

The Price of Water is Catching Up to the Cost of Water

The structural repricing of senior water rights across North America

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Executive Summary

Water rights pricing across North America has undergone a structural repricing that is no longer cyclical or purely drought-driven. It is secular. Senior water rights in the Colorado Front Range have appreciated more than 3,700 percent since 1985. California's surface water index launched at \$306 per acre-foot in 2018, reached \$1,144 per acre-foot during the 2021 to 2022 megadrought, and has re-established a higher secular base.

Meanwhile, the physical cost of water delivery is accelerating. America's 20-year drinking water infrastructure deficit stands at \$625 billion; annual household water bills rose 5.1 percent in 2025, the steepest annual rise in five years; and federal funding covers only a fraction of the gap. Institutional capital has taken notice. Water Asset Management, Renewable Resources Group, and D.R. Horton (via Vidler) have all moved decisively.

This white paper documents the structural factors and quantifiable market data underpinning the convergence of the price and the cost of water and frames the institutional implications for senior water-right owners.

THE CENTRAL THESIS

The price of water rights is undergoing a structural, not cyclical, re-rating toward the true replacement cost of water delivery. Seniority is the premium attribute, and the gap between the two has only begun to close.

1. Water Rights Pricing Trends in North America

1.1 Colorado-Big Thompson: A Transparent Long-Run Series

The Colorado-Big Thompson Project, administered by Northern Water, provides a uniquely transparent long-run price series for senior trans basin water rights serving the Colorado Front Range, the fastest-growing water market in the western United States by unit price. According to [Northern Water's CBT Market Price Historical Data](#), per-unit prices (each unit equals one acre-foot at 100 percent quota) have compounded decisively since the mid-1980s.

YEAR	PRICE PER AF	YEAR	PRICE PER AF
1985	\$650	2018	\$28,600
2000	\$15,000	2019	\$47,662
2009	\$7,000	2020	\$59,609
2013	\$15,065	2022	\$65,946
2014	\$21,600	2023	\$67,000
2015	\$25,659	2024	\$58,772
		2025	\$57,487

Price per unit huddled under \$3,000 for decades, then between \$7,000 and \$15,000 through the mid-2010s. Per [Water Education Colorado \(April 2025\)](#), the 2013 to 2024 run represents an increase of nearly 345 percent. In a February 2024 auction, sellers of 90 CBT shares achieved approximately \$52,000 per acre-foot, with some rights (including associated fees) transacting above \$80,000 per acre-foot, per [CBS Colorado reporting](#).

The 2025 consolidated market price of \$57,487 per acre-foot represents approximately a 3,700 percent increase over the 1985 price of \$650 and an 8.2x increase from the 2013 trough of \$7,000, achieved within a single decade. A March 2026 water-market survey noted that [CBT units now trade at \\$52,000 to \\$85,000 per acre-foot](#) while agricultural water on the Colorado River commands merely \$30 per acre-foot, a 2,800-fold divergence for the same water molecule under different legal frameworks 300 miles apart.

1.2 California: The Nasdaq Veles California Water Index (NQH2O)

The [Nasdaq Veles California Water Index \(NQH2O\)](#) launched October 31, 2018 at \$306.56 per acre-foot, providing the first transparent weekly benchmark of California surface water spot prices across the five largest and most actively traded markets. The index is co-produced by Veles Water and WestWater Research, sourcing transaction data from the Waterlitix database.

- **Launch (Oct 2018):** \$306.56 per acre-foot. *Source:* [Veles Water Historical NQH2O](#).

