

Altamaha Regional Water Planning Council Meeting February 13, 2020

Council Meeting Agenda



Council Meeting Altamaha Regional Water Council Agenda – February 13, 2020

Objectives:

Review background on up-coming technical work that will support the 2020-2022 Water Plan Update Cycle
Seed Grant Updates
Learn about local GEFA funded projects in the region

9:30 - 10:00 a.m.	Registration
10:00 – 10:15 a.m.	Welcome and Introductions
	Tribute to John Roller
	Approve meeting minutes from September 10, 2019 Council Meeting
	Approve meeting agenda
10:15 – 10:30 a.m.	Review Q&A from September 10, 2019 Power Generation and Energy Sector Forecasting Discussion (Bill Davis, CDM Smith)
10:30 -11:15 p.m.	Background and Overview of Upcoming Technical Work for 2020-2022 Regional Water Plan Update Cycle (Bill Davis, CDM Smith)
	Review of Most Recent County Population Projections
	Water Demand Forecasts Methodology
11:15 - 11:45 p.m.	Review Resource Assessments and Gap Analysis Technical Memo (Danielle Honour, CDM Smith)
11:45 - 12:30 p.m.	Lunch
12:30 - 12:45 p.m.	Seed Grant Updates / Outreach (Rahn Milligan, Pine Country RC&D / Danielle Honour, CDM Smith)
12:45 - 1:00 p.m.	Next Steps / Public Comments/Local Elected Official Comments
1:00 - 1:30 p.m.	GEFA Funded Projects in the Region (Richard Newbern, City Manager of Cochran)
1:30 p.m.	Adjourn



Georgia's State Water Plan

Council Business



Council Business

- Welcome and Introductions
- Approve meeting summary from September 10, 2019 Council Meeting
- Approve meeting agenda





Q&A Review from September 10, 2019 Power Generation and Energy Sector Forecasting Discussion



Power Generation and Energy Forecasting Q&A Review

- Follow-up to Q&A during the September 10, 2019 Council Meeting
- Memo sent out November 4, 2019



Memorandum

To: Altamaha Regional Water Planning Council

From: Bill Davis

Date: November 4, 2019

Subject: Power Generation and Energy Sector Forecasting for Altamaha Regional Water Planning Council Meeting - Follow-Up Questions and Answers for the September 10, 2019 Council Meeting

Question 1 - Do the projections incorporate efficiency of use?

Yes, increases in efficiency are included in the projections. Page 23 of the *Annual Energy Outlook 2019* (EIA 2019) states, "Delivered U.S. energy consumption grows across all major end-use sectors, with electricity and natural gas growing fastest. However, increases in efficiency, represented by declines in energy intensity (the amount of energy consumed per unit of potential demand), partially offset growth in total U.S. energy consumption across all end-use sectors."

Note that the energy intensity lines (per unit use) on the graph below are declining over time but the total demand is increasing because of the increasing number of units over time.







Background and Overview of Upcoming Technical Work for 2020-2022 Regional Water Plan Update Cycle



Background

Next plan update cycle will begin in 2020

Initial focus areas will include:

- Updated population projections
- Updated water demand and wastewater forecasts
 - Municipal, Industrial, Energy (thermoelectric) and Agricultural
- Updated Surface Water and Ground Water Availability Resource Assessments (Quantity)
- Updated Surface Water Quality / Assimilative Capacity Resource Assessment





- Re-familiarize Council with the key technical products that inform the water plan update
 - What analysis is performed?
 - How is the information used?
 - Why is it done like that?
 - How does it all fit together?
- Provide baseline for more refined discussions on items of interest or potential changes during the next cycle.



