



**Annual Report** | December 31, 2018

# Vanguard Variable Insurance Fund

Real Estate Index Portfolio

See the inside front cover for important information about access to your fund's annual and semiannual shareholder reports.

## Important information about access to shareholder reports

Beginning on January 1, 2021, as permitted by regulations adopted by the Securities and Exchange Commission, paper copies of your fund's annual and semiannual shareholder reports will no longer be sent to you by mail, unless you specifically request them. Instead, you will be notified by mail each time a report is posted on the website and will be provided with a link to access the report.

If you have already elected to receive shareholder reports electronically, you will not be affected by this change and do not need to take any action. You may elect to receive shareholder reports and other communications from the fund electronically by contacting your financial intermediary (such as a broker-dealer or bank) or, if you invest directly with the fund, by calling Vanguard at one of the phone numbers on the back cover of this report or by logging on to [vanguard.com](http://vanguard.com).

You may elect to receive paper copies of all future shareholder reports free of charge. If you invest through a financial intermediary, you can contact the intermediary to request that you continue to receive paper copies. If you invest directly with the fund, you can call Vanguard at one of the phone numbers on the back cover of this report or log on to [vanguard.com](http://vanguard.com). Your election to receive paper copies will apply to all the funds you hold through an intermediary or directly with Vanguard.

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## CEO's Perspective



**Tim Buckley**  
Chairman and Chief Executive Officer

Dear Planholder,

Over the years, I've found that prudent investors exhibit a common trait: discipline. No matter how the markets move or what new investing fad hits the headlines, those who stay focused on their goals and tune out the noise are set up for long-term success.

The prime gateway to investing is saving, and you don't usually become a saver without a healthy dose of discipline. Savers make the decision to sock away part of their income, which means spending less and delaying gratification, no matter how difficult that may be.

Of course, disciplined investing extends beyond diligent saving. The financial markets, in the short term especially, are unpredictable; I have yet to meet the investor who can time them perfectly. It takes discipline to resist the urge to go all-in when markets are frothy or to retreat when things look bleak.

Staying put with your investments is one strategy for handling volatility. Another, rebalancing, requires even more discipline because it means steering your money away from strong performers and toward poorer performers.

Patience—a form of discipline—is also the friend of long-term investors. Higher returns are the potential reward for weathering the market's turbulence and uncertainty.

It's important to be prepared for that turbulence, whenever it appears. Don't panic. Don't chase returns or look for answers outside the asset classes you trust. And be sure to rebalance periodically, even when there's turmoil.

Whether you're a master of self-control, get a boost from technology, or work with a professional advisor, know that discipline is necessary to get the most out of your investment portfolio. And know that Vanguard is with you for the entire ride.

Thank you for your continued loyalty.

Sincerely,

A handwritten signature in black ink, appearing to read "Mortimer J. Buckley". The signature is fluid and cursive, with a long, sweeping tail on the final letter.

Mortimer J. Buckley  
Chairman and Chief Executive Officer  
January 17, 2019

## Market Perspective

### Stocks slide and volatility climbs

After a strong start, global stock markets fell, and volatility rose substantially at the end of the year. The spike in volatility resulted primarily from concerns over slowing global growth, rising U.S. interest rates, and heightened geopolitical uncertainty. These factors led to sharp declines across major equity markets for the 12-month period.

The CRSP US Total Market Index, the benchmark for Vanguard Total Stock Market Index Fund, returned -5.17% for the 12 months ended December 31, 2018. Seven of the fund's ten industry sectors declined, with only health care, utilities, and consumer services gaining ground. Financials and industrials were the sectors that detracted the most.

In the United States, technology stocks were hurt by concerns about slowing sales and high valuations. Manufacturers lost ground in part because of continued trade tensions between the United States and China. And stocks in the energy sector retreated amid declining oil prices.

Stocks outside the United States were also in negative territory. The U.K., for example, continued to be challenged by

the Brexit negotiations. And European stocks lagged because of concerns about Italy's debt and Europe's economic dependence on emerging markets, which were hurt throughout much of the year by a rising dollar and trade protectionism.

### Mixed results for bonds

Despite a solid macroeconomic backdrop throughout the year, bond markets also experienced bouts of volatility, as bond investors shared some of the same concerns that affected equity investors.

In the final quarter of the year, fixed income investors shied away from risky assets, including U.S. high-yield and investment-grade corporate bonds, which underperformed as credit spreads with U.S. Treasuries widened significantly. The impending partial shutdown of the U.S. government also weighed on investor sentiment and contributed to the relative strength of safe-haven assets as the year drew to a close.

For the year, the return for the bond market was essentially flat. The Bloomberg Barclays U.S. Aggregate Bond Index returned 0.01%. Bonds with shorter durations tended to perform the best. Mortgage-backed

securities outperformed both U.S. Treasuries and corporate bonds for the year.

Treasury yields generally fell over the final quarter but finished the year higher. The yield of the 2-year Treasury note climbed 61 basis points to close the year at 2.49%. The yield of the 10-year Treasury increased 27 basis points to 2.68%.

The 12-month rise in yields was encouraged by the U.S. Federal Reserve. In December, the Fed lifted its target for short-term interest rates for the fourth time in 2018, to a range of 2.25%–2.5%. The central bank maintained that U.S. growth fundamentals and labor market conditions remain solid despite the recent market volatility, and lowered its long-term neutral target range to 2.75%–3%, signaling the likelihood for two more rate increases in 2019.

Bonds outside the United States, as measured by the Bloomberg Barclays Global Aggregate Index ex USD, returned -2.15% for the period. In general, higher-quality bonds with longer maturities tended to perform the best.

### Market Barometer

	Average Annual Total Returns Periods Ended December 31, 2018		
	One Year	Three Years	Five Years
<b>Stocks</b>			
Russell 1000 Index (Large-caps)	-4.78%	9.09%	8.21%
Russell 2000 Index (Small-caps)	-11.01	7.36	4.41
Russell 3000 Index (Broad U.S. market)	-5.24	8.97	7.91
FTSE All-World ex US Index (International)	-14.13	4.58	1.05
<b>Bonds</b>			
Bloomberg Barclays U.S. Aggregate Bond Index (Broad taxable market)	0.01%	2.06%	2.52%
Bloomberg Barclays Municipal Bond Index (Broad tax-exempt market)	1.28	2.30	3.82
FTSE Three-Month U.S. Treasury Bill Index	1.86	0.98	0.59
<b>CPI</b>			
Consumer Price Index	1.91%	2.03%	1.51%

## Real Estate Index Portfolio

Real estate investment trusts (REITs) performed about the same as the U.S. stock market during the 12 months ended December 31, 2018. Vanguard Real Estate Index Portfolio returned -5.35% for the fiscal year, in line with its target index, which returned -5.22%.

The portfolio seeks to provide a high level of income and moderate long-term capital appreciation by tracking a benchmark index that measures the performance of publicly traded equity REITs and other real estate-related investments.

Please note that the portfolio returns in Vanguard Variable Insurance Fund are different from those in Vanguard Variable Annuity (and other plans that invest in the fund), which take into account insurance-related expenses.

