

Next Economy Select

December 31, 2023

Green Alpha[®]

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Investment Philosophy

Today's economy derives its most significant growth from innovative, high-performing businesses that actively develop and expedite solutions addressing critical systemic issues such as the climate crisis, resource degradation, inequality, and diseases. These companies represent the most promising investment opportunities for both safeguarding and increasing our clients' capital.

Green Alpha adheres to a straightforward philosophy: we actively seek out companies pioneering swiftly scalable and rapidly adaptable, economically competitive solutions.

Our investments seek to de-risk the global economy (which in turn reduces clients' long-term investment risks) by focusing on sectors and industries growing faster than underlying GDP.



Why Invest in Next Economy Select?

- Active research, stock selection, and portfolio mgmt
- Very low minimum purchase of 1 ETF share provides democratized access to institutional-quality investing
- Seeks long-term capital growth to preserve and grow purchasing power
- 45-65 global, market-leading companies developing solutions to core economic and environmental risks

Inception Date: March 31, 2013

Vehicles: AXS Green Alpha ETF (ticker NXTE) and Separately Managed Accounts

Research

Across portfolios, we aim to identify companies meeting the following criteria:

- They offer products and/or services that mitigate the risk profile of the global economy by providing solutions to pressing economic and environmental challenges.
- Companies allocating a significant portion of revenue to R&D, CapEx, and possessing more IP than their peers.
- Those led by shareholder-aligned, effective, and diverse executive teams and BODs with a record of increasing revenues and expanding profit margins, which in turn drives earnings growth.
- Companies with prudent capital allocation priorities and strong balance sheets.
- Those with shares trading at attractive valuations relative to proven and anticipated growth prospects.

Portfolio Construction

The Next Economy Select's objective is long-term capital appreciation via investing in a diverse set of high-conviction, market-leading Next Economy companies that have competitive moats protecting and growing market share.

Green Alpha's Next Economy Select portfolio provides democratized, low-minimum investment access to institutional-quality, innovation-focused investing.

Largest Positions

How the Next Economy Select portfolio is driving progress toward the Next Economy

Applied Materials *(Sector: Technology, Industry: Semiconductors)*

- Applied Materials is a global leader in providing manufacturing equipment, services, and software used to produce virtually every new chip, display screen, solar panel, advanced glass product, and other electronics devices.
- With expertise spanning silicon wafer fabrication to display panel sculpting to solar cell production, Applied Materials enables digital innovations in Big Data, transportation, healthcare, and more via its broad enabling technology portfolio powering diverse electronics supply chains.
- They have a robust intellectual property (IP) portfolio, with a focus on protecting key aspects of its technologies. The company holds more than 17,300 patents, making its IP portfolio one of the strongest in the industry—a result of its substantial investment in R&D, which amounts to billions of dollars each year.
- As members of RE100, they are targeting 100% renewable energy use globally by 2030 (currently at 70%), and they reached their interim goal of 100% renewable energy use in the U.S. in 2022.

Vestas Wind Systems *(Sector: Energy, Industry: Renewable Energy)*

- Vestas is a global leader in wind energy, designing, manufacturing, installing, and servicing onshore and offshore turbines.
- With over 173 gigawatts of installed wind turbine capacity globally, Vestas powers millions of homes and contributes significantly to renewable energy production. They hold the record for both the highest number of installed wind turbines (55,000+) and the most powerful onshore wind turbine in operation (the V236-15.0MW).
- Vestas continues to grow its large order backlog, now \$25 billion+, and its service order backlog is \$38 billion+. The sizeable combined order backlog translates to projected increased revenue for Vestas in the coming years.
- Vestas goes beyond just producing turbines. They offer a comprehensive range of services, including project development, construction, operation and maintenance, and asset optimization. Their global network of service technicians ensures consistent performance and maximizes the lifespan of wind farms. The average service contract duration is 10 years, providing a long runway of revenue transparency. They also provide data-driven insights and analytics to help customers optimize their energy production and make informed decisions.
- Vestas' board is 45% female and women serve on all committees.

