

Turning the Tide: Reforming Western Water Law in the Age of AI Infrastructure

ABSTRACT

The rise of generative artificial intelligence (AI) has fueled a global race to construct increasingly powerful supercomputers and data centers. Yet, the legal infrastructure meant to regulate these water-intensive projects remains dangerously underdeveloped. Current water law principles in prior appropriation states only further exacerbate this concern. This Note suggests that reform of water law principles can provide a framework for regulating AI data centers' water consumption in order to protect societal interests during the global AI race. While data centers present beneficial technological advancements, their lack of transparency regarding water consumption presents concerns for local communities suffering from the numerous negative externalities presented by data center facilities. Given that state regulation has yet to properly address concerns presented by these local communities, water law may be able to offer a solution if strengthened. To demonstrate water law's weak protection of this critical resource, this Note analyzes the goals of prior appropriation law, its main principles, and where data centers fit into this framework.

This Note proposes a legal framework based on the purpose of prior appropriation law in order to regulate AI infrastructure. States following the prior appropriation doctrine will be highlighted since these states are generally those facing severe droughts. Through this framework, it will be demonstrated that the priority of use principle is misaligned, and the beneficial use principle should be the central theme of prior appropriation law, and the establishment of a proper water right. As AI accelerates and environmental harms concentrate in historically marginalized areas, the time has come to adapt the logic of natural resource law to the digital age. To do so, this Note will argue that prior appropriation law (1) must be recentralized with its original purpose of promoting efficient beneficial use; and (2) must assert transparency of consumption as a critical factor in order to reflect the belief that water is a public resource owned by the state rather than individuals. These reformed water law principles provide courts with a proper framework that prioritizes such a limited and critical natural

resource. This analysis can also serve as a deterrent for further oppression communities will face due to the race to develop smarter AI tools.

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In 2024, Elon Musk's artificial intelligence ("AI") company, xAI, rapidly constructed a data center, known as Colussus, in South

Memphis, Tennessee.¹ The project advanced with remarkable speed, breaking ground within nineteen days of conception and achieving completion in 122 days.² However, the planning and construction process remained highly secretive, failing to provide the surrounding community with opportunities to provide input.³ As a community having battled pollution throughout history, Colossus has only further strained the environment and the ability for people to live comfortably in their homes.⁴ The lack of regulatory burdens facing data centers allowed Colossus to rapidly construct without consideration of local concerns. The Trump administration has further exacerbated this regulatory vacuum by releasing executive orders that aim to further lower federal regulations for the AI infrastructure to continue its rapid development.

While South Memphis, Tennessee has experienced numerous environmental concerns due to Colossus's construction, data center construction in the Western United States has sparked a deteriorating water crisis in dire need of aid.⁵ Since 2021, approximately 95 percent of the West has been suffering from drought conditions.⁶ Major water sources—such as the Great Salt Lake and the Colorado River—have lost a significant amount of surface area due to the severe drought resulting from accelerating climate change and sharp escalations in

1. See Bracey Harris, Jon Gerberg & Stephanie Gosk, *Up Against Musk's Colossus Supercomputer, a Memphis Neighborhood Fights for Clean Air*, NBC NEWS (May 16, 2025, at 09:22 CT), <https://www.nbcnews.com/news/us-news/musk-xai-colossus-supercomputer-boxtown-memphis-tennessee-rcna206242> [<https://perma.cc/QL3H-MJXA>].

2. See *id.*

3. See *id.* (discussing that South Memphis is already “an area beset by industrial pollution”); see also Sarah Emerson & Emily Baker-White, *Inside Elon Musk's Mad Dash to Build a Giant xAI Supercomputer in Memphis*, FORBES (Aug. 27, 2025, at 12:37 ET), <https://www.forbes.com/sites/sarahemerson/2024/07/17/inside-elon-musks-mad-dash-to-build-a-giant-xai-supercomputer-in-memphis/> [<https://perma.cc/FY9Q-J7JB>].

4. See Harris, Gerberg & Gosk, *supra* note 1 (describing local residents' outrage over not being able “to breathe at home” due to the pollution caused by Colossus and xAI); see also Logan Hawkins, *Tech, Toxins, and Memphis: Evaluating the Environmental Footprint of the xAI Facility*, TENN. BAR ASSOC., <https://www.tba.org/?pg=Hastings2025AIX#:~:text=If%20you've%20ever%20visited,the%20deeper%20Memphis%20Sand.25> [<https://perma.cc/59J9-5D6T>] (last visited Apr. 21, 2026) (expressing concern that “xAI system's demand for water could accelerate contamination of the Memphis sand aquifer,” which contains “57 trillion gallons of ancient, pristine water . . . that many cities can only dream of having at their disposal.”).

5. See Felicity Barringer, *Thirsty for Power and Water, AI-Crunching Data Centers Sprout Across the West*, STAN. UNIV.: & THE WEST (Apr. 8, 2025), <https://andthewest.stanford.edu/2025/thirsty-for-power-and-water-ai-crunching-data-centers-sprout-across-the-west/> [<https://perma.cc/G22Q-W7EJ>].

6. See Benjamin Longbottom & Alexandria Gordon, *Beyond All Drought: Improving Urban Water Conservation in the West Through Integrative Water and Land Use Policy*, 63 NAT. RES. J. 88, 89 (2023).

water demand, especially in such arid regions.⁷ In a region already facing acute water stress, large-scale data centers (facilities that rely heavily on potable water for cooling and daily operations) invite the need for heightened scrutiny, particularly when their water use remains undisclosed. Such concerns have caused communities in Arizona and Utah to block new developments that would constrain their water supply even further.⁸ Despite their substantial water demands, data centers operate within a regulatory framework that imposes few meaningful constraints on water use, suggesting the need for reformed oversight.⁹

This Note argues that western water law, specifically the prior appropriation doctrine and its requirement of beneficial use, provides a viable foundation for regulating data center water consumption. However, existing doctrine must be adapted to reflect modern environmental conditions and applied more uniformly among states that share common water sources. Amended regulations will aim to strengthen the underlying principle within western water law—that the scarce resource should be utilized both beneficially and efficiently.¹⁰ By strengthening transparency requirements and reinforcing efficiency-based standards of beneficial use, states can better protect scarce water resources while addressing the growing environmental footprint of data centers in the western United States.

I. BACKGROUND

The rapid expansion of artificial intelligence has driven a corresponding surge in the construction of large-scale data centers

7. See *id.* (finding that “rapid population growth and severe drought have caused the Great Salt Lake to lose 44% of its surface area”).

8. See Yana Kunichoff, *Tucson City Council Rejects Project Blue Data Center amid Intense Community Pressure*, ARIZ. LUMINARIA (Aug. 6, 2025), <https://azluminaria.org/2025/08/06/tucson-city-council-rejects-project-blue-amid-intense-community-pressure/> [<https://perma.cc/9FXM-STNE>] (reporting that a data center project in Tucson, Arizona was rejected due to “public outrage over the lack of transparency” and concerns for the local water supply); see also Jack Healy & Sophie Kasakove, *A Drought So Dire That a Utah Town Pulled the Plug on Growth*, N.Y. TIMES (Aug. 3, 2021), <https://www.nytimes.com/2021/07/20/us/utah-water-drought-climate-change.html> [<https://perma.cc/B4EZ-YH39>] (discussing “severe drought conditions” that prompted Utah to cut down development, especially since water sources for “farmers and cities [were] drying up”).

9. See Oliver Milman, *More Than 200 Environmental Groups Demand Halt to New US Datacenters*, GUARDIAN (Dec. 8, 2025, at 07:00 ET), <https://www.theguardian.com/us-news/2025/dec/08/us-data-centers> [<https://perma.cc/6VRE-H9HL>] (citing a letter signed by “more than 230 environmental groups” expressing concern over the “rapid” and “largely unregulated rise of datacenters”).

10. See *Ariz. Pub. Serv. Co. v. Long*, 773 P.2d 988, 997 (Ariz. 1989) (stating that the “purpose of Arizona water law . . . is to promote the beneficial use of water and to eliminate waste of this precious resource.”).

designed to support advanced computing and data storage.¹¹ As demand for generative AI grows, technology companies have invested heavily in infrastructure capable of sustaining increasingly energy- and water-intensive operations.¹² This development provides numerous technological benefits, as the space for more data minimized AI's processing time and increases efficiency.¹³ However, such growth has outpaced the development of a comprehensive regulatory framework governing the environmental impacts of AI data centers, creating a legal and regulatory blind spot with significant consequences for local communities.¹⁴

One of the most pressing externalities associated with AI data centers is their substantial reliance on potable surface water for cooling and daily operations.¹⁵ However, regulatory oversight of this water demand remains limited as data centers face few water-specific requirements, and companies frequently decline to disclose projected water consumption during the planning process.¹⁶ The secrecy surrounding xAI's Colossus facility indicates how limited transparency undermines public oversight and prevents communities from meaningfully evaluating the sustainability of proposed developments.¹⁷

11. See Rebecca Leppert, *What We Know About Energy Use at U.S. Data Centers amid the AI Boom*, PEW RSCH. CTR. (Oct. 24, 2025), <https://www.pewresearch.org/short-reads/2025/10/24/what-we-know-about-energy-use-at-us-data-centers-amid-the-ai-boom/> [https://perma.cc/W4BP-UYK Y].

12. See *id.*

13. See Nicol Turner Lee & Darrell M. West, *The Future of Data Centers*, BROOKINGS (Nov. 5, 2025), <https://www.brookings.edu/articles/the-future-of-data-centers/> [https://perma.cc/3DMD-WKGV].

14. See *id.* (discussing how consumers are forced to bear the cost of “the increased data center capacity” and do not often get to enjoy promises of “job creation”); see also Milman, *supra* note 9.

15. See Mya Garcia, *AI Uses How Much Water? Navigating Regulation of AI Data Centers' Water Footprint Post-Watershed Loper Bright Decision*, 57 TEX. TECH. L. REV. 517, 541 (2025) (criticizing AI data centers for their “use of potable water in drought-stricken areas”).

16. See Ken Silverstein, *America's AI Boom Is Running into an Unplanned Water Problem*, FORBES (Jan. 11, 2026, at 10:15 ET), <https://www.forbes.com/sites/kensilverstein/2026/01/11/americas-ai-boom-is-running-into-an-unplanned-water-problem/> [https://perma.cc/QK8D-PNVM] (discussing the lack of narrowly tailored regulation on AI data centers, finding that the facilities “are still being regulated as if they were ordinary real-estate projects rather than nationally strategic infrastructure”); Leonardo Nicoletti, Michelle Ma & Dina Bass, *AI Is Draining Water from Areas That Need It Most*, BLOOMBERG (May 8, 2025), <https://www.bloomberg.com/graphics/2025-ai-impacts-data-centers-water-data/> [https://perma.cc/RE4A-CZY2] (reporting that Texas data centers declined to disclose their water consumption “when the Texas Water Development Board sent [them] a water use survey”).

