

# PSF Managed Bond

Available through Pacific Life's Variable Universal Life Insurance Products

## Benchmark

Bloomberg US Agg Bond TR USD

### Investment Strategy

 from underlying investment's prospectus  
 The investment seeks to maximize total return consistent with prudent investment management.

The fund invests at least 80% of its assets in debt instruments, including instruments with characteristics of debt instruments (such as derivatives). It may invest up to 20% of its assets in securities of developed market foreign issuers that are denominated in foreign currencies, although the fund will normally limit its foreign currency exposure from these foreign currency denominated securities and currencies to 10% of its assets.

### Morningstar Category: Intermediate Core-Plus Bond

Intermediate-term core-plus bond portfolios invest primarily in investment-grade U.S. fixed-income issues including government, corporate, and securitized debt, but generally have greater flexibility than core offerings to hold non-core sectors such as corporate high yield, bank loan, emerging-markets debt, and non-U.S. currency exposures. Their durations (a measure of interest-rate sensitivity) typically range between 75% and 125% of the three-year average of the effective duration of the Morningstar Core Bond Index.

### Fees and Expenses

#### Class I

Prospectus Net Expense Ratio	0.62%
Prospectus Gross Expense Ratio	0.64%

#### Class P

Prospectus Net Expense Ratio	0.42%
Prospectus Gross Expense Ratio	0.44%

### Waiver Data

	Type	Exp. Date	%
Class I	Contractual	04-30-23	0.02
Class P	Contractual	04-30-23	0.02

### Operations

Class I Portfolio Inception Date:	01-04-88
Class I Separate Acct Start Date:	02-01-89
Class P Portfolio Inception Date:	05-02-11
Class P Separate Acct Start Date:	08-23-19

### Portfolio Manager(s)

Scott Mather. Since 2014.

Mark Kiesel. Since 2014.

Mohit Mittal. Since 2019.

Management Company	Pacific Life Fund Advisors LLC (PLFA)
Subadvisor	Pacific Investment Management Company, LLC

### Morningstar Sustainability

**Morningstar Sustainability Rating** as of 08-31-22


Above Average

#### Global Category

Out of 2,915 US Fixed Income investments analyzed

**Historical Corporate % Rank in Global Category**  
18

**Historical Corporate Sustainability Score** as of 09-30-22

22 based on 75% of AUM

**Sustainability Mandate**

No

The Morningstar Sustainability Score is based on company-level analysis from Sustainalytics. See disclosure for details.

### Performance

	YTD	1 Year	3 Year	5 Year	10 Year	Since Inception
Class I Portfolio Return %	-15.50	-15.61	-3.31	-0.46	0.88	5.93
Class P Portfolio Return %	-15.38	-15.44	-3.11	-0.26	1.08	1.89
Benchmark Return %	-14.61	-14.60	-3.26	-0.27	0.89	—
Category Average %	-14.76	-15.09	-2.86	-0.15	1.15	—

	3 Year	5 Year	10 Year	Overall Rating
Class I Morningstar Rating™	★★★	★★★	★★	★★★
Class P Morningstar Rating™	★★★	★★★	★★★	★★★
# of Funds in Category	568	508	363	568

**Performance Disclosure:** The performance data quoted represents past performance and does not guarantee future results. The investment return and principal value of an investment will fluctuate; thus an investor's shares, when redeemed, may be worth more or less than their original cost.

There may be multiple fund share classes listed. Not all share classes that appear in this Report are available in all VUL insurance products. Please refer to your VUL insurance product prospectus for the applicable funds and share classes.

Current performance may be lower or higher than return data quoted herein. For more current information including month-end performance, please call 800-800-7681 or visit [www.pacificlife.com](http://www.pacificlife.com). Please refer to the performance section of the disclosure page for more information.

