Interim SAA Implementation Considerations

August 2023

Public Slides

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Agenda

- Connection to investment philosophy and beliefs
- Overview of implementation considerations
- Option 5, zero net leverage (CIO’s recommendation)
- Tracking and trading considerations
- Market and portfolio considerations
- IPS changes (targets and ranges)
- IPS changes (benchmarks)
- Appendix items (exhibits specific to other options)

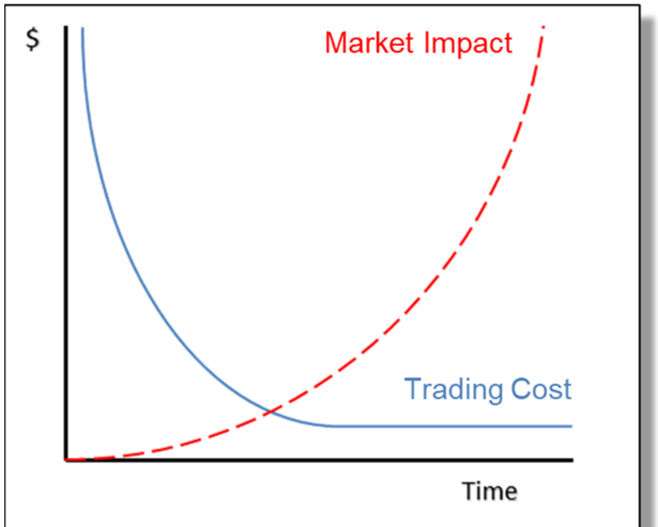
IPS Section V – Investment Philosophy and Beliefs Statements

1 Uncertainty	2 Asset Allocation	3 Diversification	4 Risk	5 Leverage	6 Rebalancing
7 Portfolio Size	8 Private Investments	9 Active Management	10 Internal Management	11 Fees	

Today's Focus:

- Uncertainty – The future is difficult to forecast with accuracy or certainty.
- Asset Allocation – The strategic asset allocation (SAA) mix largely determines overall risk and return.
- Diversification – Diversification, across multiple dimensions, is the best approach to addressing uncertainty.
- Risk – The path of compounding investment returns matters, particularly for underfunded plans with net outflows.
- Leverage – Applied towards diversifying assets, leverage can more efficiently improve return expectations.
- Rebalancing – Rebalancing enhances long term returns while mooring the portfolio to the SAA

Implementation Considerations



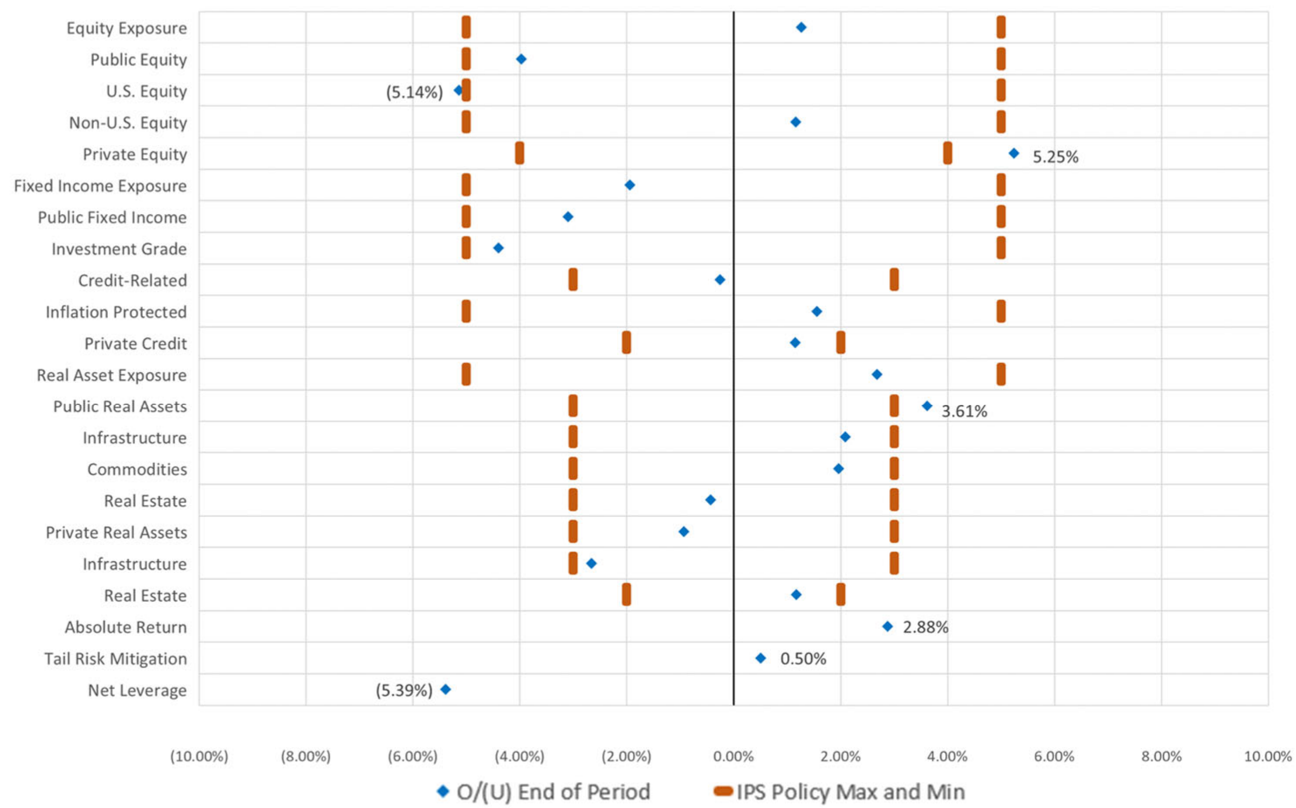
Primary Considerations	Trading Cost	Market Impact
Return Expectations	0.5 to 1.0 bps $4.4MM to $7.9MM	10 to 30 bps $70MM to $210MM
Cash & Leverage	--	≈ 4% to 5% Yield $40MM to $50MM per $1B
Fixed Income	≈ 10 bps $1.0MM per $1B	≈ 5% to 8% Yield $50MM to $80MM per $1B
EM to US Equity	≈ 24 bps $2.4MM per $1B	± 8% $80MM per $1B

For a $70B portfolio, $1B ≈ 1.4% allocation.

- Trading costs generally decrease with sufficient time to manage the transition properly.
- Market impact can be negative or positive but becomes potentially more significant with time.
- Over time, market impact can significantly outweigh trading cost.

Absent a view, relatively shorter transitions are preferable.

Option 5, 0% Net Leverage



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Asset Class	Actual	Proposed	O/(U) as of 6/30/23	Range
Equity	**43.27**	**42.00**	**1.27**	**± 5**
Public	26.02	30.00	(3.98)	± 5
U.S. Equity	12.86	18.00	(5.14)	± 5
Non-U.S. Equity	13.16	12.00	1.16	± 5
Private	17.25	12.00	5.25	± 4
Fixed Income	**31.55**	**33.50**	**(1.95)**	**± 5**
Public	24.40	27.50	(3.10)	± 5
Investment Grade	9.60	14.00	(4.40)	± 5
Credit-Related	4.24	4.50	(0.26)	± 3
Inflation Protected	10.55	9.00	1.55	± 5
Private	7.15	6.00	1.15	± 2
Real Assets	**27.18**	**24.50**	**2.68**	**± 5**
Public	16.11	12.50	3.61	± 3
Infrastructure	7.09	5.00	2.09	± 3
Commodities	6.96	5.00	1.96	± 3
Real Estate	2.06	2.50	(0.44)	± 3
Private	11.07	12.00	(0.93)	± 3
Infrastructure	2.34	5.00	(2.66)	± 3
Real Estate	8.17	7.00	1.17	± 2
Absolute Return	**2.88**	**-**	**2.88**	**0 - 5**
Net Leverage	**(5.39)**	**-**	**(5.39)**	**10 to –10**
Unencumbered Cash	3.30	4.55	(1.25)	NA
Explicit Leverage	(9.00)	(4.55)	(4.45)	NA
Encumbered Cash	6.00	2.45	NA	NA
Gross Derivative	15.00	7.00	NA	NA

