Advancing Sustainable Development: Volusia County’s Low Impact Development Journey

Florida Planning & Zoning Association, Surfcoast Chapter, May 2025
Samantha West, Volusia County Sustainability & Resilience Manager

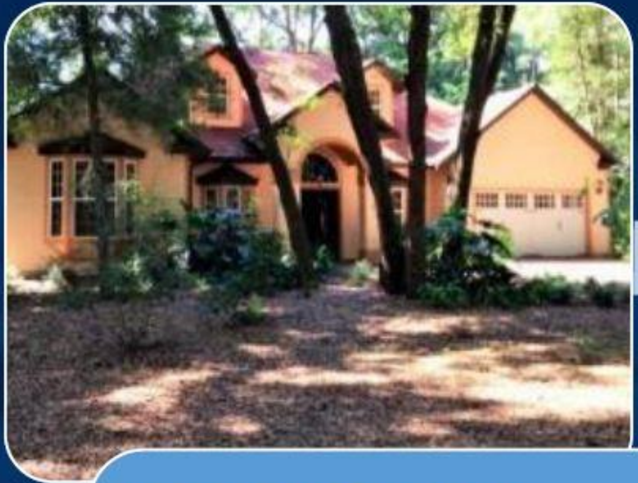
What is it?

- Sustainability
  - Meeting the needs of the present without compromising the ability of future generations to meet their own needs. *United Nations Brundtland Commission (1987)*
- Green Infrastructure
  - A broad concept that encompasses the integration of natural and built systems for various purposes, including management of stormwater quantity and quality.
- Low Impact Development
  - An ecologically driven stormwater management approach, prioritizing soft engineering strategies to intricately mitigate rainfall on-site through a network of vegetated treatments.
- Green Stormwater Infrastructure
  - A subset of green infrastructure that specifically focuses on sustainable stormwater management and treatment practices.

LID vs. GSI: Development Process

Avoidance (LID)

- Map natural infrastructure
- Preserve open spaces, natural areas, trees and native soils
- Retain natural hydrologic and topographic features in site plan



Minimization (LID)

- Limit and disconnect impervious surfaces
- Mimic and maximize pre-development hydrologic processes
- Integrate practices that provide co-benefits and multifunctional areas

Mitigation (GSI)

- Implement runoff source control measures
- Employ natural processes to treat and retain stormwater
- Provide treatment and attenuation in multiple areas across the site

Timeline

August 2022 – June 2023

- Florida Department of Economic Opportunity (DEO) Community Planning & Assistance Program grant – reviewed other LID codes throughout Florida and elsewhere for lessons learned

June 2023

- ENRAC recommendation – use the code audit tool, create a hybrid use of LID/GSI

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The DEO grant project

- $75,000 – completed June 2023
- Develop ordinance recommendations for LID
  - Best equitable practices to incorporate LID into land development codes
  - Ordinance recommendations for County Council to consider to advance resilient nature-based stormwater solutions LID Implementation guidebook
  - Aid in implementing LID regionally

Deltona Amphitheater

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UF | IFAS UNIVERSITY of FLORIDA

DEO FLORIDA DEPARTMENT of ECONOMIC OPPORTUNITY

EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL EST. 1962

ENRAC meeting June 7, 2023

- **ENRAC Recommendation:** “The County Council direct staff to employ the LID+GSI Code Audit Tool to evaluate our Land Development Code (LDC) for existing ordinances that employ LID tools, barriers or conflicts to LID, and opportunities to enhance the use of LID and GSI. This is with the goal of revising the LDC to facilitate a hybrid use of LID and GSI across the county to mitigate flooding and nutrient pollution.“

- Using the LID hierarchy of avoid, minimize, mitigate

1. All new development and redevelopment must do some LID elements
2. Use a menu approach and include incentives
3. The more elements you implement, the more incentives you receive

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LID Implementation Options and Direction

Voluntary with incentives ← **Hybrid** → **Mandatory**

October 2023 - County Council unanimously directed staff to utilize the LID and GSI Code Audit Tool to evaluate the Land Development Regulations and develop a draft ordinance that encompasses voluntary LID and GSI practices.