### Portfolio Analysis

**Composition** as of 09-30-22

	% Net
U.S. Stocks	0.0
Non-U.S. Stocks	0.0
Bonds	88.8
Cash	8.3
Other	3.0
<b>Total</b>	<b>100.0</b>

**Top 10 Holdings** as of 09-30-22

	% Assets
Federal National Mortgage Associatio	4% 11-14-52 10.31
5 Year Treasury Note Future Dec 22	12-30-22 9.27
2 Year Treasury Note Future Dec 22	12-30-22 8.51
Federal National Mortgage Associatio	3% 11-14-52 5.77
10 Year Japanese Government Bond Mini	12-13-22 3.41
Federal National Mortgage	3.33
Associat	3.5% 11-14-52
United States Treasury Notes	2.875% 05-15-32 2.81
United States Treasury Bonds	3.25% 05-15-42 2.41
Federal National Mortgage Associatio	3% 09-01-52 1.65
Federal Home Loan Mortgage	1.11
Corpor	0.68% 08-06-25
Total Number of Stock Holdings	1
Total Number of Bond Holdings	887
Annual Turnover Ratio %	320.00
Total Fund Assets (\$mil)	2,467.62

**Morningstar Fixed Income Style Box™** as of 06-30-22

Not Available	Avg Eff Duration	5.46
	Avg Eff Maturity	6.69
	Avg Wtd Price	91.97

**Morningstar F-I Sectors** as of 09-30-22

	% Fund	% Category
Government	24.40	25.27
Corporate	22.38	26.75
Securitized	42.84	32.78
Municipal	0.03	1.68
Cash/Cash Equivalents	9.84	8.01
Other	0.51	5.51

**Credit Analysis: % Bonds** as of 06-30-22

AAA	46	BB	1
AA	1	B	0
A	5	Below B	5
BBB	20	Not Rated	21

### Notes

Variable universal life (VUL) insurance offers the policyowner the flexibility to structure the desired death benefit, as well as the premium payments according to individual needs and objectives. The policyowner also has the ability to allocate these premium payments among a variety of investment options. Pacific Life's VUL insurance products offer a wide variety of variable investment options. Insurance products are issued by Pacific Life Insurance Company in all states except New York, and in New York by Pacific Life & Annuity Company. Product availability and features may vary by state. Portfolio statistics may differ from the annual report.

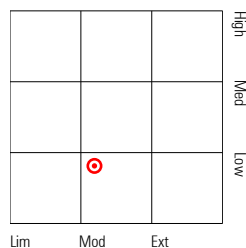
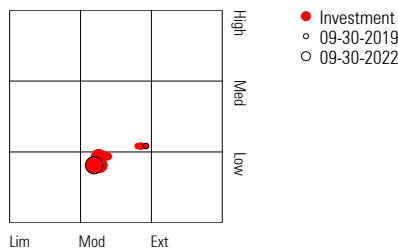
# PSF Managed Bond

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## Benchmark

Bloomberg US Agg Bond TR USD

## Style Orientation

**Fixed Income Style** as of 09-30-22

**Fixed Income Style Trail** as of 09-30-22

**Fixed Income Statistics** as of 09-30-22

Avg Eff Duration	5.46
Avg Eff Maturity	6.69
Avg Wtd Price	91.97

## Risk Evaluation

**Class I Risk Measures** as of 09-30-22

	3-Year	5-Year	10-Year
Standard Deviation	5.61	4.84	4.16
Sharpe Ratio	-0.68	-0.32	0.06
Information Ratio	-0.04	-0.16	-0.01
R-squared	94.48	93.77	90.01
Beta	1.02	0.98	1.01
Alpha	0.03	-0.21	-0.01

**Class P Risk Measures** as of 09-30-22

	3-Year	5-Year	10-Year
Standard Deviation	5.61	4.84	4.16
Sharpe Ratio	-0.64	-0.28	0.11
Information Ratio	0.11	0.01	0.14
R-squared	94.48	93.77	90.01
Beta	1.02	0.98	1.01
Alpha	0.23	-0.01	0.19

## Volatility Analysis



In the past, this investment has shown a relatively small range of price fluctuations relative to other investments. Based on this measure, currently more than two-thirds of all investments have shown higher levels of risk. Consequently, this investment may appeal to investors looking for a conservative investment strategy.



