School and Institutional
Trust Funds Office

SCHOOL & INSTITUTIONAL TRUST FUNDS OFFICE
310 SOUTH MAIN STREET, SUITE 1250 SALT LAKE CITY, UT 84101
801-364-0821 SITFO.UTAH.GOV

SITFO Summit Agenda | October 5, 2023

Anchor Location: Westgate Park City Resort & Spa, 3000 Canyons Resort Dr, Park City, UT 84098
Webinar Registration: https://utah-gov.zoom.us/webinar/register/WN_W4Tl5_tUSlCr2z9Zkbj1eg

Day 1: Navigating Uncertainty & Planning the Future

Time	Event	Presenter(s)	Location
8:00 am	Breakfast	--	Bison 4
9:00 am	Call Meeting to Order, Introductions, Activity	JOYMOB	Bison 3
10:00 am	SITFO's 5-Year Plan	SITFO	Bison 3
11:30 am	Lunch	--	Bison 4
12:30 pm	SITFO's Risk Management Framework	SITFO	Bison 3
1:30 pm	Corpus Analysis and Discussion	RVK	Bison 3
2:30 pm	Break	--	Bison 3
3:00 – 5:30 pm	Networking Activity	--	Lobby
6:30 pm	Friend of the Trusts Award Dinner *Dress Code: Semi-formal Wear*	--	Bear Ballroom

Overnight: Westgate Park City Resort & Spa
Meals included: B/L/D
Conference Dress Code: Business Casual
Award Dinner Dress Code: Semi-formal

SITFO

JOYMOB

JOYMOB EXPERIENCE

Being Here with You I Notice

Let's Get Present

Commonalities

Let’s Get Connected

Commonalities

TOO OBVIOUS:

- BOTH IN THIS ROOM
- BOTH HAVE BROWN EYES
- WE WEAR GLASSES

Commonalities

NOT OBVIOUS:

- GOING FOR WALKS CLEARS MY HEAD
- GREW UP ON A FARM
- I'M THE OLDEST CHILD
- BEEN TO THAILAND
- I LOVE CROISSANTS

Commonalities

ADDITIONAL CATEGORY HELP:

- **CHILDHOOD**
  - Comics, Bikes, Sports
- **TASTE**
  - Food, buttered toast vs no butter, eggnog
- **SOUND – MUSIC**
  - Classic rock, EDM
- **SMELL**
  - Fresh cut grass, Christmas dinner
- **TOUCH**
  - Love massages, Hugging your grandkids

TRAVEL HOBBIES TV/MOVIES DAD JOKES

Partner Memory

Let’s Get Active

Biggest Fan

Let’s Get Loud

October 2023

SITFO and The Five-Year Plan

Introduction

The Plan

- An evolving draft for SITFO's strategic horizon to maximize risk-adjusted returns resource and process optimization.

The Purpose

- Long-term planning
- Collaboration with trustees
- Communication with stakeholders

The Primary Focus

- Reflecting on Complexity, Organization, and Resources
- Process and Technology
- Asset Allocation

Reflecting on Complexity & Resources

First Four vs Last Four

The current budget provides for 4.5 FTE (3 investment professionals and 1.5 operations, accounting, and administration).

Data shows that at ~3B AUM teams should be roughly double our size. (RVK, Albourne, Cambridge)

The data isn't specific on the degree of outsourcing vs insourcing discretion but provides reasonable context. Regardless, the SITFO team is too small at 4.5 FTE for the purposes of resiliency, culture, and risk management.

Options range between building out a full office to significantly increasing the level of outsourcing from approximately 10% (select use of FoFs) to 60% (outsource discretion of alternatives via 3rd party advisor(s)).

The trustees need to develop conviction in how to move forward and agree to specifics sufficient to approve a budget supporting any changes.

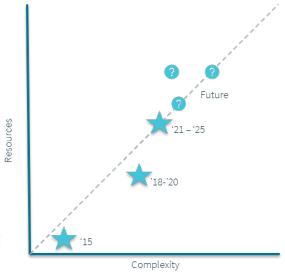
Needs to be a long-term vision, where should SITFO be in 5, 10, 15 years?

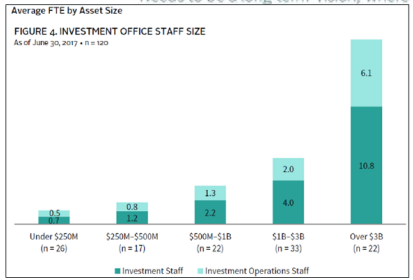
Matching complexity with resources

- Resources allow for customization and control
  - Increased and improved reporting and risk
  - Increased bandwidth and improved underwriting
  - Increased delegation and sharing of responsibilities

What might increased complexity & resources include?

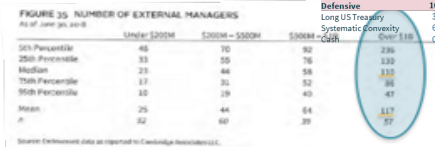
- Lowering costs through more internalization
  - Less reliance on consultants (ops, investments)?
  - More directs, co-investments?
  - Increased layers and stability?
  - Other?

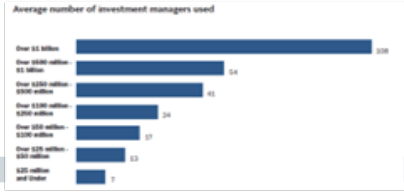




	NACUBO FTE Inv. Staff Average
SITFO	4.5
>$1B	10.3

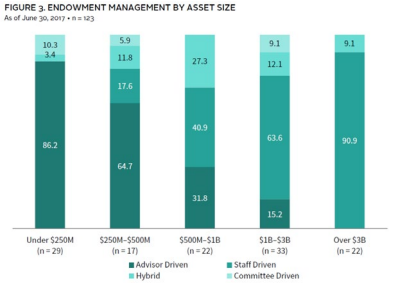
Average staffing levels by client type and staff responsibility											
	All	Internal Trading	IDD on External Managers	ODD on External Managers	Risk Management	Middle/(Legal & Compliance)	Back Office (Operations and Accounting)	Administrative/Support	Average	Respondents
1) Corporate Pension	17.4	1.5	5.6	1.2	1.3	2.1	4.3	1.4	17.4	24
2) Public Pension	62.8	10.3	12.5	1.0	5.3	8.6	15.7	9.5	62.8	17
3) Foundation	10.8	0.2	5.3	0.8	1.0	0.7	1.6	1.4	10.8	17
4) Endowment	10.5	0.3	4.9	0.7	1.0	0.7	1.9	1.0	10.5	24
5) Insurance Company	13.6	2.8	2.4	1.1	1.7	1.5	3.0	1.0	13.6	9
6) Family Office	15.6	1.2	5.0	0.6	1.0	1.6	4.0	2.1	15.6	18
7) Sovereign Wealth Fund	17.1	3.5	8.3	0.9	1.9	0.5	0.3	1.9	17.1	4
									Total	113





	Weight	Managers
Total Portfolio	100.0%	98
Growth	40.6%	43
Global Equity	4.6%	3
US Equity	11.2%	4
US Large Cap	6.6%	1
US Small Cap	4.6%	3
International Equity	11.8%	10
International Developed	6.4%	4
Emerging Markets	5.4%	5
Private Equity	13.0%	26
Real Assets	21.1%	26
TIPS	2.3%	1
Public Real Assets	2.2%	3
Private Real Estate	9.0%	12
Private Real Assets	7.6%	10
Income	27.4%	27
Credit	4.6%	4
Securitized	5.6%	4
Insurance Linked Securities	3.8%	3
Non-US	3.2%	3
Private Debt	10.4%	14
Defensive	10.7%	2
Long US Treasury	3.9%	1
Systematic Convexity	6.8%	1
Cash	0.0%	-

	Broad Categories		
	Beta	Private	Marketable Alts
Beta	3.3		
Beta	3.0		
Beta	1.0		
Beta	2.0		
Beta	9.0		
Beta	4.0		
Beta	5.0		
Private		28.0	
Beta			
Beta	3.0		
Private		10.7	
Private		10.7	
Marketable Alts			3.2
Marketable Alts			4.0
Marketable Alts			2.7
Beta	3.2		
Private		17.3	
Beta	1.0		
Marketable Alts			1.0
Beta			
Managers	34.5	66.7	10.9
Managers/FTE	25	15	15
Implied FTE	1.4	4.4	0.7



Proxying Complexity

	% Traditionals	% Alternatives	% Private	# Managers	# of Active Managers	# of Open-end Funds	# of Closed-end Funds	# Funds
Sep-2015	90%	10%	5%	5		9	6	15
Sep-2017	62%	38%	10%	31		34	11	45
Sep-2019	45%	55%	17%	45		21	35	56
Sep-2020	33%	67%	21%	54		28	50	78
Sep-2022	39%	61%	28%	64	51	17	91	108
Sep-2025								
Sep-2030								

