Data Centers *and the* Delaware River Basin

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March 31, 2026

Upper Delaware Council

Delaware River Basin Commission

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1. Why is DRBC thinking about data centers?
2. Water use and power in the Delaware River Basin
3. All about data centers
4. Data centers and the DRB

Section 1

Why is DRBC thinking about data centers?

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Authorization

Section 1.5 Emergent Issues

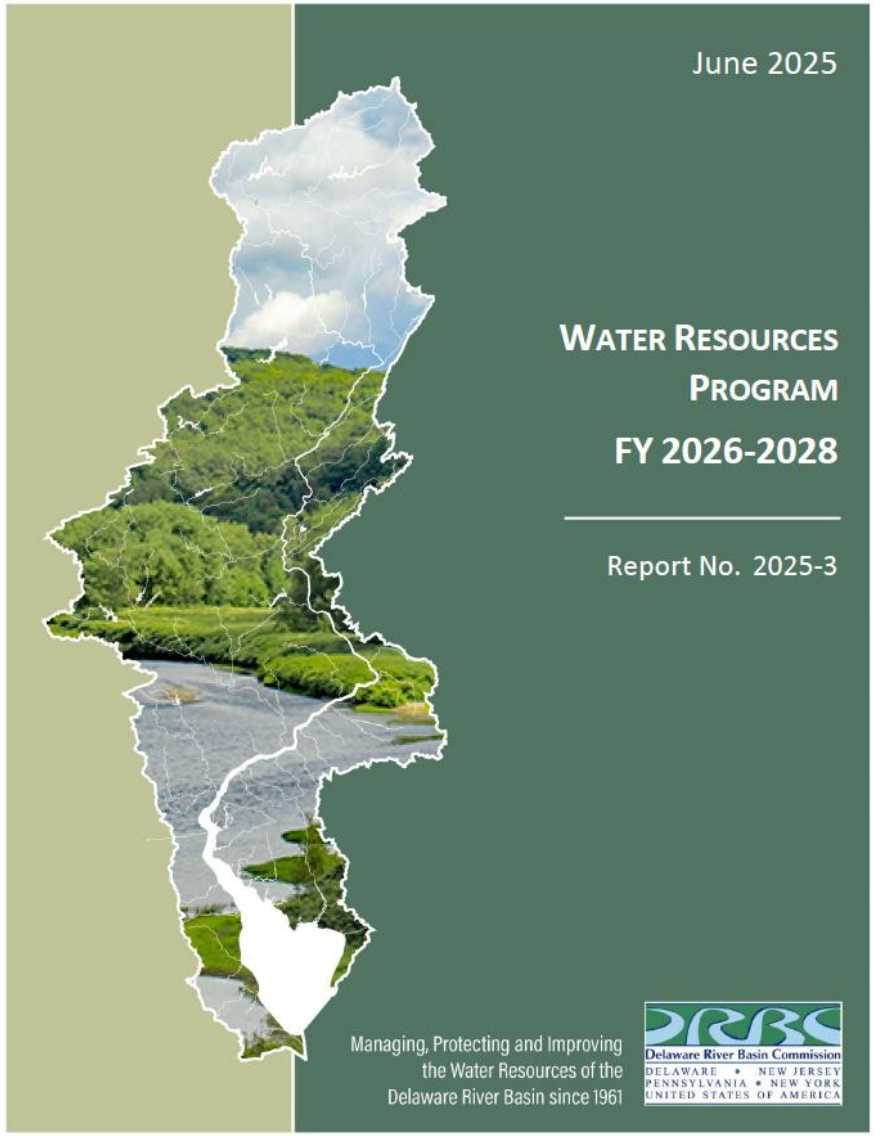
- 1.5.8 Data Centers

The growing importance of data centers and their potential impacts on water resources within the Basin are important to understand. Data centers consume large volumes of potable water for various purposes, primarily for cooling systems and humidity control, and the Commission has received inquiries for construction of data centers in recent years. DRBC will research and develop a briefing document on the potential impacts that data centers may have on water resources in the Basin.

Section 2.2 Work Program

- 2.2.1.1.1 Water Supply Planning for a Sustainable Water Future 2060

DRBC will work to develop a briefing document on the potential impacts that data centers may have on water resources.

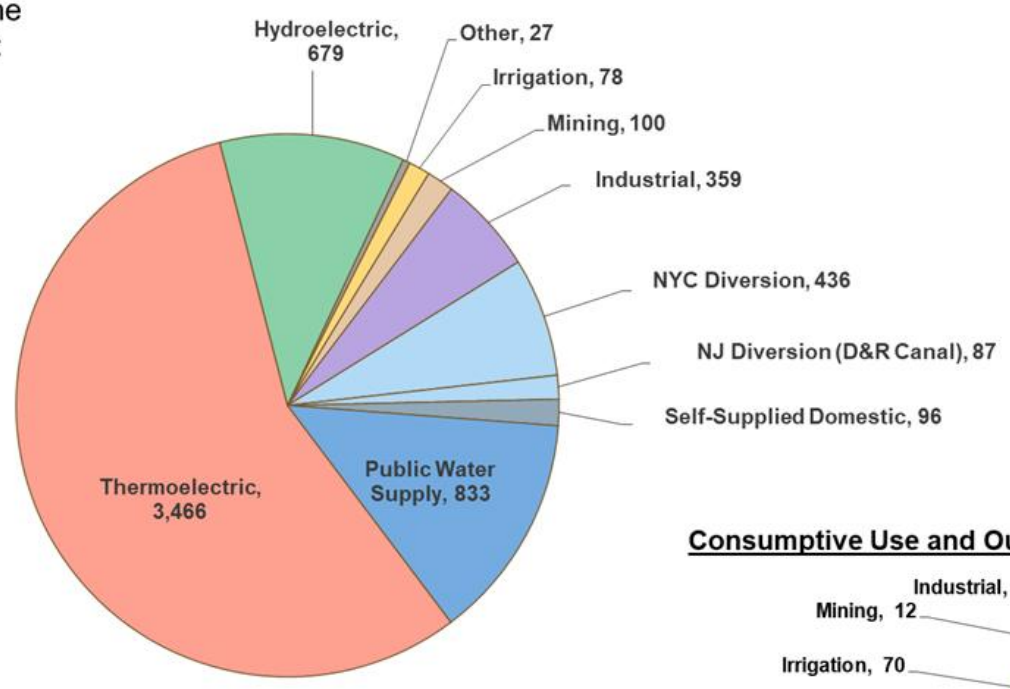


Section 2

Water use and power in the Delaware River Basin

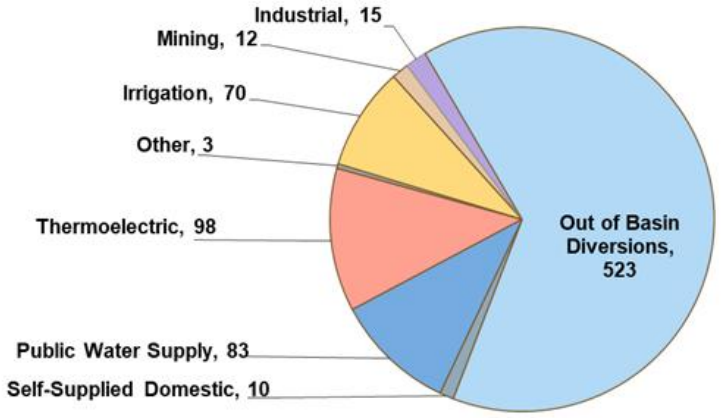
FY26-28 WRP: 2024 DRB Water Withdrawals

Total Water Withdrawals (ground and surface) from the Delaware River Basin, **2024**: **6,160 MGD**