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**Best 3 Month Return**

 11.48%  
(Mar '09 - May '09)

**Worst 3 Month Return**

 -8.18%  
(Feb '22 - Apr '22)

**Best 3 Month Return**

 4.44%  
(Dec '11 - Feb '12)

**Worst 3 Month Return**

 -8.14%  
(Feb '22 - Apr '22)

# Disclosure

**You should carefully consider the risks, charges, limitations, and expenses associated with a variable life insurance policy, as well as the risks, charges, expenses, and investment goals/objectives of the underlying investment options. This fact sheet is authorized for distribution only when preceded or accompanied by the variable life insurance product prospectus. Contact your life insurance producer or visit [www.PacificLife.com](http://www.PacificLife.com) for more information, including product and underlying fund prospectuses that contain more complete information about Pacific Life and a variable universal life insurance policy. Read them carefully before investing or sending money.**

Variable Universal Life Insurance generally requires additional premium payments after the initial premium. If either no premiums are paid, or subsequent premiums are insufficient to continue coverage, it is possible that coverage will expire. Life insurance is subject to underwriting and approval of the application and will incur monthly policy charges.

Each variable investment option invests in a corresponding portfolio of the American Century Variable Portfolios, Inc., American Funds Insurance Series® Funds, BNY Mellon Variable Investment Fund, BlackRock® Variable Series Funds, Inc., DFA Investment Dimensions Group Inc., Fidelity® Variable Insurance Products Funds, Franklin Templeton Variable Insurance Products Trust, Invesco Variable Insurance Funds, Janus Aspen Series, Lazard Retirement Series, Inc., Legg Mason Partners Variable Equity Trust, Legg Mason Partners Variable Income Trust, Lord Abbett Series Fund, Inc., MFS® Variable Insurance Trust, M Fund Inc., Neuberger Berman Advisers Management Trust, Pacific Select Fund, PIMCO Variable Insurance Trust, Royce Capital Fund, State Street Variable Insurance Series Funds, Inc., T. Rowe Price Equity Series, Inc., VanEck VIP Trust, and Vanguard Variable Insurance Fund.

Although some funds may have names or investment goals/objectives that resemble retail mutual funds managed by the fund manager, these funds will not have the same underlying holdings or performance as the retail mutual funds' goals/objectives.

All investing involves risk, including the possible loss of the principal amount invested. The value of the variable investment options will fluctuate so that shares, when redeemed, may be worth more or less than the original cost. Please see the fund prospectuses for detailed descriptions of investment risks.

Expense ratios shown were determined based on average net assets as of the fiscal year ended 12-31, unless otherwise indicated. Certain portfolios' net expenses reflect a contractual advisory fee waiver and/or expense cap through a specified period. Please see the applicable portfolio's prospectus for detailed information.

## Performance

The Total Returns listed in this report include only fund level fees and expenses, reinvestment of dividends, and distributions. Current performance may be lower or higher than the performance reflected in this Report. Returns do not include any policy charges. Performance would be significantly lower after all policy fees and expenses are deducted. The cost of life insurance and benefits provided through the policy is deducted monthly in the form of policy

charges (which may include, but are not limited to, Cost of Insurance charges, administrative charges, mortality and expense risk charges, coverage charges, and any rider charges). Since policy charges vary by product, you are encouraged to ask your life insurance producer for a personalized illustration, which includes an analysis of charges report, to help you understand how the policy charges affect your policy cash values. See the applicable product prospectus for more information about policy charges. There may be multiple fund share classes listed in this Report. Not all share classes that appear in this Report are available in all VUL insurance products. Please refer to your VUL insurance product prospectus for the applicable funds and share classes.

The performance for certain funds includes periods of time when other investment management firms managed these funds and/or when investment policies, and possibly the fund name, differed. The applicable funds and dates such changes occurred are as follows:

**M Fund, Inc.:** M International Equity Fund on 12/11/18. M Large Cap Value Fund on 5/1/13 and 5/1/20.

**Pacific Select Fund:** Emerging Markets on 5/24/19. Emerging Markets Debt on 11/1/21. Growth on 5/1/13. Health Sciences on 5/1/14. International Small-Cap on 5/2/16 and 11/1/21. International Value on 5/1/06, 1/1/11, and 5/1/17. Large-Cap Growth on 1/1/06, 5/1/09, 1/1/13, and 5/1/13. Main Street® Core on 5/24/19. Mid-Cap Growth on 11/1/13 and 11/1/21. Mid-Cap Value on 5/1/15. Small-Cap Value on 10/30/15. Technology on 5/1/14 and 11/1/16. Value on 11/2/20.

