UPPER FLINT

2021 Council Member Orientation

November 2021



GEORGIA
WATER PLANNING

waterplanning.georgia.gov

Agenda

Georgia Water Planning

Agenda

Upper Flint
Water Council Meeting
November 12, 2021
Flint Energies Headquarters
& by Videoconference

Objectives:

1) Provide orientation on regional water council and planning process
2) Review forecasts of water and wastewater demands for region
3) Discuss Council's vision statement and goals
4) Hear updates on current regional water planning review and revision process
5) Learn about several water-related activities in the region

9:45 am – 10:00 am	Registration
10:00 am – 10:10 am	Welcome & Agenda Review
10:10 am – 10:45 am	Introductions
10:45 am – 12:00 pm	Orientation to Regional Water Planning
12:00 pm – 12:45 pm	Lunch
12:45 pm – 12:55 pm	Chair's Report – Chairman Chase
12:55 pm – 1:10 pm	EPD Report: Planning Schedule and Resource Assessments – Johanna Smith (GAEPD)
1:10 pm – 1:25pm	Water and Wastewater Forecasts Overview – Steve Simpson & Jake Dean, Black & Veatch
1:25 pm – 1:50 pm	Agricultural Water Demand Forecasts – Mark Masters, GWPPC
1:50 pm – 2:20 pm	Vision and Goals Discussion
2:20 pm – 2:35 pm	Upper Flint River Working Group Report – Ben Emanuel
2:35 pm – 2:45 pm	Public Comment
2:45 pm – 3:00 pm	Next Steps and Adjourn

www.georgiawaterplanning.org

Meeting Agenda

- Council Member Orientation
- Upper Flint Council Meeting
- Public Comments
- Next Steps
- Adjourn

Introductions

DONALD CHASE	**Council Chair for:** Upper Flint dgmkchase@gmail.com (478) 472-7726
JOHANNA SMITH Georgia EPD	**Liaison for:** Upper Flint Johanna.Smith@dnr.ga.gov (470) 632-3158
KRISTIN ROWLES GWPPC	**Council Lead for:** Upper Flint krowles@h2opolicycenter.org (404) 822-2395
STEPHEN SIMPSON Black & Veatch	**Council Advisor for:** Upper Flint simpsonsl@bv.com (770) 521-8105
MARK MASTERS GWPPC	**Council Advisor for:** Upper Flint mmasters@h2opolicycenter.org

Council Member Orientation

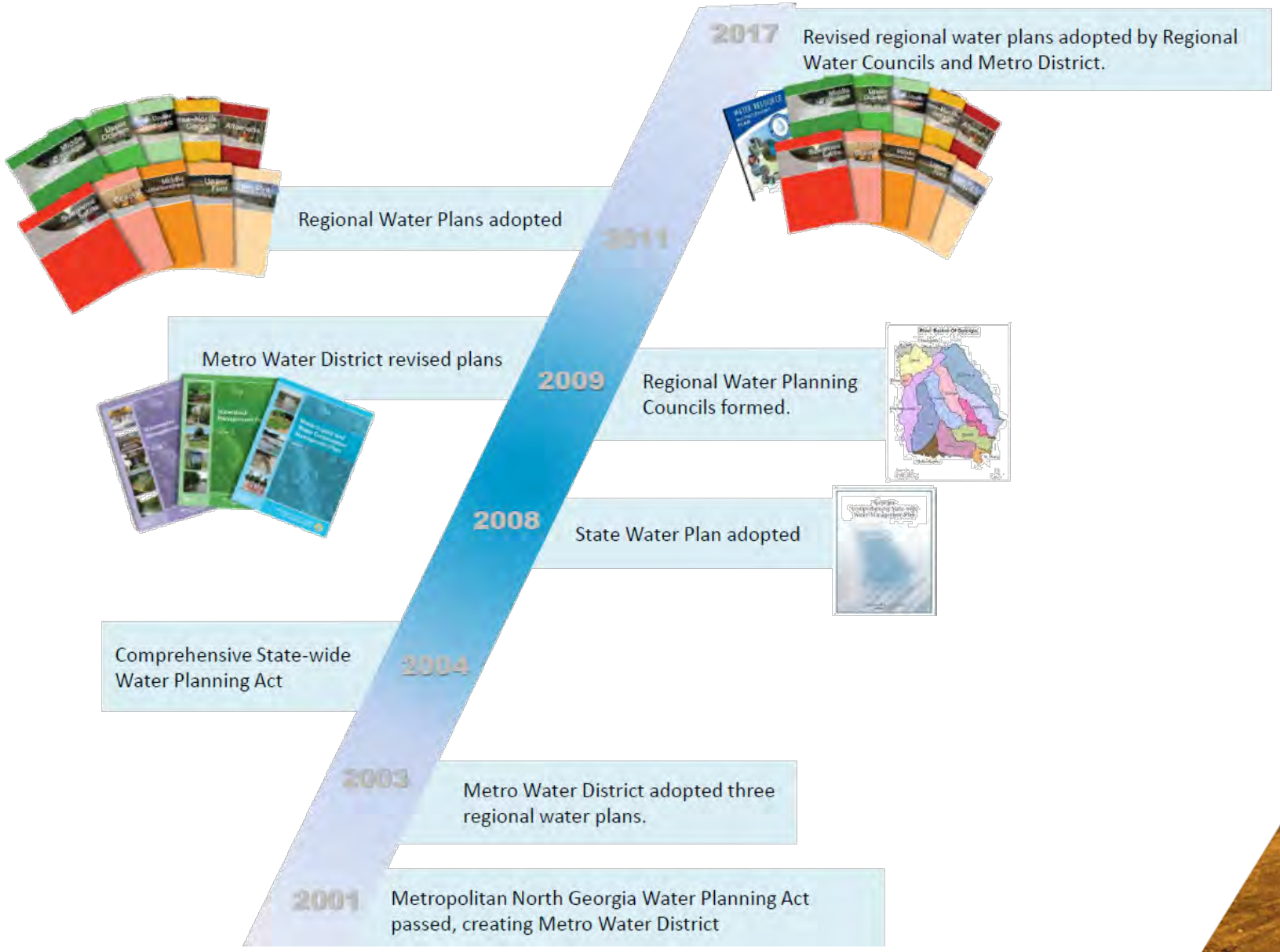
Policy Statement

“Georgia manages water resources in a sustainable manner to support the state’s economy, to protect public health and natural systems, and to enhance the quality of life for all citizens.”

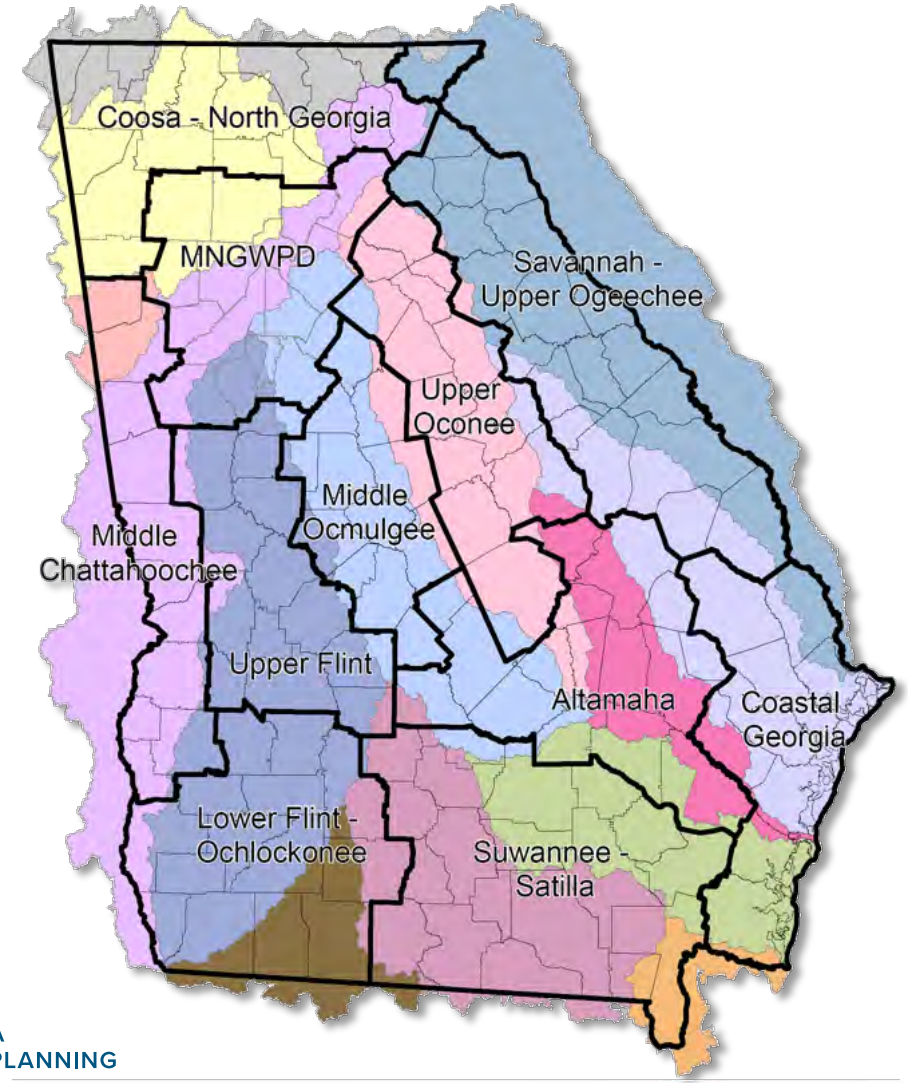


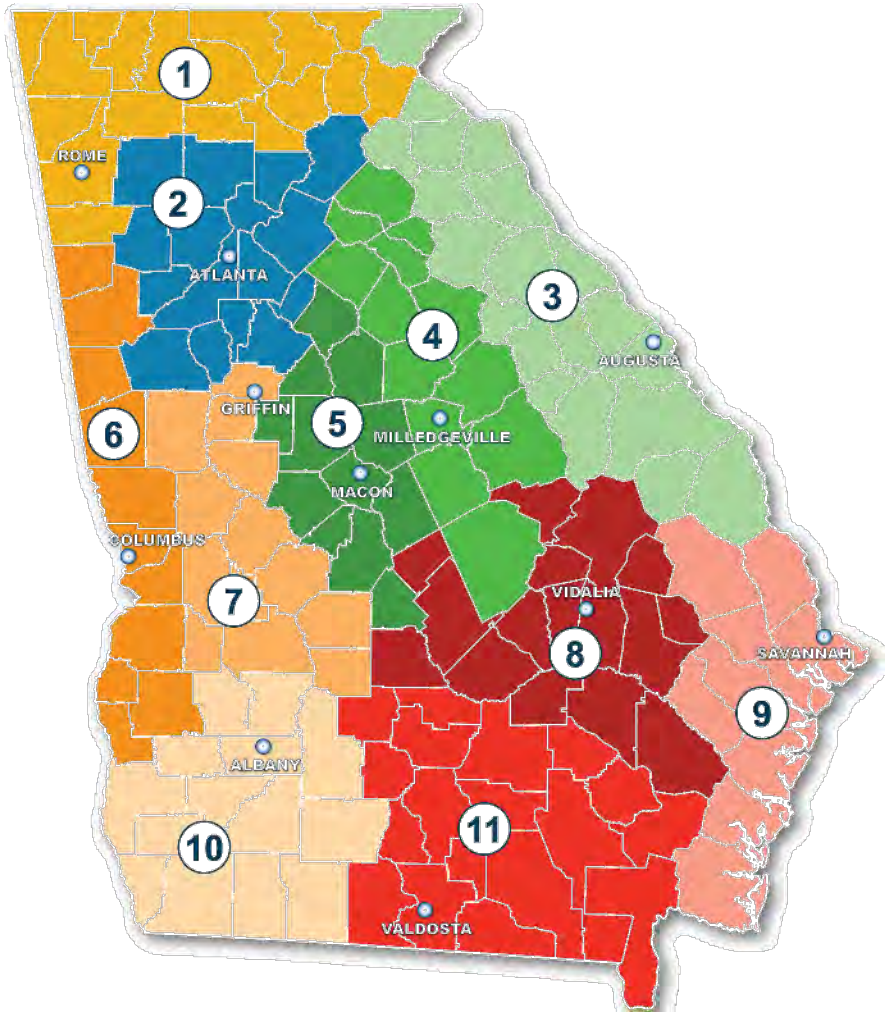
2004 Comprehensive Statewide Water Management Planning Act

Two Decades of Water Planning



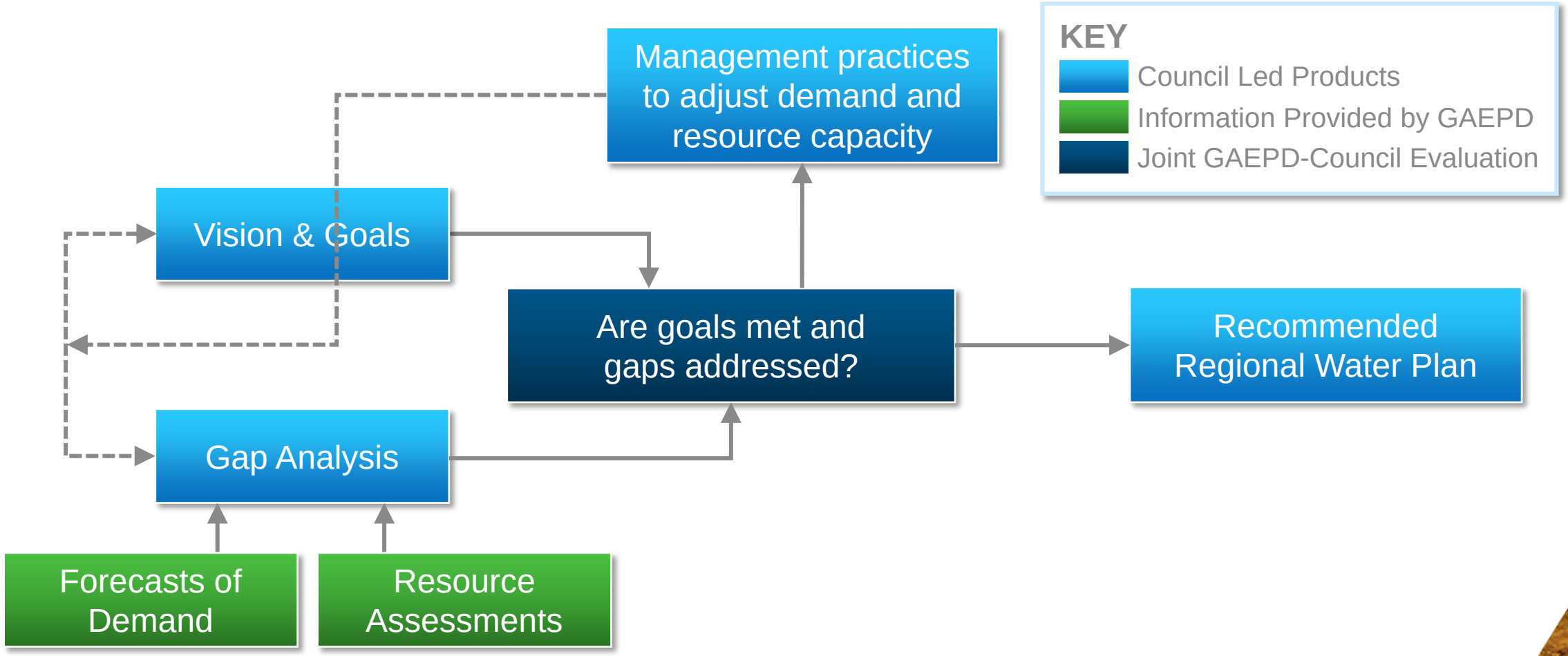
Regional Water Planning Councils





1. COOSA-NORTH GEORGIA
2. METRO WATER DISTRICT
3. SAVANNAH-UPPER OGEECHEE
4. UPPER OCONEE
5. MIDDLE OCMULGEE
6. MIDDLE CHATTAHOOCHEE
7. UPPER FLINT
8. ALTAMAHA
9. COASTAL
10. LOWER FLINT-OCHLOCKONEE
11. SUWANNEE-SATILLA

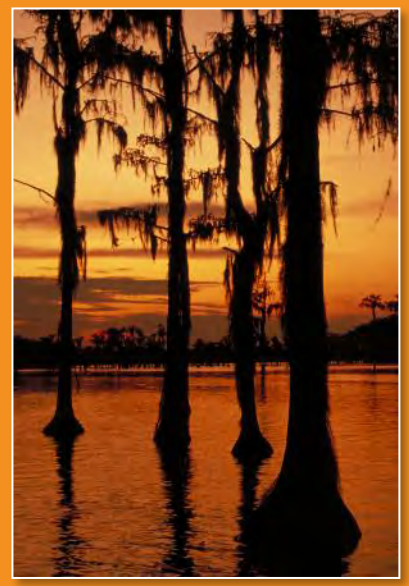
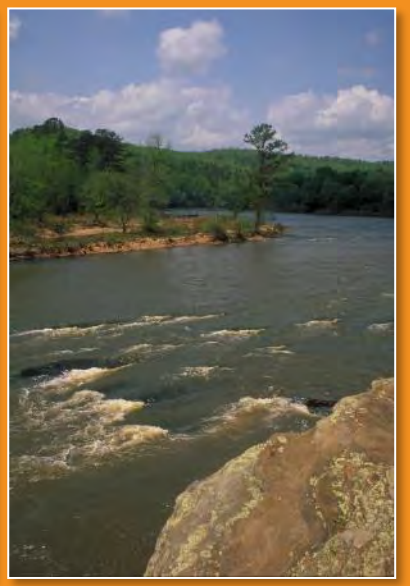
Steps in the Development of the Regional Water Plan



Regional Water Plan Review and Revision Process

The 5-Year Review Process will focus on:

- Updated water demand and wastewater forecasts
- Updated Surface Water and Groundwater Resource Assessments (Quantity)
- Updated Surface Water Quality Resource Assessment
- Review and Refinement (if needed) of Management Practices and Recommendations to the State
- Review of Council's vision and goals



Regional Water Plan Update

Regional Water Plan Review and Revision Schedule

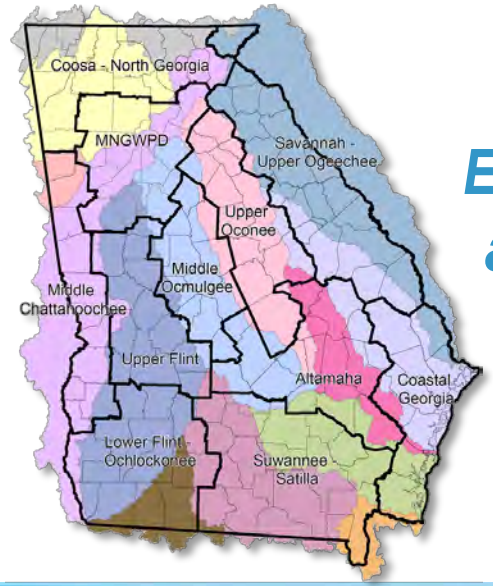
Meeting One
4th Quarter 2021

Meeting Two
1st Quarter 2022

Meeting Three
2nd Quarter 2022

Meeting Four
3rd Quarter 2022
Draft Plan

Meeting Five (Final)
4th Quarter 2022
Incorporate Comments



EPD targeted date of adoption of revised Regional Water Plan by December 2022

Stakeholder Roles and Responsibilities

- **Regional water planning councils** guide the development of the Regional Water Plans including selection of management practices to assess progress toward the regional vision and goals and the purpose of the State Water Plan.
- **Regional planning contractors** will provide technical and planning support to the councils and prepare the Plans following regional water planning council guidance.
- **Local governments**, **other agencies** and the general **public** will provide input during the planning process.
- **Other water planning councils** will coordinate recommendations regarding shared water resources.
- **Georgia EPD** will ensure consistency with the State Water Plan and maintain the schedule and budget for plan development.