### **Fed tightening limited REITs' appeal**

In December, the Federal Reserve increased the target range for its federal funds rate by one-quarter of a percentage point, to between 2.25% and 2.5%. This was the Fed's fourth rate hike of 2018; however, it also lowered its guidance for rate hikes in 2019.

REITs tend to lag the broader stock market when rates rise as higher interest rates raise debt-financing costs and erode profit margins. In such an environment, investors may swap REITs for income-generating investments that bear less risk. But it's worth noting that REITs' performance relative to the U.S. stock market improved in 2018 in part because of generally solid earnings, more attractive valuations, and reduced legislative uncertainty after the election.

As defensive stocks gained traction in the broader market beginning in the middle of the year, the types of REITs that outperformed tended to be defensive as well. Three of the 13 subsectors of the REIT market finished the period in positive territory. Health care REITs were the top performers, with a return of more than 7%, followed by residential REITs. Diversified real estate activities, real estate development, and mortgage REITs were the worst performers.

## About Your Portfolio's Expenses

As a shareholder of the portfolio, you incur ongoing costs, which include costs for portfolio management, administrative services, and shareholder reports (like this one), among others. Operating expenses, which are deducted from a portfolio's gross income, directly reduce the investment return of the portfolio.

A portfolio's expenses are expressed as a percentage of its average net assets. This figure is known as the expense ratio. The following examples are intended to help you understand the ongoing costs (in dollars) of investing in your portfolio and to compare these costs with those of other mutual funds. The examples are based on an investment of \$1,000 made at the beginning of the period shown and held for the entire period.

The accompanying table illustrates your portfolio's costs in two ways:

- **Based on actual portfolio return.** This section helps you to estimate the actual expenses that you paid over the period. The "Ending Account Value" shown is derived from the portfolio's actual return, and the third column shows the dollar amount that would have been paid by an investor who started with \$1,000 in the portfolio. You may use the information here, together with the amount you invested, to estimate the expenses that you paid over the period.

To do so, simply divide your account value by \$1,000 (for example, an \$8,600 account value divided by \$1,000 = 8.6), then multiply the result by the number given for your portfolio under the heading "Expenses Paid During Period."

- **Based on hypothetical 5% yearly return.** This section is intended to help you compare your portfolio's costs with those of other mutual funds. It assumes that the portfolio had a yearly return of 5% before expenses, but that the expense ratio is unchanged. In this case—because the return used is not the portfolio's actual return—the results do not apply to your investment. The example is useful in making comparisons because the Securities and Exchange Commission requires all mutual funds to calculate expenses based on a 5% return. You can assess your portfolio's costs by comparing this hypothetical example with the hypothetical examples that appear in shareholder reports of other funds.

Note that the expenses shown in the table are meant to highlight and help you compare *ongoing* costs only and do not reflect transaction costs incurred by the portfolio for buying and selling securities. The portfolio's expense ratio does not reflect additional fees and expenses associated with the annuity or life insurance program through which you invest.

The calculations assume no shares were bought or sold during the period. Your actual costs may have been higher or lower, depending on the amount of your investment and the timing of any purchases or redemptions.

You can find more information about the portfolio's expenses in the Financial Statements section. For additional information on operating expenses and other shareholder costs, please refer to the prospectus.

### Six Months Ended December 31, 2018

	Beginning Account Value 6/30/2018	Ending Account Value 12/31/2018	Expenses Paid During Period <sup>1</sup>
Real Estate Index Portfolio			
Based on Actual Portfolio Return	\$1,000.00	\$939.89	\$1.22
Based on Hypothetical 5% Yearly Return	1,000.00	1,023.95	1.28

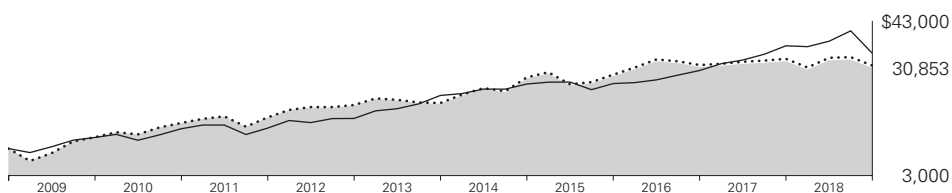
<sup>1</sup> The calculations are based on expenses incurred in the most recent six-month period. The portfolio's annualized six-month expense ratio for that period is 0.25%. The dollar amounts shown as "Expenses Paid" are equal to the annualized expense ratio multiplied by the average account value over the period, multiplied by the number of days in the most recent six-month period, then divided by the number of days in the most recent 12-month period (184/365).

## Performance Summary

All of the returns in this report represent past performance, which is not a guarantee of future results that may be achieved by the portfolio. (Current performance may be lower or higher than the performance data cited. For performance data current to the most recent month-end, visit our website at [vanguard.com/performance](http://vanguard.com/performance).) Note, too, that both investment returns and principal value can fluctuate widely, so an investor's shares, when sold, could be worth more or less than their original cost. The returns shown do not reflect taxes that a shareholder would pay on portfolio distributions or on the sale of portfolio shares. Nor do the returns reflect fees and expenses associated with the annuity or life insurance program through which a shareholder invests. If these fees and expenses were included, the portfolio's returns would be lower.

### Cumulative Performance: December 31, 2008–December 31, 2018

Initial Investment of \$10,000



	Average Annual Total Returns Periods Ended December 31, 2018			Final Value of a \$10,000 Investment
	One Year	Five Years	Ten Years	
Real Estate Index Portfolio	-5.35%	7.40%	11.93%	\$30,853
Real Estate Spliced Index <sup>1</sup>	-5.22	7.65	12.14	31,461
Dow Jones U.S. Total Stock Market Float Adjusted Index	-5.30	7.86	13.22	34,625

<sup>1</sup> MSCI US REIT Index adjusted to include a 2% cash position (Lipper Money Market Average) through April 30, 2009; MSCI US REIT Index through January 18, 2018; and MSCI US Investable Market Real Estate 25/50 Index thereafter.

See Financial Highlights for dividend and capital gains information.

## Subindustry Diversification

As of December 31, 2018

Diversified REITs	4.6%
Health Care REITs	9.9
Hotel & Resort REITs	4.9
Industrial REITs	6.8
Office REITs	9.8
Residential REITs	14.0
Retail REITs	14.6
Specialized REITs	32.0
Real Estate Management and Development	3.4

The table reflects the portfolio's equity exposure, based on its investments in stocks and stock index futures. Any holdings in short-term reserves are excluded. Sector categories are based on the Global Industry Classification Standard ("GICS"), except for the "Other" category (if applicable), which includes securities that have not been provided a GICS classification as of the effective reporting period.

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of MSCI Inc. ("MSCI") and Standard and Poor's, a division of McGraw-Hill Companies, Inc. ("S&P"), and is licensed for use by Vanguard. Neither MSCI, S&P nor any third party involved in making or compiling the GICS or any GICS classification makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of its affiliates or any third party involved in making or compiling the GICS or any GICS classification have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.