Regional Water Planning Process







Energy Water Demand Forecast



2011 RWP - Thermoelectric Power Facilities in Georgia with Water Withdrawal Permits



01	Plant Name
1	Plant Yates
2	Plant McManus
3	Plant Wentworth (Kraft)
4	Plant McDonough
5	Plant Mitchell
6	Plant Harlee Branch
0	Plant Hatch
8	Plant bowen
9	Plant Vogtle
10	Plant McDonough
11	Plant Yates
12	Effingham County Power Project
13	Plant McIntosh
14	Plant Hammond
15	Plant McManus
16	Plant Wansley
17	Plant Franklin (in AL)
18	Plant Scherer
19	Georgia Biomass
20	AL Sandersville
21	Washington County Power
22	Blue Ridge Energy Development
23	Crisp County Power Comm
24	Plant Vogtle
25	Effingham County Power Project
20	Grum Bouung Plant



Energy Forecasting Methodology

- Each power facility has a unique water-to-power-to-production signature
- Statewide, each facility contributes a unique portion to the entire power portfolio
- The relative contribution of each facility can change over time as facilities retire or are brought on-line
- This information is used along with total power production (est. from population projections) to determine statewide & regional water needs out to 2050



Altamaha Energy Forecast Review

ALTAMAHA	2015	2020	2025	2030	2035	2040	2045	2050
Withdrawals MGD	54	54	54	55	57	60	63	68
Consumption MGD	35	34	34	35	37	39	41	44



Georgia's State Water Plan

Population Projections



Updated Population Projections

- State and County population projections are prepared by the Governor's Office of Planning and Budget (OPB) <u>https://opb.georgia.gov/</u>
- Used consistently by all state agencies for multiple purposes
- Updated population projections will be used in the Plan review and revision process
- Population is dynamic and is an important input to planning



Population Growth Revisions - Statewide





Population Growth Revision 2017 Regional Water Plan Update – Altamaha

- Population growth was refined during the last update showing 24% less projected population by 2050.
- The latest population projections further reduce the projected population of the region



Incorporating the 2020 Census

The 2020 Census timeline will not allow for incorporation into the population projections for the next update





Georgia's State Water Plan

Water Demand Forecasts



Water Demand for Altamaha Region

Water Demand Forecasts are developed for 4 sectors:





Altamaha Water Demands by County



2015 Water Demand (MGD)





Municipal Water Demand Forecast



Projecting Municipal Water Demand

2011 Future Water Need:

Base Year Per Capita Water Demand







Projecting Municipal Water Demand

2017 Update with Adjustment Factor:





Change in Municipal Water Demand







Updating Per Capita Estimates



Using Water Audits to Calculate Per Capita

- Annual water audits are required by all water systems serving 3,300 people or more in Georgia since 2011/2012
- Water audits show the breakdown of water use from entering distribution system to customer meter
- Accounts for imported and exported water
- Quantifies water loss volumes



Per Capita Calculation

- Water supplied from water audit divided by population served from the State's Safe Drinking Water Information System (SDWIS) database
- Preliminary per capita values are calculated for each system (2011-2018)
- Weighted averages are calculated for each county with water systems serving population of 3,300 or more



Preliminary Per Capita Estimates

			2011	2012	2013	2014	2015	2016	2017	2018
			Weighted							
County	Round 1	Round 2	Average							
Appling	140	133		142	126	126	121	134	124	139
Bleckley	115	113		143	112	123	105	124	136	135
Candler	105	99		87	114	105	103	86	86	82
Dodge	174	176		174	185	155	155	159	112	119
Emanuel	169	161		163	140	131	131	135	132	129
Evans	95	92								124
Jeff Davis	195	193		136	123	139	156	162	168	152
Johnson	121	. 122							125	154
Tattnall	121	118		160	155	147	146	133	133	130
Telfair	140	141		132	126	129	124	114	115	107
Toombs	147	146	137	149	140	210	220	120	160	150
Wayne	171	164		140	131	129	114	129	119	119
Wheeler	141	143						110	115	107





Municipal Wastewater Forecast



Municipal Wastewater Forecast Update

 The municipal water demand served as the basis for estimating the municipal wastewater (WW) flows for each county

2017 Updated Wastewater Forecast

□ Septic □ Centralized Point Source □ Centralized Land App





Industrial Water Demand Forecast



Industrial Water Demand Forecasts

- Industrial demands were not updated during the 2017 RWP update due to updated employment data not being available
- Industrial wastewater flows are identified by discharge method



Industrial Water Demand for Altamaha

 Industrial water use in the Altamaha Region is dominated by the paper industry, followed by food manufacturing and textile mills.