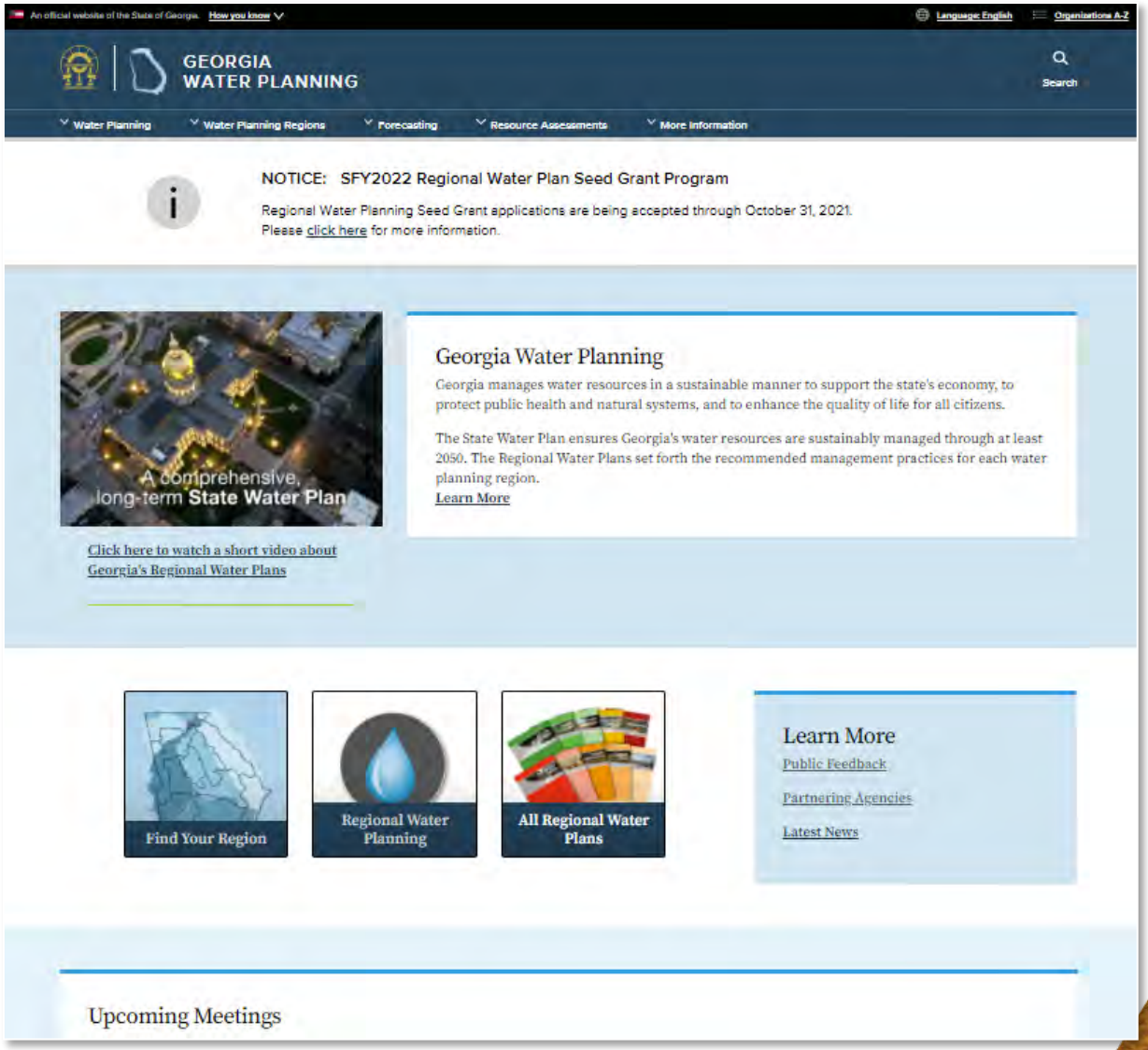
Responsibilities of Water Planning Councils

- Follow EPD guidance to revise & adopt an updated Regional Water Plan
- Review, comment and use data and information provided by EPD in updating the Regional Water Plans
- Coordinate with local governments and neighboring councils
- Submit revised plan to EPD by September 2022
- Coordinate with EPD to respond to public comments on the draft plan
- Make revisions based on EPD and public comment and finalize revised plan by December 2022

Georgia State Water Plan Website

This website provides New (and existing) Council members with the following documents and data:

- Familiarize themselves with the existing regional water plan
- Review Vision and Goals developed by the Council
- Review Memorandum of Agreement (MOAs) and Operating Procedures, and Rules for Meetings
- Familiarize themselves with forecasts on website (coming soon!)
- Familiarize themselves with resources on Council Website

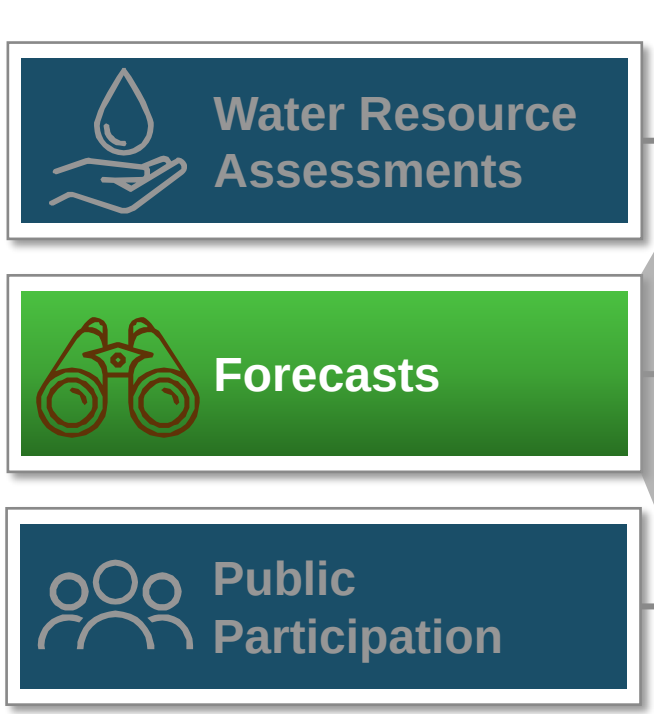


waterplanning.georgia.gov

Water Planning Process



Planning Information Compilation and Evaluation

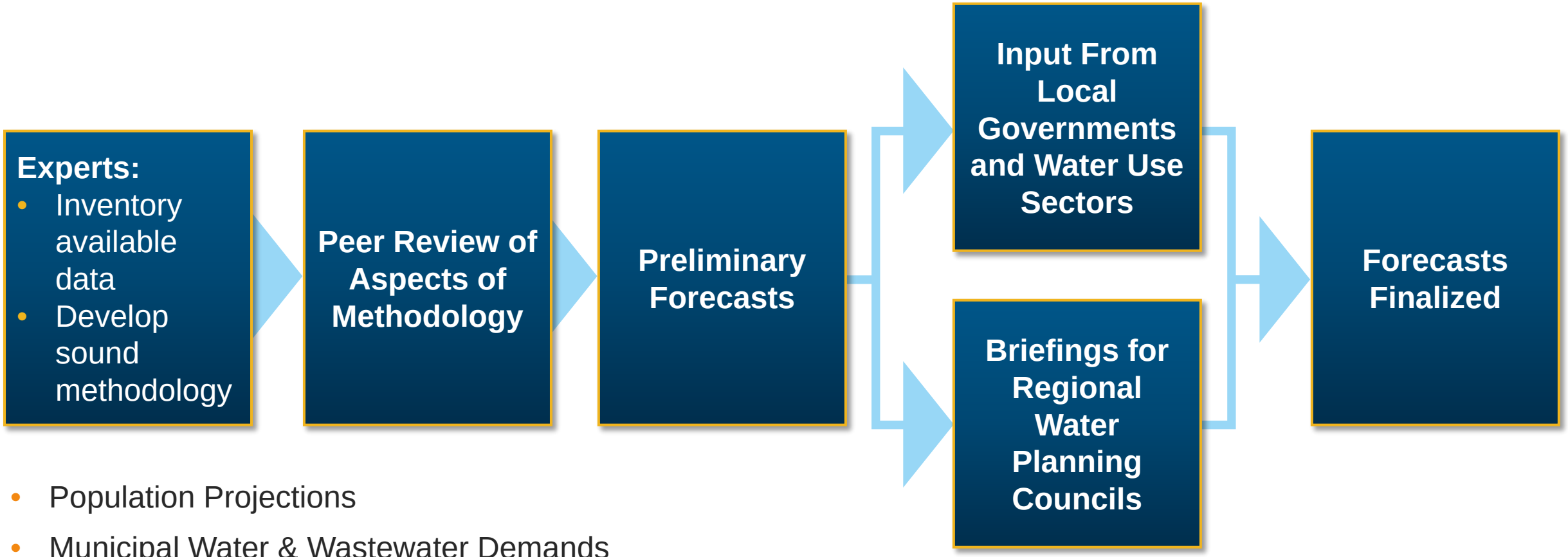


Forecasts

Forecasts describing water and wastewater needs support evaluation of long-term sustainable water management, when considered in parallel with resource assessments. Five forecasts are provided to the regional water planning councils:

- Population Projections
- Municipal Water Demand
- Industrial Water Demand
- Agricultural Demand
- Energy Demand

Development of Forecasts



- Population Projections
- Municipal Water & Wastewater Demands
- Industrial Water & Wastewater Demands
- Agricultural Demand
- Energy Demand

*Council members will be notified when forecasts are posted on the website.

Updated Demand Forecasts

As a reminder, we encourage council members to review the forecasts presented at Council meetings and available on the website.*

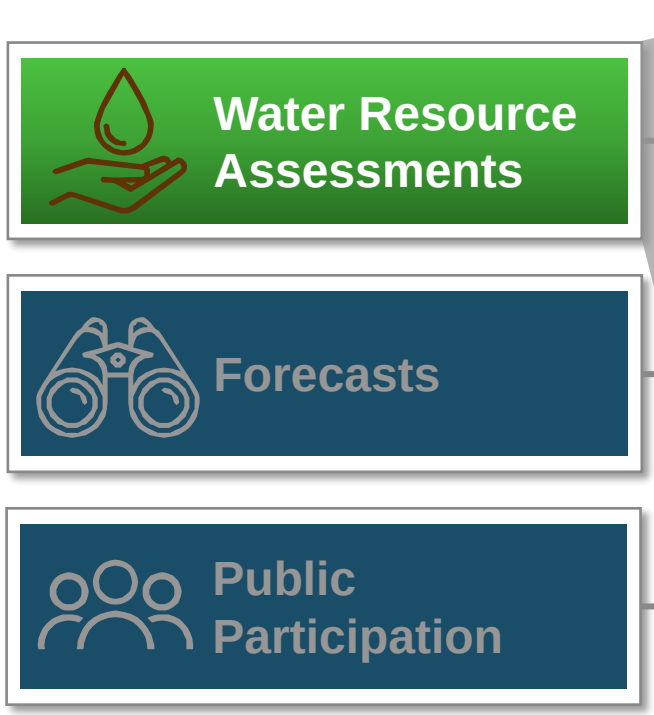
New updates have been completed for:

- **Municipal Water & Wastewater Demands (incorporates population projections)**
- **Industrial Water & Wastewater Demands**
- **Water Use Associated with Energy Demand**

Updates are being finalized now for:

- **Agricultural Demands**

Planning Information Compilation and Evaluation



Water Resource Assessments

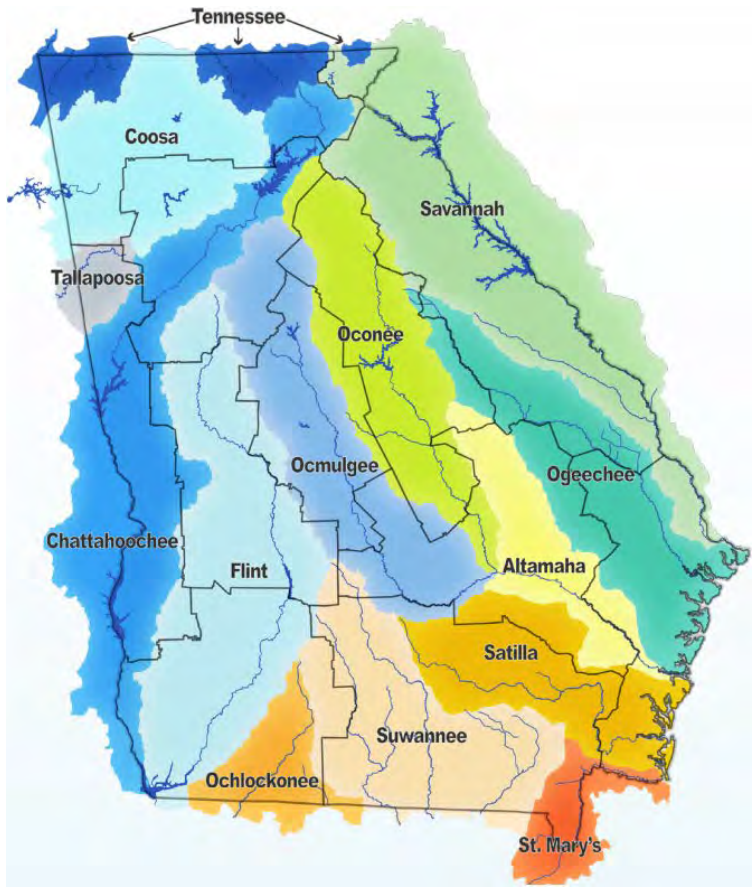
Resource assessments along with the forecasts form the scientific basis for the Regional Water Plans. Three resource assessments will be provided to the regional water planning councils:

- Groundwater Availability
- Surface Water Availability
- Surface Water Quality

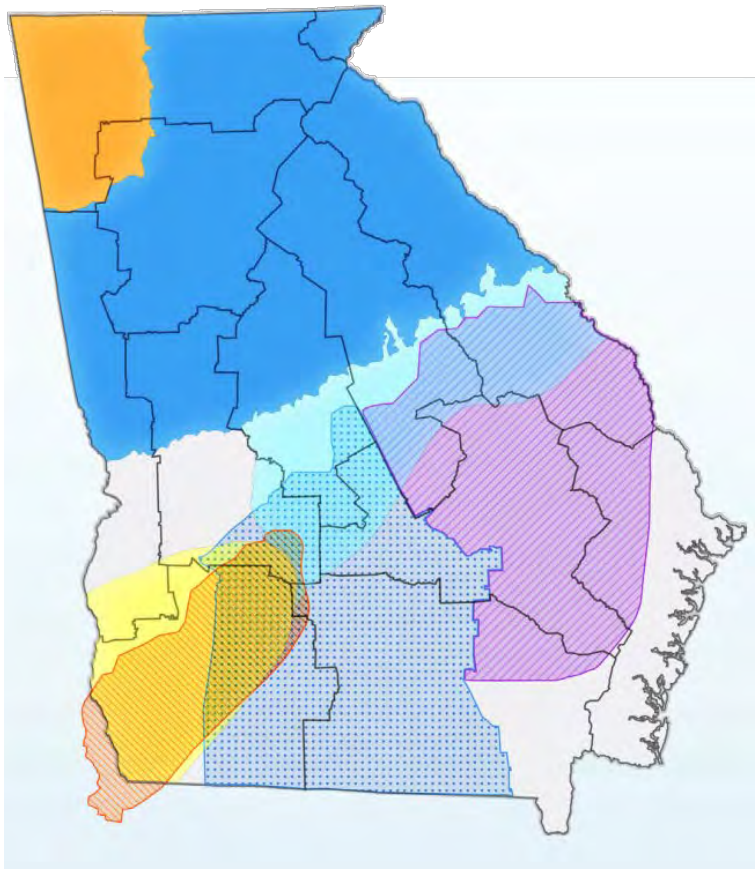
Assessments are completed based on the boundaries of the resource, not the water planning region.

Water Resources in Georgia

Surface Water



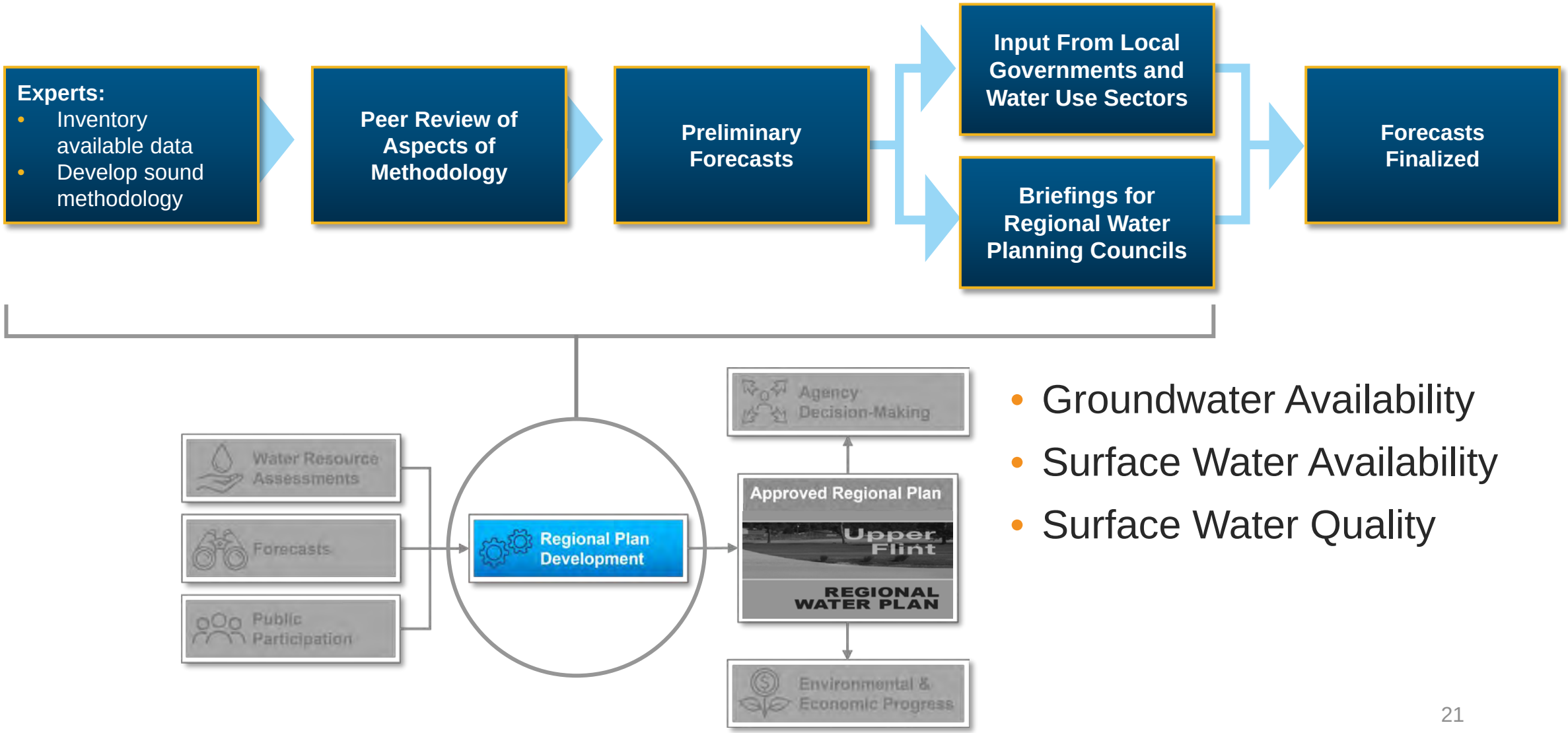
Groundwater Aquifers



AQUIFER LEGEND

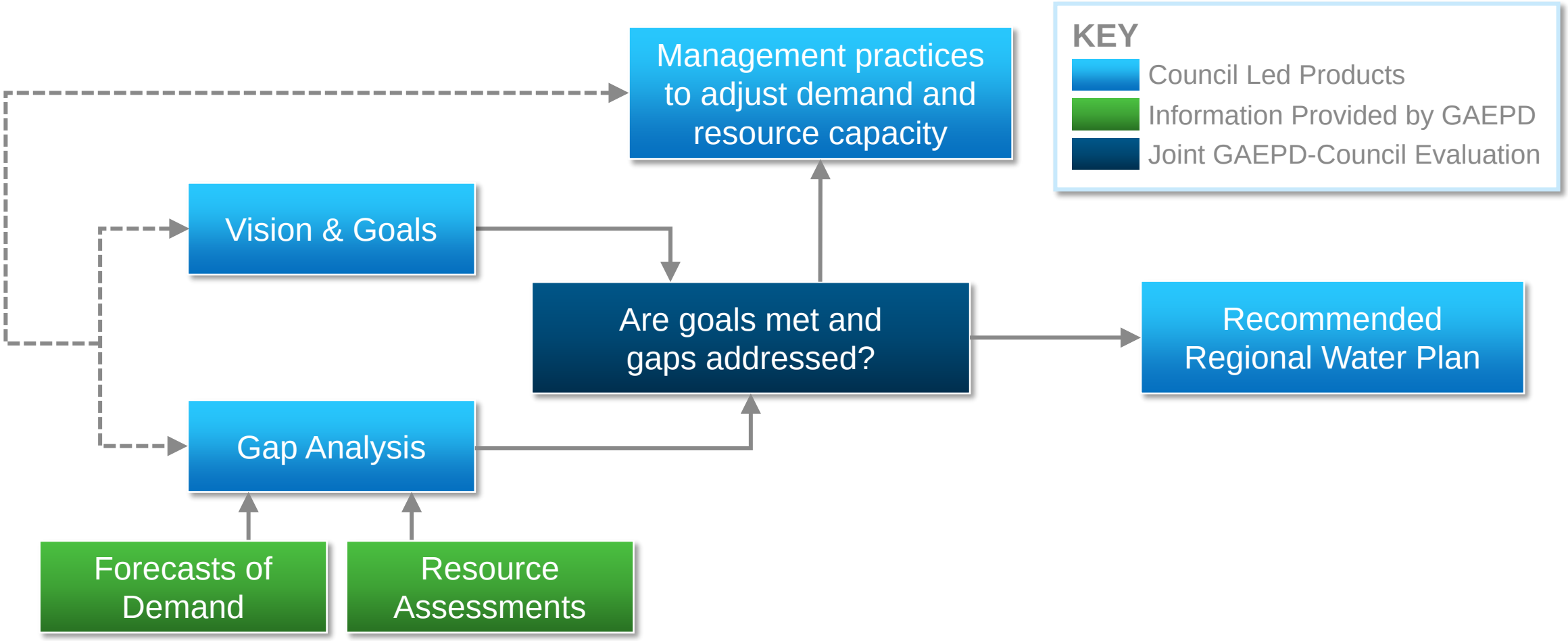
- Paleozoic-rock Aquifer
- Crystalline-rock Aquifer
- Cretaceous Aquifer in Georgia's Coastal Plain
- Claiborne Aquifer in Georgia's Coastal Plain
- South Central Georgia Floridan Aquifer Area
- Dougherty Plain Upper Floridan Aquifer Area
- Eastern Coastal Plain Floridan Aquifer Area

Development of Resource Assessments



- Groundwater Availability
- Surface Water Availability
- Surface Water Quality

Path Forward: Information Flow/Products



Final Product

Approved Regional Plan

The Director of EPD is charged with the review and approval of recommended Regional Water Plans as outlined in the State Water Plan.

