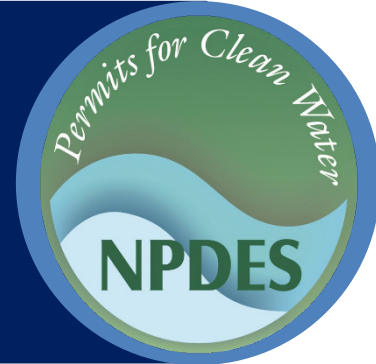




Stormwater Best Management Practice

Zoning



Minimum Measure: Post Construction Stormwater Management in New Development and Redevelopment
Subcategory: Municipal Program Elements

Description

Zoning is a classification scheme for land use planning and can serve many functions. It can help mitigate stormwater discharge problems by facilitating better site designs. By applying the right zoning technique, a community can target development in specific areas, limiting development and providing protection for land conservation areas.

Zoning techniques include watershed-based zoning, overlay zoning, floating zones, incentive zoning, performance zoning, urban growth boundaries, large lot zoning, infill/community redevelopment, transfer of development rights (TDRs) and limiting infrastructure extensions. Table 1 describes each of these techniques and discusses how they can be useful.



Zoning can be used to target development in specific areas and preserve natural areas.

Table 1. Zoning techniques.

Technique	Description	Utility as a Watershed Protection Technique
Watershed-based zoning	Watershed and subwatershed boundaries are the foundation for land use planning.	Protects receiving water quality on the subwatershed scale by moving development outside of particular subwatersheds.
Overlay zoning	Superimposes additional regulations or specific development criteria within specific mapped districts.	Requires development restrictions or allows alternative site design techniques in specific areas.
Impervious overlay zoning	Type of overlay zoning that limits total impervious cover within mapped districts.	Protects receiving water quality at the subwatershed and site levels.
Floating zones	Applies a special zoning district without identifying the exact location until the landowner specifically requests the zone.	Obtains proposals for watershed protective measures that accompany specific land uses within the district.
Incentive zoning	Applies bonuses or incentives to encourage creation of amenities or environmental protection.	Encourages development within a particular portion of the watershed or provides open space credit in exchange for higher density development at the site level.
Performance zoning	Specifies a performance requirement that accompanies a zoning district.	Requires additional levels of performance within a subwatershed or at the site level.

Technique	Description	Utility as a Watershed Protection Technique
Urban growth boundaries	Establishes a dividing line that defines where a growth limit will preserve agricultural or rural land.	Protects specific waterbodies, in conjunction with natural watershed or subwatershed boundaries.
Large lot zoning	Zones land at very low densities.	Decreases impervious cover at the site or subwatershed level but may adversely impact regional or watershed imperviousness.
Infill/community redevelopment	Encourages new development and redevelopment within existing developed areas.	Restricts development in sensitive areas and fosters development in areas with existing infrastructure, in conjunction with watershed-based zoning or other zoning tools.
Transfer of Development Rights (TDRs)	Transfer potential development from a designated “sending area” to a designated “receiving area.”	Restricts development in sensitive areas and encourages development in areas that can accommodate increased densities, in conjunction with watershed-based zoning.
Limiting infrastructure extensions	The community chooses to limit or deny extending infrastructure (e.g., public sewer, water or roads) to designated areas to avoid increased development in these areas.	A temporary method to control growth in a targeted watershed or subwatershed. Usually delays development until the economic or political climate changes.

Source: Adapted from American Planning Association, 2019; Caraco et al., 1998

Applicability

The type of zoning to apply will depend on management goals. If water or land quality is a primary goal, then watershed-based zoning can provide a comprehensive approach. At the same time, a community can use incentive zoning, performance zoning and TDRs as protective measures for specific conservation areas.

Implementation

Watershed-based zoning: Watershed-based zoning can use a mixture of land use and zoning options. A watershed-based zoning approach should include the following nine steps:

- Create a comprehensive stream inventory.
- Measure current levels of impervious cover.
- Verify impervious cover/stream quality relationships.
- Project future levels of impervious cover.
- Classify subwatersheds based on stream management “templates” and current impervious cover.

- Modify master plans/zoning to correspond to subwatershed impervious cover targets and other management strategies identified in subwatershed management templates.
- Incorporate management priorities from larger watershed management units, such as river basins or larger watersheds.
- Adopt specific watershed protection strategies for each subwatershed.
- Conduct long-term monitoring over a prescribed cycle to assess watershed status.

Overlay zoning: Overlay zoning lets a community apply specific criteria to isolated areas without the threat of qualifying as spot zoning (the isolated changing of the base zoning), which can be controversial. The limits of the underlying base zoning do not necessarily restrict overlay districts. An overlay zone may take up only part of an underlying zone or encompass several underlying zones. The use of an overlay zone is often optional.

Impervious overlay zoning: This type of overlay zoning limits future impervious areas. Planners estimate the

environmental impacts of future impervious cover and limit the maximum imperviousness within a given planning area. They then review site development proposals in the context of an imperviousness cap. Subdivision layout options typically conform to the total imperviousness limit of the planning area.

Floating zones: Normally, a parcel of land will not qualify for a floating zone district unless it is large enough to buffer its development from the surrounding area. Note that the existence of a floating zone district does not automatically grant rezoning to each landowner whose property complies with the prescribed conditions. The local governing body should review and approve each property owner’s rezoning application to determine if it is consistent with a comprehensive development plan.

