Wisconsin Water Use

2017 Withdrawal Summary

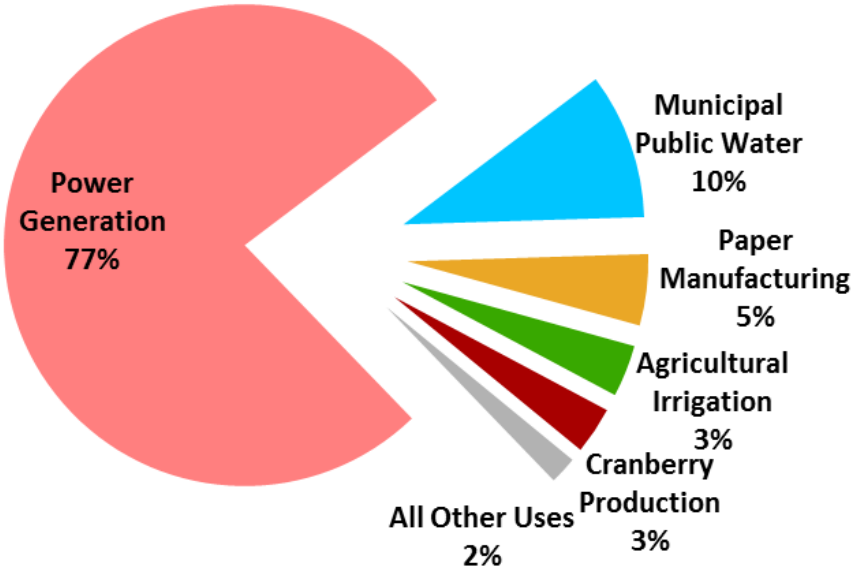
Water supply systems in Wisconsin capable of withdrawing 100,000 gallons or more per day are required to register and report withdrawals annually. The state currently has over 12,000 registered active sources that include wells, ponds, streams, rivers and lakes. In 2017, total statewide water withdrawals exceeded 1.95 trillion gallons, an increase of about 4% compared to 2016. The 1.95 trillion gallons is roughly equal to 3 times the volume of water in Lake Winnebago or enough water to cover the surface area of Wisconsin in nearly 1.7 inches of water.

How and when water is withdrawn varies seasonally. Withdrawal volumes typically vary throughout the year with seasonal temperature and precipitation patterns. Most of the state saw above average precipitation in 2017, especially during the peak water-use months of summer.

- Agricultural Irrigation water use remained steady with another wet growing season. 2017 agricultural water use was nearly half of the peak use recorded during the drought of 2012.
- Water demand for Power Generation and Municipal Public Water was up about 4% for each category. The increase is likely the result of higher than average temperatures which made cooling processes less efficient during the warmer summer months.

