

Target Retirement 2045 Fund

Inception Date 2015-06-30	Total Assets (\$ Mil) 119.80	Morningstar Overall Rating ★★★★	Category Target-Date 2045
Investment Style Large Blend	Credit Quality / Interest Rate Sensitivity Medium/Moderate	Turnover 5.00%	Expense Ratio 0.05%

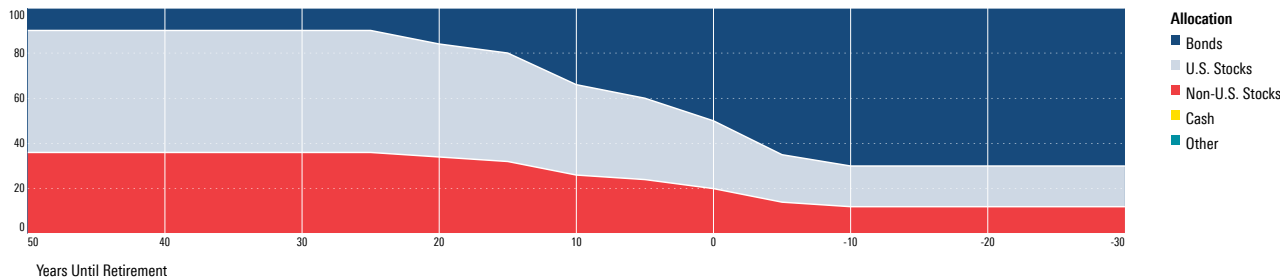
Investment Strategy

Target Retirement 2045 Trust uses an asset allocation strategy designed for investors planning to retire between 2043 and 2047. The trust seeks to provide growth of capital and current income consistent with its current target allocation by investing in a gradually more conservative mix of the following funds: Total Stock Market Index Fund, Total Bond Market II Index Fund, Total International Bond Index Fund, and Total International Stock Index Fund.

Morningstar Category

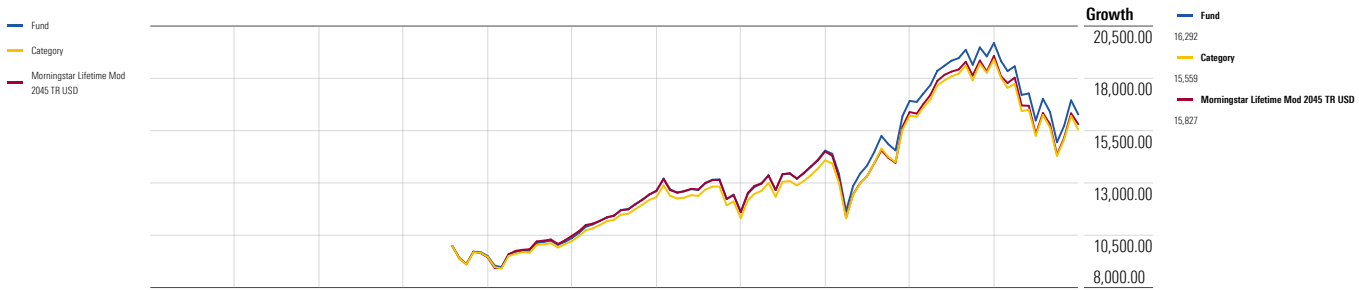
Target-date portfolios provide diversified exposure to stocks, bonds, and cash for those investors who have a specific date in mind (in this case, the years 2041-2045) for retirement. These portfolios aim to provide investors with an optimal level of return and risk, based solely on the target date. Management adjusts the allocation among asset classes to more-conservative mixes as the target date approaches, following a preset glide path. A target-date portfolio is part of a series of funds offering multiple retirement dates to investors.

Target Asset Allocation



Performance

Growth of 10K*



Total Return %	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	YTD
Fund	—	—	—	8.97	21.52	-7.84	25.12	16.31	16.35	-17.32	-17.32
Category	—	—	—	7.93	20.51	-8.14	24.35	15.10	16.63	-17.75	-17.75
Morningstar Lifetime Mod 2045 TR USD	—	—	—	10.84	20.53	-8.17	24.97	12.95	16.36	-17.06	-17.06
Quartile Rank	—	—	—	■	■	■	■	■	■	■	■
Percentile Rank	—	—	—	26	20	38	36	36	61	28	28
# of Funds in Cat	—	—	—	195	208	221	229	207	213	212	212

YTD Fund as of Dec 31,2022 | Category: Target-Date 2045 as of Dec 31,2022 | Index: Morningstar Lifetime Mod 2045 TR USD as of Dec 31,2022

*This graph presents historical performance for the investment as well as an index and/or peer group. If the investment, index and/or peer group have performed similarly, the lines representing these entities may overlap, causing the investment line to appear hidden. Please refer to the values in the chart and tables below.