Proxying Resources

	Staff	Expertise / Experience	Process, Risk	Governance	Software	FoFs / Advisory	Investment Consultants	Operational Consultants	Custodian
Sep-2015	1	1	1	1	0	0	0	0	0
Sep-2017	3	2	2	2	5	2	1	1	1
Sep-2019	4.5	3	2	3	6	3	1	1	1
Sep-2020	5	3	3	4	6	3	2	1	1
Sep-2022	9	4	4	4	6	5	2	1	1
Sep-2025									
Sep-2030									

Organization & Resources

“Organizational and Operational Alpha”

- What are SITFO’s strengths and how can they be managed to meet investment objectives?
  - Mission, governance, autonomy, time-horizon, size (assets and team), location, and culture
  - SITFO evolves when possible and adapts when needed

- What to prioritize?
  - Resources and processes to be aligned with philosophy and objectives (fit-for-purpose)
  - Internal and external technology optimization in relation to portfolio complexity and team size/capabilities
  - Recruiting and retaining talent is critical to expanding capabilities, with culture as the key

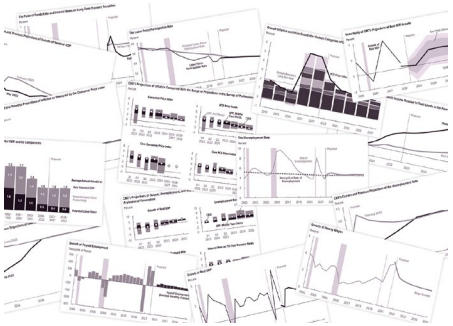
- How should SITFO’s team size, experience, and capability look in the future?
  - SITFO needs to retain and grow existing talent!
  - Additional layers within the team for increased resiliency and retention?
  - Further internal capabilities such as prioritizing co-investments and exploring a total portfolio overlay to reduce costs and increase efficiency?

Progress and Planning

- How is SITFO availing itself of data, systems, and tools for portfolio construction and risk management?
  - Optimize the mix of external software and internal capabilities for data and analytics supporting decision making
  - Enhance objectivity and expedite existing processes using technology
  - Spend less time preparing the information and more time analyzing it!

- How is SITFO thinking about the impact of increased technology on expenses, personnel, and processes or portfolio management?
  - Anticipating a marginal increase in software expenses as new tools come online and other tools or resources are rationalized
  - Balancing productivity and expenses with modernization in accordance with staffing and capabilities

Asset Allocation



Questions for our Strategic Horizon

- Could the economy and the markets look different than they have since the GFC? What are the implications for SITFO's asset allocation?
  - Interest rates more like post GFC or the post WWII average?
  - Deglobalization, decoupling, de-risking, friend-shoring, China-plus-one?
  - Demographics as destiny?
  - Debt, does it ever end?
  - Energy, new or old, or both?
  - Technology – more of the same or game changing?

Summary

Organization and Resources

- Maintain the strength of the governance structure of SITFO
- Underwrite SITFO's DNA and philosophy and invest in the team, culture, and partnerships
- Continue to explore and reflect on best-practices and a fit-for-purpose organization

Process and Technology

- Leverage technology for greater efficiencies, to increase bandwidth, flexibility, and collaboration
- More informed investment decisions, leading to improved portfolio and risk management

Asset Allocation

- Risks and opportunities in asset class structuring and strategy selection in the expected economic regime
- Further consideration of the unique constraints presented by the corpus accounting framework
- Revisit the role of private assets as SITFO approaches targets

SITFO in 2050

Lunch

October 2023

State of Utah, School & Institutional Trust Funds Office

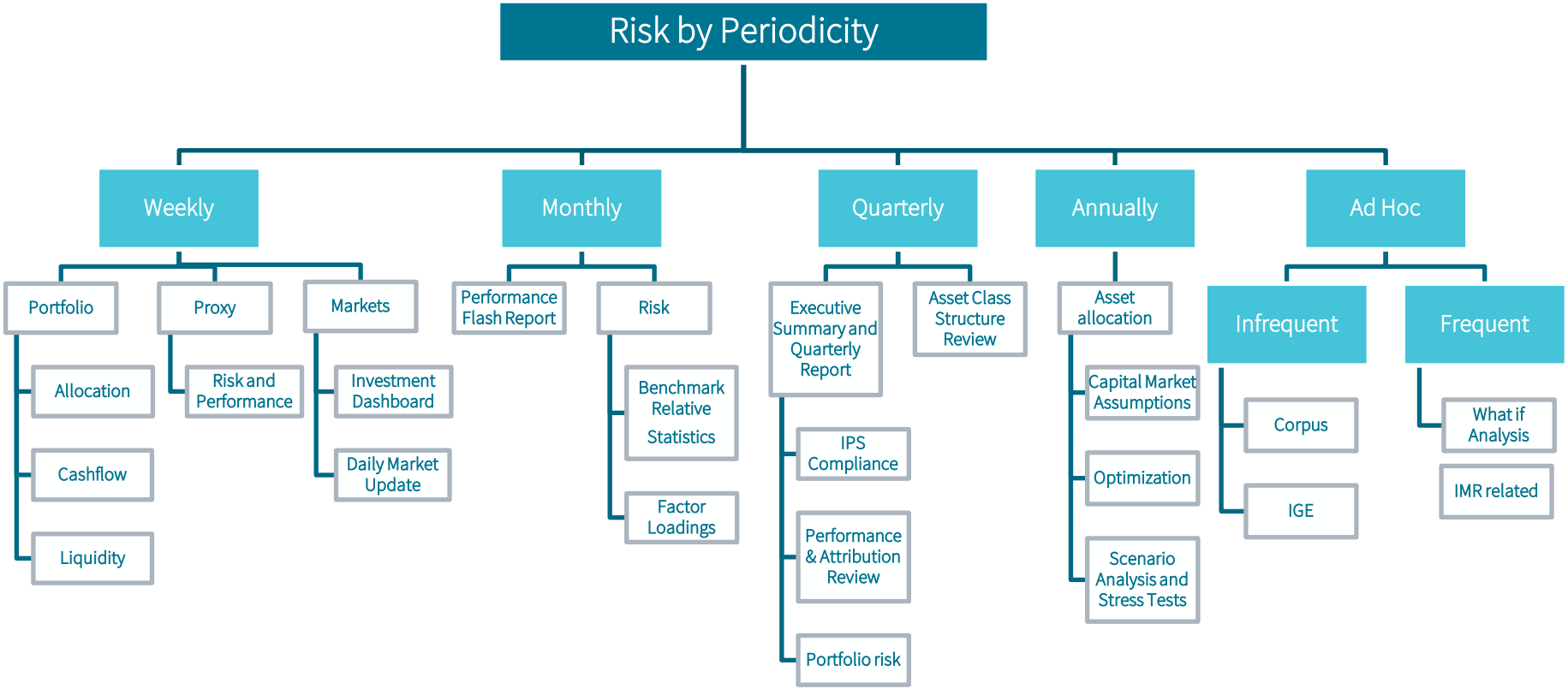
Executive Summary & Introduction

Risk Process Components

- Described chronologically
  - Not linear, a feedback loop
- Internal and external tools mentioned briefly
- High-level, plenty more where that came from

Risk Team and Beliefs

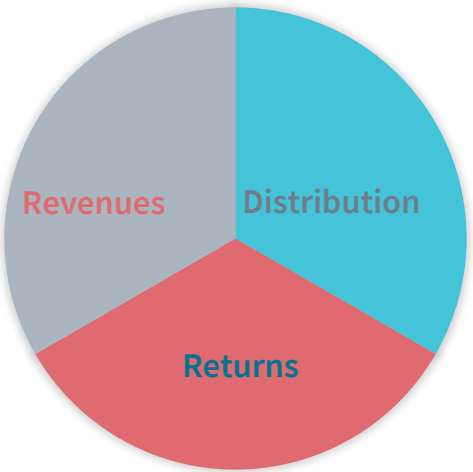
- The team has changed SITFO's risk management game in the last few years
- Risk is aimed at ensuring the return objective is met with an attractive profile of a narrow confidence interval with favorable skew
- SITFO is focused primarily on downside risk, as it has the highest probability of impacting SITFO's return objectives and distributions
- Starts with the policy weights and the risks relative to the return objective using the underlying benchmarks and the risk factors they represent

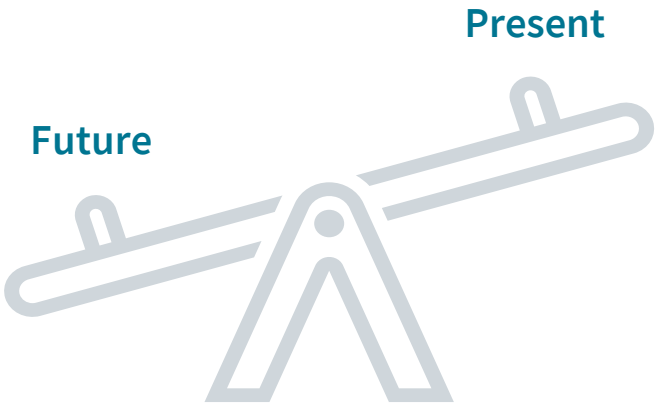

Risk by Periodicity
Weekly
Portfolio
Allocation
Cashflow
Liquidity
Proxy
Risk and Performance
Markets
Investment Dashboard
Daily Market Update
Monthly
Performance Flash Report
Risk
Benchmark Relative Statistics
Factor Loadings
Quarterly
Executive Summary and Quarterly Report
IPS Compliance
Performance & Attribution Review
Portfolio risk
Asset Class Structure Review
Annually
Asset allocation
Capital Market Assumptions
Optimization
Scenario Analysis and Stress Tests
Ad Hoc
Infrequent
Corpus
IGE
Frequent
What if Analysis
IMR related

