



Wyoming State Treasurer's Office

Treasurer's Conference – August 2023



Permanent Mineral Trust Fund vs Unconstrained Fund

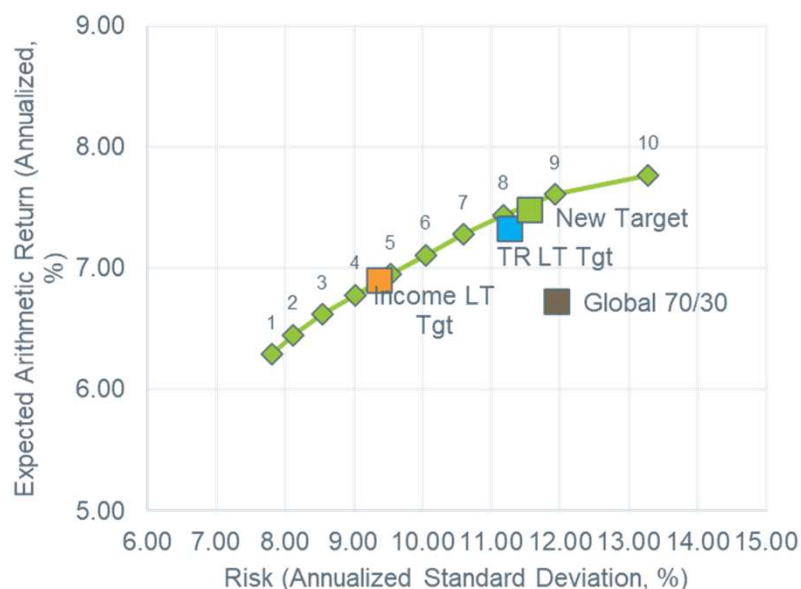
Objectives & Constraints

	PMTF	Unconstrained Fund
Investment Objective	<ul style="list-style-type: none"> Intergenerational Equity 	<ul style="list-style-type: none"> Maximize Long-Term Growth
Spending Policy	<ul style="list-style-type: none"> Corpus <u>cannot</u> be spent. 5% of the trailing 5-year average market value. 	<ul style="list-style-type: none"> No distributions before a set future date
Spending Constraints	<ul style="list-style-type: none"> Only income may be spent (i.e. interest payments, dividends, rental income, and net realized gains). <u>Guaranteed spending level: 2.5%</u> 	<ul style="list-style-type: none"> NA
Reserve Accounts	<ul style="list-style-type: none"> Excess income above the spending policy amount is appropriated to the earnings reserve account. Historically, capped at 150% of the spending policy amount. Legislation passed in 2023 however calls for permanent fund reserve accounts to be funded and maintain at least 5 (and preferably 7 years) of their respective annual spending obligations (potential obligations from the reserves). Following the establishment of the new permanent reserve accounts, each Fund will have a different threshold for transferring excess revenues back to permanent fund corpus. <ul style="list-style-type: none"> <u>PMTF: revenues in excess of 245% of spending policy amount.</u> While Wyoming's permanent funds are constitutionally protected from legislative appropriation, the state's permanent fund reserve accounts are not. 	<ul style="list-style-type: none"> NA

Summary of 2023 Asset Allocation Changes

Permanent Funds

- **New Targets:** Consolidate Total Return-Focused and Income-Focused funds into a single asset allocation strategy.
- Relative to former Total Return Targets:
 - Increase growth and private real assets
 - Increase illiquid asset targets (private equity, private credit, private infrastructure)



