code measures; plumbing; electrical; windows and insulation; heating, ventilation and air conditioning (HVAC); solar; indoor air quality and interior finishes; and innovation in design. Under these categories 71 measures exist to choose from and add up to a maximum of 338 total points. See ordinance for specific design measures and point breakdowns.

The ordinance origins began in the late 1970s, when the city of Boulder received a grant to do an energy audit. The results of the audit revealed that the residential sector accounted for 39.5% of the energy use. The city created an Energy Options Points program in the early 1980s. Building permits were granted based on the number of Energy Option Points they implemented in residential building. This program was reevaluated and updated to include a Green Points checklist. Leaders from the homebuilding industry, energy and green building experts, code officials and city staff developed the checklist based on the fact that different features had more value or greater cost than others and should receive more points. The program and code was renamed Green Points program.

After the program was implemented in 1996, the program was revised in 2001 to increase the amount of points required and also included a new element for home over 2,500 sq. ft. These homes required one additional point per 50 sq. ft.

Current Impact

The numbers below are based on a study of 267 homes built under the program in 2003 and 2004.

The average dwelling unit is 1,705 sq. ft. and has 72 Green Points (seven over required 65).

One home built to these standards achieves an annual savings of 1,222 KWh in electricity, 301 therms of natural gas, and 11,562 gallons of water. These add up to \$375 with a majority of monetary savings in natural gas (Figure 1).

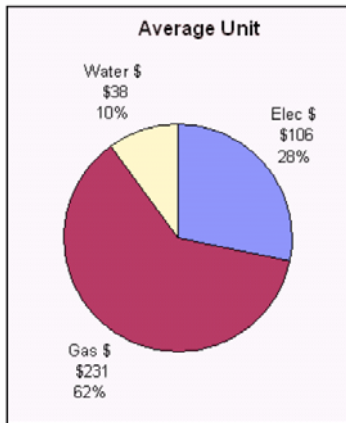


Figure 1. Annual utility savings per 1,705 sq. ft. unit.³⁰

A large unit consists of 6,031 sq. ft. and 129 Green Points. Annual savings of this building include 6,517 KWh of electricity, 426 therms of natural gas and 27,410 gallons of water. Total monetary savings add up to \$985. Electric savings are highest in the large dwelling unit (Figure 2).

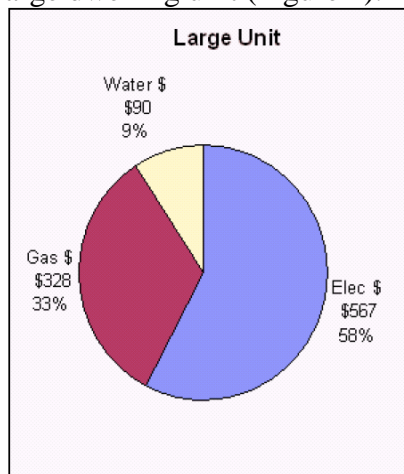


Figure 2. Annual utility savings per 6,031 sq. ft. unit.¹

³⁰ Elizabeth Vasatka, Larry Kinney and Cam Marshall, Well Beyond Energy Codes: The Green Points Program in Boulder, Colorado. Contact City of Boulder Office of Environmental Affairs for a copy of this paper.

Pros and Cons

Builders, architects and material suppliers were consulted with a draft of the program and they were able to include their input in how much value to give to each feature and how many points should be required for a building permit. By including builders in the ordinance design process, increased the acceptance among some builders.

Initially builders and code officials had rough moments in the onset of the program, which included disagreements about points received and total number of points required. Within one year of the program, all certified builders in the city complied with the program and even those who were initially resistant discovered that the program was good for business and even improved their sales. Some builders made their entire line of homes green and continued to build green even outside the Boulder city limits.

In retrospect, one improvement that could have been implemented was to estimate potential savings for each category before assigning points. This will balance the categories of savings and number of points assigned to each category.

One benefit of creating an ordinance based system for green building is that the city gets 100% market penetration for green building. The entire public is made aware of the benefits and this increases the market for green building products and homes. Builders now use Green Points as a marketing feature to sell more homes.

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Original Ordinance Language

<http://www.ci.boulder.co.us/cao/brc/933.html>
#9-3.3-24

Green Building Program Ordinance

Implemented: 2 May 2001
Frisco, TX

Population 2001: 41,990
Population 2005: 70,793



Purpose

To create a green building program that mandates minimum energy efficiency, water conservation, indoor air quality and waste recycling standards for all residential buildings.

Summary

The ordinance sets forth minimum standards in four categories: energy efficiency, water conservation, indoor air quality and waste recycling.

The energy efficiency standards followed the Environmental Protection Agency's Energy Star designation

(http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.pt_bldr).

Water conservation standards include: 1) provide drought tolerant landscaping, 2) provide information in model home about xeriscaping benefits and water conservation practices, 3) if bedding areas exist, they must be mulch, 4) irrigation systems must include rain and freeze sensor, and 5) irrigation system must be zoned.

Indoor air quality standards include: 1) mechanical room walls exposed to living area must be insulated to R-11 2) provide range hood vented to outside, 3) unvented fireplaces and gas logs with fan blowing

gases into living space are prohibited, 4) one carbon monoxide detector hardwired per 1,000 sq. ft. where home has an attached garage or any combustion appliance, 5) all joints in air distribution system must be sealed with duct mastic, 6) duct leakage shall be less than or equal to 5% of square footage served by unit or less than or equal to 10% if a fan flow high speed system is installed, 7) airflow in each room will match with +/- 10% of designated airflow calculations, 8) exterior ventilation system installed must perform at certain standards in ordinance, 9) provide option for furnace and/or duct-mounted electronic/electrostatic air cleaner, 10) central vacuum system must exhaust outside, and 11) HVAC plenums on the supply side must be constructed of sheet metal with external insulation.

Waste recycling standards include: 1) construction waste from a building site must be taken to a recycling facility approved by the county or state, 2) construction waste reduction and reuse plan must be written and followed by builder, 3) donate unwanted building materials to non-profit building organization, 4) provide built in recycling center option for homebuyers, and 5) provide composting system option in yard for homebuyers.

The ordinance was innovative in 2001 and did not have any model language on which to base the new policy. The small city was growing so rapidly that city staff began work to develop a green building program after a

green builder spurred the idea during a conversation at a local conference. The city staff wanted to apply green building to the entire city. Staff created a volunteer committee that would be tasked to create the ordinance. After the committee consulted with builders, they determined that a short list of prescriptive minimum standards that did not include an exhaustive checklist of requirements would give the builders the flexibility they need to comply with the ordinance. For example, the water conservation element in the ordinance only includes 5 components that encourage efficient landscaping techniques instead of a long checklist that details every component of landscaping.

Current Impact

Overall³¹

- 7,097 Green Homes/Energy Star Homes built since May 2001
- 15,289 Green Homes platted since 2001
- CO₂ reduced - 16,819.89 tons
- NO_x reduced - 48.12 tons
- SO₂ reduced - 52.26 tons

Per Home

- Average kWh savings - 4,650 per year
- Approximate utility savings per year - \$436

Awards

- Texas Environmental Excellence Awards Finalist 2003
- North Texas Clean Air Coalition grant recipient 2002 and 2003
- Celebrating Leadership in Developmental Excellence (CLIDE) Award winner 2005

³¹ Ryan Middleton (see Contact Information). Telephone interview. 24 April 2006.

Pros and Cons

Initially builders were concerned that by establishing a standard, their current building practices would be altered and it would increase building costs and affect their ability to do business. This led to the adoption of fewer prescriptive methods and more performance based measures. For example, airflow in each room had to be within +/- 10 percent of designed airflow calculations. The ordinance does not require builders to use specific building practices as long as they meet these requirements.

The builders in the community ranged from adverse to indifferent to the new program. The participation process during the ordinance's development was open to all builders. Builders who chose to participate were included in the drafting of minimum standards and the majority of resistance came from those builders who did not participate. The increased sales on green homes versus non green homes (outside the city limits) have encouraged even those builders who were against the ordinance to change their attitude and embrace the program. Many of these builders now build green homes both inside and outside the city limits.

The ordinance is only 3-4 pages long with a mixture of prescriptive and performance based measures. The Website (http://www.friscotexas.gov/Projects_Programs/Green_Building/index.aspx?id=155) gives builders more detailed practices and strategies to meet the minimum standards. A positive aspect of the building flexibility helps homebuilders to keep their building cost down while following the program. Builders, however, do not receive any additional recognition from the city for going above and beyond the requirements.

Overall, the program requires few resources from the city staff to manage the green building program. Third party members, paid for by the builders, complete all testing for minimum standards. Builders then present certificate of inspection by third party members to the city in order to revive final certificate of occupancy.