# Financial Statements

## Statement of Net Assets

As of December 31, 2018

The portfolio reports a complete list of its holdings in regulatory filings four times in each fiscal year, at the quarter-ends. For the second and fourth fiscal quarters, the lists appear in the portfolio's semiannual and annual reports to shareholders. For the first and third fiscal quarters, the portfolio files the lists with the Securities and Exchange Commission on Form N-Q. Shareholders can look up the portfolio's Forms N-Q on the SEC's website at sec.gov.

	Shares	Market Value* (\$000)		Shares	Market Value* (\$000)		Shares	Market Value* (\$000)
<b>Equity Real Estate Investment Trusts (REITs) (96.5%)<sup>1</sup></b>								
<b>Diversified REITs (4.6%)</b>								
WP Carey Inc.	156,677	10,237	Sunstone Hotel Investors Inc.	222,932	2,900	Columbia Property Trust Inc.	115,691	2,239
VEREIT Inc.	944,537	6,753	RLJ Lodging Trust	171,334	2,810	Brandywine Realty Trust	173,587	2,234
Liberty Property Trust	144,245	6,041	Xenia Hotels & Resorts Inc.	109,182	1,878	Piedmont Office Realty Trust Inc. Class A	124,519	2,122
STORE Capital Corp.	180,283	5,104	DiamondRock Hospitality Co.	202,563	1,839	Corporate Office Properties Trust	100,248	2,108
PS Business Parks Inc.	20,094	2,632	MGM Growth Properties LLC Class A	69,165	1,827	Mack-Cali Realty Corp.	88,074	1,725
Colony Capital Inc.	454,898	2,129	Chesapeake Lodging Trust	58,985	1,436	Tier REIT Inc.	49,802	1,027
Empire State Realty Trust Inc.	137,660	1,959	Summit Hotel Properties Inc.	101,743	990	Easterly Government Properties Inc.	58,346	915
Washington REIT	76,416	1,758	Chatham Lodging Trust	44,442	786	<sup>^</sup> Government Properties Income Trust	97,501	670
Lexington Realty Trust	210,494	1,728	Hersha Hospitality Trust Class A	36,250	636	Franklin Street Properties Corp.	104,158	649
American Assets Trust Inc.	31,990	1,285	CorePoint Lodging Inc.	41,015	503	Select Income REIT	87,257	642
* Alexander & Baldwin Inc.	66,739	1,227	Ashford Hospitality Trust Inc.	92,316	369	NorthStar Realty Europe Corp.	43,499	633
Global Net Lease Inc.	69,610	1,226	Braemar Hotels & Resorts Inc.	28,916	258	City Office REIT Inc.	33,480	343
Armada Hoffler Properties Inc.	47,359	666			<b>46,896</b>			<b>94,354</b>
iStar Inc.	66,612	611	<b>Industrial REITs (6.7%)</b>			<b>Residential REITs (14.0%)</b>		
Gladstone Commercial Corp.	27,732	497	Prologis Inc.	614,229	36,068	Equity Residential	359,024	23,699
One Liberty Properties Inc.	14,204	344	Duke Realty Corp.	348,440	9,025	AvalonBay Communities Inc.	134,696	23,444
<sup>§</sup> Winthrop Realty Trust	32,397	35	First Industrial Realty Trust Inc.	122,813	3,544	Essex Property Trust Inc.	64,408	15,794
		<b>44,232</b>	EastGroup Properties Inc.	35,119	3,222	Mid-America Apartment Communities Inc.	110,857	10,609
<b>Health Care REITs (9.9%)</b>			Rexford Industrial Realty Inc.	89,123	2,626	UDR Inc.	260,864	10,335
Welltower Inc.	362,803	25,182	STAG Industrial Inc.	102,056	2,539	Sun Communities Inc.	78,947	8,030
Ventas Inc.	347,539	20,362	Americold Realty Trust	93,628	2,391	Equity LifeStyle Properties Inc.	82,279	7,992
HCP Inc.	457,887	12,789	Terrano Realty Corp.	57,028	2,006	Camden Property Trust	90,404	7,960
Omega Healthcare Investors Inc.	195,501	6,872	<sup>^</sup> Industrial Logistics Properties Trust	63,197	1,243	Apartment Investment & Management Co.	153,454	6,734
Medical Properties Trust Inc.	356,656	5,735	Monmouth Real Estate Investment Corp.	83,013	1,029	Invitation Homes Inc.	304,703	6,118
Healthcare Trust of America Inc. Class A	202,464	5,124	Hannon Armstrong Sustainable Infrastructure Capital Inc.	52,453	999	American Campus Communities Inc.	133,545	5,527
Healthcare Realty Trust Inc.	122,029	3,470	Innovative Industrial Properties Inc.	8,681	394	American Homes 4 Rent Class A	259,463	5,150
National Health Investors Inc.	40,923	3,091			<b>65,086</b>	Independence Realty Trust Inc.	85,525	785
Sabra Health Care REIT Inc.	174,195	2,871	<b>Office REITs (9.8%)</b>			NexPoint Residential Trust Inc.	18,096	634
Physicians Realty Trust	178,841	2,867	Boston Properties Inc.	150,682	16,959	Investors Real Estate Trust	11,548	567
Senior Housing Properties Trust	231,852	2,717	Alexandria Real Estate Equities Inc.	103,231	11,896	Preferred Apartment Communities Inc. Class A	38,697	544
LTC Properties Inc.	38,616	1,610	Vornado Realty Trust	167,181	10,370	Front Yard Residential Corp.	49,478	432
CareTrust REIT Inc.	79,006	1,458	SL Green Realty Corp.	84,578	6,689	UMH Properties Inc.	32,321	383
Universal Health Realty Income Trust	12,866	790	Kilroy Realty Corp.	98,197	6,175			<b>134,737</b>
New Senior Investment Group Inc.	80,472	332	Douglas Emmett Inc.	157,553	5,377	<b>Retail REITs (14.6%)</b>		
MedEquities Realty Trust Inc.	28,335	194	Hudson Pacific Properties Inc.	153,384	4,457	Simon Property Group Inc.	301,606	50,667
		<b>95,464</b>	Highwoods Properties Inc.	100,304	3,881	Realty Income Corp.	282,612	17,816
<b>Hotel &amp; Resort REITs (4.9%)</b>			JBG SMITH Properties	111,432	3,879	Regency Centers Corp.	148,664	8,724
Host Hotels & Resorts Inc.	723,833	12,066	Equity Commonwealth	117,267	3,519	Federal Realty Investment Trust	71,732	8,467
Park Hotels & Resorts Inc.	196,565	5,107	Cousins Properties Inc.	407,552	3,220	National Retail Properties Inc.	152,978	7,421
Hospitality Properties Trust	160,189	3,825	Paramount Group Inc.	208,986	2,625	Kimco Realty Corp.	411,446	6,028
Pebblebrook Hotel Trust	127,764	3,617						
Apple Hospitality REIT Inc.	212,762	3,034						
Ryman Hospitality Properties Inc.	45,210	3,015						

