Tapping Growth: New Catalysts for Investments in Water

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Reliable access to clean water has been a cornerstone of economic progress since the earliest water delivery systems emerged in ancient Mesopotamia 8,000 years ago.[1] Today, water remains vital not only for sustaining life, but also for the development of new technologies and industries. In our view, water infrastructure represents a compelling investment opportunity, fueled by new catalysts and emerging trends like water-intensive manufacturing, the shift to liquid cooling for artificial intelligence ("AI") data centers, and hydraulic fracturing in the energy sector. Below, we explore these trends, highlighting the case for the First Trust Water ETF (FIW).

A Thirst for Reshoring Semiconductor Manufacturing

The reindustrialization of the U.S. economy is set to dramatically increase water demand over the next several years, particularly for water-intensive industries such as semiconductor manufacturing. New chip fabrication facilities can consume as much as 10 million gallons of ultra-pure water daily to ensure contaminant-free silicon,[2] with roughly 1.5 gallons of water needed to produce each gallon of ultra-pure water.[3] Water is also a critical component for cooling and removing hazardous gases from these facilities.[4]

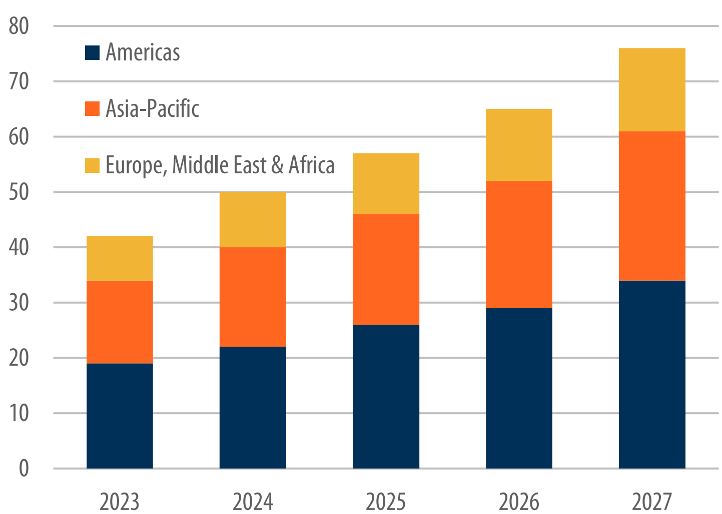
Today, 25 semiconductor facilities are being built or expanded throughout the United States, many of which are in water-stressed areas, such as Texas and Arizona.[5] In upstate New York, Micron is preparing the first phase of a $100 billion chip manufacturing facility, which may ultimately require an estimated 48 million gallons of water per day, sourced from Lake Ontario, 26 miles away.[6] As these projects and others proliferate, we anticipate substantial investments in water infrastructure will be required.

Data Centers are Hot…and Need Cooling

Advancements in generative AI have captured the world's attention, with chatbots like ChatGPT fielding over 2.5 billion daily requests.[7] To support the growing performance demands of AI, global data center capacity is expected to grow 52% from 2024-2027.[8] Keeping high-performance processors in data centers cool poses a significant challenge for traditional air-cooling systems, leading the industry to shift toward liquid cooling. According to JLL, hybrid cooling (70% liquid and 30% air) has become the standard thermal management strategy for new data centers.[9]