However, the program could offer a more comprehensive list of requirements and could offer more specific requirements in certain areas. For example, the program does not require any specific options for landscaping such as micro-irrigation or percentages of irrigated turf. Also, the ordinance does not include any solar energy or other renewable energy requirements. Often the components are so vague that it is difficult to enforce certain standards. Also, no consensus exists in testing procedures for certain standards. Furthermore, builders have no incentives to go above and beyond the minimum

requirements or to offer home packages at economically lower rates.

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Original Ordinance Language

<http://documents.ci.frisco.tx.us/weblink/index.asp?DocumentID=25074&FolderID=28177&SearchHandle=0&DocViewType=ShowImage&LeftPaneType=Hidden&dbid=0&page=1>

Resource Efficiency Requirements and Green Building Standards

Implemented: 3 July 1999
San Francisco, CA

Population 2000: 776,733
Population 2005: 739,426



Purpose

To promote energy and water efficiency and decrease negative environmental impacts that result from conventional construction and maintenance of city-owned buildings. This is a mandatory ordinance for all city-owned and does not apply to private developments.

Summary

The Resource Efficiency Requirement Ordinance created a Resource Efficient Building (REB) Task Force, which consists of members from 10 different city departments who oversee city building projects. The ordinance also created 9 pilot projects to promote resource efficient construction practices.

Resource efficiency requirements for city buildings are presented in the ordinance for five categories: Water Conservation, Lighting Efficiency Improvements, and Indoor Air Quality Management Plans, Space for Office / Workspace Recycling, Construction and Demolition Waste Management Plans. City departments must comply with specific requirements presented in the ordinance. Municipal building projects over 5,000 sq. feet must comply with the following: 1) achieve LEED Silver certification, 2) include a LEED Accredited Professional (LAP) as a member of the design team and 3) submit an

annual report to the REB Task Force by August 1 of each year.

LEED certification standards can be found on the U. S. Green Building Council website at:

- <http://www.usgbc.org/>

The green building program began when the city's Bureau of Energy Conservation created the Environmental Department in 1996. This department in conjunction with several other city departments drafted the ordinance in 1999. The ordinance was amended in 2004 after recommendations were made to require that city facilities meet a minimum green building standard. These recommendations were the conclusions of the San Francisco's Green Building Report 1999-2002.

Current Impact

Only three of the 9 pilot projects have been completed. This includes the EcoCenter/San Francisco Department of the Environment Offices, Visitation Valley Clubhouse and 23rd and Treat Streets New Mission Park and Clubhouse.

Two additional projects are currently under construction and will follow the LEED standards for certification. This includes the Laguna Hospital and New California Academy of Sciences. The other projects are on hold for various reasons including funding issues.

Several projects are currently under review and will all follow at a minimum the LEED certification.

Details about current projects can be viewed on the city website:

- <http://www.sfgreenprint.org/>

Pros and Cons

The ordinance took three years to draft and send through the approval process. This lengthy process is the result of time to communicate with other departments and educate city officials. The biggest challenge was getting all other city departments on the same page and understanding the goals of this program.

This ordinance did not meet any difficulties in getting approved since it did not mandate any requirements at first. Initially, the ordinance only provided guidelines for building energy-efficient buildings but did not require any contractors to comply with any standards. The amendments were later accepted to require the green building standards but only for city facilities.

Because the ordinance did not mandate green building with the first draft of the ordinance, it was more difficult to incorporate the green building certification in projects that were already started. Requiring the green building standards up front would have made the process easier. All the pilot programs were

started before mandating the LEED Silver rating.

This ordinance only applies to city-based projects and does not encourage green building in the private sector. The city government is currently working on providing incentives such as fast track permitting to developers in the private sector who use green building standards.

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415-355-3710

Original Ordinance Language

http://www.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:sf_environment

Search Under: Chapter 7 Resource Efficiency Requirements

Additional References

San Francisco's Green Building Report 1999-2002 and Municipal Compliance Guide both found at the SF Environment website under "Innovative Programs" and "Green Building:"

www.sfenvironment.com

Arlington County Green Building Program

Implemented: April 2000
Arlington County, VA

Population 2000: 189,453
Population 2005: 195,965



Purpose

To reduce the environmental impacts of a building and provide a more healthy indoor space. This program is voluntary and offers building density incentives for a larger building to encourage developers to follow LEED standards.

Summary

This program is not a formal ordinance but is a County established program. The program is a variance on current density regulations based on Section 36 of the Zoning Ordinance.

The program includes all types of developments such as commercial, office, and high-rise residential. As an incentive, the County Board is able to consider modifications for additional density between 0.15 and 0.35 FAR (Floor Area Ratio) and/or additional height up to 3 stories for exceptional site plans. The site plan proposal must guarantee a LEED rating at the Certified award level or above (Silver, Gold or Platinum). Developers that incorporate LEED-certified green building components are not guaranteed additional density and/or height, which is determined on a case-by-case basis. Based on the range of the LEED Silver award point system, a range of bonus

density will also be considered, from 0.15 FAR for the Certified award level, up to 0.25 FAR for LEED Silver, and up to 0.35 FAR for LEED awards of gold or platinum. For site plan proposals in which the LEED-certified Gold or Platinum award levels are being sought, a bonus density greater than 0.35 FAR may be considered if they use several of the environmental amenities provision of Section 36.H.5.a. (1) of the Zoning Ordinance.

For those developers that do not commit to achieving LEED certification, the county allows them to still receive density bonuses if they contribute to a Green Building Fund. The contribution is calculated at a rate of \$0.03 per square foot. If the developer does receive LEED certification, the fund contributions are refunded upon receipt of final LEED certification.

The origins of this program began in the late 1990s when county staff members wanted to commit the county to incorporate LEED certification into new construction. The county does not have a formal policy to certify all new county projects but has agreed internally to strive for LEED certification on all county projects. Then in 1999 the County adopted a program to encourage commercial office developments to use these standards in order to receive bonus densities or height additions. In 2003, the county updated the program to expand it to all developments and not just commercial office developments.

Current Impact

- 18 private development projects approved with some LEED components
- 4 of the 18 will be LEED certified
- 10 private development projects currently under construction with some LEED components
- 1 completed private development project under density incentive program LEED Silver (in-review)
- County has completed one LEED certified building (Langston-Brown School and Community Center)

Green Building Fund currently has one contribution of \$10,000. The money is used to provide outreach and education to developers and the community about green building techniques and green building issues.

Pros and Cons

Since the program is voluntary, no direct opposition to the program existed. One drawback is that the program is not a formal ordinance or policy. This provides a challenge to the staff when they try to convey the specifics of the program to others. A few developers were hesitant to apply for the program because they were not as familiar with LEED green building components.

At first, the private development projects that applied under the Green Building Fund did not contribute money until after the project was completed. The lag time between project approval and final certificate of occupancy is extended over several years. The county recently changed this provision and will receive funds after the initial permits are approved.

Contact Information

Joan Kelsch
Environmental Planner
703-228-3599

Original Ordinance Language

Green Building Program Information:

<http://www.arlingtonva.us/Departments/EnvironmentalServices/epo/EnvironmentalServicesEpoGreenBuildings.aspx>

Zoning Ordinance, Section 36:

http://www.arlingtonva.us/Departments/CPHD/planning/zoning/pdfs/Ordinance_Section36.pdf

Water-Efficient Landscaping Regulations

Implemented: 13 November 2001
Sarasota County, FL

Population 2001: 333,287
Population 2005: 366,256



Purpose

To require landscaping practices that conserve water resources. This ordinance is mandatory for all public and private construction.

Summary

This ordinance applies to the irrigated portions of a site for: redevelopment, reconstruction, or expansion; all new single family and multifamily residential structures; and additions to residential buildings that amount to 50% or more of the assessed value of the existing building.

Key provisions in the ordinance include: 1) plants with similar water requirements must have separate irrigation systems and be planted in the same zone; 2) turfgrass and other highly irrigated plants are limited to 50% or less of the irrigated area; 3) impervious surfaces are limited to less than 10% of the landscaped area; 4) turf areas will be no narrower than four feet except next to contiguous properties; 5) no plants will be planted or sprayed from irrigation systems applied under roof overhang; 6) Pop-up sprinklers and rotors will not be mixed in the same zone; 7) reclaimed or other non-potable water sources should be used for irrigation if available; 8) micro-irrigation systems are required for all plant beds and the system

must include a filter; 9) rain sensing shutoff device is required for all automatic irrigation systems; and 10) the builder will provide a landscape maintenance checklist and information packet to the property owner.

