One Water Land Development Policy Toolkit

Policy tools and best practices for achieving One Water in Winter Haven

One Water Land Development Policy Toolkit

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Introduction

The "One Water" paradigm recognizes that all water within a watershed is hydrologically interconnected and that an integrated management approach is necessary to sustain our water resources¹. Land development policy is a facet of a integrated and holistic approach and is the focus area of this toolkit. This toolkit provides a series of policy recommendations that target Winter Haven's Comprehensive Plan and Land Development Codes to help achieve a balance between human land use needs and natural hydrological functions.

Winter Haven One Water Master Plan

The City of Winter Haven is at the forefront in water resource management through its leadership, creative planning, and operational efforts utilizing its interconnected lakes and natural systems as resources to ensure social vitality and economic growth. These efforts have led to the City's initiation of a One Water Master Plan, designed to integrate all the City's water-related systems, policies and investments into one comprehensive and sustainable integrated water resources management plan. The Winter Haven One Water vision is to become a vibrant, innovative community embracing a One Water culture that promotes responsible stewardship of social, environmental and economic resources².

The Sapphire Necklace

The ultimate goal is to construct a series of natural water storage facilities throughout the watershed with a connecting trail network, locally known as the "Sapphire Necklace" that would create water supply, prevent flooding, improve water quality, protect lakes, provide recreation and scenic beauty, and facilitate sustainable waterfront development.

The tools in this toolkit intend to work in concert with other integrated aspects of the Winter Haven One Water Master Plan to achieve this ultimate goal.

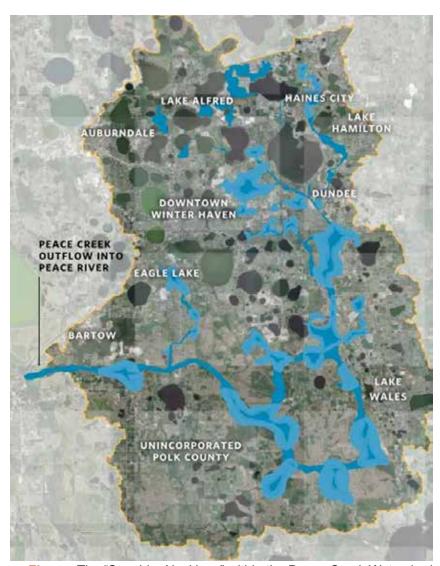


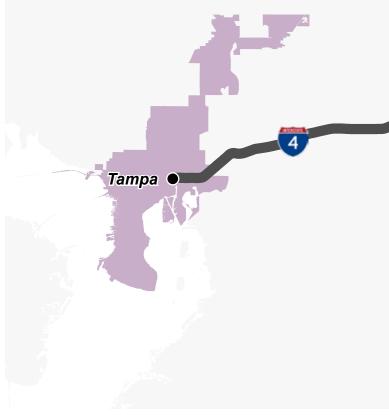
Figure: The "Sapphire Necklace" within the Peace Creek Watershed

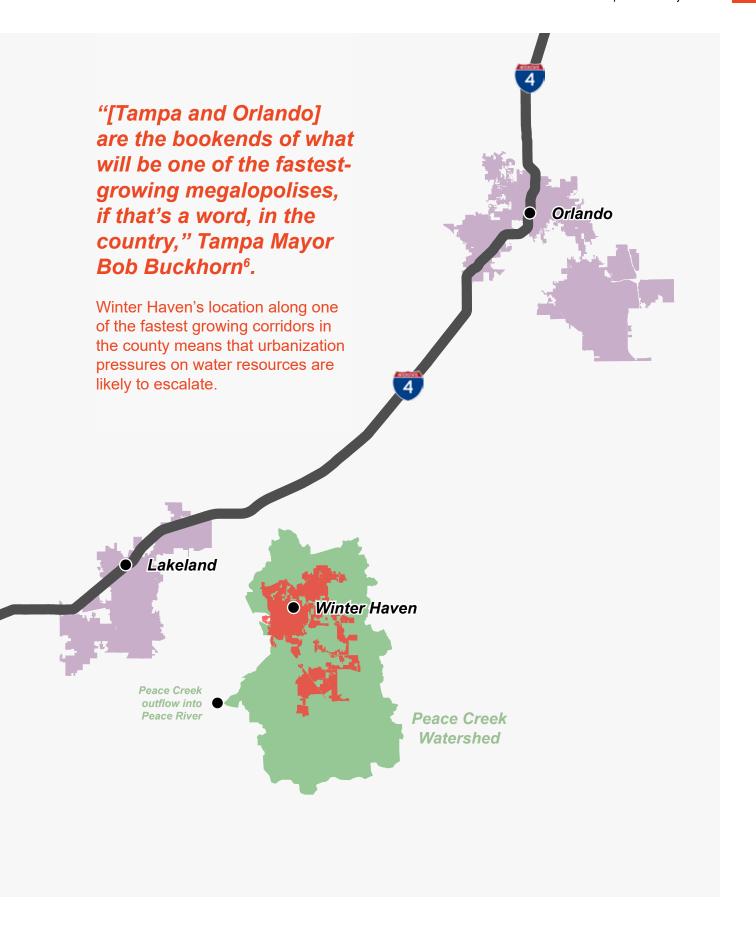
Winter Haven and the Peace Creek Watershed

Winter Haven is located within the Central Florida Highlands area, fifty miles east of Tampa and forty-six miles southwest of Orlando³.

Florida's natural landscapes before European settlement were organized to efficiently store both surface water (lakes, rivers, and streams) and groundwater (aguifers), and to allow it to move slowly through the landscape. In the headwaters of the system, lakes and isolated wetlands provide water quality treatment and infiltration into both the shallow and deeper underground aquifers. In some places, the aquifer literally seeps out of the landscape into wetlands, lakes, and streams. These form disconnected strands and sloughs in the middle reaches of the watershed. The wetlands, along with the broad floodplain forests in the lower reaches, provide important surface water storage and conveyance during large storm events by allowing water to spread over the landscape4.

Because Winter Haven is situated at the headwaters of the surface water and groundwater systems that comprise the much larger Peace River Basin, the water that falls within the watershed is the only source for all uses. The Peace Creek watershed is approximately 150,000 acres in size and comprises about 11% of the Peace River Basin. From its beginning in Winter Haven, Peace Creek flows into the Peace River, which extends 110 miles south to Charlotte Harbor and the Gulf of Mexico⁵.





