Irrigation Efficiency Research: Reducing Demand While Maintaining Landscapes

(Have your cake and eat it too…)

3rd Urban Water Demand Roundtable
Oct 1, 2013, Las Vegas, NV

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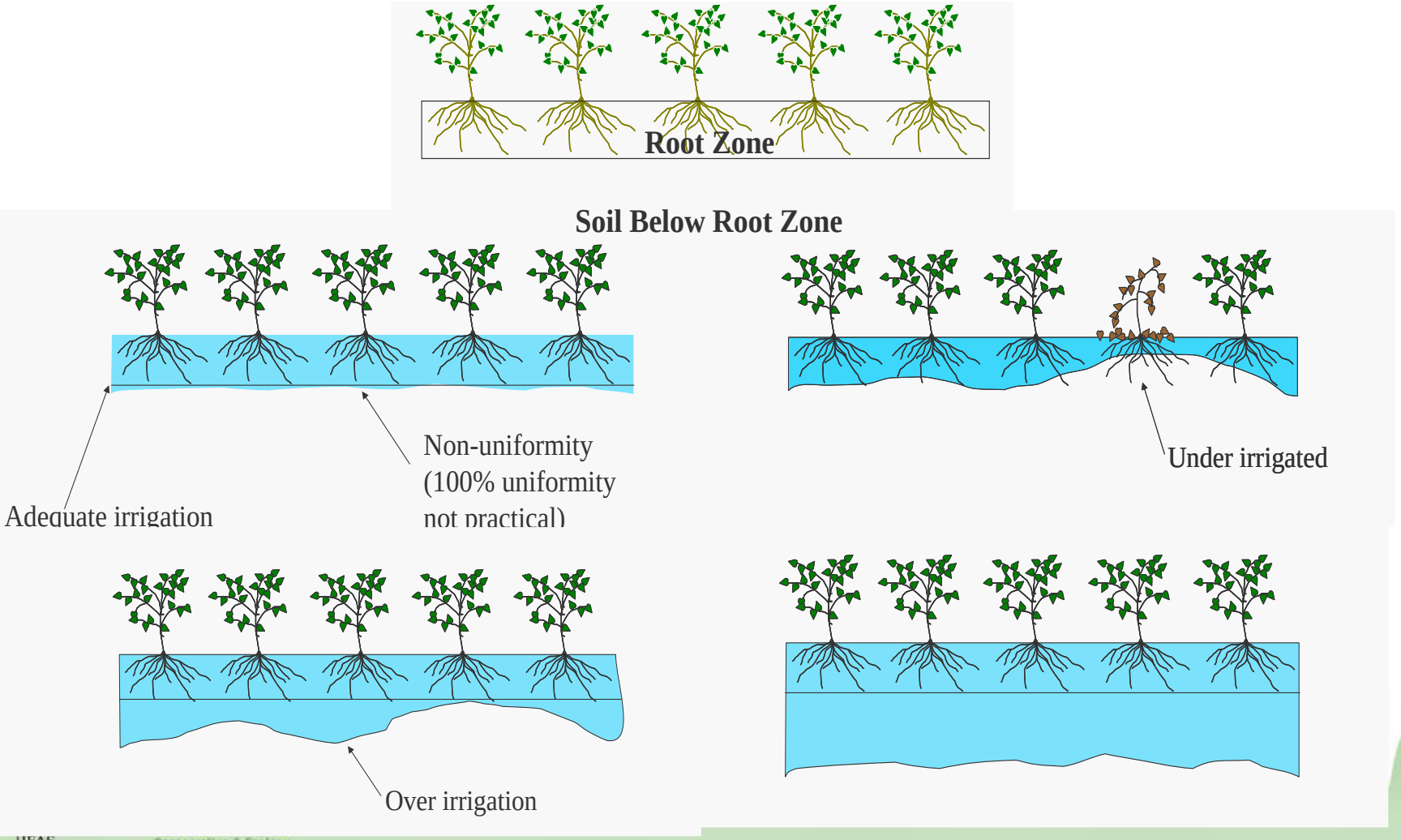
Irrigation Efficiency: Design/maint. + Management