- Thermoelectric
- Hydroelectric
- Other
- Irrigation
- Mining
- Industrial
- NYC Diversion
- NJ Diversion (D&R Canal)
- Self-Supplied Domestic
- Public Water Supply

Consumptive Use and Out-of-Basin Diversions: 814 MGD



~ 6.1 BGD in 2024

- ~3.5 BGD is thermoelectric
- 0.8 BGD is PWS

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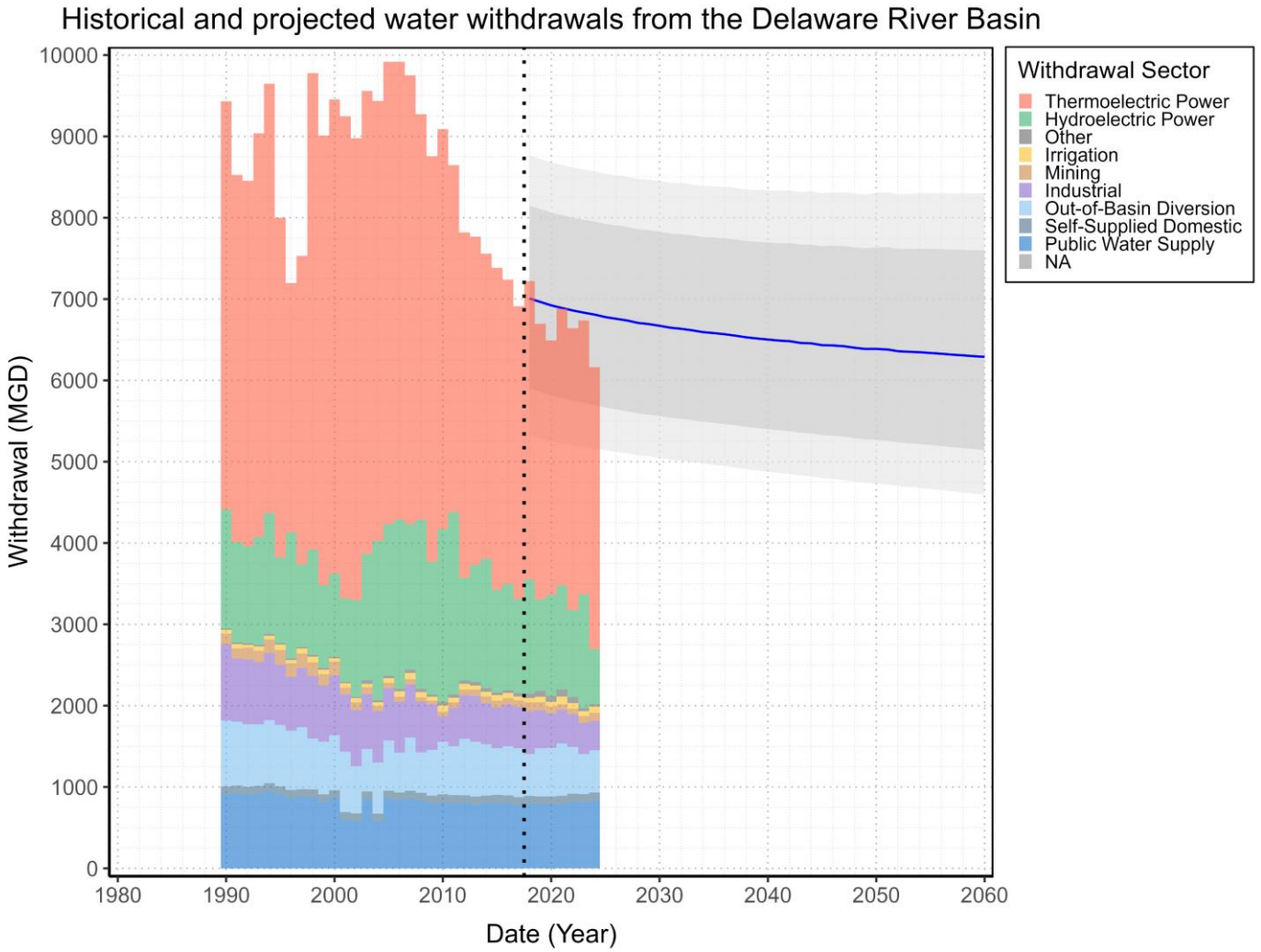
FY26-28 WRP: 1990 – 2024 DRB Water Withdrawals



Water Withdrawals 1990 - 2024

~ 10,000 MGD in 2005 (10 BGD)

~ 6,000 MGD in 2024 (6 BGD)

~ 4,000 MGD *decrease* (4 BGD)

Decrease Projected to 2060

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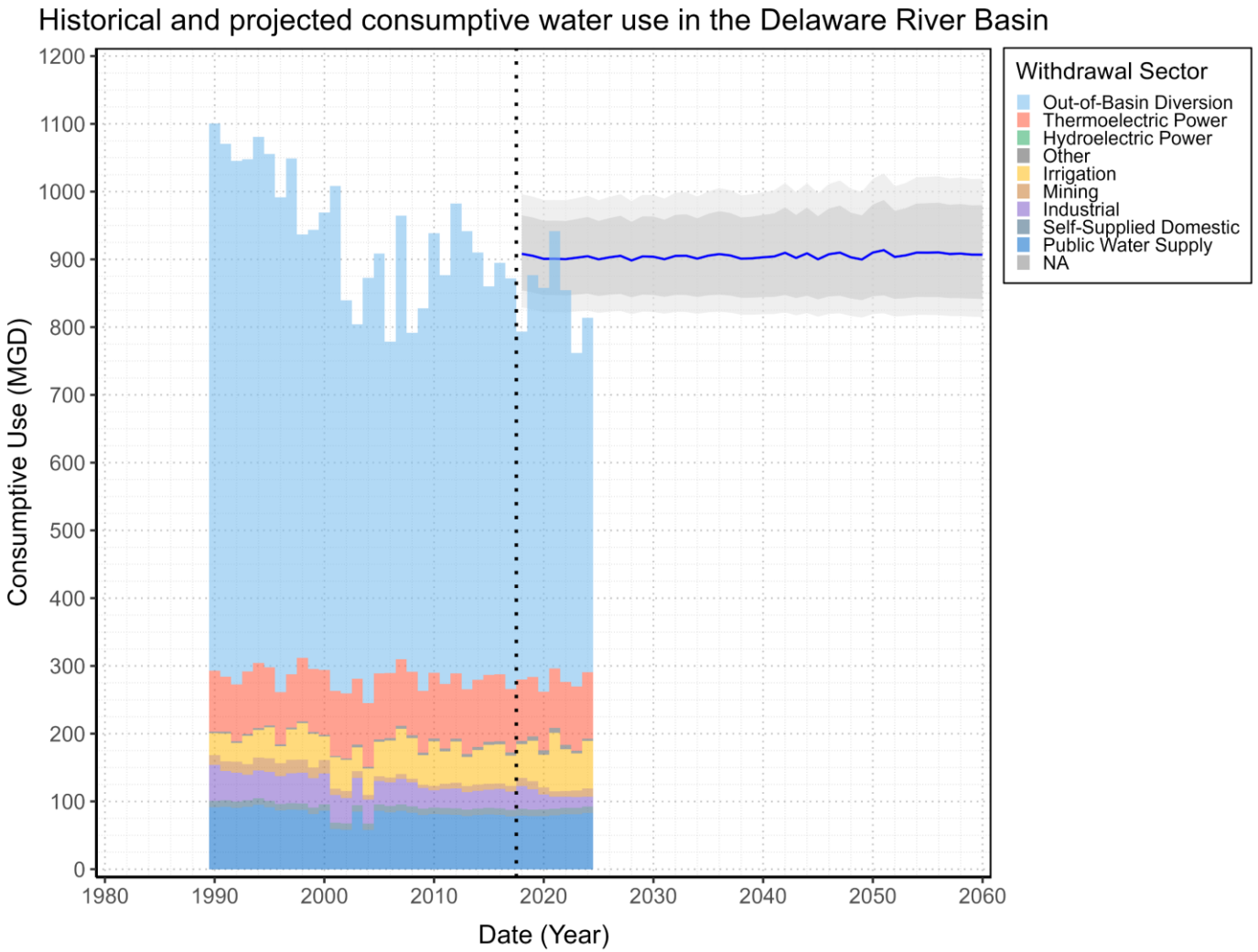
FY26-28 WRP: 1990 – 2024 DRB Consumptive Water Use



