Coastal Utilities' Response to Saltwater Intrusion

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Saltwater Intrusion Health Concern

Long-term Coastal Groundwater Stressors

Urbanization
Agriculture
Climate Change
Sea Level Rise

Saltwater Intrusion

Salt ions:
Bromide

+

Public Water Supply Disinfection Process

Chlorine

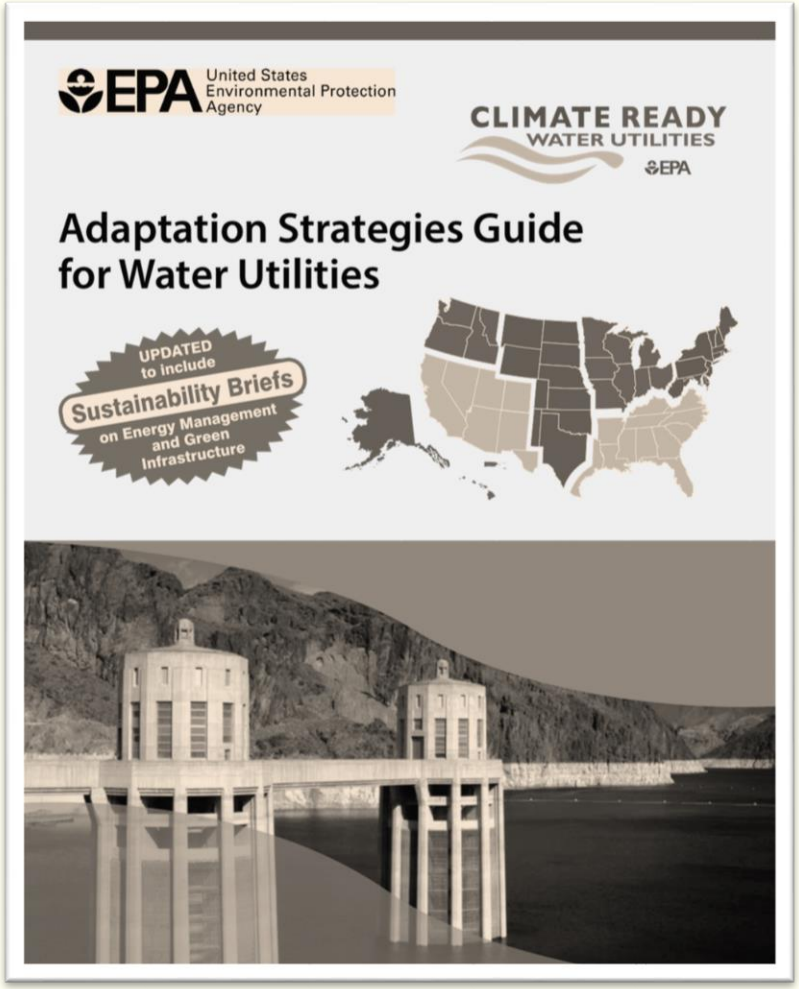
=

Disinfection Byproducts

Regulated Carcinogenic Compounds

Applied Science Framework: Utilities Adaptation Planning

- EPA's Climate Ready Water Utilities
  - Adaptation Strategies Guide
  - Climate Resilience Evaluation and Awareness Tool (CREAT)
- Florida Water and Climate Alliance
  - UF Water Institute