The ordinance originated from the Southwest Florida Water Management District encouraging local governments to consider adopting water efficient landscaping ordinances. Public workshops were used to engage the community about a potential water efficient landscape ordinance. The ordinance was developed with inputs from different stakeholders such as the home building industry, landscaping, and irrigation professionals.

The builder, landscape architect, irrigation contractor or landscape contractor that is certified by the State of Florida or Sarasota County will conduct the final inspection and the County will provide a certificate of compliance.

Current Impact

All county buildings and private developments issued building permits after January 13, 2002 currently comply with the ordinance.

Pros and Cons

This mandatory ordinance did not receive any opposition because stakeholders were involved in the development of the ordinance. Also, county extension agents provided continuing education for builders, contractors, and county building inspectors about water efficient landscaping practices and the benefits of using water-efficient landscaping. The Home Builders Association provided help in integrating this ordinance with current building practices.

The ordinance is self-certified by the builder or irrigation/landscape contractor. The builder fills in the checklist for the water-efficient landscape and irrigation plan. Many of the building inspectors that go through the checklist only look at the high points; however, smaller provisions may fall through the system. For example, the inspectors usually can observe that turf is limited to 50 % of the irrigated area and that

micro-irrigation is applied to landscape beds. Often, inspectors will overlook the provision that turf will not be narrower than 4 ft. The only way to observe that pop-up sprinklers and rotors are not mixed in the same area is to turn on the system, which many inspectors fail to do during their inspection.

Contact Information

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npowers@scgov.net

Original Ordinance Language

<http://www.municode.com/Resources/gateway.asp?pid=11511&sid=9>

Search Under: Chapter 22 Buildings and Building Regulations; Article VI Water-Efficient Landscaping Regulations

Landscaping and Irrigation

Implemented: 26 February 2002
Pasco County, FL

Population 2002: 372,908
Population 2005: 429,065



Purpose

To reduce water consumption by providing minimum standards for the development, installation, maintenance, and preservation of water-efficient landscaping and irrigation systems in residential lots. This ordinance is mandatory for all single or multi-family residential developments or commercial developments.

Summary

The ordinance applies to single family or two-family residential lots with irrigation systems and Class I, II, and III developments (i.e., small to large commercial areas). The county requires the contractor to submit the completed certification of compliance with all irrigation and landscape components. Irrigation contractors fill out a self-certification application and the final inspection will be conducted by a county approved, certified inspector. After the final inspection, the county will issue a certificate of compliance.

Key provisions of the ordinance include: 1) maximum of 50% of the plant materials used can be non-drought tolerant; 2) turf grass with excellent drought tolerance may exceed the 50% rule; 3) minimum of 30% of the plant material, other than trees and turf grass,

shall be native; 4) turf grass shall be on separate irrigation zones from other landscape zones; 5) narrow landscaped beds (4 feet or less) shall not be irrigated unless micro-irrigated and turf grass areas shall not be less than four feet wide; 6) sprinkler spacing shall not exceed 55% of the sprinkler's diameter of coverage; 7) sprays and rotors shall have matching application rates within separate zones; 8) sprinklers shall not spray water onto paved areas; 9) a functioning rain shutoff device shall be utilized in automatic irrigation systems; 10) organic mulch shall be at least 3 inches thick; 11) maximum of 50% of the on-site green space shall be allowed to utilize irrigation techniques other than micro-irrigation; and 12) where available, reclaimed water will be utilized for irrigation.

Also included in the ordinance are specifics for: minimum interior landscaping required for vehicular use areas; building perimeter landscaping for automotive service stations and convenience stores with gas pumps; landscape buffering and screening; and water management systems.

The ordinance originated from the Southwest Florida Water Management District encouraging local governments to consider adopting water efficient landscaping ordinances. The Native Plant Society in the county also encouraged an ordinance to include using native plants. Model landscape

ordinances were used as a base to develop the language for this ordinance.

Current Impact

The county is working on putting together water history data for Pasco County. A limited number of inspectors have made it difficult to inspect all provisions in the ordinance. More inspectors and randomized inspections of developments could help increase compliance with the ordinance. With an estimated 57% of new homes with irrigation systems in Pasco County, compliance with the ordinance could provide significant water reductions.

An evaluation of the ordinance by Tampa Bay Water revealed areas where builders complied with the ordinance and areas where they did not comply. Generally the sites evaluated met the requirements for sprinkler spacing, overlap and separate zones for rotors and sprays and no rotors or sprays irrigating areas less than 4 feet wide. However, several sites did not comply with the ordinance by not having separate irrigation zones for turf grass and tree/shrub beds; water being applied to impervious areas; not having micro-irrigation in plant beds; exceeding the percentage of irrigated area in turf grass; not meeting the 30% requirement of native plants; and not meeting the standard of 50% of the irrigated system to be micro-irrigation.

Pros and Cons

The ordinance was not accepted with open arms and several residential and commercial developers and even residents have used innovative techniques in order to not comply. For example, developers would plant less water intensive grass such as bahia grass in

areas without irrigation. After the home is sold, the owner will remove the bahia grass and plant St. Augustine grass and extend the irrigation system. Initially, not much input from the building and landscape industry was provided. In order to supplement, public meetings with builders and landscape architects were held and their input will be used to make amendments to the ordinance.

One complaint against the landscape and buffering section came from the fact that commercial developments require landscape buffering even on roads through natural areas. This seems redundant since the natural area is a natural buffer area.

Currently the irrigation contractor fills out the self-certification process. An amendment will change this processes by requiring the builders to certify the landscape and irrigation systems. This will put more pressure on the builders to ensure compliance with the ordinance before the county inspectors conduct the final inspection. A member of the county's inspection team will inspect and certify the landscape during the final sign off.

Case Study

In east Pasco County, a development site uses a variance on the landscaping ordinance. The development's first phase was approved before the ordinance and does not have to comply with the new code but other phases were not exempt. The developer argued that because the development was approved that the entire development should be exempt.

A compromise was made in which the developer could exceed the 50% non-drought plant rule. The Development Review Committee approved a variance to the requirements based on three criteria: 1) all future building on the entire development must use soil moisture sensors; 2) amendments to the deed restrictions must require soil moisture sensors; 3) must promote soil moisture sensors in all homes with education materials.

Another development has made a request similar to this one and will have the same conditions applied to the variance from the code.

Contact Information

Chris Dewey
County Florida Yards and Neighborhoods
Program Coordinator
727-847-8177

Original Ordinance Language

<http://www.pascocountyfl.net/devser/sd/dr/ldc/1603.pdf>

Vegetation Standard

Implemented: 2 March 2004
Sanibel, FL

Population 2004: 6,112
Population 2005: 6,072



Purpose

To increase retention of native plants in all developments and prevent use of invasive exotics. The ordinance is mandatory for all types of developments.

Summary

Key provisions of the landscaping requirements include: 1) use of native plants is encouraged for all landscaping projects; 2) planting invasive exotic vegetation is prohibited; 3) new development or redevelopment of a parcel requires at least 75% by count of all in-ground shrubs, groundcover, and all trees must be native species (the remaining cover can be non-competing exotic species); 4) landscaping in a gulf beach zone shall only include native species. In-ground native plants installed or existing on a parcel to meet landscaping requirements will be distributed so that 75% native plants by count will be met in each of the following categories: trees, shrubs, and groundcover. All development applicants must remove all invasive exotics (listed below) from within the boundaries of the parcel proposed for development or alteration. These sites must be kept permanently free of those particular exotics. If the estimated cost of removing the exotics

exceeds the cost of development, then the property owner will be given three years to remove the invasive exotics and keep the site permanently free of invasive exotics.

This ordinance defined invasive exotics as an undesirable species, which out-compete or otherwise displace native vegetation. Planting or transplanting invasive exotics is prohibited by this ordinance. Invasive exotic species include: Brazilian pepper, melaleuca, earleaf acacia, java plum, exotic inkberry, lead tree, bowstring hemp, and air potato.

This ordinance originated from articles in the city's Comprehensive Plan (1997) to protect native vegetation and remove invasive exotics. The community as a whole supported these efforts because nearly 2/3 of the island is under conservation.

During the planning phase, a proposed vegetation plan is submitted prior to any development. A member of the vegetation committee approves the vegetation plan. Changes may be submitted to the committee during the planning and construction phases. After development is completed, a member of the vegetation committee will then inspect the site before a certificate of occupancy is issued. The certificate of occupancy may be withheld if the landscape does not comply with the ordinance. Enforcement of the vegetation standards is the job of the city manager or designee. Penalties for not following the ordinance include: replacing

foliage, wildlife habitat and wildlife food source (fruit) with the same type of vegetation that was destroyed, replacement vegetation shall be of the same size and proportion of the destroyed vegetation, replacement vegetation may be required off-site if there is not sufficient area on-site.

