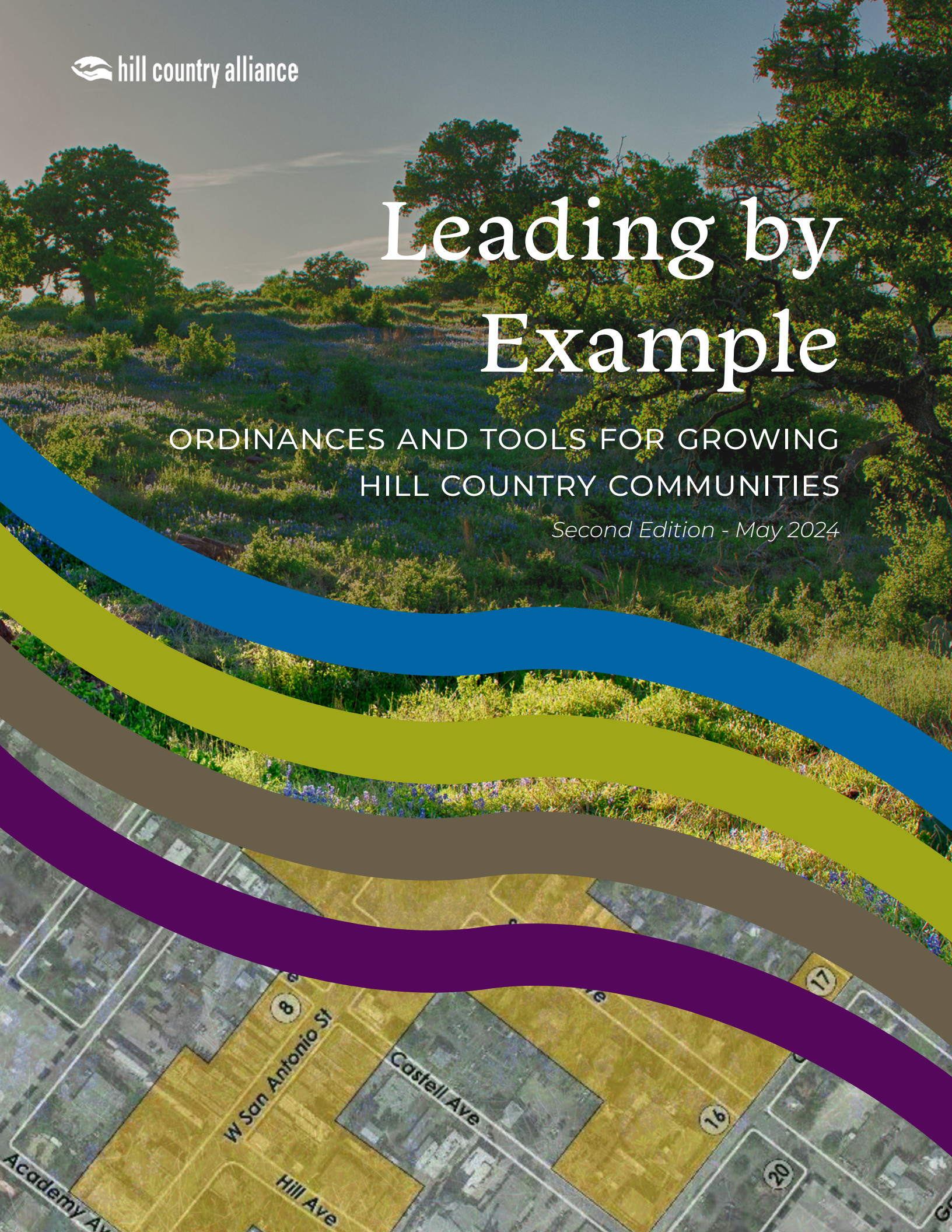


Leading by Example

ORDINANCES AND TOOLS FOR GROWING
HILL COUNTRY COMMUNITIES

Second Edition - May 2024





DEAR HILL COUNTRY LEADER,

The Texas Hill Country is undergoing a remarkable period of change. In many parts of the region, populations have doubled over the last 25 years and are expected to do so again over the next 25. In other places, the official population is not growing, but the weekend population is, drastically. Growth has its advantages - for new residents enjoying the Hill Country's unique charm, for local businesses that stand as pillars of the community, and for long-time residents who benefit from the energy and ingenuity that new community members can bring.

However, without thoughtful local policies in place, unplanned and unmanaged growth can erode the very qualities that make our communities desirable in the first place. Iconic squares and walkable neighborhoods across the Hill Country are at risk of being lost in a sea of disconnected subdivisions, big box stores, and vast parking lots. "Anywhere-America" development practices ignore the region's unique character, delicate resources, and existing natural features and the impacts of unmanaged growth last for decades or longer.

Thankfully, we are in a position to plan for a better future. With thoughtful local policies, Hill Country communities can enjoy the benefits of growth while limiting the negative impacts on our region's unique character and environment. In fact, appropriate development policies can spur the kind of development we do want: welcoming and authentic, water savvy, fiscally responsible, and complimentary to our existing landscape. Encouraging this kind of intentional development is an essential role of our municipal governments and it takes leadership, both inside and outside of government, to get it done.

This guidebook – Leading by Example: Ordinances and Tools for Growing Hill Country Communities – is a resource for any Hill Country leader who wants to promote more thoughtful development in their community. Here you will find a variety of guides, focused on different local policies that can guide development that is protective of our local context. Each guide includes links to example ordinances from around our region, as well as links to more in-depth information on the subject.

These guides are starting points from which you can learn more, set priorities, and adopt the policies that are right for your town. If you want to learn more about a particular subject, our team at the Hill Country Alliance can provide further assistance. Nobody says local government is easy - but together we can shape the future of the Hill Country!

CLIFF KAPLAN
HCA PROGRAM DIRECTOR



Acknowledgements

First of all, thanks to you, reader. If you've picked up this report it means you're a leader in your own community and part of the human infrastructure that makes the Hill Country such a special place!

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Using the Guides

This guidebook is organized into topical chapters: Water, Land and Skies, Transportation, and Zoning and Development. Each chapter contains *guides* that focus on a particular ordinance, or aspect of an ordinance, your community may be interested in adopting. Each guide introduces the ordinance topic and includes strong example ordinances, resources for further research, and a list of best practices.

EXAMPLE ORDINANCES

A selection of ordinances from the Hill Country and beyond are available for download throughout this guidebook. Strong components and necessary context are included as needed.

CITY NAMES and underlined text **link to ordinances and code sections.**

RESOURCES

The guides are snapshots of ordinances. Resources include relevant organizations and guiding documents that provide more in-depth information about each topic.

► *Underlined and italicized titles link to the corresponding document.*

BEST PRACTICES

A compilation of methods to undertake when crafting the ordinance. These suggestions are widely accepted as the most responsible and effective procedures for the given topic.



WATER

The Texas Hill Country is a region defined by its water resources, from our iconic rivers and lakes to our renowned swimming holes. As the region grows, more pressure is placed on our resources. It is imperative we make the most with what we have. In adopting water conscious ordinances, local governments can do their part in promoting smart water use.

This chapter includes ordinances to address water quality and quantity – from promoting small-scale best practices like rainwater harvesting or drought watering restrictions, to larger-scale measures like holistic watershed protection planning.

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An aerial photograph of a river, identified as Rio Frio, winding through a rugged, rocky landscape. The river is a vibrant green color, contrasting sharply with the grey and brown tones of the surrounding rocks and sparse vegetation. The river flows from the top left towards the bottom right, making a slight curve. The surrounding terrain is covered with low-lying shrubs and small trees, some of which are yellowed, possibly due to dry conditions. The overall scene is one of a wild, natural environment.

"RIO FRIO"

LEAKEY, TX

PHOTO COURTESY OF JORDAN MOORE

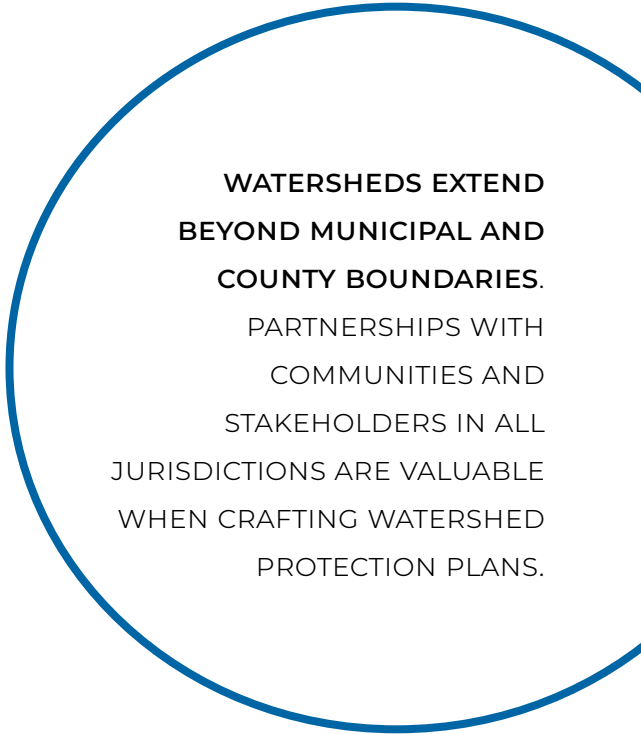
"Everything we do on the land is eventually reflected in a river. That's why it's so important to think about the whole landscape, how big and little pieces fit together."

- Sky Lewey

Watershed Protection

We all live in a watershed and our activities on the land have a direct impact on the health of our watersheds and water resources. A watershed – also known as a basin – is an area of land where all water flows to a single stream, river, lake or even ocean. Natural boundaries of watersheds can be very small for a single creek or stream, or quite large—like the Colorado River basin. The goal of watershed protection is to manage the impact of human activities to prevent flooding, erosion, and pollution of surface water and aquifers.

Watershed protection can mean many different things, including low-impact development, stream setbacks, flood management, impervious cover limits, or an all encompassing integrated watershed management approach. These and other strategies for watershed protection are covered in subsequent sections of this guidebook.



WATERSHEDS EXTEND
BEYOND MUNICIPAL AND
COUNTY BOUNDARIES.
PARTNERSHIPS WITH
COMMUNITIES AND
STAKEHOLDERS IN ALL
JURISDICTIONS ARE VALUABLE
WHEN CRAFTING WATERSHED
PROTECTION PLANS.

ECONOMIC & ENVIRONMENTAL BENEFITS OF HEALTHY WATERSHEDS

- Improved water quality and aquifer recharge
- Reduced vulnerability to flooding and erosion
- Increased biodiversity and reduced risk of invasive species
- Reduced vulnerability to climate change and natural disasters
- Increased property values and quality of life
- Human health benefits through access to natural spaces

WATERSHED PLANNING

A HOLISTIC APPROACH

For communities interested in addressing water quality problems in a more holistic manner, a **watershed protection plan (WPP)** is a great way to identify sources of pollution and prioritize protection strategies. A WPP is a comprehensive management plan that protects watersheds from land uses and human activities that pollute or degrade the health of the watershed. Done well, the planning process is thorough and collaborative, incorporating stakeholder input and feedback at multiple points along the way. Comprehensive planning can provide a guide for growth that is economically and environmentally sustainable.

A plan on its own is not legally binding or enforceable. It is a policy document that expresses intent, sets goals, and outlines key strategies. An ordinance is a legally enforceable means to implement portions of a plan.

EXAMPLE WATERSHED PROTECTION PLANS

BOERNE

- [Upper Cibolo Creek Watershed Protection Plan](#)

WIMBERLEY

- [Cypress Creek Watershed Protection Plan](#)

FUNDING & PLANNING RESOURCES

Federal Government funding for watershed protection exists under the **Clean Water Act section 319(h)**. To qualify, planning projects are required to meet the EPA's Nine Elements for Watershed-based plans, which are discussed in the handbook below.

- [Handbook for Developing Watershed Plans to Restore and Protect Our Waters \(the quick guide\)](#)

The **EPA** maintains a list of funding opportunities for watershed planning.

- View the funding opportunities [here](#).



Low Impact Development

As we develop residential and commercial areas, land that once absorbed and retained rainfall is paved over. Rain quickly runs off our buildings, sidewalks, roads, lawns, and parking lots creating negative downstream consequences, such as increased flooding risks and stream degradation. The primary objective of *low-impact development (LID)* is to capture, filter, and retain water as close to the point of rainfall as possible by mimicking a site's pre-development hydrology and ecological functions.

Conventional stormwater management facilities control flooding and reduce downstream impacts by using impervious cover (usually concrete) to direct, transport and hold runoff.

LID features work to increase water infiltration and rainfall retention on-site by reducing and breaking up impervious cover. LID is the “swiss army knife” of the watershed protection tool box because it is easily adapted to new and existing development and provides a wide range of benefits.

ECONOMIC & ENVIRONMENTAL BENEFITS OF LID

- Improved water quality
- Reduced frequency and severity of flooding
- Restored aquatic habitat
- Improved groundwater recharge
- Reduced heat island impacts
- Improved air quality
- Pollinator species habitat
- Enhanced neighborhood beauty
- Reduced construction costs
- Enhanced property values

common LID PRACTICES

RAIN GARDENS AND SWALES
RAINWATER HARVESTING
WETLAND CREATION AND PRESERVATION
REDUCTION OF IMPERVIOUS SURFACES
STREAM SETBACKS & RIPARIAN BUFFERS
TREE CANOPY PRESERVATION
DEVELOPMENT DENSITY
GREEN CORRIDOR PRESERVATION
GREENROOFS

LID PRACTICE SPOTLIGHTS

Rain gardens are vegetated, depressed landscape areas designed to capture, infiltrate and/or filter stormwater runoff. The biofiltration areas remove pollutants in stormwater runoff similar to other treatment systems. However, because they are restricted to smaller drainage areas and shallower ponding depths, which necessitate a larger surface area, infiltration, evapotranspiration, and biological uptake mechanisms may be more significant for rain gardens than other treatment best management practices (BMPs).



BIOFILTRATION AREA IN SAN MARCOS, TX.
PHOTO COURTESY OF SYDNEY BECKNER



GREEN ROOF ON A PARK PAVILION IN LEAGUE CITY, TX.
PHOTO COURTESY OF GIFT - TEXAS A&M AGRILIFE EXTENSION

Green roofs are "contained" green spaces on top of human-made structures. Green roofs are commonly thought about as a solution for densely populated urban areas, but their benefits apply to buildings and cities of any size. Green roofs are great for reducing urban heat island effect and also provide stormwater management, increased energy efficiency and roof durability, aesthetic improvements.

► [Green Roofs for Healthy Cities](#) is a national non-profit organization with great resources for greening.

EXAMPLE ORDINANCES

MARBLE FALLS

KYLE

BOERNE

SAN ANTONIO

- Encourages the installation of LID features and allows development credits for their Regional Storm Water Management Program.
- ▶ San Antonio River Authority Technical Design Guidance Manual
Boerne and San Antonio each point to this manual for guidance.

RESOURCES

The **EPA** website on Urban Runoff has a number of helpful resources on how communities can grow while reducing negative environmental impacts.

- ▶ *Terminology of Low Impact Development*
- ▶ *Costs of Low Impact Development*
- ▶ *Maintenance of Low Impact Development*
- ▶ *Encouraging Low Impact Development*

Texas Living Waters Project (TLW) is a collaboration of conservation groups working to preserve our state's water resources. The TLW team routinely publishes helpful resources and issue papers like this one, detailing possible funding sources for nature-based flooding solutions.

- ▶ *Nature-Based Solutions to Flooding in the Hill Country*

Hill Country Alliance created a guidebook of LID projects and information on the professionals who helped make them happen.

- ▶ *One Water in the Texas Hill Country*

Clean Coast Texas is a program of the Texas General Land Office (GLO) that works to help communities protect water quality along the coast. The health of the coast depends largely on the actions of upstream users. Clean Coast Texas has produced several useful guides on stormwater solutions.

- ▶ *Sustainable Stormwater Solutions: Why Design Matters*
- ▶ *Sustainable Stormwater Solutions: Maintenance Requirements*
- ▶ *Sustainable Stormwater Solutions: Guide to Retrofitting*

BEST PRACTICES

Seek input from community stakeholders and tailor ordinances to local conditions. Community support is invaluable and brings important political and logistical support for enforcement.

Treat and think of stormwater as a resource, rather than a problem to be managed. Wide-scale use of LID practices can help developed watersheds act more like undeveloped watersheds by mimicking natural infrastructure. When we create systems that return rainwater to where it would naturally go, we help nature support our communities. Doing so saves money and increases property value, mitigates flooding, improves water quality, and beautifies open spaces.

Maintenance practices and schedules are critical to prevent weak performance or system failure. When compared to traditional stormwater infrastructure over time, LID can be more cost-effective. LID typically requires lower initial investment and more ongoing maintenance, especially early on as vegetation becomes established. Once established, LID practices can largely be maintained like other landscaping elements. Maintenance for dispersed LID systems, such as rainwater harvesting systems, and permeable paving that fall on private parcels need to come with clear maintenance instructions and schedules so that private property owners have the tools to keep these solutions fully-functional.

Require watershed protection solutions for all new residential and commercial properties. Purely voluntary participation in LID reduces the effectiveness of the entire system.