- **2022 drought peak:** NQH2O reached an all-time high near \$1,144 per acre-foot in late June 2022, a 56 percent surge in the first half of 2022 alone. *Source: [GV Wire, Aug 2022](#).*
- **2023 correction:** South-of-Delta prices fell from ~\$1,600 per acre-foot during the 2022 drought to an average of \$170 per acre-foot in 2023. *Source: [WestWater Research via LinkedIn](#).*
- **2024 surge:** NQH2O surged over 120 percent YTD by mid-2024, with a full-year gain of approximately 116 percent. *Source: [Veles Water Investment Performance](#).*
- **2025 levels:** The index ranged from ~\$327 per acre-foot (July 2025 trough) to ~\$434 per acre-foot (August to September 2025). *Source: [Veles Weekly Report Archive](#).*
- **Early 2026:** Nasdaq Global Index Watch shows NQH2O at \$261.44 in late February 2026; FRED data confirm \$208.73 as of April 22, 2026. *Source: [Nasdaq Global Index Watch](#); [St. Louis Fed FRED](#).*

A UC Davis economic study published November 2025 found that California drought conditions push surface water prices up by \$487 per acre-foot, more than triple the cost during an average wet year, per [Water Education Foundation](#). The NQH2O trajectory illustrates both the structural upward repricing of 2018 to 2022 and the high volatility inherent in water assets, reinforcing the value of permanent entitlements over spot allocation trades.

1.3 Australia: The Murray-Darling Basin Reference Market

Australia's Murray-Darling Basin (MDB) is the world's most liquid and transparent water market and provides a leading-indicator reference for North American market evolution. The MDB distinguishes between **entitlements** (permanent rights, analogous to senior water rights) and **allocations** (annual spot use).

Per the [2024 Ricardo Water Markets Report](#), the total estimated value of major southern MDB entitlements on issue was A\$30.4 billion in 2023 to 2024, recovering to A\$31.9 billion in 2024 to 2025, per [Agri Investor \(August 2025\)](#). High-reliability entitlement prices in 2023 to 2024 ranged from \$3,975 per megaliter (Victoria Goulburn) to \$9,068 per megaliter (NSW Murray High Security). The Ricardo Entitlement Index has compounded at 8 percent per year since 2008 to 2009 and 17 percent per year since 2015 to 2016.

The MDB example is instructive: despite short-term allocation price volatility driven by rainfall, permanent entitlement values have held structural gains, with total market value exceeding A\$30 billion. This establishes a template for senior rights as a distinct institutional asset class.

1.4 Texas: Transactions and Municipal Wholesale Rates

Texas presents a more opaque market structure given the rule-of-capture doctrine governing groundwater. Key pricing data points:

- **Edwards Aquifer permits:** trade at \$460 to \$2,000 per acre-foot. *Source: [Water financialization survey](#).*
- **SAWS developed groundwater:** agreements referencing costs of \$1,999 per acre-foot. *Source: [AIPG-TX](#).*

- **Vista Ridge Project:** full delivered water cost of \$1,993 per acre-foot for San Antonio, including \$460 raw water purchase, \$1,146 infrastructure finance, \$191 electricity, and \$196 O&M. *Source:* [Baker Institute](#).

- **NTMWD wholesale rate:** \$4.14 per 1,000 gallons (\$1,350 per acre-foot equivalent) for FY2026; planned \$5 billion-plus in capital investments over 10 years driven by Dallas-Fort Worth growth. *Source:* [NTMWD Water Rates](#).

Demand across Texas is projected to outpace existing supply by 2030, per the Texas State Water Plan and [Community Impact \(January 2025\)](#).

2. The Cost of Water Versus the Price of Water

2.1 Infrastructure CapEx Need: AWWA Buried No Longer

In 2012, the American Water Works Association commissioned the landmark study *Buried No Longer: Confronting America's Water Infrastructure Challenge*, which determined that the U.S. must invest more than \$1 trillion over 25 years, growing to \$1.7 trillion over 40 years, just to maintain current service levels, per [WWEMA summary](#). This estimate was in 2012 dollars and does not account for inflation, climate adaptation, or demand growth.

2.2 EPA 7th DWINSA: \$625 Billion Over 20 Years

EPA's 7th Drinking Water Infrastructure Needs Survey and Assessment, published in 2023, determined that \$625 billion is needed over 20 years for pipe replacement, treatment upgrades, storage tanks, and related assets, a 32 percent increase over the 6th DWINSA estimate of \$472.6 billion, per [EPA DWINSA](#) and [ASDWA \(Sept 2023\)](#).

- **Distribution and transmission (pipe replacement/rehab):** \$422.9 billion.