Real Estate Index Portfolio

	Shares	Market Value* (\$000)
Macerich Co.	103,476	4,478
Brixmor Property Group Inc.	296,436	4,355
Weingarten Realty Investors	119,244	2,958
Spirit Realty Capital Inc.	83,892	2,957
Taubman Centers Inc.	59,632	2,713
Brookfield Property REIT Inc. Class A	155,343	2,501
Retail Properties of America Inc.	213,650	2,318
Acadia Realty Trust	79,489	1,889
Urban Edge Properties	111,285	1,850
Tanger Factory Outlet Centers Inc.	91,371	1,848
Agree Realty Corp.	30,216	1,786
Retail Opportunity Investments Corp.	109,879	1,745
SITE Centers Corp.	153,262	1,697
Kite Realty Group Trust	81,981	1,155
^ Seritage Growth Properties Class A	33,159	1,072
Getty Realty Corp.	33,233	977
RPT Realty	78,450	937
Washington Prime Group Inc.	182,594	887
Alexander's Inc.	2,206	672
Saul Centers Inc.	13,177	622
Urstadt Biddle Properties Inc. Class A	28,850	554
Whitestone REIT	34,725	426
^ Pennsylvania REIT	68,750	408
Retail Value Inc.	14,600	374
^ CBL & Associates Properties Inc.	170,321	327
Spirit MTA REIT	42,040	300
Cedar Realty Trust Inc.	89,333	281
		<b>141,210</b>
<b>Specialized REITs (32.0%)</b>		
American Tower Corp.	430,022	68,025
Crown Castle International Corp.	404,660	43,958
Public Storage	152,912	30,951
Equinix Inc.	77,559	27,344
Digital Realty Trust Inc.	201,041	21,421
* SBA Communications Corp. Class A	112,065	18,142
Weyerhaeuser Co.	739,351	16,162
Extra Space Storage Inc.	123,321	11,158
Iron Mountain Inc.	265,522	8,606
VICI Properties Inc.	358,742	6,737
Gaming and Leisure Properties Inc.	197,819	6,392
Lamar Advertising Co. Class A	82,692	5,721
CubeSmart	181,633	5,211
CyrusOne Inc.	96,972	5,128
EPR Properties	72,537	4,645
Life Storage Inc.	45,388	4,221
Rayonier Inc.	126,423	3,501
CoreSite Realty Corp.	33,691	2,939
Uniti Group Inc.	163,247	2,542
Outfront Media Inc.	136,290	2,470
GEO Group Inc.	119,001	2,344
CoreCivic Inc.	115,491	2,059
PotlatchDeltic Corp.	62,621	1,981
QTS Realty Trust Inc. Class A	49,832	1,846
Four Corners Property Trust Inc.	65,036	1,704

	Shares	Market Value* (\$000)
National Storage Affiliates Trust	55,001	1,455
InfraREIT Inc.	42,428	892
CorEnergy Infrastructure Trust Inc.	11,461	379
Jernigan Capital Inc.	18,878	374
CatchMark Timber Trust Inc. Class A	47,513	337
Farmland Partners Inc.	31,769	144
		<b>308,789</b>
<b>Total Equity Real Estate Investment Trusts (REITs) (Cost \$1,048,156)</b>		<b>930,768</b>
<b>Real Estate Management &amp; Development (3.4%)</b>		
* CBRE Group Inc. Class A	314,817	12,605
Jones Lang LaSalle Inc.	44,425	5,624
* Howard Hughes Corp. Kennedy-Wilson Holdings Inc.	39,801	3,885
Inc.	124,817	2,268
^ Realogy Holdings Corp.	120,671	1,772
HFF Inc. Class A	36,272	1,203
Newmark Group Inc. Class A	121,200	972
*^ Redfin Corp.	47,253	681
* Marcus & Millichap Inc. RE/MAX Holdings Inc. Class A	18,478	634
Essential Properties Realty Trust Inc.	35,046	485
* St. Joe Co.	34,700	457
*^ Five Point Holdings LLC Class A	57,957	402
* Tejon Ranch Co.	20,646	342
RMR Group Inc. Class A	5,911	314
* FRP Holdings Inc.	6,715	309
*^ Altisource Portfolio Solutions SA	10,661	240
*^ Forestar Group Inc.	10,019	139
<b>Total Real Estate Management &amp; Development (Cost \$40,517)</b>		<b>32,856</b>
<b>Temporary Cash Investments (0.3%)<sup>1</sup></b>		
<b>Money Market Fund (0.2%)</b>		
<sup>2,3</sup> Vanguard Market Liquidity Fund, 2.530%	20,441	2,044
	Face Amount (\$000)	
<b>U.S. Government and Agency Obligations (0.1%)</b>		
<sup>4</sup> United States Treasury Bill, 2.194%, 1/24/19	1,000	999
<b>Total Temporary Cash Investments (Cost \$3,043)</b>		<b>3,043</b>
<b>Total Investments (100.2%) (Cost \$1,091,716)</b>		<b>966,667</b>

	Amount (\$000)
<b>Other Assets and Liabilities (-0.2%)</b>	
<b>Other Assets</b>	
Investment in Vanguard	55
Receivables for Investment Securities Sold	51
Receivables for Accrued Income	4,923
Receivables for Capital Shares Issued	454
Variation Margin Receivable—	
Futures Contracts	3
Other Assets	574
<b>Total Other Assets</b>	<b>6,060</b>
<b>Liabilities</b>	
Payables for Investment Securities Purchased	(3,356)
Collateral for Securities on Loan	(2,044)
Payables for Capital Shares Redeemed	(1,610)
Payables to Vanguard	(648)
<b>Total Liabilities</b>	<b>(7,658)</b>
<b>Net Assets (100%)</b>	
<b>Applicable to 83,387,429 outstanding \$ .001 par value shares of beneficial interest (unlimited authorization)</b>	<b>965,069</b>
<b>Net Asset Value Per Share</b>	<b>\$11.57</b>

At December 31, 2018, net assets consisted of:

	Amount (\$000)
Paid-in Capital	1,006,949
Total Distributable Earnings (Loss)	(41,880)
<b>Net Assets</b>	<b>965,069</b>

\* See Note A in Notes to Financial Statements.

\* Non-income-producing security.

§ Security value determined using significant unobservable inputs.

^ Includes partial security positions on loan to broker-dealers. The total value of securities on loan is \$1,888,000.

1 The portfolio invests a portion of its cash reserves in equity markets through the use of index futures contracts. After giving effect to futures investments, the portfolio's effective common stock and temporary cash investment positions represent 100.1% and 0.1%, respectively, of net assets.

2 Affiliated money market fund available only to Vanguard funds and certain trusts and accounts managed by Vanguard. Rate shown is the 7-day yield.

3 Includes \$2,044,000 of collateral received for securities on loan.

4 Securities with a value of \$399,000 have been segregated as initial margin for open futures contracts.

REIT—Real Estate Investment Trust.

