



# A 15-Year History of Water Use in Pennsylvania

Statewide Water Resources Committee Meeting

March 17, 2021

Mike Hill, P.G.

Planning & Conservation

Tom Wolf, Governor

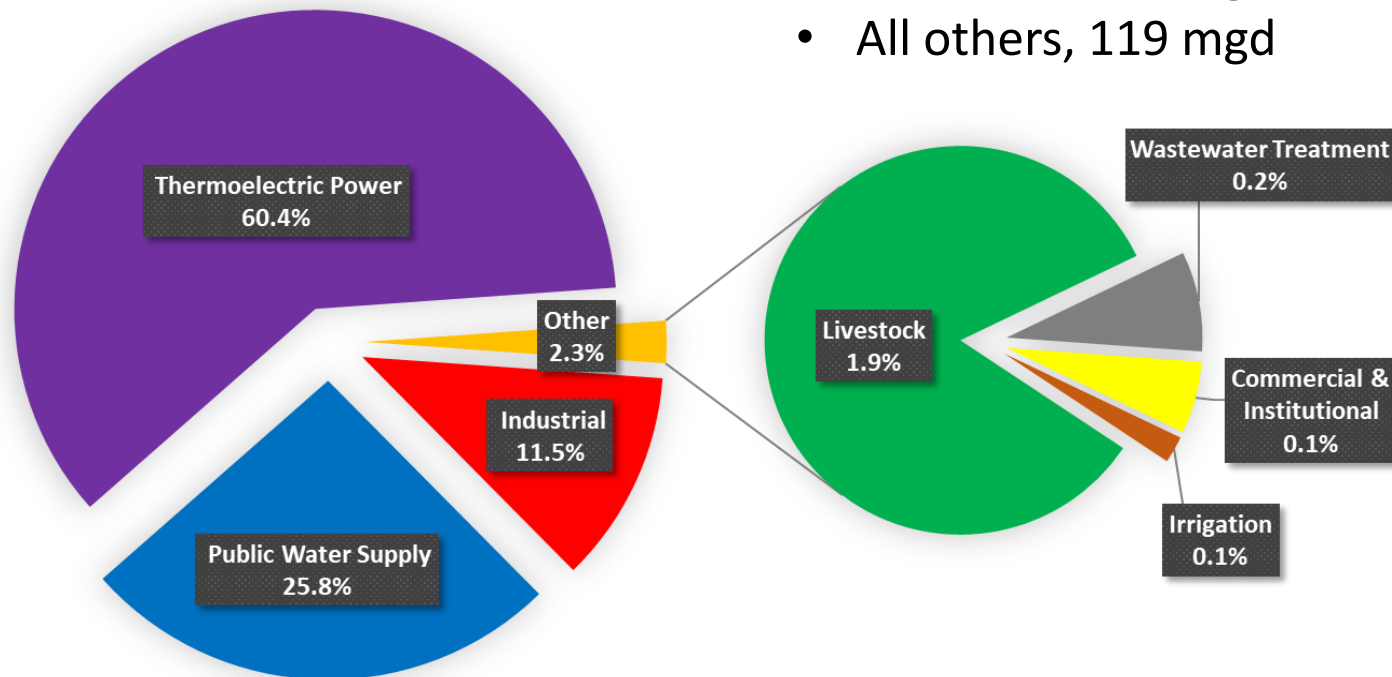
Patrick McDonnell, Secretary

# Water Withdrawal Use by Categories, 2019

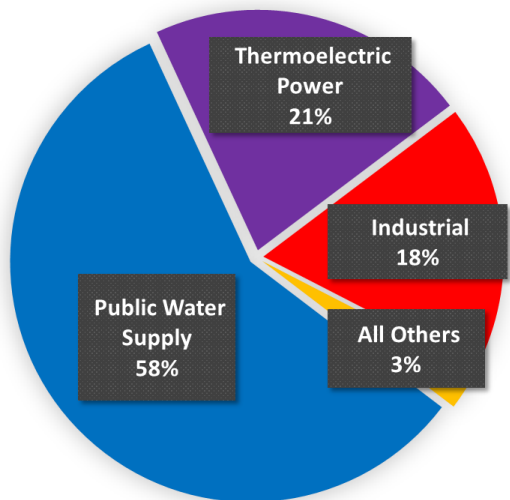
Three categories accounted for 98% of all reported water withdrawn and used in Pennsylvania: Thermoelectric Power, Public Water Supply, and Industrial

**5,219 million gallons per day (mgd)**

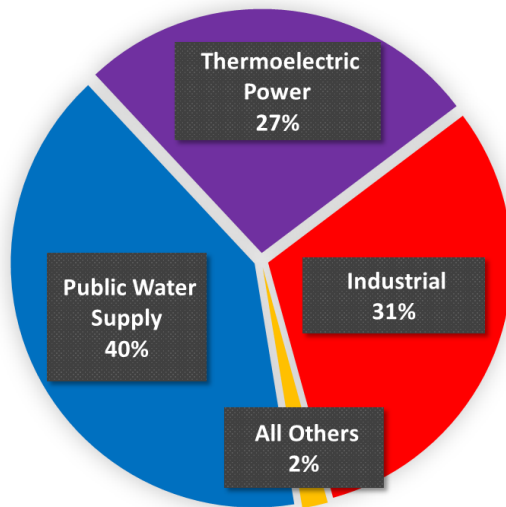
- Thermoelectric Power, 3,152 mgd
- Public Water Supply, 1,348 mgd
- Industrial, 600 mgd
- All others, 119 mgd



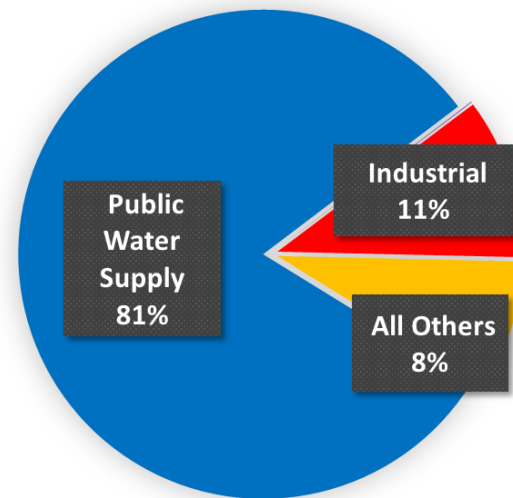
# Water Withdrawal Use by Categories and Regions, 2019