Consumptive Water Use

~ 1,100 MGD in 1990 (1 BGD)

~ 825 MGD in 2024 (0.825 BGD)

~ 300 MGD decrease (0.3 BGD)

Projected to remain constant

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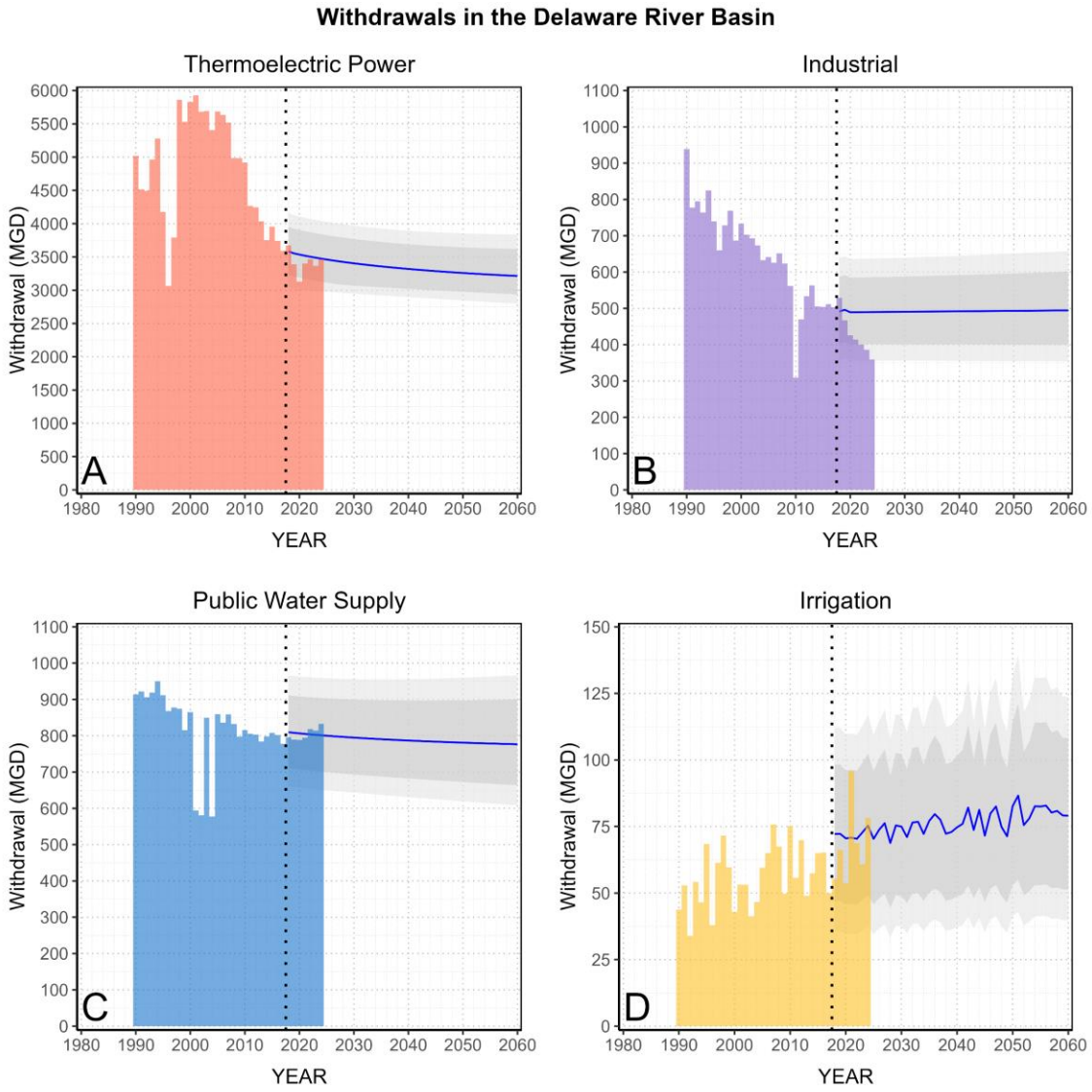
FY26-28 WRP: 4 Sector trends



