

# Great Salt Lake Basin Data Center Water Use

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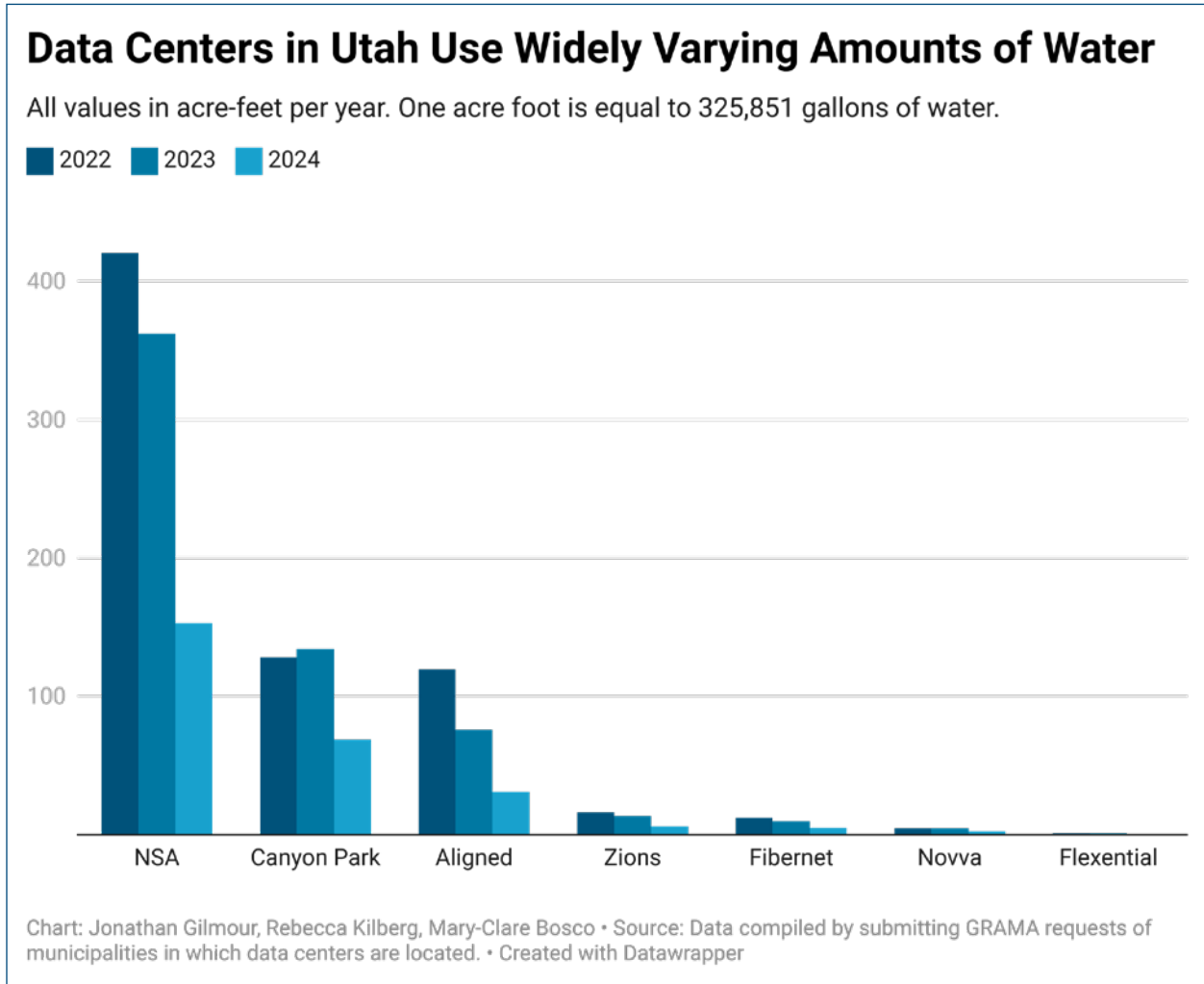
This project proposes that the State of Utah’s Office of the [Great Salt Lake Commissioner](#) set water efficiency targets for the tech sector and collaborate with local partners to collect new data on the water usage of local data centers. Doing so will support the Commissioner’s Office in its efforts to protect the Great Salt Lake and set an example for other states looking for strategies to curb the tech sector’s water consumption in drought-prone regions.

This fact sheet provides an overview of current water usage of major data centers in the Great Salt Lake region, gathered by our team through public records requests. It also provides a recommendation for what specific targets and metrics the Office of the Commissioner should use when setting these water efficiency targets.

