

Pee Dee River Basin Planning

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and

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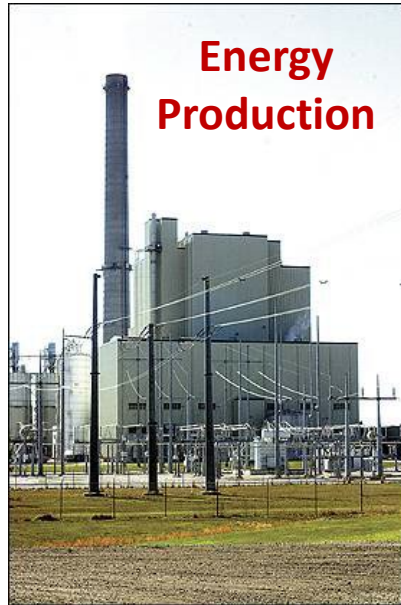


Pee Dee River Basin Council – Meeting #1

June 28, 2022



Water Use in South Carolina



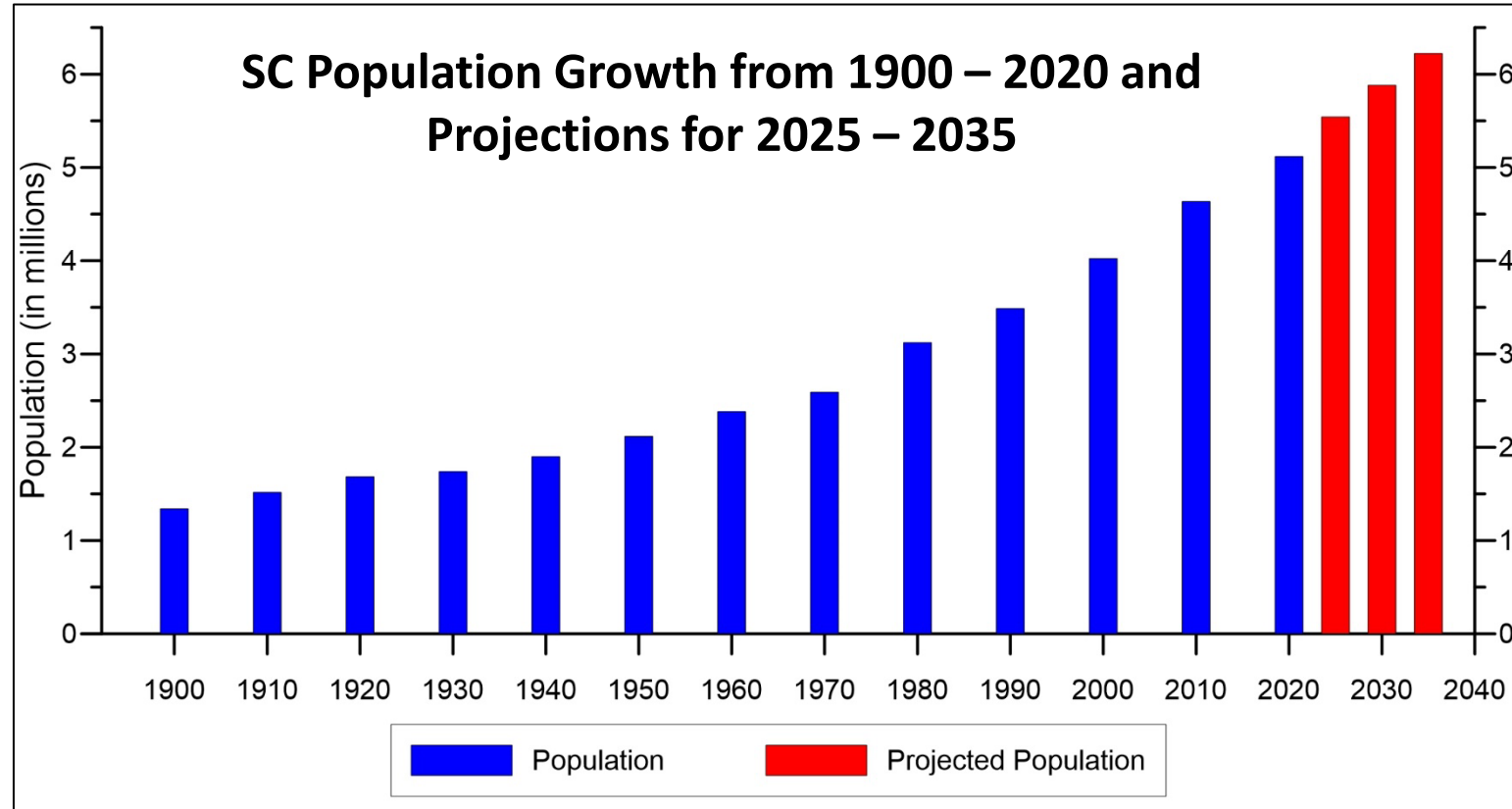


Why State Water Planning?



Population Growth → Increased Water Demand

- From 1990 – 2020, SC population increased from **3.5** to **5.1** million and is forecasted to increase to **6.2** million by 2035.
- Our growing population may increase future water demands and may increase competition for our water supplies.



Data from the SC Office of Revenue and Fiscal Affairs, 2021, and U.S. Census Bureau, 2021.

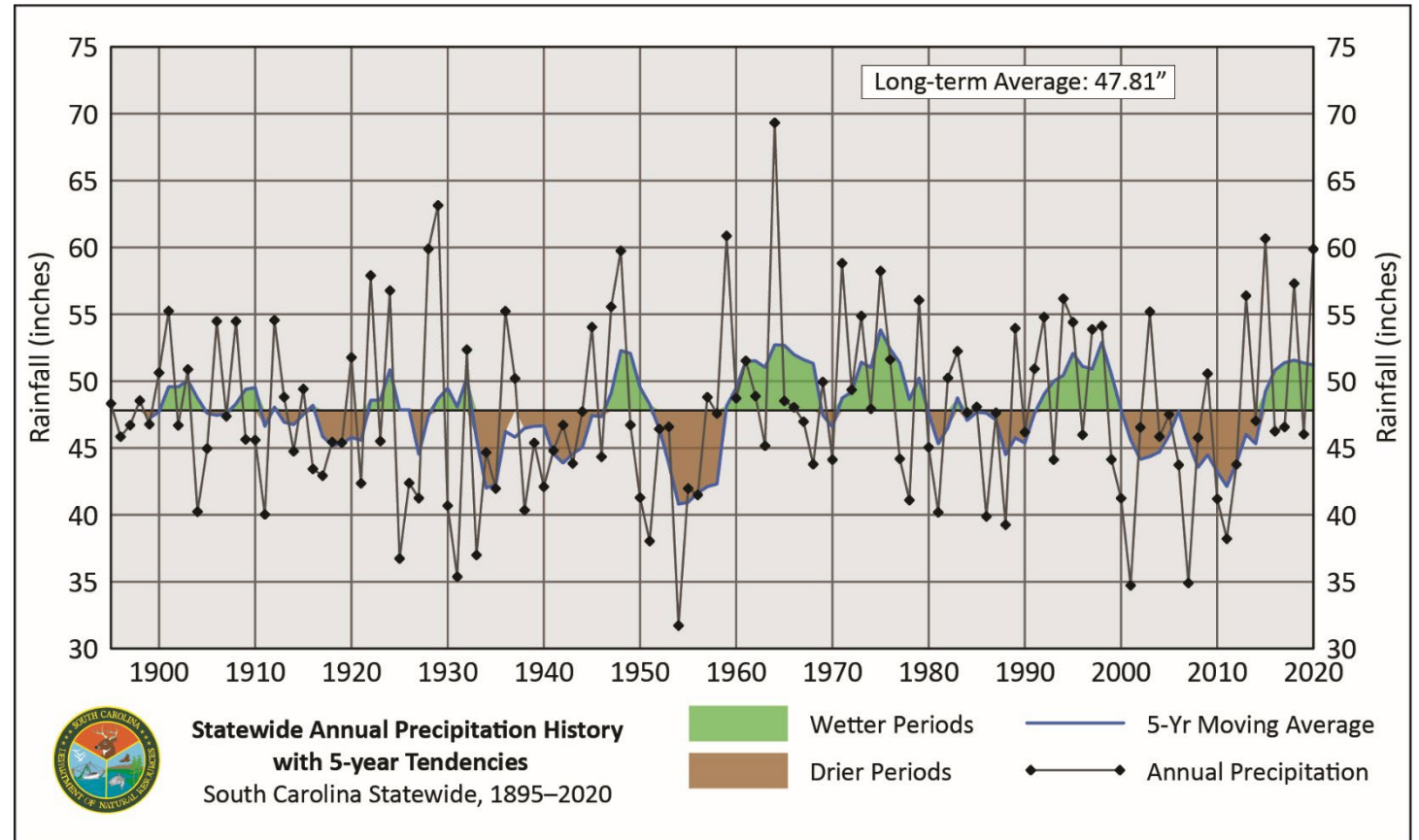


Why State Water Planning?