	New Target	TR LT Tgt	Income LT Tgt	Difference (New - TR)
Broad US Equity	10.0	11.0	8.0	-1.0
Small Cap US Equity	2.0	3.0	2.0	-1.0
Broad International Equity	16.0	18.0	15.0	-2.0
MLPs	5.0	5.5	7.0	-0.5
Preferred Stock	0.0	0.0	6.0	0.0
Private Equity	15.0	11.0	0.0	4.0
Custom Emerging Markets Debt	4.0	5.0	7.0	-1.0
Private Credit	10.0	5.0	7.0	5.0
US Agg Fixed Income	10.0	11.0	12.0	-1.0
Low Duration	0.0	0.0	0.0	0.0
Core Real Estate	7.0	6.0	9.0	1.0
Non-Core Real Estate	5.0	7.0	5.0	-2.0
Private Core Infrastructure	5.0	2.0	5.0	3.0
Bank Loans	3.0	6.0	12.0	-3.0
Custom Hedge Funds	8.0	9.5	5.0	-1.5
Total	100	100	100	0
Total Equity	48	49	38	-0.5
Total Growth Assets	62	59	52	3.5
Total Capital Preservation	10	11	12	-1.0
Total Real Assets	17	15	19	2.0
Total Inflation Assets	20	21	31	-1.0
Total Alpha Assets	8	10	5	-1.5
Total Illiquid Assets	42	31	26	11.0
Expected Arithmetic Return	7.49	7.33	6.91	0.16
Expected Risk (Standard Deviation)	11.55	11.27	9.37	0.28
Expected Compound Return	6.87	6.74	6.50	0.13
Estimated Yield (12/31/22)	3.87	3.72	5.22	0.16

Monte Carlo Return Simulations

The table below shows the expected nominal return by percentile for each portfolio on Frontier 1 for the 1, 3, 5, and 10 year periods.

1 Year	New Target	TR LT Tgt	Income LT Tgt	Global 70/30
1st Percentile	-18.71	-20.26	-15.04	-31.84
5th Percentile	-8.10	-8.83	-5.38	-14.21
25th Percentile	1.75	1.42	2.41	-1.29
50th Percentile	7.74	7.60	7.23	6.57
75th Percentile	13.54	13.69	11.81	14.90
95th Percentile	22.92	23.33	18.80	28.32
99th Percentile	29.36	30.15	23.75	37.84
3 Years				
5th Percentile	-2.38	-3.06	-0.87	-7.02
25th Percentile	3.68	3.36	4.04	1.26
50th Percentile	7.42	7.28	6.99	6.32
75th Percentile	11.05	11.06	9.77	11.04
95th Percentile	16.06	16.21	13.69	18.49
5 Years				
5th Percentile	-0.47	-1.11	0.66	-4.62
25th Percentile	4.41	4.08	4.55	2.20
50th Percentile	7.29	7.11	6.83	6.17
75th Percentile	10.10	10.03	9.05	10.01
95th Percentile	14.16	14.26	12.18	15.63
10 Years				
5th Percentile	1.57	1.02	2.22	-1.80
25th Percentile	5.10	4.81	5.09	3.15
50th Percentile	7.19	7.00	6.78	6.07
75th Percentile	9.23	9.16	8.36	8.81
95th Percentile	12.10	12.13	10.61	12.85

***Investment Policy Guidelines: Total portfolio risk should be managed with a goal of avoiding annual losses greater than 22% with a 99% confidence level.**

Monte Carlo Real Return Probabilities

The table below shows the **percentage** chance of achieving or exceeding the given real return for each portfolio on Frontier 1 for the 1, 3, 5, and 10 year periods.

1 Year	New Target	TR LT Tgt	Income LT Tgt	Global 70/30
Target 3%	59	58	58	53
Target 4%	54	53	53	50
Target 5%	50	49	48	46
Target 5.5%	48	47	45	45
3 Years				
Target 3%	63	61	62	55
Target 4%	56	55	53	49
Target 5%	49	48	44	43
Target 5.5%	45	44	40	40
5 Years				
Target 3%	65	63	64	54
Target 4%	56	55	53	47
Target 5%	47	46	42	40
Target 5.5%	42	41	36	37
10 Years				
Target 3%	70	67	68	55
Target 4%	58	55	53	46
Target 5%	45	43	37	36
Target 5.5%	38	37	29	31

