Just the Facts

Montana Data Centers and Water

Montana Chamber of Commerce
April 16, 2026

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Lance Energy Chair

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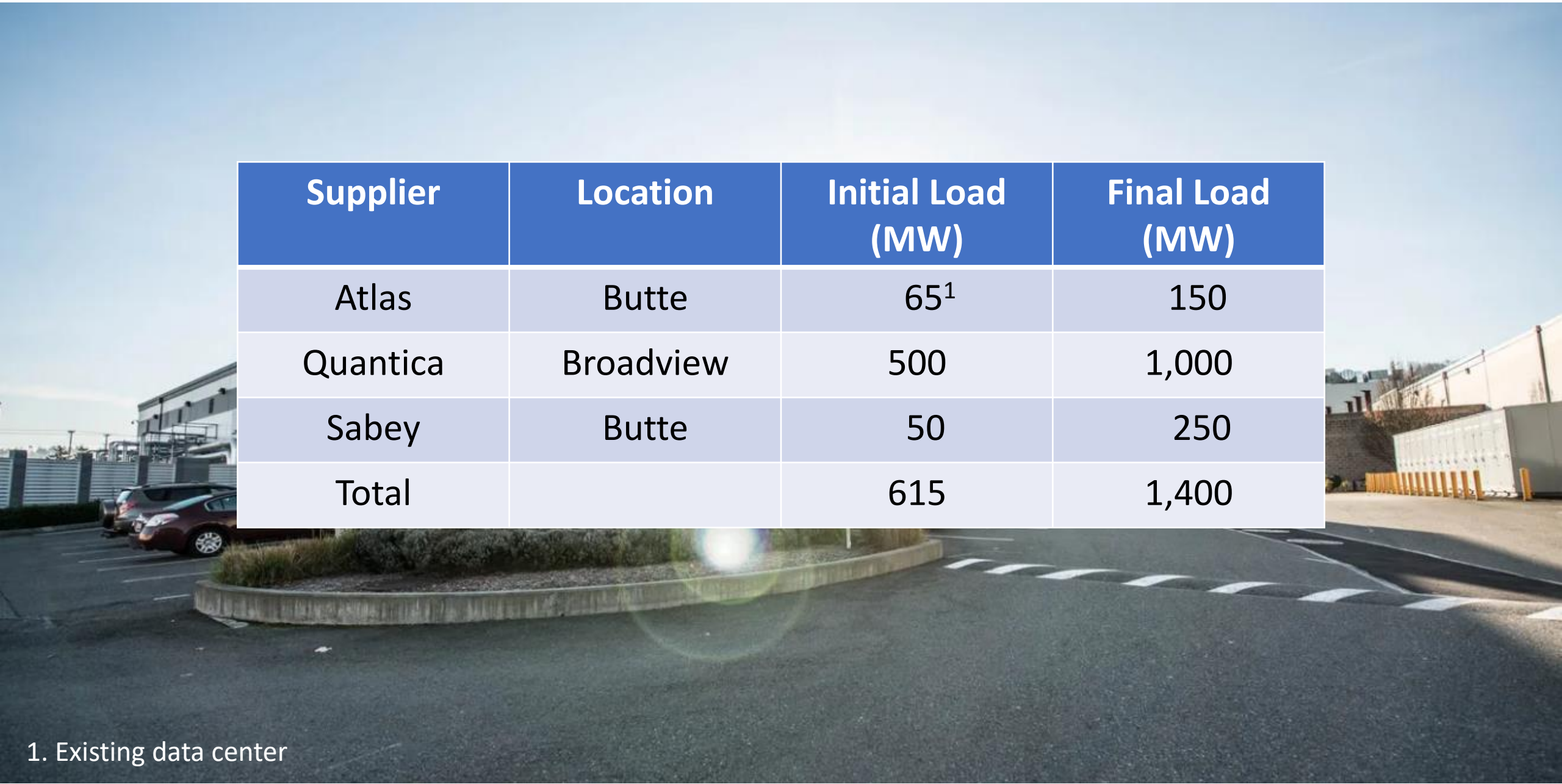
MONTANA
TECHNOLOGICAL UNIVERSITY

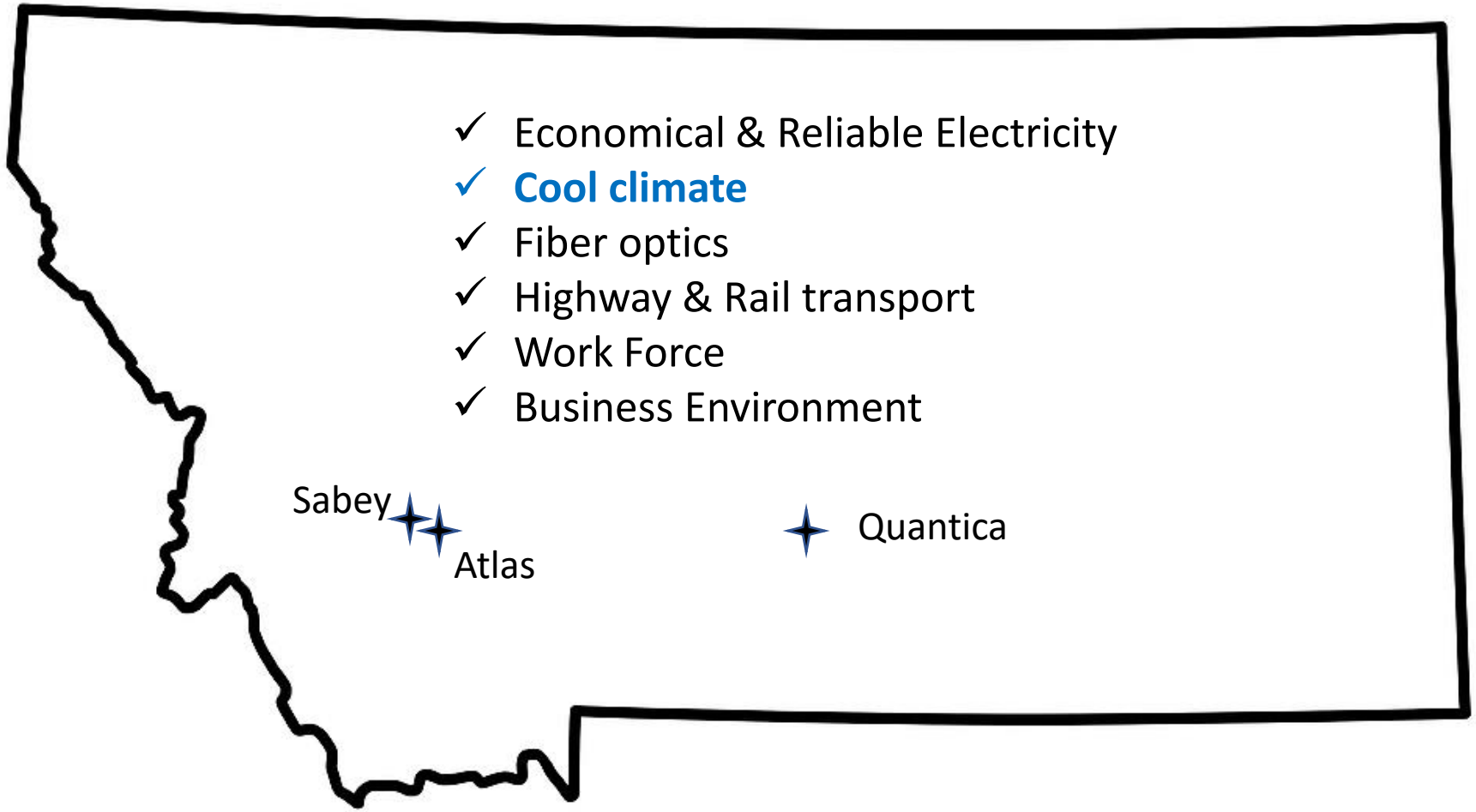
Proposed Montana Data Centers



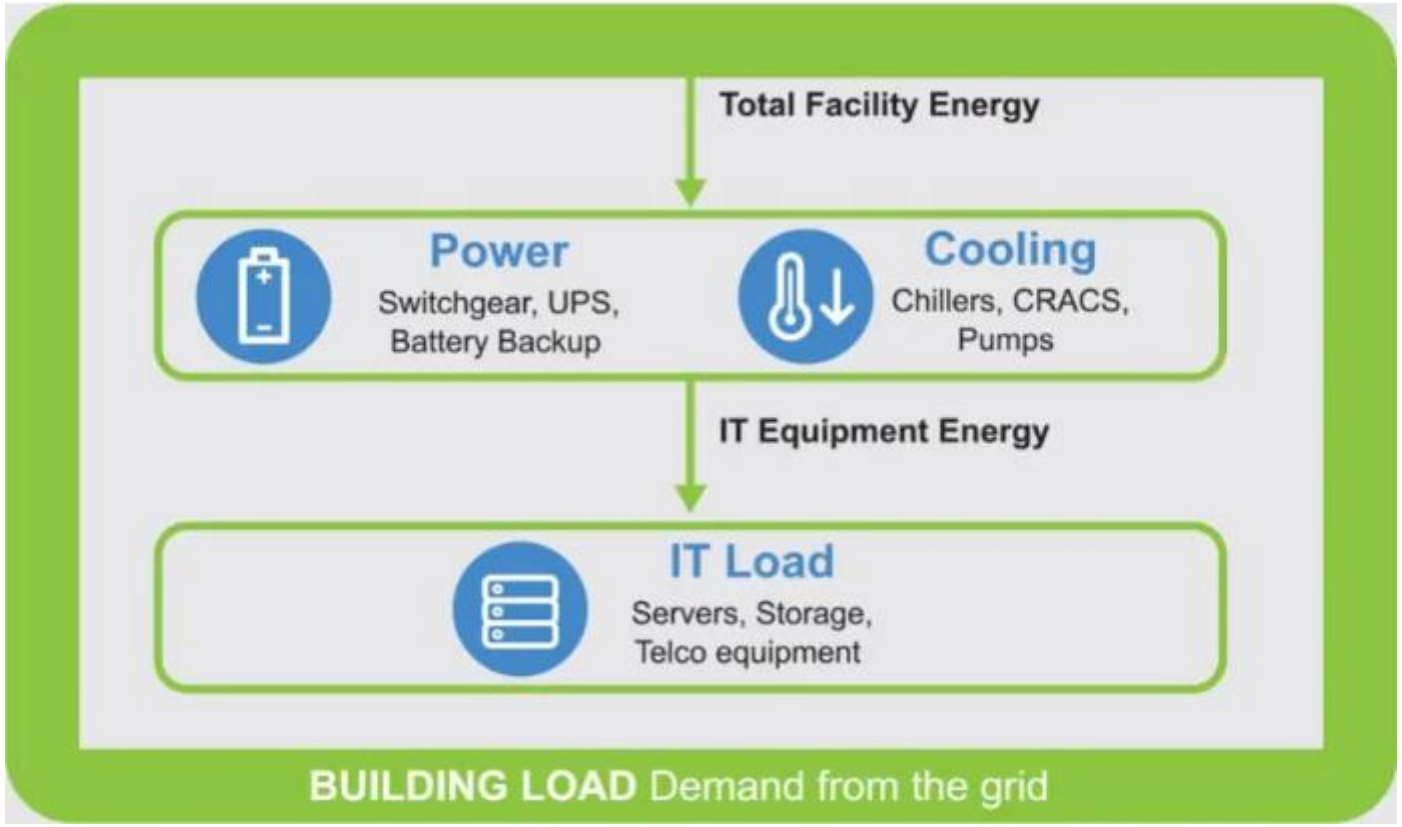
Supplier	Location	Initial Load (MW)	Final Load (MW)
Atlas	Butte	65[1]	150
Quantica	Broadview	500	1,000
Sabey	Butte	50	250
Total		615	1,400

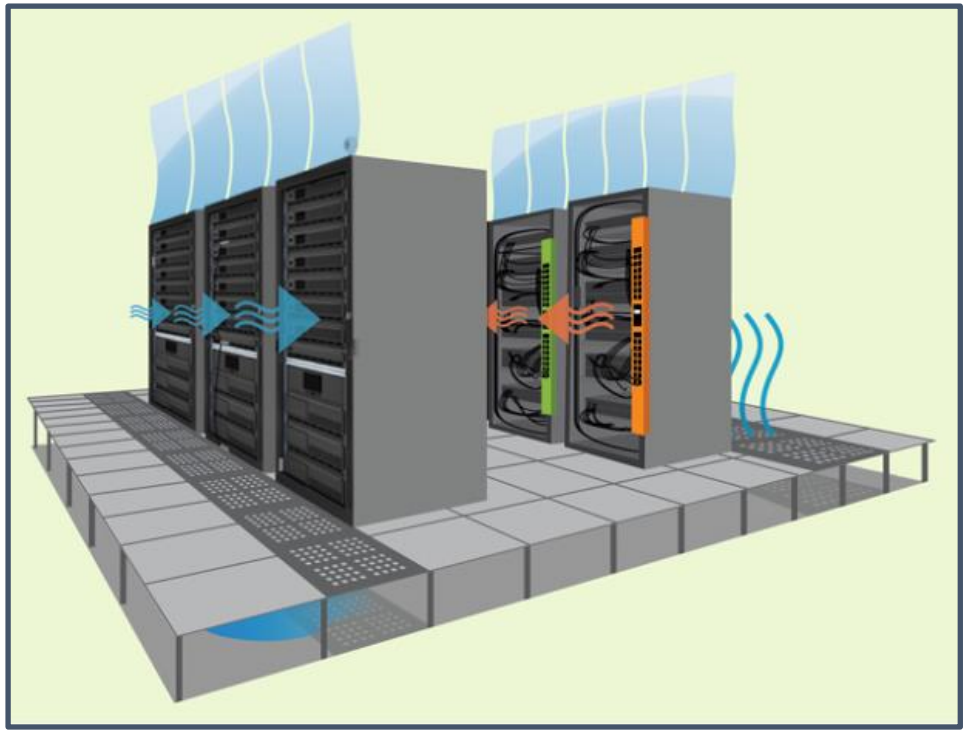
1. Existing data center

Why Data Centers in Montana?