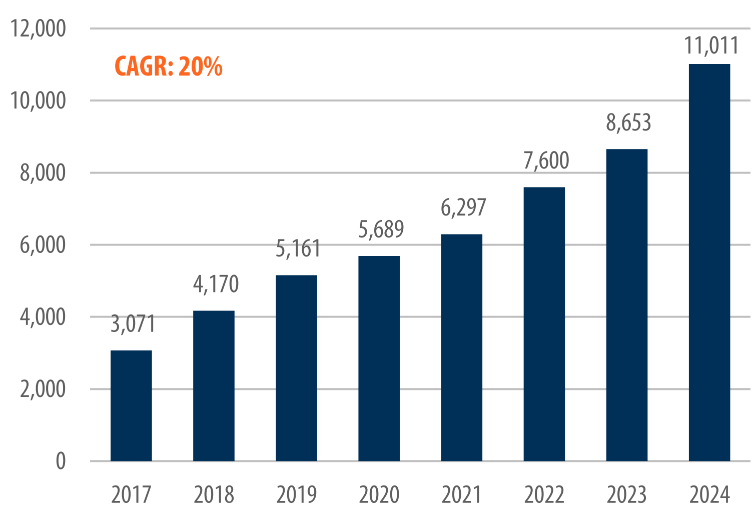
While water-intensity varies, a single large data center can consume up to 5 million gallons of water per day, equivalent to a town of 50,000 people.[10] Between 2017 and 2024, Google's water withdrawals—total water extracted from sources, including any later replenished— grew a rate of 20% per year, primarily driven by the need to cool data centers. As artificial intelligence applications expand, the need for more computational resources and water for cooling is expected to continue to rise for Google as well as the other hyperscalers. While efforts to reduce water demands are ongoing, the growing adoption of liquid cooling may create opportunities for companies involved in transporting, monitoring, and recycling water, in our opinion.

Chart 1: Forecasted Global Data Center Capacity (Gigawatts)



Source: JLL, 2025 Global Data Center Outlook. There is no guarantee that past trends will continue or forecasts will be realized.

Chart 2: Google Water Withdrawal (Millions of Gallons)



Source: Google Environmental Reports 2022-2025. **CAGR** is compound annual growth rate.

[1] Choga Mami, Wikipedia.
[2,4] National Institute of Standards and Technology (NIST), January 2025.
[3] G. Klusewitz and J. M. C. Viegh, "Water usage reduction in a semiconductor fabricator," 13th Annual IEEE/SEMI Advanced Semiconductor Manufacturing Conference. Advancing the Science and Technology of Semiconductor Manufacturing. ASMC 2002 (Cat. No.02CH37259), Boston, MA, USA, 2002, pp. 340-346.
[5] Z2 Data, October 2024.
[6] Syracuse.com, May 2025 and WRVO Public Media, August 2023.
[7] The Verge, July 2025.
[8,9] JLL, 2025 Global Data Center Outlook.
[10] Environmental and Energy Study Institute, June 2025.

Fracking Fuels Water Demand

Hydraulic fracturing ("fracking") also remains a significant driver of water infrastructure demand, in our view. Fracking—which involves injecting high-pressure water, sand, and chemicals into underground rock formations to extract oil and gas—and related innovations like horizontal drilling, have transformed U.S. energy production over the past decade. A single fracked well can consume between 1.5 and 16 million gallons of water.[11] Additionally, fracking produces "frac water," a toxic byproduct comprised of water and chemicals, which requires treatment via technologies like microfiltration and reverse osmosis. From water sourcing to treatment, transportation, and monitoring, fracking's water-intensive processes create substantial demand for water resources.