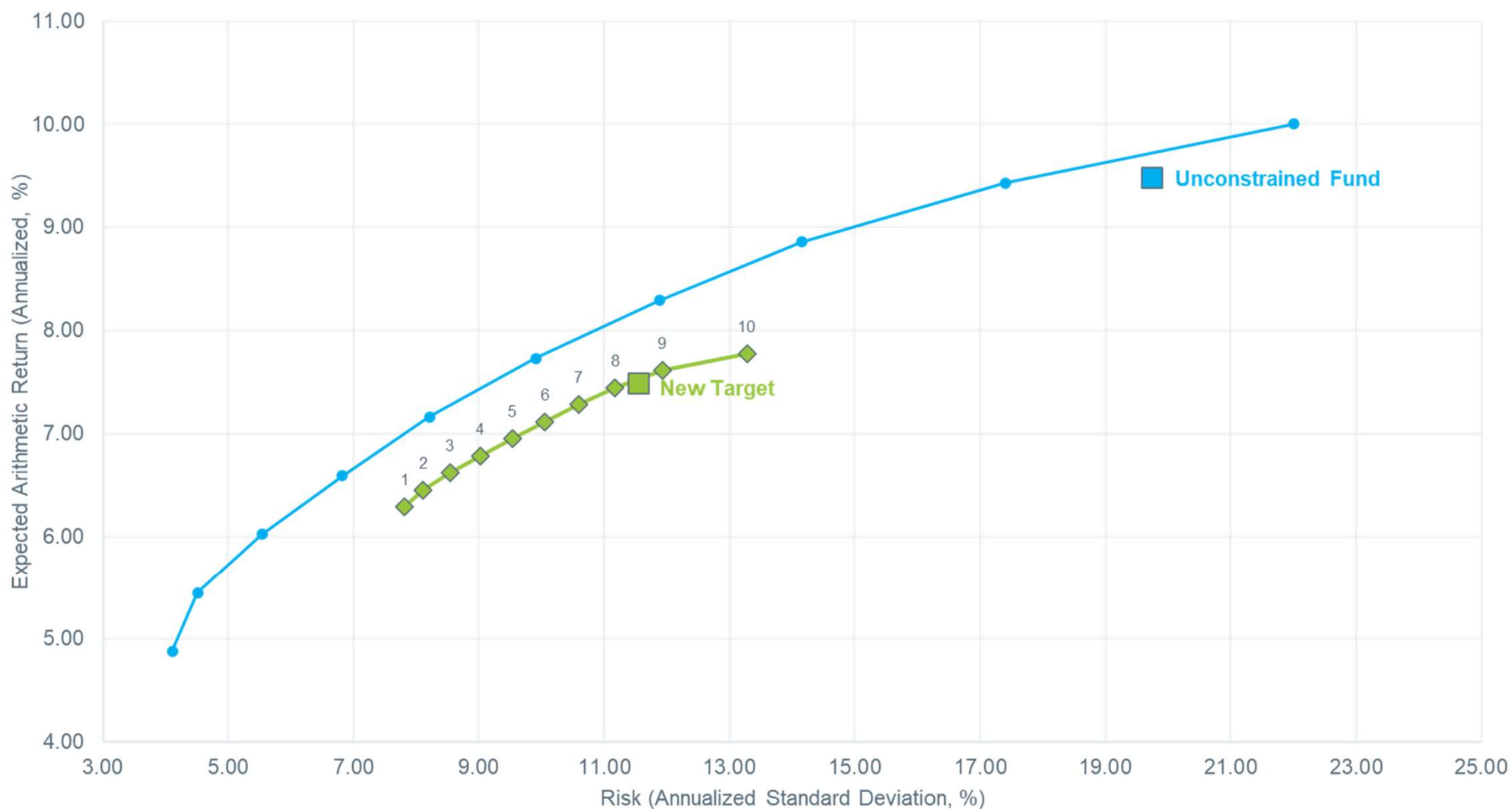
Unconstrained Efficient Frontier

- The following table shows the range of possible optimal allocations given the current asset classes within the PMTF, with zero constraints on any asset class.

