Creating Living Laboratories for Sustainability in Florida's New Urban Developments

The Sustainable Floridians Benchmarking & Monitoring Program (SF-BMP)

Jennison Kipp, Pierce Jones, Heather Hubbard

UF/IFAS Program for Resource Efficient Communities

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The Nature Conservancy Florida

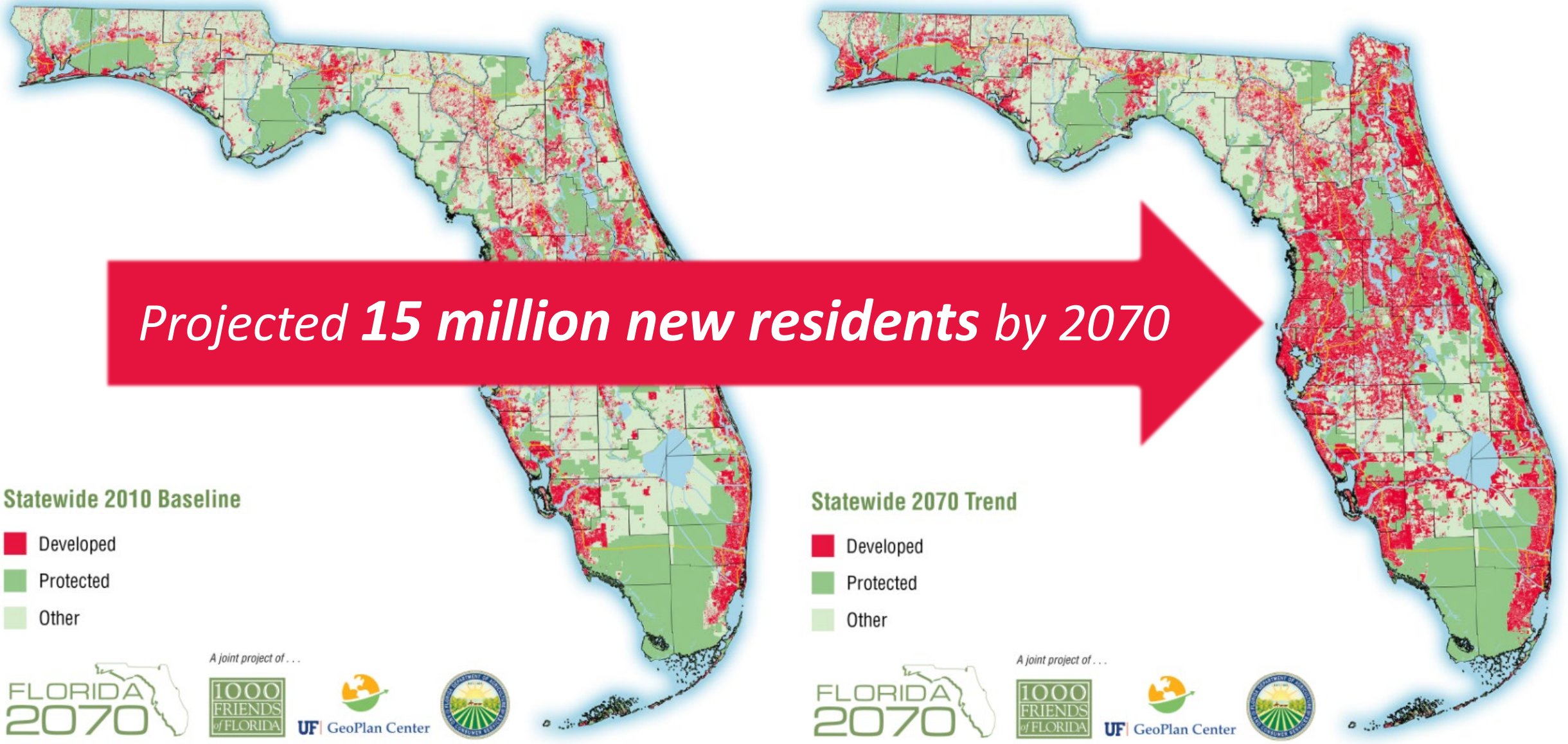
NEES+NSS 2022 • Penn State University • 16 May 2022