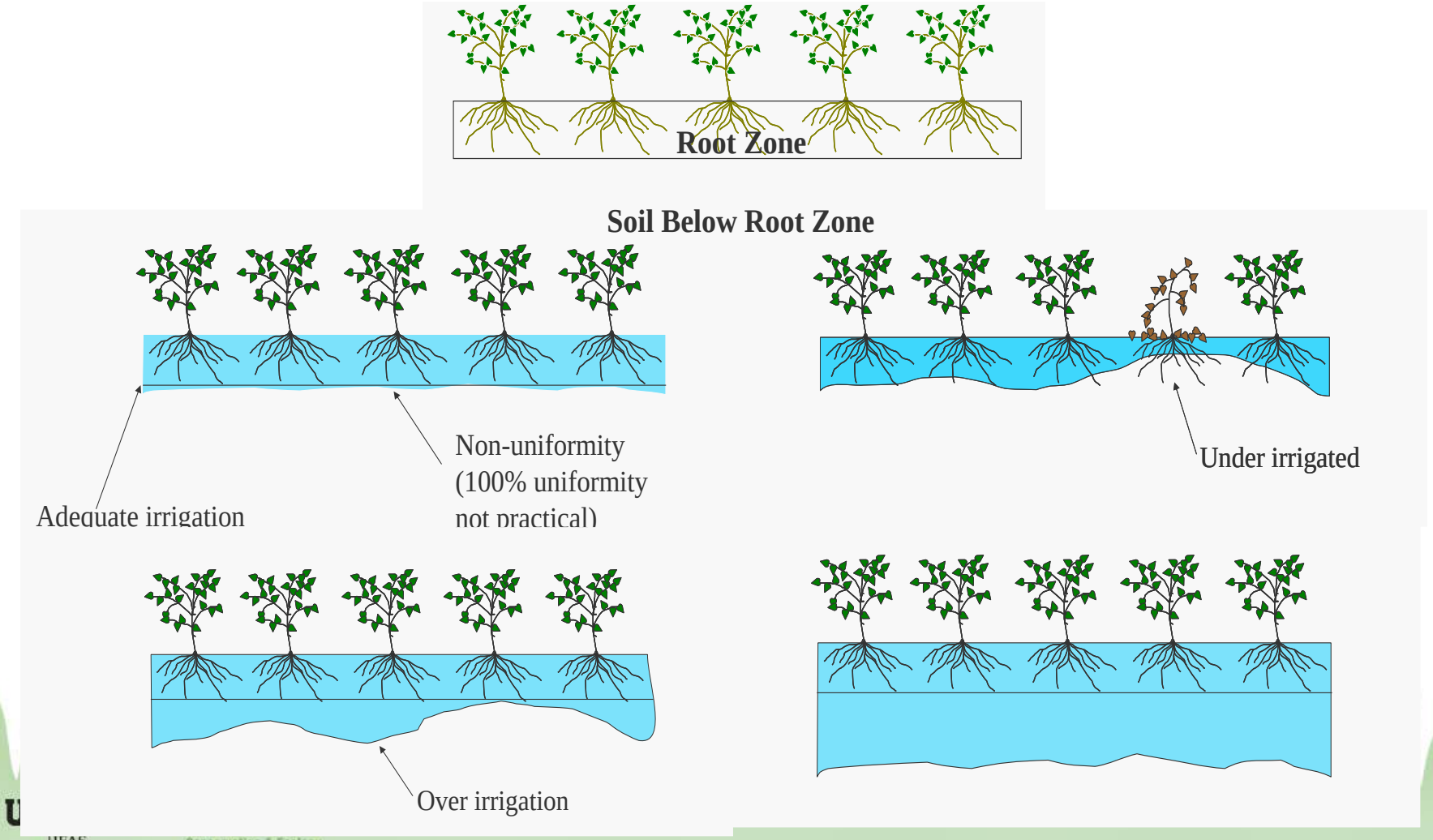



Misaligned Sprinklers

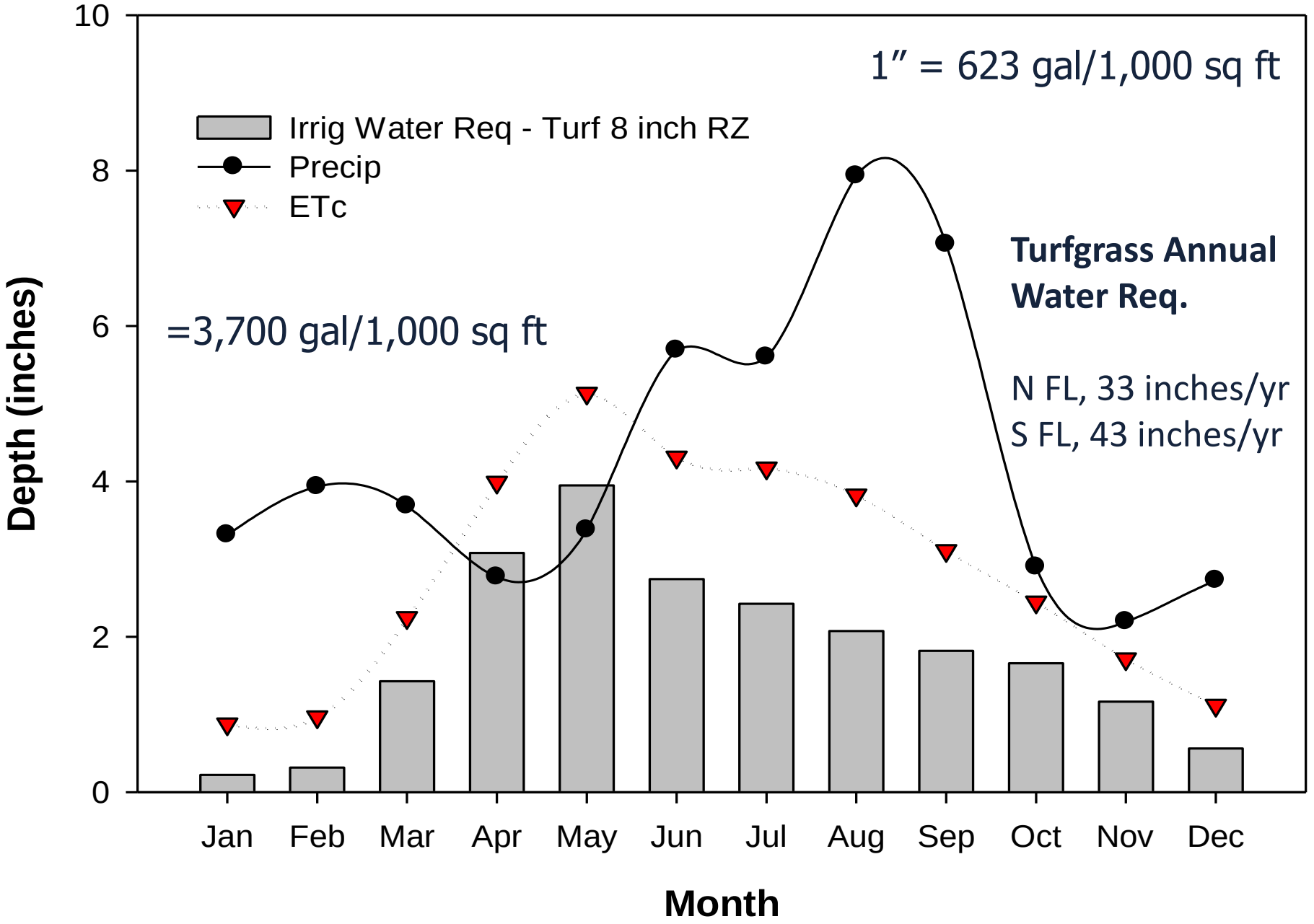
Broken Sprinklers


R.I.P.
Common Sense

Irrigation Efficiency: Design/maint. + Management



Irrigation Requirements

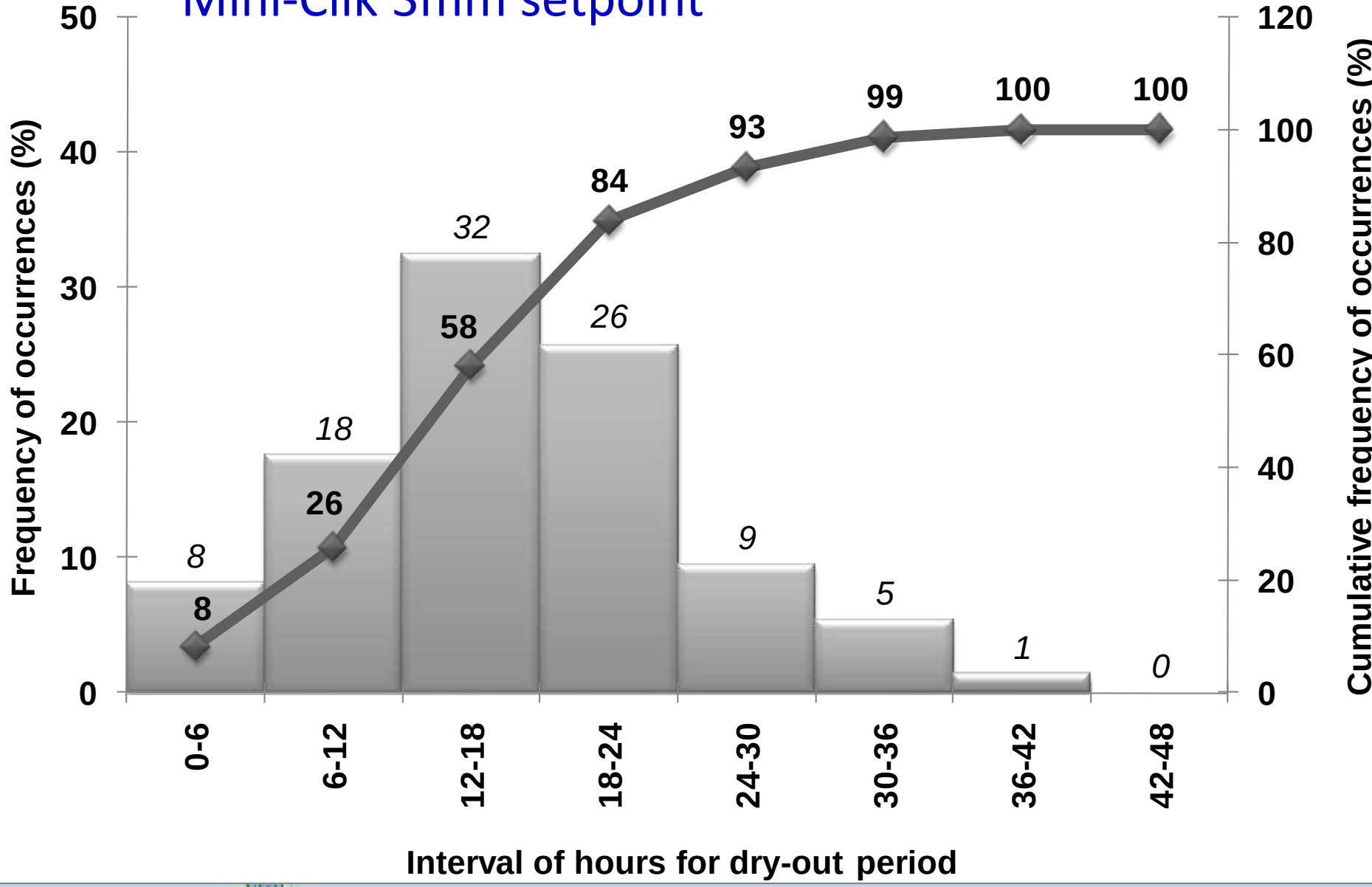


RAIN SENSORS

IA SWAT Rain Sensor Testing

