

Policies that Address Sustainable Site Development¹

Marisa J. Romero and Mark E. Hostetler²

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

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

Increasing populations and developments also consume land through urban sprawl. Urban sprawl is the dispersal of single developments outside the central urban population. This low-density land use increases consumption of natural resources by increasing our dependence on transportation and decreases natural area lands (Vermont Forum on Sprawl n.d.).

At more limited scales, such as residential communities, sustainable designs include clustering homes to preserve open space (Smart Communities Network n.d.). In general, developers use open space as an amenity and attraction that differentiates their community from others (Casey 2005). Site development, in terms of conserving open space, helps maintain natural wildlife habitats and prevents the complete destruction of natural habitats (Smart Communities Network n.d.).

Often, open space is merely left over from setbacks and buffer areas. However, with careful planning, open space can become an amenity and a conservation area (Hall and Porterfield 2001, 19). Some municipalities are combining conservative with recreational amenities by retaining unique ecosystems and providing the opportunities for recreation and common areas (Hall and Porterfield 2001, 30). Traditional developments extend pavement and

increase runoff into centralized areas. Clustering buildings on developments increases pervious surface and on-site water filtration (Benfield, Terris, and Voranger 2001 146).

The site development ordinances below include policies such as Open Space Subdivisions in Brevard County, FL; Crucial Habitat Ordinance in Brevard County, FL; Zero Effect Drainage Discharge in Lacey, WA; Zero Effect Drainage Discharge in Tumwater, WA; and Stormwater Management Policy in Issaquah, WA.

I. Open Space Subdivisions

Implemented: 20 March 2001, Brevard County, FL

Population 2001: 486,358

Population 2005: 531,250
(US Census Bureau)

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 and 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); and (7) requires standard review of a subdivision, including the open space ordinance design and review of 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. The 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

No developers opposed 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 existed or what open space or clustering involved. Often the planning department receives traditional project designs and asks 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 is 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

Brevard County Planning & Zoning Office, 321-633-2070

Original Ordinance Language

<https://www.codepublishing.com/WA/Tumwater/html/Tumwater13/Tumwater1322.html>

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

II. Draft Crucial Habitat Ordinance

Implemented: Never Passed, Brevard County, FL

Population 2005: 531,250
(US Census Bureau)

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 cannot 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; and (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 threatened 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 threatened 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. 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.

Pros and Cons

One advantage that this ordinance has over the Brevard County Open Space Subdivision Ordinance 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.

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

Virginia Barker, Natural Resource Management Office,
(321) 633-2016

Original Ordinance Language

Contact Virginia Barker.

III. Zero Effect Drainage Discharge

Implemented: August 1999, Lacey, WA

Population 1999: 23,956

Population 2005: 33,368
(US Census Bureau)

Purpose

To provide the opportunity for developers to use low-impact development (LID) practices to deal with stormwater 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 stormwater 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, the traditional "curb and gutter" is reduced or not needed.

In accordance with this ordinance, there are certain criteria that 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 the 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 had not established particular critical habitat areas. 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

<https://lacey.municipal.codes>

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

IV. Zero Effect Drainage Discharge

Implemented: 2000, Tumwater, WA

Population 2000: 12,773

Population 2005: 13,331
(US Census Bureau)

Purpose

To provide the opportunity for developers to use low-impact development (LID) practices to deal with stormwater 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

An 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 reduced or not needed. 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, and (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 downspouts), rain garden roofs, pervious pavements, and retention of open space (native forests).

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

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 a site 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 it 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 potentially 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 gutter systems. 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, (360) 754-4210

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

V. Stormwater Management Policy

Implemented: 2000, Issaquah, WA

Population 2000: 13,578

Population 2005: 17,059
(US Census Bureau)

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 stormwater 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 recreation 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; and (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 systems, no stormwater drainage collection (rain gutters and downspouts), 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, 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 they delay the permitting process. Developers also know that they can sell regardless of using low-impact development strategies. Few developers are experienced with 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

Kerry Ritland, City of Issaquah, (425) 837-3410,
kerry@ci.issaquah.wa.us

Original Ordinance Language

<https://www.codepublishing.com/WA/Issaquah/> [20 December 2022]

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



Figure 1. Pervious pavers are designed to promote vehicular and pedestrian traffic in land areas that would otherwise be unusable due to stormwater retention. Impervious pavement systems, such as asphalt, promote heat and stormwater runoff. Pervious pavers provide a natural way to let water percolate to the ground, while still offering a durable and aesthetically pleasing pavement surface.

Credit: Hanson Paver Products, Inc., *Environmental Pavers* (2006)

References

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

- Casey, Patricia. 2005. Green Building Program Offers Solutions for Development. *The SNRE Source* Vol. 1, Issue 1:5–6. (No longer available online.)
- Crucial Habitat Overlay Zone Mapping Model. Brevard County Natural Resources Office public records.
- Hall, K., and G. Porterfield. 2001. *Community by Design: New Urbanism for Suburbs and Small Communities*. New York: McGraw-Hill.
- Smart Communities Network. Land Use Planning Introduction. n.d. (No longer available online.)
- US Census Bureau. Population Finder. <https://www.census.gov>
- Vermont Forum on Sprawl. What is Sprawl? n.d. (No longer available online.)

¹ This document is CIR1520, one of a series of the Department of Wildlife Ecology and Conservation, UF/IFAS Extension. Original publication date January 2007. Reviewed February 2021. Revised February 2025. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

² Marisa J. Romero, former graduate assistant, Department of Wildlife Ecology and Conservation, Gainesville, FL.; Mark E. Hostetler, professor and Extension specialist, Department of Wildlife Ecology and Conservation; UF/IFAS Extension, Gainesville, FL 32611.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. For more information on obtaining other UF/IFAS Extension publications, contact your county's UF/IFAS Extension office. U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida, IFAS, Florida A & M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Andra Johnson, dean for UF/IFAS Extension.