Trailing Returns

Month End

Quarter End

	1M	3M	YTD	1-Year	3-Year	5-Year	10-Year	15-Year	Since Inception
Total Return %	-3.95	8.89	-17.32	-17.32	3.82	5.23	—	—	6.80
Category	-4.04	8.76	-17.75	-17.75	3.45	4.83	—	—	6.22
Morningstar Lifetime Mod 2045 TR USD	-3.14	10.16	-17.06	-17.06	2.92	4.58	—	—	6.31
Morningstar Rating	—	—	—	—	★★★★	★★★★	—	—	—
Quartile Rank	■	■	■	■	■	■	—	—	—
Percentile Rank	31	54	28	28	34	29	—	—	—
# of Funds in Cat	214	214	212	212	188	167	—	—	—

Fund as of Dec 31,2022 | Category: Target-Date 2045 as of Dec 31,2022 | Index: Morningstar Lifetime Mod 2045 TR USD as of Dec 31,2022

Fees

Expense Ratio0.05%

Portfolio

Equity

Bond

Asset Allocation

Asset Class	Fund	Category
U.S. Equity	48.72	49.22
Non-U.S. Equity	34.27	27.16
Fixed Income	12.34	12.82
Other	0.04	4.32
Cash	4.64	6.48

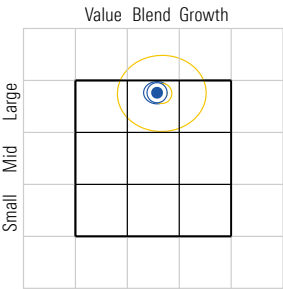
Fund as of Nov 30,2022 | Category: Target-Date 2045 as of Dec 31,2022

Stock Style

Map

Weight

Historical



- Centroid
- Ownership Zone
- Target Retirement 2045 Fund as of 11/30/2022
- Target-Date 2045 as of 11/30/2022

Exposure

Sector

Region

Country

	Sector	Fund %
Cyclical	Basic Materials	5.14
	Consumer Cyclical	10.66
	Financial Services	16.12
	Real Estate	3.48
Sensitive	Communication Services	6.38
	Energy	5.42
	Industrials	11.36
	Technology	18.34
Defensive	Consumer Defensive	7.32
	Healthcare	12.75
	Utilities	3.03

Fund as of Nov 30,2022 | Sector data based on the rescaled long position of equity holdings

Style Measures

Measures

Market Cap

Value & Growth Measures	Fund	Cat. Average
Price/Earnings	14.60	14.24
Price/Book	2.11	2.20
Price/Sales	1.41	1.44
Price/Cash Flow	7.73	7.82
Dividend Yield %	2.64	2.57
Long-Term Earnings %	10.97	—
Historical Earnings %	12.21	22.35
Sales Growth %	-3.21	5.25
Cash-Flow Growth %	14.48	13.03
Book-Value Growth %	6.24	6.32

Fund as of Nov 30,2022 | Category: Target-Date 2045 as of Dec 31,2022 | Data is based on the long position of the equity holdings.

Portfolio Holdings Summary

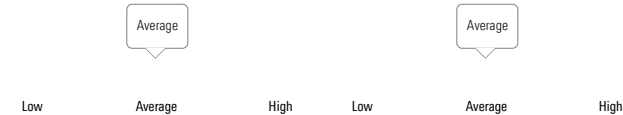
Current Portfolio Date	Equity Holdings	Bond Holdings	Other Holdings	% of Assets in Top 25 Holdings	Annual Turnover Ratio %
2022-11-30	0	0	6	98.65	5.00

Top 25 Holdings

Holding Name	Sector	Country	Maturity Date	Market Value	% Portfolio Weight
Vanguard Total Stock Mkt Idx Instl Pls	—	USA	—	34,524,384,958	50.54
Vanguard Instl Ttl Intl Stk Mkt Idx Trll	—	USA	—	24,105,271,325	35.29
Vanguard Total Bond Market II Idx I	—	USA	—	6,141,983,903	8.99
Vanguard Total Intl Bd II Idx Instl	—	USA	—	2,618,129,259	3.83

Morningstar Risk & Return

Risk vs. Category



Category: Target-Date 2045 as of Dec 31,2022 | Rankings are out of 171 funds.