2010 2020 2030 2040 2050





Agricultural Water Demand Forecast



Agricultural Water Demand Forecast

- Approach: Look to past trends and consider foreseeable changes
- Irrigated acreage
 - Baseline USDA Census of Agriculture (2012); linked to 2015 irrigated acres
- Crop water needs
 - Wet, normal and dry year estimates by crop/soil/county
 - Estimates informed by metering data
 - Aggregated spatially to 2015 irrigated acreage
- Crop projections through 2050 modeled based on multiple data sources:
 - Average of: USDA Projections, Southeast Model, Georgia Model



Altamaha Agricultural Water Demand

- Agricultural water demand is spread throughout the Altamaha region.
- Demand is met largely through groundwater; although, surface water is also utilized





waterplanning.georgia.gov









Review of Resource Assessments



Altamaha Region Resource Assessments

Current & Future Conditions

- Groundwater availability
- Surface water availability
- Surface water quality

Gaps

- Compare resource to demands to determine if there are potential gaps in current or future water availability or water quality
- Findings documented in the Gap Analysis Technical Memo



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Groundwater Availability



Altamaha Region Groundwater Availability Assessment

- Groundwater currently supplies ~72% of the projected regional water demand.
- The major aquifer utilized is the Floridan aquifer, accounting for 69% of the total supply
- An additional 19 MGD of groundwater usage is projected over the planning horizon





Groundwater Modeling of the Floridan Aquifer

- Floridan Aquifer model boundaries used in the Groundwater Resource Assessment for determining sustainable yield
- Regionally, there is sufficient groundwater to meet current and future needs





Groundwater Modeling of the Cretaceous Aquifer

- Cretaceous Aquifer model boundaries used in the Groundwater Resource Assessment for determining sustainable yield
- Regionally, there is sufficient groundwater to meet current and future needs



Altamaha Councils — High Sustainable Yield — Low Sustainable Yield



Groundwater Availability Modeling

- The modeling tool used to analyze groundwater availability has been updated
 - "Coastal Plain of Georgia" modeling domain
- Grid spacing has been reduced, from 5,280' to 1,760'
 - Decreasing grid spacing allows for a more refined look at the impact of withdrawals
- The modeling tool can now be run in transient mode, to analyze time-varying uses vs. steady-state (constant) uses







Surface Water Availability



Altamaha Region Surface Water Supply

350

300

250

200

150

100

50

0

Demand (MGD)

- Surface water supply comes primarily from the Altamaha River basin
- Surface water accounts for ~28% of water demands
- Surface water is utilized to serve agricultural and energy demands



Altamaha 2050 Water Forecast Total: 287.5 MGD



Surface Withdrawals by County and Region

- Acreages of each County within the local drainage area (LDA) by planning node were determined
- Areas irrigated with surface water by County within the LDA assigned to planning node were determined
- 2050 forecasted surface water withdrawals for portion of County assigned (drains to) planning node within LDA were available from forecasting and resource assessment work



Altamaha Region Surface Water Availability Assessment

- Surface water availability was assessed at locations with long-term records of flow, with streamflows modeled under current and future conditions
- A potential gap occurs when streamflow is projected to fall below specified low flow levels
- Potential gaps in streamflow identified on the:
 - Ogeechee River at the Eden and Kings Ferry node
 - Canoochee River at the Claxton node
 - Satilla River at the Atkinson node
 - Alapaha River at the Statenville node