17. See Sarah Emerson & Emily Baker-White, *How Elon Musk Muzzled Government Employees from Talking About xAI's New Supercomputer*, FORBES (Dec. 14, 2025, at 13:22 ET), <https://www.forbes.com/sites/sarahemerson/2024/10/11/how-elon-musk-muzzled-government-employees-from-talking-about-xais-new-supercomputer/> [https://perma.cc/ZC2M-FML8] (finding

States have increasingly had to bear sole responsibility for the management of data centers' environmental impacts with the lowering of federal regulations.¹⁸ Federal policy initiatives by the Trump administration have demonstrated support for the rapid development of AI infrastructure, advocating for fewer regulatory burdens for data center construction.¹⁹ For western states governed by prior appropriation water law, this shift presents both a challenge and an opportunity. Existing water law doctrines already regulate industrial water use, but they have not been meaningfully adapted to address the scale and operational demands of modern AI data centers.²⁰

This Section examines the environmental effects of AI data centers, the pervasive lack of transparency with water use, and the resulting strain on local water supplies. It then reviews foundational principles of prior appropriation water law to assess how states traditionally allocate and regulate surface water for industrial use. By situating AI data centers within this framework, the Section establishes the dire need for regulatory reform grounded in water law principles that prioritize efficiency, accountability, and sustainable consumption.

A. Water Usage of Data Centers

To properly function, data centers require an overwhelming supply of water, further exacerbating concerns of water scarcity in the western United States.²¹ Much of this water demand stems from cooling

that “government officials in Memphis had signed NDAs with xAI” before the public was aware of the project at all).

18. See Chantelle Lee, *Trump Unveils Plan to Win AI ‘Race’ by Stripping Away Regulations: What to Know*, TIME (Jul. 23, 2025, at 17:54 CT), <https://time.com/7304994/trump-ai-regulation-plan/> [<https://perma.cc/92W5-XTR8>] (discussing the Trump administration’s plan to “reduc[e] the number of environmental regulations” for AI data centers); Madyson Fitzgerald, *States Will Keep Pushing AI Laws Despite Trump’s Efforts to Stop Them*, STATELINE (Dec. 12, 2025, at 16:38 CT), <https://stateline.org/2025/12/12/states-will-keep-pushing-ai-laws-despite-trumps-efforts-to-stop-them/> [<https://perma.cc/W332-GSEN>] (demonstrating that states are aware that they must regulate in order to “protect their constituents” from the lowering of federal environmental regulations on data centers).

19. See Exec. Order No. 14318, 90 Fed. Reg. 35385 (July 28, 2025) (asserting that the Trump administration’s priority is to “facilitate the rapid and efficient buildout of this infrastructure by easing Federal regulatory burdens”).

20. See *Mont. Trout Unlimited v. Mont. Dep’t of Nat. Res. & Conservation*, 2025 MT 1, 420 Mont. 85, 561 P.3d 995,1002; Janet C. Neuman, *Beneficial Use, Waste, and Forfeiture: The Inefficient Search for Efficiency in Western Water Use*, 28 ENV’T L. 919, 926, 953 (1998) (discussing the need to adapt western water law “for life in the twenty-first century”).

21. See Nicoletti, Ma & Bass *supra* note 16 (discussing that “water scarcity issues caused by climate change” have become further exacerbated in the West due to the fact that “the proportion of data centers in water-stressed regions is at a record high”).

systems designed to prevent server overheating.²² Although several cooling methods exist, many data centers rely on water-based cooling systems that result in significant water loss.²³ One such method found to be significantly water-intensive is known as “evaporative cooling,” which pushes air through water-soaked pads to cool the hot air as the water evaporates.²⁴ In such systems, approximately 80 percent of the water used is lost through evaporation and cannot be recovered or reused by local communities, while only 20 percent enters wastewater treatment facilities.²⁵

Further compounding this issue, the water used for cooling is typically potable water (drinking water), directly drawn from municipal supplies.²⁶ In 2023, 78 percent of the water used by Google data centers was potable, despite the availability of reclaimed or non-potable alternatives.²⁷ For instance, captured rainwater is just one of the more efficient alternatives available to reduce the strain on municipal water supplies.²⁸ By prioritizing potable water, data centers direct an increasingly scarce public resource away from surrounding communities, particularly problematic in arid regions already facing severe water stress.²⁹

The scale of this consumption is substantial.³⁰ Memphis’s gas and water utility service reported that xAI’s Colossus data center uses up to one million gallons of water daily.³¹ Similarly, Meta’s Arizona data center consumed 56 million gallons of water annually, an amount equal to the water consumption of 670 nearby households.³² In Newton County, Georgia, another Meta data center has been linked to damaged

22. See Barringer, *supra* note 5 (explaining that data centers generate significant heat through electricity use, requiring cooling technologies to raise efficiency, with one such technology, “evaporative cooling, requir[ing] significant amounts of water”).

23. See *id.*

24. See *id.*

25. See Nicoletti, Ma & Bass, *supra* note 16.

26. See Reid Lifset, Pranava Raparla, Amy Stein, Lauren Bridges, Jim McElfish & Tim Cywinski, *Local Environmental Impacts of Data Center Proliferation*, 55 ENV’T L. REP. 10131, 10136 (2025).

27. See Maya Chari, *Are Data Centers Depleting the Southwest’s Water and Energy Resources?*, APM RSCH. LAB (Feb. 27, 2025), <https://www.apmresearchlab.org/10x/data-centers-resource> [<https://perma.cc/7EVU-YPNU>].

28. See *id.*

29. See Nicoletti, Ma & Bass, *supra* note 16 (expressing concerns over the potential for “communities facing water shortages” being forced to “compete with data center operators to access clean water”).

30. See *id.*

31. See Jennifer Ugwa, *In South Memphis, Elon Musk’s Colossus Operated Gas Turbines Without Appropriate Permits, Residents and Activists Claim*, INSIDE CLIMATE NEWS (July 17, 2025), <https://bit.ly/4qU0CHM> [<https://perma.cc/6U3Y-8LR2>].

32. See Barringer, *supra* note 5.

local wells, increased municipal water costs, and fears of an impending water shortage, placing the county “on track to be in a water deficit by 2030.”³³ Due to Tennessee and Georgia’s joint use of the Tennessee River, Tennessee communities may also suffer water shortages if conditions in Newton County spread across the entire state.³⁴ Therefore, while this Note primarily focuses on the Western region’s drought conditions, it is imperative to acknowledge that numerous states across the country will become susceptible to similar water scarcity concerns due to environmental changes.³⁵

Unregulated water use by data centers threatens to worsen drought conditions across the West.³⁶ Many western states depend heavily on the Colorado River for their total water supply, yet several major technology companies, including Meta and Microsoft, also draw water from this source.³⁷ In Arizona, for instance, data centers that acquire water from the Colorado River essentially take that water from Arizona’s allocation, diminishing the water supply for residents, agriculture, and municipalities.³⁸ Therefore, the construction of data centers in arid regions can affect millions of people who rely on already-strained water systems.³⁹

33. See Eli Tan, *Their Water Taps Ran Dry When Meta Built Next Door*, N.Y. TIMES (July 16, 2025), <https://www.nytimes.com/2025/07/14/technology/meta-data-center-water.html> [https://perma.cc/GL8A-CL9F].

34. See Shaila Dewan, *Georgia Claims a Sliver of the Tennessee River*, N.Y. TIMES (Feb. 22, 2008), <https://www.nytimes.com/2008/02/22/us/22water.html> [https://perma.cc/97PR-VM3T] (discussing the longstanding feud between Tennessee and Georgia over water supplies); *Tennessee River*, GA. RIVERS, <https://garivers.org/tennessee-river/> [https://perma.cc/AB7Q-Y4RM] (last visited Feb. 1, 2026).

35. See, e.g., Rebekah F. Ward, *AI Data Centers Could Make Up Nearly 3% of Texas Water Usage by 2030, Creating Strain, Report Says*, HOU. CHRONICLE (Jan. 21, 2026), <https://www.houstonchronicle.com/news/houston-texas/environment/article/ai-data-center-texas-water-21307067.php> [https://perma.cc/V7M9-Y38X] (discussing how Houston faced “extreme drought” conditions in 2025 that do not appear to be slowing down, with continued construction likely worsening the strain on water supply by 2030); see also Michelle Fleury & Nathalie Jimenez, *I Can’t Drink the Water’—Life Next to a US Data Centre*, BBC (July 10, 2025), <https://www.bbc.com/news/articles/cy8gy7lv448o> [https://perma.cc/G2CQ-ZR97] (highlighting the experience of a Mansfield, Georgia resident after Meta constructed a data center “[j]ust 400 yards” from her home).

36. See Barringer, *supra* note 5.

37. See Maggie Harrison Dupré, *Microsoft Is Draining Arizona’s Water for Its AI*, FUTURISM (Mar. 2, 2024, at 07:00 ET), <https://futurism.com/the-byte/microsoft-arizona-water-ai> [https://perma.cc/R6TV-B5CR].

38. See Chari, *supra* note 27.

39. See Dupré, *supra* note 37.

B. Negative Externalities Experienced by the West

The rise of data center construction has imposed significant negative externalities on the West, including heightened strain on limited water resources, minimal economic benefits, and disproportionate harm to historically vulnerable communities.⁴⁰ As AI technologies advance, companies must store unprecedented volumes of data to power tools like ChatGPT, driving demand for increasingly large data centers.⁴¹ To accommodate these massive facilities, companies often seek out rural or sparsely populated areas in the West that provide abundant land and fewer siting conflicts while also benefitting from less restrictive state-level regulatory barriers.⁴² Many of these regions, however, already experience severe water scarcity due to historically flawed allocation frameworks and intensifying climate change.⁴³ Therefore, the regional trend of data center construction in the West has sparked community outrage.⁴⁴ However, given that facilities are frequently located in low-income or historically marginalized communities, residents often possess limited political

40. See *id.* (expressing concern over data center growth depleting the Southwest's limited water supply); see also Lee & West, *supra* note 13 (discussing the unlikelihood of data centers offering "a large number of jobs outside of construction," suggesting minimal community benefits); KAPOR FOUND., THE UNEQUAL BURDEN OF DATA CENTERS: AN EXAMINATION OF THE ENVIRONMENTAL AND PUBLIC HEALTH IMPACTS ON COMMUNITIES IN CALIFORNIA 2 (2025), <https://kaporfoundation.org/wp-content/uploads/2025/12/The-Unequal-Burden-of-Data-Centers-2025.pdf> [<https://perma.cc/H2DV-VWQ6>] (finding that public health impacts due to data center construction are felt strongly by "the most marginalized communities").

41. See *What's an AI Data Center?: Everything You Need to Know*, BLOOM ENERGY (Aug. 13, 2025), <https://www.bloomenergy.com/blog/ai-data-center/> [<https://perma.cc/HAL2-93ST>].

