Georgia's State Water Plan

Updates on Demand Forecasting for the 2020-2022 Regional Water Plan Update Cycle

Georgia
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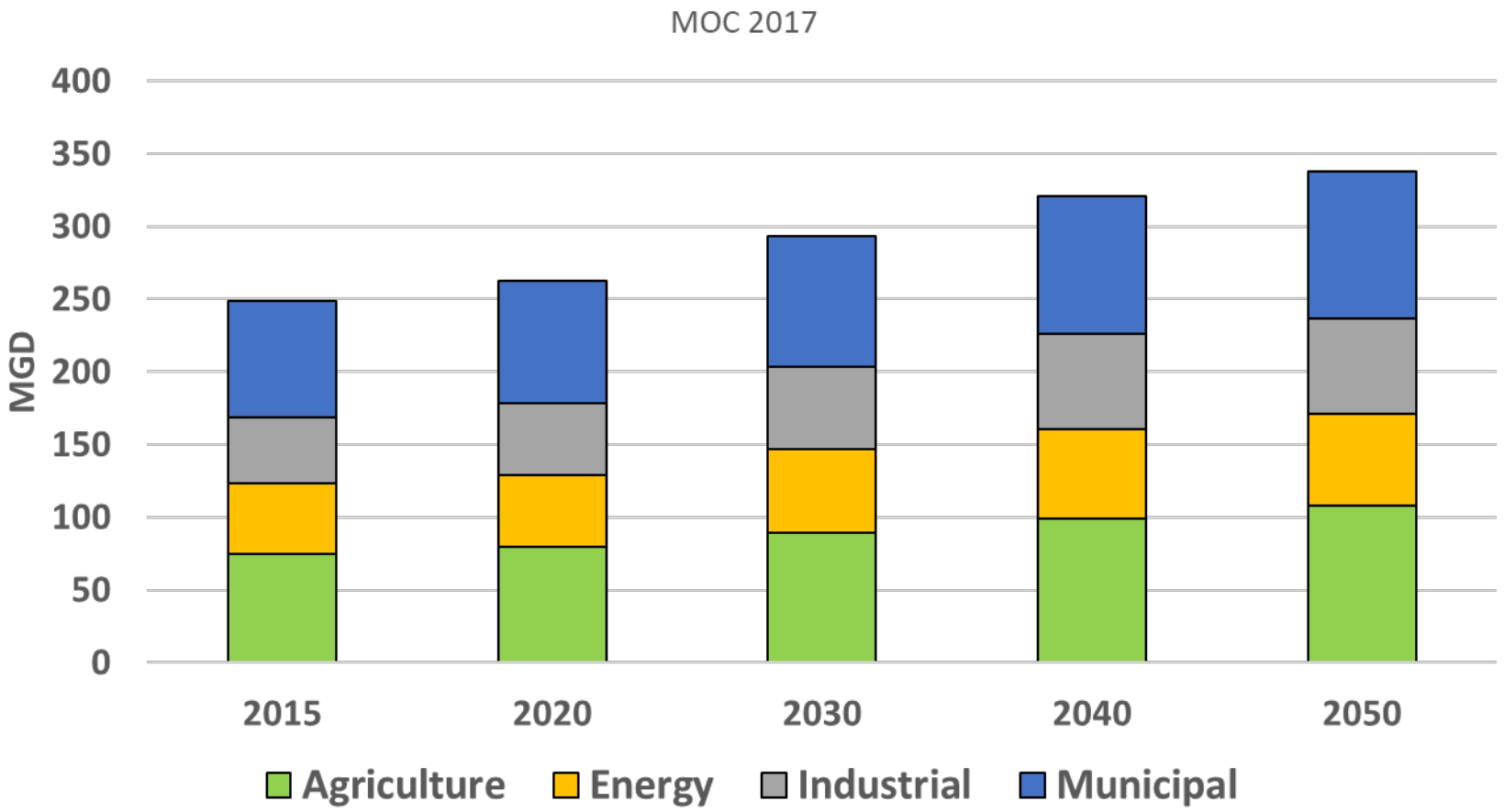
Review of 2017 Demand Forecast for MOC

- Total demand increases 36% from 2015 to 2050
- Agriculture is 31% of total demand
- Energy demand is 19%
- Industrial demand increases 18% to 20%
- Municipal decreases from 32% to 30%



Review of 2017 Water Demands by County

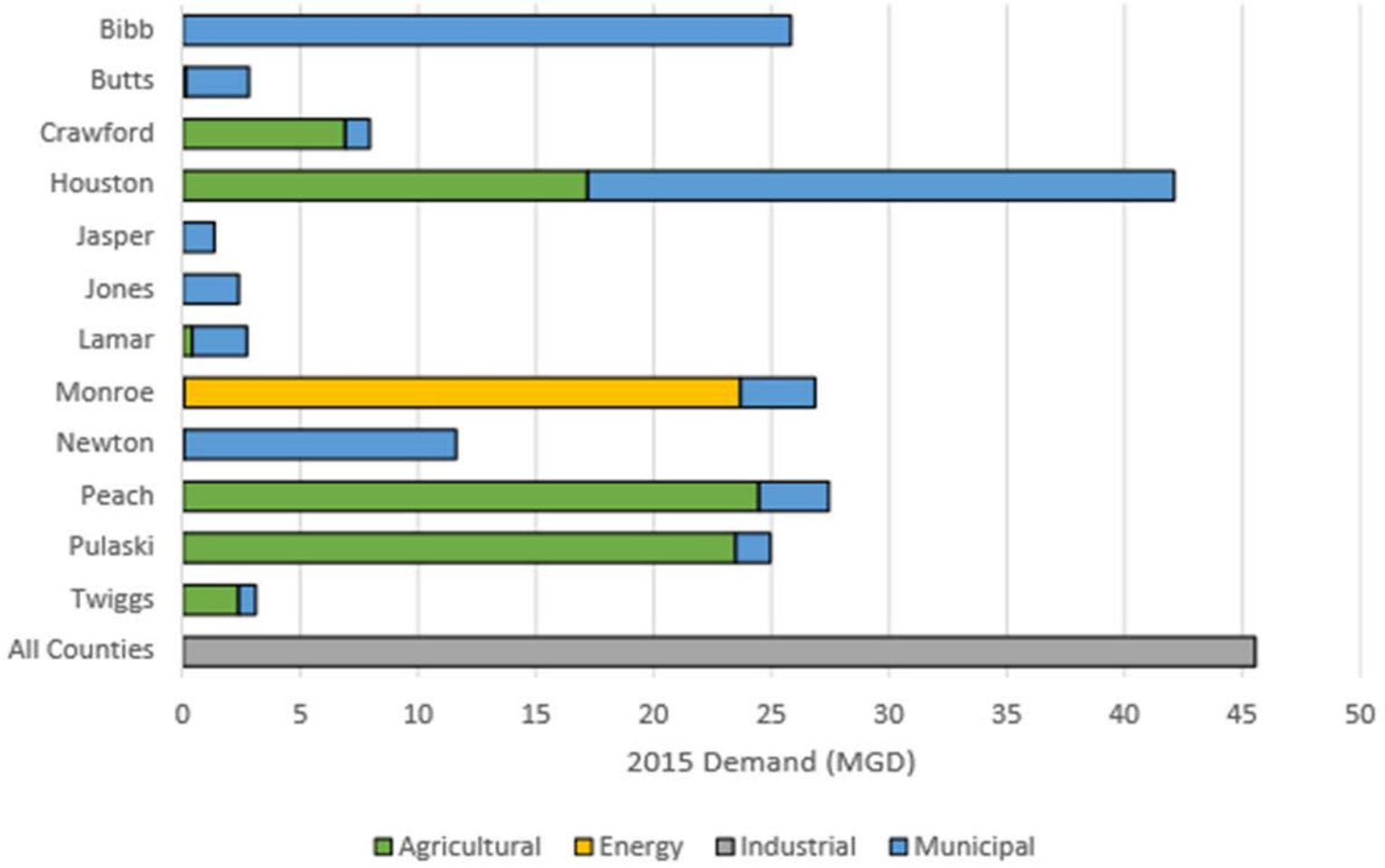


Figure 7-3
County Water Demand by Sector for 2015

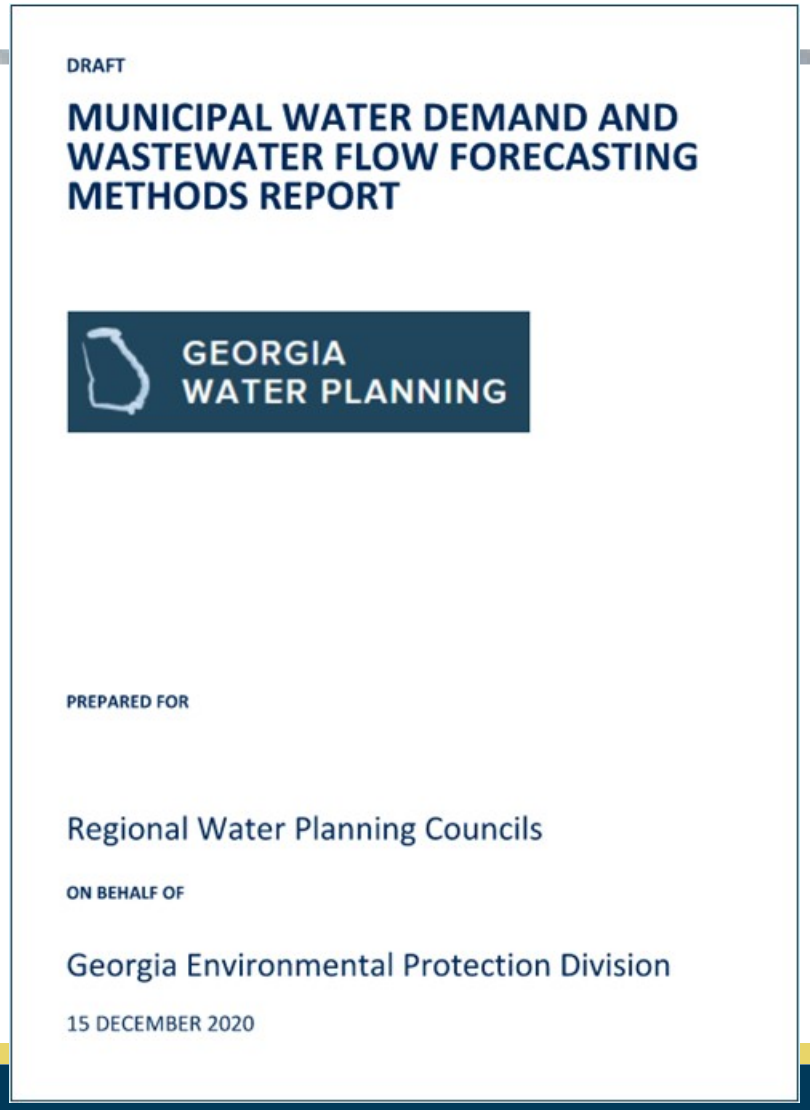
Georgia's State Water Plan

Municipal Water Demand and Wastewater Flow Forecast

Municipal Demand Forecast Update

- Forecast prepared by Black & Veatch team https://waterplanning.georgia.gov/forecasting/municipal-water-use
- Revised population projections by county*
- Updated GPCD by county*
- Forecast was reviewed by Municipal Forecasting Stakeholder Group with representative from each Council

**Impacts Municipal Forecast*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MUNICIPAL WATER DEMAND AND WASTEWATER FLOW FORECASTING METHODS REPORT