Legend

Would Require Adjustment

Other Priority Consideration

*Data as of June 30, 2023

Tracking & Trading Considerations

	Option 2 Present	Option 4 4.0% Leverage	Option 5 No Leverage	Comments
Active Risk Actual v. Target (Untoggled)	0.49%	0.69%	0.97%	Initial overall active risk measure for Option 5 is not extreme
Trading Cost - To 100bp Active Risk	$ -	$ -	-	Total portfolio active risk within 100 bps
Trading Cost - To 75bp Active Risk	$ -	$ -	$ -	Cost for modestly more active risk reduction insignificant
Trading Cost - To IPS Range Tolerance	$ -	$ 500,000	$ 50,000	Cost to conform with IPS ranges are also modest
Trading Cost - To Target	$ 4,350,000	$ 8,650,000	$ 8,050,000	Cost to fully match proposed targets not dissimilar to among new option
US Equity	$ 1,150,000	$ 2,750,000	$ 2,750,000	Incremental cost associated with reducing policy overweight to EM equity relative US Equity
Non-US Equity	$ 1,950,000	$ 1,550,000	$ 1,550,000	
Fixed Income Investment Grade	$ 250,000	$ 3,100,000	$ 3,100,000	Reflects increase to Investment Grade relative to HY & EMD. Assumes Investment grade FI transactions involve physicals vs. swaps
Fixed Income Credit	$ 1,250,000	$ 1,250,000	$ 650,000	

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Market & Portfolio Consideration

Primary Considerations	Option 2 Present	Option 4 4.0% Leverage	Option 5 No Leverage	Comments
Expected Total Return (@ 10 to 20 bps)	--	$(70) MM	$(140) MM	10 to 20bps expected return reduction for a 90bps risk reduction.
Cash & Leverage (@ 4.5% Yield)	--	$48 MM	$175 MM	Reduced cost of leverage relative to present targets
Fixed Income (@ 5% to 8% Yield)	--	$180 MM	$180 MM	Increased earnings from fixed income (ignores duration)
Equity (@ +/- 8%)	--	+/- $300 MM	+/- $300 MM	Reduced uncertainty from policy overweight to EM equity
Implied Investment Fee Reductions	≈ $75 MM	≈ $130 MM	≈ $130 MM	Continues projected fee reductions from LT targets
Private Markets from 36% to 30%	$75 MM	$75 MM	$75 MM	
Absolute Return from 4% to 0%	--	$55 MM	$55 MM	
Gross Swap Exposure (at target)	$12.0 B	$8.0 B	$5.0 B	Reduces leverage significantly…
Gross Cash at Target	$6.0 B	5.0 B	$5.0 B	…without significant reduction to liquidity

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IPS Target Revisions – Option 5

Present

Present IPS Asset Allocation Targets & Ranges (from page 13)

Asset Class	Target Allocation	Range
Equity Exposure	**42.0%**	**+/- 5%**
Public Equity	**30.0%**	+/- 5%
US Equity	15.0%	+/- 5%
Non-US Equity	15.0%	+/- 5%
Private Equity	**12.0%**	+/- 4%
Fixed Income Exposure	**33.0%**	**+/- 5%**
Public Fixed Income	**27.0%**	+/- 5%
Investment Grade	10.0%	+/- 5%
Credit-Related	6.0%	+/- 3%
Inflation Protected	11.0%	+/- 5%
Private Credits	**6.0%**	+/- 2%
Real Assets Exposure	**28.5%**	**+/- 5%**
Public Real Assets	**16.5%**	+/- 3%
Infrastructure	5.0%	+/- 3%
Commodities	7.5%	+/- 3%
Real Estate	4.0%	+/- 3%
Private Real Assets	**12.0%**	+/- 3%
Infrastructure	5.0%	+/- 3%
Real Estate	7.0%	+/- 2%
Absolute Return	**4.0%**	**0% to 7%**
Net Leverage	**-7.5%**	**10 to -20%**
Cash	3.0%	
Explicit Leverage	-10.5%	
	100.0%	

Proposed

Proposed IPS Asset Allocation Targets and Ranges

Asset Class	Target Allocation	Range	Change
Equity Exposure	**42.0%**	**+/- 5%**	**--**
Public Equity	**30.0%**	+/- 5%	--
US Equity	18.0%	+/- 5%	+ 3.0 ppts
Non-US Equity	12.0%	+/- 5%	- 3.0 ppts
Private Equity	**12.0%**	+/- 4%	--
Fixed Income Exposure	**33.5%**	**+/- 5%**	**+ 0.5 ppts**
Public Fixed Income	**27.5%**	+/- 5%	+ 0.5 ppts
Investment Grade	14.0%	+/- 5%	+ 4.0 ppts
Credit-Related	4.5%	+/- 3%	- 1.5 ppts
Inflation Protected	9.0%	+/- 5%	- 2.0 ppts
Private Credits	**6.0%**	+/- 2%	--
Real Assets Exposure	**24.5%**	**+/- 5%**	**- 4.0 ppts**
Public Real Assets	**12.5%**	+/- 3%	- 4.0 ppts
Infrastructure	5.0%	+/- 3%	--
Commodities	5.0%	+/- 3%	- 2.5 ppts
Real Estate	2.5%	+/- 3%	- 1.5 ppts
Private Real Assets	**12.0%**	+/- 3%	--
Infrastructure	5.0%	+/- 3%	--
Real Estate	7.0%	+/- 2%	--
Absolute Return	**0.0%**	**0% to 5%**	**- 4.0 ppts**
Net Leverage	**0.0%**	**10 to -10%**	**+ 7.5 ppts**
Cash	4.5%		
Explicit Leverage	-4.5%		
	100.0%		

IPS Benchmark Revision – Option 5

Present | Proposed

Asset Class	Present IPS Benchmarks (pages 17 & 18)	Target Allocation	Proposed Benchmark	Target Allocation
Equity Exposure		**42.0%**		**42.0%**
Public Equity		**30.0%**		**30.0%**
US Equity	S&P 500 TR Index (75%), S&P MidCap 400 TR Index (12.5%), S&P Small Cap 600 TR Index (12.5%)	15.0%	S&P 1500	18.0%
Non-US Equity	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	12.75%	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	12.0%
	MSCI Emerging Markets IMI Net TR Index	2.25%		
Private Equity		**12.0%**		**12.0%**
	Burgiss TR, one-quarter lagged		Burgiss TR, one-quarter lagged	
Fixed Income Exposure		**33.0%**		**33.5%**
Public Fixed Income		**27.0%**		**27.5%**
Investment Grade				
	Bloomberg US Aggregate Bond TR Index	2.0%	Bloomberg US Aggregate Bond TR Index	**6.0%**
	Bloomberg U.S. Long Treasury TR Index	8.0%	Bloomberg U.S. Long Treasury TR Index	8.0%
Credit-Related				
	Bloomberg US Corporate High Yield Bond Index	4.0%	Bloomberg US Corporate High Yield Bond Index	**3.5%**
	J.P. Morgan EMD Aggregate Total Return Index	2.0%	J.P. Morgan EMD Aggregate Total Return Index	**1.0%**
Inflation Protected				
	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	10.0%	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	**9.0%**
	Bloomberg World Government ex US Inflation-Linked Bond All Maturities TR Index (Hedged to USD)	1.0%		
Private Credit		**6.0%**		**6.0%**
	S&P LSTA Leveraged Loan TR Index + 200bps	6.0%	S&P LSTA Leveraged Loan TR Index + 200bps, **one-quarter lagged**	6.0%

IPS Benchmark Revision – Option 5 (Continued)

Present | Proposed

Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Real Assets		**28.5%**		**24.5%**
Public Real Assets		**16.5%**		**12.5%**
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.0%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%
Commodities	Bloomberg Commodity TR Index	2.5%	Bloomberg Commodity TR Index	2.50%
	Bloomberg Gold TR Subindex	5.0%	Bloomberg Gold TR Subindex	**2.50%**
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.0%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	**2.50%**
Private Real Assets		**12.0%**		12.0%
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.0%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.0%
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.0%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.0%
Absolute Return		**4.0%**		**0.0%**
	HFRI Fund of Funds Conservative Index + 100bps	4.0%	Delete Benchmark	**0.0%**
Net Leverage		**-7.5%**		--
Cash	ICE BofAML 0-3 Month US Treasury Bill Index	3.0%	ICE BofAML 0-3 Month US Treasury Bill Index	**4.5%**
Financing Cost of Leverage				
	3-Month Term SOFR	-10.5%	3-Month Term SOFR	**-4.5%**