Data Centers Use Energy for IT Load, Power, and Cooling



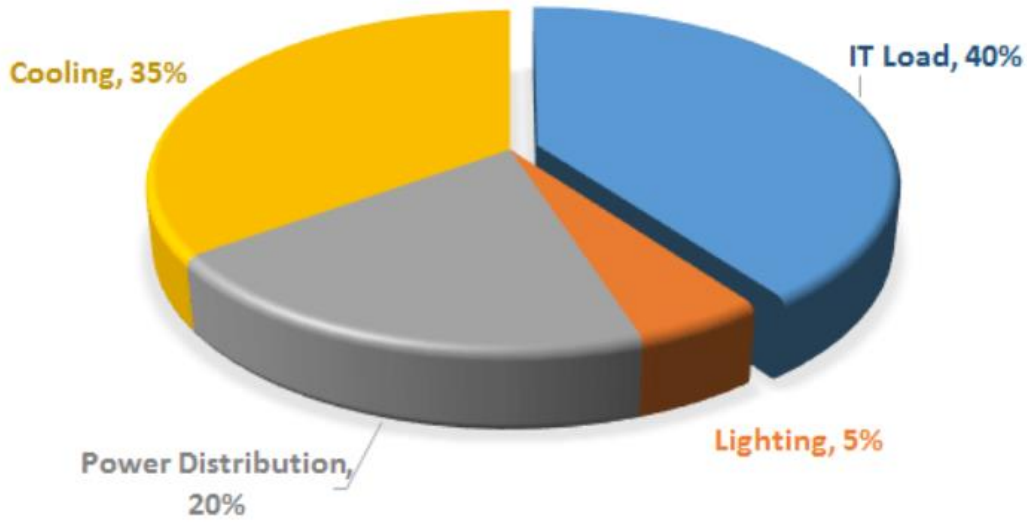


How Efficient is Data Center Power Use?

Power Use Effectiveness $PUE = \frac{\text{Total Facility Power (MW)}}{\text{IT Equipment Power (MW)}}$

Average PUE = 1.6

Best in Class PUE = 1.1



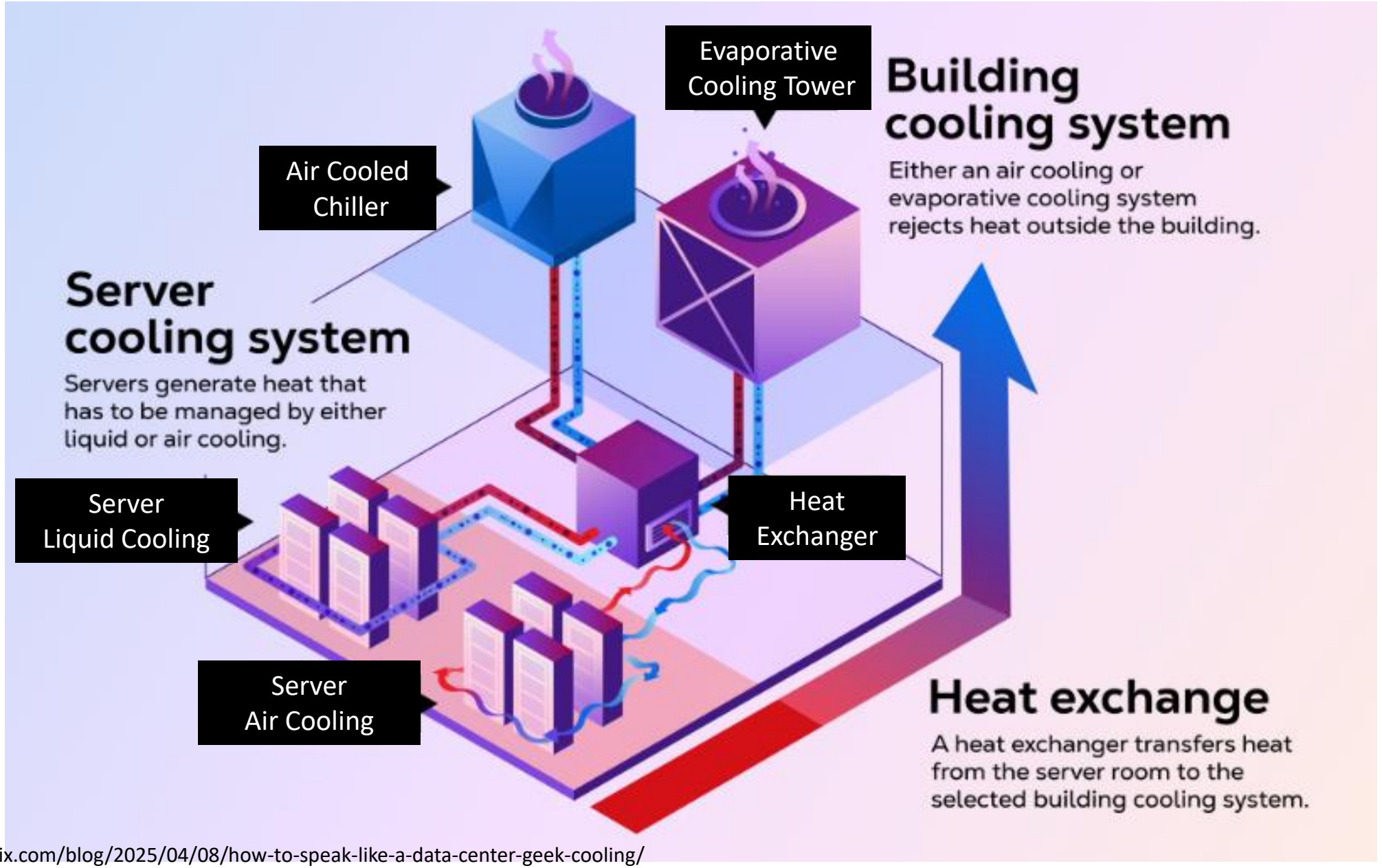
https://datacenters.google/efficiency/

Data Center Power Utilization Efficiency (PUE) Trends (2007-2022)

Source: Uptime Institute

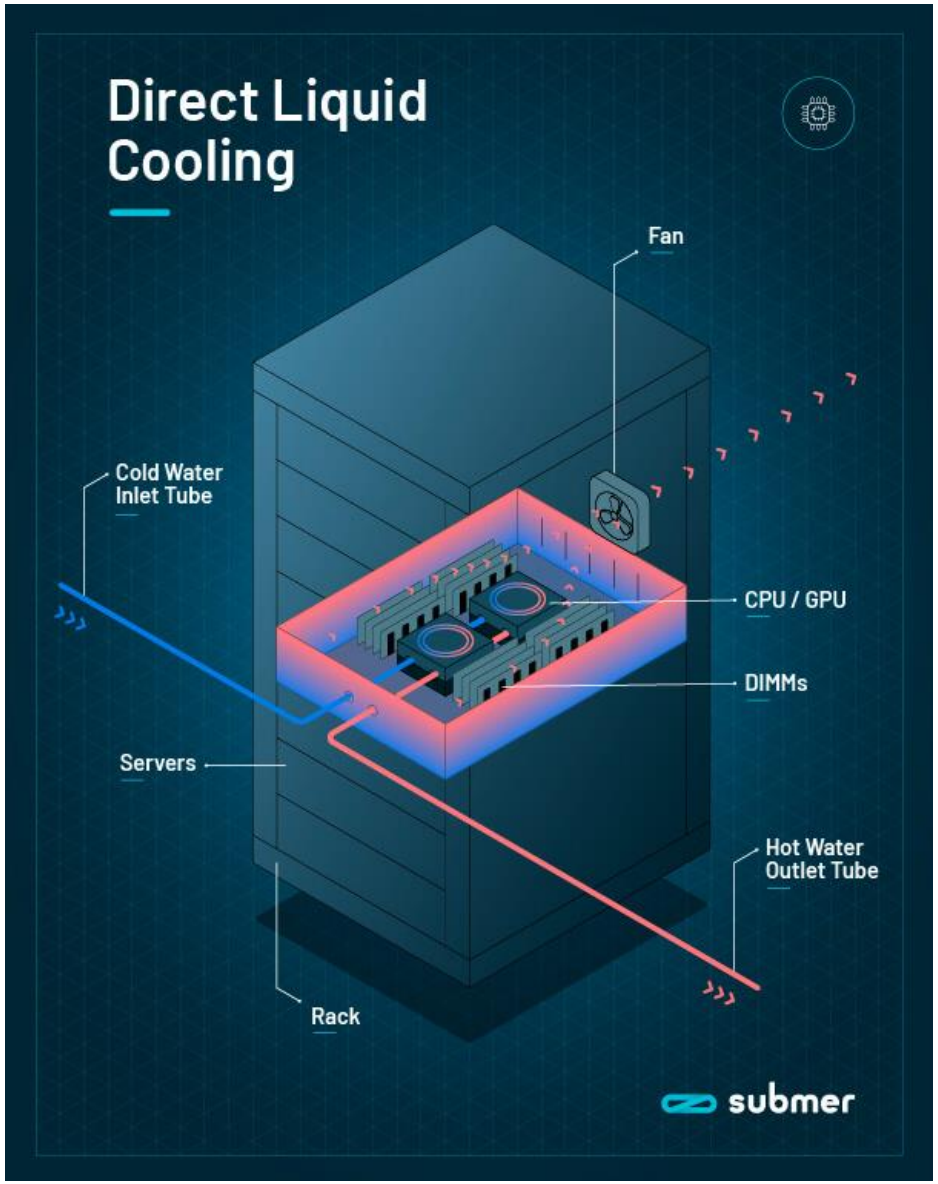
Stratview Research

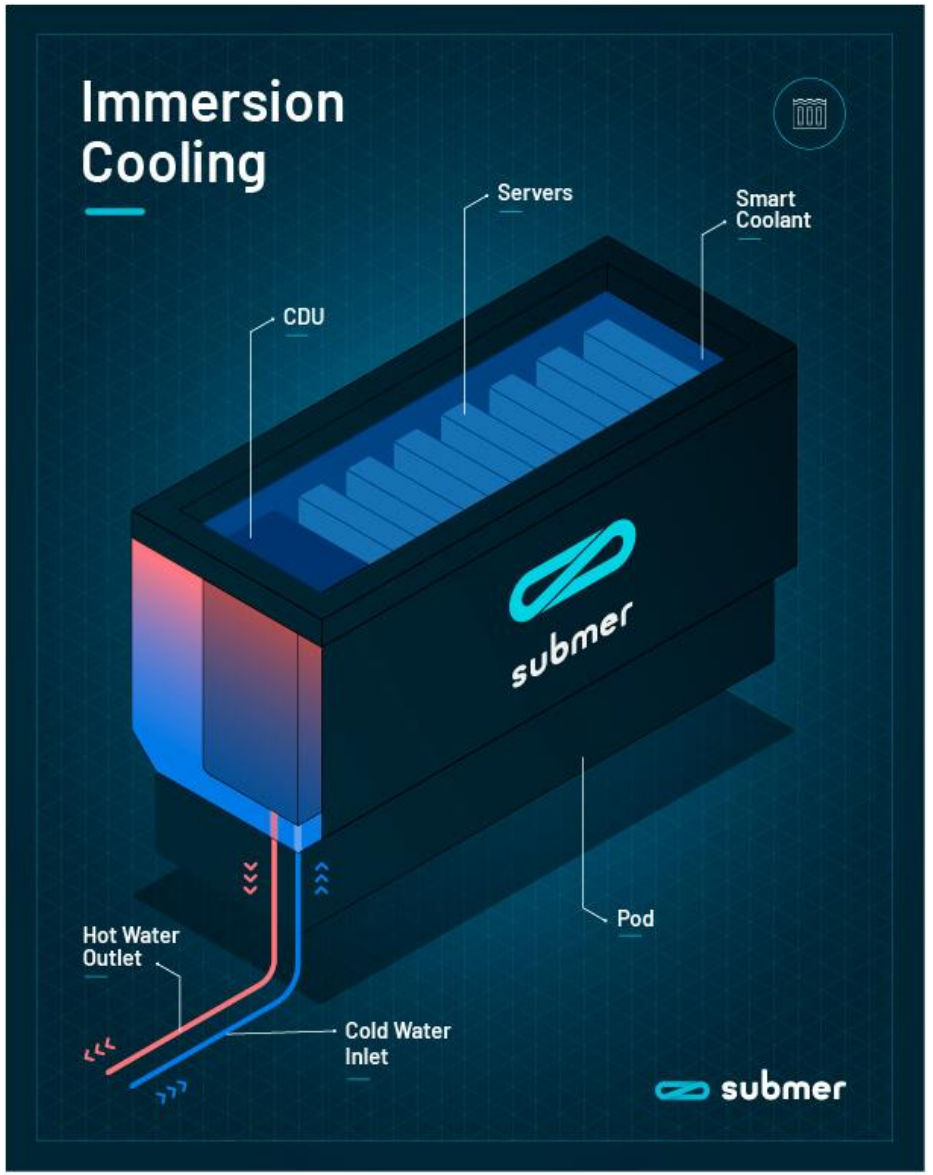
Data Centers Optimize Cooling System Design



https://blog.equinix.com/blog/2025/04/08/how-to-speak-like-a-data-center-geek-cooling/