The Director will either:

- Adopt the recommended Regional Water Plan as submitted;
- Advise the regional water planning council of necessary changes to make the plan approvable; or
- Adopt a recommended Regional Water Plan with conditions



Planning Information Compilation and Evaluation

- Water Resource Assessments
- Forecasts
- Public Participation

Public Participation

The Regional Water Plan development process must be open and inclusive, as participation from a diverse audience will result in better implementable decisions and a wide base of support for implementation. The following will be hallmarks of the efficient, effective, transparent regional planning process:

- Open Meetings
- Web-Posted Documents and Reports
- Direct Solicitation of Public Input



Regional Water Plan Update

Regional Water Plan Review and Revision Schedule

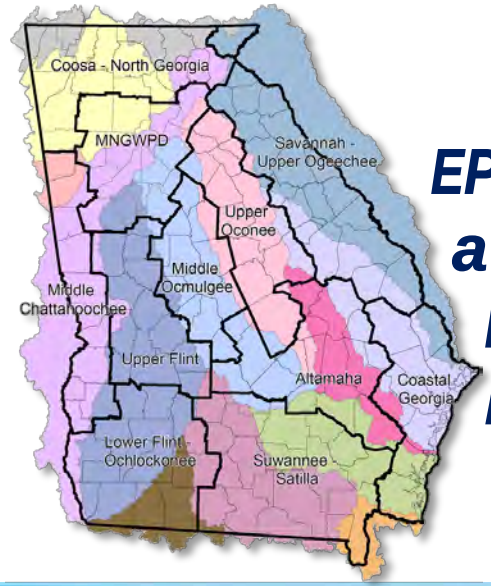
Meeting One
4th Quarter 2021

Meeting Two
Council Meeting
1st Quarter 2022

Meeting Three
2nd Quarter 2022

Meeting Four
3rd Quarter 2022
Draft Plan

Meeting Five (Final)
4th Quarter 2022
Incorporate Comments



EPD targeted date of adoption of revised Regional Water Plan by December 2022

Upper Flint Memorandum of Agreement

- **Original signed June 2009 between Upper Flint Council, GA EPD, GA DCA**
- **Council reviewed the agreement with the 2017 Review and Revision planning**
- **Agreement was renewed in 2016**
- **Agreement includes Operating Procedures and Rules for Meetings**

Upper Flint Water Council Operating Procedures and Rules for Meetings

- **Council updated the procedures with the 2017 Review and Revision planning**
- **Key points / updates:**
  - **Council operates by consensus**
  - **Fallback on decision-making by a simple majority vote**
  - **Quorum is defined as 50 percent plus one of the active Council members (inactive members have missed 3 consecutive meetings)**
  - **Operating Procedures and Rules for Meetings may be amended**
  - **Chair is authorized to speak for the Council**

Upper Flint Region

Council's Vision:

The Upper Flint Water Planning Council's purpose is to provide guidance, leadership and education on water resource utilization within the region. Through cooperation among stakeholders, implementation of the Council's plan will support sustainable management of the region's water resources, benefit public health and natural ecosystems, support the State's economy, and enhance the quality of life for its citizens.

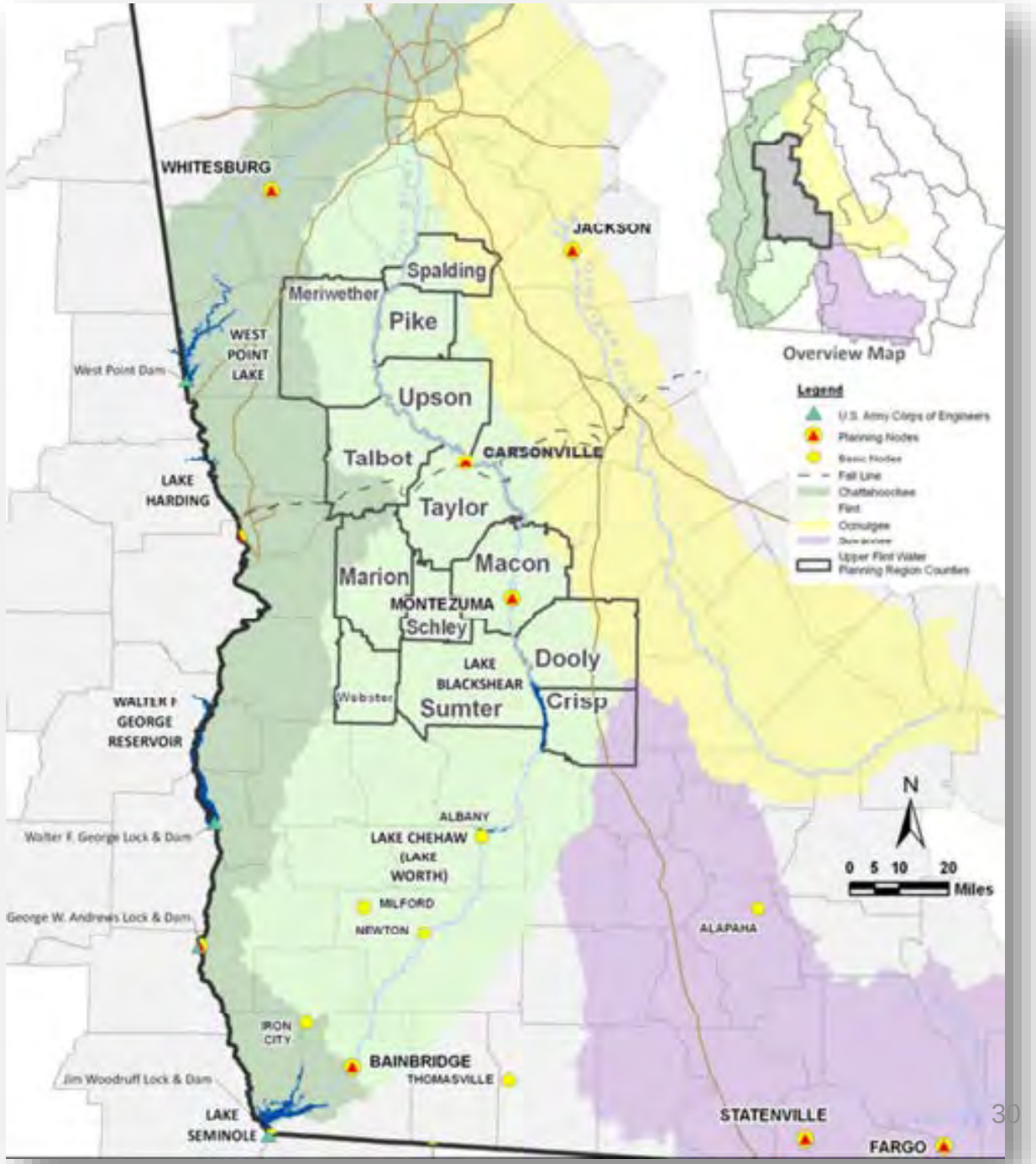


Upper Flint Region

Council's Goals

1. **Lead the development and implementation of water resource policy** in this region and work together with the state and federal government and with the other regional water planning councils to ensure that the welfare and needs of our region are met.
2. **Enhance public understanding of water resources** and provide stakeholders with an opportunity for input into regional water policy.
3. **Maintain and strive to improve the quality and quantity of our water resources** in order to protect natural ecosystems and public health.
4. **Manage water resources sustainably through the three "C's"** – conserving, capturing and controlling water – in order to provide for the needs of all water users in the region (agriculture, utilities, residential, commercial, industry, forestry, and recreation).
5. **Sustain the region's aquifers and surface waters** in a way that will continue to support the economic activities of the Upper Flint Water Planning Region and the economy of the State of Georgia.
6. **Ensure that actions taken by this Council** do not impede the agriculture and forestry-based economy of this region.

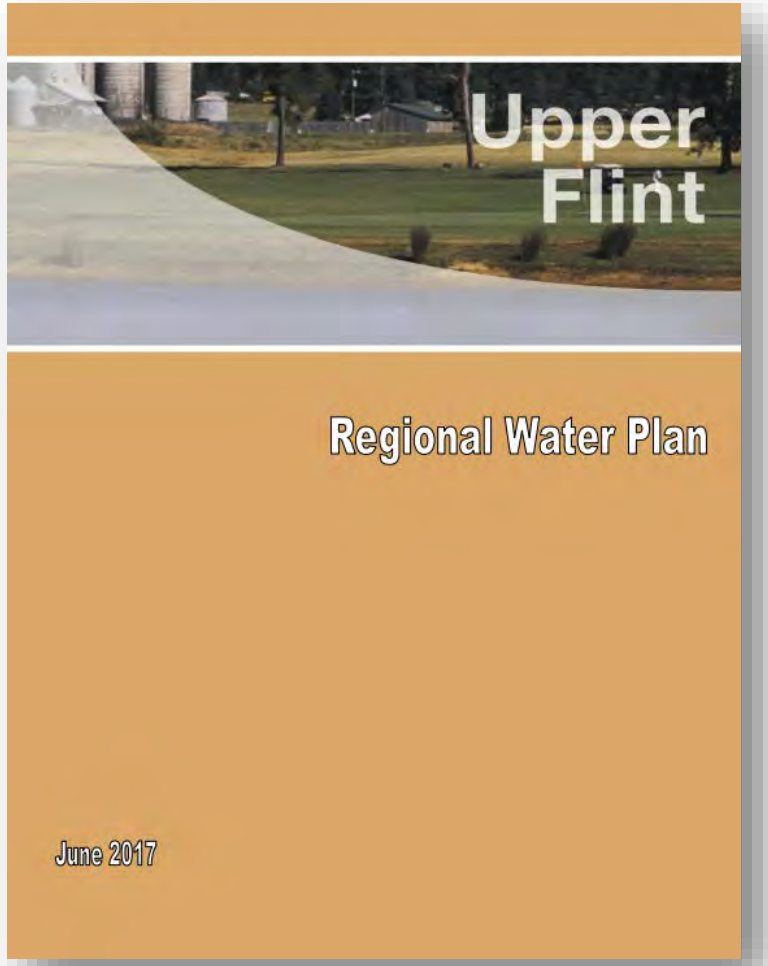
Upper Flint Region



Upper Flint Regional Water Plan

What is the Regional Water Plan?

- Water and Wastewater Forecasts & Water Resource Assessments
- Water Management Practices to meet water resource needs through 2050
  - Demand Management (7)
  - Supply Management (4)
  - Water Returns Management (1)
  - Water Quality (5)
- Used by GA EPD for permit applications and renewals
- Used by GEFA for grant and loan applications



Upper Flint Regional Water Plan

High Priority Management Practices

- Evaluate storage options in the Upper Flint Water Planning Region that can provide for supply and flow augmentation in dry periods
- Continue to improve the agricultural water withdrawal metering program
- Increase education directed toward improving water quality

Upper Flint Region

Key Water Resource Issues Being Addressed by the Council in the 2017 Plan

Resource Assessment	Summary of Model Results	Council Plan to Address Results
Surface Water Availability	The model identified potential gaps in surface water availability in the Flint River Basin at Bainbridge under both current and forecast demands. No potential gaps were identified by the model in the Flint River Basin at Montezuma or Carsonville. A potential gap was identified by the model at Alapaha in the small part of the Suwannee River Basin that is in this region.	Address the potential gaps with conservation and supply augmentation practices as much as possible, while also collecting better information to support more thorough evaluation of resource capacity and the impacts of potential gaps identified by the resource assessment model on in-stream and downstream uses. One way to satisfy the potential surface water availability gaps in the Flint River Basin would be the addition of storage. The Council discusses the development of new storage in the Flint River Basin in its management practices and recommendations.
Groundwater Availability	Groundwater use is currently below the sustainable yield range estimated by the model for the Claiborne Aquifer and the South-Central Georgia Upper Floridan Aquifer. The model results showed current and future demand within the estimated sustainable yield range for the Cretaceous Aquifer in the Upper Flint Region and above the estimated sustainable yield range for the Upper Floridan Aquifer in the Dougherty Plain. Aquifer use within or above the estimated sustainable yield range does not necessarily mean the aquifer is likely to be exhausted by use. Instead, management practices may be needed to meet long-term demands.	Use of the Claiborne Aquifer should be further evaluated to address geographic and time-based variations in capacity and demands. In the Upper Floridan Aquifer in the Dougherty Plain, the impact of groundwater withdrawals on surface water flows in the Flint River Basin should continue to be a determining factor in guiding the location and amount of groundwater use from this aquifer. Collect better and more geographically specific information on groundwater resource capacity, as needed to evaluate specific uses and management practices.
Surface Water Quality	Water quality model results indicated decreasing availability of assimilative capacity in streams in some areas of the Flint River Basin as discharge flows increase in the future. In other areas, expected improvements in wastewater treatment are projected to improve assimilative capacity under future conditions.	Implement practices targeted especially toward nonpoint sources of pollutants to improve assimilative capacity and to reduce nutrient loading in the region's streams and lakes. It is expected that EPD will adjust point source discharge permit limits over time as needed to address assimilative capacity constraints and nutrient criteria. More nonpoint source controls may be needed to address nutrient criteria. Collect more complete information to support the targeting

Thank You

Upper Flint



WATER

WASTEWATER

STORMWATER



https://waterplanning.georgia.gov/water-planning-regions/upper-flint-water-planning-region

Chair’s Report

Presented by Chairman Chase



Planning Updates from Georgia EPD

Johanna Smith, Georgia EPD



Regional Water Plan Update Process

- Coordinated with the Metro Water District
- Process began in 2020 with Forecasting work
- Target for updated Plans by end of 2022
  - Draft Plans on public notice by Sept. 30, 2022
  - Updated Plans completed by Dec. 2022
- Technical work completed/ongoing that underlies the Regional Water Plans
- Quarterly Council Meetings

Georgia®

Plan Updates Schedule

Regional Water Plan Review and Revision Schedule

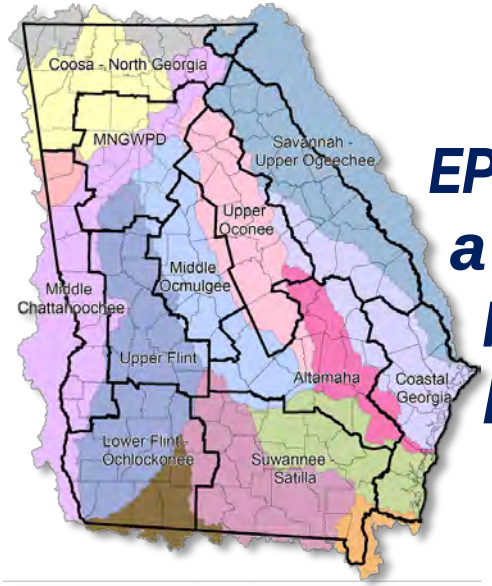
Council Meeting
4th Quarter 2021

Council Meeting
1st Quarter 2022

Council Meeting
2nd Quarter 2022

Council Meeting
3rd Quarter 2022
Draft Plan

Council Meeting
4th Quarter 2022
Final Plan



EPD targeted date of adoption of revised Regional Water Plans by December 2022

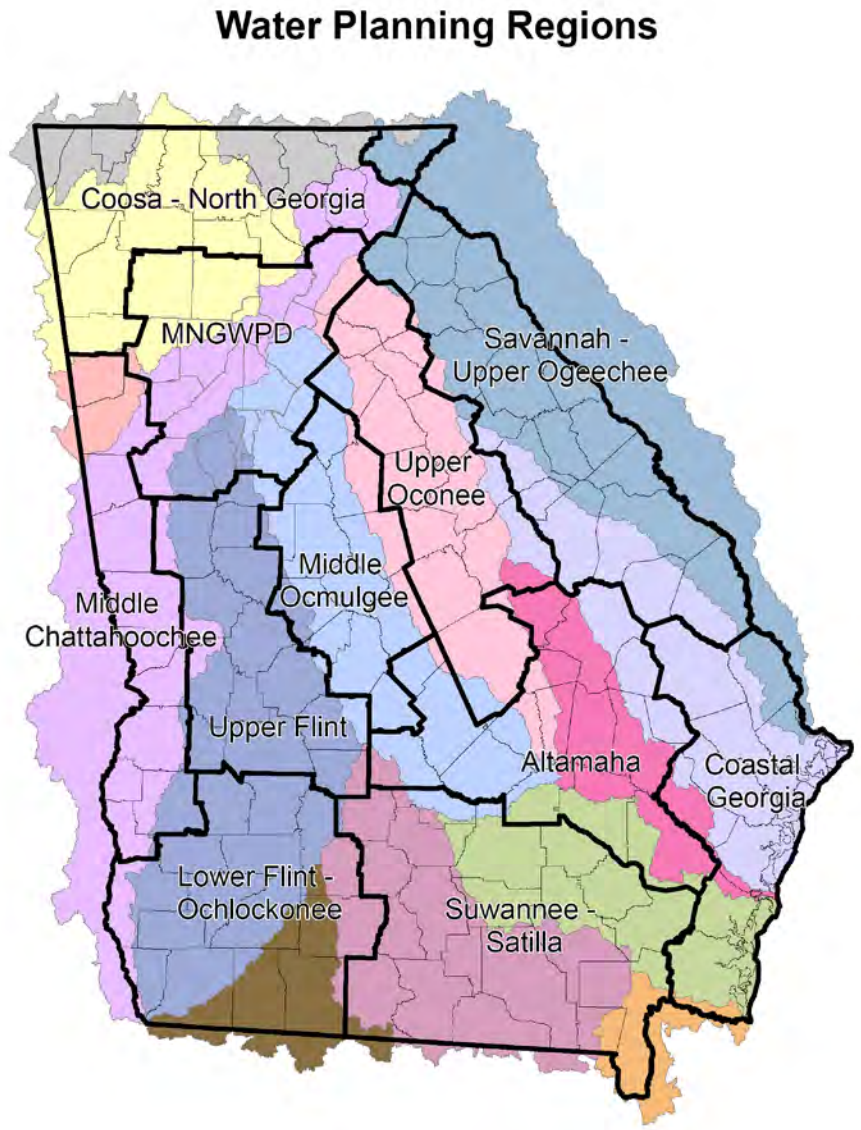
Regional Water Plan Review and Revision Process