Current Impact

The city does not keep track of the impacts this ordinance has on the area. Currently 7,800 acres of land on the island is under conservation. The city hopes to preserve native plants and prevent invasive exotics from disrupting this conservation area by restricting landscaping of developments.

Pros and Cons

Since the majority of the island is under conservation, the community supported efforts to increase native species and decrease exotics. Initially, some builders and

private property owners did complain about the mandatory restrictions in the ordinance.

Some developers found a loophole in the ordinance by using native trees to include the 75% native cover for the site. Then they could use any type of non-native for the ground cover. City officials amended the code to state that 75% native plants had to be used in three different categories: large trees, small trees and shrubs, and ground cover.

Contact Information

James Evans
Sanibel Environmental Planner
239-472-3700

Original Ordinance Language

<http://www.municode.com/resources/gateway.asp?pid=10937&sid=9>

Search Under: Chapter 122 Vegetation;
Article III. Standards

Water Conservation

Implemented: 28 November 2000
Gilbert, AZ

Population 2000: 109,697
Population 2005: 173,989



Purpose

To reduce water consumption in residential and nonresidential developments. This ordinance is mandatory for landscaping in all city or private developments.

Summary

The ordinance creates a city water conservation officer that oversees the implementation of water conservation practices. The ordinance prohibits covenants, conditions, and restrictions (CCRs) that require water-intensive landscaping or prohibit low water use landscaping.

Limitations that exist on water features such as pools, ponds, fountains and waterfalls are outlined in the ordinance. Water features must comply with the following requirements: 1) a permit to install a water feature must be obtained from the building and code compliance office; 2) water feature shall be designed with catch basins that maximize use of recycled water; 3) water feature must use water equipment that will minimize leakage; 4) water feature shall reuse filtered backwash; 5) water feature shall be operational only during normal business hours and shall be equipped with an automatic timer.

Key provisions for residential landscaping in new single family or multi-family developments include: 1) water-intensive landscaping in common areas shall not exceed 10%; 2) if reclaimed water is used then water-intensive landscaping may be increased to 50%; 3) amount of reclaimed water will be no more than 3 times the calculated sewage output from the development; 4) turf is prohibited in all rights-of-way; 5) only low water plants will be used in the remaining landscape area; 6) all irrigation systems must be efficient irrigation systems. Model homes in residential developments must follow the same provisions above except combined turf and water surfaces of water features shall not exceed 20% of the landscape.

Key provisions for commercial landscaping include: 1) water-intensive landscaping will not exceed the area calculated by adding 10,000 sq. ft. to 20% of the landscape area and if the lot is less than 10,000 sq. ft. water-intensive area shall be 10% or less; 2) hotels and motels follow the same rule except 20,000 sq. ft. replaces 10,000 sq. ft.; 3) developments that use reclaimed water may extend water-intensive landscaping to 50% of the total landscape area; 4) only low water use plants may be used in the remaining landscape area; 5) schools, parks, cemeteries, golf courses and common housing areas that exceed ten acres of water-intensive landscaping are exempt and shall be regulated by the state; and 6) all irrigation

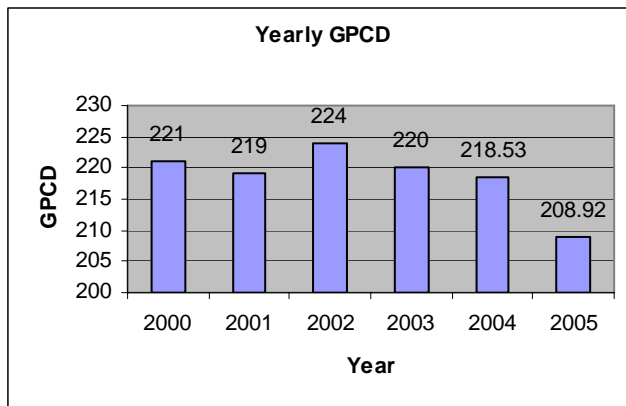
systems must be efficient irrigation systems. Non-residential developments that estimate an annual average of 9,000 gallons or more per day must submit a water use plan before being issued a building permit.

The ordinance originated because the city of Gilbert exceeded their allotted gallons per capita per day (GPCD). The per capita in the GPCD is per person in each residential unit. This amount is set based on the population, and when a city exceeds the set limit they must adopt certain reasonable stipulations that will reduce water consumption. The city of Gilbert put these stipulations into an ordinance.

Current Impact

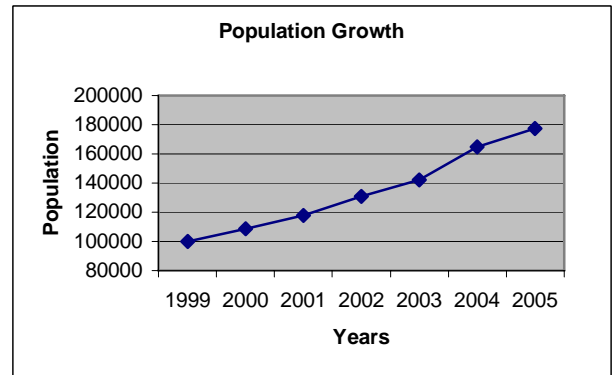
Although the annual GPCD has been reduced since the ordinance was implemented, officials cannot clearly indicate that the lower GPCD is the result of the ordinance. Currently the city does not have a consistent method for measuring the impact of the ordinance besides measuring the annual GPCD (see figures 1 & 2).

Figure 1*. Annual gallons (of water) used per capita per day in Gilbert County, AZ.



* This is an average 2% GPCD annual reduction for the years between 2002 and 2005.

Figure 2*. Population growth in Gilbert County, AZ.



* The average percent increase in population from 2002 to 2005 is 9% per year.

Pros and Cons

Initially the program had little effect on some developers who had projects approved before the ordinance was implemented. These projects were grandfathered into the old codes. One development that was grandfathered was a 3,000-acre area.

The original language created in 2000 was amended in 2006 to expand on the definitions provided in the ordinance and include more detail. For example, “active recreational area” was amended to include turf area and several new definitions were added such as cap water supply, reclaimed water and water-intensive landscaping. Within developments, the model homes are required to have all irrigation and landscape plans approved by the planning department before receiving a building permit. Currently the planning department is understaffed and the planning department does not approve the model home irrigation and landscape plans. Instead, the Water Conservation Department is tasked with inspecting and approving the model home irrigation and landscape plans. This

task is outside the Water Conservation Departments normal duties.

Originally, the language of this ordinance prohibited CCRs that restrict low water use landscaping or require water intensive landscaping. However, developers got around this by using amending documents to a CCR. The language has recently changed to include all amending documents to the CCRs in order to prevent some developers from creating subdocuments that prevented low water landscaping.

Contact Information

Karen Young
Water Conservation Coordinator
480-503-6892

Original Ordinance Language

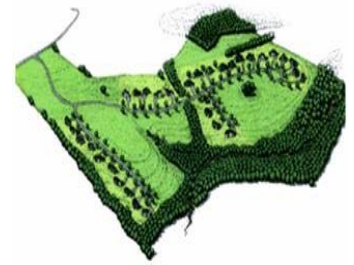
<http://www.municode.com/Resources/gateway.asp?pid=12036&sid=3>

Search Under: Chapter 66 Utilities Operations; Article VIII. Water Conservation

Open Space Subdivisions

Implemented: 20 March 2001
Brevard County, FL

Population 2001: 486,358
Population 2005: 531,250



Purpose

To preserve open space by offering incentives to developers.

Summary

The ordinance is voluntary and provides incentives for creating an open space subdivision. Developers will receive up to a 25 % increase in density of residential lots if they cluster developments and leave a certain percentage of open space. Developers do not have to apply for a special use permit, planned unit development or zone change in order to receive the increased density bonuses. The ordinance applies to single family zoning classifications.

Key provisions in the ordinance include: 1) allows single-family residential development with reduced lot sizes and widths and a density bonus of up to 25% above the maximum building lot-yield; 2) requires a minimum of 35% to 50 % of primary open space (preserved wetland & floodplain) and secondary open space (uplands), depending on the zoning of the property; 3) minimum residential lot sizes can range from 4000 square feet to one acre; 4) requires the creation and preservation of interconnected open space by allowing clustering of developments with narrower streets, smaller lot sizes and reduced impervious surfaces; 5) requires the use of a four-step site design

technique to preserve open space: the four steps include identifying land to be protected, locating individual house sites, connecting sites with streets and trails, and drawing lot lines; 6) requires subdivision plats that are designed with pedestrian and bicycle trail systems, preserved wetlands, permanent conservation easements, and long term open space management plans; (allow narrower streets as stated in #4) 7) requires standard review of a subdivision including the open space ordinance design and review criteria in order to receive density bonus. A three-step application process to comply with the ordinance includes a pre-application conference, preliminary plat review, and final plat review. County Planning and Zoning department reviews all plans that apply for open space subdivision incentives.