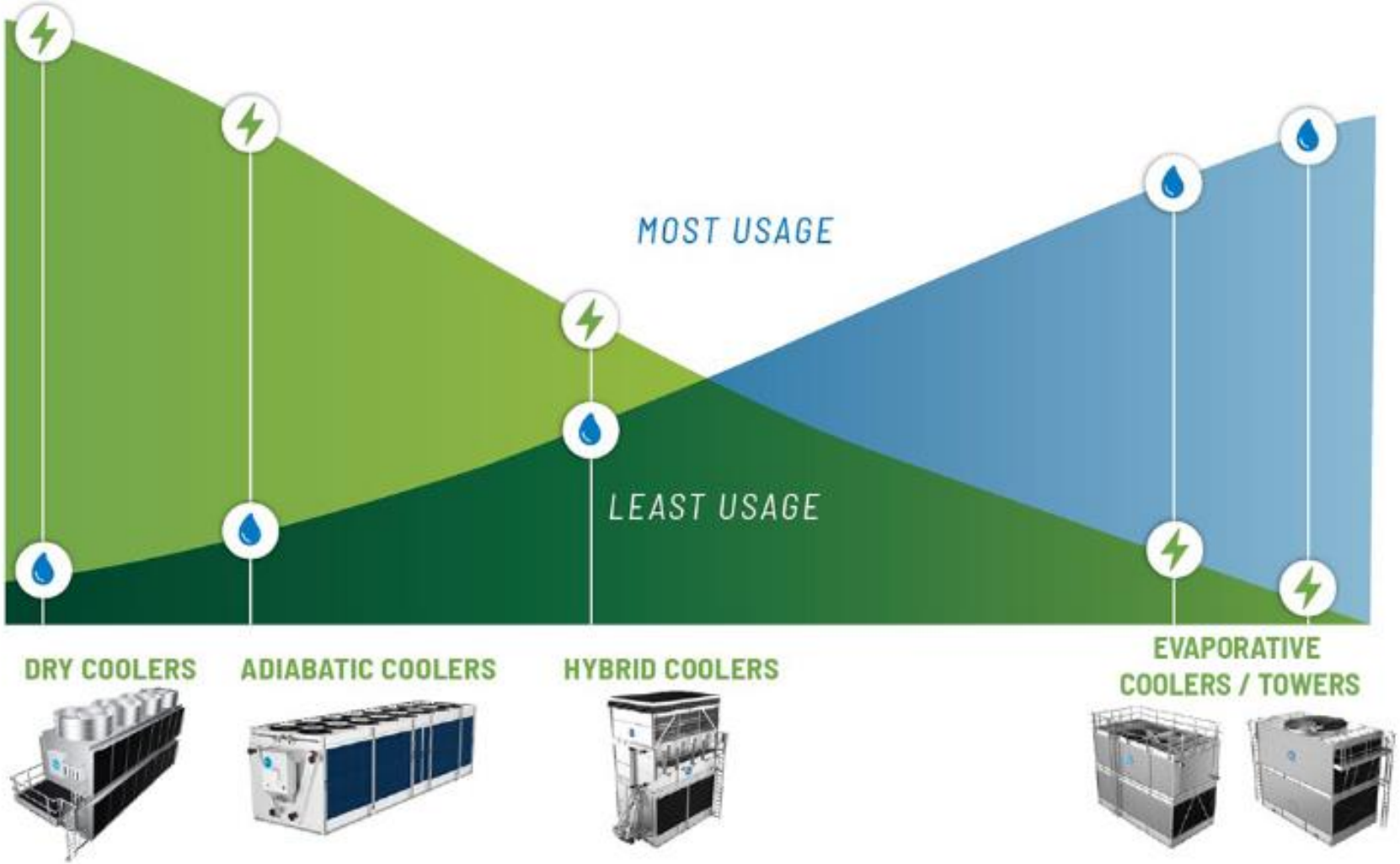
Liquid Server Cooling: More Efficient, Less Power





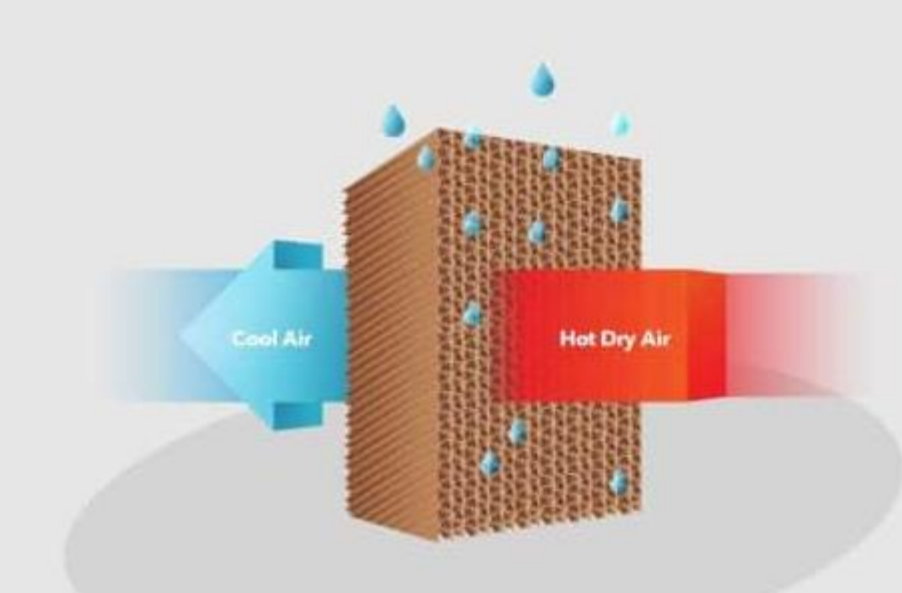
https://submer.com/blog/single-phase-immersion-cooling-vs-direct-to-chip-cooling/

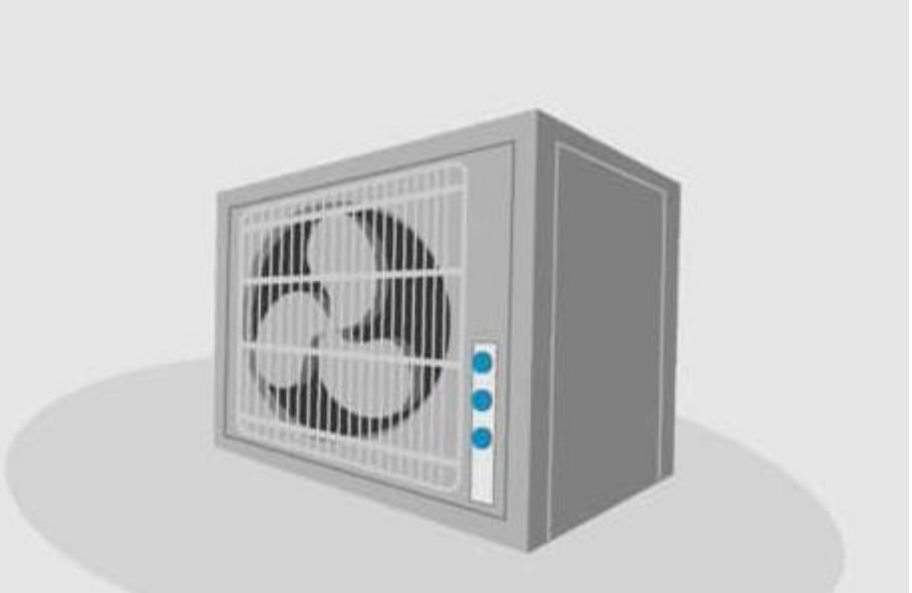
Data Center Building Cooling
Can be a Trade-Off Between Energy and Water



https://baltimoreaircoil.com/articles/data-center-cooling-options

Building Cooling System Tradeoffs





Evaporative Cooler

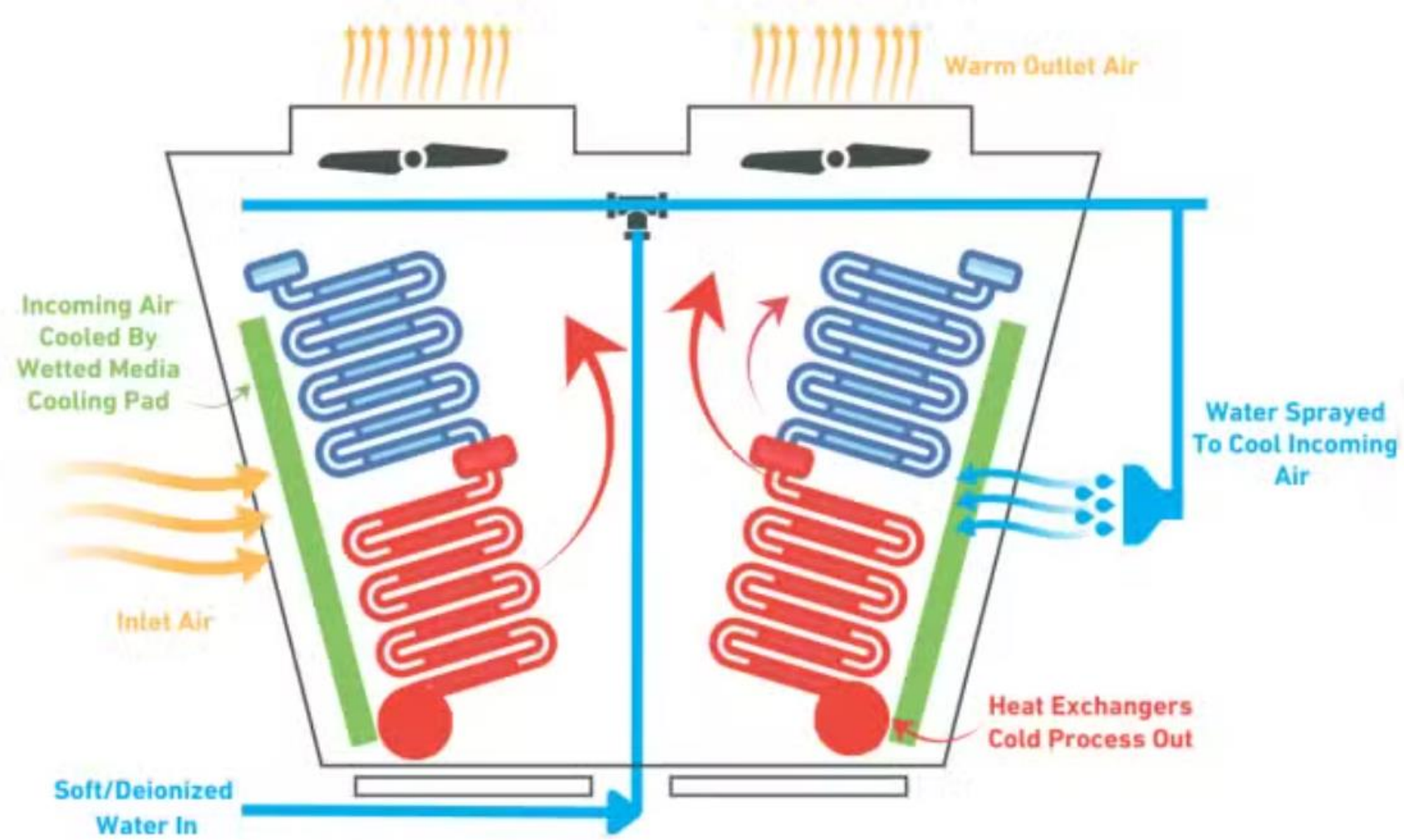
+ Simple: membrane & pump
+ Low power use
- High water use