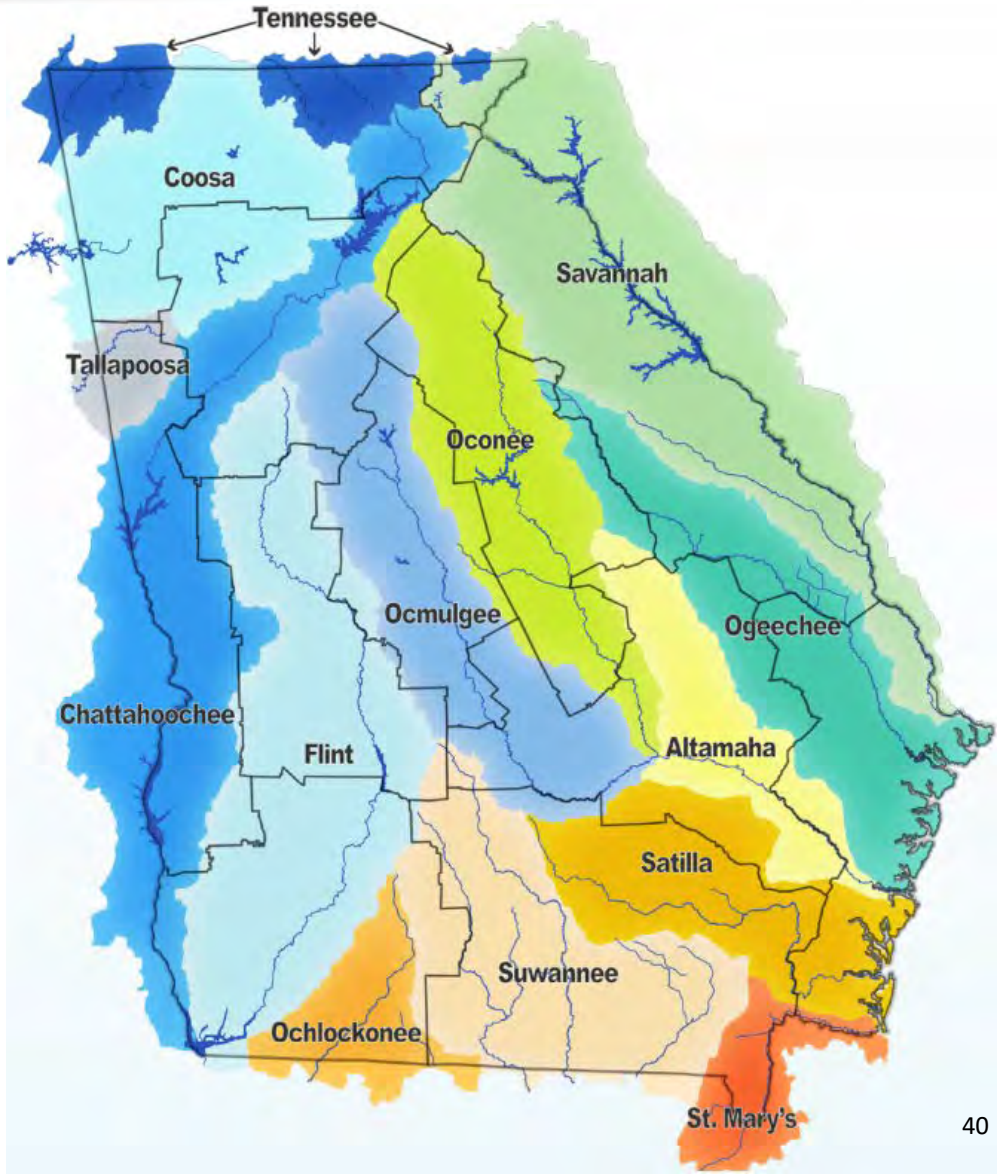
The 5-Year Review Process will focus on:

- Updated water demand and wastewater return forecasts
- Updated Surface Water and Ground Water Availability Resource Assessments (Quantity)
- Updated Surface Water Quality (Assimilative Capacity) Resource Assessment
- Refine Management Practices, if needed, to address water resource conditions or Council vision/goals



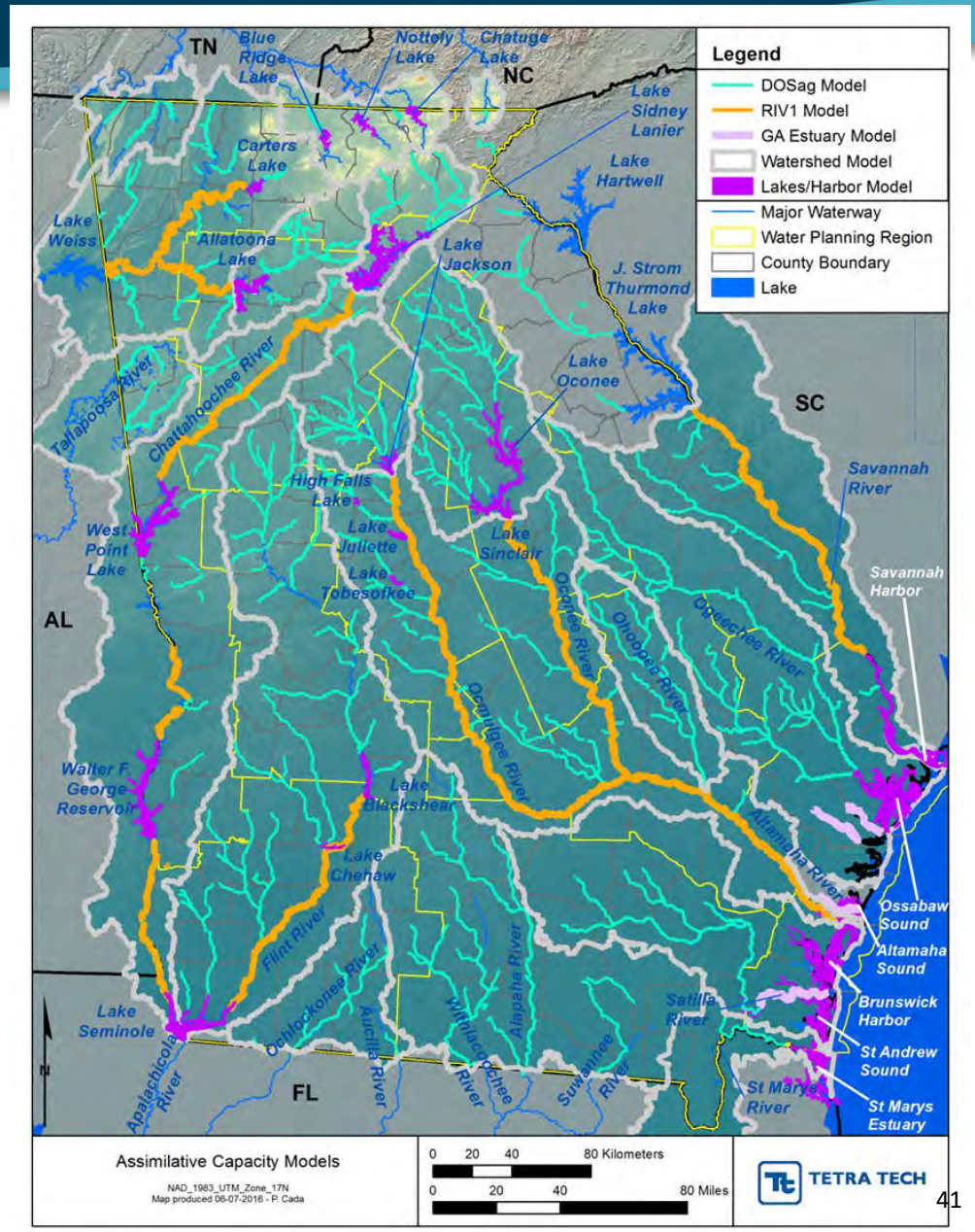
Surface Water Resources in Georgia





Surface Water Quality Resource Assessment

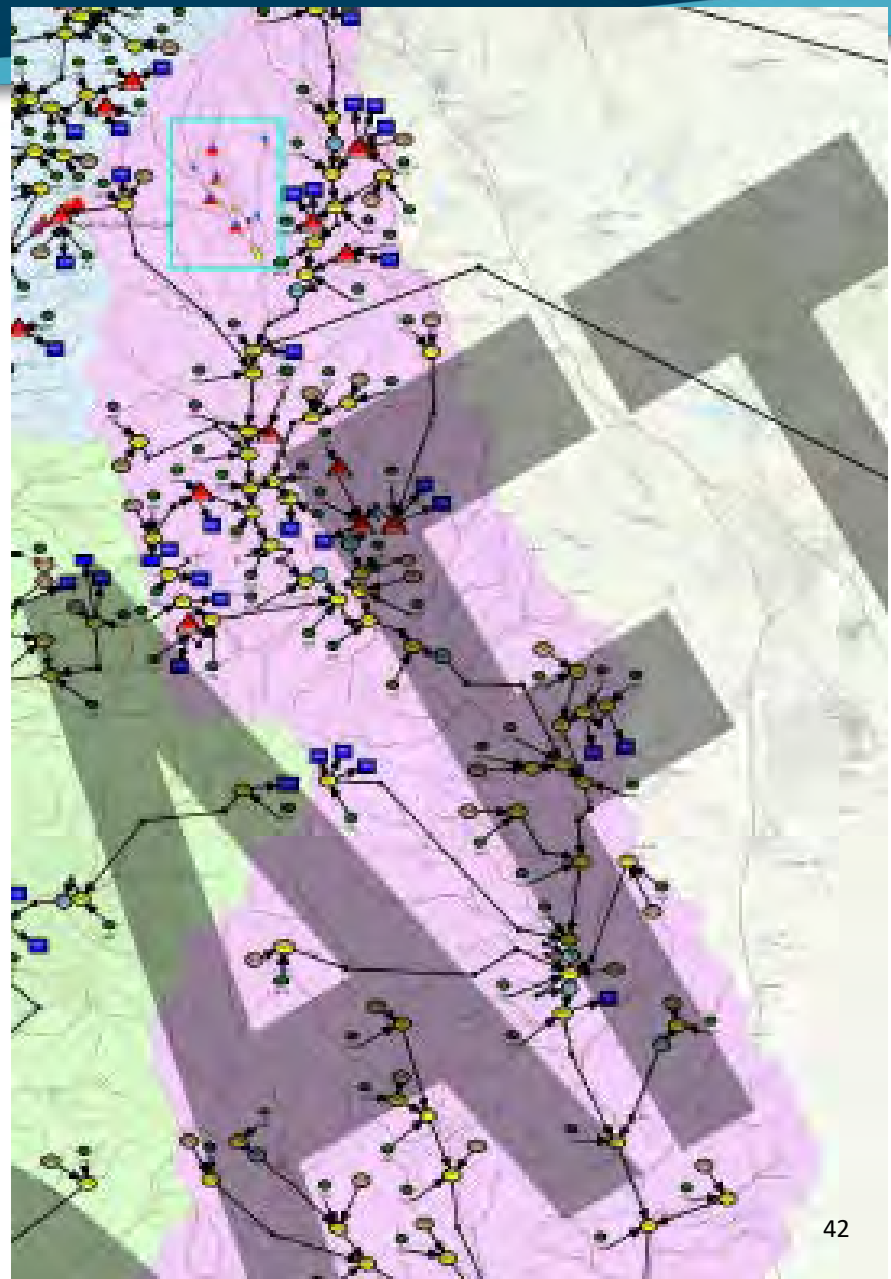
- Updates to Surface Water Quality (Assimilative Capacity) Resource Assessment
  - Updated information & model recalibration
- Parameters being analyzed include instream dissolved oxygen, nutrients (total N, total P) and chlorophyll *a* response in lakes



Surface Water Availability Resource Assessment

- Updates to Surface Water Availability Resource Assessment
  - New modeling tool: Basin Environmental Assessment Model ("BEAM")
  - Provides analysis at more nodes





Surface Water Availability Resource Assessment

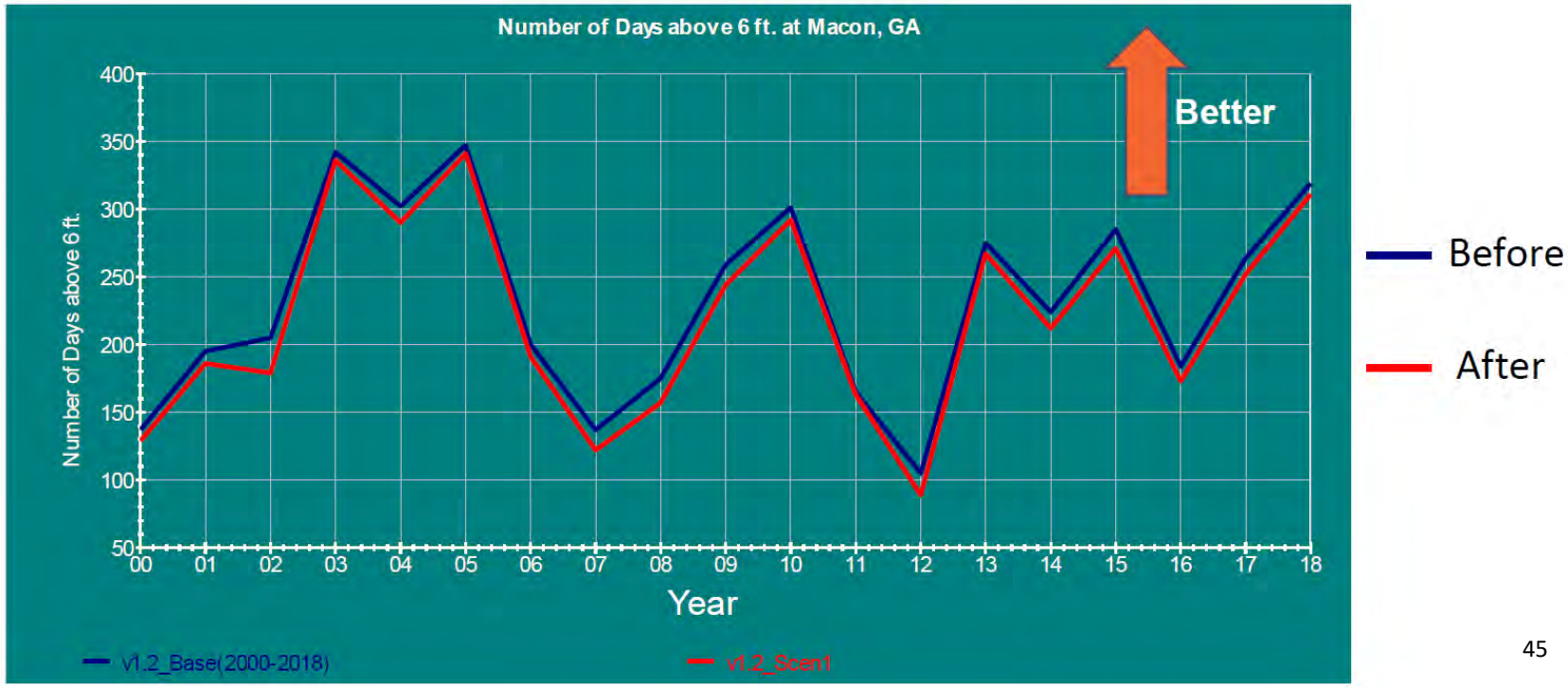
- More measures (aka “metrics”) can be analyzed by the BEAM models than in the past
  - Water Supply, Ecological and Recreation metrics
- EPD will present example metrics to the Council for their discussion/consideration, and will ask the Council:
  - What additional metrics does the Council want to see analyzed and used in their planning?
  - What other environmental or ecological information would the Council want to consider?

Surface Water Availability Resource Assessment

- Examples of metrics:
  - Water Supply
    - Metric: Daily volume of desired withdrawal that can't be taken from the river because of low flow conditions
    - Can be measured by the # of days below a particular flow requirement from a withdrawal permit
  - Ecological
    - Metric: Avg. monthly area of available habitat suitable for specific fish species
    - Can use habitat information to inform this metric
  - Recreational
    - Metric: Number of days per year with sufficient river water level for boating
    - Can use flows suitable to boating or paddling to inform this metric

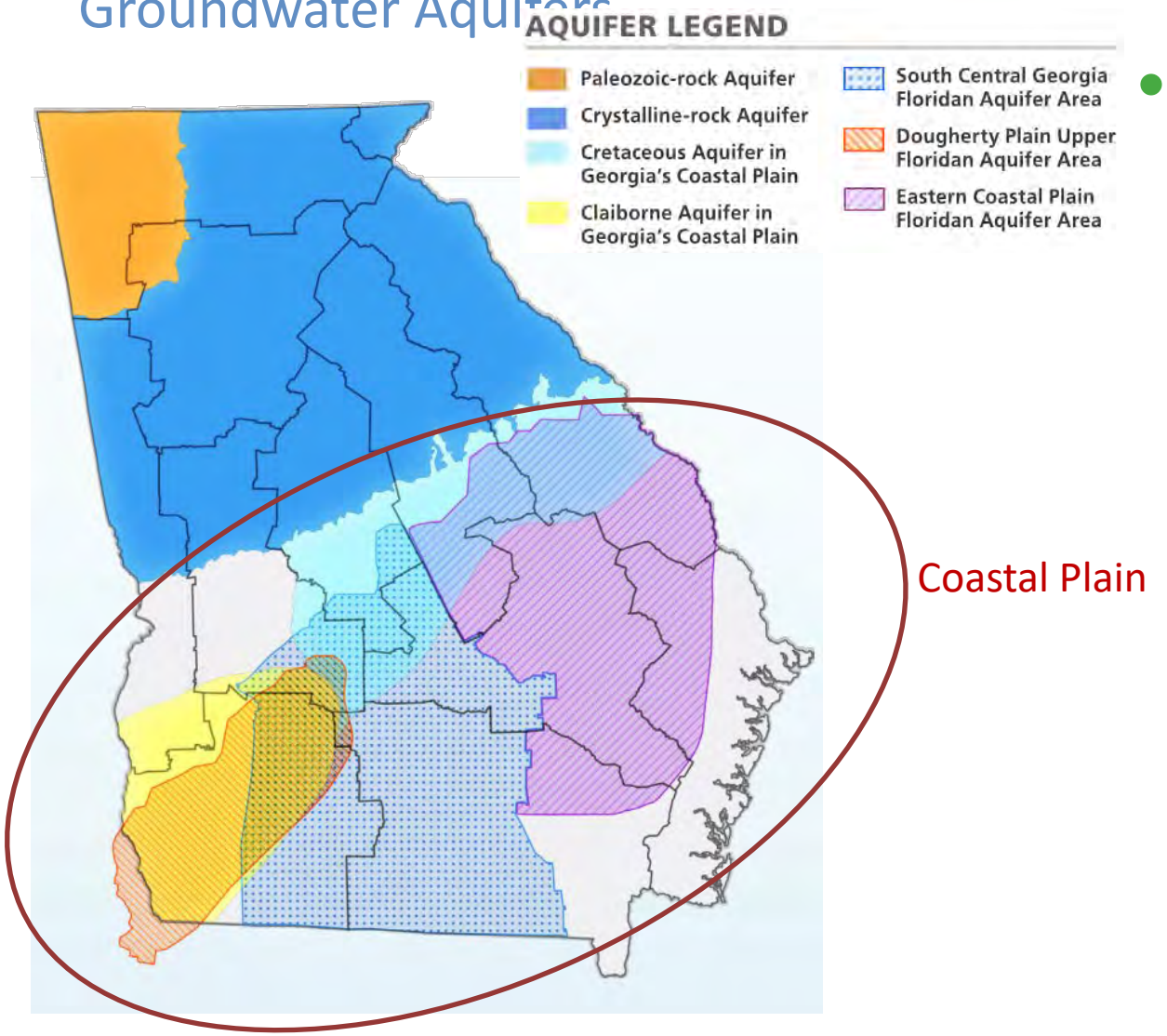
Surface Water Availability Resource Assessment

