

# LID ELEMENT #4: RESTRICT MAXIMUM IMPERVIOUS SURFACE COVERAGE

## OBJECTIVE

Minimize the amount of impervious surfaces in developments in order to maximize infiltration.

## CONSIDERATIONS

For this element paper, it is assumed that impervious area reductions can be achieved by imposing limits on impervious surface coverage for a project site. This paper does not address methods of creating pervious hardscapes that would have otherwise been designed as impervious – such as parking lots, driveways, patios, and other hard surface features. Low Impact Development methods in permeable pavements, preservation of native vegetation, and utilizing landscaping areas for stormwater management are addressed in separate elements.

## RELATED ELEMENTS

Element 5 Reduce Impervious Surface Associated with On-Site Parking  
Element 14 Permeable Paving

## TRADITIONAL SITE DEVELOPMENT TECHNIQUES

Market forces, the Growth Management Act, and associated requirements for urban densities have resulted in residential lots becoming increasingly small. Typical new single family lots in Olympia range from 4,000-7,000 square feet. The impervious cover on a single family lot is also increased by patios, driveways, and a myriad of other uses. As a result of trends toward rising motor vehicle ownership, small lots and large homes, the impervious coverage of a typical new residential lot in Olympia is more than half the lot area.

Commercial lots are also developed with extensive impervious surfaces. With the rising cost of land, building square footages are often maximized. These buildings also need sufficient parking. The result is most commercial developments construct the maximum possible allowed impervious area, often 80-90% of the site.

Similarly, industrial developments typically have very little pervious surface other than minimum required landscape areas. It is common for industrial developments to have large buildings and parking lots that need to meet specific functional goals or circulation requirements for heavy equipment or deliveries.

“The intent of revisions shall be to make LID the preferred and commonly-used approach to site development. The revisions shall be designed to minimize impervious surfaces, native vegetation loss, and stormwater runoff in all types of development situations.”

Western Washington Phase  
II Municipal Stormwater  
Permit August 2013

## CODES AND STANDARDS REVIEWED

Olympia Municipal Code (OMC) Section 18.04.080 and Table 4.04 (residential districts development standards)

OMC 18.05.080 and Table 5.04 (commercial development standards for village zonings)

OMC 18.06.100 and Table 6.02 (commercial development standards)

OMC 18.08.100 and Table 8.02 (industrial development standards)

## BENEFITS OF RESTRICTING MAXIMUM IMPERVIOUS SURFACE COVERAGE

Development standards with high impervious surface allowances result in large volumes of stormwater runoff. Restricting impervious surface allowances helps to reduce runoff and can result in more landscape areas or pervious areas for infiltration and retention of stormwater. A key component of low impact design is to mimic the pre-disturbance hydrologic processes of infiltration, filtration, and storage. None of these processes occur on impervious areas. By limiting impervious surfaces, more area is provided for natural hydrologic processes. Restricting impervious area also promotes other desired outcomes such as increasing the use of permeable paving, retention of native vegetation, and minimizing site disturbance. For these reasons, limiting impervious surfaces is one of the three main goals of low impact development.

## OLYMPIA CODE ANALYSIS

Impervious area coverage is addressed in the OMC within the design standards for the zoning district types: residential, commercial, and industrial. Each zoning district has limits on impervious coverage addressed in design standard tables. The current limits of City zoning are the result of many years of balancing competing interests. Some limits are based on traditional health-based “light and air” (access to sun and air by not allowing buildings to be too close or limiting building heights) provisions of zoning.

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*The current limits impervious area coverage in City codes are the result of many years of gradual adjustments.*

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## HURDLES TO IMPLEMENTING LID

Increased restrictions on impervious area could present the following challenges:

**Increased Limits on Impervious Surfaces May Conflict with Other Goals** - Numerous state, regional and local planning policies discourage sprawl by guiding development to urban areas. The urban core is intended to be densely developed, which is compatible with generous impervious area coverage limits. Land at the urban core is more expensive than land in outlying areas because of urban amenities, infrastructure and limited supply. The higher cost for acquisition is offset because development can be more densely developed. Property values and sales prices are also higher nearer the urban core. If the ability to be more densely developed is

removed, development may shift to areas where land is less expensive or where higher impervious surface coverage is allowed. Some development may no longer be feasible within restricted areas. The City has an obligation through the Growth Management Act to accept growth and discourage sprawl.

