



# ETF Category Report

## Equity: Thematic - Sustainability

As of 3/28/2024

Flows & Product Growth | Structure | Performance  
Risk | Composition | Fundamentals

The ETF Action Category Reports present category averages, category breakdown, and ETF level data using the ETF Action Classification System. For more information, please reach out to [team@etfaction.com](mailto:team@etfaction.com).

### ETF Action Category List

Alternative: Absolute Return - Event Driven	Equity: Global Ex-U.S. Large Cap - Value	Equity: U.S. Mid Cap - Growth
Alternative: Absolute Return - Managed Futures	Equity: Global Ex-U.S. Small   Mid Cap	Equity: U.S. Mid Cap - Value
Alternative: Absolute Return - Multi-Strategy	Equity: Global Large Cap	Equity: U.S. Small Cap - Blend
Alternative: Specialty - Volatility	Equity: Global Large Cap - Blend	Equity: U.S. Small Cap - Growth
Asset Allocation: Specialty - Miscellaneous	Equity: Global Large Cap - Growth	Equity: U.S. Small Cap - Value
Asset Allocation: Target Date - 2015	Equity: Global Large Cap - Value	Fixed Income: Municipal - Defined Maturity
Asset Allocation: Target Date - 2020	Equity: Global Small   Mid Cap	Fixed Income: Municipal - High Yield
Asset Allocation: Target Date - 2025	Equity: Region - Africa-Middle East	Fixed Income: Municipal - Intermediate
Asset Allocation: Target Date - 2030	Equity: Region - Asia-Pacific	Fixed Income: Municipal - Long
Asset Allocation: Target Date - 2035	Equity: Region - Asia-Pacific Ex-Japan	Fixed Income: Municipal - Short
Asset Allocation: Target Date - 2040	Equity: Region - Country Specific	Fixed Income: Municipal - Single State
Asset Allocation: Target Date - 2045	Equity: Region - Eurozone	Fixed Income: Taxable - Bank Loans
Asset Allocation: Target Date - 2050	Equity: Region - Latin America	Fixed Income: Taxable - Convertible
Asset Allocation: Target Date - 2055	Equity: Sector - Communication Services	Fixed Income: Taxable - Core
Asset Allocation: Target Date - 2060	Equity: Sector - Consumer Discretionary	Fixed Income: Taxable - Core Enhanced
Asset Allocation: Target Date - 2065+	Equity: Sector - Consumer Staples	Fixed Income: Taxable - Corporate
Asset Allocation: Target Risk - Aggressive	Equity: Sector - Energy	Fixed Income: Taxable - Defined Maturity
Asset Allocation: Target Risk - Conservative	Equity: Sector - Financials	Fixed Income: Taxable - Emerging
Asset Allocation: Target Risk - Global Macro	Equity: Sector - Health Care	Fixed Income: Taxable - Emerging USD
Asset Allocation: Target Risk - Growth	Equity: Sector - Industrial	Fixed Income: Taxable - Government Intermediate
Asset Allocation: Target Risk - Moderate	Equity: Sector - Materials	Fixed Income: Taxable - Government Long
Asset Allocation: Target Risk - Tactical	Equity: Sector - Real Estate	Fixed Income: Taxable - Government Short
Commodity: Focused - Agriculture	Equity: Sector - Technology	Fixed Income: Taxable - High Yield
Commodity: Focused - Energy	Equity: Sector - Utilities	Fixed Income: Taxable - Inflation Protected
Commodity: Focused - Industrial Metals	Equity: Thematic - Disruptive Tech	Fixed Income: Taxable - International
Commodity: Focused - Precious Metals	Equity: Thematic - Evolving Consumer	Fixed Income: Taxable - International USD
Commodity: Multi-Sector - Broad Market	Equity: Thematic - FinTech	Fixed Income: Taxable - Long-Term
Commodity: Specialty - Carbon Credits	Equity: Thematic - Health Innovation	Fixed Income: Taxable - Multisector
Commodity: Specialty - Shipping Freight	Equity: Thematic - Industrial Revolution	Fixed Income: Taxable - Preferred Stock
Cryptocurrency	Equity: Thematic - Infrastructure	Fixed Income: Taxable - Securitized
Currency	Equity: Thematic - Midstream & MLPs	Fixed Income: Taxable - Short-Term
Equity: Dev Ex-U.S. Large Cap - Blend	Equity: Thematic - Miscellaneous	Fixed Income: Taxable - Ultrashort
Equity: Dev Ex-U.S. Large Cap - Growth	Equity: Thematic - Multi-Sector	Non-Traditional: Buffer
Equity: Dev Ex-U.S. Large Cap - Value	Equity: Thematic - Natural Resources	Non-Traditional: Interest Rate Volatility
Equity: Dev Ex-U.S. Small   Mid Cap	Equity: Thematic - Precious Metals	Non-Traditional: Leverage   Inverse
Equity: Emerging Large Cap	Equity: Thematic - Sustainability	Non-Traditional: Long   Short
Equity: Emerging Small   Mid Cap	Equity: U.S. Large Cap - Blend	Non-Traditional: Option Overlay
Equity: Global Ex-U.S. Large Cap - Blend	Equity: U.S. Large Cap - Growth	Non-Traditional: Synthetic Income
Equity: Global Ex-U.S. Large Cap - Growth	Equity: U.S. Large Cap - Value	
	Equity: U.S. Mid Cap - Blend	

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# Overview & Structure

**Category:** Equity: Thematic - Sustainability

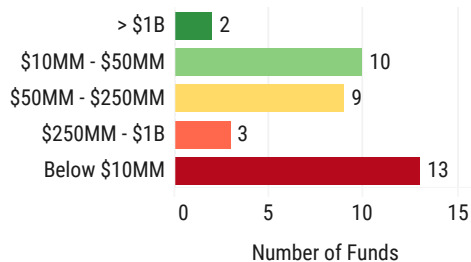


As of 3/31/2024

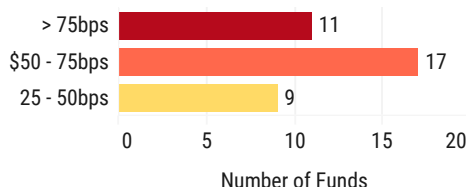
Fund Count	Assets Under Management	Average Expense Ratio	Average Lifespan	Average TTM Yield	Average Spread (%)	Average ADV (\$)
36	\$6.8B	0.62%	6.59 Years	1.17%	0.38%	\$3.41M

## Breakdown of Category Universe Ratings

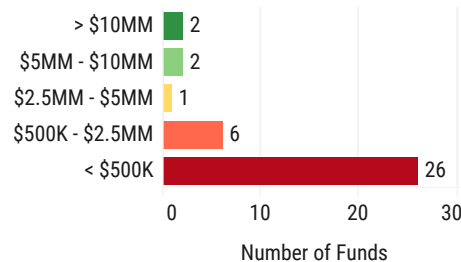
### Assets Under Management



### Expense Ratio



### Liquidity (\$ ADV)



## Top 10 Funds by Market Share

Ticker	Name	Inception	AUM	Expense Ratio	Distribution Yield (TTM)	Average Spread	ADV
ICLN	iShares Global Clean Energy ETF	6/24/2008	\$2,419.87M	0.41%	1.80%	0.07%	\$49.22M
TAN	Invesco Solar ETF	4/15/2008	\$1,279.92M	0.67%	0.11%	0.11%	\$52.26M
QCLN	First Trust Nasdaq Clean Edge Green Energy Index Fund	2/8/2007	\$781.51M	0.58%	0.95%	0.11%	\$7.35M
PBW	Invesco WilderHill Clean Energy ETF	3/3/2005	\$368.83M	0.66%	3.52%	0.14%	\$6.12M
SDG	iShares MSCI Global Sustainable Development Goals ETF	4/20/2016	\$301.74M	0.49%	1.81%	0.25%	\$1.17M
ACES	ALPS Clean Energy ETF	6/29/2018	\$227.72M	0.55%	1.59%	0.24%	\$3.92M
CNRG	SPDR S&P Kensho Clean Power ETF	10/22/2018	\$209.46M	0.45%	1.40%	0.14%	\$1.31M
ERTH	Invesco MSCI Sustainable Future ETF	10/24/2006	\$190.15M	0.62%	1.08%	0.27%	\$0.86M
FAN	First Trust Global Wind Energy ETF	6/16/2008	\$187.88M	0.60%	1.84%	0.21%	\$0.67M
SMOG	VanEck Low Carbon Energy ETF	5/3/2007	\$140.54M	0.61%	1.79%	0.65%	\$0.31M