Air Conditioner / Chiller

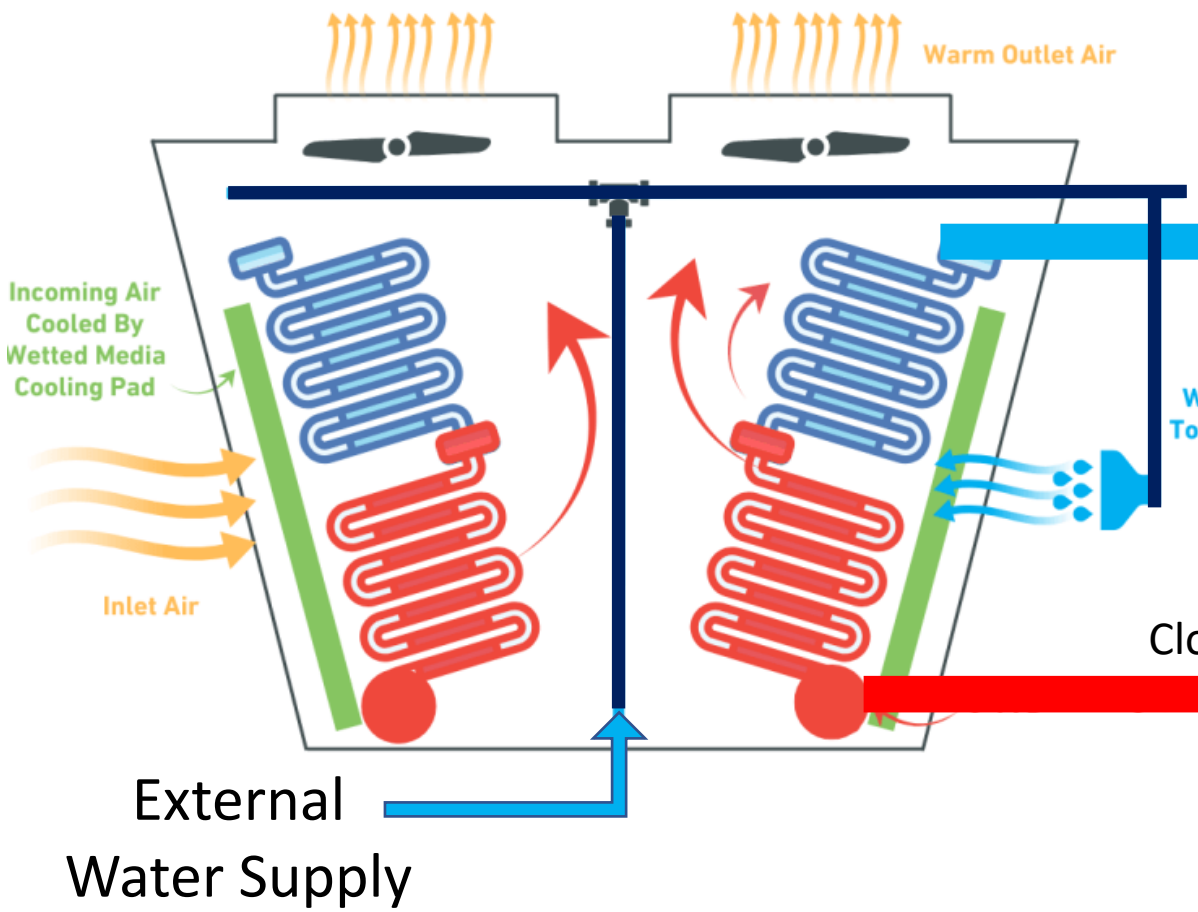
- Complex: evaporator, compressor, condenser
- High power use
+ Little or no water use

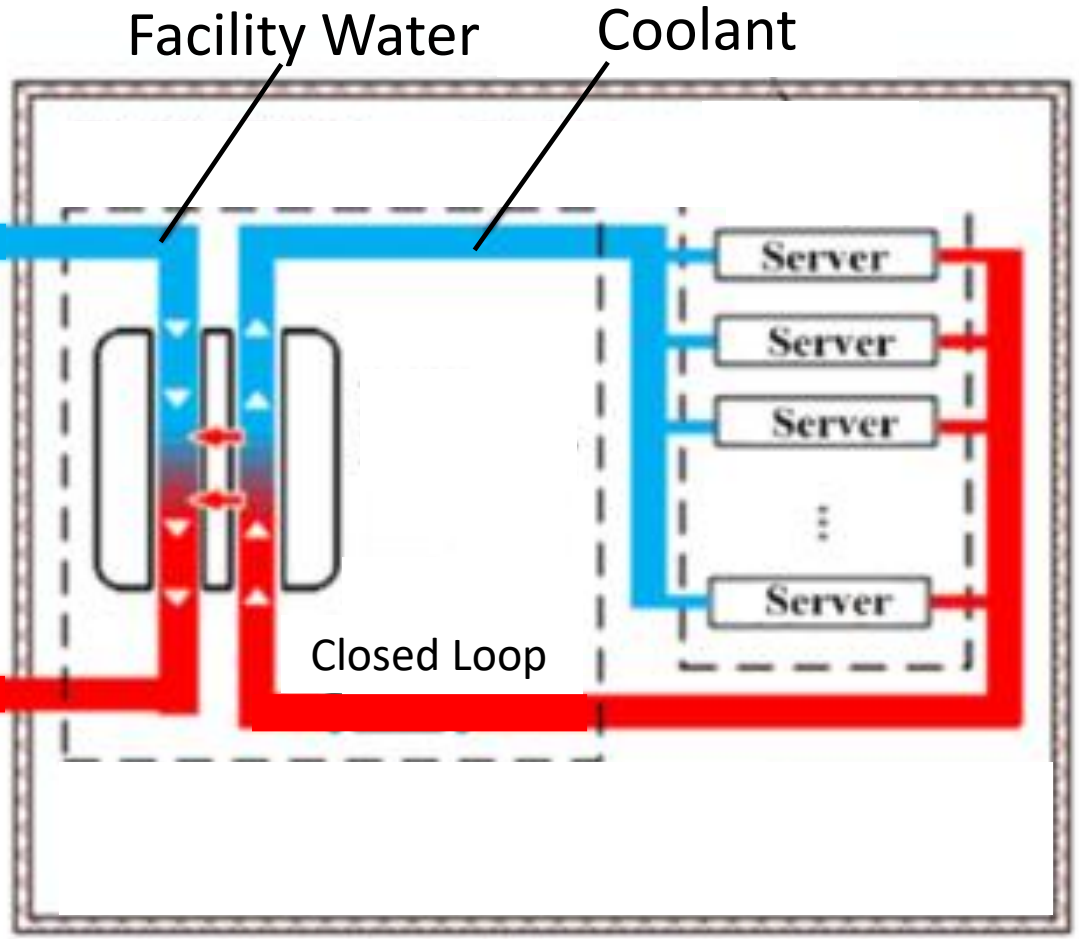
Adiabatic Building Coolers Offer a Compromise

+ Simple Design + Low Power Use + No Water Use below 80°F



Design Building & Server Cooling to Optimize Energy & Water Use





Adiabatic Building Cooling

Liquid Server Cooling

https://www.bds-energy.com/how-do-adiabatic-cooling-systems-work/

https://www.researchgate.net/figure/Water-cooling-design-in-the-data-center-25_fig2_359538981

How Much Water do Data Centers Use?

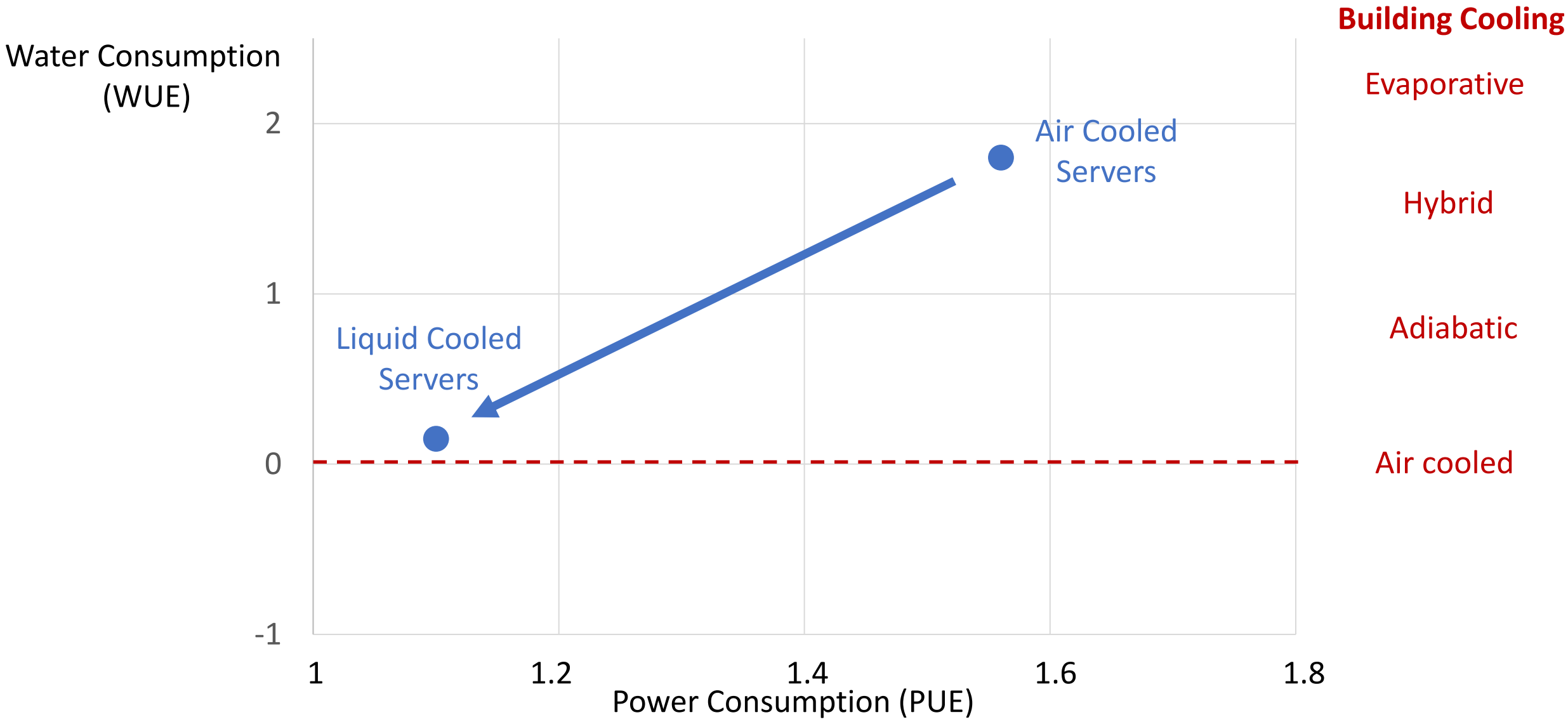
Water Use Effectiveness $WUE = \frac{\text{Annual Water Usage (Liters)}}{\text{IT Equipment Energy (kWh)}}$

Average $WUE = 1.8$ liters/kWh[1]

Best in Class $WUE <= 0.15$ liters/kWh[2]

1. https://www.datacenterknowledge.com/cooling/a-guide-to-data-center-water-usage-effectiveness-wue-and-best-practices
2. https://sustainability.aboutamazon.com/natural-resources/water#approach

New Technology Optimizes Water & Power Use



Sources: 1. https://blog.equinix.com/blog/2026/03/19/a-guide-to-responsible-water-use-in-data-centers/ 2. https://www.datacenterknowledge.com/cooling/a-guide-to-data-center-water-usage-effectiveness-wue-and-best-practices 3. https://sustainability.aboutamazon.com/natural-resources/water#approach 4. https://datacenters.google/efficiency/

How Much Water Will a Dry Cooling Data Center Use?