IBM *(Sector: Technology, Industry: Software & Tech Services)*

- IBM is a leading driver of innovations mitigating global risks. Having divested from its legacy managed-infrastructure business, IBM has re-emerged as a Next Economy™ powerhouse. Areas of focus include:
 - Hybrid Cloud Infrastructure: IBM provides robust cloud computing solutions, competing with giants like Amazon Web Services and Microsoft Azure. Their offerings include hardware, software, and services to help businesses manage their data and applications across hybrid cloud environments.
 - AI and Machine Learning: IBM is a leader in the field of artificial intelligence, offering tools and platforms like Watson for various applications, including data analysis, customer service, and healthcare.
 - Security and Blockchain: IBM emphasizes data security and privacy, offering comprehensive security solutions and exploring the potential of blockchain technology for enhanced trust and traceability.

IBM, Taiwan Semiconductor, and CRISPR Therapeutics' Next Economy attributes are described on the following page.

Company Name	Weight
Applied Materials	4.90%
Vestas Wind Systems	4.62%
IBM	4.26%
Taiwan Semiconductor Manuf.	4.23%
CRISPR Therapeutics	3.88%
Lam Research	3.78%
ASML Holding	3.64%
Brookfield Renewable	3.62%
First Solar	3.51%
JinkoSolar Holding	3.30%
% of Portfolio	39.74%

Largest Positions *continued*

IBM *continued*

- IBM Quantum: One of the world's first and largest publicly accessible quantum computing platforms, offering access to over 20 quantum processors via its cloud platform, IBM Quantum Cloud.
- Qiskit: An open-source quantum software development kit, empowering developers and researchers worldwide to build and run quantum algorithms and applications.
- Focus on Scalability: Actively developing and testing new quantum processor architectures, like the Quantum System Two, which aims to achieve millions of qubits in the future.
- IBM believes these “can exponentially alter the speed and scale at which we can uncover solutions to complex problems. We’ve come to call this accelerated discovery.”
- Senior leadership is 23% female, including the Senior Vice President, Transformation and Operations, Chief Human Resources Officer, Senior Vice President, Legal and Regulatory Affairs, and General Counsel, and Senior Vice President and Chief Operating Officer, IBM Consulting. IBM is a longstanding leader on pay equity for women and minorities.

Taiwan Semiconductor Manufacturing Co. *(Sector: Technology, Industry: Semiconductors)*

- Taiwan Semiconductor Manufacturing Co (“TSMC”) is the world’s largest semiconductor foundry, providing advanced chip manufacturing and fabrication services to companies on a made-to-order basis. TSMC maintains a clear dominance where their specialized factories manufacture advanced custom chips for companies like Apple, NVIDIA, and Qualcomm.
- TSMC stands alone as the one foundry already operating at the 3nm node, the most advanced chip manufacturing process available anywhere in the world currently. No other competing fab comes close in leading-edge capability and capacity. Early adoption of pioneering techniques like extreme ultraviolet lithography (EUV) underpins this leadership.
- Many contest that TSMC stands as the most important company in all of technology due to their vital role as an enabler to virtually every semiconductor innovator pushing the performance envelope—those firms critically depend on TSMC to transform their chip visions into scaled reality.
- With over 90% of advanced global foundry market share, an unparalleled focus on sustaining the most capable fab infrastructure, and customers heavily reliant on their new node introduction cadence, TSMC's name goes nearly synonymous with "state of the art" among computing architects. Their operational prowess dominates the leading edge of possibility, and their work arguably underpins the entire modern economy.

Crispr Therapeutics *(Sector: Health Care, Industry: Biotech & Pharma)*

- CRISPR Therapeutics’ core focus areas:
 - CRISPR/Cas9 Gene Editing: They utilize the revolutionary CRISPR/Cas9 technology, which allows for precise editing of DNA, opening doors for treating genetic diseases and modifying cell functions for therapeutics.
 - Ex Vivo Therapies: They primarily utilize ex vivo therapies, where cells are extracted from a patient, edited outside the body, and then reintroduced, providing a personalized and potentially curative approach.
 - Diverse Pipeline: They are developing a broad range of therapies, including hemoglobinopathies like sickle cell disease and beta-thalassemia, oncology for various cancers, regenerative medicine, and rare diseases.
- Key Achievements and Milestones:
 - Exa-cel (CTX001): Their leading therapy for sickle cell disease and transfusion-dependent beta-thalassemia has conditional marketing authorization in some countries and continues to show promising results in clinical trials.
 - Partnerships : They actively collaborate with leading pharmaceutical companies and research institutions, including Vertex Pharmaceuticals, the University of California Berkeley, and Editas Medicine.
 - Investment in R&D: They continually invest in research and development, exploring new applications of CRISPR/Cas9 technology and expanding their pipeline of potential therapies.
- Women in executive leadership include the Chief Medical Officer, Head of Programs and Portfolio Management, and the Chief HR Office, and the leadership team has an above-average age spread of 31 years. The board is 22% female.

