

Summary Prospectus

July 25, 2025



TORTOISE AI INFRASTRUCTURE ETF

New York Stock Exchange: TCAI

Before you invest, you may want to review Tortoise AI Infrastructure ETF (the "Fund") prospectus, which contains more information about the Fund and its risks. The current Statutory Prospectus and Statement of Additional Information dated July 25, 2025, are incorporated by reference into this Summary Prospectus. You can find the Fund's Statutory Prospectus, Statement of Additional Information, reports to shareholders and other information about the Fund online at <https://etp.tortoisecapital.com/funds/tortoise-global-water-fund/#literature>. You can also get this information at no cost by calling the Fund (toll-free) at 855-TCA-FUND (855-994-4437) or by sending an e-mail request to info@tortoisecapital.com.

Investment Objectives

Tortoise AI Infrastructure ETF, a series of Tortoise Capital Series Trust (the “Fund”), seeks long-term capital appreciation with a secondary objective of current income.

Fees and Expenses of the Fund

This table describes the fees and expenses you may pay if you buy, hold and sell shares of the Fund. **You may pay other fees, such as brokerage commissions and other fees to financial intermediaries, which are not reflected in the table and example below.**

Shareholder Fees

(fees paid directly from your investment)

None

Annual Fund Operating Expenses

(expenses that you pay as a percentage of the value of your investment)

Management Fees	0.65% ⁽¹⁾
Distribution and Service (Rule 12b-1) Fees	0.00%
Other Expenses	0.00%
Total Annual Fund Operating Expenses	0.65%

- (1) The Fund has adopted a unitary fee structure. Under such structure, the Adviser is responsible for paying the ordinary operating expenses of the Fund from the management fee. Ordinary operating expenses do not include brokerage commissions and transaction costs, leverage/borrowing expense, securities lending fees and similar expenses. See “Investment Management — the Investment Adviser” at page 26 of the Fund’s Statutory Prospectus.

Example

This example is intended to help you compare the cost of investing in the Fund with the cost of investing in other funds. The example assumes that you invest \$10,000 in the Fund for the time periods indicated and then redeem all of your shares at the end of those periods. The example also assumes that your investment has a 5% return each year and that the Fund’s operating expenses remain the same. Although your costs may be higher or lower, based on these assumptions your costs would be:

One Year	Three Years	Five Years	Ten Years
\$66	\$208	\$362	\$810

Portfolio Turnover

The Fund pays transaction costs, such as commissions, when it buys and sells securities (or “turns over” its portfolio). A higher portfolio turnover rate may indicate higher transaction costs and may result in higher taxes when Fund shares are held in a taxable account at the shareholder level. These costs, which are not reflected in annual fund operating expenses or in the example above, affect the Fund’s performance. Because the Fund is newly offered, portfolio turnover information is not available.

Principal Investment Strategies

The Fund is a non-diversified series of Tortoise Capital Series Trust and is regulated as an “investment company” under the Investment Company Act of 1940, as amended (the “1940 Act”). The Fund is actively managed and does not seek to track the performance of an index. The Fund’s investment objectives to seek primarily long-term capital appreciation with a secondary objective of current income are non-fundamental.

The Fund seeks to achieve its objective by investing in companies that are expected to benefit from increasing AI demand and the resulting increase in demand for the specific technology and power infrastructure needs of AI. The Adviser believes that AI workloads demand unique technology, cooling, electrical and energy infrastructure requirements and seeks to identify companies that focus on, or are expected to focus on, providing technology and power infrastructure that meets the specific needs of AI.