Infrequent Ad Hoc

Corpus & Intergenerational Equity

- Statute and governance review
- Corpus growth and inflow analysis
- Simulation based scenario and stress testing

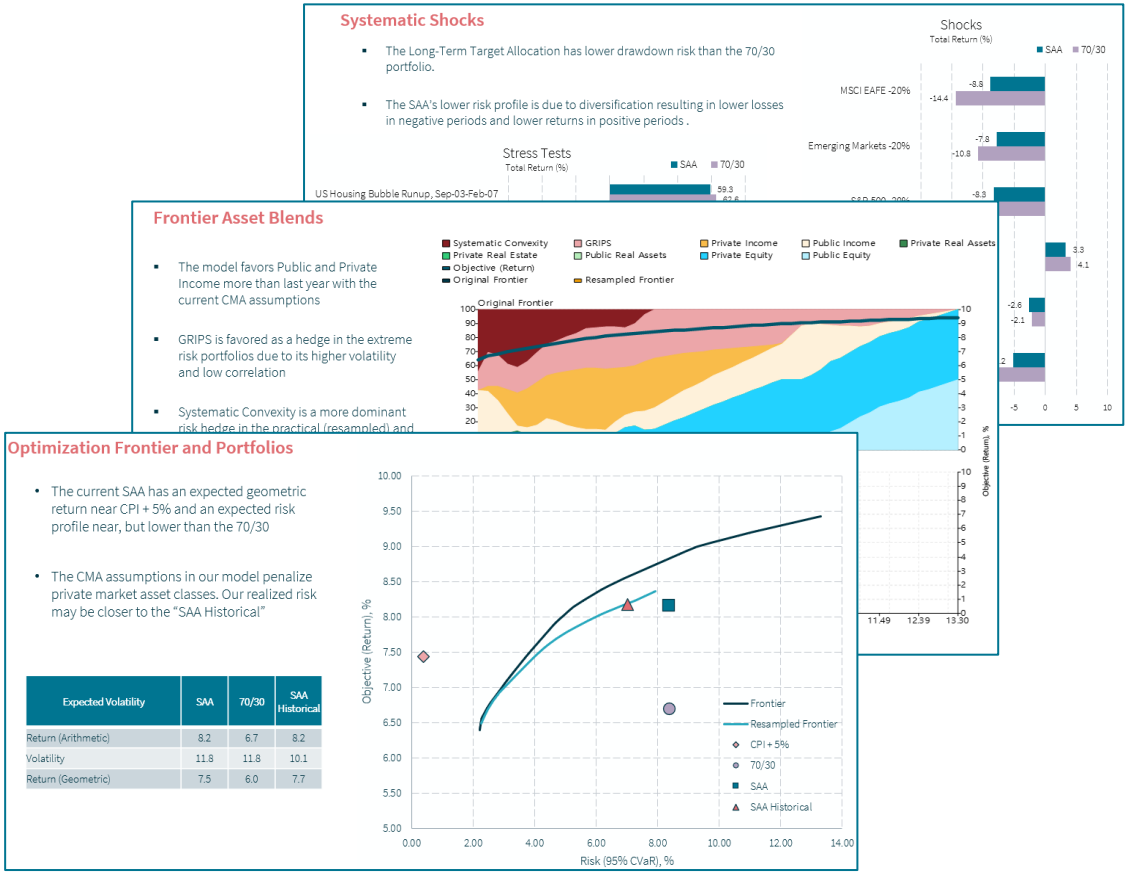




Annual

Asset Allocation

- Capital market assumptions
  - Industry and consultant based
- SAA optimization
  - Multi-model process
- Stress test and scenario analysis
  - Factor and regime based



Expected Volatility	SAA	70/30	SAA Historical
Return (Arithmetic)	8.2	6.7	8.2
Volatility	11.8	11.8	10.1
Return (Geometric)	7.5	6.0	7.7

Asset Allocation—New Ideas

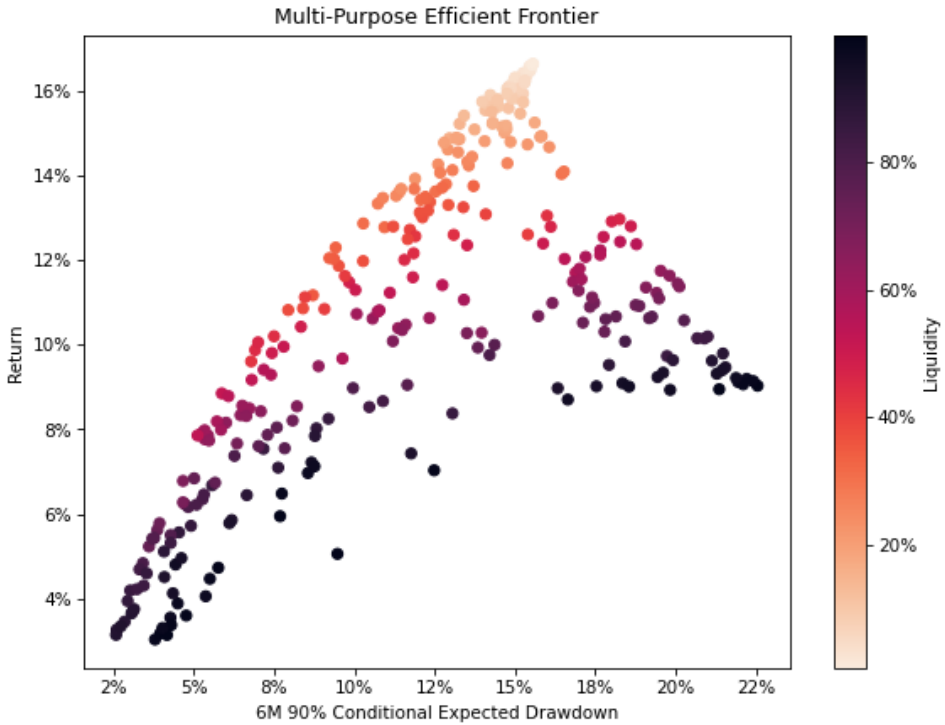
SITFO is exploring new technologies that extend portfolio optimization to include more sophisticated metrics and that optimize on more than two dimensions.

Path Dependent Metrics

- Drawdown vs Volatility or CVaR
- Penalizes back-to-back losses

Optimizing on Liquidity

- Liquidity as a third dimension alongside Risk and Return



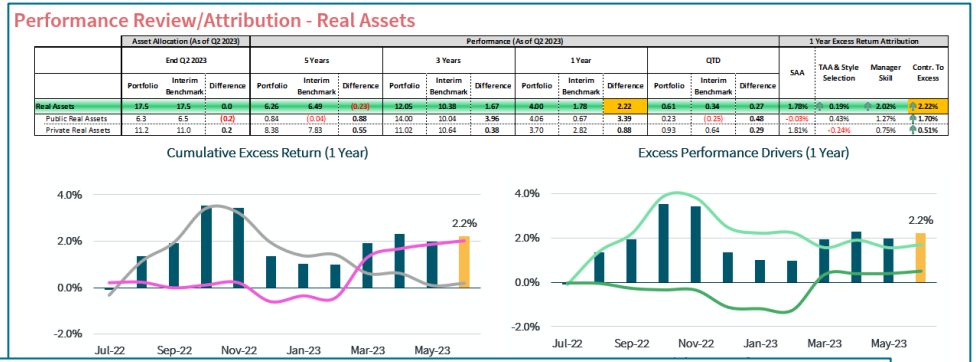
Quarterly

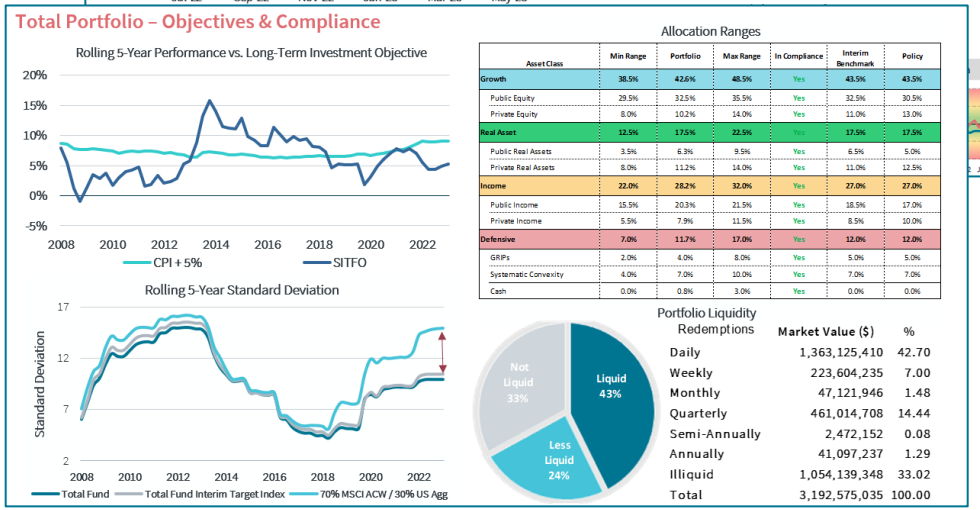
Quarterly Reporting

- Executive Summary
  - Compliance
  - IDP performance attribution
- Quarterly Report