Drought

SC generally has an abundance of water, but recent droughts (**1998-2002, 2007-2008, 2011-2012, 2016, 2019 – flash drought**) have stressed the State’s water resources.



Statewide Average Annual Rainfall (inches) and 5-year Running Average



Why State Water Planning?

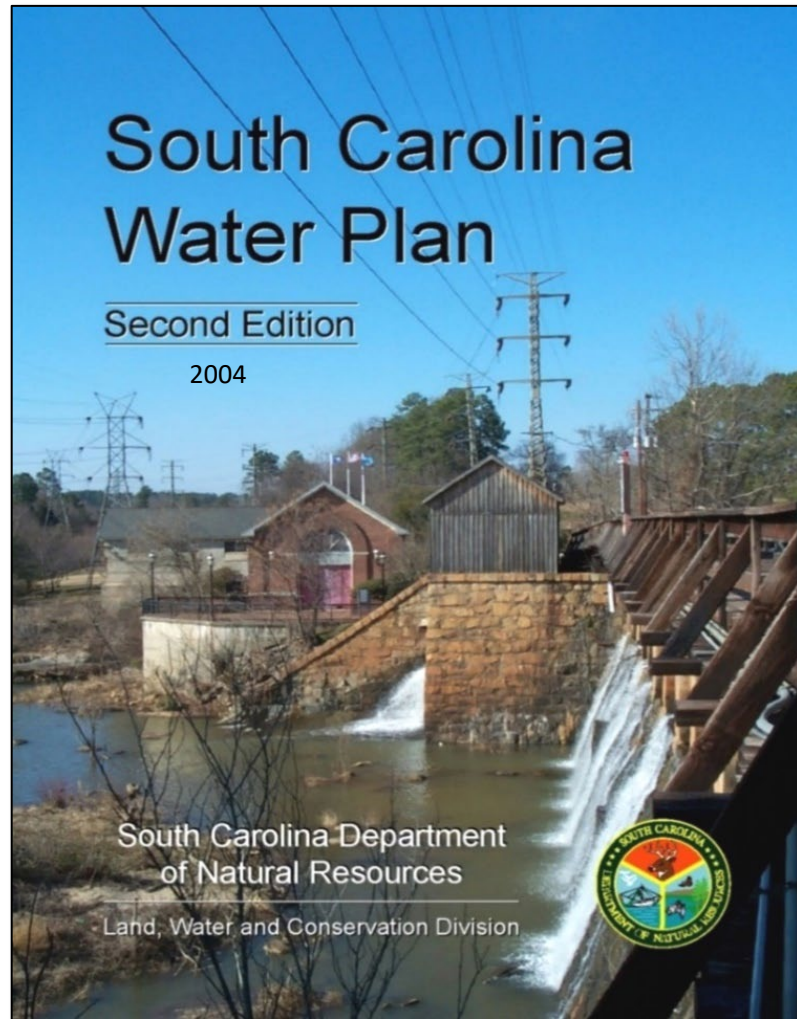
Uncertainty in the nature of future droughts combined with increased water demands highlights the importance of comprehensive State and river basin planning

Proactive Water Management, not Reactive!





A Brief History of State Water Planning



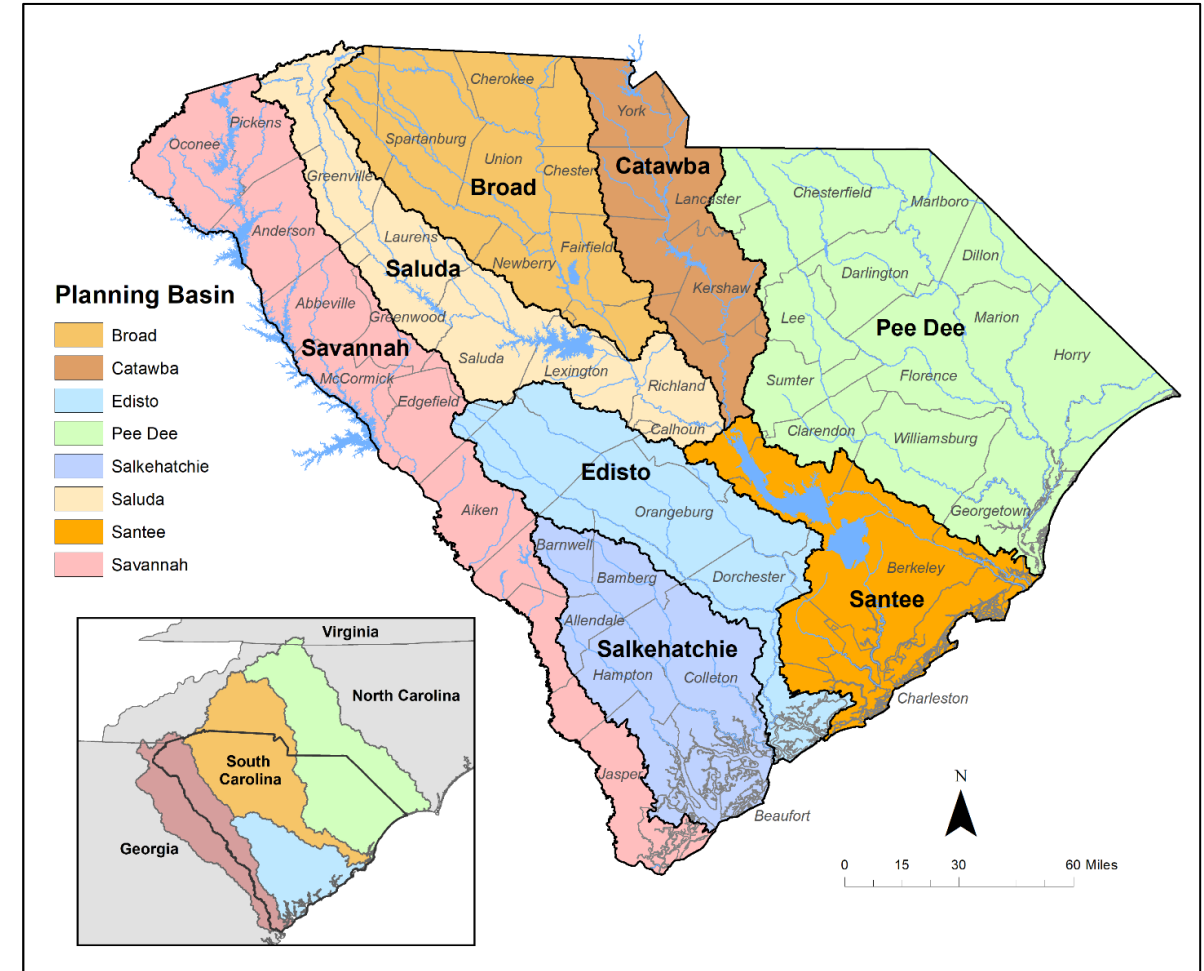
- SCDNR published the first edition of the State Water Plan in **1998**.
- In **2004**, SCDNR published the second edition of the South Carolina Water Plan incorporating lessons learned from the drought of 1998-2002.
- One recommendation was to develop a regional water plan for each major river basin in the State.
- **10 years later** – SCDNR and SCDHEC initiated the first step towards these regional water plans, now formally called *River Basin Plans*.



South Carolina's Eight Planning Basins



- River Basin Plans will be developed for the State's 8 major river basins using a ***“bottom-up”*** approach where stakeholders in each basin lead the development of their basin plan.
- Collectively, the River Basin Plans will form the foundation of a new State Water Plan.





Five-step Process

1. Surface Water Assessments – completed in 2017 for each basin (CDM Smith, Inc).

- Several models recently updated.