Long Term Rain Sensor Testing

Mini-Clik 3mm setpoint



SMART IRRIGATION CONTROLLERS

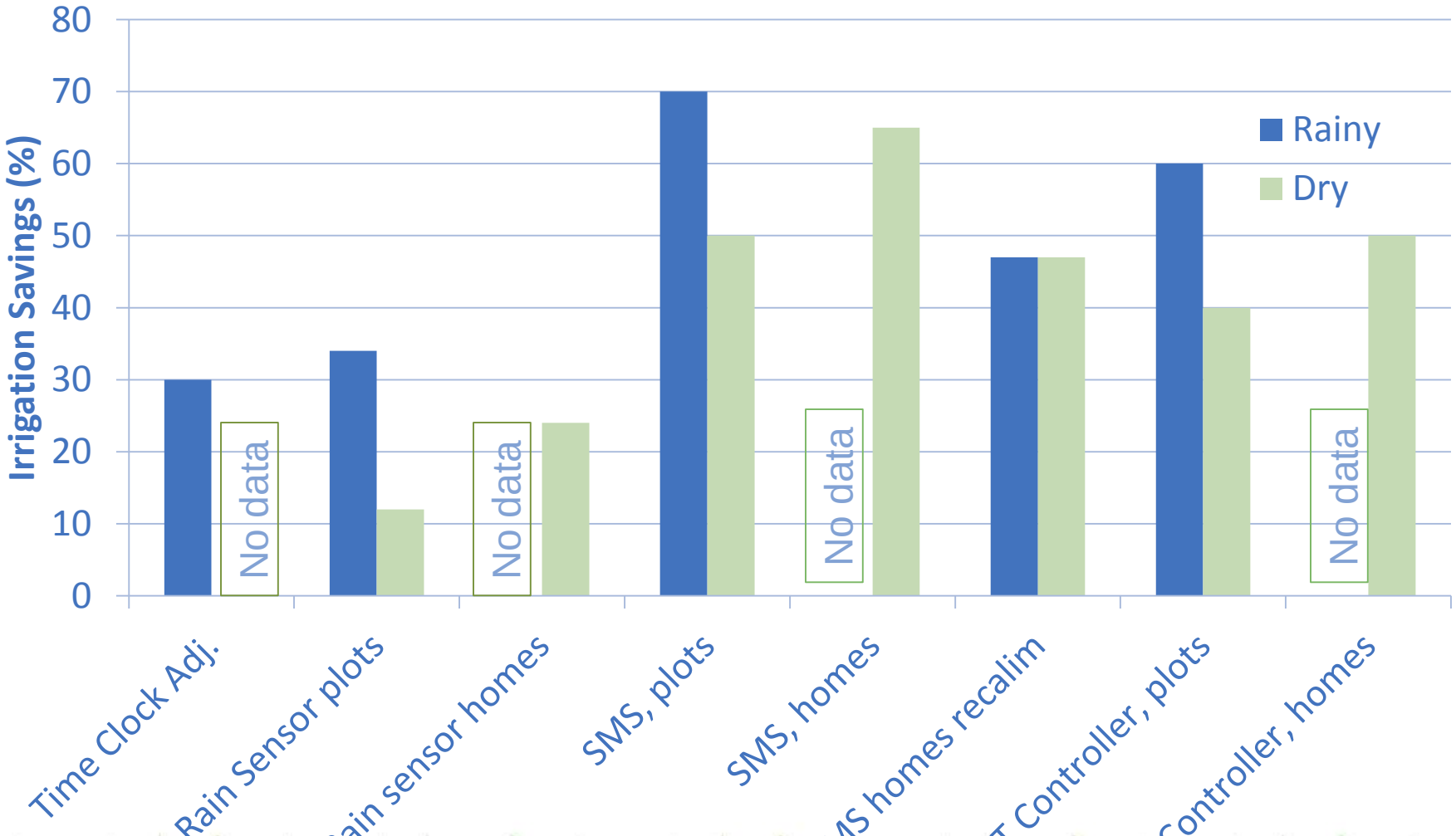
Soil Moisture Sensor Controller

Evapotranspiration (ET) Controllers

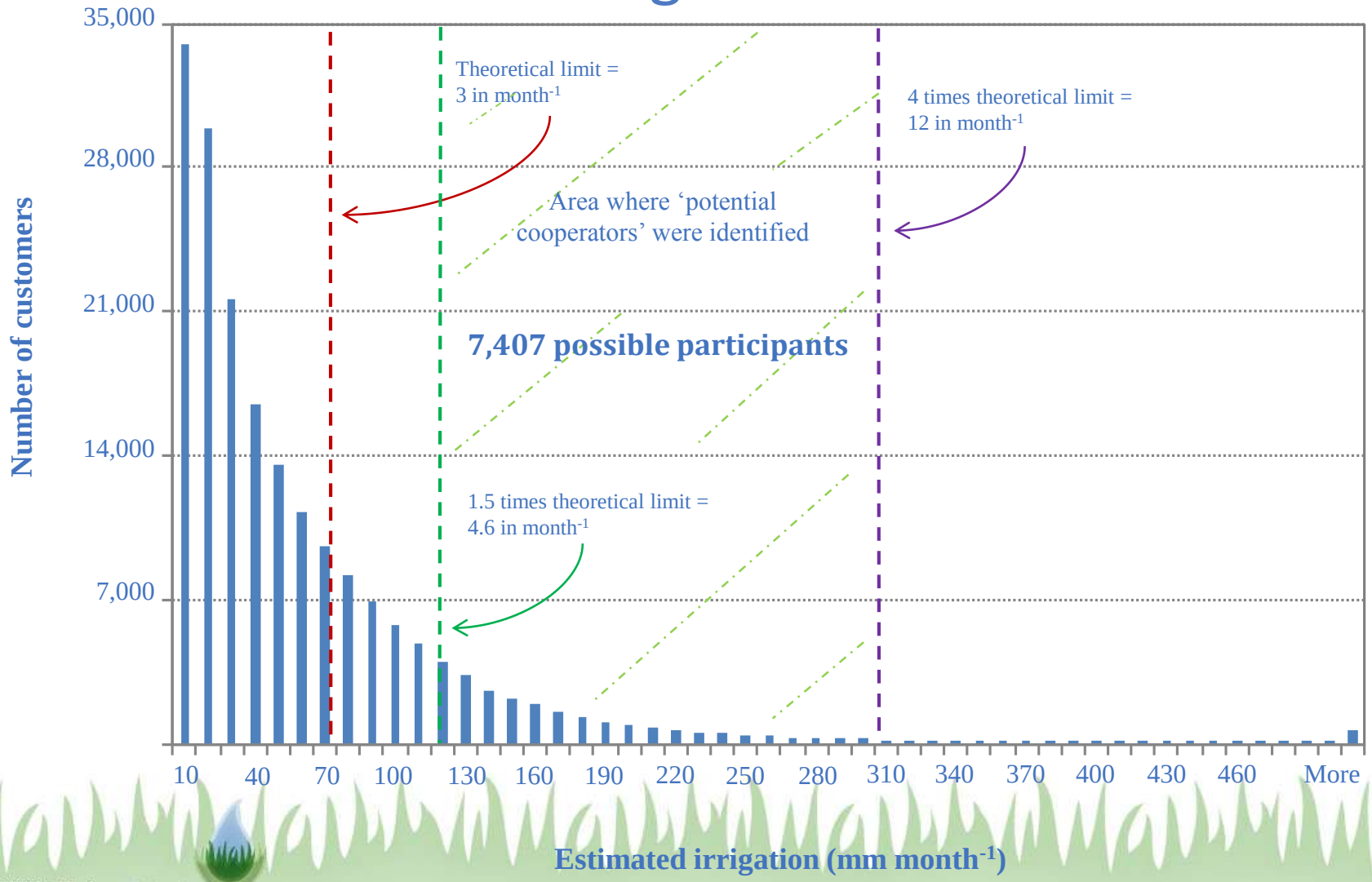
- Some can determine runtimes and days
- Programming is key!
  - Soil type
  - Plant type