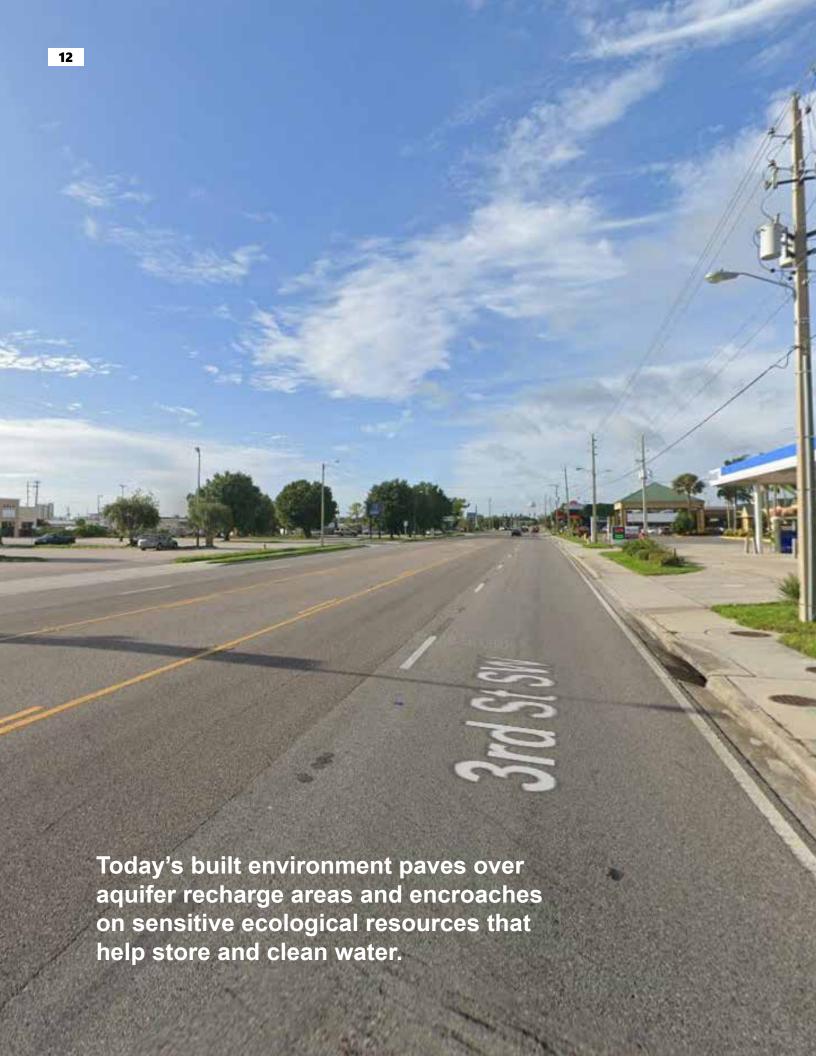


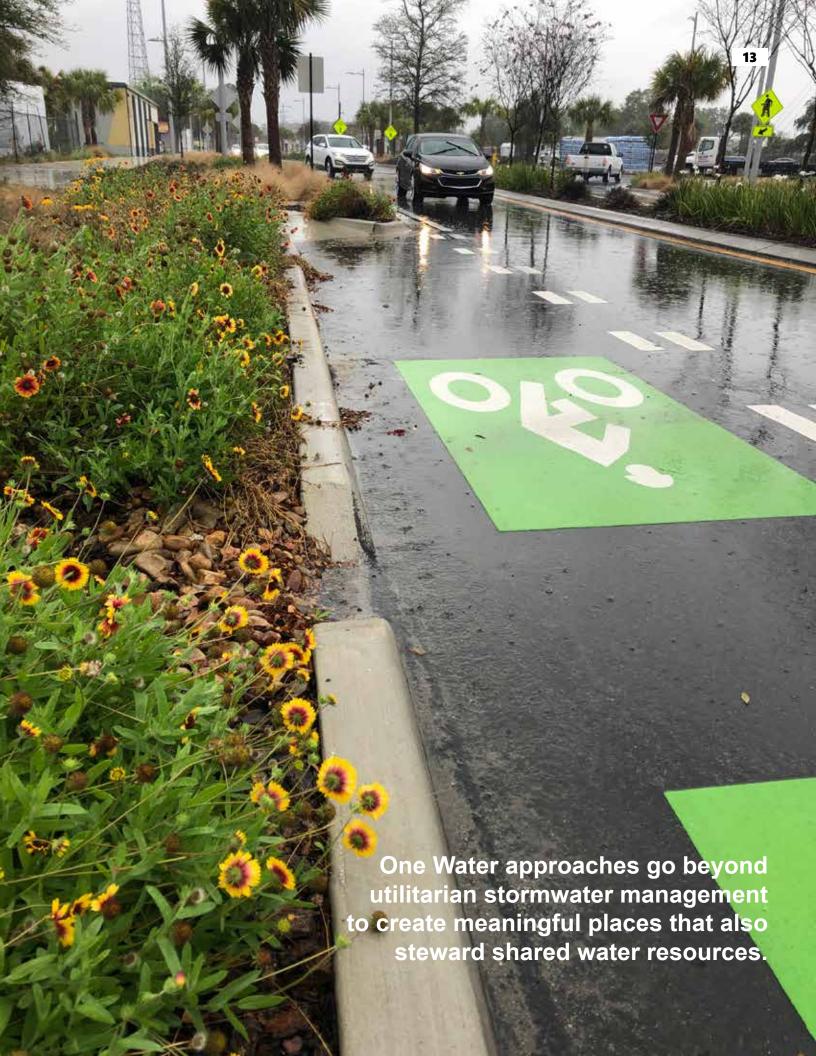


Sustaining Winter Haven's Water Resources

Floridan aquifer water levels in the Peace River region of southwest central Florida have declined significantly due to withdrawals in the last century for public supply, agriculture, mining, power generation, and recreational uses. These withdrawals have resulted in declines of more than 50 feet in some areas. Although withdrawals have leveled off, the lowered aquifer may be causing saltwater intrusion in Hillsborough County wells along the coast near Tampa Bay; it also contributes to reduced flows in the upper Peace River and lowered lake levels in the upland areas of Polk and Highlands Counties including the lakes in the City of Winter Haven⁷.

Because of the area's geology, the effects of regional withdrawals on the lakes, wetlands, and rivers of the Peace Creek watershed and the Peace River just below Peace Creek are more pronounced than in any other part of the Southwest Florida Water Management District.





Previous Planning Foundations

Winter Haven stands out as a regional leader in taking proactive measures to address the mounting risks of unsustainable impacts to local water resources.

In 2010, the City published the Sustainable Water Resource **Management Plan** which details the unique hydrology of the Peace Creek watershed, before and after urbanization, and provides recommendations for implementing long-term strategies that balance economic, environmental, and social priorities. This 2010 plan was instrumental in providing city planners with major policy elements adopted into the Winter Haven 2025 Comprehensive Plan in 2011. The plan outlines six principles of sustainable water resource planning and management, which inform the foundations of this toolkit.

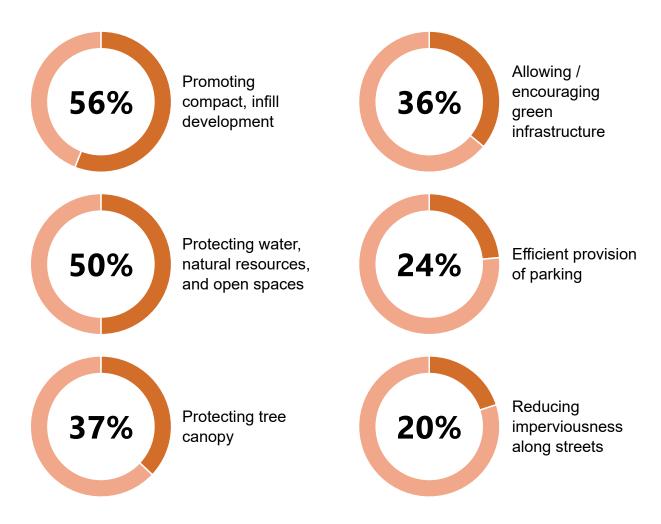
In 2015, Winter Haven commissioned the *Building a Water-Centric Sustainable Community report* which provides an in-depth evaluation of Winter Haven's Comprehensive Plan and Land Development Code to identify regulatory gaps that inhibit sustainable resource management practices. The authors of this toolkit lean heavily on the 2015 report for guidance on where policy gaps exist and what an effective approach for filling those gaps may be.

Principles from 2010 Sustainable Water Resource Management Plan⁸

- 1. The total rainfall in the region is that region's water budget.
- 2. In the long run, it is far more efficient and cost-effective to use the watershed's natural infrastructure to provide multiple long-term water resource benefits than to restore lost hydrological function using structural, man-made means.
- 3. Any impacts to water resources in a watershed should be mitigated in the watershed.
- 4. The locations of surface water and groundwater storage areas to protect and restore water resources must be integrated into urban and community design.
- 5. Stormwater, wastewater, and reuse water should be viewed as a valuable resource, rather than a form of waste to be disposed of. This resource should be recycled and recharged at a rate commensurate with use.
- 6. Each parcel of land should contribute to the water budgets of both the watershed and the region.

Water Scorecard from 2015 Water-Centric Report9

The 2015 *Building a Water-Centric Sustainable Community* report uses "The Water Scorecard" to evaluate the extent in which Winter Haven's Comprehensive Plan and Land Use Code align with sustainable water resource best practices. The scorecard's rubric considers a series of land development topic areas that have significant influence over water resource management practices.