GEORGIA WATER PLANNING

PREPARED FOR

Regional Water Planning Councils

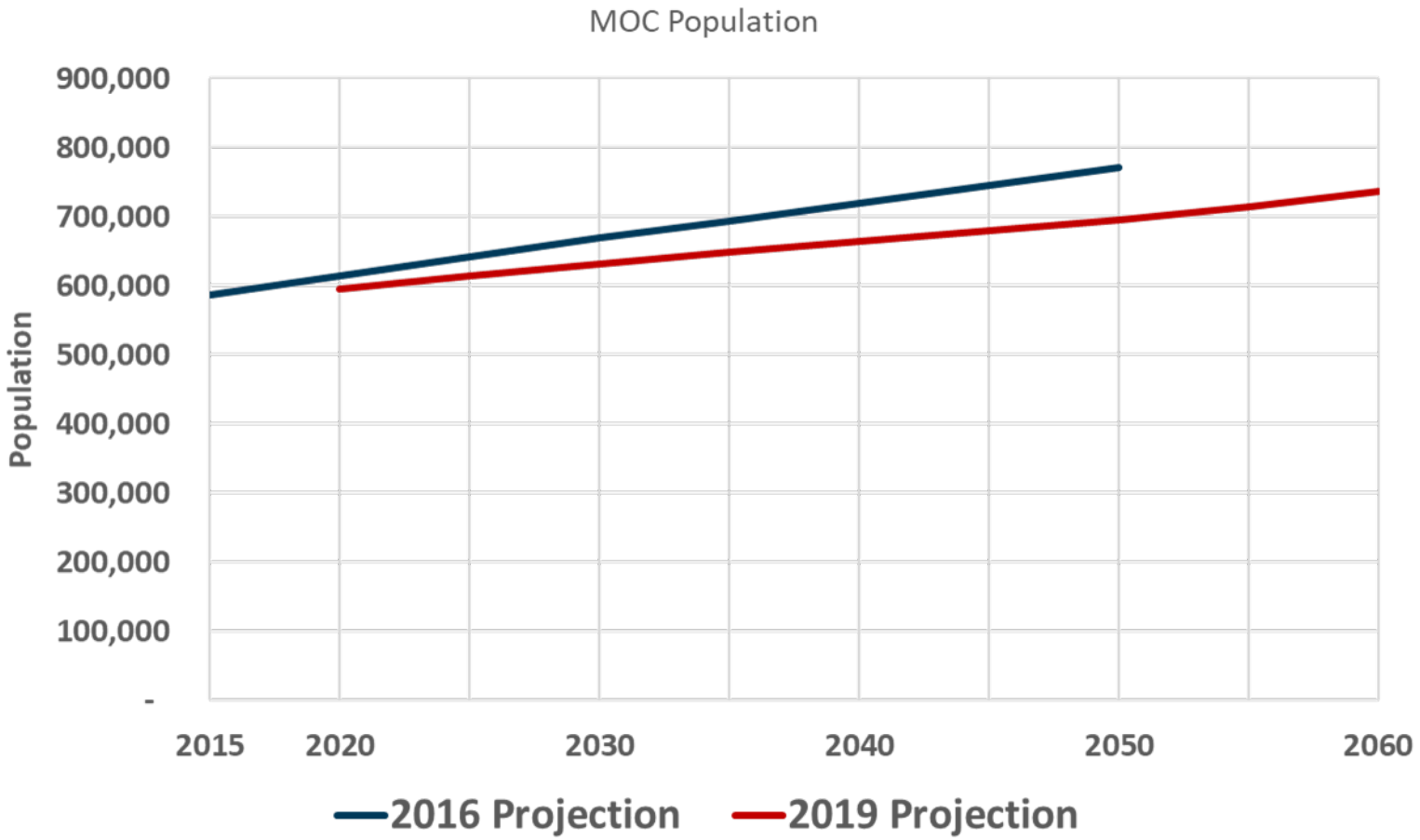
ON BEHALF OF

Georgia Environmental Protection Division

15 DECEMBER 2020

MOC Population Projections

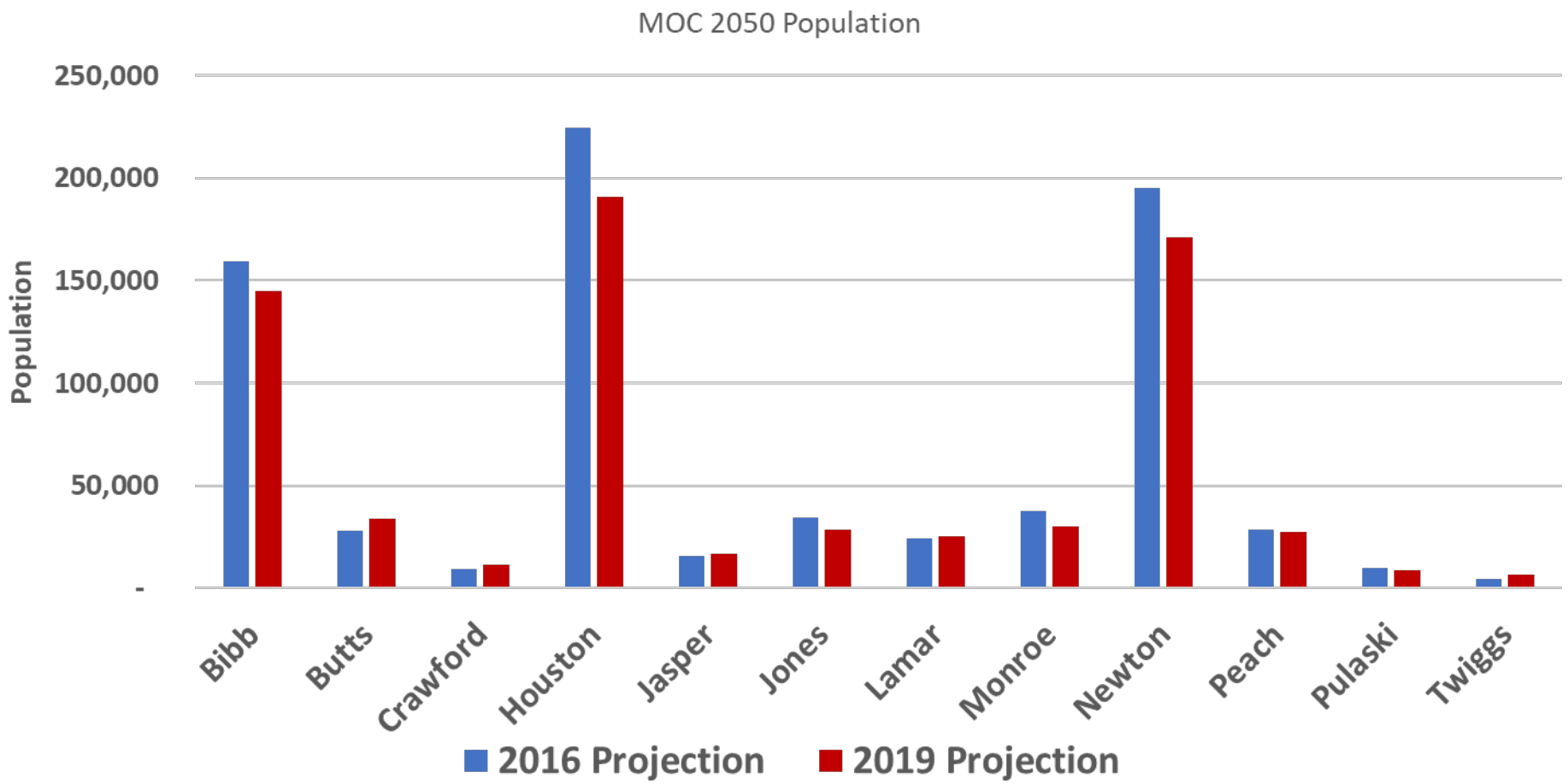
- 2017 RWP Update was based on 2016 population projections from Office of Planning & Budget (OPB)
- 2020 Municipal Forecast Demand Update based on 2019 OPB population projections
- OPB 2020 projections became available in October 2020 and similar to 2019 projections



MOC Population Projections Comparison for 2050 by County

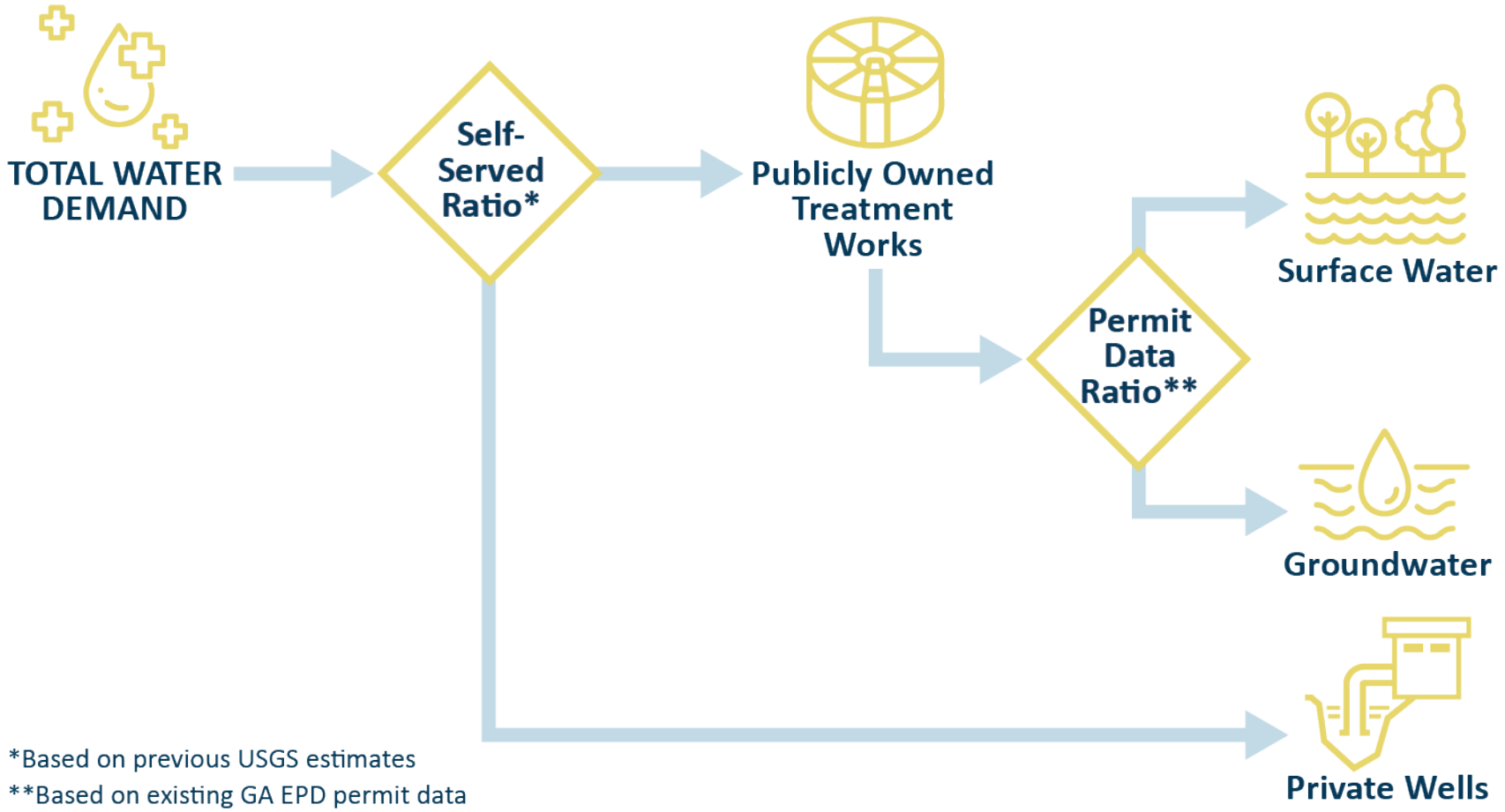
In 2050:

- 7 counties projected to have lower population
- 5 counties projected to have higher population



County Water Demand Methodology

- Some % of county population is self-served (75 gpcd)
- Remainder of population is municipally-supplied
- Each county has unique municipal gpcd (weighted average)



MOC Region Percent Self Supplied

- 2020 % self-supplied taken from USGS 2015 data
- Percentages held constant for the future for most counties
- Self-supplied population assumed to use 75 GPCD (USGS) for most counties
- GPCD is gradually reduced in the future for conservation

County	2017 % Self-Supplied	2020 % Self-Supplied	2060 % Self-Supplied
Bibb	6%	14%	6%
Butts	18%	0.3%	0.3%
Crawford	79%	71%	71%
Houston	3%	5%	5%
Jasper	64%	44%	44%
Jones	54%	46%	29%
Lamar	56%	57%	57%
Monroe	65%	47%	47%
Newton	31%	16%	16%
Peach	31%	35%	22%
Pulaski	40%	53%	30%
Twiggs	77%	72%	72%