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Derivative Financial Instruments Outstanding as of Period End

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Futures Contracts

				(\$000)
	Expiration	Number of Long (Short) Contracts	Notional Amount	Value and Unrealized Appreciation (Depreciation)
Long Futures Contracts				
Dow Jones U.S. Real Estate Index	March 2019	65	1,924	(133)

## Statement of Operations

	Year Ended December 31, 2018
	(\$000)
<b>Investment Income</b>	
<b>Income</b>	
Dividends	33,266
Interest <sup>1</sup>	24
Securities Lending—Net	23
<b>Total Income</b>	<b>33,313</b>
<b>Expenses</b>	
The Vanguard Group—Note B	
Investment Advisory Services	152
Management and Administrative	2,249
Marketing and Distribution	149
Custodian Fees	18
Auditing Fees	36
Shareholders' Reports	22
Trustees' Fees and Expenses	1
<b>Total Expenses</b>	<b>2,627</b>
<b>Net Investment Income</b>	<b>30,686</b>
<b>Realized Net Gain (Loss)</b>	
Investment Securities Sold <sup>1</sup>	46,770
Futures Contracts	(44)
Capital Gain Distributions Received	6,596
<b>Realized Net Gain (Loss)</b>	<b>53,322</b>
<b>Change in Unrealized Appreciation (Depreciation)</b>	
Investment Securities <sup>1</sup>	(141,493)
Futures Contracts	(128)
<b>Change in Unrealized Appreciation (Depreciation)</b>	<b>(141,621)</b>
<b>Net Increase (Decrease) in Net Assets Resulting from Operations</b>	<b>(57,613)</b>

<sup>1</sup> Interest income, realized net gain (loss), and change in unrealized appreciation (depreciation) from an affiliated company of the portfolio were \$14,000, (\$1,000), and (\$1,000), respectively. Purchases and sales are for temporary cash investment purposes.

## Statement of Changes in Net Assets

	Year Ended December 31,	
	2018	2017
	(\$000)	(\$000)
<b>Increase (Decrease) in Net Assets</b>		
<b>Operations</b>		
Net Investment Income	30,686	30,921
Realized Net Gain (Loss)	53,322	38,019
Change in Unrealized Appreciation (Depreciation)	(141,621)	(18,204)
<b>Net Increase (Decrease) in Net Assets Resulting from Operations</b>	<b>(57,613)</b>	<b>50,736</b>
<b>Distributions</b>		
Net Investment Income	(30,725)	(26,681)
Realized Capital Gain <sup>1</sup>	(37,675)	(47,580)
<b>Total Distributions</b>	<b>(68,400)</b>	<b>(74,261)</b>
<b>Capital Share Transactions</b>		
Issued	145,927	113,956
Issued in Lieu of Cash Distributions	68,400	74,261
Redeemed	(200,093)	(180,812)
<b>Net Increase (Decrease) from Capital Share Transactions</b>	<b>14,234</b>	<b>7,405</b>
<b>Total Increase (Decrease)</b>	<b>(111,779)</b>	<b>(16,120)</b>
<b>Net Assets</b>		
<b>Beginning of Period</b>	<b>1,076,848</b>	<b>1,092,968</b>
<b>End of Period</b>	<b>965,069</b>	<b>1,076,848</b>

<sup>1</sup> Includes fiscal 2018 and 2017 short-term gain distributions totaling \$441,000 and \$786,000, respectively. Short-term gain distributions are treated as ordinary income dividends for tax purposes.

## Financial Highlights

For a Share Outstanding Throughout Each Period	Year Ended December 31,				
	2018	2017	2016	2015	2014
<b>Net Asset Value, Beginning of Period</b>	<b>\$13.14</b>	<b>\$13.48</b>	<b>\$13.77</b>	<b>\$14.17</b>	<b>\$11.87</b>
<b>Investment Operations</b>					
Net Investment Income	.367 <sup>1</sup>	.375 <sup>1</sup>	.346	.358	.307
Net Realized and Unrealized Gain (Loss) on Investments	(1.084)	.220	.734	(.032)	3.061
Total from Investment Operations	(.717)	.595	1.080	.326	3.368
<b>Distributions</b>					
Dividends from Net Investment Income	(.383)	(.336)	(.375)	(.251)	(.367)
Distributions from Realized Capital Gains	(.470)	(.599)	(.995)	(.475)	(.701)
Total Distributions	(.853)	(.935)	(1.370)	(.726)	(1.068)
<b>Net Asset Value, End of Period</b>	<b>\$11.57</b>	<b>\$13.14</b>	<b>\$13.48</b>	<b>\$13.77</b>	<b>\$14.17</b>
<b>Total Return</b>	<b>-5.35%</b>	<b>4.78%</b>	<b>8.36%</b>	<b>2.22%</b>	<b>30.11%</b>
<b>Ratios/Supplemental Data</b>					
Net Assets, End of Period (Millions)	\$965	\$1,077	\$1,093	\$990	\$1,009
Ratio of Total Expenses to Average Net Assets	0.26%	0.27%	0.27%	0.27%	0.27%
Ratio of Net Investment Income to Average Net Assets	3.04%	2.87%	2.55%	2.60%	3.96%
Portfolio Turnover Rate	35%	10%	14%	21%	11%

<sup>1</sup> Calculated based on average shares outstanding.

## Notes to Financial Statements

Real Estate Index Portfolio, a portfolio of Vanguard Variable Insurance Funds, is registered under the Investment Company Act of 1940 as an open-end investment company. The portfolio's shares are only available for purchase by separate accounts of insurance companies as investments for variable annuity plans, variable life insurance contracts, or other variable benefit insurance contracts.

A. The following significant accounting policies conform to generally accepted accounting principles for U.S. investment companies. The portfolio consistently follows such policies in preparing its financial statements.

1. **Security Valuation:** Securities are valued as of the close of trading on the New York Stock Exchange (generally 4 p.m., Eastern time) on the valuation date. Equity securities are valued at the latest quoted sales prices or official closing prices taken from the primary market in which each security trades; such securities not traded on the valuation date are valued at the mean of the latest quoted bid and asked prices. Securities for which market quotations are not readily available, or whose values have been materially affected by events occurring before the portfolio's pricing time but after the close of the securities' primary markets, are valued by methods deemed by the board of trustees to represent fair value. Investments in Vanguard Market Liquidity Fund are valued at that fund's net asset value. Temporary cash investments are valued using the latest bid prices or using valuations based on a matrix system (which considers such factors as security prices, yields, maturities, and ratings), both as furnished by independent pricing services.

2. **Futures Contracts:** The portfolio uses index futures contracts to a limited extent, with the objectives of maintaining full exposure to the stock market, maintaining liquidity, and minimizing transaction costs. The portfolio may purchase futures contracts to immediately invest incoming cash in the market, or sell futures in response to cash outflows, thereby simulating a fully invested position in the underlying index while maintaining a cash balance for liquidity. The primary risks associated with the use of futures contracts are imperfect correlation between changes in market values of stocks held by the portfolio and the prices of futures contracts, and the possibility of an illiquid market. Counterparty risk involving futures is mitigated because a regulated clearinghouse is the counterparty instead of the clearing broker. To further mitigate counterparty risk, the portfolio trades futures contracts on an exchange, monitors the financial strength of its clearing brokers and clearinghouse, and has entered into clearing agreements with its clearing brokers. The clearinghouse imposes initial margin requirements to secure the portfolio's performance and requires daily settlement of variation margin representing changes in the market value of each contract. Any assets pledged as initial margin for open contracts are noted in the Statement of Net Assets.

