

Delaware River Basin Commission

Water Supply Planning & Use Overview

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Water Resource Planning Section

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South Korean Delegation



Delaware River Basin Commission

DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

DRBC Planning Authority

- > Compact – Planning Powers and Duties (Section 3.2)
 - > Comprehensive Plan (Section 13.1)
 - >Water Resources Program (Section 13.2)
 - >Annual Work Plan/Budget (Section 13.3)
 - >Annual Report (Section 14.12)

Water Resources Program

- WRP required by the Compact (Articles 3.2 & 13.2)
- Required to be updated annually, sets strategic plan for DRBC program direction “during the ensuing six years or such other reasonably foreseeable period” (lately 3 years)
- Program presented in two parts:
 - **Section I - Conditions**
 - **Section II – Work Program**
- FY2019-2021 recently adopted.

Delaware River
Basin Commission

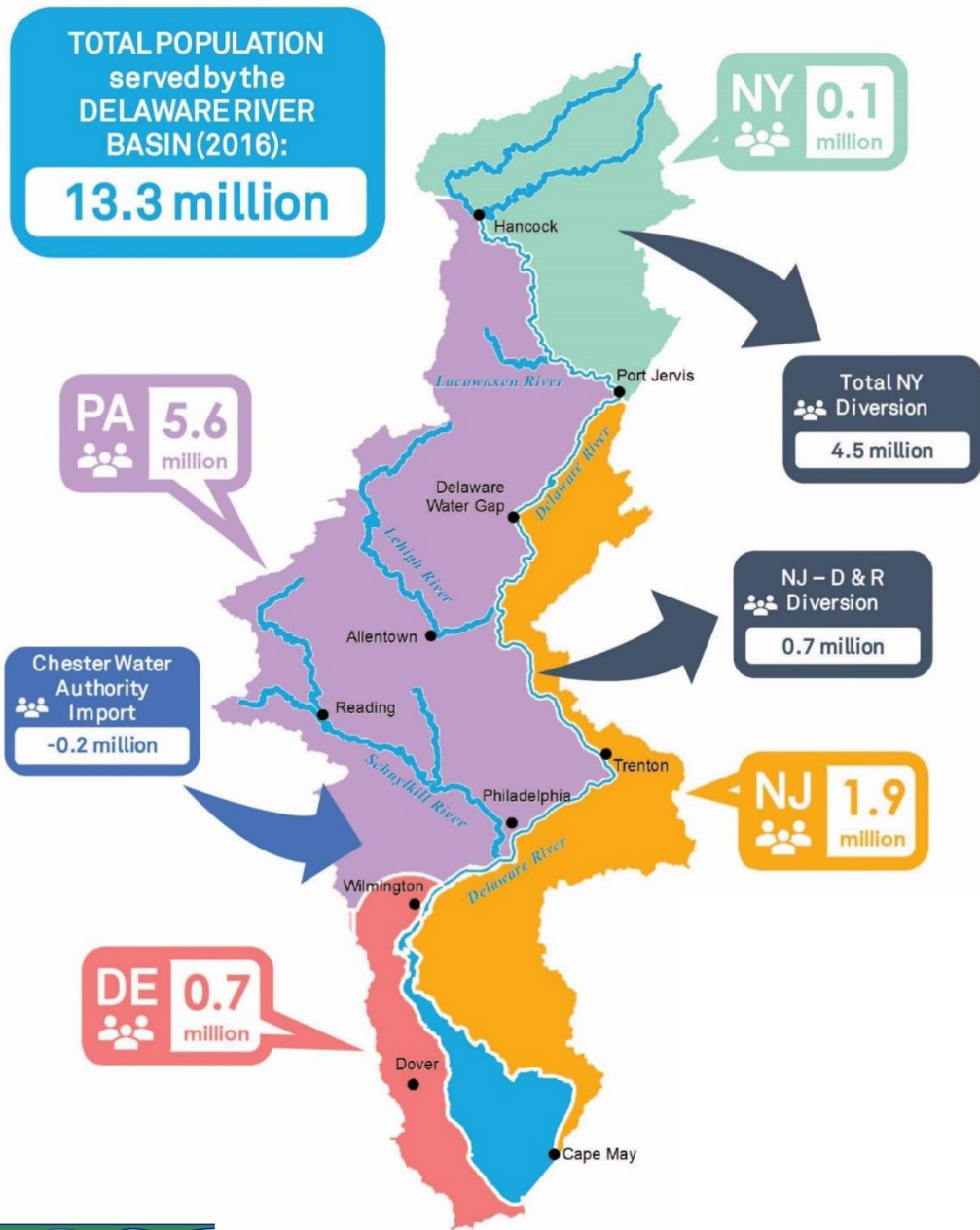
**Water Resources
Program**

FY 2019-2021

March 13, 2019

TOTAL POPULATION served by the DELAWARE RIVER BASIN (2016):

13.3 million



Population Served

	POPULATION (2016)
State	
Delaware	725,545
New Jersey	1,936,900
New York	119,265
Pennsylvania	5,561,803
Total DRB Population	8,343,513
Import/Export	
NJ – D & R Diversion	670,000
Total NY Diversion	4,500,000
CWA Import	-200,000
Total Import/Export	4,970,000
TOTAL ESTIMATED POPULATION SERVED	13,313,513

Total NY diversion includes NYC diversion and upstate NY communities

Water Supply Planning Objectives

- Meet Compact planning requirements (Articles)
 - **Water Supply**: sustainable and resilient
 - During existing extremes - floods and droughts
 - Meeting water demands – consumptive and non-consumptive
 - Under future scenarios that include mega trends - water efficiency, energy needs, climate change, ecological flows
 - **Flow Management** : Support needs and targets – balance supply & flood loss reductions

DRBC Water Code (Resolution No. 83-12)

- * 2.400.1 Water Supply. The drought of record, which occurred in the period 1961-1967, shall be the basis for determination and planning of dependable Basin water supply.

DRBC 1983 Position Paper

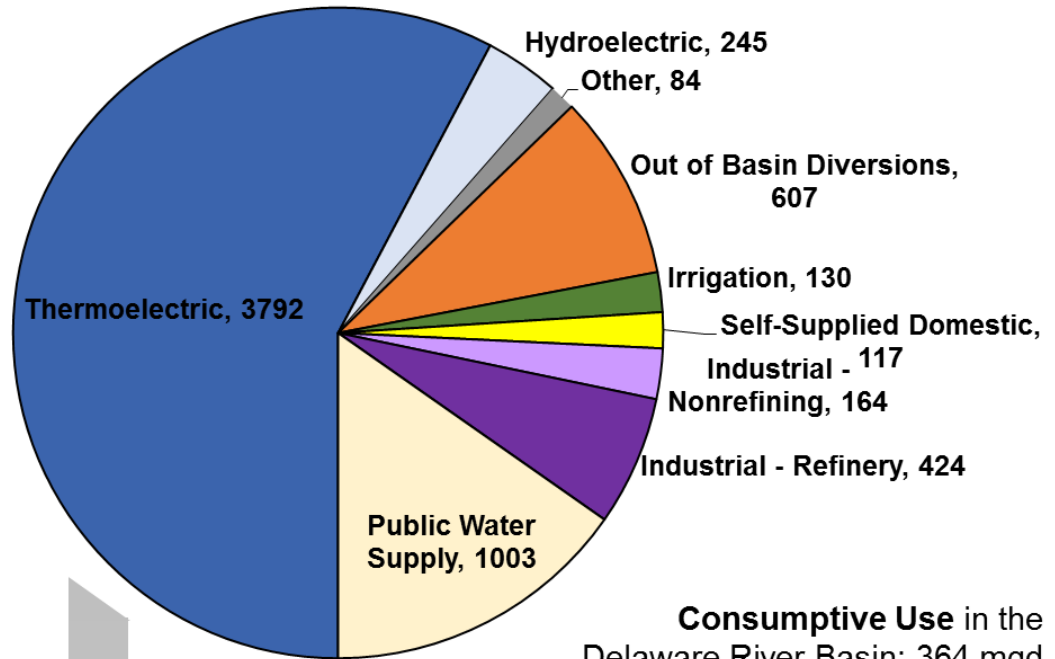
In adopting this planning criteria, *DRBC does not assume that all uses will be satisfied during extreme droughts*. Rather, the management *plans* adopted (including conservation efforts, emergency cutbacks in use, and water resources development efforts) must *be geared to meet essential needs*, protect health and safety, and avoid economic hardships, during such drought of record conditions.