Return vs. Category



Risk & Volatility Measures

Trailing	Fund
Alpha	-0.08
Beta	0.92
R2	99.61
Sharpe Ratio	0.25
Standard Deviation	18.61

USD | Fund as of Nov 30,2022 | Data is based on the long position of the equity holdings. | Calculation Benchmark : MSCI ACWI NR USD

Principal Risks

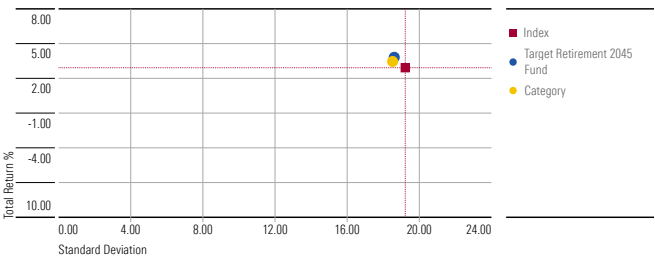
Credit and Counterparty, Inflation-Protected Securities, Prepayment (Call), Country or Region, Income, Index Correlation/Tracking Error, Interest Rate, Market/Market Volatility, Underlying Fund/Fund of Funds, Passive Management, Portfolio Diversification, Target Date

[Show Risk Definitions](#)

Risk/Return Analysis

Show as Chart

Show as Table



USD | Category: Target-Date 2045 | Index: Morningstar Lifetime Mod 2045 TR USD | Return as of 2022-11-30 | Standard Deviation as Of 2022-11-30

3 Year Volatility Analysis



In the past, this investment has shown a relatively moderate range of price fluctuations relative to other investments. This investment may experience larger or smaller price declines or price increases depending on market conditions. Some of this risk may be offset by owning other investments with different portfolio makeups or investment strategies.

Best 3 Month Return

18.64 (Apr '2020 - Jun '2020)

Worst 3 Month Return

-19.82 (Jan '2020 - Mar '2020)

People

Managers

Name	William Coleman
Tenure	9.84 Yrs
Biography	William A. Coleman, CFA, Portfolio Manager at Vanguard. He has worked in investment management since joining Vanguard in 2006 and has co-managed the Conservative Allocation and Moderate Allocation Portfolios since 2013. Education: B.S., King's College; M.S., Saint Joseph's University.
Name	Walter Nejman
Tenure	9.84 Yrs
Biography	Walter Nejman, Portfolio Manager at Vanguard. He has been with Vanguard since 2005; has worked in investment management since 2008; and has co-managed the Communication Services Index, Health Care Index, Industrials Index, and Information Technology Index Funds since 2015. Education: B.A., Arcadia University; M.B.A., Villanova University.

Investment Advisor(s)

Vanguard

Issuer

Vanguard Group Inc

Morningstar Investment Profiles: Disclosure Statement

Investment Option Disclosure

For more complete information about any of the investment products available within the retirement plan, please call 800-345-2345. Investors should carefully consider the investment objectives, risks, charges and expenses of the fund. For those investment options containing registered mutual funds, please carefully read the prospectus, which contains this and other important information, before you invest or send money.

An investment in a Money Market Fund is not insured or guaranteed by the Federal Deposit Insurance Corporation or any other government agency. Although the fund seeks to preserve the value of your investment at \$1.00 per share, it is possible to lose money by investing in the Fund.

The money market yield quotation illustrated in the performance data more closely reflects the current earnings of the money market than the total return quotations.

The information below may or may not be applicable to your plan.

A commingled fund is not a registered product but a collective trust fund. A collective fund is not a mutual fund and is exempt from SEC registration. Designed for and exclusively sold to qualified retirement plans and their participants, the funds are not available to individual retail investors.

A separate account is not a registered investment product but a separate account created specifically for the Plan. Separate accounts are not required to file a prospectus or registration statement with the SEC and accordingly neither is available.

A conduit account is not a registered investment product but a separate account created specifically for the Plan. The underlying assets of this fund are primarily invested within the fund listed in the "Investment Strategy" section of this fund fact sheet.

The lifestyle portfolio(s) is (are) a predetermined asset allocation among the core investment options available under the plan. The portfolio is not itself, nor is it intended to be, a security. You should review the prospectus for each mutual fund included in this asset allocation for information regarding the funds, including fees and other charges.

Investment return and principal value of security investments will fluctuate. The value at the time of redemption may be more or less than original cost. Past performance is no guarantee of future results.