CONTEXT: Urban Land Development & **Extension**

FLORIDA 2070 | 1000 FRIENDS of FLORIDA | UF GeoPlan Center | TOC

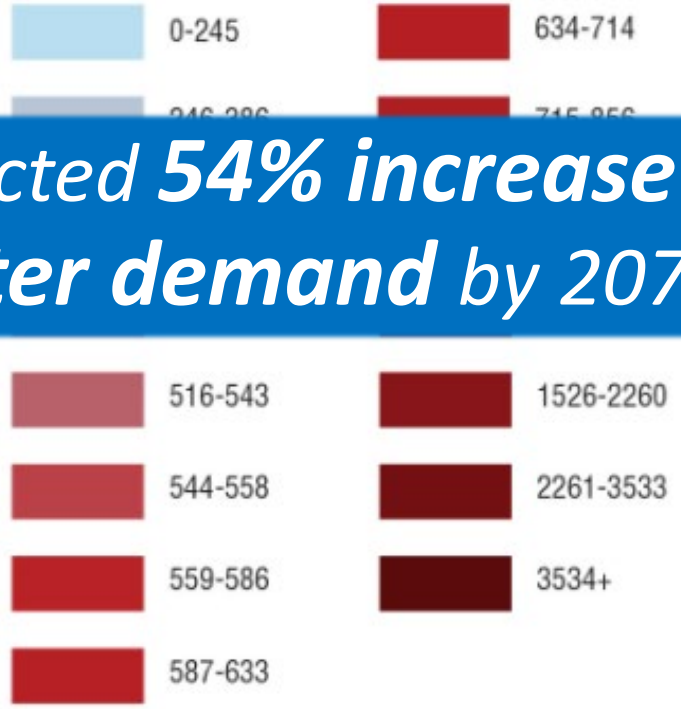
A SPECIAL REPORT FLORIDA 2070

Florida's Population & Developed Land 2010 v. 2070



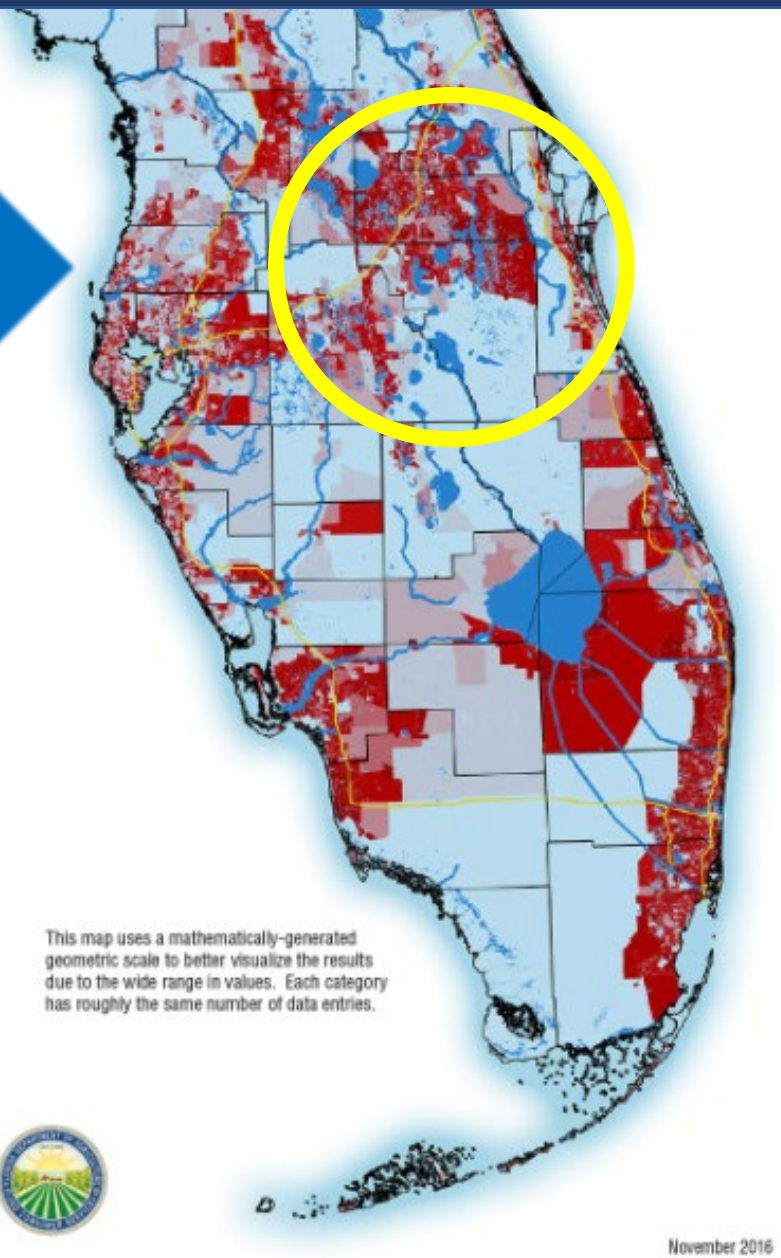
Florida's **Water Supply & Quality**

*Projected **54% increase in water demand** by 2070*



Statewide 2070 Trend

(Total demand by census block in gallons per day per acre)



This map uses a mathematically-generated geometric scale to better visualize the results due to the wide range in values. Each category has roughly the same number of data entries.