Further, it should be noted that in the future, *a drought more severe than drought of record may (and most likely will) occur*. Thus, plans should include some margin of safety to allow for more critical conditions, and provide for actions if needed to address such emergencies.

Delaware River Basin Water Use : CY2016

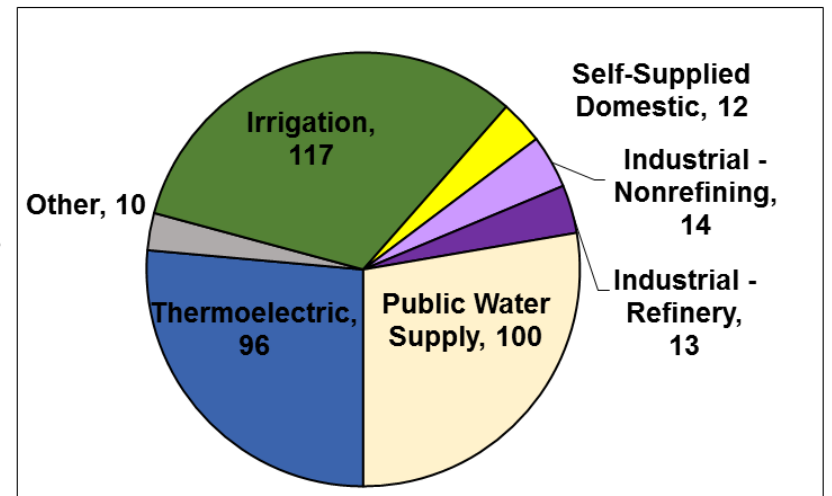
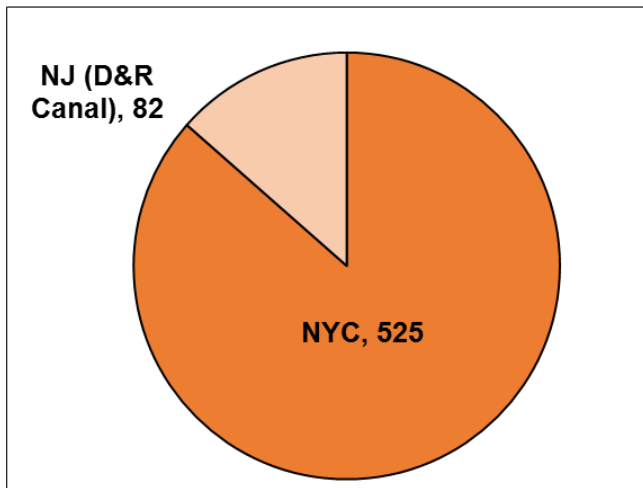
Total Water Withdrawals (ground and surface) from the Delaware River Basin: 6,565 mgd

- Thermoelectric
- Hydroelectric
- Other
- Out of Basin Diversions
- Irrigation
- Self-Supplied Domestic
- Industrial - Nonrefining
- Industrial - Refinery
- Public Water Supply



Major Exports from the Delaware River Basin: 607 mgd

Consumptive Use in the Delaware River Basin: 364 mgd



Water Withdrawals & Future Demand

Delaware River Basin

Surface Water Withdrawals

Withdrawal Category

- Public Water Supply
- Agriculture
- Golf
- Industrial
- Thermolectric
- Other

Volume in Million Gallons per Day

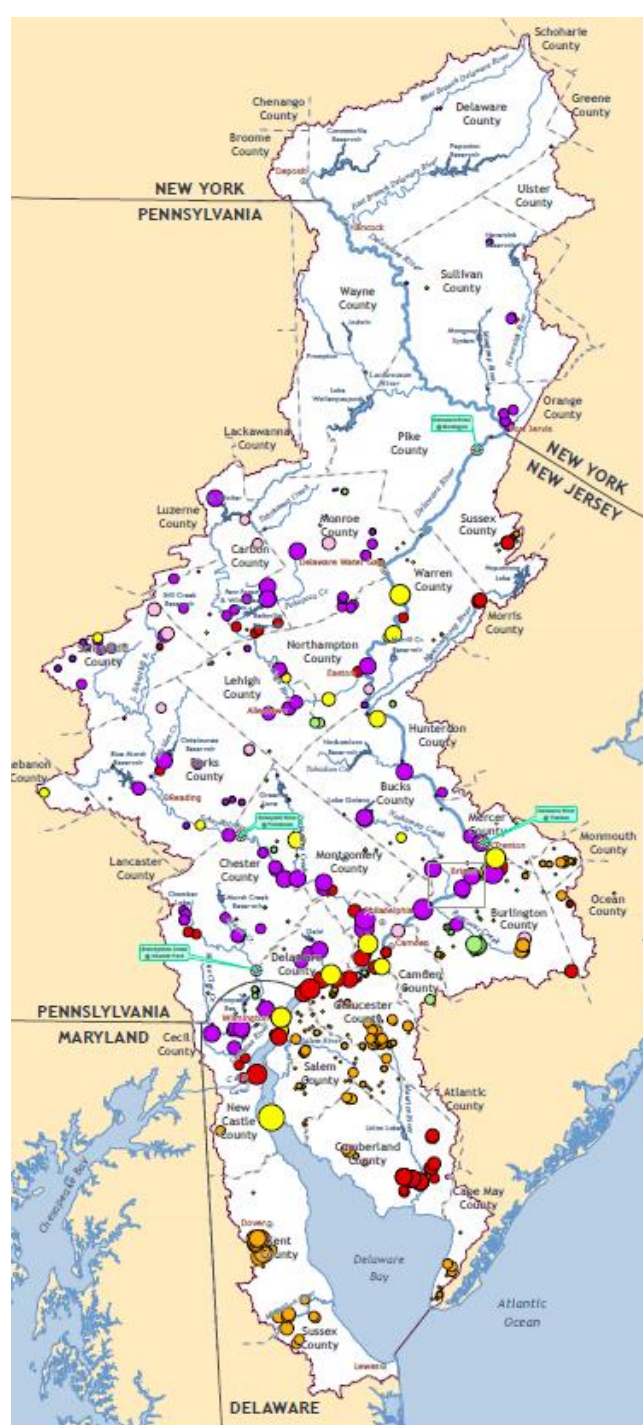
- 0 - 0.5 MGD
- 0.6 - 1.0 MGD
- 1.1 - 5.0 MGD
- 5.1 - 10 MGD
- 10 - 100 MGD
- 100 - 1,000 MGD
- Greater than 1,000 MGD