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Appendix Slides

Tracking & Trading Considerations (1)

	Option 1 LT IPS	Option 2 Present	Option 3 4.5% Leverage	Option 4 4.0% Leverage	Option 5 No Leverage	Option 6 +2.0% Cash
Active Risk Actual v. Target [*1]	0.80%	0.49%	0.57%	0.69%	0.97%	1.27%
Trading Cost - To 100bp Active Risk	$ -	$ -	$ -	$ -	-	$ - [*2]
Trading Cost - To 75bp Active Risk	$ -	$ -	$ -	$ -	$ - [*3]	$ - [*4]
Trading Cost - To IPS Range Tolerance	$ 2,650,000	$ -	$ 50,000 [*5]	$ 50,000 [*5]	$ 50,000 [*5]	$ -
Trading Cost - To Target	$ 7,950,000	$ 4,350,000	$ 5,550,000	$ 5,550,000	$ 4,950,000	$ 4,900,000
US Equity [*6]	$ 4,650,000	$ 1,150,000	$ 2,750,000	$ 2,750,000	$ 2,750,000	$ 2,100,000
Non-US Equity [*6]	$ 2,050,000	$ 1,950,000	$ 1,550,000	$ 1,550,000	$ 1,550,000	$ 2,150,000
Fixed Income Credit [*6]	$ 1,250,000	$ 1,250,000	$ 1,250,000	$ 1,250,000	$ 650,000	$ 650,000

Notes:

1. Active Risk and Trading Cost estimated based on allocations without toggling
2. Active Risk for Option 6 can be brought within 100bp without estimated cost by reducing certain swaps.
3. Active Risk for Option 5 can be brought within 75bp without estimated cost by reducing certain swaps.
4. Reduction in Active Risk on Option 6 to within 75 bps requires continued reduction in PE overweight.
5. That $50K that appears for the Options 3, 4, & 5 *to IPS Range Tolerance* is the estimated cost of bringing US Equity into tolerance (rounded).
6. Represent the primary contributors to Trading Cost if publicly traded assets brought to Target., Note, FI, Inv. Grade transactions cost assumed potentially insignificant if executed via swaps

Tracking & Trading Considerations (2)

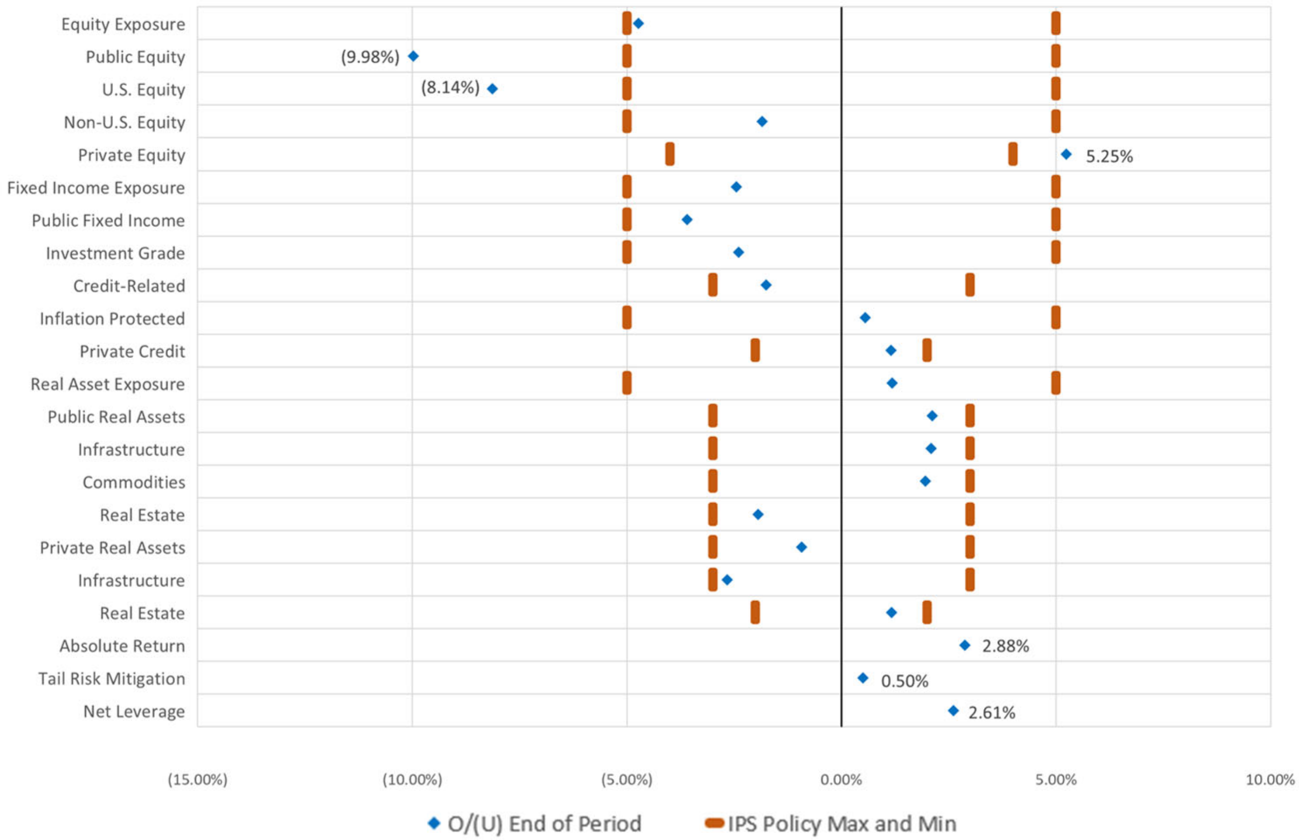
	Option 1 LT IPS	Option 2 Present	Option 3 4.5% Leverage	Option 4 4.0% Leverage	Option 5 No Leverage	Option 6 +2.0% Cash
Active Risk Actual v. Target *1	0.80%	0.49%	0.57%	0.69%	0.97%	1.27%
Trading Cost - To 100bp Active Risk	$ -	$ -	$ -	$ -	-	$ - *2
Trading Cost - To 75bp Active Risk	$ -	$ -	$ -	$ -	$ - *3	$ - *4
Trading Cost - To IPS Range Tolerance	$ 2,650,000	$ -	$ 50,000 *5	$ 500,000 *5	$ 50,000 *5	$ -
Trading Cost - To Target	$ 7,950,000	$ 4,350,000	$ 7,200,000	$ 8,650,000	$ 8,050,000	$ 8,000,000
US Equity *6	$ 4,650,000	$ 1,150,000	$ 2,750,000	$ 2,750,000	$ 2,750,000	$ 2,100,000
Non-US Equity *6	$ 2,050,000	$ 1,950,000	$ 1,550,000	$ 1,550,000	$ 1,550,000	$ 2,150,000
Fixed Income Investment Grade *6	$ 1,650,000	$ 250,000	$ 1,650,000	$ 3,100,000	$ 3,100,000	$ 3,100,000
Fixed Income Credit *6	$ 1,250,000	$ 1,250,000	$ 1,250,000	$ 1,250,000	$ 650,000	$ 650,000

Notes:
1. Active Risk and Trading Cost estimated based on allocations without toggling
2. Active Risk for Option 6 can be brought within 100bp without estimated cost by reducing certain swaps.
3. Active Risk for Option 5 can be brought within 75bp without estimated cost by reducing certain swaps.
4. Reduction in Active Risk on Option 6 to within 75 bps requires continued reduction in PE overweight.
5. That $50K that appears for the Options 3 & 5 *to IPS Range Tolerance* is the estimated cost of bringing US Equity into tolerance (rounded). Incremental $450K for Option 5 relates to FI IG.
6. Represent the primary contributors to Trading Cost if publicly traded assets brought to Target., Note, FI Inv. Grade transactions cost potentially more significant if executed via physical holdings