## OVERVIEW

This fact sheet tells the story of water usage by data centers in the Great Salt Lake Basin based on data collected from 7 of the 22 data centers in the area. It provides comparisons of local data center water use over 2.5 years, shows the seasonal variation for each data center, and supplies estimates of water use effectiveness (WUE) for each of the data centers in the sample. The fact sheet serves as a starting point for the Office of the Great Salt Lake Commissioner to determine appropriate conservation targets for the data center industry, and provides guidance to identify useful metrics. We hope the Commissioner’s Office will publish this fact sheet and related information on its website, in a new section entitled “Data Centers” under the [Industry & Recreation](#) tab.

Snapshot of Data Center Water Usage



The differences in water usage are stark. The figures for Novva and Flexential are dwarfed by the NSA’s Utah Data Center’s water usage. However, the total amount of consumption is not the only important factor to consider.

### Data Centers Use a Massive Amount of Water

All values in acre-feet. An acre-foot is the amount of water that covers an acre (slightly smaller than the size of a football field) to a depth of one foot.

Year	NSA	Novva	Aligned	Zions	Canyon Park	Fibernet	Flexential	Total
2022	420.4	4.5	119.4	16.0	128.2	12.2	0.9	701.8
2023	362.2	4.6	75.8	13.6	134.2	9.7	1.0	601.1
2024 (Jan-Jun)	152.6	2.3	30.7	6.0	68.8	5.0	0.4	265.8

*There are about fifteen more data centers in the Great Salt Lake area with unknown water usage.*

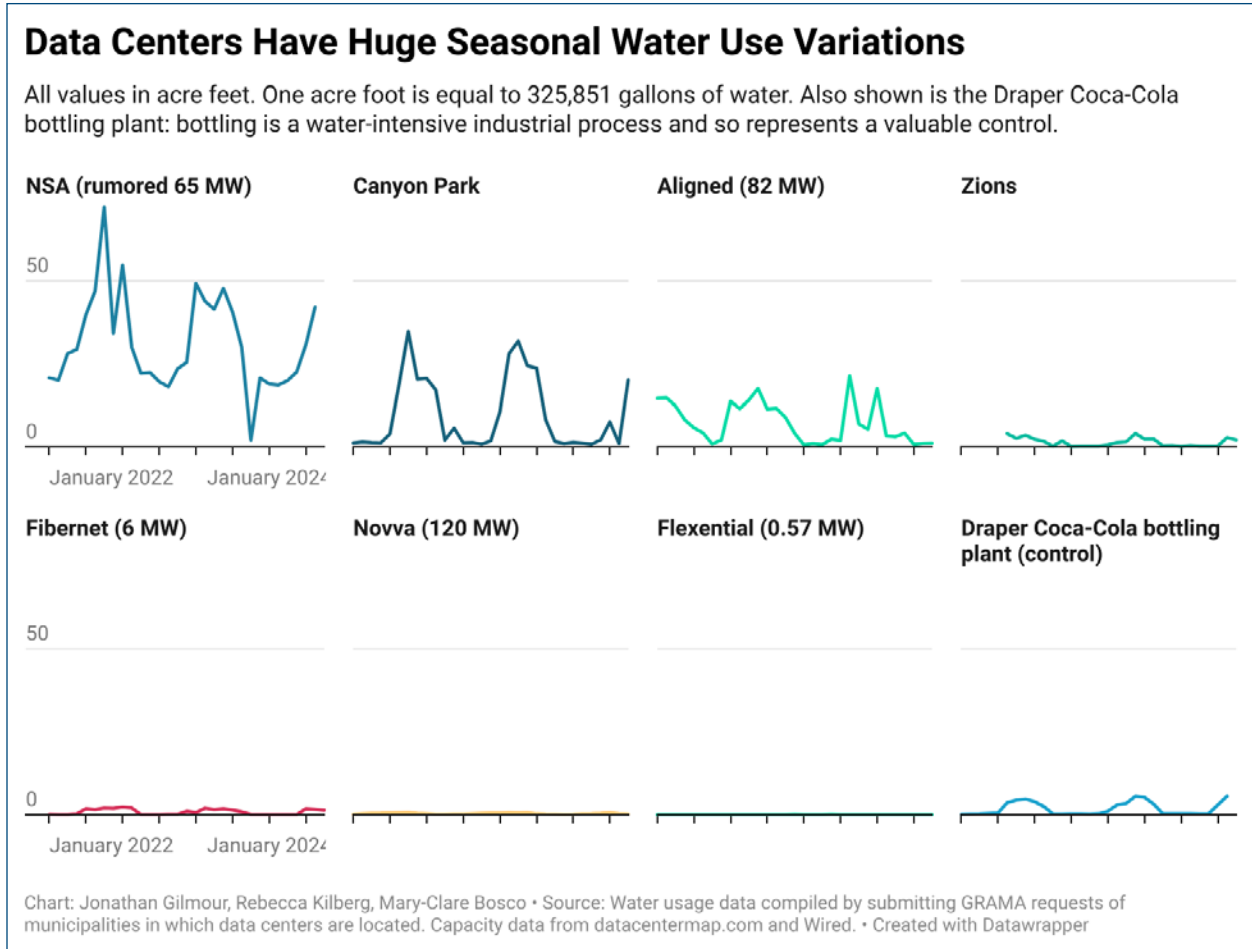
Table: Jonathan Gilmour, Rebecca Kilberg, Mary-Clare Bosco • Source: Data compiled by submitting GRAMA requests of municipalities in which data centers are located. • Created with Datawrapper

Data center water usage from each of the 7 data centers we have data for and a total of all 7. There are about 15 other data centers in the Great Salt Lake Basin with unknown water usage.