Asset Class Structure Review

- Performance
- Risk
- Structure





Monthly

Flash Report

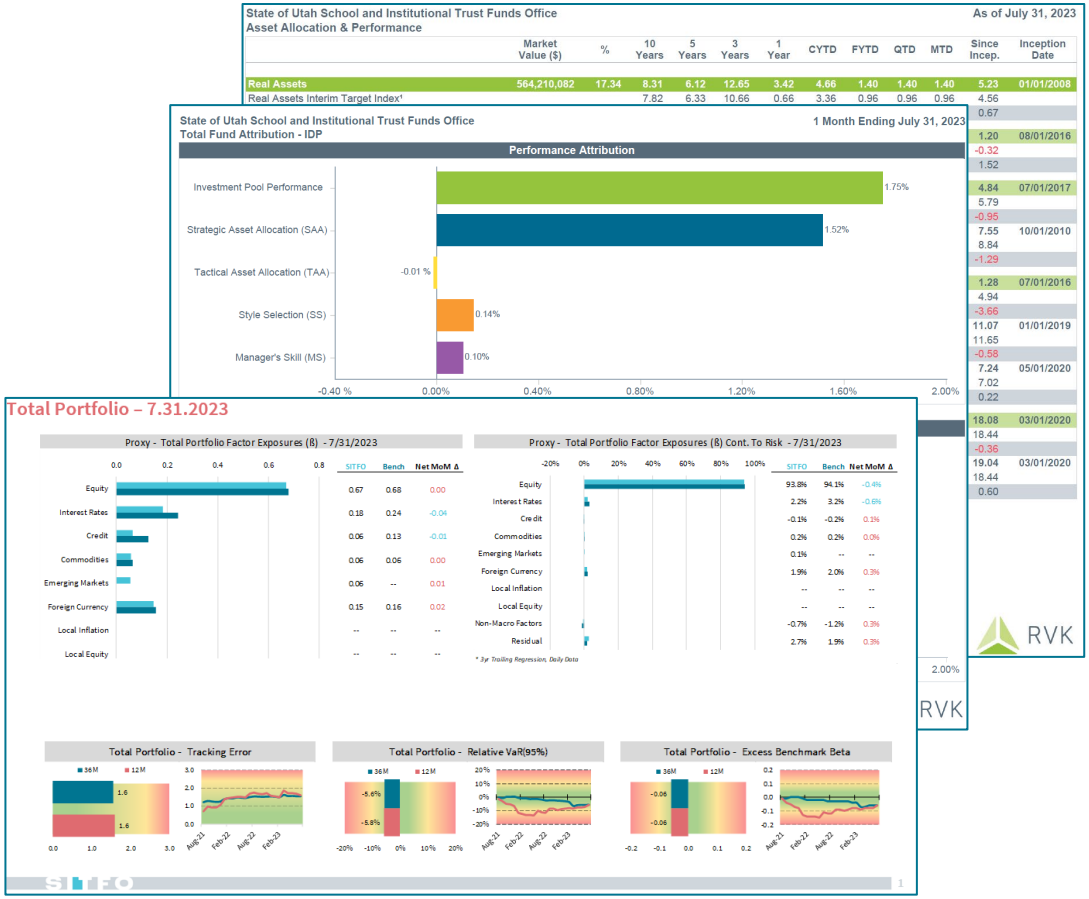
- Performance review
- Data validation

Monthly Risk Reporting

- Relative risk
- Factor loadings

Bi-Weekly Risk Meeting

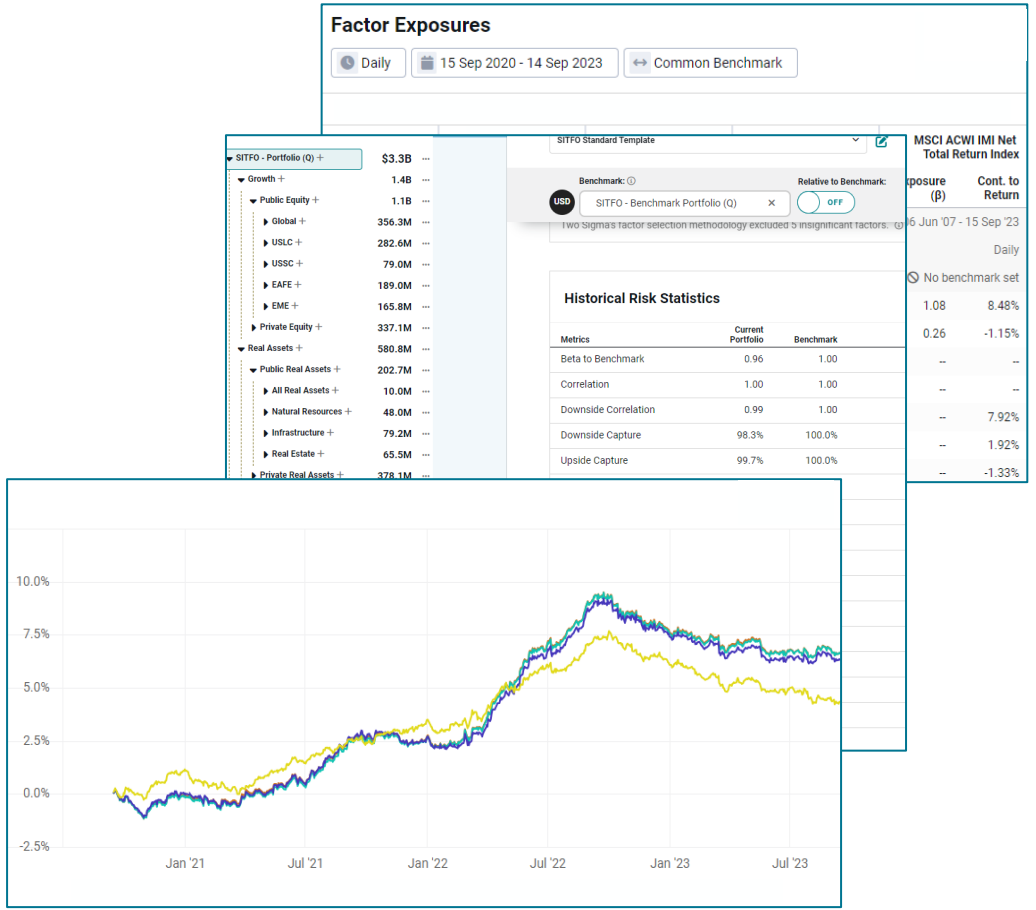
- Project management
- Risk committee



Frequent Ad Hoc

What if Analysis

- New managers and rebalancing
  - Portfolio implications
  - Contributions and marginal impacts
  - Sensitivity analysis around allocation sizing

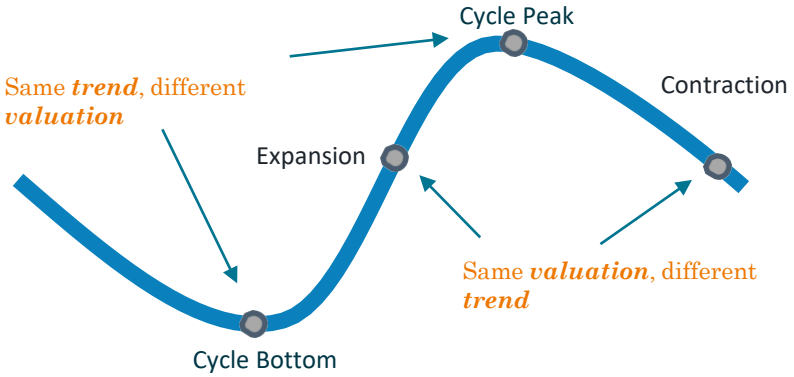


Weekly


Broad Market & Macro-Economic Data
External Strategist Commentary
"Investment Dashboard" Model
Cashflow & Allocation Reporting
Manager / Strategy Analysis from IMR Team
Weekly Risk Monitoring
Team Discussion

Investment Dashboard—Design

The Investment Dashboard is new rebalancing and TAA input tool that scores assets on **Value** and **Momentum**.

