Georgia’s State Water Plan

Upper Oconee Regional Water Planning Council
September 30, 2020

www.georgiawaterplanning.org
Upper Oconee Council Meeting

Welcome and Introductions

Approve Meeting Summary from Oct. 24, 2018

Approve Today’s Draft Agenda
Population Projections and Forecasting Update

- **Population Projections**
  - Michelle Vincent, Jacobs

- **Status of Forecasting Process**
  - Ania Truszczynski, EPD
Population Projections
Updated Population Projections

- State and County population projections are prepared by the Governor’s Office of Planning and Budget (OPB) [https://opb.georgia.gov/](https://opb.georgia.gov/)
- 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
Basic Approach to Population Projections (The Cohort-Component Method)

Future Population = Base Year Population + Births - Deaths + Net Migration

- Fertility and death rates updated using 2013 – 2017 county-level data by Carl Vinson Institute
- Migration rates updated using:
  - U.S. Census Bureau’s annual population estimates and components of change
  - Data from the U.S. Census Bureau’s 2006-2010 American Community Survey
Population Growth Projections - Statewide

- Historic Population
- 2010 Projection
- 2015 Projection
- 2019 Projection

The graph shows the population growth from 1880 to 2060, with projections extending to 2060.
Regional Population Growth – Upper Oconee
<table>
<thead>
<tr>
<th>County</th>
<th>2018</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>2050</th>
<th>2060</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin County</td>
<td>44,564</td>
<td>44,428</td>
<td>43,637</td>
<td>41,221</td>
<td>38,125</td>
<td>35,806</td>
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<tr>
<td>Barrow County</td>
<td>80,313</td>
<td>86,383</td>
<td>116,916</td>
<td>149,706</td>
<td>189,385</td>
<td>239,941</td>
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<tr>
<td>Clarke County</td>
<td>126,907</td>
<td>129,779</td>
<td>146,104</td>
<td>158,840</td>
<td>168,872</td>
<td>181,071</td>
</tr>
<tr>
<td>Greene County</td>
<td>17,610</td>
<td>18,717</td>
<td>22,546</td>
<td>24,505</td>
<td>27,014</td>
<td>30,982</td>
</tr>
<tr>
<td>Hancock County</td>
<td>8,317</td>
<td>8,193</td>
<td>7,637</td>
<td>7,004</td>
<td>6,557</td>
<td>6,482</td>
</tr>
<tr>
<td>Jackson County</td>
<td>69,962</td>
<td>74,700</td>
<td>95,493</td>
<td>115,088</td>
<td>136,627</td>
<td>160,808</td>
</tr>
<tr>
<td>Laurens County</td>
<td>47,325</td>
<td>47,296</td>
<td>47,405</td>
<td>46,964</td>
<td>45,989</td>
<td>45,193</td>
</tr>
<tr>
<td>Morgan County</td>
<td>18,855</td>
<td>19,138</td>
<td>20,757</td>
<td>22,438</td>
<td>24,206</td>
<td>26,328</td>
</tr>
<tr>
<td>Oconee County</td>
<td>39,272</td>
<td>41,737</td>
<td>52,926</td>
<td>63,566</td>
<td>75,060</td>
<td>87,460</td>
</tr>
<tr>
<td>Putnam County</td>
<td>21,809</td>
<td>21,885</td>
<td>22,308</td>
<td>22,341</td>
<td>22,478</td>
<td>23,209</td>
</tr>
<tr>
<td>Walton County</td>
<td>93,503</td>
<td>95,814</td>
<td>109,179</td>
<td>124,621</td>
<td>141,993</td>
<td>162,652</td>
</tr>
<tr>
<td>Washington County</td>
<td>20,387</td>
<td>20,302</td>
<td>20,009</td>
<td>19,452</td>
<td>18,595</td>
<td>18,066</td>
</tr>
<tr>
<td>Wilkinson County</td>
<td>9,044</td>
<td>8,919</td>
<td>8,361</td>
<td>7,791</td>
<td>7,095</td>
<td>6,665</td>
</tr>
<tr>
<td><strong>Upper Oconee Totals:</strong></td>
<td><strong>597,868</strong></td>
<td><strong>617,291</strong></td>
<td><strong>713,278</strong></td>
<td><strong>803,537</strong></td>
<td><strong>901,996</strong></td>
<td><strong>1,024,663</strong></td>
</tr>
</tbody>
</table>
Incorporating the 2020 Census