Please see the final page of this document for important disclosures about portfolio, benchmark, and characteristic information.

Macroeconomic Commentary

Our complete [2023, 2024, and the Road Ahead](#) review is available [here](#); the summary provided below aims to spark your curiosity to explore the comprehensive content and associated source materials.



In 2023, the dichotomy of our future became starker: a potential utopia or a daunting dystopia. Our path hinges on collective decisions, particularly in financial investments. Money, as a potent agent of change, directs economic growth. Where we choose to invest can either propel innovations that solve critical problems, fostering economic expansion and societal progress, or lead us toward detrimental outcomes. The key lies in aligning our financial resources with sustainable and innovative ventures that promise a brighter, richer, and more abundant, more equitable future. What were 2023's key milestones of hope and despair?

First: Despair. Key negative events in 2023 that affected and continue to pose economic and market risks

- **Climate Crisis:** Increased severity of climate events; high investment in fossil fuels both prolonging and causing further environmental damage; subsequent economic risks like insurance companies withdrawing from high-risk areas
- **Geopolitical Conflicts:** Escalation of global conflicts affecting economies and markets; significant wars include Israel-Hamas and Russia-Ukraine
- **American Political Landscape:** Potential impact of the 2024 U.S. Presidential election on environmental policies and global climate action
- **China's Economic Challenges:** China is facing a decline in foreign investments and economic growth due to high debt-to-GDP ratio, affecting global economic dynamics, but also incentivizing China to stabilize relations with the U.S.

What IS Working?

- **Renewable Energy Growth:** Significant increase in renewable energy adoption and electric vehicle (EV) use; advancements in solar technology and reduction in costs
- **Biotechnological Advances:** Gene editing, particularly CRISPR-Cas9, is showing potentially unlimited promise in medicine and agriculture
- **AI Integration:** AI's growing role in the economy and its impact on productivity and solving major issues
- **Market Conditions:** Improving environment for innovation-driven companies; shifts in investment patterns and potential for growth in sustainable technology sectors; some growth stocks appear undervalued

2024 Financial Outlook: Continued expensive money, geopolitical economic reshaping, and rapid technological advancement impacting investment and growth strategies

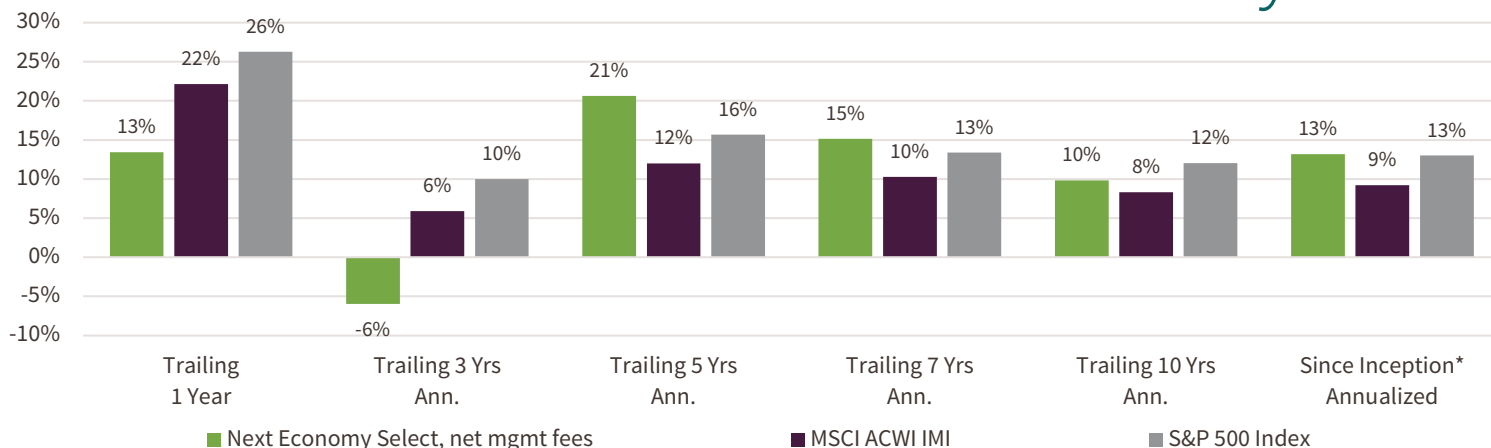
- The climate crisis is worsening—higher temperatures and more extreme weather are likely
- China taking a more collaborative stance with the West as its economy struggles