● USGS Stream Gage Location

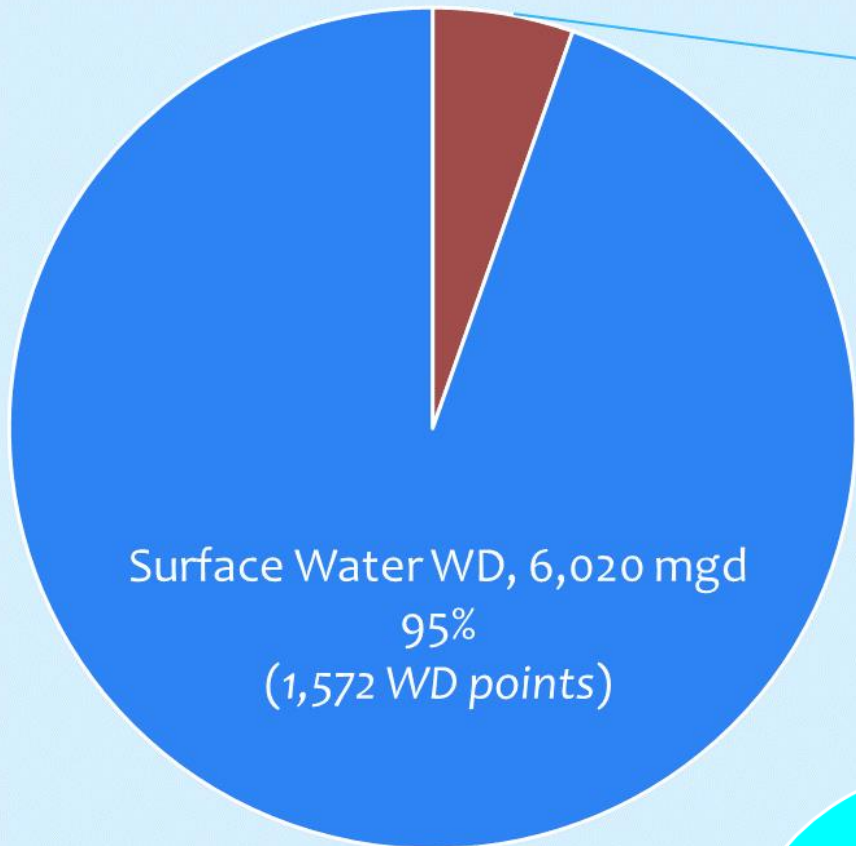
Inset Map



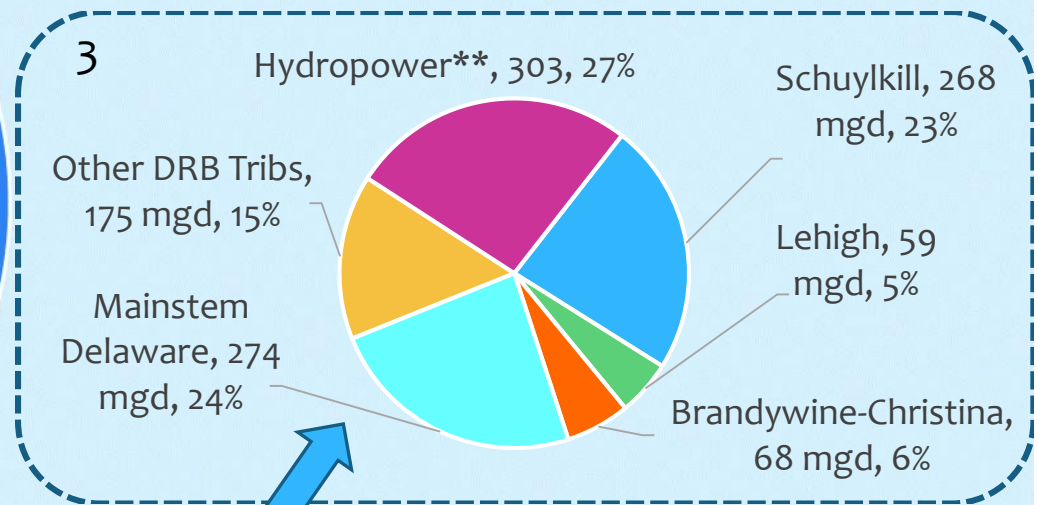
- DRBC allocates water via docketts.
 - >1,200 active docket approvals for water (groundwater & surface water).
 - ~ 1,500 surface water withdrawals approved in ~375 docketts.
 - ~5,600 groundwater withdrawals approved in ~850 docketts
- Project future water demands.



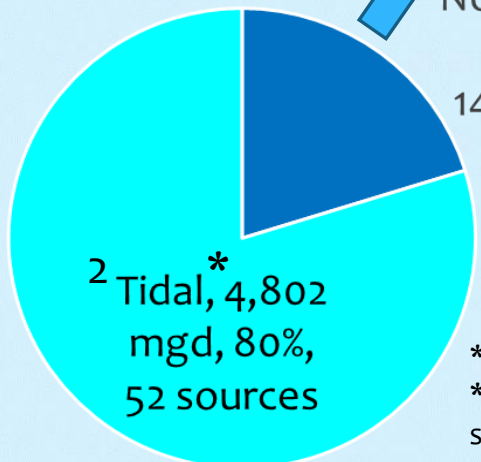
Total DRB WDs in 2016 by Type/Location



¹ Groundwater WD, 342 mgd
5 %
(5,646 WD points)