Incentivize property owners to apply LID practices in existing developments. Within existing developments, there are often opportunities to add LID features and enhance the performance of the site.



Impervious Cover Limits

Impervious cover is any surface that does not absorb or retain rainfall, examples include: roofs, pavement, sidewalks, patios, and compacted soil. As we build more housing developments, roads, and commercial buildings, land that was once open space and absorbed rainfall is paved over causing more water to runoff. This can lead to more intense flooding downstream, which threatens lives and homes, increases pollutant loads to surface water bodies, and endangers aquatic habitats and species. By requiring that new developments retain a certain percentage of permeable land or surface, communities can mitigate some of the negative effects of runoff.

EXAMPLE ORDINANCES

Each example includes an extensive list of what is considered impervious cover and offers development incentives.

WOODCREEK

WIMBERLEY

DRIPPING SPRINGS

BOERNE

AUSTIN

- Uses the maximum allowable impervious cover instead of the existing amount of impervious cover when modeling floodplains to ensure the floodplain area isn't expanding with development.
- Overlapping incentives encourage applicants to build below the maximum allowable impervious cover.



ROCK BIORETENTION ZONE IN A HOUSTON PARKING LOT.
PHOTO COURTESY OF DAVID BATTS, CONSTRUCTION ECOSERVICES

BEST PRACTICES

List of what is and is not considered impervious cover. This sets clear guidance for developers, city staff, and the community on the types of surfaces and materials that factor into site area calculations. The regional examples listed below all have good lists.

Offer development incentives. An interesting feature of the City of Wimberley's ordinance is that functioning rainwater harvesting systems are not considered impervious cover and can be used to obtain credits toward any impervious cover requirements.

Consider zoning activities when setting maximum percentages. Industrial and commercial areas typically require higher impervious cover to be economically viable. Thus, water quality treatment and volume management should be required to offset the effects of imperviousness. For example, the City of Austin places more stringent requirements on these potentially pollutive activities and requires industrial sites to have an on-site water quality and detention pond system for highly contaminated runoff.

PERMEABLE PAVEMENT

Permeable pavement is paving that is porous to allow water infiltration. It is a more environmentally sensitive way to manage stormwater than standard paving.

Types of permeable paving:

- Pervious concrete
- Porous asphalt
- Permeable interlocking concrete pavers (PICP)
- Grid pavement system



PERVIOUS PAVERS IN THE RAIN. LEAGUE CITY, TX.
PHOTO COURTESY OF TCWP - TEXAS A&M AGRILIFE.



GRID PAVEMENT SYSTEM. PHOTO COURTESY OF MAGGIE NEMETZ

IS PERMEABLE PAVEMENT THE BEST OPTION?

BENEFITS

- Contributes to groundwater recharge.
- Reduces the amount of untreated stormwater reaching rivers and lakes, which reduces pollutants and stream bank erosion.
- Stays cooler than standard paving in summer temperatures, which reduces the urban heat island effect.
- Reduces flood risk by storing water that is released at a slower rate.

HOWEVER...

Due to the low filtering capacity of standard permeable paving designs, it is not always the right solution.

- Without a treatment train downstream permeable paving is not recommended for sites within aquifer recharge zones because stormwater may not be adequately filtered before reaching the groundwater.
- Permeable paving on its own is not suitable for sites with poor soil drainage, high levels of wind-blown dust and debris, slopes over 5%, or high concentrations of oil, grease, heavy metals, or toxic chemicals.

MODIFICATION

- One of the simplest design modifications is to include a sand layer in the pavement section that improves pollutant removal.

Stream Setbacks

A stream setback is a development regulation that protects the land along stream banks from human activities that could damage riparian vegetation, aquatic life, soils, and water quality. These regulations go by many names, such as riparian buffers, water quality buffer zones, water quality transition zones, and erosion hazard zones. The setbacks limit development adjacent to riparian and wetland zones to reduce exposure to flood risk and preserve the capacity of the buffer to minimize contamination hazards through ecological processes.

BENEFITS OF STREAM SETBACKS

- Protects human life, health, and property from flooding events and erosion by slowing floodwaters.
- Stabilizes banks through protected native plant growth.
- Prevents the degradation and pollution of groundwater.
- Retains groundwater recharge features.
- Maintains natural beauty and community character.
- Protects wildlife habitat, including for endangered species.

RESOURCES

The **Association of State Wetland Managers** published an extensive best practice and model ordinance guide.

► [Model Ordinances for Regulating Wetlands, Riparian Habitats, and Stream Buffers](#)

Texas Parks and Wildlife published the following resource as a guide for restoring riparian areas. It includes descriptions of necessary government permits, site preparation, and much more.

► [Restoration Design Guidelines for Texas Hill Country Riparian Areas](#)

The **Hill Country Alliance** Land Program has resources on good land stewardship practices for individuals and municipalities, including the following overview of the benefits of “Grow Zones” along creeks rivers.

► [Grow Zones and Targeted Access Along Creeks and Rivers](#)



"THE MIGHTY UPPER GUADALUPE RIVER"
PHOTO COURTESY OF ALISON LYONS

BEST PRACTICES

Recognize public health and safety benefits of stream setbacks that promote healthy and ecologically functional riparian areas

Obtain and adopt large scale wetland, riparian, and floodplain maps. Recognizing that there are financial limits to map accuracy and detail, provide mechanisms within the ordinance for establishing boundaries and addressing map inaccuracies that will accrue over time. Whenever possible, shift data gathering responsibilities to permit applicants.

Establish a review board to develop regulations and evaluate permit applications. Grant the board or commission authority to require riparian management and mitigation plans based on the size and type of development project, as well as the amount of riparian area affected.

Incentivize repairing degraded riparian buffers. Provide applicants with credits for other code requirements when they de-pave, remove invasive species, plant native riparian species and fix degraded buffer areas.

Include "Grow Zone" policies that halt mowing along publicly owned stream banks. Doing so allows the growth of more dense and diverse riparian vegetation that can improve water quality, prevent erosion, increase wildlife habitat, and provide other important ecosystem services.

STREAM SETBACKS

IN HILL COUNTRY JURISDICTIONS

CITIES

BLANCO
WOODCREEK
WIMBERLEY
BULVERDE
BURNET
MARBLE FALLS
LAGO VISTA
BEE CAVE
BOERNE
LAKEWAY
SAN MARCOS
AUSTIN
SAN ANTONIO

COUNTIES

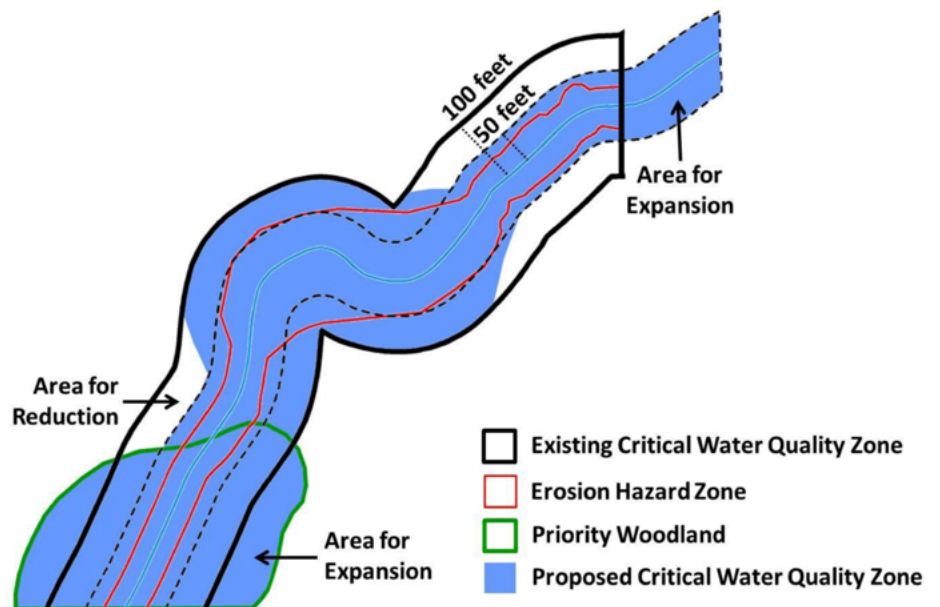
BEXAR
HAYS
TRAVIS

Section 26.177 of the Texas Water Code authorizes municipalities to establish a water pollution control and abatement program. Many Hill Country cities have used this authority to establish stream setbacks within city limits and their extra-territorial jurisdictions (ETJs).

BUFFER AVERAGING ON A MINOR WATERWAY

This City of Austin graphic shows an approach called “buffer averaging.” This allows the buffer boundaries around a stream to be altered in certain areas, as long as the overall surface area of the buffer is the same or greater.

SOURCE: CITY OF AUSTIN
 ENVIRONMENTAL CRITERIA MANUAL
 SECTION 1.5.2-D



COMPARISON OF SELECT HILL COUNTRY STREAM SETBACKS

Governments take different approaches to implementing stream buffers and setbacks. Some institute fixed-width, non-varying setbacks for a variety of riparian areas (see *Bulverde*). Others adopt sliding-scale approaches with variable standards based on factors such as: the waterway's contributing zone size, the presence of critical environmental features, and land use.

Table interpretation example: A stream in **Blanco** with a 15-acre contributing zone would have a setback, or “buffer,” of 25 ft on either side of that stream's centerline (i.e. a total buffer of 50 ft). Any proposed development along this stream would not be allowed within this buffer.

| City | Setback zone type | Acreage of contributing zone | Setback zone (feet from stream centerline) | Notes |
|-----------------------------------|--|--|--|--|
| Blanco Wimberley Woodcreek | Graduated Setbacks | 5 - 40 | 25 | This approach gives landowners a choice at the time of platting to either use a graduated setback method or apply setbacks based on the floodplain boundaries. |
| | | 40 - 128 | 50 | |
| | | 128 - 320 | 100 | |
| | | 320 - 640 | 200 | |
| | | 640 | 300 | |
| | Floodplain Boundaries | For creeks and rivers draining >5 acres and <40 sq miles | 25 ft from 100-yr floodplain boundary | |
| | | For creeks and rivers draining >40 sq miles | FEMA 100-yr floodplain buffer | |
| Bulverde | All City and ETJ Waterways | >25 | 60 | This is a simple one-size-fits-all approach. |
| Boerne | Protection Zone 1 | 25 - 128 | 35 | This approach uses graduated buffers, but also creates more stringent protections closer to the stream (PZ1) and less stringent protections further from the stream (PZ2). Together, they create the Total Protection Zone. |
| | | 128 - 320 | 55 | |
| | | 320 - 640 | 70 | |
| | | ≥640 | 100 | |
| | Protection Zone 2 | 25 - 128 | 20 | |
| | | 128 - 320 | 30 | |
| | | 320-640 | 50 | |
| | | ≥640 | 50 | |
| | Total Protection Zone = PZ1 + PZ2 | 25 - 128 | 55 | |
| | | 128 - 320 | 85 | |
| | | 320 - 640 | 120 | |
| San Marcos | Waterways with a FEMA defined floodway | | 100 ft from FEMA floodway | This approach adds 100 ft to FEMA floodway boundaries wherever they are available and a graduated buffer scheme throughout the rest of the community. Within the Edwards Aquifer Recharge Zone, there are heightened restrictions. |
| | | 5 - 50 | 25 | |
| | Where FEMA maps don't exist | 50 - 250 | 50 | |
| | | 250 - 1000 | 100 | |
| | | >1000 | 200 | |

Water Conservation

Municipalities play a crucial role in promoting water conservation through the adoption of ordinances and best practices. Such efforts not only help to ensure a sustainable supply of water for future generations but also provide economic benefits, including reduced operating costs for water utilities and improved efficiency of water usage. Additionally, water conservation measures can help to mitigate the impact of droughts and other water-related challenges. Reducing inefficient water uses, such as watering golf courses or lawns with potable drinking water, can help ensure that in a drought-prone region there is water available for domestic sanitation and fire protection.

While each ordinance or practice taken individually can make a difference, a comprehensive approach to water conservation can yield even greater benefits by reducing overall water consumption and promoting resilient water management practices. By taking a proactive stance on water conservation, municipalities can help to safeguard this vital resource into the future.

EXAMPLE ORDINANCES

The following communities have water conservation ordinances that outline their drought contingency plans as well as additional rules to reduce the inefficient use of water.

BLANCO

WIMBERLEY

AUSTIN

SAN ANTONIO

BEST PRACTICES

Address system leaks. An analysis of 2019 water data by the National Wildlife Federation found that Texas utilities are losing about 572,000 acre-feet per year of water, corresponding to an average of about 51 gallons of water per service connection every day ([see report here](#)). Addressing water losses in a water system is usually very cost effective, especially when compared to other supply strategies.

Install smart meters to provide real-time accounting of the timing and patterns of use. Such detailed information can help identify unseen sources of leakage and prioritize abatement measures.

Structure water rates to reflect the full long-range costs of operating and maintaining a water utility. A tiered rate structure charges a lower rate for basic household water usage, with progressively higher rates for additional consumption to promote conservation and reflect the true cost and value of water resources.

RESOURCES

The Environmental Protection Agency designed a guide to help water utilities and governments carry out assessments of the potential for future water conservation and efficiency savings to avoid or minimize the need for new water supply development

► [*Best Practices to Consider when Evaluating Water Conservation*](#)

Texas Living Waters Project is a collaboration of conservation groups, including the Hill Country Alliance, that issues publications about water conservation and stewardship. For more information, visit www.texaslivingwaters.org.

► [*Hidden Reservoirs: Addressing Water Loss in Texas*](#)

The Texas Water Development Board website is another great resource.

► [*Water Conservation Best Practices Management Guide*](#).



Rainwater Harvesting

Rainwater harvesting is the technique of capturing rainwater and diverting it to storage basins or planted areas for use or treatment. It is a great way to reduce stormwater runoff, reducing erosion and downstream flooding, while reaping the benefit of the collected rainwater. Rainwater harvesting can be combined with rain gardens and swales for slower release and to reduce landscape size. Municipalities can promote the use of rainwater harvesting systems by offering clear guidelines on permit requirements and incentivizing implementation through credits and rebates



RAINWATER HARVESTING SYSTEM
PHOTO COURTESY HALFF ASSOCIATES

EXAMPLE ORDINANCES

BLANCO
WIMBERLEY
BEE CAVE
BOERNE
AUSTIN

RELEVANT STATE CODES AND LEGISLATION

- **TEXAS TAX CODE 151.355** exempts state sales tax on rainwater harvesting equipment. To claim, provide form 01-339 to the supplier at the time of purchase. The form is available at: www.comptroller.texas.gov/taxes/sales/forms/index.php.
- **TEXAS PROPERTY CODE 202.007** prevents homeowners associations from banning rainwater harvesting installations.
- **TEXAS HOUSE BILL 3391** (*effective 2011*) requires rainwater harvesting system technology to be incorporated into the design of new state buildings and allows financial institutions to consider making loans for developments using rainwater as the sole source of water supply.

BEST PRACTICES

Require rainwater harvesting as an option for prospective homebuyers. The City of Wimberley requires all homebuilders and developers building new single family residential homes to provide a rainwater harvesting option to prospective buyers.

Incentivize rainwater harvesting systems. The City of Blanco allows the use of harvested rainwater as an alternative water source for irrigation and therefore those irrigating with rainwater are exempt from city drought restrictions (so long as stand-alone systems are not connected to city water to avoid potential contamination).

Include detailed graphics and equations to aid in system design. The City of Austin has adopted an extensive ordinance in an effort to promote the adoption of rainwater harvesting systems. It includes detailed best management practices and design options for a variety of systems.

Encourage native plant use with rainwater harvesting to conserve water. Landscaping irrigation can use up to 50% of municipal water, so conserving water through plant choice is crucial before implementing rainwater harvesting.

RESOURCES

The Texas Water Development Board (TWDB) is a great resource providing fact sheets and free trainings for city and county staff. The manual below offers a comprehensive guide on the advantages of rainwater harvesting, along with detailed technical guidance for establishing a system. Learn more at twdb.texas.gov/innovativewater/rainwater.

► [*The Texas Manual on Rainwater Harvesting*](#)

RESOURCES FOR LARGE SCALE RAINWATER HARVESTING

Rainwater harvesting can also happen at the subdivision and commercial development scale. The documents below provide models and considerations for large scale water harvesting.

► [*Rainwater Harvesting as a Development-Wide Water Supply Strategy*](#)

► [*Water Harvesting Guidance Manual*](#) (see pages 18-21)



Water Reuse

Water reuse is the process of treating and using otherwise wasted water sources - such as greywater or blackwater - in additional ways such as irrigation, industrial processes, or even as a source of clean drinking water. By reusing water, we can reduce demand on existing water resources, decrease energy use and carbon emissions associated with water treatment and transport, and mitigate the impacts of droughts. As the region's population grows, water reuse will be a critical tool for ensuring water supply needs are met.

Water reuse also provides economic benefits by creating a reliable and cost-effective water supply and by reducing the costs associated with wastewater disposal.

ECONOMIC & ENVIRONMENTAL BENEFITS OF WATER REUSE

- Conserves potable water
- Lowers water bills
- Reduces wastewater discharge to sensitive water bodies
- Decreases load on local sewers
- Enhances drought resilience
- Increases water supply reliability.