- **Treatment infrastructure:** \$107 billion.

- **Storage:** \$56.1 billion.

- **Source (including water-rights purchases):** \$25.2 billion.

Combined with the \$630 billion needed for wastewater infrastructure per the 2022 Clean Watersheds Needs Survey, total U.S. water and wastewater infrastructure need exceeds \$1.25 trillion over 20 years, per [The Driller \(July 2024\)](#).

2.3 Residential Water Bill Trends

Per [Bluefield Research's March 2026 U.S. Municipal Water & Sewer Rate Index](#), which benchmarks 50 U.S. cities annually:

- **2025 increase:** U.S. household water and sewer bills rose 5.1 percent, the steepest annual increase in five years and a record in Bluefield's tracking.

- **Five-year cumulative (2020 to 2025):** +24.2 percent, well above general inflation over the same period.
- **Long-term trend:** Since 2000, prices for water, sewer, and trash collection services have risen 207 percent, compared with 93 percent for overall inflation over the same 25-year period.
- **Regional highs:** Northeast (\$147 per month combined) and West (\$143 per month) face the highest monthly household bills.

[Bluefield's January 2025 podcast](#) confirmed water rates rose 6.0 percent and wastewater 4.8 percent between 2024 and 2025 specifically. [Circle of Blue's annual survey](#) of 30 U.S. cities independently tracks these trends.

2.4 The Federal Funding Gap: IJA

The Infrastructure Investment and Jobs Act (2021) allocated \$55 billion for water infrastructure, described by [Troutman Pepper](#) and the [U.S. Senate JEC](#) as the single largest federal water infrastructure investment in U.S. history. However, \$55 billion over five years represents only 8.8 cents of every dollar of the \$625 billion 20-year drinking water need. The structural gap of \$570 billion-plus for drinking water alone will be bridged through rate increases, municipal debt, and increasingly, private capital in water assets.

THE COST-PRICE CONVERGENCE

Delivered water costs are rising at over 5 percent annually on a multi-decade baseline; senior water-right prices are compounding at multiples of that rate. Convergence is neither complete nor optional.

3. Structural Drivers of the Repricing

3.1 Colorado River Flow Reductions (2021 to 2026)

The Colorado River, backbone water supply for over 40 million people across seven U.S. states and two Mexican states, has experienced structural flow reduction. Since 2000, average annual flows have dropped to 12.3 million acre-feet from historical norms.

- **August 16, 2021:** Bureau of Reclamation declared the first-ever Colorado River shortage; Lake Mead at 1,067.8 feet (35 percent capacity); Arizona absorbed a 512,000 AF cut (18 percent of allocation); Nevada took a 21,000 AF cut. *Source: [Colorado Politics, Aug 2021](#); [CPR News](#).*
- **August 2022:** First-ever Tier 2a shortage declared; deeper Arizona cuts of 592,000 AF in 2023 (21 percent of annual allotment). *Source: [EDF](#).*
- **May 2023:** Lower Basin states agreed to conserve 3 million acre-feet through 2026 in exchange for \$1.2 billion in federal compensation. *Source: [Reuters](#).*
- **2024:** Cuts eased to Tier 1 (18 percent Arizona cut) due to improved snowpack. *Source: [AP News](#).*

- **April 2026:** System storage at approximately 36 percent of capacity; lowest snowpack on record now compounding long-term drought. *Source: [Bureau of Reclamation](#).*

Post-2026 operating guidelines are under active negotiation, with structural over-appropriation (the river has been legally allocated 20 percent more water than it carries in most years) driving permanent scarcity expectations.

3.2 California SGMA: Groundwater into a New Pricing Regime

California's [Sustainable Groundwater Management Act](#), passed in 2014, mandated for the first time that high- and medium-priority groundwater basins develop plans to achieve sustainability by 2040 to 2042. It created Groundwater Sustainability Agencies with authority to establish allocations, fees, and, critically, water markets.