Market & Portfolio Consideration

Primary Considerations	Option 1 LT IPS	Option 2 Present	Option 3 4.5% Leverage	Option 4 4.0% Leverage	Option 5 No Leverage	Option 6 +2.0% Cash
Total Return Expectations (@ 10 to 30 bps)	$70 MM	--	$(70) MM	$(70) MM	$(140) MM	$(210) MM
Cash & Leverage (@ 4.5% Yield)	$(80) MM	--	$32 MM	$48 MM	$175 MM	$240 MM
Fixed Income (@ 5% to 8% Yield)	$105 MM	--	$105 MM	$180 MM	$180 MM	$180 MM
Equity (@ +/- 8%)	+/- $1.0 B	--	+/- $300 MM	+/- $300 MM	+/- $300 MM	+/- $250MM
Implied Investment Fee Reductions	≈ $130 MM	≈ $75 MM	≈ $130 MM	≈ $130 MM	≈ $130 MM	≈ $130 MM
Private Markets from 36% to 30%	$75 MM	$75 MM	$75 MM	$75 MM	$75 MM	$75 MM
Absolute Return from 4% to 0%	$55 MM	--	$55 MM	$55 MM	$55 MM	$55 MM
Gross Swap Exposure (at target)	$13.0 B	$12.0 B	$8.0 B	$8.0 B	$5.0 B	$5.0 B
Gross Cash at Target	$6.3 B	$6.0 B	$5.0 B	5.0 B	$5.0 B	$6.3 B

Long Term Targets – Option 1, 8% Net Leverage



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Asset Class	Actual	Targets	O/(U) as of 6/30/23	Range
Equity	**43.27**	**48.00**	**(4.73)**	**± 5**
Public	26.02	36.00	(9.98)	± 5
U.S. Equity	12.86	21.60	(8.68)	± 5
Non-U.S. Equity	13.16	14.40	(1.34)	± 5
Private	17.25	12.00	5.25	± 4
Fixed Income	**31.55**	**34.00**	**(2.45)**	**± 5**
Public	24.40	28.00	(3.60)	± 5
Investment Grade	9.60	12.00	(2.40)	± 5
Credit-Related	4.24	6.00	(1.76)	± 3
Inflation Protected	10.55	10.00	0.55	± 5
Private	7.15	6.00	1.15	± 2
Real Assets	**27.18**	**26.00**	**1.18**	**± 5**
Public	16.11	14.00	2.11	± 3
Infrastructure	7.09	5.00	2.09	± 3
Commodities	6.96	5.00	1.96	± 3
Real Estate	2.06	4.00	(1.94)	± 3
Private	11.07	12.00	(0.93)	± 3
Infrastructure	2.34	5.00	(2.66)	± 3
Real Estate	8.17	7.00	1.17	± 2
Absolute Return	**2.88**	**-**	**2.88**	**0 - 7**
Net Leverage	**(5.39)**	**(8.00)**	**2.30**	**10 to –20**
Unencumbered Cash	3.30	3.00	0.30	NA
Explicit Leverage	(9.00)	(11.00)	2.00	NA
Encumbered Cash	6.00	6.00	NA	NA
Gross Derivative	15.00	18.00	NA	NA

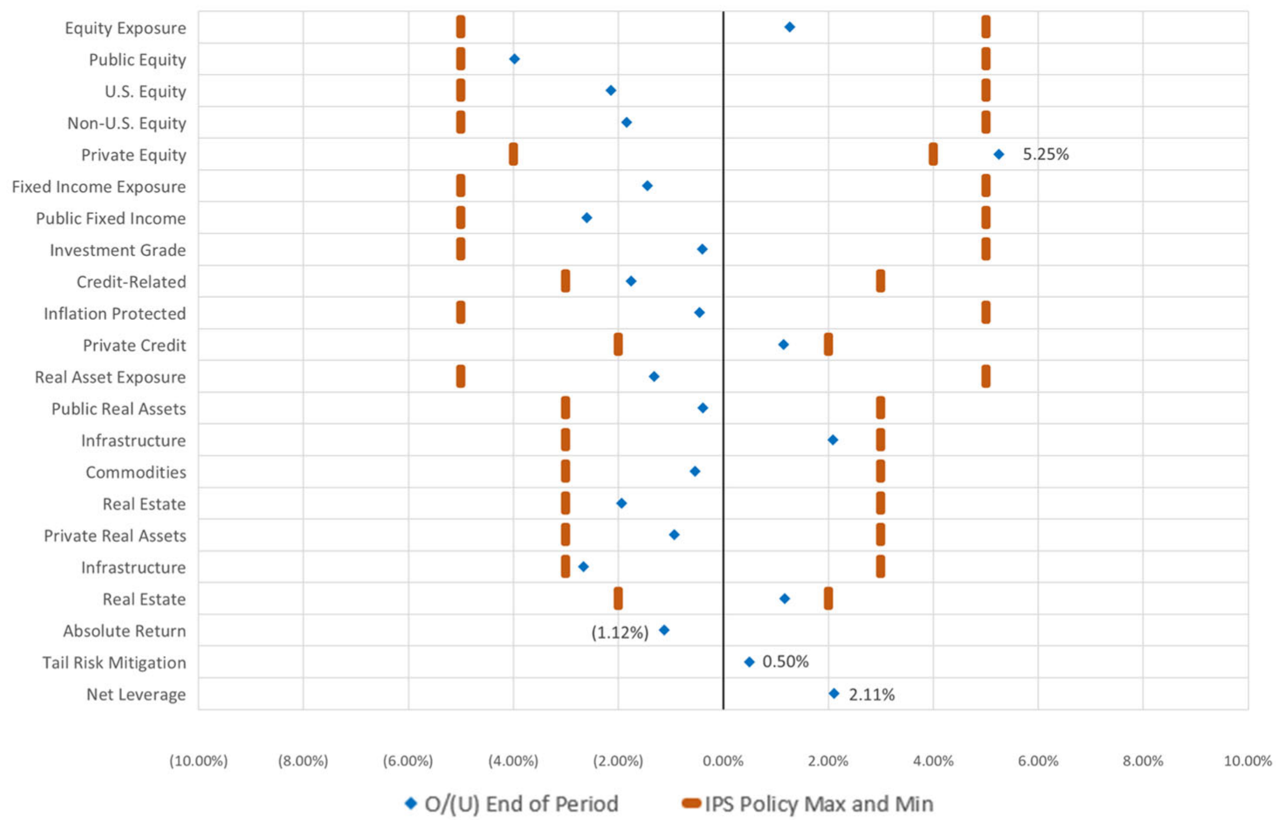
Legend

Requires Adjustment

Other Priority Consideration

*Data as of June 30, 2023

Present Targets – Option 2, 7.5% Net Leverage



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Asset Class	Actual	Targets	O/(U) as of 6/30/23	Range
Equity	**43.27**	**42.00**	**1.27**	**± 5**
Public	26.02	30.00	(3.98)	± 5
U.S. Equity	12.86	15.00	(2.14)	± 5
Non-U.S. Equity	13.16	15.00	(1.84)	± 5
Private	17.25	12.00	5.25	± 4
Fixed Income	**31.55**	**33.00**	**(1.45)**	**± 5**
Public	24.40	27.00	(2.60)	± 5
Investment Grade	9.60	10.00	(0.40)	± 5
Credit-Related	4.24	6.00	(1.76)	± 3
Inflation Protected	10.55	11.00	(0.45)	± 5
Private	7.15	6.00	1.15	± 2
Real Assets	**27.18**	**28.50**	**(1.32)**	**± 5**
Public	16.11	16.50	(0.39)	± 3
Infrastructure	7.09	5.00	2.09	± 3
Commodities	6.96	7.50	(0.54)	± 3
Real Estate	2.06	4.00	(1.94)	± 3
Private	11.07	12.00	(0.93)	± 3
Infrastructure	2.34	5.00	(2.66)	± 3
Real Estate	8.17	7.00	1.17	± 2
Absolute Return	**2.88**	**4.00**	**(1.12)**	**0 - 7**
Net Leverage	**(5.39)**	**(7.50)**	**2.80**	**10 to –20**
Unencumbered Cash	3.30	3.00	0.30	NA
Explicit Leverage	(9.00)	(10.50)	1.50	NA
Encumbered Cash	6.00	6.80	NA	NA
Gross Derivative	15.00	17.30	NA	NA