Notes

A. Thermoelectric **at** projection

B. Industrial **below** projection

C. PWS shows **increase**

D. Irrigation shows **increase**

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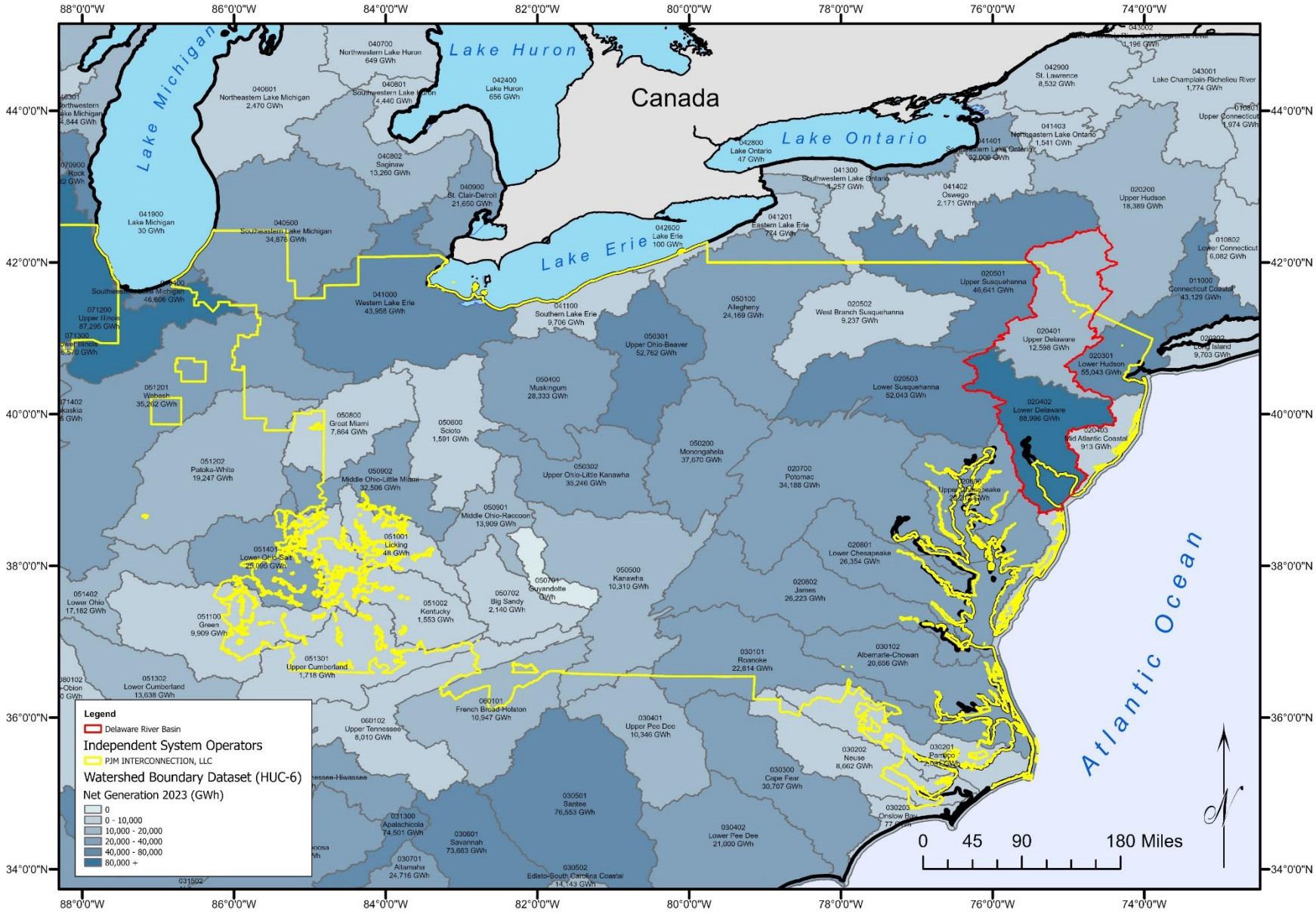
PJM Grid

- Regional Transmission Organization (RTO)
- Largest grid in U.S.
- ~65 million customers
- 13 states + D.C.
- HQ in Valley Forge, PA
- Regulated by FERC

CY2023 net power generation
Lower Delaware HUC

2nd in the country
1st in the PJM

88,690 GWh in 2023



Total net power generation (from all sources) as reported through EIA Form-923 (CY2023), aggregated to a HUC-6 scale for the entire country. Labels within each watershed indicate the watershed name, as well as the net generation in gigawatt-hours (GWh).

Sources:
United States Energy Information Administration (EIA) Form 923, Form 860 and "PowerPlants" shapefile.
USGS Watershed Boundary Dataset (HUC-6 boundaries)

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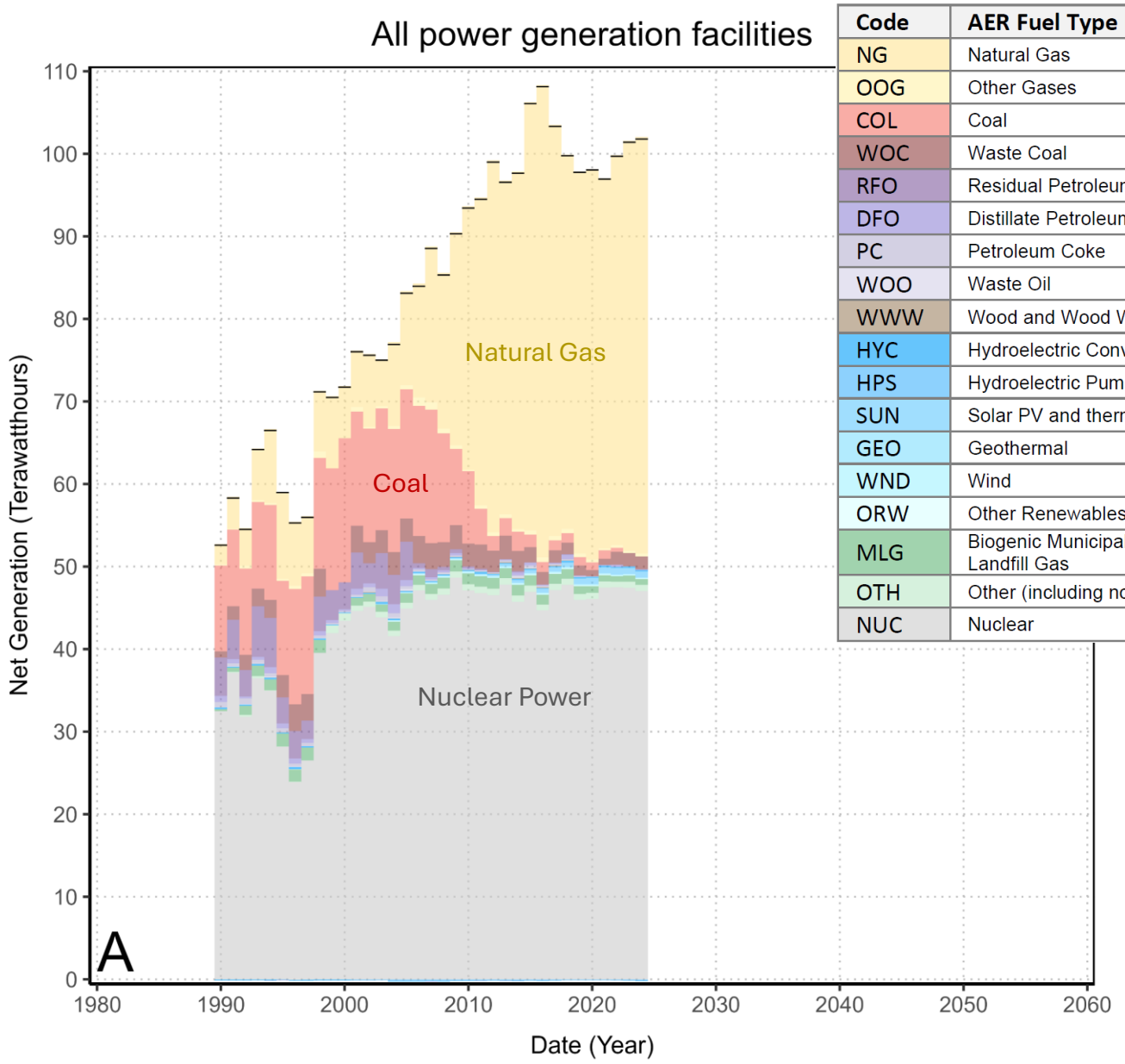
The Delaware River

historical context for essential power generation

Power Facility Net Generation in the Delaware River Basin Categorized by AER Fuel Type



Code	AER Fuel Type Description
NG	Natural Gas
OOG	Other Gases
COL	Coal
WOC	Waste Coal
RFO	Residual Petroleum
DFO	Distillate Petroleum
PC	Petroleum Coke
WOO	Waste Oil
WWW	Wood and Wood Waste
HYC	Hydroelectric Conventional
HPS	Hydroelectric Pumped Storage
SUN	Solar PV and thermal
GEO	Geothermal
WND	Wind
ORW	Other Renewables
MLG	Biogenic Municipal Solid Waste and Landfill Gas
OTH	Other (including nonbiogenic MSW)
NUC	Nuclear

*Total net power generation includes facilities in the Upper Delaware (020401) and the Lower Delaware (020402).

