Verde ESG Market Neutral Index

VESGMNX · Index Methodology · Version 1.0.1

Effective October 8, 2026 · Administrator: Verde Advisors LLC

Long / short	11 sectors	Beta 0.0
TOP VS BOTTOM FIFTH BY SCORE	EQUAL WEIGHT IN BOTH LEGS	TARGET MARKET EXPOSURE

1. Overview

The Verde ESG Market Neutral Index (VESGMNX) measures the return of S&P 500 companies with the highest Verde ESG Scores relative to companies with the lowest, after removing sector and broad-market effects. It is long the best-scored fifth of each GICS sector and short the worst-scored fifth, with the two legs balanced so that the index has no intended exposure to any sector or to the market as a whole.

VESGMNX is a companion to the Verde ESG Leaders Index (VESGLIDX). Both use the same scores. VESGLIDX is a long-only, capitalization-weighted portfolio of score leaders; VESGMNX isolates the difference between leaders and laggards. VESGMNX is a non-investable research index. It is rules-based: the Administrator exercises no discretion over constituents or weights.

2. Universe and scores

The universe is every constituent of the S&P 500 that has a Verde ESG Score at the score date. S&P 500 membership is used because it is public and independently verifiable. Companies are classified by GICS sector.

The Verde ESG Score (0 to 100) is defined in the VESGLIDX Methodology, version 3.0, and is used here without modification. It combines five pillars, each drawn from a free, public, primary source:

Pillar	Weight	Public source
Climate Alignment (E)	30%	Science Based Targets initiative (SBTi) Target Dashboard
Governance Quality (G)	30%	SEC EDGAR, DEF 14A proxy statements
Carbon Efficiency (E)	15%	EPA Greenhouse Gas Reporting Program (GHGRP)
Social Responsibility (S)	15%	OSHA Injury Tracking Application
ESG Transparency (G)	10%	SEC EDGAR filings (disclosure-framework references)

Carbon, Social and Transparency are scored relative to GICS sector. Where a pillar cannot be measured for a company it is excluded and the remaining pillar weights are renormalized; no value is imputed. No licensed ESG ratings are used. There are no categorical exclusions: no sector or product is removed from the universe.

3. Constituent selection

At each reconstitution, companies are ranked by Verde ESG Score within their GICS sector and each is assigned a sector percentile between 0 and 1. Companies with the same score share the average of the ranks they span.

Long leg: sector percentile of 0.80 or higher.
Short leg: sector percentile of 0.20 or lower.

A sector takes part only if it has at least five scored companies and at least one company in each leg. Because tied companies share a rank, a group of ties that straddles a cut-off falls outside the leg, and a leg can hold fewer than a fifth of its sector. Unlike VESGLIDX, VESGMNX applies no absolute score floor: selection is purely relative within sector.

4. Weighting

Each participating sector is given a weight equal to its share of scored companies:

sector weight = scored companies in the sector / scored companies in all participating sectors

The same sector weight is used in both legs. Within a sector leg, constituents are equal-weighted:

constituent weight = sector weight / number of constituents in that sector leg

Each leg therefore sums to 100%, and the net weight of every sector (long minus short, before the hedge ratio) is zero.

Example. At inception Communication Services has 22 scored companies out of 503, a sector weight of 4.37%. Its long leg holds 5 companies at 0.875% each; its short leg holds 2 at 2.187% each.

5. Beta neutrality

A portfolio with equal dollars long and short still carries market exposure if one leg is more sensitive to the market than the other. VESGMNX removes this by scaling the short leg.

Constituent beta. For each constituent, beta is the slope of its daily returns on the daily returns of the SPDR S&P 500 ETF Trust (SPY) over the 252 trading days ending on the reconstitution date. A constituent with fewer than 120 observations is assigned a beta of 1.00. Betas are limited to the range 0.30 to 2.50.

Leg beta. The weighted average of constituent betas in the leg.

Hedge ratio.

h = beta of the long leg / beta of the short leg, limited to the range 0.50 to 2.00

For every 1.00 held long, the index is short h. The hedge ratio is fixed at each reconstitution and held until the next.

6. Index calculation

Between reconstitutions both legs are buy-and-hold: constituent weights drift with prices and nothing is traded. On any trading day t after the most recent reconstitution:

$$L_t = \text{sum over long constituents of } [\ weight_i \times price_{i,t} / price_{i,reb}\ ]$$

$$S_t = \text{sum over short constituents of } [\ weight_i \times price_{i,t} / price_{i,reb}\ ]$$

$$Index_t = Index_{reb} \times [\ 1 + (L_t - 1) - h \times (S_t - 1)\ ]$$

where *reb* denotes the close on the reconstitution date, and weights are those set at that reconstitution. L and S equal 1.00 on the reconstitution date, so the index level is continuous across a reconstitution.

Example. With h = 0.90, if the long leg has risen 2.0% and the short leg has fallen 1.0% since reconstitution, the index has risen 2.0% + 0.90 x 1.0% = 2.9%.

The index is calculated once per trading day from closing prices. It is a price-return index: dividends are not reinvested, as with VESGLIDX. Levels are gross: no deduction is made for trading costs, financing, or the cost of borrowing shares, and no interest is credited on short-sale proceeds. Prices are public end-of-day closes from the same source used for VESGLIDX. The base value is 1,000.00 at the close on October 8, 2026.