Ogeechee River, Kings Ferry Node

Councils and Associated Counties That Are Within in the Local Drainage Area with Potential Gaps	Total 2050 Forecasted Surface Water Demand at Planning Node Summarized	2050 Potential G Average Daily Flo Event Summarized	Gap Information: w Deficit per Gap I by Planning Node	2050 Forecasted Surface Water Withdrawals Summarized by Planning	
Brandge Area with rotential daps	by Sector (MGD)	1-7 Day Duration	8-14 Day Duration	Council (MGD)	
Altamaha – Candler, Emanuel, Evans, Tattnall	Agriculture: 8.12	13 MGD (20 cfs)		8.12	
Coastal Georgia – Bryan, Bulloch, Chatham, Effingham, Liberty, Long	Agriculture: 4.42		27 MGD (41 cfs)	4.42	
Savannah-Upper Ogeechee – Burke,	Agriculture: 7.83		· · · · · · · · · · · · · · · · · · ·	8.00	
Glascock, Jefferson, Jenkins, Screven, Taliaferro, Warren	Municipal: 0.17	58.0% of all potential gap events	13.0% of all potential gap events		
Upper Oconee – Greene, Hancock, Washington	Agriculture: 1.42			1.42	
	21.96				



Surface Water Availability Resource Assessment

- Developing finer-scale hydrologic models (nodes at discharge and withdrawal points, at reservoirs and at flow gages)
- Starting with Oconee, Ocmulgee and Altamaha basins







Georgia's State Water Plan

Water Quality



Current Assimilative Capacity Assessment

- Develop Models
- Use available data & conservative assumptions
- Calibrate models to existing conditions
- Evaluate models using current permits
- Determine available assimilative capacity
- Determine areas of concern





Round 2 of the State Water Plan

- Multiple models used including:
- DOSAG (streams)
- RIV1 (Rivers)
- GA ESTUARY (Estuaries)
- Lakes/Estuaries
- Watershed Models
- Nutrient Loading



Future Assimilative Capacity Assessment

- Evaluate models using future permitted flow
 - Increased Flows (Q)
- Incorporate model assumptions regarding future permits limits designed to meet water quality standards
 - Tighter BOD Limits (maintain load, Q x Concentration)
 - New or Tighter Ammonia (NH3) Limits
 - New or Tighter Dissolved Oxygen Limits
- Future land use changes



Assimilative Capacity Assessment

- Modeled dissolved oxygen under
 - current permitted conditions
 - assumed future permitted flows and effluent limits
 - natural background conditions (no permitted discharges)



Impaired Surface Water Quality

- The Altamaha Region has 74 impaired stream reaches with a total length of 755 miles
- The region also has 2 impaired lakes



Gap Technical Memorandum

- Summary comparing forecasted demands to available resources
 - Water and wastewater forecasts for regional surface and groundwater resources
 - Identification of known existing permit capacity in relationship to forecasts
 - Water quality considerations
- Document is available via the Altamaha region webpage





Resource Assessment Discussion

- Feedback on items of interest
- Potential changes during next cycle
 - Groundwater
 - Surface Water Quantity
 - Surface Water Quality





GEFA Funded Projects in the Region



City of Cochran (Bleckley County) GEFA Funded Projects

- <u>CW15009</u>: Rehabilitation of the city's existing sewer system to include the upgrading of existing sewer lines and manholes to reduce inflow and infiltration, circumventing sewage overflows (loan amount \$2,500,000)
- <u>DW15009</u>: Upgrade of the existing elevated storage tanks, miscellaneous improvements in the distribution system replacement, and replacement of approximately 2,280 water meters with AMR water meters including software and meter reading equipment (loan amount \$2,572,500)
- <u>CW15002</u>: Upgraded existing sewer lines and manholes to reduce inflow and infiltration, preventing sewage overflows (completed 2017)





Seed Grant Updates / Outreach



Regional Water Plan Seed Grant Fiscal Year 2020 Grant Period

- Applications were due in October 2019
- Pine Country RC&D in collaboration with University of Georgia (Dr. Hawkins) prepared an application to address Erosion and Nutrient Management Practices in the region
- Addresses multiple nonpoint source management practices in the RWP (NPSR-1, NPSA-2, NPSA-3 and NPSA-4)
- Project was recommended for funding using 319(h) grant funds



Continuing Support to RWP Councils

- Outreach Activities
 - Georgia Rural Water Association Spring Conference; May 12-14
 - Georgia Municipal Association's Cities United Summit; Jan 25





Next Meeting/Public Comments/Local Elected Official Comments



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Thank You!

Questions? Comments? Need More Information?

> Honourdm@cdmsmith.com Jennifer.Welte@dnr.ga.gov