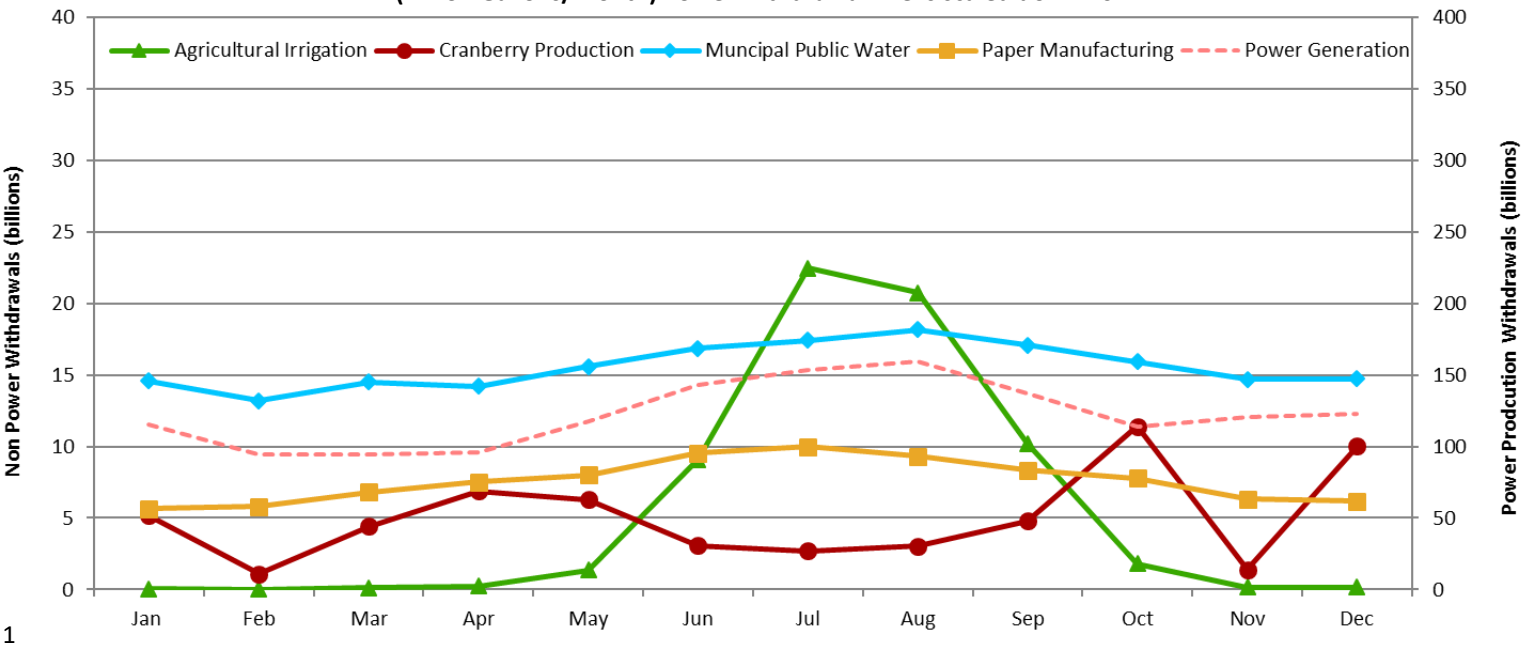
2017 Withdrawals by Use

Total Withdrawals = 1.95 Trillion Gallons



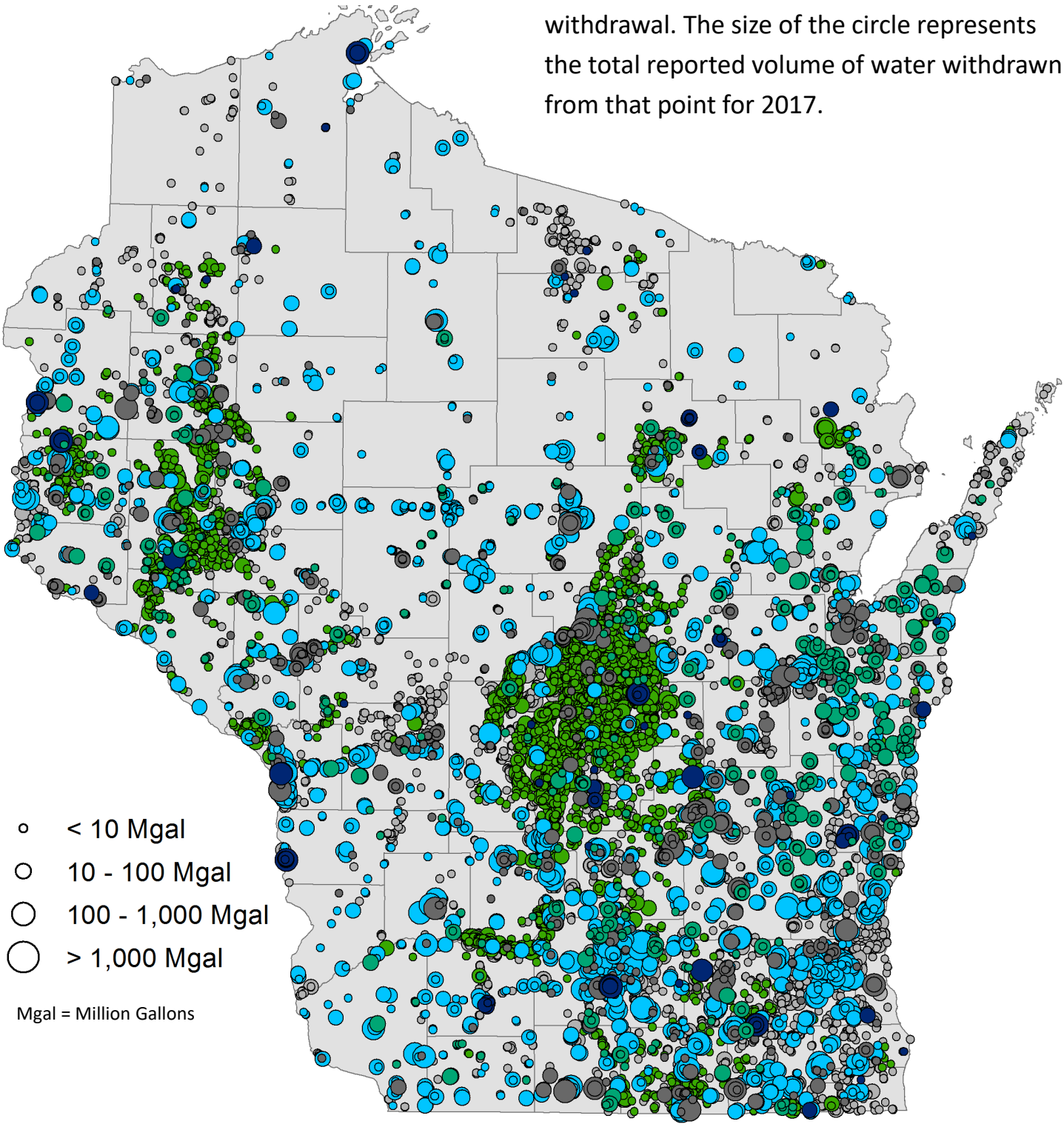
2017 Monthly Variation in Top 5 Withdrawals