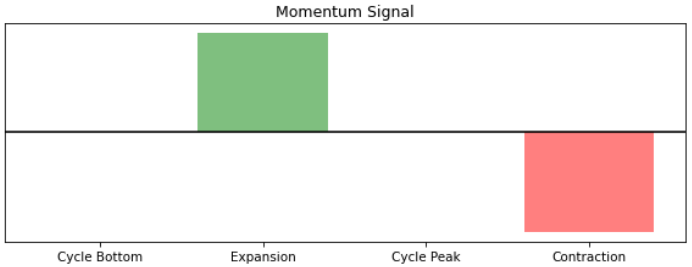


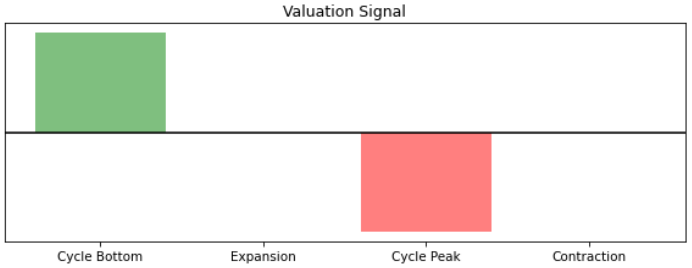
Value

- Triggers during extremely rich or cheap environments
- Combines fundamental metrics for each asset class
  - P/E, P/S, P/B for Equities, Yield for Bonds, etc.

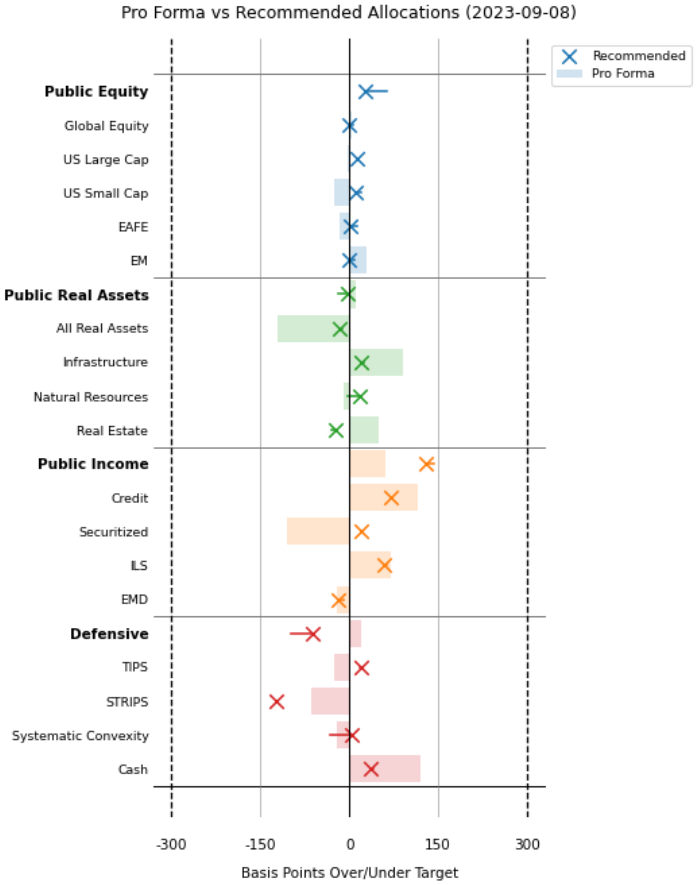
Momentum

- Strength/weakness of medium-term price moves
- Prevents value traps





Investment Dashboard—Output



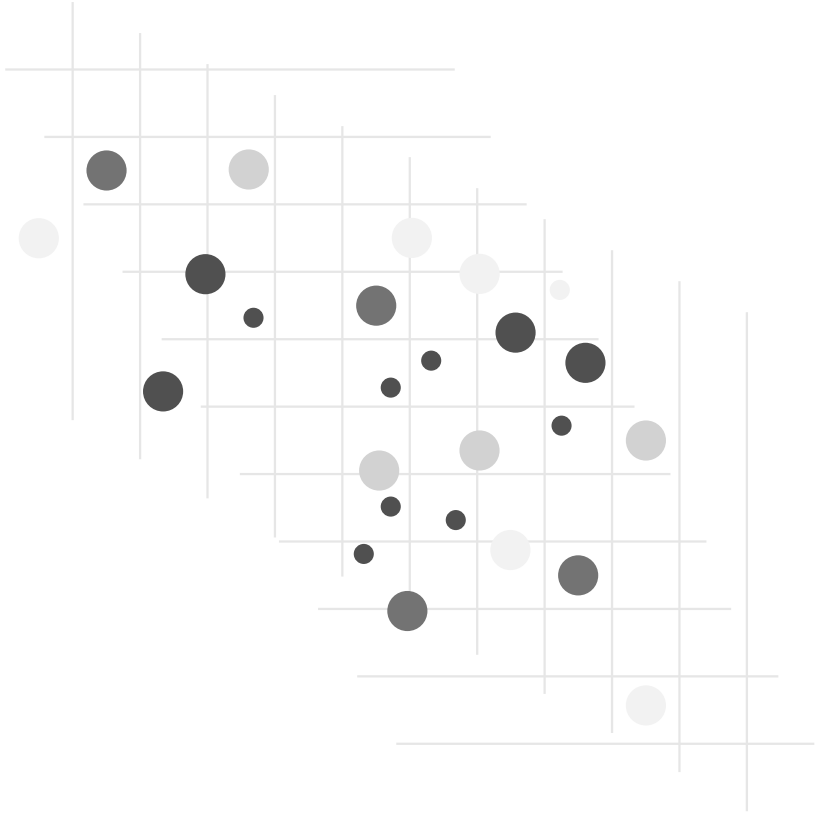
Summary

SAA Relative

- SAA set to meet return objective
- SAA used as quantifiable risk objective
- Processes revolves around SAA relative risk

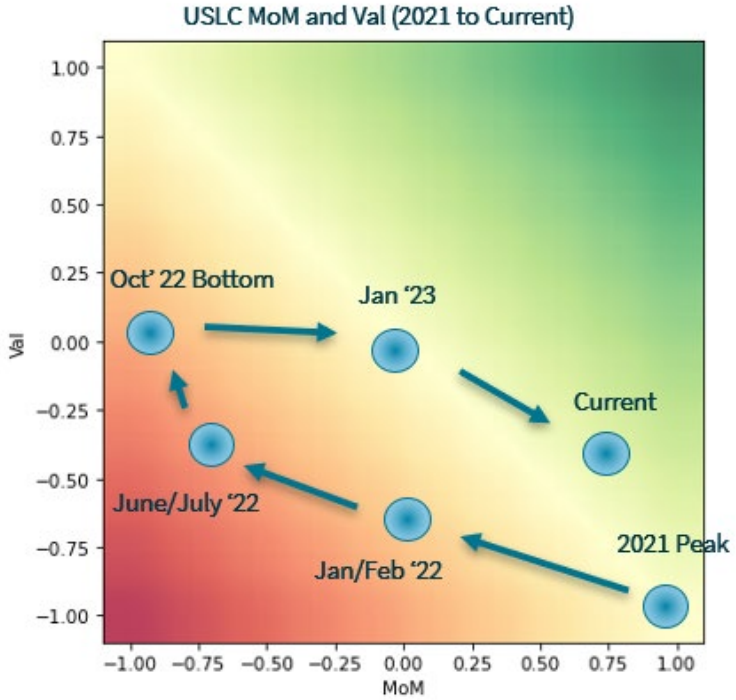
Forward Thinking

- Path and probabilistic based risk
- Utility based optimizations
- Factor utilization
- Northern Trust Front Office Solutions
- Investment and risk dashboards

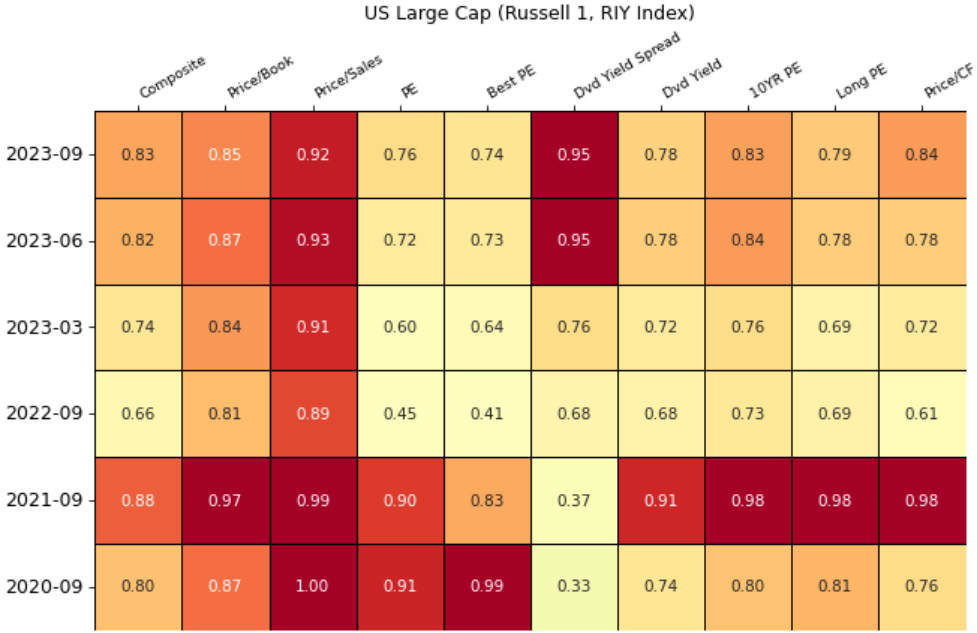


Appendix

Investment Dashboard Appendix (1)



