N

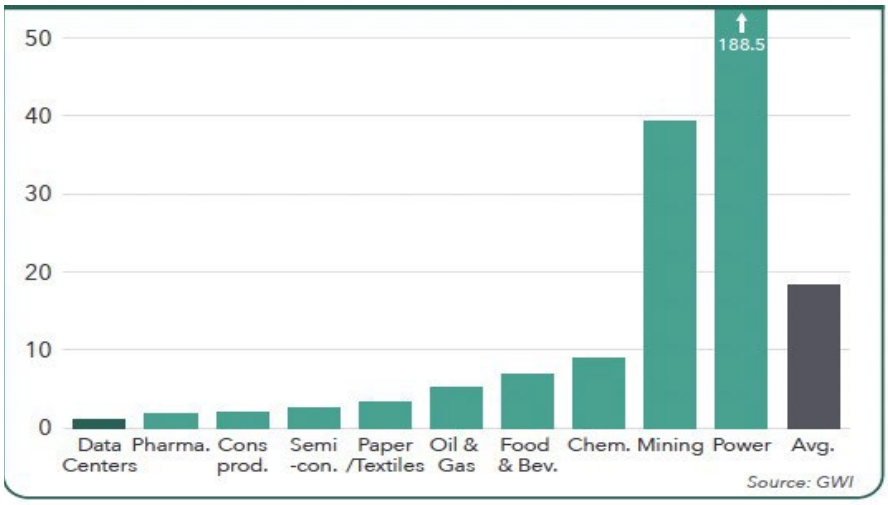
Appendix N - New Water Intensive Uses Toolkit

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The Water Center
University of Pennsylvania

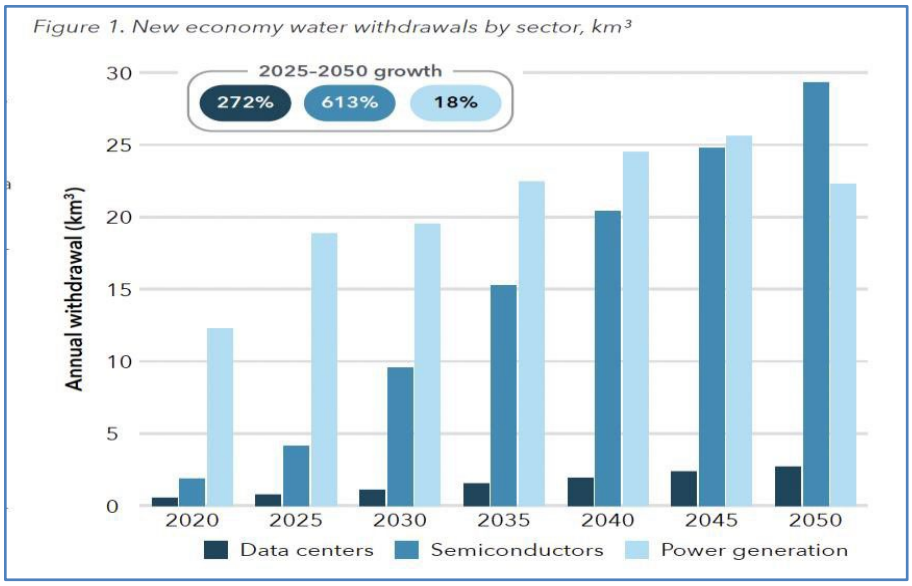
TO: **Catawba Wateree Water Management Group Integrated Planning Steering Committee**
FROM: **Ellen Kohler, Director of Applied Research and Policy**
Griffin Pitt, Undergraduate Student Research Fellow
DATE: **June 16, 2026**
RE: **Managing New Water Intensive Industrial Uses in the Catawba Wateree Watershed**

Industrial and commercial activities can use large amounts of water. Many of these uses have been part of our local economies for a long time. As our local economies evolve, new industries can lead to significant changes in water use. With the transition to a digital economy, communities are seeing new industrial uses related to semiconductor fabrication, solar panel manufacturing, and data center development.



Source: Watering the New Economy at 12.