(Billion Gallons/Month) Power withdrawal line is scaled down 10x



2017 Groundwater Annual Withdrawals

Each circle represents a single 2017 point of withdrawal. The size of the circle represents the total reported volume of water withdrawn from that point for 2017.



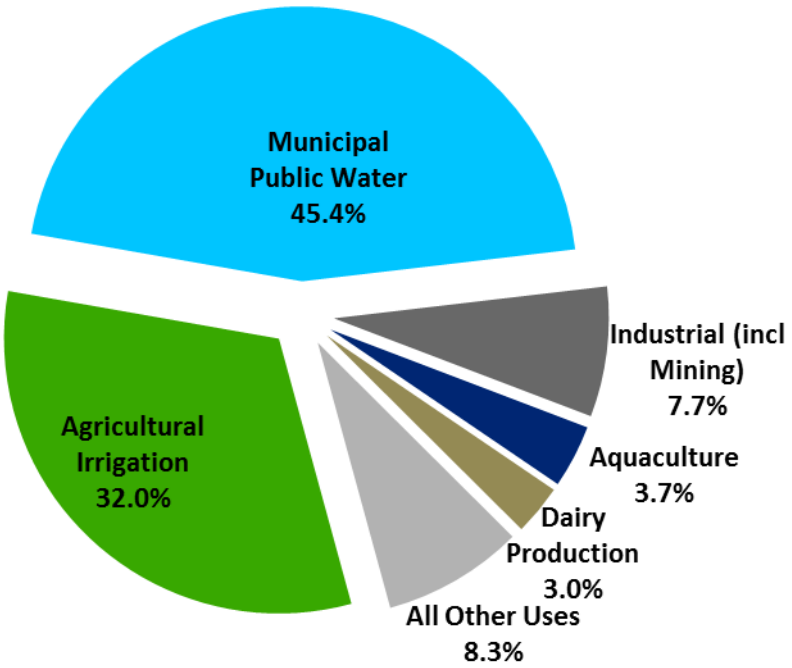
Municipal Water Supply **Industrial (incl. mining)** **Dairy Production**