Of the six water-centric topic areas, Winter Haven land development policies score between 20% and 56% efficacy, indicating that there are significant opportunities for improvement.

The interrelationships among water cycle elements are extensive and decisions affecting one element impact the other elements. **Understanding the land** use-water nexus in a One Water context is critical to sustaining Winter Haven's water resources. It is also important to recognize that in many urban settings the natural elements of the water environment have been paved, filled, and piped, and that the focus of planners also needs to include restoration of water interrelationships when possible.



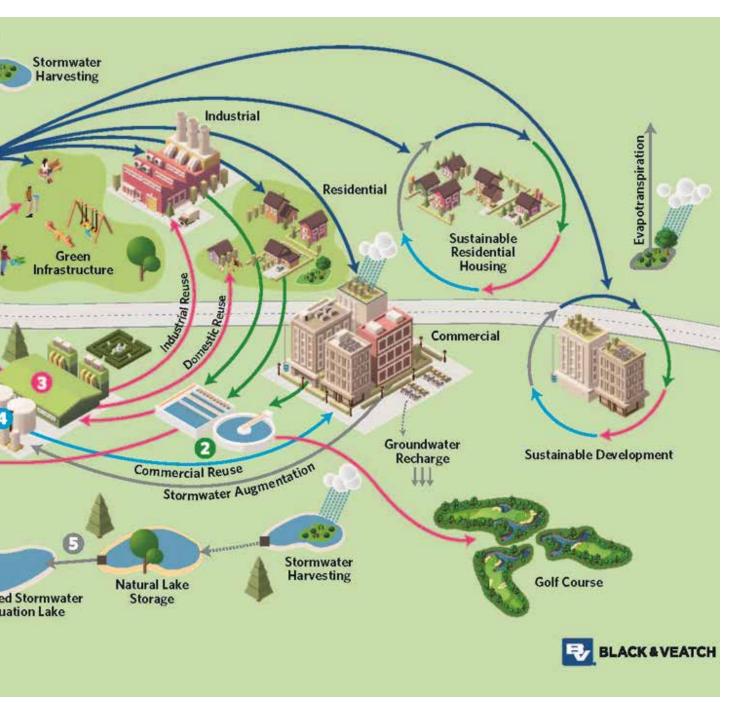


Figure: Interrelationships among elements of the One Water Cycle (Black & Veatch)

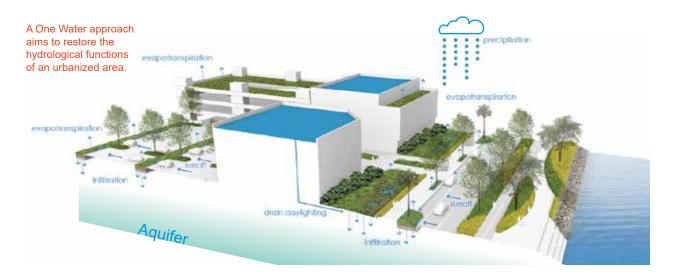
How does land development policy connect with One Water?

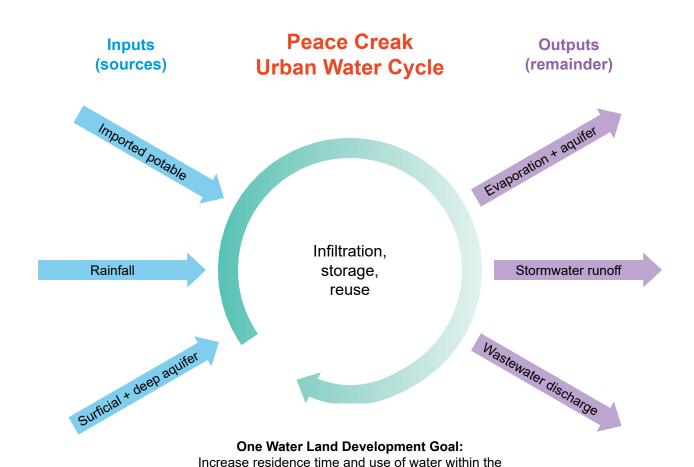
Land development policy reflects a combination of economic, environmental, and political goals to influence where, what, and how urban areas consume land. Urbanization is made up of a built environment that physically impacts the hydrological functions of land and people who use water as the basis of their life and livelihoods. Land development policies play a role in shaping the built environment, based on the values and aspirations of the people who craft them.

In Winter Haven, the impacts of urbanization on the natural water system are evident by looking at the lake levels¹⁰. Overall, lake levels are much lower now than they were pre-development, an indication that aquifer withdrawal (water consumption) is outpacing aquifer recharge (rainwater infiltration) – a symptom of population growth and the building over high-recharge areas.

Likewise, low lake levels signal that natural water storage capacity is impaired – a symptom of ditching, draining, and destruction to sensitive environmental systems, such as wetlands. Observers are also noticing that lake levels are behaving erratically, quickly rising and falling after storm events – a symptom that channelization and impervious surfaces from streets and buildings are inducing high-velocity water runoff.

One Water land development policy can help balance human land use needs and natural hydrological functions by protecting sensitive environmental systems, reducing imperviousness, and encouraging the expansion of green infrastructure. This is a key part of making Winter Haven a distinctive community with restored watershed features and quality, sustainable development.





One Water Land Development Strategies:

Peace Creek Watershed

Protect & restore natural systems

Optimize urban footprint

Expand green infrastructure Reuse water

Four Land Development Strategies

One Water land development policy involves a range of regulatory and non-regulatory approaches, including land use planning elements, land acquisition efforts, and capital investment policies that support a comprehensive approach to water resource protection, and allow communities to determine where, in the broad spectrum of policy implementation, their policies fall and where improvements could be made. The following strategies drive at influencing the urban water cycle to increase aquifer recharge, enhance natural water filtration, and mitigate the impacts of stormwater runoff and wastewater discharge.

Protect & restore natural systems

Natural systems within a watershed, including the soils, floodplains, wetlands, and lakes in the Peace Creek Watershed, provide valuable benefits to communities, including flood control, water filtration, and groundwater recharge.

Optimize urban footprint

Regulatory gaps and perverse incentives drive urbanization to demand excessive resources. Adjustments to urban form can help make more efficient use of infrastructure resources, reducing "footprint" or impact on natural systems.

Expand green infrastructure within the built environment.

One Water land development policy is most capable of impacting runoff from direct-connected impervious surfaces. Limiting & breaking-up imperviousness and replacing it with green infrastructure is essential.

Water Storage and Reuse

Strategies that help localize water storage and reuse can reduce water consumption and offset historic drainage of the watershed.

Protect & Restore Natural Systems

The quality of natural resources and systems link to the health and wellbeing of a community¹¹. Natural systems also provide a myriad of infrastructure services for managing the urban water cycle. Therefore it is far more efficient and cost-effective to use the watershed's natural infrastructure to provide multiple long-term water resource benefits than to restore lost hydrologic function using structural, man-made means¹². Land development policy must protect sensitive environmental systems that tend to degrade as a result of urbanization.



Protection & Restoration

Environmental resources such lakes, wetlands, and wildlife habitat, enable rainwater catchment and aquifer recharge. Urbanization tends to severely disrupt the functions of these resources, urging land development policy to help protect environmentally sensitive areas.



Conservation Entitlement Strategies

By law, land development policies must also protect property rights. Conservation entitlement strategies should balance property owner right-to-develop with the conservation.



Multi-jurisdictional Frameworks

Impacts to the urban water cycle in one jurisdiction inevitably impacts the water cycles of other jurisdictions. Multi-jurisdictional frameworks can help coordinate the protection and restoration of natural systems.



 Proactive process for planning future conservation and restoration projects.

Cons:

 Strategies need to be hyper sensitive to potential private property rights issues.

Conservation & Restoration Strategy

A conservation and restoration strategy helps planners identify and prioritize where and what environmental resource need protection and or restoration. This strategy also helps planners get-in-front of potential conflicts between conservation measures and private property rights.