MOC Municipal Forecast GPCD

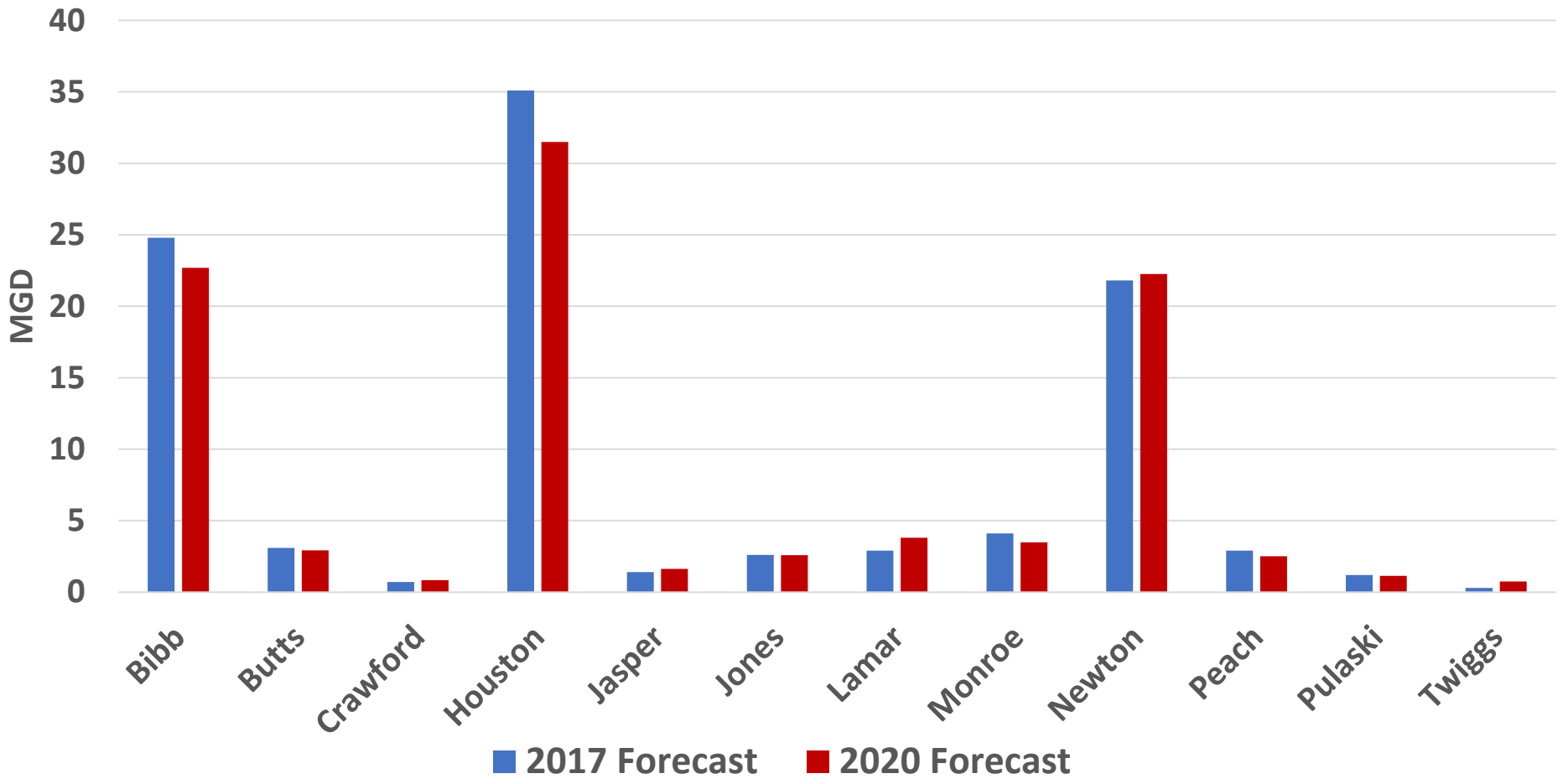
- Updated GPCD by county based on weighted average from 2015 – 2018 Water Loss Audits
- GPCD calculated from State Drinking Water Information System (SDWIS) data if Water Loss Audit data not available
- 7 counties have lower GPCD
- 5 Counties have higher GPCD

County	2017 GPCD	2020 GPCD	Change
Bibb	171	136	-35
Butts	120	90	-30
Crawford	107	96	-11
Houston	166	177	11
Jasper	139	121	-18
Jones	91	106	15
Lamar	193	263	70
Monroe	191	160	-31
Newton	122	144	22
Peach	125	104	-21
Pulaski	146	164	18
Twiggs	125	227	102

MOC Municipal Demand Forecast Comparison for 2050 by County

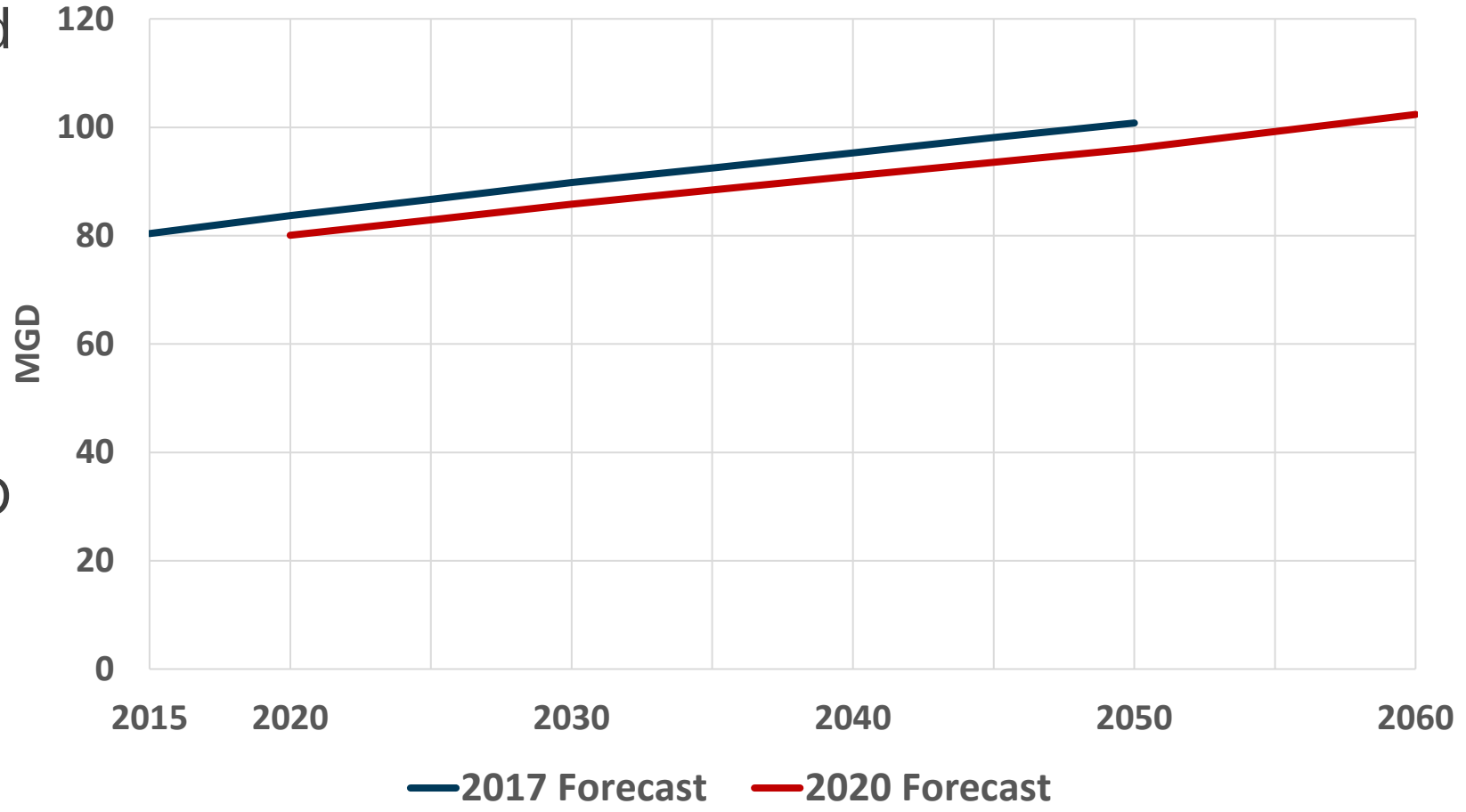
In 2050:

- 7 counties have lower demand
- 4 counties have higher demand
- No change in Newton county



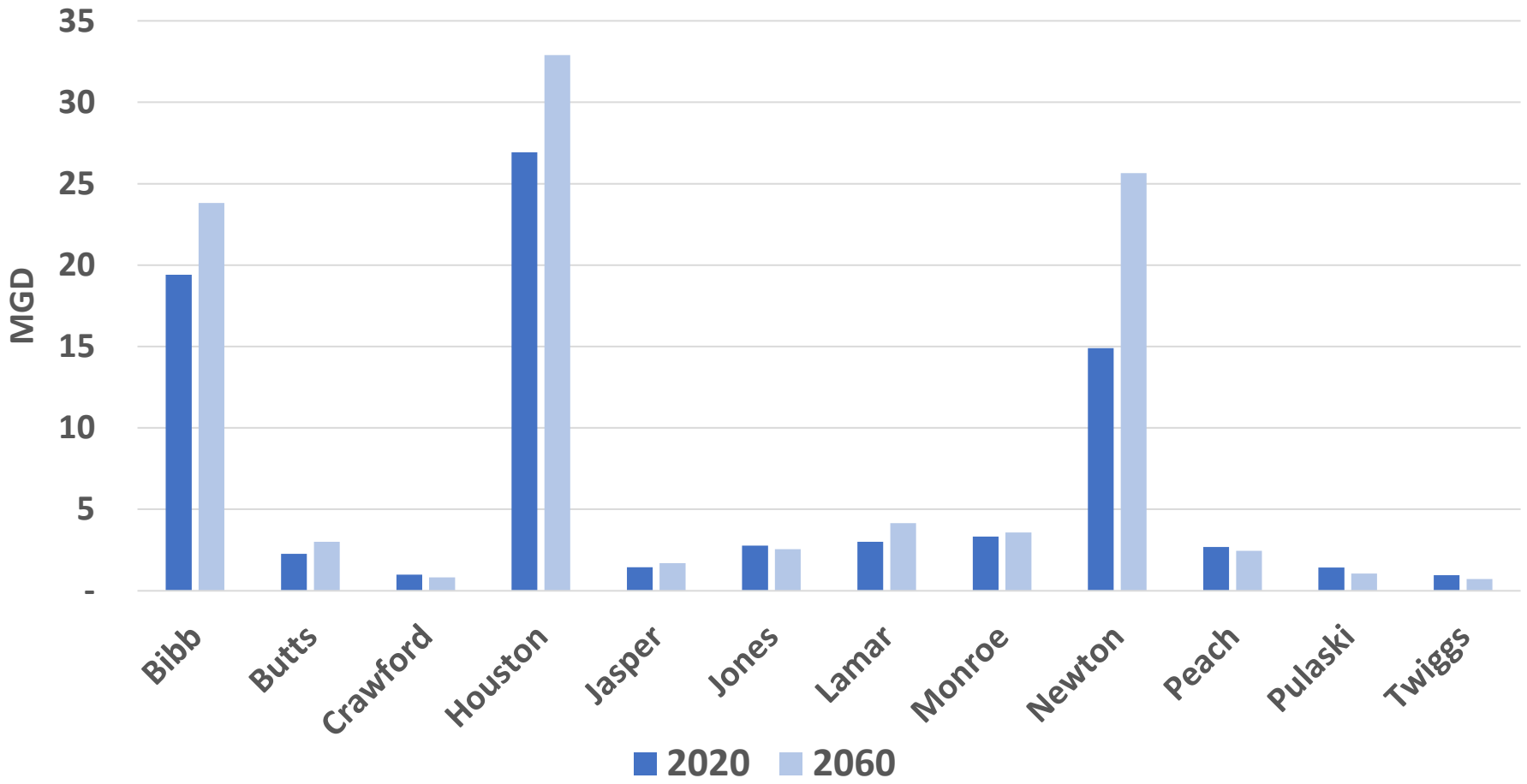
MOC Region Municipal Demand Forecast

- Current (2020) demand is lower than the 2017 forecast
- Population projections are lower by 10% in 2050
- County average GPCD is lower in 50% of the counties