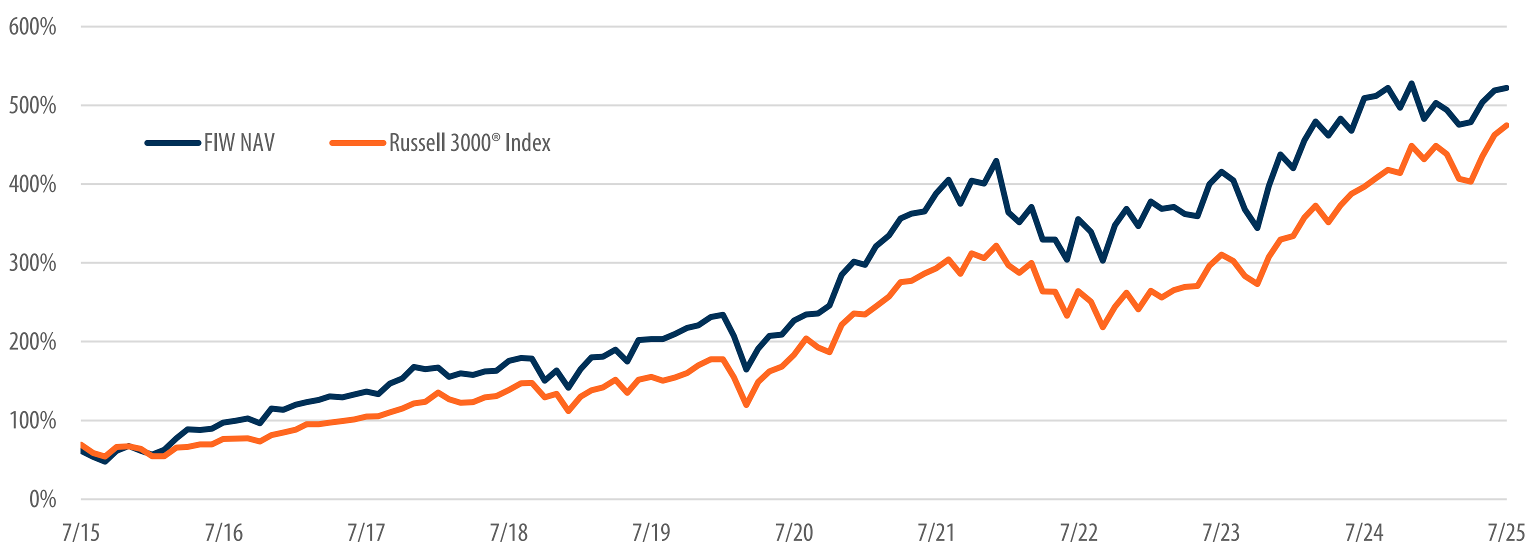
Bad Grades for U.S. Water Infrastructure

In light of these emerging trends—and to maintain high living standards—the need to invest in U.S. water infrastructure remains significant. The American Society of Civil Engineer's (ASCE) 2025 Report Card for America's Infrastructure assigned poor grades for water infrastructure, including a C- for drinking water, a D+ for wastewater, and a D for stormwater.[12] This reflects decades of underinvestment, with Congressional Budget Office data showing water infrastructure spending growing at just a 0.3% rate over the past 20 years.[13] The ASCE projects that $1.65 trillion of investments will be needed for drinking water, wastewater, and stormwater infrastructure from 2024-2033. With just $655 billion funded, the remaining $1 trillion funding gap represents the largest of all infrastructure sectors.

Capitalizing on Water Investments with FIW

In our view, the First Trust Water ETF (FIW) may offer investors a compelling opportunity to gain exposure to the water infrastructure theme. FIW tracks the ISE Clean Edge Water™ Index, which is comprised of 36 stocks focused on the drinking water and wastewater industries, including water distribution, infrastructure development, purification and filtration, as well as related services such as consulting, construction, and metering. Over the past decade, FIW has outperformed the Russell 3000® Index by 1.4% annually, despite its underweight allocation to the information technology sector, as of 7/31/2025.

Chart 3: FIW Cumulative Net Asset Value (NAV) Total Return



Data from 7/31/2015-7/31/2025. **Past performance is no guarantee of future results.**

Water is a resource that many take for granted today because large investments in water infrastructure were made several decades ago. But nothing lasts forever. According to the ASCE, the U.S. loses over 50 million Olympic sized swimming pools worth of water each year due to aging infrastructure.[14] Today, growing water scarcity in certain areas and rising water demand from new industries supports the need for large-scale investments in water infrastructure. In our view, these trends may provide growth opportunities for companies providing the goods and services to the water industry. We believe FIW may be a compelling tool for investors to capitalize on these trends.

[11]U.S. Geological Survey, U.S. Department of the Interior, July 2024.
[12,14]American Society of Civil Engineers (ASCE) 2025 Report Card for America's Infrastructure.
[13]Congressional Budget Office (with First Trust estimates)

Performance data quoted represents past performance. Past performance is not a guarantee of future results and current performance may be higher or lower than performance quoted. Investment returns and principal value will fluctuate and shares when sold or redeemed, may be worth more or less than their original cost. You can obtain performance information which is current through the most recent month-end by visiting www.ftportfolios.com.