WATER 2070

A joint project of . . .

1000 FRIENDS of FLORIDA

UF GeoPlan Center

November 2016

Florida's Land Development **Status Quo**

Land Development **Status Quo Is Failing**

WHO? UF/IFAS Program for Resource Efficient Communities

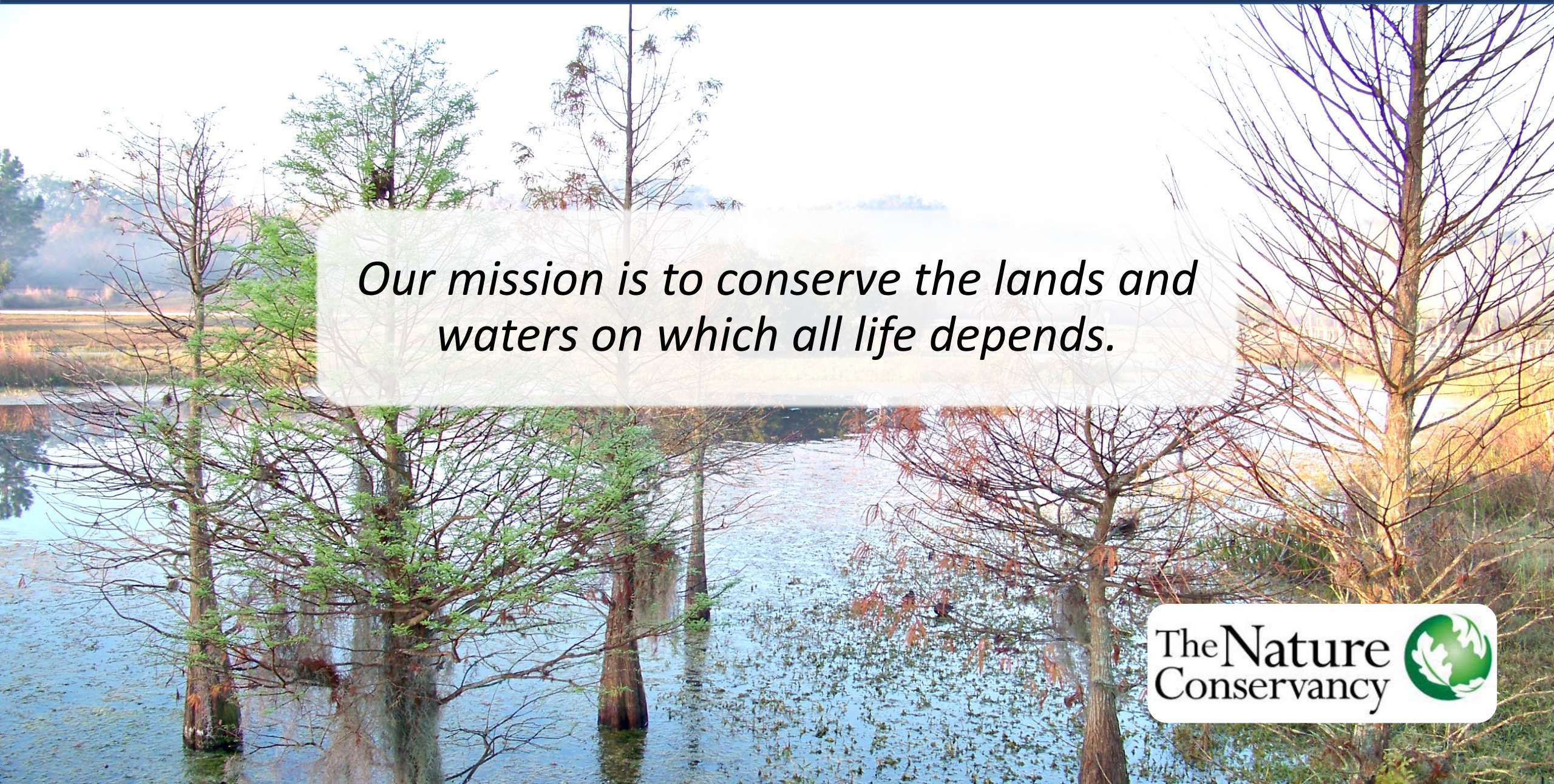
We promote the adoption of best design, construction, and management ***practices that measurably reduce energy and water consumption and environmental degradation*** *in Florida's master-planned residential community developments.*