In some cases, limits on allowed lot coverages could be offset by increasing allowed height of buildings. However, multistory building form is not compatible with all end user needs. Some types of development have traditionally been located in a single story building. Therefore, this offset would only be beneficial to limited building types.

**Difficulty Meeting Unit/Lot Count Requirements (Residential Projects)** – Reducing the maximum allowed impervious coverages in the current code could create both known and unknown consequences. A large reduction in the impervious allowances for multi-family residential projects could make density requirements of the underlying zoning difficult to achieve. Careful consideration of potential impacts to other areas of the code is needed when reducing allowed impervious area coverage.

Residential zoning districts typically have a required minimum and maximum lot or unit count. As an example, Olympia’s single family R 4-8 zoning requires that a minimum of 5 lots and a maximum of 7 lots per acre be developed. Because “undevelopable” areas are not included, for a 20 acre parcel, this can equate to a required lot count of less than 80 lots to almost 100. This zoning currently has allowed impervious area coverages of 55-70% depending on housing unit type (single family detached, townhomes, etc.). With the roads, sidewalks, and other impervious infrastructure associated with subdivision development, the current limitations on allowed impervious areas for these districts already make achieving low impact development difficult.



*Urban Residential and Commercial developments typically have extensive impervious surfaces.*

Multifamily projects could solve density problems by adding stories to buildings. However, proposed increases to height limits, as stated previously, have not been easy to accomplish. Neighborhood residents often object to loss of light and privacy, view blockage, and increases in noise. Taller buildings are also generally more expensive to build due to special building materials needed to support taller structures as well as requirements for elevators and other building code imposed safety features.

**Enforcement** – Once sites go through the initial permitting and construction process, maintenance activities or minor improvements are often done outside of City review. A single family owner can create a concrete patio for enjoyment of their backyard without City approval. Areas paved with pervious materials may be covered with impervious surfaces during normal maintenance without City knowledge. Therefore, exceeding the impervious limits in the codes could happen on commercial and residential projects with no City oversight, especially in the years following final occupancy. In order to prevent this, additional permitting, education and/or inspections would be needed by the City to ensure that impervious area limits are not exceeded throughout the life of a development project.

**Conversion to Permeable Hardscapes** – A method of reducing effective impervious surface on a site is the replacement of conventional concrete or pavements with a permeable paving solution such as porous concrete, permeable asphalt, or interlocking permeable paving stones. These LID methods are acceptable on-site measures for reducing impervious areas and promote retention and infiltration of stormwater onsite, but they also come with increased installation and construction costs. Considerable attention to long term maintenance is necessary, and the life cycle of these systems is generally not as long as conventional, non-permeable pavements. Because these permeable pavement solutions are not feasible for every site, they are not examined here as a method for reducing maximum impervious surface coverage.

## OPTIONS CONSIDERED

### Assumptions/Background

The following factors are considered:

- There are two distinct categories that need to be addressed separately - single family residential and all other projects (multifamily, commercial, industrial).
- Because of its proximity to Budd Inlet, most of downtown is exempted from stormwater quantity control requirements and would, therefore, be exempt from LID flow standard implementation.
- Small redevelopment projects could also be exempted from impervious surface limit restrictions. Small redevelopment projects could be defined as those that only trigger minimum requirements 1 through 5 in Olympia Drainage Design and Erosion Control Manual (DDECM). Developments that would meet this threshold are those that add less than 5,000 square feet of new



*Downtown should be considered for exemption from impervious surface restrictions.*

impervious surfaces or convert less than ¾ acre of native vegetation to lawn or landscaped areas or convert less than 2.5 acres of native vegetation to pasture. In addition, small projects must not have a combined area of new and replaced impervious surfaces that exceed 50% of the existing impervious surfaces.