	Min	Max	1	2	3	4	5	6	7	8	9	10	New Target	Unconstrained Fund
Broad US Equity	0	100	0	0	0	0	0	0	0	0	0	0	10.0	11.0
Small Cap US Equity	0	100	0	0	0	0	0	0	0	0	0	0	2.0	2.0
Broad International Equity	0	100	0	0	1	3	8	16	24	34	36	0	16.0	17.0
MLPs	0	100	0	0	0	0	0	0	0	0	0	0	5.0	0.0
Private Equity	0	100	0	0	0	0	2	9	16	33	52	100	15.0	70.0
Custom Emerging Markets Debt	0	100	0	0	1	15	21	9	0	0	0	0	4.0	0.0
Private Credit	0	100	2	11	18	9	6	13	20	0	0	0	10.0	0.0
US Agg Fixed Income	0	100	67	52	37	15	0	0	0	0	0	0	10.0	0.0
Core Real Estate	0	100	5	2	0	0	0	0	0	0	0	0	7.0	0.0
Non-Core Real Estate	0	100	0	0	1	3	4	1	0	0	0	0	5.0	0.0
Private Core Infrastructure	0	100	8	14	19	22	25	31	36	33	12	0	5.0	0.0
Bank Loans	0	100	17	20	24	33	34	21	5	0	0	0	3.0	0.0
Custom Hedge Funds	0	100	0	0	0	0	0	0	0	0	0	0	8.0	0.0
Total			100	100	100	100	100	100	100	100	100	100	100	100.0
Total Equity			0	0	1	3	10	25	40	67	88	100	48	100
Total Growth Assets			2	11	20	27	37	47	60	67	88	100	62	100
Total Capital Preservation			67	52	37	15	0	0	0	0	0	0	10	0
Total Real Assets			13	16	20	25	29	32	36	33	12	0	17	0
Total Inflation Assets			30	36	44	58	63	53	41	33	12	0	20	0
Total Alpha Assets			0	0	0	0	0	0	0	0	0	0	8	0
Total Illiquid Assets			15	27	38	34	37	54	72	66	64	100	42	70
Expected Arithmetic Return			4.88	5.45	6.02	6.59	7.16	7.73	8.29	8.86	9.43	10.00	7.49	9.48
Expected Risk (Standard Deviation)			4.11	4.51	5.54	6.82	8.21	9.91	11.88	14.15	17.41	22.00	11.55	19.74
Expected Compound Return			4.80	5.35	5.88	6.37	6.85	7.28	7.64	7.95	8.07	7.86	6.87	7.74
Estimated Yield (12/31/22)			5.49	6.28	7.05	7.18	7.03	6.19	5.30	2.78	1.79	0.00	3.87	0.79

Unconstrained Efficient Frontier

- **Green Frontier = original frontier**
- **Blue Frontier = unconstrained frontier**



Wealth Projections

Current PMTF Target vs. Unconstrained Target

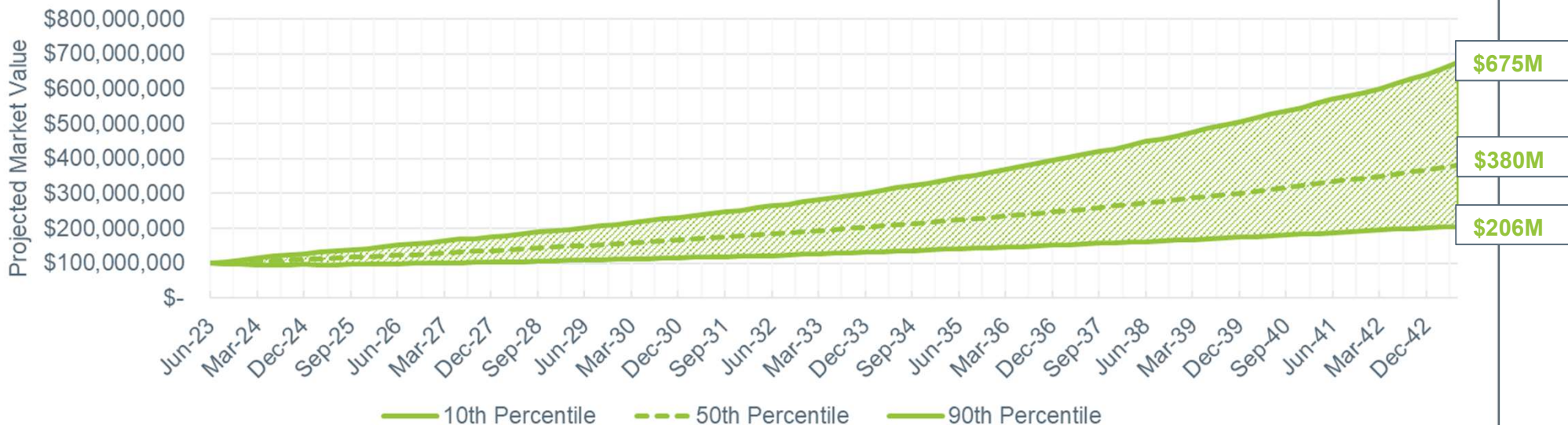
- **Background**

- The following page shows a 20-year range of outcomes (10th percentile – 90th percentile returns) for a hypothetical portfolio, using the current (new) PMTF target and the unconstrained portfolio consisting of 30% public equity and 70% private equity.
- Assumes no cash flows, and is intended to provide an apples to apples comparison of potential investment outcomes under 2 different paradigms (constrained and unconstrained)