Data from the 2020 Census will be available in late 2021 or 2022; population projections based on 2020 Census data will be incorporated into 2026 Regional Plan update.
Status of Forecasting Process
Water Demand Forecasting

- 4 Sectors of Water Demand Forecasts
  - Municipal
  - Industrial
  - Energy
  - Agricultural
    Stakeholder Groups Convened
    Forecasts completed by Dec. 2020
    Albany State/UGA; to be completed by March 2021

- Water Demand Forecasts will extend out to 2060
Status of Municipal Sector Forecast
Municipal Water Demand Forecasting

- Municipal Forecasting Stakeholder Group
  - Includes one representative from each Council & the Metro Water District (Hunter Bicknell represents Upper Oconee Council)
  - Stakeholder Meetings held on April 16 and June 3
    - Reviewed methodology and initial data collection
    - Reviewed draft forecast results
  - Next meeting to be held this fall (date TBD)
- Forecast being prepared by Black & Veatch team
- Information from Industrial forecasting efforts will inform this forecast (municipally-supplied industries)
Status of Industrial Sector Forecast
Introductory Kickoff Meeting held June 3, 2020

Participating Industrial Stakeholders:

- Industry Trade Groups:
  - Georgia Poultry Federation
  - Georgia Mining Association
  - Georgia Paper and Forest Products Association
  - Georgia Association of Manufacturers
  - Georgia Chemistry Council
- Governor’s Office of Planning and Budget
- Georgia Department of Economic Development
- Georgia Tech Research Institute

- Representatives from a cross-section of industries, including:
  - International Paper
  - Mohawk Industries
  - Gulfstream
  - BASF
  - KIA Motors
  - Rayonier Performance Fibers
  - Packaging Corp. of America
Industrial Water Demand Forecasting

- Industrial Forecasting Stakeholder Group
  - Initial stakeholder meeting held on June 3
  - Developed subgroups by major sectors to further inform data and methodology:
    - Poultry & Food Processing
    - Mining
    - Paper and Forest Products
    - Manufacturing

- Expected completion of draft forecast by October
Industrial Water Demand Forecast Coordination

Coordination with Municipal Water Demand Forecast

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

Georgia Department of Economic Development (GDED)

- Coordination with GDED on industry trends and available data to inform the forecast
- If specific information about the locations/amounts of water needs from new industries is available, it will be incorporated in the forecast
Status of Energy Sector Forecast
Energy Water Demand Forecasting Stakeholder Group

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
Purpose of Energy Stakeholder Group

- Provide input on the methodology used to estimate future water demand for thermoelectric power generation

- Review and provide input on:
  - Available data
  - Updated list of thermoelectric facilities
  - Method for statewide energy generation estimate
  - Estimation of water withdrawal and consumption forecast by facility
Where We Are in the Process

**EPD & Planning Contractor**
- Refined estimate of statewide need for energy
- Estimated future generation by configuration type to meet future need
- Estimated need for additional capacity if necessary
- Estimated future withdrawal & consumption by location

**Stakeholders**
- Provided feedback on materials presented at April 29th kickoff meeting
- Reviewed draft forecast technical memorandum (TM) from 7/28/20
- Participated in follow-up meeting on August 14th to discuss draft forecast and provided feedback
- CDM Smith/EPD addressing stakeholder comments to finalize forecast TM
Status of Agricultural Sector Forecast
Water Demand Forecasting – Agricultural

- Georgia Water Planning & Policy Center at Albany State University will be updating this sector forecast
- Forecast includes irrigated land and other agricultural uses
  - Nurseries, animal operations, golf course irrigation
- Estimates of irrigation water use informed by estimates of wetted acreage and irrigation use
  - Wetted acreage informed by aerial surveys and site visits
  - Irrigation use informed by meters and crop types
- Forecasts informed by economic models that look at crop projections (UGA conducts this modeling)
Municipal Water Demand Forecast
Municipal Water Demands