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Section 3

All about data centers

What is a data center?

Gemini

2.5 Flash

What is a data center? Specifically those which are developed to support things like Machine Learning or Artificial Intelligence.

A **data center** is a centralized physical facility—a building, a dedicated room, or a collection of buildings—that houses computer systems and associated components, such as servers, storage systems, and networking equipment, which are necessary for storing, processing, and managing large amounts of data and applications. They serve as the critical infrastructure backbone for IT operations.

Data centers are equipped with robust supporting infrastructure, including:

- **Power Subsystems:** Uninterruptible Power Supplies (UPS) and backup generators to ensure continuous operation.
- **Cooling Equipment:** Systems to dissipate the significant heat generated by the IT hardware.
- **Security Systems:** Physical and digital measures to protect critical assets and sensitive data.
- **Network Infrastructure:** High-bandwidth cabling, routers, and switches for data transfer.

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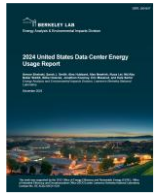
What could a data center look like?

Table 4.1. Data Center Space Types Considered in This Study

Space Type	Description
Telco Edge	Deployment of small closets/rooms to micro data centers and network infrastructure by communications companies as points of presence throughout their network
Commercial Edge	Network closets, server rooms, and micro-data centers deployed to support modern digital, infrastructure, and software delivery services to edge locations for commercial (focused on customer and business operations) and industrial (focused on supply chain and channel operations)
Small and Medium Businesses (SMB)	SMB deployments in their own internal facilities
Enterprise Branch	Classic remote and branch office (ROBO) deployments for large enterprises in their own internal facilities (network closets, server rooms)
Internal	Data centers run by enterprises, internally, for their own use
Communications Service Providers (Comms SPs)	Data centers run by telecommunications/cable companies to support internal services required to enable provision of communications technology services to their customers
Colocation – Sm/Med Scale	Data centers built by local colocation companies typically providing retail leasing at smaller scale
Colocation – Large Scale	Data centers built by major colocation companies providing wholesale and retail colocation leasing, typically deploying large and mega datacenters
Hyperscale	Data centers built by companies that deploy internet services and platforms at massive scale

Currently exist within the Delaware River Basin



Reference:

2024 United States Data Center Energy Usage Report

Arman Shehabi, Sarah J. Smith, Alex Hubbard, Alex Newkirk, Nuoa Lei, Md Abu Bakar Siddik, Billie Holecek, Jonathan Koomey, Eric Masanet, and Dale Sartor

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Water use on a national scale?

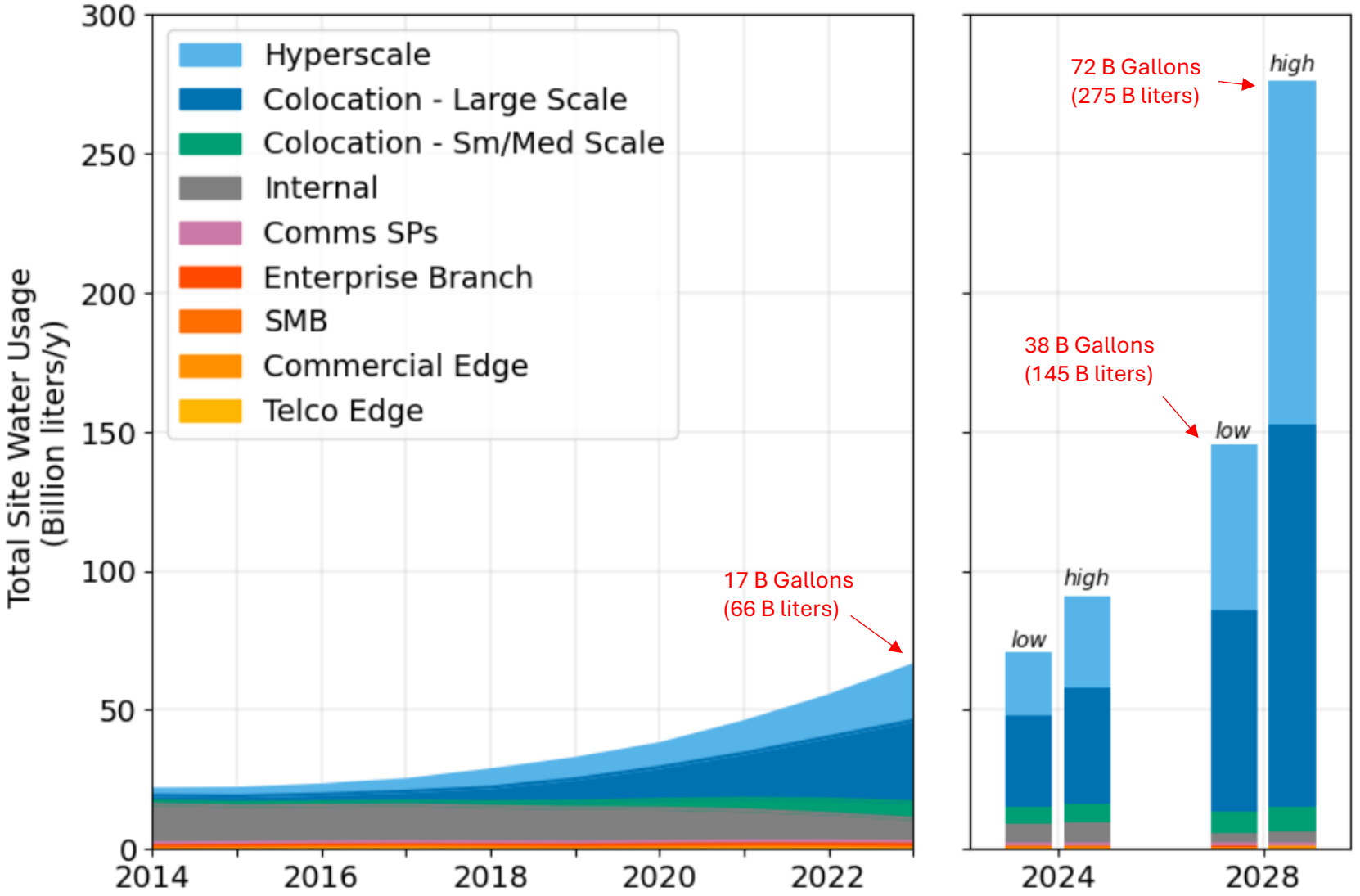

Figure 5.9. Direct water consumption by data center type.

Reference:

2024 United States Data Center Energy Usage Report

Arman Shehabi, Sarah J. Smith, Alex Hubbard, Alex Newkirk, Nuoa Lei, Md Abu Bakar Siddik, Billie Holecek, Jonathan Koomey, Eric Masanet, and Dale Sartor

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Data centers electrical demand?

Increase in electricity consumption will likely impact water withdrawals for thermoelectric generation in DRB.