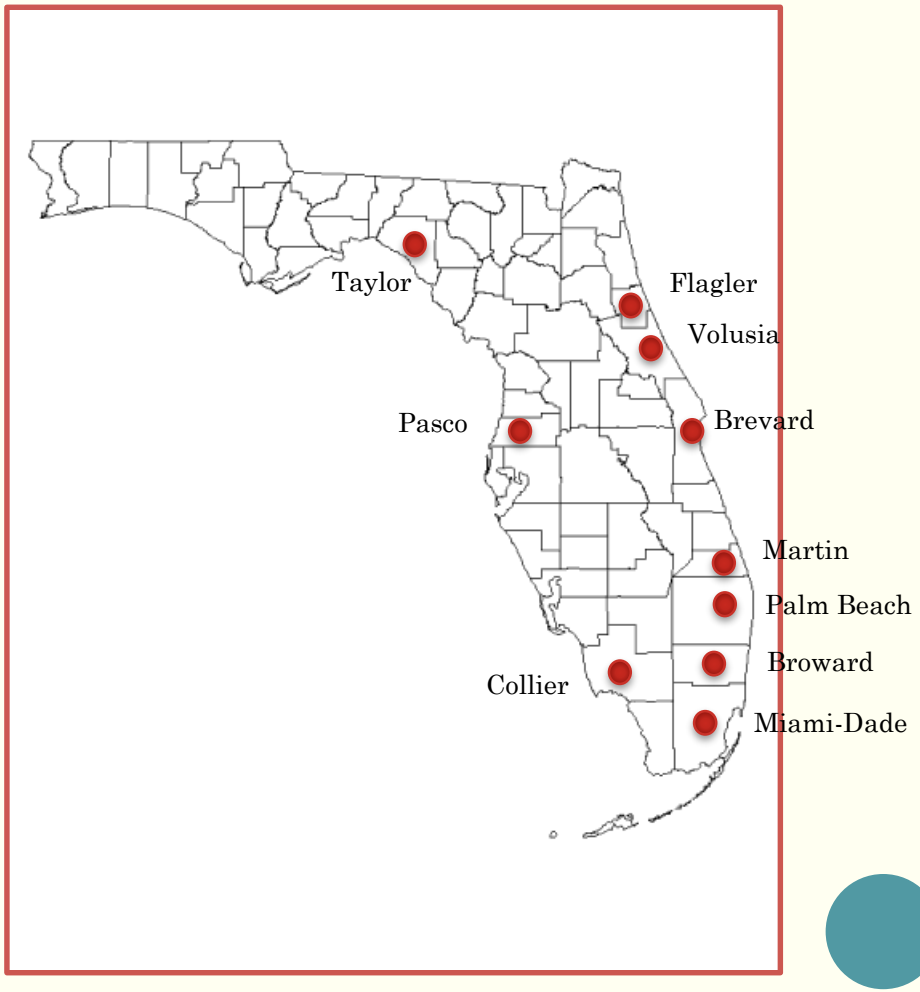
Florida Coastal Utilities Survey

- **Objective**: Understand utility mindset towards saltwater intrusion
  - Water supply, management and planning,
  - Concerns and strategies
- **Method**: Online survey (TREEO)
  - Summer 2013, Winter 2013
- Applied science adaptive framework