Why: The Comprehensive Plan identifies some sensitive resources, such as lakes and wetlands, but does not provide clear direction/ coordination on where and what all of the watershed resources are nor provide a sense of conservation priority. Lack of policy clarity renders water resources vulnerable to development impacts.

What: A conservation and restoration strategy identifies protection areas based on an environmental sensitivity analysis and organizes them into tiers of conservation priority. Top tier features are associated with areas of high potential for groundwater and surface water flow exchange, areas of high groundwater pollution potential, floodplains, wetlands, and stream corridor zones. A conservation strategy also helps planners proactively identify potential conflicts between private-property rights and preservation goals

How: Conduct environmental sensitivity analysis, develop conservation and restoration strategy, and amend Comprehensive Plan to include Conservation Strategy. *Note: The Sapphire Necklace framework may be the foundations of a conservation/restoration strategy.*

Additional Resources:

Big Darby Accord, Conservation Strategy https://bigdarbyaccord.org/the-plan/

The Oregon Conservation Strategy https://www.oregonconservationstrategy.org/

Conservation Entitlement

Transfer of Development Rights

Developers purchase the development rights of certain parcels within a designated "sending district" and transfer the rights to another "receiving district" to increase the density of their new development¹³.

Benefits:

 Generates revenue for individual landowners who may otherwise find it unattractive to sell their land in fee.

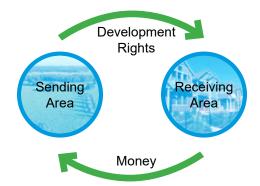
Costs:

- Programs can be complex and administratively challenging
- Generally need more receiver sites than donor sites.

Why: Greenfield sites in rural areas have development rights, even if their allowances are low intensity. These greenfield areas may be host to a variety of sensitive environmental resources. In the short term, rural landowners can only derive value from a limited range of uses, such as agriculture, often waiting for urban areas to grow out to them to gain value. A TDR program provides rural landowners the option to sell their property rights in the near-term, rather than wait for sprawling growth that ends up degrading rural environment.

What: Transfer of Development Rights programs essentially allow "sending area" landowners to sever and sell their development rights to developers in "receiving areas". Local governments frequently identify environmentally sensitive lands or historic sites as the "sending areas" and areas where public utilities like water and sewer exist or are planned as the "receiving areas".

How: Amend Chapter 21, Article VIII with administrative provisions that enable a voluntary TDR program. These provisions would outline the program procedures, criteria, and TDR formulas. The city might also amend the Future Land Use map and Zoning map to indicate where "sending areas" and areas "receiving areas" are.



Additional Resources:

Pima County Transfer of Development Rights Code https://perma.cc/NQ2B-EAVC/

Sarasota County Transfer of Development Rights Program https://www.scgov.net/Home/ShowDocument?id=34552

Conservation Entitlement

Cluster Subdivision

Cluster/Conservation Subdivision ordinances allow residential developments in rural and urban fringe areas while retaining the natural character and significant wildlife habitat in the newly developed area¹⁴.

Pros:

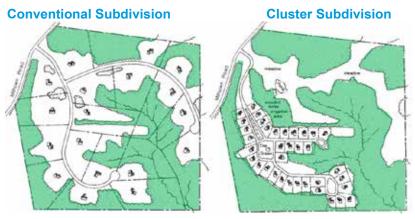
- Enables public service efficiencies.
- Increases resident access/proximity to natural lands.

Cons:

 Requires rethinking of status-quo land development financial models. **Why:** The conventional sprawling pattern of development typically results in substantial destruction of natural systems and is expensive to service with water, sewer, and fire, etc.

What: Cluster subdivisions ordinances allow or require dense clusters of residential units in one part of the proposed project area, in exchange for permanently preserving open space and natural features¹⁵. Under this model, the open space is rendered undevelopable, but may be used by the community for recreation, agriculture, or conservation.

How: Expand existing cluster subdivision allowances (see Sec. 21-38) to all residential zones. Consider revising cluster provisions to allow for more flexible development standards (i.e. reduced setbacks, greater net-densities, etc.).



Fewer lots, less conservation

More lots, more conservation

Additional Resources:

Thurston County Cluster Subdivision Ordinance https://perma.cc/4KLS-HNDV/

Baltimore County Cluster Subdivision Ordinance https://perma.cc/UBX5-E838

Conservation Entitlement

Lean Conservation Overlay

Developers that conserve sensitive environmental resources will gain an array of entitlements and are subject to "lean" development standards. Entitlements and flexible standards affords a greater range of potential development models.

Pros:

- Allows for a greater range of development options.
- Requires less administrative overhead than other strategies.

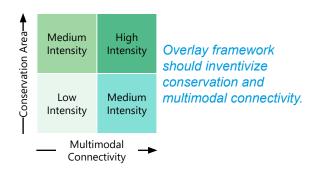
Cons:

- Does not necessarily result in the "idealic" conservation subdivision form.
- Requires clear and simple rules for rewarding development rights.

Why: The complexities and requirements of land development codes have a tendency to exclude small-scale development in favor of large-scale developments¹⁶ that are more likely to negatively impact natural systems.

What: "Lean" standards reduce regulatory burden on developers by stripping away non-essential code requirements that are often in place for exclusionary purposes rather than for protecting health and safety (i.e. minimum lot sizes, minimum dwelling sizes, strict use limitations, etc.)¹⁷. Moreover, the flexibility of lean codes encourage compact design and make it easier for developers to arrange buildings around ecologically sensitive resources¹⁸.

How: Amend Chapter 21, Article II to include a "Lean Conservation Overlay" with the purpose of incentivizing greater land conservation in exchange for highly flexible development standards. A lean overlay should still require walkable blocks with comfortable public realms and green infrastructure but shy away from prescriptive requirements that are overly deterministic. The exchange of conservation land for entitlements should occur along a "progressive curve" so that more conservation results in exponentially greater entitlements.



Additional Resources:

City of Lake Alfred Green Swamp Overlay (to be published)



- Promotes watershed-wide partnerships and cooperation.
- Unifies a legal land use planning landscape across multiple codes/comprehensive plans.

Cons:

- Requires significant leadership and political cooperation.
- Historically applies to greenfield development only (in Florida).

Establish Peace Creek Watershed Sector Plan

A watershed sector plan serves as a multi-jurisdictional guide for development and conservation throughout a watershed. The plan represents a long-term vision and general land use plan for the future that brings together multiple interests in an effort to protect and preserve the watershed while providing guidance for managed growth.

Why: Multiple jurisdictions share and have influence over watershed resources, prompting the need for inter-jurisdictional coordination.

What: A watershed sector plan establishes a common approach across multiple jurisdictions within the same watershed for balancing human land use needs and natural hydrological functions. Florida statutes allow for one or more local governments to engage in long-term planning for a large area and address regional issues through the adoption of detailed specific area plans within the planning area as a means of fostering innovative planning and development strategies¹⁹. Communities generally use sector planning to address transportation-related challenges but there are legal foundations for applying sector planning to watershed-related issues.

How: Plan requires significant coordination and collaboration between a consortium of stakeholders including local governments, state agencies, landowners, conservation organizations, and developers. Actors must enter into a Memorandum of Understanding to help define roles, responsibilities, and funding support.

Additional Resources:

Big Darby Accord, Watershed Master Plan https://bigdarbyaccord.org/

Forward Pinellas, Countywide Planning Authority https://forwardpinellas.org/about-us/

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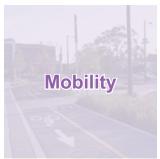
Optimize the Urban Footprint

Sprawling development patterns demand an exorbitant amount of land, energy, and impervious surface relative to compact land forms. Land development policies that enable a mix of uses, multi-modal mobility options, and are more resource efficient and are cheaper to maintain.



Mixing uses and building types

Areas with a mix of uses and building types are more likely to be walkable and accommodate a range of daily needs within a smaller urban footprint. Mixed urban forms also support sense of place, safety, and economic vibrancy.



Supporting multi-modal mobility

In addition to reducing imperviousness, narrower lane width, combined with other livable streets elements, result in less aggressive driving and the ability to slow or stop a vehicle over shorter distances to avoid a collision.