- **SGMA cutback:** PPIC research estimates an average 16 percent cutback in groundwater use in the San Joaquin Valley.
- **Trading savings:** Enabling groundwater trading within GSAs could reduce SGMA compliance costs by 33 to 50 percent, per research discussed in a UC Berkeley ANR webinar. *Source: [UC Berkeley ANR SGMA webinar, Dec 2025](#).*
- **Indian Wells Valley:** California groundwater rights have reached \$2,130 per acre-foot.

SGMA transforms what was a free-access resource into a capped, tradeable property right, the same structural shift that preceded major entitlement price appreciation in Australia's MDB following its 1994 COAG reforms.

3.3 Aging Infrastructure

The average U.S. water distribution pipe has a useful lifespan of 75 to 100 years, per [American Water](#). Per [AMCS analysis \(March 2026\)](#), the average U.S. water-network pipe is now 45 years old; some cast-iron pipes date to the Civil War era. 2.1 trillion gallons of treated water are lost annually in the U.S. due to infrastructure breakdowns. [Circle of Blue \(Feb 2016\)](#) notes that the rate of needed pipe replacement will rise through 2035 as the largest post-WWII cohort enters senescence simultaneously.

3.4 Sunbelt Population Growth

U.S. Census data from [May 2024](#) confirms that Sunbelt states continue to lead the nation in population growth. Texas, Arizona, Nevada, and Florida, all facing intensifying water scarcity, are absorbing millions of new residents. Mid-sized Sunbelt cities grew at 1.5 percent annually in 2023, outpacing all other U.S. regions. [Inside Climate News \(Dec 2024\)](#) projects that by 2070, between 31 and 65 percent of counties facing water shortages will have substantial vulnerable populations exposed. NTMWD's service area in North Texas is projected to have higher water demand than supply by 2030.

3.5 Climate and Drought Data

[NOAA's Climate Prediction Center](#) confirmed that as of early April 2026, over 60 percent of the contiguous U.S. was experiencing drought conditions. Bureau of Reclamation April 2026 data confirms Colorado River system storage at just 36 percent of capacity. The [U.S. Drought Monitor](#) continues to show D2 to D4 drought across Arizona, Nevada, New Mexico, and southern California, the core Colorado River demand basin.

4. Investment Precedents and Market Comparables

4.1 Water Asset Management (WAM)

Water Asset Management LLC, founded in 2005, is the most established institutional pure-play water rights investor in the United States. Per [Bayshore Capital \(June 2025\)](#), WAM operates two distinct strategies: global water public equities (long-only listed water companies) and U.S. Southwest water resources and regenerative farmland (private equity). As of May 2025, [WAM's reported 13F AUM is \\$746.1 million](#). Private equity funds include Water Property Investor LP (\$226.7M), WPI II (\$167.6M), and WPI Emporia III Co-investment (\$77.3M, closed 2025).

Notable transactions: WAM paid \$100 million for 12,793 acres of farmland and groundwater rights in Arizona's McMullen Valley Basin in 2024, per [Tucson Star via Farmlandgrab \(Aug 2024\)](#). WAM also closed a \$112 million co-investment in a U.S. Southwest water and farmland asset in August 2024, per [IREI](#). Strategy: acquire farmland with attached water rights at discounted prices, modernize irrigation, hold for long-term water appreciation, position for urban transfers as Sunbelt imbalances intensify.

4.2 Vidler Water Resources: D.R. Horton Acquisition (2022)

In April 2022, **D.R. Horton, Inc.** (NYSE: DHI), America's largest homebuilder, agreed to acquire **Vidler Water Resources, Inc.** (Nasdaq: VWTR) at \$15.75 per share in cash, representing a total equity value of approximately \$291 million, per [HousingWire](#). The deal closed May 25, 2022, per [D.R. Horton press release](#). A homebuilder acquiring a water-rights operator is the defining signal: water supply is now a direct input cost for residential development, not merely a utility issue. The stated driver was a lack of adequate water supply in D.R. Horton's Sunbelt markets.

4.3 Renewable Resources Group

Los Angeles-based Renewable Resources Group manages one of the largest water-focused private equity funds globally. RRG's Sustainable Water Impact Fund I closed at \$927 million in 2020, per [Agri Investor \(March 2025\)](#). Per the [McKnight Foundation \(2022\)](#), the strategy is to purchase land and attendant water rights in California, Australia, and Chile, and optimize returns through improving water quality, quantity, and end use. In March 2025, RRG filed regulatory documents with the SEC for a successor fund.