TWO TYPES OF WATER REUSE

Centralized water treatment refers to the process of treating water at a single location and distributing it to various consumers through a network of pipes. This is typically done by large municipal water treatment plants that are responsible for supplying clean water to entire cities or regions.

Decentralized water treatment involves treating water at or near the point of use. This means that water is treated at a smaller scale, such as in individual homes, buildings, or neighborhoods. Decentralized systems can include technologies such as point-of-use filters, reverse osmosis units, and other small-scale treatment devices.

BEST PRACTICES

Engage stakeholders in the development of water reuse ordinances, including the public, industry representatives, and water utilities. This can help to ensure that the ordinances are effective, acceptable, and feasible.

Include provisions that address health and safety concerns, including monitoring and testing requirements, treatment standards, and public notification requirements.

Provide incentives to encourage water reuse. Municipalities may consider providing incentives such as reduced fees for permits or water rates for entities that implement water reuse.

Develop a monitoring and reporting framework to ensure compliance with standards and to track the success of the program.

Consider public perception. Public perception can be a significant barrier to water reuse. Municipalities should consider public outreach and education programs to help build trust and acceptance of water reuse. This can include workshops, online resources, and public information campaigns.

FUNDING RESOURCES FOR WATER REUSE PROJECTS

Centralized Public Systems

Clean Water State Revolving Fund (CWSRF) assists communities with low-cost financing for a wide range of activities related to wastewater, stormwater, and reuse infrastructure.

► Learn more at twdb.texas.gov/financial/programs/CWSRF.

State Water Implementation Fund of Texas (SWIFT) was formed by the Texas Legislature to offer low-cost financial aid to support projects in the state water plan. As of fiscal year 2022, SWIFT has committed around \$9.9 billion for projects throughout Texas.

► Learn more at twdb.texas.gov/financial/programs/swift/.

Decentralized Private Systems

PACE (Properly Assessed Clean Energy) funding can be used by private real estate holdings to finance the upfront capital costs of water reuse, including developing onsite infrastructure to capture and reuse non-potable water like rainwater and air conditioner condensate. For communities looking to pass rules encouraging decentralized water reuse, private buildings can take advantage of this program.

► Learn more about the program from this Texas Water Trade report [here](#).

WATER REUSE CENTRALIZED APPROACHES

CENTRALIZED NON-POTABLE SYSTEMS

While non-potable water is not suitable for drinking, it is perfect for irrigation and outdoor water uses. Centralized systems for water reuse are more technical than decentralized systems and require additional planning and investment to implement. However, they are very useful in larger communities and can be scaled as demand for non-potable water grows.

The San Antonio Water System (SAWS) operates the nation's largest recycled water facility supplying non-potable water to customers for irrigation, manufacturing and other uses. Learn more [here](#).



Purple pipes are used to indicate water is not potable or drinkable.
(CC) FLICKR

EXAMPLE ORDINANCES

BUDA

- Tier 1 reclaimed water used by City for landscape irrigation along roadways. Bulk reclaimed water station available for customers with nonpotable water needs (§24.06.032c).

BOERNE

DIRECT POTABLE REUSE

Direct Potable Reuse (DPR) is a process of treating wastewater to meet drinking water standards, and then directly returning it to the drinking water supply system. To ensure public safety, it is crucial to establish strong monitoring and regulatory frameworks. DPR is not new in Texas but it has been slow to adopt. The cities of Big Spring and Wichita Falls utilized DPR quickly when experiencing emergency water shortages in 2013 and 2014.

EL PASO will begin construction late 2023 on a 10-million-gallon-per-day facility will be the first to allow advanced treated water to flow directly into the water distribution system

- Learn more about El Paso's Advanced Purification facility [here](#).

WATER REUSE

DECENTRALIZED APPROACHES

On-Site Water Reuse refers to the practice of treating and reusing water on the same property or location where it is generated. These decentralized systems can be customized to fit the specific needs of a property or building and can be designed to operate in conjunction with municipal water systems or as standalone systems.

Rainwater, air conditioner condensate, and greywater can be treated to produce high-quality water that can be reused for non-potable purposes like irrigation, toilet flushing, and cooling.

Subchapter F of Chapter 210 of the Texas Administrative Code outlines the authorized uses of greywater systems for residential, commercial, industrial, and agricultural uses.

AUSTIN, STARTING
DECEMBER 2023, WILL
REQUIRE ON-SITE WATER
REUSE SYSTEMS FOR
ALL NEW COMMERCIAL
AND MULTI-FAMILY
DEVELOPMENT PROJECTS
OF 250,000 SQ. FT. OR
GREATER.

EXAMPLE ORDINANCE

AUSTIN

- [Regulation of Onsite Water Reuse Systems](#)

RESOURCE

Texas Living Waters Project released the following study finding that onsite water reuse can bring financial and quality-of-life benefits to affordable housing residents.

- [Opportunities for Realizing Water Reuse in Affordable Housing](#)

Water-Wise Landscaping Ordinances

In the Hill Country, landscape irrigation accounts for up to 70% of potable water consumed by residents. Irrigation is highest in the summer, when temperatures are hottest and the pressures on our water supplies are often at their peak. There is a huge opportunity to both reduce water demand and conserve supply by shifting landscaping practices in the region. By implementing landscaping ordinances that promote water-wise landscapes, communities can achieve huge water and cost savings.

BENEFITS OF WATER-WISE LANDSCAPING

- **Water Conservation:** Efficient use of native plants and irrigation systems saves water.
- **Cost Savings:** Drought-tolerant landscaping reduces water bills and maintenance expenses for homeowners, businesses, and municipalities.
- **Increased Curb Appeal:** Diverse native plants create visually appealing landscapes.
- **Ecosystem Health:** Native landscaping supports biodiversity and reduces chemical use, benefiting local wildlife and ecological resilience.

Contrary to popular belief, drought-tolerant landscapes can be very green, with major curb appeal.

PHOTO COURTESY OF DIANA KIRBY



PLANNING CONSIDERATIONS

In new Hill Country developments, incorporating water-wise landscaping principles from the outset is more efficient and cost-effective than retrofitting existing buildings. By integrating these principles into the initial design phase, developers can optimize site layouts, select appropriate plant species, and install efficient irrigation systems seamlessly. This proactive approach not only ensures compliance with water conservation regulations but also maximizes the long-term sustainability and resilience of the community's outdoor spaces.

BEST PRACTICES

Require new developments to choose landscaping plants from an approved list of drought-tolerant plants. The City of Austin's code includes a great example of native and adapted plants in their [Preferred Plant List](#), though adapting the list is appropriate for different parts of the Hill Country.

Require irrigation efficiency measures such as setting day limits, installing smart controllers, and incorporating rain sensors. The [City of San Marcos' code](#) provides a good example of effective irrigation management through these practices.

Focus on new developments and residences. Rather than trying to convert existing landscapes, model ordinances focus on making sure new commercial developments and residential irrigation systems are reducing their water use on landscapes.

Compliment regulation with incentive programs targeting existing landscaping. The City of Austin offers a rebate of up to \$1,750 to help homeowners convert healthy turf grass to native plant beds. They also offer rebates for homeowners that install rainwater harvesting systems.

PHOTO COURTESY OF DIANA KIRBY



EXAMPLE ORDINANCES

GEORGETOWN (CHAPTER 13.15)

- Permanently limits landscape watering to twice weekly, with watering allowed only before 10AM and after 7PM (exceptions exist for hand watering).
- Requires plants from a Preferred Plant List for all new plant material on residential lots and must use hydrozone to minimize water waste.
- Restricts turf grasses, such that turf grass can't cover an area larger than 2.5 times the foundation footprint or 10,000 square feet, whichever is smaller.

SAN MARCOS (SEC. 14.126)

- Requires separate meters for landscape irrigation.
- Restricts turf grass areas to 50% of landscaped areas for single-family residential homes and 25% of landscaped areas in all other developments. Turf grass areas must be planted with approved drought-tolerant species.
- Allows use of reclaimed water for irrigation.

AUSTIN (ENVIRONMENTAL CRITERIA MANUAL, SEC. 2)

- Requires that new commercial sites choose plants from a Preferred Plant List for at least 90% of landscaped areas.
- Restricts use of potable water for irrigation on commercial sites. Fifty percent of landscaped area must be undisturbed natural area or be irrigated by rainwater or stormwater runoff conveyed from onsite impervious surfaces.
- Permanently restricts irrigation to once-per-week watering for automatic irrigation, though a 40-day variance applies if installing new low-water use turf grasses and plants.

RESOURCES

City of Austin and **Texas A&M AgriLife Extension** have produced a comprehensive guide to native and adapted plants for Central Texas lawns.

► [Native and Adapted Landscape Plants: an earthwise guide for Central Texas](#)

San Antonio Water System has a great website of gardening resources that prioritize water conservation. Use this website to browse native plants well-suited to Hill Country climates, find rebates, or to connect with a gardening expert.

► Visit the site at www.gardenstylesanantonio.com.

Texas Living Waters Project conducted a statewide analysis of the savings potential of reducing outdoor watering. It is estimated that homeowners over water their lawns by two to three times the amount needed.


► [Water Conservation by the Yard: A Statewide Analysis of Outdoor Water Savings Potential](#)



LAND & SKIES

The Hill Country is known for its sweeping scenic beauty and diverse wildlife, as well as its unique geological formations and water resources. Preserving open space, star-filled skies, native trees, and plant communities is essential to the health and well-being of the region's residents. Protecting these iconic open spaces and skies ensures that future generations of residents and visitors will have access to the natural resources, quality of life, and outdoor recreational opportunities that make the Hill Country unique.

| | |
|--------------------------------------|-------|
| OPEN SPACE PRESERVATION..... | LS-4 |
| TREE PRESERVATION..... | LS-7 |
| OUTDOOR LIGHTING..... | LS-10 |
| CONSERVATION SUBDIVISION DESIGN..... | LS-15 |
| PARKLAND DEDICATION..... | LS-18 |



"The environment is where we all meet, where we all have a mutual interest; it is the one thing all of us share. It is not only a mirror of ourselves, but a focusing lens on what we can become."

- Lady Bird Johnson

"MILKY WAY OVER TEXAS WILDFLOWERS"

ENCHANTED ROCK STATE NATURAL AREA

PHOTO COURTESY OF ROB GREEBON

Open Space Preservation

Open space is undeveloped land or land that is minimally developed for outdoor recreation or agriculture. Open spaces can be meadows, woodlands, savannahs, agricultural lands, river bottoms, floodplains, steep slopes, or hilltops. Preserved open spaces can be publicly owned lands or private lands where the owners have sold or donated the development rights, choosing to leave the land undeveloped in perpetuity.

BENEFITS OF PRESERVING OPEN SPACE

- Prevents sprawl and encourages efficient and fiscally responsible land use by clustering road, water, and sewer infrastructure in developed areas.
- Protects drinking water supplies from overuse and pollution.
- Increases groundwater recharge and preserves water quality by limiting development over critical recharge features where water can cleanly enter our aquifers.
- Increases property values in surrounding areas.
- Provides outdoor recreation opportunities for residents and visitors.
- Reduces habitat fragmentation for wildlife.
- Preserves natural landmarks that give our communities their specific identities and create a sense of place.
- Preserves land for farming and ranching.
- Provides buffers between incompatible land uses.
- Improves air quality and cools the surrounding area.
- Mitigates the impacts of flooding.

Open space preservation is a potent policy initiative because it is innately multi-functional and cost effective. Most preserved open spaces perform several, if not all, of the functions listed above for a fraction of the cost of traditional development. Open space can be preserved through a variety of approaches including overlay districts, cluster or conservation developments, public parks, greenbelts or corridors, and conservation easements. These and other strategies for open space preservation will be covered in subsequent portions of this guidebook.

EXAMPLE ORDINANCES

CITIES

DRIPPING SPRINGS (SEC 28.05.015)

COUNTY

HAYS COUNTY

see page 47

AUSTIN (CHAPTER 6)

► Traditional Neighborhood District

BONDS FOR PARKS AND OPEN SPACE

Public investments in land conservation can help offset the ever-growing impacts related to development. Conservation projects can help protect water quality, mitigate flood risks, preserve wildlife habitat, provide public recreation opportunities, and preserve rural lands that will help maintain the character of the Hill Country. Bonds to protect and preserve open space have been approved by the following communities:

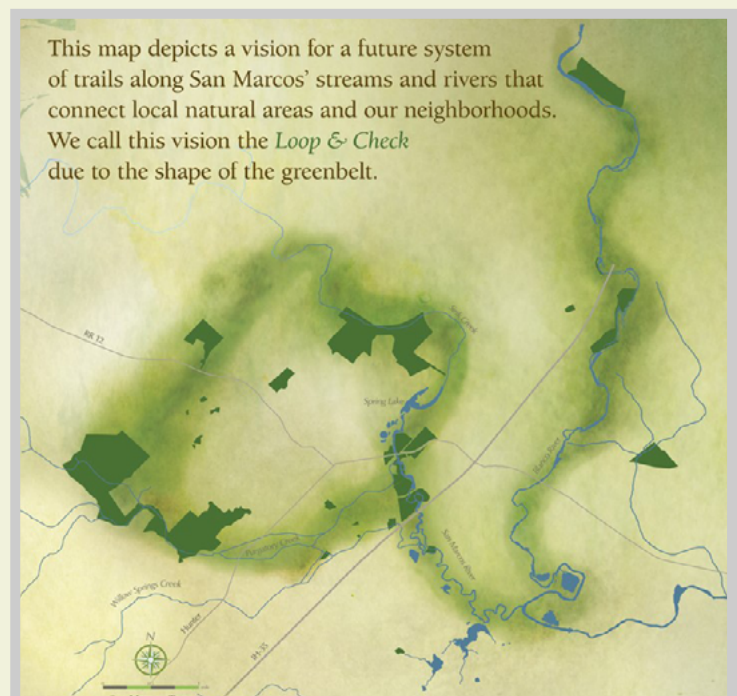
- **Hays County** voters approved, in November 2021, a \$75 million bond to protect Purgatory Creek Nature Preserve with a 1,068-acre conservation easement that permanently preserves the land from future development. Learn more at haysparksbond.com.
- **City of Boerne** voters approved \$13 million to improve several parks, trails and open spaces in November 2022.
- **Kendall County** voters approved in November 2022 a \$20 million bond for open space and conservation land to protect wildlife habitat and the water quality of creeks, rivers and springs.

GREENBELTS & CORRIDORS

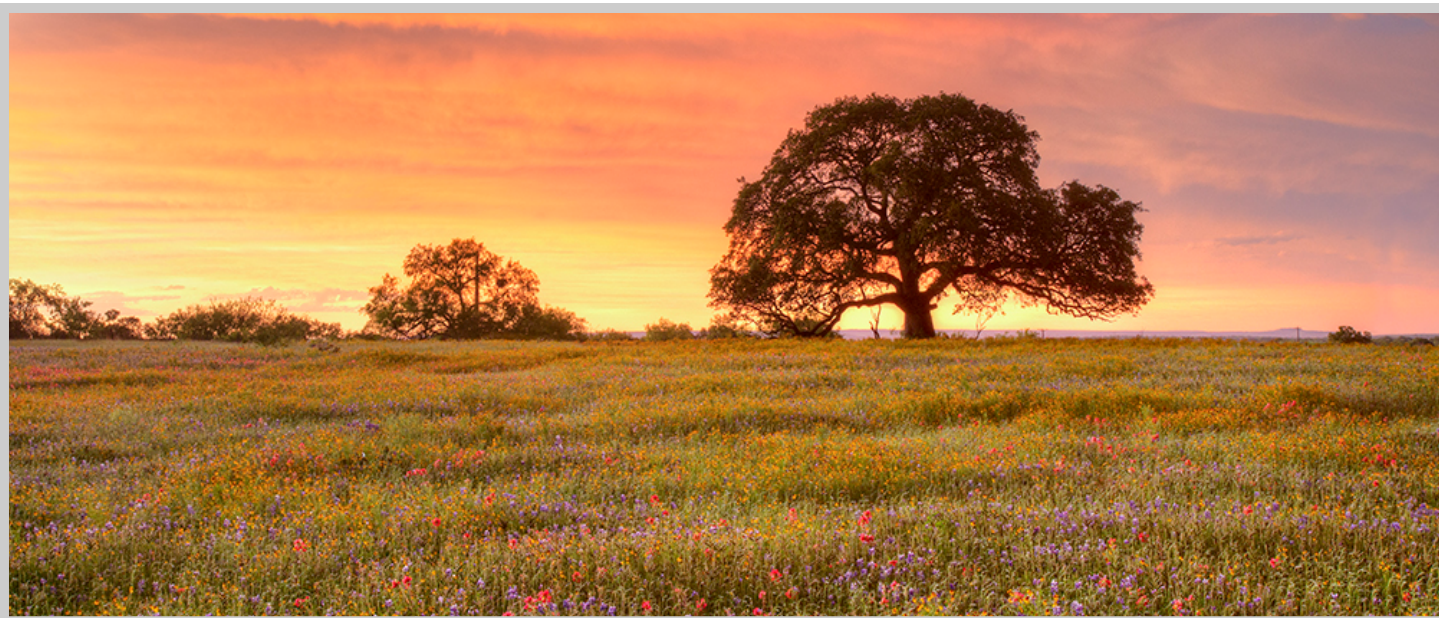
Greenbelts, or green corridors, are a great way to link parks, open spaces, and mixed use land in cities. For greenbelts to add the most value, they must be large enough to provide opportunities for people and wildlife to access and enjoy. Whenever possible, greenbelts should provide connections between existing green spaces, local amenities, commercial hotspots, and transportation hubs.