Agricultural Irrigation **Aquaculture** **All other uses**

2017 Total Groundwater Withdrawals by Water Use

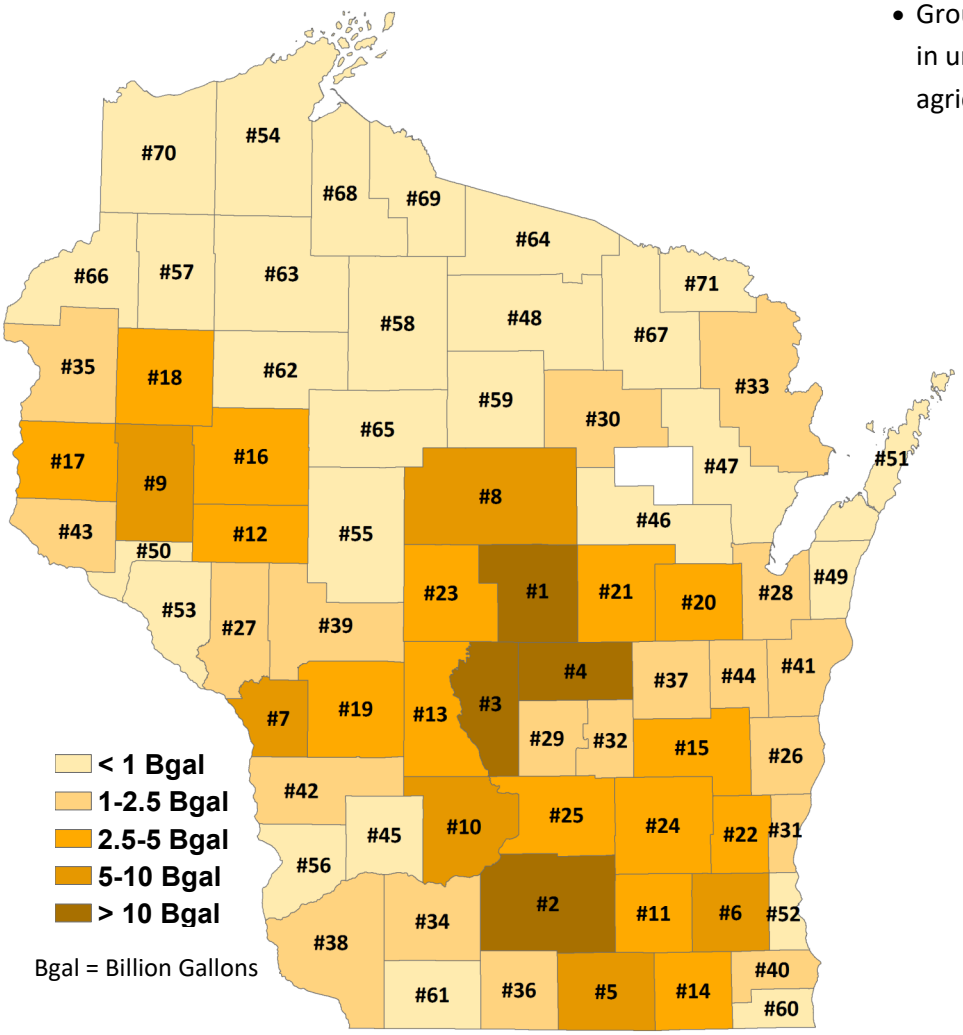
202 billion gallons statewide

- 11% of all statewide withdrawals were from groundwater. These totaled 202 billion gallons from over 11,000 high capacity wells active in 2017.
- Municipal Public Water suppliers remained the largest withdrawer of groundwater. These wells are typically owned by cities and deliver water for residential, commercial, institutional and industrial uses. Municipal suppliers withdrew nearly 92 billion gallons in 2017.
- Agricultural Irrigation is the second largest withdrawer of groundwater in the state, pumping 64.6 billion gallons. Irrigation rates are typically tied to annual changes in weather. Given the higher than average rainfall during the 2017 growing season total irrigation withdrawals were almost half of the highest recorded levels from 2012 which totaled 123 billion.



