

MPI Portfolio Review

Report Created on: April 27, 2021



Prepared For

Sample

Prepared By

Markov Processes International

Portfolio Comparison Report

March 31, 2021

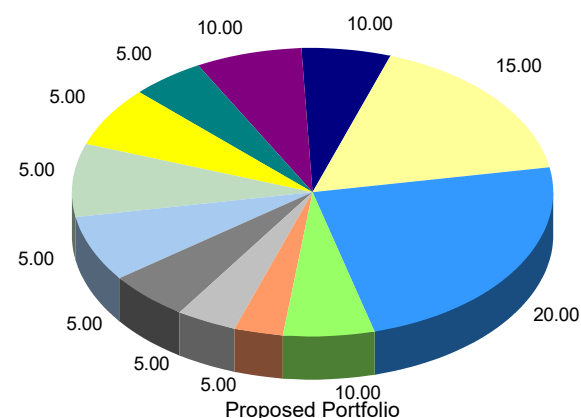
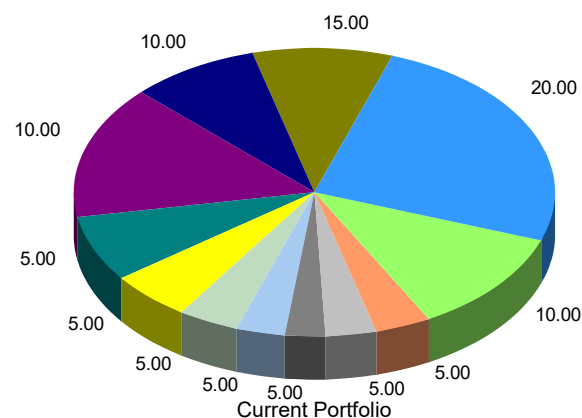
Portfolio Holdings

Benchmark

Blended Benchmark

Portfolio Holdings Comparison: As of March 31, 2021

- American Beacon Lg Cap Value Inv
- American Funds Growth Fund of Amer R4
- Perkins Mid Cap Value T
- Columbia Acorn Z
- Northern Small Cap Value
- Vanguard Small Cap Value Index Inv
- Vanguard Small Cap Growth Index Inv
- Sentinel Small Company I
- American Funds Europacific Growth R4
- Vanguard Total Intl Stock Index Inv
- PIMCO Total Return Instl
- Vanguard Total Bond Market II Idx Inv
- Vanguard Equity-Income Adm



	Ticker	Morningstar Category	Current Portfolio	Proposed Portfolio
American Beacon Lg Cap Value Inv	AAGPX	Large Value	15.00%	0.00%
American Funds Growth Fund of Amer R4	RGAEX	Large Growth	10.00%	10.00%
Perkins Mid Cap Value T	JMCVX	Mid-Cap Value	10.00%	10.00%
Columbia Acorn Z	ACRNZ	Mid-Cap Growth	5.00%	5.00%
Northern Small Cap Value	NOSGX	Small Value	5.00%	5.00%
Vanguard Small Cap Value Index Inv	VISVX	Small Value	5.00%	5.00%
Vanguard Small Cap Growth Index Inv	VISGX	Small Growth	5.00%	5.00%
Sentinel Small Company I	SIGWX	Small Blend	5.00%	5.00%
American Funds Europacific Growth R4	REREX	Foreign Large Growth	5.00%	5.00%
Vanguard Total Intl Stock Index Inv	VGTSX	Foreign Large Blend	5.00%	5.00%
PIMCO Total Return Instl	PTTRX	Intermediate Core-Plus Bond	10.00%	10.00%
Vanguard Total Bond Market II Idx Inv	VTBIX	Intermediate Core Bond	20.00%	20.00%
Vanguard Equity-Income Adm	VEIRX	Large Value	0.00%	15.00%

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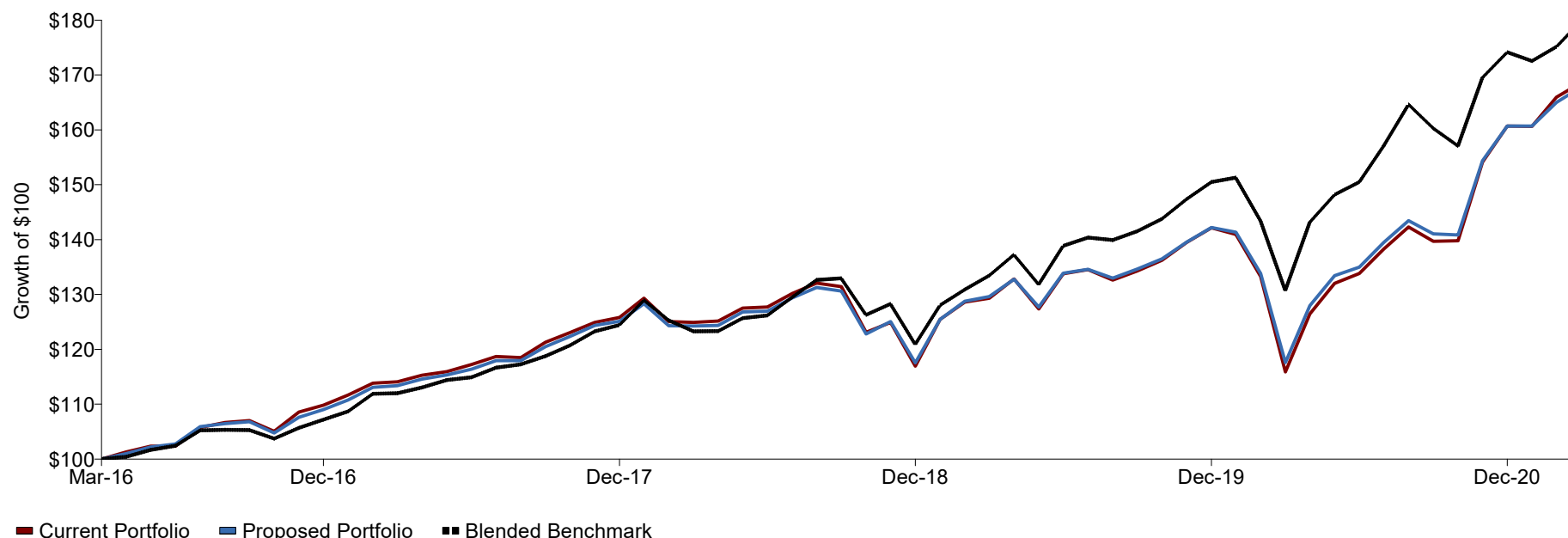
March 31, 2021

Portfolio Performance

Benchmark

Blended Benchmark

Cumulative Performance: Growth of \$100



Annualized Performance	YTD	1 Year	3 Years	5 Years	7 Years	10 Years
■ Current Portfolio	4.95	45.51	10.52	11.02	8.30	8.73
■ Proposed Portfolio	4.43	42.71	10.53	10.91	8.53	8.95
◆ Blended Benchmark	3.27	37.55	13.42	12.46	10.66	10.90

Calendar Year Performance	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
■ Current Portfolio	13.05	21.54	-7.05	14.52	10.80	-1.50	6.21	20.18	13.61	-0.80
■ Proposed Portfolio	12.99	20.97	-6.05	14.78	10.66	-0.41	6.39	19.59	12.86	1.13
◆ Blended Benchmark	15.74	24.48	-2.82	16.08	9.23	1.34	11.39	21.12	12.49	4.08