2. Groundwater Assessment – completed in 2021 (USGS).

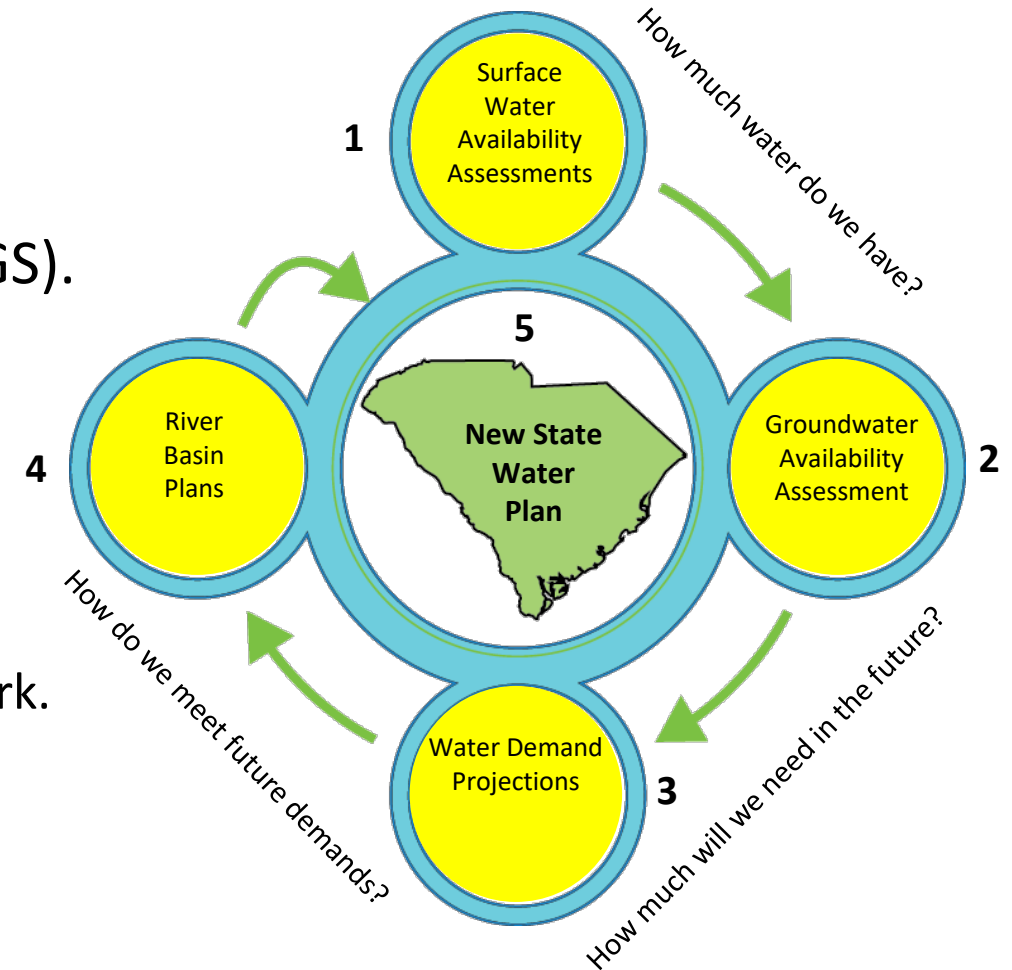
3. Water Demand Projections – methodology report completed in October 2019.

- Edisto basin projections completed in 2021.
- Projections for Broad and Pee Dee basin in progress.

4. River Basin Plans

- Publication of South Carolina State Water Planning Framework.
- Edisto and Broad basin planning in progress.
- Pee Dee basin is the 3rd basin to begin planning activities.

5. State Water Plan – River Basin Plans will form the foundation of a new State Water Plan.



Cooperators:





Stakeholder Participation



Broad Basin SWAM Model Stakeholder Meeting



Edisto River Basin Council Field Trip



Edisto Basin Water Demand Projection Stakeholder Meeting



PPAC Meeting



Planning Process Advisory Committee



- Convened by SCDNR in March 2018.
- Purpose - develop a guidance document (Planning Framework) for developing River Basin Plans (Step 4) and for updating the State Water Plan (Step 5).
- South Carolina State Water Planning Framework (Planning Framework) was published in October 2019 after an 18-month process.
- PPAC continues to meet quarterly for planning oversight purposes.

PPAC Vision Statement:

“Reflecting our values of water as a shared resource with a shared responsibility, we will work together to develop and maintain an actionable State Water Plan balancing economic, environmental and social needs of South Carolina for generations to come.”





PPAC Committee Members



- Jeffery Allen** – Clemson University
- David Baize** – SCAWWA/WEASC
- David Bereskin** – Greenville Water
- Jesse Cannon** – Santee Cooper
- Fred Castles, III** – Catawba-Wateree Water Management Group
- Clay Duffie** – Mt. Pleasant Waterworks (retired)
- Steve Hamilton** – The Dunes Golf and Beach Club
- Erika Hollis** – Upstate Forever
- J.J. Jowers, Jr.** – Bamberg County citizen, Edisto Engineers and Surveyors, Inc.
- Eric Krueger** – The Nature Conservancy
- Jeff Lineberger** – Duke Energy
- Jill Miller** – South Carolina Rural Water Association
- Dean Moss, Jr.** – Beaufort Jasper WSA (retired)
- Myra Reece** – South Carolina Department of Health and Environmental Control
- Ken Rentiers** – South Carolina Department of Natural Resources
- Bill Stangler** – Congaree Riverkeeper
- Landrum Weathers** – Farmer
- Scott Willett** – Anderson Regional Joint Water System
- Charles Wingard** – Walter P. Rawl and Sons, Inc.



For more information, visit:

[https://www.clemson.edu/public/water-assessment/State Water Planning Process Advisory Committee.html](https://www.clemson.edu/public/water-assessment/State%20Water%20Planning%20Process%20Advisory%20Committee.html)



<http://hydrology.dnr.sc.gov/ppac.html>



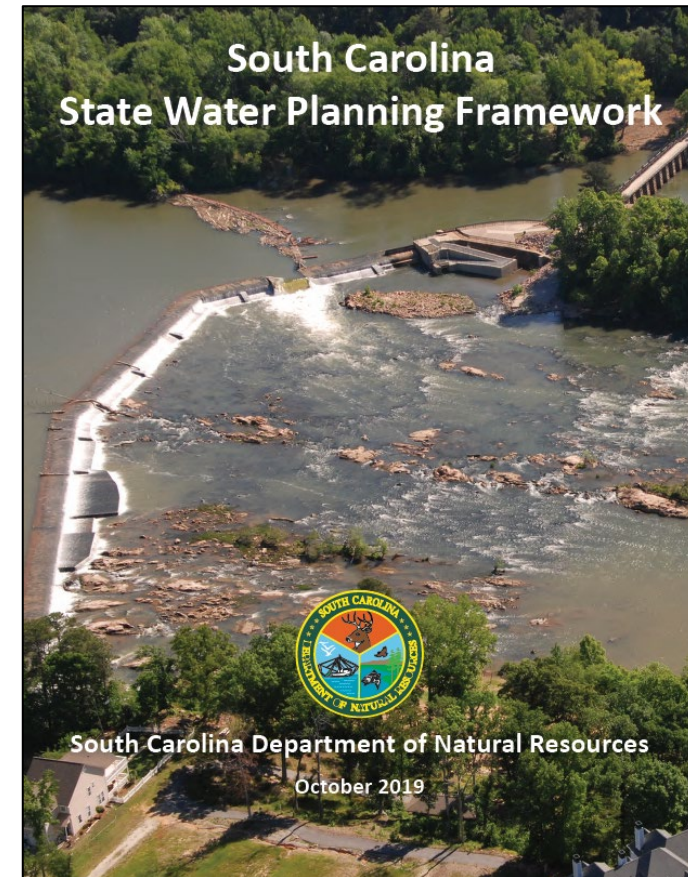


Contents of Planning Framework



Sections:

1. Executive Summary
 2. Introduction
 3. River Basin Planning Process
 4. Methodologies for Evaluating Water Availability
 5. River Basin Plan Table of Contents
 6. River Basin Planning Process Implementation
 7. River Basin Plan Implementation
 8. State Water Plan
- Appendix: River Basin Council Bylaws



Planning Framework is available for review and download at:
<http://hydrology.dnr.sc.gov/water-planning-framework.html>

What is a River Basin Plan?





What is a River Basin Plan?



A River Basin Plan answers four questions:

1. What is the basin's current available water supply and demand?
2. What are the current permitted and registered water uses?
3. What will be the basin's water demand over the Planning Horizon, and will the water supply meet the demand?
4. What water management strategies will be employed to ensure the supply meets or exceeds the projected demand over the Planning Horizon?

Proactive Water Management, not Reactive!