Average Groundwater Withdrawals by County 2011-2017

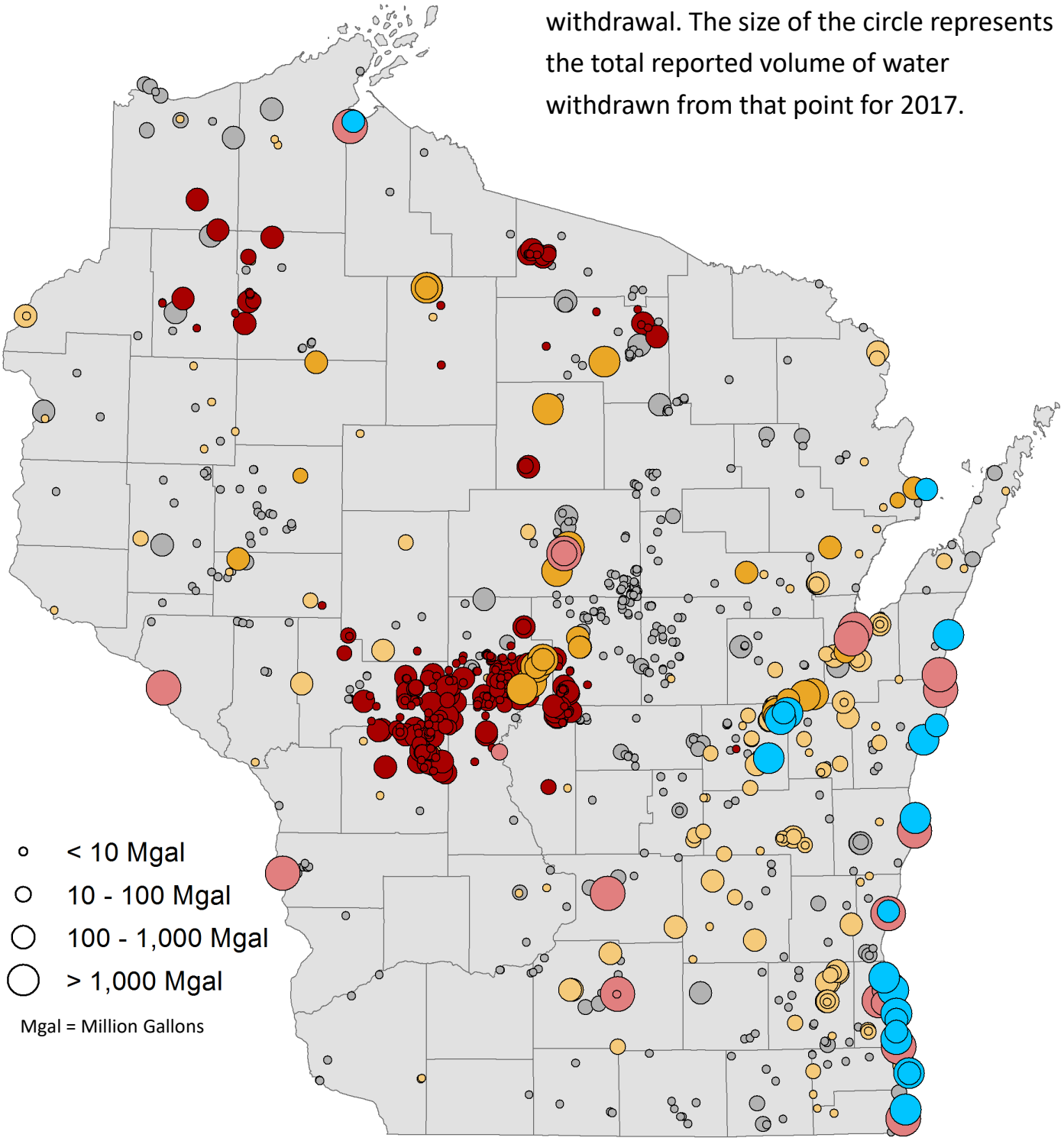
The number indicates ranking of total withdrawal by county (#1 = highest, #71 = lowest).