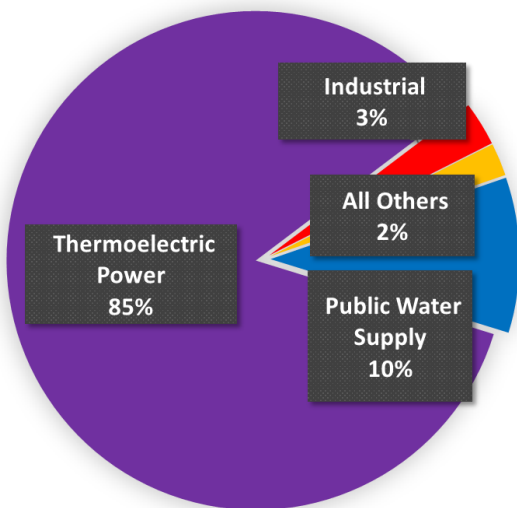
Delaware



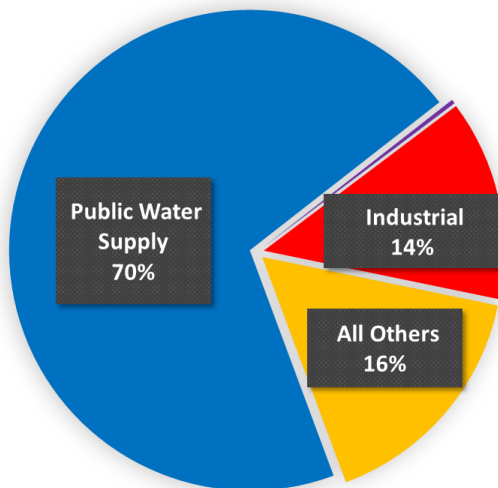
Ohio



Great Lakes

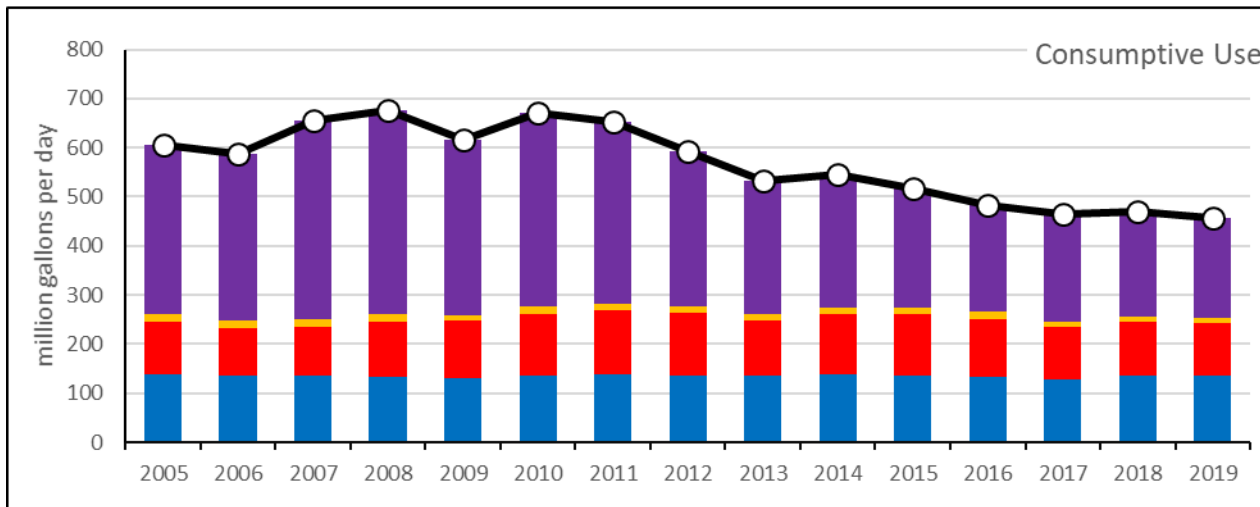
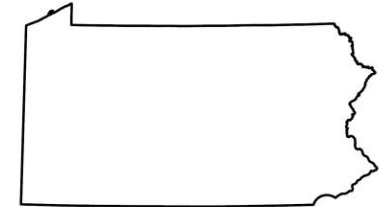
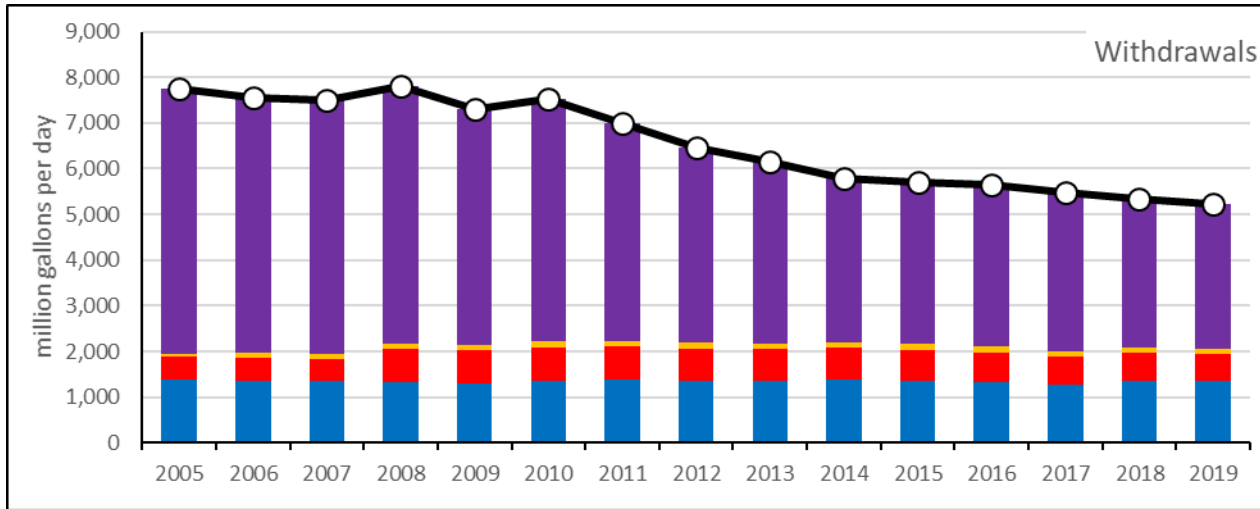


Susquehanna



Potomac

# 15-Year Water Use - State



## Notes:

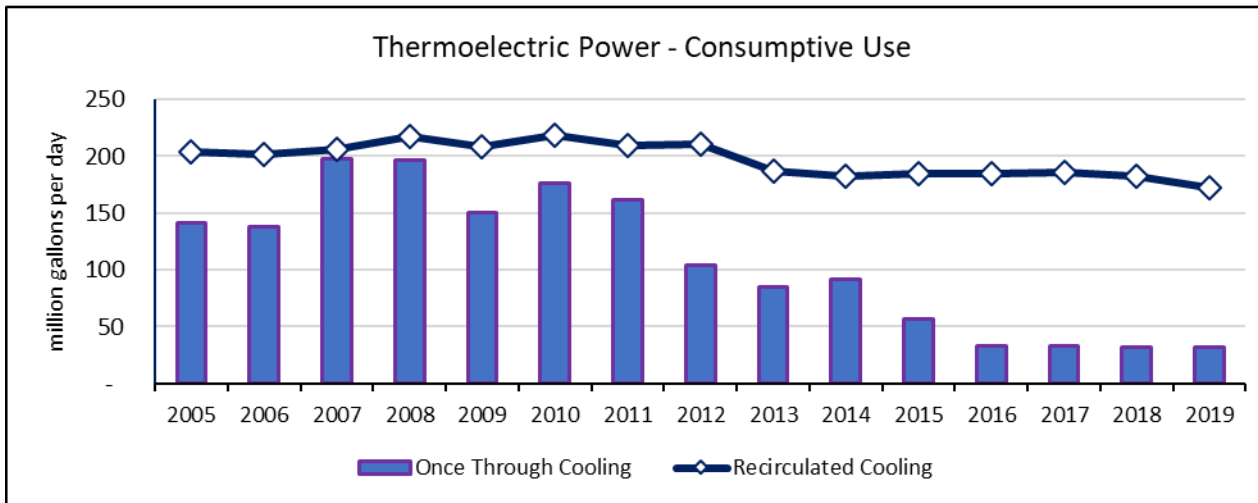
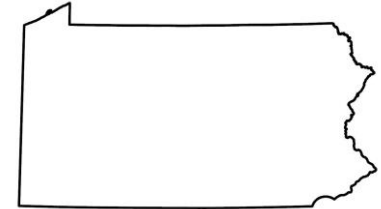
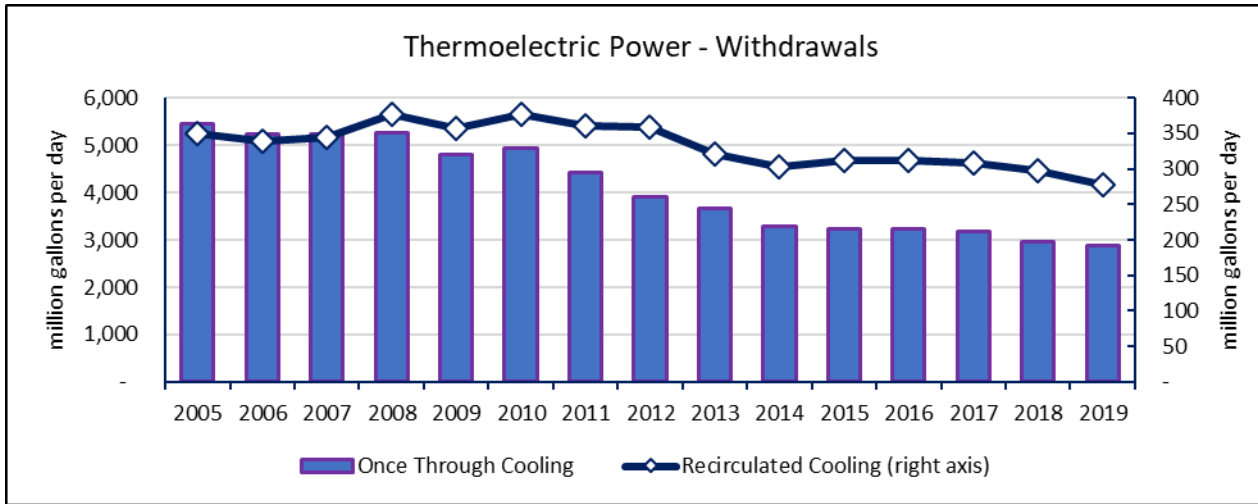
Since 2010:

- Total withdrawals have declined by 31%
- Total consumptive use has declined by 32%
- Thermo withdrawals declined by 41% and 48% for consumptive use



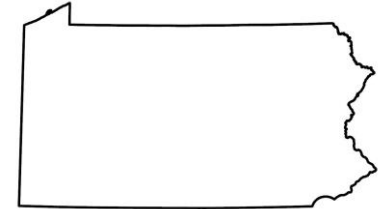
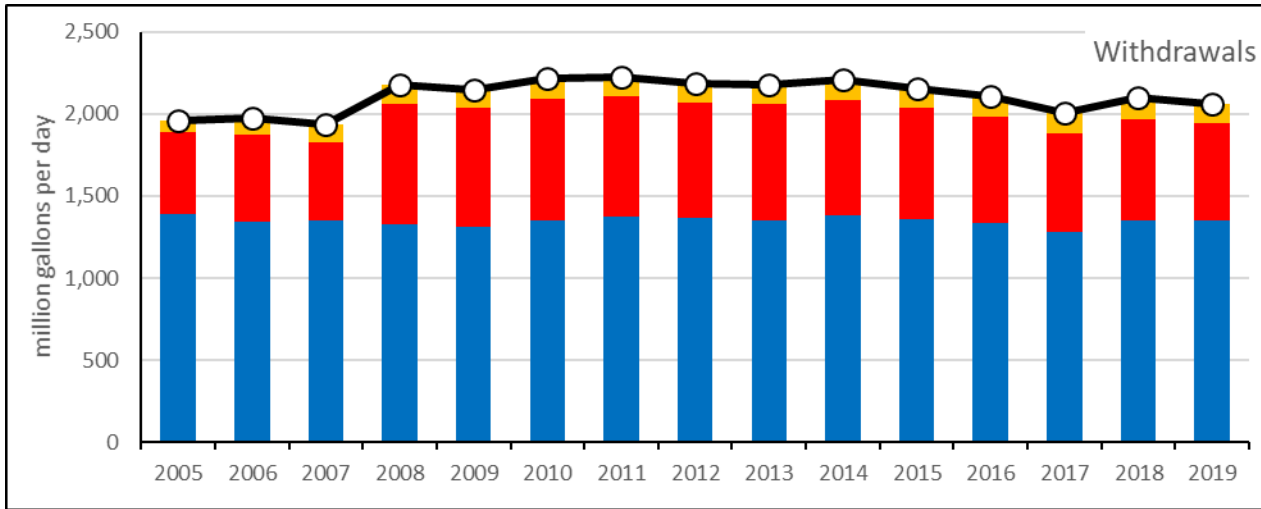
Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use - Thermo by cooling types

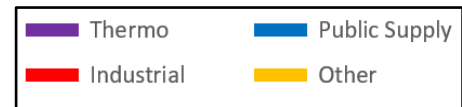
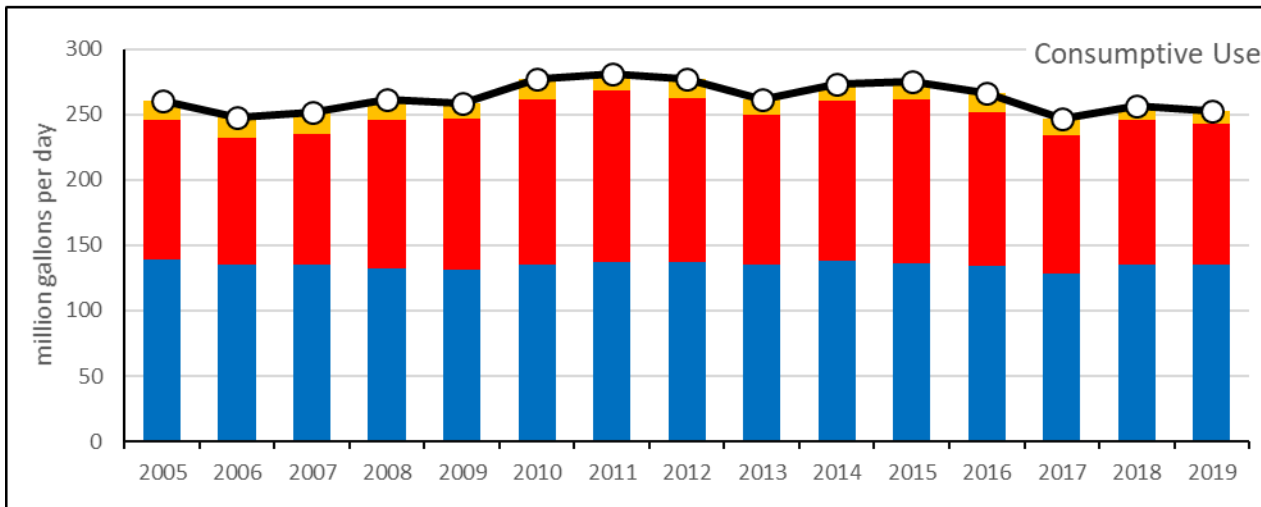


- Notes:**
- Withdrawals for once-thru cooling plants far exceed recirc cooling power plants; the opposite is the case for consumptive use
  - Once thru cooling power plants had a more significant reduction than recirculating cooling power plants

# 15-Year Water Use - w/o Thermo

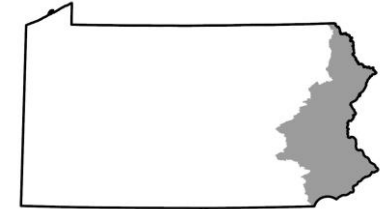
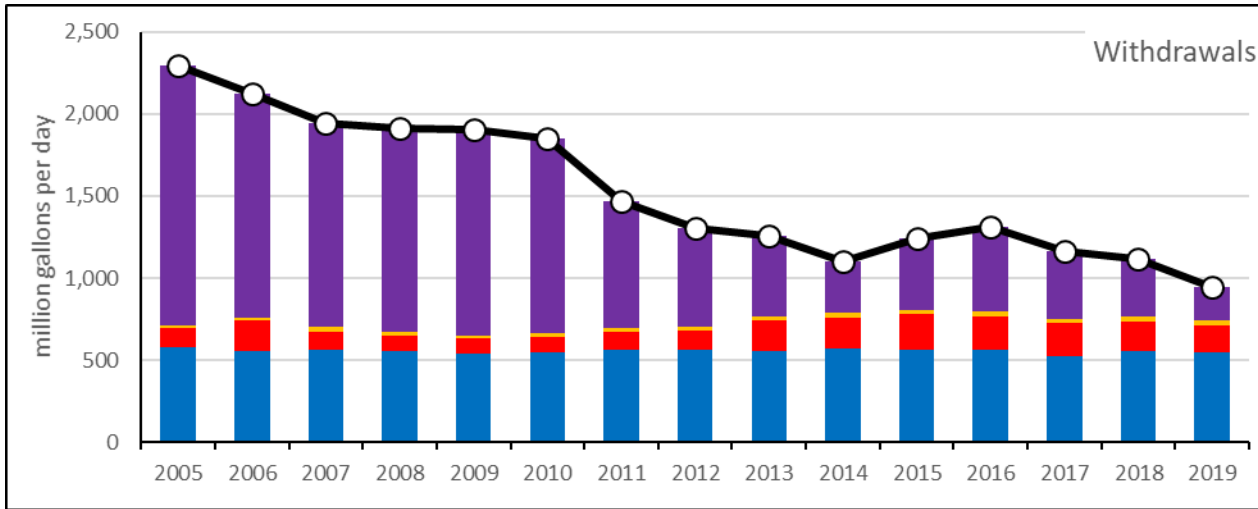