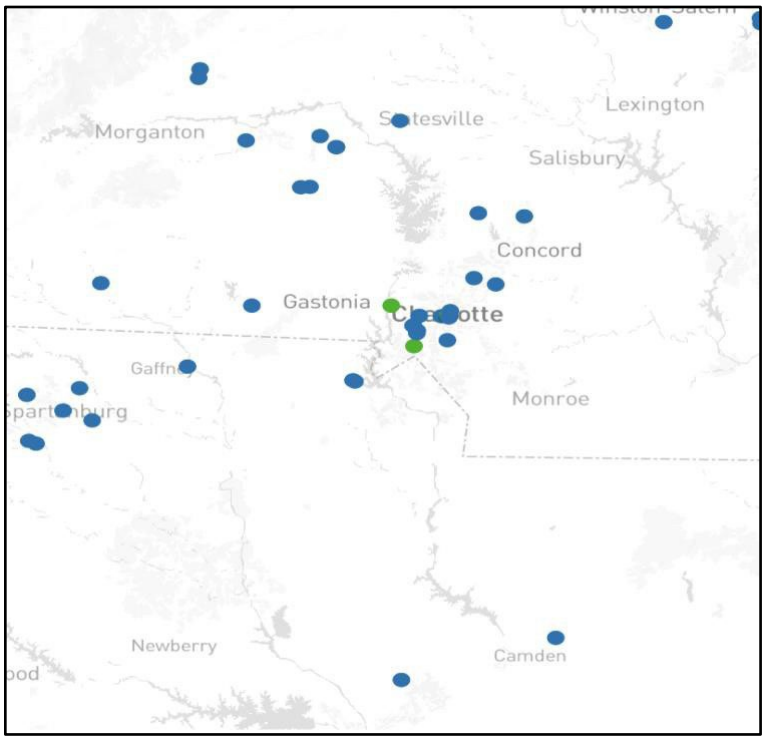
New industrial uses also impact water use indirectly depending how those energy needs are met. The table below outlines what those water impacts could look like over the next several decades.



Source: Watering the New Economy at 22.

As throughout the country, the new digital economy is showing up in the Catawba Wateree. The map below is a screenshot of the Catawba Wateree watershed region from a resource that tracks where data centers are being located. A cluster of centers is in the Charlotte area that will likely expand. Other digital enterprises are in the watershed and more will follow because of the co-location of energy and water resources.

Data Centers in the Catawba Wateree Region



Source: https://www.datacentermap.com/

With the potential impacts on water resources in mind, hyperscale data center developers, semi-conductor fabricators and other corporate entities are making different kinds of sustainability pledges that include water use. Some example pledges include:

> **Water neutral:** Balancing water use and water savings; could be at facility or in terms of impact on the community.
>
> **Water positive:** Working with the community to generate more water savings than the facility is using.
>
> **Net zero:** Broader strategy about conserving water, reducing energy use, and eliminating solid waste to improve the environment, save money, and help communities become more sustainable and resilient.
>
> **Net zero water:** Limiting the consumption of water resources and returning it back to the same watershed so as not to deplete the resources of that region in quantity or quality over the course of the year.

Understanding these pledges and translating them into community benefits can make these new industrial uses more acceptable to the community. In addition, knowing that some private entities are making these pledges and developing strategies to meet them means that other digital developers can deploy these same strategies as well. More resources are becoming available to support corporate partners in making this new industrial development more sustainable.[1] The choice of energy also impacts water usage and should be considered in assessing any corporate water pledges and monitoring compliance with them.

Supporting communities in the Catawba Wateree watershed

To get the most out of these new industrial land uses, communities and stakeholders need to be empowered with the appropriate information to navigate community benefit agreements that fit their needs. Communities across the country are providing examples of how they have decided to address these industrial land use changes. Loudon County in Virginia, home to the most data centers in the country, adopted a data center overlay district that helps set clear standards for lot size, height, setbacks and utilities.[2] Henrico County in Virginia has adopted a tax on data center equipment that it is using to support housing initiatives.[3] In April 2026, St. Louis approved a conditional use permit for a data center that includes provisions requiring a closed-loop water system, renewable energy requirements, and equipment recycling standards among others.[4] While focused on data centers, these approaches can apply equally to other new water-intensive industrial uses. There are a variety of kinds and sources of data that community members and stakeholders need to better understand the potential impacts of new water-intensive industrial land uses. Some of the information will be specific to the project and other information will be specific to the jurisdiction.