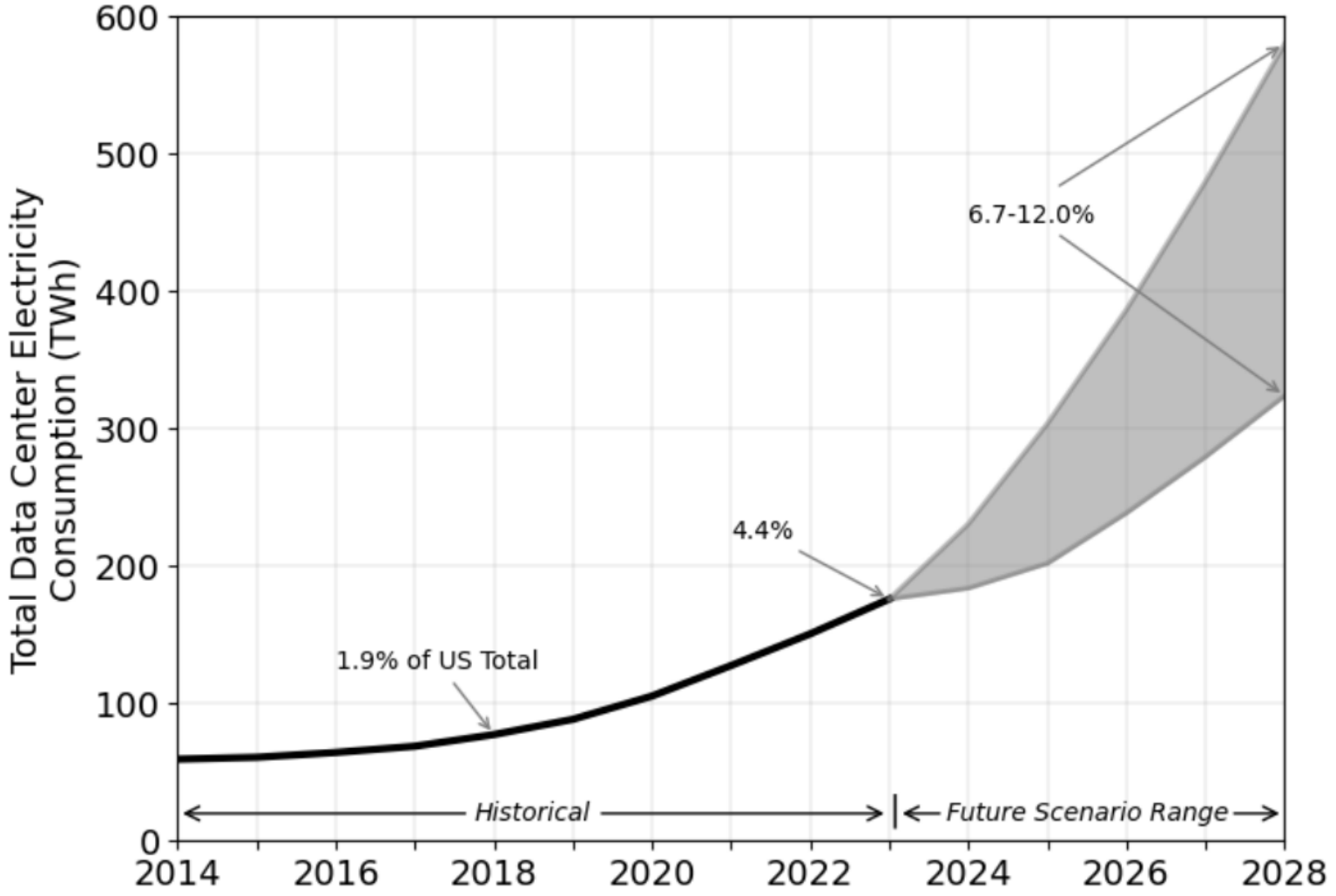

Figure ES-1. Total U.S. data center electricity use from 2014 through 2028.

Reference:

2024 United States Data Center Energy Usage Report

Arman Shehabi, Sarah J. Smith, Alex Hubbard, Alex Newkirk, Nuoa Lei, Md Abu Bakar Siddik, Billie Holecek, Jonathan Koomey, Eric Masanet, and Dale Sartor

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Promise Kept: Governor Sherrill Takes Bold Action with Executive Orders Declaring State of Emergency on Utility Costs

Posted on 01/20/2026

Shapiro among governors whose states rely on PJM who want data centers to guarantee their own power

The governors are exploring fast track approval for data centers that agree to deliver dependable power to the grid as part of the connection process.

EMBER 3, 2025 12:07 PM

N.J. General Assembly passes bill requiring large data centers to pay for their grid upgrades

Pennsylvania governor's legal action against PJM prevents massive price hikes across 13 states

DATA

N.J. families just got hit with the nation's biggest energy bill spike. See the brutal numbers.

Updated: Mar. 23, 2026, 6:46 p.m. | Published: Mar. 23, 2026, 10:01 a.m.

NEWS

New Jersey governor looks to build 'thousands of megawatts' of renewables, attacks PJM 'mismanagement'