## Top 10 Funds by Greatest Average Daily Traded Value (ADV)

Ticker	Name	Inception	AUM	Expense Ratio	Distribution Yield (TTM)	Average Spread	ADV
TAN	Invesco Solar ETF	4/15/2008	\$1,279.92M	0.67%	0.11%	0.11%	\$52.26M
ICLN	iShares Global Clean Energy ETF	6/24/2008	\$2,419.87M	0.41%	1.80%	0.07%	\$49.22M
QCLN	First Trust Nasdaq Clean Edge Green Energy Index Fund	2/8/2007	\$781.51M	0.58%	0.95%	0.11%	\$7.35M
PBW	Invesco WilderHill Clean Energy ETF	3/3/2005	\$368.83M	0.66%	3.52%	0.14%	\$6.12M
ACES	ALPS Clean Energy ETF	6/29/2018	\$227.72M	0.55%	1.59%	0.24%	\$3.92M
CNRG	SPDR S&P Kensho Clean Power ETF	10/22/2018	\$209.46M	0.45%	1.40%	0.14%	\$1.31M
SDG	iShares MSCI Global Sustainable Development Goals ETF	4/20/2016	\$301.74M	0.49%	1.81%	0.25%	\$1.17M
NETZ	TCW Transform Systems ETF	2/2/2022	\$133.51M	0.75%	0.65%	0.07%	\$0.99M
ERTH	Invesco MSCI Sustainable Future ETF	10/24/2006	\$190.15M	0.62%	1.08%	0.27%	\$0.86M
FAN	First Trust Global Wind Energy ETF	6/16/2008	\$187.88M	0.60%	1.84%	0.21%	\$0.67M

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# Flows & Category Growth

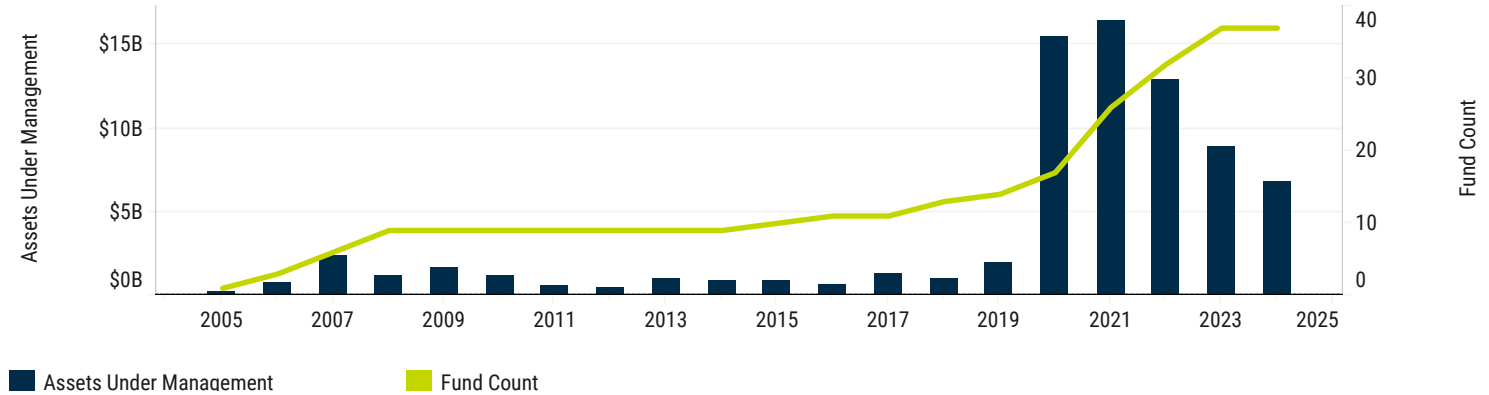


As of 3/31/2024

## Category: Equity: Thematic - Sustainability

Fund Count	Assets Under Management	1 Month Flows	3 Month Flows	Year To Date Flows	1 Year Flows	3 Year Flows	5 Year Flows
36	\$6.8B	(\$0.19B)	(\$0.86B)	(\$0.87B)	(\$2.36B)	(\$2.77B)	\$10.33B

### Category Growth



### Top 10 Funds by 1 Month Flows

Ticker	Name	Inception	AUM	1 Month	3 Month	Year To Date	1 Year	3 Year	5 Year
PBW	Invesco WilderHill Clean Energy ETF	3/3/2005	\$368.83M	\$10.6M	(\$1.3M)	(\$1.9M)	(\$111.5M)	(\$511.2M)	\$1,183.9M
NETZ	TCW Transform Systems ETF	2/2/2022	\$133.51M	\$5.2M	(\$25.6M)	(\$25.6M)	(\$15.3M)	\$93.9M	\$93.9M
CCSO	Carbon Collective Climate Solutions U.S. Equity ..	9/19/2022	\$26.55M	\$2.4M	\$3.8M	\$3.8M	\$7.1M	\$25.6M	\$25.6M
CLIA	Veridien Climate Action ETF Veridien Climate Ac..	5/8/2023	\$24.05M	\$0.6M	\$0.6M	\$0.6M	\$24.4M	\$24.4M	\$24.4M
RAYS	Global X Solar ETF	9/8/2021	\$6.80M	\$0.4M	\$0.4M	\$0.4M	\$5.0M	\$10.8M	\$10.8M
KSEA	KraneShares Rockefeller Ocean Engagement ETF	9/12/2023	\$2.67M	\$0.0M	\$0.0M	\$0.0M	\$2.5M	\$2.5M	\$2.5M
BECO	BlackRock Future Climate and Sustainable Econ..	8/3/2021	\$3.19M	\$0.0M	(\$1.0M)	(\$1.0M)	(\$1.0M)	(\$1.0M)	(\$1.0M)
BNE	Blue Horizon BNE ETF	12/8/2020	\$5.09M	\$0.0M	\$0.0M	\$0.0M	(\$2.0M)	(\$0.7M)	\$6.8M
CTEX	ProShares S&P Kensho Cleantech ETF	9/29/2021	\$4.67M	\$0.0M	\$0.0M	\$0.0M	\$0.0M	\$3.6M	\$3.6M
ETEC	iShares Breakthrough Environmental Solutions E..	3/28/2023	\$3.47M	\$0.0M	\$0.0M	\$0.0M	\$0.0M	\$0.0M	\$0.0M