Total Water Demand

<table>
<thead>
<tr>
<th>Self-served Ratio*</th>
<th>Publicly Owned Treatment Works</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Permit Data Ratio**</td>
</tr>
<tr>
<td></td>
<td>Surface Water</td>
</tr>
<tr>
<td></td>
<td>Groundwater</td>
</tr>
<tr>
<td></td>
<td>Private Wells</td>
</tr>
</tbody>
</table>

*Based on previous USGS estimates
**Based on existing GA EPD permit data
Municipal Water Demands – Self Supplied

- County % population self-supplied water (groundwater wells)

  - The % self supplied will remain constant into the future, unless County-specific information is received.

<table>
<thead>
<tr>
<th>County</th>
<th>2017 Plan Percent Population Self Supplied</th>
<th>Self Supplied Per Capita</th>
<th>Updated Percent Population Self Supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin</td>
<td>1%</td>
<td>75</td>
<td>8%</td>
</tr>
<tr>
<td>Barrow</td>
<td>47%</td>
<td>75</td>
<td>41%</td>
</tr>
<tr>
<td>Clarke</td>
<td>0%</td>
<td>75</td>
<td>1%</td>
</tr>
<tr>
<td>Greene</td>
<td>24%</td>
<td>75</td>
<td>39%</td>
</tr>
<tr>
<td>Hancock</td>
<td>37%</td>
<td>75</td>
<td>9%</td>
</tr>
<tr>
<td>Jackson</td>
<td>5%</td>
<td>75</td>
<td>19%</td>
</tr>
<tr>
<td>Laurens</td>
<td>47%</td>
<td>75</td>
<td>48%</td>
</tr>
<tr>
<td>Morgan</td>
<td>54%</td>
<td>75</td>
<td>57%</td>
</tr>
<tr>
<td>Oconee</td>
<td>40%</td>
<td>75</td>
<td>32%</td>
</tr>
<tr>
<td>Putnam</td>
<td>40%</td>
<td>75</td>
<td>11%</td>
</tr>
<tr>
<td>Walton</td>
<td>46%</td>
<td>75</td>
<td>28%</td>
</tr>
<tr>
<td>Washington</td>
<td>46%</td>
<td>75</td>
<td>40%</td>
</tr>
<tr>
<td>Wilkinson</td>
<td>30%</td>
<td>75</td>
<td>28%</td>
</tr>
</tbody>
</table>

1 Ratios as shown in the Estimated Use of Water in Georgia for 2015 and Water Use Tends, 1985-2015 (USGS, 2019).
Municipal Water Demands – Public Supply

- Data collection was focused on 2019 average annual water withdrawals (as reported to EPD)
- Current municipal water use in the Upper Oconee region:
  - 2019 Groundwater use: 7.1 mgd
  - 2019 Surface water use: 52.3 mgd
- Forecast public supply (through 2060) is based on updated per capita use estimates and population projections
  - 2060 Forecasted Groundwater use: 13.4 mgd
  - 2060 Forecasted Surface water use: 70.9 mgd
Municipal Water Demands – Per Capita

- Updated per capita demand values based on water audit results
- Forecasting team is reviewing 2019 data and adjusting for large industrial customers