By Will Norman

January 26, 2026

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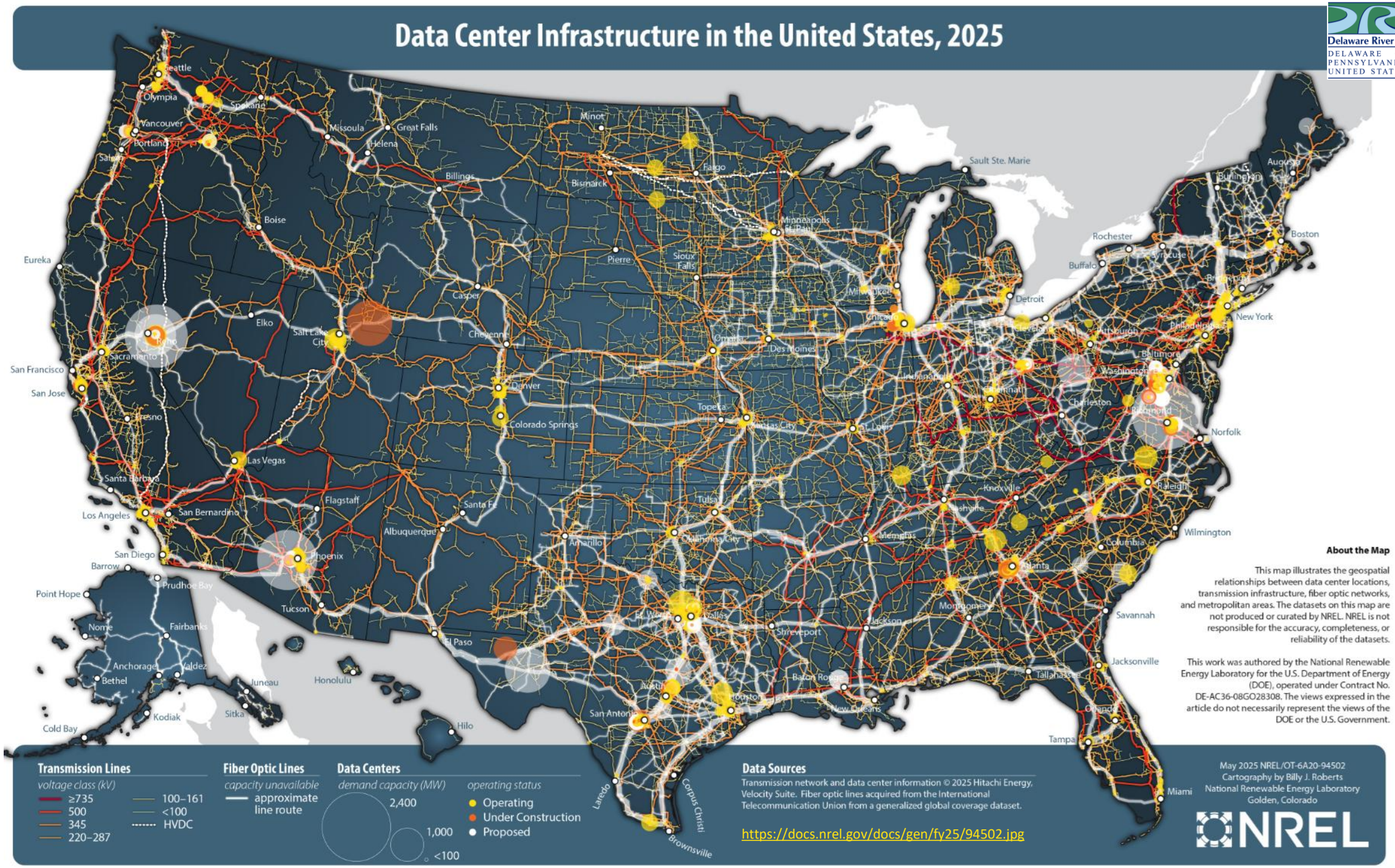
Data Center Infrastructure in the United States, 2025
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Seattle
Olympia
Spokane
Vancouver
Portland
Salem
Missoula
Great Falls
Helena
Minot
Billings
Bismarck
Fargo
Sault Ste. Marie
Boise
Eureka
Pierre
Sioux Falls
Minneapolis
St Paul
Rochester
Buffalo
Boston
Casper
Detroit
Elko
Salt Lake City
Reno
Sacramento
Cheyenne
Omaha
Des Moines
Chicago
New York
San Francisco
San Jose
Denver
Topeka
Kansas City
St. Louis
Baltimore
Washington
Charleston
Fresno
Colorado Springs
Norfolk
Las Vegas
Santa Barbara
Knoxville
Raleigh
Flagstaff
Santa Fe
Tulsa
Los Angeles
San Bernardino
Albuquerque
Amarillo
Oklahoma City
Memphis
Columbia
Wilmington
San Diego
Phoenix
Atlanta
Barrow
Prudhoe Bay
Point Hope
Tucson
Savannah
Nome
Fairbanks
Shreveport
Jackson
Montgomery
Jacksonville
Anchorage
Valdez
Bethel
Juneau
Honolulu
Baton Rouge
Tallahassee
Kodiak
Sitka
Houston
Orlando
Cold Bay
Hilo
San Antonio
Tampa
Laredo
Corpus Christi
Brownsville
Miami
About the Map
This map illustrates the geospatial relationships between data center locations, transmission infrastructure, fiber optic networks, and metropolitan areas. The datasets on this map are not produced or curated by NREL. NREL is not responsible for the accuracy, completeness, or reliability of the datasets.
This work was authored by the National Renewable Energy Laboratory for the U.S. Department of Energy (DOE), operated under Contract No. DE-AC36-08GO28308. The views expressed in the article do not necessarily represent the views of the DOE or the U.S. Government.
Transmission Lines
voltage class (kV)
≥735
500
345
220–287
100–161
<100
HVDC
Fiber Optic Lines
capacity unavailable
approximate line route
Data Centers
demand capacity (MW)
2,400
1,000
<100
operating status
Operating
Under Construction
Proposed
Data Sources
Transmission network and data center information © 2025 Hitachi Energy, Velocity Suite. Fiber optic lines acquired from the International Telecommunication Union from a generalized global coverage dataset.
https://docs.nrel.gov/docs/gen/fy25/94502.jpg
May 2025 NREL/OT-6A20-94502
Cartography by Billy J. Roberts
National Renewable Energy Laboratory
Golden, Colorado
NREL

NYC and NOVA hubs surround the DRB

Transmission Lines

voltage class (kV)

- ≥735
- 500
- 345
- 220–287
- 100–161
- <100
- HVDC

Fiber Optic Lines

capacity unavailable

- approximate line route

Data Centers

demand capacity (MW)

- 2,400
- 1,000
- <100

operating status

- Operating
- Under Construction
- Proposed

https://docs.nrel.gov/docs/gen/fy25/94502.jpg

Section 4

Data centers and the DRB

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What is the DRBC planning section up to?

Research existing data centers in the DRB

- Establish a list using resources such as data portals, internet searches, and NAICS
- Assess location intersection with public water supply service areas*
- Review industry characteristics (e.g. EIA, other agencies)

Track proposed data centers in the DRB

- Only one inquiry with DRBC to date regarding data centers
- No applications to date
- Review news releases & stay “in-the-know”

Evaluate ways to reduce impacts

- This means understanding the potential impacts as well!

* *DRBC reviews water withdrawals above 100,000 gpd (or 10,000 gpd in the SEPA-GWPA). There are currently no approvals for self-supplied data centers.*

