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

![Bar chart showing water demands by county](image)

**Figure 7-3**
County Water Demand by Sector for 2015
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
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
In 2050:

- 7 counties projected to have lower population
- 5 counties projected to have higher population
Some % of county population is self-served (75 gpcd)

Remainder of population is municipally-supplied

Each county has unique municipal gpcd (weighted average)
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

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

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

![Graph showing MGD (million gallons per day) for 2017 and 2020 forecasts for different counties. The graph indicates a comparison between 2017 and 2020 forecasts with bars for each county representing the forecasted MGD.]
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.
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)

<table>
<thead>
<tr>
<th>County</th>
<th>2020 % Septic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibb</td>
<td>20%</td>
</tr>
<tr>
<td>Butts</td>
<td>70%</td>
</tr>
<tr>
<td>Crawford</td>
<td>87%</td>
</tr>
<tr>
<td>Houston</td>
<td>34%</td>
</tr>
<tr>
<td>Jasper</td>
<td>74%</td>
</tr>
<tr>
<td>Jones</td>
<td>77%</td>
</tr>
<tr>
<td>Lamar</td>
<td>84%</td>
</tr>
<tr>
<td>Monroe</td>
<td>70%</td>
</tr>
<tr>
<td>Newton</td>
<td>67%</td>
</tr>
<tr>
<td>Peach</td>
<td>66%</td>
</tr>
<tr>
<td>Pulaski</td>
<td>68%</td>
</tr>
<tr>
<td>Twiggs</td>
<td>86%</td>
</tr>
</tbody>
</table>
MOC Municipal Wastewater Forecast

2017 Forecast

2020 Forecast

Flow (MGD)

Septic  Point Source  LAS

MGD
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](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?

**Georgia Population and Electric Generation**

- **Population**
  - Blue line

- **Electric Utilities Power Generation**
  - Orange line

**Georgia MWh per Capita**


*Source: US Census and EIA data for Georgia*
How Much Power will Georgia Need?

10 MHw per capita

Gigawatt-Hours

Historic
2011 Expected
2011 High
2017 Expected
2017 High
2020 Expected
2020 High

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

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

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.
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](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
- Southwire
- Toyo Tire
Paper & Forest Products

- Water use to remain constant using the (2010 to 2019) 10-year average water withdrawals by location
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
- 0.01 - 0.10
- 0.10 - 0.50
- 0.51 - 1.00
- 1.01 - 5.00
- Greater than 5.00

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
Agricultural Water Demand Forecast
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.