The ordinance originated when a development in a rural area wanted to have higher density zoning without having to rezone the area. Normal zoning permitted 2.5-acre lots but the developer wanted 1-acre lots. Environmental groups saw this as an opportunity to save land and preserve more open space. The ordinance was developed to create a voluntary program that allowed smaller lots in exchange for preserving open space.

Current Impact

Currently about 15 projects that employ this ordinance are under review and 3 have begun construction. One of the larger developments currently under construction is Hamlin Grove, a 142.6-acre site with 356 proposed lots. The proposed total amount of open space preserved is about 56 acres.

Pros and Cons

Developers did not oppose the ordinance because it offered incentives of density to preserve open space and it was voluntary. Opposition did come from the public who believed that 25% increase in density was too much and roads, sewage and schools could not handle the increased numbers in smaller areas.

Many developers who want to apply for density bonuses under this ordinance only see a 25% increase in density and do not understand the environmental factors that go into creating the open space and cluster developments. For example, some developers do not realize that the open space must be connected and others believe that golf courses could count as open space. Stormwater management facilities do count as potential open space if the facilities are designed to be functional wildlife habitat. The ordinance also requires that the open space be undivided to the maximum extent possible and if corridors are used they must be no smaller than 3 acres and have a 4:1 length to width ratio.

In some cases developers complained during the planning phase because the acreage allotted to build houses was smaller than developers were used to. These

misunderstandings caused longer design and planning phases.

This ordinance was on the books for several years before any developer took advantage of the benefits. Many developers did not know that this program exists or what open space or clustering involved. Often the planning department will get traditional project designs and ask the developer if they want to develop under the open space program.

The Open Space Subdivision Ordinance provides the ability to use different zoning lot sizes without having to go to the board and apply for rezoning. This saves time in a development and provides options for the developer to use alternative designs. However smaller lot sizes are typically only an advantage to those sites that have 1 acre or larger lot sizes. Some developments do not need higher density zoning if they already have smaller lot sizes.

Generally, the Open Space Subdivision Formula in the ordinance is confusing and not user friendly. The county made a supplement calculation sheet that is more user friendly and available to developers to calculate building lots permitted and the amount of open space required. Contact the Brevard County Planning and Zoning department for a copy of the new formula sheet.

Contact Information

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Brevard County Planning & Zoning Office
321-633-2070

Original Ordinance Language

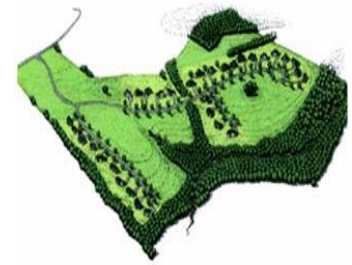
<http://www.municode.com/Resources/gateway.asp?pid=10473&sid=9>

Search Under: Chapter 62. Land
Development Regulations; Article VII.
Subdivisions and Plats; Division 5. Open
Space Subdivisions

Draft Crucial Habitat Ordinance

Implemented: Never Passed
Brevard County, FL

Population 2005: 531,250



Purpose

To preserve and restore the natural functions of critical habitat areas by specifying development standards that address environmental issues.

Summary

The ordinance applies to residential building permits, land divisions, subdivisions, planned unit developments and residential planned unit developments on properties 5 acres or more entirely or partially within the Crucial Habitat Overlay Zone. Design standards for this ordinance include: a) mandated 50% open space b) open space shall have no dimension less than 100 ft and can not exceed 3:1 length to width ratio c) restored areas can count as open space if they meet certain criteria d) permanent open space can include wetlands, stormwater facilities designed to preserve natural vegetation, canopy, trees, buffers and native vegetation e) landscaping shall be native vegetation to the greatest practical extent f) open space shall count towards canopy preservation requirements. Specific lot densities, lot size, width, depth, road dimensions, setbacks and buffer requirements are also laid out in the ordinance.

This ordinance was an original for the county and was not modeled after any other. The

idea came from the County's Comprehensive Plan (1999), which includes objectives for habitat preservation for wildlife and protecting endangered or threaten wildlife and plant communities. Many of the environmental policies in the County's Comprehensive Plan have not been implemented. This ordinance was designed to implement the objectives and policies of the comprehensive plan pertaining to threatened wildlife and threaten habitats.

The Crucial Habitat Overlay Zone (CHOZ) map was developed based on the map of natural communities developed by Brevard County's Natural Resources Management Office between 1999 and 2001.³² A GIS model combined existing natural scrub areas of minimum size with connecting corridors of minimum sizes to create the overlay zone. The specific measurement and a detailed explanation of mapping these zones is a public records file at the Natural Resources Management Office.

Current Impact

The ordinance was removed before it was presented in a public hearing.

³² Crucial Habitat Overlay Zone Mapping Model a Brevard County Natural Resources Office public records file.

Pros and Cons

One advantage that this ordinance has over the Brevard County Open Space Subdivision Ordinance (see pages 27-28) is that it offers more flexibility in clustering density of residential developments. The ordinance allows for lot reductions from 1 to 1/4 acre lots.

However, commercial developments do not have the same flexibility as residential areas and this ordinance could have economic impacts for commercial developments. Typically commercial developers need certain acreage for the building plan and have a more difficult time preserving open space.

The ordinance was meant to be mandatory and may have had more success in getting passed as a voluntary program like the Open Space Subdivision Ordinance (see pages 27-28).

The ordinance failed to be passed because a small minority threatened lawsuits against the

county over property rights. Political pressure prevented the ordinance from even being heard at the public hearing.

The drafters of the ordinance made an effort to get public input but were unsuccessful in involving the stakeholders. In some instances, groups completely avoided these input meetings. To get all stakeholders involved such as the property owners, County officials and environmentalists, one suggestion was to hire a consultant firm.

Contact Information

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Original Ordinance Language

Appendix B

Zero Effect Drainage Discharge

Implemented: August 1999
Lacey, WA

Population 1999: 23,956
Population 2005: 33,368



Purpose

To provide the opportunity for developers to use low impact development (LID) practices to deal with storm water runoff. This is not a mandatory program and no incentives exist to encourage developers. The ordinance makes it easier for developers to vary from current design regulations if they use low impact designs.

Current building regulations require certain building practices such as channeling storm water away from the building site into curb and gutters or specific street width size requirements. This ordinance allows the developer to deviate from these conventional design standards as long as the site incorporates low impact design practices.

Summary

All proposed development projects must offer reasonable assurance that near zero effective impervious surfaces will be achieved and maintained. Effective impervious surface is defined as traditional stormwater runoff techniques such as a driveway that channels water runoff into the street and gutters. Creating “zero” effective impervious surface is achieved by dispersing all stormwater runoff on site. Thus, traditional “curb and gutter” is not needed or reduced.

In accordance with this ordinance, there are certain criteria a development project must meet in order to qualify for deviations from conventional building standards. The deviations must promote one or more of the following: 1) Innovative site or housing design; 2) Increased on-site stormwater retention; 3) Retention of at least 60% of natural habitat; 4) Improved on-site water quality beyond regulations; 5) Retention/re-creation of pre-development or natural hydrologic conditions to maximum; and 6) Reduction of effective impervious surfaces to near zero. The criteria of the ordinance has also become known as the 60/0 standard, which means at least 60 % forest must remain after development and must establish zero effective impervious surface area.

The following practices are a few examples of low-impact construction: narrower roads without curb or gutter, rain garden roofs, pervious paving system, native forest as stormwater management systems and avoidance of impervious surface discharges into streams.

A committee from Lacey city staff has the authority to grant deviation from conventional design standards. The ordinance requires monitoring and evaluation of the innovative design in order to measure the performance and to ensure zero impact. Unfortunately, the city does not have a monitoring and evaluation system in place because they have not had any large development projects use this ordinance.

This ordinance originated as a result of the conference “Salmon in the City.” This conference brought attention to the impact of development on aquatic life and was sponsored by American Public Works Association.

Current Impact

Currently no developers have implemented enough of the low-impact strategies in the ordinance to achieve zero effective impervious surfaces. Some developers use only a few strategies from the ordinance such as pervious pavements. One project is completed with a parking lot that is pervious pavement. A second project still in the design phase will also include pervious pavement in their parking lot.

Pros and Cons

Designed to be flexible, the ordinance promotes performance standards instead of specific design standards. For example, the ordinance does not specifically outline how a developer will achieve near zero impervious surfaces. This is a voluntary ordinance that offers no additional incentives other than design flexibility.