Under normal circumstances, the Fund will invest at least 80% of its total assets (including assets obtained through borrowings for investment purposes) in equity securities of artificial intelligence (“AI”) infrastructure companies. AI infrastructure companies are (i) AI-capable data centers, (ii) technology infrastructure companies that provide AI-essential infrastructure to AI-capable data centers, and (iii) energy infrastructure companies that provide AI-essential infrastructure to AI-capable data centers. AI-capable data centers are facilities that, in the judgment of the portfolio managers based on fundamental research, have the equipment and resources to accommodate the intense computational demands of generative AI workloads. Technology infrastructure companies that provide AI-essential infrastructure to AI-capable data centers include companies that provide servers, data storage and memory, networking, electric equipment, HVAC equipment and similar equipment to AI-capable data centers, and contractors that design, install and maintain such systems. Energy infrastructure companies that provide AI-essential infrastructure to AI-capable data centers include those engaged in electricity generation, transmission, and distribution; natural gas production, pipelines and distribution; renewable power generation; uranium and nuclear energy production; local energy distribution; energy storage; and future energy sources. Technology infrastructure companies and energy infrastructure companies will be considered AI infrastructure companies for purposes of the Fund’s 80% investment policy if they have meaningful exposure to activities related to the provision of AI-essential infrastructure to AI-capable data centers, as measured by revenue derived from long-term assets, products, or services critical to AI output and/or meaningful capital expenditures devoted to the growth of such activities, in each case as determined by the portfolio management team based on fundamental research.

The Fund’s investment in equity securities may include both common and preferred stock. The Fund may invest in foreign securities and U.S. dollar denominated securities of foreign issuers. Such investments in securities of foreign issuers may include sponsored or unsponsored American Depositary Receipts (“ADRs”). ADRs are receipts that represent interests in foreign securities held on deposit by U.S. banks. The Fund may invest in portfolio companies without regard to their market capitalization.

The Fund may, but is not required to, use various hedging techniques, such as the buying and selling of options, including covered call options, futures, interest rate swaps or total return swaps to seek to mitigate one or more risks associated with investments in portfolio securities including market risk and interest rate risk, which, among other factors, could adversely affect market valuations of specific securities or certain sectors, or the value of the Fund’s overall portfolio. The Fund may also use derivatives, including options, futures and swaps, to seek market exposure or to generate income.

The Fund concentrates its investments (i.e., holds 25% or more of its assets) in the energy infrastructure, industrials and information technology industries.

Principal Risks

Risk is inherent in all investing, and you could lose money by investing in the Fund. A summary description of the principal risks of investing in the Fund is set forth below. Each risk summarized below is considered a “principal risk” of investing in the Fund, regardless of the order in which it appears. Before you decide whether to invest in the Fund, carefully consider these risk factors associated with investing in the Fund, which may cause investors to lose money. There can be no assurance that the Fund will achieve its investment objectives. An investment in the Fund is not a bank deposit and is not insured or guaranteed by the Federal Deposit Insurance Corporation (“FDIC”) or any government agency.

AI Infrastructure Risk. The Fund’s strategy of emphasizing investments in AI infrastructure companies means that the performance of the Fund will be closely tied to the performance of one or more industries that are expected to benefit from the growth of AI-capable data centers and related technology and energy infrastructure. Investing in companies that are expected to benefit from the same macro theme means that some of the Fund’s investments may be similarly affected by certain market, economic, political, or social developments. The risks of emphasizing AI-capable data centers and companies that provide critical infrastructure to such companies include a slower adoption rate of AI that results in lower capital spending on AI infrastructure; changes in the pace or focus of AI infrastructure spending; the development of large language models that require less AI infrastructure for similar output; and the emergence of alternative energy technology that generates reliable electricity.

Energy Infrastructure Concentration Risk. Companies in the energy infrastructure sector are subject to many risks that can negatively impact the revenues and viability of companies in this sector, including, but not limited to risks associated with companies owning and/or operating pipelines, gathering and processing assets, power infrastructure, propane assets, as well as capital markets, terrorism, natural disasters, climate change, operating, regulatory, environmental, supply and demand, and price volatility risks.

Technology Infrastructure Concentration Risk. Companies in the technology infrastructure sector are subject to many risks that can negatively impact the revenues and viability of companies in this sector, including, but not limited to risks associated with emerging technology that renders existing products or services obsolete, reliance on outdated technology, intellectual property theft, supply chain disruption, vulnerabilities to third-party vendors and suppliers, business interruption, difficulty in retaining skilled talent, and regulatory compliance.

Industrials Concentration Risk. Companies in the industrial sector face a variety of risks, including commodity price volatility, supply chain disruptions, potential obsolescence of technologies, economic downturns, and increasing competition. The sector is also under pressure to address climate change and transition to a low-carbon economy, which creates transition risk.