Guiding Principles



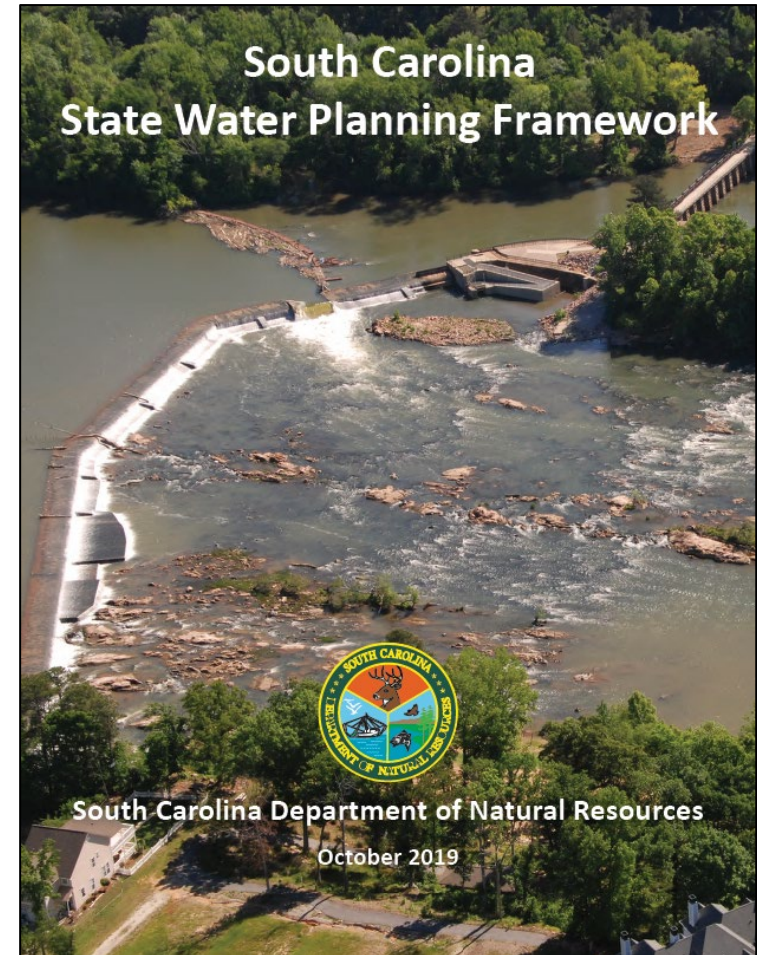
- Water is a limited natural resource and is a major factor for economic development and environmental protection.
- River Basin Plans should strive for the equitable use of water resources with the goal of ensuring water is available for all uses, when and where needed, throughout the Planning Horizon and under drought conditions.
- River Basin Plans should protect the public's health and well-being and should balance social, economic, and environmental needs.



Features of a River Basin Plan



- Covers a **50-year** Planning Horizon.
- Considers both surface water and groundwater resources.
 - **Emphasis is on drought conditions.**
- Not a regulatory document but may include recommendations regarding State water policy, law, and regulations.
- Updated every 5-years – water planning will be an ongoing process.
- Supported by hydrologic data, models, and water-demand projections.





River Basin Plan Table of Contents



1. Introduction
2. Description of the Basin
3. Water Resources of the Basin
4. Current and Projected Water Demand
5. Comparison of Water Resource Availability and Water Demand
6. Water Management Strategies
7. Water Management Strategy Recommendations
8. Drought Response
9. Policy, Legislative, Regulatory, Technical, and Planning Process Recommendations
10. Implementation Plan



Edisto Basin Planning



- First basin selected for implementing Planning Framework.
- Public kick-off meetings – November 2019.
- First RBC meeting – June 2020.
- Completed 24 meetings:
 - Due to Covid, first 11 meetings were held virtually
 - In-person meetings began in May 2021.
- River Basin Plan scheduled for completion in Fall 2022.





Broad Basin Planning



- Second basin selected for implementing Planning Framework.
- Public kick-off meetings – November 2021.
- First RBC meeting – March 2022.
- Completed 3 meetings/1 field trip.
- River Basin Plan scheduled for completion in February 2024.



How will the River Basin Plans be Developed?

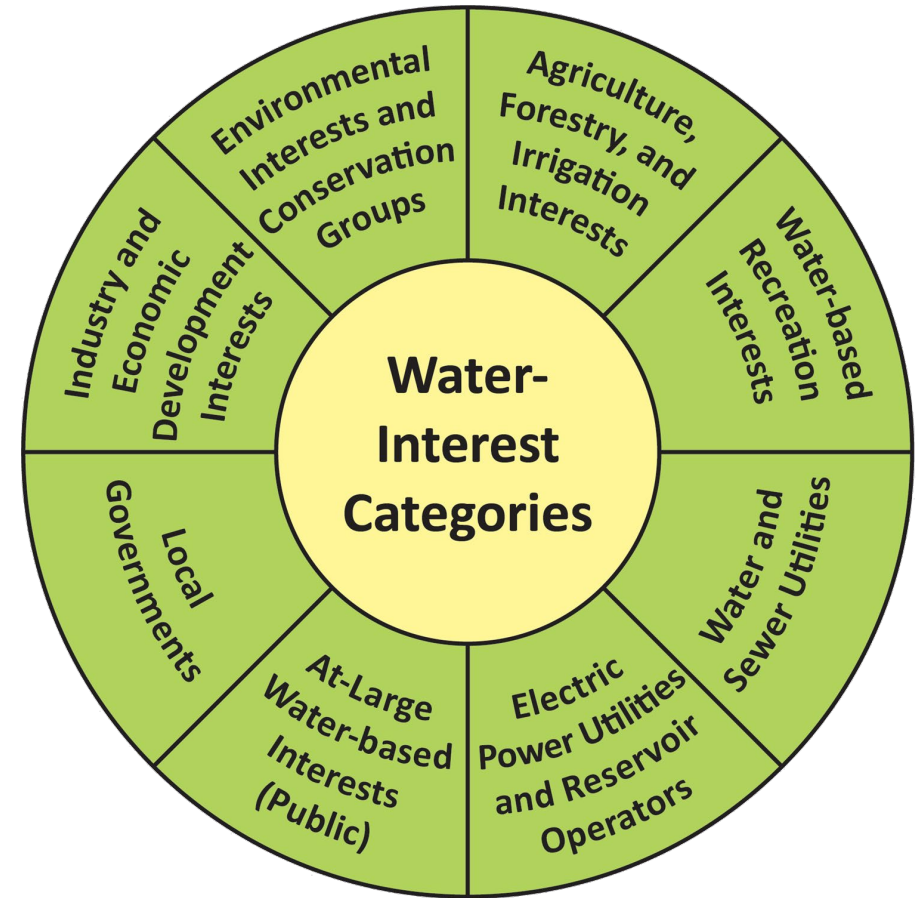




River Basin Council (RBC)



- **Stakeholder-led team** responsible for developing the River Basin Plan.
- Up to **25** members representing 8 interest categories.
- Governed by a set of Bylaws.
- Consensus based decision-making process.
- Chair and Vice Chair elected by RBC.



The Pee Dee River Basin Plan will be developed over a 2-year period

Pee Dee Basin RBC

Interest Categories

Agriculture, Forestry, and Irrigation (5)

At-Large (3)

Electric-Power Utilities (2)

Environmental (4)

Industry/Economic Development (3)

Local Governments (3)

Water and Sewer Utilities (4)

Water-based Recreational (2)



Organizations Represented

American Forest Management, Inc.

Chesterfield County Rural Water and SCRWA

City of Florence

City of Sumter

Duke Energy

Francis Marion University

Gamble Family Farms

Grand Strand Water and Sewer

International Paper

Keep It Green/Inlet Bay & Stewards (IBIS)

Legends Golf Course

Newton Farms

Palustrine Group/Water & Land Solutions

Pee Dee Land Trust

Pee Dee Regional COG

Public

Riverdale Farms

Santee Cooper

Santee Lynches Regional COG

Sonoco Products Company Hartsville

The Nature Conservancy

Town of Clio

USDA Farm Service Agency

Wiegand Real Estate, Inc.