Currently no benefits exist for the developers to use these practices, so they do not put in extra effort or time to include these alternate construction methods. The ordinance will require additional reviewing that can take more time before a developer can begin

building. The new construction methods will deviate from current building practices that builders are already using. They know that they can sell a development with or without the 60/0 standard.

One thing to consider before using this ordinance is that the applicability of low impact development practices is not universal. For example, permeable pavements must be built correctly and on the right type of soil in order to be effective. The soils in this area are highly variable and developers must have a better understanding of how to use different low impact practices.

The city is considering mandating the 60/0 standard in critical habitat areas. As of 2006, the city has not established particular critical habitat area. They still are struggling with the decision of whether or not the ordinance will be mandatory in other developing areas.

Contact Information

Doug Christensen
Water Reservoir Engineer
(360) 438-2686

Original Ordinance Language

http://www.ci.lacey.wa.us/lmc/lmc_main_page.html

Search Under: TITLE 14 Buildings and Construction; Chapter 14.31 Zero Effect Drainage Discharge

Storm Water Management Policy

Implemented: 2000
Issaquah, WA

Population 2000: 13,578
Population 2005: 17,059



Purpose

To provide guidelines for managing surface and stormwaters, to promote low impact development (LID) strategies that reduce impervious surface and stormwater runoff and to minimize water quality degradation. This ordinance is voluntary and offers the developers flexibility with current building standards if they incorporate low impact design practices.

Current building regulations require certain building practices such as channeling storm water away from the building site into curb and gutter systems or specific street width size requirements. This ordinance allows the developer to deviate from these design standards as long as the site incorporates low impact design practices.

Summary

The overall ordinance provides guidelines for stormwater management with a section allowing for deviations for low impact development. The ordinance authorizes deviations from design standard based on the following criteria:

1) Deviations will produce a compensating or comparable result in stormwater flow control and treatment; 2) deviations contribute to and are consistent with the goal of achieving low effective impervious surface area; 3) project

offers reasonable assurances that low impervious surfaces will be achieved and maintained; 4) deviations do not threaten public health or safety; 5) deviations are consistent with generally accepted engineering and design practices; 6) deviations promote one or more of the following: a) innovative site or housing design; b) increased on-site stormwater retention using native vegetation; c) retention of at least 60 percent of natural vegetation conditions over the site; d) improved on-site water quality beyond that required; e) retention or re-creation of pre-development and/or natural hydrologic conditions; f) reduction of effective impervious surfaces; 7) deviations do not allow density greater than current city regulations; 8) deviations do not present significantly greater maintenance requirements at facilities 9) submission of covenants, conditions and restrictions, which outline all necessary native growth protection easements or open space requirements These native growth protection easements are open space areas that retain natural vegetation, impervious surface restrictions and such other critical features.

Accepted low impact development practices include narrow roads without curb or gutter, no storm water drainage collection (rain gutters and downs spouts), rain garden roofs, pervious pavements, and retention of open space (native forests).

The ordinance requires an application process for deviation to standards and the Director

may require a proposed monitoring and evaluation feature to measure the performance of specific elements addressed in the deviations from standards.

This ordinance was modeled after the City of Lacey Zero Effect Drainage Discharge ordinance (see pages 31-32). They followed the City of Lacey's using similar code language for the section on deviation for low impact development.

Current Impact

Currently no developers have taken advantage of the ordinance.

Pros and Cons

The ordinance is voluntary and provides developers the opportunity to use low impact development practices. The ordinance encourages such practices by allowing for deviation from the current building standards.

Developers have not been inclined to follow these practices because it delays the permitting process. Developers also know that they can sell regardless of using low impact development strategies. Few developers are experienced building low impact developments and do not wish to take the risk of changing their current design standards.

Allowable deviations to the standard are not clear within the ordinance. City officials are trying to make a clear set of alternatives to the current design standards instead of allowing deviations to the standard. One problem that officials have run into when designing a low impact development ordinance, is that the ordinance infringes on zoning regulations. For example, zoning already has a set percentage of area that can be covered by impervious surface. In order to get a comprehensive ordinance, the officials in different departments must work together to provide clear standards or alternatives to the standards.

Contact Information

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kerry@ci.issaquah.wa.us

Original Ordinance Language

[http://search.mrsc.org/nxt/gateway.dll/isqhmc?f=templates&fn=isqhpqage.htm\\$vid=munico des:Issaquah](http://search.mrsc.org/nxt/gateway.dll/isqhmc?f=templates&fn=isqhpqage.htm$vid=munico des:Issaquah)

Search Under: Title 13 Public Services;
Chapter 13.28 Stormwater Management
Policy

Zero Effect Drainage Discharge

Implemented: 2000
Tumwater, WA

Population 2000: 12,773
Population 2005: 13,331



Purpose

To provide the opportunity for developers to use low impact development (LID) practices to deal with storm water runoff. The intent is to reduce additional stormwater flow to streams and wetlands through alternative design.

Current building regulations require certain building practices such as channeling water away from the building or specific road size requirements. As an incentive, this ordinance allows the developer to deviate from these design standards as long as the site incorporates low impact design practices.

Summary

Effective impervious surface is defined as traditional stormwater runoff techniques such as a driveway that channels water runoff into the street and gutters. Creating “zero” effective impervious surface is achieved by dispersing all stormwater runoff on site. Thus, traditional “curb and gutter” is not needed or reduced. According to the ordinance a Development Review Committee may approve deviations from the Tumwater development guide manual based on the following criteria: 1) deviation must be consistent with the purpose of the ordinance; 2) project must offer reasonable assurance that near zero effect impervious surface will be achieved and maintained; 3) deviations do not threaten public health or safety; 4)

deviations are consistent with generally accepted engineering design; 5) deviations must promote one or more of the following: a) innovative site or housing design furthering the purposes of this program b) increased on-site stormwater retention using native vegetation c) retention of at least 65% of native forest; and 6) deviations do not allow for density greater or lesser than what is already allowed under city regulations.

Specific project requirements are laid out in the ordinance. All projects must apply to the city in order to receive approval for any deviations. The applications will also include a proposed monitoring and evaluation process designed to measure the performance of specific deviations included in the project.

Accepted low impact development practices include narrow roads without curb or gutter, no stormwater drainage collection (rain gutters and downs spouts), rain garden roofs, pervious pavements, and retention of open space (native forests).

The ordinance originated after a city council member began conversing with engineer (Tom Holz) about applications of low impact development. The language of this ordinance was drafted based on City of Lacey’s Zero Effect Drainage Discharge Ordinance (see pages 31-32).

Current Impact

Currently no developers have taken advantage of this ordinance. A few developments have used certain low impact development strategies but no one has developed based on the regulations of this ordinance.

Pros and Cons

The ordinance is a voluntary program that allows builders to deviate from current building standards and did not receive any public opposition to its establishment. City officials are working on mandating the ordinance for critical areas, especially near watersheds.

One challenge came from the local fire department, which opposed the ordinance because of the potential increased fire hazard. Increased vegetation around the homes would increase the risk of fires and the narrow streets would limit the fire departments reaction time in combating the fire. In order to compensate for these factors, the buildings had to be designed to higher fire standards.

This ordinance is a good start to encouraging low impact development and needs to be expanded in order to become more effective within the city. The ordinance will need to

be redesigned with the help of the building department in order to create a low impact development ordinance that does not conflict with any previous ordinances. For example, current building ordinances require certain dimensions of roads and use of curb and gutters. Low impact design practices could narrow the streets and remove curb and gutters. By including the building department in the creation of a low impact development ordinance, variation to current building standards will meet less opposition from the regulatory department.

Contact Information

Michael Matlock
City of Tumwater
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Tom Holz
SCA Engineer
(360) 866-1791
tomholz@comcast.net

Original Ordinance Language

http://nt5.scbbs.com/cgi-bin/om_isapi.dll?clientID=336493&headingswithhits=on&hitsperheading=on&infobase=tumwtr42.nfo&jump=13.22&softpage=PL_frame#JUMPDEST_13.22

Targeted Jobs Incentive Fund Program

Implemented: 25 July 2000
Amended: 3 May 2005
Miami-Dade County, FL

Population 2000: 2,260,317
Population 2005: 2,376,014

Purpose

To attract businesses to Miami-Dade County through cash incentives. Additional bonus incentives were added to attract solar energy industries and businesses operating in the construction of green buildings. These amendments exist to facilitate the County's goal of remaining competitive in economic growth and creating a positive impact on the environment by promoting environmentally sensitive design and construction.