### Bottom 10 Funds by 1 Month Flows

Ticker	Name	Inception	AUM	1 Month	3 Month	Year To Date	1 Year	3 Year	5 Year
ICLN	iShares Global Clean Energy ETF	6/24/2008	\$2,419.87M	(\$81.2M)	(\$334.7M)	(\$334.7M)	(\$1,125.7M)	(\$703.0M)	\$4,160.5M
QCLN	First Trust Nasdaq Clean Edge Green Energy Ind..	2/8/2007	\$781.51M	(\$51.7M)	(\$155.0M)	(\$157.1M)	(\$361.4M)	(\$785.2M)	\$1,422.3M
TAN	Invesco Solar ETF	4/15/2008	\$1,279.92M	(\$49.3M)	(\$200.8M)	(\$200.8M)	(\$151.0M)	(\$500.9M)	\$1,359.3M
CNRG	SPDR S&P Kensho Clean Power ETF	10/22/2018	\$209.46M	(\$5.7M)	(\$23.3M)	(\$23.3M)	(\$54.7M)	\$36.6M	\$351.3M
PBD	Invesco Global Clean Energy ETF	6/13/2007	\$122.18M	(\$4.9M)	(\$12.0M)	(\$12.0M)	(\$33.5M)	(\$89.3M)	\$214.2M
SDG	iShares MSCI Global Sustainable Development ..	4/20/2016	\$301.74M	(\$3.9M)	(\$38.7M)	(\$38.7M)	(\$111.9M)	(\$32.5M)	\$277.7M
FAN	First Trust Global Wind Energy ETF	6/16/2008	\$187.88M	(\$3.8M)	(\$15.4M)	(\$15.4M)	(\$60.4M)	(\$118.0M)	\$142.6M
GSFP	Goldman Sachs Future Planet Equity ETF	7/13/2021	\$43.50M	(\$3.1M)	(\$3.1M)	(\$3.1M)	(\$105.6M)	\$89.9M	\$89.9M
ACES	ALPS Clean Energy ETF	6/29/2018	\$227.72M	(\$2.8M)	(\$19.2M)	(\$19.2M)	(\$106.8M)	(\$229.0M)	\$505.1M
ERTH	Invesco MSCI Sustainable Future ETF	10/24/2006	\$190.15M	(\$2.1M)	(\$16.8M)	(\$16.8M)	(\$74.3M)	(\$93.4M)	\$74.3M

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# Category Performance

**Category:** Equity: Thematic - Sustainability



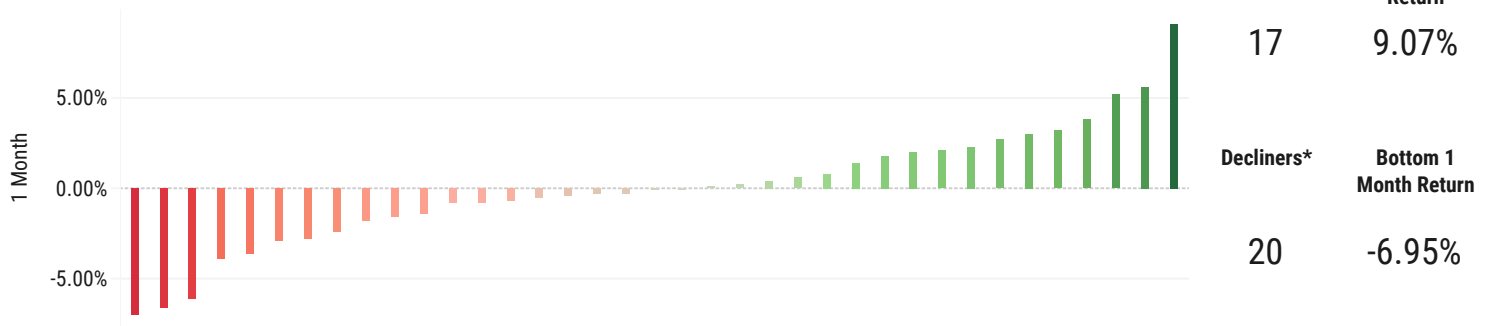
As of 3/31/2024

Fund Count	Average 1 Month Return	Average 3 Month Return	Average YTD Return	Average 1 Year Return	Average 3 Year Return**	Average 5 Year Return**	Average 10 Year Return**
36	0.02%	-4.82%	-6.19%	-12.86%	-6.68%	2.24%	0.90%

## Breakdown of Category Performance

\*\*Annualized

### 1 Month Returns



### Top 10 Performers: 1 Month

Ticker	Name	Inception	AUM	1 Month	3 Month	YTD	1 Year	3 Year*	5 Year*
PWER	Macquarie Energy Transition ETF	11/28/2023	\$5.58M	9.07%	1.22%	0.83%			
ECLN	First Trust EIP Carbon Impact ETF	8/19/2019	\$26.96M	5.58%	0.96%	1.78%	-0.74%	4.18%	
NETZ	TCW Transform Systems ETF	2/2/2022	\$133.51M	5.21%	20.48%	19.46%	37.25%		
NBCT	Neuberger Berman Carbon Transition Infrastructure ETF	4/6/2022	\$28.45M	3.80%	6.76%	5.97%	9.31%		
RNWZ	TrueShares Eagle Global Renewable Energy Income ETF	12/8/2022	\$2.29M	3.19%	-8.18%	-8.83%	-12.10%		
GSFP	Goldman Sachs Future Planet Equity ETF	7/13/2021	\$43.50M	3.05%	4.47%	3.12%	0.58%		
FIXT	Procore Disaster Recovery Strategy ETF	6/1/2022	\$2.57M	2.70%	12.82%	11.31%	32.90%		
GCLN	Goldman Sachs Bloomberg Clean Energy Equity ETF	2/8/2022	\$11.55M	2.32%	-3.73%	-4.37%	-14.16%		
VLCL	Virtus Duff & Phelps Clean Energy ETF	8/3/2021	\$6.59M	2.11%	-4.77%	-5.77%	-22.62%		
TEMP	JPMorgan Climate Change Solutions ETF	12/13/2021	\$23.85M	1.99%	7.29%	5.69%	8.09%		

### Bottom 10 Performers: 1 Month

Ticker	Name	Inception	AUM	1 Month	3 Month	YTD	1 Year	3 Year*	5 Year*
QCLN	First Trust Nasdaq Clean Edge Green Energy Index Fund	2/8/2007	\$781.51M	-6.95%	-19.50%	-20.92%	-35.78%	-21.33%	10.73%
PBW	Invesco WilderHill Clean Energy ETF	3/3/2005	\$368.83M	-6.53%	-22.51%	-24.65%	-43.53%	-37.49%	-1.81%
ACES	ALPS Clean Energy ETF	6/29/2018	\$227.72M	-6.08%	-19.47%	-20.39%	-37.80%	-27.83%	2.03%
ERTH	Invesco MSCI Sustainable Future ETF	10/24/2006	\$190.15M	-3.87%	-10.47%	-12.41%	-15.06%	-13.83%	2.71%
CTEX	ProShares S&P Kensho Cleantech ETF	9/29/2021	\$4.67M	-3.55%	-15.58%	-16.63%	-32.95%		
WNDY	Global X Wind Energy ETF	9/8/2021	\$2.56M	-2.89%	-9.63%	-11.93%	-29.37%		
ICLN	iShares Global Clean Energy ETF	6/24/2008	\$2,419.87M	-2.76%	-10.72%	-11.75%	-29.49%	-16.20%	7.99%
SMOG	VanEck Low Carbon Energy ETF	5/3/2007	\$140.54M	-2.34%	-10.72%	-12.96%	-19.45%	-14.49%	9.37%
TAN	Invesco Solar ETF	4/15/2008	\$1,279.92M	-1.79%	-16.67%	-18.67%	-44.05%	-21.76%	12.92%
ETEC	iShares Breakthrough Environmental Solutions ETF	3/28/2023	\$3.47M	-1.53%	-6.62%	-9.01%	-15.82%		