Incentive zoning: This planning technique relies on bonuses or incentives for developers to encourage the creation of certain amenities or land use designs. A community grants a developer the right to build more intensively on a property or gives that developer some other bonus in exchange for an amenity or a design that the community considers beneficial. Developers stand to gain increased profits from the more intensive use of the property. A community might use incentive zoning to promote more compact development, establish [conservation easements](#), encourage [open space designs](#) or generate other desired amenities—such as trails, parks or playgrounds.

Performance zoning: Several communities across the country have used this flexible approach in a variety of ways. Some performance factors include traffic or noise generation limits, lighting requirements, stormwater quality and quantity criteria, protection of wildlife and vegetation, and even architectural style criteria.

Urban growth boundaries: Urban growth boundaries (or “development service districts”) include areas with existing public services, such as sewers, water, roads, police, fire and schools. The delineation of the boundary is very important. Important issues to consider in establishing an urban growth boundary include the following:

- Public facilities and services should be nearby and/or available at reasonable cost and in a specific timeframe.

- The area within the boundary should have enough land to meet projected growth over the planning period.
- The area should provide mixed land uses.
- The community should analyze the potential impact of growth within the boundary on existing natural resources.
- The criteria for defining the boundary need to be fair, and to incorporate natural (vs. artificial) features wherever possible. For example, watershed boundaries could serve as urban growth boundaries.

Large lot zoning: Although large lot zoning tends to reduce impervious cover and therefore the amount of stormwater discharge at a particular location, it also spreads development over vast areas. The road networks required to connect these large lots can actually increase the total amount of imperviousness created for each dwelling unit. In addition, large lot zoning contributes to regional sprawl. Sprawl-like development increases the expense of providing community services such as fire protection, water and sewer systems, and school transportation. Effective [infrastructure planning](#) can help limit the adverse effects of sprawl on water quality.

Infill/community redevelopment: A community can employ infill and [redevelopment](#) in large or small projects. Impediments to more widespread implementation of these types of projects include the existing condition of a potential redevelopment site in terms of environmental constraints, land use regulations, and pressing social and economic issues. Local governments may need to modify local zoning or building codes to make infill and redevelopment more attractive to developers. In addition, citizen involvement is a vital catalyst for leveraging funding or revising codes.

Transfer of Development Rights (TDRs): The premise behind TDRs is that land ownership entails certain property rights. While zoning, building codes and environmental constraints may restrict some of these rights, landowners are entitled to use their land for the “highest and best use.” TDRs rely on market-driven incentive programs, whose users can buy and sell development potential (zoned density) without buying or selling land. This system compensates landowners in preservation areas for lost development potential, while

conventional down-zoning deprives landowners of this potential value.

Limitations

Economic and political acceptance may limit some zoning techniques. Planners should evaluate techniques on these criteria as well as stormwater management goals.

Maintenance Considerations

Among long-term maintenance issues to consider are the following:

- What is the most economically and politically acceptable zoning technique (or group of techniques) that the community can implement to shift or reduce impervious cover among the subwatersheds?
- How accurate are the estimates of the amount and location of future impervious cover in the watershed? Are those projections adequate?
- Will future increases in impervious cover create unacceptable changes to a watershed and/or subwatershed?
- Which subwatersheds appear capable of absorbing future growth in impervious cover?

Effectiveness

At the site and neighborhood scales, environmental protection overlay districts can help protect natural features such as wetlands, floodplains, groundwater recharge areas and stream corridors, preserving natural hydrologic processes that improve water quality. Even small changes to setback requirements and frontage

dimensions can significantly affect residential stormwater volumes (Stone & Bullen, 2006).

At the watershed scale, cluster zoning techniques that promote greater development densities to reduce demand for new development elsewhere in the watershed can significantly reduce net increases in impervious surface. Planners can apply these techniques while incorporating other best management practices—such as development districts, open space design and effective infrastructure planning—into zoning requirements.

Additional Resources

Updating local zoning ordinances is a complex process and requires considerable planning, time, stakeholder input and public support. The following resources provide more information:

- The Center for Watershed Protection's updated code and ordinance worksheet for improving local development regulations
- EPA's *Protecting Water Resources with Smart Growth* report
- EPA's *Getting to Smart Growth: 100 Policies for Implementation* report
- The University of Wisconsin Sea Grant's *Tackling Barriers to Green Infrastructure: An Audit of Local Codes and Ordinances* report
- EPA's Water Quality Scorecard
- EPA's "Incorporating Low Impact Development into Municipal Stormwater Programs" fact sheet

Additional Information

Additional information on related practices and the Phase II MS4 program can be found at EPA's National Menu of Best Management Practices (BMPs) for Stormwater website

References

American Planning Association. (2019). *Property topics and concepts*.

Caraco, D. S., Claytor, R. A., Hinkle, P. M., Kwon, H. Y., Schueler, T. R., Swann, C. P., Vysotsky, S., & Zielinski, J. (1998). *Rapid watershed planning handbook: A comprehensive guide for managing urbanizing watersheds*. Center for Watershed Protection.

Stone, B., & Bullen, J. L. (2006). Urban form and watershed management: How zoning influences residential stormwater volumes. *Environment and Planning B: Planning and Design*, 33(1), 21–37.

Disclaimer

This fact sheet is intended to be used for informational purposes only. These examples and references are not intended to be comprehensive and do not preclude the use of other technically sound practices. State or local requirements may apply.