UF | IFAS Extension
UNIVERSITY of FLORIDA

UF | IFAS
UNIVERSITY of FLORIDA

CLUE | CENTER FOR LAND USE EFFICIENCY

WHO? The Nature Conservancy Florida



WHO? Public-Private Partnerships for Systems Change

WHAT? Sustainable Floridians[SM] Program

Guiding Principles

1. Target *master-planned communities in Florida* from concept to build-out.
2. Work within *strategic water, energy, and nutrient budgets*.
3. Focus on *measurable, performance-based outcomes* supplemented by prescriptive practices.
4. *Enshrine conservation and efficiency incentives* in communities' legal documents.
5. Follow a *phased and iterative* performance benchmarking, monitoring, and verification *process*.
6. Require *annual renewal* of Program participation commitments and standards until a community is "built-out".
7. Be *completely voluntary* and operated on a fee-for-service/task order basis.
8. *Publish the results* periodically in professional, academic, and popular literature.

HOW? Performance Path: **Benchmarking & Monitoring**

- **Holistic, performance-based**, collaborative approach – for the long haul
- Create **"living laboratories"** for applied research and outreach Extension projects
- **Make the business case** for low-impact, resource-efficient, replenishing, restorative, and resilient new communities
- Build on opportunities, document lessons learned, and **iteratively adapt**
- **Scale**, replicate, and shift the status quo

SUSTAINABLE FLORIDIANS℠

H_2OSAV

HOW? Performance Path: **Benchmarking & Monitoring**

*We **endorse best practices & principles**, not specific projects & products!*

- **Holistic, perfo**
  approach – fo
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SUSTAINABLE FLORIDIANS℠

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HOW? Measurement & Verification (H_2OSAV)