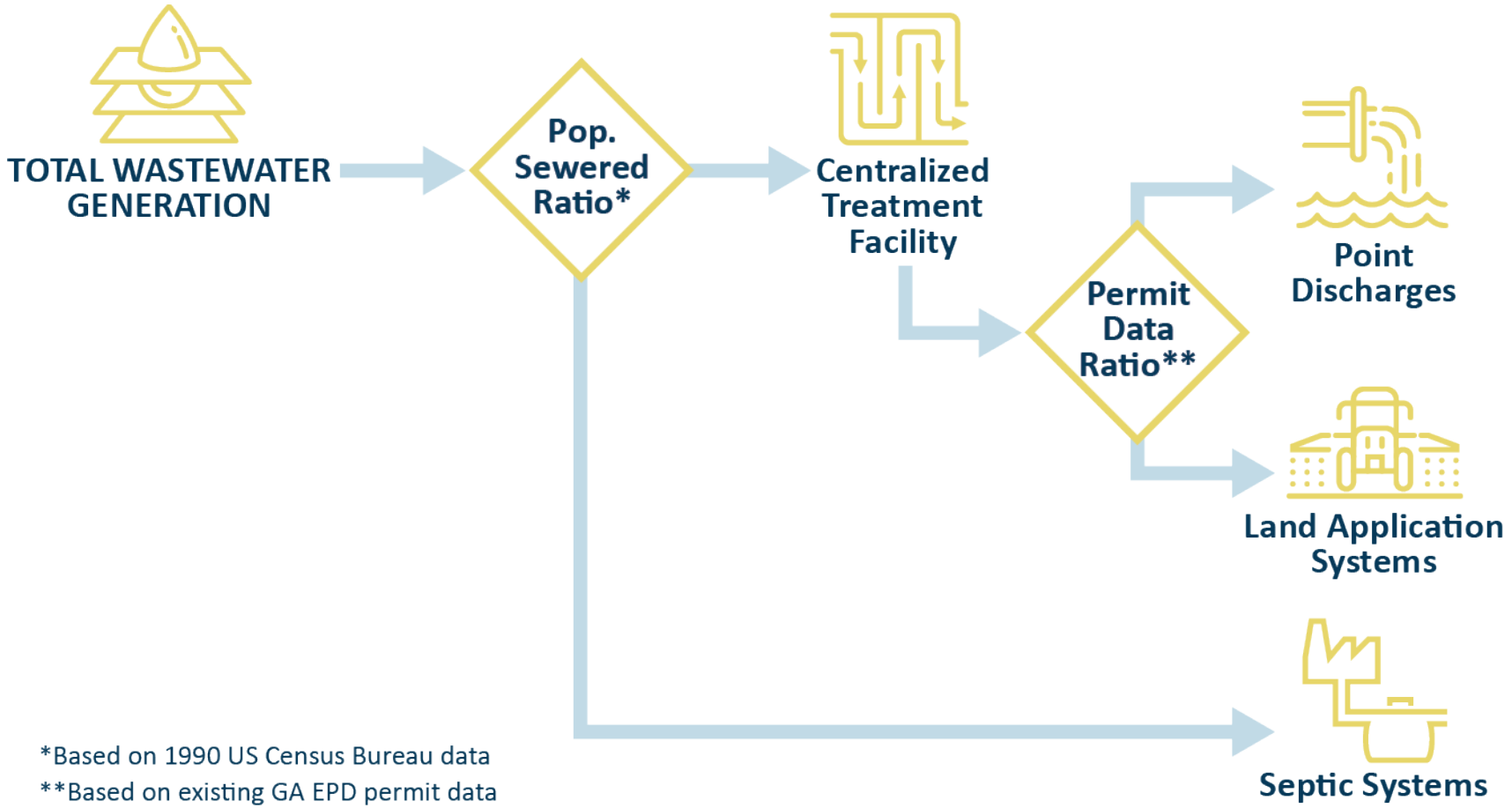
MOC 2020 Municipal Demand Forecast by County

The 2020 Municipal demand forecast shows 5 counties with a decline and 7 with an increase in demand



Municipal Wastewater Methodology

- Septic flow based on % households on septic (80% of use)
- Used 2019 discharges by county
- Applied % change in population
- Maintain same ratio of Point and LAS



*Based on 1990 US Census Bureau data
**Based on existing GA EPD permit data

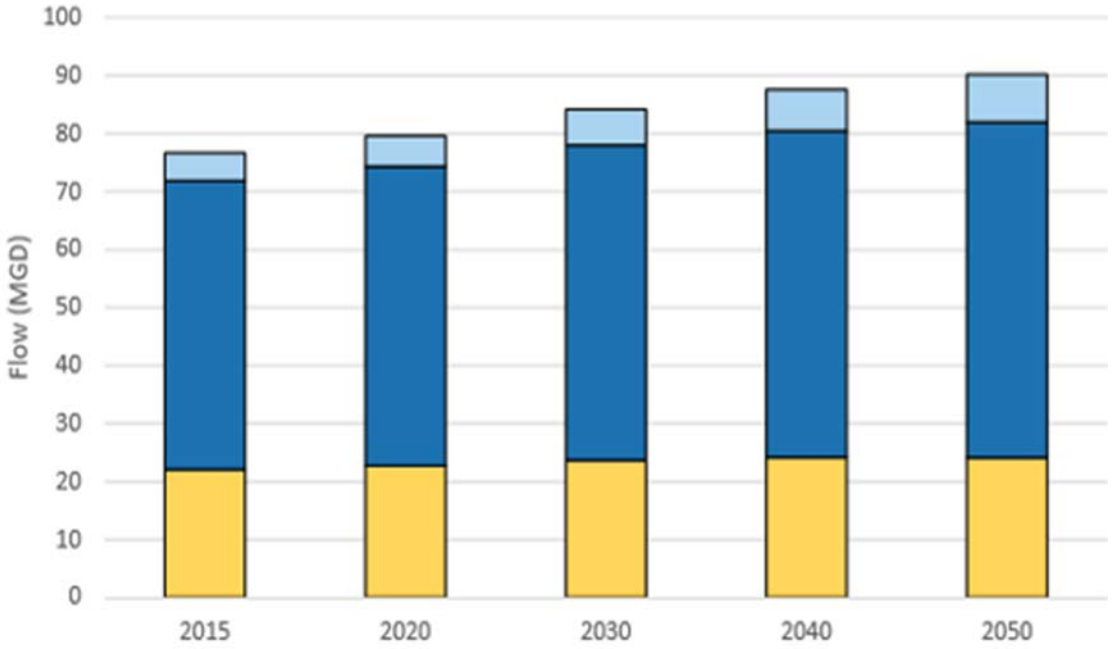
Municipal Wastewater – Septic

- County % population on septic systems
  - Held constant, unless specific input provided
- Values with asterisks are from the 1990 Census housing characteristics for Georgia
- Values w/o asterisks are from Georgia Dept. of Public Health data (through 2018)

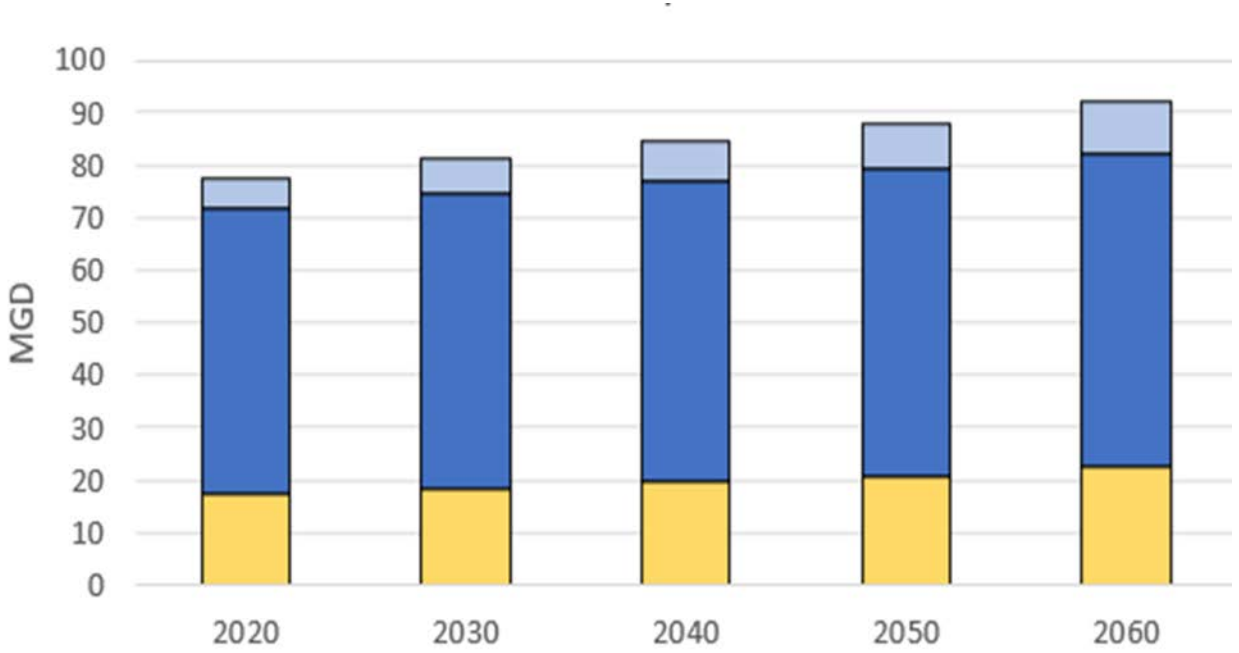
County	2020 % Septic
Bibb	20%
Butts	70%
Crawford	87%
Houston	34%
Jasper	74%
Jones	77%
Lamar	84%
Monroe	70%
Newton	67%
Peach	66%
Pulaski	68%
Twiggs	86%

MOC Municipal Wastewater Forecast

2017 Forecast



2020 Forecast



Septic Point Source LAS

Georgia's State Water Plan

Energy Water Demand Forecast

Energy Demand Forecast Update

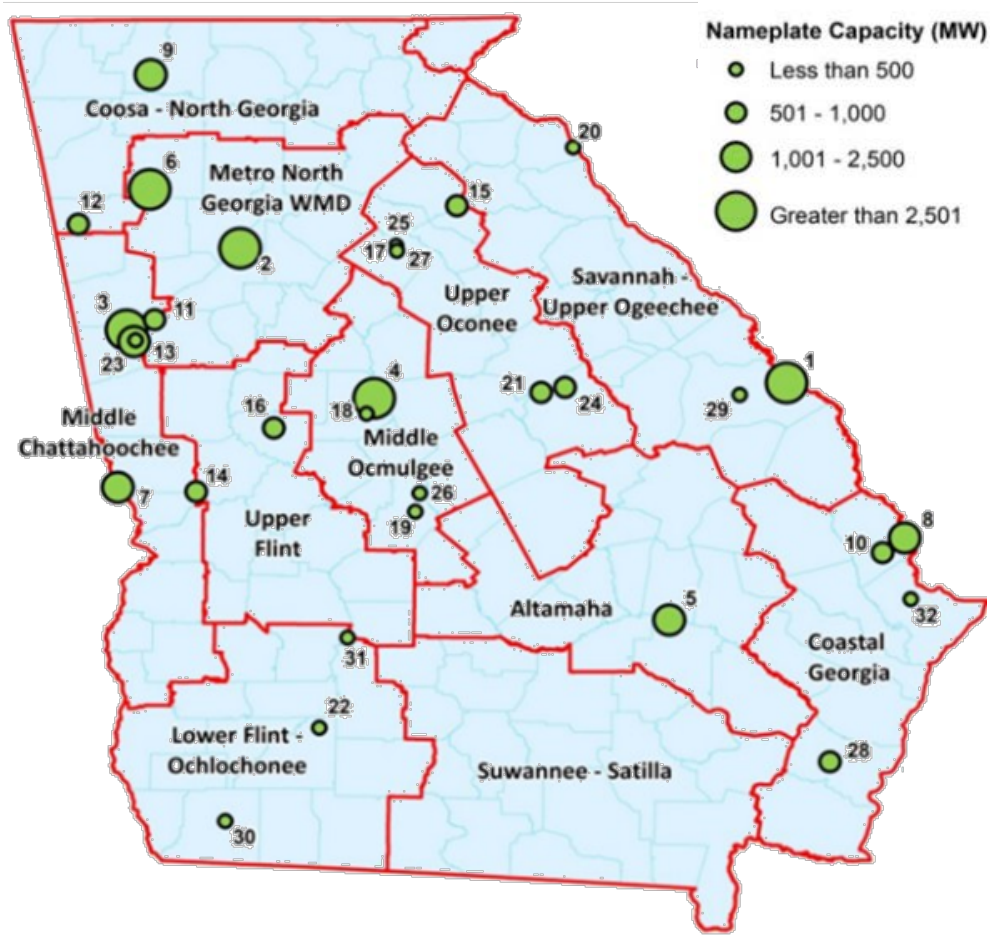
- Convened a stakeholder advisory group representing power companies in the State of Georgia
- Worked with stakeholder group to identify future sources of power generation
- https://waterplanning.georgia.gov/forecasting/energy-water-use