Williamsburg Soil and Water Conservation

Winyah Rivers Alliance

Planning Team

Brown AND Caldwell

Meeting Facilitation

CLEMSON
UNIVERSITY

Meeting Coordination
and Public Outreach



Oversight and Education

**CDM
Smith**

Surface Water Technical
Support Contractor

USGS
science for a changing world

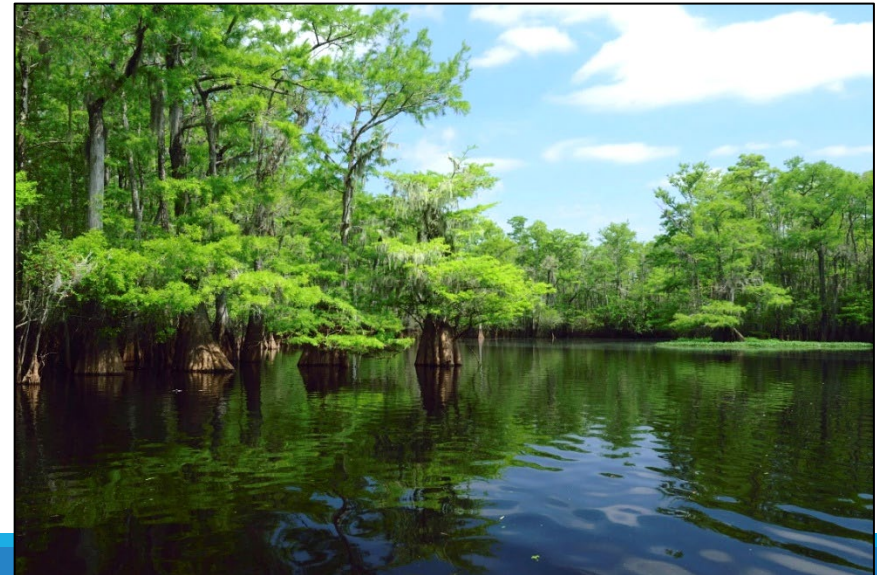
Groundwater Technical
Support Contractor



RBC Roles and Responsibilities



- Identify water shortages or conflicts using hydrologic models.
- Recommend strategies to mitigate or eliminate water use conflicts or water shortages.
- Help draft River Basin Plans.
- Communicate with stakeholders and the public on water planning activities.
- Coordinate with other formal water planning bodies (including those in North Carolina).
- Recommend changes to water policy or legislation or to the water planning process.
- Update River Basin Plans every 5-years and amend the plans as needed.

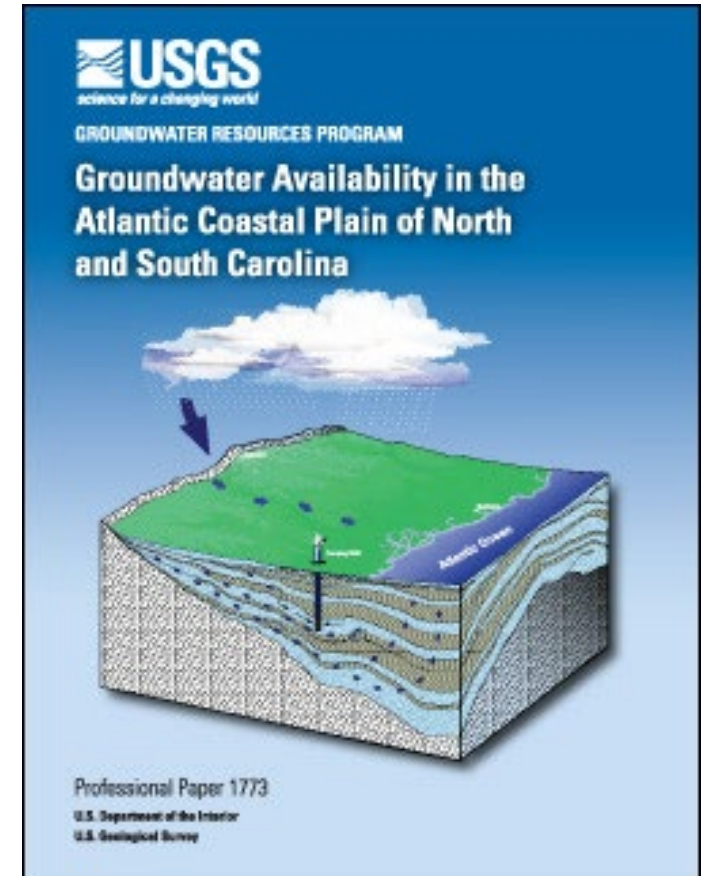




Groundwater Model (MODFLOW)

- Groundwater flow model developed by the USGS with assistance from SCDNR and SCDHEC .
- Simulates groundwater flow of the Atlantic Coastal Plain aquifer system.
- Recent updates include groundwater data up to 2020.

Model is a decision-making tool used to assess water availability and management strategies, and will support the development of River Basin Plans





Water Demand Projections – In Progress



- Water-demand methodology report released in October 2019 and available at:
<http://hydrology.dnr.sc.gov/water-demand.html>.
- Projections will be used in surface and groundwater models to assess future water availability and will support the development of River Basin Plans.
- Water-demand projections for the Pee Dee basin are currently being developed.



US Army Corps
of Engineers

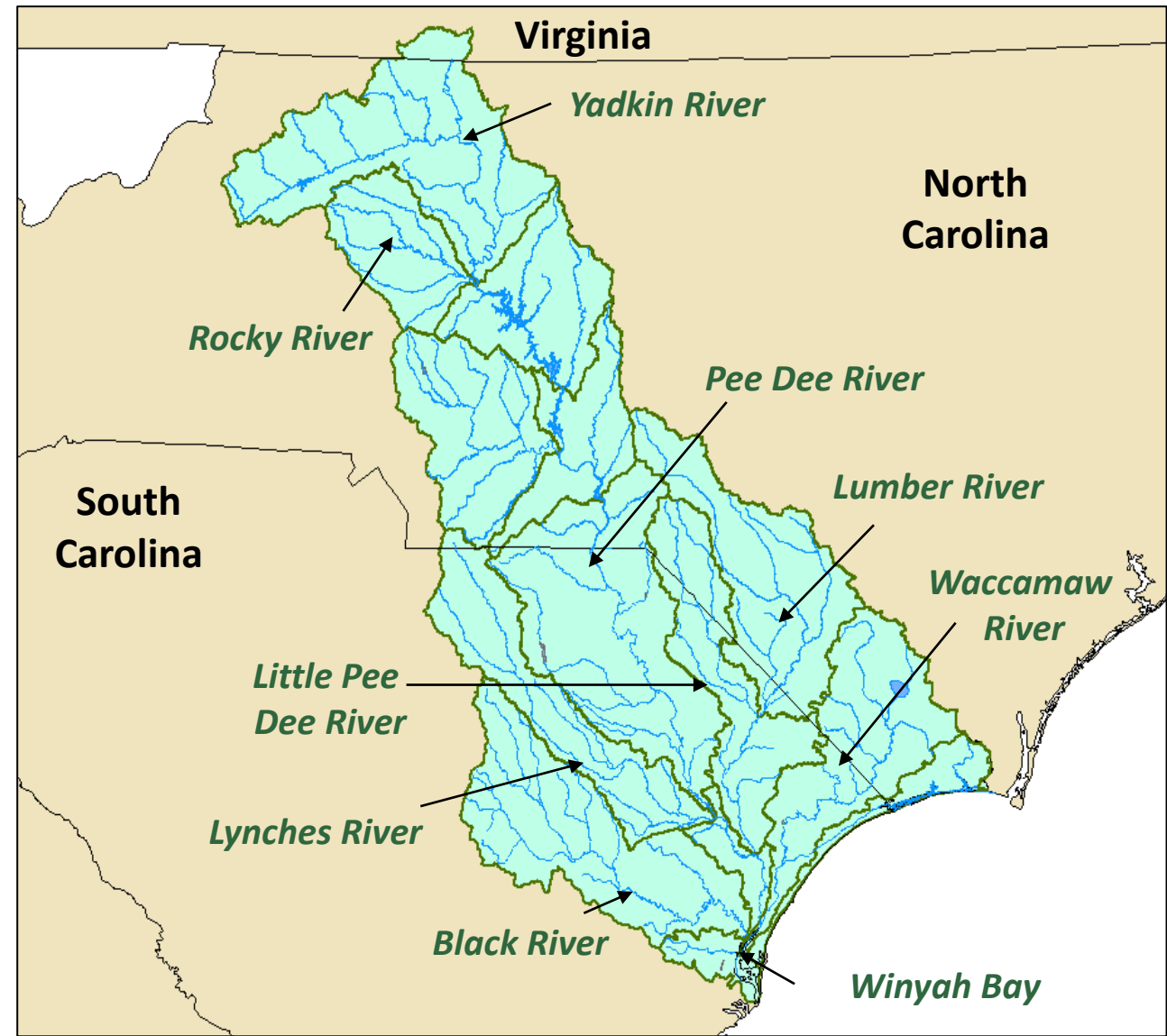


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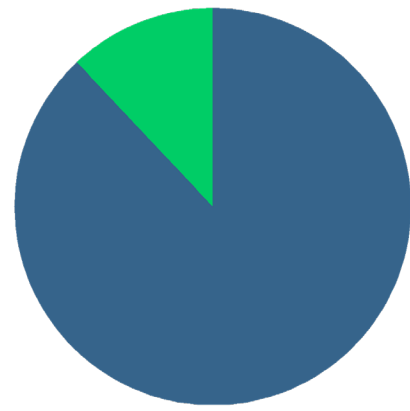


Yadkin-Pee Dee Basin

- Largest basin in the Carolinas draining portions of SC, NC, and VA
 - Area = 17,940 sq mi
- 7 Reservoirs in NC along Yadkin and Pee Dee mainstem
- Other NC tributaries flowing into SC include the Lumber and Waccamaw.
- Both surface water and groundwater are important resources in the basin.