Summary

This program is only eligible to companies from outside the county undertaking relocation to Miami-Dade and to county companies undertaking business expansion. To promote energy-efficient construction, this ordinance provides up to 1) \$1,000 bonus if the company operates out of a certified "green building" 2) \$500 bonus if the company operates out of a building that incorporates alternate energy systems 3) \$1,500 if the company is a Solar Thermal and Photovoltaic Manufacturing, Installation and Repair business. The bonuses are paid per new job created, which can add up to \$3,000 per new job for eligible companies.

Either the Florida Green Building Coalition or U.S. Green Building Council must certify the "green buildings" with the Leadership in

Energy and Environmental Design (LEED) rating system. Standards for development certification can be found at the following sites:

- <http://floridagreenbuilding.org/standard/Default.htm>
- <http://www.usgbc.org/>

A company must apply each year to receive this award and can apply up to three times. The County Board must approve all applicants prior to receiving any award.

Current Impact

Currently no "green" buildings exist to take advantage of the program's incentives.

Pros and Cons

This ordinance goes beyond simply rewarding the construction of green building by awarding the companies who operate in the building. The county hopes the ordinance will stimulate the market for green building by encouraging businesses to increase demand for this construction in order to receive additional cash bonuses. Rewards from this ordinance are strictly for companies and do not reward the developer.

Since no certified “green buildings” exist, no company can take advantage of the additional monetary awards. This county is in the beginning stages of building “green.” Few designers and architects are even familiar with green building techniques. Also, developers are hesitant to take on additional front-end costs of certifying and building energy efficient buildings.

Contact Information

Doug Yoder, Asst. Director
Miami-Dade Environmental Resources Mgmt

Dept.
305-372-6766
miamidade.gov

Original Ordinance Language

<http://www.municode.com/Resources/gateway.asp?pid=10620&sid=9>

Search Under: Chapter 2 Administration;
Article LXXXVI. Targeted Jobs Incentive
Fund Program

Integrated Pest Management Program

Implemented: October 1996
San Francisco, CA

Population 2000: 776,733
Population 2005: 739,426



Purpose

To eliminate or reduce pesticide applications on city property. This ordinance is mandatory for all city owned property and does not apply to privately owned property.

Summary

The ordinance created an Integrated Pest Management Policy to include:

(1) Monitor each pest within an area and identify decisions and practices that could affect pest populations; (2) Identify in an implementation plan based on how much biological, aesthetic or economic damage the site can tolerate; (3) Consider a range of potential treatments for the pest problem. Employ non-pesticide management tactics first: a) Determine the most effective treatment time, b) Design and construct indoor and outdoor areas to reduce and eliminate pest habitats, c) Modify management practices, including watering, mulching, waste management, and food storage, d) Modify areas to reduce pest food and living space, e) Use physical controls such as hand-weeding, traps and barriers, f) Use biological controls (introducing or enhancing pests' natural enemies); (4) Conduct ongoing educational programs; and (5) Monitor treatment to evaluate effectiveness.

The ordinance also bans the use of pesticides that fall into the Toxicity Category I or II unless they are on the approved pesticide list or exemption is granted. The Toxicity Categories were designed by the Environmental Protection Agency. The Integrated Pest Management Coordinator and other city department officials update a list of Reduced-risk pesticides. This list can be found at the following website:
http://www.sfenvironment.com/aboutus/innovative/ipm/pest_list06/index.htm

One-year exemptions may be granted for using banned pesticides based on three different categories:

- ***Trial exemptions*** are granted for the purpose of testing products that show promise as less hazardous alternatives.
- ***Regular exemptions*** are considered for managing rare or unforeseen pest problems that cannot be adequately controlled using products on the recommended list.
- ***Emergency exemptions*** are permitted under the ordinance when a “pest outbreak poses an immediate threat to public health or significant economic damage will result from failure to use a pesticide.”

The city must post signs before any pesticide application in a public area. The city departments will also keep a record of pest

management activities that will be summarized in a report.

The ordinance originated as the result of a public campaign against using dangerous chemicals in public areas. Older, more dangerous pesticides were discovered in a public park shed, which prompted activist groups to lead a campaign against using hazardous chemical pesticides. City officials proceeded to draft an ordinance immediately after these events. The first draft began as a complete ban on pesticides but this did not last for two reasons. First, the list included chemicals that were used as cleaners, and second, it was recognized that some form of pesticide would be needed for insect management in particular cases.

Current Impact

Figure 1.
Since the beginning of the IPM Program in 1996:

55% reduction (lbs. of product)	Total pesticide use 1996 through 2005, excluding rodenticides
72% reduction (gals. of product)	
87% reduction (lbs. of active ingr.)	Glyphosate (Roundup® active ingredient) use 1996 through 2005
66% reduction (lbs. of product)	Total herbicide use 1996 through 2005
88% reduction (gals. of product)	

Figure 2.

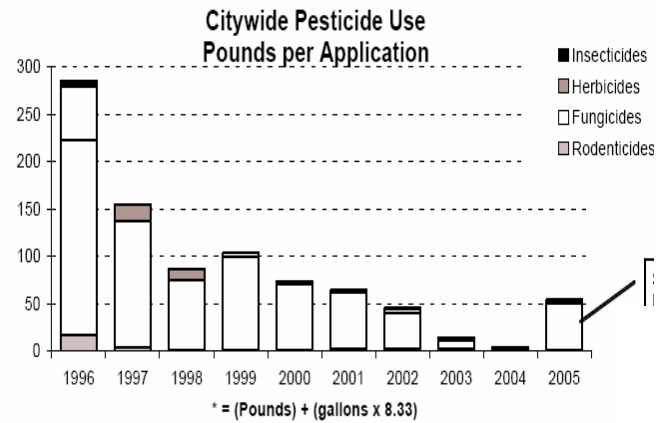
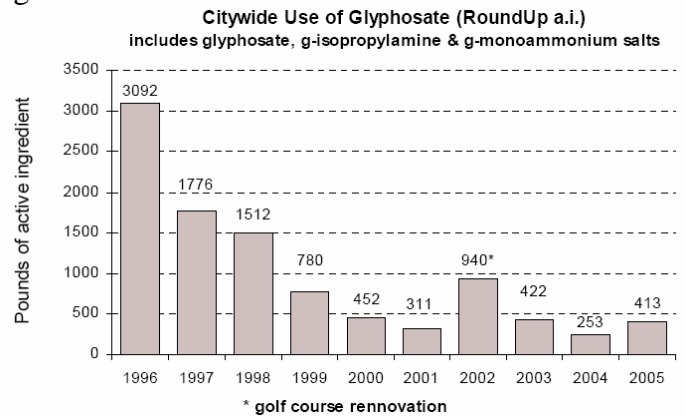


Figure 3.



All data and graphs were referenced from *The San Francisco Integrated Pest Management Program Combine Annual Report 2004-2005*. This document can be found at the following website:

<http://www.sfenvironment.com/aboutus/innovative/ipm/>
Search Under - IMP Annual Report 2004-2005

Pros and Cons

The ordinance implements a citywide policy, which includes other City departments besides the Department of the Environment. This inclusion of other departments has led to the wide spread education of city officials.

The ordinance falls short in a few areas. The ordinance did not have language to establish an Integrated Pest Management Coordinator position. However, this position was subsequently established by the city in order to become the focal point for the entire program.

The ordinance does not include a list of approved pesticides, which would make it easier for personnel. However, approved pesticides can be found which can be found on the web site (<http://www.sfenvironment.com/aboutus/innovative/ipm>).

Contact Information

Chris Geiger
SF Environment Staff
Household & Commercial Toxics Reduction
415-355-3700

Original Ordinance Language

http://www.amlegal.com/nxt/gateway.dll?f=templates&fn=default.htm&vid=amlegal:sf_environment

Search Under: Chapter 3 Integrated Pest Management Program

Additional References

Details and other information is located at the following website:
www.sfenvironment.com

DISCUSSION

MANDATORY ORDINANCES

Mandatory ordinances are regulations or standards that must be followed. They range from mandatory for only the public sector, such as county or city owned facilities, to mandatory for only private developments, such as residential or commercial buildings.

In this review, one example of a mandatory ordinance that affects private development is the Frisco, TX Green Building Program. This program mandates a minimum set of green building standards that all residential developers must follow. Other mandatory private development ordinances include the Boulder, CO Green Points Program; Gilbert, AZ Water Conservation; Pasco County Landscaping and Irrigation; Sarasota County, FL Water Efficient Landscaping Regulations; Sanibel, FL Vegetation Standard and Brevard County, FL Crucial Habitat Ordinance. An example of a mandatory ordinance for the public sector is the San Francisco Resource Efficiency Requirements and Green Building Standards. This ordinance applies only to city owned facilities and mandates green building certification of new city buildings. Another mandatory ordinance for publicly owned facilities is the San Francisco, CA Integrated Pest Management Program.