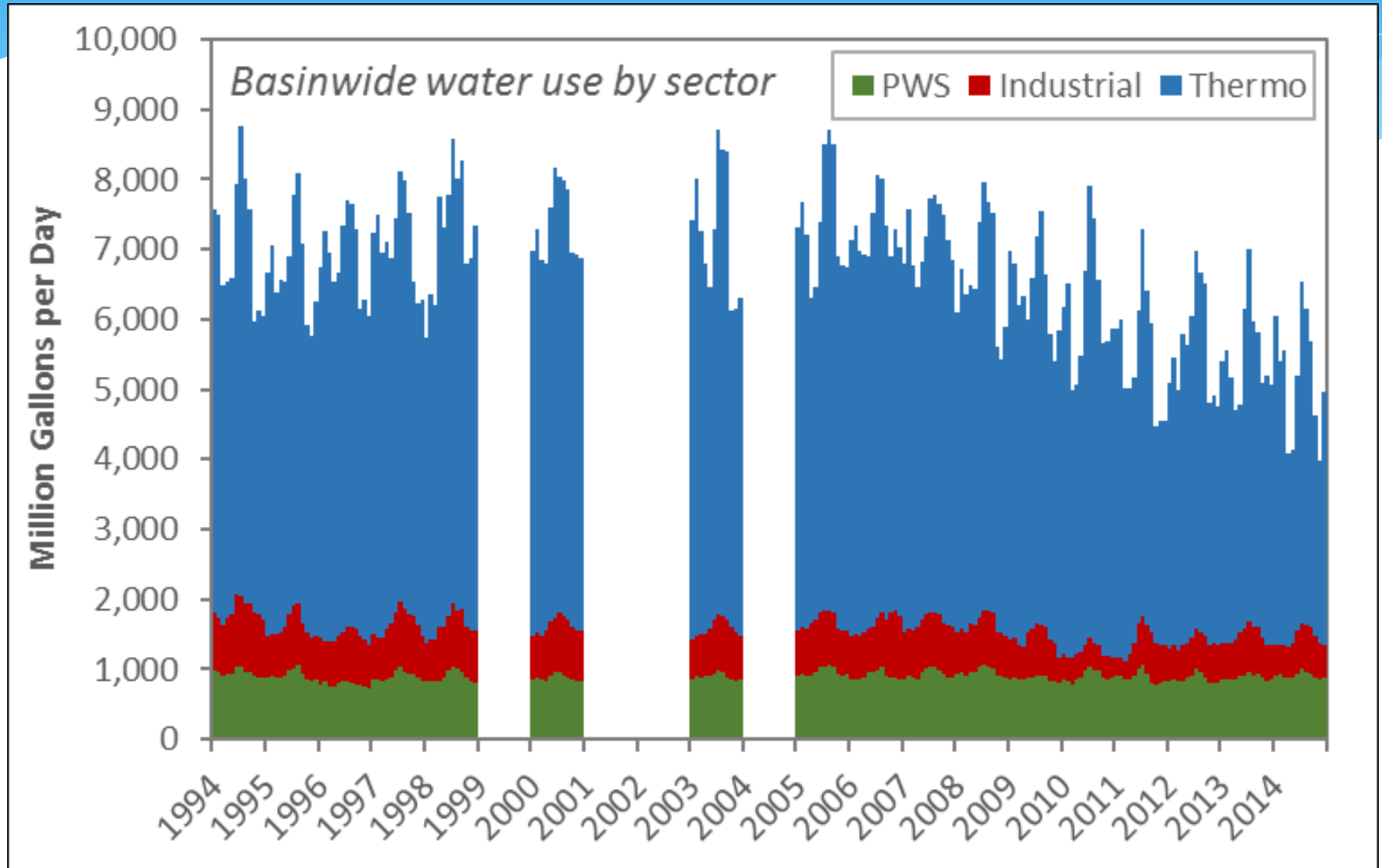


Nontidal, 1,218 mgd, 20%,
1490 sources

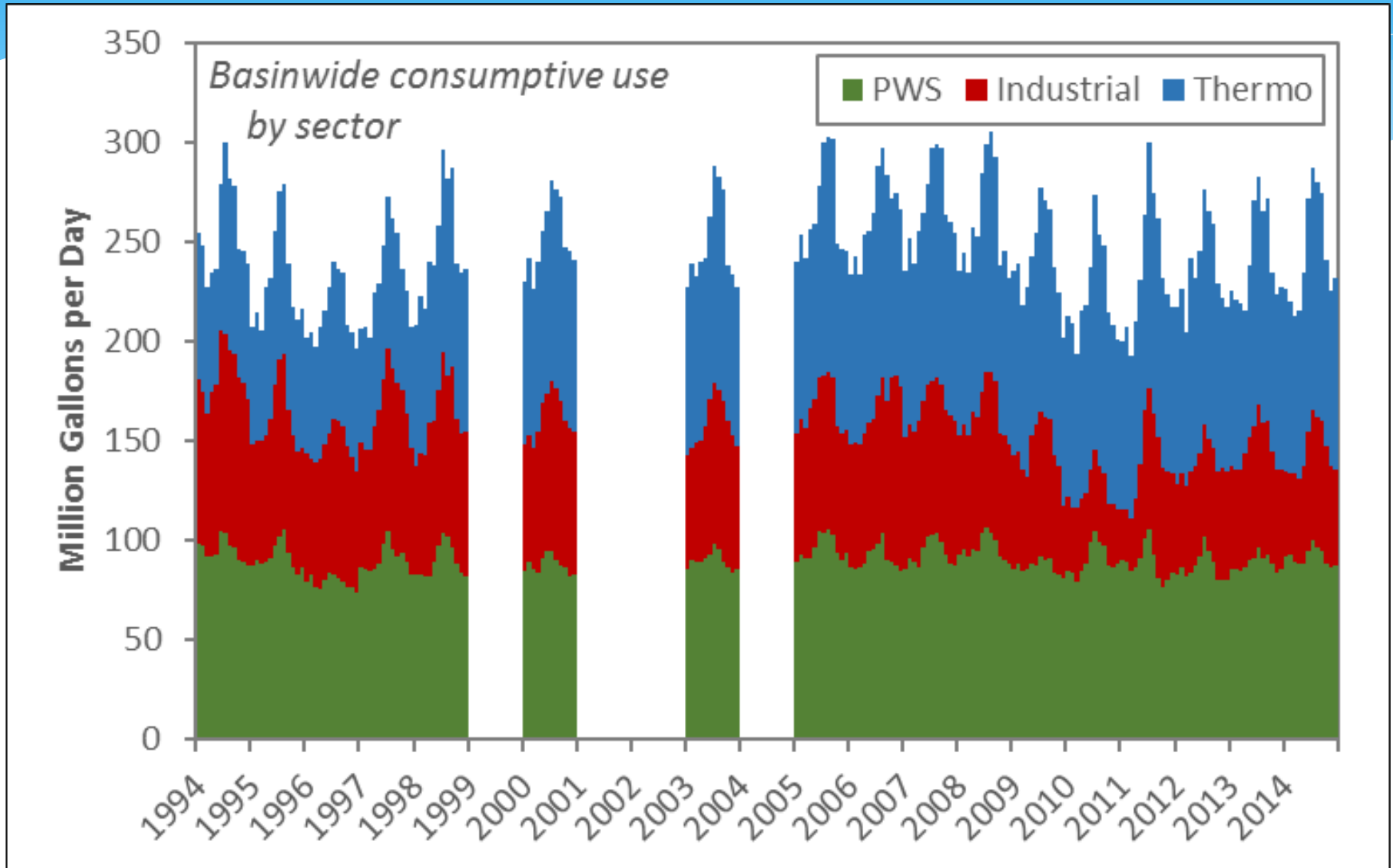


*Tidal WDs highly inflated by Hope-Salem
**Hydropower facilities inflate "Other DRB Tribs" significantly, so taken as a separate "region":

Monthly Total Water Withdrawals for Three Key Sectors in the Delaware River Basin



Monthly Consumptive Water Use for Three Key Sectors in the Delaware River Basin



Public Water Supply Demand--Nationwide

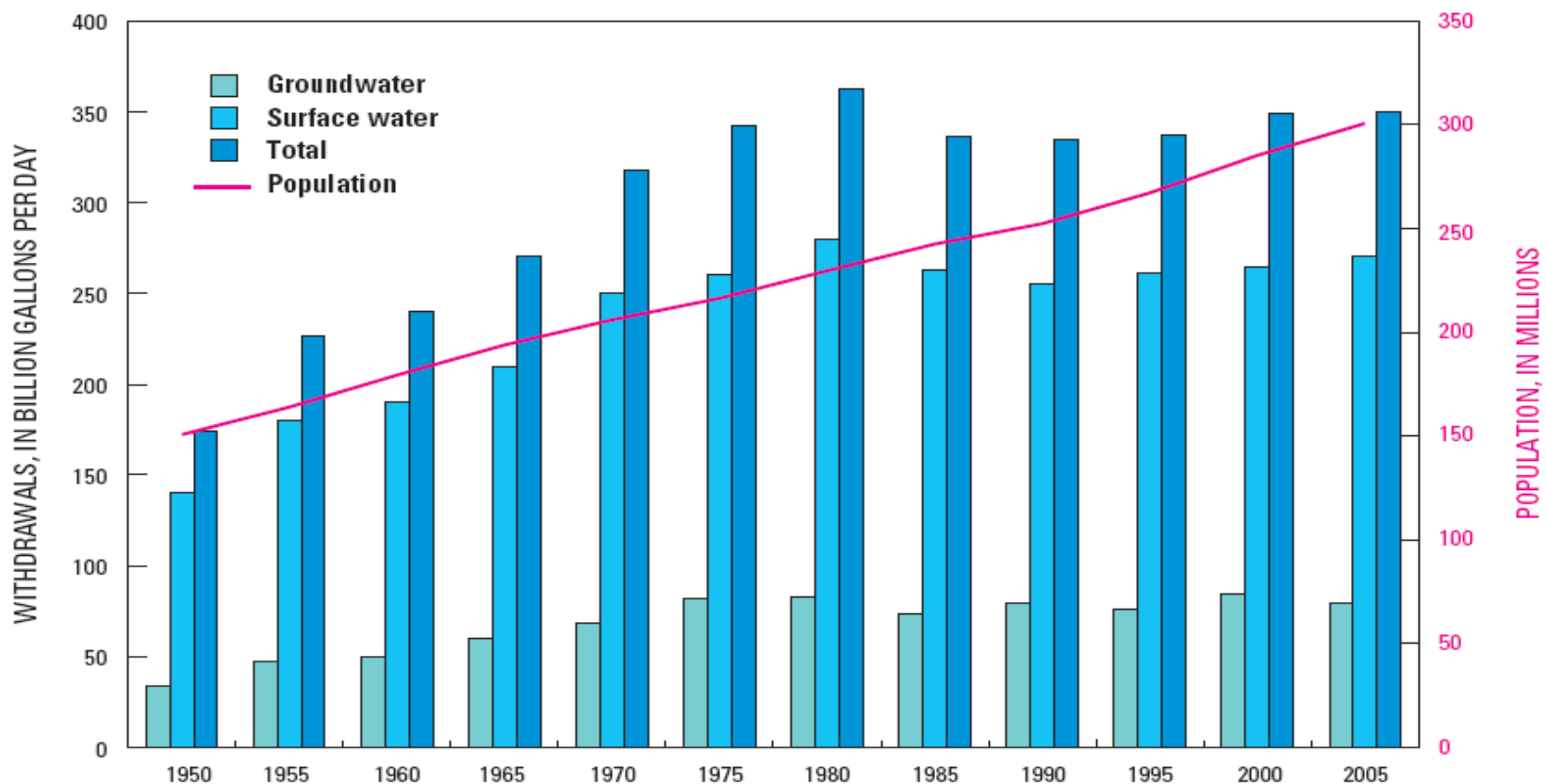
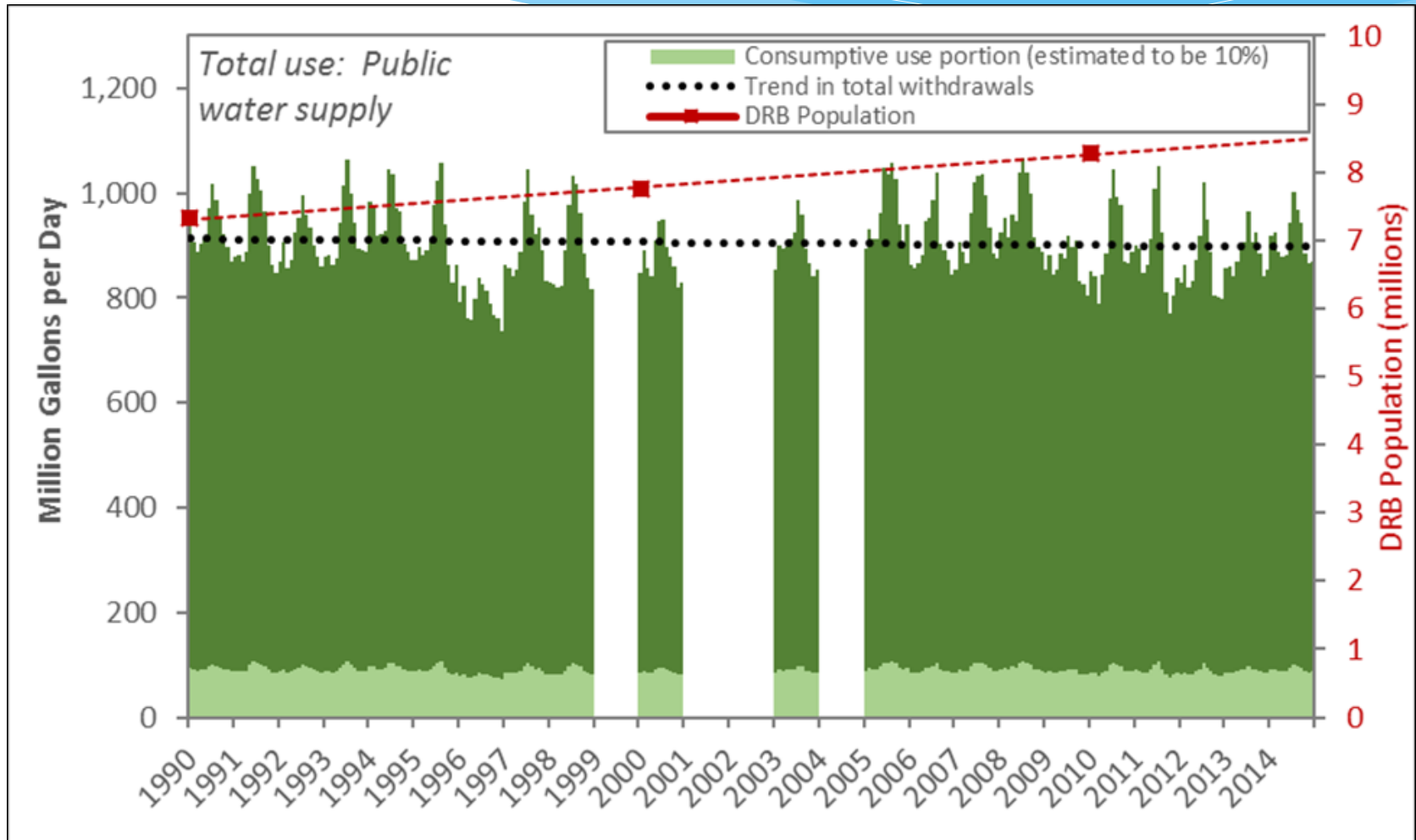