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# 3 Year Risk Metrics

Category: Equity: Thematic - Sustainability

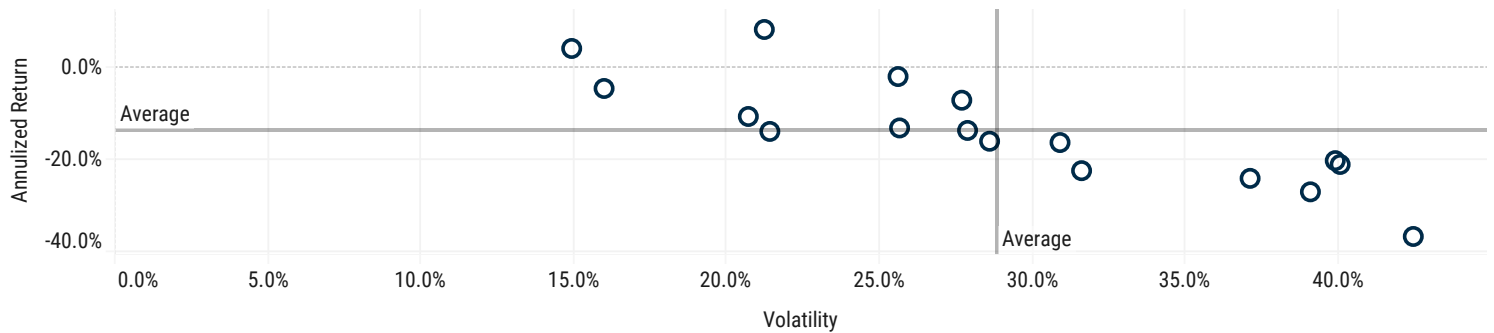


As of 3/31/2024

Fund Count	Average Return	Average Volatility	Average Correlation	Average Sharpe Ratio	Average Sortino Ratio	Average Beta	Average Alpha	Average Up Capture	Average Down Capture
36	-13.74%	28.85%	0.72	-0.46	-0.87	1.14	-25.09%	58.66%	161.16%

## Breakdown of Category Risk

### 3 Year Risk-Return Scatterplot



### Top 10 Funds by Sharpe Ratio (3 Year)

Ticker	Name	AUM	Annualized Return	Volatility	Correlation (SPY)	Sharpe Ratio	Beta	Alpha	Up Capture	Down Capture
EVX	VanEck Environmental Services ETF	\$74.8M	8.4%	21.2%	86.0%	0.38	1.03	-2.4%	93.5%	102.9%
ECLN	First Trust EIP Carbon Impact ETF	\$27.0M	4.3%	14.9%	81.0%	0.28	0.69	-3.1%	61.0%	73.3%
SOLR	Guinness Atkinson Funds SmartETFs Sust..	\$5.0M	-1.8%	25.6%	81.5%	-0.07	1.18	-13.2%	92.4%	147.0%
BNE	Blue Horizon BNE ETF	\$5.1M	-6.9%	27.7%	79.6%	-0.26	1.25	-18.8%	85.5%	161.8%
SDG	iShares MSCI Global Sustainable Develop..	\$301.7M	-4.4%	16.0%	75.0%	-0.28	0.68	-11.6%	48.5%	95.7%
SMOG	VanEck Low Carbon Energy ETF	\$140.5M	-13.5%	27.9%	73.0%	-0.52	1.15	-24.8%	62.0%	161.6%
FAN	First Trust Global Wind Energy ETF	\$187.9M	-10.5%	20.7%	75.5%	-0.53	0.89	-19.8%	46.8%	123.7%
ERTH	Invesco MSCI Sustainable Future ETF	\$190.1M	-13.0%	25.6%	73.8%	-0.54	1.07	-23.8%	56.9%	151.4%
QCLN	First Trust Nasdaq Clean Edge Green Ener..	\$781.5M	-20.1%	39.9%	63.5%	-0.56	1.44	-32.0%	67.1%	204.2%
CNRG	SPDR S&P Kensho Clean Power ETF	\$209.5M	-16.1%	30.9%	65.9%	-0.57	1.16	-27.1%	51.2%	160.1%

### Top 10 Funds by Greatest Alpha (3 Year)

Ticker	Name	AUM	Annualized Return	Volatility	Correlation (SPY)	Sharpe Ratio	Beta	Alpha	Up Capture	Down Capture
EVX	VanEck Environmental Services ETF	\$74.8M	8.4%	21.2%	86.0%	0.38	1.03	-2.4%	93.5%	102.9%
ECLN	First Trust EIP Carbon Impact ETF	\$27.0M	4.3%	14.9%	81.0%	0.28	0.69	-3.1%	61.0%	73.3%
SDG	iShares MSCI Global Sustainable Develop..	\$301.7M	-4.4%	16.0%	75.0%	-0.28	0.68	-11.6%	48.5%	95.7%
SOLR	Guinness Atkinson Funds SmartETFs Sust..	\$5.0M	-1.8%	25.6%	81.5%	-0.07	1.18	-13.2%	92.4%	147.0%
BNE	Blue Horizon BNE ETF	\$5.1M	-6.9%	27.7%	79.6%	-0.26	1.25	-18.8%	85.5%	161.8%
FAN	First Trust Global Wind Energy ETF	\$187.9M	-10.5%	20.7%	75.5%	-0.53	0.89	-19.8%	46.8%	123.7%
RNRG	Global X Renewable Energy Producers ETF	\$39.2M	-13.7%	21.4%	74.1%	-0.69	0.90	-23.5%	42.2%	134.0%
ERTH	Invesco MSCI Sustainable Future ETF	\$190.1M	-13.0%	25.6%	73.8%	-0.54	1.07	-23.8%	56.9%	151.4%
SMOG	VanEck Low Carbon Energy ETF	\$140.5M	-13.5%	27.9%	73.0%	-0.52	1.15	-24.8%	62.0%	161.6%
ICLN	iShares Global Clean Energy ETF	\$2,419.9M	-15.9%	28.6%	65.3%	-0.60	1.06	-26.2%	47.4%	153.0%

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# Equity Composition

**Category:** Equity: Thematic - Sustainability



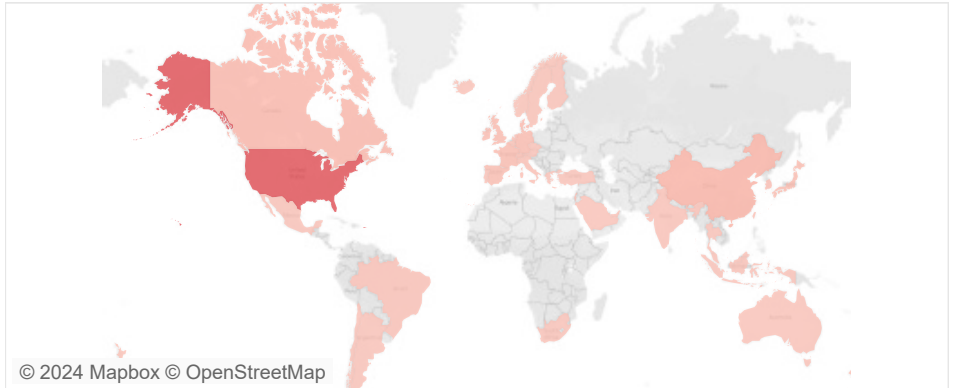
As of 3/31/2024

Fund Count*	Assets Under Management	Average Top 10 Holdings Weight	Average Weighted Avg Market Cap	Average Sector Concentration	Average Stock Concentration
36	\$6.8B	43.50%	\$51,139M	High	Average

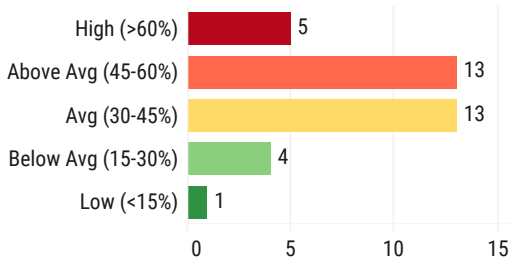
## Average Size & Style Exposure

	Growth	Core	Value
Large-cap	15.88%	10.89%	6.02%
Mid-cap	19.38%	9.23%	6.71%
Small-cap	13.44%	11.07%	7.28%

## Average Geographic Exposure



## Category Breakdown: Stock Concentration



## Average Market Development

U.S.	47.86%
Developed ex-U.S.	40.06%
Emerging	11.37%
Frontier	0.06%
Rest of World	0.57%
Unassigned	0.07%