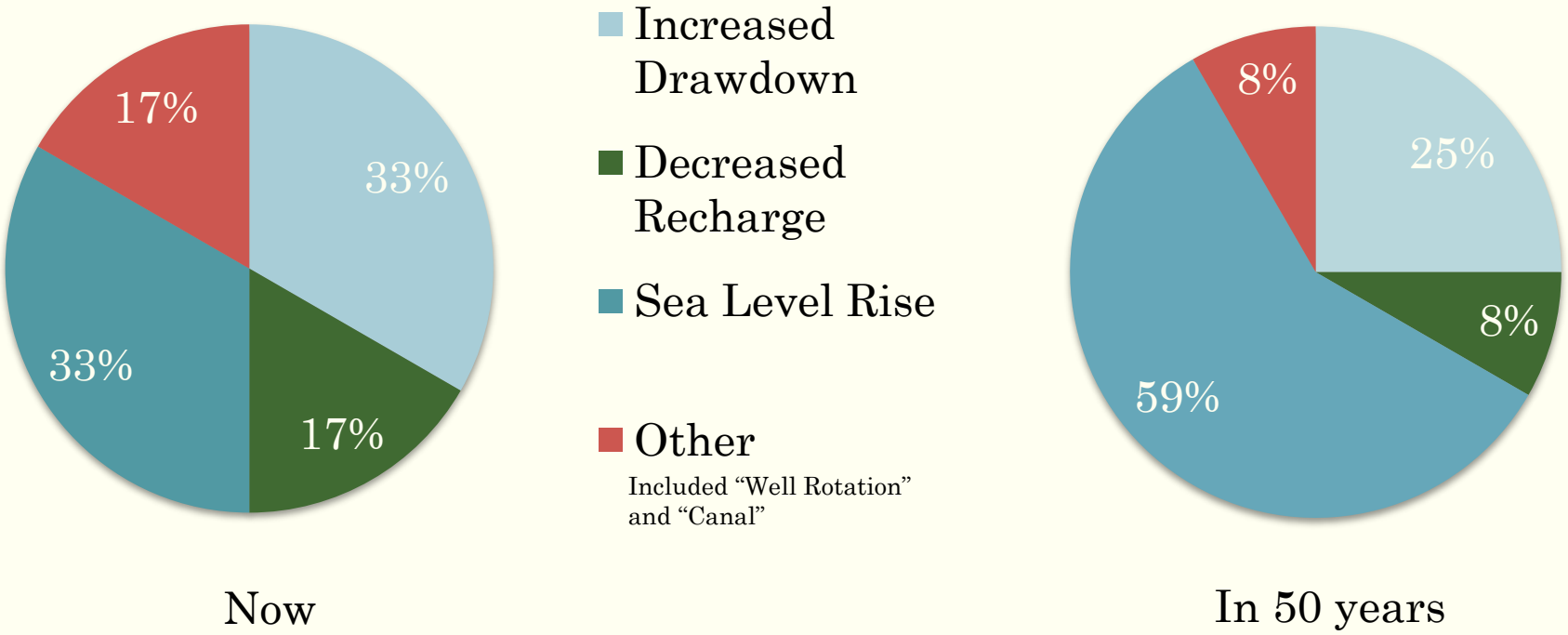
Survey Results

Utility Respondents

- 13 analyzed responses
- 10 counties
- Populations served
  - Low 1,346
  - High 156,254
  - Average 69,713
- All 100% groundwater
- Aquifer types
  - Floridan
  - Biscayne
  - Upper Surficial
  - Sand and Gravel
- Wellfield distance from coast
  - Average 9 miles