Key Unknowns

- Whether geopolitical conflicts spread or cool down
- If \$6 trillion in money market funds flows to stocks and other risk assets, that could fuel appreciation in share prices of growth companies

In the context of escalating global challenges, technological innovation emerges as a pivotal force for stability and economic progression. For fiduciaries, it's prudent to direct investment portfolios towards companies demonstrating resilience and innovation in sustainable production functions that can support long-term global growth. These firms are not only transforming their industries, but also show a robust capacity to flourish amid complex global dynamics. A strategic emphasis on such sustainability-focused enterprises highlights the critical role of technology in driving meaningful global change, lowering economic and portfolio risks, and aligning financial returns with positive impact.

Portfolio Performance & Commentary



For the full year 2023, Green Alpha's Next Economy Select portfolio returned 13.44% net of management fees, versus its benchmark, the MSCI All Country World Investable Market Index (MSCI ACWI IMI), which returned 22.15%.

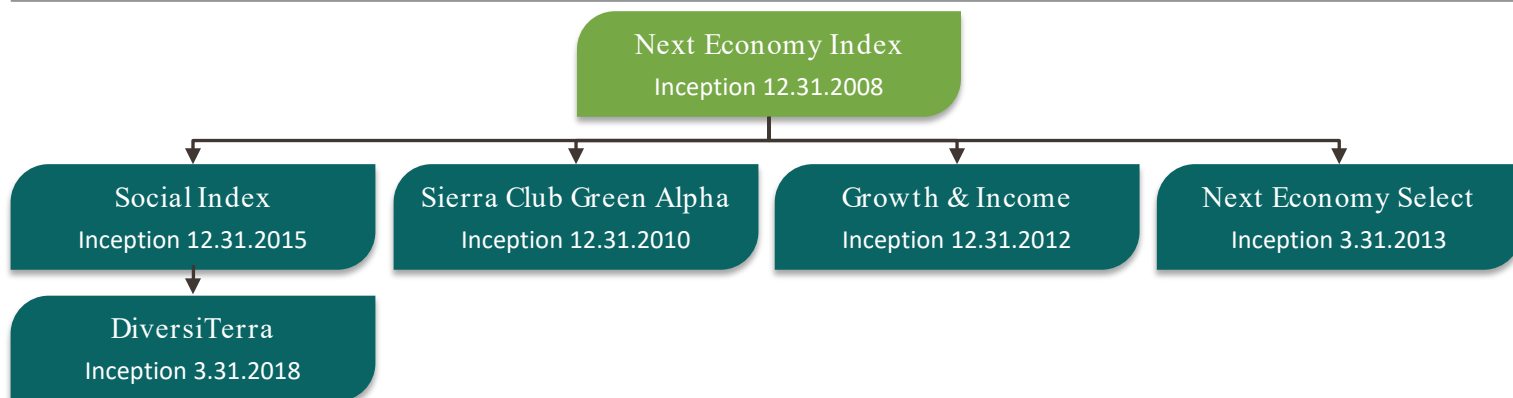
The sectors detracting the most from the strategy's returns were Energy and Health Care.

- Within Energy, solar exposure was the most significant detractor due to industry headwinds and the portfolio's overweight to the theme. Losses in solar were from multiple verticals, including power inverter makers, panel and module makers, and energy storage companies. Solar headwinds included the exponential rise in interest rates making solar projects at both the utility and homeowner scales appear less financially attractive, temporary supply chain challenges, and a narrative-driven lowering of market appetite for growth-oriented equities. Despite these dynamics, we continue to maintain a significant weighting in solar as it remains one of the world's fastest growing industries, is enjoying cost reductions leading to expanding margins, and continues to advance and the cheapest source of new electricity generation available in most of the world. The wind energy industry faced similar headwinds, though our stock picks only detracted marginally from returns.
- Health Care is the third largest sector in the portfolio and was the second most detracting from returns, with performance from specific stocks mixed. The gainers were the leading providers of genomic therapeutics, and an innovative, more disruptive genomic sequencing equipment provider, and the detractors included the world's two leading providers of mRNA vaccines and therapeutics, and a genomics therapeutics firm, along with two legacy genetic sequencing companies. Here we note that in the short term, equity markets can fail to recognize the longer-term potential of a large pipeline of promising solutions and can show a disconnect between positive business results and share price.