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[1] See e.g. https://water-ai-nexus.org/insight-report/; https://www.wri.org/research/volumetric-water-benefit-accounting-2-0.

[2] https://www.loudoun.gov/5990/Data-Center-Standards-Locations

[3] https://henrico.gov/services/business-personal-property-tax/

[4] https://www.stlouis-mo.gov/government/departments/mayor/news/data-center-permit-approved.cfm

The preliminary list of questions below provides a starting point for developing this understanding.

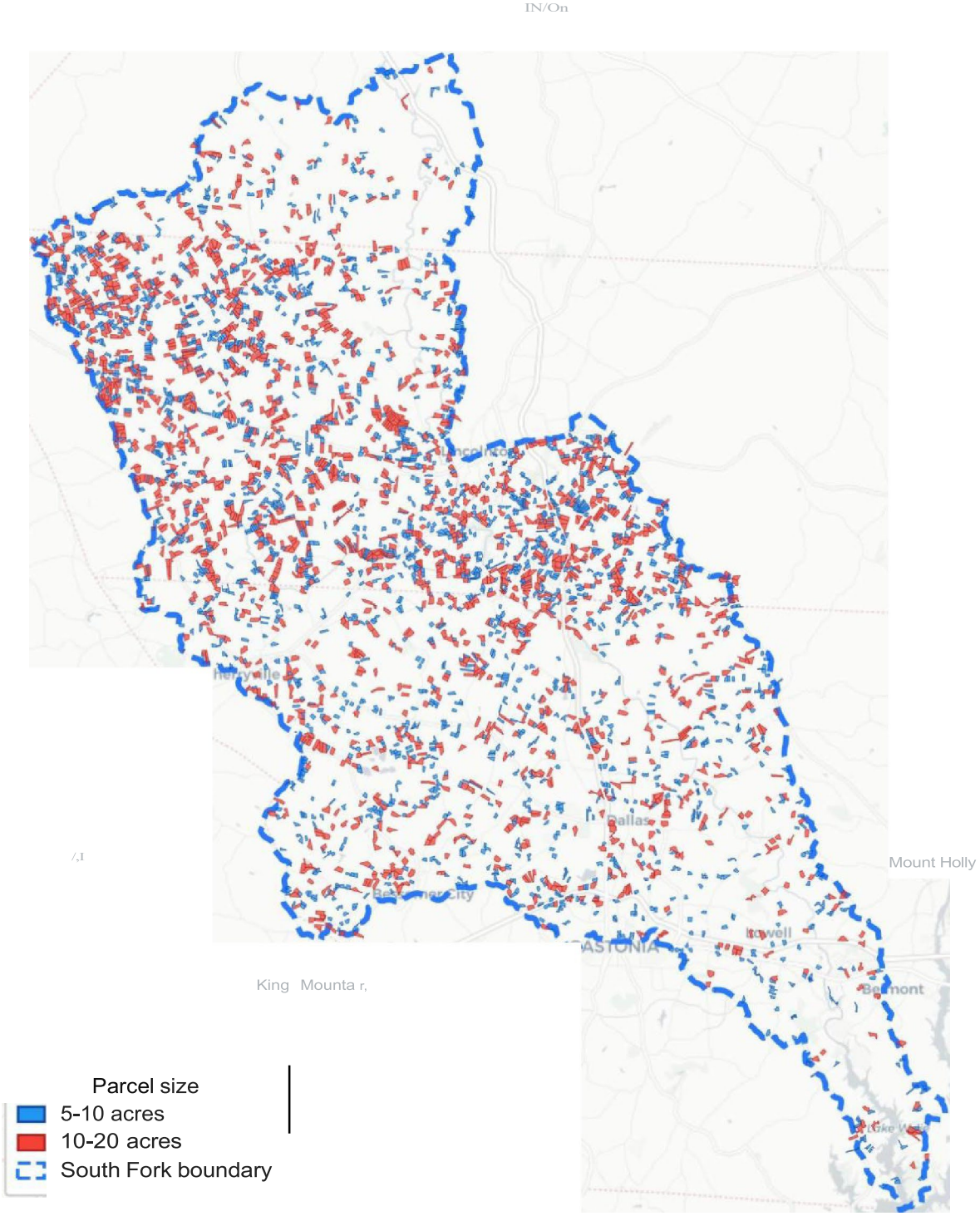
- ➢ Identify parcels & zoning in the watersheds where new water-intensive industrial uses could be located based on parcel size and access to energy & water.
- ➢ Engage in local land use processes to:
  - Adopt ordinance provisions that limit where new water intensive industrial uses can be located.
  - Impose special requirements because of high energy use, low employment, physical security needs, noise.
  - Increase fines for violations.
  - Require posting of financial guarantees for site remediation when obsolete or abandoned (10-20 year life cycle).
- ➢ Work with economic development agencies to understand state/regional tax abatements, incentives and exemptions that could impact your watershed.
- ➢ Find out who is responsible for the proposed development and whether the developer has secured tenants if they don't plan to own and run the facility.
- ➢ Support water utility managers and local officials in obtaining and sharing as much information about proposed water and energy use as soon as possible.
- ➢ Help water utilities identify infrastructure improvements and watershed protection projects that water-intensive industrial use developers should help implement. Google, for example, is seeking water replenishment projects in the Catawba Wateree region that can be implemented by 2030.[5]
- ➢ Develop and use robust monitoring practices to ensure that facilities continue to meet their water pledges.