**Notes:**  
Withdrawals and consumptive use in all categories (excludes Thermo) appear steady



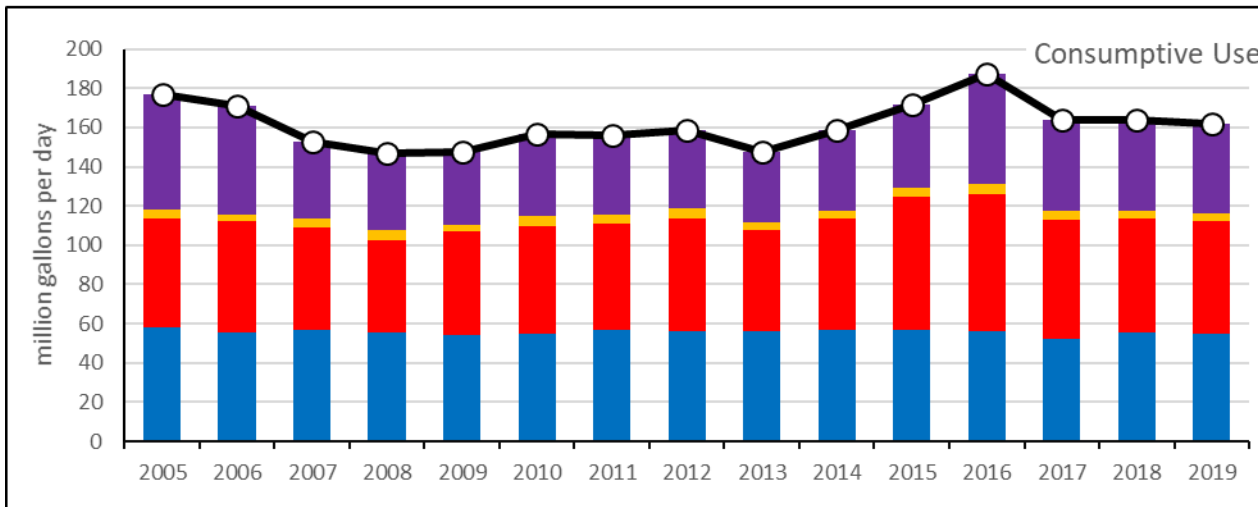
Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use - Delaware



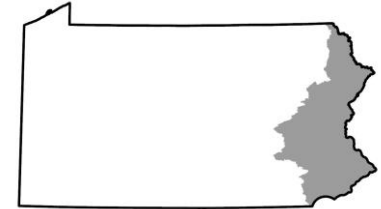
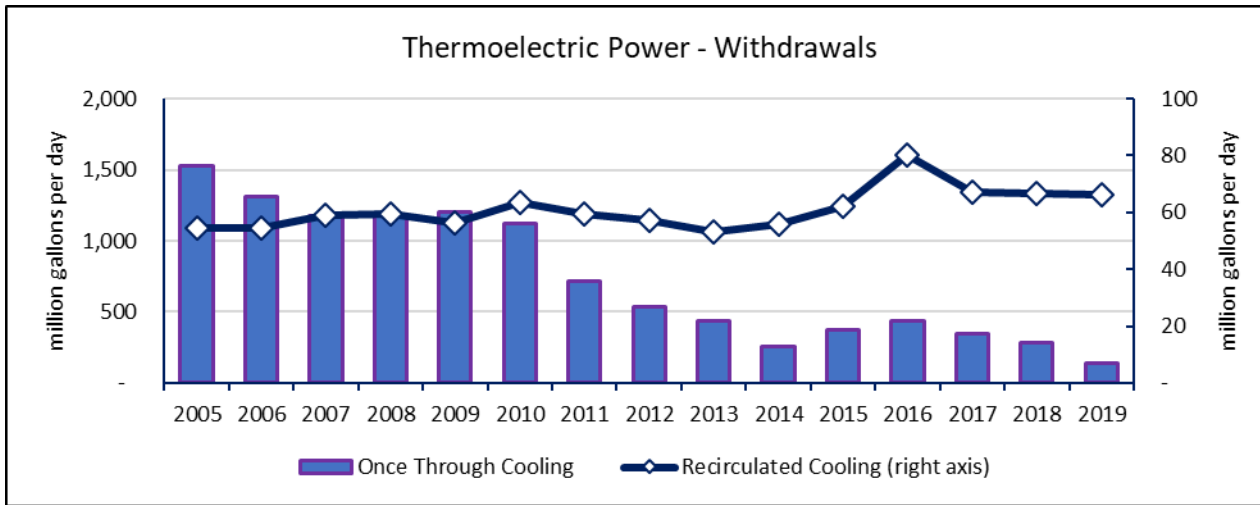
## Notes:

- All withdrawals, except Thermo, have been steady
- PWS withdrawals surpassed Thermo in 2013
- Consumptive use across all sectors appear steady



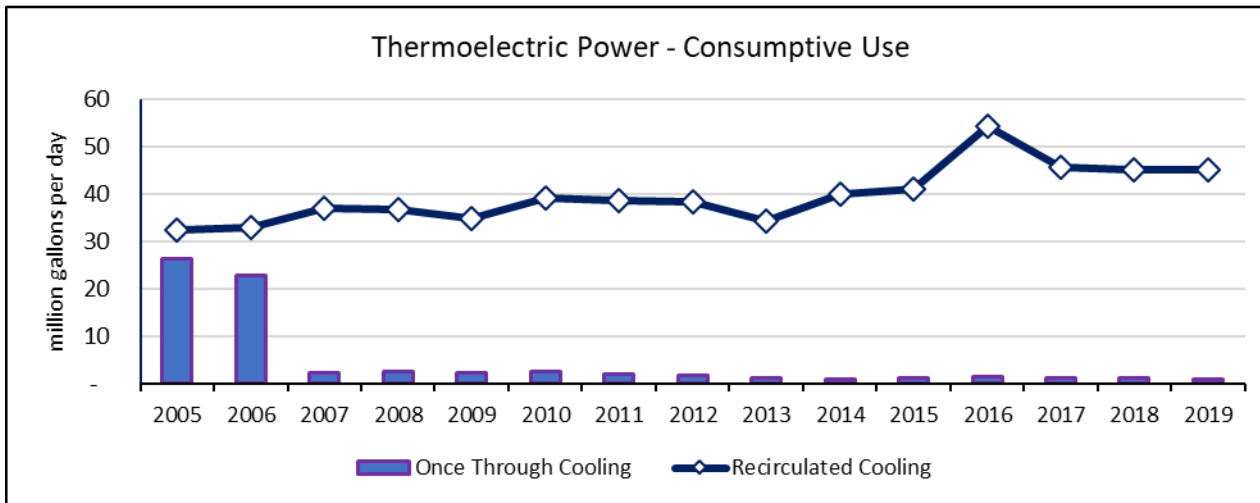
Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use - Thermo by cooling types



**Notes:**

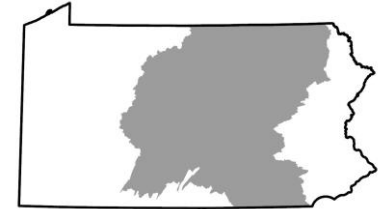
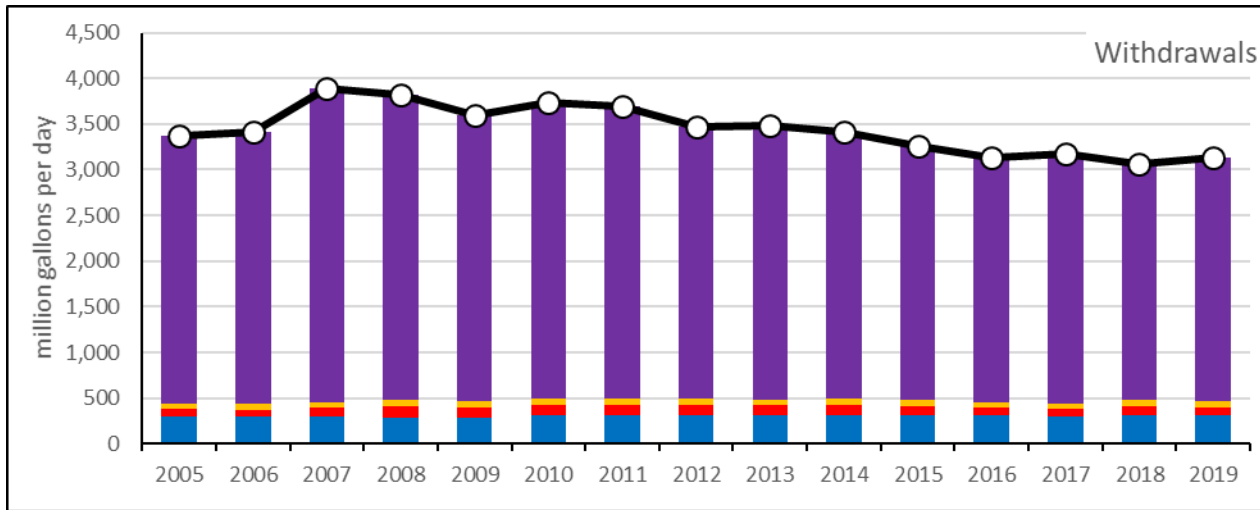
- Delaware is the only region where recirculated cooling have increased in water use



Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

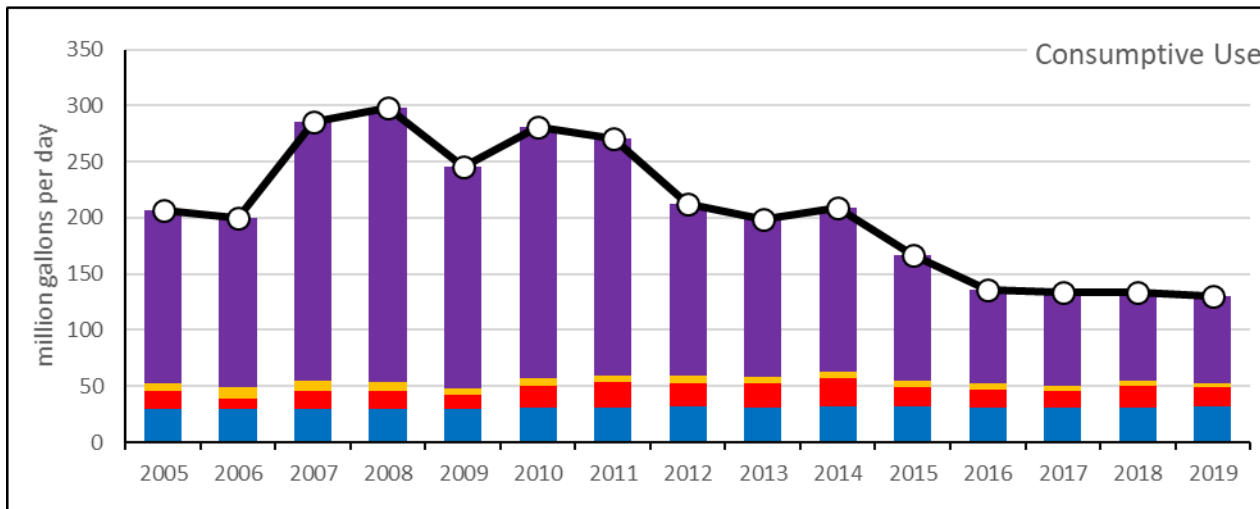


# 15-Year Water Use - Susquehanna



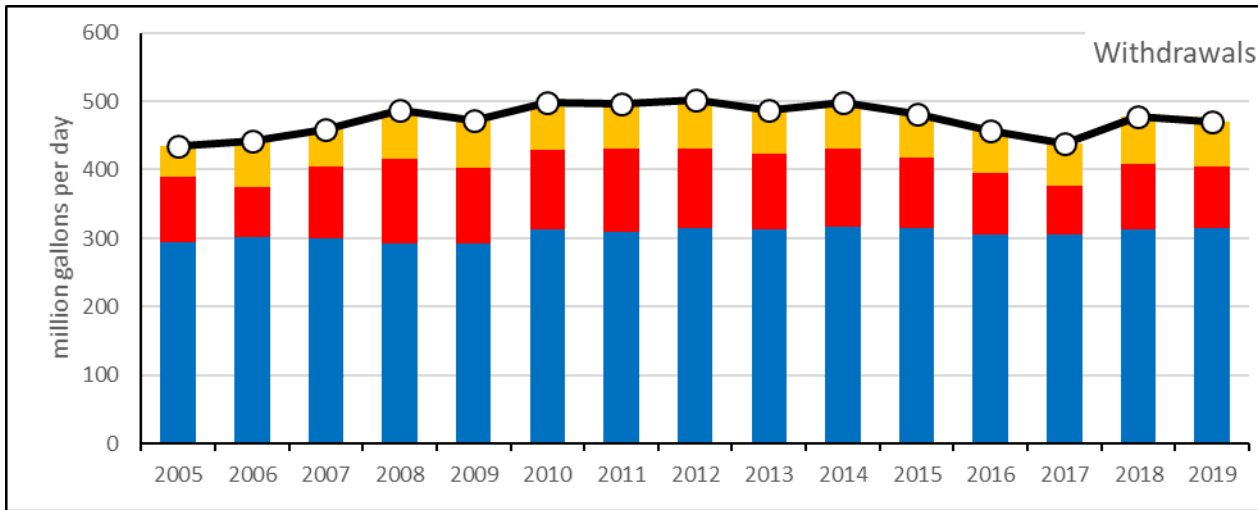
## Notes:

- After a steady decline in Thermo withdrawals and consumptive use, use appears to be leveling off since 2016
- Consumptive use from Thermo still leads all other categories



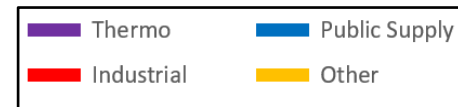
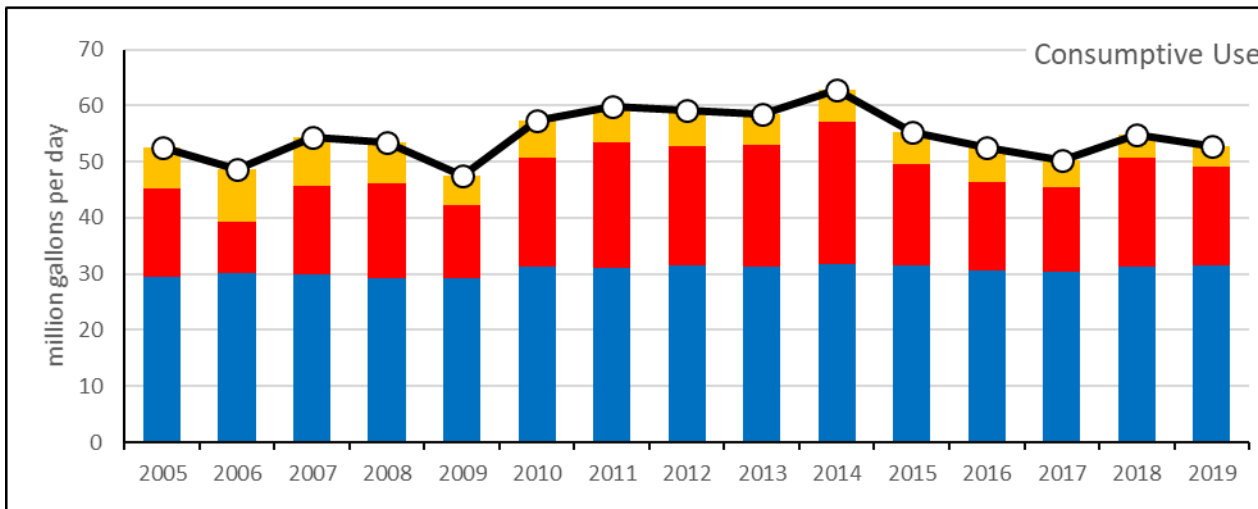
Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use - Susquehanna w/o Thermo