Futures contracts are valued at their quoted daily settlement prices. The notional amounts of the contracts are not recorded in the Statement of Net Assets. Fluctuations in the value of the contracts are recorded in the Statement of Net Assets as an asset (liability) and in the Statement of Operations as unrealized appreciation (depreciation) until the contracts are closed, when they are recorded as realized futures gains (losses).

During the year ended December 31, 2018, the portfolio's average investments in long and short futures contracts represented less than 1% and 0% of net assets, respectively, based on the average of the notional amounts at each quarter-end during the period.

3. **Federal Income Taxes:** The portfolio intends to continue to qualify as a regulated investment company and distribute all of its taxable income. Management has analyzed the portfolio's tax positions taken for all open federal income tax years (December 31, 2015–2018), and has concluded that no provision for federal income tax is required in the portfolio's financial statements.

4. **Distributions:** Distributions to shareholders are recorded on the ex-dividend date. Distributions are determined on a tax basis and may differ from net investment income and realized capital gains for financial reporting purposes.

5. **Securities Lending:** To earn additional income, the portfolio lends its securities to qualified institutional borrowers. Security loans are subject to termination by the portfolio at any time, and are required to be secured at all times by collateral in an amount at least equal to the market value of securities loaned. Daily market fluctuations could cause the value of loaned securities to be more or less than the value of the collateral received. When this occurs, the collateral is adjusted and settled before the opening of the market on the next business day. The portfolio further mitigates its counterparty risk by entering into securities lending transactions only with a diverse group of prequalified counterparties, monitoring their financial strength, and entering into master securities lending agreements with its counterparties.

The master securities lending agreements provide that, in the event of a counterparty's default (including bankruptcy), the portfolio may terminate any loans with that borrower, determine the net amount owed, and sell or retain the collateral up to the net amount owed to the portfolio; however, such actions may be subject to legal proceedings. While collateral mitigates counterparty risk, in the event of a default, the portfolio may experience delays and costs in recovering the securities loaned. The portfolio invests cash collateral received in Vanguard Market Liquidity Fund, and records a liability in the Statement of Net Assets for the return of the collateral, during the period the securities are on loan. Securities lending income represents fees charged to borrowers plus income earned on invested cash collateral, less expenses associated with the loan. During the term of the loan, the portfolio is entitled to all distributions made on or in respect of the loaned securities.

6. Credit Facility: The portfolio and certain other funds managed by The Vanguard Group ("Vanguard") participate in a \$3.1 billion committed credit facility provided by a syndicate of lenders pursuant to a credit agreement that may be renewed annually; each fund is individually liable for its borrowings, if any, under the credit facility. Borrowings may be utilized for temporary and emergency purposes, and are subject to the portfolio's regulatory and contractual borrowing restrictions. The participating funds are charged administrative fees and an annual commitment fee of 0.10% of the undrawn amount of the facility; these fees are allocated to the funds based on a method approved by the portfolio's board of trustees and included in Management and Administrative expenses on the portfolio's Statement of Operations. Any borrowings under this facility bear interest at a rate based upon the higher of the one-month London Interbank Offered Rate, federal funds effective rate, or overnight bank funding rate plus an agreed-upon spread.

The portfolio had no borrowings outstanding at December 31, 2018, or at any time during the period then ended.

7. Other: Distributions received from REITs are recorded on the ex-dividend date. Each REIT reports annually the tax character of its distributions. Dividend income, capital gain distributions received, and unrealized appreciation (depreciation) reflect the amounts of taxable income, capital gain, and return of capital reported by the REITs, and management's estimates of such amounts for REIT distributions for which actual information has not been reported. Interest income includes income distributions received from Vanguard Market Liquidity Fund and is accrued daily. Premiums and discounts on debt securities purchased are amortized and accreted, respectively, to interest income over the lives of the respective securities. Security transactions are accounted for on the date securities are bought or sold. Costs used to determine realized gains (losses) on the sale of investment securities are those of the specific securities sold.

B. In accordance with the terms of a Funds' Service Agreement (the "FSA") between Vanguard and the portfolio, Vanguard furnishes to the portfolio investment advisory, corporate management, administrative, marketing, and distribution services at Vanguard's cost of operations (as defined by the FSA). These costs of operations are allocated to the portfolio based on methods and guidelines approved by the board of trustees. Vanguard does not require reimbursement in the current period for certain costs of operations (such as deferred compensation/benefits and risk/insurance costs); the portfolio's liability for these costs of operations is included in Payables to Vanguard on the Statement of Net Assets. All other costs of operations payable to Vanguard are generally settled twice a month.

Upon the request of Vanguard, the portfolio may invest up to 0.40% of its net assets as capital in Vanguard. At December 31, 2018, the portfolio had contributed to Vanguard capital in the amount of \$55,000, representing 0.01% of the portfolio's net assets and 0.02% of Vanguard's capitalization. The portfolio's trustees and officers are also directors and employees, respectively, of Vanguard.

C. Various inputs may be used to determine the value of the portfolio's investments. These inputs are summarized in three broad levels for financial statement purposes. The inputs or methodologies used to value securities are not necessarily an indication of the risk associated with investing in those securities.

**Level 1**—Quoted prices in active markets for identical securities.

**Level 2**—Other significant observable inputs (including quoted prices for similar securities, interest rates, prepayment speeds, credit risk, etc.).

**Level 3**—Significant unobservable inputs (including the portfolio's own assumptions used to determine the fair value of investments). Any investments valued with significant unobservable inputs are noted on the Statement of Net Assets.

The following table summarizes the market value of the portfolio's investments as of December 31, 2018, based on the inputs used to value them:

Investments	Level 1 (\$000)	Level 2 (\$000)	Level 3 (\$000)
Common Stocks	963,589	—	35
Temporary Cash Investments	2,044	999	—
Futures Contracts—Assets <sup>1</sup>	3	—	—
Total	965,636	999	35

<sup>1</sup> Represents variation margin on the last day of the reporting period.

D. Permanent differences between book-basis and tax-basis components of net assets are reclassified among capital accounts in the financial statements to reflect their tax character. These reclassifications have no effect on net assets or net asset value per share. As of period end, permanent differences primarily attributable to the accounting for distributions in connection with fund share redemptions were reclassified between the following accounts:

	Amount (\$000)
Paid-in Capital	337
Total Distributable Earnings (Loss)	(337)

Temporary differences between book-basis and tax-basis components of total distributable earnings (loss) arise when certain items of income, gain, or loss are recognized in different periods for financial statement and tax purposes; these differences will reverse at some time in the future. The differences are primarily related to the tax deferral of losses on wash sales and the realization of unrealized gains or losses on certain futures contracts. As of period end, the tax-basis components of total distributable earnings (loss) are detailed in the table as follows:

	Amount (\$000)
Undistributed Ordinary Income	36,577
Undistributed Long-Term Gains	47,116
Capital Loss Carryforwards (Non-expiring)	—
Net Unrealized Gains (Losses)	(125,049)

As of December 31, 2018, gross unrealized appreciation and depreciation for investments and derivatives based on cost for U.S. federal income tax purposes were as follows:

	Amount (\$000)
Tax Cost	1,091,716
Gross Unrealized Appreciation	47,419
Gross Unrealized Depreciation	(172,468)
Net Unrealized Appreciation (Depreciation)	(125,049)

E. During the year ended December 31, 2018, the portfolio purchased \$354,996,000 of investment securities and sold \$358,849,000 of investment securities, other than temporary cash investments.