7. Reconstitution

The index is reconstituted quarterly at the close of the first trading day of January, April, July and October, the same calendar as VESGLIDX. At each reconstitution, constituents are reselected from the most recent published Verde ESG Scores, weights are reset, betas are re-estimated and a new hedge ratio is set. If updated scores have not been published by the reconstitution date, the prior scores are carried forward and the index is still re-weighted and re-hedged.

The inception portfolio was struck off-cycle at the October 8, 2026 close using scores as of September 30, 2026, the scores used for the October 1, 2026 VESGLIDX reconstitution. The first scheduled reconstitution is the first trading day of January 2027.

8. Corporate actions and missing prices

Splits. On each calculation day the stored close for the previous day is compared with the split-adjusted close for that day. A difference of a split-sized ratio (for example 1/2, 1/4 or 3/2) is treated as a split, and the constituent's reference price is rescaled so that its value in the index is unchanged. Detected splits are logged in the published portfolio file.

Dividends are not reinvested; the index is price return.

No price at reconstitution. A selected company with no available closing price on the reconstitution date is left out for that quarter. The remaining companies in its sector leg are re-weighted; if a sector leg is left empty the sector is dropped from both legs and the other sectors are scaled up.

Acquisitions and delistings between reconstitutions. The constituent is carried at its last available closing price until the next reconstitution. No replacement is added.

Missing daily prices. If a constituent has no close on a given day, its last available close is used. A day is recorded only when at least 95% of constituents have a close; otherwise it is recorded on a later run.

Ticker changes are applied by the Administrator in the score file and do not affect weights.

9. Publication

The index level, daily change, since-inception return, leg returns since reconstitution, constituents with weights and betas, and the hedge ratio are published each trading day after the U.S. close in Verde's public data repository (github.com/davideslattery-jpg/vesglidx-data). The calculation code is published in the same repository, so any level can be reproduced from public prices.

10. Governance and changes

Verde Advisors LLC is the Index Administrator and calculates the index. The index is not calculated or verified by an independent third party. Changes to this methodology are published in advance with an effective date and recorded in the change log below, under the same change policy as VESGLIDX. Errors in a published level are corrected and disclosed.

11. Limitations

Gross of costs. A real portfolio would pay trading costs at each reconstitution and ongoing costs to borrow the short positions; some shares may be unavailable to borrow. Index returns overstate what such a portfolio would earn.

Estimated betas. Betas are historical estimates and change over time. Realized market exposure will not be exactly zero, and can be material in a sharp market move.

Small sector legs. A sector leg can hold as few as one or two companies, each carrying the full sector weight.

Equal weighting. Within sector legs the index gives the same weight to large and small companies, so it behaves differently from a capitalization-weighted portfolio.

Score coverage. Companies without a reporting footprint are scored on three pillars only; asset-light companies can rank high or low without carbon or social measurement.

No simulated history. Verde Advisors does not publish backtested or hypothetical performance for VESGMNX. The live record from October 8, 2026 is the only performance series. The parameters in this document were set in October 2026 following internal research on historical scores; there is no assurance the index will have a positive return.

VESGMNX is a non-investable research index published by Verde Advisors LLC for informational and research purposes only. It is not investment advice, not an offer of any security and not a financial product.

Appendix A. Parameters

Parameter	Value
Universe	S&P 500 constituents with a Verde ESG Score
Sector classification	GICS sector (11 sectors)
Minimum scored companies for a sector to take part	5
Long cut-off	Sector percentile of 0.80 or higher
Short cut-off	Sector percentile of 0.20 or lower
Treatment of tied scores	Average rank
Sector weight	Share of scored companies; identical in both legs
Weight within a sector leg	Equal
Beta reference	SPDR S&P 500 ETF Trust (SPY)
Beta window	252 trading days of daily returns; minimum 120, otherwise beta = 1.00
Constituent beta limits	0.30 to 2.50
Hedge ratio limits	0.50 to 2.00
Reconstitution	Close of the first trading day of January, April, July and October
Between reconstitutions	Buy-and-hold; hedge ratio fixed
Minimum price coverage to record a day	95% of constituents
Return basis	Gross price return; dividends not reinvested; split-adjusted
Base value and date	1,000.00 at the October 8, 2026 close

Appendix B. Change log

Version	Effective	Change
1.0	October 8, 2026	Initial methodology. Index launched at 1,000.00.
1.0.1	October 13, 2026	Clarified that the index is price return and described automatic split handling. No change to index levels.

Appendix C. Sector composition at inception

Target constituents selected from scores as of September 30, 2026.

GICS sector	Weight in each leg	Scored names	Long	Short	Avg score, long	Avg score, short
Industrials	16.3%	82	17	17	87.9	41.9
Financials	15.1%	76	17	16	80.6	43.5
Information Technology	14.9%	75	14	15	93.0	41.3
Health Care	11.9%	60	13	11	90.1	42.0
Consumer Discretionary	9.3%	47	10	9	91.1	45.3
Consumer Staples	6.6%	33	7	7	87.0	43.8
Utilities	6.2%	31	7	6	64.5	38.2
Real Estate	6.0%	30	7	7	90.1	45.5
Materials	5.2%	26	6	5	84.1	44.0
Communication Services	4.4%	22	5	2	91.2	43.9
Energy	4.2%	21	5	4	54.7	42.1
All sectors	**100.0%**	**503**	**108**	**99**	**84.9**	**42.7**