Investment Dashboard Appendix (2)



Corpus Analysis

State of Utah, School and Institutional Trust Fund Office ("SITFO")

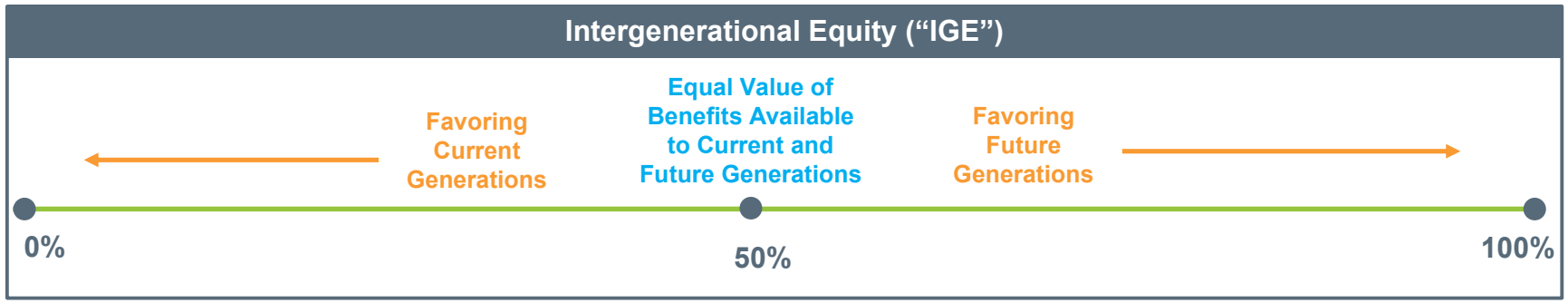
Prepared for the 2023 Summit

RVK

Executive Summary

At present, SITFO's assets are projected to exhibit a strong likelihood of maintaining intergenerational equity and protecting the corpus. As a result, it is reasonable to review whether the Fund could sustain higher rates of distribution and potential consequences of doing so.

- While increases in spending above the current distribution rate cap of 4% does increase the likelihood of breaching the Fund corpus, it is important to evaluate on the basis of the likelihood of equity distributions across current and future generations of beneficiaries.
  - Under the paradigm of the currently adopted strategic asset allocation, RVK's 2023 capital market assumptions, projected distributions and contributions, and an inviolate corpus, the current 4% distribution rate cap projects to have a **91.6%** chance of intergenerational equity. This is reduced to **89.3%** at a 4.5% distribution rate, and **86.7%** at a 5% distribution rate.
  - Removing the inviolate corpus restriction results in an **83.1%** chance of intergenerational equity. This is reduced to **77.6%** at a 4.5% distribution rate, and **70.0%** at a 5% distribution rate.



- While all distribution rates are projected to result in outcomes in excess of the targeted 50% IGE value, and are defensible given the current health of the Fund, it is important to consider the following:
  1. SITFO distributions are projected to outpace the growth of SITLA contributions, resulting in larger net outflows from the Fund than at present, and a likelihood of greater dependence on market returns. Please see appendix for expanded cash flow information.
  2. Distribution percentage rates are sticky, and likely materially more challenging to decrease – compared to increase – in the potential case of deteriorating financial health of the Fund.

RVK is not a regulatory expert. All information provided by SITFO and SITLA staff.

What is a Corpus?

Corpus Definition: Corpus represents the principal monies used to establish a fund. This can include initial funds, as well as new funds added external to investment earnings.

Article X, Section 7. of the Utah State Constitution details the establishment of the corpus and its use stating:

> "*The proceeds from the sale of lands reserved by Acts of Congress for the establishment or benefit of the state's universities and colleges shall constitute permanent funds to be used for the purposes for which the funds were established. The funds' principal shall be safely invested and held by the state in perpetuity. Any income from the funds shall be used exclusively for the support and maintenance of the respective universities and colleges.*"

Article X, Section 5(2). of the constitution notes that the corpus is not available for distribution (inviolate), and that only the "earnings" of the corpus can be spent:

> *"(a) The permanent school fund shall be prudently invested by the state and shall be held by the state in perpetuity.*
>
> *(b) Only earnings received from investment of the permanent State School Fund may be distributed from the fund, and any distributions from the fund shall be for the support of the public education system as defined in Article X, Section 2 of this constitution.*
>
> *(c) Annual distributions from the permanent State School Fund under Subsection (2)(b) may not exceed 4% of the fund, calculated as provided by statute."*

RVK

Corpus History among Institutional Investors

Limitations in modern investing.

The use of Corpus was particularly prevalent and appropriate for a portfolio designed to hold primarily high-quality bonds and at that time, likely did not anticipate the diversification of the investment portfolio that we now understand is required to preserve the real purchasing power of the Fund.

The net effect of a structure with Corpus restrictions coupled with high distribution rates has and can be an overemphasis on income-producing assets, unnecessary avoidance of risk, opportunity cost associated with higher allocations to liquid assets than should be necessary, and an overall approach to investment that is arguably too conversative given the time horizon (perpetual) and objectives (long-term preservation of purchasing power and intergenerational equity).

In some cases, a structure of “earnings only” distribution and Corpus restriction, has discouraged the implementation of certain investment vehicles and strategies that may be beneficial, but cannot be seriously considered given their potential to produce short-term realized losses (an example could be the use of derivatives for purposes of rebalancing).

The inviolate nature of Corpus is not unique among the US-based SWFs. Most endowment and foundations (such as higher education endowments) have moved away from this restriction and embraced a true total return approach that removes artificial accounting-based constraints in order to afford the endowment the best opportunity to pursue long-term returns while continuing to support responsible levels of spending.

There are at least two US state level SWFs (New Mexico and North Dakota) that have amended their respective constitutions to allow for a similar approach. New Mexico defines its annual spending as a percentage of average trailing assets, is indifferent as to how the spending is funded, and is not restricted by any distinction between corpus and non-corpus assets. This provides the ultimate level of flexibility to pursue the best long-term returns consistent with the fund’s objectives.

RVK

Corpus History among Institutional Investors

Limitations in modern investing.

Fortunately, SITFO's spending policy structure is less of a restriction on investment than in some other states. A key element is that the strict definitional linkage between income and spending is less severe than elsewhere. SITFO does not have separate reserves and instead utilizes a simple accounting for historical corpus values and awareness of what amounts are considered "spendable" at any point in time, subject to their annual spending policies.

Idaho appears to utilize larger reserve funds with measurement of annual total returns to determine the flow of funds rather than income. The Alaska Permanent Fund also adopted a "percentage of market value" spending policy that does not appear to be linked in any way to a specific component of fund returns, such as income.

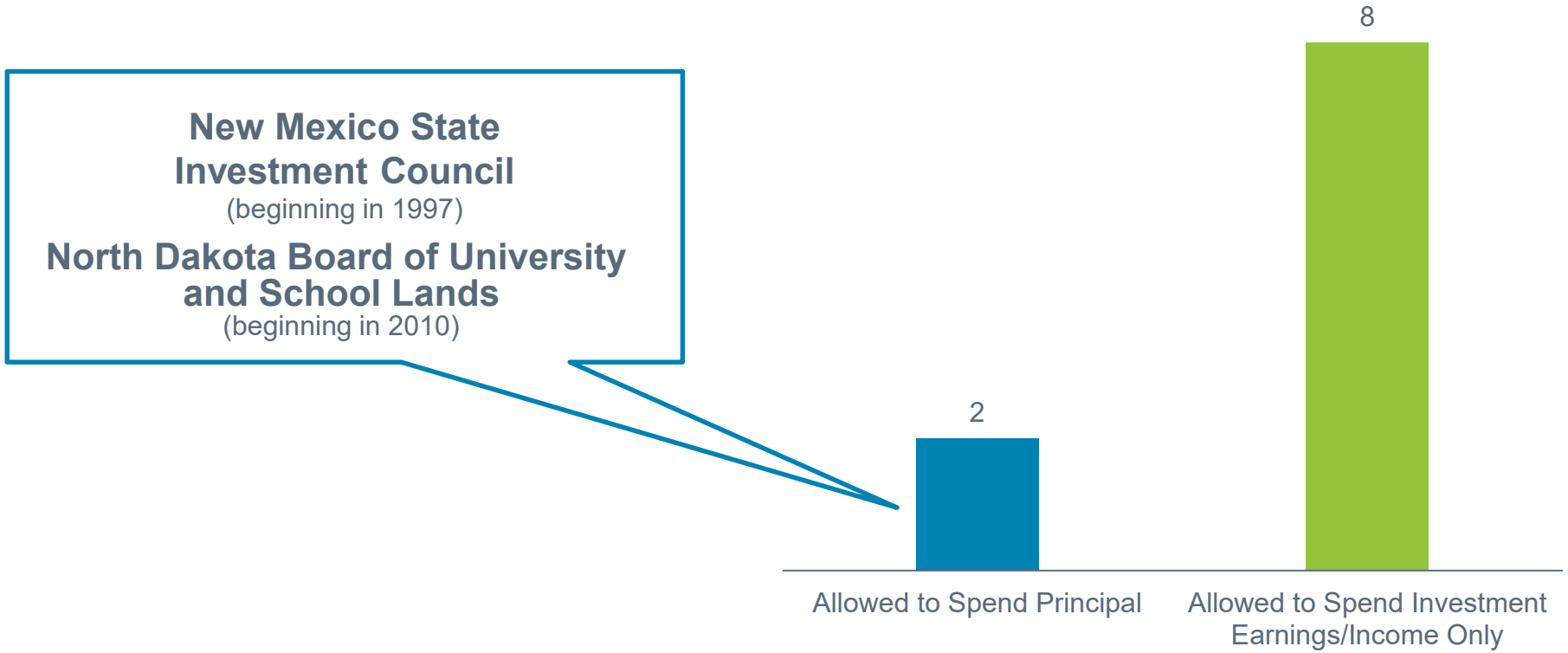
One final note on spending policies pertains to the sustainability of the spending policy amount. It is critical that investment policy and spending policy be fully coordinated. In order to achieve intergenerational equity, it is important that the investment policy allows for a high enough rate of return to support current spending and equivalent levels of future inflation-adjusted spending. If the investment policy is too conservative or the spending policy too high, there will be an erosion of the inflation-adjusted value of the State's coffers.