## Average Regional Exposure

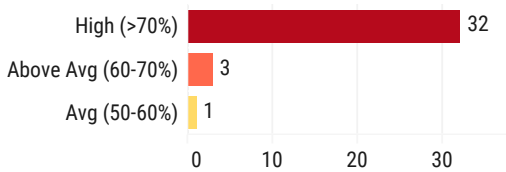
North America	53.71%
Europe	26.85%
Asia Pacific	16.56%
Latin America	1.31%
Africa	1.57%
Unassigned	0.00%

## Average Top 10 Country Exposure

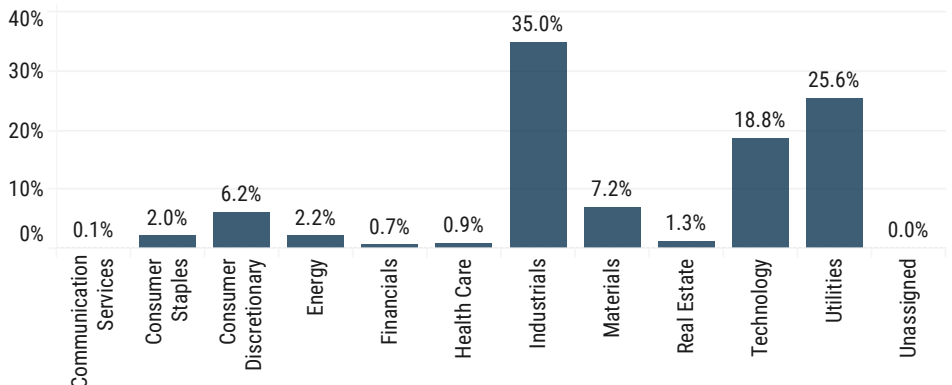
United States	48.02%
China	7.30%
Canada	5.27%
Denmark	4.52%
Germany	3.43%
United Kingdom	3.34%
France	3.07%
Spain	2.72%
Japan	2.70%
Ireland	2.35%

Stock Concentration measured by weighting in top 10 portfolio holdings.

## Category Breakdown: Sector Concentration



## Average Sector Exposure



Sector Concentration measured by greatest weight within one sector of the portfolio

\*Fund count for composition and fundamentals excludes funds with no recent holdings date (ie: ETNs)

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# Equity Fundamentals

**Category:** Equity: Thematic - Sustainability

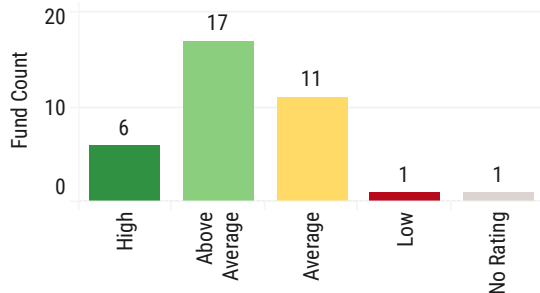


As of 3/31/2024

## Valuation

Fund Count*	Avg Price / Earnings (TTM)	Avg Price / Earnings (NTM)	Avg Price / Sales (TTM)	Avg Price / Sales (NTM)	Avg Price / Cash Flow (TTM)	Avg Price / Free Cash Flow (TTM)	Avg Price / Book (TTM)
36	18.42	17.07	1.45	1.48	9.46	21.73	2.06

### Category Breakdown: Value Rating



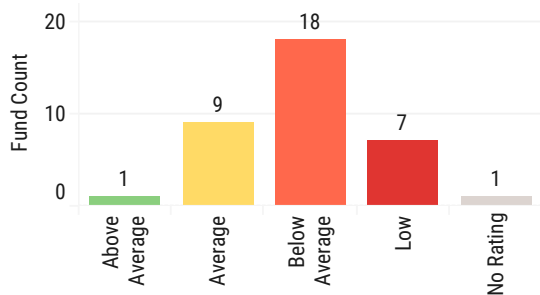
### Top 10 Funds by Value Score

Ticker	Name	AUM	Value Rating (0-5)
CTEX	ProShares S&P Kensho Cleantech ETF	\$4.67M	4.64
RNWX	TrueShares Eagle Global Renewable Energy Income ETF	\$2.29M	4.48
TAN	Invesco Solar ETF	\$1,279.92M	4.46
CTEC	Global X CleanTech ETF	\$52.59M	4.35
CNRG	SPDR S&P Kensho Clean Power ETF	\$209.46M	4.27
FRNW	Fidelity Clean Energy ETF	\$26.82M	4.17
BNE	Blue Horizon BNE ETF	\$5.09M	3.93
PBD	Invesco Global Clean Energy ETF	\$122.18M	3.83
FAN	First Trust Global Wind Energy ETF	\$187.88M	3.81
SDG	iShares MSCI Global Sustainable Development Goals ETF	\$301.74M	3.77

## Quality

Fund Count*	Avg Return On Equity	Avg Return On Assets	Avg Return On Invested Capital	Avg Long Term Debt / Equity	Avg Interest Coverage
36	11.0%	4.9%	6.0%	89.9%	9.1%

### Category Breakdown: Quality Rating



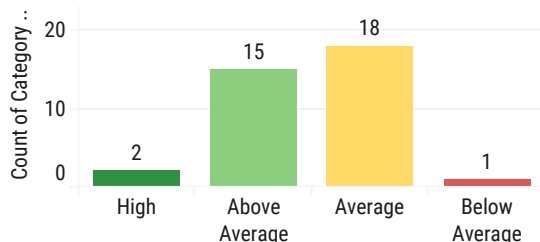
### Top 10 Funds by Quality Score

Ticker	Name	AUM	Quality Rating (0-5)
ETEC	iShares Breakthrough Environmental Solutions ETF	\$3.47M	3.17
NETZ	TCW Transform Systems ETF	\$133.51M	2.92
RAYX	Global X Solar ETF	\$6.80M	2.85
TEMP	JPMorgan Climate Change Solutions ETF	\$23.85M	2.70
HEAT	Touchstone Climate Transition ETF	\$11.57M	2.66
BNE	Blue Horizon BNE ETF	\$5.09M	2.62
OCEN	IQ Clean Oceans ETF	\$5.07M	2.32
SOLR	Guinness Atkinson Funds SmartETFs Sustainable Energy II..	\$5.00M	2.31
FIXT	Procore Disaster Recovery Strategy ETF	\$2.57M	2.05
SDG	iShares MSCI Global Sustainable Development Goals ETF	\$301.74M	2.02

## Growth

Fund Count*	Avg LT Earnings	Avg Earnings Growth (TTM)	Avg Earnings Growth (NTM)	Avg Sales Growth (TTM)	Avg Sales Growth (NTM)	Avg Cash Flow Growth (TTM)	Avg Book Growth (TTM)	Avg Dividend Growth (TTM)
36	12.1%	8.4%	29.4%	4.5%	7.3%	14.2%	9.0%	3.7%

### Category Breakdown: Growth Rating



### Top 10 Funds by Growth Score

Ticker	Name	AUM	Growth Rating (0-5)
WNDY	Global X Wind Energy ETF	\$2.56M	5.00
RAYX	Global X Solar ETF	\$6.80M	4.33
PBW	Invesco WilderHill Clean Energy ETF	\$368.83M	3.89
FRNW	Fidelity Clean Energy ETF	\$26.82M	3.87
FAN	First Trust Global Wind Energy ETF	\$187.88M	3.83
CTEC	Global X CleanTech ETF	\$52.59M	3.81
ICLN	iShares Global Clean Energy ETF	\$2,419.87M	3.80
VCLN	Virtus Duff & Phelps Clean Energy ETF	\$6.59M	3.68
CTEX	ProShares S&P Kensho Cleantech ETF	\$4.67M	3.65
TAN	Invesco Solar ETF	\$1,279.92M	3.61

\*Fund count for composition and fundamentals excludes funds with no recent holdings date (ie: ETNs)