- Example Recreation metric (from Ocmulgee basin):
  - Input from outfitter: 6’ min. depth ideal for recreational kayaking
  - Used gage data to connect depth to min. streamflow
  - Evaluated # of days above min. streamflow under current and future conditions
  - Analyzed over an 18-year period that includes varying hydrologic conditions
  - Can estimate # of days of recreational impact



Groundwater Resources in Georgia

Groundwater Aquifers



- Updates to Groundwater Availability Resource Assessment
  - Refined groundwater model with smaller grid spacing and transient pumping in the Coastal Plain (multiple aquifer layers)
  - Will compare updated forecasts to existing sustainable yield estimates in northern Georgia

Johanna Smith
Georgia Environmental Protection Division

(470) 384-7450
jennifer.welte@dnr.ga.gov

Water and Wastewater Forecasts Overview

Steve Simpson and Jake Dean, Black & Veatch



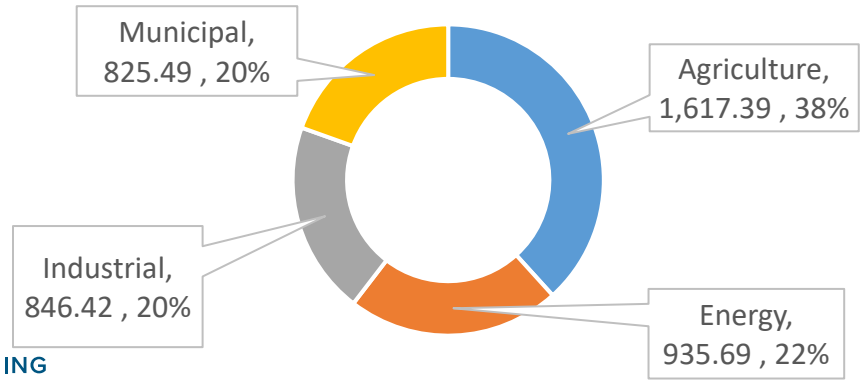
Statewide Water Demand Forecast Comparison

	2020 Water Demand Forecast		2050 Water Demand Forecast	
Sector	Forecast Made in 2015	Forecast Made in 2021	Forecast Made in 2015	Forecast Made in 2021
Agriculture	1424.11	1584.3	1617.39	1845.35
Energy *(Withdrawals)*	727.64	383.11	935.69	360.44
Industrial*	721.25	465.14	846.42	470.29
Municipal	715.35	694.49	825.49	744.20
Total Water Demand (MGD)	**3588.35**	**3127.04**	**4224.99**	**3420.28**

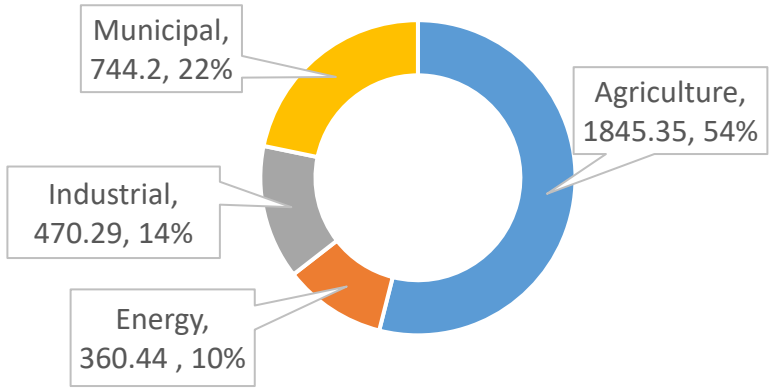
*Excludes municipal industrial water demand.

Note: Values shown do not include MNGWPD municipal demand

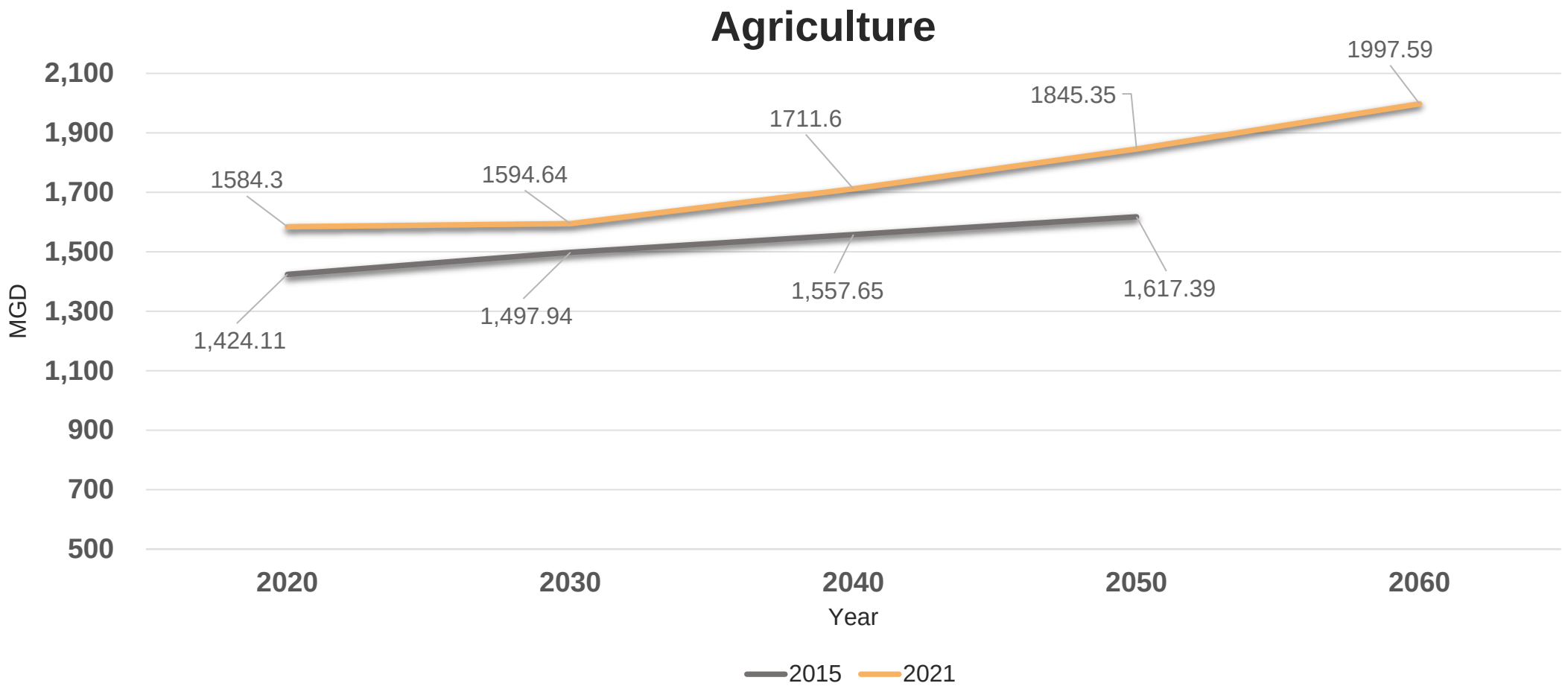
Statewide 2015 Water Demand Forecast for 2050



Statewide 2021 Water Demand Forecast for 2050



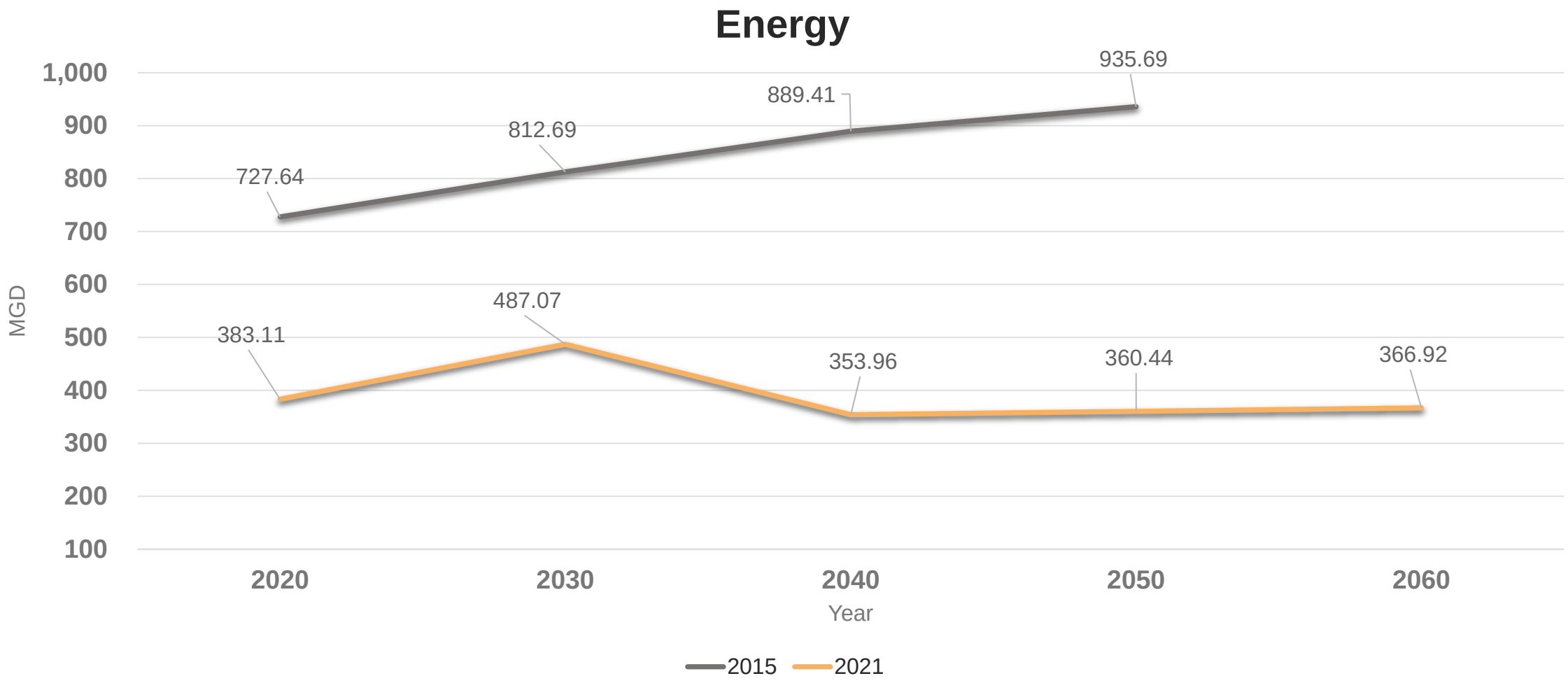
Statewide Water Demand Forecast Comparison



Key Takeaway

- 2021 Statewide Agricultural Water Demand Forecast increases in comparison to 2015 Forecast

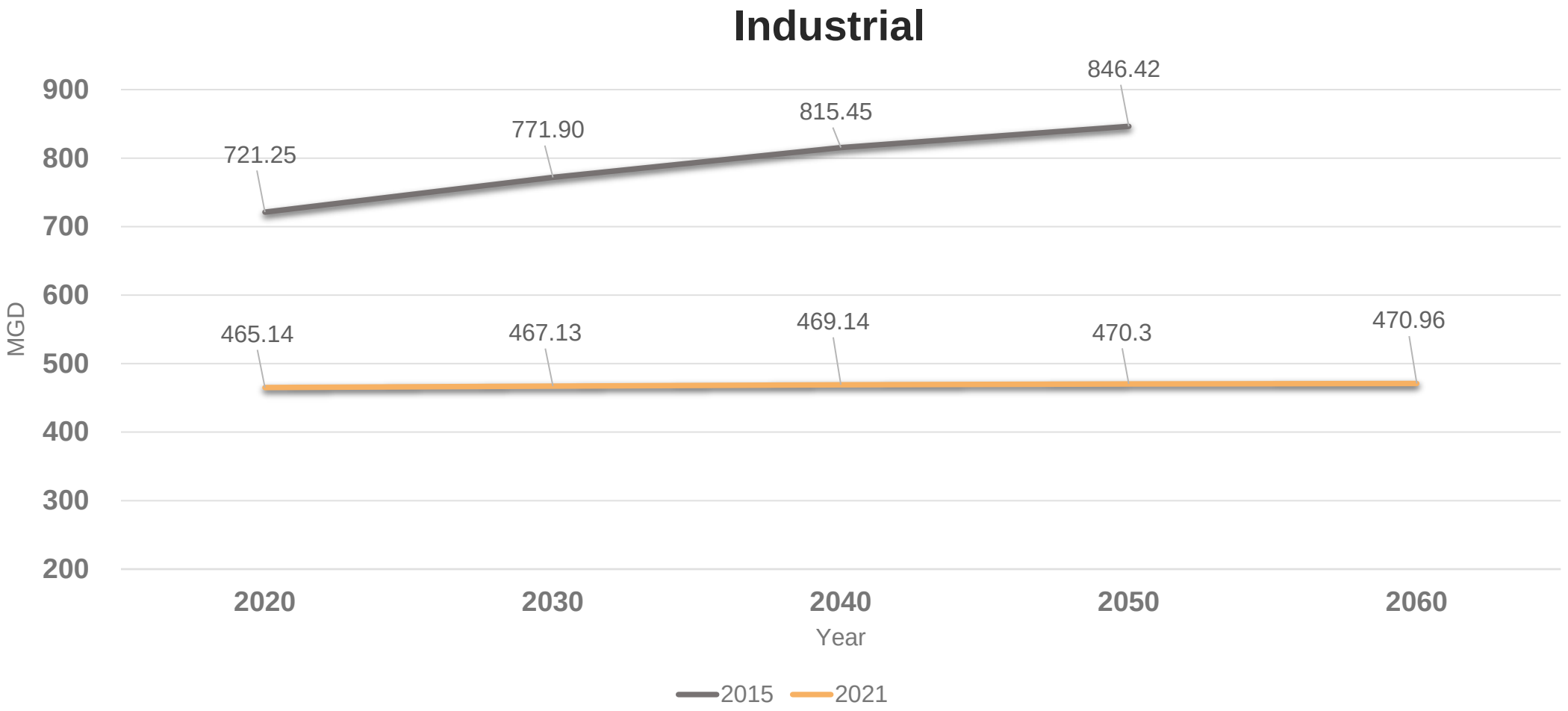
Statewide Water Demand Forecast Comparison



Key Takeaway

- 2021 Statewide Energy Demand Forecast (withdrawals) decreases in comparison to 2015 Forecast

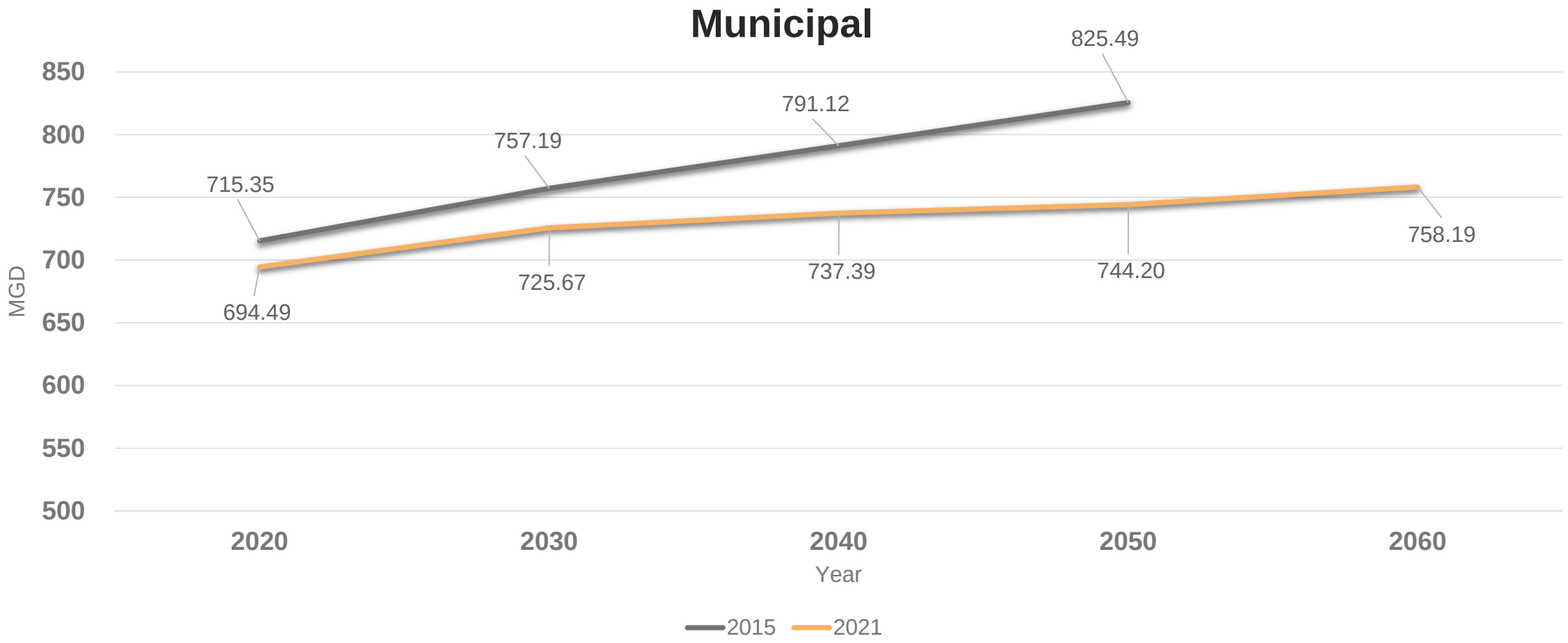
Statewide Water Demand Forecast Comparison



Key Takeaway

- 2021 Statewide Industrial Water Demand Forecast utilizes stakeholder input to develop forecast

Statewide Water Demand Forecast Comparison



Key Takeaway

- Municipal Water Demand Forecasts reflect lower totals for the 10 regional water planning councils

Note: Values do not include MNGWPD

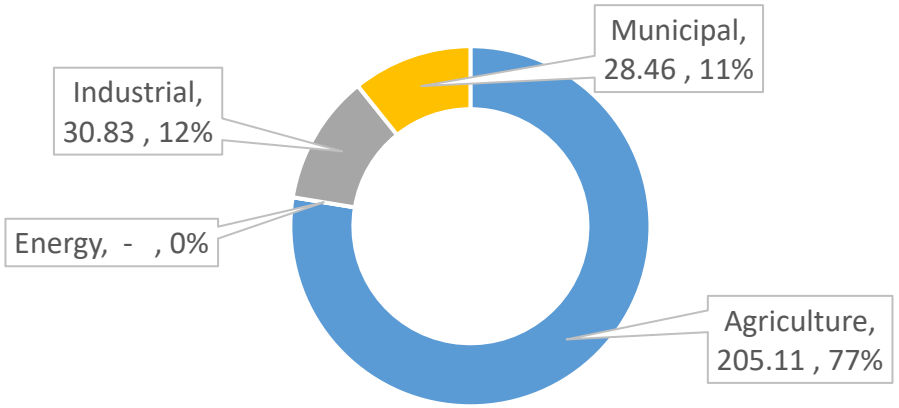
Upper Flint 2050 Water Demand Forecast Comparison