The City of Round Rock monitored water use from Sabey over the past year and found that the facility uses roughly the same amount of water on an annual basis as about 15 single-family homes ***(2 million gallons).***[1]

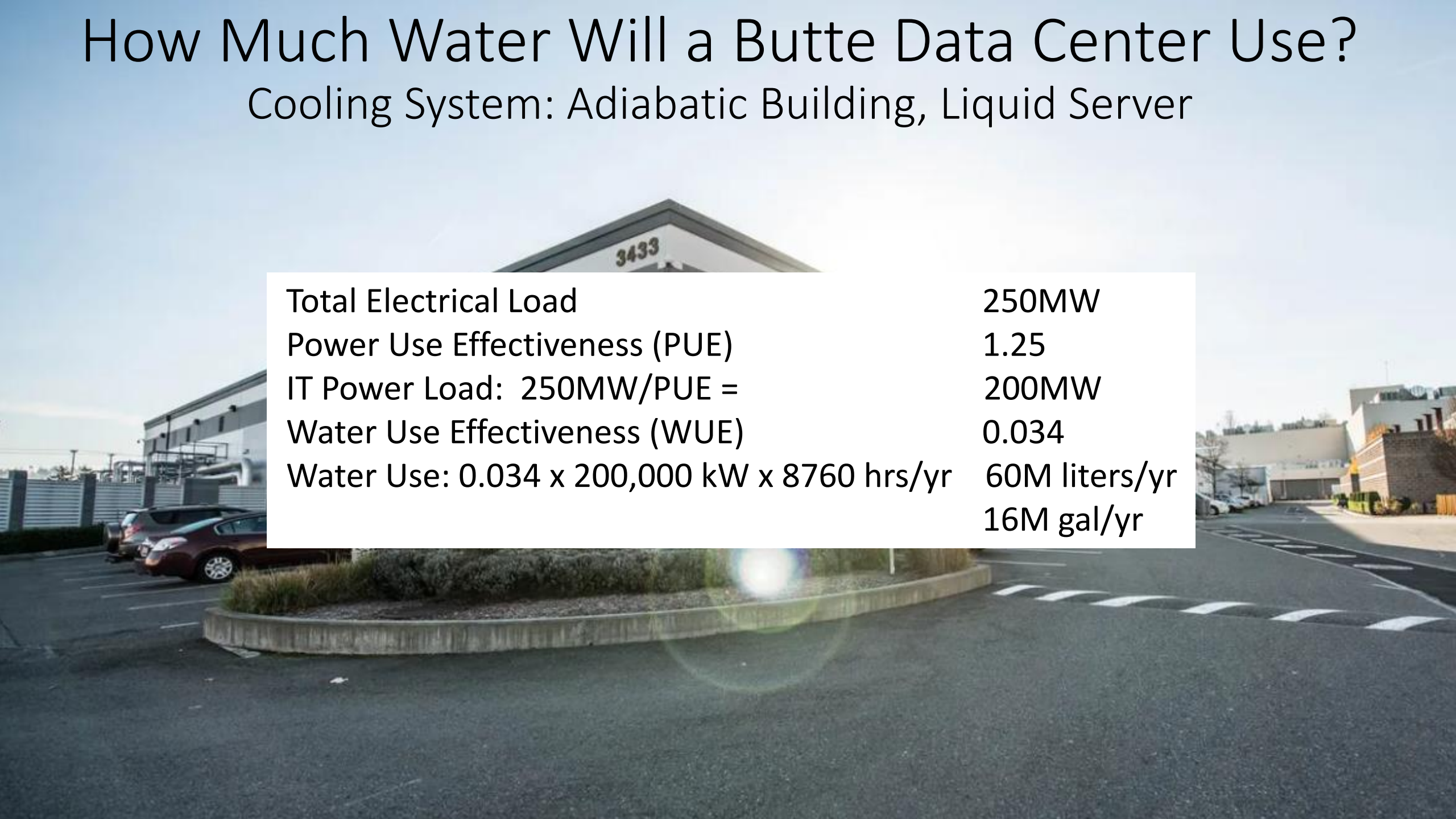
Total Facility Capacity[2]	84 MW
Active Facility	~38 MW
Water Use Effectiveness*	WUE = 0.02

*** Water use is for general facility operations and staff, not for cooling system**

1. https://www.roundrocktexas.gov/city-departments/administration/data-centers-in-round-rock/#7
2. https://sabeydatacenters.com/locations/austin-data-center

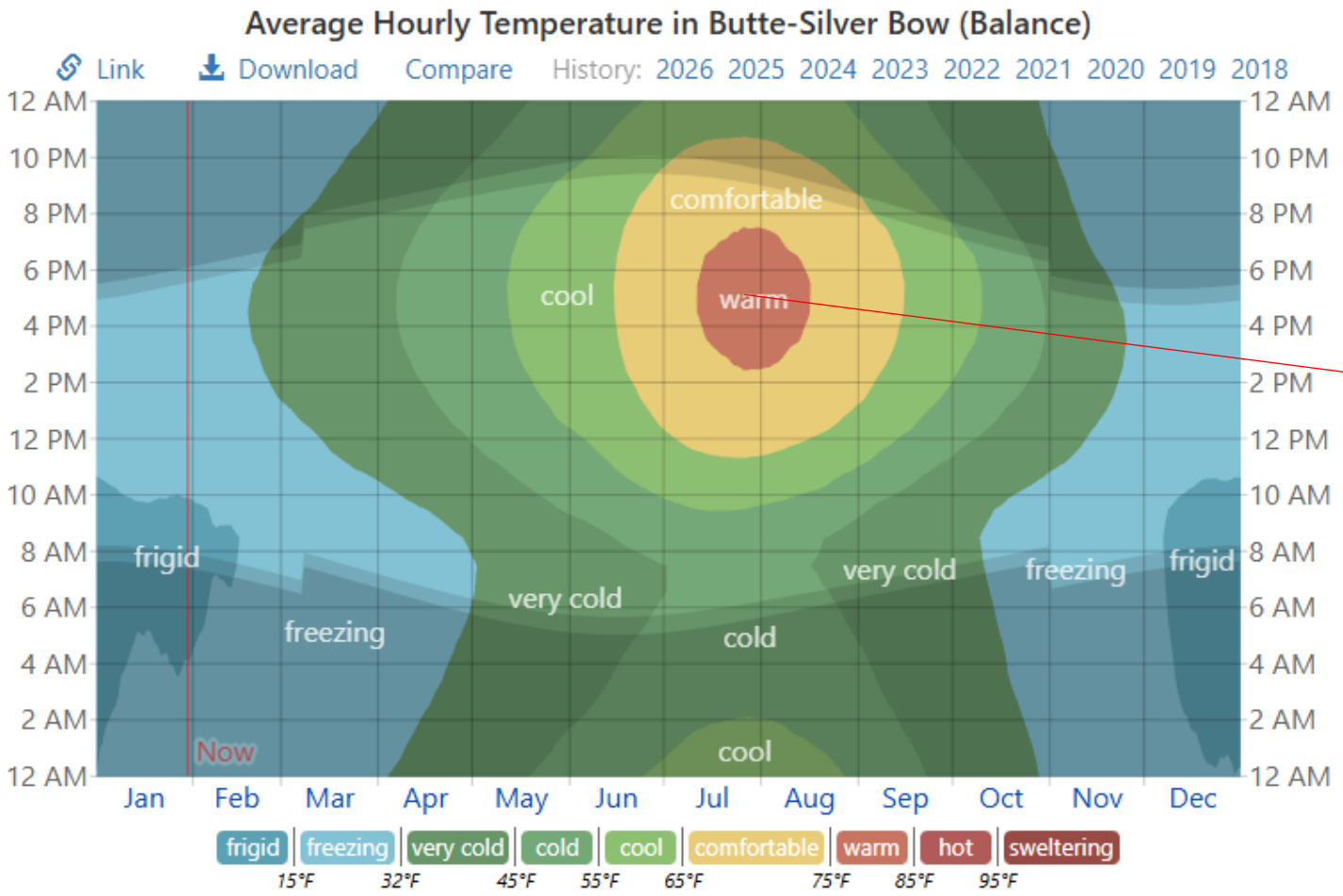
How Much Water Will a Butte Data Center Use?

Cooling System: Adiabatic Building, Liquid Server



Total Electrical Load	250MW
Power Use Effectiveness (PUE)	1.25
IT Power Load: 250MW/PUE =	200MW
Water Use Effectiveness (WUE)	0.034
Water Use: 0.034 x 200,000 kW x 8760 hrs/yr	60M liters/yr
	16M gal/yr

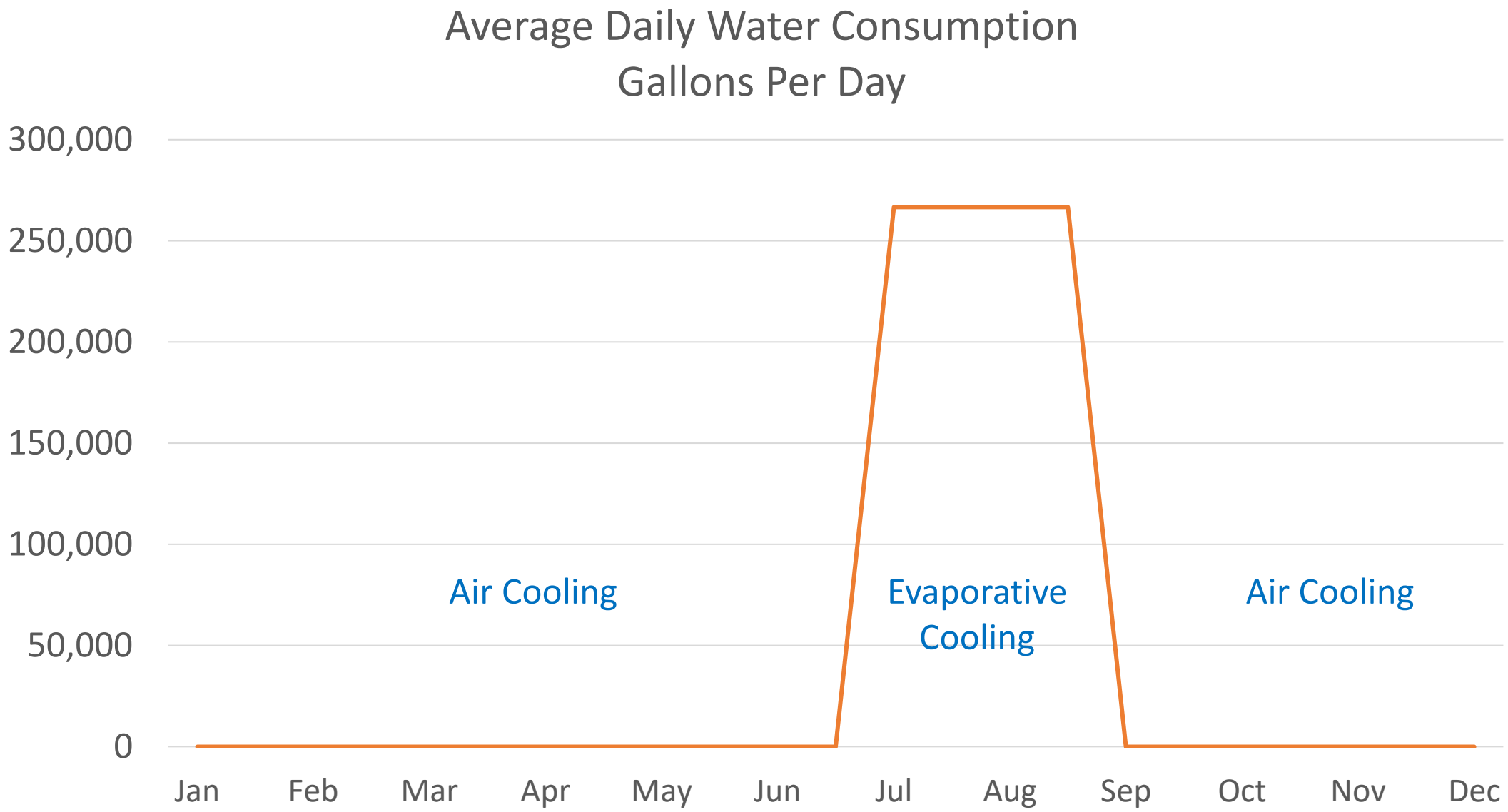
Butte Air Temperature Above 80°F in July and August



Cooling system runs in dry mode, except for four hours per day in summer.