A separate account is a type of Investment Company referred to as a unit investment trust which is registered in the Securities Exchange Commission under the Investment Company Act of 1940. The Separate Account Start Date represents the date the portfolio was added as a sub-account into the applicable Separate Account.

The benchmark indices provided herein may not represent all of a funds' benchmark indices shown in the applicable funds' prospectuses. See the applicable funds' prospectuses for more information.

Bloomberg US Agg Bond TR USD: The index measures the performance of investment grade, U.S. dollar-denominated, fixed-rate taxable bond market, including Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM passthroughs), ABS, and CMBS. It rolls up into other Bloomberg flagship indices, such as the multi-currency Global Aggregate Index and the U.S. Universal Index, which includes high yield and emerging markets debt.

## Definitions

**Alpha** is measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. A positive Alpha figure indicates the portfolio has performed better than its beta would predict. In contrast, a negative Alpha indicates the portfolio has underperformed, given the expectations established by beta.

**Average Market Cap** defines the overall "size" of a stock

fund's portfolio as the geometric mean of the market capitalization for all of the stocks it owns.

**Beta** is a measure of a fund'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.

**Credit Analysis** For corporate-bond and municipal-bond funds, the credit analysis depicts the quality of US and non-US bonds in the fund's portfolio. The analysis reveals the percentage of fixed-income securities that fall within each credit-quality rating as assigned by Standard & Poor's or Moody's. At the top of the ratings are AAA bonds. Bonds with a BBB rating are the lowest bonds that are still considered to be of investment grade. Bonds that are rated at or lower than BB (often called junk bonds or high-yield bonds) are considered to be quite speculative. (For municipal bonds, ratings BBB and below are considered speculative). Any bonds that appear in the Not Rated category are either not rated by Standard & Poor's or Moody's, or did not have a rating available.

**Duration Average** effective duration is a measure of a bond'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.

**Equity Style Ownership Zone** The Morningstar Ownership Zone<sup>SM</sup> provides a graphic and intuitive representation of the size and investment style of stocks in an equity portfolio. The Ownership Zone is derived by plotting each stock in the portfolio within the Morningstar Style Box. The Ownership Zone is the shaded area that represents 75% of the assets in the portfolio and indicates the level of concentration in the holdings. The "centroid" in the middle of the Ownership Zone represents the weighted average of all the holdings. The Ownership Zone helps investors differentiate between portfolios that may otherwise look similar. Investors can also use the Ownership Zone to construct diversified portfolios and model how multiple funds complement one other in a portfolio.

**Equity Style Trail** gives you a historical view of the movement of a portfolio over time in terms of equity style based on historical portfolios. This helps to clearly define the management of a portfolio over time and determine the consistency of that management.

**Information Ratio** is a risk-adjusted performance measure. The information ratio is a special version of the Sharpe Ratio in that the benchmark doesn't have to be the risk-free rate.

**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. It takes into consideration all mortgage prepayments, puts, and adjustable coupons. Longer-maturity funds are generally considered more interest-rate sensitive than their shorter counterparts.

**Price/Prospective Book Ratio** is the asset-weighted average of the prospective book value yields of all the domestic stocks in the fund's portfolio as of the date of the portfolio. It is calculated by dividing the company's estimated shareholders' equity per share for the current fiscal year by

No bank guarantee	Not a deposit	May lose value	Not FDIC/NCUA insured	Not insured by federal government agency
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# Disclosure

the company's month-end stock price as of the portfolio date.

**Price/Prospective Cash Flow Ratio** represents the weighted average of the price/cash-flow ratios of the stocks in a fund's portfolio. Price/cash-flow represents the amount an investor is willing to pay for a dollar generated from a particular company's operations. Price/cash flow shows the ability of a business to generate cash and acts as a gauge of liquidity and solvency.