42. See Nicoletti, Ma & Bass, *supra* note 16; James Temple, *The Data Center Boom in the Desert*, MIT TECH. REV. (May 20, 2025), <https://www.technologyreview.com/2025/05/20/1116287/ai-data-centers-nevada-water-reno-computing-environmental-impact/> [<https://perma.cc/GSF3-SYFB>] (discussing the many factors luring data centers to the desert, such as "inexpensive land" as well as "[c]ool nighttime and winter temperatures"); Dakin Campbell, *How Data Centers Are Deepening the Water Crisis*, BUS. INSIDER (June 24, 2025, at 11:42 CT), <https://www.businessinsider.com/how-data-centers-are-deepening-the-water-crisis-2025-6#:~:text=Water%20use%20can%20vary%20widely,use%2082%20gallons%20a%20day> [<https://perma.cc/F5MQ-R6RS>] (finding that 40% of the country's data centers are located in areas "experiencing 'extremely high' or 'high' water scarcity," according to the World Resources Institute).

43. See Jonathan Overpeck, *The West's Water Crisis Is Worse Than You Think*, HILL (Sep. 15, 2022, at 13:00 ET) <https://thehill.com/opinion/energy-environment/3644547-the-wests-water-crisis-is-worse-than-you-think/> [<https://perma.cc/ZE9B-W2KQ>] (discussing that the initially agreed-upon allocation of the Colorado River "exceeds the supply of water flowing the river," which has only been exacerbated by climate change further "shrinking the Colorado River").

44. See Deepa Shivaram, *People Are Protesting AI Data Centers, and It's Scrambling Political Lines*, NPR (Jan. 26, 2026, at 04:48 ET), <https://www.npr.org/2026/01/25/nx-s1-5684321/trump-ai> [<https://perma.cc/S88X-XR4D>] (reporting protests against AI data centers in "Virginia, Pennsylvania, North Carolina," among others).

power to resist large-scale infrastructure projects incentivized by tax benefits.⁴⁵ While companies promise economic revitalization, the increased competition for water has led to rising utility costs and heightened exposure to pollution-related health risks.⁴⁶

Increased demand for water has led to rising utility costs and heightened exposure to pollution-related health risks. Moreover, data centers frequently fail to deliver the economic benefits used to justify their construction.⁴⁷ In particular, both job creation and tax revenue projections often fall short of expectations. Although companies project significant job creation, data centers actually create “the lowest number of jobs per square foot in their facilities.”⁴⁸ Employment opportunities peak during the data center’s construction, but appear to significantly diminish once construction has completed.⁴⁹ This disparity is attributed to minimal labor demands in the actual operation of the data centers.⁵⁰ Similarly, anticipated tax revenue gains often fail to materialize, as forty-two states offer sales tax exemptions or similar incentives to attract development while burdens are shouldered by local communities.⁵¹ These policies allow corporations to externalize costs while capturing the majority of financial benefits.⁵² Recently, Doña Ana County in New Mexico considered a \$165 billion debt package along with tax incentives in hopes of capitalizing on the industry boom.⁵³ Rather than strengthening public resources, these tax incentives allow companies to “boost corporate profits” while shifting financial burdens onto the vulnerable communities the facilities are located in.⁵⁴

45. See KAPOR FOUND., *supra* note 40, at 2; see also TERRY NGUYEN & BEN GREEN, WHAT HAPPENS WHEN DATA CENTERS COME TO TOWN? 3 (2025) (finding that the tax breaks offered to data centers fail to “deliver the promised economic benefits”).

46. See NGUYEN & GREEN, *supra* note 45, at 3.

47. See *id.*

48. Tom Dotan, *The AI Data-Center Boom Is a Job-Creation Bust*, WALL ST. J. (Feb. 25, 2025, at 21:00 ET), <https://www.wsj.com/tech/ai-data-center-job-creation-48038b67?mod=Searchresults&pos=1&page=1> [<https://perma.cc/582B-G3EF>].

49. See *id.*

50. See *id.*

51. See Melissa Reali, *Incentivizing the Digital Future: Inside America’s Race to Attract Data Centers*, DATA CTR. FRONTIER (Aug. 5, 2025), <https://www.datacenterfrontier.com/site-selection/article/55307797/incentivizing-the-digital-future-inside-americas-race-to-attract-data-centers> [<https://perma.cc/3DSL-HYUJ>]; see also NGUYEN & GREEN, *supra* note 45, at 3.

52. See NGUYEN & GREEN, *supra* note 45, at 3.

53. See Maxwell Adler, *AI Data Centers Near Tax Break with \$165 Billion of Phantom Debt*, BLOOMBERG: TECH. (Sep. 4, 2025, at 11:15 CT), <https://www.bloomberg.com/news/articles/2025-09-04/ai-data-centers-near-tax-break-with-165-billion-of-phantom-debt> [<https://perma.cc/23R9-4PWV>].

54. See NGUYEN & GREEN, *supra* note 45, at 8.

Currently, the data center boom disproportionately benefits companies driving AI expansion while imposing lasting environmental, social, and economic burdens on vulnerable communities.⁵⁵ Regulatory intervention is clearly needed.

C. Reporting Concerns and a Lack of Transparency

While AI data centers emphasize efficiency and technological progress, their persistent secrecy regarding water usage explains why regulatory intervention to protect shared water resources is necessary.⁵⁶ Because most companies decline to disclose how much potable water their facilities consume, regulators and local communities lack the information necessary to evaluate whether water is being used efficiently or responsibly.⁵⁷ Without reliable data on water consumption, policymakers cannot effectively monitor usage, set appropriate restrictions, or plan for long-term regional water needs.⁵⁸

In an attempt to investigate the consumption of water by data centers, *Business Insider* scoured public records and requested data from multiple technology conglomerates.⁵⁹ Colorado utility agencies even sued *Business Insider* in an effort to prevent revealing records of water use.⁶⁰ xAI's Colossus data center was no different.⁶¹ xAI had Memphis government officials sign NDAs and "sidelined" them from the entire decision-making process of the project.⁶² Additionally, internal memos revealed Microsoft executives expressing concern over sharing

55. *See id.*

56. *See* Hannah Beckler, Rosemarie Ho, Narimes Parakul, Dakin Campbell & Ellen Thomas, *How Business Insider Investigated the True Cost of Data Centers*, BUS. INSIDER (June 17, 2025, at 03:13 CT), <https://www.businessinsider.com/how-calculate-data-center-cost-environmental-impact-methodology-2025-6> [<https://perma.cc/FB9L-WWTN>].

57. *See* Lifset et al., *supra* note 26, at 10136.

58. *See id.*; *see also* Carly Schmidt, *AI Is a Risk to Water. Here's How Network Leaders Are Responding*, RIVER NETWORK (May 14, 2025), <https://www.rivernetwork.org/ai-is-a-risk-to-water-heres-how-network-leaders-are-responding/#:~:text=Jonathan%20Gilmour%20says%20this%20problem,and%20access%20to%20clean%20water> [<https://perma.cc/UEL7-LFJ6>] (discussing how Meta's data center in Colorado has an "agreement in which the city must notify [them] of requests for water use data"); Alec del Pino Gil-Casares, *When the People's Water Vanishes*, HARV. POL. REV. (Dec. 26, 2025), <https://theharvardpoliticalreview.com/ai-water-consumption/#:~:text=The%20OregonLive%20case%20is%20not,abusing%20for%20their%20artificial%20ambitions> [<https://perma.cc/45ES-YVPS>] (listing "[s]cientists, research facilities, non-profit organizations and software companies" as groups that believe that data centers "should disclose more detailed information about their activities").

59. *See* Beckler et al., *supra* note 56.

60. *See id.*

61. *See* Emerson & Baker-White, *supra* note 3.

62. *See id.*

water efficiency reports as they were aware it would not demonstrate positive performance.⁶³ Nineteen data centers have even redacted information regarding energy usage on their public permits to keep this information hidden from the public.⁶⁴ It appears to be the common practice of data centers across the country to guard water usage data from the public.⁶⁵

While some companies have hinted at a willingness to disclose water usage, meaningful transparency remains notably absent.⁶⁶ Google reported the estimated water consumption associated with individual prompts for its Gemini AI model, but failed to disclose the total water usage of their data centers.⁶⁷ OpenAI has similarly only revealed estimates of water consumption per inquiry rather than an aggregate review of consumption across all facilities.⁶⁸ These limited disclosures conceal the scale of water consumption and prevent meaningful assessment of regional impacts, leaving states without the adequate information or regulatory tools needed to manage water resources effectively.⁶⁹

D. Current State Regulation of AI Data Centers

While more than five hundred AI data centers currently exist, states have struggled to regulate their water usage given the rapid

63. See Karen Hao, *AI Is Taking Water from the Desert*, ATL. (Mar. 1, 2024), <https://bit.ly/3ZF0VtY> [<https://perma.cc/3D9S-BBE2>].

64. See Beckler et al., *supra* note 56.

65. See *id.*

66. See Casey Crownhart, *In a First, Google Has Released Data on How Much Energy an AI Prompt Uses*, MIT TECH. REV. (Aug. 21, 2025), <https://www.technologyreview.com/2025/08/21/1122288/google-gemini-ai-energy/> [<https://perma.cc/G77V-UJNR>]; see also Adam Satariano, Paul Mozur & Karen Weise, *Microsoft Pledged to Save Water. In the A.I. Era, It Expects Water Use to Soar*, N.Y. TIMES (Feb. 1, 2026), <https://www.nytimes.com/2026/01/27/technology/microsoft-water-ai-data-centers.html> [<https://perma.cc/8U4E-G6AS>] (reporting that “[t]he tech industry’s limited transparency makes managing water use more challenging”).

67. See Crownhart, *supra* note 66; Amin Vahdat & Jeff Dean, *Measuring the Environmental Impact of AI Inference*, GOOGLE CLOUD: BLOG (Aug. 21, 2025), <https://cloud.google.com/blog/products/infrastructure/measuring-the-environmental-impact-of-ai-inference> [<https://perma.cc/M3U7-XUPK>].

68. See Josie Stewart, Brooke Tanner & Nicol Turner Lee, *As Energy Demands for AI Increase, So Should Company Transparency*, BROOKINGS (July 14, 2025), <https://www.brookings.edu/articles/as-energy-demands-for-ai-increase-so-should-company-transparency/> [<https://perma.cc/4GB3-QVFG>] (reporting that “an average query” for ChatGPT consumes “0.000085 gallons of water”).

69. See *id.*; Stratton P. Constantinides & Aaron Goldman, *Water Use in US Data Centers: Legal and Regulatory Risks*, NIXON PEABODY (Sep. 5, 2025), <https://www.nixonpeabody.com/insights/articles/2025/09/05/water-use-in-us-data-centers-legal-and-regulatory-risks> [<https://perma.cc/H5YR-8NC4>].

growth of this field.⁷⁰ In 2024, the Texas Water Development Board enacted a rule requiring entities using groundwater or surface water to report their water usage to aid long-term planning of the state's water supply.⁷¹ However, the regulation proved ineffective because of its minimal enforcement mechanisms.⁷² Of the approximately seventy data centers surveyed at the time, only one-third complied, while the remainder opted to pay nominal fines rather than disclose usage data.⁷³ This inefficient approach failed to provide Texas with data that they so desperately needed.⁷⁴ The approach taken in Texas suffered from multiple structural flaws, including delayed data collection after construction had already begun, incomplete coverage of the state's data centers, and penalties too small to deter noncompliance by billion-dollar companies. The resulting regulation failed to generate the information necessary for effective water planning.⁷⁵

In January of 2025, California, like Texas, also proposed a modest approach through its Assembly Bill 93, which would have required data centers to disclose projected water usage before construction and submit annual usage reports.⁷⁶ Despite the bill's limited scope, Governor Gavin Newsom vetoed the measure, citing concerns that the regulation could discourage data center investment.⁷⁷ The governor's veto of the proposed bill highlights the deficiencies in proposed regulations and reflects mistaken assumptions held by state officials, contributing to the regulatory vacuum surrounding AI infrastructure and its environmental impacts.⁷⁸

70. See *USA Data Centers*, DATA CTR. MAP, <https://www.datacentermap.com/usa/> [<https://perma.cc/G5VF-2VNU>] (last visited Feb. 1, 2026).