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Timeline

October 2023

- County Council direction – use the audit tool and create a voluntary LID program with incentives

November 2023 – August 2024

- LID+GSI audit of County Code & creation of comprehensive plan amendment, ordinance, and LID Guidance Manual

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UF LID + GSI Code Audit Tool

Administrative
- About
- Definitions
- Codes Review Log
- Contact Information
- Scoring Instructions
- Score Summary

Local Government Planning and Policy
- Comprehensive Plan
- Zoning

Protecting Nature
- Natural Resources Protection and Management
- Coastal Areas
- Trees
- Sensitive Groundwater Areas

Stormwater and Water Quality
- Stormwater Management
- Pollutant Reduction

The Built Environment
- Site Plan Review
- Buildings & Landscape
- Streets
- Parking
- Permeable
- Construction
- Subdivisions & Greenfield
- Education and Demonstration

Points	*Criteria*	*Example Code Requirements*
4	Practice is clearly described and approved or is allowed with design approval.	Where feasible, parking lot islands and perimeter landscaped areas shall be designed and installed to function as stormwater management areas, following design standards for bioretention found in the Stormwater Design Manual. If not feasible, native plants, suitable for the site shall be used.
3	Practice is encouraged, but some ambiguity or potential conflict exists.	Parking lot islands and perimeter landscaped areas are encouraged to be designed as part of the site's stormwater management system, based on bioretention standards in the Stormwater Design Manual. Trees must be planted at a maximum interval of 20 feet.
2	Practice is mentioned, but without standards or guidance for use.	Landscaped areas in parking lot perimeters and islands may be designed and used as stormwater bioretention areas.
1	Code is silent or significant limits exist, but practice could possibly be used.	Landscaping in parking lot islands and perimeters must achieve a minimum of 75% cover within two years of planting.
0	Practice is prohibited or very unlikely to be approved.	Parking lot perimeters shall be graded into a berm with a minimum slope of 2:1, covered with landscaping that will form a dense evergreen screen within tow years of planting.

Code Audit Tool Implementation

- Assembled core team from Environmental Management (4 staff members)
- Identified subject matter experts as the LID Review Team (19 staff members from 7 different county divisions including Planning, Zoning, Building, Land Development, Development Engineering, Traffic, Road and Bridge, Fire Rescue)
- Held a kick-off meeting
- Hired a student from Stetson University

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Code Audit Tool Implementation

- **Protecting Nature**
  - **Natural Infrastructure**
    - Chapter 50, Article III Minimum Standards for Environmental Regulations
      - Division 5 Wetlands
    - Chapter 72, Article II Zoning
      - Section 71-136 Interpretation of classification boundaries
      - Section 72-241 Classifications (RC & FR)
      - Section 72-277 Accessory structures and exceptions to minimum dimensional requirements; accessory dwelling units
      - Section 72-289 Planned unit development regulations
      - Section 72-293 Special Exceptions
      - Section 72-294 Waterfront Yards
      - Section 72-300 Natural Resource Management Area
      - Section 72-304 Clustering of dwelling units and zero lot line residential subdivisions
    - Chapter 72, Article III Land Development Regulations
      - Section 72-505 Determination and offsetting of impact on public services and facilities of Volusia County
      - Section 72-547 Conservation Subdivisions
      - Division 7 Flood Hazard Management
      - Division 11 Wetland Alteration Permits
    - Chapter 72, Article IV Overlay Zones
      - Section 72-1311 Other Regulations

- **The Built Environment**
  - **Site Plan Review**
    - Chapter 72, Article II Zoning
      - Section 72-291 Final Site Plan
    - Chapter 72, Article III Land Development Regulations
      - Division 2 Subdivision Regulations
      - Division 3 Final Site Plan Approval Procedures
  - **Zoning**
    - Chapter 50, Article III Minimum Standards for Environmental Regulations
      - Division 10 Water Wise Landscape Irrigation
    - Chapter 72, Article II Zoning
      - Section 72-241 Establishment of Classifications
      - Section 72-284 Minimum Landscaping Requirements
  - **Buildings and Landscaping**
    - Florida Building Code
    - Chapter 50, Article III Minimum Standards for Environmental Regulations
      - Division 10 Water Wise Landscape Irrigation
    - Chapter 50, Article VIII Florida Friendly Fertilizer Use (in its entirety)

Code Audit Tool Implementation

- LID Review Team conducted the audit tool section by section – typical 3-week work period
- Core team reviewed each section independently
- Compiled all LID Review Team responses
- Met with LID Review Team team to review and discuss differences (often 2 meetings)
- Compiled all audit results and distribute to LID team for final review