Targeting infill development

Infill development targets growth within areas already served by city infrastructure rather than "greenfield" areas at the perimeters of the city.



Encouraging compact development

Compact development can achieve the same or higher level of economic and social activity with less land consumption.



Efficient provision of parking

This is one of the best ways to capture stormwater in areas with little land. Some parking spaces could be lost to provide enough area for runoff infiltration.



- Enables a greater mix of uses.
- Expands economic opportunity for entrepreneurs and small businesses.

Cons:

 May require update to building codes as well.

Allow "live-work" uses

Live-Work Units (LWUs) are properties that combine residential and non-residential uses in either commercial or residentially zoned areas²⁰.

Why: Conventional zoning codes force distance between residential and non-residential uses, inducing demand for high imperviousness to serve automobile infrastructure. Prior to World War II, it was relatively common for people to live above or behind their place of work (i.e. stores, offices, shops), effectively eliminating their commute.

What: Live/work uses are simple addition to the land development code. Often municipalities consider this use similar to home occupations in that their primary use is that of a residence, but the regulations are not as restrictive. Working is permitted but is secondary to the residential component and the need to preserve the neighbor's expectations of quiet enjoyment.

How: Amend table Table 21-32(A) to include "Live-work" uses and indicate which zoning districts will allow the use. Amend Article II, Division 3 to include use standards for Live-work uses that address permitted activities, scale, and potential signage



Additional Resources:

City of Sandy Springs Live-Work Uses

https://library.municode.com/ga/sandy_springs/codes/development_code?nodeld=ART7USPR_DIV._7.3REUS/

City of Decatur Live-Work Uses

https://library.municode.com/ga/decatur/codes/code_of_ordinances?nodeId=PTIVUNDEORDEGE_ART6USPR_S6.3REUS



- Enables a greater mix of uses.
- Protects industrial areas that may serve employment/creative culture purpose.

Cons:

None observed.

Introduce "I-MIX" zoning district

Industrial Mixed-Use zoning districts allow light-industrial uses to co-exist with residential and commercial uses²¹.

Why: Advances in technology are diminishing the nuisances associated with industrial uses however most zoning codes prohibit light-industrial uses within residential, commercial, or mixed-use districts.

What: Industrial mixed-use zoning can accommodate a variety of industrial, commercial, civic and residential uses. The primary goal of I-MIX is to increase mix of uses however there can be ulterior goals such as preserving/modernizing industrial areas that may serve as employment assets and/or creative culture districts.

How: Amend Chapter 21, Article II to include the "I-MIX" zoning district with provisions pertaining required minimum industrial FAR, form limitations, requirements for public realm enhancements and any other elements that help blend industrial, residential, and commercial uses. Consider amending Table 21-32(A) to include "artisan manufacturing" uses which are small scale manufacturing uses that produce little to no vibration, noise, fumes, or other nuisances.



Additional Resources:

Zoning Practice: The Inudstrial Evolution https://www.planning.org/publications/document/9200427/

Dan Cotter, Integrating Light Industry into Mixed-Use Urban Development http://stip.gatech.edu/wp-content/uploads/2012/10/STIP-Dan-Cotter.pdf



 Clarifies requirements and expectations regarding green street interventions.

Cons:

None observed.

Green streets policy & guide

A green streets policy provides cities with guidance, standards, and procedures on how to design, build, and manage green infrastructure within the right-of-way.

Why: City engineers rely on specifications and guidelines for city street design however no specifications or guidelines that incorporate green infrastructure currently exist. Green streets retain and treat runoff at the source through cost-effective green infrastructure, improving water quality and complementing Complete Streets efforts.

What: A green streets policy and guide provides planners, developers, and engineers with clear details about the design, construction, and operation of streets that accommodate multiple modes of travel as well as green infrastructure that serve environmental sustainability.

How: Amend Chapter 21, Article III, Division 2 to include principles, design standards, decisions trees, and performance measures for green streets.



Additional Resources:

City of Seattle Green Streets Policy

https://streetsillustrated.seattle.gov/urban-design/green-streets/

Pioneer Valley Sustainability Toolkit

http://www.pvpc.org/sites/default/files/files/PVPC-Green%20Streets.pdf

NACTO Urban Street Stormwater Guide

https://nacto.org/publication/urban-street-stormwater-guide/



Reduce number of travel lanes and lane widths

Roadway width is the primary determinant of vehicle speed, and vehicle speed is a determinant of pedestrian safety²². Reducing the number of travel lanes and lane widths improves pedestrian safety while reducing impervious surface.

Pros:

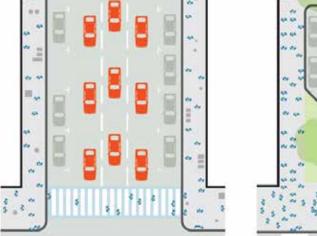
 Right-sizes streets to prioritize the movement of people and not just vehicles.

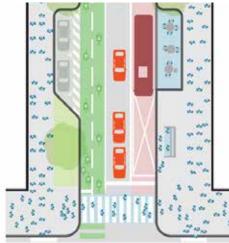
Cons:

 Public may perceive road diet as detriment to mobility. **Why:** Engineers design wide roads in an effort to accommodate more vehicles during rush-hour demand. The result is acres of pavement that are empty most of the time and are neither pleasant to walk around nor conducive to the types of welcoming urban spaces that encourage street life²³.

What: Street width (number of lanes and lane widths) must not be wider than absolutely necessary. Reducing the number of lanes in favor of adding space for other travel modes increases the number of people who can move through a street. Reducing the width of vehicular travel lanes to no greater-than 10 feet accommodates the full range of vehicle sizes.

How: Amend Chapter 21, Article III, Division 2 and Section 9 of the Winter Haven Standards to include maximum vehicle travelway widths as well as specify adjustment to reduce lane widths.





Additional Resources:

Vision Zero Network, Vision Zero Success Depends on Managing Speed for Safety https://visionzeronetwork.org/resources/safety-over-speed/

Smart Growth, What are Complete Streets?

https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/what-are-complete-streets/



Design bicycle facilities for all ages & abilities

Bikeway design must meet the needs of a broader set of potential bicyclists. The comfort of existing bicycle facility designs exclude people who might otherwise ride, traditionally favoring very confident riders²⁴.

Pros:

- Induces a broader range of potential bicyclists to shift their mobility preferences away from car mobility.
- Active transportation greatly enhances health outcomes associated with built environment.
- Less costly than expanding automobile infrastructure.

Cons:

 Requires rethinking of most streets in Winter Haven. **Why:** Streets that are safe and comfortable for all ages & abilities bicycling are critical for urban mobility. More people will bicycle when they have safe places to ride, and more riders mean safer streets. Bikeways that provide comfortable, low-stress bicycling conditions can achieve widespread growth in mode share.

What: Design criteria that promotes bicycle facilities for all ages and abilities is essential. Streets where motor vehicle volumes and speeds are so low that most people bicycling have few, if any, interactions with passing motor vehicles can serve as "shared-streets" Streets where motor vehicle volumes and speeds are higher or unpredictable need to provide protected or off-street bicycle facilities to meet the *All Ages & Abilities* criteria²⁶.

How: Amend Chapter 21, Article III, Division 2 and Section 9 of the Winter Haven Standards to include criteria for context-sensitive bicycle facility design that prioritize comfort for bicyclists of all ages and abilities.



Additional Resources:

NACTO Urban Bikeway Design Guide: Designing for All Ages & Abilities https://nacto.org/publication/urban-bikeway-design-guide/designing-ages-abilities-new/



Build better intersections

Intersection designs are critical for determining mobility safety and efficiency. Land development codes and technical standards need to provide special attention to how cities and developers build intersections.

Pros:

- Promotes walkability and more efficient mobility.
- Enhances emergency response.

Cons:

Existing subdivision with low-connectivity are "entrenched" and difficult to retrofit with additional network paths.