F. Capital share transactions for each class of shares were:

	Year Ended December 31,	
	2018 Shares (000)	2017 Shares (000)
Issued	12,072	8,703
Issued in Lieu of Cash Distributions	6,005	5,946
Redeemed	(16,621)	(13,812)
Net Increase (Decrease) in Shares Outstanding	1,456	837



At December 31, 2018, one shareholder, an insurance company separate account whose holdings in the portfolio represent the indirect investment of Vanguard Variable Annuity contract holders, was the record or beneficial owner of 46% of the portfolio's net assets. If the shareholder were to redeem its investment in the portfolio, the redemption might result in an increase in the portfolio's expense ratio or cause the portfolio to incur higher transaction costs.

G. Management has determined that no events or transactions occurred subsequent to December 31, 2018, that would require recognition or disclosure in these financial statements.

## Report of Independent Registered Public Accounting Firm

To the Board of Trustees of Vanguard Variable Insurance Funds and Shareholders of Real Estate Index Portfolio

### Opinion on the Financial Statements

We have audited the accompanying statement of net assets of Real Estate Index Portfolio (one of the portfolios constituting Vanguard Variable Insurance Funds, referred to hereafter as the "Portfolio") as of December 31, 2018, the related statement of operations for the year ended December 31, 2018, the statement of changes in net assets for each of the two years in the period ended December 31, 2018, including the related notes, and the financial highlights for each of the five years in the period ended December 31, 2018 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Portfolio as of December 31, 2018, the results of its operations for the year then ended, the changes in its net assets for each of the two years in the period ended December 31, 2018 and the financial highlights for each of the five years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America.

### Basis for Opinion

These financial statements are the responsibility of the Portfolio's management. Our responsibility is to express an opinion on the Portfolio's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Portfolio in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits of these financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. Our procedures included confirmation of securities owned as of December 31, 2018 by correspondence with the custodians and brokers and by agreement to the underlying ownership records of the transfer agent; when replies were not received from brokers, we performed other auditing procedures. We believe that our audits provide a reasonable basis for our opinion.

/s/PricewaterhouseCoopers LLP  
Philadelphia, Pennsylvania  
February 14, 2019

We have served as the auditor of one or more investment companies in The Vanguard Group of Funds since 1975.

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### Special 2018 tax information (unaudited) for corporate shareholders only for Vanguard Real Estate Index Portfolio, a portfolio of Vanguard Variable Insurance Funds

This information for the fiscal year ended December 31, 2018, is included pursuant to provisions of the Internal Revenue Code for corporate shareholders only.

The portfolio distributed \$37,234,000 as capital gain dividends (from net long-term capital gains) to shareholders during the fiscal year. The portfolio designates \$35,295,000 of its capital gain dividends as 20% rate gain distributions and \$1,939,000 as unrecaptured section 1250 gain distributions (25% rate gain).

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# The People Who Govern Your Fund

The trustees of your mutual fund are there to see that the fund is operated and managed in your best interests since, as a shareholder, you are a part owner of the fund. Your fund's trustees also serve on the board of directors of The Vanguard Group, Inc., which is owned by the Vanguard funds and provides services to them.

A majority of Vanguard's board members are independent, meaning that they have no affiliation with Vanguard or the funds they oversee, apart from the sizable personal investments they have made as private individuals. The independent board members have distinguished backgrounds in business, academia, and public service. Each of the trustees and executive officers oversees 212 Vanguard funds.

Information for each trustee and executive officer of the fund appears below. The mailing address of the trustees and officers is P.O. Box 876, Valley Forge, PA 19482. More information about the trustees is in the *Statement of Additional Information*, which can be obtained, without charge, by contacting Vanguard at 800-662-7447, or online at [vanguard.com](http://vanguard.com).

## Interested Trustees<sup>1</sup>

### F. William McNabb III

Born in 1957. Trustee since July 2009. Principal occupation(s) during the past five years and other experience: chairman of the board (January 2010–present) of Vanguard and of each of the investment companies served by Vanguard, trustee (2009–present) of each of the investment companies served by Vanguard, and director (2008–present) of Vanguard. Chief executive officer and president (2008–2017) of Vanguard and each of the investment companies served by Vanguard, managing director (1995–2008) of Vanguard, and director (1997–2018) of Vanguard Marketing Corporation. Director (2018–present) of UnitedHealth Group.

### Mortimer J. Buckley

Born in 1969. Trustee since January 2018. Principal occupation(s) during the past five years and other experience: chief executive officer (January 2018–present) of Vanguard; chief executive officer, president, and trustee (January 2018–present) of each of the investment companies served by Vanguard; president and director (2017–present) of Vanguard; and president (February 2018–present) of Vanguard Marketing Corporation. Chief investment officer (2013–2017), managing director (2002–2017), head of the Retail Investor Group (2006–2012), and chief information officer (2001–2006) of Vanguard. Chairman of the board (2011–2017) of the Children's Hospital of Philadelphia.

## Independent Trustees

### Emerson U. Fullwood

Born in 1948. Trustee since January 2008. Principal occupation(s) during the past five years and other experience: executive chief staff and marketing officer for North America and corporate vice president (retired 2008) of Xerox Corporation (document management products and services). Former president of the Worldwide Channels Group, Latin America, and Worldwide Customer Service and executive chief staff officer of Developing Markets of Xerox. Executive in residence and 2009–2010 Distinguished Minett Professor at the Rochester Institute of Technology. Lead director of SPX FLOW, Inc. (multi-industry manufacturing). Director of the University of Rochester Medical Center, the Monroe Community College Foundation, the United Way of Rochester, North Carolina A&T University, and Roberts Wesleyan College. Trustee of the University of Rochester.

### Amy Gutmann

Born in 1949. Trustee since June 2006. Principal occupation(s) during the past five years and other experience: president (2004–present) of the University of Pennsylvania. Christopher H. Browne Distinguished Professor of Political Science, School of Arts and Sciences, and professor of communication, Annenberg School for Communication, with secondary faculty appointments in the Department of Philosophy, School of Arts and Sciences, and at the Graduate School of Education, University of Pennsylvania. Trustee of the National Constitution Center.