2050 Forecast Region Comparison to the State

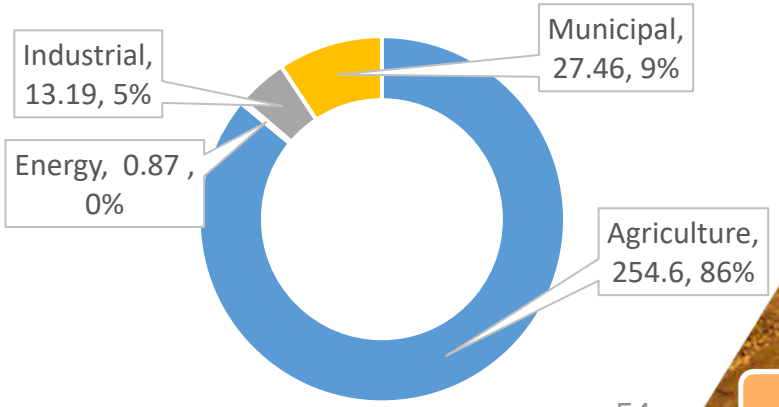
- **15%** Agriculture
- **3%** Industrial
- **4%** Municipal

	2050 Water Demand Forecast Comparison to Previous	
Sector	**Forecast Made in 2015**	**Forecast Made in 2021**
Agriculture	205.11	254.6
Energy *(Withdrawals)*	0.0	0.87
Industrial*	30.83	13.19
Municipal	28.46	27.46
Total Water Demand (MGD)	**264.39**	**296.12**

Upper Flint 2010 Water Demand Forecast for 2050



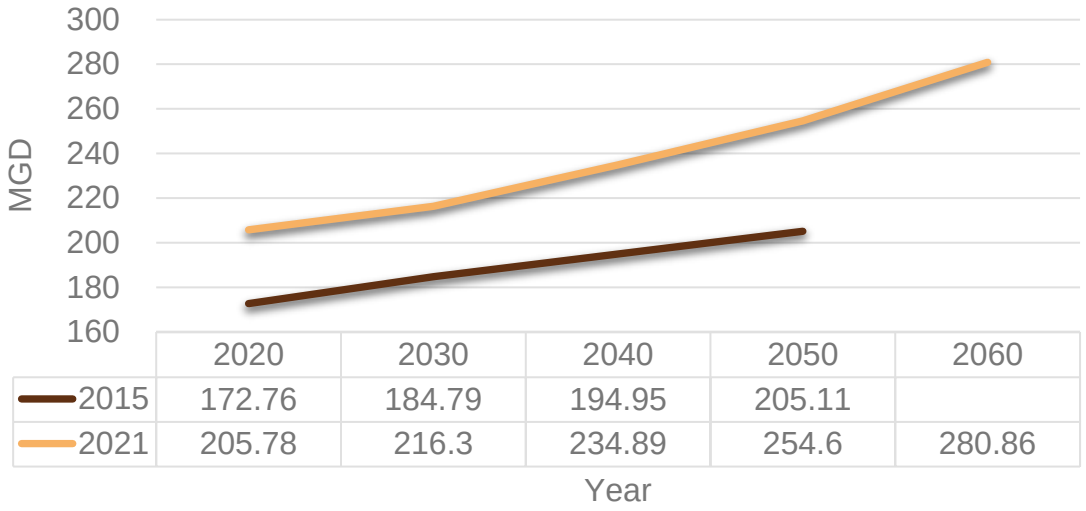
Upper Flint 2021 Water Demand Forecast for 2050



*Excludes municipal industrial water demand.

Upper Flint Water Demand Forecast Comparison to Previous

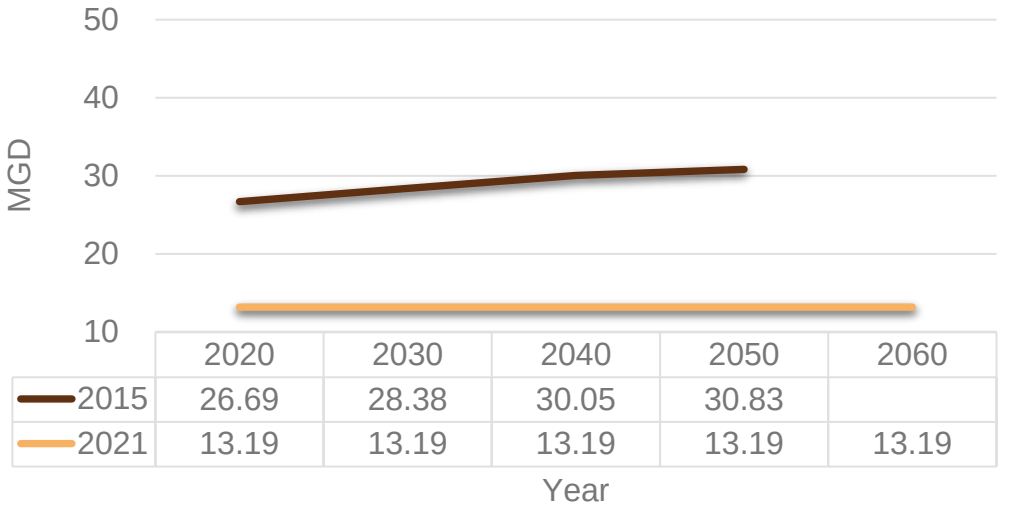
Agriculture



	2020	2030	2040	2050	2060
2015	172.76	184.79	194.95	205.11	
2021	205.78	216.3	234.89	254.6	280.86

Year

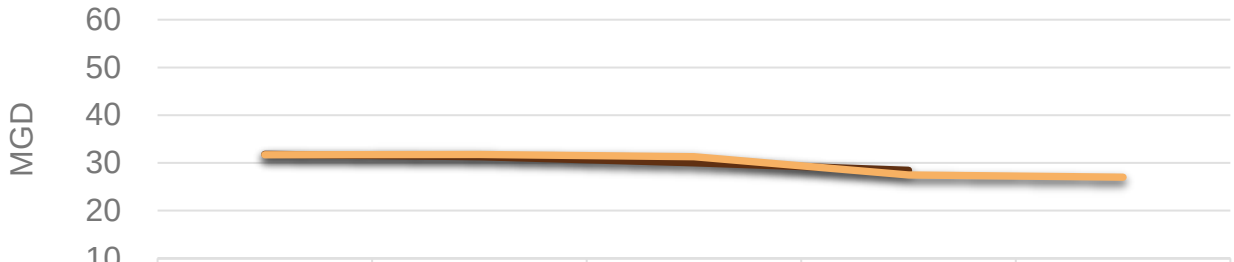
Industrial



	2020	2030	2040	2050	2060
2015	26.69	28.38	30.05	30.83	
2021	13.19	13.19	13.19	13.19	13.19

Year

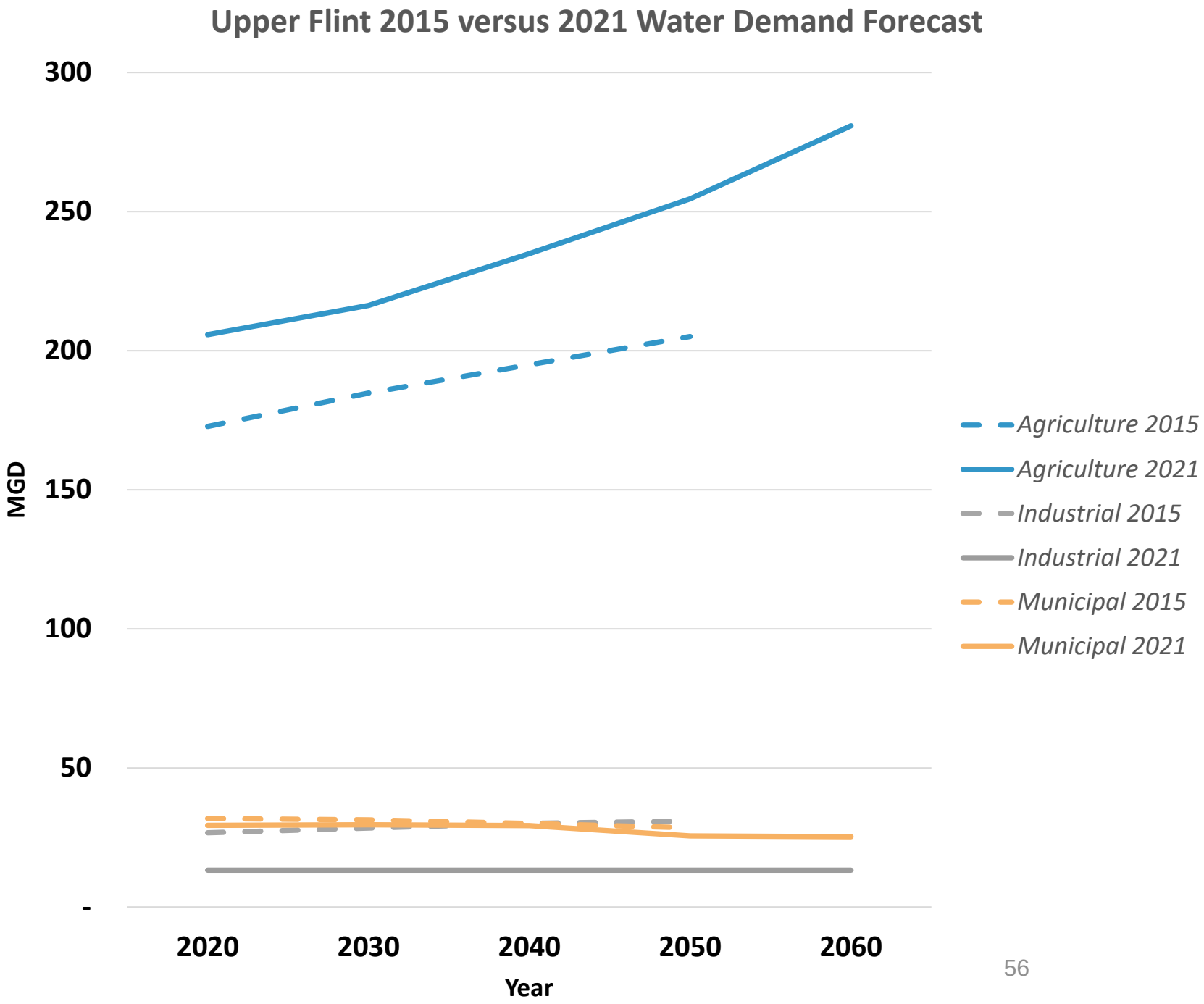
Municipal



	2020	2030	2040	2050	2060
2015	31.82	31.31	30.01	28.46	
2021	31.71	31.76	31.29	27.46	27.01

Year

Upper Flint Water Demand Forecasts



Upper Flint Water Demand Forecast Dashboard



Agricultural Water Demand Forecasts

Mark Masters, GWPPC



Project Team

- Albany State University – Georgia Water Planning and Policy Center (Lead)
- University of Georgia Agricultural and Applied Economics

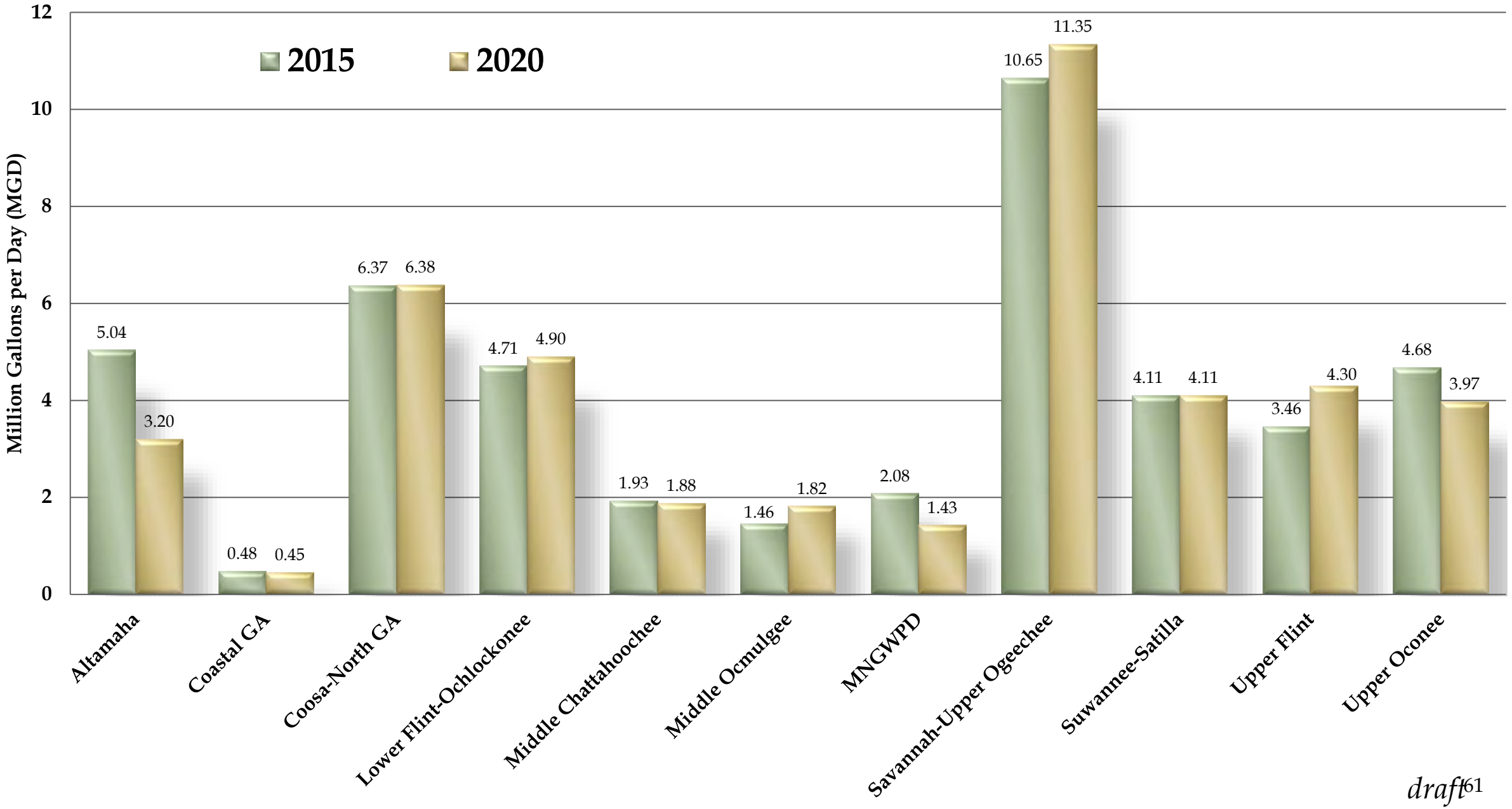




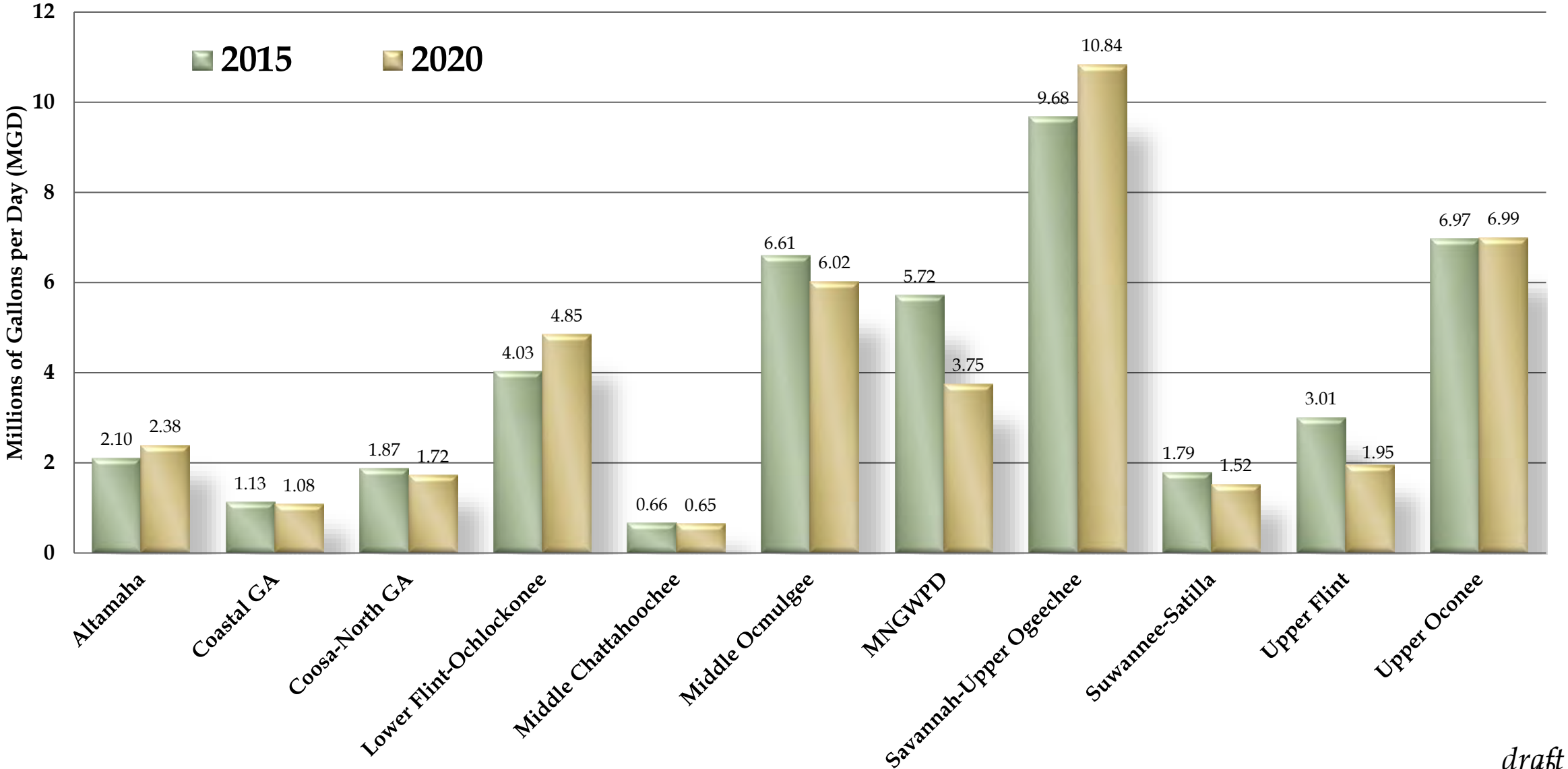
2020-21 Agricultural Water Demand Forecasts - Methods

- **Acreage –** Updated 2020 wetted acreage data
  - Field observation and aerial survey
- **Crop projections through 2060** - modeled based on multiple data sources:
  - Remote sensing and field data
  - USDA Projections, Southeast Model, Georgia Model, Data Trends
- **Crop water needs** - wet, normal, dry years
  - Expanded use of meter data
  - Review estimates used in 2015-2016 and revise if needed
    - Surface water method revised to remove "70% assumption"
- **Animal Ag/Nursery**