City of Apopka

GRU More than Energy

Orange County Government Florida

OUC The Reliable One

Sarasota County

Seminole County Florida's Natural Choice

Toho Water Authority

Alachua County, Florida

St. Johns County Florida

St. Cloud Utilities

Tampa Bay Water Supplying Water To The Region

Hillsborough County Florida

Pasco County Florida

EGIA

H2osav.buildgreen.org/info/partners

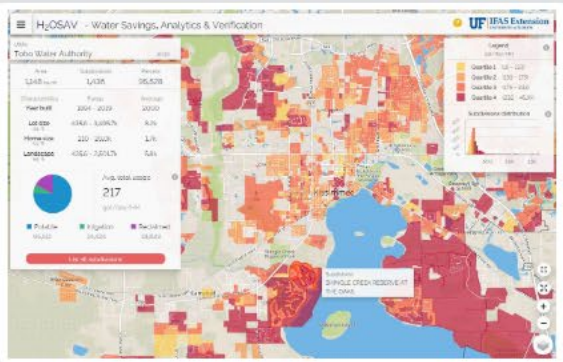
H_2OSAV

HOW? Measurement & Verification (H_2OSAV)

Use Cases • Partners • **Methods/Tools** • Get Involved • About

H_2OSAV Tools

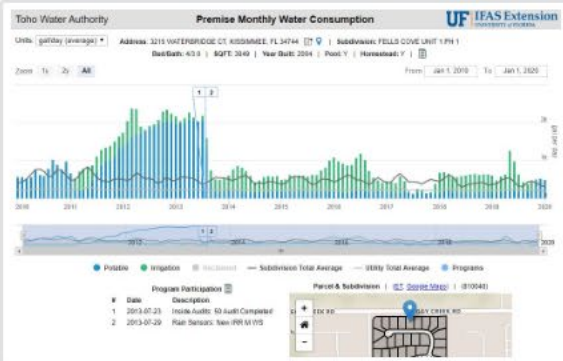
In addition to our suite of easy-to-use web-tools (shown below), we can rapidly compose prototypes and special-purpose tools to explore those "I wonder if..." scenarios.



Exploratory Tool (ET): Explore the utility's service region and gain insights at 3 levels: utility, subdivision, and premise.

Targeting Tool (TT): Slice and dice consumption, premise, and subdivision data for targeting, analysis, and more.

Analysis Tool (AT): Analyze the efficacy of conservation programs adopted by the utility over time.



Premise View (PV): View premise consumption, features, and program participation via a smart-search interface.