A longer checklist of questions that will provide a deeper understanding is included as Attachment A. A table of selected resources is included as Attachment B.

The collected information will help community members and stakeholders start to identify places in the watershed that could become hot spots for water intensive industrial land uses. To make this forecasting more robust, consider that the footprint of data centers varies widely and parcels can be consolidated. The three maps below show parcels of 5 to 20 acres in three basins in the watershed. Areas where these parcels are clustered should also be considered along with larger parcels as potential locations for new industrial uses. Additional mapping that includes larger parcels as well as zoning districts will define areas for further assessment. Local and county planning departments as well as economic development agencies likely have additional information to further the analysis. Working together, the communities in the Catawba Wateree watershed can be better prepared to ensure that new water intensive industrial land uses are sustainable now and in the future.

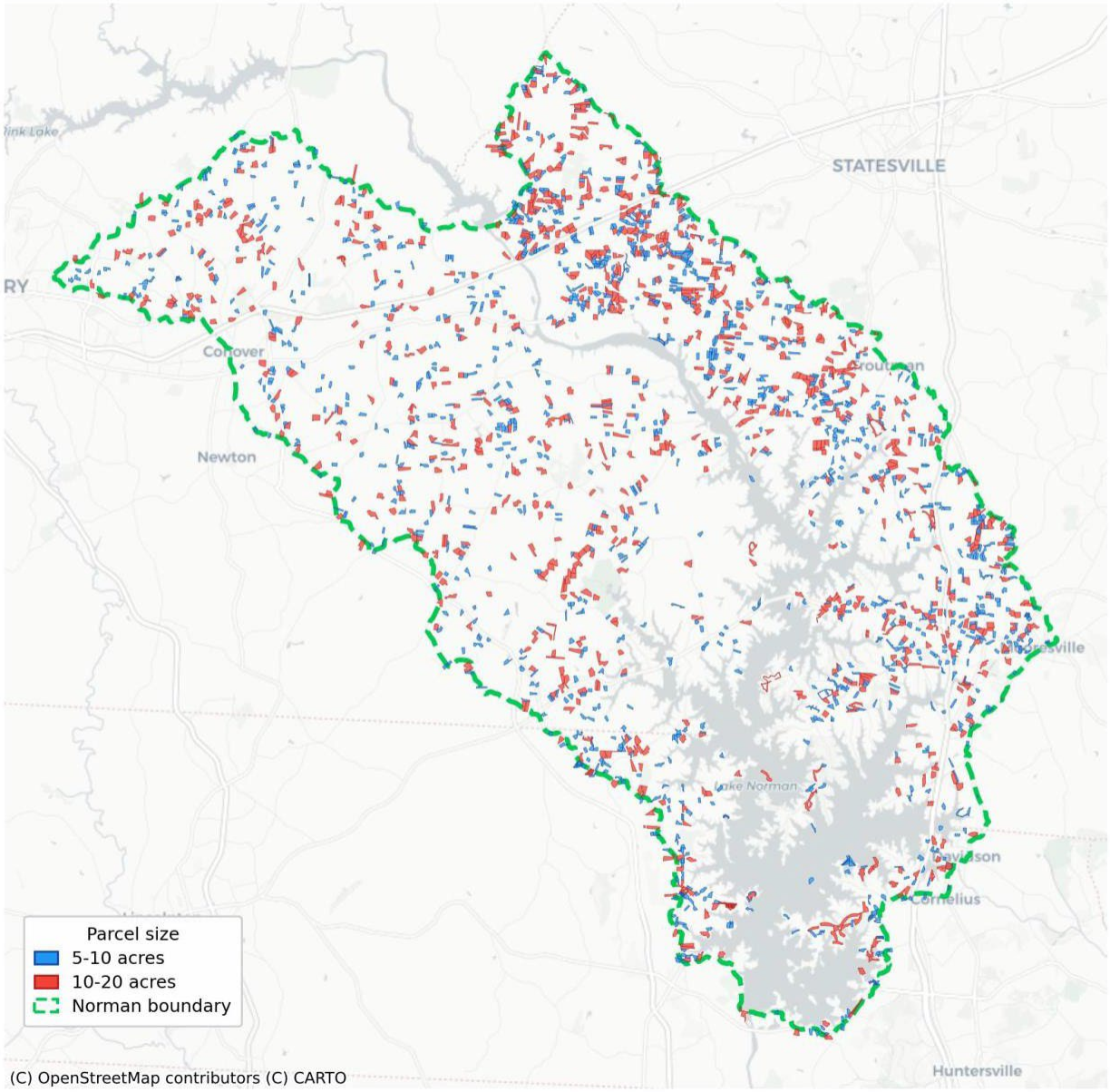
[5] See the Google request for information at https://datacenters.google/water-rfi/.