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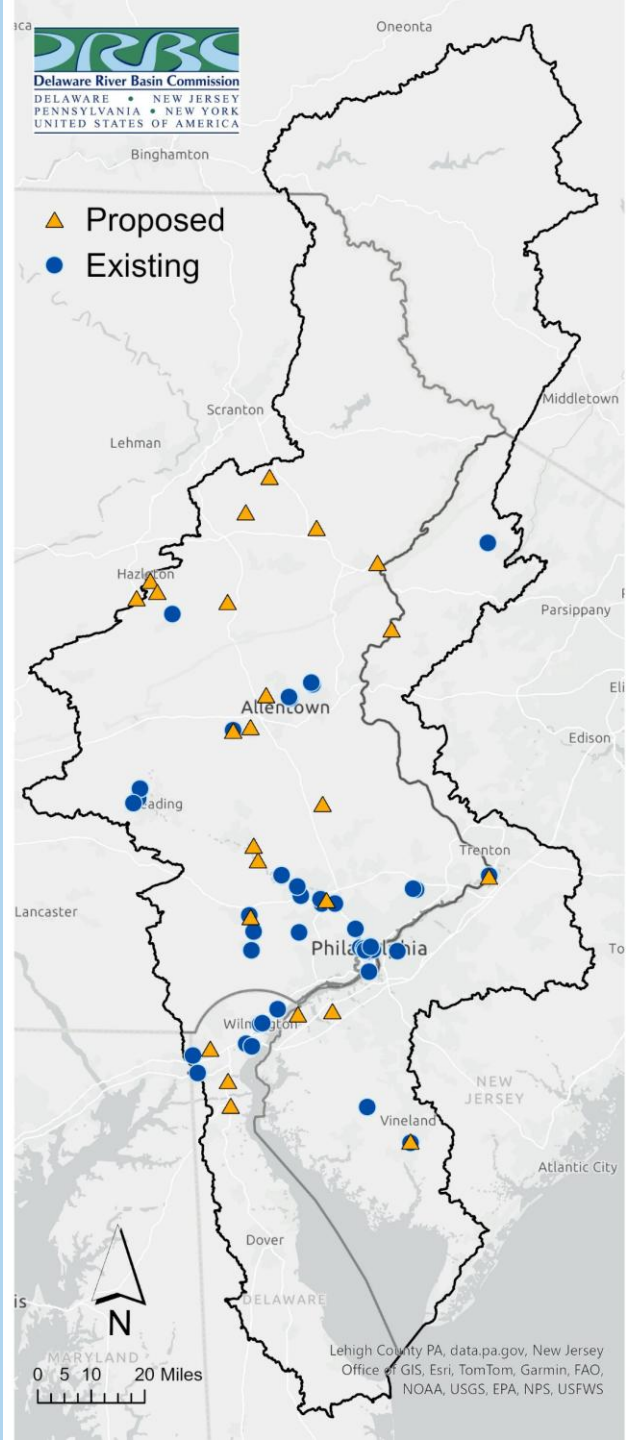
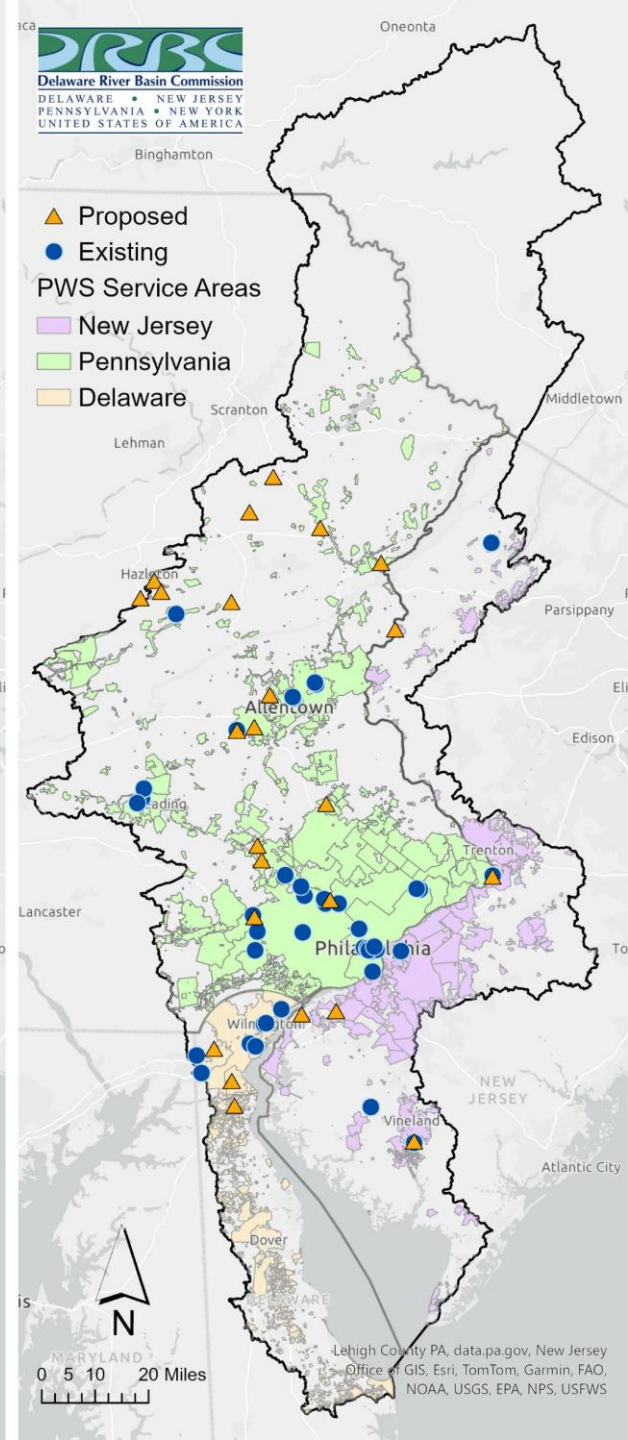
Data centers across the DRB

Basin State	Existing	Proposed
Pennsylvania	51	18
New Jersey	6	3
Delaware	9	3
New York	0	0
	66	**24**





What have we learned?

There are over 60 operating in the DRB

- All served by public water supply
- Not hyperscale

Water supply utilities likely have Non-Disclosure Agreements (NDA) with data center developers

Facility level data is difficult to obtain

Meetings with other regulatory agencies are helpful

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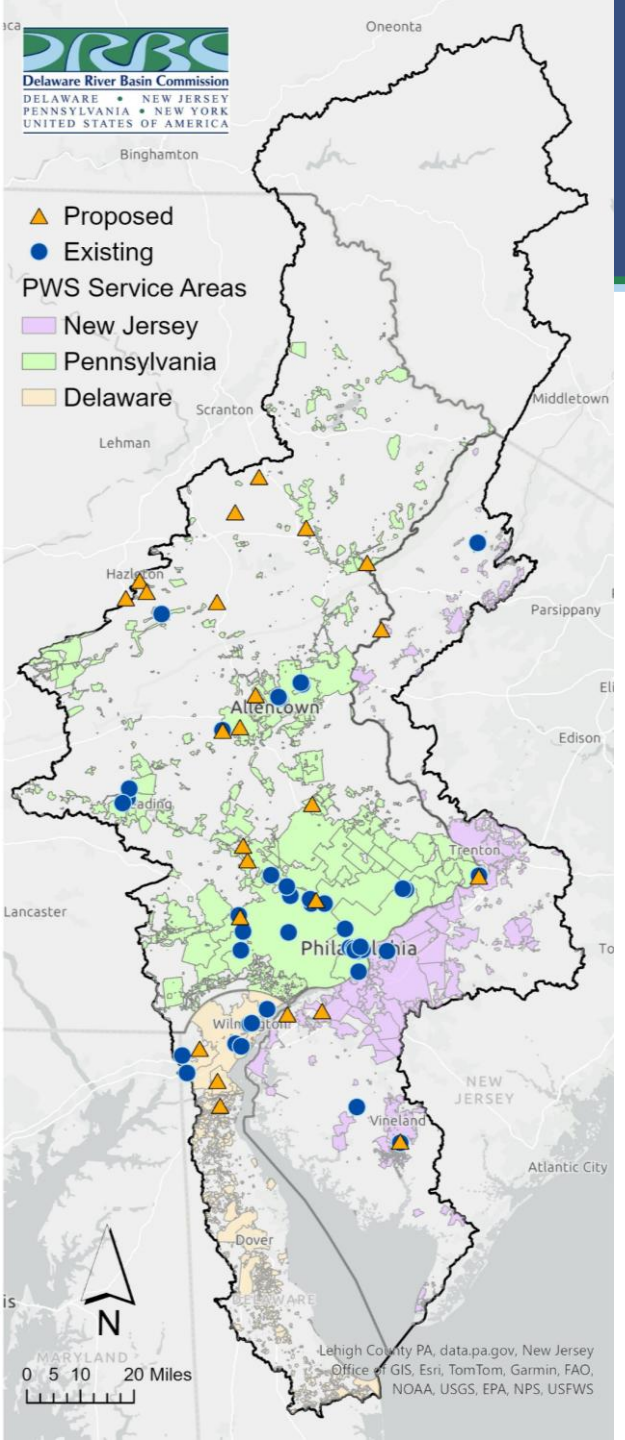

Water use considerations

SOURCING	Where will cooling water come from? • No applications or approval to date • Primarily being served as PWS customers
CONSUMPTIVE USE	What do DC tend to use consumptively? • Does DC consumptive use on PWS change their 10% CU assumption?
EMERGENCY RESPONSE PLANNING	How are DC prepared for resource emergencies? • Drought Management Contingency Planning (DMCP) considerations

Thank you!

DRBC website

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