<table>
<thead>
<tr>
<th>County</th>
<th>2011 Plan Per Capita Demand</th>
<th>2017 Plan Per Capita Demand</th>
<th>Updated Per Capita Demand ¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin</td>
<td>140</td>
<td>137</td>
<td>146</td>
</tr>
<tr>
<td>Barrow</td>
<td>153</td>
<td>153</td>
<td>103</td>
</tr>
<tr>
<td>Clarke</td>
<td>157</td>
<td>167</td>
<td>105</td>
</tr>
<tr>
<td>Greene</td>
<td>153</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>Hancock</td>
<td>125</td>
<td>120</td>
<td>192</td>
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<tr>
<td>Jackson</td>
<td>111</td>
<td>110</td>
<td>129</td>
</tr>
<tr>
<td>Laurens</td>
<td>157</td>
<td>153</td>
<td>166</td>
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<tr>
<td>Morgan</td>
<td>164</td>
<td>163</td>
<td>220</td>
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<tr>
<td>Oconee</td>
<td>142</td>
<td>136</td>
<td>125</td>
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<tr>
<td>Putnam</td>
<td>131</td>
<td>129</td>
<td>142</td>
</tr>
<tr>
<td>Walton</td>
<td>138</td>
<td>142</td>
<td>102</td>
</tr>
<tr>
<td>Washington</td>
<td>195</td>
<td>191</td>
<td>181</td>
</tr>
<tr>
<td>Wilkinson ²</td>
<td>132</td>
<td>135</td>
<td>138</td>
</tr>
</tbody>
</table>

NOTES:
¹ Weighted average per capita calculated using the available 2015-2018 Water Loss Audits.
² Per capita was calculated using the population stated in SDWIS and the recorded water demands.
Municipal Wastewater Demands

Total Wastewater Generation

- Pop. Sewered Ratio*
- Centralized Treatment Facility
- Permit Data Ratio**
- Point Discharges
- Land Application Systems
- Septic Systems

*Based on 1990 US Census Bureau data
**Based on existing GA EPD permit data
Municipal Wastewater – Septic

- County % population on septic systems
  - Will be held constant, unless specific input received

- Values shown in unshaded cells are from Georgia Dept. of Public Health data (through 2018)

- Values shown in shaded cells are from the 1990 Census housing characteristics for Georgia (used where DPH data was deemed inappropriate for use by forecasting team)

<table>
<thead>
<tr>
<th>County</th>
<th>% Septic Users in 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin County</td>
<td>65%</td>
</tr>
<tr>
<td>Barrow County</td>
<td>68%</td>
</tr>
<tr>
<td>Clarke County</td>
<td>23%</td>
</tr>
<tr>
<td>Greene County</td>
<td>65%</td>
</tr>
<tr>
<td>Hancock County</td>
<td>82%</td>
</tr>
<tr>
<td>Jackson County</td>
<td>74%</td>
</tr>
<tr>
<td>Laurens County</td>
<td>53%</td>
</tr>
<tr>
<td>Morgan County</td>
<td>67%</td>
</tr>
<tr>
<td>Oconee County</td>
<td>87%</td>
</tr>
<tr>
<td>Putnam County</td>
<td>72%</td>
</tr>
<tr>
<td>Walton County</td>
<td>71%</td>
</tr>
<tr>
<td>Washington County</td>
<td>59%</td>
</tr>
<tr>
<td>Wilkinson County</td>
<td>76%</td>
</tr>
</tbody>
</table>
Municipal Wastewater – Municipally Treated

- Data collection was focused on 2019 average annual wastewater discharges (as reported to EPD)
- Current municipal wastewater flows in the Upper Oconee region (2019 annual avg.):
  - Point source discharges: 37.4 mgd
  - Land application system (LAS): 2.2 mgd
- Wastewater Forecast (2060), based on population projections
  - 2060 Forecasted point source discharges: 59.1 mgd
  - 2060 Forecasted LAS discharges: 3.7 mgd
Seed Grant Updates
GIS mapping of water delivery system for City of Madison

- City of Madison, 2019: The purpose of this project is to revise and replace outdated data with current GIS mapping of water delivery and wastewater systems.

- Meets two BMPs supported by the 2017 Upper Oconee Regional Water Plan.
  - WS-7: Continue mapping of water system assets
  - WW-5: Create a sewer system map.

- Database structure has been developed; field data collection in process this quarter
Flow-dependent benefits and values in Upper Oconee Region

- Albany State, 2020: The purpose of this project is to develop basin-specific information on water uses important to stakeholders.

- Meets two goals of the 2017 Upper Oconee Regional Water Plan.
  - ES-2: Ensure that management practices balance economic development, recreation, and environmental interests.
  - ES-7: Identify and plan measures to ensure sustainable, adequate water supply to meet current and predicted long-term population, environmental, and economic needs.