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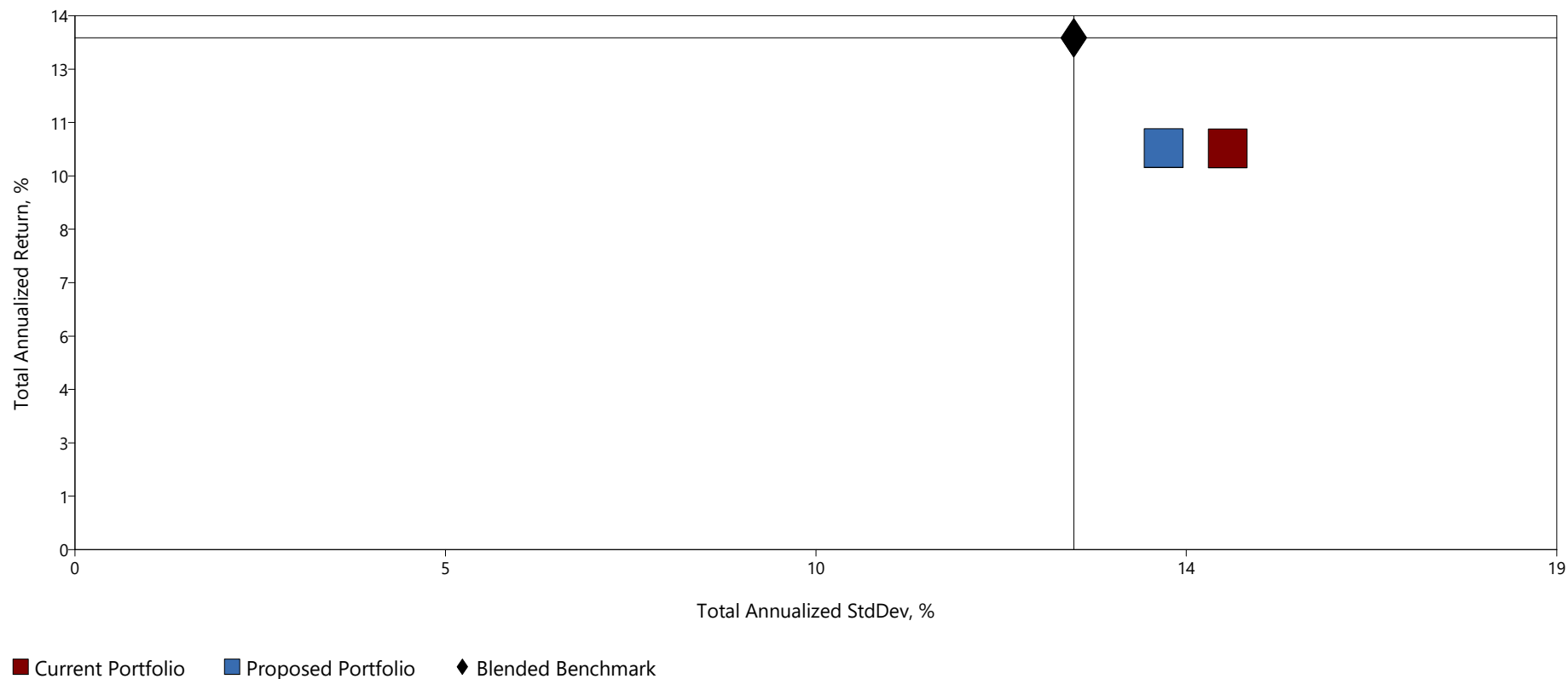
March 31, 2021

Risk vs. Return Analysis

Benchmark

Blended Benchmark

Risk/Return: Last 3 Years



3 Year Summary Stats

	Return	Std Deviation	Sharpe Ratio	Alpha	Beta	Info Ratio	R-Squared
■ Current Portfolio	10.52	14.94	0.65	-3.69	1.11	-0.69	93.14
■ Proposed Portfolio	10.53	14.11	0.68	-3.14	1.06	-0.82	94.15
◆ Blended Benchmark	13.42	12.94	0.93	0.00	1.00	NA	100.00

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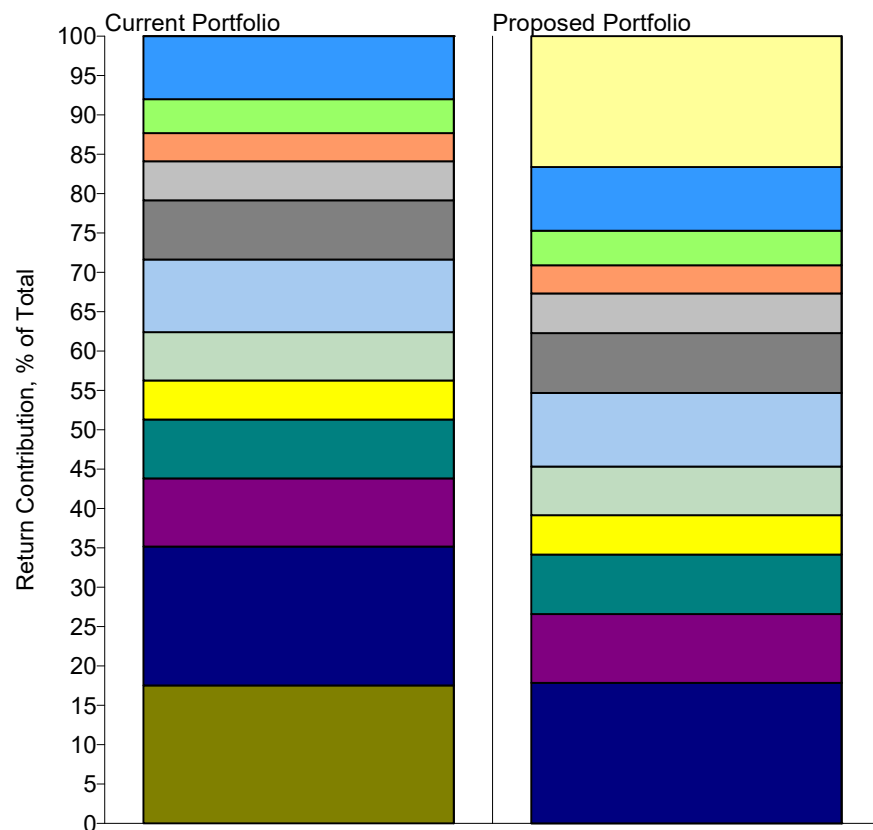
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Risk & Return Contribution