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Performance Summary (%) as of 6/30/25

Fund Performance*	3 Month	YTD	1 Year	3 Year	5 Year	10 Year	Since Fund Inception
Net Asset Value (NAV)	7.58	6.26	9.05	15.30	14.91	13.99	10.57
Market Price	7.61	6.22	9.03	15.31	14.93	14.00	10.57
Index Performance**							
ISE Clean Edge Water™ Index	7.73	6.54	9.63	15.95	15.68	14.68	11.27
Russell 3000® Index	10.99	5.75	15.30	19.08	15.96	12.96	9.98

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Inception Date: 5/8/2007. Total Expense Ratio: 0.51%. Net Expense Ratio: 0.51%. Expenses are capped contractually at 0.60% per year, at least through April 30, 2026.

*__NAV__ returns are based on the fund's net asset value which represents the fund's net assets (assets less liabilities) divided by the fund's outstanding shares. **Market Price** returns are determined by using the midpoint of the national best bid offer price ("NBBO") as of the time that the fund's NAV is calculated. Returns are average annualized total returns, except those for periods of less than one year, which are cumulative. The fund's performance reflects fee waivers and expense reimbursements, absent which performance would have been lower.

**Performance information for each listed index is for illustrative purposes only and does not represent actual fund performance. Indexes do not charge management fees or brokerage expenses, and no such fees or expenses were deducted from the performance shown. Indexes are unmanaged and an investor cannot invest directly in an index.

FIW Overall Morningstar Rating™

★★★★★

As of 7/31/2025, among 112 funds in the Natural Resources category. This fund was rated 5 stars/112 funds (3 years), 4 stars/105 funds (5 years), 5 stars/89 funds (10 years) based on risk adjusted returns.^

^The Morningstar Rating™ for funds, or "star rating", is calculated for managed products (including mutual funds, variable annuity and variable life subaccounts, exchange-traded funds, closed-end funds, and separate accounts) with at least a three-year history. Exchange-traded funds and open-ended mutual funds are considered a single population for comparative purposes. It is calculated based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a managed product's monthly excess performance, placing more emphasis on downward variations and rewarding consistent performance. The Morningstar Rating does not include any adjustment for sales loads. The top 10% of products in each product category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars, and the bottom 10% receive 1 star. The Overall Morningstar Rating for a managed product is derived from a weighted average of the performance figures associated with its three-, five-, and 10-year (if applicable) Morningstar Rating metrics. The weights are: 100% three-year rating for 36-59 months of total returns, 60% five-year rating/40% three-year rating for 60-119 months of total returns, and 50% 10-year rating/30% five-year rating/20% three-year rating for 120 or more months of total returns. While the 10-year overall star rating formula seems to give the most weight to the 10-year period, the most recent three-year period actually has the greatest impact because it is included in all three rating periods. The Morningstar Rating™ information contained herein: (1) is proprietary to Morningstar;(2) may not be copied or distributed; and (3) is not warranted to be accurate, complete or timely. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information. Past performance is no guarantee of future results.

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You should consider a fund's investment objectives, risks, and charges and expenses carefully before investing. Contact First Trust Portfolios L.P. at 1-800-621-1675 or visit www.ftportfolios.com to obtain a prospectus or summary prospectus which contains this and other information about a fund. The prospectus or summary prospectus should be read carefully before investing.

RISK CONSIDERATIONS

You could lose money by investing in a fund. An investment in a fund is not a deposit of a bank and is not insured or guaranteed. There can be no assurance that a fund's objective(s) will be achieved. Investors buying or selling shares on the secondary market may incur customary brokerage commissions. Please refer to each fund's prospectus and Statement of Additional Information for additional details on a fund's risks. The order of the below risk factors does not indicate the significance of any particular risk factor.

Unlike mutual funds, shares of the fund may only be redeemed directly from a fund by authorized participants in very large creation/redemption units. If a fund's authorized participants are unable to proceed with creation/redemption orders and no other authorized participant is able to step forward to create or redeem, fund shares may trade at a premium or discount to a fund's net asset value and possibly face delisting and the bid/ask spread may widen.