  - Microclimate
  - Application rates
  - Slope

EPA WaterSense Protocol Evaluation

Research Based Irrigation Savings *Potential*



Orange County Evaluation Selection of Excess Irrigators



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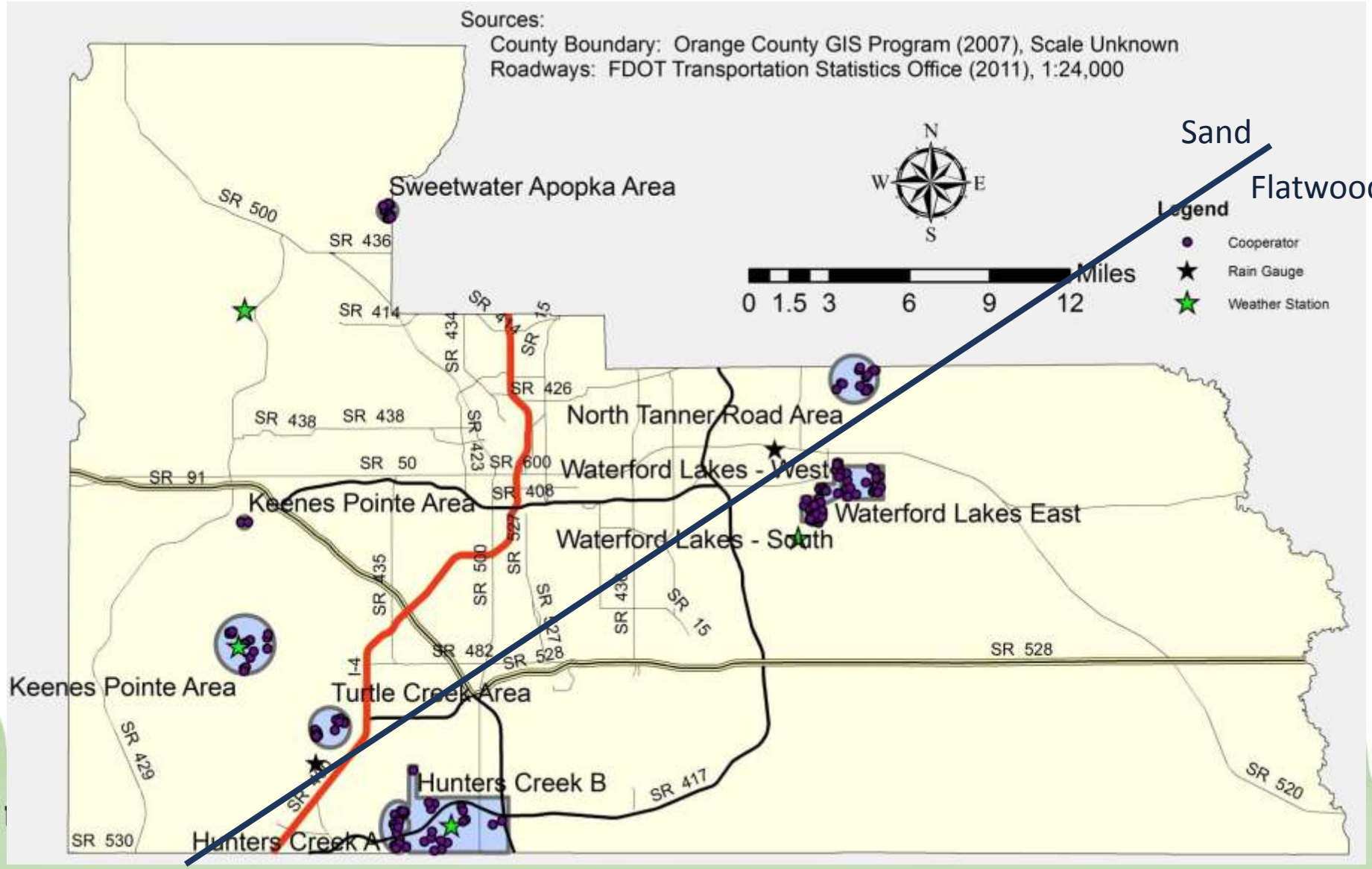
Summary of Participants