Other SWFs continue to educate stakeholders on the benefits of moving to a total return framework and providing the flexibility to pursue the most attractive risk-adjusted return opportunities in the pursuit of their objectives, which includes intergenerational equity.

RVK

Constraints and Spending

- Out of the 10 SWFs we periodically interview, there are two Funds that are not restricted to using earnings/income (interest, dividends, realized gains) for distributions.
- Because these funds are allowed to spend principal, they are free to pursue a true, "Total Return" investment approach.



Peer fund survey includes the following: Alaska Permanent Fund, Idaho Endowment Fund, Oklahoma Common School & Higher Education Trust Fund, Montana Trust Fund Investment Pool, New Mexico Land Grant Permanent Fund, North Dakota Board of University and School Lands, North Dakota Legacy Fund, Texas Permanent School Fund, Utah School & Institutional Trust Funds, and Wyoming Permanent Mineral Trust Fund.

Fund Summary

	Utah SITFO	Wyoming STO (PMTF)	New Mexico SIC	North Dakota Board of University and School Lands
Permanent Fund AUM ($M)*	$3,193	$10,108	$43,882	$6,458
Funding Source	Land and Mineral Income	Mineral Income	Land and Mineral Income	Land and Mineral Income
Objectives	• Long-term objective is CPI + 5%; • Maintain purchasing power while sustaining the current distribution amount which is a maximum amount of 4%; • A portfolio growth rate that exceeds the maximum distribution amount of 4% plus inflation is a secondary objective and is embedded in the CPI + 5% target.	• Long-term return expectations for the PMTF shall exceed inflation by an amount sufficient to preserve the real purchasing power of the assets after spending (spending policy is detailed on the following page).	• Provide the annual distribution to beneficiaries as defined in State statute; • Protect the purchasing power of the corpus of the fund such that future distributions from the funds stay stable or increase in economic value.	• Preserve purchasing power • Maintain stable distributions to trust beneficiaries

*As of June 30, 2023. Utah SITFO's maximum distribution amount of 4% is defined as 4% of the trailing 5-year average market value.

RVK

Fund Summary

	Utah SITFO	Wyoming STO (PMTF)	New Mexico SIC	North Dakota Board of University and School Lands
Spending Policy	Consists of the average of: • 4% of the trailing 5-year average market value; • Prior year's distribution increased by the prior year changes in the percentage of student enrollment growth and CPI.	5% of trailing 5-year average market value.	5% of trailing 5-year average market value.	10% of 5-year average market value, distributed in equal amounts during each year of the biennium
Can Corpus be Spent?	No	No	Yes	Yes
Spending Methodology	Spending is paid out of the "distributable assets pool" (Utah tracks the value of corpus and spendable assets separately, though both are invested in same manner).	All income is distributed (interest, dividends, and net realized capital gains).	"Total return" spending methodology – in addition to income, corpus may be spent.	"Total return" spending methodology – in addition to income, corpus may be spent.
Inflation Protection	Inflation is taken into account in both the primary return objective (CPI + 5%) and spending policy (annual spending may not exceed 4% of the average market value over the past 5 years and growth in the consumer price index).	Excess reserve funds are credited back to corpus as an inflation protection mechanism. Additionally, asset allocation and spending policy analyses incorporate long-term inflation assumptions to address the objective of preserving purchasing power.	Intergenerational equity/spending policy analyses incorporate long-term inflation assumptions to inform asset allocation and spending policy decisions.	Intergenerational equity/spending policy analyses incorporate long-term inflation assumptions to inform asset allocation and spending policy decisions.

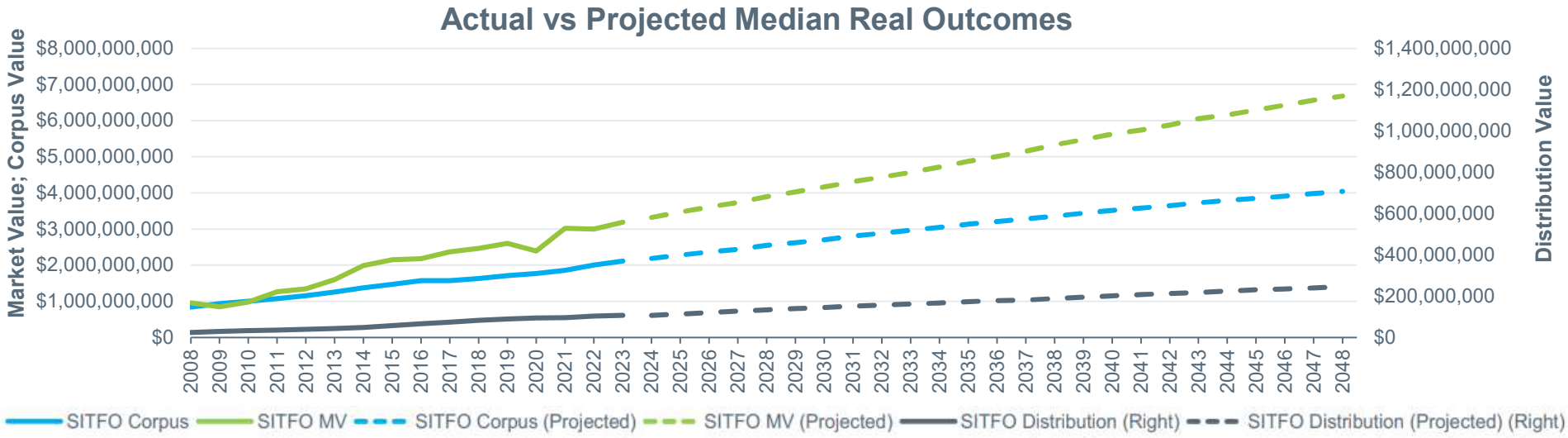
RVK

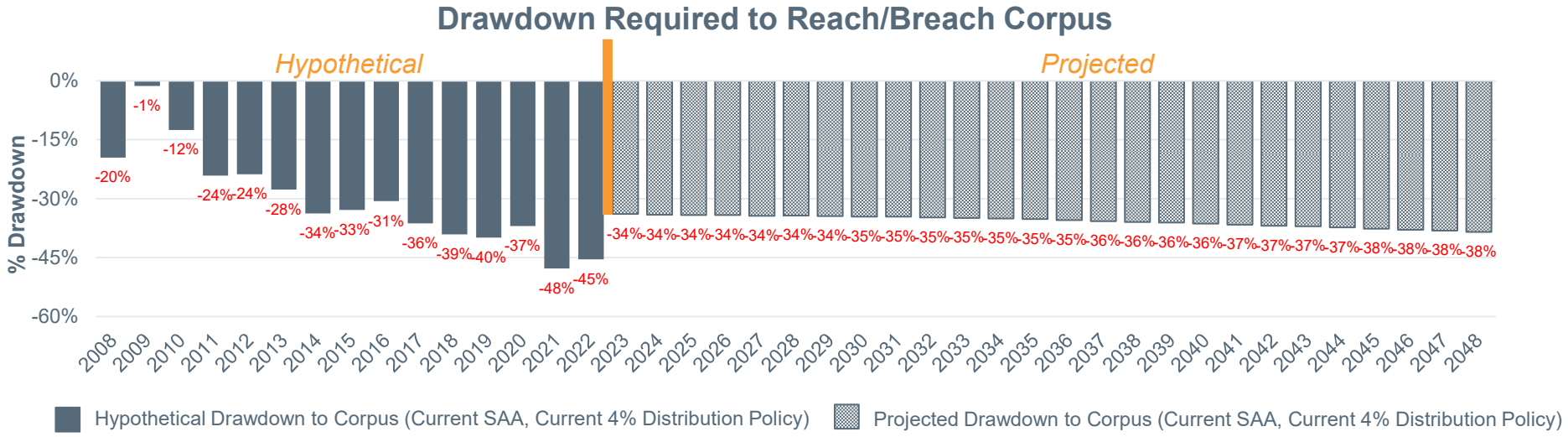
Fund Summary

		Utah SITFO	Wyoming STO (PMTF)	New Mexico SIC	North Dakota Board of University and School Lands
Earnings Reserve	Overview	Earnings reserve (i.e. spendable assets) and corpus are commingled, with values accounted for to ensure corpus is not spent.	Income in excess of spending policy is appropriated to the reserve account.	No reserve account	No reserve account
	Maximum Size	No maximum size.	Any excess of over 150% of the spending policy amount is directed back to the corpus.		
	Investment	Same as corpus	Fixed income		
	Can the reserve be appropriated by legislature?	No	Yes		

SITFO's Corpus

- The market value of invested assets currently exceeds the corpus value by over $1 billion and would require an estimated downturn of 34% to breach the corpus and suspend distributions, this relationship is projected to expand in the future given projected cash flows and returns.