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# Appendix: Category Funds



As of 3/31/2024

## Appendix: Top Category Funds 1-50 By AUM

Ticker	Name	Inception	AUM	1 Month	3 Month	YTD	1 Year	3 Year*	5 Year*
ICLN	iShares Global Clean Energy ETF	6/24/2008	\$2,420M	-2.76%	-10.72%	-11.75%	-29.49%	-16.20%	7.99%
TAN	Invesco Solar ETF	4/15/2008	\$1,280M	-1.79%	-16.67%	-18.67%	-44.05%	-21.76%	12.92%
QCLN	First Trust Nasdaq Clean Edge Green Energy Index Fund	2/8/2007	\$782M	-6.95%	-19.50%	-20.92%	-35.78%	-21.33%	10.73%
PBW	Invesco WilderHill Clean Energy ETF	3/3/2005	\$369M	-6.53%	-22.51%	-24.65%	-43.53%	-37.49%	-1.81%
SDG	iShares MSCI Global Sustainable Development Goals ETF	4/20/2016	\$302M	-0.12%	-2.99%	-4.22%	-0.16%	-4.97%	7.06%
ACES	ALPS Clean Energy ETF	6/29/2018	\$228M	-6.08%	-19.47%	-20.39%	-37.80%	-27.83%	2.03%
CNRG	SPDR S&P Kensho Clean Power ETF	10/22/2018	\$209M	-1.34%	-11.38%	-11.95%	-26.45%	-16.81%	14.56%
ERTH	Invesco MSCI Sustainable Future ETF	10/24/2006	\$190M	-3.87%	-10.47%	-12.41%	-15.06%	-13.83%	2.71%
FAN	First Trust Global Wind Energy ETF	6/16/2008	\$188M	-0.29%	-6.00%	-7.43%	-13.30%	-11.02%	4.72%
SMOG	VanEck Low Carbon Energy ETF	5/3/2007	\$141M	-2.34%	-10.72%	-12.96%	-19.45%	-14.49%	9.37%
NETZ	TCW Transform Systems ETF	2/2/2022	\$134M	5.21%	20.48%	19.46%	37.25%		
PBD	Invesco Global Clean Energy ETF	6/13/2007	\$122M	-0.09%	-10.58%	-12.48%	-27.49%	-23.05%	4.62%
EVX	VanEck Environmental Services ETF	10/10/2006	\$75M	1.77%	9.56%	8.21%	14.42%	7.53%	11.82%
CTEC	Global X CleanTech ETF	10/27/2020	\$53M	-0.43%	-11.48%	-13.73%	-41.10%	-24.76%	
GSFP	Goldman Sachs Future Planet Equity ETF	7/13/2021	\$43M	3.05%	4.47%	3.12%	0.58%		
RNRG	Global X Renewable Energy Producers ETF	5/28/2015	\$39M	-0.72%	-12.29%	-13.92%	-20.53%	-14.49%	-3.73%
NBCT	Neuberger Berman Carbon Transition Infrastructure ETF	4/6/2022	\$28M	3.80%	6.76%	5.97%	9.31%		
ECLN	First Trust EIP Carbon Impact ETF	8/19/2019	\$27M	5.58%	0.96%	1.78%	-0.74%	4.18%	
FRNW	Fidelity Clean Energy ETF	10/5/2021	\$27M	-0.46%	-13.25%	-14.89%	-33.48%		
CCSO	Carbon Collective Climate Solutions U.S. Equity ETF	9/19/2022	\$27M	0.15%	-0.88%	-2.88%	2.71%		
CLIA	Veridien Climate Action ETF Veridien Climate Action ETF	5/8/2023	\$24M	-0.27%	-7.72%	-8.52%			
TEMP	JPMorgan Climate Change Solutions ETF	12/13/2021	\$24M	1.99%	7.29%	5.69%	8.09%		
HEAT	Touchstone Climate Transition ETF	5/2/2023	\$12M	0.23%	2.59%	1.24%			
GCLN	Goldman Sachs Bloomberg Clean Energy Equity ETF	2/8/2022	\$12M	2.32%	-3.73%	-4.37%	-14.16%		
RAYN	Global X Solar ETF	9/8/2021	\$7M	-0.77%	-10.07%	-11.88%	-44.10%		
VCLN	Virtus Duff & Phelps Clean Energy ETF	8/3/2021	\$7M	2.11%	-4.77%	-5.77%	-22.62%		
PWER	Macquarie Energy Transition ETF	11/28/2023	\$6M	9.07%	1.22%	0.83%			
BNE	Blue Horizon BNE ETF	12/8/2020	\$5M	0.81%	-1.97%	-3.47%	-11.41%	-7.91%	
OCEN	IQ Clean Oceans ETF	10/21/2021	\$5M	-0.77%	1.64%	-0.37%	4.75%		
SOLR	Guinness Atkinson Funds SmartETFs Sustainable Energy II Fund	11/11/2020	\$5M	0.44%	-1.60%	-3.17%	-12.18%	-3.06%	
CTEX	ProShares S&P Kensho Cleantech ETF	9/29/2021	\$5M	-3.55%	-15.58%	-16.63%	-32.95%		
ETEC	iShares Breakthrough Environmental Solutions ETF	3/28/2023	\$3M	-1.53%	-6.62%	-9.01%	-15.82%		
BECO	BlackRock Future Climate and Sustainable Economy ETF	8/3/2021	\$3M	1.44%	0.83%	-0.42%	-2.81%		
KSEA	KraneShares Rockefeller Ocean Engagement ETF	9/12/2023	\$3M	0.58%	1.66%	0.81%			
FIXT	ProShare Disaster Recovery Strategy ETF	6/1/2022	\$3M	2.70%	12.82%	11.31%	32.90%		
WNDY	Global X Wind Energy ETF	9/8/2021	\$3M	-2.89%	-9.63%	-11.93%	-29.37%		
RNWZ	TrueShares Eagle Global Renewable Energy Income ETF	12/8/2022	\$2M	3.19%	-8.18%	-8.83%	-12.10%		

\*Annualized performance. Returns based on market price.

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## Appendix: Top Category Funds 51-100 By AUM

\*Annualized performance. Returns based on market price.

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The historical returns presented include all items of dividends and interest net of fees unless otherwise stated. Model portfolio and blended model portfolio analysis utilizes position data provided by the model sponsor and/or the user back to the initial asset allocation date provided. There is no guarantee that these hypothetical returns could or would have been achieved had this asset allocation or model portfolio been used during the years presented. Results shown are provided for illustrative purposes only. Past performance is not indicative of future results.

Performance data are based on actual returns of the investment strategies and securities in the portfolio and are provided for illustrative purposes only. Data and performance may be limited due to lack of published performance data either by the issuer or investment manager, or the availability of such data sources to FactSet. Aggregated data and average performance figures are calculated as simple averages of all funds that existed at that point in time for a specific category. All funds currently classified within a category will contribute to average historical performance figures such that a survivorship bias may be present for average category performance figures.

**Past performance is not an indicator of future performance.** The model portfolio and blended model portfolio returns presented are calculated based on historical investment position data provided by the model sponsor and/or user. The returns do not reflect the actual trading of any account or group of accounts and are thereby hypothetical in nature. Model position changes are implemented using closing prices on position date provided unless otherwise stated and the returns reflect the reinvestment of dividends and interest. The impact of fund fees held in the model portfolios is reflected in the returns for all periods presented. Model portfolio returns shown are net of fees provided by model sponsor and/or user and are prominently displayed in each model portfolio.