Because mandatory ordinances are regulatory by nature, they are the most successful in terms of measurable impacts. Frisco, TX has a very successful program with over seven thousand homes built under their minimum standards. However, barriers to applying a mandatory ordinance include opposition from the general public as well as the private sector. For example, the Brevard County, FL Crucial Habitat Ordinance received enough opposition from private landowners that the ordinance did not make it to a public hearing and was not passed. In addition, ordinance language may contain unforeseen loopholes. For example, in the Sanibel Vegetation Standard Ordinance, developers followed the 75% native cover for trees only and used non-native ground cover until the ordinance was amended to specify use of 75% native for each category: trees, shrubs, and ground cover. Thus, if a local government is planning to implement a mandatory ordinance, they should also plan to amend the language after an initial application of the ordinance in order to remove any loopholes that compromise the effectiveness of the ordinance.

Also, in order to promote a successful mandatory ordinance, city or county officials must inspect and enforce ordinance standards. For example, Pasco County is short in manpower to properly inspect every irrigation system as it adheres to the Landscaping and Irrigation Ordinance. This shortcoming is one reason the county has difficulty enforcing every aspect of the code. City and county governments should establish a monitoring system to ensure compliance with these mandatory ordinances.

VOLUNTARY ORDINANCES

Voluntary ordinances do not have to be obeyed but are encouraged through different types of incentives. Incentives can range from permission to deviate from old code standards to permit fee reductions and fast tracking of the permit process.

An example of a voluntary ordinance with weak incentives is the Tumwater, WA Zero Effect Drainage Discharge, which allows developers to deviate from the current codes in order to implement low impact development practices. Other weak incentive voluntary ordinances include The Lacy, WA Zero Effect Drainage Discharge and Issaquah Storm water Management Policy. In Lacy, Issaquah, and Tumwater, few developers took advantage of these ordinances because they did not see this type of ordinance as a strong enough incentive to deviate from traditional construction practices. Stronger incentives speak to fast tracking the permit process, density bonuses, and saving money (e.g., permit fee reductions). These are all economic incentives and are used to encourage developers to try different approaches to development. One example of an economic incentive based program is the Gainesville, FL Green Building Program. This program offers discounted permits and fast tracking through the permit process for those buildings that incorporate green building standards. The Sarasota County, FL Green Building Ordinance was modeled after Gainesville's ordinance and has the same incentives. The Open Space Subdivision ordinance in Brevard County, FL is one example of a density bonus incentive. Developers can receive up to 25% increase in the density of residential lots if they leave a certain percentage of the development as open space. The Arlington, VA Green Building Program offers increased building density incentives for the floor area and height if they commit to following LEED certification standards or if they contribute to a Green Building Fund. The Miami Dade County, FL Targeted Jobs Incentive Fund encourages companies to operate in green buildings by offering monetary bonuses for businesses doing so.

In general, voluntary ordinances that offer economic incentives are less successful than mandatory ordinances. The Gainesville, FL Green Building Program (a voluntary ordinance) is only one year younger than the Frisco, TX program (a mandatory ordinance) but has just 28 buildings permitted under this ordinance while Frisco, TX has several thousand homes built. Gainesville still does not have a majority of builders adopting these new building practices because they do not want to deviate from their current way of doing business. Many builders see certification as an additional obstacle to getting through the paperwork to develop an area. Voluntary ordinances with no substantial incentives are the least productive out of all ordinances. For example, the three ordinances from Washington State are not regulatory and only offer deviations to existing codes as an incentive. To date, no developer has implemented the complete array of low impact development tools offered in these ordinances.

The difficulty with incentive based voluntary ordinances originates from the fact that many developers are unaware that the ordinance even exists. Even if the developer is aware of the ordinance, he/she usually chooses not to participate because it is easier to maintain the status quo than it is to modify their development practices. The incentives offered must be enough to convince the developer to deviate from their normal practices and try different techniques in developing.³³

STAKEHOLDERS, MARKETING, AND EDUCATION

Including stakeholder participation from beginning to end, marketing an ordinance, and offering public education about new standards within an ordinance are essential for any ordinance, either

³³ Randall Arendt, Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks (Washington D.C.: Island Press 1996) 19.

mandatory or voluntary, to succeed. Proper education and marketing of a new ordinance is necessary to prevent confusion and help promote acceptance of the new code.³⁴ For example, San Francisco's green building ordinance includes a regularly updated website that provides progress on the city's green building achievements and additional references for developers who have questions about building to the ordinance standards.

One important component of drafting a successful ordinance is including developers, builders, and other key stakeholders throughout the process. Significant input from developers and builders was gathered in the drafting of the Gainesville Green Building Ordinance. These stakeholders help design the type of incentives used in the ordinance. Also, the Frisco, TX Green Building Ordinance included stakeholder input in its drafting. This input resulted in an ordinance that set a minimum standard and offered flexibility in incorporating some of the design specifications. By incorporating input from stakeholders, the ordinances were accepted with less resistance. In some cases, input from stakeholders was desired but because of unwilling participants or time constraints, they were not included in the initial drafting.

When developing an ordinance that will affect the community, including stakeholders is important and can allow for a smoother acceptance of new design practices and techniques. Stakeholders could include developers, landscape architects, homeowners associations, environmental groups, and citizens. With the Crucial Habitat Ordinance from Brevard County, stakeholder input was solicited but few stakeholders took interest in helping draft the new code and the ordinance was not implemented. The Pasco County's Landscaping and Irrigation Ordinance also tried unsuccessfully to incorporate stakeholder input and was met with resistance when implementing the new code. Pasco County officials accepted input and are currently (as of 2006) redesigning the code based on input from builders and landscapers. Getting input and buy-in early from local constituents will prevent some problems of an ordinance getting passed.

Moreover, public understanding and acceptance of an ordinance will help promote the implementation of sustainable building practices. Actively marketing the incentives of the ordinance and making both the design/build community and the public aware of local government efforts to encourage sustainable development can help promote the new ordinance. Both the Gainesville and Sarasota County Green Building Ordinance include publicity, such as press releases and building signs onsite, for those developers who build under the voluntary standards.

Many of the programs that offer training opportunities and/or educational documents of new building methods have been successful. For example, Sarasota County offers extended education programs for developers and builders to teach them how to comply under the Green Building and Water-efficient Landscaping ordinances. By helping developers understand and learn how to design and build under a new ordinance, local governments can aide in the transition from previously unsustainable development to new techniques that promote sustainable development.

³⁴ Arendt 20

CONCLUSION & RECOMMENDATIONS

City and county governments can promote sustainable development within their boundaries by including specific practices and design standards in their codes. These new ordinances can originate from a group of concerned citizens (San Francisco's Integrated Pest Management program began after a citizen group petitioned), local governments officials (Gainesville and Sarasota County Green Building Ordinances originated from local government officials), or encouragement from district or state management offices (Sarasota County and Pasco County's Landscape Ordinance was encouraged by each county's water management district).

Communities can begin designing their own codes by looking at what other towns and cities have implemented. In many cases, ordinances are adopted with similar language from one community to the next. For example, Sarasota County used most of the same language in their Green Building Program as used in Gainesville's Green Building Program ordinance. The ordinances described in this manuscript could be used as a starting point to draft similar ordinances in other counties. One can search for other and perhaps more recent examples online. A good place to search for ordinances that address sustainability is at:

<https://www.usgbc.org/ShowFile.aspx?DocumentID=691>. This document contains information about LEED initiatives included in state and local government ordinances and programs.

KEY RECOMMENDATIONS

Based on our study, we recommend the following to create successful, sustainable development ordinances. Introduce a new voluntary ordinance using stakeholder input. Voluntary ordinances should include some significant economic incentives, such as fast tracking permits, permit fee reductions, and density bonuses. After substantial marketing and education of the new standards or building practices, a voluntary ordinance can evolve into a mandatory ordinance. Having it out there as a voluntary ordinance will give the opportunity for developers to try out the ordinance and help set up a culture of acceptance for these new design/build practices. Through the voluntary step, opportunities exist to work out kinks in the ordinance. Once a particular practice becomes mainstream, the next step is to make the practice mandatory. For mandatory ordinances, a baseline standard could be used for all developments to follow; however, include additional incentives where developers can go above and beyond the baseline standard. Additional incentive-based practices can become more accepted and eventually become mandatory. This iterative process may seem tedious, but trying out a new practice as a voluntary ordinance with economic incentives will help ensure initial buy-in and acceptance from the public. Overall, good marketing plans and education initiatives will help increase public awareness about the new ordinance and ensure compliance with the ordinance.