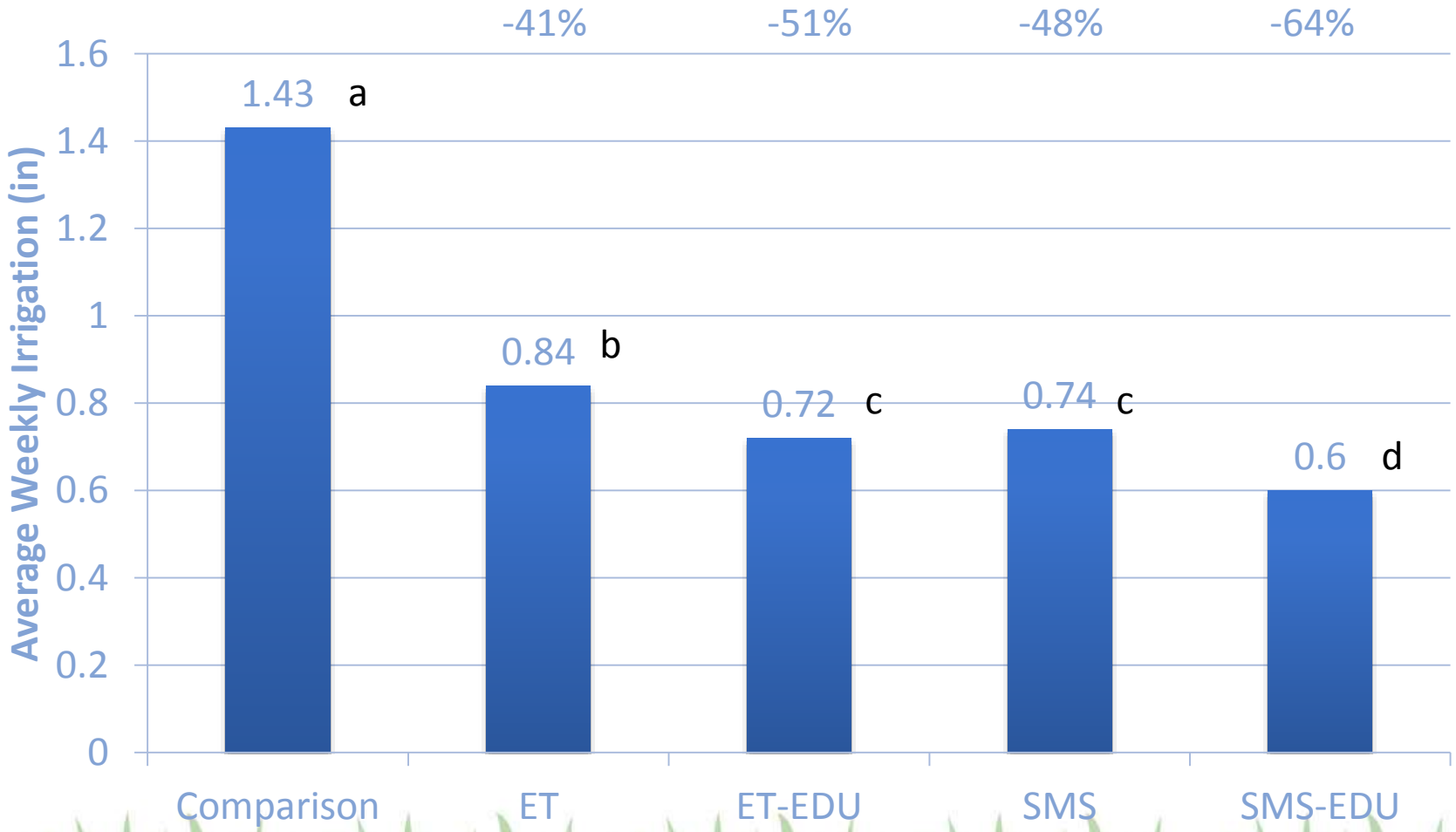


Two Smart Controllers Evaluated

- Rain Bird ESP-SMT
  - ET treatment
  - Total Count = 28
  - Total Locations = 7

- Baseline WaterTec S100
  - SMS treatment
  - Total count = 28
  - Total locations = 7