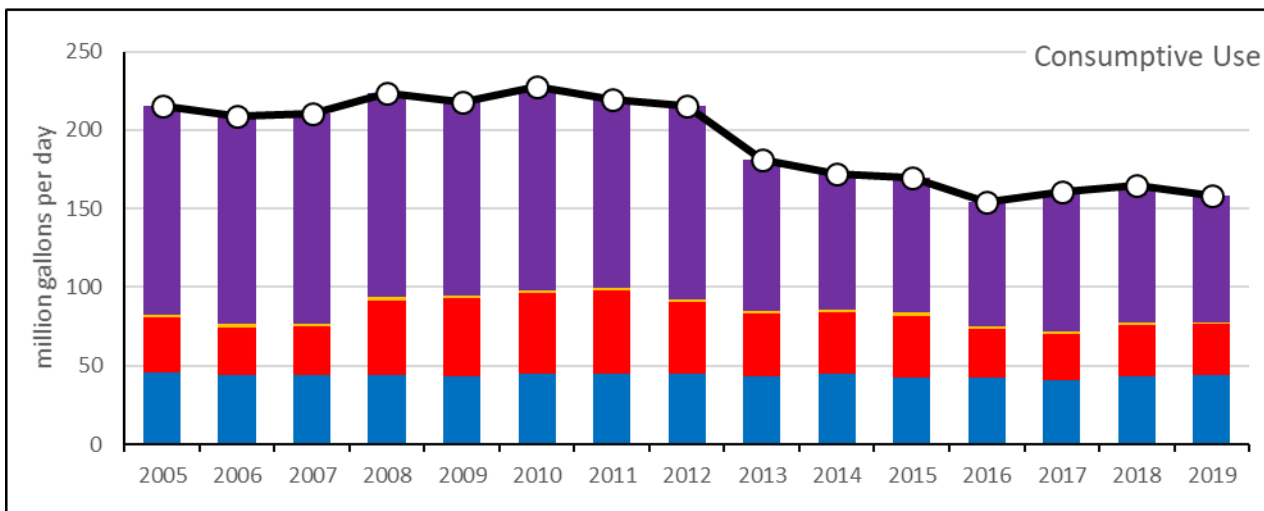
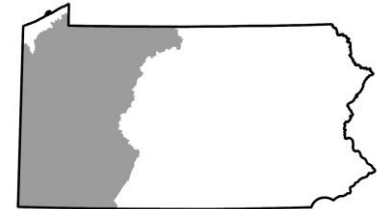
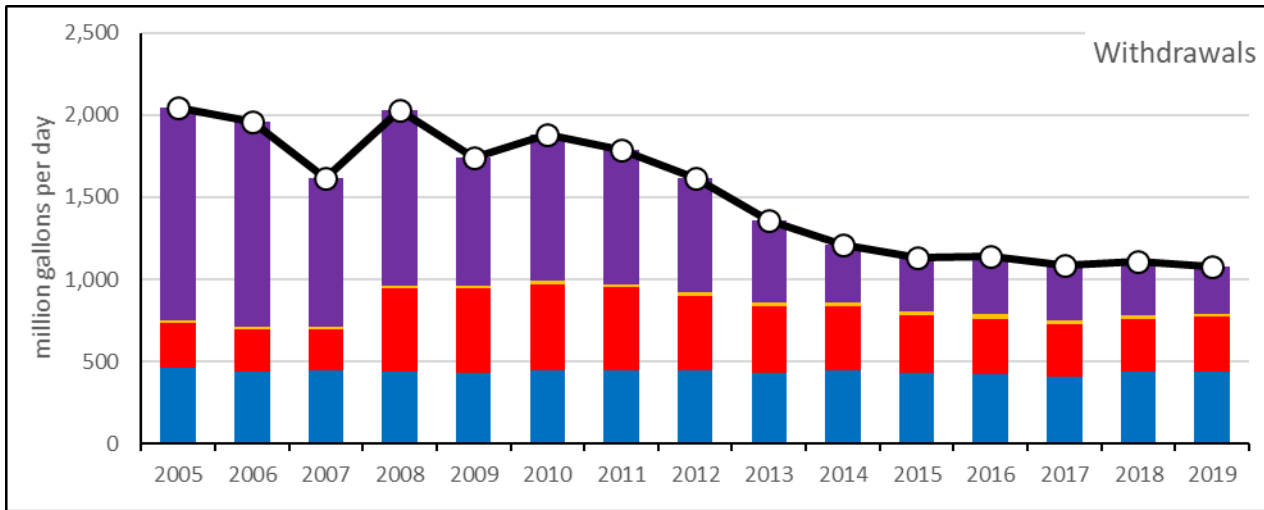
**Notes:**

- All sector withdrawals and consumptive use appear steady



Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use - Ohio



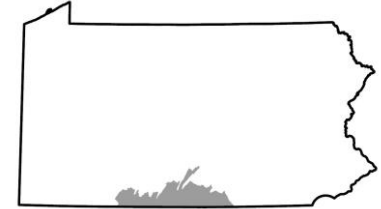
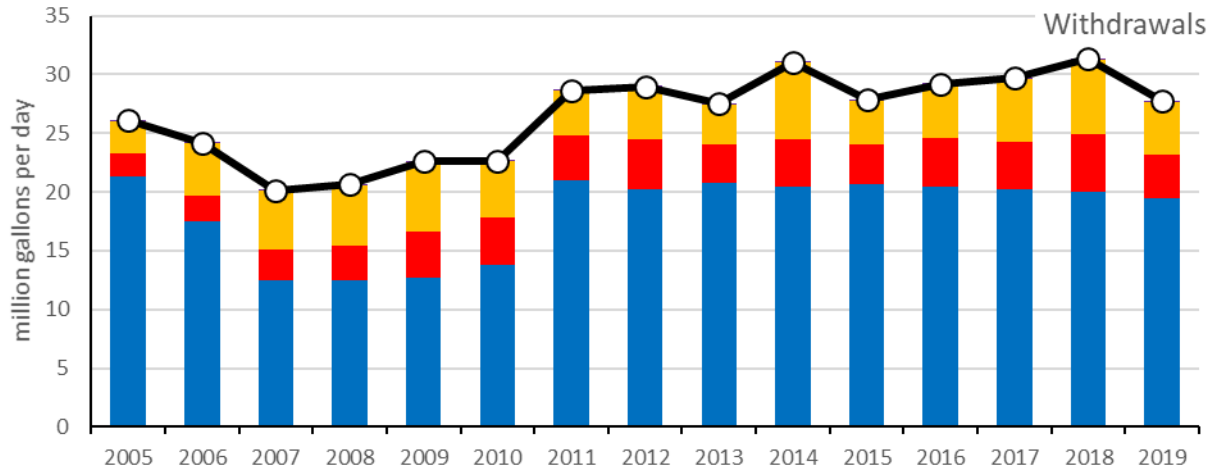
## Notes:

- Declines in thermo withdrawals and consumptive use appear to be leveling off
- Public water supply withdrawals surpassed thermo in 2014
- All other categories appear steady



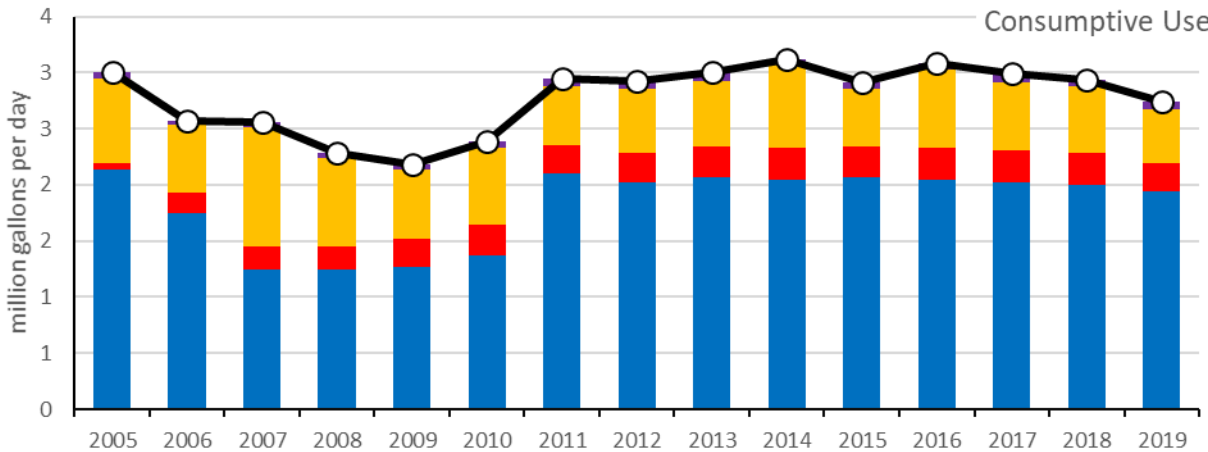
Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use - Potomac



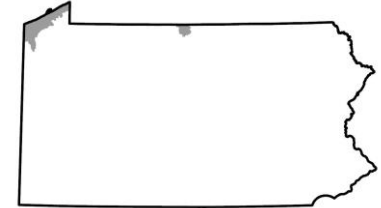
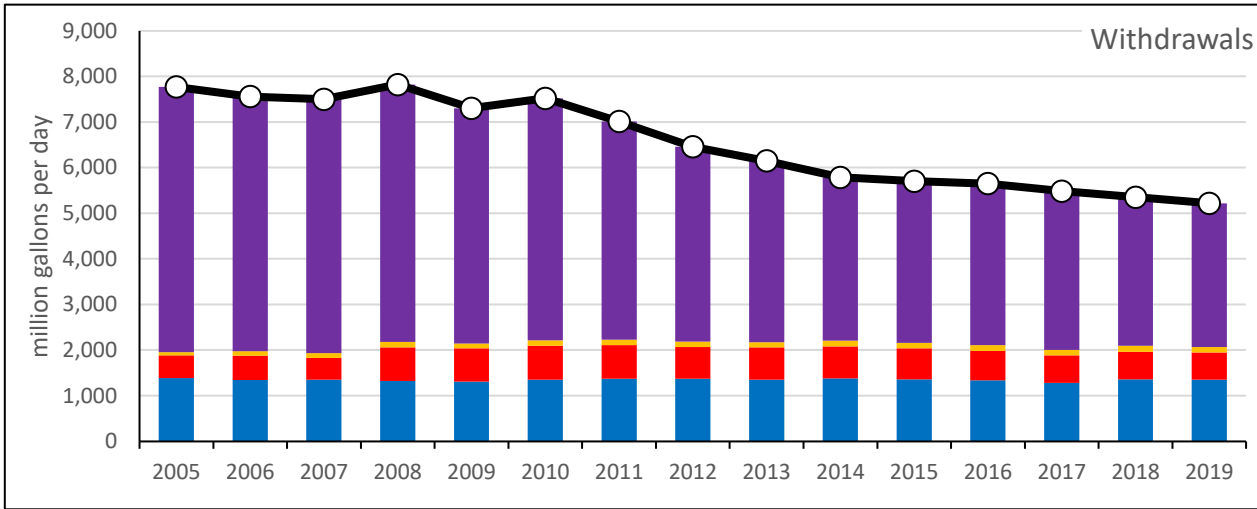
## Notes:

- Increased to steady water use since 2011



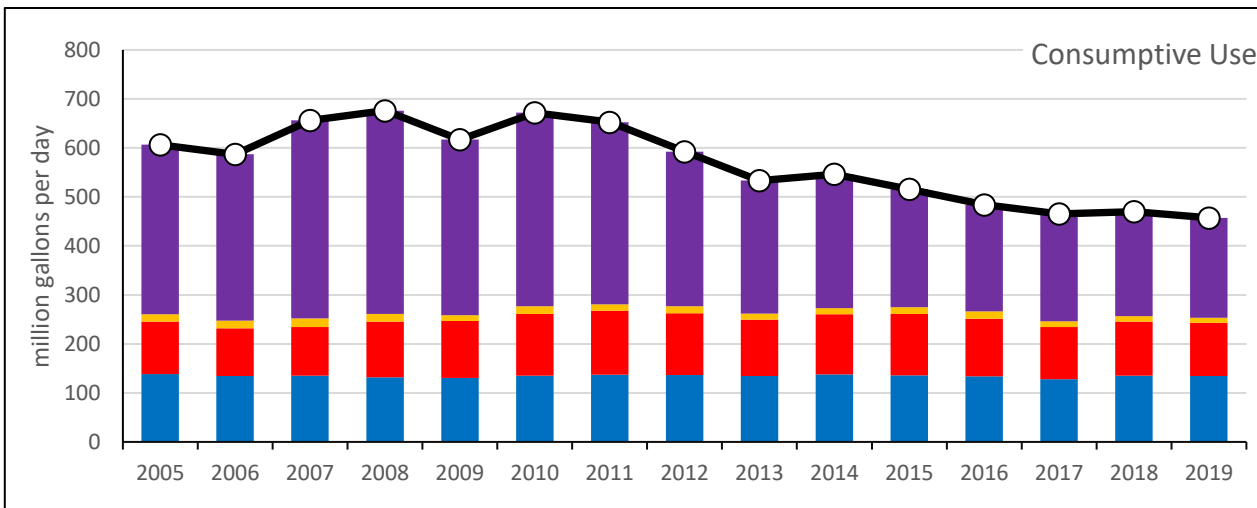
Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# 15-Year Water Use Trend - Great Lakes



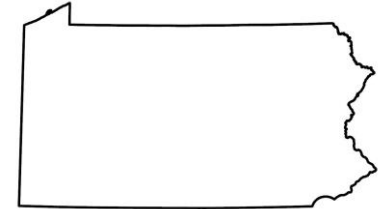
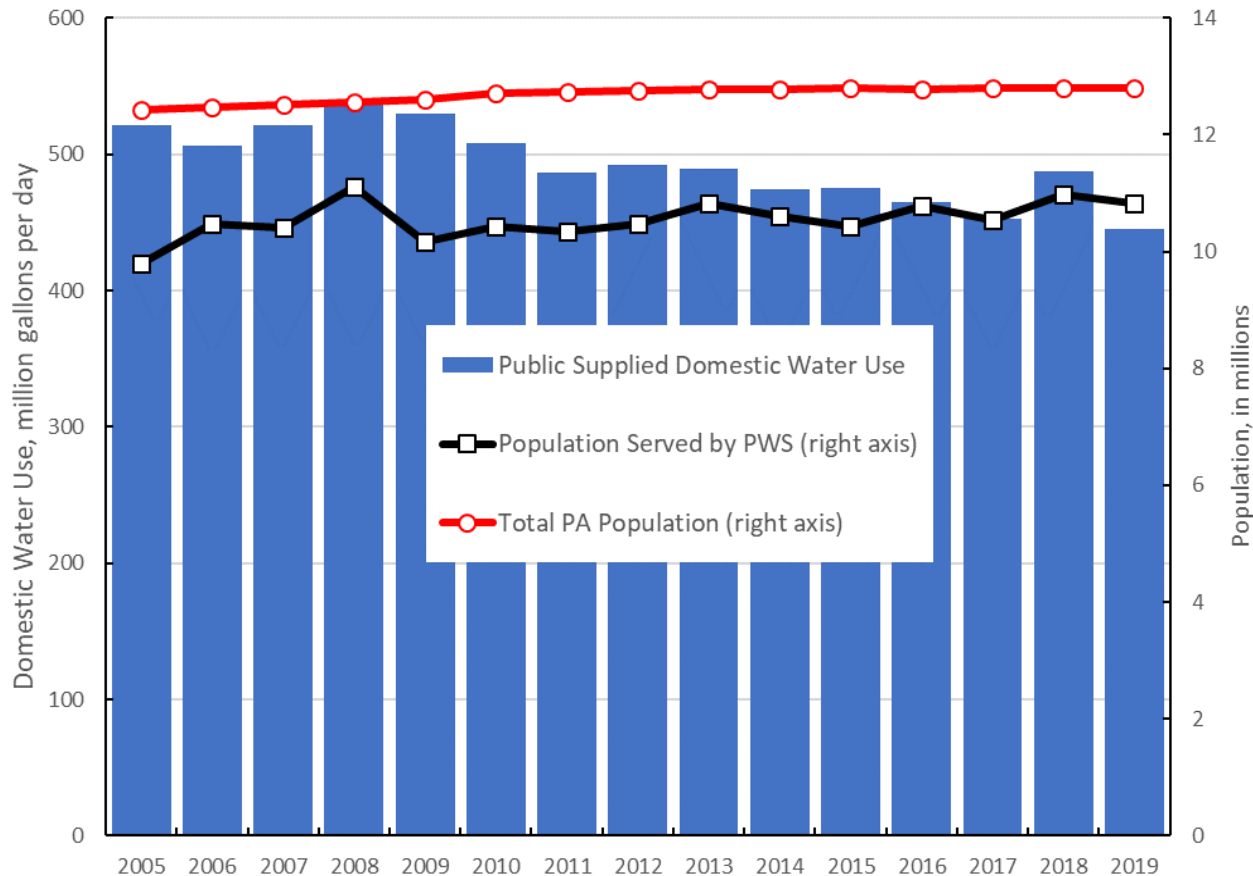
## Notes:

- Steady to decreasing water use
- A large industrial water user in Erie shut down in late 2019



Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# Public Supplied Domestic Water Use