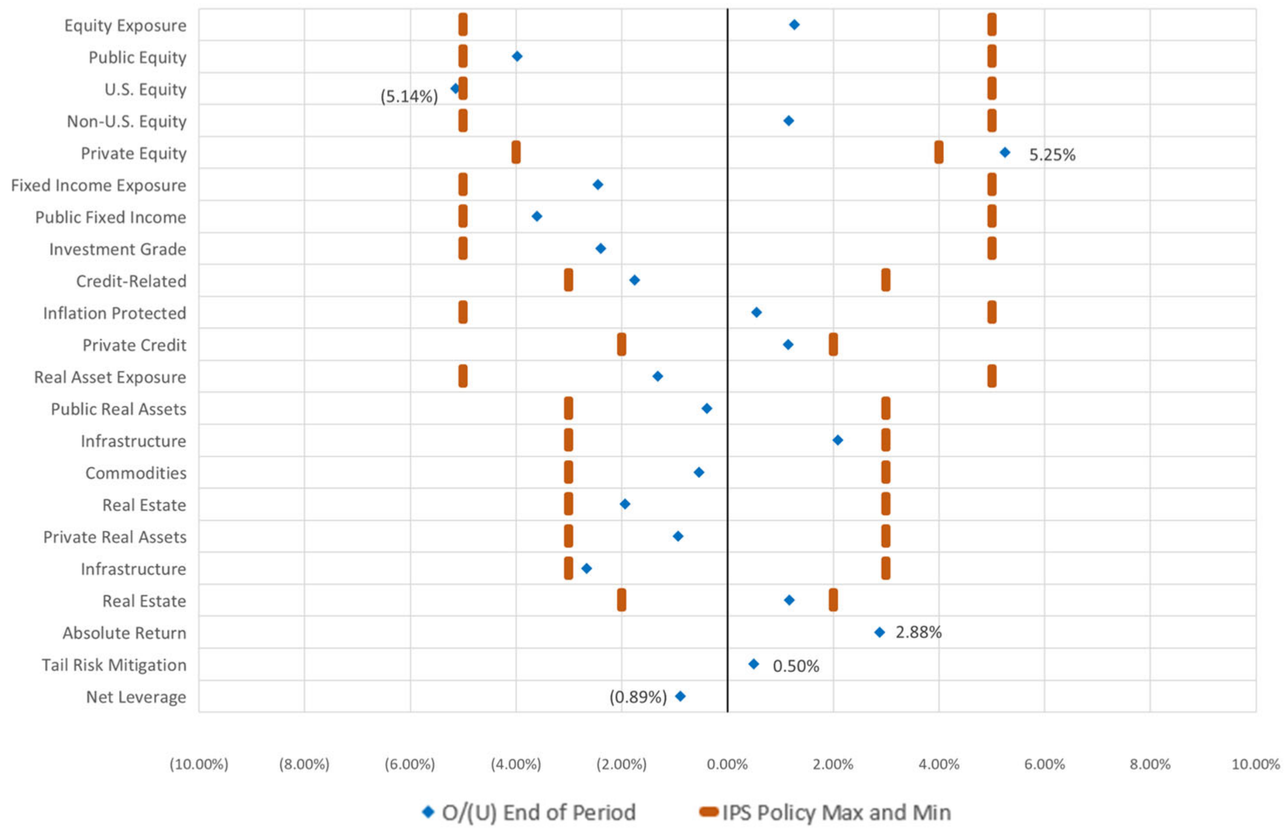
Legend

Require Adjustment

Other Priority Consideration

*Data as of June 30, 2023

Option 3, 4.5% Net Leverage



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Asset Class	Actual	Proposed	O/(U) as of 6/30/23	Range
Equity	**43.27**	**42.00**	**1.27**	**± 5**
Public	26.02	30.00	(3.98)	± 5
U.S. Equity	12.86	18.00	(5.14)	± 5
Non-U.S. Equity	13.16	12.00	1.16	± 5
Private	17.25	12.00	5.25	± 4
Fixed Income	**31.55**	**34.00**	**(2.45)**	**± 5**
Public	24.40	28.00	(3.60)	± 5
Investment Grade	9.60	12.00	(2.40)	± 5
Credit-Related	4.24	6.00	(1.76)	± 3
Inflation Protected	10.55	10.00	0.55	± 5
Private	7.15	6.00	1.15	± 2
Real Assets	**27.18**	**28.50**	**(1.32)**	**± 5**
Public	16.11	16.50	(0.39)	± 3
Infrastructure	7.09	5.00	2.09	± 3
Commodities	6.96	7.50	(0.54)	± 3
Real Estate	2.06	4.00	(1.94)	± 3
Private	11.07	12.00	(0.93)	± 3
Infrastructure	2.34	5.00	(2.66)	± 3
Real Estate	8.17	7.00	1.17	± 2
Absolute Return	**2.88**	**-**	**2.88**	**0 - 5**
Net Leverage	**(5.39)**	**(4.50)**	**(0.89)**	**10 to –10**
Unencumbered Cash	3.30	3.00	0.30	NA
Explicit Leverage	(9.00)	(7.50)	(1.50)	NA
Encumbered Cash	6.00	4.00	NA	NA
Gross Derivative	15.00	11.50	NA	NA

Legend

Would Require Adjustment

Other Priority Consideration

*Data as of June 30, 2023

Related IPS Revisions – Option 3

Present

Present IPS Asset Allocation Targets & Ranges (from page 13 of 34)

Asset Class	Target Allocation	Range
Equity Exposure	**42.0%**	**+/- 5%**
Public Equity	**30.0%**	+/- 5%
US Equity	15.0%	+/- 5%
Non-US Equity	15.0%	+/- 5%
Private Equity	**12.0%**	+/- 4%
Fixed Income Exposure	**33.0%**	**+/- 5%**
Public Fixed Income	**27.0%**	+/- 5%
Investment Grade	10.0%	+/- 5%
Credit-Related	6.0%	+/- 3%
Inflation Protected	11.00%	+/- 5%
Private Credits	**6.0%**	+/- 2%
Real Assets Exposure	**28.5%**	**+/- 5%**
Public Real Assets	**16.5%**	+/- 3%
Infrastructure	5.0%	+/- 3%
Commodities	7.5%	+/- 3%
Real Estate	4.0%	+/- 3%
Private Real Assets	**12.0%**	+/- 3%
Infrastructure	5.0%	+/- 3%
Real Estate	7.0%	+/- 2%
Absolute Return	**4.0%**	**0% to 7%**
Net Leverage	**-7.5%**	**10 to -20%**
Cash	3.0%	
Explicit Leverage	-10.5%	
	100.0%	

Proposed

Proposed IPS Asset Allocation Targets and Ranges

Asset Class	Target Allocation	Range	Change
Equity Exposure	**42.0%**	**+/- 5%**	**--**
Public Equity	**30.0%**	+/- 5%	--
US Equity	18.0%	+/- 5%	+ 3.0 ppts
Non-US Equity	12.0%	+/- 5%	- 3.0 ppts
Private Equity	**12.0%**	+/- 4%	--
Fixed Income Exposure	**34.0%**	**+/- 5%**	**+**
Public Fixed Income	**28.0%**	+/- 5%	+ 1.0 ppts
Investment Grade	12.0%	+/- 5%	+ 2.0 ppts
Credit-Related	6.0%	+/- 3%	--
Inflation Protected	10.0%	+/- 5%	- 1.0 ppts
Private Credits	**6.0%**	+/- 2%	--
Real Assets Exposure	**28.5%**	**+/- 5%**	**--**
Public Real Assets	**16.5%**	+/- 3%	--
Infrastructure	5.0%	+/- 3%	--
Commodities	7.5%	+/- 3%	--
Real Estate	4.0%	+/- 3%	--
Private Real Assets	**12.0%**	+/- 3%	--
Infrastructure	5.0%	+/- 3%	--
Real Estate	7.0%	+/- 2%	--
Absolute Return	**0.0%**	**0% to 5%**	**- 4.0 ppts**
Net Leverage	**-4.5%**	**10 to -10%**	**+ 3.0 ppts**
Cash	3.0%		
Explicit Leverage	-7.5%		
	100.0%		