Orange County Results



Smart Controllers – Bottom Line

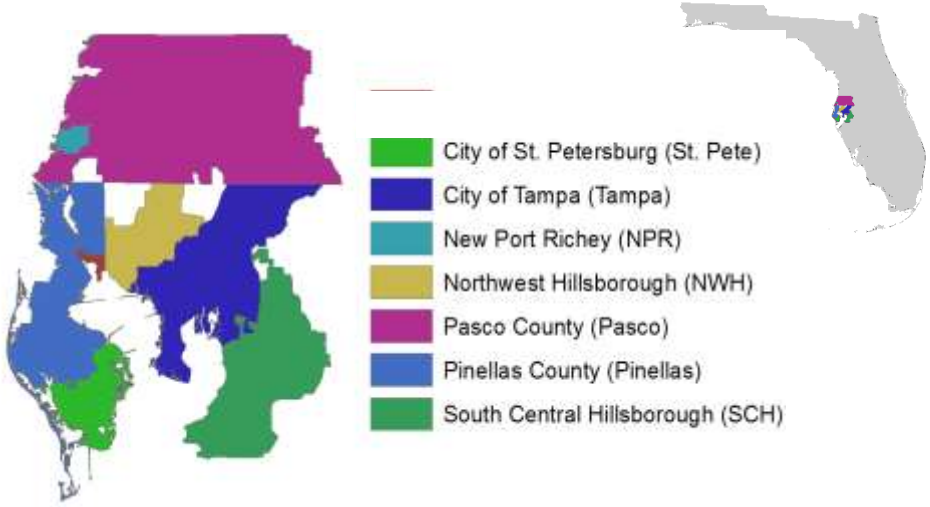
- They significantly reduce over-irrigation
- ET controllers must be targeted to sites with savings potential
- Proper installation enhances savings
- Rain sensors do NOT save “in the wild”
- Not all technologies are created equal?
- Longevity of savings?

Florida Friendly Landscaping

LANDSCAPE DESIGN/MODIFICATION

Estimating SFH Irrigation

- Tampa Bay Water (TBW)
- Potable monthly water billing records for single-family residential for ~12 years
- Parcel records including greenspace
- Soil data (sandy, urban)
- Daily rainfall and ET data

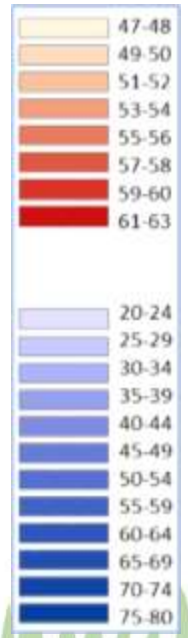


Characteristic	Observations	Variables
Customers	~650,000	-
Monthly water billing	~44,000,000	25
Parcels	~432,000	24
Soils	~40,000	40
Daily weather	~5,782,000	12

Individual SFH Irrigation Estimate

- Irrigation required based on daily soil-water balance
- 1,440 separate calculations for 4,380 days, summed monthly

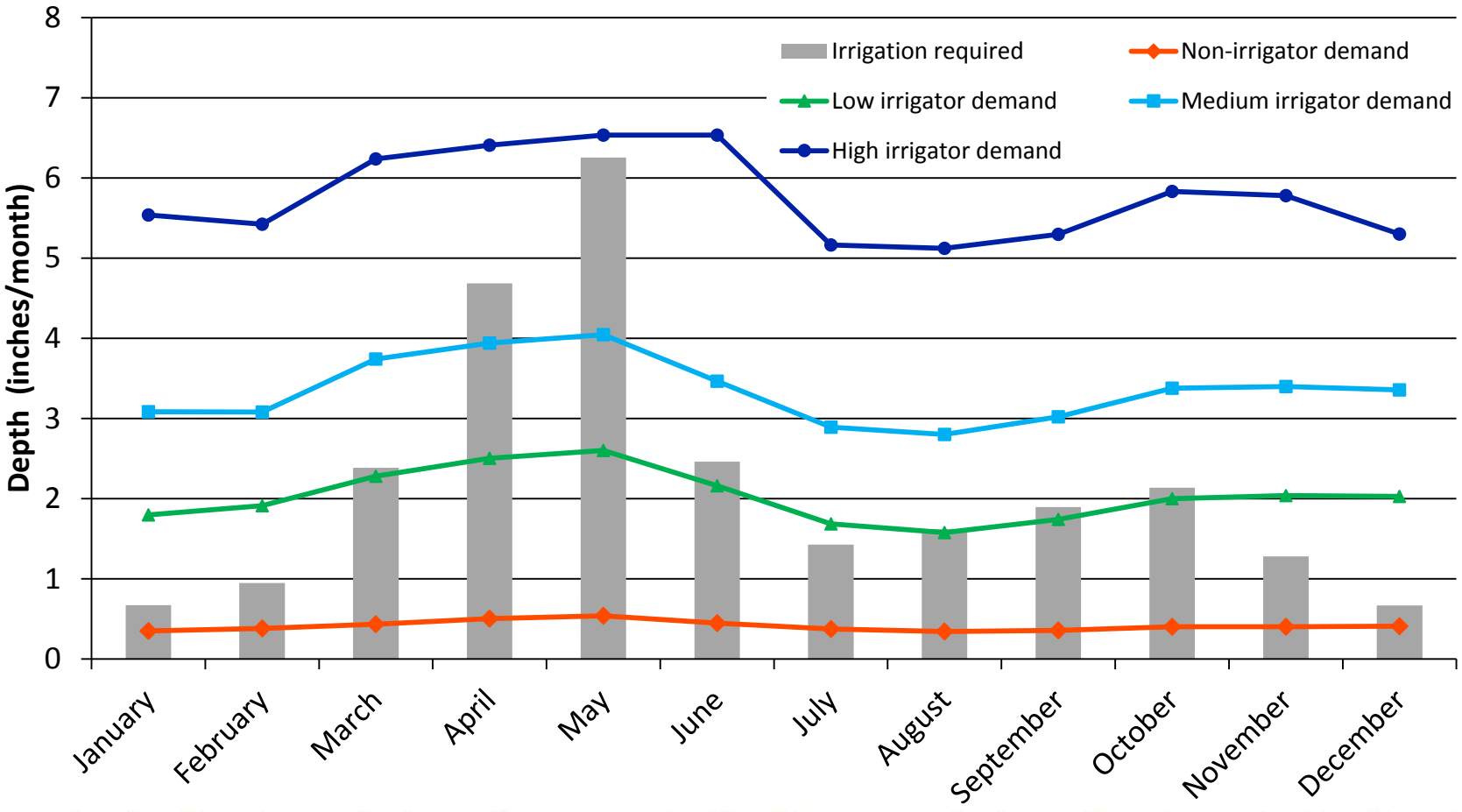
Annual ET_o (2000)