## ASSET CLASS DEFINITIONS & RISK DISCLOSURES:

US Equities include stocks listed in the United States, including small-cap and mid-cap equities, Master Limited Partnerships (MLPs), Real Estate Investment Trusts (REITs), and alternative equity securities, including covered call ETFs and hedged ETFs or ETFs that make use of derivatives. Stocks represent partial ownership of a corporation. If the corporation does well, its value can increase, and investors can share in the appreciation. However, if it goes bankrupt, or performs poorly, investors can lose their entire initial investment (i.e., the stock price can go to zero). MLP investing includes risks such as equity- and commodity-like volatility. Also, distribution payouts sometimes include the return of principal and, in these instances, references to these payouts as "dividends" or "yields" may be inaccurate and may overstate the profitability/success of the MLP. There are potentially complex and adverse tax consequences associated with investing in MLPs. There are special risks associated with an investment in real estate and REITs, including credit risk, interest rate fluctuations and the impact of varied economic conditions. A covered call option involves holding a long position in a particular asset, in this case US common equities, and writing a call option on that same asset with the goal of realizing additional income from the option premium. Certain ETFs use a covered call strategy. By selling covered call options, the fund limits its opportunity to profit from an increase in the price of the underlying index above the exercise price but continues to bear the risk of a decline in the index. Using a hedge or a hedged product does not insulate the portfolio against losses.

Global equities are equities that span across both developed countries and emerging markets. Investments in international and emerging markets securities include exposure to risks such as currency fluctuations, foreign taxes and regulations, and the potential for illiquid markets and political instability.

International Equities are equities that span across both developed countries and emerging markets, excluding U.S. equities. Investments in international and emerging markets securities include exposure to risks such as currency fluctuations, foreign taxes and regulations, and the potential for illiquid markets and political instability.

Developed international equities are large cap and mid cap equities in developed countries excluding the U.S. and Canada. International investments involve greater risks than U.S. investments, and can decline significantly in response to adverse issuer, political, regulatory, market, and economic risks.

Emerging market equities are large cap and mid cap equities in emerging market countries. Emerging market countries are countries with economies that are considered rapidly expanding and engaging aggressively in global markets. In addition to the risks associated with all international investing, inflation and rapid fluctuations in inflation rates have had, and may continue to have, negative effects on the economies and securities markets of certain emerging market countries.

Investment grade fixed income securities include broad fixed income, corporate securities, municipal bonds, treasuries, and mortgage backed securities (MBS). Investment grade securities are believed to be at less risk of default and rated higher by the credit rating agencies. In general, the bond market is volatile, and fixed income securities carry interest rate risk. (As interest rates rise, bond prices usually fall, and vice versa). This effect is usually more pronounced for longer-term securities.

Fixed income securities also carry inflation risk, liquidity risk, call risk and credit and default risks for both issuers and counterparties. The municipal market can be affected by adverse tax, legislative, or political changes, and by the financial condition of the issuers of municipal securities. MBS are subject to prepayment and extension risk; as such, they react differently to changes in interest rates than other bonds. Small movements in interest rates may quickly and significantly reduce the value of certain MBS.

Alternative fixed income asset class includes high yield, preferreds, bank loans, currency funds, developed non-US debt, emerging market debt, TIPS, and floaters. Lower-quality fixed income securities found in this category involve greater risk of default or price changes due to potential changes in the credit quality of the issuer. Any fixed-income security sold or redeemed prior to maturity may be subject to loss. Additionally, non-US/emerging market debt assumes the same risks as international investing.

Cash & Equivalents include direct cash positions and underlying cash positions within fund positions within a model. This also includes money market funds that may be held by the model or underlying positions.

Unassigned designations are used for positions that include options, commodities contracts, or other derivatives, and may not have composition data available.

Commodities include securities that tract bulk goods and raw materials, such as grains, metals, livestock, oil, cotton, coffee, sugar, and cocoa, that are used to produce consumer products. Buying commodities allows for a source of diversification for those sophisticated persons who wish to add this asset class to their portfolios and who are prepared to assume the risks inherent in the commodities market. Any commodity purchase represents a transaction in a non-income-producing asset and is highly speculative. Therefore, commodities should not represent a significant portion of an individual's portfolio.

Alternatives are securities that are typically less or inversely correlated with Equities and Fixed Income such as Index Volatility ETFs. Alternative investments are often non income producing and highly speculative. Therefore, alternative investments should not represent a significant portion of an individual's portfolio.

Dividends are not guaranteed and are subject to change or elimination.

ETFs are subject to substantially the same risks as those associated with the direct ownership of the underlying securities owned by the ETF. Additionally, the value of the investment will fluctuate in response to the performance of the underlying index or securities. ETFs typically charge therefore, investments in ETFs will result in the layering of expenses.

## DEFINITIONS:

Acquired Fund Fees is the weighted average of the expense ratios of all model holdings.

Distribution yield refers to the percentage of income a portfolio has distributed to investors over the last 12 months. At the model level, this is calculated as a weighted average of TTM yield for all model holdings. This is based on fund and/or stock distributions, and is not a look-through calculation.

Geometric return is a measure of the compound rate of growth in a portfolio. This method eliminates the distorting effects created by inflows of new money. This is also called the 'geometric mean return,' as the reinvestment is captured by using the geometric total and mean, rather than the arithmetic total and mean. It is assumed that all cash distributions are reinvested in the portfolio and the exact same periods are used for comparisons. The difference between the two return measures is caused by volatility. The more volatile the asset class, the bigger the difference between its geometric and average annual returns. The geometric mean return is typically lower than the arithmetic mean return.

Pure gross returns are calculated before the deduction of advisory fees, trading expenses and other fees. Net of fees performance reflects the deduction of the advisory fees charged to the client, trading expenses, and other costs associated with investments made by the client. Returns do not include the reinvestment of dividends.

Standard deviation is a measure of the dispersion of a set of data from its mean. The more spread apart the data is, the higher the deviation. Calculated using monthly returns.

Alpha refers to the performance differential between a specific investment and that of the investment's beta multiplied by its benchmark. It isolates the portion of total return not accredited to movement in the broader market. Calculated using monthly returns.

Beta is a measure of the volatility—or systematic risk—of a security or portfolio compared to its relative benchmark. Securities with betas higher than 1.0 can be interpreted as more volatile relative to movements in the market benchmark while securities with a beta less than 1.0 can be interpreted as less volatile relative to movements in the market benchmark. Calculated using monthly returns.

The Sharpe ratio is the average return earned in excess of the risk-free rate per unit of volatility or total risk. Volatility is a measure of the price fluctuations of an asset or portfolio. Calculated using monthly returns.

The correlation coefficient is a statistical measure of the strength of the relationship between the relative movements of two variables. The values range between -1.0 and 1.0. A calculated number greater than 1.0 or less than -1.0 means that there was an error in the correlation measurement. A correlation of -1.0 shows a perfect negative correlation, while a correlation of 1.0 shows a perfect positive correlation. A correlation of 0.0 shows no linear relationship between the movement of the two variables. Calculated using monthly returns.

R-squared (R2) is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. Calculated using monthly returns.

Tracking error is the divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark. This is often in the context of a hedge fund, mutual fund, or exchange-traded fund (ETF) that did not work as effectively as intended, creating an unexpected profit or loss. Tracking error is reported as a standard deviation percentage difference, which reports the difference between the return an investor receives and that of the benchmark they were attempting to imitate. Calculated using monthly returns.

The upside capture ratio measures an investment manager's relative performance during bull markets. The ratio is calculated by comparing the manager's returns in up-markets with that of a benchmark. Calculated using monthly returns.

The down-market capture ratio is a statistical measure of an investment manager's overall performance in down-markets. It is used to evaluate how well an investment manager performed relative to an index during periods when that index has dropped. The ratio is calculated by dividing the manager's returns by the returns of the index during the down-market and multiplying that factor by 100. Calculated using monthly returns.

A drawdown refers to how much an investment or trading account is down from the peak before it recovers back to the peak. Drawdowns are typically quoted as a percentage, but dollar terms may also be used if applicable for a specific trader. Drawdowns are a measure of downside volatility. Calculated using monthly returns.

Market capitalization is the sum of the total value of a company's outstanding shares multiplied by the price of one share. With a weighted average market capitalization, components that have a higher market cap have more influence because they constitute a higher percentage in the index; those with smaller caps have less influence.