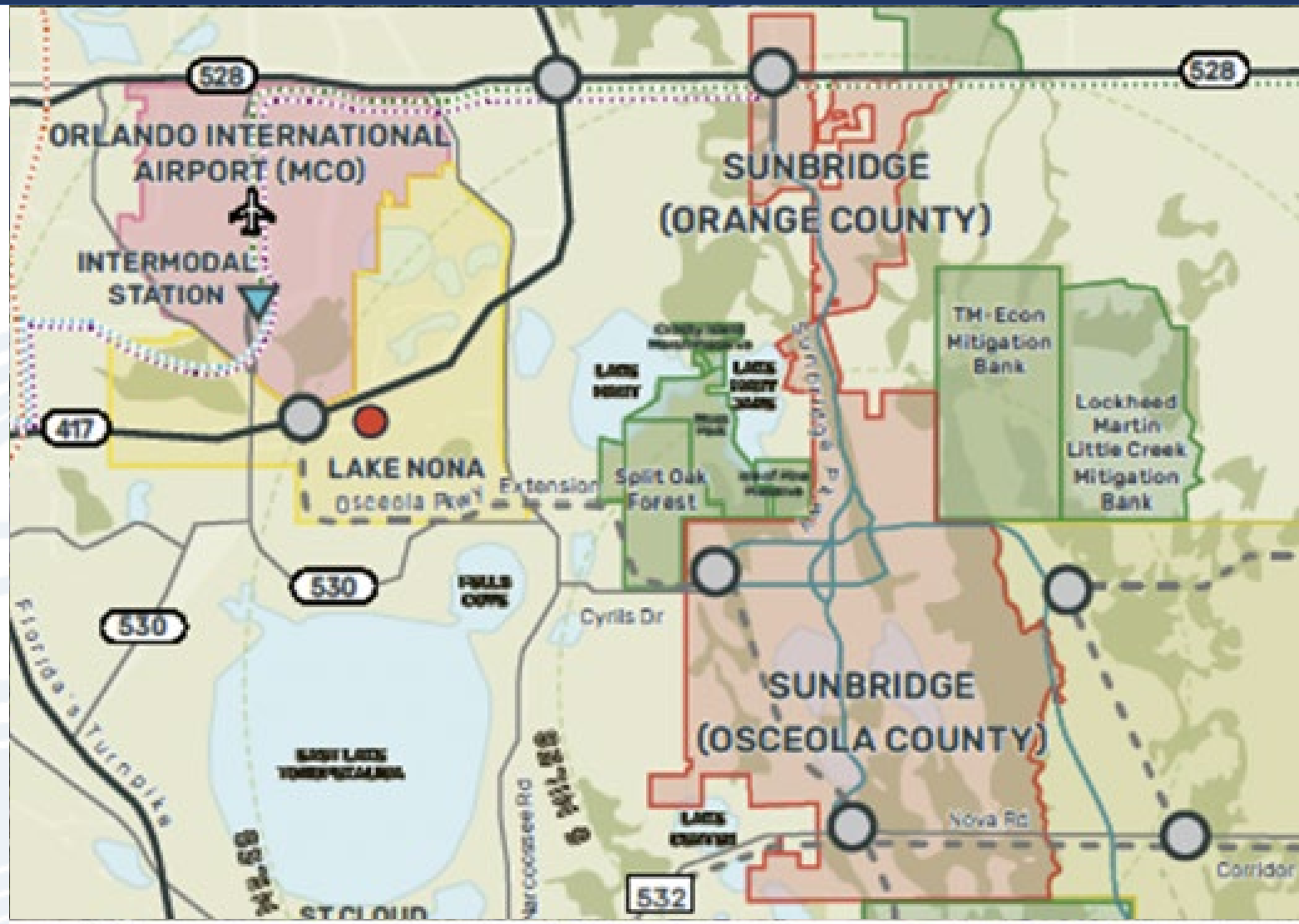
H2osav.buildgreen.org/info/methods

Example: Reduced Impact Residential Landscapes

- **Promote/maximize** ecological diversity and ecosystem services
- **Minimize/eliminate** irrigation beyond establishment
- **Minimize/eliminate** mineralized fertilizer use
- **Minimize/eliminate** pesticides, insecticides, herbicides

WHERE? SF-BMP "Living Laboratories"

- One example: **Sunbridge Stewardship District**
- **24,000-acre** master planned community development
- 30-year build out with **~36,000 new homes**
- Osceola & Orange Counties
- **5 "Eco-Life" Tenets** aligned with Sustainability Performance Metrics