Counterparty Risk. Counterparty risk is the risk that the other party or parties to an agreement or a participant to a transaction, such as a broker, might default on a contract or fail to perform by failing to pay amounts due or failing to fulfill the obligations of the contract or transaction.

Cybersecurity Risk. Investment advisers, including the Adviser, must rely in part on digital and network technologies (collectively “cyber networks”) to conduct their businesses. Such cyber networks might in some circumstances be at risk of cyber-attacks that could potentially seek unauthorized access to digital systems for purposes such as misappropriating sensitive information, corrupting data, or causing operational disruption.

Derivatives Risk. Derivatives include instruments and contracts that are based on and valued in relation to one or more underlying securities, financial benchmarks, indices, or other reference obligations or measures of value. The use of derivatives could increase or decrease the Fund's exposure to the risks of the underlying instrument. Using derivatives can have a leveraging effect and increase fund volatility. A small investment in derivatives could have a potentially large impact on the Fund's performance. Derivatives transactions can be highly illiquid and difficult to unwind or value, and changes in the value of a derivative held by the Fund may not correlate with the value of the underlying instrument or the Fund's other investments. Many of the risks applicable to trading the instruments underlying derivatives are also applicable to derivatives trading. However, additional risks are associated with derivatives trading that are possibly greater than the risks associated with investing directly in the underlying instruments. These additional risks include, but are not limited to, illiquidity risk and counterparty credit risk. For derivatives that are required to be cleared by a regulated clearinghouse, other risks may arise from the Fund's relationship with a brokerage firm through which it submits derivatives trades for clearing, including in some cases from other clearing customers of the brokerage firm. The Fund would also be exposed to counterparty risk with respect to the clearinghouse. Financial reform laws have changed many aspects of financial regulation applicable to derivatives. Once implemented, new regulations, including margin, clearing, and trade execution requirements, may make derivatives more costly, may limit their availability, may present different risks or may otherwise adversely affect the value or performance of these instruments. The extent and impact of these regulations are not yet fully known and may not be known for some time.

Equity Securities Risk. Equity securities are susceptible to general stock market fluctuations and to volatile increases and decreases in value. The equity securities held by the Fund may experience sudden, unpredictable drops in value or long periods of decline in value. This may occur because of factors that affect securities markets generally or factors affecting specific industries, sectors, geographic markets, the equity securities of energy infrastructure companies in particular, or a particular company in which the Fund invests.

Foreign Securities Risk. Investments in securities of foreign companies involve risks not ordinarily associated with investments in securities and instruments of U.S. issuers, including risks relating to political, social and economic developments abroad, differences between U.S. and foreign regulatory and accounting requirements, tax risks, and market practices, as well as fluctuations in foreign currencies.

Currency Risk. When the Fund buys or sells securities on a foreign stock exchange, the transaction is undertaken in the local currency rather than in U.S. dollars, which carries the risk that the value of the foreign currency will increase or decrease, which may impact the value of the Fund's portfolio holdings and your investment. Foreign countries may adopt economic policies and/or currency exchange controls that affect its currency valuations in a disadvantageous manner for U.S. investors and companies and restrict or prohibit the Fund's ability to repatriate both investment capital and income, which could place the Fund's assets in such country at risk of total loss.

ADR Risk. ADRs are generally subject to the same risks as the foreign securities because their values depend on the performance of the underlying foreign securities. ADRs may be purchased through "sponsored" or "unsponsored" facilities. A sponsored facility is established jointly by the issuer of the underlying security and a depositary, whereas a depositary may establish an unsponsored facility without participation by the issuer of the depositary security. Holders of unsponsored ADRs generally bear all the costs of such depositary receipts, and the issuers of unsponsored ADRs frequently are under no obligation to distribute shareholder communications

received from the company that issues the underlying foreign securities or to pass through voting rights to the holders of the ADRs. As a result, there may not be a correlation between such information and the market values of unsponsored ADRs.