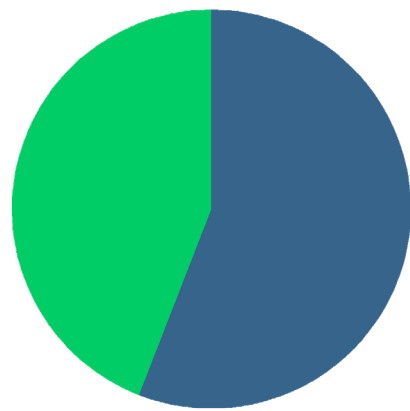


SC water withdrawal including energy



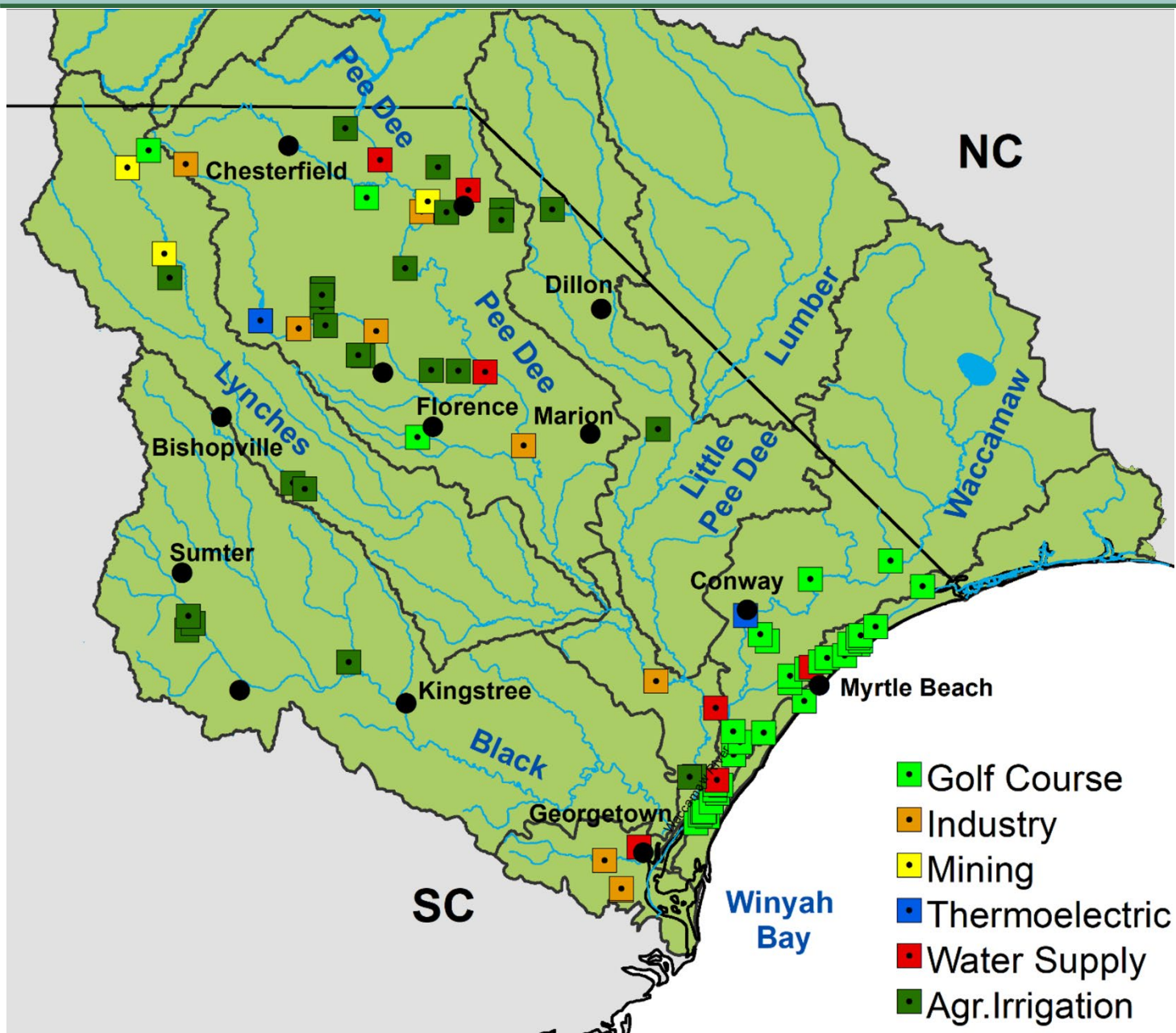
SW: 88%
GW: 12%

SC water withdrawal excluding energy

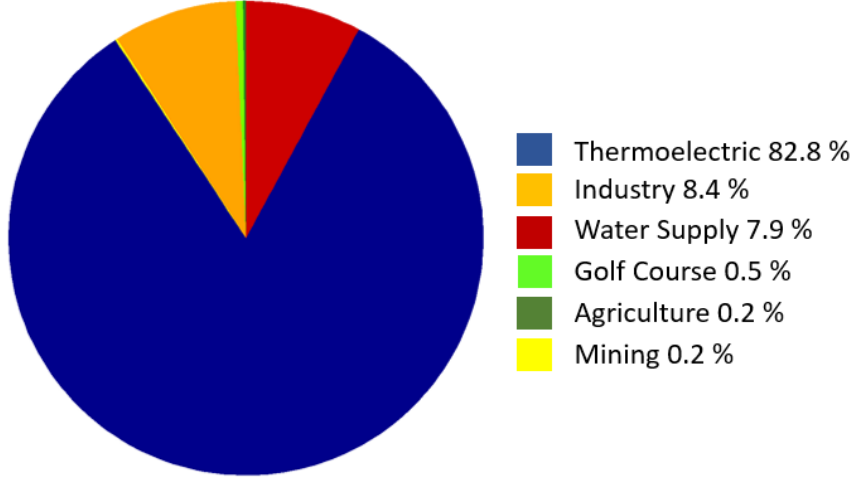


SW: 56%
GW: 44%

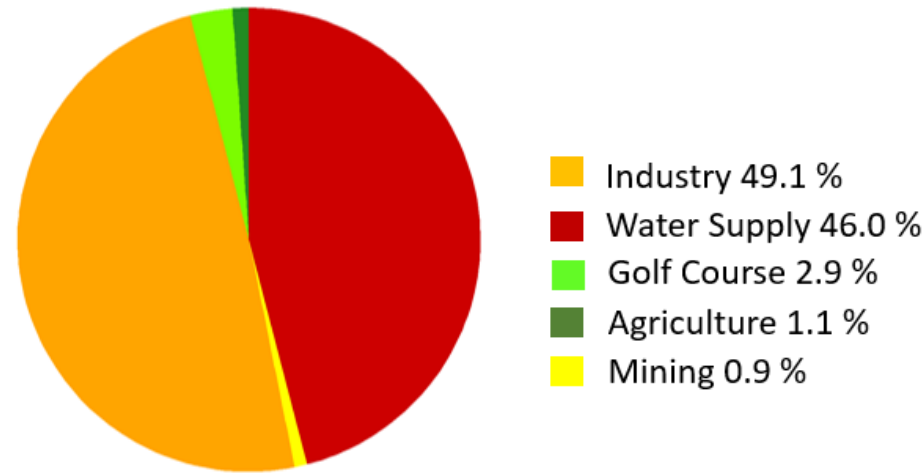
2021 Reported Surface Water Withdrawals



Including Energy



Excluding Energy



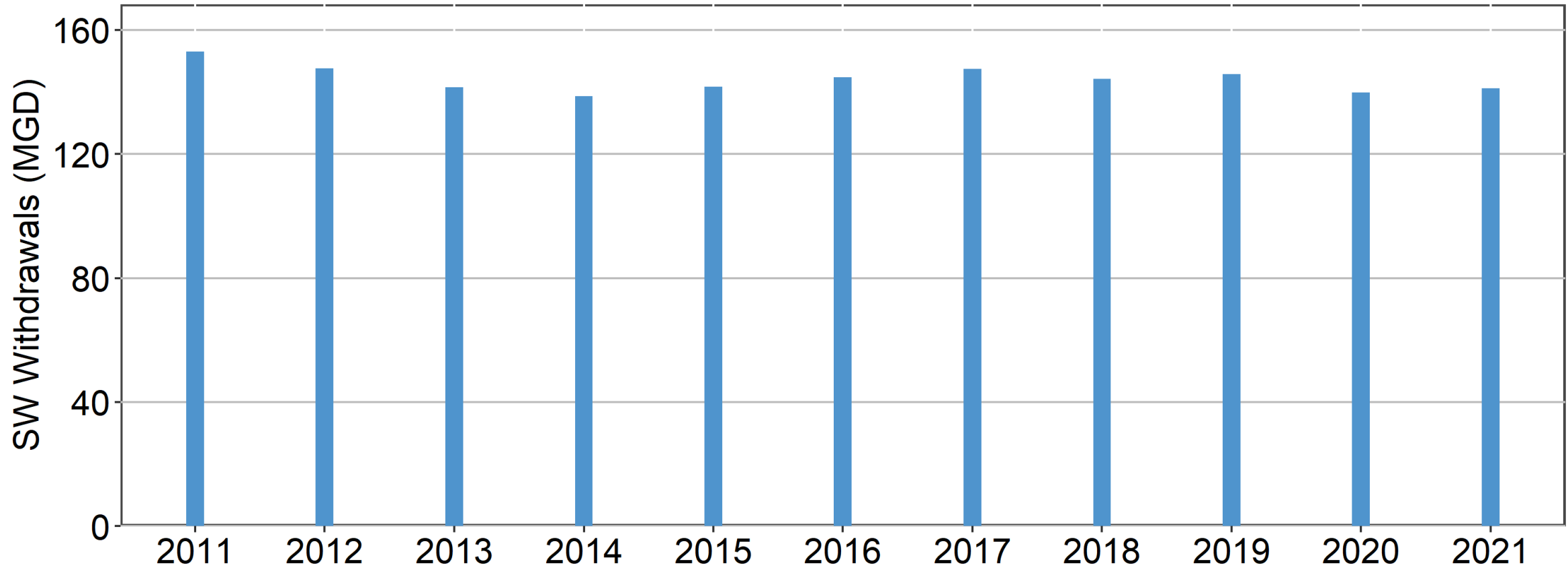
Data source: SCDHEC Water Use Database



Surface Water Withdrawals (2011-2021)