The San Marcos Greenbelt Alliance (SMGA) is a non-profit organization that works to preserve and protect the natural areas of San Marcos while connecting the community to its natural beauty.

► Learn more about SMGA at smgreenbelt.org.



MAP OF FUTURE TRAIL SYSTEM ALONG SAN MARCOS' STREAMS AND RIVERS
PHOTO COURTESY OF SAN MARCOS GREENBELT ALLIANCE



FIELD OF WILDFLOWERS BETWEEN LLANO AND MASON COUNTIES
PHOTO COURTESY OF ROB GREEBON

BEST PRACTICES

Identify types of open space. Not all open space needs to be parkland, or even be publicly owned. Open space can be categorized into natural, recreational, and agricultural types, each representing varying levels of human impact on the environment. By identifying these types, a community can determine the desired amount of each and make informed decisions about how to allocate resources.

Designate policies for acquisition of open space areas in community comprehensive plans. Open space is a vital land use and should be considered in a variety of local planning efforts from transportation to parks and recreation. Long-term goals for open space preservation are necessary for reducing habitat fragmentation, managing municipal and regional stormwater, and protecting sensitive natural resources and wildlife from the effects of transportation projects and other development.

Connect open spaces in order to reduce habitat fragmentation and preserve recreational opportunities. Collaborating with other municipalities, regional partners, area non-profits, and land trusts can help in creating larger tracts of connected open space.

Create equitable access to open space. Everyone deserves access to nature. While contiguous tracts are ecologically beneficial, it is equally as important that the benefits of open space are enjoyed and shared across multiple neighborhoods within a community.



Tree Preservation

A tree ordinance helps a city manage and protect its urban forest by providing for the preservation of existing trees, communicating tree health maintenance practices, and setting short and long-term management standards. Heritage trees have been growing for decades, often centuries, making them precious and finite resources that are vital to protect.



PROTECTED LIVE OAK ON THE CAPITOL GROUNDS IN AUSTIN. SIGN IN PHOTO BELOW READS "PLEASE HELP PRESERVE THIS HISTORIC TREE, KEEP OFF."



PHOTOS COURTESY OF SYDNEY BECKNER

EXAMPLE ORDINANCES

JOHNSON CITY (ARTICLE 15.01)

BLANCO (CHAPTER 5, SEC. 5.11)

BULVERDE (SEC. 4.06)

MARBLE FALLS (SECTION 9.1.1)

- Includes language around penalties for properties that are clear-cut for any reason making them ineligible for approval of other permits for three years.

HELOTES (ARTICLE 1, SEC. 94.1)

BOERNE (CHAPTER 8, SEC. 8.3)

NEW BRAUNFELS (SEC. 144-5.3)

- Includes one of the more extensive lists of protected tree and shrub species of any community.

AUSTIN (ENVIRONMENTAL CRITERIA MANUAL, SEC 3)

SAN ANTONIO (UNIFIED DEVELOPMENT CODE, SEC. 35-523)

- An example of a thorough ordinance including helpful images, graphs and equations.



TREES ALONG SOUTH GRAPE CREEK IN LUCKENBACH.
(CC) DIANN BAYES / FLICKR

RESOURCES

This in-depth resource from the **International Society of Arboriculture** examines existing tree ordinances, discusses community forest management strategies, methods for evaluating tree ordinances and urban forests, performance standards for tree ordinances, and more.

► [*Guidelines for Developing and Evaluating Tree Ordinances*](#)

City Hall Essentials, a Texas-based firm, provides background on legal issues related to tree ordinances, specifically private property and takings law precedents. The document also contains example ordinances and best practices for providing a sound legal backdrop to your city's legislation. This resource is specific to Texas communities.

► [*Municipal Regulation of Trees and Landscaping*](#)

Penn State College of Agricultural Sciences provides an overview of a maintenance strategy for your community's urban forest.

► [*Annual Working Plans for Tree Commissions*](#)

NC State provides a broad overview of tree ordinances that covers types of tree ordinances, ordinance components, aspects of community involvement, and offer guidance on the ordinance writing process.

► [*Developing Successful Tree Ordinances*](#)

Levels of Tree Ordinance Protection



8" and larger

- Survey required on commercial site plan submittals



19" and larger are Protected Trees

- All species are protected
- Tree permit required for removal or impacts (residential and public)



24" and larger may be Heritage Trees

- Only specific species qualify
- Variance required for removal or impacts that exceed code requirements
- Variances can be administrative
- Greater penalties for unpermitted impacts



30" and larger Heritage Trees

- Proposed variances must go through public process

ON PRIVATE PROPERTY, THE CITY OF AUSTIN USES THREE CLASSIFICATIONS OF TREES FOR PROTECTION PURPOSES: 8- TO 18-INCH DIAMETER, PROTECTED TREES, AND HERITAGE TREES.

SOURCE: CITY OF AUSTIN

BEST PRACTICES

Fostering community support is critical to an ordinance's effectiveness. Before drafting an ordinance, develop a working relationship with interested civic groups, such as neighborhood associations, environmental groups, community clubs, etc.

Consider establishing a citizen advisory board and/or appointing a city arborist. This approach gives appointed residents the authority to propose and review revisions to the tree ordinance to city council. It also provides an avenue for community education of tree conservation and provides an additional forum for public input. Another approach can be to appoint a city arborist with expertise in forestry or horticulture to oversee compliance.

Develop and implement a master tree management plan. A successful management plan reflects the goals and values of the community and helps ensure that tree preservation is part of a community's larger natural resource management strategy. Successful implementation of a master tree plan requires commitment of personnel and resources. Developing an implementation schedule, delegating roles, and setting aside resources will ensure the success of an ordinance.



Outdoor Lighting

Outdoor lighting ordinances help communities keep their rural nighttime character, preserve star-filled skies, and maintain public safety while growth occurs. To be clear, outdoor lighting ordinances do not prohibit outdoor lighting - they simply limit the amount of light pollution. When nighttime lighting is shining where it's not intended - onto neighbors' properties, into the eyes of drivers and pedestrians, or up into the sky - it is considered light pollution. Reducing light pollution in our communities benefits human health, safety, and quality of life while also saving money in energy costs. Proper outdoor lighting protects starry views, which increases the tourism draw of our communities, benefits wildlife, and preserves a connection to the stars for children and adults.

Remember, it's not about "no lighting," it's about thoughtful lighting.

EXAMPLE ORDINANCES

BLANCO (SECTION 5.12)

- Addresses the city's extraterritorial jurisdiction (ETJ).

WIMBERLEY (ARTICLE 4.09)

LIBERTY HILL (APPENDIX A, CHAPTER 6, SEC. 6.13)

- Uses the Texas Model Outdoor Lighting Ordinance (from Texas IDA).

FREDERICKSBURG (ARTICLE XV)

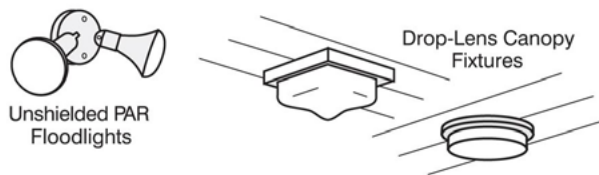
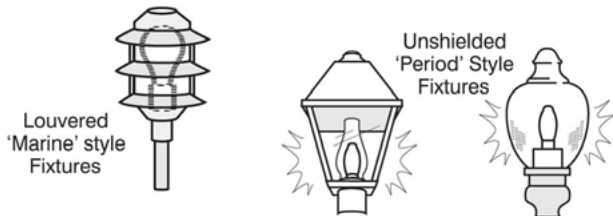
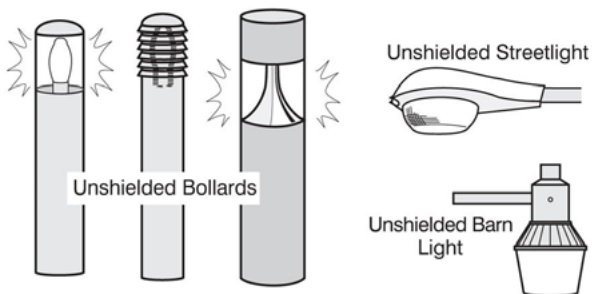
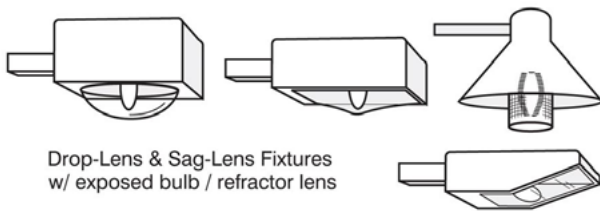
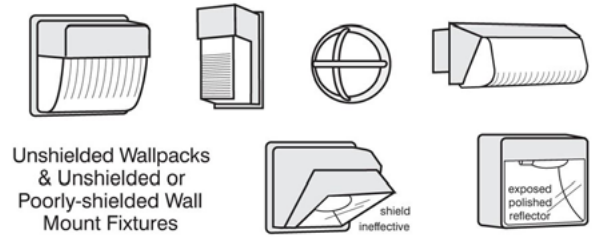
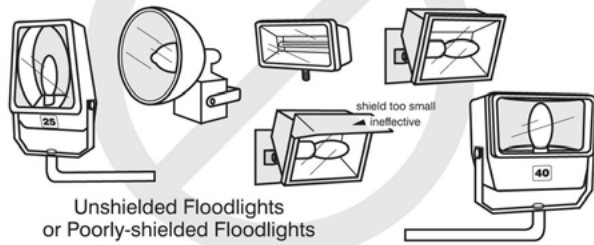
The Hill Country Alliance Night Sky Program helps Hill Country communities minimize the impacts of light pollution through education and outreach, the establishment of outdoor lighting policies, and the celebration of designated Dark Sky Places in our region.

- Explore our resources at hillcountryalliance.org/our-work/night-skies

Examples of Acceptable / Unacceptable Lighting Fixtures

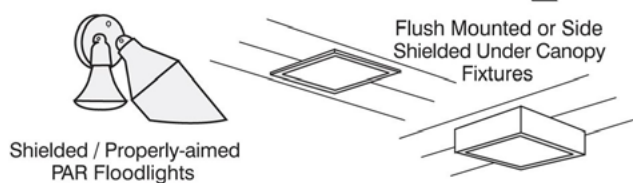
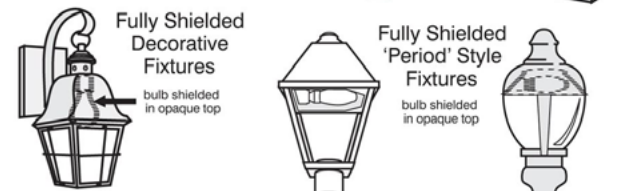
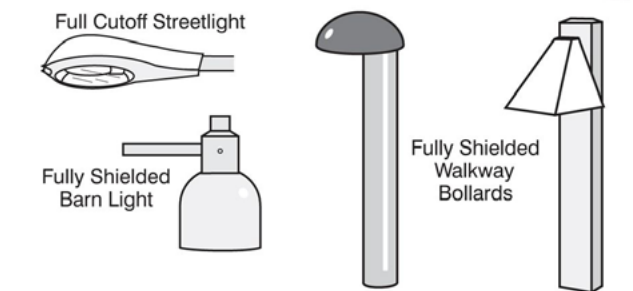
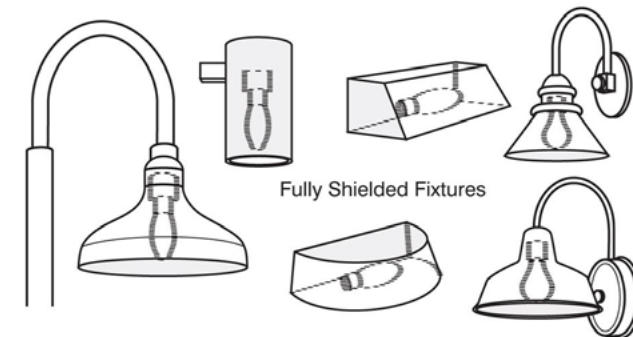
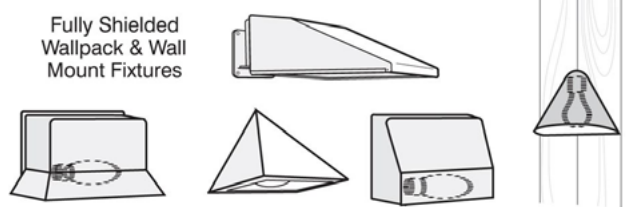
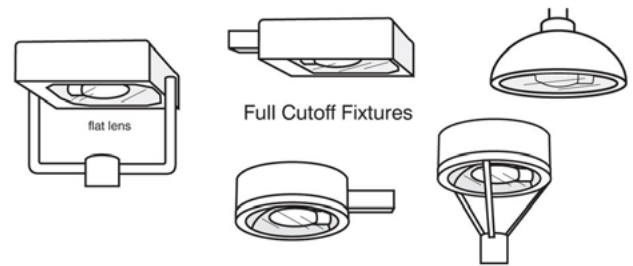
Unacceptable / Discouraged

Fixtures that produce glare and light trespass



Acceptable

Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



(CC) ILLUSTRATION BY BOB CRELIN

IDSC

INTERNATIONAL DARK-SKY COMMUNITY

Established by the **International Dark-Sky Association (IDA)**, the IDSC designation is granted to towns, cities, or otherwise legally organized communities that show exceptional dedication to night sky preservation through the implementation and enforcement of a quality outdoor lighting ordinance, dark sky education, and citizen support of dark skies.

The **IDA** is an advocacy network working to protect night skies.

- ▶ Learn more about IDSC and IDA resources at darksky.org
- ▶ Visit the Texas chapter at darkskytexas.org

The IDA and **Illuminating Engineering Society (IES)** developed a Model Lighting Ordinance to simplify the ordinance process (see Liberty Hill).

- ▶ [Model Lighting Ordinance](#)

TEXAS IDSC CITIES

DRIPPING SPRINGS (2014)

HORSESHOE BAY (2015)

WIMBERLEY VALLEY (2018)

LAKEWOOD VILLAGE (2019)

FREDERICKSBURG (2020)

BLANCO (2022)

BEE CAVE (2023)

CHAPTER 3000 OF THE TEXAS GOVERNMENT CODE mandates that any municipality that adopts or enforces an outdoor lighting ordinance must also adopt a resolution stating the community's intention to pursue an International Dark-Sky Community (IDSC) designation through the International Dark-Sky Association (IDA). The resolution does not need to indicate a timeline for pursuing the IDSC designation.

- ▶ [City of Liberty Hill Resolution Supporting Dark-Sky Certification](#)



"THE STARGAZER"

PHOTO COURTESY OF TODD WINTERS

BEST PRACTICES

Use visual aids and approachable language to encourage understanding and support. Lighting is a visual subject and diagrams and images are helpful for illustrating permitted designs. Lighting is also a technical subject and uses terms and concepts that will likely require community education. Some terms, like "lumens" and "correlated color temperature (CCT)" are less important to understand technically, and more important to simply get the gist (e.g. "lumens" is a measure of brightness, and "CCT" refers to the color of the light). It is important to discuss the value of an outdoor lighting ordinance with the community to gain support and cooperation.

Limit the amount of unshielded lighting per acre. One of the primary components of an outdoor lighting ordinance is the requirement that outdoor lighting be fully shielded. However, it is typical to allow for some low output lights to remain unshielded, to accommodate string lights and other special uses, provided they do not shine onto neighboring properties or into streets.

Require that outdoor lighting be warmer (amber) in color, using a cap of 3000 Kelvin, CCT. The move to LEDs has led to the proliferation of bright blue-white or “daylight” fixtures in our night time streetscapes. Warmer tones - lights that have less blue in them (lower CCT ratings) - are better for our bodies as well as those of animals and plants. They also create less glare in the eyes of drivers and pedestrians and do less to wash out our view of the stars in the sky. While warmer tones from LEDs were once more expensive, that is no longer the case.

Limit the total amount of lighting on an acre of commercial property or residential property. Typical numbers to use are 17,500 lumens per acre of residential property and 75,000 lumens per acre of commercial property. It is a best practice to define the acreage of the property using “net acres,” meaning the portion of the property not covered by a building.

Prohibit light trespass. Light trespass occurs whenever light shines directly across a property line. Reducing light trespass is a key motivator for many residents to support outdoor lighting ordinances. A fully shielded light will not create light trespass, unless it is very close to the property line, so the requirement to fully shield lighting will address most, but not all, instances of light trespass.

Address streetlights and sports lighting. In general terms, the same standards (e.g. CCT maximum of 3000K, full shielding, light trespass restriction) should apply to street lighting. Sports lighting policies should follow similar standards, and have a curfew for what time the lights go out if no scheduled game is underway.