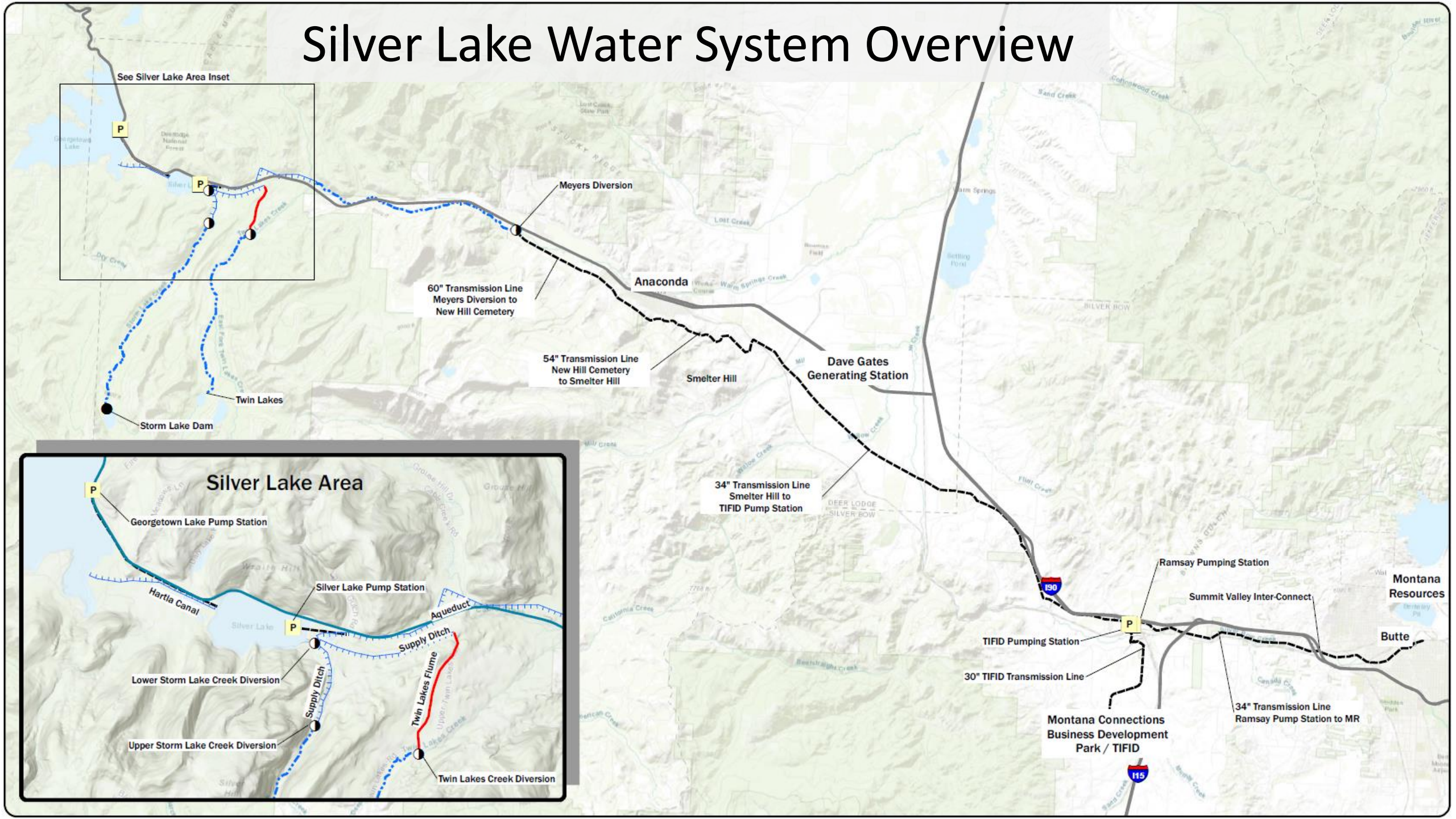
[Butte-Silver Bow (Balance) Climate, Weather By Month, Average Temperature (Montana, United States) - Weather Spark]

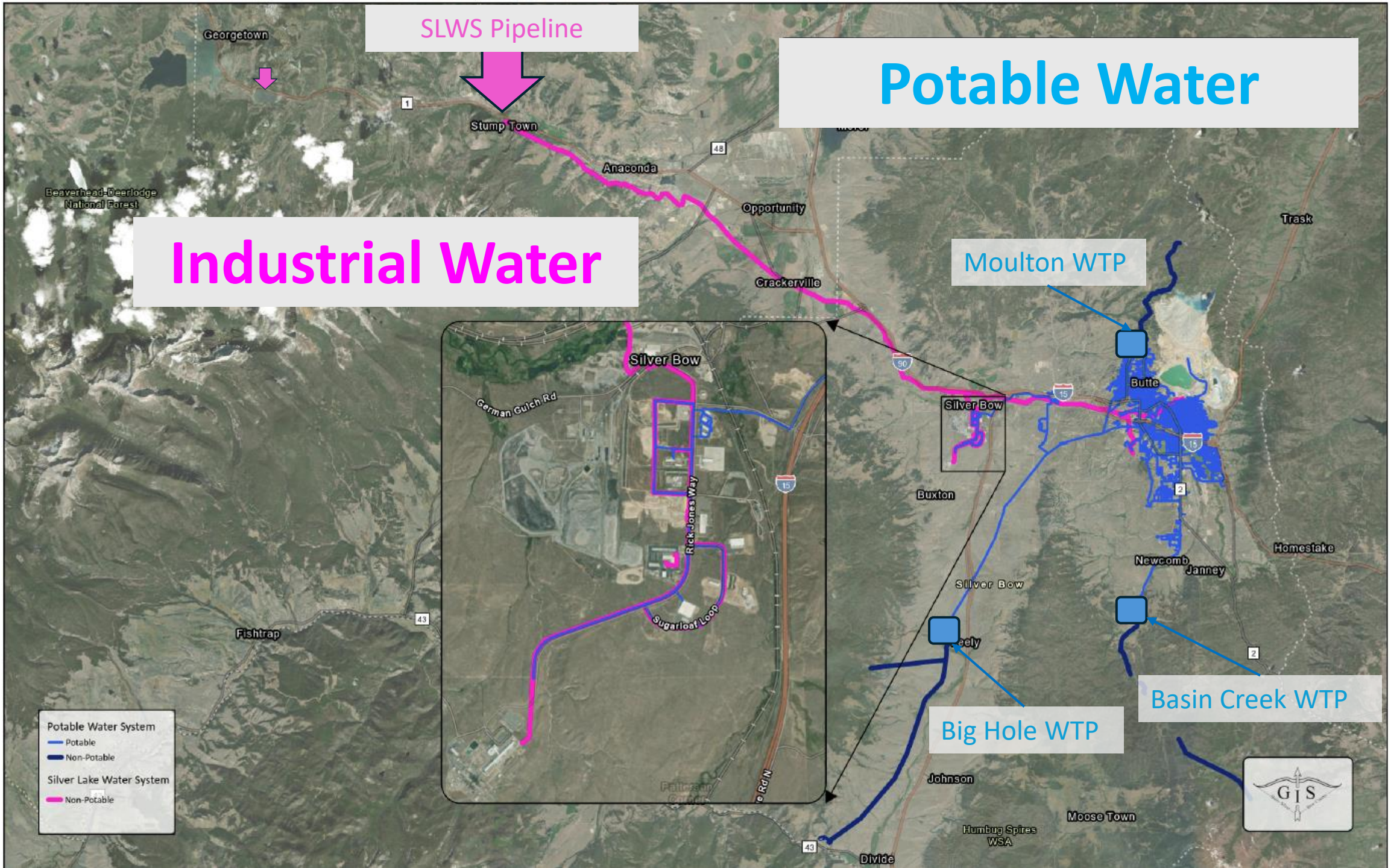
Cooling Water Use for 200MW Butte Data Center



Bob Morris 11 February 2026

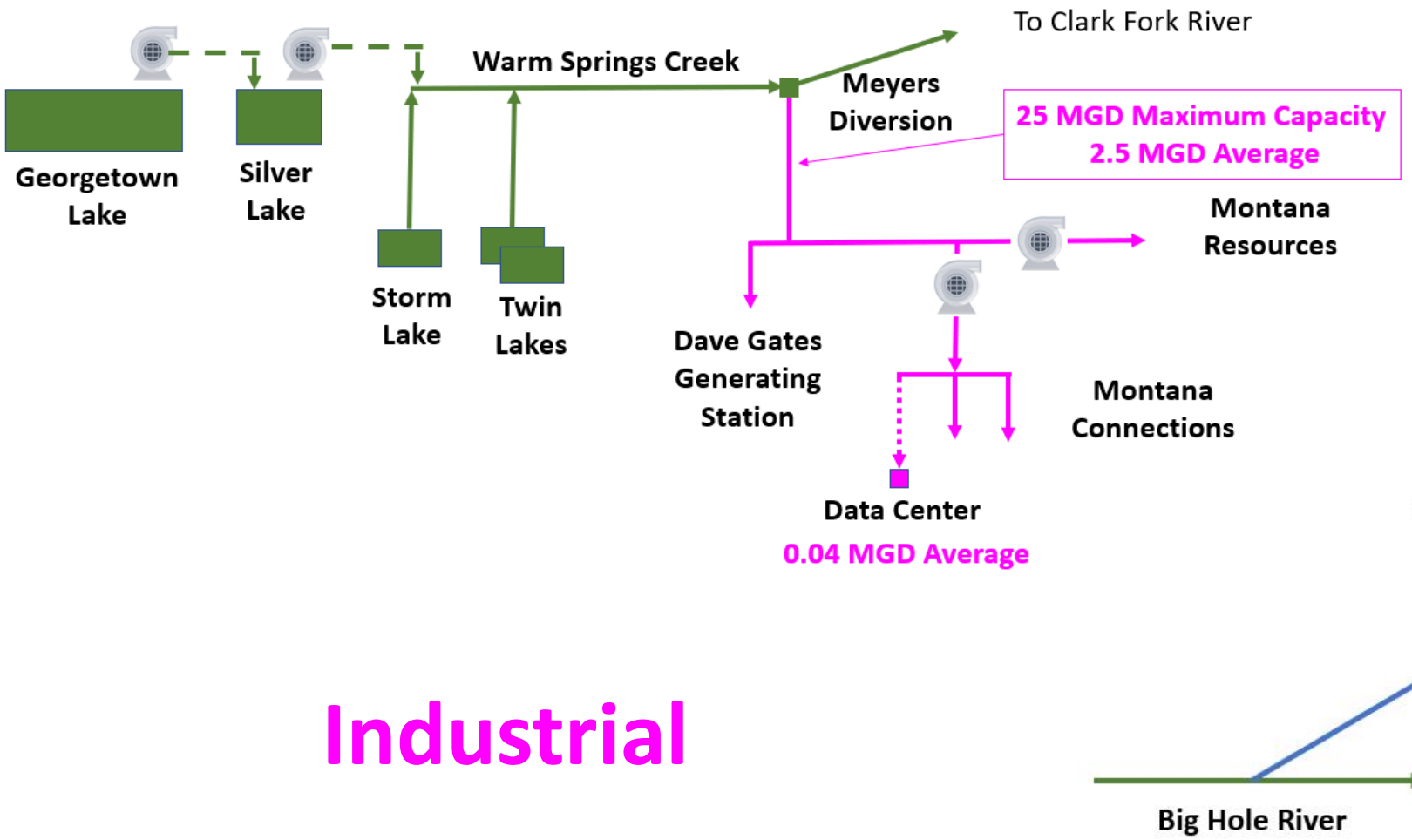
Silver Lake Water System Overview

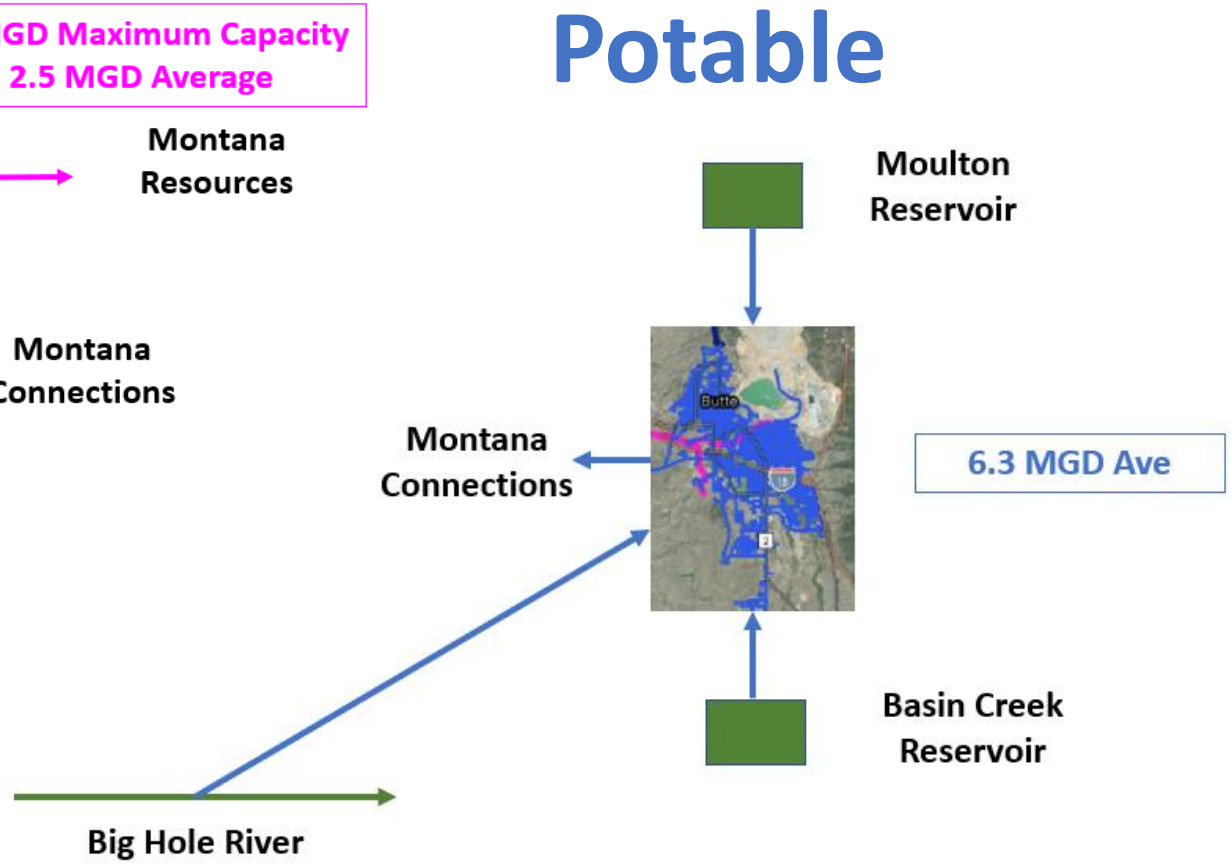



SLWS Pipeline
Potable Water
Industrial Water
Moulton WTP
Basin Creek WTP
Big Hole WTP
Georgetown
Stump Town
Anaconda
Opportunity
Crackerville
Beaverhead-Deerlodge National Forest
Trask
Silver Bow
German Gulch Rd
Rick Jones Way
Sugarloaf Loop
Butte
Silver Bow
Buxton
Newcomb
Janney
Homestake
Silver Bow
Fishtrap
Johnson
Moose Town
Humbug Spires WSA
Divide
Potable Water System
Potable
Non-Potable
Silver Lake Water System
Non-Potable
GIS