- Groundwater withdrawals are most concentrated in urban areas not supplied by surface water and agricultural areas with high irrigation demand.
  - Portage (#1), Adams (#3) and Waushara (#4), comprise much of the Central Sands area of the state. This area is a globally significant vegetable and potato producing region.
  - Dane (#2), Rock (#5), and Waukesha (#6) have large urban/suburban populations that rely on groundwater to meet their residential, commercial and industrial water needs.
  - Groundwater withdrawals are smallest in the far north where land use is more forest based, populations are lower, agriculture is less prevalent and aquifers are less productive.
  - Agricultural Irrigation demand has increased over recent decades in the west central portion of the state including Dunn (#9), Eau Claire (#12), and Chippewa (#16) Counties.

2017 Surface Water Annual Withdrawals

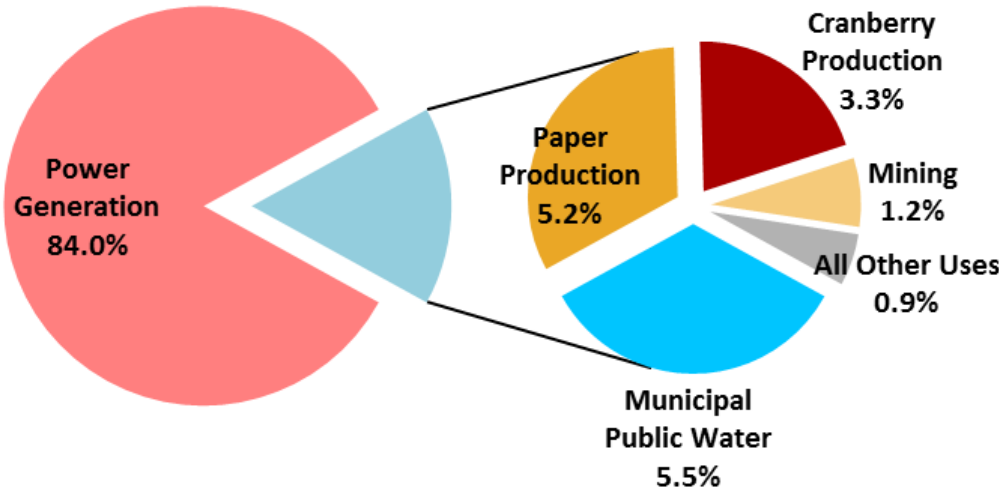
Each circle represents a single 2017 point of withdrawal. The size of the circle represents the total reported volume of water withdrawn from that point for 2017.



Power Generation
Municipal Water Supply
Mining
Paper Production
Cranberry Production
All Other Uses