Allow nonconforming lighting to stay in place for a set number of years before needing to be replaced. Grace periods of 5 years or 10 years are typical for this provision.

Address signage, if there is not a sign ordinance that already addresses sign lighting. Lighting for externally lit signs should conform to the same standards as other lighting. Internally lit signs should have a dark background with lighter lettering, as opposed to a white background with darker lettering.

Require a lighting plan and inspection. It is best to require evidence (e.g. an inspection) that the ordinance has been followed, prior to issuing a certificate of occupancy.



Conservation Subdivision Design

A conservation subdivision design (CSD) ordinance is a type of development ordinance that encourages or requires developers to design and construct subdivisions in a way that minimizes the impact on the natural environment and preserves open space, wildlife habitats, and scenic landscapes.

Typically, CSD ordinances require or incentivize developers to cluster homes and infrastructure on one portion of the land and set aside another portion for conservation purposes, such as parks, trails, wetlands, and woodlands. This approach helps to reduce the amount of land needed for development and protect natural resources, while still allowing for growth and development in a community and preserving a landowner's ability to profitably develop their land.

BENEFITS OF CSD

- Preserves natural resources, protects wildlife, promotes biodiversity, and maintains the ecological balance of an area.
- Creates public amenities like new parks, trails, and other recreational amenities for residents to enjoy.
- Reduces costs to local governments and developers by reducing the distances that infrastructure such as roads, electricity, water, and sewer must run to serve the development.
- Improves quality of life by promoting a connection to nature and providing shared access to outdoor spaces.
- Increases property values.

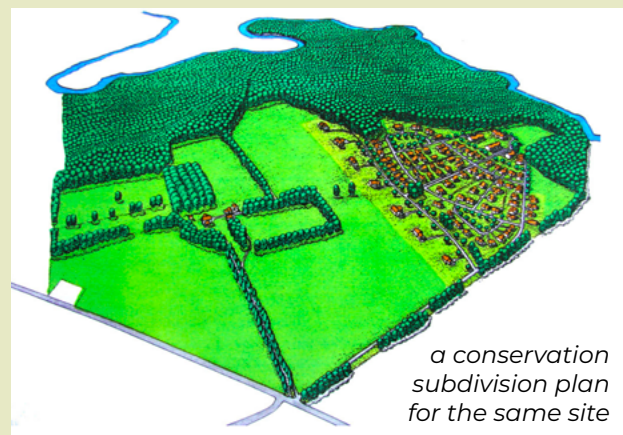


IMAGE FROM ARENDT, R., M. COLLINS, AND A. VALENTINE
(1996) OPEN SPACE DESIGN GUIDEBOOK

EXAMPLE ORDINANCES

CITIES

DRIPPING SPRINGS
SAN ANTONIO

COUNTIES

HAYS COUNTY
TRAVIS COUNTY

BEST PRACTICES

Recognize roles played by active parties (developers, local governments, residents, ecologists, and land trusts/management associations) and support them to overcome barriers.

Connect open space to existing city green space, trail networks, or green corridors to amplify their utility. Connections to pedestrian trail networks enhance public recreation quality.

Incentivize CSDs by allowing design flexibility in ordinance language. Flexibility in lot sizes and setback requirements helps developers meet density requirements that are sensitive to natural land characteristics and achieve conservation goals. This flexibility can address a potential barrier for developers in instances where conserving designated ecological areas is difficult due to other existing ordinances setting limits on minimum lot size and setbacks. Flexibility in lot sizes and setback ordinances also allows developers to maximize use of the site while preserving natural characteristics and ecological priorities.

RESOURCES

Randal Arendt is a landscape planner, site designer, and an advocate of conservation planning. In addition to the resources below, Arendt has written two books on the subject titled: *Conservation Design for Subdivisions and Growing Greener: Putting Conservation into Plans and Ordinances*.

- Free downloads available at: www.greenerprospects.com/products.html
- [YouTube video presentation on CSD in Hays County](#)

North Carolina State University published a helpful guide on CSDs that outlines what they are, perceived barriers and ways to overcome them, and how to promote CSDs.

- [Conservation Subdivision Handbook](#)

University of Nebraska-Lincoln's Institute of Agriculture and Natural Resources describes CSDs on their website as a way to collectively enhance environmental quality.

- [Key Considerations for Conservation Subdivision Design](#)

HOW ARE CSDS DIFFERENT FROM PUDS?

Planned Unit Developments (PUDs) and Conservation Subdivision Designs (CSDs) represent two distinct approaches in development planning, each with its unique characteristics and objectives. PUDs typically prioritize flexibility and innovation in land use, allowing developers to deviate from conventional development regulations to create mixed-use communities or achieve specific design goals. In contrast, CSDs are primarily aimed at preserving natural features and open spaces within a development, emphasizing conservation and environmentally sustainable practices. However, it's essential to recognize that **PUDs can incorporate elements of CSDs to create more holistic and sustainable developments.**

By integrating green spaces, adopting sustainable building practices, and preserving natural landscapes within PUDs, planners can strike a balance between development and environmental conservation. In doing so, they can create communities that are not only vibrant and adaptable but also environmentally responsible, reflecting the best of both PUDs and CSDs in urban planning.

FOUR-STEP PROCESS TO CONSERVATION SUBDIVISION DESIGN

1. Identify critical conservation areas, including wetlands, floodplains, steep slopes, woodlands, meadows, wildlife habitats, streams, farmlands, and cultural features. This identification guides development placement.
2. Cluster home sites to minimize road and utility infrastructure length while maintaining privacy and providing residents with views of and easy access to natural green spaces.
3. Plan streets logically for access to homes and incorporate trails connecting neighborhoods and open spaces, offering benefits like preserved farmland and scenic buffers from major roadways.
4. Allow lot lines to vary in order to accommodate natural features, ensuring conservation areas remain unfragmented. Neighboring conservation subdivision districts can form large, connected open space expanses.



Parkland Dedication

Parkland dedication ordinances are an important tool in municipal authority to balance residential and commercial development with environmental preservation and community well-being. In the face of rapid development, preserving access to green spaces and maintaining the natural landscape's integrity can become increasingly challenging. Parkland dedication ordinances can help address these challenges by requiring developers to set aside land or contribute funds for parks and recreational areas when creating new developments. Parkland dedication ordinances are an effective tool for raising funds for parkland without raising taxes. **This helps ensure that a growing community can continue to provide ample opportunities for outdoor recreation, while preserving wildlife habitat and protecting overall quality of life for residents.**

Parkland dedication ordinances help ensure that a community's park network grows at the same pace as the community itself, without passing on the cost of that growth to current residents. New development generates a need for new parks, and through parkland dedication ordinances, new development can also bear the cost of providing new amenities to meet that

RESOURCES

Research for this guide relied heavily on the work of **Dr. John Crompton**, University Distinguished Professor at Texas A&M University. Dr. Crompton's interest in financing public leisure and tourism led him to research and publish several resources on parkland dedication. Dr. Crompton often assists city attorneys working to develop ordinances for their communities.

- ▶ [An Analysis of Parkland Dedication Ordinances in Texas](#)
- ▶ [Parkland Dedications: Optimizing an Underutilized Resource](#)
- ▶ [The Trend of Expanding the Scope of Parkland Dedication Ordinances](#)

PARK TYPES

Parkland dedication ordinances can support the creation of different types of parks, including: pocket parks, greenways, neighborhood parks, private parks, regional parks, natural resource areas, public recreation facilities, and others.

Each individual community can define its parks in a way that makes the most sense for their available parklands and recreation needs.



TIMMERMAN PARK IN NEW BRAUNFELS MADE POSSIBLE THROUGH PARKLAND DEDICATION FEES.
IMAGE COURTESY OF THE CITY OF NEW BRAUNFELS

New Braunfels utilized their Parkland Dedication ordinance to establish Timmermann Park, a 2-acre public city park on an existing city trail system. Through a negotiated development agreement where the subdivision HOA assumed responsibility for maintenance, New Braunfels balanced the need for more parkland with maintenance staff capacity.

Depending on ordinance language, municipalities can deploy parkland dedication fees to add new amenities to existing parks. For instance, the City of Fredericksburg used parkland dedication fees to pay for a new bathroom at Cross Mountain Park.



BATHROOM FACILITIES AT CROSS MOUNTAIN PARK IN FREDERICKSBURG BUILT USING PARKLAND DEDICATION FEES.
IMAGE COURTESY OF THE CITY OF FREDERICKSBURG

BENEFITS OF PARKLAND DEDICATION ORDINANCES

- **Enhanced Public Spaces:** By requiring developers to dedicate land for parks, these ordinances contribute to the creation and preservation of public green spaces, enhancing quality of life for residents.
- **Improved Community Health:** Access to parks encourages physical activity and outdoor recreation, which can lead to improved physical and mental health outcomes for individuals and communities.
- **Increased Property Values:** Proximity to parks and green spaces can increase property values, benefiting homeowners and contributing to economic stability in neighborhoods.
- **Social Equity:** Parkland dedication ensures that access to green spaces is distributed equitably across communities, regardless of socioeconomic status, promoting social inclusion and cohesion.
- **Long-Term Planning:** These ordinances facilitate long-term urban planning by ensuring that sufficient land is set aside for parks and recreational facilities as cities grow and develop.
- **Community Engagement:** The process of implementing parkland dedication ordinances often involves community input and engagement, fostering a sense of ownership and pride in local parks and green spaces.
- **Environmental Protection:** Parkland dedication helps preserve natural habitats and green corridors, supporting biodiversity and mitigating the effects of urbanization on ecosystems.

EXAMPLE ORDINANCES

Parkland dedication ordinances should reflect the individual nuances of their communities. The following cities are good examples of parkland dedication ordinances and include many best practices, but municipalities looking to adopt a parkland dedication ordinance should ensure their ordinance language reflects their specific community's priorities and context.

DRIPPING SPRINGS (ARTICLE 28.03)

FREDERICKSBURG (CHAPTER 38, SECTION 6.15)

NEW BRAUNFELS (PARKLAND MANUAL)

BEST PRACTICES

This list of best practices for crafting a parkland dedication ordinance includes information pulled from Dr. Crompton's publication: [Parkland Dedications: Optimizing an Underutilized Resource](#).

Ensure recitals or introductory paragraphs sufficiently address “rough proportionality.” One outcome of the U.S. Supreme Court case, *Dolan vs City of Tigard* (512 U.S. 374. 1994), is that a park dedication ordinance must demonstrate the impact an individual development has on creating a need for parks. The introductory paragraph of Austin's ordinance includes language addressing the requirements set in the *Dolan* decision.

“The City of Austin has determined that recreational areas in the form of public parks are necessary for the well-being of residents and employees. The City has further determined that the approval of new residential and commercial development is reasonably related to the need for additional parkland and park amenities to serve new development. This article establishes a fair method for determining parkland dedication, or the payment of a fee in-lieu of dedication, to be required as a condition to the approval of new development in an amount proportionate to the impact of development on existing parks and established levels of service.”

Include a land requirement. Provide a calculation for developers to determine acreage requirements for dedications. For example, Travis County's code states that the amount of parkland required to be dedicated by a subdivider is five acres for every 1,000 residents while the City of Austin requires 9.4 acres per 1,000 residents.

Offer a fee-in-lieu of land and specify a timeframe for expending funds. Fees-in-lieu are an alternative to the land requirement and ensure that adequate fees are collected to cover the cost of land acquisition by the local government. To align with court expectations, ordinances should also include a deadline for utilizing fees-in-lieu. Typically, an 8- to 10-year period is sufficient for most communities. Should this timeframe not be met, ordinances must detail a refund process (refer to p. 87 of [Crompton, 2010](#) for example language).

Offer incentives to achieve the community's preferred outcome. Identify community preference between land acquisition or fee collection and craft the ordinance to incentivize that outcome by making that path the most cost effective for developers.



KAYAKERS AT BLUE HOLE REGIONAL PARK IN WIMBERLEY.
PHOTO COURTESY OF JAZZMIN AQUAYO

Include a parks development fee to cover the costs of transforming dedicated parkland into active parks. Without it, cities rely on existing taxpayer funds, often leaving parklands undeveloped. Mandate this fee alongside land dedication and in-lieu requirements in ordinances, even if developers opt for fee-in-lieu arrangements. New Braunfels includes on page 12 of their Parkland Manual a list of acceptable park amenities and requires a minimum of 3 are used.

Create a parks master plan to guide planning and development of the city's park system. Well-planned parks can promote active lifestyles, build a more connected community and provide other health and economic benefits. A parks plan should result from a participatory process with community members and stakeholders to guide decision-making and future planning. It is important that any parks plan is a dynamic and flexible planning tool that can adapt to a community's evolving vision, needs, and priorities.

Consider a timeline for revisions. An appealing feature of parkland dedication is that it is responsive to the market. If more people move to a city, then there is more money for parks, and more will be built. Additionally, as the cost of land acquisition increases (or decreases) then parkland dedication requirements can increase (or decrease) accordingly. This is especially useful in fast-growing communities within the Hill Country, where land prices have increased consistently over time.

COMMON PITFALLS TO AVOID WHEN CRAFTING A PARKLAND DEDICATION ORDINANCE

Don't confuse dedications with impact fees.

Often there is confusion around these two funding mechanisms for local government that operate very differently. Parkland dedications are considered a “police power” of Texas home rule municipalities, allowing cities to take actions that promote the health, safety, and welfare of their residents. Impact fees, by contrast, cannot be implemented at the local level unless there is a law passed by the state legislature that explicitly allows local governments to impose these fees. Texas is one of five states that does not allow impact fees to fund parks ([Crompton, 2010](#)).

Don't base dedications on land percentages.

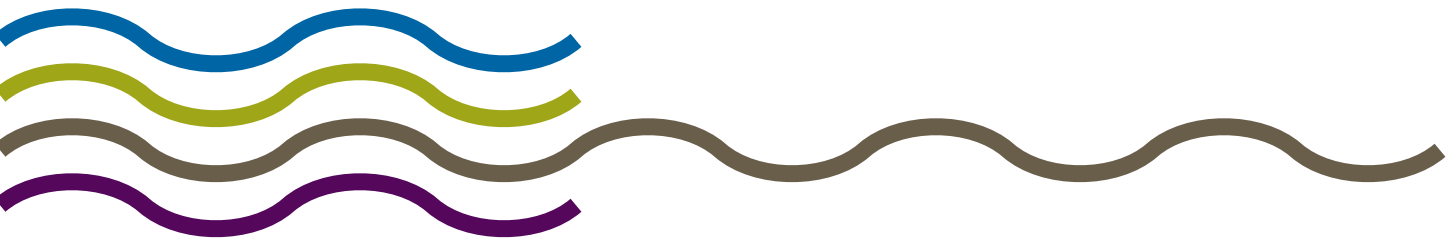
Avoid legal challenges by basing dedications on development density rather than land percentage. Parkland dedication requirements expressed as a percent of land do not take into account development density and are likely to be rejected by courts for failing to meet the “rough proportionality” standard, set by the US Supreme Court in *Dolan vs City of Tigard* (512 U.S. 374, 1994).

The City of College Station's parkland dedication requirements differentiates based on development density by using “development units (DUs) per acre.” For single-family units they require 1 acre per 102 DUs (1 acre per 125 DUs for multi-family units). For a more detailed breakdown of this see page 75 of [Crompton, 2010](#).

Don't use dedication fees for park maintenance.

Parkland dedication requirements are restricted to the acquisition and improvement of parks, not for maintaining or operating them. Maintenance costs should be considered and accounted for separately.





TRANSPORTATION

As walking and biking become popular modes of transportation again, our towns need streets and sidewalks that meet the needs of all users. The following guides can help cities build infrastructure with safety, efficiency, and walkable downtowns in mind, no matter their size.

| | |
|------------------------------------|------|
| COMPLETE STREETS..... | T-4 |
| TRAFFIC CALMING..... | T-7 |
| SENSIBLE PARKING REQUIREMENTS..... | T-11 |
| BIKE PARKING..... | T-14 |

"ALIVE ON WATER STREET"

KERRVILLE, TX

PHOTO COURTESY OF DALE LEACH



"A good street is more than just a fantastic place to be. It's a vital building block for a strong community."

- StrongTowns

Complete Streets

Complete Streets is a flexible street design approach that promotes functional, safe, and accessible streets for all people and transportation modes. The approach encourages jurisdictions to adopt designs that respond to local conditions. While each community will have distinct needs, Complete Streets should strive to be *multi-modal* – accommodating pedestrians, bicyclists, motorists, ride share services, and public transit users, where transit is provided.

Expanding street accommodations for users other than drivers is particularly beneficial for people who don't own a car and those who are unable or choose not to drive. Streets should be hospitable to users of all ages and abilities, which includes providing seating and shade. Street redesign also presents opportunities for greening, which beautifies and ecologically benefits the area.

Complete Streets decrease pedestrian and bicyclist accidents through safer design, facilitate more active lifestyles, and increase street activity which benefits nearby businesses. The positive impact of Complete Streets on road safety can be furthered through traffic calming measures, which are also discussed in this chapter.