Butte's Water Systems are Independent

MGD = Million Gallons Per Day



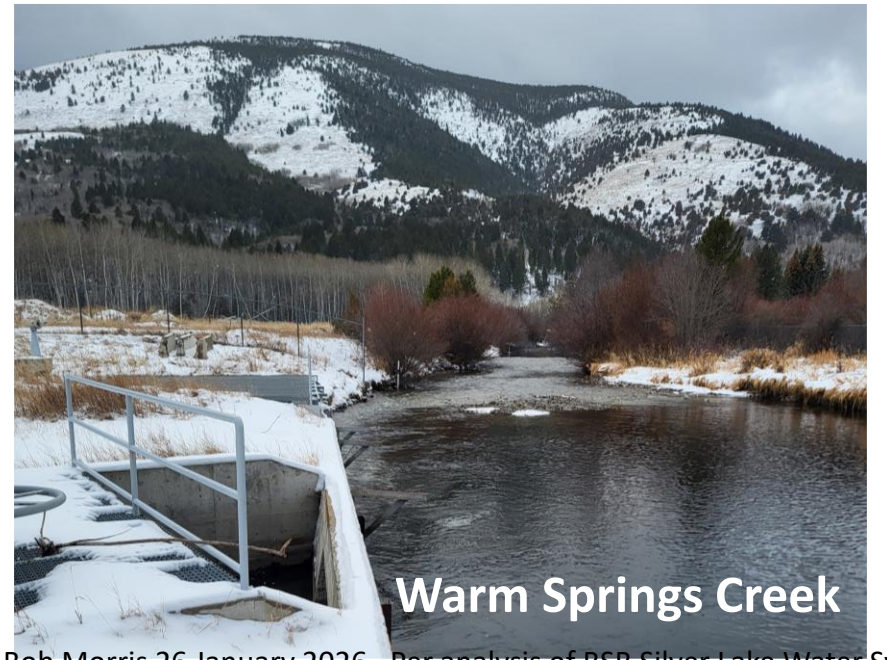


Bob Morris 26 January 2026. Per analysis of BSB Silver Lake Water System and proposed Montana Connections data center per Sabey Data Centers

Typical Water Use Rates

BSB Potable Water System

Average System Use	6.3 million gallons/day
Average Home	300 gallons/day
100 Room Hotel	44,000 gallons/day



BSB Industrial Water System

Daily Capacity	25 million gallons/day
Average Use	2.5 million gallons/day
Copper Mtn Sports Complex	17 million gallons/year

Proposed Data Center

Annual Use	16 million gallons/year
Average Daily Use	44,000 gallons/day

Bob Morris 26 January 2026. Per analysis of BSB Silver Lake Water System and proposed Montana Connections data center per Sabey Data Centers

Montana Bureau of Mines and Geology

Open-File Report 567

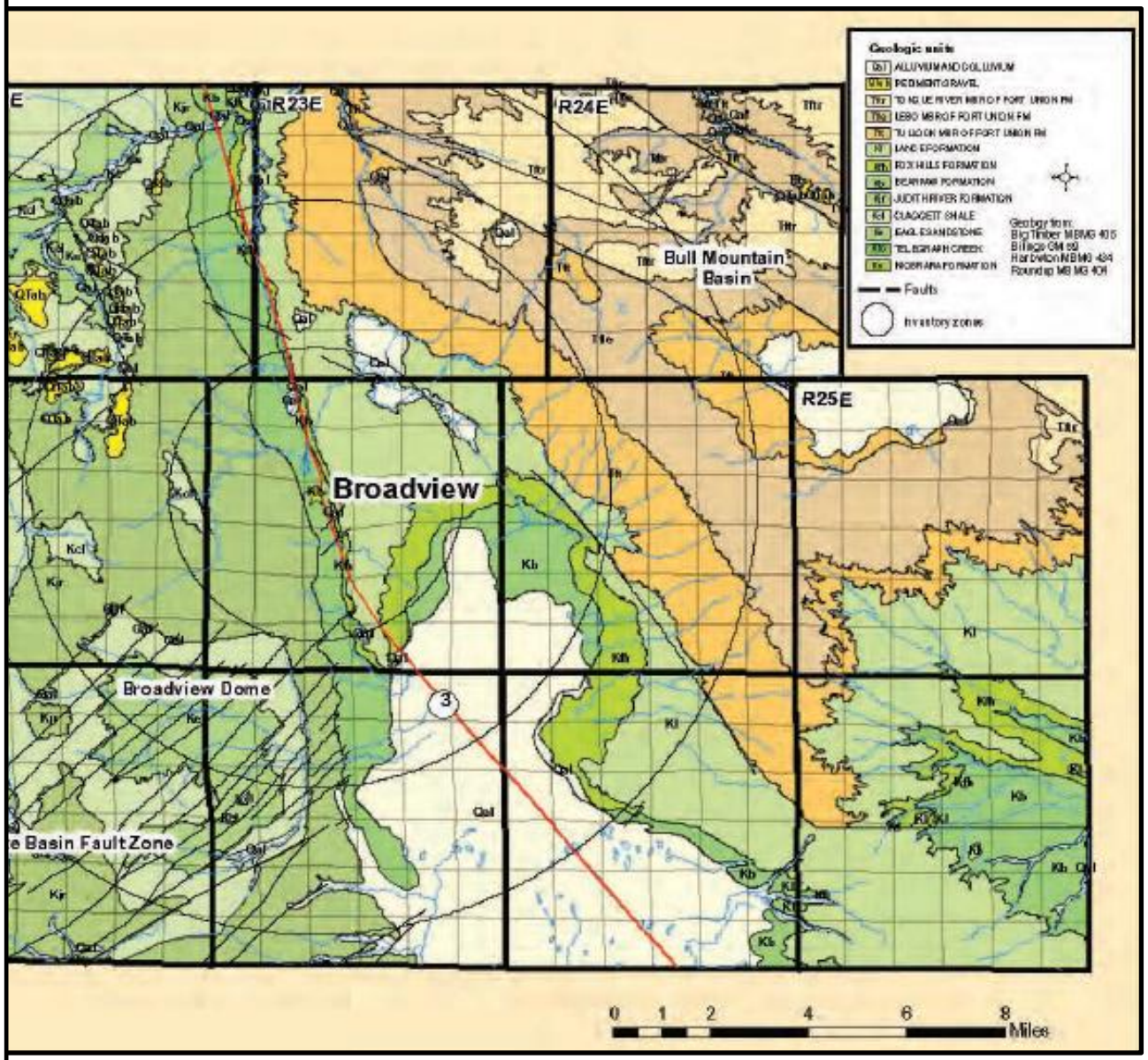
Developing a Viable Water Supply for the Town of Broadview, South-Central Montana