The strategy's best performing sectors were Technology and Real Estate.

- Technology was the sector contributing the most to portfolio returns, with manufacturers and upstream equipment providers leading, followed by chip designers. Thematically, interest in AI tended to favor the designers, although the essential practical work of foundries in making the actual chips was also recognized by markets; however, in this strategy we have more significant weighting on foundries and equipment makers. Following semiconductors, our exposure to security software, and cloud, AI, and blockchain services companies were the next most significant areas of contribution. Technology hardware companies were also strong, with most contributions coming from mobile communications and consumer electronics hardware. As a reminder, Green Alpha believes that technology presents a uniquely powerful solution set for addressing the world's top systemic risks, and in fact, tech addresses each of our [four pillars of the Next Economy](#).
- Green Alpha's exposure to real estate was uniformly positive for the year across subgroups, including data centers, office, and specialty REITs. While data center REITs performed well throughout the year, the other subcategories primarily rallied in Q4 as expectations for a plateau in interest rates became the dominant market narrative. On a fundamentals level, our REIT companies executed their business models exceptionally well throughout the year, even when their share prices didn't reflect it, as their sustainable, desirable spaces remained in high demand and their occupancy rates remained well above industry average. Green Alpha believes that our careful, selective REIT evaluation process results in a highly curated set of equities with excellent potential for continued stock appreciation, matched with an above-average dividend yield profile.

**Composite Inception: March 31, 2013. All returns presented above that are greater than 1 year in length have been annualized. Performance data quoted represents past performance. Past performance does not guarantee future results and current performance may be lower or higher than the data quoted. Please see the final page of this document for additional important disclosures.*



- **Highest conviction stocks, two investment vehicles:** democratizing access to leading Next Economy companies via an ETF and separately managed accounts, providing clients of all shapes and sizes with institutional-quality options
- **Fundamentals-driven:** the underlying quality of companies and the price paid for their shares are key drivers of LT returns
 - ✓ **High growth:** indicated by Sales Growth, and a decrease from Current P/E to Forward P/E as revenue and earnings grow
 - ✓ **Compelling valuation:** demonstrated by Price/Sales and Price/Book metrics relative to growth expectations
 - ✓ **Strong balance sheet and management execution:** conveyed by capital stewardship, LT Debt/Equity, Current Ratio
- **Diversified – we seek solutions wherever we can find them:** across the globe, in companies of all sizes, and every industry
- **Public equities, long-only:** most investors' largest asset class, so their largest opportunity for impact
- **Fossil fuel free since inception:** we never invest in companies that prospect, extract, refine, or transport fossil fuels, nor in fossil-fired utilities or internal combustion engine manufacturers