ELEMENTS OF A COMPLETE STREETS POLICY

VISION AND INTENT
DIVERSE USERS
COMMITMENT IN ALL PROJECTS & PHASES
CLEAR, ACCOUNTABLE EXCEPTIONS
JURISDICTION
LOW IMPACT DESIGN
LAND USE AND CONTEXT SENSITIVITY
PERFORMANCE MEASURES
PROJECT SELECTION CRITERIA
IMPLEMENTATION STEPS

*FROM THE NATIONAL
COMPLETE STREETS COALITION*

TEXAS ORDINANCES, POLICIES, AND PLANS

RECOGNIZED BY THE NATIONAL COMPLETE STREETS COALITION

ORDINANCES

- SAN MARCOS, *Complete Streets Policy*
- AUSTIN, *Complete Streets Ordinance*

POLICIES

- SAN ANTONIO, *Streetscape Improvements*

PLANS & GUIDES

- CAPITAL AREA METRO PLANNING ORGANIZATION (CAMPO)
Texas Mobility Plan 2030
- TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT)
Guidelines Emphasizing Bicycle and Pedestrian Accommodations

ALSO SEE AUSTIN'S CONTEXT-SENSITIVE REGULATIONS FOR STREET DESIGN.

► *Transportation Criteria Manual: Street Cross Sections*

BEST PRACTICES

Coordinate across jurisdictions, departments, and agencies.

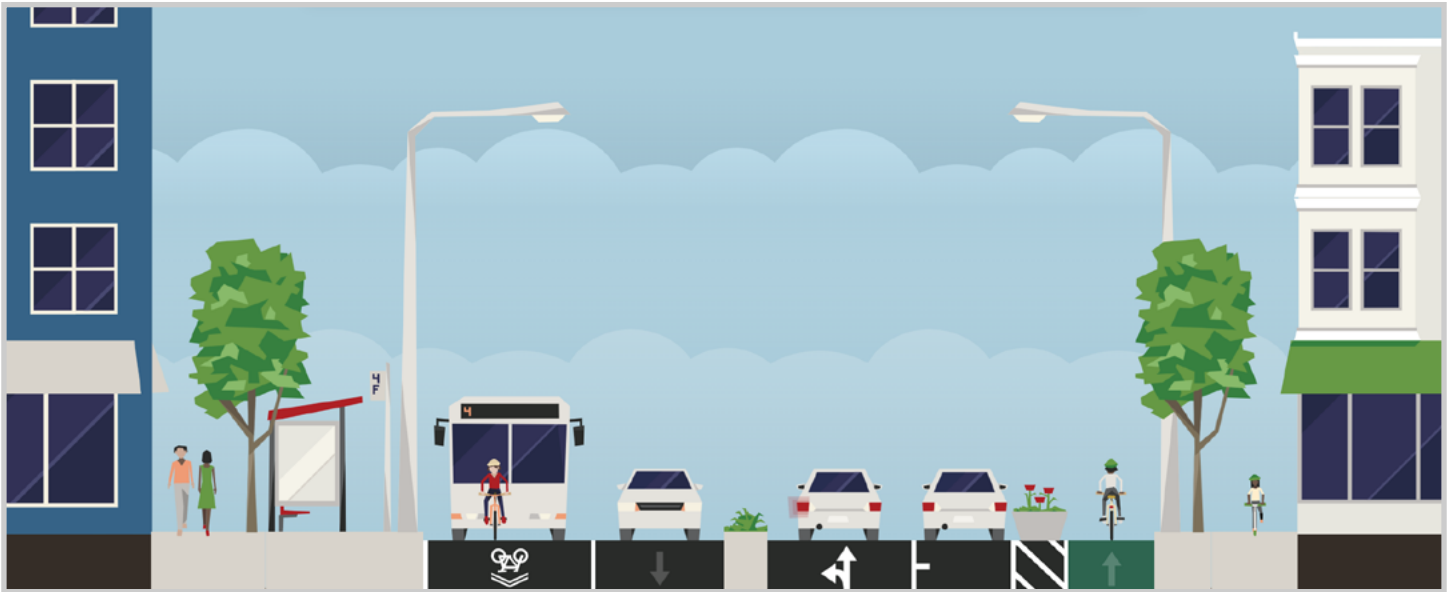
Complete Streets have many goals—economic development, environmental sustainability, social equity, and public health—and stakeholders and experts within each realm should be heard during policy development.

Allow for design flexibility. Each street has particular needs and policies should allow for creative solutions to site-specific problems. Be sure to detail exceptions to design requirements.

For example, streets surrounding schools may prioritize wider than normal sidewalks to accommodate families who walk to school. Community participation in the design process ensures the design will meet users' needs.

Use data to determine implementation barriers and to prioritize underserved and unsafe sites. Outline project selection criteria that highlights neighborhoods with vulnerable populations and sites where accidents frequently occur, users' needs are not being met, or other improvements are planned.

Accommodate many users. Complete streets should enable safe, convenient, and accessible routes for multiple modes of transportation; including, public transit, walking, biking, micro-mobility options, car and bike share services, and driving.



A POTENTIAL STREET DESIGN CREATED THROUGH [STREETMIX.NET](https://streetmix.net). STREETMIX IS AN OPEN SOURCE, ONLINE TOOL FOR VISUALIZING AND RE-IMAGINING ROADS. USERS CAN ADD EXISTING ELEMENTS AND TEST NEW DESIGNS ACCORDING TO THEIR PARTICULAR NEEDS.

RESOURCES

U.S. Department of Transportation

- [*The Small Town and Rural Multimodal Networks Guide*](#)
Interactive version at ruraldesignguide.com

Southern Georgia Regional Commission

- [*Best Practices for Complete Streets in Rural Communities*](#)

City of Tacoma, Washington

- [*Complete Streets Design Guidelines: Residential*](#)
- [*Complete Streets Design Guidelines: Mixed-Use Centers*](#)

Smart Growth America—National Complete Streets Coalition

- [*The Best Complete Streets Policies*](#)
See Appendix A: Methodology and Model Policy Language

Texas Department of Transportation (TxDOT)

- [*Bicycle Accommodation Design Guidance \(2021\)*](#)

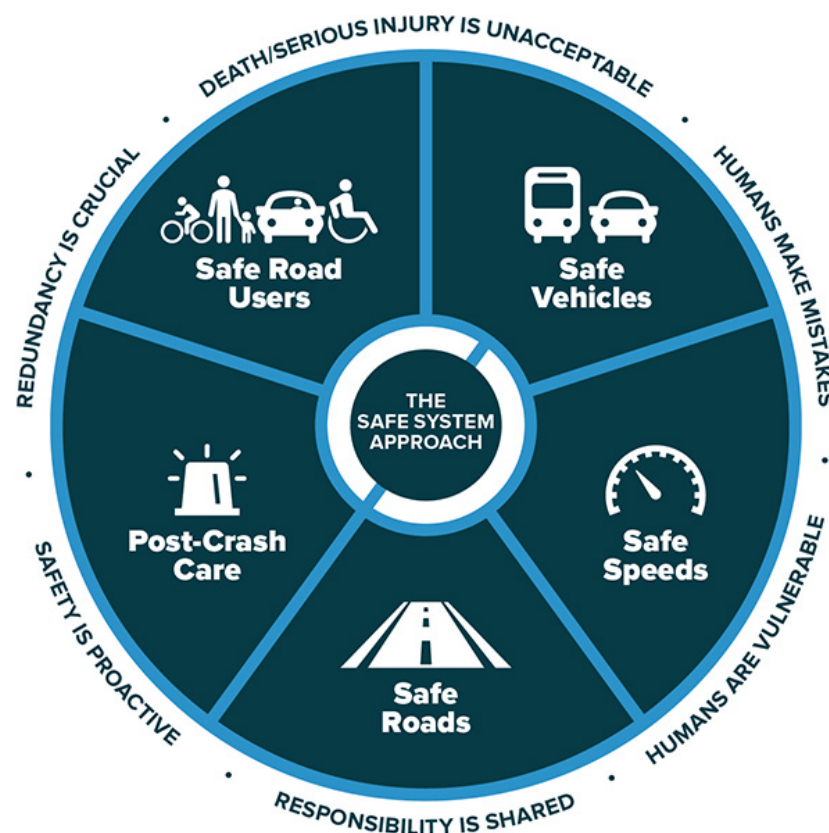
National Association of City Transportation Officials design guides for various street and community needs.

- [*Moving Together for Equitable Communities: Urban Bikeway Design*](#)
- View all the guides at nacto.org

Traffic Calming

Traffic calming solutions improve safety and mobility for pedestrians, cyclists, transit users, and motorists and easily complement Complete Streets policies. Long, wide, straight roads encourage motorists to speed, resulting in more accidents. Traffic calming efforts, including reducing lane widths and altering lane paths, reduce vehicle traffic volumes and speeds, which helps reduce collisions. These efforts manifest as physical barriers, visual cues, and pavement materials and colors that self-enforce traffic calming or call attention to non-vehicle paths.

Safe Systems is a road design approach with a vision of zero traffic deaths by 2050. The approach understands that human error is inevitable and aims to minimize the harm caused when those accidents happen.



ELEMENTS OF THE SAFE SYSTEMS APPROACH.
SOURCE: USDOT, FEDERAL HIGHWAY ADMINISTRATION

EXAMPLE ORDINANCES & MANUALS

MCKINNEY

- ▶ [Neighborhood Traffic Management Program*](#)

AUSTIN

- ▶ [Transportation Criteria Manual: Geometric Design Criteria](#)

SAN ANTONIO

- ▶ [Neighborhood Traffic Calming Handbook*](#)

GAITHERSBURG, MD

- ▶ [Street Design Standards and Traffic Calming Best Practices*](#)

* Cities should adopt traffic and street design manuals into code to ensure compliance.

BEST PRACTICES

Inventory solutions to capture suitability factors at a glance.

Include descriptions, pictures, cost estimates, maintenance needs, and pros and cons of each solution.

Combine traffic calming with water management projects.

For example, swales can accompany road diet modifications. Chicanes, curb extensions, and pedestrian refuge islands present opportunities for landscaping which reduces impervious cover and helps manage stormwater.

Ask for neighborhood constituent input. Neighbors know where drivers tend to speed and where it feels unsafe to cross the street.

Use tactical urbanism to inexpensively pilot projects. Cities can temporarily alter roads to explore possible solutions using inexpensive materials such as cones, hay rolled in burlap, potted plants, paint, wooden planks, or by holding community events.

Beautify in addition to traffic calming. Some constituents may not like traffic calming measures for the same reason others like them: they slow drivers down. Public art, seating, and landscaping, can provide added benefits non-supporters can appreciate.

TRAFFIC CALMING SOLUTIONS

HORIZONTAL DEFLECTION

Reduces vehicle speed by altering horizontal motion, requiring drivers to reduce their speed to navigate the change in the road.

- Chicane
- Roundabout
- Pedestrian Refuge Island



CHICANE. (CC) DAVID P HOWARD / WIKIMEDIA

VERTICAL DEFLECTION

Reduces vehicle speed by altering vertical motion, encouraging drivers to slow down or risk car damage..

- Speed Tables at intersections
- Speed Bumps or Tables at crosswalks



SPEED TABLE BEFORE AN INTERSECTION.
(CC) THISISBOSSI / WIKIMEDIA

NARROWING

Slows traffic volume by narrowing lanes, often to call attention to an upcoming crosswalk or intersection.

- Road Diet
- Pinch Point
- Curb Extension and Bump-Out



LANDSCAPED CURB BUMP OUT.
(CC) RICHARD DRDUL / WIKIMEDIA

VISUAL CUES

Demarcates different uses as a reminder to drivers of pedestrian or cyclist presence. Helps cyclists navigate safely.

- Colored and Textured Pavement
- Dynamic Speed Limit Sign



WORKERS PAINTING A BIKE LANE BRIGHT GREEN.
PHOTO SOURCE: SEATTLE DEPARTMENT OF TRANSPORTATION

RESOURCES

AARP geared their solutions toward small towns and organized them by short- to long-term implementation and financing timelines.

► [*Imagining Livability Design Collection*](#)

Institute for Transportation Engineers & CNU issued a series of fact sheets to accompany a report on context sensitive street planning.

► [*Design Factors to Control Speed*](#)

The **Road to Zero coalition** aims to achieve zero traffic deaths by 2050 using a 'safe systems' approach.

► [*Road to Zero: Taking a Safe Systems Approach*](#)

The **South Central Regional Council of Governments** in Connecticut detailed a toolbox of traffic calming measures that explains pros and cons of each tactic.

► [*Traffic Calming Resource Guide*](#)



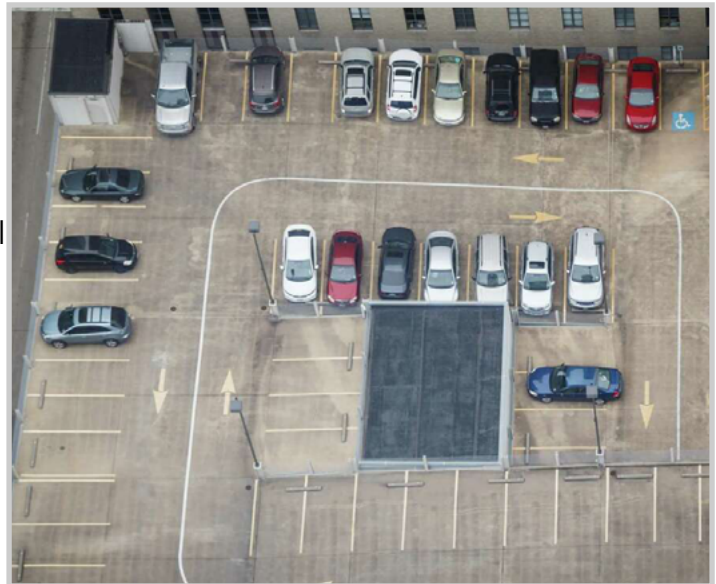
SIGNAGE, PAINTED BIKE LANES, AND CURB EXTENSIONS SUPPORT TRAFFIC CALMING IN DOWNTOWN SAN MARCOS. PHOTO COURTESY OF LEAH CUDDEBACK

Sensible Parking Requirements

Parking minimums dictate the number of parking spaces a developer must provide and often exceed the actually necessary amount of parking, leading to underused parking spaces. Cities may offer paths for developers to reduce required parking or eliminate parking minimums altogether, either at a district or city wide scale. The strongest ordinances reduce minimum parking by right, rather than making reductions conditional on nearby businesses' needs or developers' actions.

DISADVANTAGES OF SURFACE PARKING LOTS

- Surface parking lots occupy valuable space without contributing economic benefits. Underused parking lots depress property tax revenue, since they don't have taxable improvements.
- Affordability and project feasibility is compromised when developers are required to use land for parking rather than another business or residence.
- Ample parking encourages car use over active transportation modes like walking and biking, which bring foot traffic to local businesses and promote physical health.
- Impervious surface parking lots increase runoff and flooding during rain events and absorb heat which increases temperatures.



AN UNDERUSED PARKING LOT IN HOUSTON'S GROWING EAST DOWNTOWN. THE CITY RECENTLY REMOVED PARKING MINIMUMS IN THE DISTRICT.
(CC) MICHAEL PAULSON / HOUSTON CHRONICLE



SIGNIFICANT SPACE IN DOWNTOWN AUSTIN IS DEDICATED TO UNDERUSED SURFACE PARKING. ONCE MINIMUMS ARE REDUCED OR ELIMINATED, LOTS MUST BE DEVELOPED INTO ACTIVE SPACES.
(CC) DIANN BAYES / FLICKR

BEST PRACTICES

Increase allowable distance to off-site parking. Parking can be offered at the edges of the urban core rather than occupying valuable downtown space.

Offer shared parking plans. Neighbors with complementary parking needs can coordinate to maximize use of parking spaces.

Offer reductions in exchange for bicycle parking. This promotes active transportation and increases street activity for businesses.

Eliminate parking minimums in downtown areas. Downtown vitality depends on visitors parking in one location and walking through the district.

Institute parking maximums instead of minimums. This prevents oversupply of spaces and caps the amount of land dedicated to parking. This also offers developers greater flexibility to meet a site's specific needs.

Think beyond single sites. Update parking policies at the district or city level, rather than for single businesses or developments.

Shift to market-based parking. Trust that developers and businesses will provide only the amount of parking they believe is necessary for their operations.

EXAMPLE ORDINANCES

REDUCTIONS

BERTRAM

- Maximum parking regulations.
- Reductions for bike facilities and carpool programs.

DRIPPING SPRINGS (SEC. 5, EXHIBIT A)

- In lieu parking payments in the downtown district.

ELIMINATIONS

CITY-WIDE

BANDERA (APPENDIX 3)

DISTRICT-WIDE

UVALDE (CHAPTER 17.32)

SAN ANGELO (SEC. 511)

AUSTIN (ARTICLE 7)

SAN ANTONIO (SEC. 35-526)

RESOURCES

The **Des Moines area MPO** guide to sustainable parking planning, management, and design.

- [*Best Practices: Parking Management and Design*](#)

The **Center for Neighborhood Technology** municipal policy solutions for providing appropriate parking.

- [*Stalled Out: How Empty Parking Spaces Diminish Neighborhood Affordability*](#)

Victoria Transport Policy Institute's set of strategies to make parking resources more efficient.