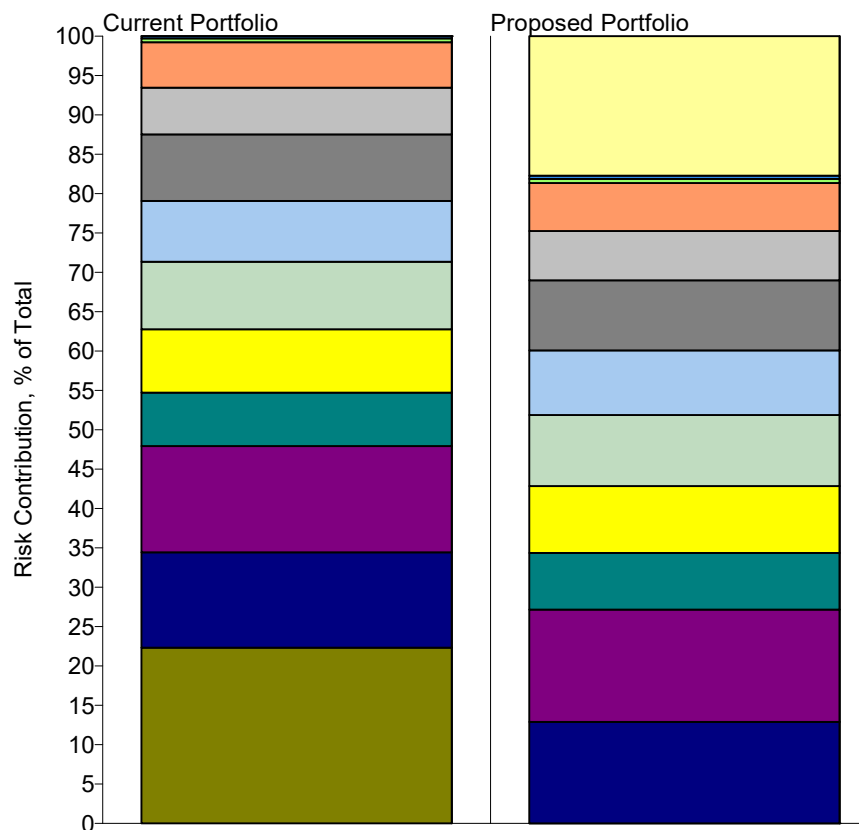
Benchmark

Blended Benchmark

Return Contribution: Last 3 Years



Risk Contribution: Last 3 Years



- | | | | |
|--------------------------------------|---------------------------------------|-------------------------------------|---------------------------------------|
| American Beacon Lg Cap Value Inv | American Funds Growth Fund of Amer R4 | Perkins Mid Cap Value T | Columbia Acorn Z |
| Northern Small Cap Value | Vanguard Small Cap Value Index Inv | Vanguard Small Cap Growth Index Inv | Sentinel Small Company I |
| American Funds Europacific Growth R4 | Vanguard Total Intl Stock Index Inv | PIMCO Total Return Instl | Vanguard Total Bond Market II Idx Inv |
| Vanguard Equity-Income Adm | | | |

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Portfolio Comparison Report

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Contribution Statistics

Benchmark

Blended Benchmark

Contribution Statistics: Last 3 Years

	Contribution to Annualized Return		Annual Return		Contribution to Annualized Risk		Current Risk, %		Contribution to Annualized Sharpe		Current Sharpe Ratio	
	Current Portfolio	Proposed Portfolio	Current Portfolio	Proposed Portfolio	Current Portfolio	Proposed Portfolio	Current Portfolio	Proposed Portfolio	Current Portfolio	Proposed Portfolio	Current Portfolio	Proposed Portfolio
American Beacon Lg Cap Value Inv	17.51	NA	1.95	NA	22.30	NA	0.96	NA	-4.79	NA	-3.58	NA
American Funds Growth Fund of Amer R4	17.65	17.84	1.97	1.97	12.12	12.87	0.52	0.52	5.53	4.97	4.13	3.89
Perkins Mid Cap Value T	8.65	8.74	0.96	0.96	13.50	14.29	0.58	0.58	-4.85	-5.55	-3.62	-4.34
Columbia Acorn Z	7.47	7.55	0.83	0.83	6.79	7.21	0.29	0.29	0.68	0.35	0.51	0.27
Northern Small Cap Value	4.96	5.01	0.55	0.55	8.07	8.50	0.35	0.35	-3.11	-3.49	-2.32	-2.73
Vanguard Small Cap Value Index Inv	6.14	6.20	0.68	0.68	8.55	9.01	0.37	0.37	-2.41	-2.81	-1.80	-2.20
Vanguard Small Cap Growth Index Inv	9.24	9.33	1.03	1.03	7.73	8.19	0.33	0.33	1.50	1.14	1.12	0.89
Sentinel Small Company I	7.52	7.60	0.84	0.84	8.45	8.91	0.36	0.36	-0.93	-1.31	-0.69	-1.02
American Funds Europacific Growth R4	4.99	5.04	0.56	0.56	5.94	6.28	0.26	0.26	-0.95	-1.24	-0.71	-0.97
Vanguard Total Intl Stock Index Inv	3.54	3.58	0.39	0.39	5.76	6.09	0.25	0.25	-2.22	-2.51	-1.66	-1.96
PIMCO Total Return Instl	4.35	4.39	0.48	0.48	0.49	0.55	0.02	0.02	3.85	3.84	2.88	3.01
Vanguard Total Bond Market II Idx Inv	7.99	8.07	0.89	0.89	0.30	0.38	0.01	0.02	7.69	7.70	5.74	6.02
Vanguard Equity-Income Adm	NA	16.64	NA	1.84	NA	17.74	NA	0.72	NA	-1.10	NA	-0.86

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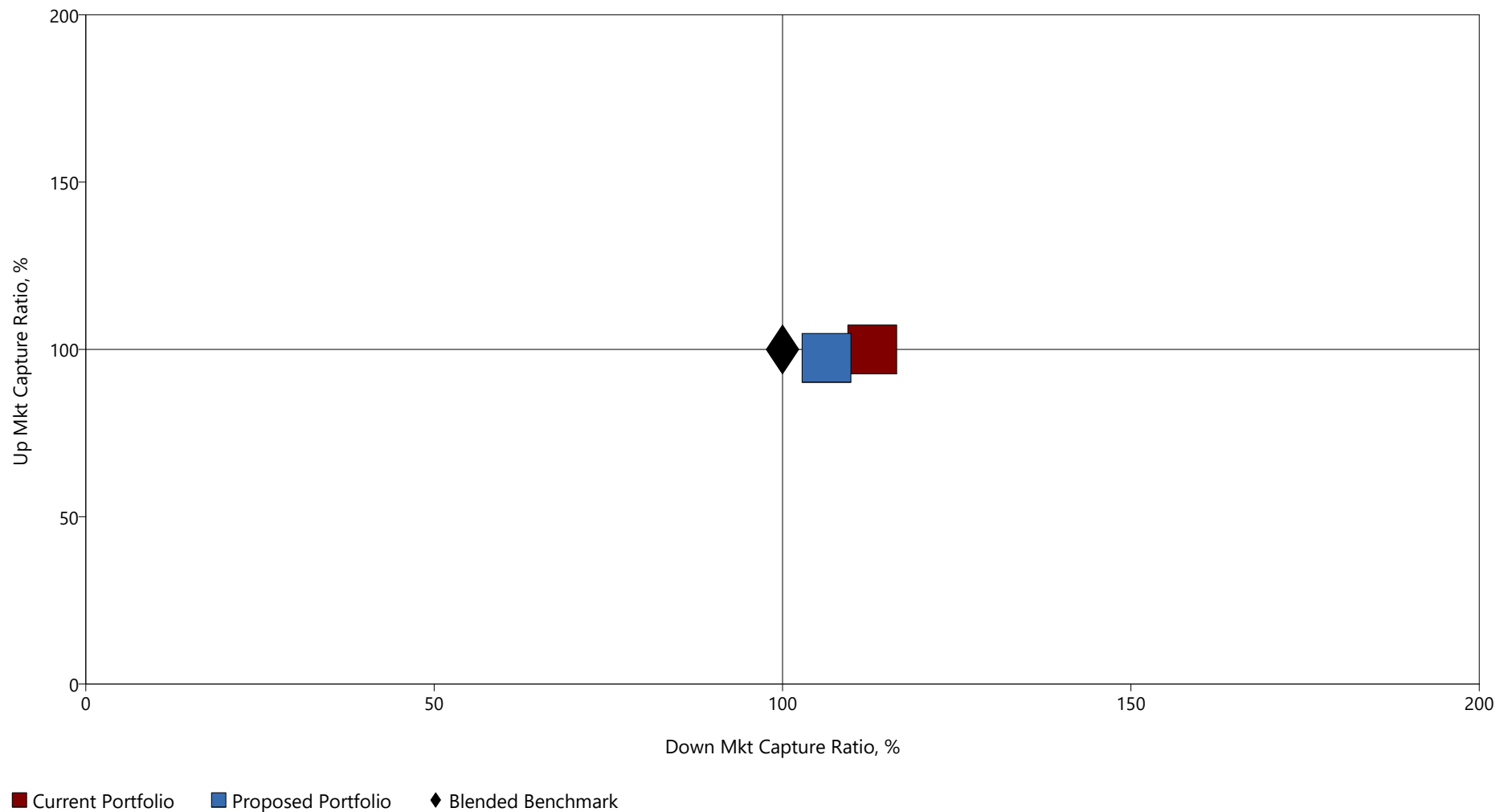
Portfolio Comparison Report