Participating Representatives from:

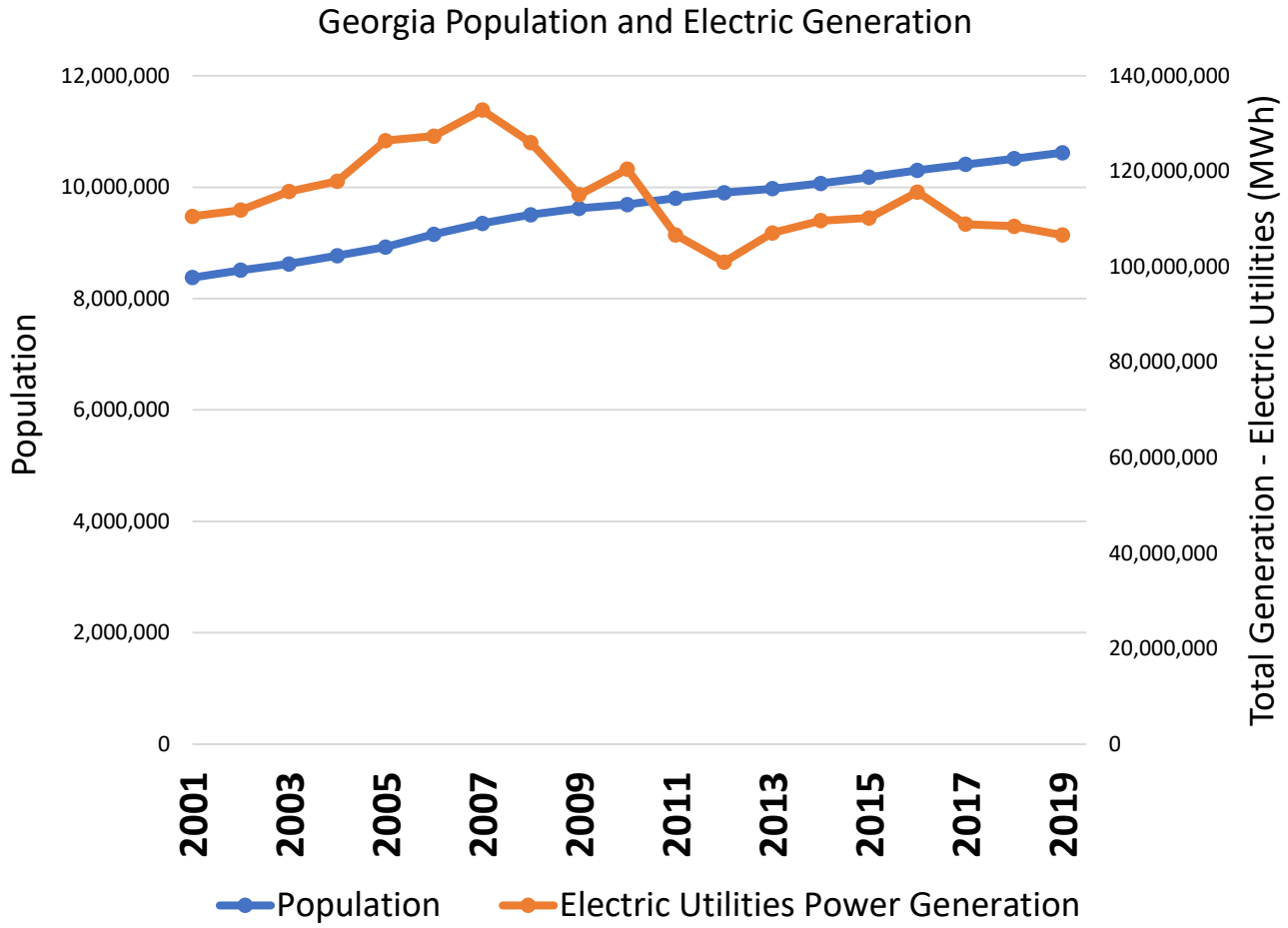
- Georgia Power / Southern Company
- Municipal Electric Authority of Georgia (MEAG)
- Oglethorpe Power Corporation
- Dalton Utilities
- Georgia Public Service Commission
- Georgia Environmental Finance Authority

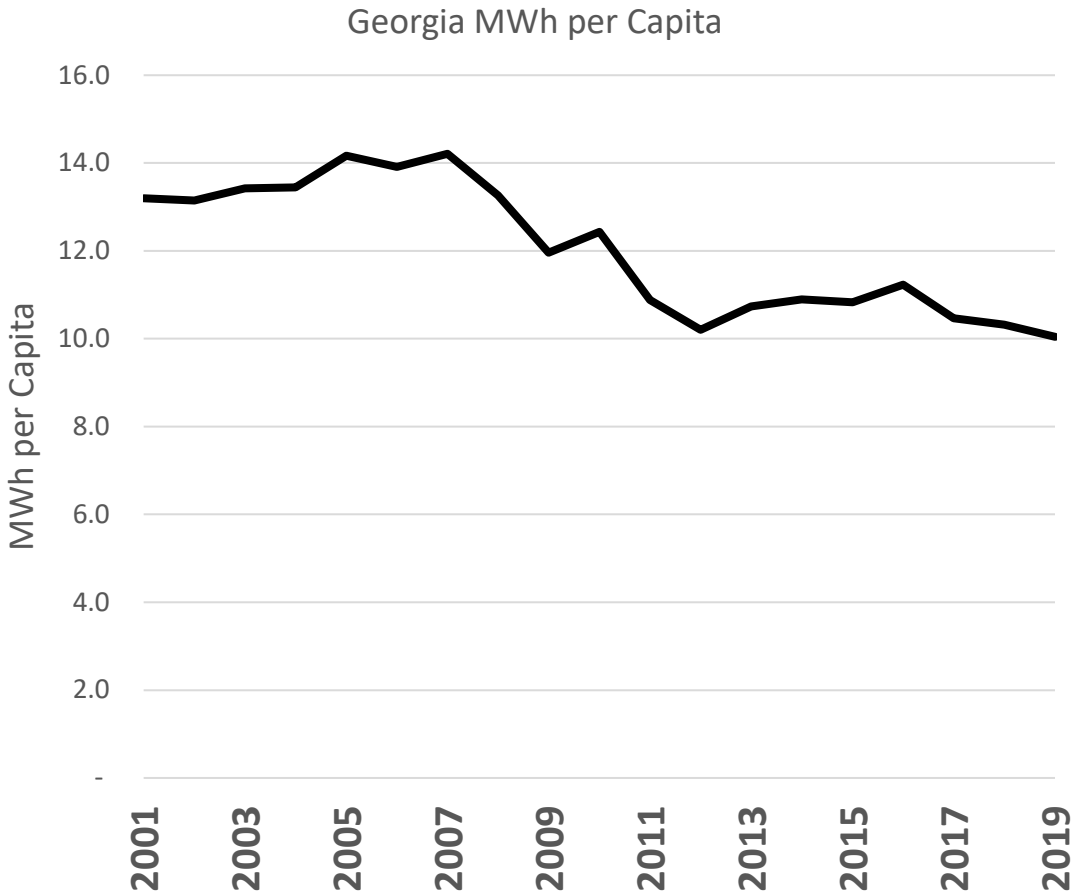
Energy Demand Forecast Update Methodology

- Updated the list of active, retired and planned generating units
- Evaluated historic MWh per capita use
- Estimated need for power generation
- Estimated statewide generation by fuel type
- Applied water use factors by fuel type
- Identified water withdrawals and consumption by facility location



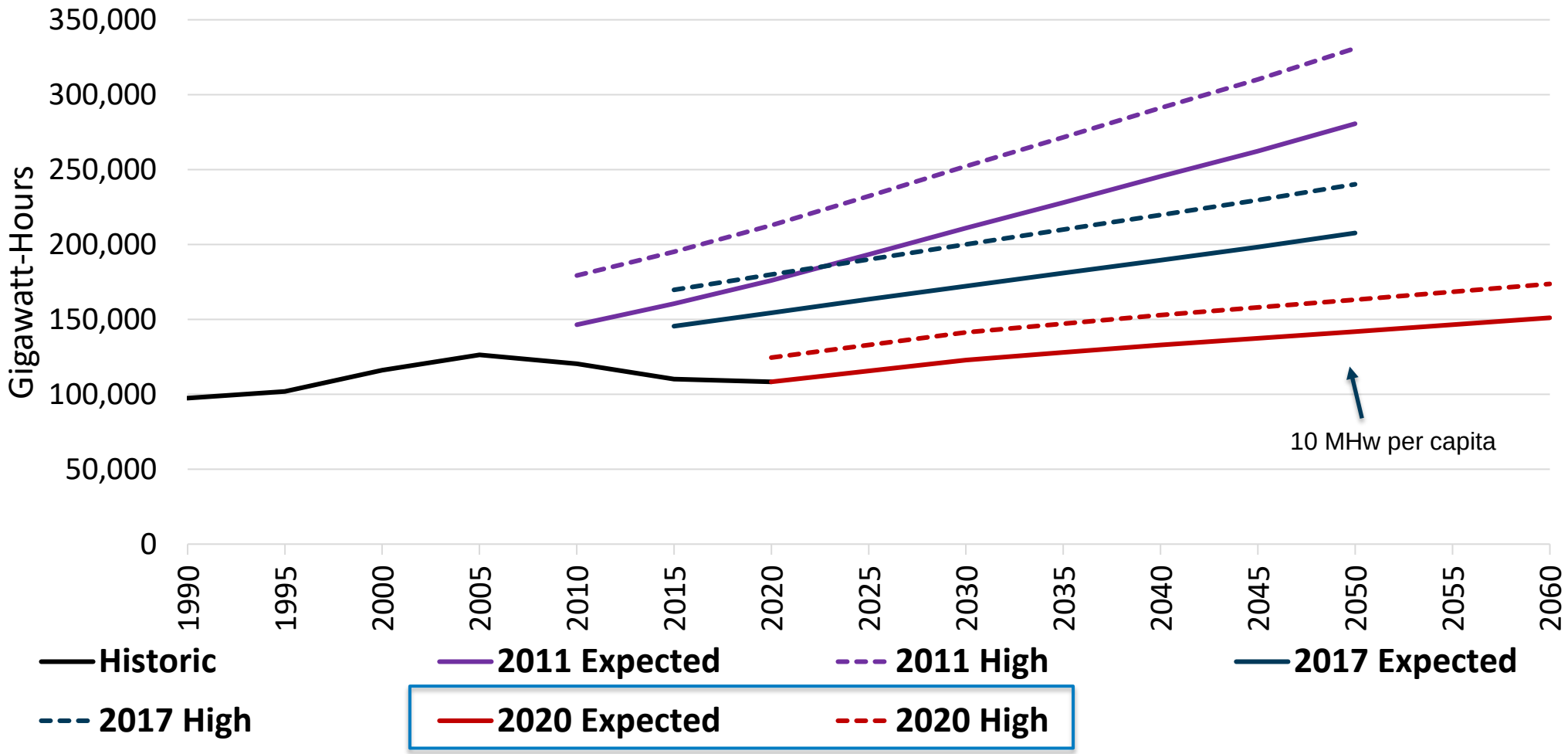
How Much Energy Do Georgians Use?