4.4 Cadiz, Inc. (NASDAQ: CDZI)

Cadiz, Inc. is California's most prominent publicly traded water supply company. Cadiz controls 45,000 acres in California with a projected 2.5 million acre-feet of water supply, 220 miles of pipeline assets, and proprietary ATEC filtration technology, per the company's [Q3 2025 Investor Update](#). In Q3 2025, Cadiz's ATEC Water Systems subsidiary reported \$4.0 million in revenue (up 42 percent YoY), with 308 filtration systems shipped. Cadiz's 8.875 percent Series A Cumulative Perpetual Preferred Stock (CDZIP) provides institutional investors preferred-equity water exposure, per [Cadiz Q4 2025 dividend declaration](#).

5. Synthesis: The Structural Repricing Thesis

The convergence of evidence across sections 1 through 4 supports a single thesis: the price of water rights is undergoing a structural, not cyclical, re-rating toward the true replacement cost of water delivery. The critical dynamics:

- **1. Supply is permanently constrained.** Colorado River system storage at 36 percent with record-low snowpack, structural over-appropriation of 20 percent above average flows, and SGMA-mandated groundwater caps all reduce the quantity of legally available senior water.
- **2. Demand is geographically concentrated in scarcity zones.** Sunbelt cities growing at 1.5 percent-plus annually, urban water demand projected to exceed supply before 2030 in major Texas metros, and urban-agricultural transfer markets forming across Arizona and Nevada.
- **3. Infrastructure cost is accelerating.** A \$625 billion 20-year federal deficit, with only \$55 billion in IJIA funding, creates pressure on utility rate structures. Bluefield confirms bills rising 5.1 percent annually, a trajectory likely to continue.
- **4. Institutional price discovery is compressing the valuation gap.** WAM (\$746M AUM), RRG (\$927M), Cadiz (public comp), and Vidler's \$291M D.R. Horton transaction all establish institutional valuation precedents. Each narrows the bid-ask spread and raises the price floor.
- **5. Seniority is the premium attribute.** CBT units (trans basin, pre-1902 priority) trading at \$57,000 to \$85,000 per acre-foot versus spot agricultural water at \$30 per acre-foot on the same river system illustrates the legal seniority premium, which grows, not shrinks, as total available water declines.

6. Reference Table: Key Data Points

METRIC	VALUE	SOURCE
CBT price, 2000	\$15,000/AF	Northern Water
CBT price, 2023 peak	\$67,000/AF	Northern Water
CBT price, 2025	\$57,487/AF	Northern Water
NQH2O launch (Oct 2018)	\$306.56/AF	Veles Water
NQH2O all-time high (Jun 2022)	~\$1,144/AF	GV Wire
NQH2O (Apr 2026)	~\$208/AF	FRED / Nasdaq
MDB entitlement value (total)	A\$30.4B (2024)	Ricardo Water Markets
MDB NSW Murray HS entitlement	~\$9,000/ML	Ricardo 2024
AWWA 25-year infrastructure need	\$1 trillion-plus	AWWA Buried No Longer
EPA 7th DWINSA 20-year need	\$625 billion	US EPA
IJA water funding	\$55 billion	US Senate JEC
Bluefield 2025 rate increase	+5.1% (5-yr cumulative: +24.2%)	Bluefield Research
Colorado River system storage	36% (Apr 2026)	Bureau of Reclamation
Arizona shortage cut (2022)	512,000 AF (18%)	Bureau of Reclamation
WAM AUM	\$746.1M (May 2025)	AUM 13F
WAM Arizona farmland purchase	\$100M (2024)	Tucson Star / Farmlandgrab
RRG Sustainable Water Fund I	\$927M	Agri Investor
Vidler / D.R. Horton acquisition	\$291M / \$15.75/sh	D.R. Horton / HousingWire
Cadiz water supply	2.5M AF, 45,000 acres	Cadiz Inc.

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