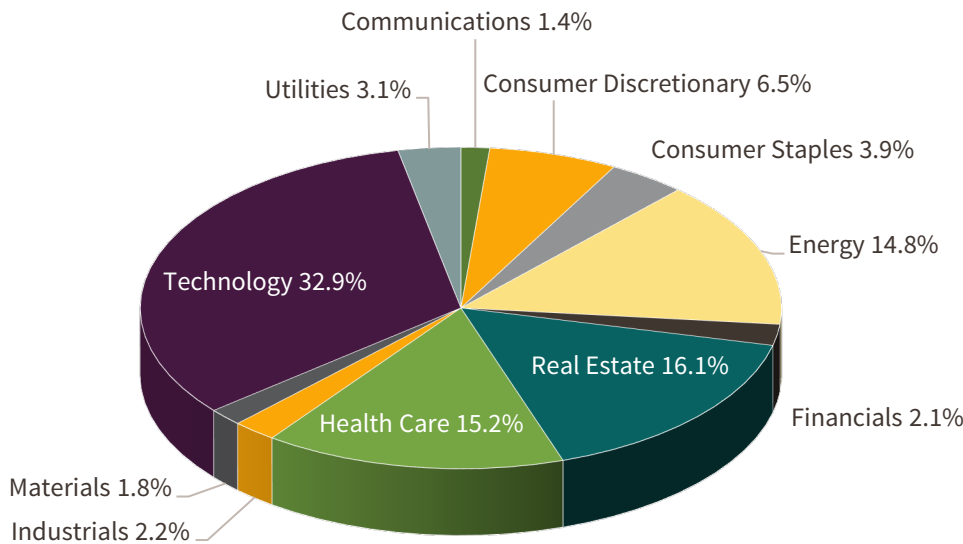
Characteristics	Next Economy Select	Benchmark: MSCI ACWI IMI (SPGM)	Next Economy Index	Social Index	Growth & Income	Sierra Club Green Alpha	DiversiTerra
# of Securities	66	2,639	150	114	36	46	58
Active Share vs MSCI ACWI IMI	96%	-	92%	94%	97%	96%	95%
Active Share vs Next Economy Index	63%	-	-	29%	71%	68%	61%
Sales Growth, Trailing 3-Yr	35%	15%	47%	63%	23%	39%	59%
P/E, Current	16.2	18.0	21.4	25.0	15.2	14.1	21.0
P/E, 1-Year Forward	18.6	17.1	23.9	27.1	15.2	16.0	25.4
Price/Sales	1.6	1.8	2.2	2.3	1.3	0.9	2.1
Price/Book	2.2	2.6	2.8	2.7	1.7	1.9	2.4
LT Debt/Equity	47%	156%	58%	58%	62%	60%	56%
Current Ratio	4.5	2.3	3.9	3.8	3.4	3.5	4.2
Dividend Yield	1.90%	2.11%	1.17%	1.02%	3.93%	1.97%	1.54%
Market Cap, Wtd Avg (\$B)	\$126.13	\$431.37	\$94.81	\$82.46	\$75.28	\$124.36	\$116.58
Market Cap, Median (\$B)	\$5.14	\$2.55	\$8.26	\$9.69	\$28.37	\$7.41	\$5.64
Turnover, Trailing 2-Yr Avg	12%	Not Available	25%	39%	16%	10%	28%
Beta, Trailing 3-Yrs	1.36	1.00	1.31	1.39	1.27	1.31	1.32
U.S.-Domiciled Companies	68%	59%	78%	87%	68%	72%	81%
% Revenue Derived in U.S.	46%	44%	49%	57%	46%	46%	55%

Characteristics are sourced from FactSet, based on a representative account and include cash. Please see additional disclosures on last page.

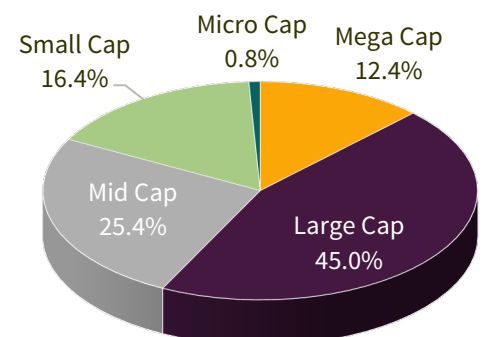
Portfolio Allocations

Our search for Next Economy companies is unconstrained. For the Next Economy Select portfolio, we seek solutions to systemic risks wherever they exist – across sectors, market caps, and geographies.