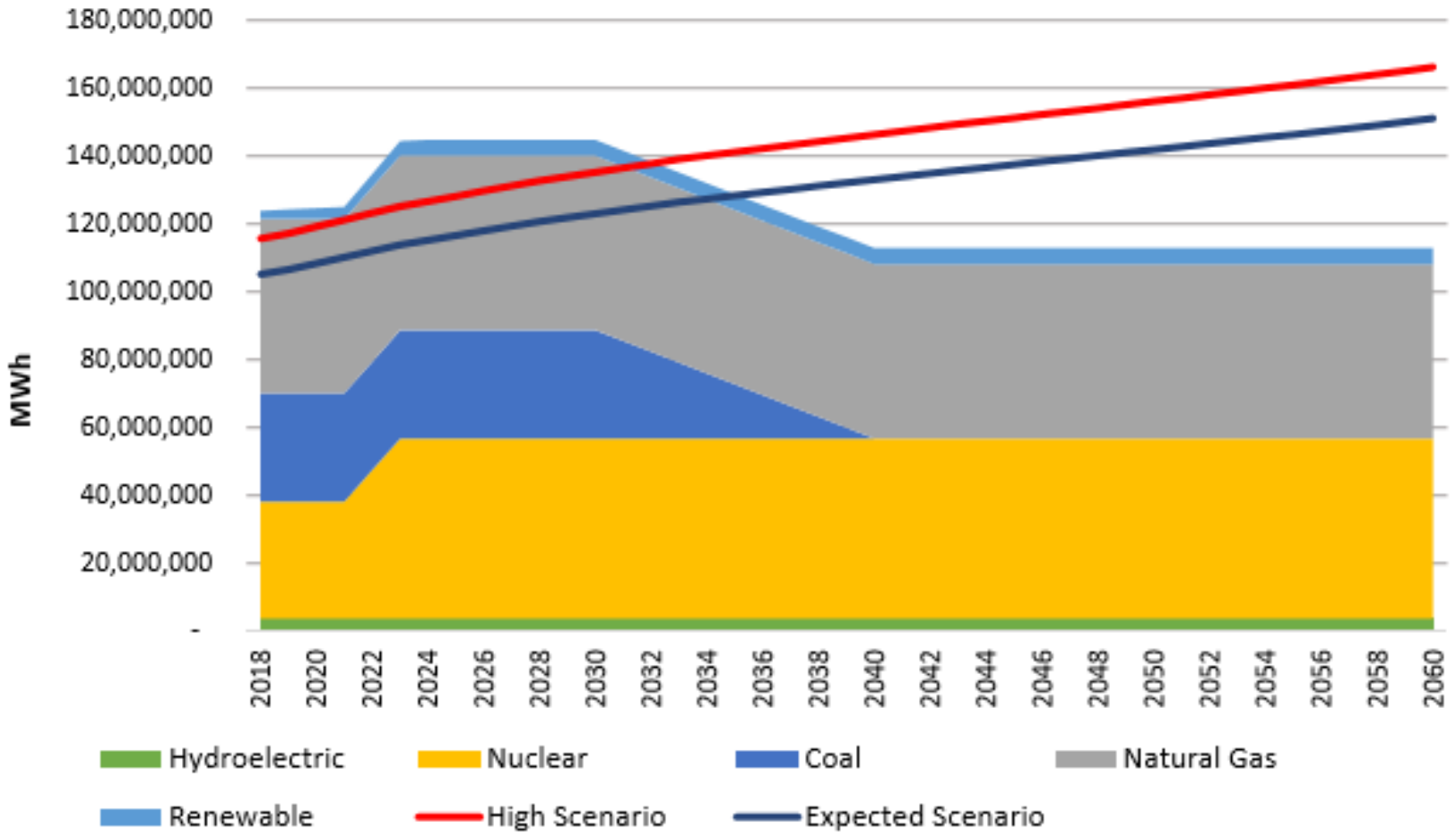
Source: US Census and EIA data for Georgia

How Much Power will Georgia Need?



Using Current Generating Capacity for the Future

- Nuclear generation (yellow) will increase with Vogtle 3&4
- Coal generation (blue) will be phased out in the future
- Both Natural Gas and Renewable assumed to increase to meet the need



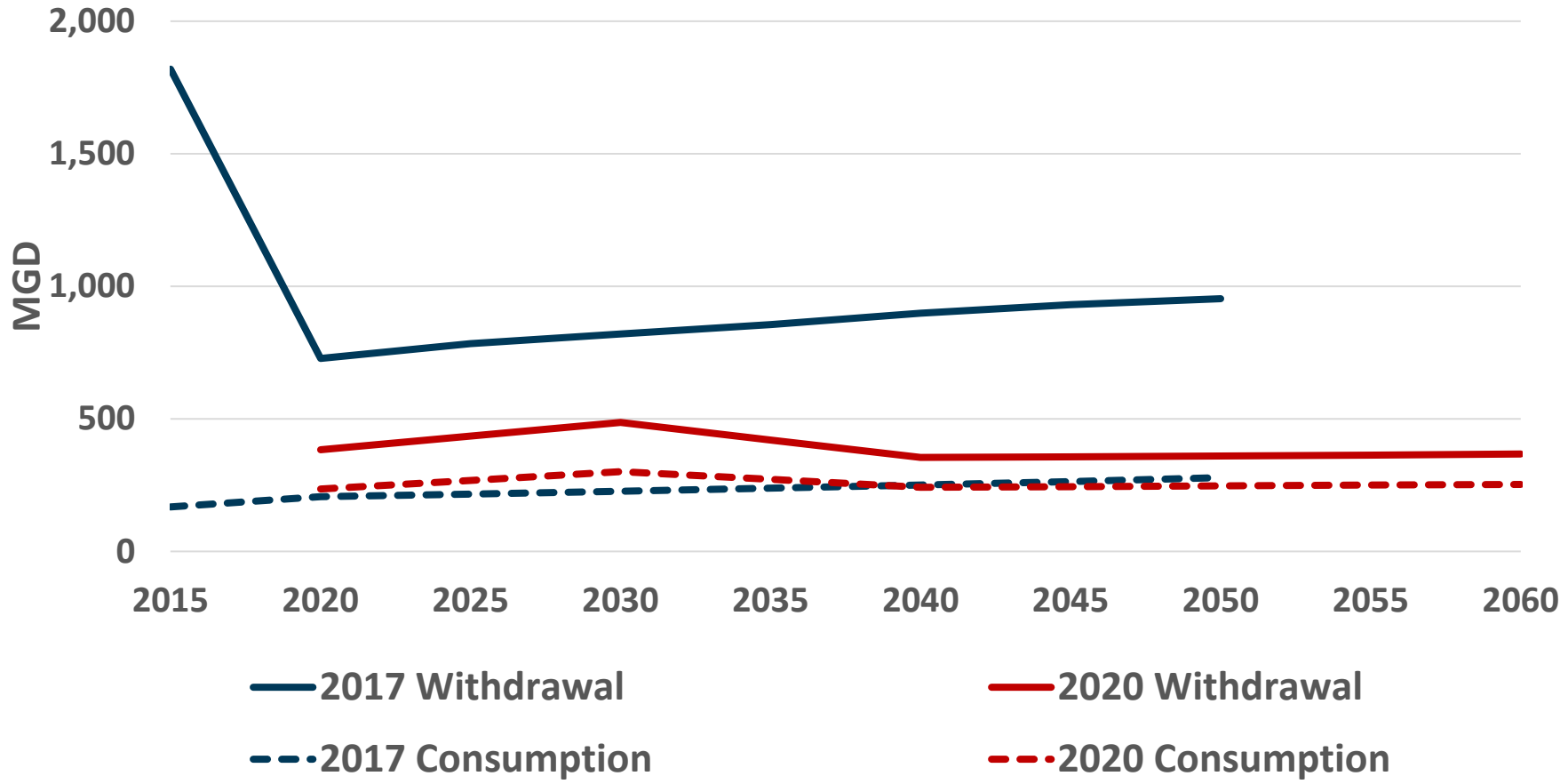
Water Use by Generation Configuration

POWER GENERATING CONFIGURATION	WATER WITHDRAWALS Gal/MWh	WATER CONSUMPTION Gal/MWh
Fossil Fuel/Biomass, Steam Turbine, Once-Through Cooling	41,005	0
Fossil Fuel/Biomass, Steam Turbine, Cooling Tower	1,153	567
Fossil Fuel/Biomass, Gas (Combustion) Turbine	0	0
Natural Gas, Combined-Cycle, Cooling Tower	225	198
Nuclear, Steam Turbine, Cooling Tower	1,372	880

Source: 2003-2007 Averages from EIA and EPD data for Georgia facilities

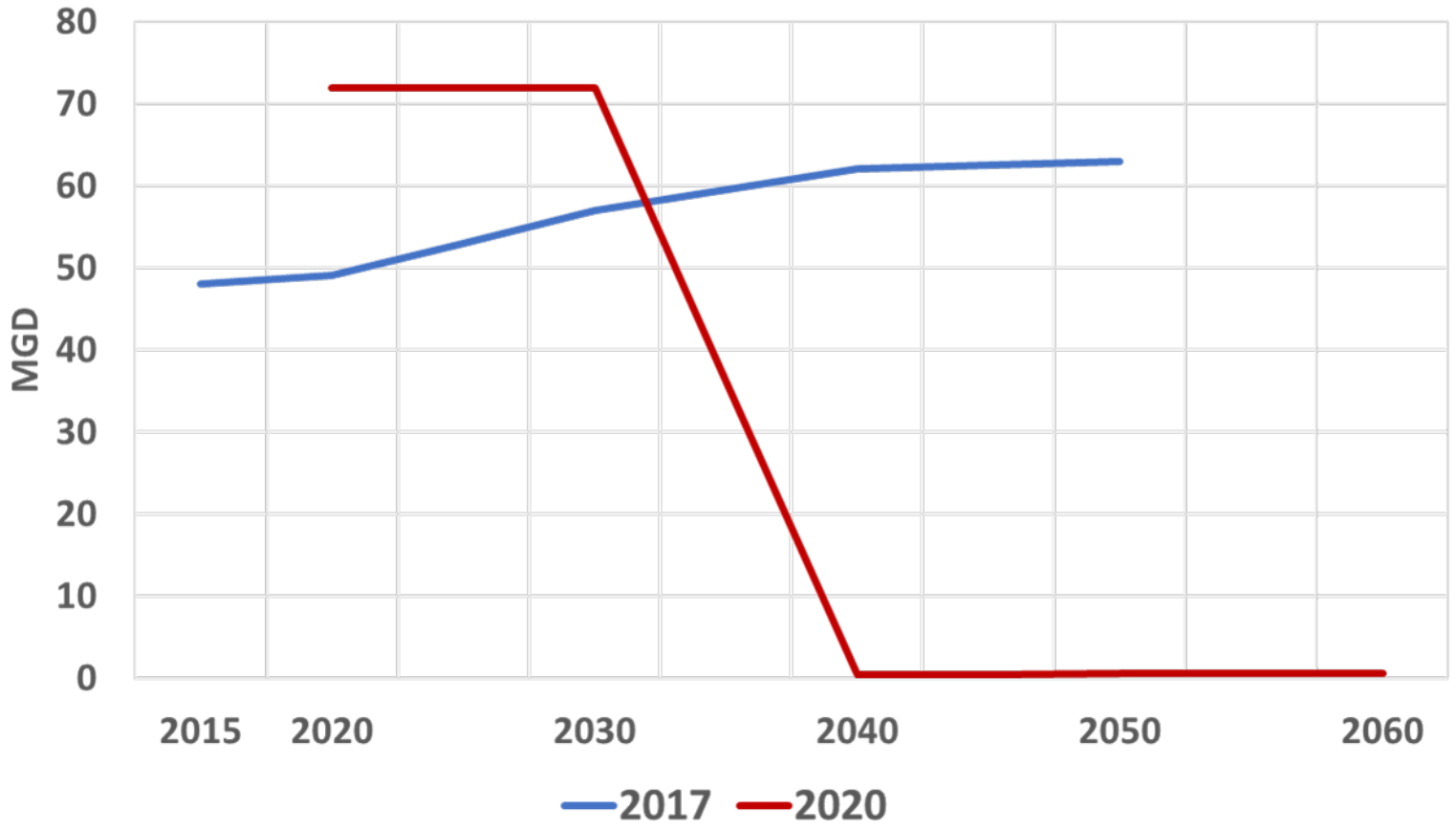
Statewide Energy Water Demand Forecast

- 2017 Forecast has high withdrawals for coal facilities now retired
- 2020 Need (MWh) is lower
- Water per MWh is more efficient



MOC Energy Water Demand Forecast

- Plant Scherer in Monroe County was the only facility identified in the 2017 forecast.
- The 2020 forecast assumes that Plant Scherer will be retired by 2040



Georgia's State Water Plan

Industrial Water Demand Forecast

Industrial Demand Forecast Update

- Updated forecasting methodology based on input from industry representatives from across the state
- No longer based on employment
- Convened industry experts into multiple advisory groups and developed separate estimates
- https://waterplanning.georgia.gov/forecasting/industrial-water-use

Industrial Sub-Sectors:

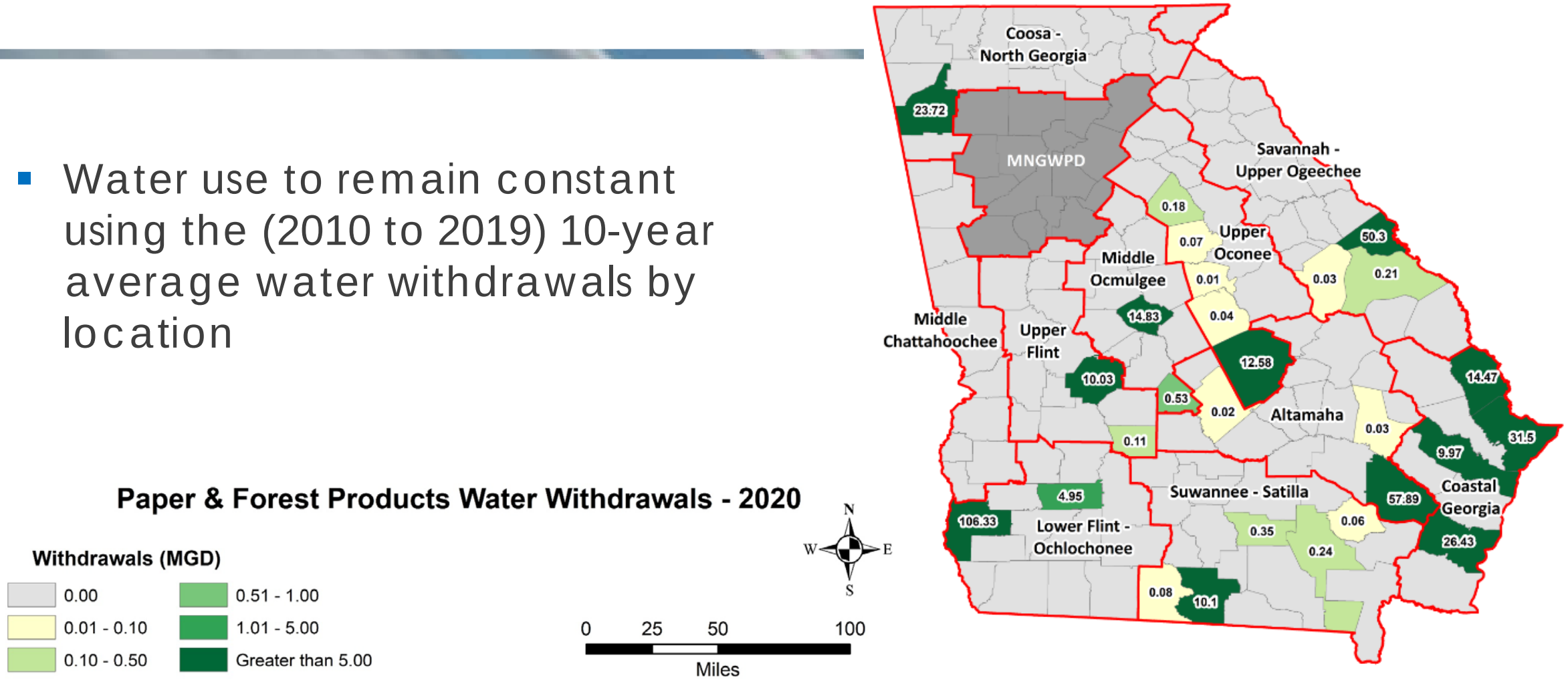
- Paper and Forest Products
- Food Processing
- Manufacturing
- Mining

Industrial Stakeholder Advisory Group

- BASF
- Covia
- Georgia Association of Manufacturers
- Georgia Chemistry Council
- Georgia Department of Economic Development
- Georgia Mining Association
- Georgia Pacific
- Georgia Paper and Forest Products Association
- Georgia Poultry Federation
- Georgia Tech Research Institute
- Gerdau Steel
- Gulfstream Aerospace
- International Paper
- Irving Consumer Products
- Kamin
- Kia Motors
- Milliken and Company
- Mohawk Industries
- Office of Planning and Budget
- Packaging Corporation of America
- Rayonier Performance Fibers
- SAFT, Inc.
- Southwire
- Toyo Tire

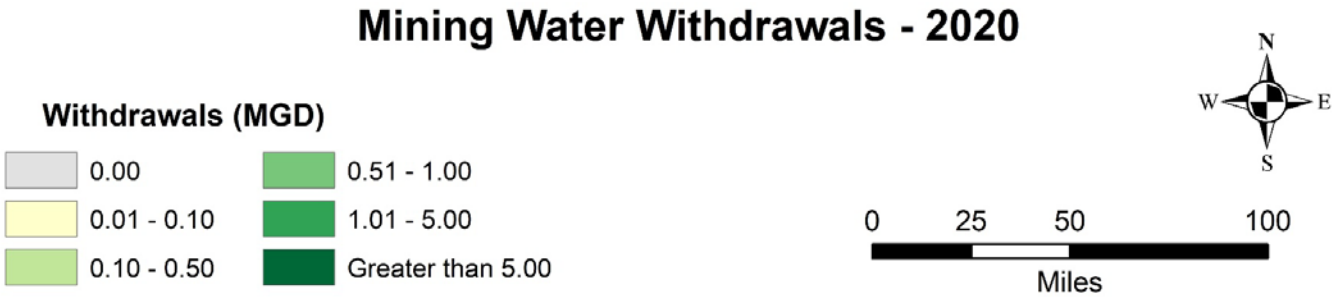
Paper & Forest Products

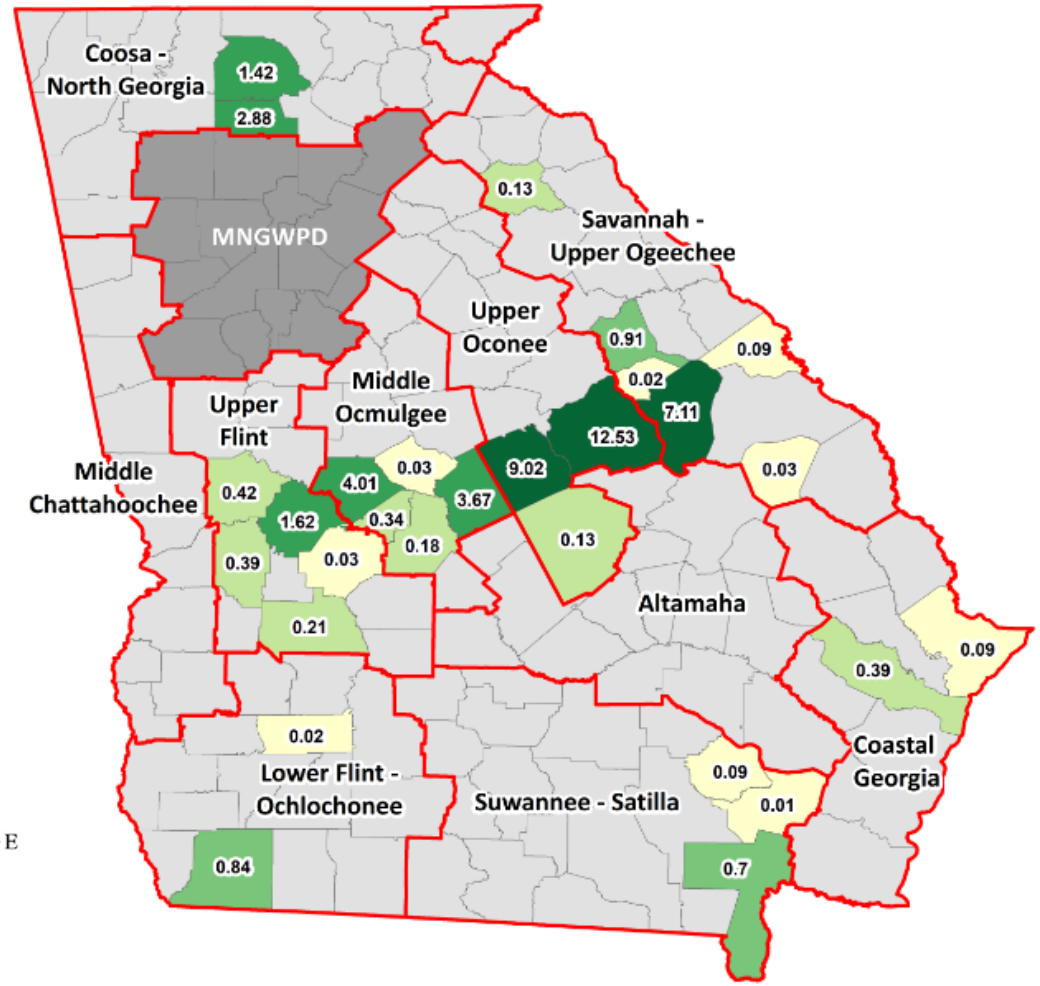
- Water use to remain constant using the (2010 to 2019) 10-year average water withdrawals by location



Mining

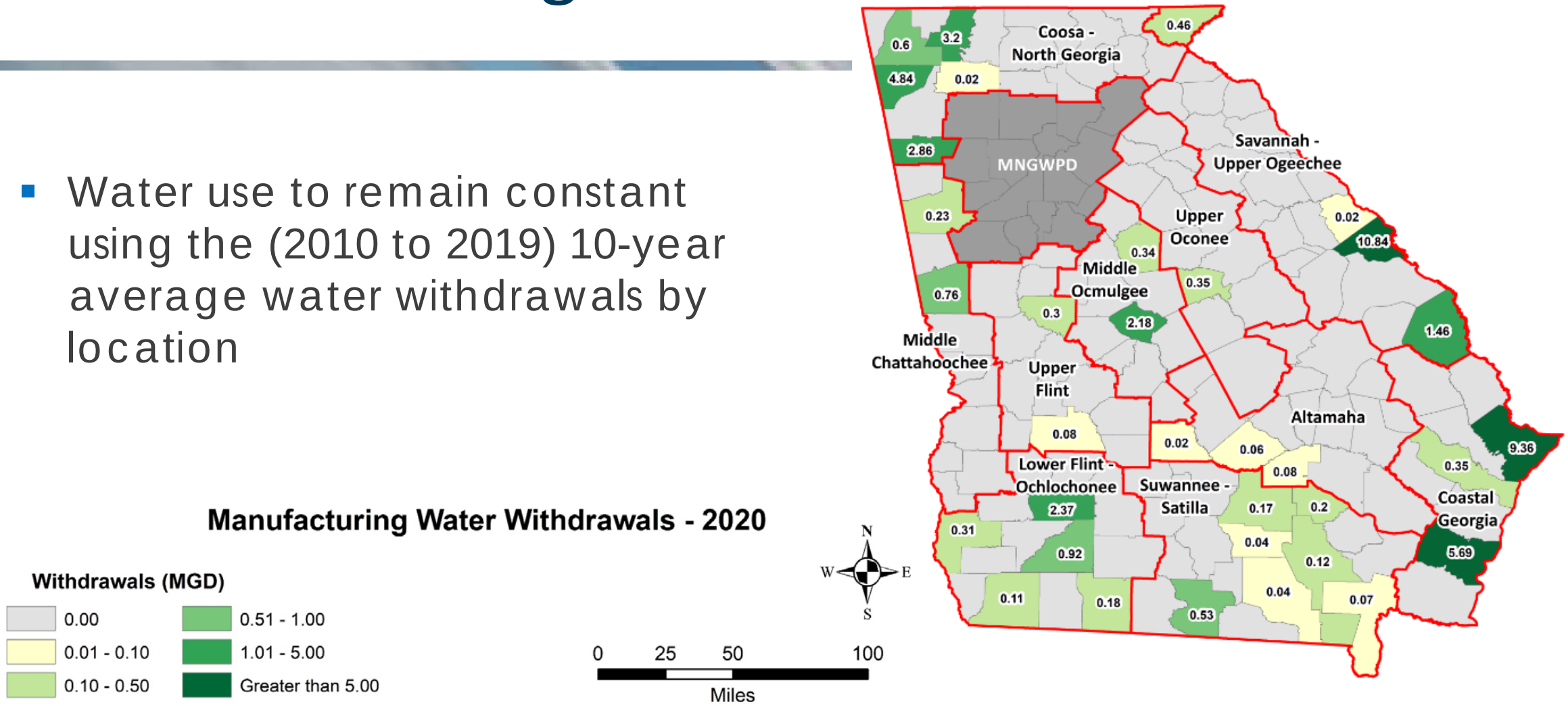
- Water use to remain constant using the (2010 to 2019) 10-year average water withdrawals by location