- Compiling scientific and technical studies and building stakeholder contact list. Contact Dr. Cowie gcowie@h2opolicycenter.org if you would like to participate or recommend a stakeholder.

- First set of stakeholder meetings in February/March 2021.
Upcoming Regional Water Plan Seed Grant
Fiscal Year 2021 Grant Period

- Announcement released in July 2020
- Eligible recipients of Seed Grant funds can include local, regional and State government, regional commissions, resource conservation and development councils, local schools, State college and universities, and State agencies
- Must attend a pre-application meeting by **October 16, 2020**
- Applications must be postmarked by **October 31, 2020**.

https://epd.georgia.gov/outreach/grants/regional-water-plan-seed-grant-funds
Septic system GIS mapping supporting Upper Oconee plan implementation

Presented by: Nandita Gaur, Ph.D.
Assistant Professor, Crop and Soil Sciences
University of Georgia
SEPTIC SYSTEM CONTRIBUTION TO WATER QUALITY - How do we understand what we cannot measure?

- **Septic systems** - Significant non-point source of potential pollution of freshwater bodies including groundwater and surface water.
  - Estimates of failing systems vary from 1-5% (DPH, 2012; Meile et al., 2010) to over 20% (Pessell and Young, 2011; USEPA, 2002).

- Most counties in Georgia lack a digital representation of this data.

Figure credits: https://extension.usu.edu/
### Recommendations in the Upper Oconee Regional Water Plan

<table>
<thead>
<tr>
<th>Action Needed</th>
<th>Definition of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW-1. Encourage implementation of centralized sewer in developing areas where density warrants</td>
<td>Identify areas that would benefit from being served by a centralized sewer versus septic systems.</td>
</tr>
<tr>
<td>WW-4. Develop septic system planning and management policies and guidance</td>
<td>Identify and manage septic systems in environmentally sensitive areas. Create a septic system map</td>
</tr>
</tbody>
</table>
Objectives of the Seed Grant

1. Develop an algorithm for estimating septic system density and age using only existing GIS and remote sensing datasets.

2. Digitize septic inspection permits for select sub-divisions of Jackson County and create a GIS layer.

3. Comprehensive literature review on the various ancillary information required with a GIS layer for septic systems. Involve all the major entities associated with interest in such a database including counties, wastewater experts, metro water district and WeISTROM.

Figure 1, Georgia County Map (inset) and a zoomed in view of Jackson County. Highlight shows Jackson county. The highlighted areas in the figure are the main cities in Jackson County (Study Area)
Progress so far..

• Formal start date of the project- 05/28/20

• LOGISTICS
  – Hiring of graduate student and undergraduate student workers for the project
  – Laptop and Scanner purchased (Jackson County)

• Scanning work underway at the Jefferson Environmental Health Office.

• Conversations with WelSTROM and Counties initiated.
Deliverables and Updates

- **OBJECTIVE 2**: Digitize septic inspection permits and create a GIS layer for Jackson County.
  - Geotagged septic system records and ArcGIS layer
  - **Updated deliverable**: Entering scanned records into the Digital Health Database to connect directly to WelSTROM

*Figure 2, Schematic example of final geotagged data layer.*
Why WelSTROM?
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Digital Septic System Database for Georgia

The data supplied to the WeSTROM system is from the database maintained by the Georgia Department of Public Health. This data is compiled by the 155 counties using the Environmental Health Information System (EHS) for their operations. DPH supports general public consumption of the data and graphics supplied by the SGRC, but any data request beyond the capabilities of the WeSTROM system must be directed to DPH via the Public Health Information Portal (PHIP).

The mission of the WeSTROM project is to provide a web-based method for the capture of private well and sewage treatment installation data that enables the query, reporting and mapping of these installations. This application is an aggregation of data from multiple sources and/or agencies participating in WeSTROM projects. As a result, certain map layers may not cover the complete extent of Georgia. For more information, or to sponsor expanding the scope of a data layer, users can Email Us.