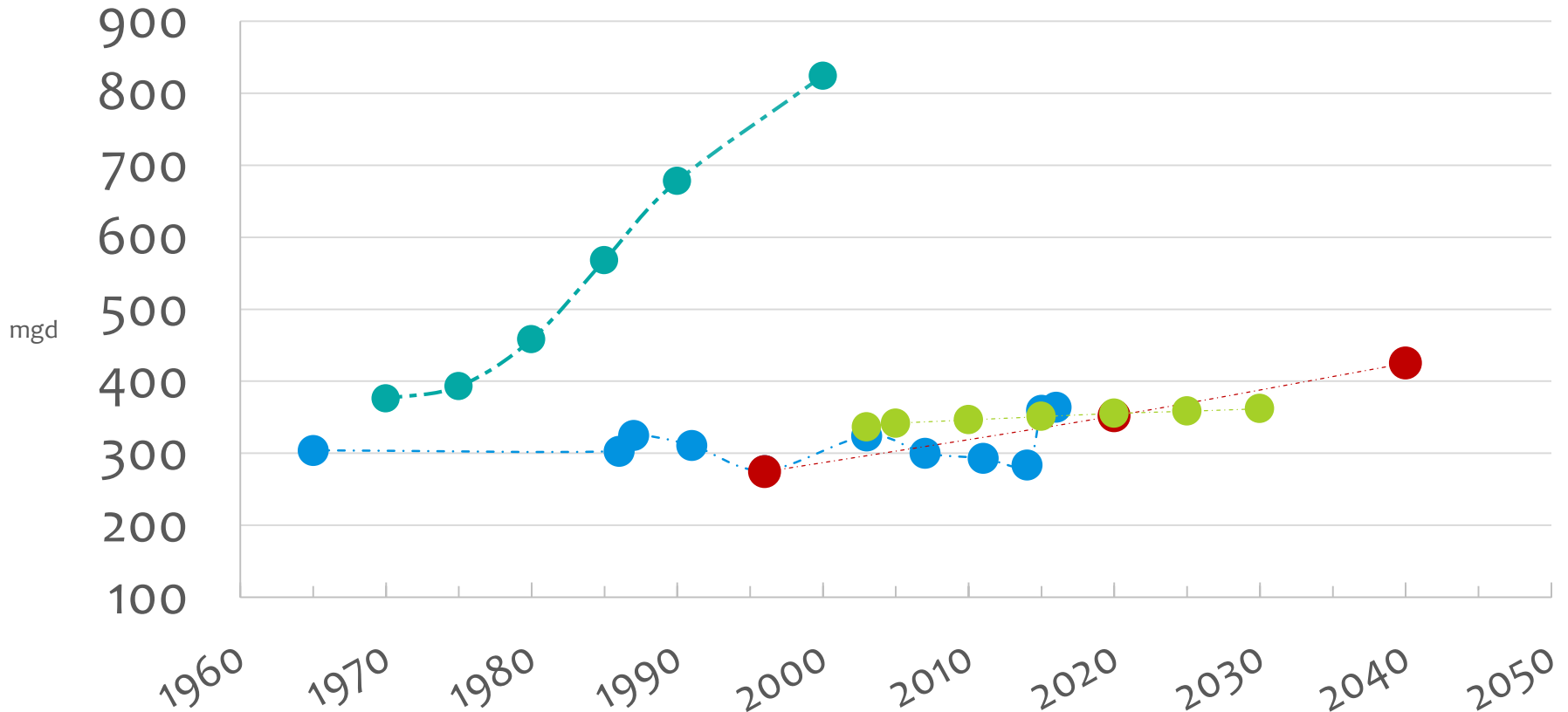
Figure 13. Trends in population and freshwater withdrawals by source, 1950–2005.

Public Water Supply Demand--DRB



Consumptive Use over time

DRBC Consumptive Use Projections vs. Reported Values



- Reported Values
- 1981 Level B Observations & Projections
- 2000 Consumptive Use Report Observations & Projections
- 2008 Multi-Jurisdictional Study

KEY POINTS FOR WATER SUPPLY PLANNING

1. **Depletive use trends:**
Relatively constant from 1965 – 2010. Power increases offset decreases in PWS and Industry.

2. **Meeting Water Supply Under Various Conditions:**
 - A. Normal – **Yes**, basinwide.