March 31, 2021

Up & Down Markets

Benchmark
Blended Benchmark

UP/DOWN MARKET CAPTURE RATIO: From February 2, 2009 - March 31, 2021



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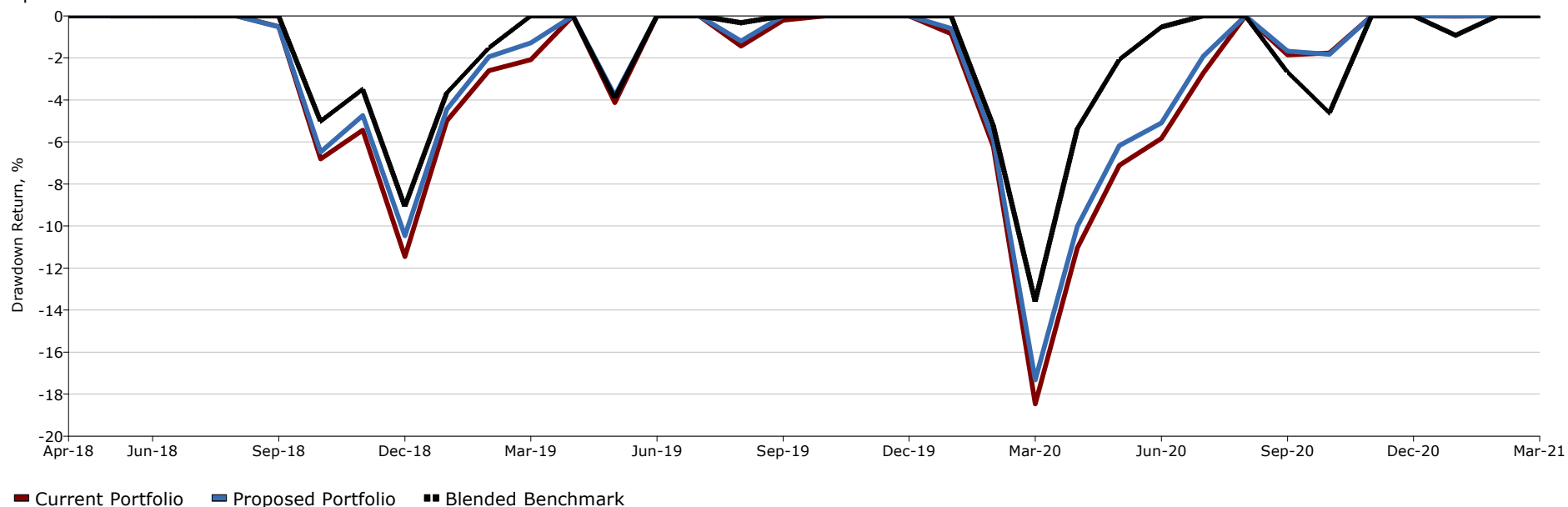
March 31, 2021

Drawdown Analysis

Benchmark
Blended Benchmark

Drawdown Return

Apr-18 - Mar-21



Drawdown Table

	Max Drawdown Return, %	Max Drawdown Period	Max Drawdown Duration (Month)	Recovery Period	Recovery Percent, %	Omega Ratio (MAR = 0.00%)	Max Run Up Period	Max Run Up Duration (Month)
■ Current Portfolio	-18.46	Jan-20 - Mar-20	3	Apr-20 - Aug-20	100.00	1.42	Apr-20 - Mar-21	12.00
■ Proposed Portfolio	-17.31	Jan-20 - Mar-20	3	Apr-20 - Aug-20	100.00	1.49	Jan-19 - Mar-21	27.00
◆ Blended Benchmark	-13.58	Feb-20 - Mar-20	2	Apr-20 - Jul-20	100.00	1.79	Jan-19 - Mar-21	27.00

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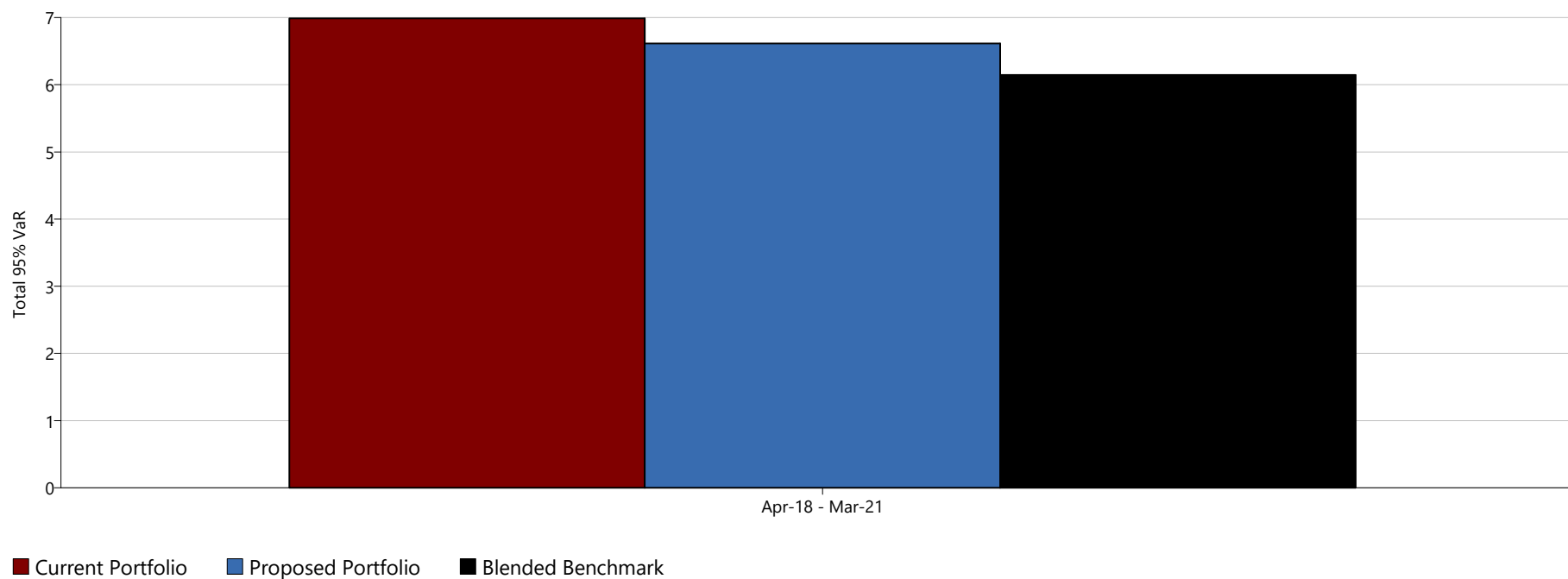
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Value at Risk Analysis

Benchmark
Blended Benchmark

HISTORICAL RETURNS BASED VaR (95%): Last 3 Years



	VaR (95% VaR)			
	Total	Systematic	Specific	Historical
■ Current Portfolio	5.55	5.59	0.30	5.41
■ Proposed Portfolio	5.23	5.29	0.28	5.15
◆ Blended Benchmark	5.12	5.12	0.00	5.12