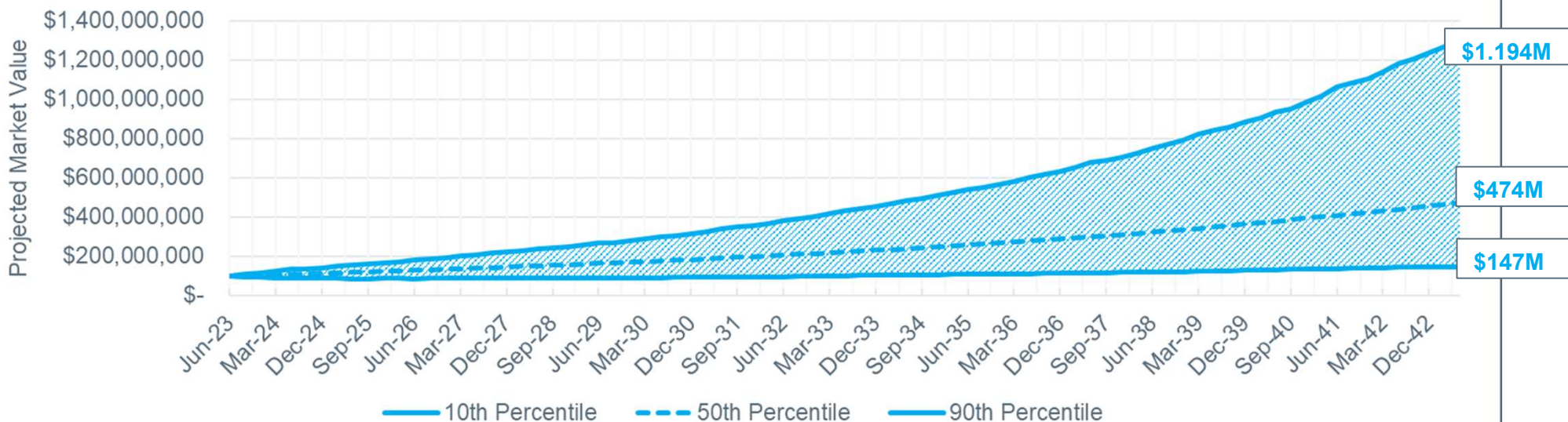
Wealth Projections

Current PMTF Target vs. Unconstrained Target (per \$100 M)

Market Value Projection - Nominal Terms - New Target



Market Value Projection - Nominal Terms - Unconstrained Target



Wealth Projections

Current PMTF Target vs. Unconstrained Target (per \$100 M)