**Price/Prospective Earnings Ratio** is the asset-weighted average of the prospective earnings yields of all the domestic stocks in the fund's portfolio as of the date of the portfolio. A stock's prospective earnings yield is calculated by dividing the company's estimated earnings per share for the current fiscal year by the company's month-end share price as of the portfolio date.

**Price/Prospective Sales Ratio** is the weighted average of the price/sales ratios of the stocks in a portfolio. Price/sales represents the amount an investor is willing to pay for a dollar generated from a particular company's operations.

**Sharpe Ratio** is a risk-adjusted measure developed by Nobel Laureate William Sharpe. It is calculated by using standard deviation and excess return to determine reward per unit of risk. The higher the Sharpe Ratio, the better the fund's historical risk-adjusted performance.

**Standard deviation** is a statistical measure of the volatility of the fund's returns.

**R-squared** reflects the percentage of a fund's movements that are explained by movements in its benchmark index, showing the degree of correlation between the fund and the benchmark.

**Risk Evaluation Chart** provides a graphic of the three year standard deviation of fund returns compared to its benchmark and Morningstar Category. Standard deviation is a statistical measurement of dispersion about an average, which, for a mutual fund, depicts how widely the returns varied over a certain period of time. Investors use the standard deviation of historical performance to try to predict the range of returns that are most likely for a given fund. When a fund has a high standard deviation, the predicted range of performance is wide, implying greater volatility. Morningstar computes standard deviation using the trailing monthly total returns for the appropriate time period. All of the monthly standard deviations are then annualized.

**Total Return table** presents the trailing performance of the investment, a chosen benchmark and the Morningstar Category for the time periods shown.

**Weighted Price** is calculated by weighting the price of each bond by its relative size in the portfolio. This number reveals if the fund favors bonds selling at prices above or below face value (premium or discount securities, respectively). A higher number indicates a bias toward premiums.

## Morningstar Rating™

The Morningstar Rating™ for funds, or "star rating", is calculated for investments 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.

## Morningstar Return

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

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 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

No bank guarantee	Not a deposit	May lose value	Not FDIC/NCUA insured	Not insured by federal government agency
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# Disclosure

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".

## Morningstar Sustainability Rating™

The Morningstar Sustainability Rating™ is intended to measure how well the issuing companies or countries of the securities within a fund's portfolio are managing their financially material environmental, social and governance, or ESG, risks relative to the fund's Morningstar Global Category peers. Morningstar assigns Sustainability Ratings by combining a portfolio's Corporate Sustainability Rating and Sovereign Sustainability Rating proportional to the relative weight of the (long only) corporate and sovereign positions.

The Morningstar Sustainability Rating calculation is a five-step process. First, the Corporate Sustainability Score and Sovereign Sustainability Score are both derived. Funds require at least 67% of corporate assets be covered by a company-level ESG Risk Score from Sustainalytics to receive a Morningstar Portfolio Corporate Sustainability Score. Funds require at least 67% of sovereign assets be covered by a Country Risk Score from Sustainalytics to receive a Morningstar Portfolio Sovereign Sustainability Score. The Morningstar Corporate and Sovereign Sustainability Scores are asset-weighted averages of company-level ESG Risk Scores for corporate holdings or Country Risk Scores for sovereign holdings. Both scores range between 0 to 100, with a higher score indicating that a fund has, on average, more of its assets invested in companies or countries with high ESG Risk.

Second, the Corporate and Sovereign Historical Sustainability Scores are weighted moving averages of the respective Portfolio Corporate and Sovereign Sustainability Scores over the past 12 months, to reduce volatility. The Historical Corporate and Sovereign Sustainability Scores range between 0 to 100, with a higher score indicating that a fund has, on average, more of its assets invested in companies or countries with high ESG Risk, on a consistent historical basis.