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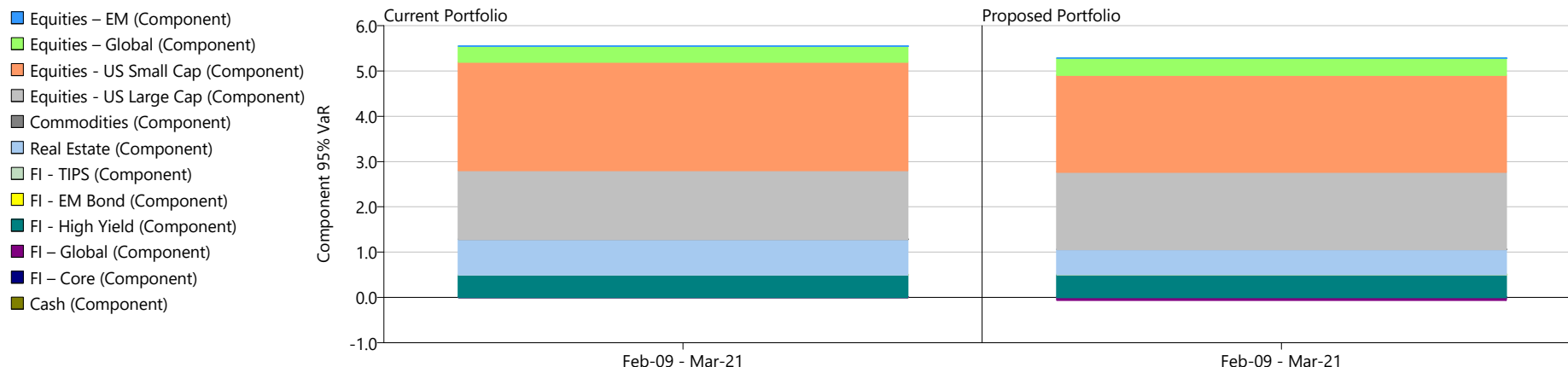
Portfolio Comparison Report

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Component Value at Risk

Benchmark
Blended Benchmark

HISTORICAL RETURNS BASED VaR BY FACTOR EXPOSURES: Last 3 Years



	Current Portfolio	Proposed Portfolio	Blended Benchmark
Cash (Component)	0.00	0.00	0.00
FI - Core (Component)	0.00	0.00	0.03
FI - Global (Component)	0.00	-0.06	0.00
FI - High Yield (Component)	0.50	0.51	0.00
FI - EM Bond (Component)	0.00	0.00	0.00
FI - TIPS (Component)	0.00	0.00	0.00
Real Estate (Component)	0.79	0.55	0.00
Commodities (Component)	0.00	0.00	0.00
Equities - US Large Cap (Component)	1.51	1.71	5.09
Equities - US Small Cap (Component)	2.40	2.14	0.00
Equities - Global (Component)	0.35	0.38	0.00
Equities - EM (Component)	0.00	0.00	0.00

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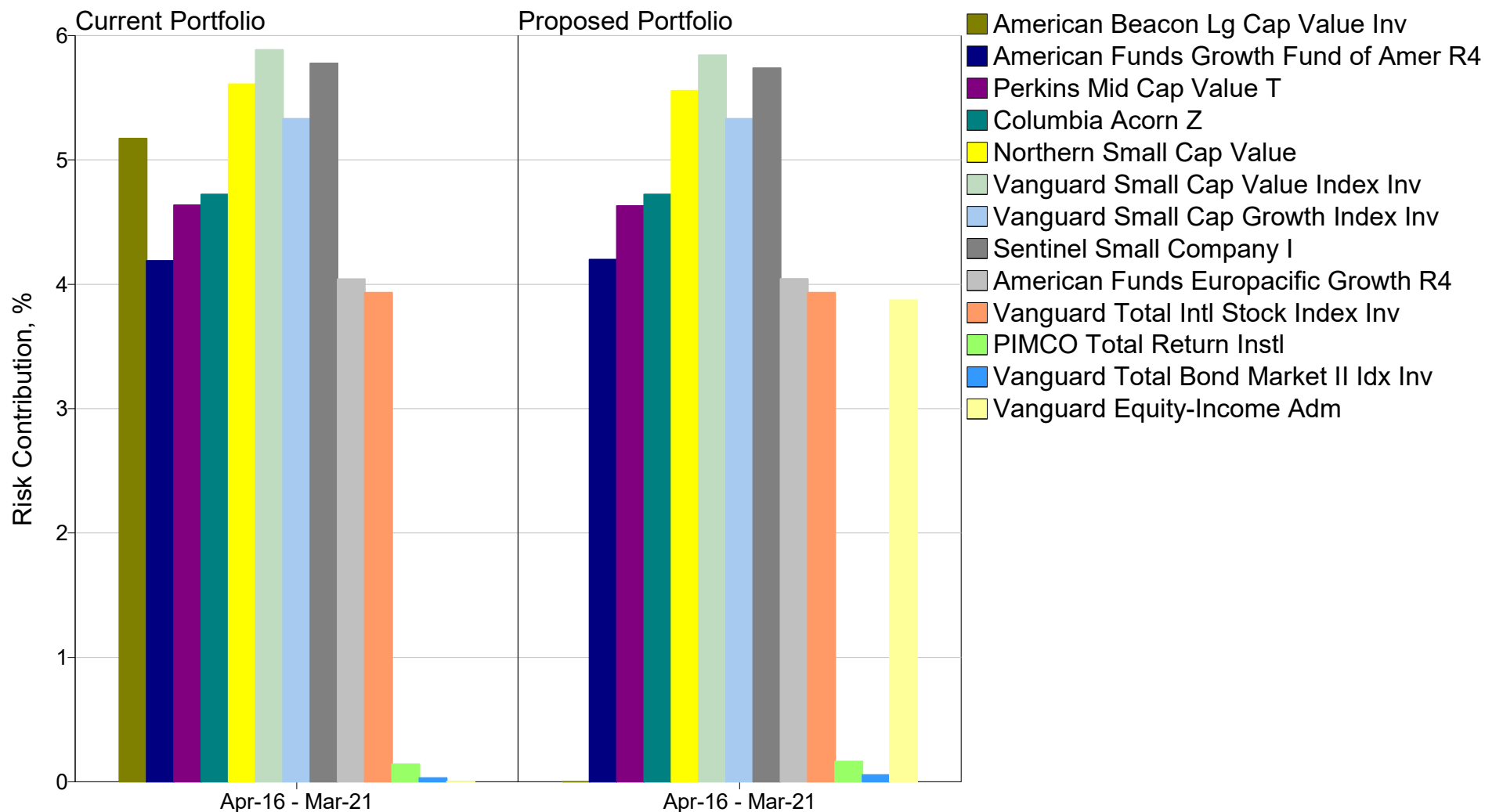
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Marginal Risk