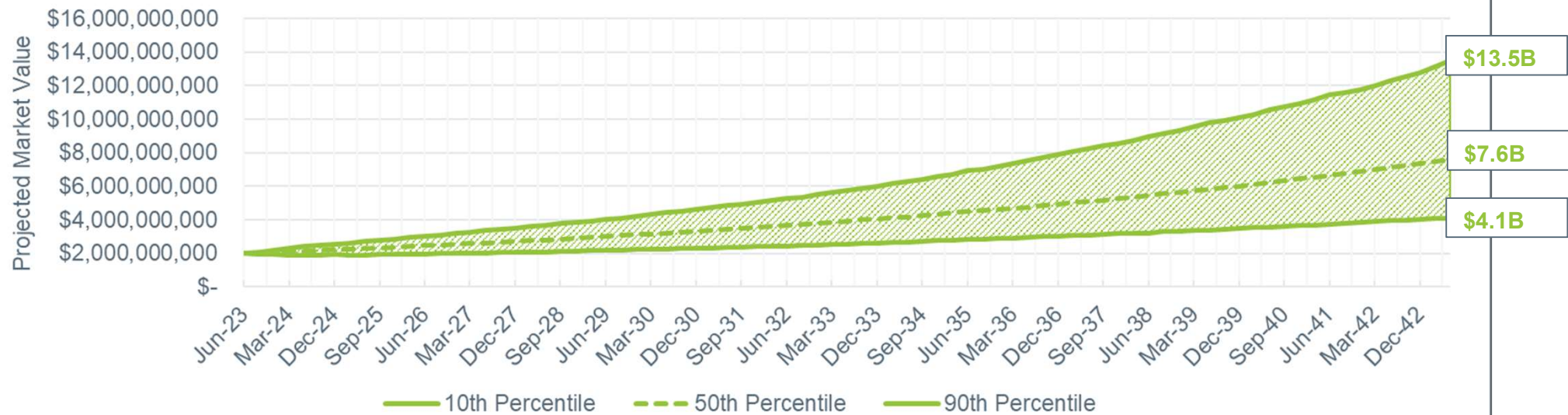
20-Year Ending Value

	Unconstrained Target	Current Target	Difference
90 th percentile	\$1.294M	\$675M	+\$619M
75 th percentile	\$817M	\$517M	+\$300M
50 th percentile	\$474M	\$380M	+\$94M
25 th percentile	\$272M	\$274M	-\$2M
10 th percentile	\$147M	\$206M	-\$59M

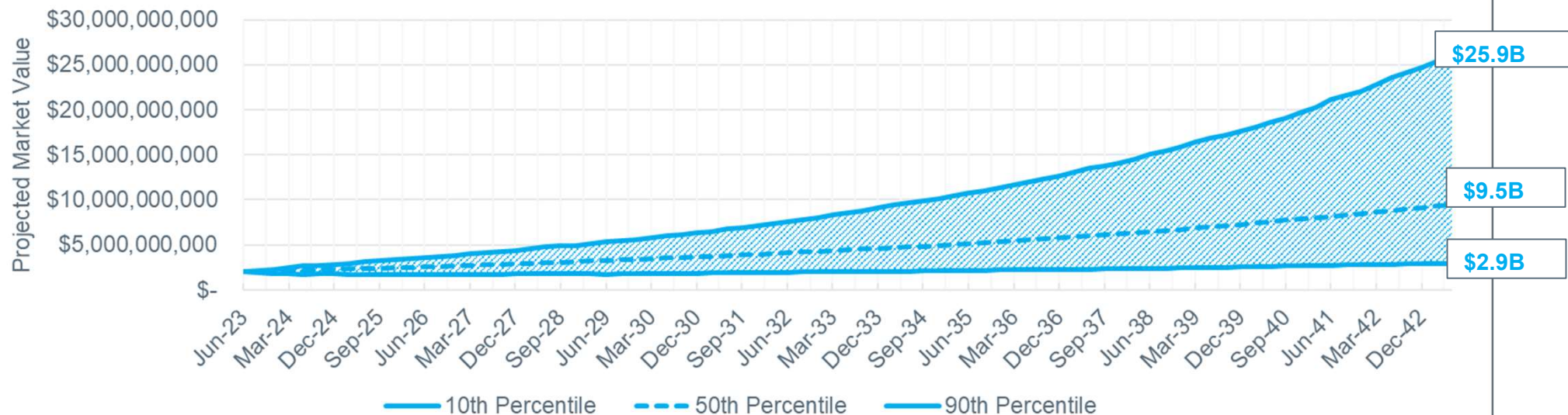
Wealth Projections

Current PMTF Target vs. Unconstrained Target (\$2 B)

Market Value Projection - Nominal Terms - New Target



Market Value Projection - Nominal Terms - Unconstrained Target



Wealth Projections

Current PMTF Target vs. Unconstrained Target (\$2 B)

20-Year Ending Value

	Unconstrained Target	Current Target	Difference
90 th percentile	\$25.9B	\$13.5B	+\$12.4B
75 th percentile	\$16.3B	\$10.3B	+\$6.0B
50 th percentile	\$9.5B	\$7.6B	+\$1.9B
25 th percentile	\$5.4B	\$5.5B	-\$0.1B
10 th percentile	\$2.9B	\$4.1B	-\$1.2B

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