IPS Benchmark Revision – Option 3

Present | Proposed

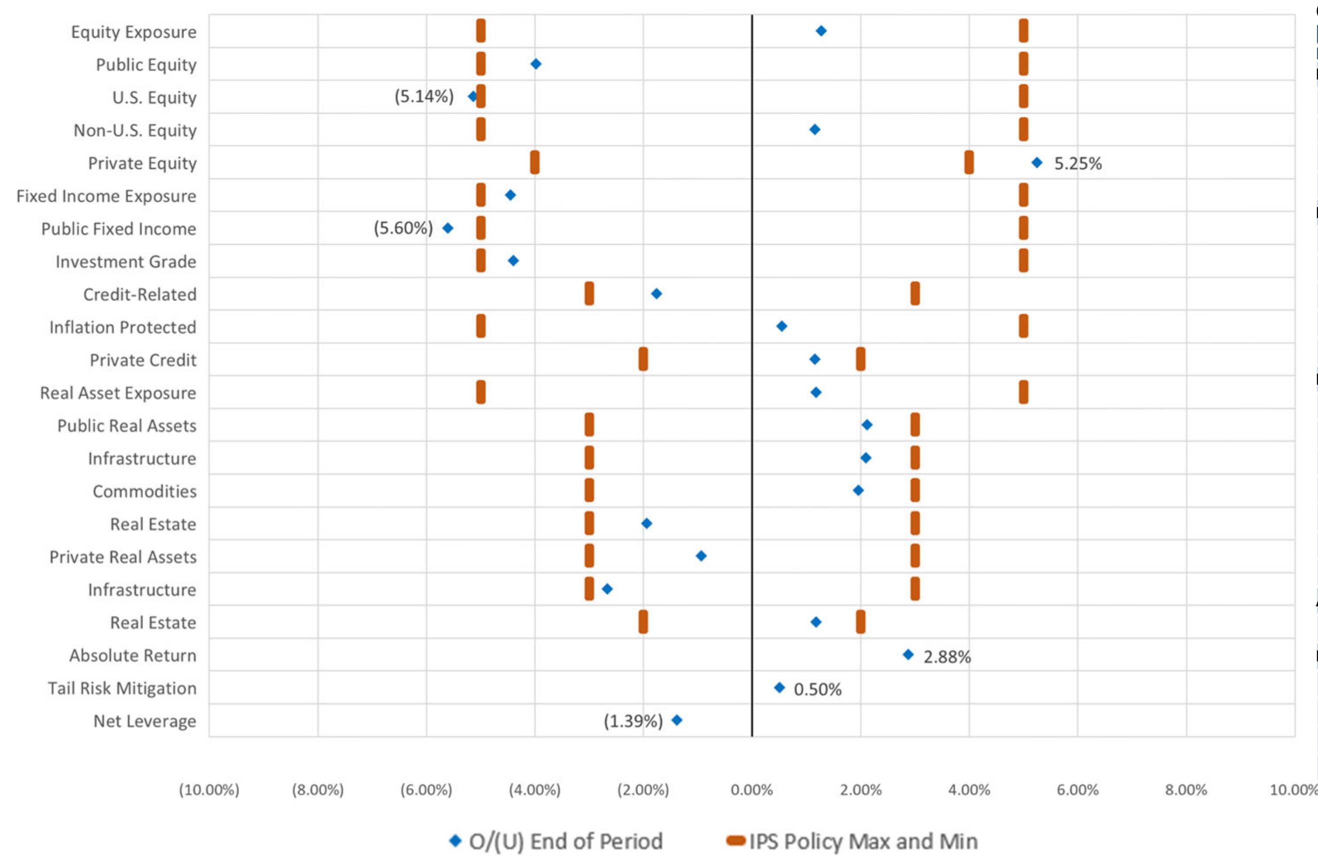
Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Equity Exposure		**42.0%**		**42.0%**
Public Equity		**30.0%**		30.0%
US Equity	S&P 500 TR Index (75%), S&P MidCap 400 TR Index (12.5%), S&P Small Cap 600 TR Index (12.5%)	15.0%	**S&P 1500**	18.0%
Non-US Equity	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	12.75%	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	**12.0%**
	MSCI Emerging Markets IMI Net TR Index	2.25%		
Private Equity		**12.0%**		**12.0%**
	Burgiss TR, one-quarter lagged		Burgiss TR, one-quarter lagged	
Fixed Income Exposure		**33.0%**		**34.0%**
Public Fixed Income		**27.0%**		**28.0%**
Investment Grade				
	Bloomberg US Aggregate Bond TR Index	2.0%	Bloomberg US Aggregate Bond TR Index	**4.0%**
	Bloomberg U.S. Long Treasury TR Index	8.0%	Bloomberg U.S. Long Treasury TR Index	8.0%
Credit-Related				
	Bloomberg US Corporate High Yield Bond Index	4.0%	Bloomberg US Corporate High Yield Bond Index	**4.0%**
	J.P. Morgan EMD Aggregate Total Return Index	2.0%	J.P. Morgan EMD Aggregate Total Return Index	**2.0%**
Inflation Protected				
	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	10.0%	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	**10.0%**
	Bloomberg World Government ex US Inflation-Linked Bond All Maturities TR Index (Hedged to USD)	1.0%		
Private Credit		**6.0%**		**6.0%**
	S&P LSTA Leveraged Loan TR Index + 200bps	6.0%	S&P LSTA Leveraged Loan TR Index + 200bps, **one-quarter lagged**	6.0%

IPS Benchmark Revision – Option 3 (Continued)

Present | Proposed

Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Real Assets		**28.50%**		**28.50%**
Public Real Assets		**16.5%**		**16.50%**
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%
Commodities	Bloomberg Commodity TR Index	2.50%	Bloomberg Commodity TR Index	2.50%
	Bloomberg Gold TR Subindex	5.00%	Bloomberg Gold TR Subindex	5.00%
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.00%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.00%
Private Real Assets		**12.00%**		**12.00%**
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.00%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.00%
Absolute Return		**4.00%**		**0.00%**
	HFRI Fund of Funds Conservative Index + 100bps	4.00%	Delete Benchmark	**0.00%**
Net Leverage		**-7.50%**		**-4.50%**
Cash	ICE BofAML 0-3 Month US Treasury Bill Index	3.00%	ICE BofAML 0-3 Month US Treasury Bill Index	**3.00%**
Financing Cost of Leverage				
	3-Month Term SOFR	-10.50%	3-Month Term SOFR	**-7.50%**

Option 4, 4% Net Leverage



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Asset Class	Actual	Proposed	O/(U) as of 6/30/23	Range
Equity	**43.27**	**42.00**	**1.27**	**± 5**
Public	26.02	30.00	(3.98)	± 5
U.S. Equity	12.86	18.00	(5.14)	± 5
Non-U.S. Equity	13.16	12.00	1.16	± 5
Private	17.25	12.00	5.25	± 4
Fixed Income	**31.55**	**36.00**	**(4.45)**	**± 5**
Public	24.40	30.00	(5.60)	± 5
Investment Grade	9.60	14.00	(4.40)	± 5
Credit-Related	4.24	6.00	(1.76)	± 3
Inflation Protected	10.55	10.00	0.55	± 5
Private	7.15	6.00	1.15	± 2
Real Assets	**27.18**	**26.00**	**1.18**	**± 5**
Public	16.11	14.00	2.11	± 3
Infrastructure	7.09	5.00	2.09	± 3
Commodities	6.96	5.00	1.96	± 3
Real Estate	2.06	4.00	(1.94)	± 3
Private	11.07	12.00	(0.93)	± 3
Infrastructure	2.34	5.00	(2.66)	± 3
Real Estate	8.17	7.00	1.17	± 2
Absolute Return	**2.88**	**-**	**2.88**	**0 - 5**
Net Leverage	**(5.39)**	**(4.00)**	**(1.39)**	**10 to –10**
Unencumbered Cash	3.30	3.00	0.30	NA
Explicit Leverage	(9.00)	(7.00)	(2.00)	NA
Encumbered Cash	6.00	3.75	2.25	NA
Gross Derivative	15.00	10.75	6.25	NA

Legend

Would Require Adjustment

Other Priority Consideration

*Data as of June 30, 2023

IPS Target Revisions – Option 4

Present | Proposed

Present Asset Allocation Targets & Ranges (from page 13 of IPS)