South Fork Sub-Basin - Parcels by Size

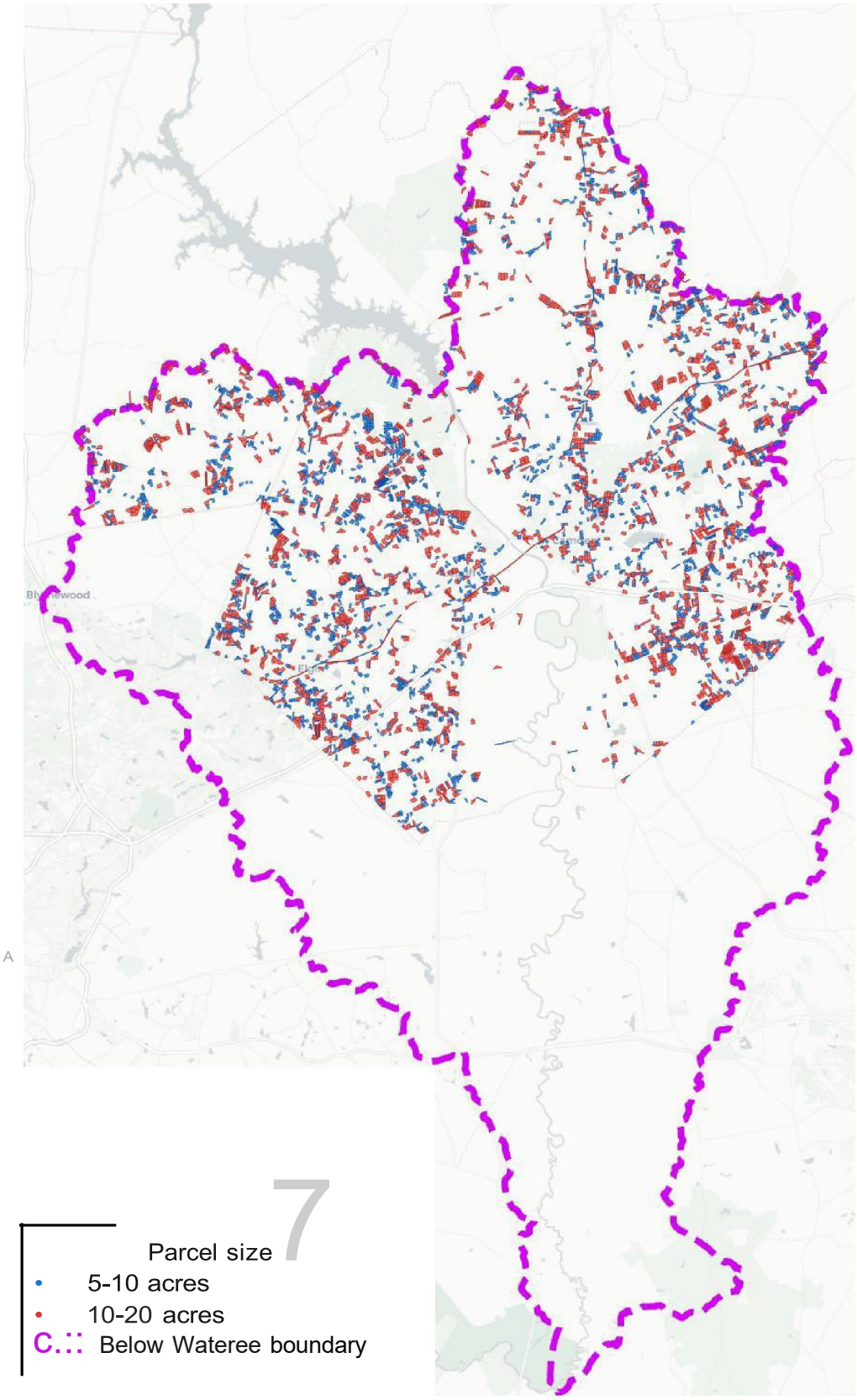


(C) OpenStreetMap contributors (C) CARTO

Norman Sub-Basin - Parcels by Size



Below Wateree Sub-Basin - Parcels by Size



(C) OpenStreetMap contributors (C) CARTO

Attachment A: Water-Intensive Industrial Use Checklist

Water Supply & Demand Forecasting

- What is the current projected water demand for the watershed over the next 10, 20, and 30 years?
- How are potential water-intensive developments incorporated into regional demand forecasts?
- Are water utilities currently receiving inquiries, speculative requests, or formal applications from water-intensive industrial/commercial developers?
- How many proposed water-intensive projects are being tracked internally?
- What is the estimated peak and annual water demand associated with those proposed facilities?
- Which utilities or sub-basins are most vulnerable to water demand spikes from large industrial users?
- How much excess wastewater treatment and distribution capacity currently exists?
- During drought conditions, how would water utilities prioritize residential, agricultural, industrial, and commercial water demand?
- What assumptions are being made about climate change impacts on long-term water availability?
- Are reservoir operating rules or interbasin transfer agreements being reconsidered because of projected water-intensive industrial growth?

Infrastructure & System Capacity

- Would accommodating new water-intensive projects require upgrades to treatment plants, pumps, transmission lines, or storage facilities in impacted drinking water and/or the wastewater system?
- Who would bear the cost of those water infrastructure upgrades: ratepayers or developers? Who would bear the maintenance costs for those upgrades?
- Are water utilities considering special rate structures or capacity charges for water-intensive customers?
- Could water-intensive industrial/commercial demand accelerate the timeline for expensive capital projects?
- Can water utilities implement reclaimed water or non-potable reuse systems for industrial cooling?
- What is the estimated energy demand associated with additional water treatment and pumping?
- How resilient is the current water system to simultaneous stressors such as drought, population growth, and industrial expansion?