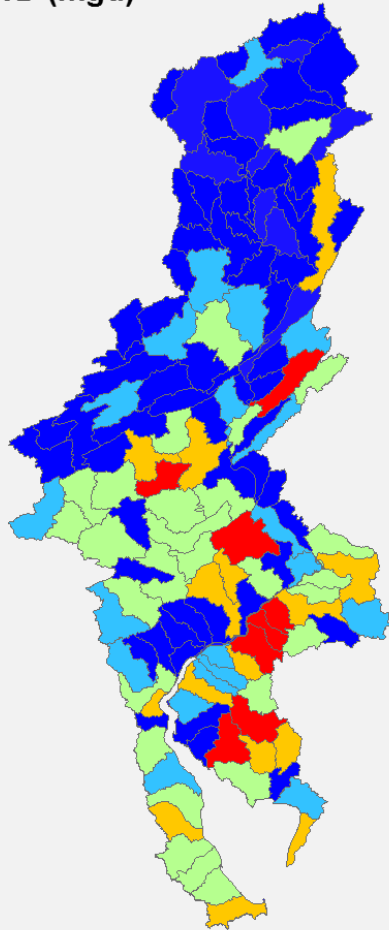
 - B. Medium Risk (Low flow statistic) – **Yes**, except in a few groundwater sub-basins and on the Schuylkill River

 - C. High Risk (Drought of Record)– **No**, streamflow objectives and out-of-basin diversions cannot be met simultaneously even under reduced targets & diversions (GFA/FFMP)

Regional Groundwater Withdrawals Demand vs. Availability

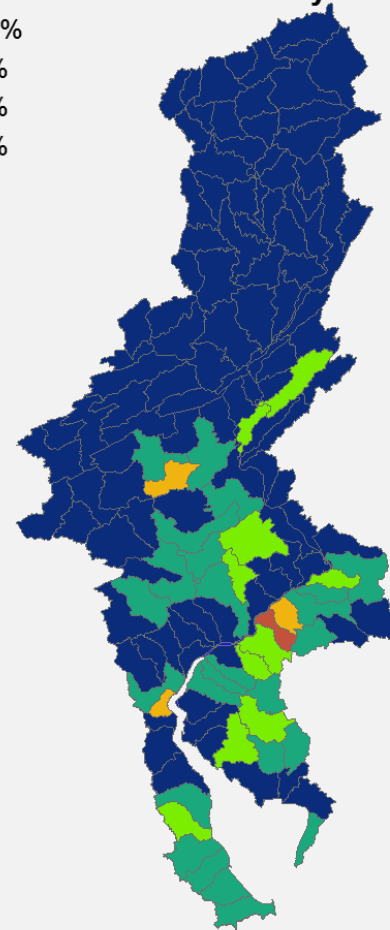
2015 GWWD (mgd)

- 10-20
- 5-10
- 2-5
- 1-2
- <1



2015 GWWD as Percent of 25-yr Baseflow

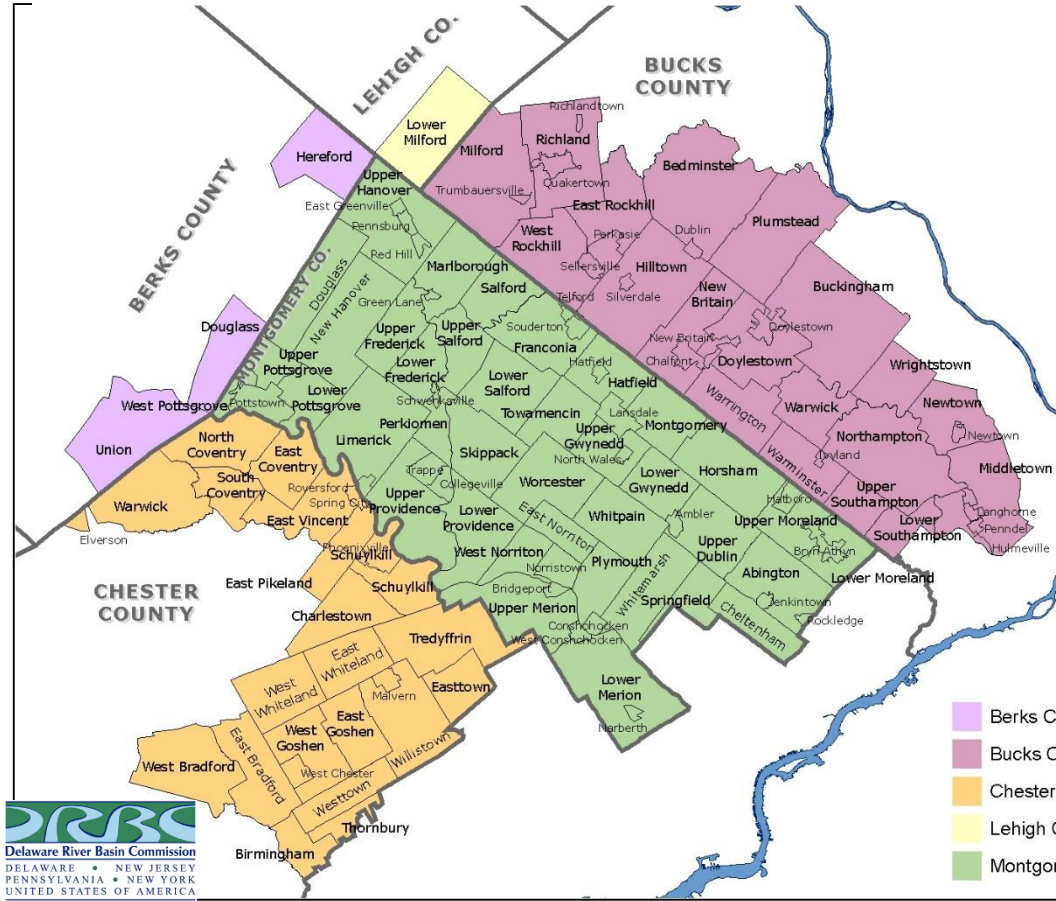
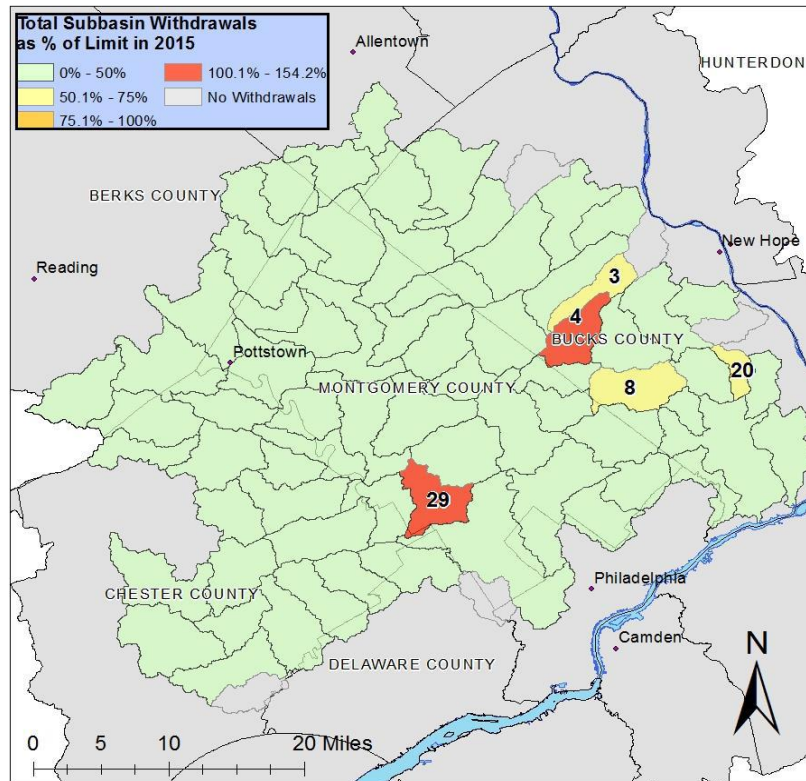
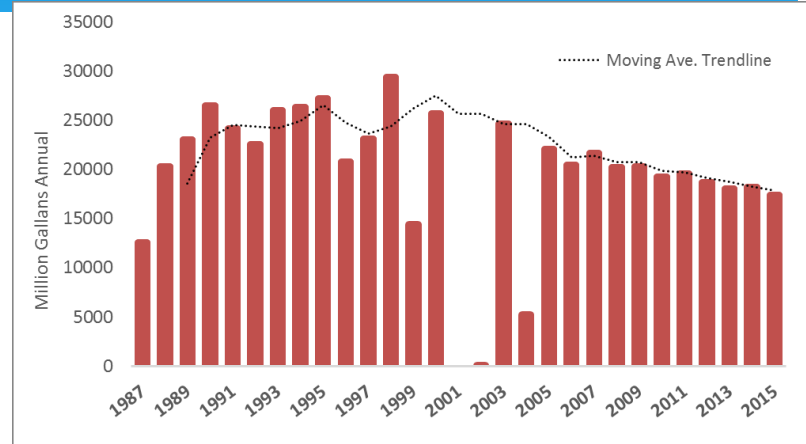
- 75-100%
- 50-75%
- 25-50%
- 10-25%
- <10%