Asset Class	Target Allocation	Range
Equity Exposure	**42.00%**	**+/- 5%**
Public Equity	**30.00%**	+/- 5%
US Equity	15.00%	+/- 5%
Non-US Equity	15.00%	+/- 5%
Private Equity	**12.00%**	+/- 4%
Fixed Income Exposure	**33.00%**	**+/- 5%**
Public Fixed Income	**27.00%**	+/- 5%
Investment Grade	10.00%	+/- 5%
Credit-Related	6.00%	+/- 3%
Inflation Protected	11.00%	+/- 5%
Private Credits	**6.00%**	+/- 2%
Real Assets Exposure	**28.50%**	**+/- 5%**
Public Real Assets	**16.50%**	+/- 3%
Infrastructure	5.00%	+/- 3%
Commodities	7.50%	+/- 3%
Real Estate	4.00%	+/- 3%
Private Real Assets	**12.00%**	+/- 3%
Infrastructure	5.00%	+/- 3%
Real Estate	7.00%	+/- 2%
Absolute Return	**4.00%**	**0% to 7%**
Net Leverage	**-7.50%**	**10 to -20%**
Cash	3.00%	
Explicit Leverage	-10.50%	
	100.00%	

Proposed Asset Allocation Targets and Ranges

Asset Class	Target Allocation	Range	Change
Equity Exposure	**42.00%**	**+/- 5%**	**--**
Public Equity	**30.00%**	+/- 5%	--
US Equity	18.00%	+/- 5%	+ 3.00 ppts
Non-US Equity	12.00%	+/- 5%	- 3.00 ppts
Private Equity	**12.00%**	+/- 4%	--
Fixed Income Exposure	**36.00%**	**+/- 5%**	**+ 3.00 ppts**
Public Fixed Income	**30.00%**	+/- 5%	+ 3.00 ppts
Investment Grade	14.00%	+/- 5%	+ 4.00 ppts
Credit-Related	6.00%	+/- 3%	--
Inflation Protected	10.00%	+/- 5%	- 1.00 ppts
Private Credits	**6.00%**	+/- 2%	--
Real Assets Exposure	**26.00%**	**+/- 5%**	**- 2.50 ppts**
Public Real Assets	**14.00%**	+/- 3%	- 2.50 ppts
Infrastructure	5.00%	+/- 3%	--
Commodities	5.00%	+/- 3%	- 2.50 ppts
Real Estate	4.00%	+/- 3%	--
Private Real Assets	**12.00%**	+/- 3%	--
Infrastructure	5.00%	+/- 3%	--
Real Estate	7.00%	+/- 2%	--
Absolute Return	**0.00%**	**0% to 5%**	**- 4.00 ppts**
Net Leverage	**-4.00%**	**10 to -10%**	**+ 3.50 ppts**
Cash	3.00%		
Explicit Leverage	-7.00%		
	100.00%		

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PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

IPS Benchmark Revision – Option 4

Present | Proposed

Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Equity Exposure		**42.00%**		**42.00%**
Public Equity		**30.00%**		30.00%
US Equity	S&P 500 TR Index (75%), S&P MidCap 400 TR Index (12.5%), S&P Small Cap 600 TR Index (12.5%)	15.00%	S&P 1500	18.00%
Non-US Equity	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	12.75%	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	12.00%
	MSCI Emerging Markets IMI Net TR Index	2.25%		
Private Equity		**12.00%**		12.00%
	Burgiss TR, one-quarter lagged		Burgiss TR, one-quarter lagged	
Fixed Income Exposure		**33.00%**		**36.00%**
Public Fixed Income		**27.00%**		**30.00%**
Investment Grade				
	Bloomberg US Aggregate Bond TR Index	2.00%	Bloomberg US Aggregate Bond TR Index	**6.00%**
	Bloomberg U.S. Long Treasury TR Index	8.00%	Bloomberg U.S. Long Treasury TR Index	8.00%
Credit-Related				
	Bloomberg US Corporate High Yield Bond Index	4.00%	Bloomberg US Corporate High Yield Bond Index	**4.00%**
	J.P. Morgan EMD Aggregate Total Return Index	2.00%	J.P. Morgan EMD Aggregate Total Return Index	**2.00%**
Inflation Protected				
	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	10.00%	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	**10.00%**
	Bloomberg World Government ex US Inflation-Linked Bond All Maturities TR Index (Hedged to USD)	1.00%		
Private Credit		**6.00%**		**6.00%**
	S&P LSTA Leveraged Loan TR Index + 200bps	6.00%	S&P LSTA Leveraged Loan TR Index + 200bps, **one-quarter lagged**	6.00%

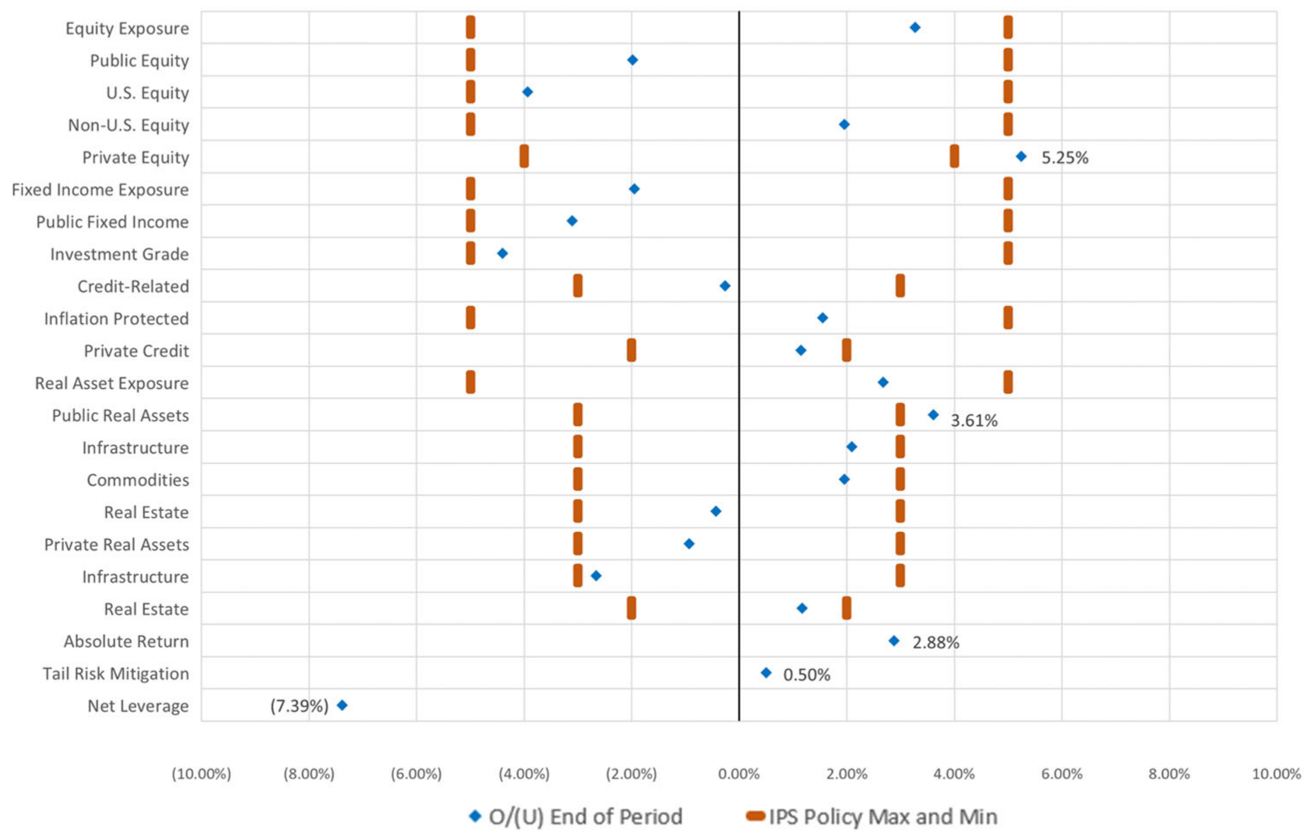
Present

IPS Benchmark Revision – Option 4 (Continued)

Proposed

Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Real Assets		**28.50%**		**26.00%**
Public Real Assets		**16.50%**		**14.00%**
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%
Commodities	Bloomberg Commodity TR Index	2.50%	Bloomberg Commodity TR Index	2.50%
	Bloomberg Gold TR Subindex	5.00%	Bloomberg Gold TR Subindex	**2.50%**
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.00%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.00%
Private Real Assets		**12.00%**		12.00%
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.00%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.00%
Absolute Return		**4.00%**		**0.00%**
	HFRI Fund of Funds Conservative Index + 100bps	4.00%	Delete Benchmark	**0.00%**
Net Leverage		**-7.50%**		**-4.00%**
Cash	ICE BofAML 0-3 Month US Treasury Bill Index	3.00%	ICE BofAML 0-3 Month US Treasury Bill Index	**3.00%**
Financing Cost of Leverage				
	3-Month Term SOFR	-10.50%	3-Month Term SOFR	**-7.00%**

Option 6, +2% Net Cash



(ppts.)