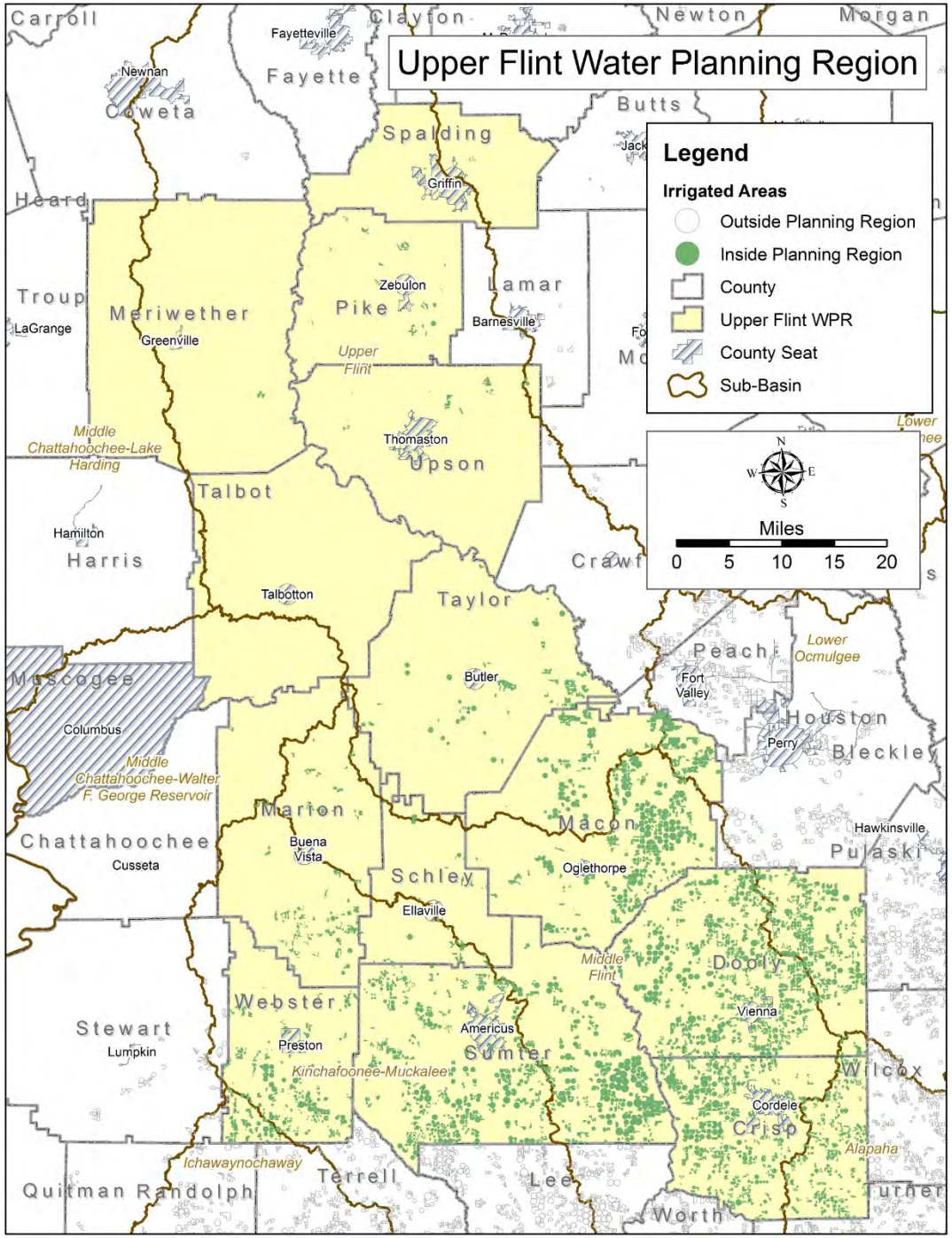
Animal Agriculture - Daily Water Use by Water Planning Region
Statewide Total: 43.8 MGD



Daily Water Use by Horticultural Nurseries (Container, In-Ground, and Greenhouse), Millions of Gallons Per Day
Statewide Total: 41.76 MGD - *draft*



draft



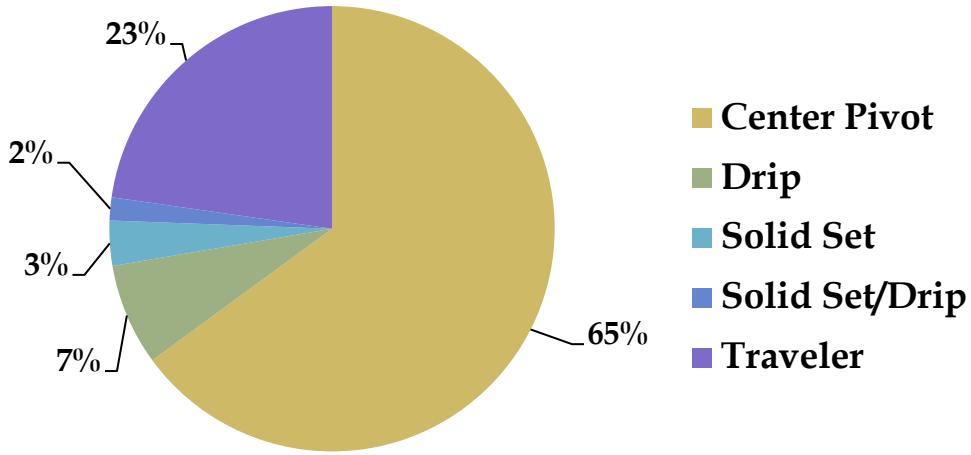
Irrigated Acres

County	2015	2020
CRISP	32,540	33,455
DOOLY	51,542	55,053
MACON	34,728	36,578
MARION	5,474	5,354
MERIWETHER	247	247
PIKE	1,277	1,415
SCHLEY	1,747	2,222
SPALDING	210	210
SUMTER	46,991	49,242
TALBOT	14	14
TAYLOR	4,344	5,251
UPSON	955	955
WEBSTER	12,041	13,981

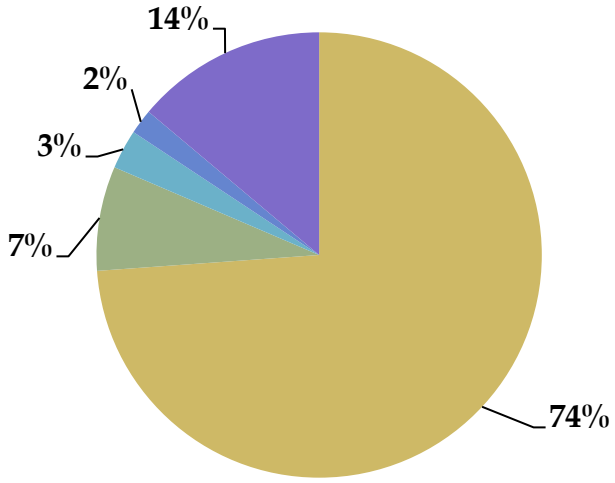
Upper Flint RWPC

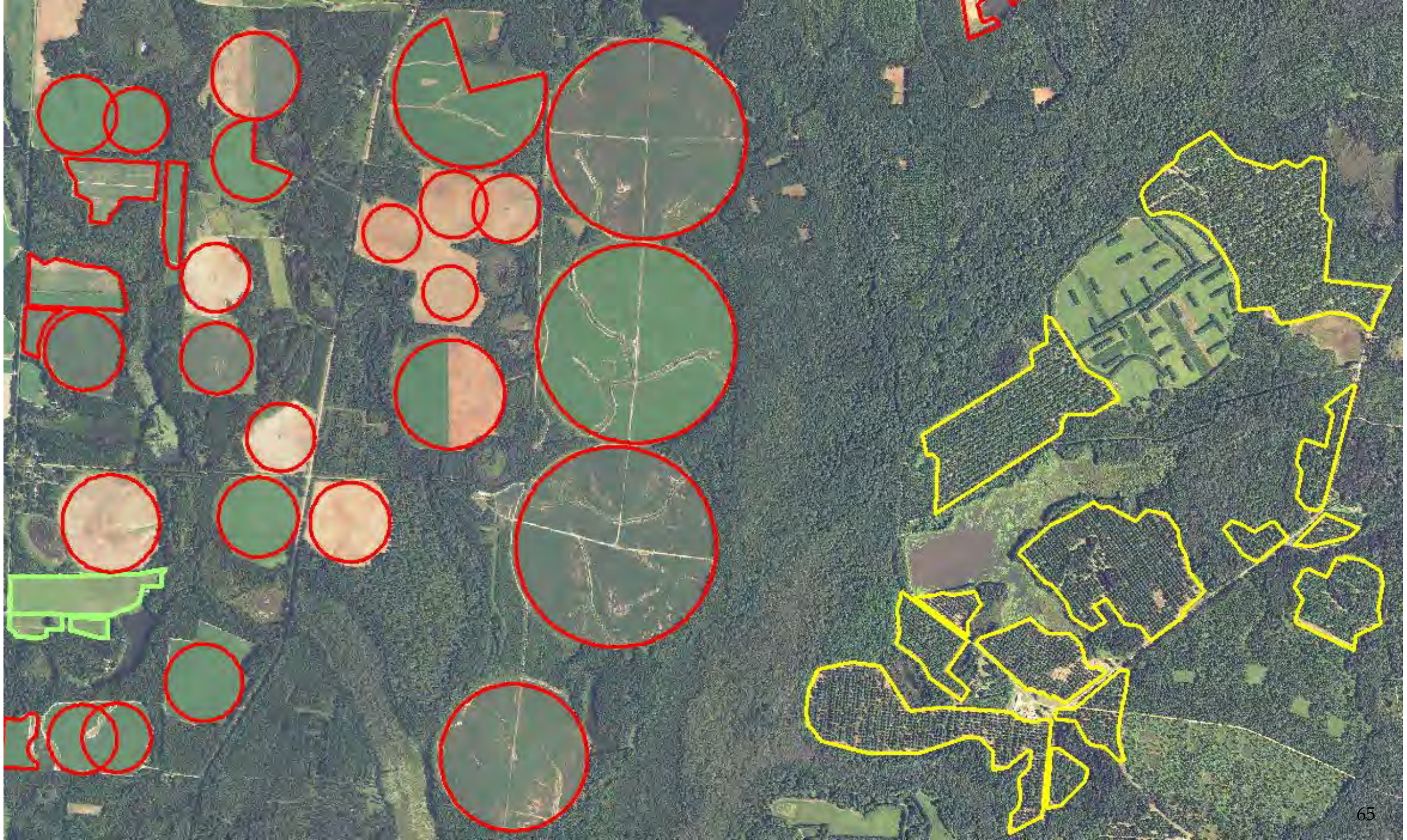
	2015	2020	% Change
Total # of Fields	3,803	4,130	+ 8.6%
Total Acreage	192,108	203,978	+ 6.2%
Total GW Acreage	131,858	145,227	+ 10.1%
Total SW Acreage	60,250	58,751	- 2.5%
Total Center Pivots	2,431	2,682	+ 10.3%
Center Pivot Acreage	140,719	150,666	+ 7.1%