Why: Intersections are the place where the most vehiclepedestrian/bike conflicts occur. On many streets, large turn radii and wide lanes encourage drivers to make sweeping, fast turns. These design decisions increase exposure and risk for people walking and biking, reduce the safety and comfort of the bike network, and discourage cycling. As cities work to make streets safer and more welcoming for pedestrian and bicyclists of all ages and abilities, intersection design is key.

What: Codes and technical standards manuals must provide design criteria that promote safety for pedestrian and bicyclists (more to add here).

How: (more to add here).







Additional Resources:



Require minimum street connectivity / maximum block size

A robust street network in development-appropriate areas distributes traffic, enables transit, and supports other non-auto forms of mobility²⁷.

Pros:

- Promotes walkability and more efficient mobility.
- Enhances emergency response.

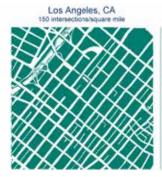
Cons:

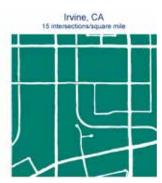
 Existing subdivision with low-connectivity are "entrenched" and difficult to retrofit with additional network paths. **Why:** Redundant pathways afforded by a robust street network enable travelers multiple route-options and enhance their ability to "chain trips," or link destinations along a desired travel route. Networks with small blocks are more walkable.

What: Codes that regulate minimum street connectivity and/or maximum block size enhancing overall mobility. Block perimeters should generally be no greater than 1,600 feet²⁸. Individual block faces more than 600 feet in length should include mid-block pedestrian pathways. Communities can adopt any of several methodologies for creating a connectivity index. By establishing a requirement for the numbers of intersections relative to the total amount of new road construction, a connectivity index insures a level of interconnectedness without specifying block sizes or configurations²⁹.

How: Amend Chapter 21 to address block sizes in subdivision regulations (Article III Division 8) or establish a new "blocks" division under Article III. Address connectivity requirements within Article III Division 2, transportation systems.







Additional Resources:

Better Town Toolkit, Create Connected Street Network http://designyourtown.org/strategy/create-connected-street-network/

Measuring the Scale, Density, and Directness of American Cities

https://www.cnu.org/sites/default/files/2017 NewUrbanResearch MeasuresoftheAmerican%20City Haynie.pdf



Flexible requirement that ensures connectivity of either mobility and/or natural systems.

Cons:

Defies typical conception of subdivision regulations that will require rethinking by developer.

Require alleyway tracts

Well designed alleyways help consolidate driveway surface area, reducing overall imperviousness and preventing excessive driveway cuts along the primary block face, which degrades walkability. If not used for vehicle access, alley tracts may instead promote a network of continuous natural corridors throughout built areas.

Why: Alleys play an integral role in street networks, providing service access and recaptured space for the public realm. Integrating green stormwater infrastructure into alleys transforms negative spaces into community assets that also serve mobility functions, improving the ease of access for service vehicles and freight and dramatically upgrading pedestrian and bicycle accessibility³⁰.

What: Subdivision regulations can require tracts along rear lot lines to accommodate alleyways. Where developers do not wish to use alleyway tracts for vehicle access, tracts can be used for pedestrian pathways or conservation/open space to create a network of continuous natural corridors.

How: Amend Chapter 21, Article III, Division 8 to include alleyway tract requirement. Specify that alleyway tracts are to be used for rear vehicle access, pedestrian/bicycle pathways, laneway housing, or conservation.



Additional Resources:



- Allows for a greater mix of housing types to blend into existing or new neighborhoods.
- Community has clarity on what housing types are allowed within their zoning district.

Cons:

 Requires ongoing collaboration with local architects.

Pattern Zones

A pattern zone combines expedited permitting, licensed architectural design, and site development criteria to streamline infill development approval³¹.

Why: Infill sites can be more difficult to develop compared to greenfield sites due to size constraints, "NIMBY" concerns, and inflexible codes. The purpose of pattern zones is to encourage successful infill development that is context sensitive and easy to permit.

What: Pattern zones offer infill developers the option to build pre-approved development types that fit a variety of lot sizes and neighborhood contexts. The number of pre-approved site plans can grow overtime, increasing the number of potential development options.

How: Amend Chapter 21, Article VIII to add procedures on how to pre-approve development types. Amend Chapter 21, Article II to include a new "pattern zone" section to include a "table of allowed patterns" based on zoning district and a reference to an approved "pattern book" which details the collection of pre-approved development patterns.



Pre-approved patterns may also help add new housing types that are compatible with existing neighborhoods.

Additional Resources:

City of Bryan, Midtown Area Plan (p. 43) https://docs.bryantx.gov/projects/midtown-map/Midtown-Plan.pdf/

More to be provided



- Allows subdivisions to more readily adapt to changing preferences in housing product types.
- May help existing areas redevelop more easily.
- Helps increase housing stock.

Cons:

NIMBY concerns over potential densification.

Reduce minimum lot sizes

Reducing or eliminating minimum lot size requirements allow for subdivisions to achieve more compact form.

Why: Large-lot, low-density, dispersed developments have higher water-infrastructure costs, higher on-site water use, higher variability in water-use trends, and higher rates of water loss than more compact developments do³². Minimum lot development standards tend to reflect a suburban context forcing residential properties to be larger than what the market might demand.

What: Reducing or eliminating minimum lot size requirements allows property owners to optimize lot configuration. In the absence of lot size minimums, a developer creating new lots is still subject to a series of constraints that indirectly regulate minimum lot size such as market forces and building codes³³.

How: Amend Chapter 21, Article II, Division 2 to right-size, reduce, or eliminate minimum lot sizes within each zoning district.



Additional Resources:



Unbundle parking

Unbundled parking separates parking spaces from the lease or purchase price of a residence or commercial space and monetizes that space allowing tenants to only pay for the parking they need.

Pros:

- Promotes efficient parking resources.
- Reduces cost burden for non-car owners.

Cons:

 Requires additional controls such as curbside parking restrictions or on-street public parking. **Why:** The cost to provide on-site parking is blended into the cost/ rent of the residential or commercial unit. Owners/renters who do not use parking are, in effect, subsidizing the rent of people who do use parking. A study by Mobility Labs finds that unbundled parking predicts a 6% lower auto ownership per unit and 13% lower auto ownership per adult resident³⁴.

What: Unbundling parking separates the cost to rent a parking space from the cost of renting an apartment or condo which may be one of the most effective ways for real-estate developers and property managers to support a more sustainable transportation sector. Unbundling policies can offer encouragement through incentives for developers/owners.

How: This tool can be implemented at any time as a voluntary step by property managers, and is often the case when there are fewer parking spaces than dwelling units or commercial tenant spaces. Curbside controls and/or pricing should be in place to prevent the misuse of on-street public parking.

Additional Resources:

City of Portland Centers and corridors parking toolkit

https://beta.portland.gov/sites/default/files/2020-04/portland-centers-and-corridors-parking-toolkit 2016-03-14.pdf/

Downtown Boise Parking Strategic Plan

http://www.ccdcboise.com/wp-content/uploads/2016/02/Document-D3-City-Carshare-Best-Practices.pdf



Eliminate parking requirements

Parking requirements increase traffic congestion, pollute the air, encourage sprawl, raise housing costs, degrade urban design, prevent walkability, damage the economy, and penalize people who do not own a car³⁵.

Pros:

- Lowers barriers to development.
- Reduces number of unnecessary parking spaces.

Cons:

Best with other controls such as on-street pricing. **Why:** Parking requirements distort supply of parking at the expense of all other potential uses of a site, regardless of the actual demand for parking. Parking is also a major contributor of impervious surface throughout cities so any excess of parking is a detriment to One Water goals. Eliminating parking requirements is an essential step toward optimizing the urban footprint.

What: Parking requirements tend to over supply the number of parking spaces necessary to support a development and induce demand for vehicles. An ordinance that removes parking requirements frees development from adding needless impervious surface to their property.

How: Amend Chapter 21, Article III, Division 3 to remove Table 21-142A.