Hedging Risk. It is not possible to hedge fully or perfectly against any risk. While hedging can reduce losses, it can also reduce or eliminate gains or cause losses if the market moves in a different manner than anticipated by the Fund or if the cost of the derivative outweighs the benefit of the hedge. Hedging also involves the risk that changes in the value of the derivative will not match those of the holdings being hedged as expected by the Fund, in which case any losses on the holdings being hedged may not be reduced or may be increased. There can be no assurance that the Fund's hedging strategies will be effective or that hedging transactions will be available to the Fund. The Fund is not required to engage in hedging transactions at any given time or from time to time, even under a volatile market environment and the Fund may choose not to do so from time to time.

Illiquid Investments Risk. The Fund may be exposed to liquidity risk when trading volume, lack of a market maker, or legal restrictions impair the Fund's ability to sell particular securities or close call option positions at an advantageous price or in a timely manner. Illiquid investments may include restricted securities that cannot be sold immediately because of statutory and contractual restrictions on resale.

Liquidity Risk. The Fund may not be able to sell some or all of the investments that it holds due to a lack of demand in the marketplace or other factors such as market turmoil, or if the Fund is forced to sell an illiquid asset to meet redemption requests or other cash needs it may only be able to sell those investments at a loss. In addition, the reduction in dealer market-making capacity in the fixed income markets that has occurred in recent years has the potential to decrease the liquidity of the Fund's investments. Illiquid assets may also be difficult to value.

Adviser Risk. The Fund may not meet its investment objective or may underperform the market or other mutual funds with similar strategies if the Adviser cannot successfully implement the Fund's investment strategies.

General Market Risk. The Fund is subject to all of the business risks and uncertainties associated with any mutual fund, including the risk that it will not achieve its investment objective and that the value of an investment in its securities could decline substantially and cause you to lose some or all of your investment. The Fund's net asset value ("NAV") and investment return will fluctuate based upon changes in the value of its portfolio securities. Certain securities in the Fund's portfolio may be worth less than the price originally paid for them, or less than they were worth at an earlier time.

Covered Call Option Risk. If the Fund writes a covered call option, during the option's life the Fund gives up the opportunity to profit from increases in the market value of the security covering the call option above the sum of the premium and the strike price of the call, but retains the risk of loss should the price of the underlying security decline. Moreover, the writer of an option has no control over the time when it may be required to fulfill its obligation as a writer of the option.

Preferred Stock Risk. A preferred stock is a blend of the characteristics of a bond and common stock. It may offer a higher yield than common stock and has priority over common stock in equity ownership, but it does not have the seniority of a bond and, unlike common stock, its participation in the issuer's growth may be limited. Although the dividend on a preferred stock may be set at a fixed annual rate, in some circumstances it may be changed or passed by the issuer. Preferred stock generally does not confer voting rights.

Mid-Cap and Small-Cap Companies Risk. Mid-cap and small-cap companies may not have the management experience, financial resources, product or business diversification and competitive strengths of large cap companies. Therefore, these securities may have more price volatility and be less liquid than the securities of larger, more established companies.

Tax Risk. The Fund has elected to be, and intends to qualify each year for treatment as, a “regulated investment company” under the U.S. Internal Revenue Code of 1986, as amended (the “Code”). To maintain qualification for federal income tax purposes as a regulated investment company under the Code, the Fund must meet certain source-of-income, asset diversification and annual distribution requirements, as discussed in detail below under “Tax Consequences.”

Non-Diversified Fund Risk. Because the Fund is “non-diversified” and may invest a greater percentage of its assets in the securities of a single issuer, a decline in the value of an investment in a single issuer could cause the Fund’s overall value to decline to a greater degree than if the Fund held a more diversified portfolio.

Exchange-Traded Fund (“ETF”) — Related Risk

Shares May Trade at Prices Different than NAV Per Share. Disruptions to creations and redemptions, the existence of extreme market volatility or potential lack of an active trading market for shares of the Fund may result in shares trading at a significant premium or discount to NAV. If a shareholder purchases shares when the market price is at a premium to the NAV or sells shares when the market price is at a discount to the NAV, the shareholder may sustain losses.