The Process

Subject Matter Experts + EMD LID Team Member Review LID Audit Tool Section

EMD LID Team Meeting

Compile all Results

County LID Team LID Audit Tool Section Review

County LID Team Meeting (3 hours)

Tentative Backup County LID Team Meeting (3 hours)

EMD LID Team cleanup of LID Audit Tool Section

Hire and manage the student worker

Draft the Comprehensive Plan, Zoning Ordinance, and Land Development Code changes

Draft the LID manual

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UF LID + GSI Code Audit Tool

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Protecting Nature

- Natural Resources Protection and Management
- Coastal Areas
- Trees
- Sensitive Groundwater Areas

Stormwater and Water Quality

- Stormwater Management
- Pollutant Reduction

The Built Environment

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- Subdivisions & Greenfield
- Education and Demonstration

0 points	Prohibits practice/not in code/not by practice
1 point	Allows (barriers removed) and/or aspires (plans) for greater implementation of practice.
2 points	Encourages practice.
3 points	Incentivizes practice.
4 points	Requires practice.

Audit Tool

Natural Infrastructure

B3. Does code require development setbacks or buffer zones around environmentally sensitive areas?

Tips	Code References	Summary of Code References	Notes, Ideas and Strategies	Score
Purpose: Protect natural infrastructure and resources Setbacks or buffers around environmentally sensitive areas help prevent secondary or indirect impacts from adjacent development.	1. Section 72-241 - Zoning Classifications 2. Section 72-277 - Accessory Structures and exceptions 3. Section 72-300 - NRMA 4. Section 50-214 & Section 72-886(a) 5. Section 72-886(c) 6. Section 72-131(c) 7. Section 72-1138(2) 8. Section 50-347	1. Require waterfront yards that mimic upland buffers 2. Atypical lot setback restrictions 3. Larger upland buffers adjoining areas 4. Minimum 25-foot wetland buffer required countywide. 5. Minimum 50-foot wetland buffer required for NRMA & OFW 6. Average 100-foot wetland buffer in OCR cluster subdivisions 7. 25-foot buffer from gopher tortoise burrow 8. Conservation zone at driving portions of beach	There are buffers required adjacent to wetlands/open water, gopher tortoise burrows, dune protection via conservation zone at driving portions od the beach - not other environmentally sensitive areas. - i.e. scrub habitat, bald eagle nests, etc.	4

Stormwater

G1. Does code establish specific reductions of total nitrogen (TN) and total phosphorous (TP) from stormwater loads?

Tips	Code References	Summary of Code References	Notes, Ideas and Strategies	Score
Purpose: Nutrient reduction Stormwater runoff from natural, undisturbed areas tends to have very low nutrient loads, generally considered "the best case" given a particular site's topography and soil type. State rules (62-40.432, F.A.C.) establishes an 80% average annual load reduction for TN and TP. For OFWS, A 95% reduction is needed.		No zoning ordinance reference	County ordinance only addresses for permitting purposes, stormwater volume reduction without addressing pollutant load reduction. The County is relying on the WMD to address water quality standards.	0