71. See 31 TEX. ADMIN. CODE § 358.5 (2025).

72. See Nicoletti, Ma & Bass, *supra* note 16.

73. See Alejandra Martinez, *Data Centers Are Thirsty for Texas' Water, but State Planners Don't Know How Much They Will Need*, TEX. TRIB. (Sep. 25, 2025, at 11:00 CT), <https://www.texastribune.org/2025/09/25/texas-data-center-water-use/> [<https://perma.cc/W93F-BRLR>].

74. See *id.*

75. See *id.*

76. See Assemb. B. 93, 2025–2026 State Assemb., Reg. Sess. (Cal. 2025); Ian James, *California Cracks Down on Water Theft but Spares Data Centers from Disclosing How Much They Use*, L.A. TIMES (Oct. 14, 2025, at 03:00 PT), <https://www.latimes.com/environment/story/2025-10-14/newsom-ai-data-center-water> [<https://perma.cc/WU44-DHE6>].

77. See James, *supra* note 76.

78. See Constantinides & Goldman, *supra* note 69.

E. Water Law in Prior Appropriation States

Prior appropriation water law governs the majority of water use in the West.⁷⁹ It was created with the goal of rapid development rather than sustainable and efficient consumption, which has ultimately exacerbated the western water crisis.⁸⁰ States typically regulate water rights in one of two ways: through (1) a riparian rights framework or (2) a prior appropriation framework.⁸¹ The former structure their water rights based on the owners of the property associated with the water source while the latter prioritizes timing and beneficial use.⁸² While some states, such as California and Oklahoma, have adopted a hybrid system of both frameworks, the purpose of this Note is to analyze prior appropriation principles and their application to data centers.⁸³ Because riparian rights are generally confined to water-abundant regions in the Eastern United States, this Note focuses on prior appropriation law, which governs most western states and is directly relevant to data center water use.⁸⁴

1. The Priority of Use Principle

In prior appropriation states, water rights are governed by the principle of “first in time, first in right,”⁸⁵ meaning that rights are prioritized based on their priority date.⁸⁶ Senior rights holders, those with earlier priority dates, are entitled to receive their full allocation of

79. See *Science Resources: Water and the Law*, FED. JUD. CTR., <https://www.fjc.gov/content/376802/water-and-law-sidebar-books-overview-surface-water-use-rights-united-states#:~:text=2.,when%20the%20use%20is%20perfected> [https://perma.cc/YCL6-KQLA] (last visited Feb. 1, 2026).

80. See Lawrence J. MacDonnell, *Prior Appropriation: A Reassessment*, 18 U. DENV. WATER L. REV. 228, 229 (2015).

81. See *Understanding Water Rights: 12 Types of Water Rights*, MASTERCLASS (June 7, 2021), <https://www.masterclass.com/articles/water-rights-definition> [https://perma.cc/8524-UNYG].

82. See *id.*

83. See *Water Law: An Overview*, NAT'L AGRIC. L. CTR., <https://nationalaglawcenter.org/overview/water-law/> [https://perma.cc/T5XB-WL7Z] (last visited Feb. 10, 2026); *infra* Part III (demonstrating that the hybrid approach is not relevant to analysis since this Note aims to uproot these rigid frameworks, whether binary or hybrid, and focus on a framework prioritizing efficient and beneficial use).

84. See Barringer, *supra* note 5 (noting that the western United States also is experiencing, and will continue to, some of the fastest data center growth in the country, demonstrating why this Note focuses on the West rather than other regions across the country).

85. See *Diamond Nat. Res. Prot. & Conservation Ass'n v. Diamond Valley Ranch, LLC*, 511 P.3d 1003, 1005 (Nev. 2022).

86. See *id.*

water before junior rights holders.⁸⁷ For example, if one user began diverting water in 1900 and another in 1950, the earlier user holds a senior right. Therefore, during periods of scarcity, the senior user must be fully satisfied before the junior user receives any water, which may leave junior rights unfulfilled.⁸⁸

Water rights are established through beneficial use, meaning the water must be applied to a recognized purpose, such as electricity generation.⁸⁹ Courts will generally find a violation of the prior appropriation doctrine where junior users are improperly prioritized over senior users.⁹⁰ However, in practice, determining who holds a senior right is not always as simple as identifying who was “first in time.”⁹¹ Instead, priority often depends on how a right was legally acquired and recognized.⁹²

2. Methods of Acquiring Water Rights

In prior appropriation states, water rights may be acquired through permits, judicial decrees, transfers, or municipal partnerships.⁹³ Firstly, to obtain a permit, candidates must send an application to the appropriate authority, typically a state water agency or the state engineer, and include information on how the desired water right will affect other nearby holders.⁹⁴ Second, rights can be established through judicial decrees, in which a court formally recognizes a water right.⁹⁵ This mechanism has been particularly significant for Native American tribes, many of whom obtained senior

87. See James N. Corbridge, Jr., *Historical Water Use and the Protection of Vested Rights*, 69 U. COLO. L. REV. 503, 505 (1998).

88. See *In re Klamath Irrigation Dist.*, 69 F.4th 934, 938 n.1 (9th Cir. 2023) (finding that senior water rights “may be fulfilled entirely before those junior appropriators get any water at all” (quoting *Montana v. Wyoming*, 563 U.S. 368, 376 (2011))).

89. See *Hydro Res. Corp. v. Gray*, 2007-NMSC-061, 143 N.M. 142, 173 P.3d 749, 756 (stating that water “must be appropriated and applied to beneficial use before a vested water right will result”); see also William F. Cloran, *The Ownership of Water in Oregon: Public Property vs. Private Commodity*, 47 WILLAMETTE L. REV. 627, 649 (2011).

90. See *S. Valley Ground Water Dist. v. Idaho Dep’t of Water Res.*, 548 P.3d 734, 763 (Idaho 2024).

91. See *Diamond Nat. Res. Prot.*, 511 P.3d at 1005.

92. See *id.*

93. See FED. JUD. CTR., *supra* note 79 (explaining permit applications under prior appropriation); Neuman, *supra* note 20, at 926, 953 (discussing permits, decrees, and transfers under prior appropriation).

94. See Adell Amos, *Freshwater Conservation in the Context of Energy and Climate Policy: Assessing Progress and Identifying Challenges in Oregon and the Western United States*, 12 U. DENV. WATER L. REV. 1, 19 (2008) (describing the Water Resources Department in Oregon and its role of reviewing permit or transfer applications); see also N.M. ADMIN. CODE § 19.26.2.10 (2005).

95. See Neuman, *supra* note 20, at 926.

rights through federal adjudication rather than state systems.⁹⁶ As a result, tribal water rights often carry very early priority dates. However, ongoing litigation against tribal water rights demonstrates the pressure exerted on senior right holders and the strain placed on existing prior appropriation doctrine.⁹⁷ Thirdly, water rights can be transferred to a new holder through an application process.⁹⁸ Here, the potential new holder is required to file a notice of this change of ownership with the appropriate authority, a state agency, or the state engineer, to demonstrate the intended change.⁹⁹ When considering whether to approve a transfer application, state agencies consider whether the new use will adversely affect nearby holders and whether it is a beneficial use of the water.¹⁰⁰ Finally, many users access water through municipal systems, where cities hold water rights and distribute water to end users.¹⁰¹ For instance, data centers often rely on municipal allocations rather than holding rights directly, effectively benefitting from the city's priority date.¹⁰² Thus, although the prior appropriation doctrine is framed as a system based on temporal priority, it often turns on legal mechanisms of acquisition in practice, allowing some users to benefit from senior rights without being truly "first in time."¹⁰³

3. The Beneficial Use Principle

The doctrine of beneficial use further limits holders of water rights in prior appropriation states by permitting use only for socially and economically valuable purposes.¹⁰⁴ Although courts have

96. See *Winters v. United States*, 207 U.S. 564, 565 (1908); Erin Rubin, *Water Rights of Public Domain Allotments*, 132 YALE L. J. F. 957, 963 (2023).

97. See e.g., *In re General Adjudication of All Rights to Use Water in Gila River System and Source*, 127 P.3d 882 (Ariz. 2006).

98. See Amos, *supra* note 94.

99. See *id.*; see also N.M. ADMIN. CODE § 19.26.2.10 (2005).

100. See Neuman, *supra* note 20, at 960; WATER POL'Y INTERIM COMM., A RIGHT TO STREAM CONDITIONS AS THEY EXISTED: A STUDY OF THE PROCESS FOR CHANGING A WATER RIGHT 8 (2018) (discussing that Utah specifically analyzes whether the proposed transfer will be "detrimental to the public welfare").

101. See Neuman, *supra* note 20, at 992.

102. See *U.S. Water-Related Expenditures for Data Centers to Exceed US\$4.1 Billion Through 2030*, BLUEFIELD RSCH. (June 23, 2025), <https://www.bluefieldresearch.com/ns/u-s-water-related-expenditures-for-data-centers-to-exceed-us4-1-billion-through-2030/> [<https://perma.cc/B9DX-9VZ7>].