Authorized Participant Concentration Risk. Only an authorized participant may engage in creation or redemption transactions directly with the Fund. A limited number of institutions act as authorized participants for the Fund. However, participants are not obligated to make a market in the Fund’s shares or submit purchase and redemption orders for Creation Units. To the extent that these institutions exit the business, reduce their role or are unable to proceed with creation and/or redemption orders and no other authorized participant steps forward to create or redeem, the Fund’s shares may trade at a premium or discount to the Fund’s net asset value and possibly face delisting and the bid/ask spread on the Fund’s shares may widen.

Market Maker Risk. The Fund faces numerous market 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 from these activities in times of market stress could inhibit the effectiveness of the arbitrage process in maintaining the relationship between the underlying values of the Fund’s portfolio securities and the Fund’s market price. The Fund may rely on a small number of third-party market makers to provide a market for the purchase and sale of shares. Any trading halt or other problem relating to the trading activity of these market makers could result in a dramatic change in the spread between the Fund’s net asset value and the price at which the Fund’s shares are trading on the exchange, which could result in a decrease in value of the Fund’s shares. This reduced effectiveness could result in Fund shares trading at a discount to net asset value and in greater than normal intraday bid-ask spreads for Fund shares.

Trading Issues Risk. Trading in Fund shares on the exchange may be halted due to market conditions or for reasons that, in the view of the exchange, make trading in shares inadvisable. In addition, trading in Fund shares on the exchange is subject to trading halts caused by extraordinary market volatility pursuant to the exchange’s “circuit breaker” rules. There can be no assurance that the requirements of Exchange necessary to maintain the listing of the Fund will continue to be met or will remain unchanged. The Fund may have difficulty maintaining its listing on the exchange in the event the Fund’s assets are small, the Fund does not have enough shareholders, or if the Fund is unable to proceed with creation and/or redemption orders.

Performance History

The Fund has not commenced operations and does not have a performance history.

Investment Adviser

Tortoise Capital Advisors, L.L.C. (the “Adviser”)

Portfolio Managers

The investment management of the Fund’s portfolio is the responsibility of the Adviser’s investment committee. The investment committee’s members are Brian A. Kessens, James R. Mick, Matthew G.P. Sallee, and Robert J. Thummel, Jr., all of whom share responsibility for such investment management and have each served as portfolio manager to the Fund since its inception in 2025.

Purchase and Sale of Shares

The Fund will issue (or redeem) shares to certain institutional investors (typically market makers or other broker-dealers) only in blocks of shares known as “Creation Units.” ETF Creation Unit transactions are typically conducted in exchange for the deposit or delivery of in-kind securities and/or cash constituting a substantial replication, or a representation, of the securities included in the relevant benchmark index. The Fund intends to effect redemptions for a combination of cash and in-kind securities. Individual shares may only be purchased and sold on a national securities exchange through a broker-dealer. You can purchase and sell individual shares of the Fund throughout the trading day like any publicly traded security. The Fund’s shares are listed on the New York Stock Exchange (the “Exchange”). The price of the Fund’s shares is based on market price, and because exchange-traded fund shares trade at market prices rather than NAV, the Fund’s shares may trade at a price greater than NAV (premium) or less than NAV (discount). Except when aggregated in Creation Units, the Fund’s shares are not redeemable securities.

Investors may incur costs attributable to the difference between the highest price a buyer is willing to pay to purchase shares of the Fund (bid) and the lowest price a seller is willing to accept for shares of the Fund (ask) when buying or selling shares of the Fund in the secondary market (the “bid-ask spread”). Recent information about the Fund, including its NAV, market price, premiums and discounts, and bid-ask spreads is available on the Fund’s website at <https://tortoisecapital.com/>.

Tax Information

Distributions made by the Fund may be taxable as ordinary income, or capital gains, unless you are a tax-exempt organization or are investing through a tax-advantaged arrangement, such as a 401(k) plan or individual retirement account. Any withdrawals made from such tax-advantaged arrangement generally will be taxable to you as ordinary income.

Payments to Broker-Dealers and Other Financial Intermediaries

If you purchase the Fund through a broker-dealer or other financial intermediary (such as a bank), the Fund and its related companies may pay the intermediary for the sale of Fund shares and related services. These payments may create a conflict of interest by influencing the broker-dealer or other intermediary and your salesperson to recommend the Fund over another investment. Ask your salesperson or visit your financial intermediary’s Web site for more information.