Additional Resources:

Zoning Practice: The Pseudoscience of Parking Requirements https://www.planning.org/publications/document/9194519/



- Promotes efficient parking resources.
- Reduces cost burden for non-car owners.

Cons:

 Requires additional controls such as curbside parking restrictions or on-street public parking.

Price on-street parking

On-street parking pricing can provide numerous benefits including increased turnover and therefore improved user convenience, parking facility cost savings, reduced traffic problems, and increased revenues.

Why: Pricing on-street parking spaces help internalize the costs parking among people who demand parking, rather than distributing the cost through taxes, rents, higher prices for retail goods, and lower employee benefits.

What: Pricing on-street parking generally requires a system for metering. Ideally, pricing should be "dynamic" reflecting the supply and demand for pricing in real-time. The right prices are the lowest prices that will leave one or two open spaces on each block, so there will be no parking shortages. Prices will balance the demand and supply for on-street space.

How: This tool requires a series of steps involving parking studies pricing pilots, and investments in metering technology. Pricing helps offset some of the costs for these implementation steps.

Additional Resources:



- Helps finance important public realm improvements that encourage livability.
- Efficiently manages supply/demand for parking.

Cons:

Will likely be a target of discontent among people who do not want to pay for the cost they are imposing on society by parking their vehicle.

Establish "parking benefit districts"

A parking benefit district ties the economic benefits of performance parking directly to improving the quality of life in the immediate area.

Why: Cities can reinvest revenues raised through priced parking to improve quality of life, including investments in parking garages which help consolidate imperviousness associated with highparking demand.

What: Where areas may be overburdened with parking related issues, parking benefit districts can help balance demand for parking with improvements that alleviate parking issues. In different cities, Parking Benefit Districts come in different shapes and sizes, but what they all have in common is that they fund visible local public improvements in the places where the revenue is raised.

How: Implementing a parking benefit district will require evaluation and planning for each potential district to determine what, how, and where the district will actualize.



Additional Resources:

Expand green infrastructure

The increase of impervious area means less infiltration of rainwater as well as impacts to evapotranspiration, water quality treatment, flow attenuation, or storage. Directly connected impervious areas (DCIA) (e.g., parking lots draining directly to storm drains and pipes that flow directly to the City's lakes) is the strongest determinant of runoff. Areas saturated by irrigation also contribute to runoff.

Land development policy can effect water consumption, storage, and reuse however it is most capable of managing impervious areas that cause runoff. This can be done by limiting the amount of imperviousness and breaking connected imperviousness apart with green infrastructure.



Urban Forestry

Urban vegetation such as tree canopy and landscaping produce significant ecosystem services, including water filtration, but also help define a distinct sense of place within a community.



Multi-functional Open Spaces

Stormwater facilities can also function as open spaces that serve community needs for recreation, access to nature, and overall sense of place.



Impervious Pricing

Imperviousness is a necessary element of an urban environment. It is also the primary determinant of urban stormwater runoff. Stormwater runoff produces externalized costs that the community has to pay for. By pricing imperviousness, we can internalize some of the community cost burden.



Design Assistance

A barrier to realizing One Water development is a lack of knowledge and awareness about the opportunities for water sensitive design. Design guides and assistance tools can help smooth



 Additional tree canopy provides a myriad of benefits.

Cons:

 Low species-diversity of tree canopy can lead to issues.

Minimum tree canopy requirement

This ordinance facilitates the growth of local tree canopy cover by requiring minimal tree canopy coverage per site or development, reforestation standards, and/or landscaping credits to developers that voluntarily plant more trees than required.

Why: Tree canopies provide numerous public and private benefits, including reduced air pollution, reduced heating and cooling demands, increased property values, improved physical and mental health, and reduced storm water runoff. Land development typically reduces tree canopy because trees are removed during site development.

What: A tree canopy ordinance facilitates the growth of local tree canopy cover by requiring minimal tree canopy coverage per site or development, reforestation standards, and/or landscaping credits to developers that voluntarily plant more trees than required. Local governments may set canopy minimums by percentage or area and apply them to residential, commercial, and/or industrial uses or set different minimums for different lot or development sizes.

How: Amend Chapter 21, Article II, Division 2 to include tree canopy cover requirements within each zoning district. Amend the landscape code to include the level of "canopy credits" associated with each permissible tree species.



Additional Resources:

Sustainable Development Codes, Tree Canopy Cover https://sustainablecitycode.org/brief/expand-tree-canopy-cover-7/



 Reduces water consumption.

Cons:

 Is not necessarily the preference of all property owners.

Florida Friendly Landscaping

Florida Friendly landscaping ordinances combine several techniques to reduce costs and time in the maintenance of landscapes.

Why: Water consumption is a primary concern associated with many types of landscaping. Traditional lawns require large amounts of water to remain healthy and ascetically pleasing. Some landscapes also require chemical products to maintain healthy appearances, such as fertilizers, pesticides, and herbicides. Many of these products can run-off their area of application and contaminate both ground and surface water, adding to costs and damaging ecosystems.

What: Florida Friendly landscaping codes specify techniques and criteria, such as the use of native and climate adapted plants, to reduce the need for additional irrigation and maintenance. Ordinances addressing water flow issues through landscaping may either create incentives to promote particular design and implementation by offering landscaping credits, or require certain landscaping during the development and approval process.

How: Amend landscaping code to fully conform with the nine principles of Florida Friendly Landscaping.



Additional Resources:

IFAS, Florida Friendly Landscaping Program https://ffl.ifas.ufl.edu/



 Enhances efforts to reduce water consumption.

Cons:

 Developers do not necessarily benefit, although owners/renter do.

Require Florida Water Star Certification

The Florida Water Star is a certification program for new residential and commercial construction and existing home renovation. The program encourages water efficiency in appliances, plumbing fixtures, irrigation systems and landscapes, as well as water quality benefits from best management practices in landscapes.

Why: Sites built with water-inefficient plumbing, irrigation, and landscaping increase operating costs for owners and renters while also drawing more water than what is necessary from the water supply.

What: Ordinance requires water conservation compliance prior to receiving a certificate of occupancy for residential and commercial properties. A third-party certification process looks at plumbing fixtures, landscaping, and irrigation systems.

How: Consider amending Chapter 21, Article VIII to include administrative procedures and criteria for pursuing Florida Water Star certification as a requirement of getting.



Additional Resources:

SWFWMD, Florida Water Star

https://www.swfwmd.state.fl.us/residents/water-conservation/florida-water-starsm



 Incentivizes more coordination across different property owners.

Cons:

 Not as useful within existing/ infill areas.

Master stormwater density bonus

Enables greater density/intensity for properties that share stormwater management resources that are also amenitized for community open space/recreation.

Why: A fragmented approach to stormwater management reduces developable area however coordinating a master stormwater system across multiple private property entities can be difficult/costly.

What: Density and intensity bonuses can help incentivize private property owners/developer coordination to consolidate stormwater facilities. With amenities such as walking/bicycle paths, public art, and recreation spaces, shared stormwater facilities can also serve as public open space.

How: Amend Chapter 21 to include density/intensity bonus that rewards private property owners/developers with additional entitlements for coordinating master stormwater infrastructure.



Additional Resources:



 Rewards owners/ developers that invest in green infrastructure.

Cons:

 Requires higher fees for owners/ developers that are not integrating green infrastructure.

Stormwater utility "feed-in" rebate

A feed-in rebate rewards property owners that invest in green infrastructure with revenues generated by stormwater utility fees.

Why: Impervious surfaces are an inevitable element of land development however these surfaces prevent rainwater infiltration and induce stormwater runoff. The costs associated with stormwater runoff, in the form of poorer water quality and increased flood risk are not fully borne by the property owner/developer. Mechanisms that help internalize the costs of imperviousness will help developers optimize their use of imperviousness.