103. See *Diamond Nat. Res. Prot. & Conservation Ass'n v. Diamond Valley Ranch, LLC*, 511 P.3d 1003, 1005 (Nev. 2022).

104. See Neuman, *supra* note 20, at 925; Jill Sacra Hoffman, *The Status of Surface Water Rights in Texas: A Comparison to Other Prior Appropriation States*, 39 TEX. ENV'T L.J. 167, 181 (2009).

historically recognized industrial, domestic, and hydroelectric uses as beneficial, no single definition governs the doctrine, leaving substantial discretion to judicial interpretation.¹⁰⁵ These limiting principles can drastically alter whether an individual is granted a water right, how much they are allocated, and whether their right can be revoked.¹⁰⁶ Accordingly, the beneficial use doctrine may play a decisive role in the AI infrastructure sector if courts find that the negative externalities data centers far outweigh their benefits.

a. Reasonableness and Waste

Beneficial use also requires that water consumption by right holders be reasonable and not wasteful.¹⁰⁷ Rights holders must not exceed what is reasonably necessary to perform the specified beneficial use, with courts routinely evaluating such reasonableness by examining whether water is being utilized efficiently and without unnecessary waste.¹⁰⁸ In assessing reasonableness, courts consider whether allocations are economical in light of competing demands on the water supply.¹⁰⁹ Because water rights do not confer ownership of water itself, states retain authority to curtail or revoke rights when use becomes excessive or wasteful,¹¹⁰ such as when more than 1,000 acres

105. See *State ex rel. Off. of State Eng'r v. United States*, 2013-NMCA-023, 296 P.3d 1217, 1222 (“The concept requires actual use for some purpose that is socially accepted as beneficial.” (internal quotations omitted)); see also *State ex rel. Martinez v. McDermott*, 1995-NMCA-060, 120 N.M. 327, 901 P.2d 745, 748 (defining beneficial use as “the use of such water as may be necessary for some useful and beneficial purpose in connection with the land from which it is taken”); Genevieve Adams, *Redefining “Beneficial Use” to Combat Water Scarcity*, 11 TEXAS A&M L. REV. 193, 204 (2023); Caleb Hall, *Water, Water, Nowhere: Adopting Water Rights For A Changing Climate*, 16 SUSTAINABLE DEV. L. & POL’Y 25, 27 (2015) (finding that the vague understanding of the beneficial use doctrine has left “[the] concept up to judiciary discretion”); see also *Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1058.

106. See *Silver v. Pueblo*, 423 P.3d 348, 359 (Ariz. 2018).

107. See *Delta Canal Co.*, 420 P.3d at 1059 (asserting that the beneficial use doctrine requires “the amount of water used [to] be reasonable” with no “unnecessary waste” (internal quotations omitted)); *Ariz. Pub. Serv. Co. v. Long*, 773 P.2d 988, 997 (Ariz. 1989) (finding that the “spirit and purpose of Arizona water law . . . is to promote the beneficial use of water and to eliminate waste of this precious resource”).

108. See *Gila River Indian Cmty. v. Angle*, 2020 WL 14053836, at *3 (D. Ariz. 2020) (further describing the “beneficial use limitation” as an “amount as shall be actually and reasonably necessary for the beneficial use” of the established water right); see also *Delta Canal Co.*, 420 P.3d at 1059.

109. See Thomas J. Budge, *Restoring the Public Interest Component of the Prior Appropriation Doctrine in Conjunctive Management of the Eastern Snake Plain Aquifer*, 61 IDAHO L. REV. 31, 34 (2025); *Delta Canal Co.*, 420 P.3d at 1059.

110. See *Long*, 773 P.2d at 997; see also MacDonnell, *supra* note 80, at 287 (discussing that prior appropriation often suggests “consider[ation] [of] the public interest associated with a proposed use of water”).

of agricultural land are deprived of water due as to benefit a power plant's operations.¹¹¹ To ensure that a person or entity is consuming a reasonable amount of water for a beneficial purpose, states analyze whether the proposed use will interfere with existing rights or a "more beneficial use."¹¹² For example, in determining whether one use is more beneficial than another, states consider present-day conditions and community needs, meaning that a use deemed beneficial sixty years ago may no longer qualify today.¹¹³ These guidelines demonstrate that the goal of the prior appropriation framework is both promoting beneficial uses of water and "eliminat[ing] waste of this precious resource."¹¹⁴ The beneficial use doctrine's limiting principle should be applied to data centers to ensure that facilities do not consume water in a manner that leads to "unnecessary waste."¹¹⁵

F. Implications for AI Data Centers

This limitation is especially important in the context of water-intensive technologies, particularly data centers, which rely on large volumes of water for cooling.¹¹⁶ As such, this creates a gap between the goals of prior appropriation and the resulting water consumption. For instance, in contrast to the theories of the beneficial use principle, data centers impose significant negative externalities on nearby communities, consume overwhelming amounts of water, and fail to transparently report their water usages.¹¹⁷ The lack of meaningful state oversight demonstrates how prior appropriation law exacerbates the western water crisis by "encourag[ing] inefficient water use."¹¹⁸ Establishing the beneficial use doctrine as the balancing test with

111. *See generally In re Water Rights of Deschutes River and Tributaries*, 134 Or. 623, 665 (Or. 1930) (finding that a power plant's proposed use of water constituted waste, leading the Supreme Court of Oregon to limit this use to the "nonirrigating season" as to not infringe on other rights holders).

112. *See HEAL Utah v. Kane Cnty. Water Conservancy Dist.*, 2016 UT App 153, 378 P.3d 1246, 1250–53 (explaining that the State Engineer's approval of an individual's application "is only a preliminary step" in a lengthier process (internal quotations omitted)); *see also* UTAH CODE ANN. § 73-3-8 (West 2024) (describing the factors analyzed by the State Engineer in Utah).

113. *See* Neumann, *supra* note 20, at 980–81.

114. *See Long*, 773 P.2d at 997; *see also HEAL Utah*, 378 P.3d at 1254 (stating that the Utah Supreme Court has previously found that "the policy of the law is to prevent waste and promote the largest beneficial use").

115. *See Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1059 (quoting *Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.*, 45 P.2d 972, 997 (Cal. 1935)).

116. *See* Barringer, *supra* note 5.

117. *See* Nicoletti, Ma & Bass, *supra* note 16; Beckler et al., *supra* note 56.

118. Neuman, *supra* note 20, at 923 (discussing how states have struggled with the "vagueness and generosity of the doctrine").

clearly defined factors would provide states and courts with the necessary flexibility to constrain excessive water use without undermining the technological benefits of AI. Rather than hindering innovation, the application of these principles would promote environmentally sustainable development consistent with water law objectives.

II. PRIOR APPROPRIATION'S WEAKNESSES: EXEMPLIFIED BY THE OVERCONSUMPTION OF DATA CENTERS

Since federal policy initiatives have lowered regulatory obstacles for data centers and created challenges to the western water supply, solutions based in regional water law initiatives would be able to circumvent further negative effects on local communities.¹¹⁹ This Part examines how the disparity between prior appropriation principles in theory and its application in practice manifests in the various negative externalities of data centers, the lack of transparency in water usage, and the deepening water crisis. Therefore, this Part argues that reforming the beneficial use doctrine to be a clearly defined set of balancing factors that is uniformly applied across the region will better protect the western water supply.

A. Data Centers Should Not Receive Priority Over Existing Water Rights

Under the prior appropriation doctrine, courts consistently recognize legal injury where junior holders receive water before senior holders have received their full allocation.¹²⁰ Courts have stressed the importance of priority in time by finding that, if junior water rights are satisfied at the expense of senior rights, the latter would experience “undeniable injury,” warranting judicial intervention.¹²¹

Courts have repeatedly reinforced this hierarchy.¹²² In *In re Klamath Irrigation District*, the Ninth Circuit held that a junior appropriator could not take precedence over senior tribal rights during drought conditions affecting the Klamath River Basin.¹²³ The court noted that senior rights holders acting in accordance with beneficial use principles are entitled to satisfy their rights entirely before junior users

119. See Lee, *supra* note 18.

120. See 3G AG LLC v. Idaho Dept. of Water Res., 509 P.3d 1180, 1185 (Idaho 2022).

121. *Id.* at 264–265 (quoting Jenkins v. Idaho Dep’t. of Water Res., 647 P.2d 1256, 1260 (Idaho 1982)).

122. See e.g., *In re Klamath Irrigation Dist.*, 69 F.4th 934 (9th Cir. 2023).

123. See *id.* at 937.

receive any water.¹²⁴ Similarly, the Supreme Court of Arizona came to a similar conclusion in *Silver v. Pueblo*, finding that “senior rights holders are entitled to use their entire water allotments before junior rights holders receive any water.”¹²⁵ As such, the first step of the inquiry to understanding data centers involves determining the type of water right they hold.¹²⁶ However, when determining what type of water right data centers hold, it is especially relevant to analyze whether their position as a senior or junior rights holder exemplifies efficient water consumption, which should be a core inquiry in prior appropriation law.¹²⁷

1. Data Centers are Junior Appropriators in Over Allocated Basins

The recent data center boom and its significant water consumption indicates potential misalignment between the priority of use principle and efficient water use, particularly in over allocated basins, where existing water rights already exceed the available supply.¹²⁸ In these regions, not all rights can be fully satisfied, meaning that priority can determine which users receive water and which do not.

In Nevada, for example, Apple holds a water right for its data center in Washoe County through a municipal partnership, allowing it to inherit a priority date of 1978.¹²⁹ However, numerous rights with earlier priority dates would take precedence in times of scarcity.¹³⁰ For instance, the Period Lake Paiute Tribe holds a right with a priority date of 1865,¹³¹ and individual agricultural users along the Truckee River hold rights from the 1870s.¹³² In a shortage, if the water supply becomes

124. See *HEAL Utah v. Kane Cnty. Water Conservancy Dist.*, 2016 UT App 153, 378 P.3d 1246, 1249.

125. See *Silver v. Pueblo*, 423 P.3d 348, 352 (Ariz. 2018).

126. See *id.*; *Klamath*, 69 F.4th at 938 n.1.

127. See Leila C. Behnampour, *Reforming a Western Institution: How Expanding the Productivity of Water Rights Could Lessen Our Water Woes*, 41 ENV'T L. 201, 204 (2011) (discussing how the beneficial use doctrine, in practice, does not incentivize efficiency, raising problems for the historical western water crisis).

128. See Nicoletti, Ma & Bass, *supra* note 16; see also MacDonnell, *supra* note 80, at 241.

129. See *Water Rights*, NEV. DIV. WATER RES., <https://water.nv.gov/index.php/water-rights> [<https://perma.cc/S246-7YAS>] (last visited Feb 10, 2026).

130. See, e.g., NEV. STATE ENG’R, CERTIFICATE OF APPROPRIATION OF WATER NO. 21263 (issued to Pyramid Lake Paiute Tribe, Dec. 8, 1865), <https://images.water.nv.gov/images/certificates/21000/21263c.pdf> [<https://perma.cc/9VRU-Y886>].

131. See *id.*

132. See Mark McLaughlin, *Plan Hatched to Divert Lake Tahoe’s Water to Nevada*, TAHOE GUIDE (Aug. 17, 2021), <https://bit.ly/45HHHrf> [<https://perma.cc/BUE3-TQM3>].

further strained, junior rights—such as Apple—should go unfulfilled in order to satisfy senior rights with priority in water consumption.¹³³

However, Apple's data center in Washoe County is not representative of the typical type of water right held by technology conglomerates.¹³⁴ Obtaining a water right through partnership with a city often allows these companies to inherit a senior right that legally takes priority over many others in the region.¹³⁵ This common procedure of acquiring water rights suggests that the practice of the priority of use doctrine is not properly aligned with the needs of the region—especially during periods of drought—and should not be a core tenet of prior appropriation law.¹³⁶ For instance, in practice, courts often heavily factor seniority into a decision regarding water rights and whether a party has experienced injury.¹³⁷ By allowing technology conglomerates to take advantage of the system by obtaining transferred senior rights, this principle becomes less about respecting the beneficial use of the original consumer and more about who is financially able to acquire a transferred right.¹³⁸ Therefore, the weaknesses presented in the priority of use doctrine demonstrate its inability to manage the growing western water crisis.