Third, the Morningstar Corporate Sustainability Rating and Sovereign Sustainability Rating are then assigned to all scored funds within Morningstar Global Categories. In order to receive a Corporate Sustainability Rating or Sovereign Sustainability Rating, at least thirty (30) funds in the Category receive a Historical Corporate Sustainability Score and a Historical Sovereign Sustainability Score respectively. The Ratings is determined by each fund's Corporate and Sovereign Sustainability Score rank within the following distribution:

- High (highest 10%)
- Above Average (next 22.5%)
- Average (next 35%)
- Below Average (next 22.5%) and
- Low (lowest 10%)

Both the Corporate and Sovereign Ratings rely on

distribution of scores within a Morningstar Global Category. In cases where there is little to no distribution for sovereign or corporate scores within a peer group, Morningstar defaults from the middle outwards, so that if there was no distribution, all portfolios in the peer group would receive an 'Average' rating assignment, and if there was very limited distribution, all portfolios may only fall under some of the five rating groups. Morningstar applies an absolute value breakpoint buffer to ensure breakpoints meet a minimum requirement of distribution. This value is assessed on an annual basis and will represent 10% of the standard deviation for all Sovereign Sustainability Scores for the Sovereign Sustainability Rating assignments, and 10% of the standard deviation for all Corporate Sustainability Scores for the Corporate Sustainability Rating assignments.

Fourth, because the distribution rules are applied within global categories, portfolios exposed to high ESG Risk could still receive favorable Sustainability Ratings. For example, portfolios within the energy category exhibit high ESG Risk levels. Therefore, as a final ratings check, we impose requirements on the level of ESG Risk.

- If Portfolio Corporate or Sovereign Sustainability score is above 40, then the fund receives a Low Corporate or Sovereign Sustainability Rating
- If Portfolio Corporate or Sovereign Sustainability score is above 35 and preliminary rating is Average or better, then the fund is downgraded to Below Average for the respective Corporate or Sovereign rating
- If Portfolio Corporate or Sovereign Sustainability score is above 30 and preliminary rating is Above Average, then the fund is downgraded to Average for the respective Corporate or Sovereign rating
- If Portfolio Corporate or Sovereign Sustainability score is below 30, then no adjustment is made.

Fifth, the Portfolio Sustainability Rating is determined by combining a portfolio's Corporate Sustainability Rating and Sovereign Sustainability Rating proportional to the relative weight of the (long only) corporate and sovereign positions, rounding to the nearest whole number. In order to receive a Portfolio Sustainability Rating, a fund must have both a Corporate Sustainability Rating and Sovereign Sustainability Rating, unless one of either the Corporate or Sovereign portion of the fund is less than 5% of the fund.

The Morningstar Sustainability Rating is depicted by globe icons where High equals 5 globes and Low equals 1 globe. Since a Sustainability Rating is assigned to all funds that meet the above criteria, the rating it is not limited to funds with explicit sustainable or responsible investment mandates.

Morningstar updates its Sustainability Ratings monthly. The Portfolio Corporate and Sovereign Sustainability Scores are calculated when Morningstar receives a new portfolio. Then, the Historical Corporate and Sovereign Sustainability Scores, the Corporate and Sovereign Sustainability Ratings, and the overall Sustainability Rating are calculated one month and six business days after the reported as-of date of the most recent portfolio. When deriving the Sustainability Rating, Morningstar uses the portfolio with same effective date as the rating, and if this is not available, will defer to the most recent portfolio up to nine months back. This is in order to accommodate varying disclosure requirements across different markets and managed portfolio types.

Please click on <http://corporate1.morningstar.com/SustainableInvesting/> for more detailed information about the Morningstar Sustainability Rating methodology and calculation frequency.

## Percentile Rank in Category

Percentile Rank is a standardized way of ranking items within a peer group. The observation with the largest numerical value is ranked zero the observation with the smallest numerical value is ranked 100. The remaining observations are placed equal distance from one another on the rating scale. Note that lower percentile ranks are generally more favorable.

## Morningstar Sectors

Morningstar determines how much of each stock portfolio is held in each of Morningstar's 12 major industrial sectors. In instances where the portfolio has a fund-of-fund structure, the sector breakdown is calculated by evaluating the underlying assets of the aggregated portfolio.

## Additional Information

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