Benchmark

Blended Benchmark

MARGINAL RISK: Last 3 Years



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March 31, 2021

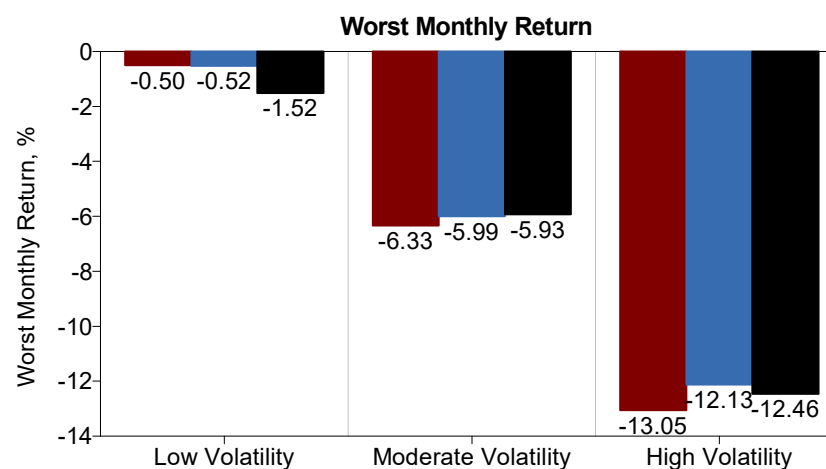
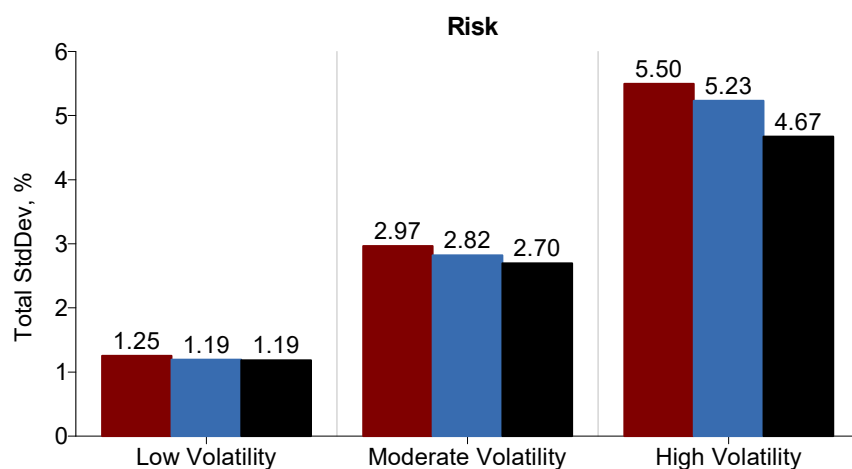
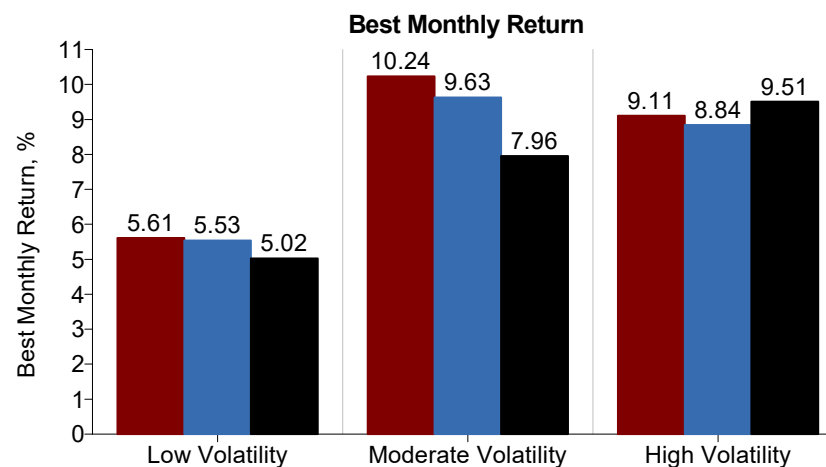
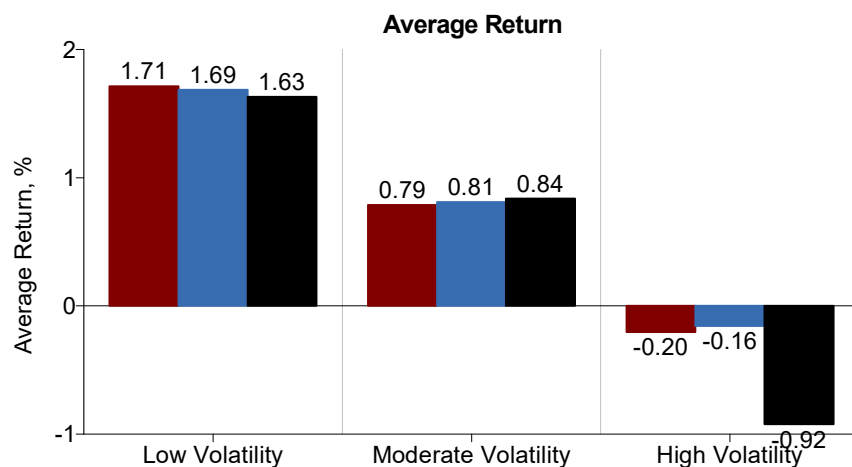
Regime Analysis

Benchmark

Blended Benchmark

Periods of Unusual Volatility

Regimes represent disjoint historical intervals with shared characteristics used to assess manager risk over crisis periods. Currently selected regime: Volatility regimes by CBOE VIX with breaks at 15 and 25.



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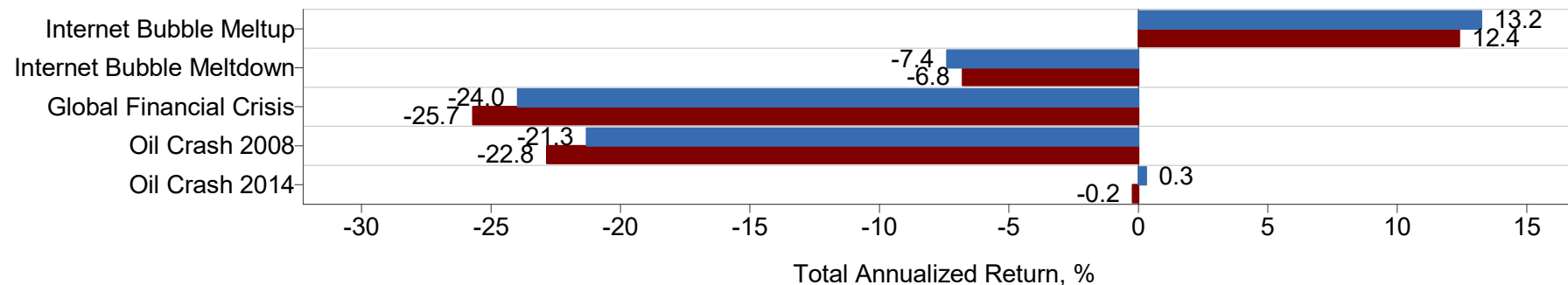
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Historic Stress Testing