#### Options

- Option 1: Keep current code limits with no change.
- Option 2: Set new impervious coverage limits on a project wide basis for all new subdivisions.
- Option 3: Reduce onsite impervious surface limits by a percentage. Maximum impervious surface limits would vary by zoning designation.

#### ANALYSIS

Minimizing impervious surfaces is one of the three main goals of the Department of Ecology Phase II NPDES permit.

Minimizing increases in impervious surfaces can aid in achieving other LID goals such as minimizing site disturbance and retaining native vegetation. Therefore, this element is particularly critical for successful LID implementation.

#### Option 1 (no change):

##### *Single Family Residential*

Option 1 will retain the status quo within single family residential zones, as the City of Olympia has already established impervious area limits there. However with no change proposed, no reductions in impervious areas would be expected.

##### *Multi-Family/Commercial/Industrial*

Option 1 will keep the status quo for multi-family, commercial, and industrial sites. Some adjacent cities actually have lower limits than Olympia. For instance in the City of Lacey, some commercial zoning districts only allow 70% coverage compared to the 85% allowed for many of Olympia's commercial zones.

#### Option 2 (limits on a subdivision/project basis)

##### *Single Family Residential*

Option 2 for single family residential will require updates to OMC 18.04.080 and Table 4.04. Impervious area coverage limits would be modified at the subdivision level rather than on individual lots. When the subdivision or short plat is recorded, it would include information documenting how it complies with the impervious area coverage limitation. Each lot would show the maximum amount of square footage allocated to impervious surface.

*Impervious area coverage limits would be modified at the subdivision level.*



In the long-term, ensuring compliance with impervious surface limits that are specific to each lot can be challenging. Olympia tried this approach in a subdivision named Devon Place. Staff found that although the restriction appeared on the face of the recorded subdivision plat – it was difficult to explain to home owners that their property was subject to special restrictions and they sometimes could not make the same improvements, such as building additions, that were allowed on neighboring lots.

*Multi-Family/Commercial/Industrial*

Option 2 (reduce limits on a project basis) would require updates to OMC 18.040.080, 18.05.080, 18.06.100, 18.08.100 and associated design tables. Impervious area coverage limits would be modified at the commercial short plat or binding site plan level. When the development is recorded, it would include information documenting how it complies with the impervious area coverage limitation. Each project would show the maximum amount of square footage allocated to impervious surface. It is anticipated that similar problems that occurred with single family projects (Devon Place) may also occur with commercial developments.

Option 3 (reduce limits by a percentage)

*Single Family Residential*

Option 3 will also require updates to OMC 18.04.080 and Table 4.04. The City of Olympia already has impervious area limits on single family residential zonings. The limits vary by district, but 55% is a typical limit. Impervious coverage limits that fall below current values could impact the value of lots as developers would be limited on development options. Impervious surface reductions of 5%-10% are contemplated. However, installing pervious surface would maintain options.

*Multi-Family/Commercial/Industrial*

Implementation of Option 3 to reduce allowed impervious surface coverage in all zones would require updates of OMC 18.04.080, 18.05.080, 18.06.100, 18.08.100, and associated design standard tables. However, current development coverage limits could be achieved as long as the additional percentage of development coverage is constructed using permeable paving. It is suggested that some type of exemption or allowance be made for sites where soils do not support use of permeable paving. Code updates would address the reduction in impervious, exemptions that might be allowed, and the development coverage allowed when using permeable paving. As with single family residential development, a 5%-10% reduction in impervious surface coverage is being considered.

For both Options 2 and 3, building height limits may need to be examined. If stricter impervious area limits are imposed, the same level of development on a site could not be achieved without increasing allowed heights.

## STAFF RECOMMENDATION

Staff recommends Option 3. This option will reduce the amount of impervious surface while still allowing for similar development coverages by providing options for permeable pavements.

Option 1 will achieve no change in impervious area coverage. Option 2 has not been tested with commercial projects but the City's experience with single family has shown that this can be problematic with end user property owners.