Investment in bond funds is subject to risks, especially interest rate risk. As interest rates rise, the prices of bonds will generally fall, and vice versa.

Equity securities of small and mid-sized companies may be more volatile than securities of larger, more established companies.

Foreign investments involve special risks, including currency fluctuations, taxation differences and political developments.

Real estate securities and trusts involve greater risks than other non-diversified investments, including but not limited to: declining property values, varying economic conditions, changes in zoning laws, or losses from casualty. Real estate securities that invest in foreign real estate involve additional risk, including currency fluctuations and political developments.

Special note regarding Target Date Funds:

The date in a target date fund's name represents an approximate date when an investor is expected to retire (which is assumed to be at age 65) and/or begins withdrawing money. The principal value of the funds is not guaranteed at any time, including the target date. For more information, please refer to the fund prospectus and/or disclosure document.

A target date fund will gradually shift its emphasis from more aggressive investments to more conservative ones based on its target date (which is the assumed retirement date for an investor).

Empower Financial Services, Inc., or one or more of its affiliates, may receive a fee from the investment option provider for providing certain recordkeeping, distribution and administrative services.

Not FDIC/NCUSIF Insured

Not a Deposit Product

May Lose Value

No Bank/Credit Union/Affiliate Guarantee

Performance Disclosure

Total return reflects performance without adjusting for sales charges or the effects of taxation, but is adjusted to reflect all actual ongoing investment expenses and assumes reinvestment of dividends and capital gains. If adjusted, sales charges would reduce the performance quoted. Due to market volatility, the investment's return may vary greatly over short periods of time.

For mutual funds, standardized total return is total return adjusted for sales charges. The sales charge utilized in the standard return calculation was obtained from the fund's most recent prospectus and/or shareholder report available to Morningstar. The investment option's performance is compared with that of an index. The index is an unmanaged portfolio of specified securities and the index does not reflect any initial or ongoing expenses. An index cannot be invested in directly. A fund's portfolio may differ significantly from the securities in the index.

For separate accounts and commingled funds, Net-of-Fee returns are collected on a monthly and quarterly basis. Morningstar calculates total returns using the raw data collected from the asset management firm or plan provider. The performance data reported by the separate account managers or plan provider represents actual performance net of trading expenses, management fees, brokerage commissions or other expenses. The investment option's performance is compared with that of an index. The index is an unmanaged portfolio of specified securities and the index does not reflect any initial or ongoing expenses. An index cannot be invested in directly. A fund's portfolio may differ significantly from the securities in the index. Clients should refer to the disclosure document of the separate account manager and their Summary Plan Description (SPD) for specific information regarding fees and expenses.

Growth of \$10,000*

*This graph presents historical performance for the investment as well as an index and/or peer group. If the investment, index and/or peer group have performed similarly, the lines representing these entities may overlap, causing the investment line to appear hidden. Please refer to the values in the chart and tables below.

Morningstar Rating, Risk and Return

The Morningstar Rating™ for funds, or "star rating", is calculated for managed products (including mutual funds, variable annuity and variable life subaccounts, exchange-traded funds, closed-end funds, and separate accounts) with at least a three-year history. Exchange-traded funds and open-ended mutual funds are considered a single population for comparative purposes. It is calculated based on a Morningstar Risk-Adjusted Return measure that accounts for variation in a managed product's monthly excess performance, placing more emphasis on downward variations and rewarding consistent performance. The Morningstar Rating does not include any adjustment for sales loads. The top 10% of products in each product category receive 5 stars, the next 22.5% receive 4 stars, the next 35% receive 3 stars, the next 22.5% receive 2 stars, and the bottom 10% receive 1 star. The Overall Morningstar Rating for a managed product is derived from a weighted average of the performance figures associated with its three-, five-, and 10-year (if applicable) Morningstar Rating metrics. The weights are: 100% three-year rating for 36-59 months of total returns, 60% five-year rating/40% three-year rating for 60-119 months of total returns, and 50% 10-year rating/30% five-year rating/20% three-year rating for 120 or more months of total returns. While the 10-year overall star rating formula seems to give the most weight to the 10-year period, the most recent three-year period actually has the greatest impact because it is included in all three rating periods.

For private funds, the Morningstar Rating presented is hypothetical, because Morningstar does not independently analyze private funds. Rather, the rating is assigned as a means to compare these funds with the universe of mutual funds that Morningstar rates. The evaluation of this investment does not affect the retail mutual fund data published by Morningstar.