Utahns use, on average, [167 gallons of water per day](#). These seven data centers used as much water as 3,752 people in 2022, with the NSA’s Utah Data Center accounting for a whopping 60% of that water use.

Put another way, the water consumed by these seven data centers in 2022 would have been enough to fill 346 Olympic sized swimming pools.

Seasonal Variation in Water Usage



Seasonal variations in the data centers’ water consumption are significant. Data centers typically use more water for cooling in the hot summer months and less when the weather is cooler, as shown in the graph above. We included the Draper Coca-Cola bottling plant as a control, as bottling is a known high-water-use industry. The NSA, Canyon Park, and Aligned data centers all use markedly more water than the Draper plant.

Water Efficiency

Data centers use different amounts of water mostly because of the technologies they use for cooling (e.g., water loops, humidification, and adiabatic towers). Other relevant factors include amounts of water used for landscaping and for plumbing and human functions inside the building. In order to measure the efficiency with

which data centers use water, we can use a metric called [Water Use Effectiveness \(WUE\)](#). WUE is the ratio between a data center’s water usage and its energy consumption.

Because we do not have data for how much energy these data centers are consuming, we calculated the total possible power they could consume, based on publicly available critical power capacity data from [Data Center Map](#) and [Wired](#). We developed an “Estimated Best Case Data Center Water Use Effectiveness” metric by assuming that every data center was drawing 100% of the possible power on a 24/7/365 basis, though this is highly unlikely. Indeed, a 2016 study from the Lawrence Berkeley National Lab found [the average data center WUE is 1.8L per 1 kWh](#), though it’s worth noting that more recent estimates from iMeta shows averages hovering between [0.18 and 0.3 for the years 2017–2023](#), while Amazon reported averages between [0.18 and 0.25 for the years 2021–2023](#). The Best Case Effectiveness for every data center in our sample was below the reported 2016 average.

Ideally, data centers could calculate and share their own WUE to get a more accurate estimate, rather than a best case estimate. **We suggest that the Commissioner’s Office set a WUE target of 0.25. This target will allow the Commissioner’s Office to hold the data center industry accountable for its impact on GSL Basin waters.**

This table shows that data center capacity and water usage are not necessarily related. There is wide variation in data center capacity (from Flexential’s 0.57 MW to Novva’s 120 MW), water usage (from Flexential’s 0.88 to the NSA’s 420.44 in 2022), and Best Case WUE (from 0.005 L/kWh for Novva to the NSA’s 0.91 L/kWh).

**Estimated Best Case Data Center Water Use Effectiveness (WUE)**

WUE takes into account data center energy consumption and water usage. The lower the WUE, the more efficiently the data center uses water resources. NSA’s Utah Data Center has a high WUE, meaning that it does not use water as effectively as other data centers. Novva, a low water use data center, has a very low WUE. A 2016 study found the average data center WUE is 1.8L per 1 kWh (WUE of 1.8), although it’s worth noting that more recent data from industry giants Meta and Amazon show averages hovering between 0.18 and 0.3 for 2017-2023—however reporting methodologies likely differ from the “best case WUE” method used here.

Datcenter	Capacity (MW)	Water usage 2022 (acre-feet)	Best Case WUE 2022	Water usage 2023 (acre-feet)	Best Case WUE 2023
NSA	65	420.44	0.910	362.15	0.784
Novva	120	4.54	0.005	4.63	0.005
Aligned	82	119.44	0.205	75.82	0.130
Fibernet	6	12.23	0.287	9.73	0.228
Flexential	0.57	0.88	0.217	0.95	0.235

*This chart shows estimated best case data center water use effectiveness. WUE = Data Center Water Consumption (in liters) / IT Equipment Energy (in kilowatt hours). We calculated maximum possible kWh the data centers could draw, based on their publicly available capacity and assuming 100% power draw 24/7/365. This represents best case WUE: it is unlikely that data centers are drawing 100% power at all times.*

Table: Jonathan Gilmour, Rebecca Kilberg, Mary-Clare Bosco • Source: Water usage data compiled by submitting GRAMA requests of municipalities in which data centers are located. Capacity data from datacentermap.com and Wired. Meta and Amazon WUE data from sustainability reports. • Created with Datawrapper



## FACT SHEET

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