2017 Total Surface Water Withdrawals by Water Use

1.74 trillion gallons statewide

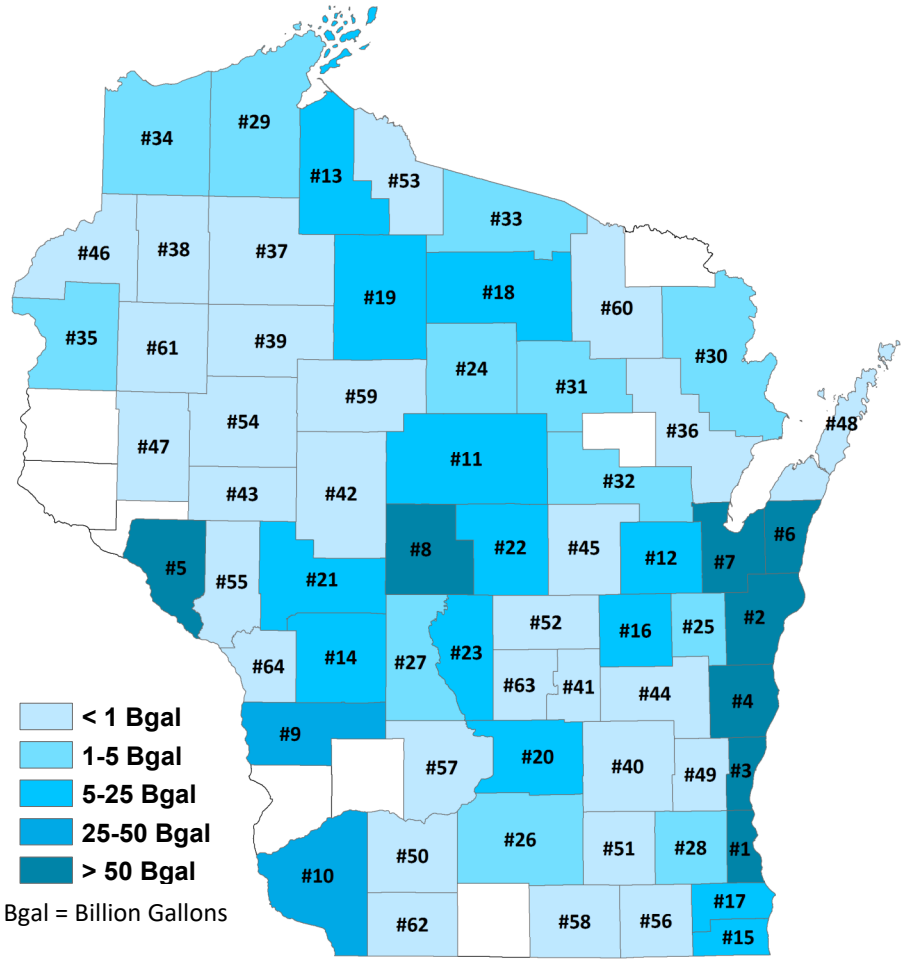


- Many surface water withdrawals are used and discharged near their point of withdrawal. This results in little water lost from the original source relative to the size of the withdrawal.
- Nearly 90% of all statewide withdrawals were from surface water. Totaling 1.74 trillion gallons from 765 active sources in 2017.
- The largest volume of water withdrawn in the state (1.49 trillion gallons) was used by Power Generation facilities. These facilities are concentrated along Lake Michigan and the Wisconsin and Mississippi Rivers.

Average Surface Water Withdrawals by County 2011-2017

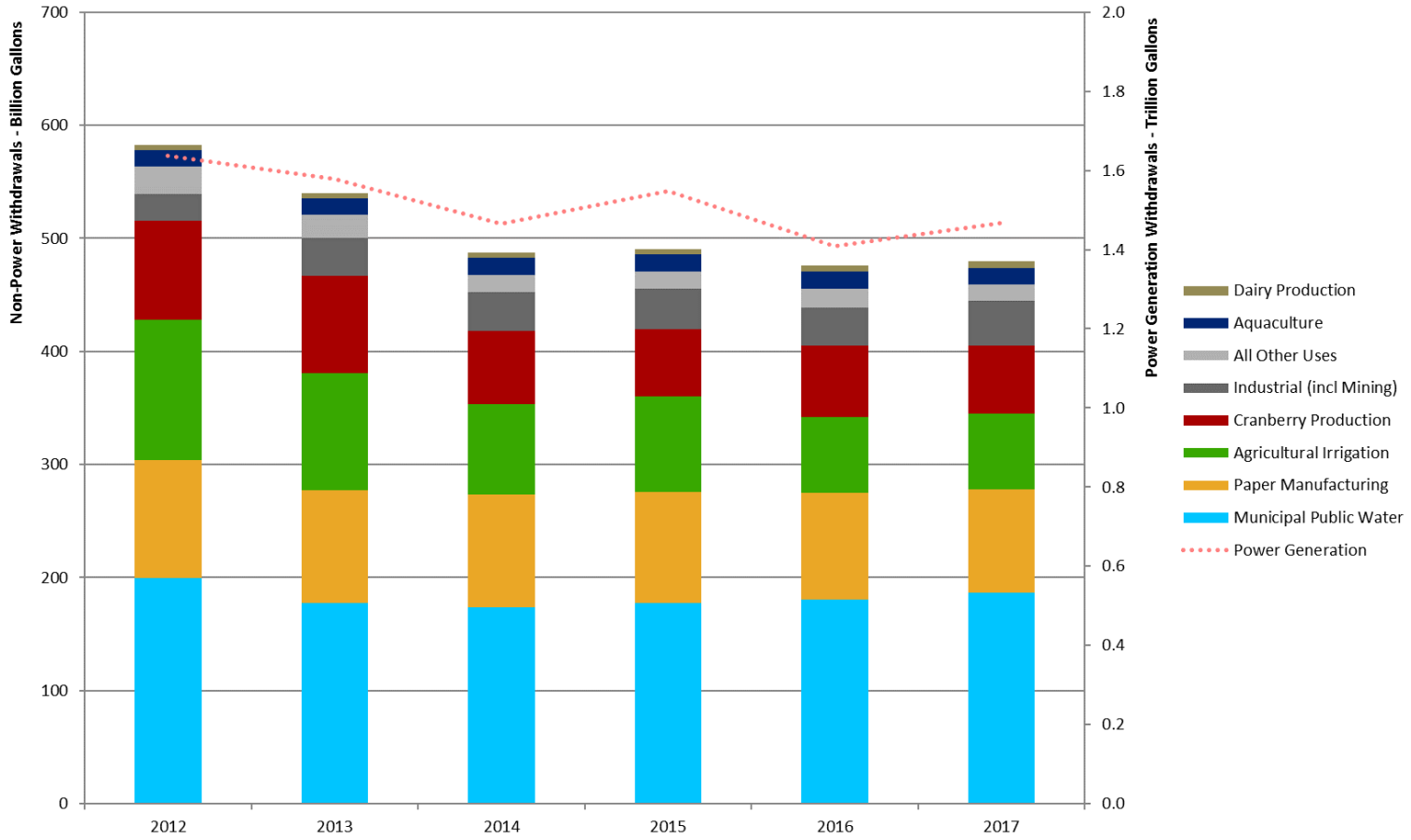
The number indicates ranking of total withdrawal by county (#1 = highest, #64 = lowest).