- [*Parking Management: Comprehensive Implementation Guide*](#)

The **Montgomery County Planning Commission** of Pennsylvania shared ways to green parking lots so that they serve a secondary function when and where they are necessary.

- [*Sustainable Green Parking Lots*](#)

Parking Reform Network developed an interactive map of cities that have adjusted or eliminated their minimum parking requirements.

- View at parkingreform.com

Bicycle Parking

Providing bicycle parking encourages biking as a viable transportation mode. People are more likely to bike if they know their destination has secure and reliable bicycle parking, which decreases car dependency and pollution while promoting physical health. Workplaces that provide showers and changing spaces for bike commuters can further encourage bicycling.

ELEMENTS TO CONSIDER

Weather Protection
Visibility and Security
Proximity to Destination
Number of Spaces
Form and Design

EXAMPLE ORDINANCES

BANDERA

AUSTIN

- ▶ Land Development Code (how much is required)
- ▶ Transportation Criteria Manual (where its required)
- ▶ Standard Specifications Manual (technical details)

SEATTLE, WA

- Bicycle parking guidelines were adopted as a Director's Rule, which are binding rules about Seattle's municipal codes.

RESOURCES

The **Association of Pedestrian and Bicycle Professionals'** technical guide is organized by short- and long-term bike parking needs.

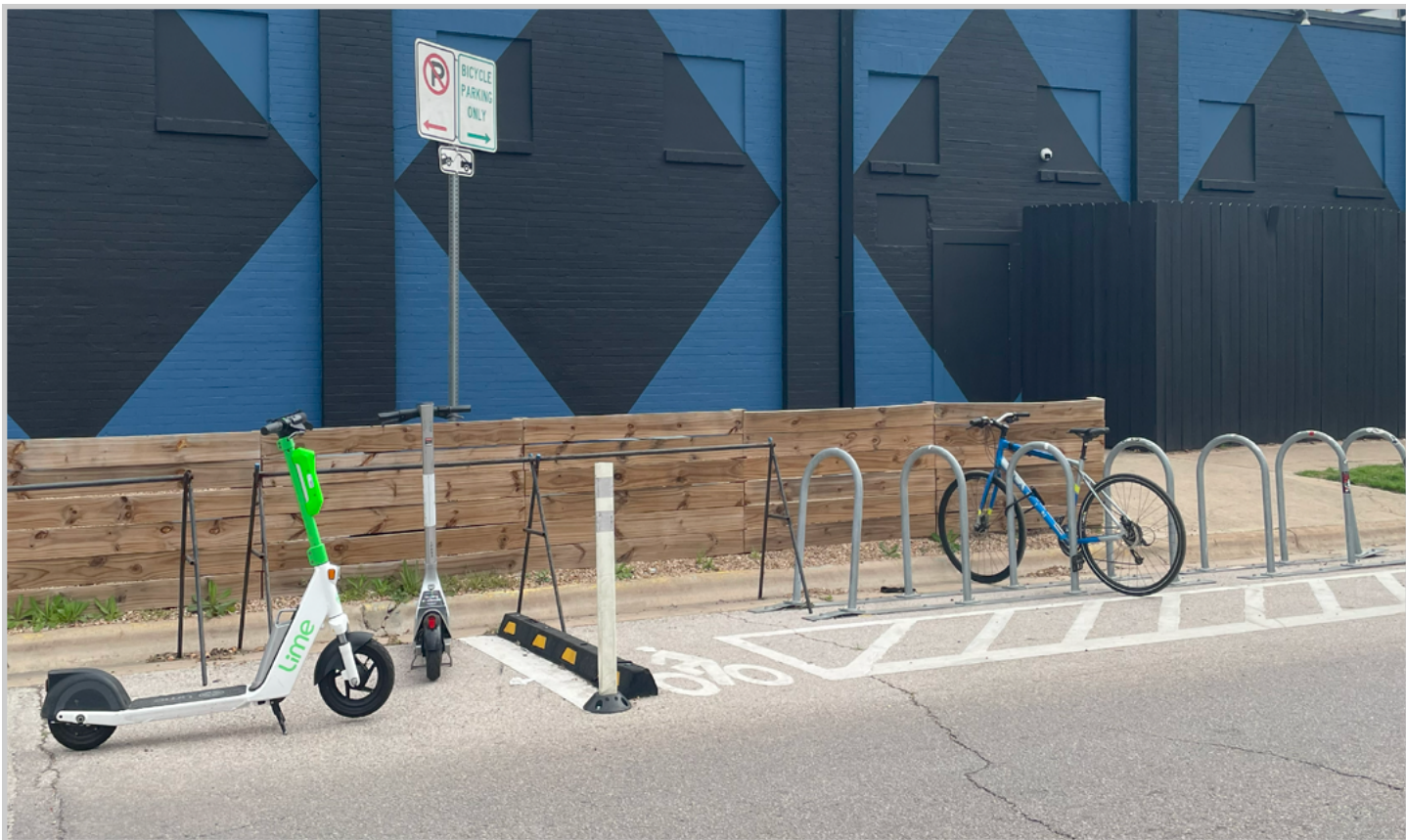
- ▶ *Essentials of Bike Parking: Selecting and Installing Bicycle Parking That Works*

Arlington County, Virginia divides their installation guide into three classes of bike parking and includes guidance on retrofitting sites.

- ▶ *Bike Parking Standards Guide*

Bike Texas is a statewide non-profit focused on bicycle access, safety, and education.

- ▶ Learn more at biketexas.org



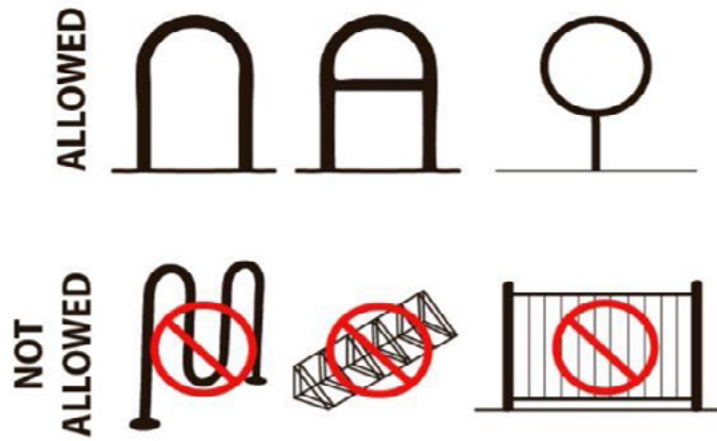
BOLLARD AND CURB PROTECTED IN-STREET BICYCLE PARKING.
PHOTO COURTESY OF MAGGIE NEMETZ

BEST PRACTICES

Ensure bike parking is visible and consistently marked. Use standard signage to direct riders and demarcate bicycle parking zones, especially when parking is not clearly visible. If within a parking garage, bike storage should be on the first floor.

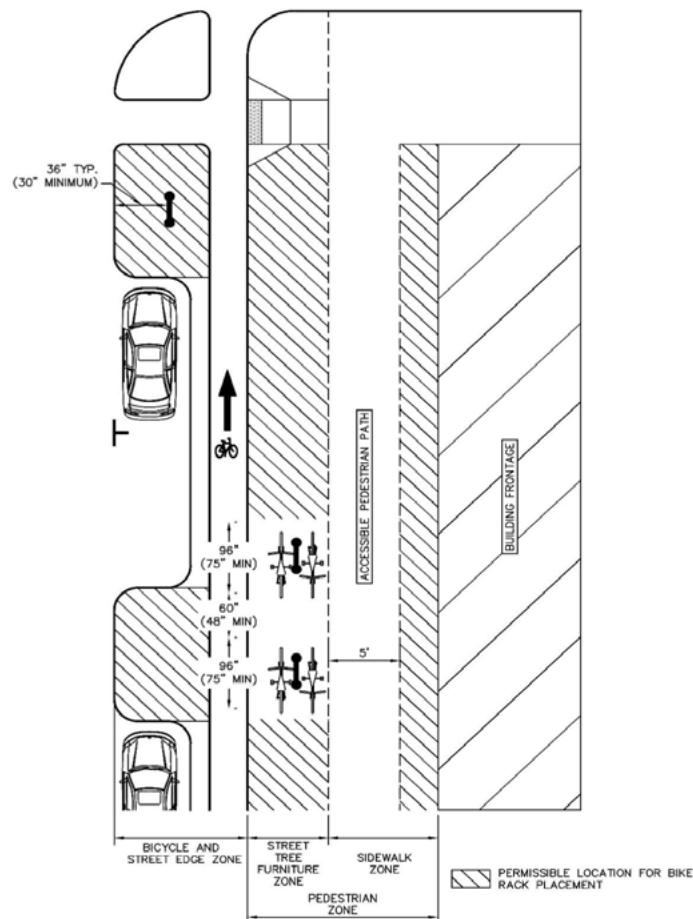
If you require vehicle parking minimums, allow them to be offset with bicycle parking. In Bertram, TX businesses can reduce their required vehicle parking by 5% if they provide covered and secure bike parking and another 5% if they provide bathrooms and lockers for employees who commute by bike. Employees are more likely to bike to work if employers provide all of these amenities.

Establish parking placement and design standards. Not all bike parking is created equal. Providing images and diagrams to assist developers and business owners in building bike facilities will yield safer, more space efficient, and consistent results.



GRAPHIC OF RECOMMENDED BICYCLE RACK DESIGNS.
SOURCE: CITY OF BANDERA CODE OF ORDINANCES SECTION 15B

Build protected parking and storage facilities. Enhance personal safety by making parking accessible, visible, and well-lit. Riders should have ample room to maneuver without damaging their bicycles.



GRAPHIC OF RECOMMENDED BICYCLE PARKING LOCATIONS AND PLACEMENT.
SOURCE: CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL SECTION 9.8

Determine minimum bike parking by establishment type.

Locations will have different needs for bike storage.

- *Short-term* bike parking should be close to entrances, in high traffic areas, and is typically offered as bike racks in front of commercial establishments where bicycles will be parked for less than 2 hours.
- *Long-term* storage should be better protected from the elements and theft and is necessary at transit hubs and residences to accommodate commuters. Designs include: bike shelters, bike lockers, and indoor bike rooms.

The *Association of Pedestrian and Bicycle Professionals* recommends the following formulas* for determining bicycle parking quantities, though each community should assess their needs according to local conditions. (*More urbanized or bike-active communities should add another 0.5 – 1 space per volume).

| | |
|--|---|
| Hospitals/Health Care | 1 space per 20,000 sq. ft. of floor area Minimum 2 spaces |
| Schools | 1 space per 20 students of planned capacity Minimum 2 spaces |
| Colleges & Universities | 1 space per 10 students of planned capacity Minimum 2 spaces |
| Businesses Offices | 1 space per 20,000 sq. ft. of floor area Minimum 2 spaces |
| Off-street Parking Lots and Garages | 1 per 20 auto spaces Minimum 6 spaces |





ZONING & DEVELOPMENT

The Texas Hill Country is growing rapidly. Growth and development can bring new businesses, jobs, and people who enrich our communities, but, if not approached thoughtfully, it can create fiscal challenges for our local governments and turn our distinct Hill Country towns into anywhere-America. Texas state law limits regulations on growth and development in unincorporated areas, but cities can take steps to ensure communities within their boundaries are growing with intention and care.

This chapter includes ordinance guides for cities that want to preserve their sense of place and natural resources while embracing new development.

| | |
|------------------------------|------|
| OVERLAY DISTRICTS..... | Z-4 |
| HISTORIC PRESERVATION..... | Z-7 |
| SIGNS..... | Z-10 |
| IMPACT FEES..... | Z-13 |
| INFILL DEVELOPMENT..... | Z-16 |
| ARCHITECTURAL STANDARDS..... | Z-19 |



*"First we shape the cities
– then they shape us."
– Jan Gehl*

"RIVERWALK LIGHT TRAILS"

SAN ANTONIO, TX

PHOTO COURTESY OF TODD WINTERS

Overlay Districts

Overlays are regulatory tools placed on top of base zoning to modify development standards. They have a unique purpose that either protects or expands development in the area. Overlays grant cities greater control over land uses, natural resources, and the built form and often target natural resources (wildlife, soil, water) or cultural resources (historic places, creative districts) for preservation. They may also override base zoning restrictions to encourage certain types of development, like infill or higher density.

Overlays address local conditions and are often developed ad hoc, so there are countless place-specific ordinances. They generally fall into two categories: 1) natural resource protection and 2) development guidance.

EXAMPLE ORDINANCES

SELECT OVERLAYS IN HILL COUNTRY & TEXAS CITIES

NATURAL RESOURCE PROTECTION

- Protected Waterway Overlay (Wimberley)
- View Protection Conditional Overlay (Lakeway)
- ▶ Scenic Byway Overlay (League City)
- Barton Springs Zone Overlay (Austin)
- Downtown Creeks Overlay (Austin)
- Lake Austin Overlay (Austin)
- ▶ Edwards Recharge Zone District (San Antonio)

DEVELOPMENT GUIDANCE

- ▶ Brookmeadow Neighborhood Overlay (Woodcreek)
- ▶ Downtown District Overlay (Johnson City)
- ▶ Entrance Scenic Corridor Overlay (Wimberley)
- Old Town Helotes Overlay
- Air Installation Compatible Use Zone (Selma)
- Cottage Housing Development Overlay (Boerne)
- ▶ Downtown Arts and Cultural District (Kerrville)
- ▶ Design Overlay Districts (Schertz)
- ▶ Main Plaza Overlay (New Braunfels)
- Old and Historic Fredericksburg District
- Capitol View Corridor (Austin)
- University Neighborhood Overlay (Austin)
- Waterfront Overlay (Austin)
- Airport Hazard Overlay (San Antonio)
- Military Lighting Overlay (San Antonio)

BEST PRACTICES

Target a specific purpose or resource. Overlays should have an identified intention and impose regulations to achieve only that purpose.

Establish strategic boundaries. Overlay boundaries can align with or cut across base zoning and should be clearly defined. Map boundaries strategically to maximize the intended outcomes of the overlay. For example, a groundwater protection overlay may distinguish between critical zones and zones of potential impact and regulate accordingly. Likewise, an infill overlay may allow greater higher buildings exclusively along major corridors.

Make new regulations known so that residents, developers, and city officials can easily understand what is allowed and what is prohibited or limited. Consider hosting public education forums that reach affected property owners and developers to explain the value and changes of new overlay districts.

RESOURCES

The **Planning Commissioners Journal** published a primer introducing the value of overlay districts.

- [*Planning Law Primer: Making Use of Overlay Districts*](#)

The **EPA** hosts a bank of water protection model ordinances.

- [*Groundwater Protection Overlay District \(Model Ordinance\)*](#)

Cornell University partnered with the **NY State Department of Environmental Conservation** to release a guide to conservation overlay zoning. Though created for upstate NY communities, the lessons are valuable for Hill Country communities.

- [*Creating Conservation Overlay Zoning: A Guide for Communities in the Hudson River Estuary Watershed*](#)

The **East Bay Housing Organizations** describe using development incentives in Housing Overlay Zones to secure affordable housing. This model can be used to meet other social and environmental goals.

- [*Factsheet: Housing Overlay Zones*](#)

The **Texas Hill Country Conservation Network** presents successful land conservation and source water protection programs. They suggest priority protection areas and a road map for implementing a successful source water protection program in the Pedernales River Basin. Water resource protection can be achieved through overlays.

- [*Making the Case for Source Water Protection*](#)

HISTORIC OVERLAY DISTRICTS

The history and character of the Hill Country presents great opportunities for preservation, which can be achieved through historic district overlay zoning. Historic districts are one of the most common forms of overlays. They bring protections for historic sites in order to maintain a place's character and protect the integrity of individual structures and areas that have historical, architectural, or cultural significance. Establishing a historic overlay district can strengthen the local tourism economy and promote civic pride.

EXAMPLE ORDINANCES

HONDO

- Outlines a *general* historic district overlay.

HELOTES

- Uses subdistricts within the overlay to meet more specific needs.

NEW BRAUNFELS

- Further protects the Main Plaza through an overlay, though the area has a 'Downtown Historic District' base zone.

BEST PRACTICES

Determine whether you need a general or specific overlay.

General applies to designated historic landmarks and sites.

Specific are defined districts that require changes to the zoning map.

Consult local historians when mapping districts.

RESOURCES

The **Metropolitan Planning Commission of Shreveport**, Louisiana developed a guide to establishing historic overlay districts which includes greater detail on general versus specific overlays.

► [*Historic Preservation Overlay Districts*](#)

The **Raleigh Historic Development Commission** in North Carolina published answers to common questions about establishing Historic Overlay Districts and the Certificate of Appropriateness process.

► [*Historic Overlay Districts: Frequently Asked Questions*](#)



Historic Preservation

Historic building and district preservation memorializes a community's history by preventing the destruction and inappropriate reuse of historic sites. Historic sites offer teaching opportunities, foster civic pride, and promote tourism by preserving local character and charm. Preservation and building reuse are sustainable practices that conserve financial and material resources by avoiding demolition and maximize use of existing road and utility infrastructure. In addition to traditional ordinances, many cities develop *historic design guidelines* which share the city's vision to help direct residents, architects, and developers who will need project approval.