Southeastern PA Groundwater Protected Area

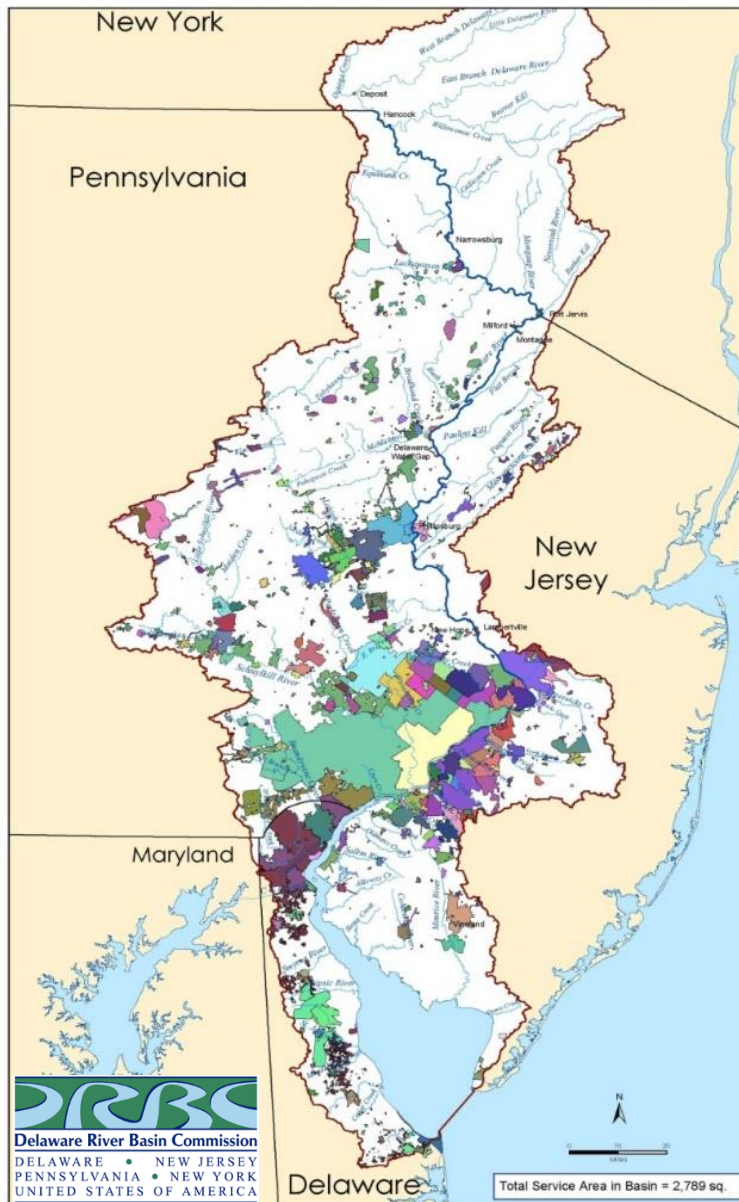
Established in 1980 to help PA:

- prevent long-term depletion of groundwater
- protect stream flows during drought
- protect rights of present and future users
- acquire additional information to manage resource



Water Conservation for Public Water Supply Service Areas

Water Service Areas in the Delaware River Basin



- Total PWS withdrawals (2016):
 - **~1,003 MGD total** (all users)
 - **~762 MGD audited** (regulated by DRBC)
- 2nd largest water use sector in the Basin
- Approx. 21% of Basin covered by service area
- Serve 6.7 million customers (80% of basin residents)
- Approx. 300 systems subject to Water Audit Requirement

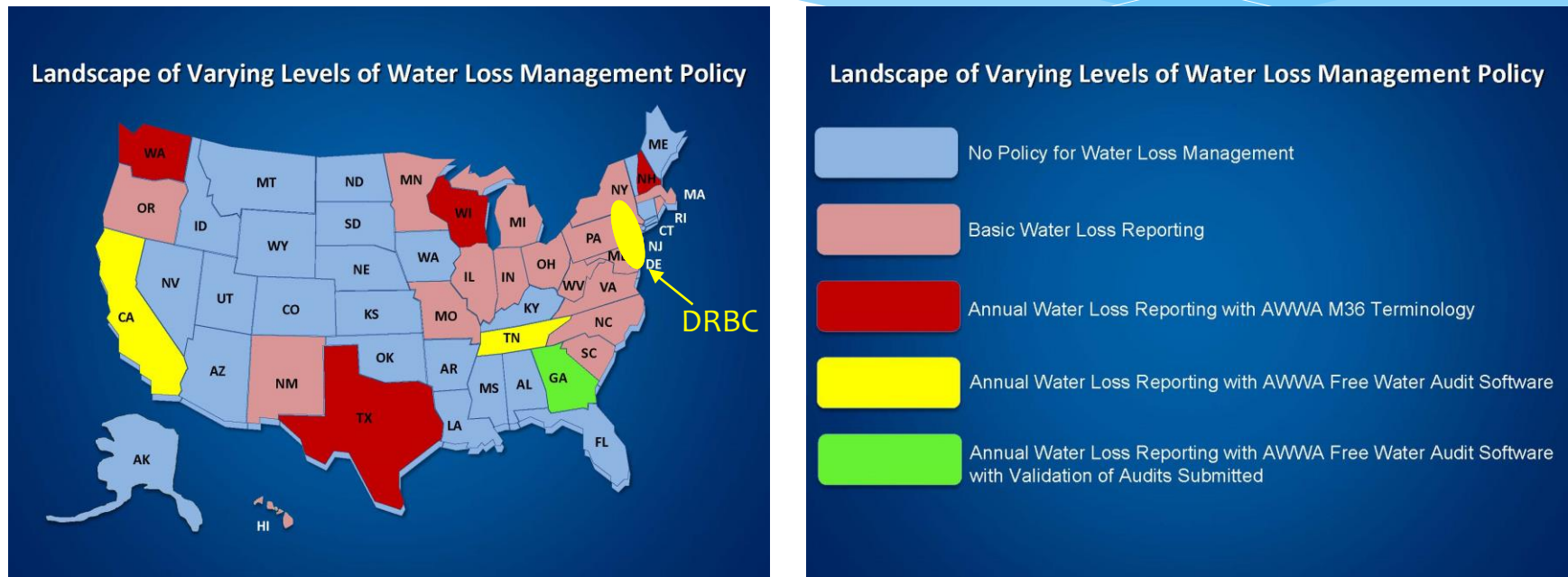
History of DRBC Water Conservation Regulations

- 1986:** Source & Service Metering
- 1987:** Leak Detection & Repair (UFW)
- 1988:** Conservation Plumbing Standards
- 1992:** Water Conservation Pricing
- 2006-9:** Water Loss Accountability (Committee)
- 2009-11:** “Water Audit” Rule/Outreach
- 2012:** First year for new water audit format
- 2013:** First water audit reports due

DRBC Water Audit Program: What is it?