Asset Class	Actual	Proposed	O/(U) as of 6/30/23	Range
Equity	**43.27**	**40.00**	**3.27**	**± 5**
Public	26.02	28.00	(1.98)	± 5
U.S. Equity	12.86	16.80	(3.94)	± 5
Non-U.S. Equity	13.16	11.20	1.96	± 5
Private	17.25	12.00	5.25	± 4
Fixed Income	**31.55**	**33.50**	**(1.95)**	**± 5**
Public	24.40	27.50	(3.10)	± 5
Investment Grade	9.60	14.00	(4.40)	± 5
Credit-Related	4.24	4.50	(0.26)	± 3
Inflation Protected	10.55	9.00	1.55	± 5
Private	7.15	6.00	1.15	± 2
Real Assets	**27.18**	**24.50**	**2.68**	**± 5**
Public	16.11	12.50	3.61	± 3
Infrastructure	7.09	5.00	2.09	± 3
Commodities	6.96	5.00	1.96	± 3
Real Estate	2.06	2.50	(0.44)	± 3
Private	11.07	12.00	(0.93)	± 3
Infrastructure	2.34	5.00	(2.66)	± 3
Real Estate	8.17	7.00	1.17	± 2
Absolute Return	**2.88**	**-**	**2.88**	**0 - 5**
Net Leverage	**(5.39)**	**2.00**	**(7.39)**	**10 to –10**
Unencumbered Cash	3.30	6.55	(3.25)	NA
Explicit Leverage	(9.00)	(4.55)	(4.45)	NA
Encumbered Cash	6.00	2.45	NA	NA
Gross Derivative	15.00	7.00	NA	NA

Legend

Would Require Adjustment

Other Priority Consideration

*Data as of June 30, 2023

IPS Target Revisions – Option 6

Present

Present IPS Asset Allocation Targets & Ranges (from page 13 of 34)

Asset Class	Target Allocation	Range
Equity Exposure	**42.00%**	**+/- 5%**
Public Equity	**30.00%**	+/- 5%
US Equity	15.00%	+/- 5%
Non-US Equity	15.00%	+/- 5%
Private Equity	**12.00%**	+/- 4%
Fixed Income Exposure	**33.00%**	**+/- 5%**
Public Fixed Income	**27.00%**	+/- 5%
Investment Grade	10.00%	+/- 5%
Credit-Related	6.00%	+/- 3%
Inflation Protected	11.00%	+/- 5%
Private Credits	**6.00%**	+/- 2%
Real Assets Exposure	**28.50%**	**+/- 5%**
Public Real Assets	**16.50%**	+/- 3%
Infrastructure	5.00%	+/- 3%
Commodities	7.50%	+/- 3%
Real Estate	4.00%	+/- 3%
Private Real Assets	**12.00%**	+/- 3%
Infrastructure	5.00%	+/- 3%
Real Estate	7.00%	+/- 2%
Absolute Return	**4.00%**	**0% to 7%**
Net Leverage	**-7.50%**	**10 to -20%**
Cash	3.00%	
Explicit Leverage	-10.50%	
	100.00%	

Proposed

Proposed IPS Asset Allocation Targets and Ranges

Asset Class	Target Allocation	Range	Change
Equity Exposure	**40.00%**	**+/- 5%**	**- 2.00 ppts**
Public Equity	**28.00%**	+/- 5%	- 2.00 ppts
US Equity	16.80%	+/- 5%	+ 1.80 ppts
Non-US Equity	11.20%	+/- 5%	- 3.80 ppts
Private Equity	**12.00%**	+/- 4%	--
Fixed Income Exposure	**33.50%**	**+/- 5%**	**+ 0.50 ppts**
Public Fixed Income	**27.50%**	+/- 5%	+ 0.50 ppts
Investment Grade	14.00%	+/- 5%	+ 4.00 ppts
Credit-Related	4.50%	+/- 3%	- 1.50 ppts
Inflation Protected	9.00%	+/- 5%	- 2.00 ppts
Private Credits	**6.00%**	+/- 2%	--
Real Assets Exposure	**24.50%**	**+/- 5%**	**+ 4.00 ppts**
Public Real Assets	**12.50%**	+/- 3%	+ 4.00 ppts
Infrastructure	5.00%	+/- 3%	--
Commodities	5.00%	+/- 3%	- 2.50 ppts
Real Estate	2.50.%	+/- 3%	- 1.50 ppts
Private Real Assets	**12.00%**	+/- 3%	--
Infrastructure	5.00%	+/- 3%	--
Real Estate	7.00%	+/- 2%	--
Absolute Return	**0.00%**	**0% to 5%**	**- 4.00 ppts**
Net Leverage	**2.00%**	**10 to -10%**	**+ 9.50 ppts**
Cash	6.55%		
Explicit Leverage	-4.55%		
	100.00%		

IPS Benchmark Revision – Option 6

Present | Proposed

Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Equity Exposure		**42.00%**		**40.00%**
Public Equity		**30.00%**		28.00%
US Equity	S&P 500 TR Index (75%), S&P MidCap 400 TR Index (12.5%), S&P Small Cap 600 TR Index (12.5%)	15.00%	S&P 1500	16.80%
Non-US Equity	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	12.75%	MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	11.20%
	MSCI Emerging Markets IMI Net TR Index	2.25%		
Private Equity		**12.00%**		12.00%
	Burgiss TR, one-quarter lagged	**12.00%**	Burgiss TR, one-quarter lagged	12.00%
Fixed Income Exposure		**33.00%**		**33.50%**
Public Fixed Income		**27.00%**		**27.50%**
Investment Grade				
	Bloomberg US Aggregate Bond TR Index	2.00%	Bloomberg US Aggregate Bond TR Index	**6.00%**
	Bloomberg U.S. Long Treasury TR Index	8.00%	Bloomberg U.S. Long Treasury TR Index	8.00%
Credit-Related				
	Bloomberg US Corporate High Yield Bond Index	4.00%	Bloomberg US Corporate High Yield Bond Index	**3.50%**
	J.P. Morgan EMD Aggregate Total Return Index	2.00%	J.P. Morgan EMD Aggregate Total Return Index	**1.00%**
Inflation Protected				
	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	10.00%	Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	**9.00%**
	Bloomberg World Government ex US Inflation-Linked Bond All Maturities TR Index (Hedged to USD)	1.00%		
Private Credit		**6.00%**		**6.00%**
	S&P LSTA Leveraged Loan TR Index + 200bps	6.00%	S&P LSTA Leveraged Loan TR Index + 200bps, **one-quarter lagged**	

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Present

IPS Benchmark Revision – Option 6 (Continued)

Proposed

Asset Class	Present Benchmarks (pages 17 & 18 in IPS)	Target Allocation	Proposed Benchmark	Target Allocation
Real Assets		**28.50%**		**24.50%**
Public Real Assets		**16.50%**		**12.50%**
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%
Commodities	Bloomberg Commodity TR Index	2.50%	Bloomberg Commodity TR Index	2.50%
	Bloomberg Gold TR Subindex	5.00%	Bloomberg Gold TR Subindex	**2.50%**
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.00%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	2.50%
Private Real Assets		**12.00%**		12.00%
Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%
Real Estate	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.00%	FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD	7.00%
Absolute Return		**4.00%**		**0.00%**
	HFRI Fund of Funds Conservative Index + 100bps	4.00%	Delete Benchmark	**0.00%**
Net Leverage		**-7.50%**		**2.00%**
Cash	ICE BofAML 0-3 Month US Treasury Bill Index	3.00%	ICE BofAML 0-3 Month US Treasury Bill Index	**6.55%**
Financing Cost of Leverage				
	3-Month Term SOFR	-10.50%	3-Month Term SOFR	**-4.55%**

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