Conflicts over seniority have already emerged in regions housing data centers, particularly where water supplies are over allocated.¹³⁹ In Nevada, groundwater allocations in the Tracey Segment basin exceed the basin's "perennial yield," that is, the amount of water that can be sustainably withdrawn each year, intensifying competition among users.¹⁴⁰ The Pyramid Lake Paiute Tribe has actively opposed data

133. See *United States v. City of Golden*, 2024 CO 43M, 551 P.3d 634, 649.

134. See BLUEFIELD RSCH., *supra* note 102 (reporting that "[m]ore than 97% of the water used by major data center operators is purchased from municipal drinking water systems").

135. See e.g., NEV. DIV. WATER RES., *supra* note 129.

136. See, e.g., Maanvi Singh, 'Water Is More Valuable Than Oil': The Corporation Cashing in on America's Drought, *GUARDIAN* (Apr. 16, 2024, at 06:30 ET), <https://www.theguardian.com/environment/2024/apr/16/arizona-colorado-river-water-rights-drought> [<https://perma.cc/PF3Z-3GXX>] (reporting on a private company selling water rights tied to 500 acres of land in Cibola, Arizona for a \$14,000,000 gross profit); see also Eli Francovich, *Corporations Are Consolidating Water and Land Rights in the West*, *HIGH COUNTRY NEWS* (Dec. 15, 2021), <https://www.hcn.org/articles/water-corporations-are-consolidating-water-and-land-rights-in-the-west/> [<https://perma.cc/Z7MM-H7B4>].

137. See, e.g., *Silver v. Pueblo*, 423 P.3d 348, 352 (Ariz. 2018) (relying on the prior appropriation rule that "senior rights-holders are entitled to use their entire water allotments before junior rights-holders receive any water," which finds that no injury has occurred if the junior rights holder does not receive their allocation).

138. See Singh, *supra* note 136 (reporting on the \$14,000,000 sale of water rights in Arizona, suggesting the access of clean water rights must be bought).

139. See Temple, *supra* note 42.

140. See *id.* (citing a report from the United States Geological Survey to define the "perennial yield" as "the maximum amount of groundwater that can be salvaged each year over the long term

center development in the region, citing concerns that increased withdrawals will strain limited supplies and undermine senior rights.¹⁴¹ Growing conflict suggests that the priority system does not consistently allocate water based on efficiency or public need, but rather on the ability to acquire earlier rights, often directly tied to the financial capabilities of the purchaser.

Tribal concerns are particularly salient given the seniority of federally reserved water rights. In *Winters v. United States*, the Supreme Court recognized that Congress implicitly granted water rights to Native American Tribes when establishing Indian reservations.¹⁴² Given that *Winters* found their water rights to have been granted upon the reservation's creation, Tribes typically hold senior rights that are superior to others in their region.¹⁴³ While it is significant to note that Tribal water rights are federal rights that are not affected by state laws, the Tribe's history of adjudication provides a clear example of courts failing to recognize senior holders due to the ambiguous nature of the priority of use doctrine. The Tribe is not the only group to recognize the growing conflicts over the strained water supply.¹⁴⁴ For instance, Arizona has already hired a powerful law firm in anticipation of legal battles against neighboring states over the Colorado River water use agreement, highlighting the rising tension surrounding western water law.¹⁴⁵

Given that data centers are disproportionately constructed in this over allocated region lacking clear regulatory guidance, states and courts must determine how to address legal injuries that may be caused by further strain due to a weak priority in use principle.¹⁴⁶ Specifically, a system designed to allocate water based on historical priority does not

without depleting the groundwater reservoir"); *see also* Diamond Nat. Res. Prot. & Conservation Ass'n v. Diamond Valley Ranch, LLC, 511 P.3d 1003, 1005 (Nev. 2022) (discussing that the Supreme Court of Nevada has recognized that "groundwater in Diamond Valley, Nevada, is over-appropriated and has been pumped at a rate exceeding its perennial yield for over four decades" (internal quotations omitted)).

141. *See* Temple, *supra* note 42.

142. *See* 207 U.S. 564, 567–77 (1908).

143. *See id.*; *see also* Rubin, *supra* note 96, at 963.

144. *See* Temple, *supra* note 42 (discussing that data center construction in Nevada has alarmed "water experts, environmental groups, and residents").

145. *See* Caitlin Sievers, *Arizona Hires High-Powered Law Firm, Setting the Stage for a Legal Battle over Colorado River Water*, ARIZ. MIRROR (Mar. 23, 2026, at 17:15 CT), <https://azmirror.com/2026/03/23/arizona-hires-high-powered-law-firm-setting-the-stage-for-a-legal-battle-over-colorado-river-water/> [https://perma.cc/KQ34-RAE7].

146. *See* Nicoletti, Ma & Bass, *supra* note 16 (finding that "about two-thirds of new data centers built or in development since 2022 are in places already gripped by high levels of water stress").

necessarily produce outcomes that reflect efficient, equitable, or sustainable use in modern conditions.

B. Data Centers Fail to Demonstrate a Reasonable and Beneficial Use

In the western United States, whether a water use qualifies as beneficial is dependent on both the “type of use and the amount of use,” as well as social and economic factors, on occasion.¹⁴⁷ Beneficial use has long been coined the “touchstone” of the prior appropriation doctrine, marking the importance of reviewing how beneficial use has been applied to data centers’ water consumption.¹⁴⁸

1. Data Centers Should Fail the “Type of Use” Requirement

While courts have generally considered industrial water cooling methods a beneficial “type of use” of water, data centers present the continuing disparity between the goals of beneficial use and its application in practice.¹⁴⁹ For instance, this classification warrants reevaluation when applied to modern data centers, particularly given the growing divergence between the theoretical goals of prior appropriation law and its application.¹⁵⁰ While power plants, often cited as a benchmark for beneficial industrial use that is economically efficient, consume water to generate electricity that directly serves public needs, data centers consume water at significantly higher rates to support private AI development.¹⁵¹ It is unlikely that the development and use of private AI provides a sufficiently comparable benefit as public-serving energy.¹⁵² Growing public opposition to data center water consumption—like protests in Tennessee, Arizona, Virginia, Pennsylvania, North Carolina, and Wisconsin, among

147. See *Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1058 (finding that beneficial use has “expanded to encompass not only economically beneficial uses, but also uses that promote conservation, recreation, and other values deemed to be socially desirable”).

148. See *id.* at 1059.

149. See *id.* at 1058 (discussing the goals of “economically beneficial uses” as well as those “deemed to be socially desirable”); see also *HEAL Utah v. Kane Cnty. Water Conservancy Dist.*, 2016 UT App 153, 378 P.3d 1246, 1249 (affirming that a project’s need for water to “generate power and to cool the power plant” were beneficial uses of their allocation).

150. See Behnampour, *supra* note 127, at 204.

151. See Cloran, *supra* note 89, at 649 (finding that “[m]ost beneficial uses, with the exception of hydropower generation, are consumptive uses of water that return little, if any, water in good condition to the water course from which it is drawn”); see also Frank J. Trelease, *The Concept of Reasonable Beneficial Use in the Law of Surface Streams*, 12 WYO. L.J. 1, 5 (1957) (finding that “[o]ne of the earliest uses of streams was for the generation of water power for the operation of mills and factories”); Nicoletti, Ma & Bass, *supra* note 16.

152. See Lee & West, *supra* note 13 (listing the various costs and risks associated with data center growth, largely affecting local communities).

others—suggests that such use may no longer be “socially desirable.”¹⁵³ Given that courts have considered societal expectations when evaluating beneficial use, recent opposition has the potential to alter the western water law field.¹⁵⁴ Given the numerous negative externalities presented by data center construction and what courts have previously considered beneficial use, data centers appear to fail the “type of use” prong under prior appropriation law’s beneficial use assessment.¹⁵⁵

2. Data Centers Should Fail the “Amount of Use” Requirement

Data centers also violate the “amount of use” prong within the beneficial use principle by consuming water in a manner that leads to “unnecessary waste,” especially in regions already facing severe water scarcity.¹⁵⁶ Data centers in the West often employ water-intensive methods to cool their servers with the argument that such methods present lower upfront costs and promote the rapid development of AI.¹⁵⁷ The current predominant cooling method requires potable freshwater, the majority of which is lost through evaporation, while only a small portion is discharged as wastewater that requires treatment before

153. See *Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1058; Mat Honan, *Data Centers Are Amazing. Everyone Hates Them*, MIT TECH. REV. (Jan. 14, 2026), <https://www.technologyreview.com/2026/01/14/1131253/data-centers-are-amazing-everyone-hates-them/> [<https://perma.cc/8TKU-HLQ6>]; Raya Torres, *Protestors Try to Stop Project Blue Land Sale, Supervisor Heinz Says It's Not That Simple*, KOLD NEWS 13 (Oct. 21, 2025, at 00:59 CT), <https://www.kold.com/2025/10/21/protestors-try-stop-project-blue-land-sale-supervisor-heinz-says-its-not-that-simple/> [<https://perma.cc/97VH-VU2X>]; Harris, Gerberg & Gosk, *supra* note 1; Shivaram, *supra* note 44.

154. See *Delta Canal Co.*, 420 P.3d at 1058.

155. See *id.* (listing the relevant factors to be assessed under the beneficial use doctrine); see also Lee & West, *supra* note 13 (discussing the numerous negative externalities imposed on communities due to nearby data center construction).

156. See *Delta Canal Co.*, 420 P.3d at 1059 (finding that the “amount of water used . . . is usually reasonable, ‘so long as the custom does not involve unnecessary waste’” (quoting *Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.*, 45 P.2d 972, 997 (Cal. 1935))); see also Nicoletti, Ma & Bass, *supra* note 16 (reporting that the numerous data centers that rely on “evaporative cooling” leads to the evaporation of “about 80% of the water they draw” and only 20% of the withdrawn water being discharged goes back to a wastewater treatment facility).