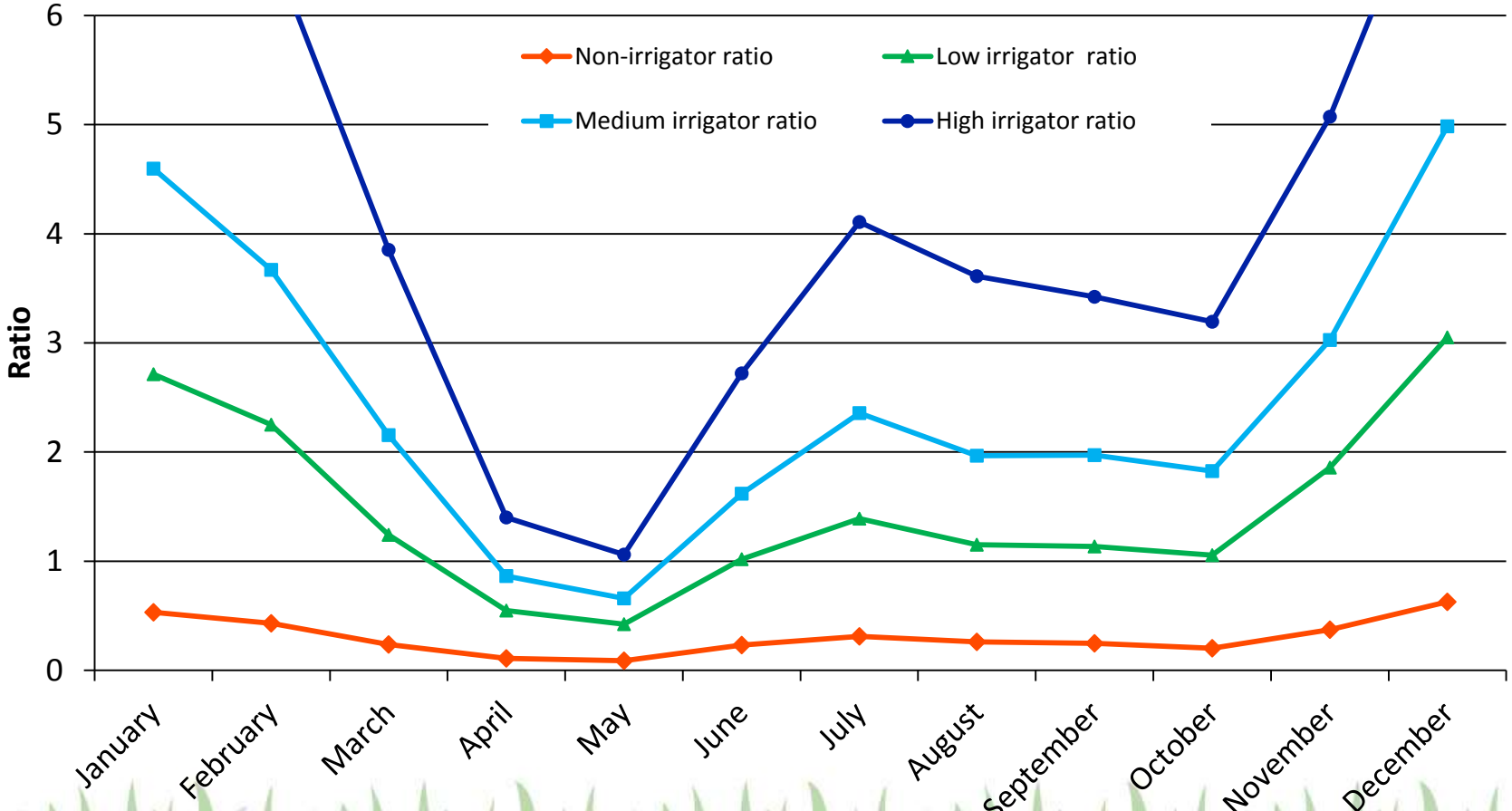
Annual Precipitation (2000)

Soil types

Tampa Irrigation Stratification



Tampa Ratio: Est. Irrig.to Gross Irrig Req.



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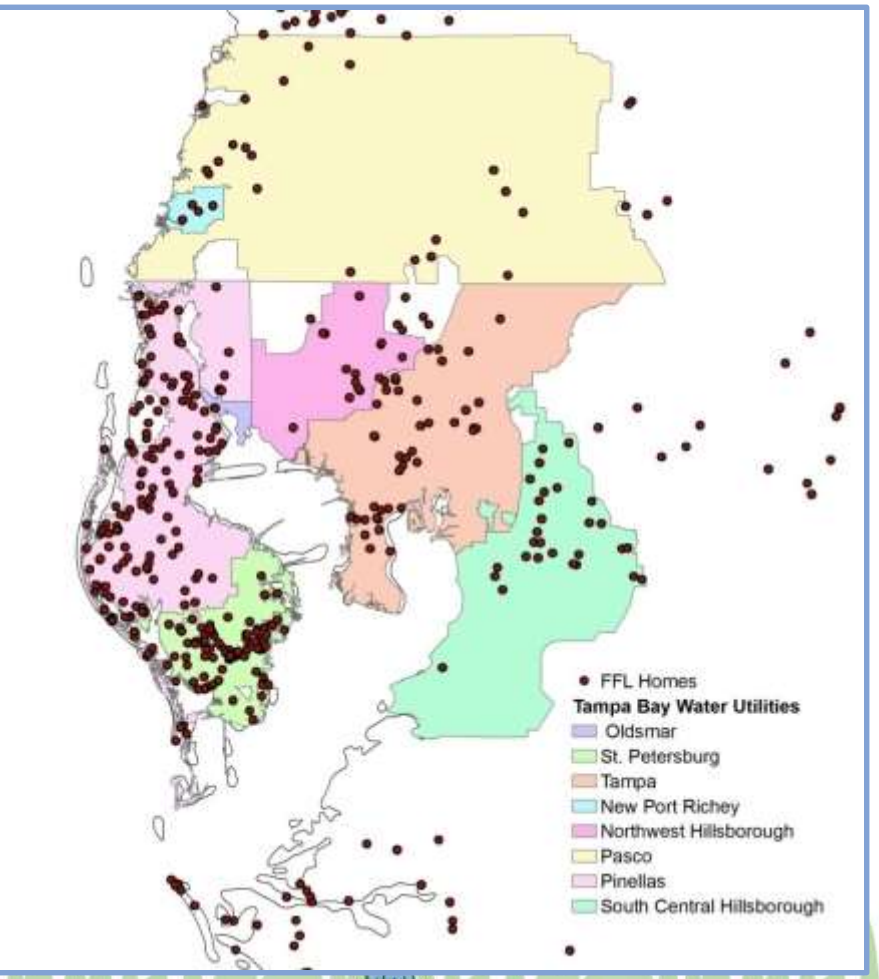
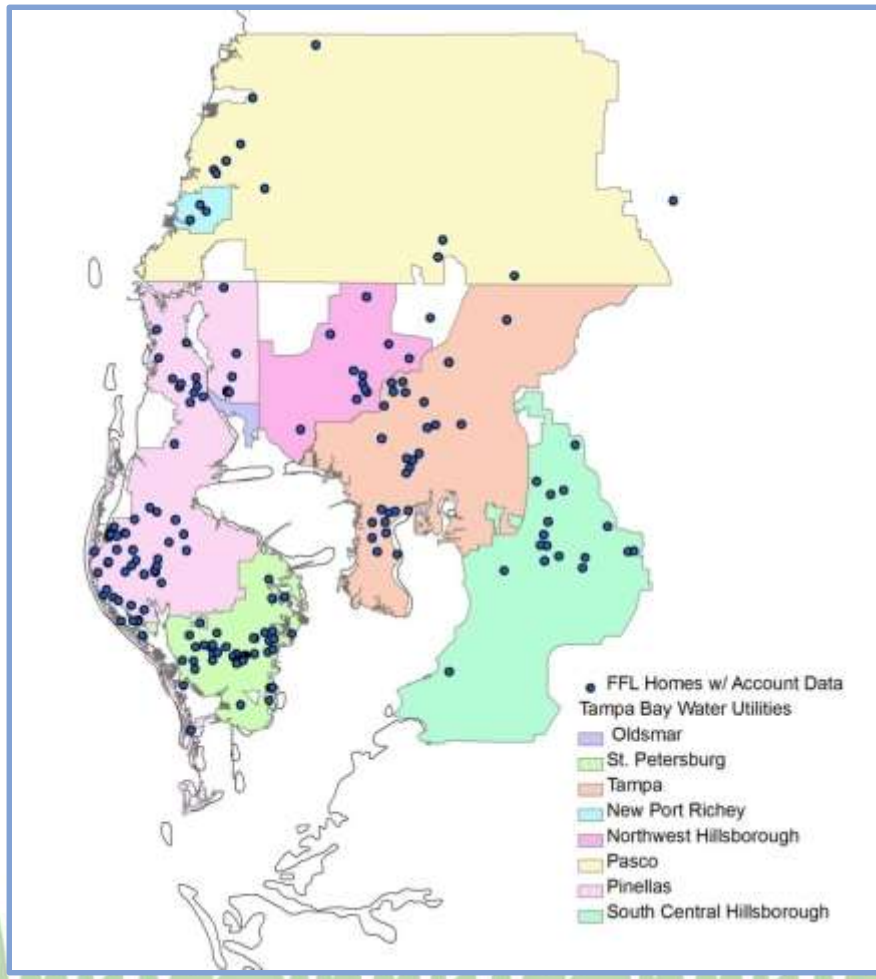
Identification of FFL Homes