Overall ratings represent a weighted average of specific time period (3-, 5- and 10-year) ratings.

The Morningstar Return rates a fund's performance relative to other managed products in its Morningstar Category. It is an assessment of a product's excess return over a risk-free rate (the return of the 90-day Treasury Bill) in comparison with the products in its Morningstar category. In each Morningstar category, the top 10% of products earn a High Morningstar Return (High), the next 22.5% Above Average (+Avg), the middle 35% Average (Avg), the next 22.5% Below Average (-Avg), and the bottom 10% Low (Low). Morningstar Return is measured for up to three time periods (three, five, and 10 years). These separate measures are then weighted and averaged to produce an overall measure for the product. Products with less than three years of performance history are not rated.

Morningstar Risk evaluates a fund's downside volatility relative to that of other products in its Morningstar Category. It is an assessment of the variations in monthly returns, with an emphasis on downside variations, in comparison with the products in its Morningstar category. In each Morningstar category, the 10% of products with the lowest measured risk are described as Low Risk (Low), the next 22.5% Below Average (-Avg), the middle 35% Average (Avg), the next 22.5% Above Average (+Avg), and the top 10% High (High). Morningstar Risk is measured for up to three time periods (three, five, and 10 years). These separate measures are then weighted and averaged to produce an overall measure for the product. Products with less than three years of performance history are not rated.

Morningstar Ratings (Relative to Category)

Rating_Time_Period	Morningstar Return	Morningstar Risk	Morningstar Rating	Number Of Funds
3-Year	Average	Average	★★★★	188
5-Year	Above Average	Average	★★★★	167
10-Year	—	—	Not Rated	98
Overall	Above Average	Average	★★★★	188

Morningstar Category : Target-Date 2045 | Number of Funds in Category: 188 | Data through 2022-12-31

Risk Measures

R-squared reflects the percentage of an investment option's movements that are explained by movements in its benchmark index, showing the degree of correlation between the investment option and the benchmark

Beta is a measure of an investment option's sensitivity to market movements. A portfolio with a beta greater than 1 is more volatile than the market, and a portfolio with a beta less than 1 is less volatile than the market. Alpha measures the difference between an investment option's actual returns and its expected performance, given its level of risk (as measured by beta).

The Sharpe ratio uses standard deviation and excess return to determine reward per unit of risk.

Standard deviation is a statistical measure of the volatility of the investment option's returns.

Calculation Index is the market index that shows the highest correlation with a fund over the most-recent 36 months, as measured by the highest R-squared. Morningstar regresses a fund's monthly excess returns against the monthly excess returns of several well-known market indexes.This index is separate from the index listed in the performance sections of the page.

Morningstar Style Box

The Morningstar Style Box™ reveals a fund's investment strategy as of the date noted on this report.

For equity funds, the vertical axis shows the market capitalization of the long stocks owned, and the horizontal axis shows the investment style (value, blend, or growth.) A darkened cell in the style box matrix indicates the weighted average style of the portfolio.

For portfolios holding fixed-income investments, a Fixed Income Style Box is calculated. The vertical axis shows the credit quality based on credit ratings and the horizontal axis shows interest-rate sensitivity as measured by effective duration. There are three credit categories - "High", "Medium", and "Low"; and there are three interest rate sensitivity categories - "Limited", "Moderate", and "Extensive"; resulting in nine possible combinations. As in the Equity Style Box, the combination of credit and interest rate sensitivity for a portfolio is represented by a darkened square in the matrix. Morningstar uses credit rating information from credit rating agencies (CRAs) that have been designated Nationally Recognized Statistical Rating Organizations (NRSROs) by the Securities and Exchange Commission (SEC) in the United States. For a list of all NRSROs, please visit <https://www.sec.gov/ocr/ocr-current-nrsros.html>. Additionally, Morningstar will use credit ratings from CRAs which have been recognized by foreign regulatory institutions that are deemed the equivalent of the NRSRO designation. To determine the rating applicable to a holding and the subsequent holding weighted value of a portfolio two methods may be employed. First is a common methodology approach where if a case exists such that two CRAs have rated a holding, the lower rating of the two should be applied; if three or more CRAs have rated a holding, the median rating should be applied; and in cases where there are more than two ratings and a median rating cannot be determined, the lower of the two middle ratings should be applied.

Alternatively, if there is more than one rating available an average can be calculated from all and applied.

Please Note: Morningstar, Inc. is not an NRSRO nor does it issue a credit rating on the fund. Credit ratings for any security held in a portfolio can change over time.