CONSULT TEXAS LOCAL GOVERNMENT CODE SECTION 211.0165 BEFORE DEVELOPING OR MODIFYING YOUR ORDINANCE. STATE REGULATIONS FOR ESTABLISHING A HISTORIC DISTRICT WERE UPDATED IN 2019.

EXAMPLE ORDINANCES & DESIGN GUIDES

FREDERICKSBURG

► *Historic District Design Guidelines and Standards*

Adopted in 2021 with updates to existing code sections, the design guide shapes the evaluation process for proposed changes to historic sites and buildings.

GEORGETOWN

► *Historic District Design Guidelines*

Adopted in 2021, the guidelines use overlays to establish area-specific regulations.

NEW BRAUNFELS

- Includes incentives to encourage preservation efforts (§66-57.1).

SAN ANTONIO

► *Historic Design Guidelines from the Office of Historic Preservation*

Adopted in 2012, the extensive guidelines are categorized into eight parts.

TEXAS HISTORICAL COMMISSION

- A Historic Landmark and District Zoning model ordinance.



THE HISTORIC LUCKENBACH POST OFFICE OPENED IN 1849.
PHOTO COURTESY OF NANCY NAYLOR

RESOURCES

The **Texas Historical Commission** compiled information about funding opportunities for governments, businesses, homeowners, non-profits, religious organizations, and rural communities.

- [*Funding for Preservation Projects*](#)

The **National Trust for Historic Preservation** tells stories of successful neighborhood revitalization work and offers lessons for practitioners.

- [*Rebuilding Community: A Best Practices Toolkit for Historic Preservation and Redevelopment*](#)

The **U.S. Secretary of the Interior** published an extensive 4-part guide offering standards and guidelines for interior and exterior work on all types of historic buildings.

- [*Standards for the Treatment of Historic Properties*](#)
- [*Guidelines on Sustainability for Rehabilitating Historic Buildings*](#)

The **Maryland Historic Trust** developed “Weather it Together,” a program to aid communities in addressing historic preservation and climate adaptation goals.

- [*Flood Mitigation Guide: Maryland’s Historic Buildings*](#)

BEST PRACTICES

Establish an Historic Preservation Commission to review and approve designations and modifications. Outline the governance structure including member composition, appointments, and term lengths. The commission composition often includes residents from across the city, with some representation from established historic districts, professionals from relevant fields, and occasionally city employees.

Enforce property maintenance to prevent unnecessary demolition due to neglect. Rely on the Property Maintenance Code, city code enforcement, and the Historic Preservation Commission to enforce regular building maintenance.

Develop approachable design guidelines that support the city's historic preservation goals to help residents and developers understand the ordinance's intentions. Guidelines should detail appropriate uses, designs, alterations, and be enforced through adoption into city code.

Provide guidelines for adaptive reuse, infill construction and renovations. These practices provide the foundation for development changes to occur as the city evolves in size, needs, and demographics while preserving structures and character.

Create a catalog of renovation opportunities for historic buildings to stimulate investment in historic districts. This can save developers time researching properties and attract others not already involved in historic building and district development. Consider a regional catalog combining properties across many smaller towns for greater attention. If available, draw upon your community's THC Historic Resources Survey.

Modify building codes for historic buildings. Most building codes cover new construction, leaving historic building redevelopment difficult to navigate. Cost is often a prohibitive factor for historic building projects, and streamlining regulations can help reduce costs and timelines.

For example, the State of New Jersey - alongside engineers, preservationists, code officials, and disability advocates - created a Rehabilitation Subcode, a technical part of the Uniform Construction Code, that outlines building standards for existing buildings, including historic buildings.



Signs

Signs convey many messages – political speech, business and residence information, safety notices, historic context – and function as wayfinding, visual interest, artistic expression, and historical reminders. Visual distinctiveness contributes to placemaking for locals and tourists alike. Standardized sign design, in terms of size, materials, lighting, and placement, improve wayfinding and visual harmony, particularly in specialized districts. Strong sign ordinances address historic districts (and historic signs) specifically.

Sign ordinances can be used to keep billboards (off-premises signs) to a minimum, as they are often deemed undesirable. Improperly placed and unclear signs can cause safety concerns for distracted drivers and others navigating through the city.

The **electronification of billboards** can bring tension between cities and advertisers. In April 2022, the U.S. Supreme Court case, *City of Austin vs. Reagan National Advertising of Austin*, affirmed the section of Austin's Sign Ordinance that prohibits off-premise signs from being converted to electronic signs, while allowing such changes for on-premise signs. This ruling upheld the city's distinction between on-site and off-site signage, thus allowing different rules to be enforced for the sign types.

EXAMPLE ORDINANCES

WEST LAKE HILLS

- Use-based standards shows context sensitivity, including regulations to meet conditions along major corridors.

DRIPPING SPRINGS

- Sign allowances by zoning district.
- Design standards and applicable fees outlined by use.

FREDERICKSBURG

- Signs in historic districts are additionally subject to the historic preservation regulations.

RESOURCES

The International Dark-Sky Association and Illuminating Engineering Society shared regulatory guidance for off-premise sign luminance from electronic messaging centers (EMCs).

► [Guidance for Electronic Message Centers \(EMCs\)](#)

Scenic Texas is a non-profit dedicated to preserving the visual landscape (see Scenic Byways Bill, TX SB 941). The Scenic City Certification Program recognizes strong city development standards.

► [Scenic City Certification Program: Best Practices Resource Guide](#)

The Texas Municipal League shared a Legal Q&A about the rights municipalities have to regulate signs. The U.S. Supreme Court has made several rulings concerning signs and it is essential to construct ordinances within a municipality's legal rights.

► [Legal Q&A with Assistant General Counsel Laura Mueller](#)

The **Montgomery County Planning Commission** of Pennsylvania provides an elaborate guide to sign ordinances that includes relevant legal conditions, types of signs, and a model ordinance.

► [Model Sign Ordinance: A Comprehensive, Content-Neutral Approach to Local Sign Control](#)



THE CITY OF SAN MARCOS COLLABORATED WITH THE SAN MARCOS CONVENTION AND VISITOR BUREAU TO DESIGN SIGNAGE FOR THE DOWNTOWN DISTRICT. THE NEW WAYFINDING SIGNS, AS WELL AS THE 'DOWNTOWN OUTDOOR GALLERY' STREET BANNERS FEATURING WORK BY LOCAL ARTISTS, WERE INSTALLED IN 2022.

PHOTO COURTESY OF LEAH CUDDEBACK

BEST PRACTICES

Create a unified vision of sign character and placement that reflects the cultural and economic character the community wants to promote. Provide example images that show what appropriate and inappropriate signs look like for your community.

Provide historical context that ties the purpose of the sign ordinance to your community's vision for present and future economic and cultural goals, with regard to historic districts. If possible, specifically address signage in your historic preservation materials or comprehensive plan, then incorporate those documents by reference in your sign regulations as another way to provide background.

Preserve night skies through illumination standards. Depending on the type and orientation of light fixtures, illuminated signs can contribute to light pollution.

Regulate off-premise signs. More often than not, “off-premise signs” (aka billboards) are located along major roads and highways where they interrupt the visual landscape and beauty and can distract drivers.

Dictate allowable specifications to avoid legal challenges. Focus on regulating the visual appearance and functional placement of the sign, not the wording. Sign rules that vary depending on textual content or owner run the risk of unlawfully curtailing protected speech. Ordinances that address sign quantity, dimensions, shape, lighting, placement, movement, colors, materials, setbacks, and landscaping are likely to withstand legal challenges.

Address the status of legal nonconforming signs, which are lawfully preexisting signs that would no longer be code compliant when the new or updated sign ordinance passes. Because there can be liability for compelling a sign owner to remove a sign that is lawfully in existence, such signs are often allowed to remain unless they are substantially damaged or expanded.



Impact Fees

Cities can offset the cost of expanding public infrastructure by imposing impact fees on new developments. Texas requires that cities have a Capital Improvements Plan (CIP) in order to collect impact fees, which are sometimes called Capital Recovery Fees to indicate their exclusive use for capital improvements and expansions directly related to the new development. Roadways; water and wastewater; and stormwater, flood control, and drainage facilities can be assessed for impact. Though permissible elsewhere, park, library, fire, police, school, and solid waste facilities cannot be assessed for impact fees in the State of Texas.

EXAMPLE ORDINANCES

KERRVILLE

- Wastewater

Considers unit size in fee calculations.

NEW BRAUNFELS

- Water and Wastewater & Streets

Exemptions for affordable housing developments.

AUSTIN

- Water and Wastewater

Exemptions for affordable housing, community gardens, fire protection lines, and recently annexed properties.

- Streets

Reductions for road fees based on proximity to public transit.

MOUNT PLEASANT, SC

Recreation, Fire Protection, Municipal Facilities, & Transportation

The **draft ordinance** produced by Stantec uses a progressive fee structure in which the average number of people per unit, rather than simply the number of units, are considered. This is the preferred fee structure.

- Draft: Development Impact Fee Model Ordinance (see Article IX for fees)

The **adopted ordinance** replaces this structure with a calculation that uses just the number of units in a development, but is still a strong ordinance.

- Adopted Development Impact Fees & Appendix A: Fee Schedule

RESOURCES

This report from **Texas A&M's Real Estate Center** offers a step-by-step guide through the legal process.

► [Impact Fees: Paying for Progress](#)

Consult the **Texas Local Government Code** for the most up to date laws concerning capital improvement plans and fees. The protocol must be followed strictly to ensure enforceability and avoid legal challenges.

► [TX LGC Chapter 395](#)

The **U.S. Department of Housing and Urban Development** (HUD) reports that impact fee structures based on unit type are regressive and unit size based fee structures are more equitable.

► [Impact Fees & Housing Affordability](#)

BEST PRACTICES

Develop fee structures based on unit size rather than unit type.

A unit type based fee structure places a higher burden on lower-income people, but pay structures based on unit size better redistribute the cost burden. Unit size better predicts the number of residents per unit than does unit type and therefore is a better predictor of infrastructure needs.

> See Kerrville & Mount Pleasant draft

Waive impact fees for affordable housing developments. Impact fees are baked into construction and development costs, which ultimately determine a unit's price tag. Renters and homebuyers end up paying more if they live in a development that incurred impact fees. Cities may choose to waive impact fees for affordable housing developments to promote such developments and aid in their affordability.

> See Austin, Buda, Fredericksburg, Manor, New Braunfels

Set impact fees locally. Local conditions influence the impact on utility infrastructure. Population density and access to public transportation both reduce per person vehicle miles traveled and general road use, so developments in these contexts will theoretically have less of an impact on roads.

When forming fee structures, consider:

- Population density
- Public transportation access
- Network of existing utility infrastructure
- Local construction costs
- Scale of the development



DOWNTOWN NEW BRAUNFELS ILLUMINATED FOR THE HOLIDAYS.
PHOTO COURTESY OF LEAH CUDDEBACK

THE NEW BRAUNFELS CITY COUNCIL approved a re-assessment of their impact fee structure in November 2022. The city may now impose the maximum allowable* residential water and wastewater impact fees on new developments. The fees will allow utility companies to expand services to keep up with demand from rapid growth in the city and region. Impact fees ask growth to pay for growth. This means existing customers aren't bearing the burden of expansion through service declines or increased prices. The new fee structure went into effect in February 2023.

*FOR A RESIDENTIAL 5/8" METER:

WATER = \$19,448 PER LUE (LIVING UNIT EQUIVALENT)

WASTEWATER = \$6,244 PER LUE



Infill Development

Infill development is the practice of developing vacant or underutilized lots in areas that are already developed. Infill projects are site specific and take many forms. In Austin, allowing accessory dwelling units (ADUs) to be built on occupied lots has increased the housing stock and density. In other cities, infill might mean restoring a building downtown to open a new business, rather than building new on the edge of town.

ECONOMIC & ENVIRONMENTAL BENEFITS OF INFILL

Infill conserves resources.

Infill development saves public resources by making use of existing infrastructure and buildings. For example, increasing residential units in an established neighborhood, rather than developing housing on the outskirts of town, allows established water lines to serve more residents at little additional cost.

Infill increases economic potential.

Developing vacant lots into commercial or residential sites increases land values and expands the municipal tax base, without incurring as many new infrastructure costs. Infill development can bring renewed attention to economically depressed areas.

Infill supports diverse populations.

Infill development presents opportunities to diversify housing typologies and costs. Housing diversity makes communities more hospitable to people of all ages, life-stages, family sizes, and incomes. Many Hill Country communities have higher-than-average senior populations. Aging in place can be difficult in communities that offer only large-lot single family homes, particularly for seniors that cannot afford to stay in their homes or want to downsize.

EXAMPLE ORDINANCES

SAN ANTONIO

- Establishes a new zoning code, the “Infill Development Zone” (IDZ), which can be applied as the base or overlay zoning and includes succinct criteria.

EL PASO

- Offers developer-end incentives including minimum parking reductions and density bonuses.

BEST PRACTICES

Allow accessory dwelling units (ADUs) to be built. ADUs increase affordability, density, and provide income opportunities to homeowners. Rather than requiring homeowners to petition for this, it should be encouraged through inclusion in city code.

Package scattered infill sites into one project to attract developers who may otherwise avoid single infill sites because of their higher costs.

Create a catalog of historic properties in need of renovation to encourage developers and community development organizations toward these projects.

Prioritize infill downtown and near transit. Infill development in walkable areas and near transit options maximizes existing public services. Living in a walkable neighborhood is especially valuable to households without vehicles and seniors who don’t drive.

Consider civic uses. Transforming vacant properties into civic spaces, such as parks and community gardens, enhances community vibrancy, making the neighborhood more unique and fun, often for relatively little cost.

Reduce parking minimums at infill sites. This can offset higher costs associated with development in denser areas.



THE PEARL IN SAN ANTONIO IS AN INFILL REDEVELOPMENT AND HISTORIC PRESERVATION PROJECT.
(CC) BYPASSERS / WIKIMEDIA

RESOURCES

The **EPA, Office of Sustainable Communities** addresses the opportunities and challenges developers face and suggests ways cities can mitigate the unique costs of infill development.

► [*Smart Growth and Economic Success: Investing in Infill Development*](#)

The **American Planning Association** features distinct infill housing approaches and ordinances in several cities struggling with affordability and looking to increase density.

► [*Zoning Practice Issue 4: Infill Housing*](#)

The City of St. Louis worked with the EPA on a plan to revitalize an historic neighborhood struggling with vacancies.

► [*Sustainably Developing a Historic District - Old North St. Louis*](#)

The Housing Partnership, a non-profit in Washington state, developed a guide to help cities increase public understanding, appeal to builders, and develop regulations to promote infill development.

► [*Filling in the Spaces: 10 Essentials for Successful Urban Infill Housing*](#)



Architectural Standards

Architectural standards and design guidelines regulate building typology, material, color, massing and orientation. These standards allow cities to influence their look and feel by ensuring visual consistency. Architectural and design guides may apply to any area, but they are most often created to guarantee historic and downtown districts feel human-scale, pedestrian friendly, and unique.

CONSULT TEXAS LOCAL GOVERNMENT CODE SECTION 211.0165 BEFORE DEVELOPING OR MODIFYING YOUR ORDINANCE. STATE REGULATIONS FOR ESTABLISHING A HISTORIC DISTRICT WERE UPDATED IN 2019.

Certain components (i.e., materials, products, methods) of the following ordinances and best practices continue to be useful, though they require a concurring historic district designation or Main Street program to be valid.

EXAMPLE ORDINANCES

BULVERDE

HELOTES

FREDERICKSBURG

GEORGETOWN

NEW BRAUNFELS

AUSTIN

- ▶ *Design Standards and Mixed Use*
- ▶ *University Neighborhood Overlay Zoning District*

SAN ANTONIO

- ▶ *Architectural Detail*
- ▶ *Downtown Design Guide*

BEST PRACTICES

Establish an Architectural Review Committee consisting of both community members and professionals who possess an understanding of the city's goals. Provide training to the committee and city staff to ensure comprehension of implementation procedures, and be ready to simplify the language for citizens and contractors.

Incorporate design standards in a comprehensive plan. Design standards should reflect long-term municipal goals described in a comprehensive plan. Listing the intentions and objectives of the design standards conveys the broader vision of the city.

Incorporate photographs and illustrations of building types and characteristics. Displaying what your city wishes to discourage or avoid is just as valuable as demonstrating what it desires to encourage. Language used should be informative rather than restrictive.

Enhance design standard guidelines by incorporating responsible development features. Permeable pavement, night-sky friendly lighting, native plants, solar panels, responsibly sourced materials, water harvesting mechanisms, and other responsible design interventions can all be incorporated without compromising a city's desired aesthetic.

For example, Fredericksburg's design standards include information on night-sky friendly lighting fixtures, energy efficiency of buildings, and the use of native, drought-tolerant plants for landscaping.

RESOURCES

The City of San Antonio created a guide to establish baseline guidance for design and preservation of the city's built environment.

► [Using the Historic Design Guidelines](#)

The City of Amesbury, Massachusetts made a checklist of elements for their Architectural Review Committee to consider when evaluating a proposal.

► [Architectural Review Checklist](#)





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