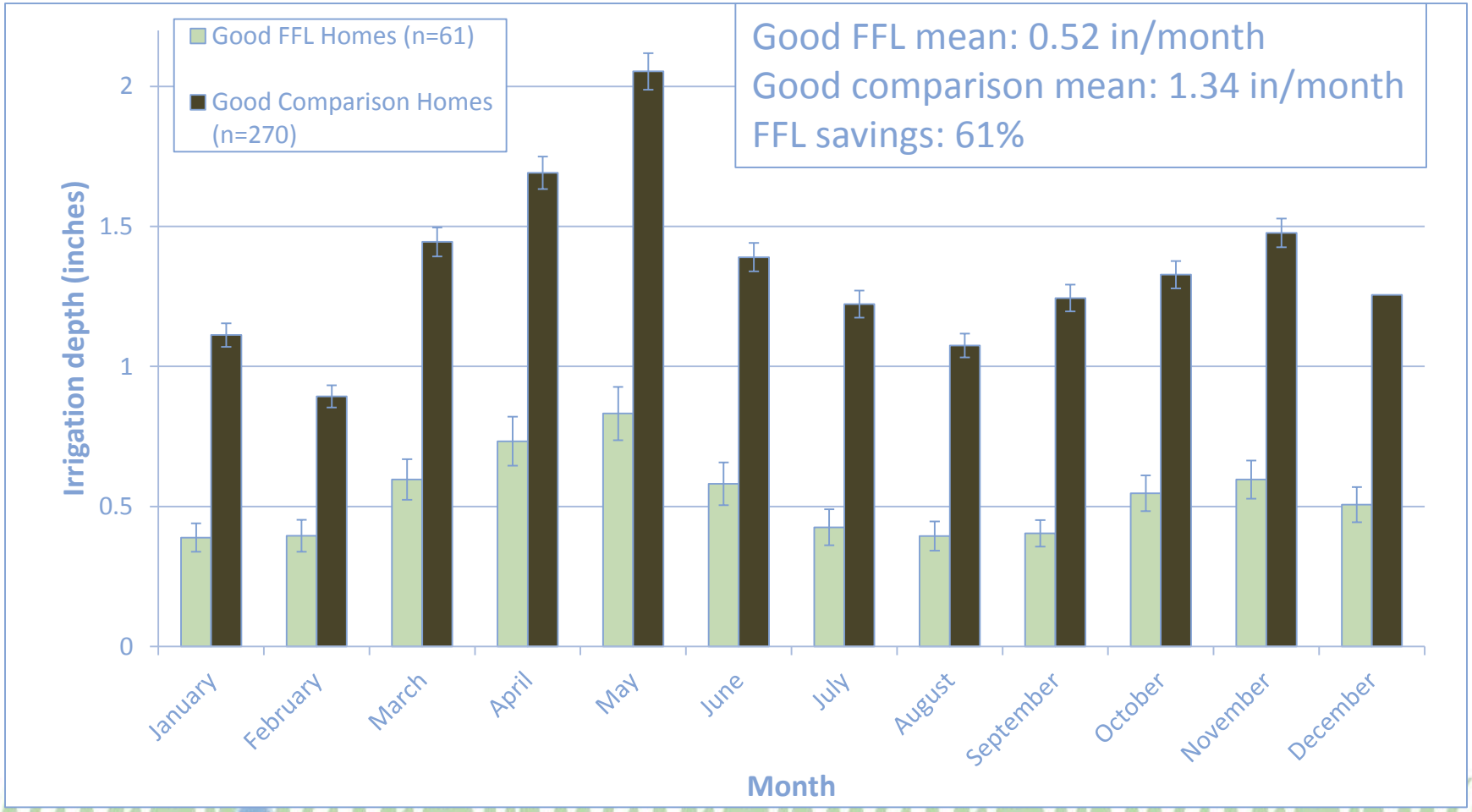




Good FFL…

Good traditional…

“Good” Quality FFL vs. Neighbors



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Acknowledgements: Water Research Foundation, Orange County Utilities, St. Johns River Water Management District, Southwest Florida Water Management District

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