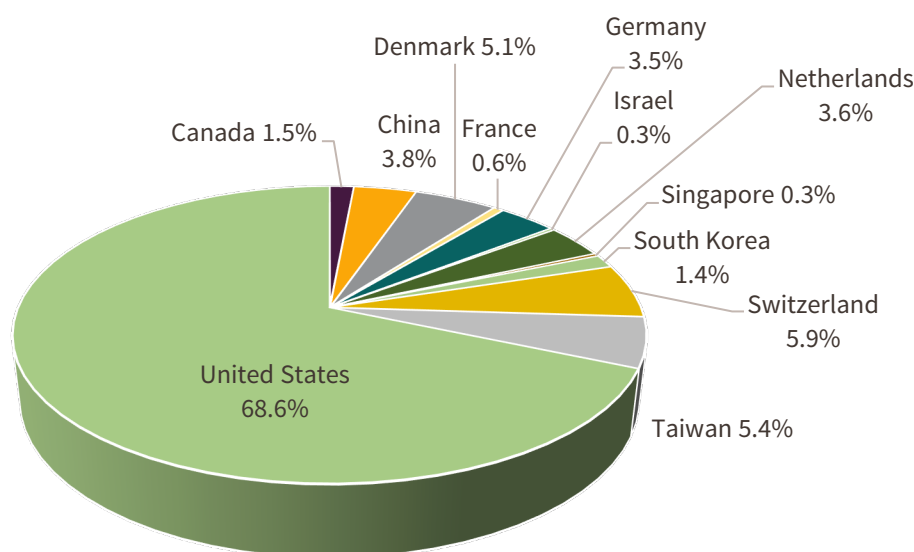
Sectors



Market Capitalizations



Companies' Main Headquarters



Allocation data is sourced from FactSet and is based on a representative account. The exception is the sector chart, which utilizes the Bloomberg Industry Classification Standard from Bloomberg. All charts on this page are shown as percent of equity. Please see the final page of this document for additional important disclosures.

Important Disclosures

- Green Alpha Advisors, LLC is a registered investment advisor. Registration as an investment advisor does not imply any certain level of skill or training.
- Green Alpha Investments is a trade name of Green Alpha Advisors, LLC. Green Alpha is a registered trademark of Green Alpha Advisors, LLC. Green Alpha Advisors also owns the trademarks to “Next Economy,” “Next Economics,” “Next Economy Portfolio Theory,” “Investing in the Next Economy,” and “Investing for the Next Economy.”
- Performance quoted throughout this document represents past performance. Past performance does not guarantee future results, and current performance may be lower or higher than the data quoted. Investment returns and principal will fluctuate with market and economic conditions, and investors may have a gain or loss when shares are sold.
- Beginning May 31, 2023, composite membership includes a minimum account size of \$100,000. Next Economy Select performance results reflect actual performance for a composite, net of actual management fees and transaction costs. Some assets managed in the Next Economy Select strategy within the composite receive a reduced fee from the standard fee schedule. Actual client returns experienced will vary from the composite returns based on a variety of factors, and we encourage you to ask about specific factors. Accounts are included in the composite for full-month periods under management with Green Alpha Investments. Next Economy Select performance results do not reflect the reinvestment of dividends and interest. Extreme periods of underperformance or outperformance are due to the concentrated nature of the strategy and the impact of specific security selection. Such results may not be repeatable.
- From the strategy’s inception through June 30, 2021, performance data are sourced from Bloomberg Finance L.P. Beginning June 30, 2021, the composite and all performance results are maintained and calculated by Green Alpha’s portfolio accounting system Advent APX.
- Actual advisory fees may vary among clients with the same investment strategy. Green Alpha’s standard fee schedules are available within Form ADV Part 2. For those details and additional legal information, please see information and files here: <http://greenalphaadvisors.com/about-us/legal-disclaimers/>.
- Green Alpha portfolios may invest in companies with small and medium market capitalizations, which may have more limited product lines, markets, and financial resources than larger companies. In addition, their securities may trade less frequently and in more limited volume than those of larger companies. Small or mid-cap stocks may be more volatile than those of larger companies and, where trading volume is thin, the ability to dispose of such securities may be more limited. Green Alpha portfolios may also invest in foreign domiciled companies. Investing in foreign securities may involve additional risks, including exchange-rate fluctuations, limited liquidity, high levels of volatility, social and political instability, and reduced regulation. Emerging markets are often more volatile than developed markets and investing in emerging markets involves greater risks. International investing may not be suitable for everyone. An investment in Green Alpha portfolios should be considered a long-term investment.
- The holdings identified throughout this document do not represent all the securities purchased, sold, or recommended for advisory clients. You may request a list of all recommendations made by Green Alpha in the past year by emailing a request to info@greenalphaadvisors.com. It should not be assumed that the recommendations made in the past or future were or will be profitable or will equal the performance of the securities cited as examples in this document.
- The MSCI All Country World Investable Market Index (ACWI IMI) captures large, mid, and small cap representation across 23 developed markets and 27 emerging markets countries. With more than 8,750 constituents, the index is comprehensive, covering approximately 99% of the global equity investment opportunity set. Investors cannot invest directly in this index.
- The SPDR MSCI Global Stock Market ETF (ticker: SPGM) seeks to provide investment results that, before expenses, correspond generally to the price and yield performance of the MSCI ACWI IMI. Investors can invest directly in SPGM.
- The S&P 500 Index is an unmanaged index of 500 common stocks chosen for market size, liquidity, and industry group representation. It is market-value weighted. The S&P 500 Index figures do not reflect any fees, expenses, or taxes. Investors cannot invest directly in this index.
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