157. See Shaolei Ren & Amy Luers, *The Real Story on AI's Water Use—and How to Tackle It*, IEEE SPECTRUM (Sep. 10, 2025), <https://bit.ly/3NSJraS> [<https://perma.cc/R8K6-D4SB>].

reuse.¹⁵⁸ This leads to “unnecessary waste” in water-scarce regions.¹⁵⁹ Less water-intensive alternatives, such as server liquid cooling, provide a more environmentally conscious method that does not impose significant economic burdens on data centers.¹⁶⁰ Although these systems involve higher initial costs, this does not justify continued inefficient water use that endangers the West’s environment.¹⁶¹ Additionally, these systems are more energy efficient, significantly reduce water consumption, and can ultimately result in higher revenue in the long run.¹⁶² Additionally, a more efficient use of water in water scarce regions would lead to the stable growth of the AI industry. As it stands, however, the excessive water use by data centers in prior appropriation states demonstrates the weak enforcement of the reasonable beneficial use principle, ultimately failing to achieve its intended goals in practice.¹⁶³

Overall, the application of the prior appropriation framework as it applies to data centers constructed in the West raises concerns over the management of this precious resource. For instance, distinguishing between senior rights and junior rights does not align with the beneficial use principle’s goal of promoting the most efficient use of water in order to eliminate waste.¹⁶⁴ Furthermore, the absence of a clearly defined and flexible test determining what constitutes a beneficial use leads the West further away from the intended goals of

158. See Ben Murray & Mia DiFelice, *Artificial Intelligence: Big Tech’s Big Threat to Our Water and Climate*, FOOD & WATER WATCH (Apr. 9, 2025), <https://www.foodandwaterwatch.org/2025/04/09/artificial-intelligence-water-climate/> [https://perma.cc/TH3G-S9HP]; see also Sharon Adarlo, *Critics Furious Microsoft Is Training AI by Sucking Up Water During Drought*, FUTURISM (Sep. 26, 2023, at 10:43 ET), <https://futurism.com/critics-microsoft-water-train-ai-drought> [https://perma.cc/6S6L-X9AT]; Miguel Yañez-Barnuevo, *Data Centers and Water Consumption*, ENV’T & ENERGY STUDY INST. (June 25, 2025), <https://www.eesi.org/articles/view/data-centers-and-water-consumption> [https://perma.cc/4ATK-TNT5] (warning that “the large volume of wastewater from data centers may overwhelm existing local facilities, which were not designed to handle such a high volume”).

159. See *Delta Canal Co.*, 420 P.3d at 1059 (quoting *Tulare Irrigation Dist.*, 45 P.2d at 997).

160. See Yañez-Barnuevo, *supra* note 158.

161. See *id.*

162. See *id.*; see, e.g., Marc Hamilton, *Chill Factor: NVIDIA Blackwell Platform Boosts Water Efficiency by over 300x*, NVIDIA (Apr. 22, 2025), <https://bit.ly/3OguiQM> [https://perma.cc/33RV-WKME] (discussing how “liquid cooling” led to “40x higher revenue potential, 30x higher throughput, 25x more energy efficiency and 300x more water efficiency” than evaporative cooling methods).

163. See Campbell, *supra* note 42 (finding that “[i]n Mesa, Arizona, Meta struck an agreement allowing a facility to use up to 4 million gallons of water a day” and also that the “vast majority” of the 6.1 billion gallons of water Google consumed in 2023 was potable).

164. See *Delta Canal Co.*, 420 P.3d at 1058–59; Hall, *supra* note 105, at 31 (discussing the Ninth Circuit and Idaho Supreme Court’s view on the beneficial use doctrine, which they both viewed as a “dynamic concept” that changes over time due to conditions changing).

the water law doctrine, especially given the ever-changing environmental conditions.¹⁶⁵ By restructuring current prior appropriation principles, states can indirectly regulate data centers' water consumption. Given that the water crisis in the western United States has only grown in recent years, this change is necessary for the safety of this region's valuable resource.¹⁶⁶

III. REFORMING PRIOR APPROPRIATION LAW FOR THE AI INFRASTRUCTURE BOOM

This Section addresses the growing strain that data center development places on already limited water resources in the western United States. Given the limited water supply and the longstanding conflict over allocations of the Colorado River, data centers may irreversibly damage the environment in the arid west.¹⁶⁷ To respond to this issue, this Section proposes a four-part framework focused on addressing the ineffective and inconsistent principles within prior appropriation law to tackle the growing strain that data center development places on Western states' water resources. First, the priority of use doctrine must be removed as a central principle of the prior appropriation framework because it conflicts with the core objective of ensuring that scarce water resources are used beneficially and efficiently.¹⁶⁸ Second, the beneficial use doctrine must be strengthened through the addition of efficiency-based factors for courts to balance in determining whether an individual or entity is properly consuming their allocation in a manner that avoids "unnecessary waste."¹⁶⁹ Third, to assist courts in this analysis, states should more rigorously enforce transparency requirements governing data center water use prior to construction, thereby reinforcing water's status as a publicly regulated resource rather than a purely private entitlement.¹⁷⁰ Finally, these reforms should be applied consistently across states that

165. See *United States v. Alpine Land & Reservoir Co.*, 697 F.2d 851, 855 (9th Cir. 1983) (discussing the changing environmental conditions); see also Neuman, *supra* note 20, at 923 (discussing how states have struggled with the "vagueness and generosity of the doctrine").

166. See Nicoletti, Ma & Bass, *supra* note 16.

167. See Temple, *supra* note 42.

168. See *Delta Canal Co.*, 420 P.3d at 1058–59.

169. See *id.* at 1059.

170. See Diane K. Brownlee, *The Public Vote in the Game of Water Wars: An Unquenchable Thirst to Define and Implement "Public Values" in Western Water Laws*, 70 U. MO.-KANSAS CITY L. REV. 647, 661 (2002) (discussing that "water is a public resource, and that all people should have a say in how the water is used regardless of whether they own a vested property interest in that water").

share interconnected water sources to prevent uneven and unsustainable allocations.¹⁷¹

A. Recentering Prior Appropriation Law on the Beneficial Use Doctrine

To combat water scarcity, prior appropriation law must enforce principles consistent with beneficial use rather than priority of use. Beneficial use must be fully and clearly defined to avoid any judicial ambiguity that may worsen the water crisis.¹⁷² Although prior appropriation law was introduced during a period when Western water scarcity was less severe than it is today, water law, managing an ever-changing natural resource, has not experienced a significant change in its core principles since its initial creation.¹⁷³ As water supplies become increasingly limited, these principles must adapt in order to protect both the environment and the communities that depend on it while still supporting environmentally conscious technological development.¹⁷⁴

To properly combat data center water consumption's impact on communities and their water supply, the beneficial use doctrine must be recentered as the "touchstone" of Western water law in practice.¹⁷⁵ In doing so, critical factors should be listed as elements to be balanced to determine beneficial use. By enforcing a balancing test, the judiciary will be able to apply clearly defined elements that allow for flexibility to account for changing environmental conditions.¹⁷⁶ Such factors include: (1) benefits of consumption, (2) negative externalities imposed on the environment and nearby communities due to consumption, (3) the efficiency of such consumption and whether there are more efficient methods available that do not significantly inhibit the benefits, and (4) public opinion.¹⁷⁷ Combined, these elements account for the benefits

171. See Bennett L. Bearden & Caleb T. Anderson, *Equitable Apportionment: The Wave of the Future in Interstate Water Disputes*, ALA. WATER INST. (Aug. 2, 2024), <https://awi.ua.edu/2024/08/02/equitable-apportionment-the-wave-of-the-future-in-interstate-water-disputes/> [https://perma.cc/D7U9-JMYE] (discussing how "interstate water availability increasingly becomes an issue due to a changing climate and resource demands").

172. See Hall, *supra* note 105, at 27 (finding that the vague understanding of the beneficial use doctrine has left "the concept up to judiciary discretion").

173. See *id.* at 31 (discussing the need to adapt prior appropriation law to account for the ever-changing conditions brought on by climate change).

174. See *id.*; Campbell, *supra* note 42 (warning that "[o]veruse [of water] threatens to dry up this critical American artery"); see also Hall, *supra* note 105, at 31.

175. See *Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1059.

176. See Hall, *supra* note 105, at 27.

177. See Lee & West, *supra* note 13 (discussing the costs, benefits, and environmental risks of data centers, suggesting such factors would be especially relevant in evaluating beneficial use); see also Yañez-Barnuevo, *supra* note 158; Brownlee, *supra* note 170, at 661.

provided by smarter technology while simultaneously scrutinizing the real-world impacts of water use. The application of this test demonstrates that the technological benefits provided by data centers are outweighed by the availability of more efficient, less wasteful cooling methods and the growing societal outrage of a public resource being taken from the community.¹⁷⁸ This balancing test will ensure that each critical aspect of water consumption is properly assessed, inherently providing western states with effective tools to manage the local water supply during the dire water crisis.¹⁷⁹

B. Importance of the “Amount of Use”

Furthermore, the definition of the beneficial use doctrine should not rely on the “type of use” but should instead prioritize the “amount of use.”¹⁸⁰ Throughout their analysis, it appears as if the courts’ inquiries ends upon discovering that the “type of use,” such as municipal, industrial, or domestic, has previously been recognized as a beneficial use.¹⁸¹ However, the most significant component of the beneficial use doctrine is its aim to promote efficient use of a limited resource.¹⁸² To strengthen these principles throughout the court’s application, the proposed statute should provide examples regarding what is considered a reasonable “amount of use” versus what is considered unreasonable. Providing such examples would provide courts and state agencies with enhanced guidance rather than ambiguous statutory language currently in place.¹⁸³ Furthermore, the beneficial use definition should include a discussion on the purpose of the doctrine itself, as this greatly assists in a court’s statutory interpretation.¹⁸⁴ As found in a few cases, the beneficial use doctrine was intended to protect the limited resource that is water, aiming to promote only uses that represent an efficient and reasonable use of a limited supply.¹⁸⁵ Since this central goal has not been made apparent

178. See Lee & West, *supra* note 13; see also Shivaram, *supra* note 44.

179. See Nicoletti, Ma & Bass, *supra* note 16 (highlighting data center consumption in the region that needs water the most).

180. *Delta Canal Co.*, 420 P.3d at 1058.

181. See *Mont. Trout Unlimited v. Mont. Dep’t of Nat. Res. & Conservation*, 2025 MT 1, 420 Mont. 85, 561 P.3d 995,1002.

182. See *Delta Canal Co.*, 420 P.3d at 1059 (discussing that, within beneficial use, it is critical for “the amount of water used [to] be reasonable”).

183. See Hall, *supra* note 105, at 27.

184. See *id.* at 31 (highlighting the California Supreme Court’s acknowledgement that it is significant to promote “the protection and conservation of the natural resources of the state” as this serves “a public purpose” (quoting *Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist.*, 45 P.2d 972, 988 (Cal. 1935))).

185. See *Delta Canal Co.*, 420 P.3d at 1058.

in practice, the addition of the doctrine's goal would provide essential guidance, ensuring that each party is better able to regulate and manage water.

C. The Weakness of the Priority of Use Doctrine

The priority of use doctrine often directly contradicts with a beneficial use assessment, weakening prior appropriation water law as a whole. For instance, the priority of use principle has become less effective with the introduction of purchasing and transferring senior rights to new holders, which data centers have taken advantage of.¹⁸⁶ As recognized in the *In re Gila* adjudication series, the judicial system has a difficult time protecting those with senior rights in light of such new developments.¹⁸⁷ While tribal rights would not be affected by the proposed solution, their persistent difficulty in protecting their water supply exemplifies the weakness of the doctrine.¹⁸⁸ To realign the prior appropriation framework with its original goals, the priority of use principle must be excluded to account for the deteriorating water crisis in the West.¹⁸⁹ By allowing purchased senior rights to trump junior rights, regardless of beneficial use, prior appropriation law remains frozen in a framework that does not allow for the flexibility that is necessary in today's drought conditions.¹⁹⁰ Ultimately, disparity between the priority of use principle's original goal and its application in practice alongside the beneficial use doctrine demonstrates the need for its exclusion.¹⁹¹

186. See Singh, *supra* note 136; see also Behnampour, *supra* note 127, at 221–22; *Western Water Law: Understanding the Doctrine of Prior Appropriation*, UNIV. NEV., RENO EXTENSION, <https://extension.unr.edu/publication.aspx?PubID=3750> [https://perma.cc/JG3S-3ADN] (last visited Feb. 17, 2026) (stating that “senior rights may be bought to secure priority status”); Tim Drugan, *How a Boulder Court Case in the 1880s Shaped the West's Water Rights and Later Water Woes*, BOULDER REPORTING LAB (Feb. 16, 2023), <https://boulderreportinglab.org/2023/02/16/how-a-boulder-court-case-in-the-1880s-shaped-the-west-s-water-rights-and-later-water-woes/> [https://perma.cc/Z2QL-4W7Z] (finding that a negative effect of the prior appropriation system is that western “cities and large industries have systematically purchased senior water rights”).