- Surface water withdrawals for Municipal Public Water averaged about 5% of the total surface water withdrawals annually.
  - Municipal Public Water withdrawals are used for a variety of purposes throughout the communities a system serves. For more detail on Municipal Water Use refer to the 2016 water use report. In 2016 the department examined Lake Michigan Municipal Public Water use utilizing Wisconsin Public Service Commission data to better understand water use sectors served within any given Municipal Public Water system.
- Power Generation facilities represented the majority of withdrawals in the five top ranked counties of Milwaukee (#1), Manitowoc (#2), Ozaukee (#3), Sheboygan (#4) and Buffalo (#5).
- Surface water is key to producing some of Wisconsin's top products:
  - Paper in Brown (#7), Wood (#8), Outagamie (#12) and Marathon (#11) counties.
  - Cranberry in Wood (#8), Monroe (#14), and Jackson (#21).



Counties without ranking have no registered surface water withdrawals.

Annual Withdrawals by Category 2012 to 2017



2017 Wisconsin Withdrawal Reporting Facts

Water Use	Total Active Sources	Total 2017 Withdrawal (Bgal)	Active Ground Water Sources	2017 Ground Water Withdrawal (Bgal)	Active Surface Water Sources	2017 Surface Water Withdrawal (Bgal)
Agricultural Irrigation	3,901	66.1	3,776	64.6	125	1.5
All Other Uses	1,568	7.2	1,529	4.7	39	2.5
Non-Municipal Public	1,751	3.9	1,751	3.9	-	-
Municipal Public	1,591	164.4	1,569	91.0	22	73.4
Dairy Production	831	6.0	831	6.0	-	-
Industrial (non-mining)	521	15.4	502	11.7	19	3.7
Golf Course Irrigation	416	3.7	358	3.1	58	0.6
Cranberry Production	410	60.7	142	3.3	268	57.4
Non-Metallic Mining	323	24.3	178	3.3	145	21.0
Aquaculture	161	14.1	143	7.6	18	6.6
Power Generation	65	1,489.1	36	.9	29	1,488.2
Paper Manufacturing	52	91.2	12	1.9	40	89.3
Total	11,590	1,946.1	10,827	202	577	1666.8

Bgal = Billion Gallons

For more information regarding the Water Use Reporting program or to request more specific information on withdrawals, please visit our website or contact Water Use Program staff: dnr.wi.gov keyword "**Water Use**"

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