System Type - % of Systems



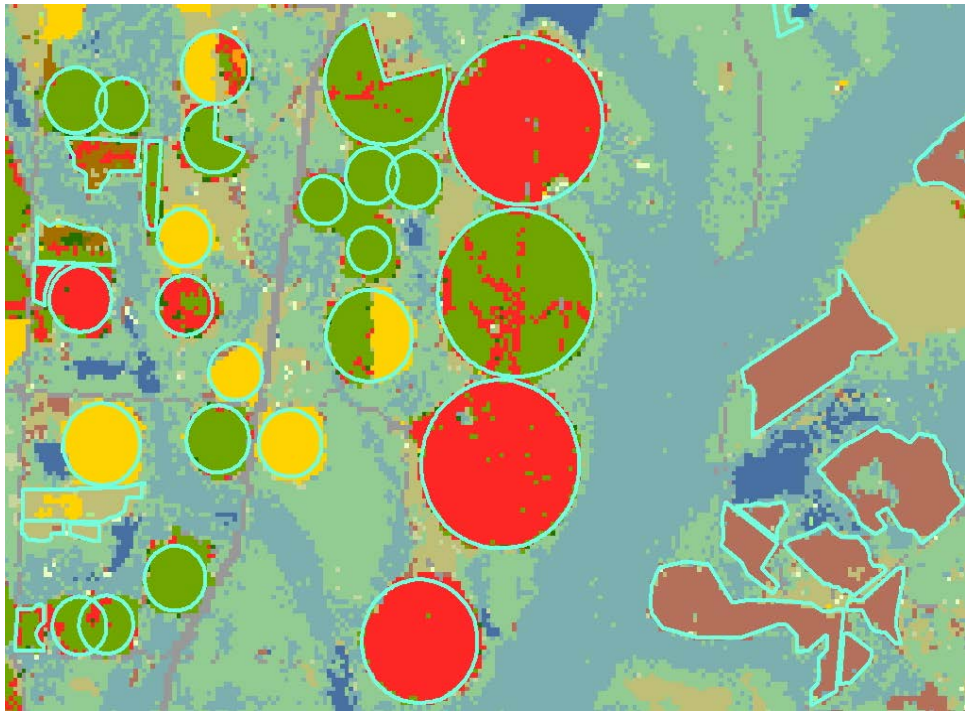
System Type - % of Acreage

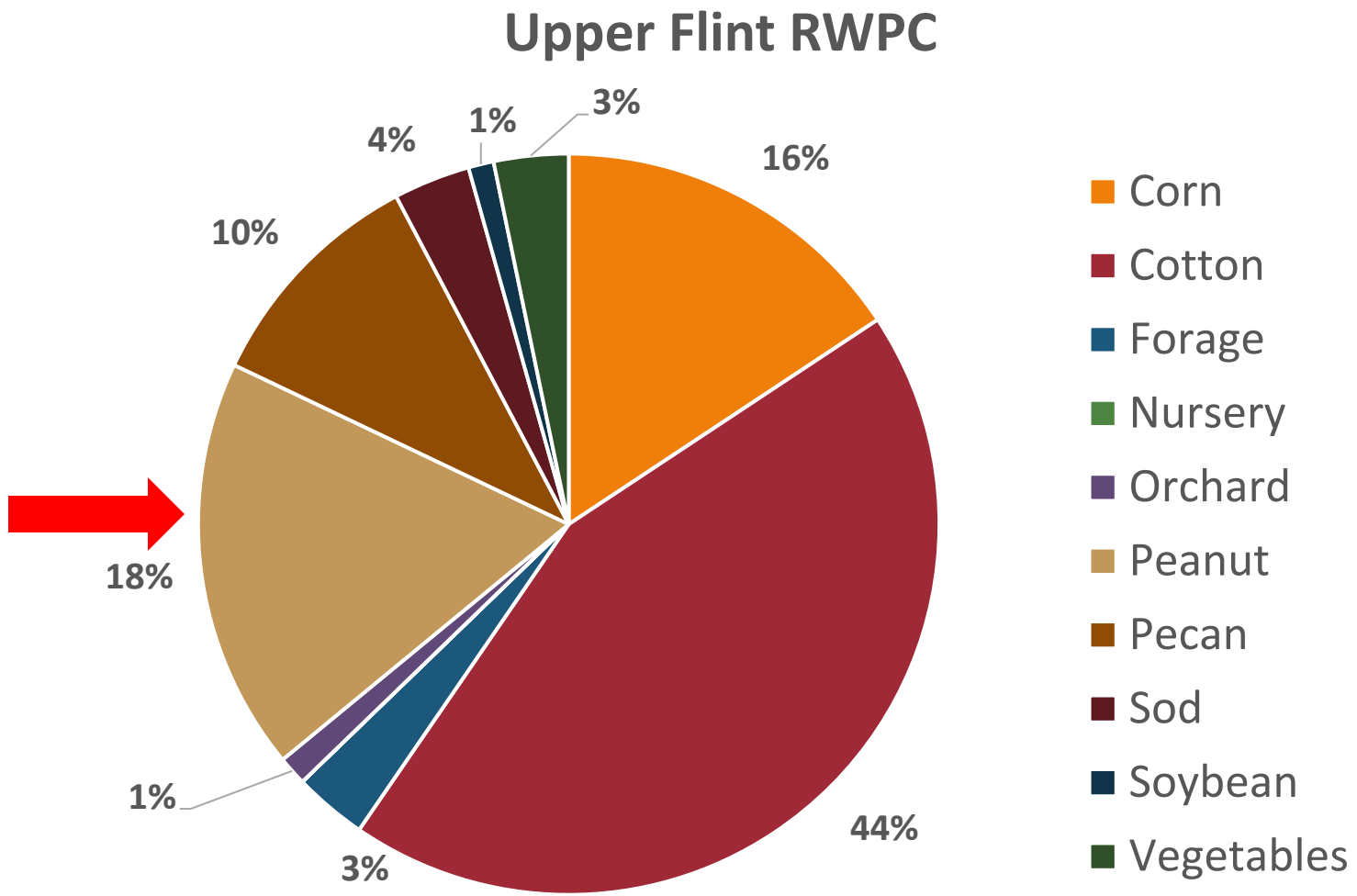


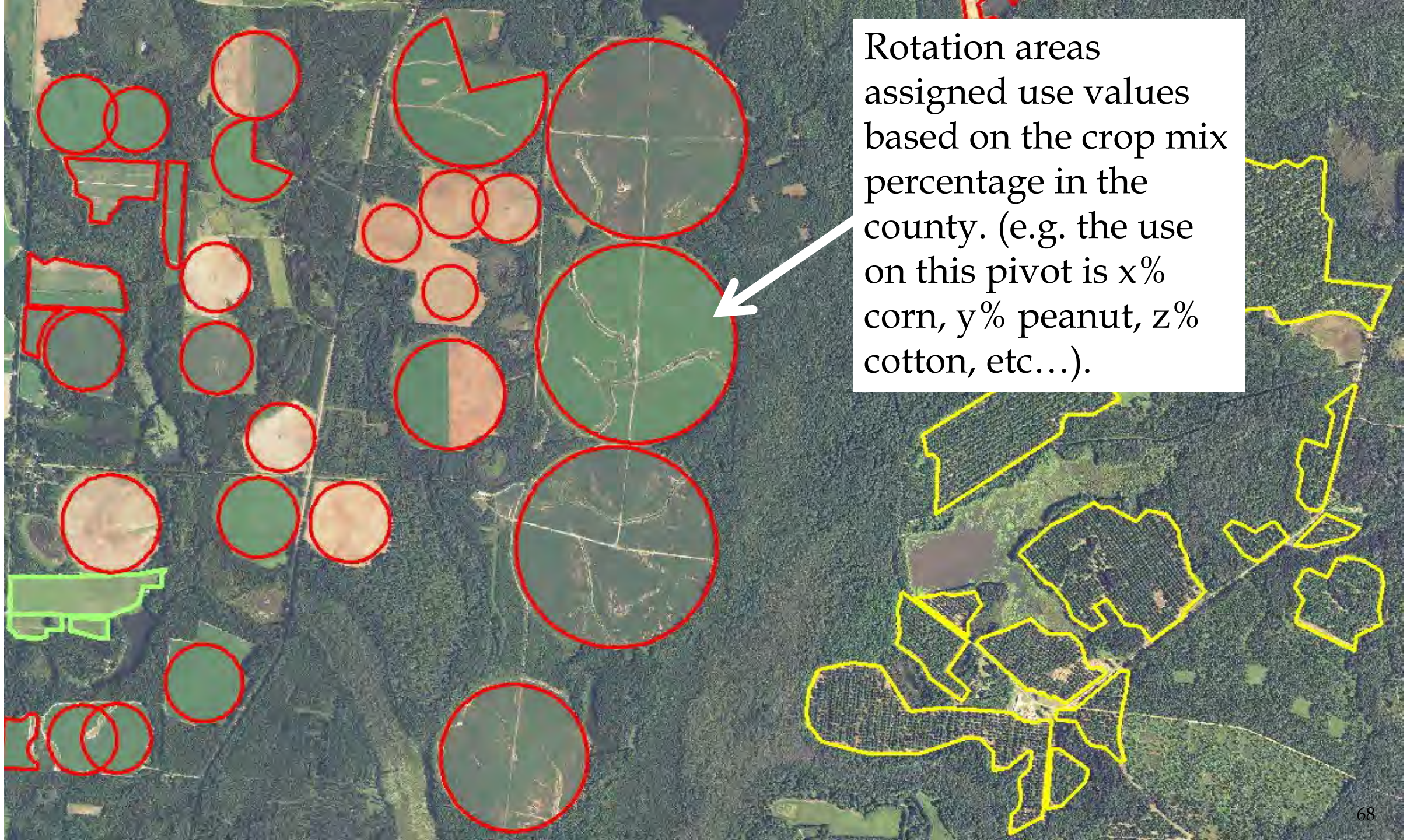


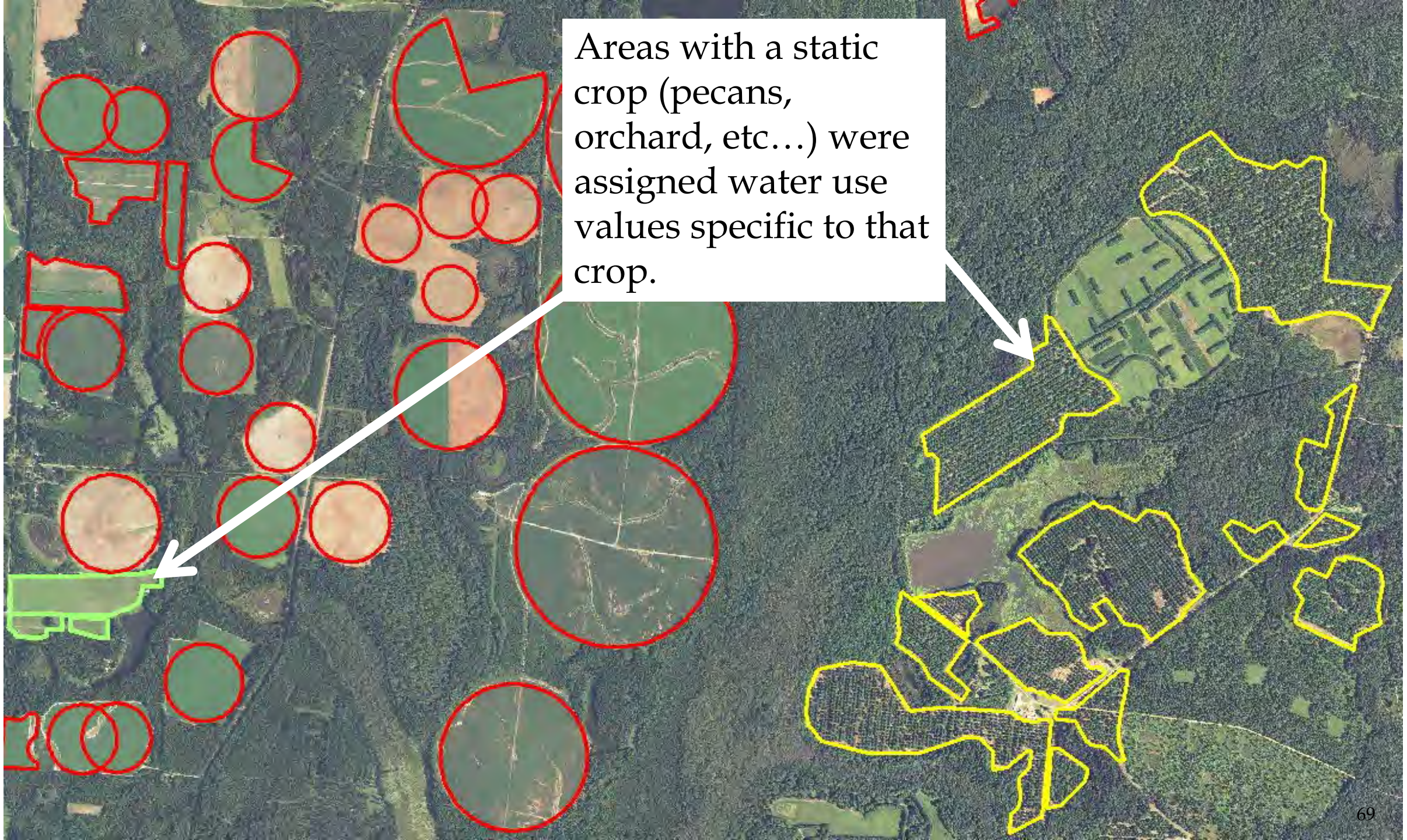


Baseline Crop Mix by RWPC



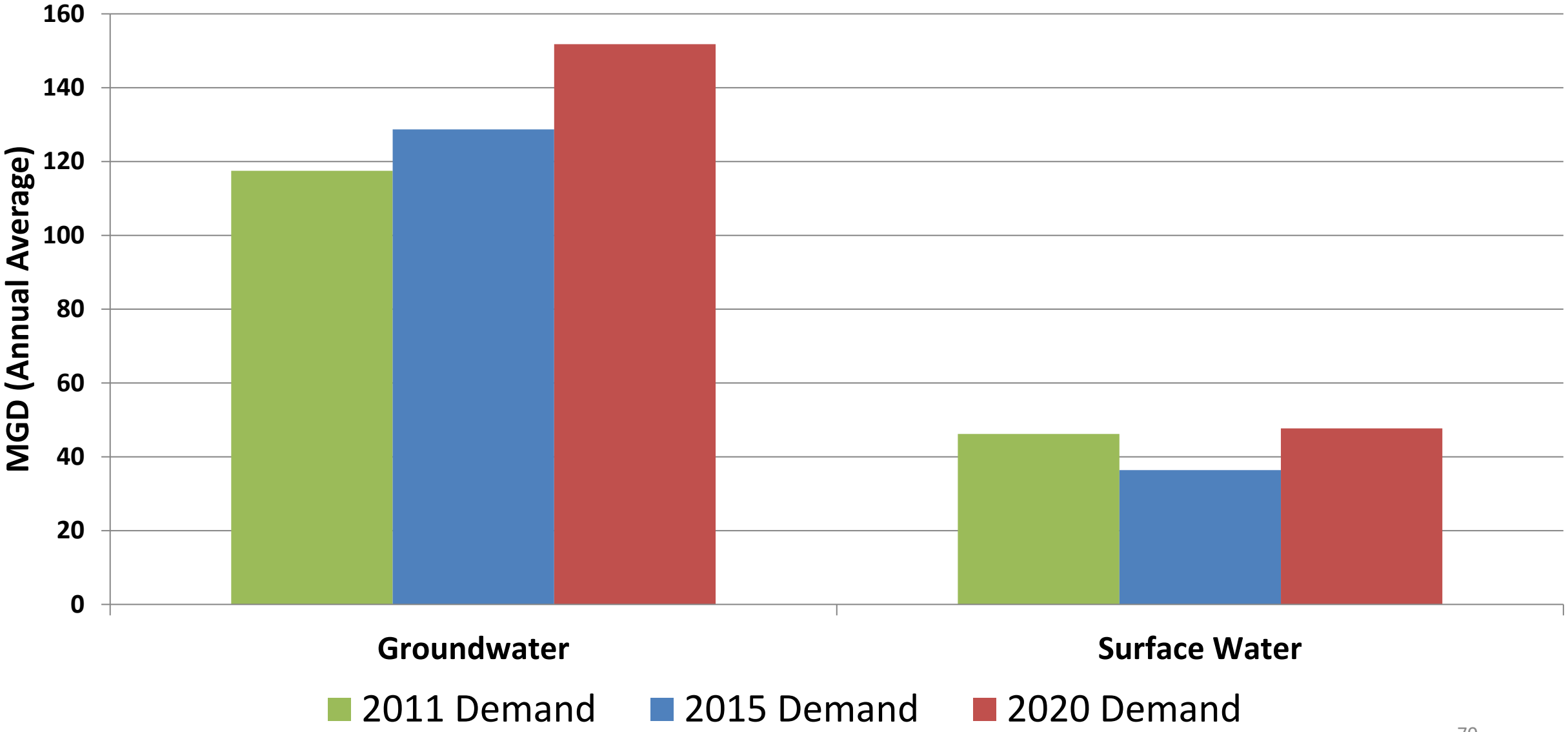



Rotation areas assigned use values based on the crop mix percentage in the county. (e.g. the use on this pivot is x% corn, y% peanut, z% cotton, etc…).


Areas with a static crop (pecans, orchard, etc…) were assigned water use values specific to that crop.

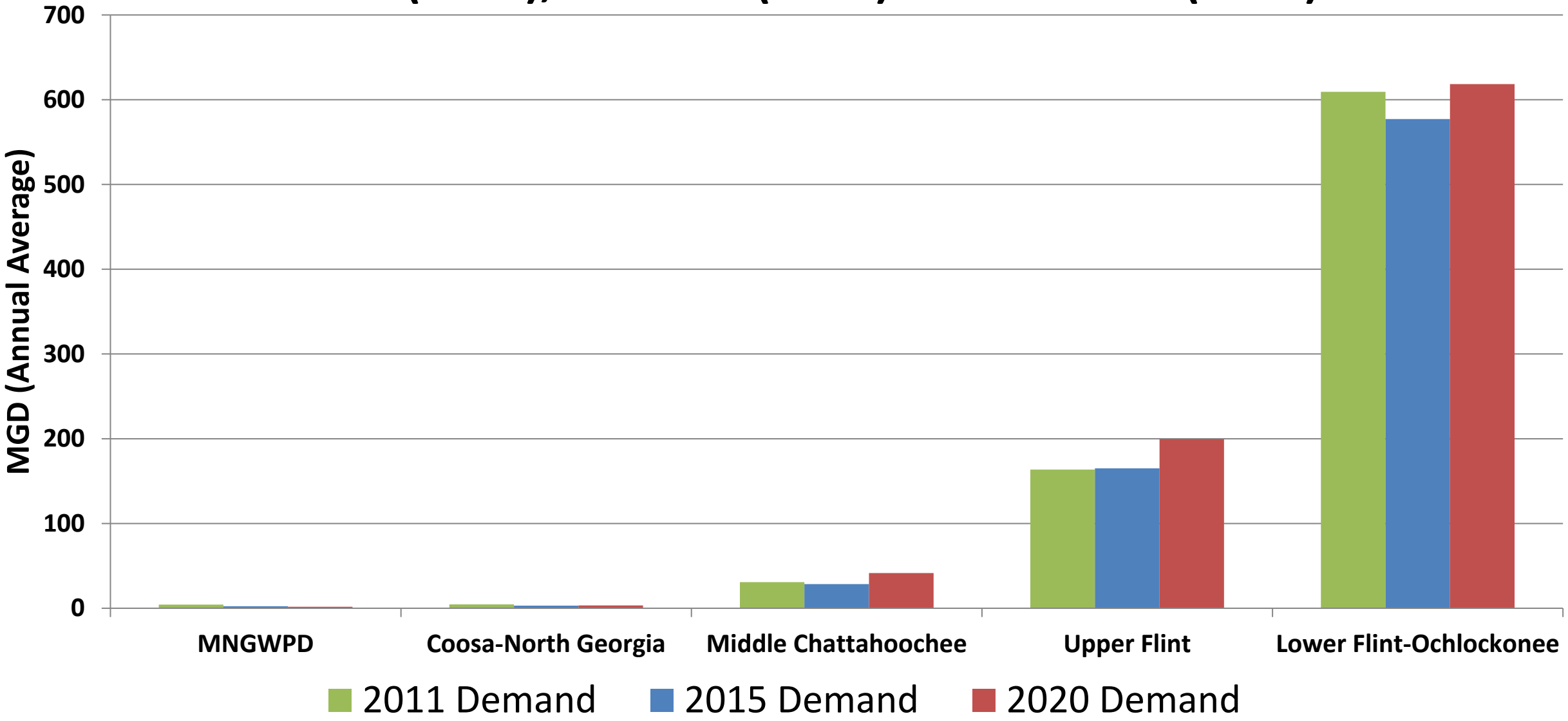
UF Council – Ag Demand – 75th Percentile

Round 1 (2011), Round 2 (2015) and Round 3 (2020)

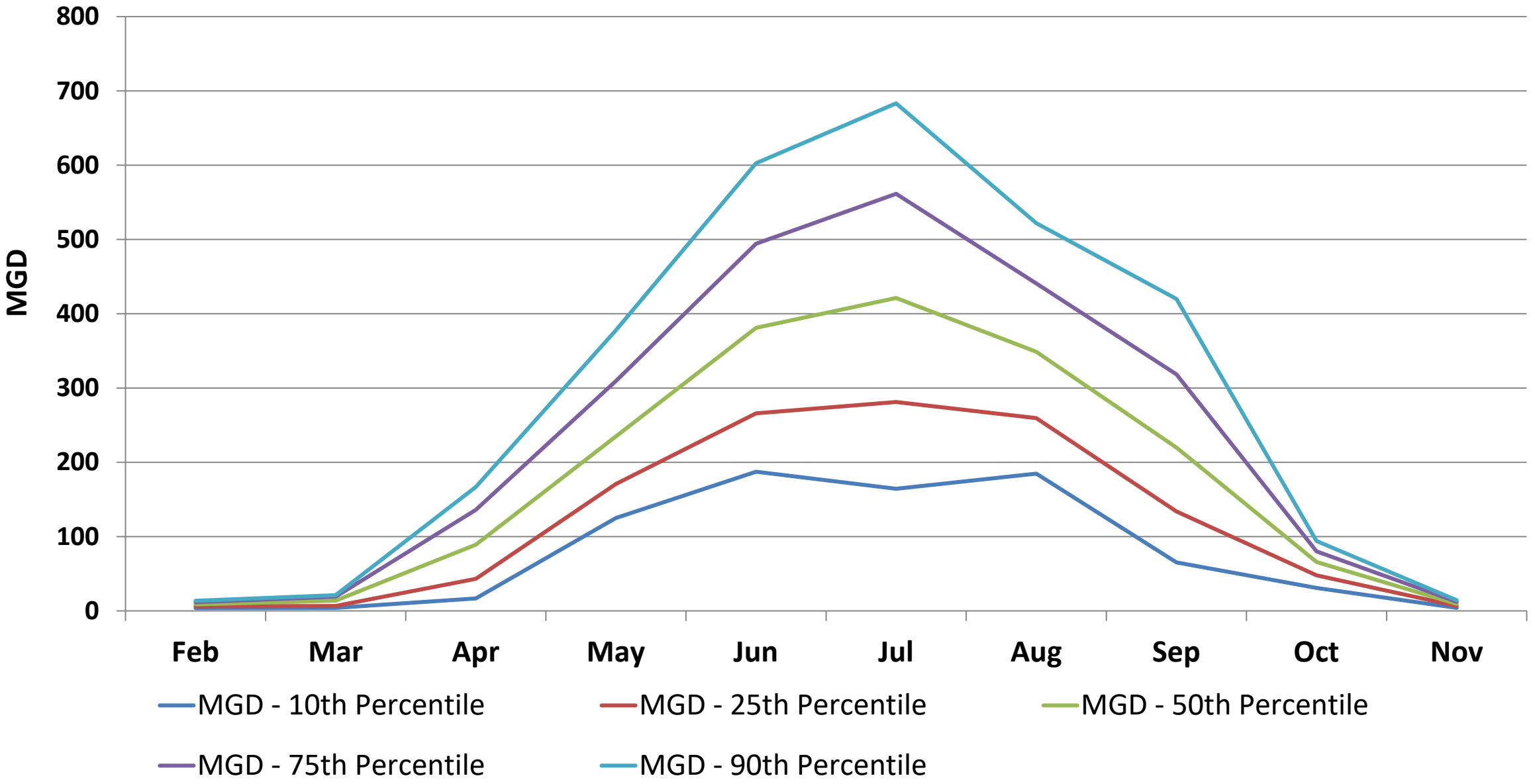


Ag Demand – 75th Percentile

Round 1 (2011), Round 2 (2015) and Round 3 (2020)

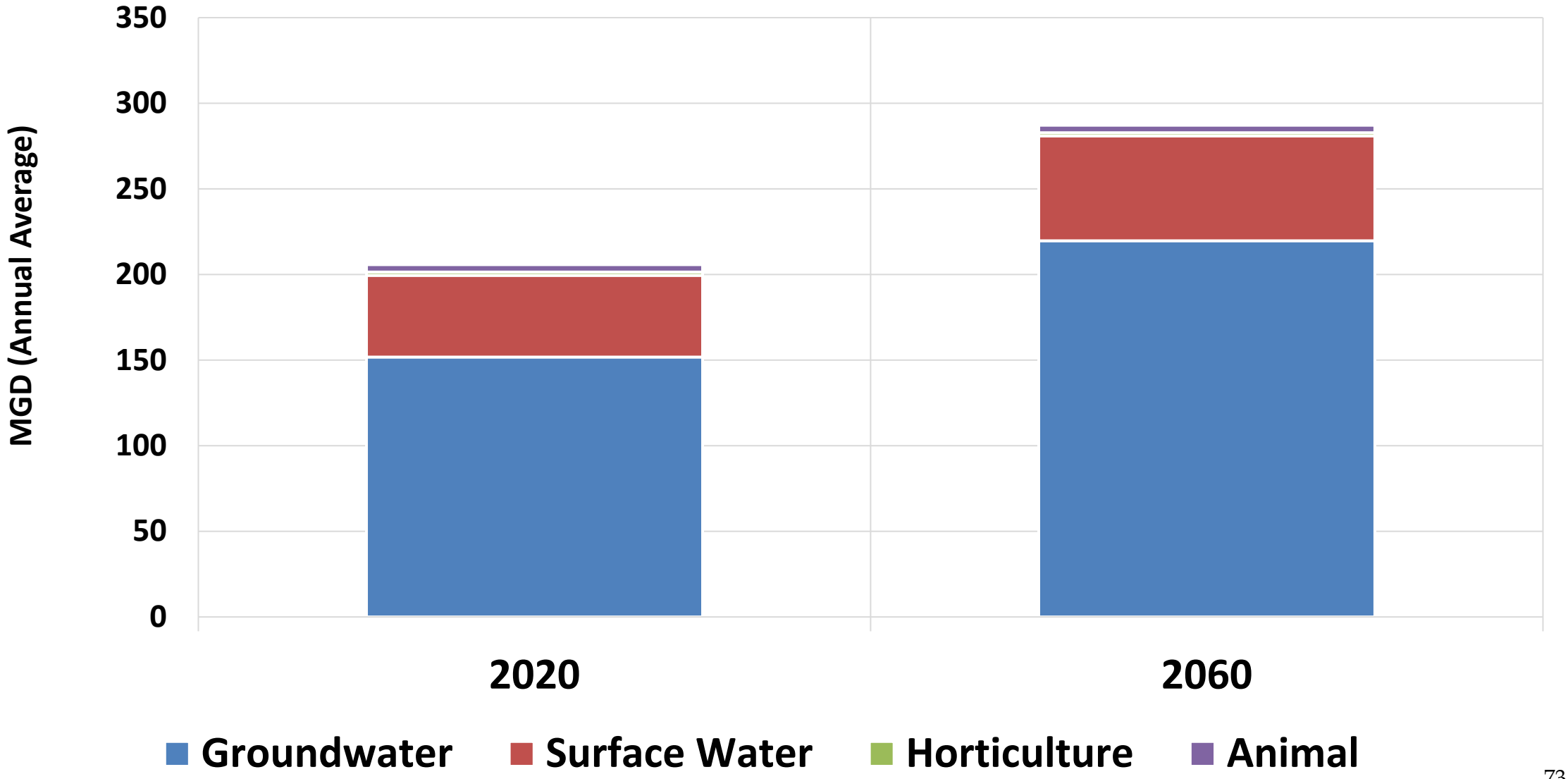


Upper Flint RWPC - Monthly



UF – Ag Demand – Forecast – 75th Percentile

Totals (2020 & 2060)



Questions & Discussion



Mark H. Masters
Albany State University
Georgia Water Planning & Policy Center
mmasters@h2opolicycenter.org
229-430-2900 x36

Vision and Goals Discussion

Corinne Valentine, Black & Veatch



Upper Flint Region

Council's Vision:

The Upper Flint Water Planning Council's purpose is to provide guidance, leadership and education on water resource utilization within the region. Through cooperation among stakeholders, implementation of the Council's plan will support sustainable management of the region's water resources, benefit public health and natural ecosystems, support the State's economy, and enhance the quality of life for its citizens.



Upper Flint Region

Council's Goals

1. **Lead the development and implementation of water resource policy** in this region and work together with the state and federal government and with the other regional water planning councils to ensure that the welfare and needs of our region are met.
2. **Enhance public understanding of water resources** and provide stakeholders with an opportunity for input into regional water policy.
3. **Maintain and strive to improve the quality and quantity of our water resources** in order to protect natural ecosystems and public health.
4. **Manage water resources sustainably through the three "C's"** – conserving, capturing and controlling water – in order to provide for the needs of all water users in the region (agriculture, utilities, residential, commercial, industry, forestry, and recreation).
5. **Sustain the region's aquifers and surface waters** in a way that will continue to support the economic activities of the Upper Flint Water Planning Region and the economy of the State of Georgia.
6. **Ensure that actions taken by this Council** do not impede the agriculture and forestry-based economy of this region.

Upper Flint River Working Group Report

Presented by Ben Emanuel



Public Comment



Next Steps



Upper Flint Water Council

- **Support team will develop and distribute meeting summary**
- **Council members are requested to review 2017 plan, updated forecasts (2021), and other council materials**
- **Support team will be working with council chair to schedule 2022 meetings**