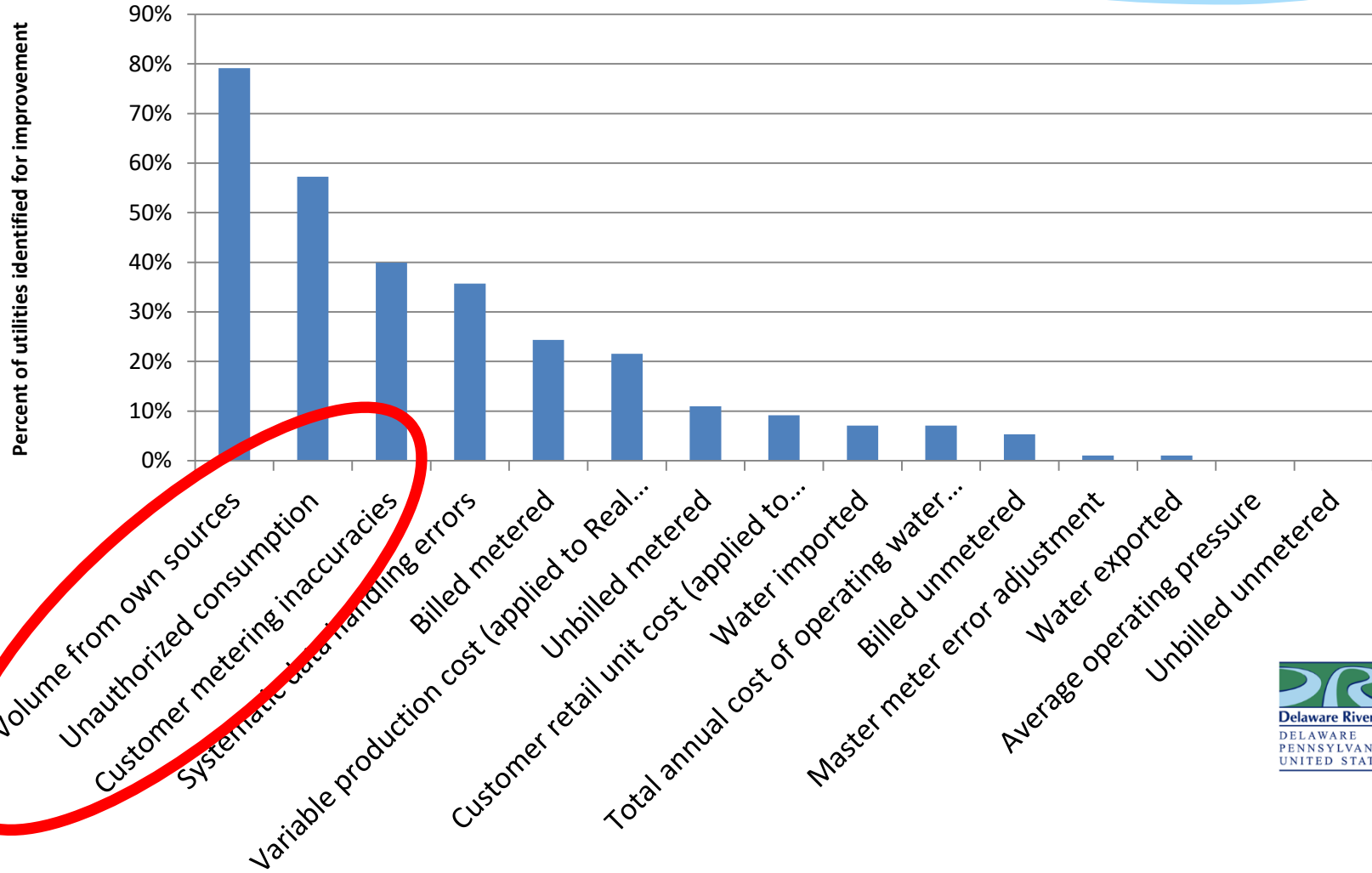
The purpose of DRBC's water audit program is to track how efficiently water is moved from its source to the customer (within a public water supply system) and to ensure that systems quantify and are accountable for water losses.

Water Loss – National Perspective

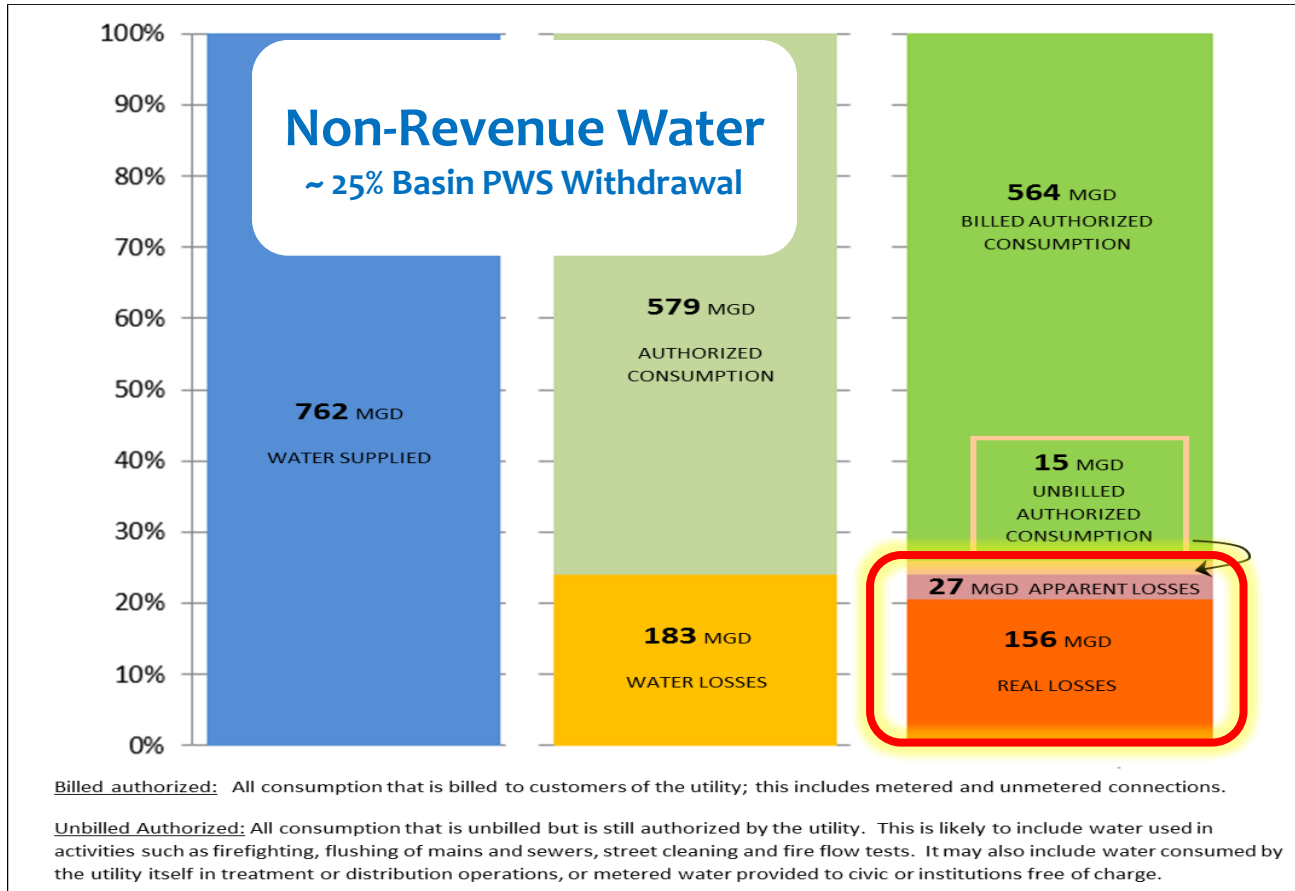


State by State Water Loss Policy Map. American Water Works Association, 2015. Web. 5 Feb. 2016. <http://www.awwa.org/Portals/0/files/resources/water_knowledge/water_loss_control/Landscape_of_Varying_Levels_of_Water_Loss_Management_Policy.pdf>.

Priority Areas to Improve Grading Score



DRBC water audit program summary (CY2016)



Questions / Discussion