by

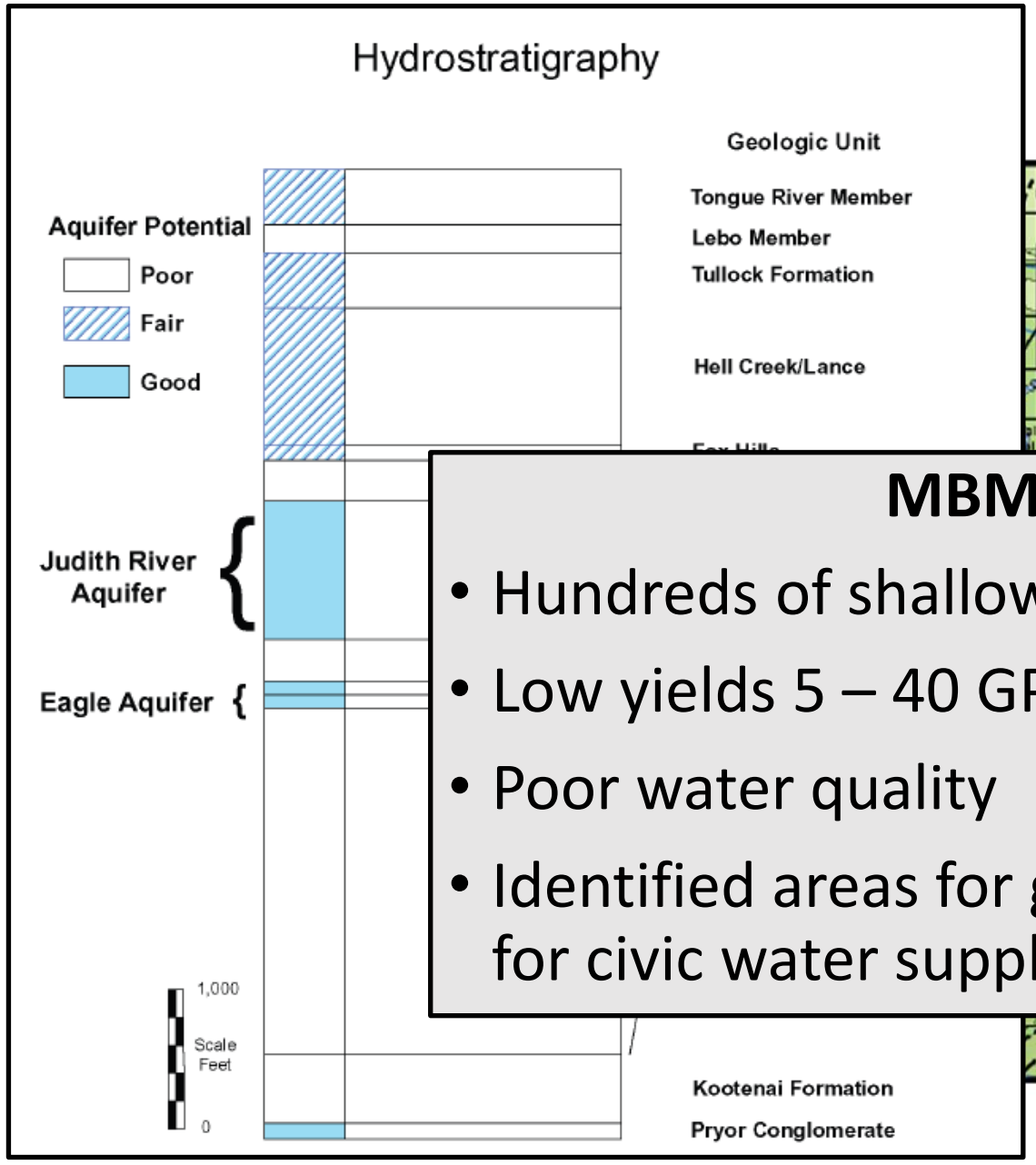
Jon C. Reiten and Jay Hanson

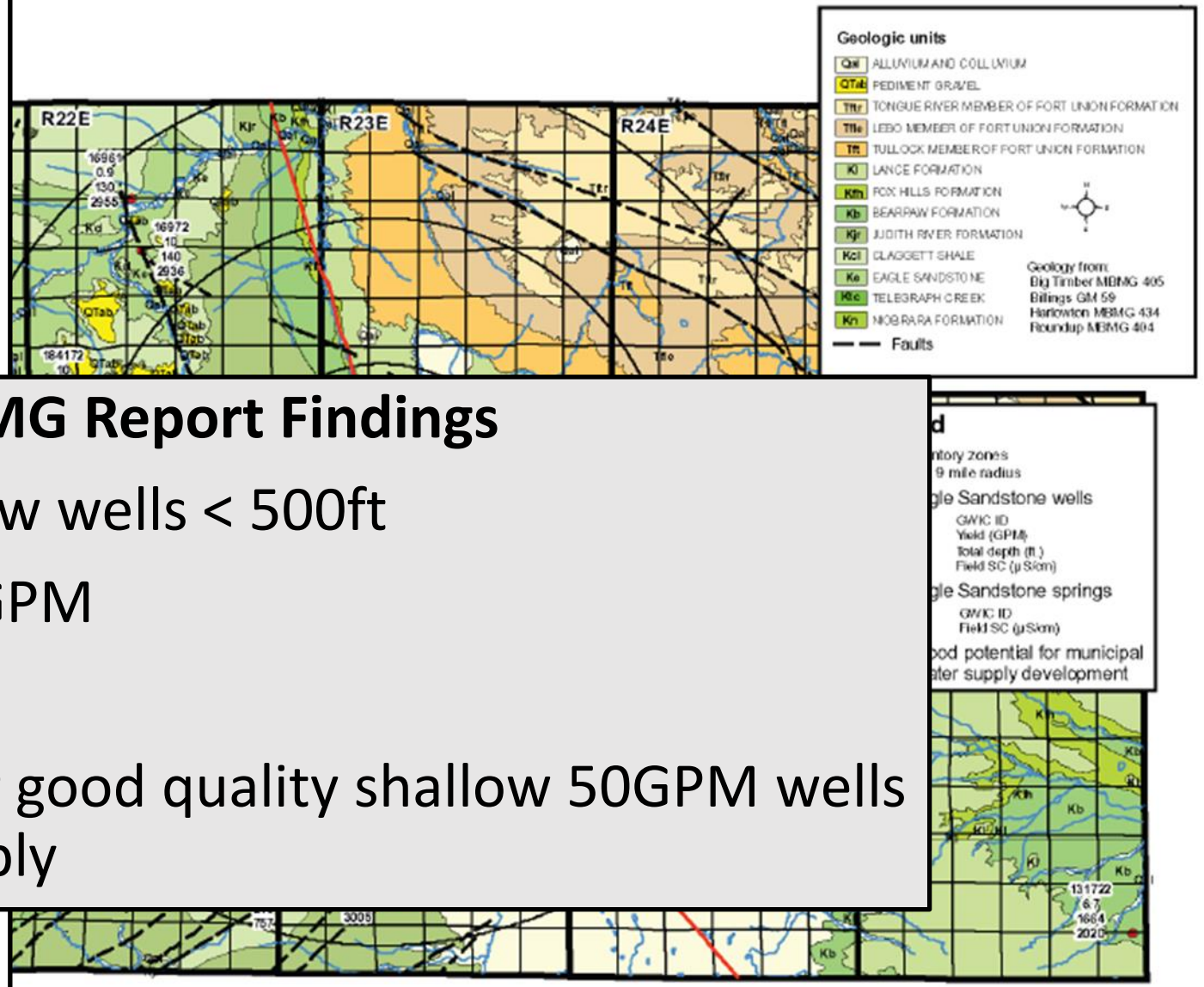
Montana Bureau of Mines and Geology

2008



Montana Bureau of Mines and Geology Open-File Report 567



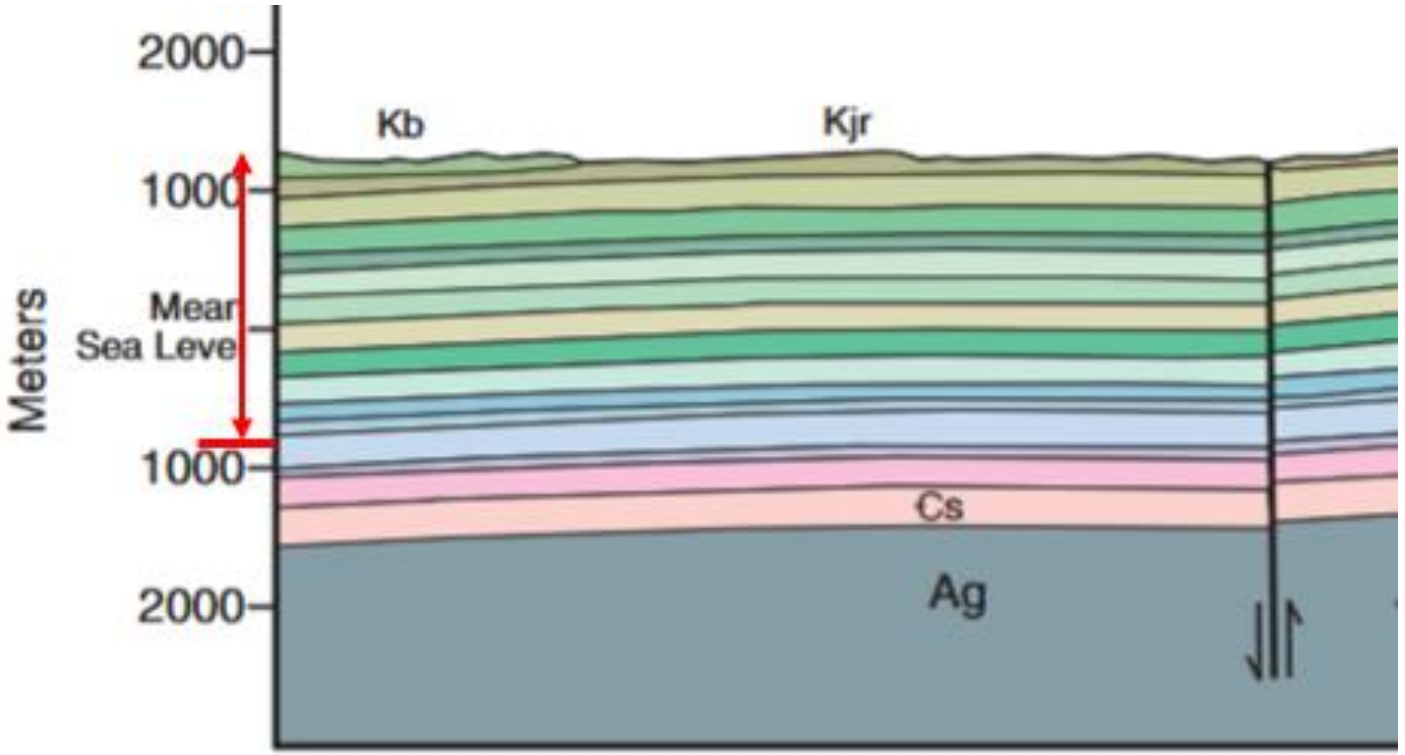


MBMG Report Findings

- Hundreds of shallow wells < 500ft
- Low yields 5 – 40 GPM
- Poor water quality
- Identified areas for good quality shallow 50GPM wells for civic water supply

Montana Bureau of Mines and Geology Open-File Report 567

Broadview Water Supply Options



Present Aquifer, < 500 FT

Potential Madison Limestone Aquifer, ~6,500 FT

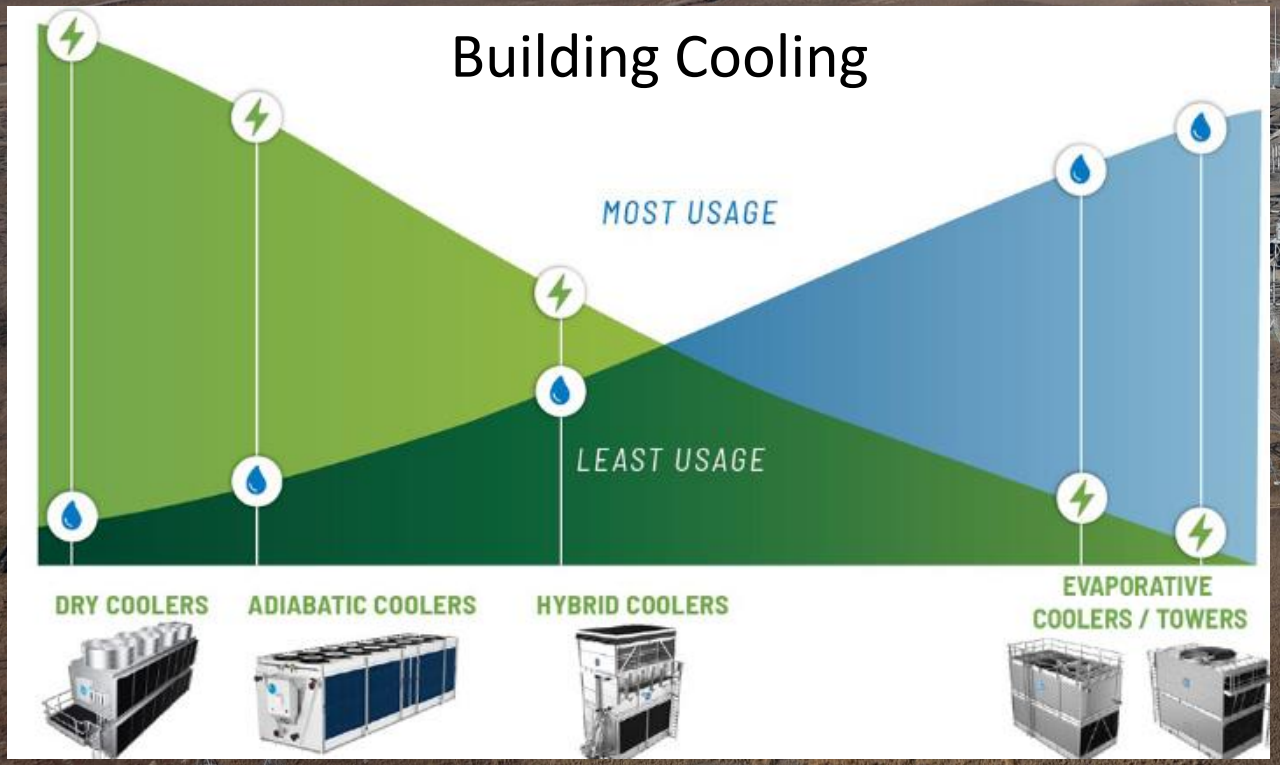
Broadview Data Center Water Use Considerations

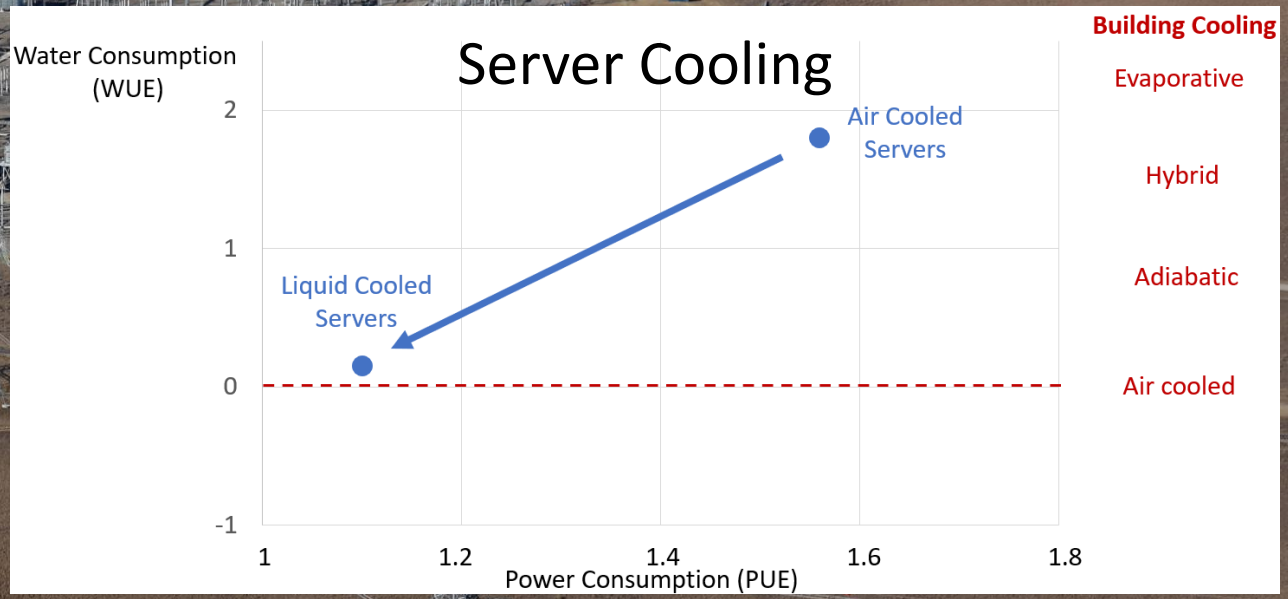
Tap into deeper aquifer

Build a water treatment facility

Use dry building cooling

Use closed loop liquid server cooling





Thank You

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