What: A feed-in rebate (also known as feed-in tariff) is a policy mechanism designed to accelerate investment in sustainable development, such as green infrastructure, though are more often applicable to renewable energy systems. The goal is to offer cost-based compensation to green infrastructure producers, that help offset other property liabilities. Winter Haven currently assesses an annual "stormwater utility fee" based on the average impervious surface of various use types. Winter Haven currently provides up to 60% fee reduction for properties that limit impervious surface. The feed-in rebate would restructure fees to allow property owner to receive a credit beyond 100% of the fee to induce investment in greater impervious reductions.

How: Winter Haven will need to consider increasing the stormwater utility fee to better reflect the externalized costs of stormwater impacts from imperviousness and expanding the credit system to further reward property owner that invest in green infrastructure.

Additional Resources:

NPR Planet Money, "Das Green Old Deal" https://www.npr.org/transcripts/797322305

Winter Haven Stormwater Utility Fee https://www.npr.org/transcripts/797322305



 Helps clarify the opportunities and benefits associated with green roof design.

Cons:

 Green roof implementation still costly and difficult to achieve on a large scale.

Green roof design guidelines

Green roofs help turn otherwise unproductive spaces, and often costly spaces, into environmentally beneficial spaces.

Why: Several municipalities have found it beneficial to offer incentives for or to make it mandatory to construct and maintain "Green Roofs."[1] Developers that are required or choose to participate in such programs may be rewarded with benefits for constructing and maintaining green roofs on a variety of buildings. The incentives can provide a developer with a variety of benefits, such as expedited permitting, increased floor area ratio (FAR) or density bonuses, or tax credits to offset the costs of green roofing. Alternatively, at least one city has required green roofs as part of development and imposed penalties for developers that do not incorporate a green roof into their building.[2].

What: Another tool municipalities may use to encourage green roofing is through the issuance of grants, tax credits or fee waivers for the construction of green roofs.[13] Alternatively, granting developers variances or additional floor area ratio or expedited permits subject to their structure having green roofs encourages green roof construction among developers.[14] Ordinances requiring green roofs for new structures in certain districts (downtown, high-traffic area) is also an effective method municipalities may utilize to promote green roofing.[15]

How: Green roof implementation can be encouraged through municipalities initiating pilot programs, providing direct or indirect financial incentives, or passing regulation.[11] Pilot programs can be accomplished through construction of green roofs on municipal buildings to market the positive benefits of green roofs.[12].

Additional Resources:



Low impact development (LID) standards manual

A feed-in rebate rewards property owners that invest in green infrastructure with revenues generated by stormwater utility fees.

Pros:

- Enhances water quality.
- Increases stormwater infiltration.
- In many cases as expensive or cheaper compared to conventional systems.

Cons:

 Perception is that LID is more costly and difficult to implement. Why: Conventional stormwater detention facilities are built to reduce off-site flood risks but not off-site water pollution risks. Any stormwater detention generally temporary, often providing an insufficient retention time to allow the natural attenuation of any pollutants that were carried by the runoff into the detention basin. LID is a decentralized approach to stormwater management that works to mimic the natural hydrology of the site by retaining precipitation on-site to the maximum extent practicable. Stormwater quality control measures that incorporate LID principles are placed throughout the site in small, discrete units and distributed near the source of impacts. LID strategies are designed to protect surface and groundwater quality, maintain the integrity of ecosystems, and preserve the physical integrity of receiving waters by managing stormwater runoff at or close to the source.

What: The LID Standards Manual provides guidance for the implementation of stormwater quality control measures in new development and redevelopment projects with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges. The purpose of LID is to reduce and/or eliminate the altered areas of the post-development hydrograph by reducing the peak discharge rate, volume, and duration of flow through the use of site design and stormwater quality control measures.

How: Amend Winter Haven Engineering Standards to include the LID standards manual. Amend Chapter 21 of the Land Development to require LID improvements on all new developments and redevelopment projects.

Additional Resources:

Multi-functional Open Spaces

Pros:

- Celebrates livable community.
- Promote health and wellness.

Cons:

 Requires dedication and planning.

10-Minute Walk Policy

10 Minute Walk is a national campaign, led by The Trust for Public Land, dedicated to improving access to safe, quality parks and green spaces. The campaign's vision is to that every person in the U.S. has safe, convenient access to a park within a 10-minute walk of their home by 2050.

Why: While people agree that parks and green spaces are valuable, particularly now, millions in U.S. cities lack safe, easy access. Over 100 million people across the country, including 28 million children, don't have a park within a 10-minute walk of home.

What: Cities all over the country are adopting policies that embrace the 10-minute walk goals. These policies are influencing land development regulations, parks master planning efforts, and capital improvement plans.

How: Craft and adopt a 10-minute walk resolution that directs planning efforts toward ensuring equitable access to park facilities throughout Winter Haven.



Additional Resources:

Store & Reuse Water

Policies that encourage water reuse and storage increase the retention of water in the watershed and reduce the amount of water discharged to surface waters, which then flows out of the watershed and is lost.

Historically, in response to the National Pollutant Discharge Elimination System, reuse of reclaimed water for residential and commercial irrigation has been heavily promoted and even subsidized with grants. From a policy perspective, reuse water needs to be valued, used efficiently, and directed to the best uses.



Reclaimed Water

Water recycling systems help alleviate the harm and dangers associated with water scarcity in a community. Recycle systems decrease the amount of water deviated from wildlife ecosystems, which protects animals and plants. Recycled water can also be supplemented back into wildlife zones which do not have enough water to survive.



Water Storage

Capturing and storing water for non-potable uses like plumbing and landscaping, or for potable uses like consumption help decrease the demand for water withdrawals from the aquifer and help restore water cycle hydrology.



 With coordination, can decrease water withdrawals from aquifer.

Cons:

 Reclaimed systems may expand over watering in areas with stressed water resources.

Reclaimed Water Master Plan

Reclaimed water master plan helps coordinate where reclaimed water systems are best suited given the development context.

Why: Using recycled, non-potable water to meet residential landscape irrigation can have a large impact on water conservation. Recycled water and highly treated wastewater are increasingly being used by local governments to limit the amount of potable, treated municipal water used on residential landscaping Ordinances that require the installation of recycled water irrigation systems in all new developments can decrease the diversion of water from sensitive ecosystems, decrease wastewater discharges into bodies of water, reduce and prevent pollution, save energy by conserving potable water, and help increase local resilience. However, some case, reclaimed systems expand over watering with reuse, which is not necessarily the best use of reclaimed water in an areas with stressed water resources.

What: Reclaimed water master plan helps coordinate where reclaimed water systems are best suited given the development context. Areas where systems would not function to serve water conservation or runoff reductions would require alternative solutions, such as in-lieu payments.

How: Planning process requires a new scope of work that starts with evaluating a broader context of reclaimed water and how its various forms may be applied across Winter Haven to reduce pressures on the City's water resources. The plan will then should also consider alternatives and provide specific recommendations for the implementation of this plan, as appropriate.

References and Resources:



Rainwater harvesting credit

Rainwater harvesting increases access to water, easing the burden on municipal water sources, increases resilience to unforeseen precipitation fluctuations, and decreasing water utility costs.

Pros:

 Promotes use of rainwater for potable and non-potable demands.

Cons:

 Requires additional technology to ensure water quality for potable and non-potable uses. **Why:** Rainwater harvesting (RWH) is the act of utilizing a passive or active collection system to capture and store rainwater for non-potable uses like plumbing and landscaping, or for potable uses like consumption. Typically, RWH systems comprise three interconnected components; a catchment, normally a roof top, which makes first contact with the rainwater; a conveyance or downspout, which directs the water from the catchment; and a cistern for storage, which holds the water. Systems may also have a filter and pump, depending on the intended use.

What: Ordinances incorporating RWH have several options. Some local governments have amended their development code to require that new development projects implement a RWH system or rainwater catchment plan. Additionally, local governments may set target standards for rainwater collection. Such standards may be based on the size of the catchment area (for example, requiring the catchment area to be 85% of rooftop run-off), may ban private covenants from restricting RWH systems, or may require a certain percentage of all on-site rain be harvested. Municipalities that do not require rainwater collection systems, but simply encourage them, may consider offering rebates for RWH system installation through their municipal water provider.

How: (more to add)

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