Surface Water withdrawals, excluding Power

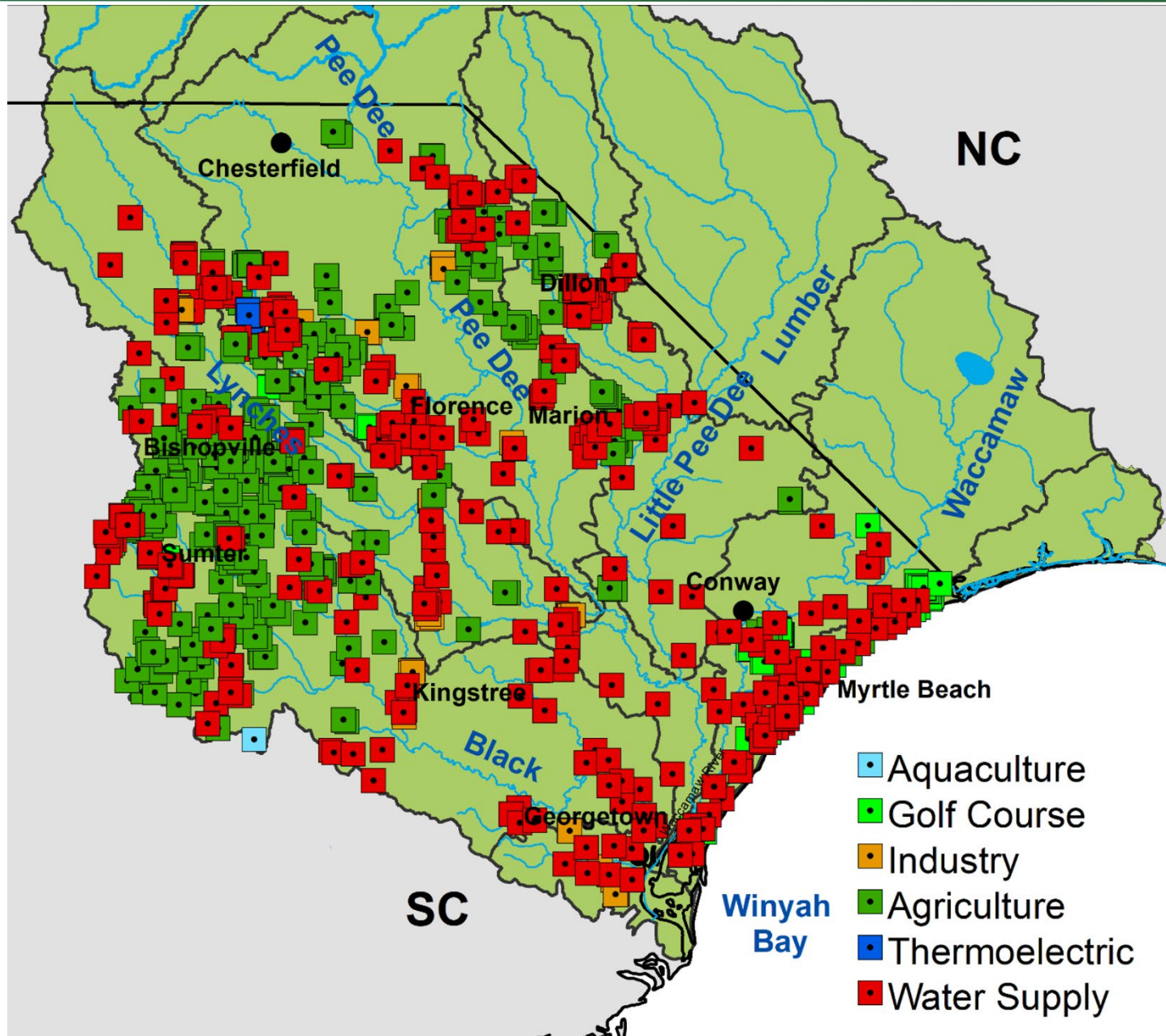


Data source: SCDHEC Water Use Database

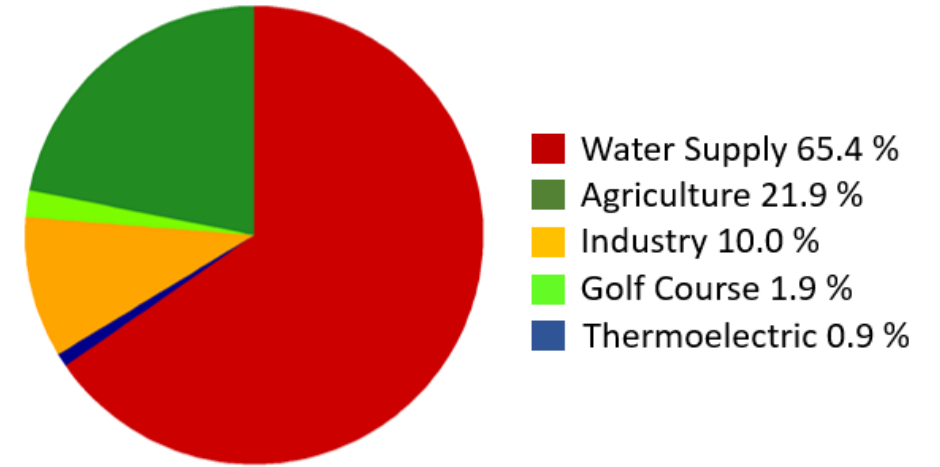




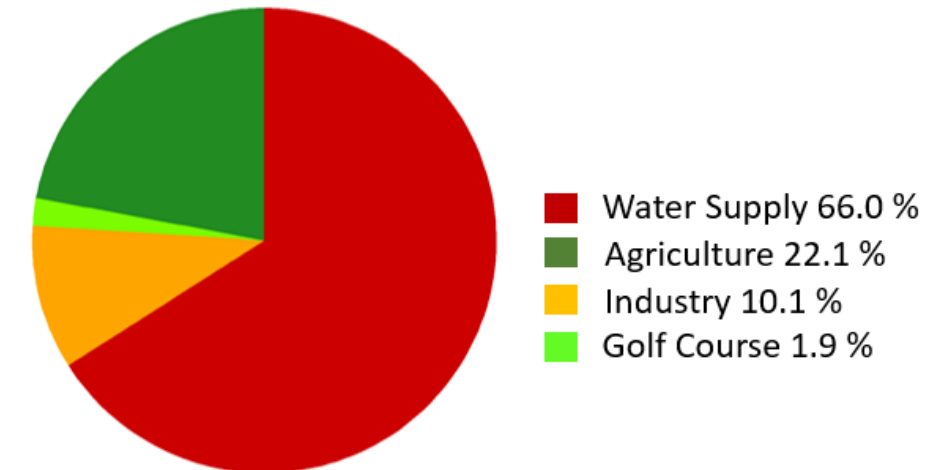
2021 Reported Groundwater Withdrawals



Including Energy



Excluding Energy

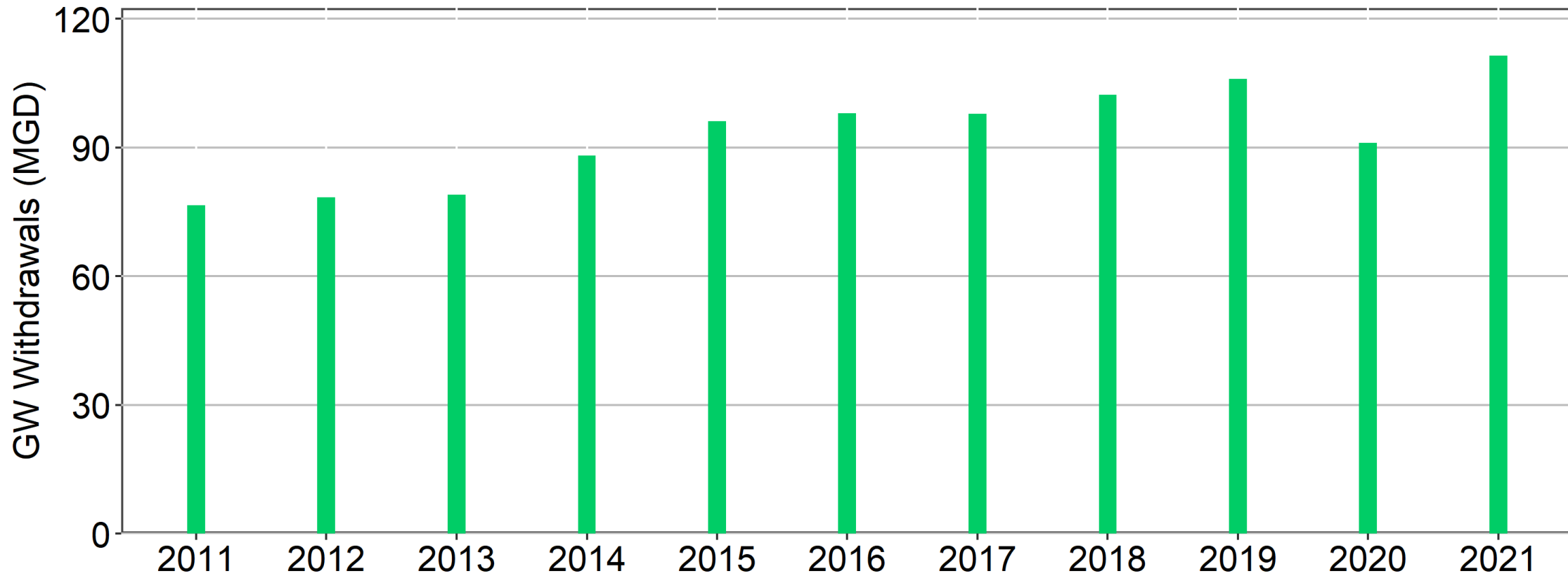




Groundwater Withdrawals (2011-2021)



Groundwater withdrawals, excluding Power



Data source: SCDHEC Water Use Database





RBC Support



The Pee Dee RBC will develop the plan with support from:

- **Contractors** (solicited and hired by SCDNR):
 - Meeting Facilitation (Brown and Caldwell)
 - Meeting Coordination (Clemson University) – administrative and logistical support
 - Surface Water Modeling Technical support (CDM Smith)
 - Public Outreach (Clemson University)
 - River Basin Plan report writing (Brown and Caldwell)
- **Other State and Federal Agencies:**
 - RBCs can request agencies to serve as Advisors.
 - Participate in RBC meetings and subcommittee meetings as requested.
- **RBCs can request input from other outside Advisors**

PPAC and SCDNR will continue to provide oversight of the river basin planning process.



Coordination with Other Planning Bodies



- Planning Framework recognizes the existence of other formal water planning groups and drought management groups.
- Planning Framework emphasizes coordination with such groups and provides general guidelines.
- Inter-basin River Councils (IRCs):
 - Made up of RBC members from two or more basins.
 - A forum for adjoining basins to communicate and coordinate on mutual interests and to resolve conflicts.
- Pee Dee RBC should coordinate with any planning groups in North Carolina to the extent possible (Yadkin-Pee Dee Water Management Group, for example).



Stakeholder/Public Participation Opportunities



- Guidelines for stakeholder and public participation described in Section 3.7 of Planning Framework.
- Public meetings (3 to 4 per basin):
 - Prior to first RBC meeting – “kickoff” meeting(s)
 - After *draft* River Basin Plan is released
 - After *final* River Basin Plan is released
- Draft River Basin Plan Public Review Period (30 days).
- RBC Meetings:
 - Open to the public
 - Each meeting will include public comment period



SCDNR Hydrology Section Website



Water Planning

The SCDNR Hydrology Section is responsible for formulating and establishing a comprehensive water resources policy for the State of South Carolina.

Overview

The South Carolina Department of Natural Resources (SCDNR) is legislatively mandated through the [South Carolina Water Resources Planning and Coordination Act](#) (§ 49-3-10, et. seq., Code of Laws of South Carolina, 1976) to formulate and establish a comprehensive water resources policy or water plan for the State. The [first edition of the South Carolina Water Plan](#) was published in 1998, and was subsequently updated in 2004 to incorporate experiences and knowledge gained from the severe, statewide drought of 1998-2002. The 2004 Water Plan highlighted the need for water planning on a regional level.