Morningstar uses the credit rating information to calculate a weighted-average credit quality value for the portfolio. This value is based only upon those holdings which are considered to be classified as "fixed income", such a government, corporate, or securitized issues. Other types of holdings such as equities and many, though not all, types of derivatives are excluded. The weighted-average credit quality value is represented by a rating symbol which corresponds to the long-term rating symbol schemas employed by most CRAs. Note that this value is not explicitly published but instead serves as an input in the Style Box calculation. This symbol is then used to map to a Style Box credit quality category of "low," "medium," or "high". Funds with a "low" credit quality category are those whose weighted-average credit quality is determined to be equivalent to the commonly used High Yield classification, meaning a rating below "BBB", portfolios assigned to the "high" credit category have either a "AAA" or "AA+" average credit quality value, while "medium" are those with an average rating of "AA-" inclusive to "BBB-". It is expected and intended that the majority of portfolios will be assigned a credit category of "medium".

For assignment to an interest-rate sensitivity category, Morningstar uses the average effective duration of the portfolio. From this value there are three distinct methodologies employed to determine assignment to category. Portfolio which are assigned to Morningstar municipal-bond categories employ static breakpoints between categories. These breakpoints are: "Limited" equal to 4.5 years or less, "Moderate" equal to 4.5 years to less than 7 years; and "Extensive" equal to more than 7 years. For portfolios assigned to Morningstar categories other than U.S. Taxable, including all domiciled outside the United States, static duration breakpoints are also used: "Limited" equals less than or equal to 3.5 years, "Moderate" equals greater than 3.5 years but less than or equal to 6 years, and "Extensive" is assigned to portfolios with effective durations of more than 6 years.

Note: Interest-rate sensitivity for non-U.S. domiciled portfolios (excluding those in Morningstar convertible categories) may be assigned using average modified duration when average effective duration is not available.

For portfolios Morningstar classifies as U.S. Taxable Fixed-Income, interest-rate sensitivity category assignment is based on the effective duration of the Morningstar Core Bond Index (MCBI). The classification assignment is dynamically determined relative to the benchmark index value. A "Limited" category will be assigned to portfolios whose average effective duration is between 25% to 75% of MCBI average effective duration, where the average effective duration is between 75% to 125% of the MCBI the portfolio will be classified as "Moderate", and those portfolios with an average effective duration value 125% or greater of the average effective duration of the MCBI will be classified as "Extensive".

Investment Risk

Foreign Securities Investment Options/ Emerging Market Investment Options: The investor should note that investment options that invest in foreign securities involve special additional risks. These risks include, but are not limited to, currency risk, political risk, and risk associated with varying accounting standards. Investing in emerging markets may accentuate these risks.

Sector Investment Options: The investor should note that investment options that invest exclusively in one sector or industry involve additional risks. The lack of industry diversification subjects the investor to increased industry-specific risks.

Non-Diversified Investment Options: The investor should note that investment options that invest more of their assets in a single issuer involve additional risks, including share price fluctuations, because of the increased concentration of investments.

Small Cap Investment Options: The investor should note that investment options that invest in stocks of small companies involve additional risks. Smaller companies typically have a higher risk of failure, and are not as well established as larger blue-chip companies. Historically, smaller-company stocks have experienced a greater degree of market volatility than the overall market average.

Mid Cap Investment Options: The investor should note that investment options that invest in companies with market capitalizations below \$10 billion involve additional risks. The securities of these companies may be more volatile and less liquid than the securities of larger companies.

High-Yield Bond Investment Options: The investor should note that investment options that invest in lower-rated debt securities (commonly referred to as junk bonds) involve additional risks because of the lower credit quality of the securities in the portfolio. The investor should be aware of the possible higher level of volatility, and increased risk of default.

Yield

The yield of an investment option refers to the income generated by an investment in that investment option over an identified period of time. The SEC 30-day yield refers to the income generated by an investment over an identified 30-day period. The SEC 30-day yield is calculated by dividing: (I) the net investment income per share of the investment option earned over a 30-day period; by (II) the maximum offering price per share of the investment option on the last day of the period. This number is then annualized using semi-annual compounding. This means that the amount of income generated during the 30-day period is assumed to be generated each month over a 12-month period and is reinvested every six months. The yield does not necessarily reflect income actually earned by investing in the investment option because of certain adjustments required by the SEC and, therefore, may not correlate to the dividends or other distributions paid to shareholders.