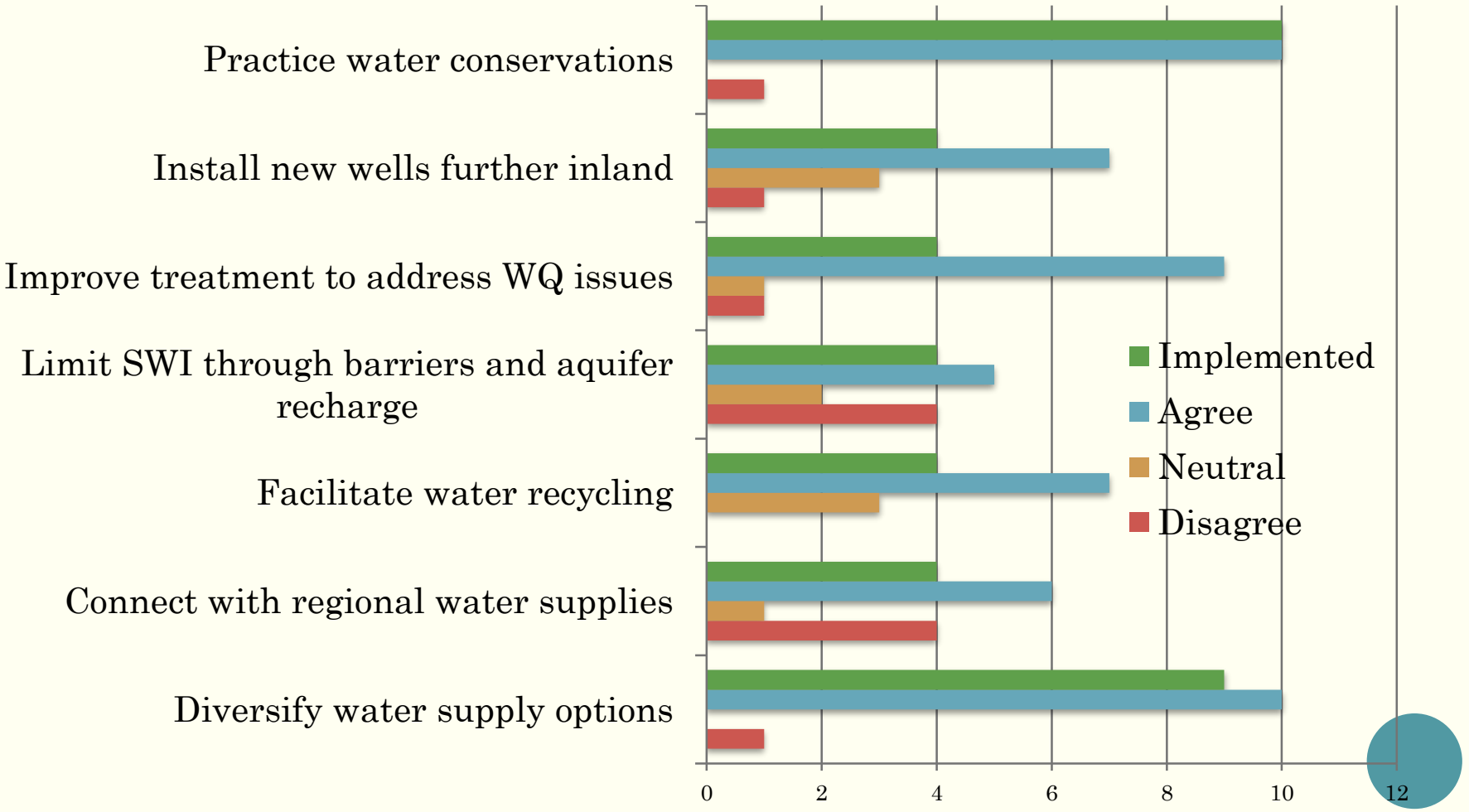


Saltwater Intrusion – Factors Affecting Utility



- Saltwater intrusion expected to impact utility: Average Year 2076

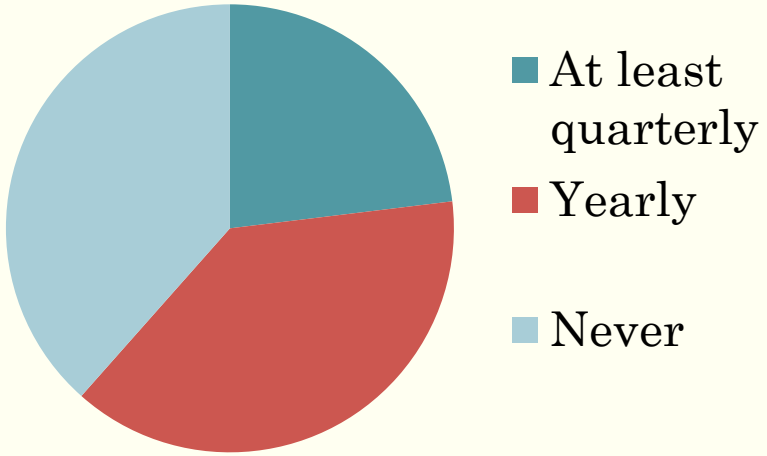
Saltwater Intrusion – Feasible and Implemented Adaptation Strategies



Climate Change – Information and Planning

- 85% respondents believe climate change is occurring
- 33% familiar with utility adaptation strategies

- Frequency discussing climate change at utility



Factors Affecting Climate Change Planning

- Utility constraints
  - More immediate problems prioritized
  - Current state of utility and infrastructure
- Information constraints
  - Insufficient science and uncertainty
  - Insufficient dialog between scientists and utilities
  - Unfamiliar with planning tools
    - No utilities used EPA's Strategies Guide or CREAT

Conclusions

- Some utilities are planning for saltwater intrusion and climate change.
- Need greater understanding of specific impacts and adaptation planning tools
  - Saltwater intrusion is not an imminent concern.
  - Communication between scientists, utilities, and policy makers needs improvement.

Next Steps in Research

- Focus on Florida utilities'
  - Saltwater intrusion monitoring, modeling, adaptation
  - Interest in using adaptation planning tools
  - Water quality concerns; water treatment and disinfection process
- Utility interviews and case study