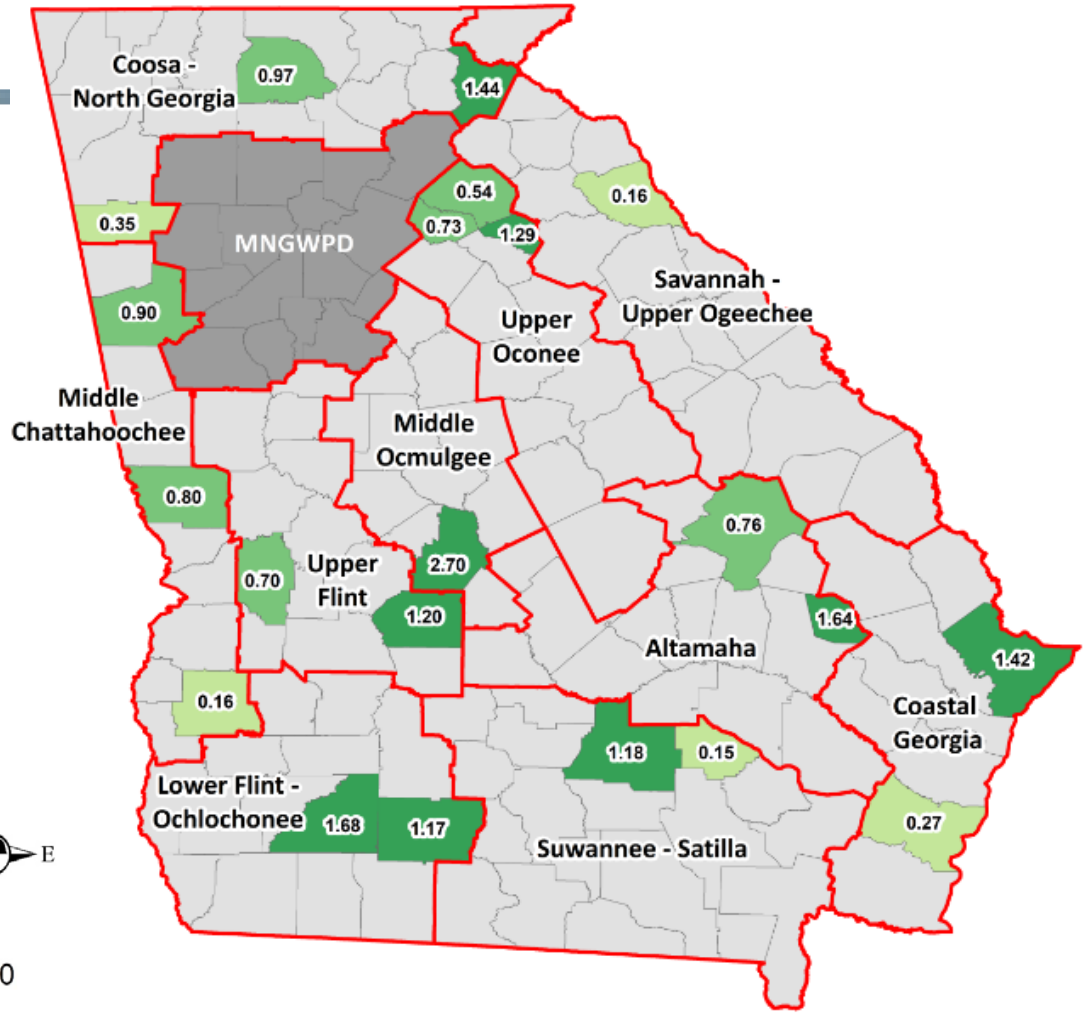
Manufacturing

- Water use to remain constant using the (2010 to 2019) 10-year average water withdrawals by location



Food Processing

- Poultry processing projected to increase
- Non-poultry processing to remain constant at 10-year average water withdrawals



Food Processing Water Withdrawals - 2020

Withdrawals (MGD)

0.00	0.51 - 1.00
0.01 - 0.10	1.01 - 5.00
0.10 - 0.50	Greater than 5.00

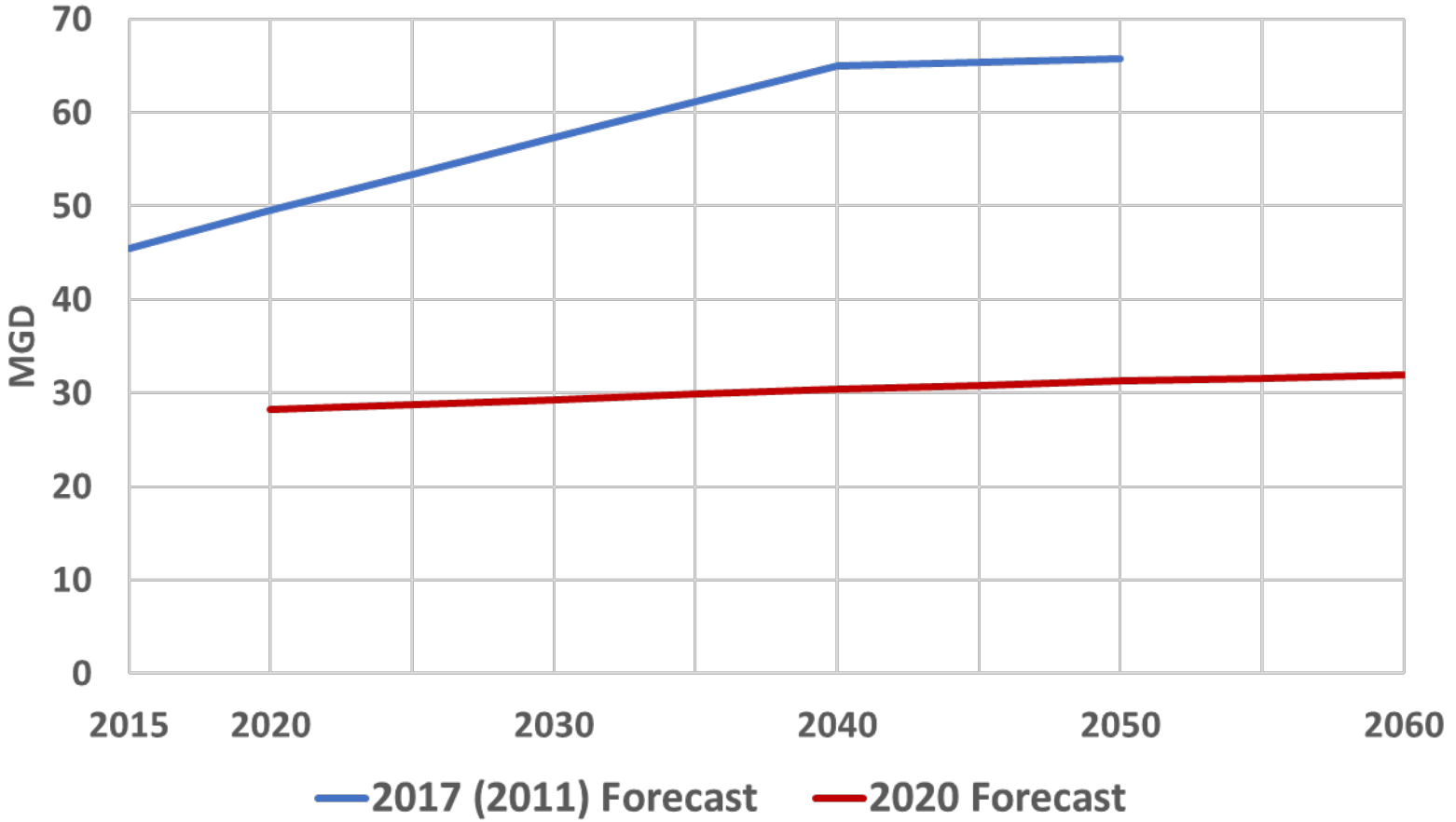
N W E S

0 25 50 100

Miles

MOC - Industrial Forecast

- 2017 forecast is from 2011 RWP, and includes added buffer
- 2017 (2011) based on employment growth projections
- 2020 based on input from local industry experts

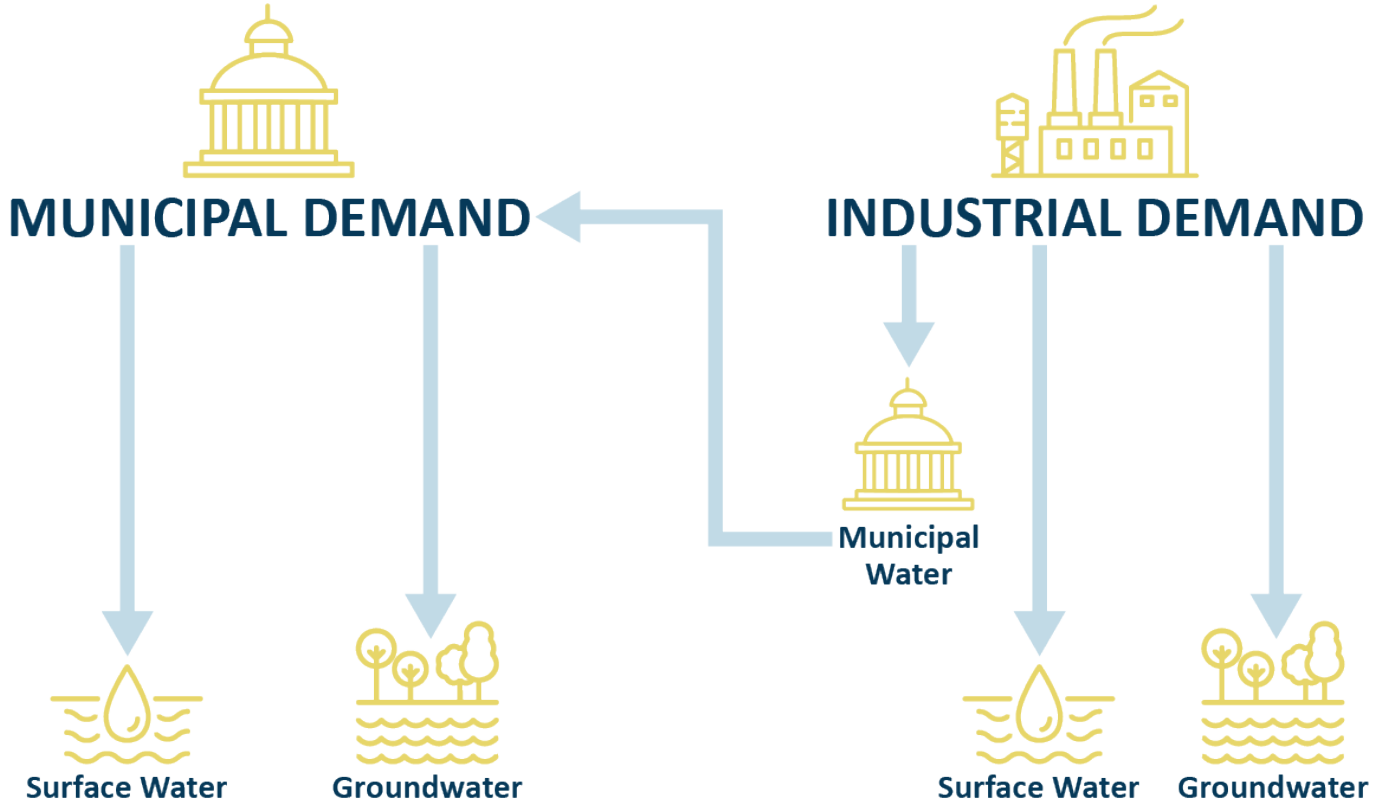


Coordination with Municipal Water Demand Forecast

- Shared information with municipal forecast team where municipal water use is identified and greater than 0.2 MGD

Are we double counting?

- If we add Municipal and Industrial demand, yes
- If we add surface water and groundwater demand, no



Georgia's State Water Plan

Agricultural Water Demand Forecast

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Water Demand Forecasting – Agricultural

- Georgia Water Planning & Policy Center at Albany State University, along with modeling support from UGA, will be updating this sector forecast
- Forecast includes irrigated land and other agricultural uses
- Estimates of irrigation water use informed by estimates of wetted acreage and irrigation use
- Forecasts informed by economic models that look at crop projections