Current market conditions risk is the risk that a particular investment, or shares of the fund in general, may fall in value due to current market conditions. For example, changes in governmental fiscal and regulatory policies, disruptions to banking and real estate markets, actual and threatened international armed conflicts and hostilities, and public health crises, among other significant events, could have a material impact on the value of the fund's investments.

A fund is susceptible to operational risks through breaches in cyber security. Such events could cause a fund to incur regulatory penalties, reputational damage, additional compliance costs associated with corrective measures and/or financial loss.

Depositary receipts may be less liquid than the underlying shares in their primary trading market and distributions may be subject to a fee. Holders may have limited voting rights, and investment restrictions in certain countries may adversely impact their value.

Equity securities may decline significantly in price over short or extended periods of time, and such declines may occur in the equity market as a whole, or they may occur in only a particular country, company, industry or sector of the market.

An index fund will be concentrated in an industry or a group of industries to the extent that the index is so concentrated. A fund with significant exposure to a single asset class, or the securities of issuers within the same country, state, region, industry, or sector may have its value more affected by an adverse economic, business or political development than a broadly diversified fund.

A fund may be a constituent of one or more indices or models which could greatly affect a fund's trading activity, size and volatility.

There is no assurance that the index provider or its agents will compile or maintain the index accurately. Losses or costs associated with any index provider errors generally will be borne by a fund and its shareholders.

Industrials and producer durables companies are subject to certain risks, including the general state of the economy, intense competition, consolidation, domestic and international politics, excess capacity and consumer demand and spending trends. They may also be significantly affected by overall capital spending levels, economic cycles, technical obsolescence, delays in modernization, labor relations, and government regulations.

Large capitalization companies may grow at a slower rate than the overall market.

Market risk is the risk that a particular security, or shares of a fund in general may fall in value. Securities are subject to market fluctuations caused by such factors as general economic conditions, political events, regulatory or market developments, changes in interest rates and perceived trends in securities prices. Shares of a fund could decline in value or underperform other investments as a result. In addition, local, regional or global events such as war, acts of terrorism, spread of infectious disease or other public health issues, recessions, natural disasters or other events could have significant negative impact on a fund.

A fund faces numerous market trading risks, including the potential lack of an active market for fund shares due to a limited number of market makers. Decisions by market makers or authorized participants to reduce their role or step away in times of market stress could inhibit the effectiveness of the arbitrage process in maintaining the relationship between the underlying values of a fund's portfolio securities and a fund's market price.

An index fund's return may not match the return of the index for a number of reasons including operating expenses, costs of buying and selling securities to reflect changes in the index, and the fact that a fund's portfolio holdings may not exactly replicate the index.

Securities of non-U.S. issuers are subject to additional risks, including currency fluctuations, political risks, withholding, lack of liquidity, lack of adequate financial information, and exchange control restrictions impacting non-U.S. issuers.

A fund and a fund's advisor may seek to reduce various operational risks through controls and procedures, but it is not possible to completely protect against such risks. The fund also relies on third parties for a range of services, including custody, and any delay or failure related to those services may affect the fund's ability to meet its objective.

A fund that invests in securities included in or representative of an index will hold those securities regardless of investment merit and the fund generally will not take defensive positions in declining markets.

The market price of a fund's shares will generally fluctuate in accordance with changes in the fund's net asset value ("NAV") as well as the relative supply of and demand for shares on the exchange, and a fund's investment advisor cannot predict whether shares will trade below, at or above their NAV.

Securities of small- and mid-capitalization companies may experience greater price volatility and be less liquid than larger, more established companies.

Trading on an exchange may be halted due to market conditions or other reasons. There can be no assurance that a fund's requirements to maintain the exchange listing will continue to be met or be unchanged.

Water companies can be significantly affected by the availability of water, the level of rainfall and the occurrence of other climatic and environmental events, changes in water consumption and water conservation. Water companies may also be negatively affected by changes in governmental regulation and spending, technological advances and increases in inflation, interest rates or the cost of raw materials. Water companies may be subject to liability for environmental damage, depletion of resources, conflicts with local communities over water rights and mandated expenditures for safety and pollution control.

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The **Russell 3000® Index** is comprised of the 3000 largest and most liquid stocks based and traded in the U.S.

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