The Results

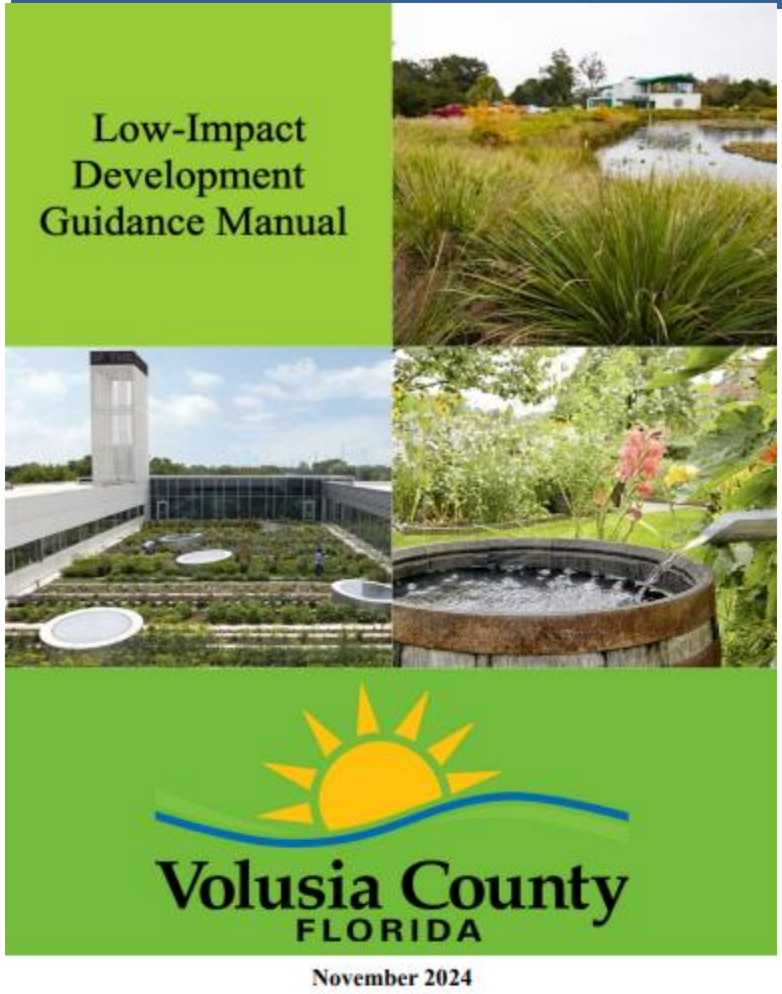
Scoring Summary Table

Section Topic	Section	Questions	Maximum Points	Completed Questions: Total Points	Completed Questions: Possible Points	Percentage of Points Credited: Section	Percentage of Points Credited: Topic
Comprehensive Plan	Future Land Use Element	6	24	19	24	*79%*	
Comprehensive Plan	Conservation Element	6	24	12	24	*50%*	
Comprehensive Plan	Coastal Zone Management Element	3	12	6	12	*50%*	
Comprehensive Plan	Utilities/Infrastructure Element	4	16	11	16	*69%*	
Comprehensive Plan	Capital Improvement Element	2	8	3	8	*38%*	
Comprehensive Plan	Housing Element	2	8	3	8	*38%*	
Comprehensive Plan	Transportation Element	3	12	1	12	*8%*	
	Cumulative for Local Government Planning and Policy	**26**	**104**	**55**	**104**		**53%**
Protecting Nature	Natural Infrastructure	9	36	17	36	*47%*	
Protecting Nature	Coastal Areas	6	24	6	24	*25%*	
Protecting Nature	Trees	7	28	27	28	*96%*	
Protecting Nature	Sensitive Groundwater Areas	4	16	5	16	*31%*	
	Cumulative for Protecting Nature	**26**	**104**	**55**	**104**		**53%**
Stormwater and Water Quality	Stormwater Management	17	68	20	68	*29%*	
Stormwater and Water Quality	Pollutant Reduction	7	28	6	28	*21%*	
	Cumulative for Stormwater and Water Quality	**24**	**96**	**26**	**96**		**27%**
The Built Environment	Site Plan Review	6	24	10	24	*42%*	
The Built Environment	Zoning	5	20	5	20	*25%*	
The Built Environment	Buildings and Landscaping	21	84	28	84	*33%*	
The Built Environment	Streets	15	60	6	60	*10%*	
The Built Environment	Parking	15	60	0	60	*0%*	
The Built Environment	Permeable Hardscapes	7	28	0	28	*0%*	
The Built Environment	Construction	7	28	18	28	*64%*	
The Built Environment	Subdivisions and Greenfield	7	28	6	28	*21%*	
The Built Environment	Education and Demonstration	10	40	14	40	*35%*	
	Cumulative for The Built Environment	**93**	**372**	**87**	**372**		**23%**
Cumulative for full audit		**169**	**676**	**223**	**676**		**33%**

Structure of LID implementation

- Comprehensive Plan changes to encourage LID practices
- Zoning Ordinance and Land Development Code changes to set the standards
- Development of a LID Guidance Manual with the details on best management practices (BMPs), incentives, and maintenance requirements
  - Includes a matrix of the BMP’s and incentives

LID Guidance Manual



Chapters:

1. Introduction
2. Technical Requirements and Incentives
3. Evaluating Your Site
4. Catalog of LID Best Management Practices

    4.2 Site Design BMPs

    4.3 Stormwater Storage, Treatment, and Conveyance BMPs

5. Maintenance of LID Practices

Site Design BMPs (LID)