Benchmark
Blended Benchmark

Historical Crisis Periods

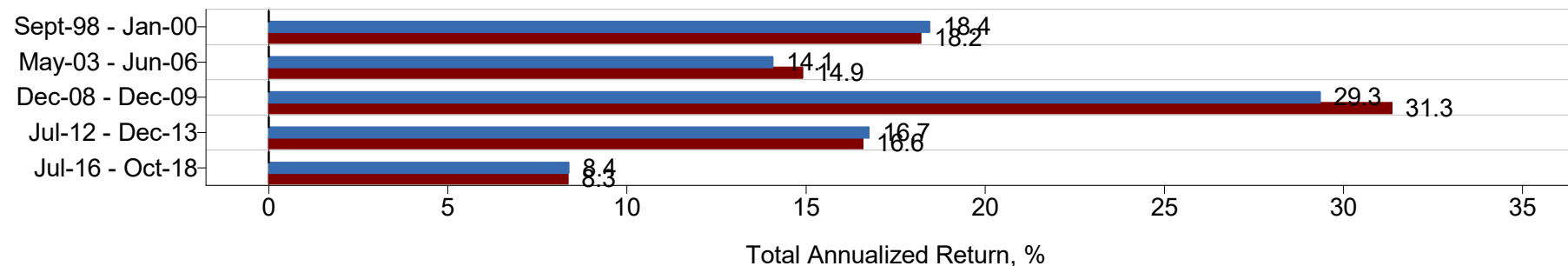
Feb-97 - Feb-16



■ Current Portfolio ■ Proposed Portfolio

Periods of Rising Rates

Sep 1998 - Oct 2018



■ Current Portfolio ■ Proposed Portfolio
■ Blended Benchmark

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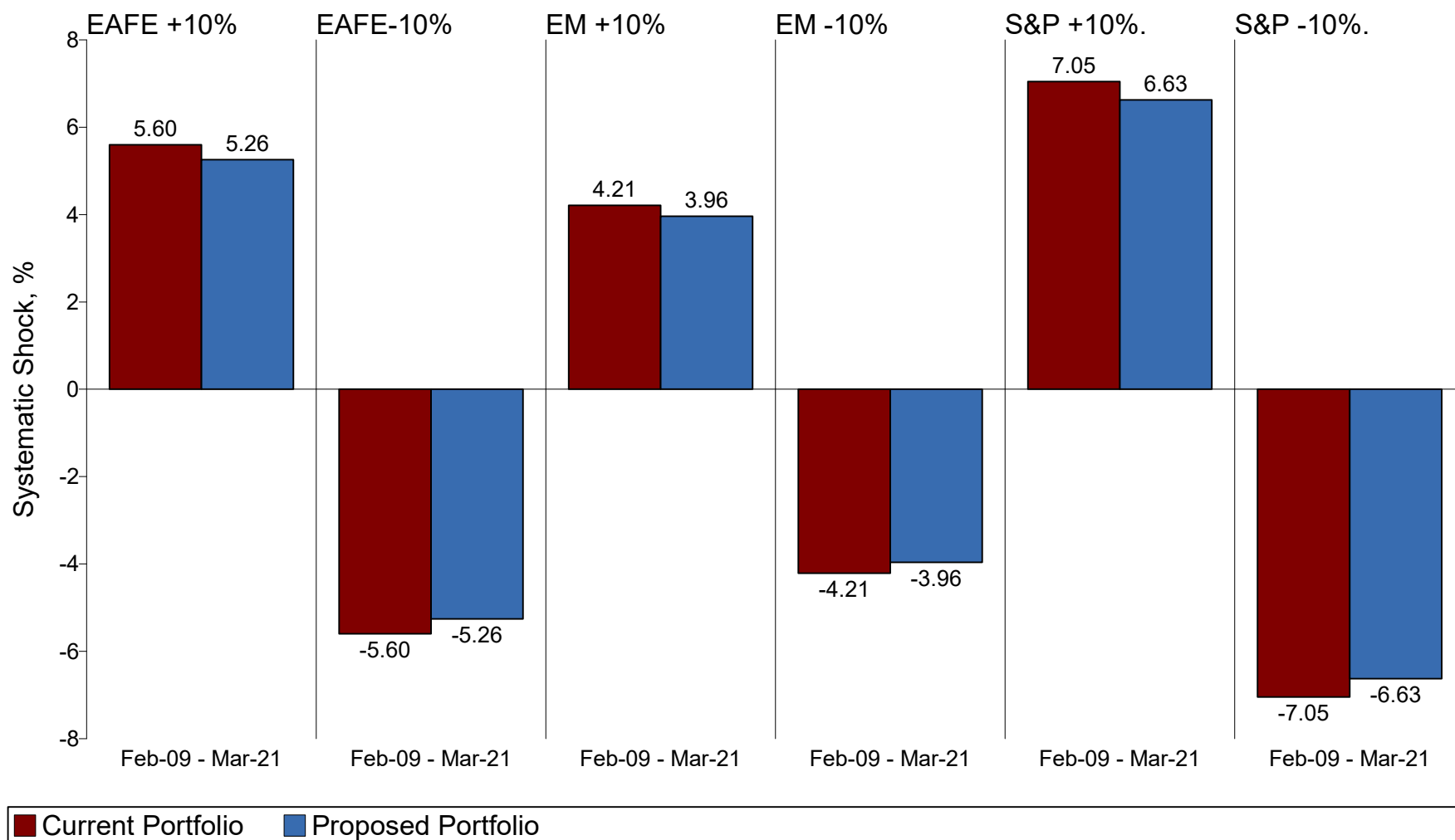
Portfolio Comparison Report

March 31, 2021

Scenario Analysis

Benchmark
Blended Benchmark

Equity Market Shocks



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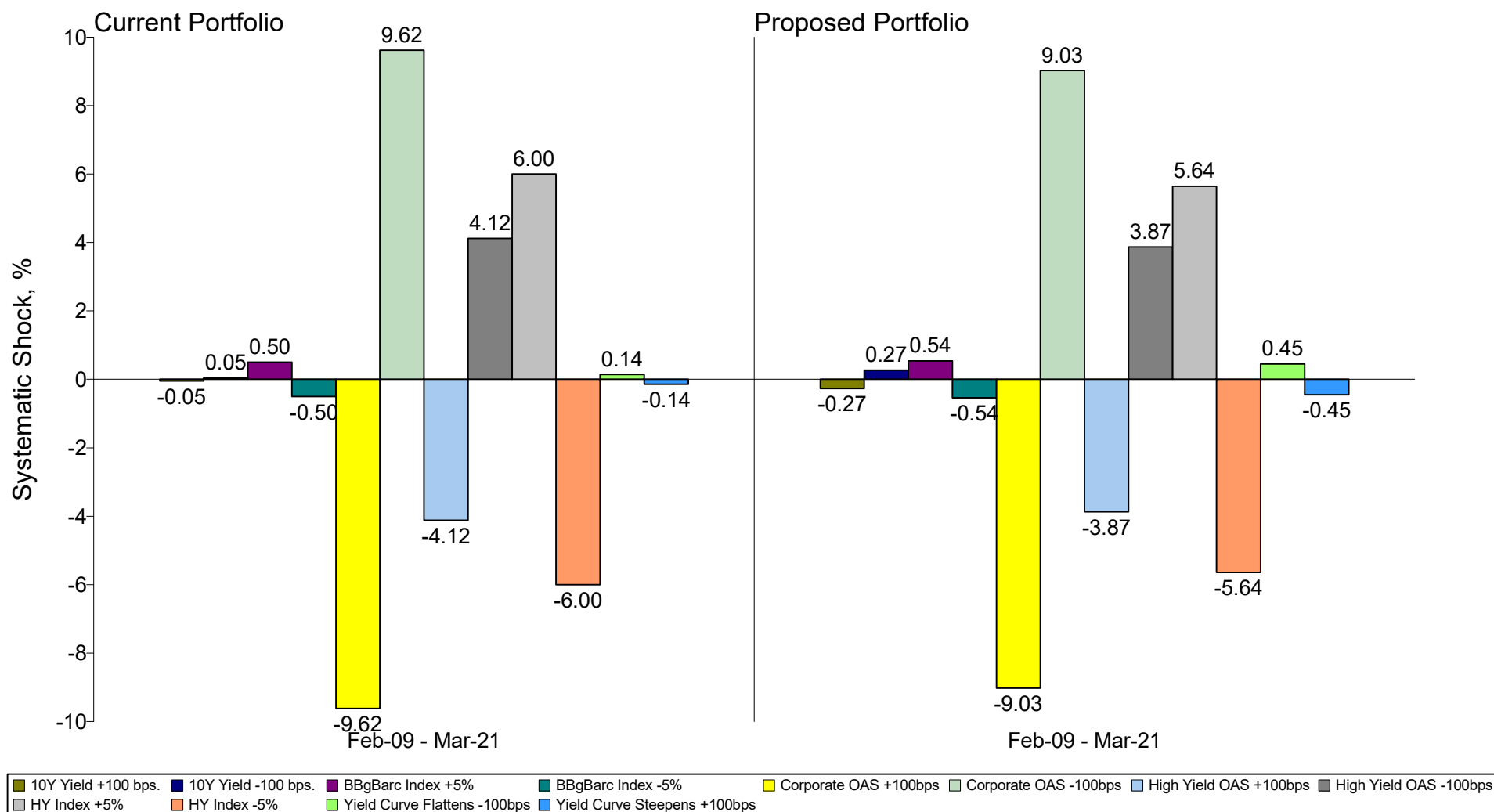
Portfolio Comparison Report

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Scenario Analysis

Benchmark
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Fixed Income Market Shocks