### JoAnn Heffernan Heisen

Born in 1950. Trustee since July 1998. Principal occupation(s) during the past five years and other experience: corporate vice president of Johnson & Johnson (pharmaceuticals/medical devices/consumer products) and member of its executive committee (1997–2008). Chief global diversity officer (retired 2008), vice president and chief information officer (1997–2006), controller (1995–1997), treasurer (1991–1995), and assistant treasurer (1989–1991) of Johnson & Johnson. Director of Skytop Lodge Corporation (hotels) and the Robert Wood Johnson Foundation. Member of the advisory board of the Institute for Women's Leadership at Rutgers University.

### F. Joseph Loughrey

Born in 1949. Trustee since October 2009. Principal occupation(s) during the past five years and other experience: president and chief operating officer (retired 2009) and vice chairman of the board (2008–2009) of Cummins Inc. (industrial machinery). Chairman of the board of Hillenbrand, Inc. (specialized consumer services), Oxfam America, and the Lumina Foundation for Education. Director of the V Foundation for Cancer Research. Member of the advisory council for the College of Arts and Letters and chair of the advisory board to the Kellogg Institute for International Studies, both at the University of Notre Dame.

### Mark Loughridge

Born in 1953. Trustee since March 2012. Principal occupation(s) during the past five years and other experience: senior vice president and chief financial officer (retired 2013) of IBM (information technology services). Fiduciary member of IBM's Retirement Plan Committee (2004–2013), senior vice president and general manager (2002–2004) of IBM Global Financing, vice president and controller (1998–2002) of IBM, and a variety of other prior management roles at IBM. Member of the Council on Chicago Booth.

### Scott C. Malpass

Born in 1962. Trustee since March 2012. Principal occupation(s) during the past five years and other experience: chief investment officer (1989–present) and vice president (1996–present) of the University of Notre Dame. Assistant professor of finance at the Mendoza College of Business, University of Notre Dame, and member of the Notre Dame 403(b) Investment Committee. Chairman of the board of TIFF Advisory Services, Inc. Member of the board of Catholic Investment Services, Inc. (investment advisors), the board of advisors for Spruceview Capital Partners, and the board of superintendence of the Institute for the Works of Religion.

### Deanna Mulligan

Born in 1963. Trustee since January 2018. Principal occupation(s) during the past five years and other experience: president (2010–present) and chief executive officer (2011–present) of The Guardian Life Insurance Company of America. Chief operating officer (2010–2011) and executive vice president (2008–2010) of Individual Life and Disability of The Guardian Life Insurance Company of America. Member of the board of The Guardian Life Insurance Company of America, the American Council of Life Insurers, the Partnership for New York City (business leadership), and the Committee Encouraging Corporate Philanthropy. Trustee of the Economic Club of New York and the Bruce Museum (arts and science). Member of the Advisory Council for the Stanford Graduate School of Business.

### André F. Perold

Born in 1952. Trustee since December 2004. Principal occupation(s) during the past five years and other experience: George Gund Professor of Finance and Banking, Emeritus at the Harvard Business School (retired 2011). Chief investment officer and co-managing partner of HighVista Strategies LLC (private investment firm). Overseer of the Museum of Fine Arts Boston.

### Sarah Bloom Raskin

Born in 1961. Trustee since January 2018. Principal occupation(s) during the past five years and other experience: deputy secretary (2014–2017) of the United States Department of the Treasury. Governor (2010–2014) of the Federal Reserve Board. Commissioner (2007–2010) of financial regulation for the State of Maryland. Member of the board of directors (2012–2014) of Neighborhood Reinvestment Corporation. Director of i(x) Investments, LLC.

<sup>1</sup> Mr. McNabb and Mr. Buckley are considered "interested persons," as defined in the Investment Company Act of 1940, because they are officers of the Vanguard funds.

**Peter F. Volanakis**

Born in 1955. Trustee since July 2009. Principal occupation(s) during the past five years and other experience: president and chief operating officer (retired 2010) of Corning Incorporated (communications equipment) and director of Corning Incorporated (2000–2010) and Dow Corning (2001–2010). Director (2012) of SPX Corporation (multi-industry manufacturing). Overseer of the Amos Tuck School of Business Administration, Dartmouth College (2001–2013). Chairman of the board of trustees of Colby-Sawyer College. Member of the Board of Hypertherm Inc. (industrial cutting systems, software, and consumables).

**Executive Officers****Glenn Booraem**

Born in 1967. Principal occupation(s) during the past five years and other experience: principal of Vanguard. Investment stewardship officer (2017–present), treasurer (2015–2017), controller (2010–2015), and assistant controller (2001–2010) of each of the investment companies served by Vanguard.

**Christine M. Buchanan**

Born in 1970. Principal occupation(s) during the past five years and other experience: principal of Vanguard and global head of Fund Administration at Vanguard. Treasurer (2017–present) of each of the investment companies served by Vanguard. Partner (2005–2017) at KPMG LLP (audit, tax, and advisory services).

**Brian Dvorak**

Born in 1973. Principal occupation(s) during the past five years and other experience: principal of Vanguard. Chief compliance officer (2017–present) of Vanguard and each of the investment companies served by Vanguard. Assistant vice president (2017–present) of Vanguard Marketing Corporation. Vice president and director of Enterprise Risk Management (2011–2013) at Oppenheimer Funds, Inc.

**Thomas J. Higgins**

Born in 1957. Principal occupation(s) during the past five years and other experience: principal of Vanguard. Chief financial officer (2008–present) and treasurer (1998–2008) of each of the investment companies served by Vanguard.

**Peter Mahoney**

Born in 1974. Principal occupation(s) during the past five years and other experience: principal of Vanguard. Controller (2015–present) of each of the investment companies served by Vanguard. Head of International Fund Services (2008–2014) at Vanguard.

**Anne E. Robinson**

Born in 1970. Principal occupation(s) during the past five years and other experience: general counsel (2016–present) of Vanguard. Secretary (2016–present) of Vanguard and of each of the investment companies served by Vanguard. Managing director (2016–present) of Vanguard. Director and senior vice president (2016–2018) of Vanguard Marketing Corporation. Managing director and general counsel of Global Cards and Consumer Services (2014–2016) at Citigroup. Counsel (2003–2014) at American Express.

**Michael Rollings**

Born in 1963. Principal occupation(s) during the past five years and other experience: finance director (2017–present) and treasurer (2017) of each of the investment companies served by Vanguard. Managing director (2016–present) of Vanguard. Chief financial officer (2016–present) of Vanguard. Director (2016–present) of Vanguard Marketing Corporation. Executive vice president and chief financial officer (2006–2016) of MassMutual Financial Group.

**Vanguard Senior Management Team**

<b>Joseph Brennan</b>	<b>Chris D. McIsaac</b>
<b>Mortimer J. Buckley</b>	<b>James M. Norris</b>
<b>Gregory Davis</b>	<b>Thomas M. Rampulla</b>
<b>John James</b>	<b>Karin A. Risi</b>
<b>Martha G. King</b>	<b>Anne E. Robinson</b>
<b>John T. Marcante</b>	<b>Michael Rollings</b>

**Chairman Emeritus and Senior Advisor****John J. Brennan**

Chairman, 1996–2009  
Chief Executive Officer and President, 1996–2008

**Founder****John C. Bogle**

Chairman and Chief Executive Officer, 1974–1996



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