- Maintain natural topography
- Preserve floodplain
- Retain tree canopy and native vegetation
- Retain riparian or vegetated buffers
- Cluster and Conservation subdivisions
- Common open space
- Corridor protection
- Native landscape, fertilizers and irrigation
- Habitat management
- Alternative surface materials
- Concentrated landscape parking islands & row ends

- Minimize building footprint
- Minimize total impervious area
- Minimize directly connected impervious area

A minimum of 4 are required

Pervious pathway surface
Photo Source: City of Cape Canaveral

Stormwater BMPs (GSI)

- Stormwater treatment park
- Wet ponds
- Dry ponds
- Underground retention and detention
- Stormwater harvesting
- Vegetated stormwater conveyance
- Rain gardens
- Tree box filters and rainfall interceptor trees
- Rainwater harvesting
- Vegetated roofs and walls

Two cisterns are visible in this photo. The one on the left is located in the tower.

A minimum of 2 are required

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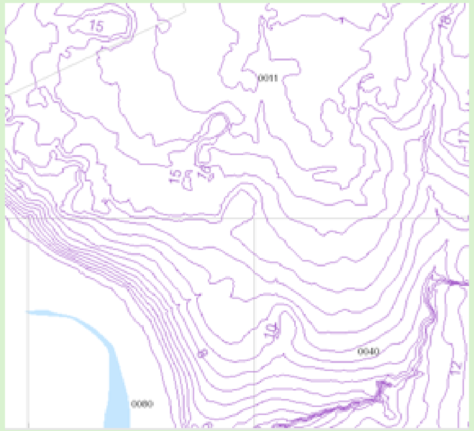
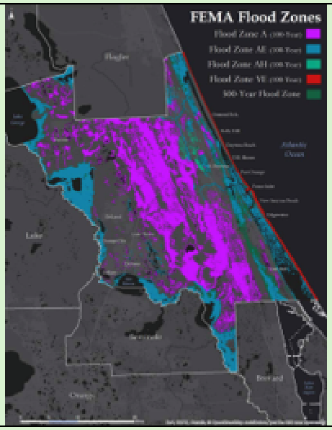
Incentives

- Flexible lot sizes
- Flexible building setbacks
- Additional density or intensity
- Increased maximum building height
- Increased lot coverage
- BMP permitted within landscape buffer and setbacks
- BMP permitted within landscape islands and row ends
- BMP credited as landscaping
- BMP credited as open space
- Off-street parking flexibility
- Reduction in tree replacement requirements
- Reduced building permit and land development fees
- Allow for neighborhood commercial uses