187. See generally *In re General Adjudication of All Rights to Use Water in Gila River System and Source*, 127 P.3d 882 (Ariz. 2006).

188. See *Winters v. United States*, 207 U.S. 564, 567–77 (1908) (recognizing the unique nature of tribal water rights).

189. See *Delta Canal Co.*, 420 P.3d at 1058 (discussing the intended goals of the prior appropriation framework); Lee & West, *supra* note 13 (reporting on the significant negative externalities associated with data center construction); Nicoletti, Ma & Bass, *supra* note 16 (expressing concern regarding the water scarcity concerns in the West).

190. See Hall, *supra* note 105, at 31 (advocating for adapting the prior appropriation framework to account for the environment's changing conditions).

191. See *Delta Canal Co.*, 420 P.3d at 1058.

C. Transparency and Efficiency Through State Agency Oversight

Furthermore, to better assist states and courts with the task of ensuring reasonable consumption, state water agencies should enforce transparent reporting measures that require data centers to report their projected water consumption prior to construction, as well as their actual water consumption after construction, and continuously each year.¹⁹² Data centers are secretive regarding their water consumption and have frequently failed to provide data to states, even going so far as redacting information so as to not be publicly accessible.¹⁹³ To combat this failure to report, state agencies must impose strict reporting requirements prior to any individual or entity's water right being approved.¹⁹⁴ Enforcing transparency before a project even begins would override the lack of repercussions facing data centers in Texas that failed to respond to water data requests.¹⁹⁵ Furthermore, data centers should be prohibited from redacting water consumption in publicly available data or otherwise attempting to conceal this information from the public.¹⁹⁶ The general principle governing prior appropriation law is that nobody owns water, but rather that this is a resource for the people governed by the state.¹⁹⁷ By concealing data on a publicly governed resource, data centers do not respect this principle.¹⁹⁸ Altering water law regulations in order to promote transparency is, therefore, another aspect that would represent both the central aim of prior appropriation law and the changing conditions of water as a resource in the West.

Additionally, strictly enforcing reasonable water consumption that does not lead to "unnecessary waste" inherently suggests the need to find sustainable cooling methods.¹⁹⁹ Server liquid cooling has often been cited as a method of cooling data centers in a more sustainable manner.²⁰⁰ This method of cooling, while initially costlier than the traditional chiller method, leads to an increase in economic revenue and sustainability initiatives in the long-term. Given that AI will inevitably

192. See Beckler et al., *supra* note 56.

193. See *id.*

194. See Nicoletti, Ma & Bass, *supra* note 16 (demonstrating the failure of the Texas Water Development Board's request to complete "a water use survey to data centers," suggesting that regulation is necessary prior to construction).

195. See *id.*

196. See Beckler et al., *supra* note 56; see also Brownlee, *supra* note 170, at 861 (noting that "water is a public resource" and should be treated as such).

197. See Brownlee, *supra* note 170, at 861.

198. See Beckler et al., *supra* note 56.

199. See *Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1059.

200. See Yañez-Barnuevo, *supra* note 158.

continue to develop in the West, cooling methods should be employed that are sustainable for the long-term in order to protect the region's scarce resources.²⁰¹ As shown here, there are multiple methods to cool data centers that do not require a significant amount of water. Cities and states, as the rightful owners of water, should discuss and suggest sustainable cooling methods with proposed data center projects based on their local water supply.²⁰² Ultimately, promoting enhanced transparent consumption will allow for the changing environmental conditions in the West while reinforcing the beneficial use doctrine.²⁰³

D. The Need for Uniform Principles Across Interconnected Western Water Sources

While the application of western water law is governed by each individual state in the region, their connected use of similar water sources demonstrates their impact on each other and need for collaboration.²⁰⁴ This region is connected by water.²⁰⁵ For example, the Colorado River appropriation connects six states.²⁰⁶ However, each Western state has adopted different versions of prior appropriation law, leading to inconsistent regulations among states receiving allocations from the same sources.²⁰⁷ Rather than keeping states separate, state water agencies must collaborate across the region. For example, Colorado, New Mexico, Utah, Arizona, California, and Nevada all receive a significant allocation from the Colorado River Compact.²⁰⁸ Recently, Governor Gavin Newsom of California vetoed a proposed legislation that would have required data centers to transparently

201. See *id.*; *Cooling Water Efficiency Opportunities for Federal Data Centers*, U.S. DEPT. ENERGY, <https://www.energy.gov/femp/cooling-water-efficiency-opportunities-federal-data-centers> [https://perma.cc/MRN9-QBMQ] (last visited Feb. 10, 2026).

202. See Nicoletti, Ma & Bass, *supra* note 16 (discussing states having trouble without “more information for water planning”).

203. See Beckler et al., *supra* note 56; *Delta Canal Co.*, 420 P.3d at 1058.

204. See *Drought in the West*, NATURE CONSERVANCY (Nov. 4, 2021), <https://www.nature.org/en-us/what-we-do/our-priorities/protect-water-and-land/land-and-water-stories/water-is-life/> [https://perma.cc/4ZWE-JT5V] (finding that “[i]n the West, we are all connected by water”).

205. See *id.*

206. See Felicia Fonseca & Sunam Naishadham, *6 States That Depend on the Colorado River Have Agreed on a New Water-Sharing Model. California Is Still Holding Out*, FORTUNE (Jan. 31, 2023, at 06:06 ET), <https://fortune.com/2023/01/31/6-states-depend-colorado-river-have-agreed-new-water-sharing-model-california-holding-out/> [https://perma.cc/Q48K-JU3K].

207. See NAT'L AGRIC. L. CTR., *supra* note 83.

208. See Gokce Sencan & Brian Gray, *The Colorado River*, PUB. POL'Y INST. CAL. (March 2025), <https://www.ppic.org/publication/the-colorado-river/#:~:text=The%20principal%20E2%80%9Cupper%20basin%20%9D%20states,mainstem%2C%20which%20the%20states%20share> [https://perma.cc/Z2MJ-JLJV].

report their water consumption.²⁰⁹ Since California is recognized as a senior holder in the lower basin of the Colorado River, the failure of this legislation raises concerns regarding how potential changes in California's consumption will affect the other Colorado River Compact states.²¹⁰ California is also the largest consumer of the Colorado River; therefore, any changes in their policies or mismanagement of water allocation within the state have the potential to affect states such as Arizona, where the Colorado River supports 36% of the state's water supply.²¹¹ To account for similar connections across the region, regulation must be adopted that requires states to collaborate with those their consumption directly affects. Promoting such collaboration and transparency among states will have the potential to spur proper management of the region's water supply.

IV. CONCLUSION

Overall, the prior appropriation doctrine was initially created for water consumption to aid in economic gain, which data centers have been stealthily taking advantage of.²¹² States, such as Utah and Arizona for example, require those intending to hold a water right to prepare an application to be rigorously reviewed by the State Engineer, which inherently requires a level of transparency.²¹³ This further illustrates the principle that nobody owns water in the West; they simply receive the right to use their allocation for a beneficial use.²¹⁴ Water is a critical resource in these regions and in order to properly review whether data centers' water consumption is reasonable and for a beneficial use, transparency and reporting should be required prior to any project construction.²¹⁵ This Note recognizes the numerous benefits presented

209. See James, *supra* note 76.

210. See Sencan & Gray, *supra* note 208.

211. See *id.*; Sophia Dixon, *Where Does Our Water Come From?*, UNIV. ARIZ.: ENV'T (Aug. 20, 2024), <https://environment.arizona.edu/news/where-does-our-water-come> [<https://perma.cc/6LXX-M9PJ>].

212. See Neuman, *supra* note 20, at 975 (finding that western water law "has been instrumental in supporting and encouraging economic development and settlement of the arid West").

213. See *HEAL Utah v. Kane Cnty. Water Conservancy Dist.*, 2016 UT App 153, 378 P.3d 1246, 1250.

214. See Lawrence J. MacDonnell, *Transferring Water Uses in the West*, 43 OKLA. L. REV. 119, 127 (1990) ("[W]ater is a public resource, [] its use is intended to serve the broadest possible public good, and [] it should not be the basis for private profit except as results from direct beneficial use.").

215. See Beckler et al., *supra* note 56 (demonstrating the dangers of secrecy when consuming an enormous amount of water).

by data centers and the advancement of AI.²¹⁶ However, these benefits are often presented in an attempt to conceal the countless repercussions faced by communities who are unable to easily combat this injustice.²¹⁷

The West is heading towards an irreversible drought.²¹⁸ Rather than waiting until this shortage occurs, this Note proposes to take precautionary steps in order to protect the future of the limited water supply. As discussed here, there are multiple cost-effective solutions that data centers can employ in order to promote a more water-conscious mission. However, the lack of real consequences for not implementing such measures has led to a deteriorating water crisis in the West.²¹⁹ By employing stricter water law regulations that ignite goals of efficient and sustainable consumption, states will reemphasize that water is a shared resource that must be used efficiently as to ensure nobody's right to water is infringed upon.²²⁰ By promoting transparency with these regulations, the public will also have the newfound ability to ensure that their water rights are respected by large technology conglomerates.²²¹ Ultimately, water is a public resource and should be treated as such in prior appropriation water law.²²² The growing water crisis in the West only further emphasizes this concern, highlighting that the time for change in water law is ever present in order to protect the future of the region's water supply.²²³

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216. See Lee & West, *supra* note 13 (reporting on the benefits of data centers).

217. See, e.g., Harris, Gerberg & Gosk, *supra* note 1.

218. See e.g., Temple, *supra* note 42 (reporting that the amount of groundwater drawn from the Tracy Segment basin is already "depleting the reservoir over the long term").

219. See Nicoletti, Ma & Bass, *supra* note 16.

220. See Neuman, *supra* note 20, at 926.

221. See *supra* Part I (discussing the protests against data center construction across the country, which is especially relevant as courts have considered whether a use is "socially desirable" when assessing beneficial use); see also *Delta Canal Co. v. Frank Vincent Fam. Ranch, LC*, 2013 UT 69, 420 P.3d 1052, 1058.

222. See Neuman, *supra* note 20, at 926.

223. See Nicoletti, Ma & Bass, *supra* note 16.

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