The Price/Earnings Ratio or P/E Ratio is a valuation metric that assesses how many dollars investors are willing to pay for one dollar of a company's earnings. It's calculated by dividing a stock's price by the company's trailing 12-month earnings per share from continuous operations. Negative P/E ratios are excluded. Calculated using weighted harmonic average.

The forward (or leading) P/E uses future earnings guidance rather than trailing figures. Negative P/E ratios are excluded. Calculated using weighted harmonic average.

The Price/Sale (P/S) ratio is a stock's current price divided by the company's trailing 12-month sales per share. This represents the weighted average of the price/sales ratios of the stocks in a fund's portfolio. Price/sales represents the amount an investor is willing to pay for a dollar generated from a particular company's operations. Calculated using weighted harmonic average.

The forward (or leading) P/S uses future sales estimates rather than trailing figures. Calculated using weighted harmonic average.

The price/book (P/B) ratio of a fund is the weighted average of the price/book ratios of all the stocks in a fund's portfolio. Book value is the total assets of a company, less total liabilities (sometimes referred to as carrying value). A company's book value is calculated by dividing the market price of its outstanding stock by the company's book value, and then adjusting for the number of shares outstanding (Stocks with negative book values are excluded from this calculation.). Calculated using weighted harmonic average.

The price-to-cash flow (P/CF) ratio is a stock valuation indicator or multiple that measures the value of a stock's price relative to its operating cash flow per share over the trailing twelve months. The ratio uses operating cash flow (OCF), which adds back non-cash expenses such as depreciation and amortization to net income. Calculated using weighted harmonic average.

Price to free cash flow is an equity valuation metric used to compare a company's per-share market price to its per-share amount of free cash flow (FCF) over the trailing twelve months. This metric is very similar to the valuation metric of price to cash flow but is considered a more exact measure, owing to the fact that it uses free cash flow, which subtracts capital expenditures (CAPEX) from a company's total operating cash flow, thereby reflecting the actual cash flow available to fund non-asset-related growth. Negative P/E ratios are excluded. Calculated using weighted harmonic average.

The price/earnings to growth ratio (PEG ratio) is a stock's price-to-earnings (P/E) ratio divided by the growth rate of its earnings for a specified time period (NTM - next twelve months). The PEG ratio is used to determine a stock's value while also factoring in the company's expected earnings growth, and it is thought to provide a more complete picture than the more standard P/E ratio. Calculated using weighted harmonic average.

The dividend yield, expressed as a percentage, is a financial ratio (dividend/price) that shows how much a company pays out in dividends each year relative to its stock price. Unless otherwise stated, dividend yield takes the distributions over the trailing 12 months divided by the price on the as of date. Note that the dividend yield is a look through of all funds and securities to underlying holdings, and may not reflect what the fund or model actually distributes. Calculated using weighted harmonic average.

Gross margin is a ratio that equates to net sales minus the cost of goods sold divided by net sales. The gross margin shows the ratio of profit made before deducting selling, general, and administrative (SG&A) costs. Calculated using weighted average.

The net margin is a measure of profitability. It is equal to annual net income divided by revenues over the trailing 12 months. The resulting figure is then multiplied by 100. Calculated using weighted average.

Return on equity (ROE) is the percentage a company earns on its total equity in a given year. ROE shows how much profit a company generates on the money shareholders have invested in the firm. Calculated using weighted average.

Return on assets (ROA) is the percentage a company earns on its assets in a given year (Year 1, 2, etc.). The calculation is net income divided by end-of-year total assets. The resulting figure is then multiplied by 100. For a mutual fund, ROA represents a weighted median figure such that approximately 50% of the domestic stocks in the portfolio will have a greater ROA and roughly 50% of these domestic stocks will have a lower ROA than the weighted median. Calculated using weighted average.

Return on invested capital (ROIC) is the percentage of money a company earns that is above the average cost it pays for its debt and equity capital. Calculated using weighted average.

The interest coverage ratio is a debt and profitability ratio used to determine how easily a company can pay interest on its outstanding debt. The interest coverage ratio is calculated by dividing a company's earnings before interest and taxes (EBIT) by its interest expense during a given period. Calculated using weighted average.

The debt-to-equity (D/E) ratio is used to evaluate a company's financial leverage and is calculated by dividing a company's total liabilities by its shareholder equity. Calculated using weighted average.

The payout ratio, also known as the dividend payout ratio, shows the percentage of a company's earnings paid out as dividends to shareholders over the trailing twelve months. Calculated using weighted average.

Per share growth metrics calculate the growth metrics over the trailing twelve months (TTM) or estimated growth metrics over the next twelve months (NTM) for Earnings, Sales, Cash Flow, Free Cash Flow, Book Value, and Dividends. Calculated using weighted median.

Long-Term earnings (LT Earnings) calculates the growth in earnings per share over longer time horizons (5 years). Calculated using weighted median.

The coupon rate is calculated by weighting each bond's coupon by its relative size in the portfolio. It indicates whether the underlying fund owns more high- or low-coupon bonds. There can be advantages to holding higher coupon bonds, but many funds buy them simply to tempt investors with a high payout. This can be damaging to investors for two reasons. The first is that higher-coupon bonds often carry greater risk than lower-coupon issues. The second is that when these bonds don't carry extra risk, they are old issues that the fund has paid up for and if the offering doesn't amortize the extra yield, investors are likely to find that their principal erodes over time. Calculated using weighted average.

Effective duration is a measure of a fund's interest-rate sensitivity; the longer a fund's duration, the more sensitive the fund is to shifts in interest rates. Duration is determined by a formula that includes coupon rates and bond maturities. Small coupons tend to increase duration, while shorter maturities and higher coupons shorten duration. The relationship between funds with different durations is straightforward: A fund with a duration of 10 years is twice as volatile as a fund with a five-year duration. Calculated using weighted average.

Modified Duration expresses the measurable change in the value of a security in response to a change in interest rates. Calculated using weighted average.

Average effective maturity is a weighted average of all the maturities of the bonds in a portfolio, computed by weighting each bond's effective maturity by the market value of the security. Average effective maturity takes into consideration all mortgage prepayments, puts, and adjustable coupons. Longer-maturity funds are generally considered more interest-rate sensitive than their shorter counterparts. We list Average Effective Maturity for Taxable Fixed-Income and Hybrid funds and Average Nominal Maturity for Municipal Bond Funds. Since this is collected by survey, it is important to bear in mind that different fund companies may use different interest-rate assumptions in determining call likelihood and timing. Generally speaking, the longer the maturity, the greater the interest rate risk. When duration is unavailable, this is used in the calculation of the fixed income style box. Calculated using weighted average.

Yield to Maturity: is the holding weighted average yield of all applicable holdings within a portfolio. Yield is a measure of the expected rate of return. Calculation of yield to maturity of a security ignores the impact of options such as a call or put feature. Calculated using weighted average.

Yield to worst is calculated on all possible call dates. It is assumed that prepayment occurs if the bond has call or put provisions and the issuer can offer a lower coupon rate based on current market rates. If market rates are higher than the current yield of a bond, the yield to worst calculation will assume no prepayments are made, and yield to worst will equal the yield to maturity.

The assumption is made that prevailing rates are static when making the calculation. The yield to worst will be the lowest of yield to maturity or yield to call (if the bond has prepayment provisions); yield to worst may be the same as yield to maturity but never higher. Calculated using weighted average.

Convexity demonstrates how the duration of a bond changes as the interest rate changes. If a bond's duration increases as yields increase, the bond is said to have negative convexity. If a bond's duration rises and yields fall, the bond is said to have positive convexity. Calculated using weighted average.

Key rate duration measures how the value of a debt security or a debt instrument portfolio, generally bonds, changes at a specific maturity point along the entirety of the yield curve. When keeping other maturities constant, the key rate duration is used to measure the sensitivity in a debt security's price to a 1% change in yield for a specific maturity.

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