BMP Table

LID Best Management Practices (BMPs) List						
Section	**BMP**	**Examples**	**Description**	**Incentive**	**Requirements for Incentives**	**Reviewing Entity**
Site Design BMPs						
4.2.1.A.	Maintain Natural Topography		Design buildings and infrastructure around existing topography, rather than re-contouring the land to fit the building design.	Option A: • **All incentives for Option B** • **Increased Density** (Section 2.2.1.C.) • **Increased Floor Area Ratio** (Section 2.2.1.D.) Option B: • **Flexible Lot Sizes** (Section 2.2.1.A.) • **Flexible Building Setbacks** (Section 2.2.1.B.) • **Increased Maximum Height** (Section 2.2.2.A.) • **Off-Street Parking Flexibility** (Section 2.2.2.F.) • **Variance and/or Waiver Not Required** (Section 2.2.5.A.)	Option A: Maintain natural topography for 30% of the site. The area must be preserved with a conservation easement dedicated to Volusia County, severing all development rights. The submitted Final Site Plan or Overall Development Plan and Preliminary Plat must identify the square-footage/acreage of these areas. **Option B**: The notes on a Final Plat or Final Site Plan must state stem-wall construction, with no additional fill, is required for all primary structures. If a subdivision, this must also be stated within the Declaration of Covenants, Conditions and Restrictions (DCCRs). *Pairs well with: Preserving Floodplain (Section 4.2.1.B.), Retaining Tree Canopy and Native Vegetation (Section 4.2.2.A.), Retaining Large Riparian or Vegetated Natural Buffers (Section 4.2.2.B.), Cluster Subdivisions (Section 4.2.2.C.), Conservation Subdivisions (Section 4.2.2.D.), Common Open Space (Section 4.2.3.A.), Corridor Protection (Section 4.2.3.B.), Habitat Restoration or Habitat Management (Section 4.2.4.B.), Minimize Building Construction Footprint (Section 4.2.6.A.), and Minimize Total Impervious Area (Section 4.2.6.B.)*	**Option A:** Development Engineering **Option B:** Land Development
4.2.1.B.	Preserving Floodplain		Preserving floodplains is crucial for mitigating flood damage and maintaining ecological balance. Floodplains store excess water, reducing flood peaks and velocities, particularly vital in urban areas. Floodplains slow runoff, promoting water infiltration and groundwater recharge, essential for local water sources. During non-flood periods, they regulate flow through groundwater discharge, mitigating flood peaks and low flows. Protecting floodplains not only safeguards communities from disasters but also sustains the health of riverine environments.	• **Flexible Lot Sizes** (Section 2.2.1.A.) • **Flexible Building Setbacks** (Section 2.2.1.B.) • **Increased Density** (Section 2.2.1.C.) • **Increased Floor Area Ratio** (Section 2.2.1.D.) • **Increased Maximum Height** (Section 2.2.2.A.) • **Reduction in Tree Replacement Requirements** (Section 2.2.3.A.) • **Variance and/or Waiver Not Required** (Section 2.2.5.A.)	100% of the FEMA Flood Hazard Areas are protected through a conservation easement dedicated to Volusia County, severing all development rights, when they encompass 30% or more of the site. This can include the tree preservation area required by Section 72-837, of the LDC. *Pairs well with: Maintaining Natural Topography (Section 4.2.1.A.), Retaining Tree Canopy and Native Vegetation (Section 4.2.2.A.), Retaining Large Riparian or Vegetated Natural Buffers (Section 4.2.2.B.), Cluster Subdivisions (Section 4.2.2.C.), Conservation Subdivisions (Section 4.2.2.D.), Common Open Space (Section 4.2.3.A.), Corridor Protection (Section 4.2.3.B.), Habitat Restoration or Habitat Management (Section 4.2.4.B.), Minimize Building Construction Footprint (Section 4.2.6.A.), and Minimize Total Impervious Area (Section 4.2.6.B.)*	Land Development

LID Matrix

	Flexible Lot Sizes	Flexible Building Setbacks	Increased Density	Increased Floor Area Ratio	Increased Maximum Height	BMP Permitted within Landscape Buffers and Building Setbacks	BMP Permitted within Landscape Islands and Row-Ends	BMP Credited as Landscaping	BMP Credited as Common Open Space	Off-Street Parking Flexibility	Increased Lot Coverage	Reduction in Tree Replacement Requirements	Reduced Building Permit Application Fees	Reduced Land Development Application Fees	Variance and/or Waiver not Required
Maintain Natural Topography – **Option A**	x	x	x	x	x					x	x		x	x	x
Maintain Natural Topography – **Option B**	x	x			x					x			x	x	x
Preserving Floodplain	x	x	x	x	x						x	x	x	x	x
Retaining Tree Canopy and Native Landscaping												x	x	x	x
Retaining Large Riparian or Vegetated Natural Buffers		x				x		x			x		x	x	x
Cluster Subdivision	x*	x*									x	x	x	x	x
Conservation Subdivision	x*	x*	x*								x*	x	x	x	x
Common Open Space	x	x								x	x		x	x	x
Corridor Protection						x	x		x	x	x		x	x	x

Timeline

August 2024 – November 2024

- ENRAC, stakeholder & citizen comment period

November 21, 2024

- PLDRC Hearing, recommendation to forward to Council with the removal of density bonuses as an incentive, and a request for the Council to reconsider a hybrid approach

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Timeline

February 11, 2025

- 1st Reading – County Council voted 6:1 to forward the LID Future Land Use Element Amendment, Chapter 72 Land Planning Code Changes, and LID Guidance Manual to the Florida Department of Commerce & VGMC for review.

May 6, 2025

- 2nd Reading – County Council voted 7:0 to adopt the LID Future Land Use Element Amendment.

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Next Steps

- Internal Development Review Staff Training
  - May 28, 2025
- LID Program Effective Date (after appeal period)
  - June 7, 2025
- Application Intake Staff Training
  - June 20, 2025

Documents can be found at:

Questions?

Contact me:

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Documents can be found at https://www.volusia.org/services/growth-and-resource-management/environmental-management/sustainability-and-resilience/sustainability.stml