The operation of this website was funded in part through a grant from the U.S. Environmental Protection Agency under the provisions of Section 319(h) of...
Our Team

• UGA
  – Brandi Renee Carr, M.S. Student
  – Lacey Michelle Tucker, Undergrad student worker
  – Bethlehem Agajayelleh, Undergrad student worker
  – Nandita Gaur, Ph.D., Assistant Professor

• Jackson County Office
  – Joel Logan, GIS Manager
  – Gina K. Roy, Assistant County Manager

• Environmental Health Office
  – Keli Hinson, Environmental Health District Director
ACKNOWLEDGMENTS

• Blue Cole, Grants Administrator, GA EPD
• Dr. Krista Capps, UGA
• Danny Johnson, Metro Water District
• Tim Callahan, DPH
• Rachel Strom
• Jefferson Environmental Health Staff

FUNDING SUPPORT PROVIDED BY
Thank you!
Metro District Update

- Plan Updates
- Biosolids Update

- Danny Johnson, ARC
Upper Oconee Council Meeting

Metropolitan North Georgia Water Planning District Update

Scope of Work for 5-year Plan Update

• Forecasting
  o Will include biosolids for first time
• Facility Planning
• Action Item Assessment and Update
• Technical Resource Studies
  o Residential water demands
  o Drought response options menu
  o Watershed resilience evaluation
  o Cost-Benefit Analysis

Schedule
Highlights from the Statewide Biosolids Management Survey

For full survey results, contact Danny Johnson (djohnson@atlantaregional.org)
Biosolids Management in Georgia: Results of the GAWP Statewide Survey

2020 GAWP Virtual Annual Conference
Mike Thomas, GAWP & Danny Johnson, MNGWPD
Since 2018, the disposal of wastewater biosolids to landfills has become more difficult and costly due to recent slope instabilities:

- 2014 Pine Ridge Landfill
- 2014 Eagle Point Landfill
- 2018 Eagle Point Landfill
- 2017 Greentree Landfill, Pennsylvania
GAWP Biosolids Survey

Data collected for 2018 calendar year
Did not include water plant residuals

Survey sent to all GAWP Utility Members - October 2019

52 communities responded 99 facilities

EPD’s Annual Biosolids Reports reviewed

21 communities 28 facilities

TOTAL

73 communities 127 facilities
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Georgia Wastewater Biosolids for 2018

Dry Tons by County

Dry Tons 2018

- 0 - 100
- 101 - 300
- 301 - 10000
- 1001 - 1500
- 1501 - 5000
- 5001 - 10000
- 10001 - 20000
- 20001 - 30000
- 30001 - 45000

No Data
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Georgia Wastewater Biosolids for 2018
Water Planning Regions

Dry Tons 2018
- 6 - 500
- 501 - 1000
- 1001 - 2000
- 2001 - 5000
- 5001 - 10000
- 10001 - 15000
- 15001 - 140000

Dry Tons by Regional Water Council
**Most common disposal methods**

- Landfill – 65% of Dry Tons
- Land Application – 16% of Dry Tons

**Only incinerator used in 2018 was by the City of Atlanta**

**Composting:**

- 8% of Dry Tons
- 16 Facilities
Recapping Biosolids Management Trends

Landfilling – Regulatory pressures likely to continue

More utilities looking at advanced drying technology
  ▪ Now cost effective
  ▪ Beneficial reuse options

Land application is still an option
  ▪ Public perception, PFAS/PFOA, available land difficult for large utilities

Incineration
  ▪ Air quality, fuel costs, ash disposal

Regional Solutions
  ▪ Multiple under consideration
Public Comment Period

- Please limit comments to 3 minutes total
- Council encourages written submission of comments as well
• **Wrap Up and Next Steps**
  - Seed Grant Applications – Due October 31
    - Contact Laura or Ania
  - Next Council meeting?
    - General date range
    - Any topics or ideas you would like to see on agenda?
    - Contact Laura or Michelle with input or ideas
Thank You!

Questions? Comments? Need More Information?

Laura.Hartt@Jacobs.com
Michelle.Vincent@Jacobs.com
Anna.Tuszczynski@dnr.ga.gov