Governance, Transparency & Planning

- Does the water system and/or municipality currently have a formal policy regarding new water-intensive industrial or commercial uses?
- How are local governments coordinating regionally on industrial and commercial water allocation decisions?
- Are water utilities sharing information about pending water-intensive projects across the impacted watershed?
- What public disclosure requirements exist for large water users or development agreements?
- How are cumulative impacts evaluated when multiple facilities are proposed in the same region?
- Are environmental justice communities being consulted in siting and permitting decisions?
- What role do state regulators play in reviewing large industrial/commercial water demand proposals?

Economic & Community Impacts

- What long-term economic benefits would proposed water-intensive industrial/commercial developments provide relative to their water demand?
- How many permanent jobs are typically created per million gallons of daily water use?
- Are water utilities concerned about stranded infrastructure investments if facilities become obsolete or relocate?
- What mechanisms exist to ensure developers contribute fairly to long-term watershed stewardship?
- Could industrial/commercial demand increase residential water rates or create affordability concerns?
- What conditions or thresholds would lead the water utility to reject or delay proposed water-intensive industrial/commercial proposals?

Attachment B: Table of Selected Data Center Toolkits

Resource Name	Type/Category	Link	Focus/Notes
Data Center Ordinance Guide - Montgomery and Chester County Planning Commissions (PA)	Educational Materials	https://www.montgomerycountypa.gov/departments/planning-commission/publications/data-center-ordinance-guide	Model ordinance language
Why community benefit agreements are necessary for data centers — Brookings	CBA & Negotiation Framework	https://www.brookings.edu/articles/why-community-benefit-agreements-are-necessary-for-data-centers/	Explains key CBA components: jobs, tax commitments, environmental protections
Community Benefits Agreements - Climate & Community Institute	CBA & Negotiation Framework, Educational Materials	https://climateandcommunity.org/research/cbas/	Best practices, case studies, governance recommendations
Community Benefits Resource Guide — Data for Progress	CBA & Negotiation Framework, Educational Materials	https://www.dataforprogress.org/project-agreements-resource-guide	Historical context, leverage strategies, examples of project labor agreements
Community Benefits Resources — UC Berkeley Law	CBA & Negotiation Framework, Educational Materials, Assessment Toolkit	https://www.law.berkeley.edu/research/clee/research/law-of-the-sea-institute/california-offshore-wind/community-benefits-agreements-resources/	Templates, guides, case studies for CBAs
North Start Data Center Policy Toolkit - AI Now	Assessment Toolkit	https://docs.google.com/document/d/1x8KsCVOhJS97rxzdd_bWW4Me1Errpj6ggyU5dAdNKUM/edit?tab=t.0#heading=h.48syutlxcwpx	Policy Interventions to Stop AI Data Center Expansion
Local Approaches to Data Center Development — Southern Environmental Law Center	Educational Materials, Assessment Toolkit	https://www.selc.org/resource/getting-it-right-local-approaches-to-data-center-development/	Local zoning authority overview and practical advice
Investigating the Environmental and Socioeconomic Strain of Datacenters on Local Communities	Research	https://arxiv.org/abs/2506.03367	Environmental burden analysis: water use, noise, infrastructure
Quantifying and Addressing the Impact of Data Centers on Public Water System	Research	https://arxiv.org/abs/2603.02705	Quantifying water withdraws on public water systems

Environmental impact and net-zero pathways for sustainable artificial intelligence servers in the USA	Research	https://www.nature.com/articles/s41893-025-01681-y	Sustainable AI servers environmental impact
Uncovering and Addressing the Secret Water Footprint of AI Models	Research	https://arxiv.org/abs/2304.03271	Water footprint of data centers

Category	Definition
Research	Academic studies, reports, or analyses that provide evidence about impacts, risks, or benefits of data centers
Assessment Toolkit	Structured guides, checklists, or frameworks that communities can use to evaluate a proposed project
Educational Materials	Guides, primers, or introductory resources aimed at educating community members about concepts, terminology, and processes
CBA & Negotiation Framework	Materials focused specifically on Community Benefits Agreements (CBAs), host community agreements, or other negotiated agreements between the community and developers