Sunbridge Stewardship District **SF-BMP "Living Lab"**

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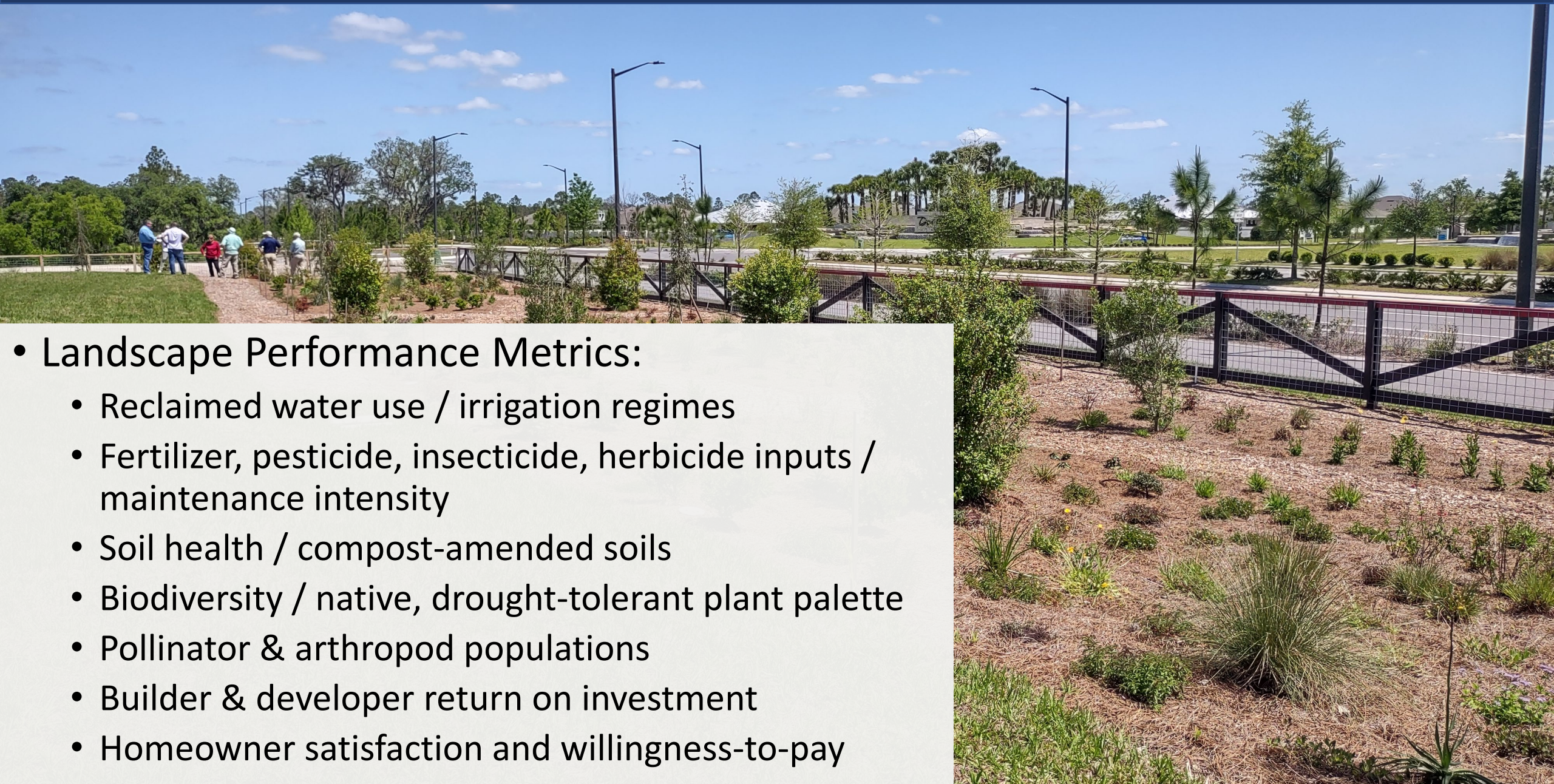
Sunbridge Landscapes as “Living Labs”