In 2019, SCDNR published the [South Carolina State Water Planning Framework](#) (Planning Framework) under the guidance of the [Planning Process Advisory Committee](#) (PPAC). The Planning Framework describes the process of developing regional water plans, now formerly called River Basin Plans, that will support the development of a new State Water Plan. River Basin Plans will be developed for the eight major river basins in the State – Broad, Catawba, Edisto, Pee Dee, Salkehatchie, Saluda, Santee, and Savannah. To support the development of the River Basin Plans, hydrologic models have been developed for both the State's surface water and groundwater resources and will be used along with water demand projections to assess current and future water availability in the State.

Public Notice: Two Public Meetings Have Been Scheduled for March 21st and 22nd to Kick-off Pee Dee River Basin Planning Activities.

For more information including times and locations visit the [Pee Dee Basin Planning](#) page.

State and River Basin Planning Framework

[Edisto Basin Planning](#)

[Broad Basin Planning](#)

[Pee Dee Basin Planning](#)

[Water Demand Projections](#)

<http://hydrology.dnr.sc.gov/water-planning.html>

Pee Dee Basin Planning

Activities and reports on water planning in the Pee Dee River basin.

Overview

River basin planning activities in the Pee Dee basin were recently initiated under the guidance of the [South Carolina State Water Planning Framework](#). Two public meetings were held on March 21st in Conway, SC and on March 22nd in Florence, SC to kick-off planning activities. An overview of the South Carolina State Water Planning Framework was provided to the basin's stakeholders and applications to serve on the Pee Dee River Basin Council were solicited. The [Pee Dee River Basin Council](#) was appointed in May 2022, and the first Council meeting is tentatively scheduled for June 2022. Please visit this website for periodic updates and new information regarding Broad River basin planning activities.

The first Pee Dee River Basin Council meeting has been scheduled for June 28th, 2022 from 9:00 AM to 12:00 PM. ([draft agenda](#))

The Council will meet in-person at Clemson University's Pee Dee Research and Education Center (2200 Pocket Rd., Florence, SC 29506). The meeting may be attended virtually as well. Please contact Brooke Czwartacki (czwartackib@dnr.sc.gov) for virtual meeting access information.

[Pee Dee Basin Planning Meetings](#)

[Pee Dee River Basin Council](#)

[Pee Dee SWAM Model Access](#)

[Pee Dee Planning News](#)

• [First Pee Dee River Basin Council Meeting Scheduled for June 28th, 2022](#)

[Hydrology Calendar](#)

Upcoming events

<http://hydrology.dnr.sc.gov/peedee-basin-planning.html>

Site will host:

- Announcements/Calendar of Events
- Access to water planning documents – Planning Framework, technical reports
- RBC meeting materials – agendas, presentations, recordings