## Notes:

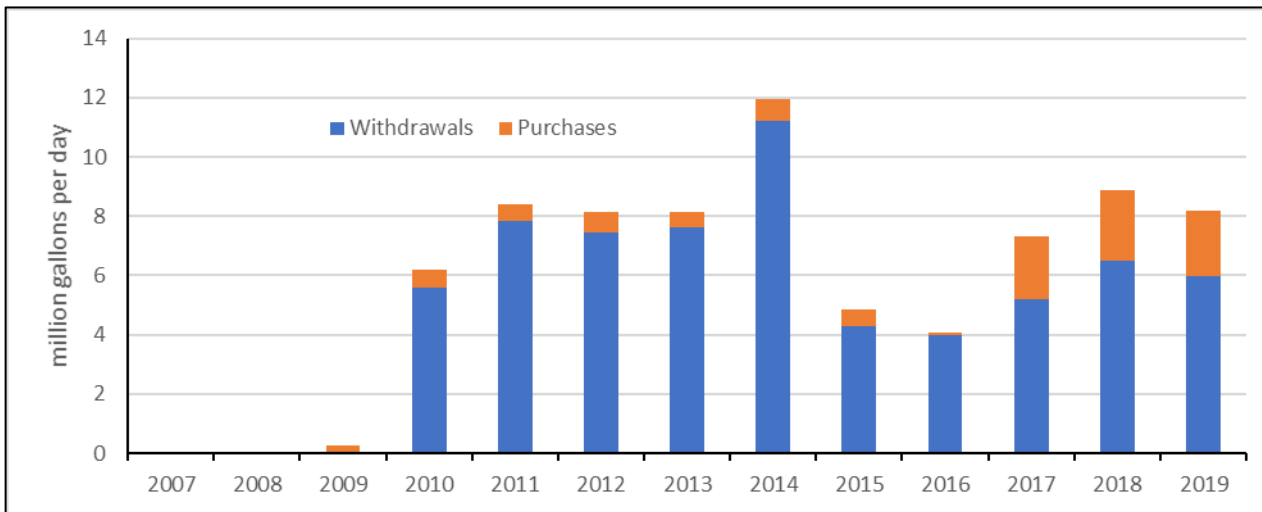
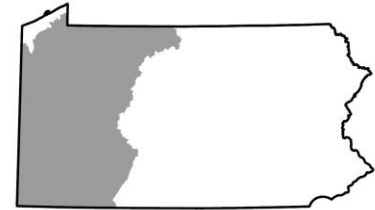
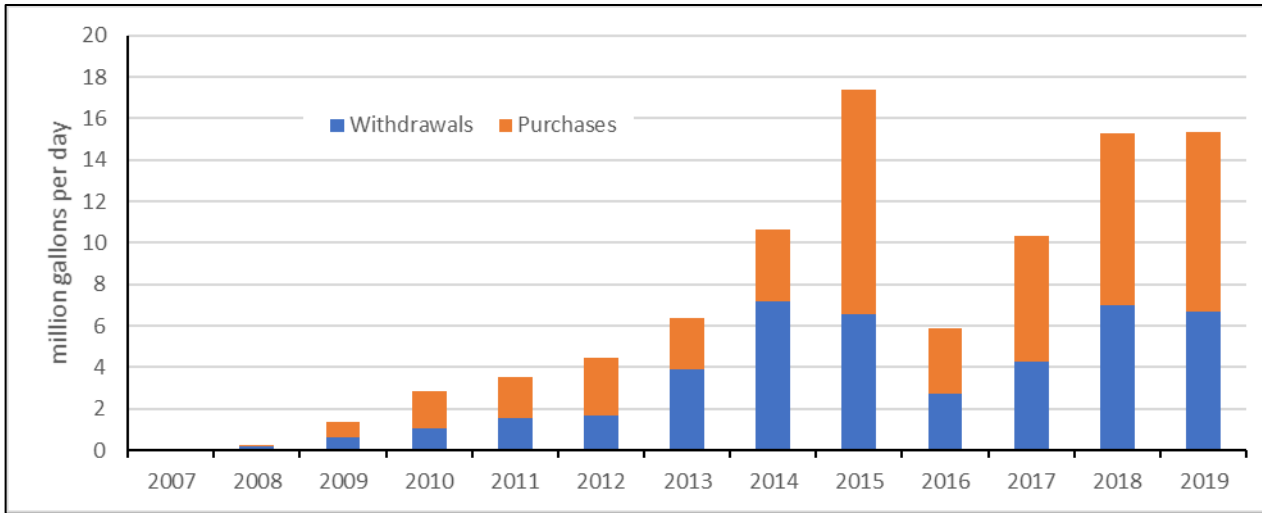
- Public supplied domestic use had declined while population served increased along with gradual growth in Pennsylvania population

Data Sources:

Chapter 110 Water Use Reports, <https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

Pennsylvania State Data Center, <https://pasdc.hbg.psu.edu/Data/PA-Stats>

# Natural Gas Development Water Use



Data Source: Chapter 110 Water Use Reports,  
<https://www.dep.pa.gov/DataandTools/Reports/Pages/Water.aspx>

# National trends in total water withdrawals, 1950-2015

Pennsylvania is following a national trend in water use. The figure below is from the most recent census of estimated water use in the country.

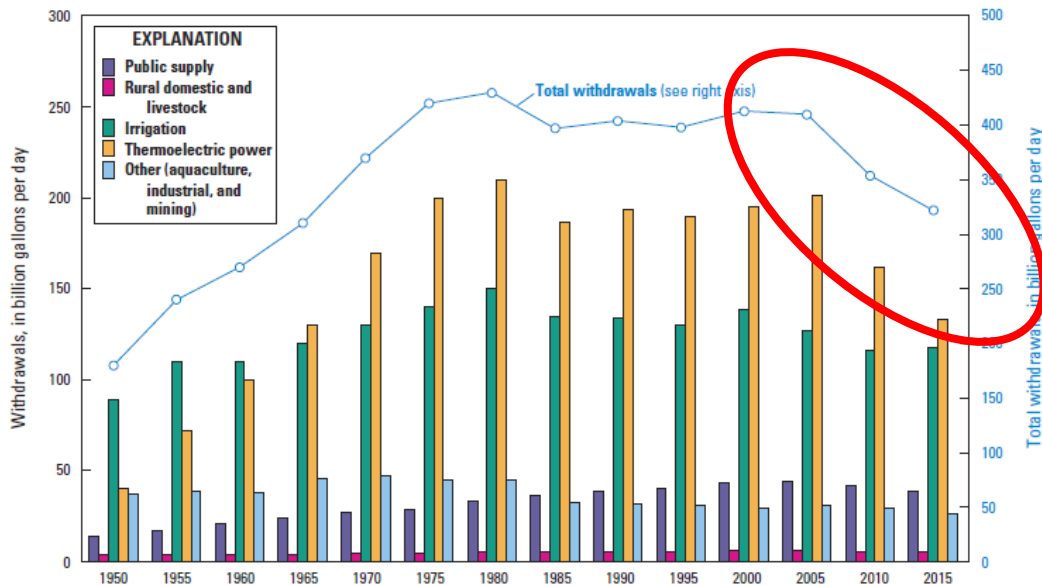
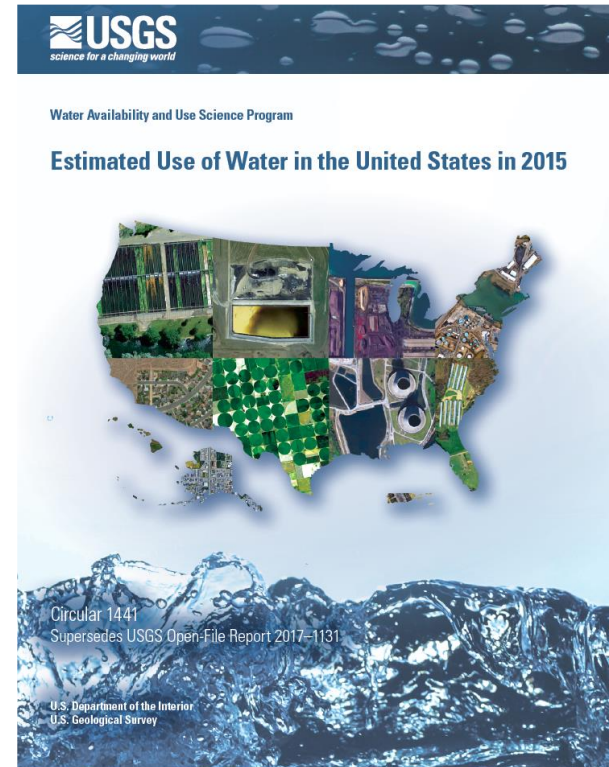


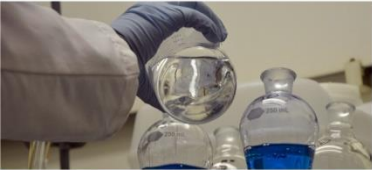
Figure 16. Trends in total water withdrawals by water-use category, 1950-2015.





# Conclusions

1. Statewide total withdrawals and consumptive use had declined in the past 15 years due to significant cooling water reduction for thermoelectric power generation, which follows a national trend. However, all other water use categories have used water steadily over this period.
2. This trend in total use is not seen in all regions.
  - Delaware - consumptive use from power generation has increased slightly
  - Potomac - withdrawals and consumptive use have increased slightly to recent steady use
3. Public supplied domestic water use has decreased, while the population served by public water suppliers has increased.
4. Water used for natural gas development declined after peaking in 2014 and 2015 but has increased and appears steady in both the Susquehanna and Ohio regions.



**pennsylvania**  
DEPARTMENT OF ENVIRONMENTAL PROTECTION



**Michael Hill**  
**DEP, Division of Planning &**  
**Conservation**

**[mihill@pa.gov](mailto:mihill@pa.gov)**

**717-787-0630**