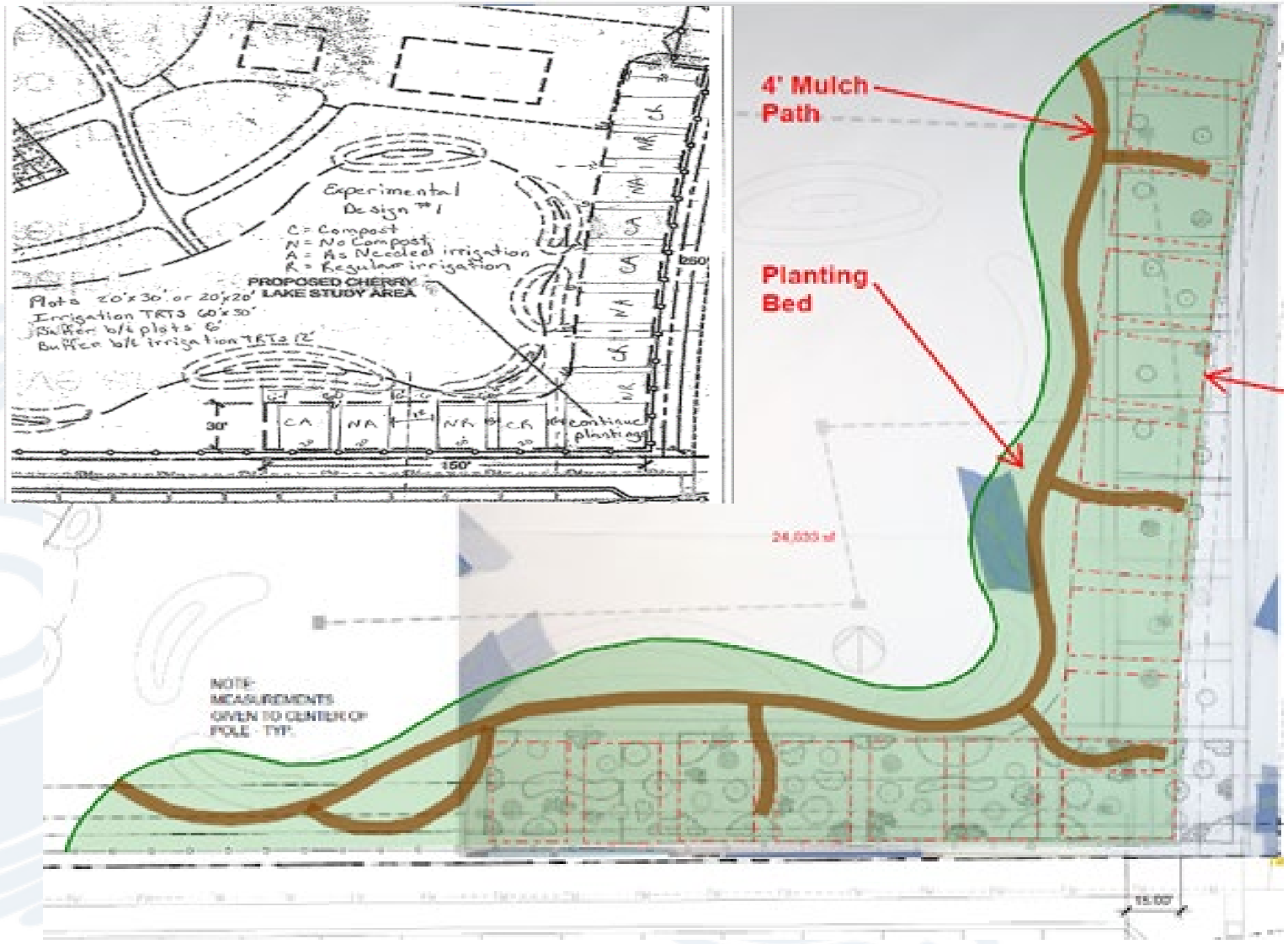


- Landscape Performance Metrics:
  - Reclaimed water use / irrigation regimes
  - Fertilizer, pesticide, insecticide, herbicide inputs / maintenance intensity
  - Soil health / compost-amended soils
  - Biodiversity / native, drought-tolerant plant palette
  - Pollinator & arthropod populations
  - Builder & developer return on investment
  - Homeowner satisfaction and willingness-to-pay

Sunbridge **Native Garden "Boundary Planting"**

Identify:

- **Native plant species that can thrive** in residential landscapes
- **Irrigation and soil amendment practices** that improve establishment of native plants
- Characteristics of native plants that **promote pollinator and ground dwelling beetle biodiversity** - two key ecological services indicators



Reduced Impact Landscapes: **Less** is More

OUTSIDE

Less noise	More beauty
Less water	More native plants
Less fertilizers	More healthy soils
Less pesticides	More harmony with nature
Less CO_2 emissions	More passion + enthusiasm
Less landscape traffic	More life

SUNBRIDGE™

Thank You! Questions?

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