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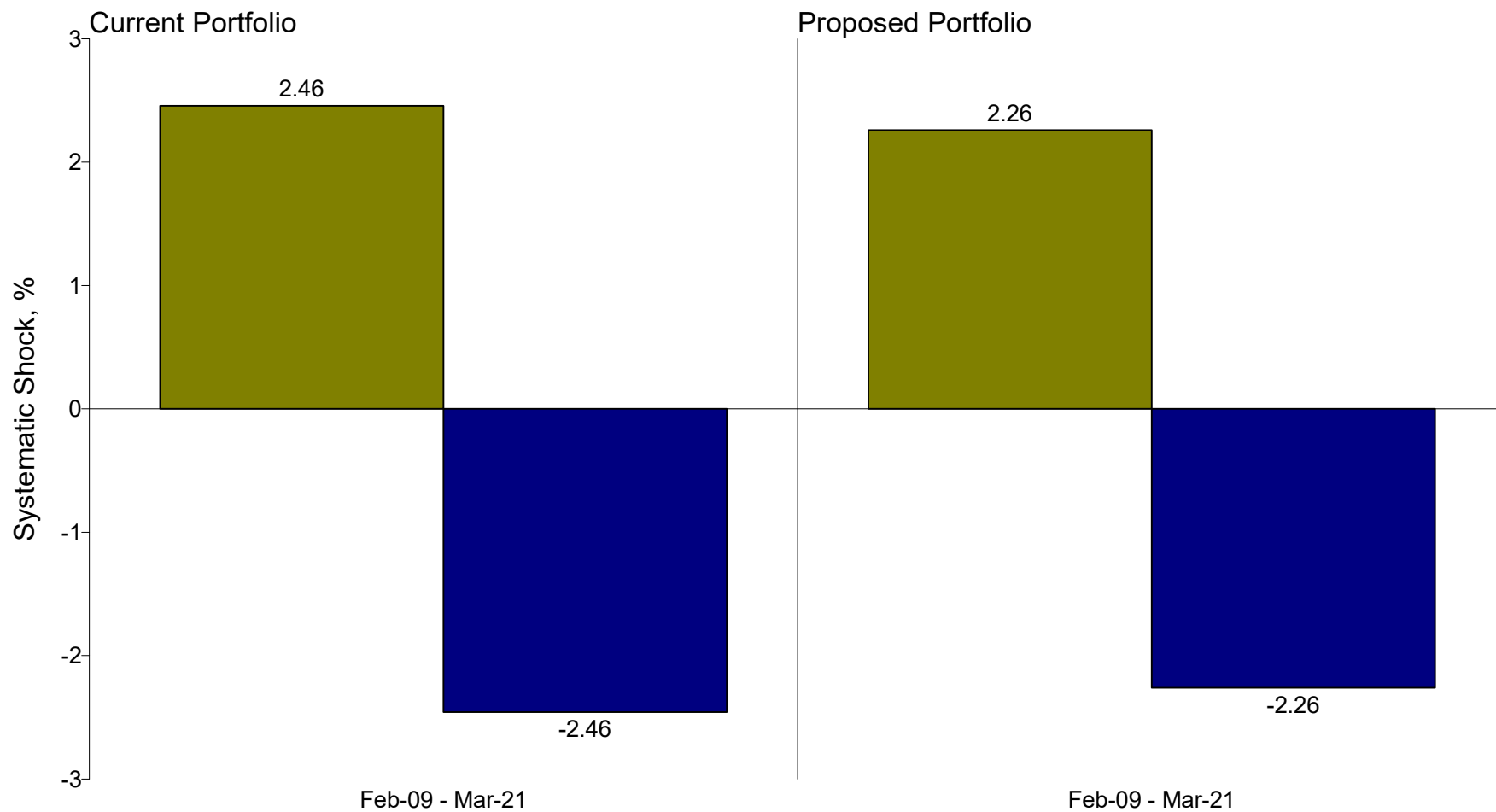
Portfolio Comparison Report

March 31, 2021

Scenario Analysis

Benchmark
Blended Benchmark

Macro Shocks



■ Oil +20% ■ Oil -20%

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Portfolio Comparison Report

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Correlation

Benchmark

Blended Benchmark

CORRELATION MATRIX: Last 3 Years

	1																
Current Portfolio	1		2														
Proposed Portfolio	2	1.00		3													
American Beacon Lg Cap Value Inv	3	0.97	0.96		4												
American Funds Europacific Growth R4	4	0.91	0.91	0.86		5											
American Funds Growth Fund of Amer R4	5	0.95	0.95	0.91	0.92		6										
Columbia Acorn Z	6	0.95	0.95	0.88	0.84	0.92		7									
Perkins Mid Cap Value T	7	0.97	0.97	0.96	0.84	0.90	0.91		8								
Northern Small Cap Value	8	0.94	0.93	0.92	0.76	0.84	0.90	0.94		9							
PIMCO Total Return Instl	9	0.30	0.32	0.17	0.38	0.27	0.22	0.21	0.11		10						
Sentinel Small Company I	10	0.95	0.94	0.92	0.79	0.88	0.93	0.94	0.95	0.11		11					
Vanguard Equity-Income Adm	11	0.94	0.95	0.96	0.84	0.88	0.84	0.93	0.89	0.22	0.87		12				
Vanguard Small Cap Growth Index Inv	12	0.95	0.95	0.88	0.83	0.92	0.98	0.92	0.92	0.24	0.94	0.84		13			
Vanguard Small Cap Value Index Inv	13	0.97	0.96	0.95	0.81	0.88	0.92	0.96	0.98	0.17	0.96	0.91	0.94		14		
Vanguard Total Bond Market II Idx Inv	14	-0.01	0.01	-0.13	0.04	-0.05	-0.08	-0.08	-0.16	0.85	-0.16	-0.05	-0.06	-0.12		15	
Vanguard Total Intl Stock Index Inv	15	0.91	0.91	0.88	0.98	0.90	0.82	0.85	0.77	0.38	0.78	0.86	0.81	0.82	0.03		16
Blended Benchmark	16	0.97	0.97	0.95	0.88	0.96	0.90	0.93	0.87	0.31	0.88	0.96	0.90	0.91	0.03	0.88	

Correlation Scale

Negative	Uncorrelated	Correlated	Moderate	High	Very High
-1	-0.2	0.2	0.60	0.85	0.95
					1

The Correlation Matrix reveals the strength of return relationships between investments. A perfect linear relationship is represented by a correlation of 1, while a perfect negative relationship has a correlation of -1. A correlation of 0 indicates no relationship between the investments. Correlation is a critical component to asset allocation and can be a useful way to measure the diversity of a combined plan portfolio.

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Standardized Performance

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TRAILING PERFORMANCE: As of March 31, 2021

	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date	Pre Inception Returns	Net Exp Ratio	Gross Exp Ratio
American Beacon Lg Cap Value Inv	13.66	67.58	10.93	12.51	10.54	9.16	08/01/1994	Y	0.96	0.96
American Funds Growth Fund of Amer R4	2.45	66.32	19.47	19.75	14.94	10.75	05/28/2002	Y	0.65	0.65
Perkins Mid Cap Value T	9.72	53.01	7.69	9.86	8.24	11.01	08/12/1998	Y	0.99	0.99
Columbia Acorn Z	1.93	67.72	15.27	17.64	11.73	14.49	06/10/1970	NA	0.86	0.86
Northern Small Cap Value	18.91	77.19	8.11	10.17	9.46	9.84	03/31/1994	NA	1.00	1.11
Vanguard Small Cap Value Index Inv	16.78	89.63	10.67	12.29	10.91	8.97	05/21/1998	NA	0.19	0.19
Vanguard Small Cap Growth Index Inv	2.53	82.87	19.24	18.91	13.02	10.09	05/21/1998	NA	0.19	0.19
Sentinel Small Company I	13.33	92.63	14.27	15.61	12.10	9.97	05/04/2007	Y	0.90	0.99
American Funds Europacific Growth R4	-0.52	60.24	9.81	12.50	7.35	8.43	06/07/2002	Y	0.81	0.81
Vanguard Total Intl Stock Index Inv	3.94	52.71	6.45	9.90	5.15	5.22	04/29/1996	NA	0.17	0.17
PIMCO Total Return Instl	-3.09	3.25	4.89	3.84	3.75	7.01	05/11/1987	NA	0.70	0.70
Vanguard Total Bond Market II Idx Inv	-3.64	0.39	4.48	2.94	3.27	3.74	01/26/2009	NA	0.09	0.09
Vanguard Equity-Income Adm	10.07	47.53	11.27	12.02	12.16	8.48	08/13/2001	Y	0.19	0.19

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