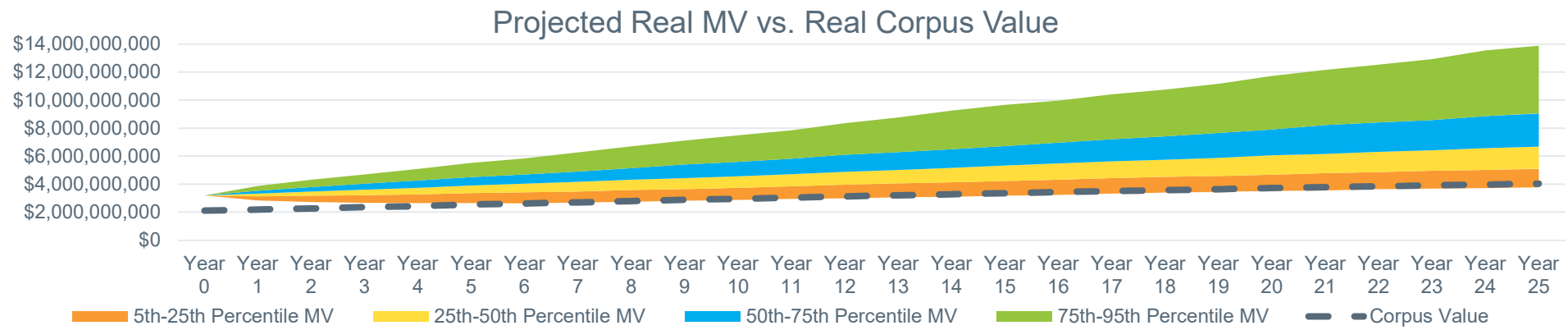


Drawdown to Corpus history (2008 – 2022) utilizes current SAA back-tested returns applied to current distribution policy. All projected outputs are in real terms. Differential between 2022 and 2023 on "Drawdown Required to Reach/Breach Corpus" chart is due to the hypothetical historical analysis representing the current more "growth-oriented" SAA compared to what was actually in place. All analysis includes current 4% distribution policy.

SITFO's Corpus Modeling – Base Case

Base case: Current LT Target with 2023 CMAs and 4% distribution.

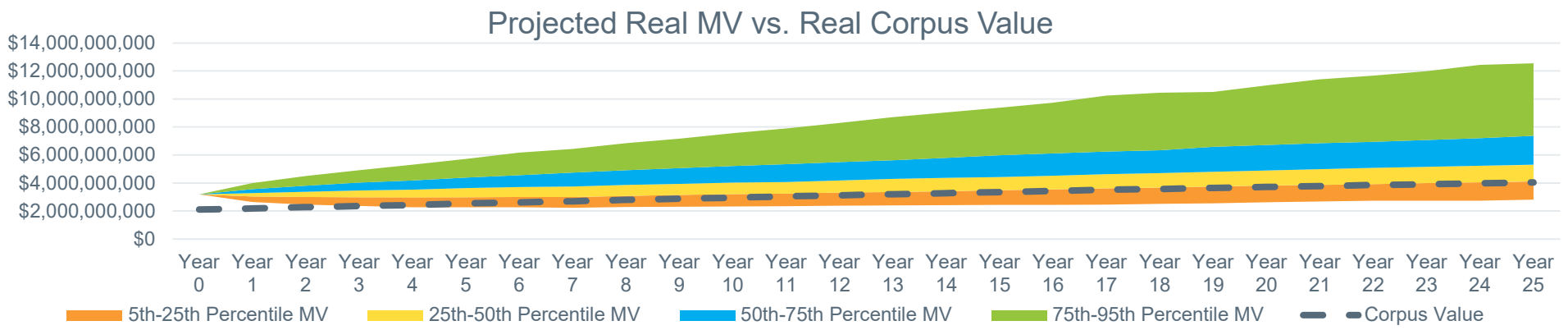
Projected Geometric Return: 7.42%



IGE : 91.6% / Corpus Breach: 5.6%

Risk Target: 70/30 portfolio with 2023 CMAs and 4% distribution.

Projected Geometric Return: 6.04%



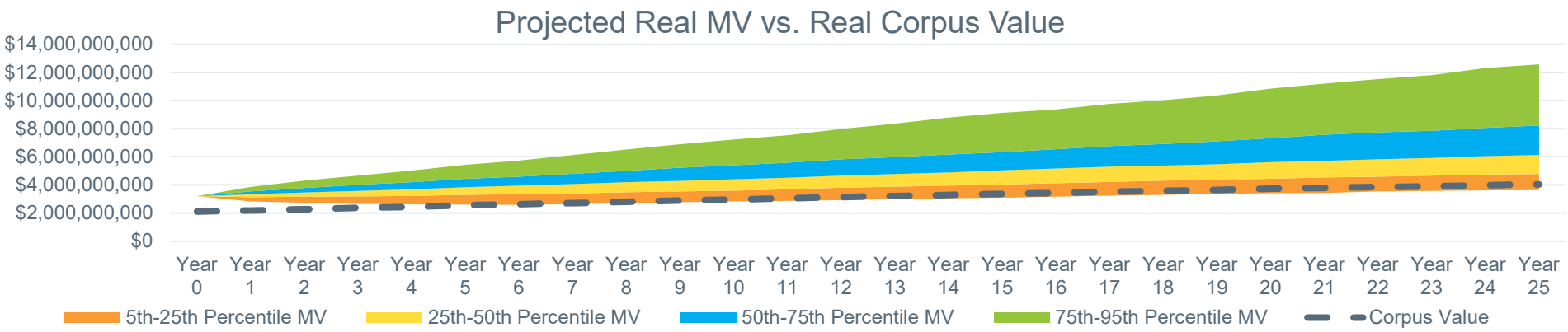
IGE : 75.6% / Corpus Breach: 16.6%

Projections utilize Monte Carlo analysis conducted with 5,000 paths of returns. Percentiles represent the respective outcomes of each year across the 5,000 return paths and does not reflect a representative path. Probability of breaching corpus is calculated across all periods and paths.

SITFO's Corpus Modeling – 4.5% Distribution

Base case: Current LT Target with 2023 CMAs and 4.5% distribution.

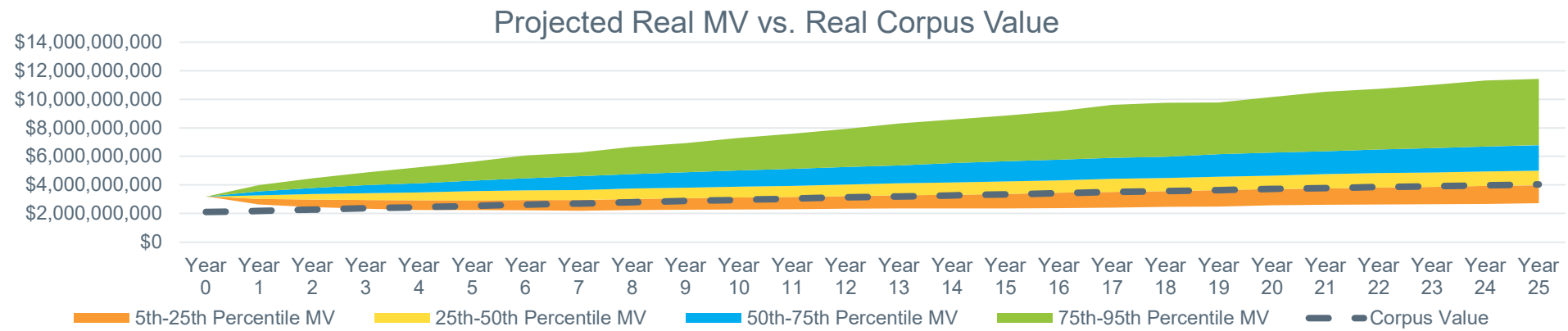
Projected Geometric Return: 7.42%



IGE : 89.3% / Corpus Breach: 6.8%

Risk Target: 70/30 portfolio with 2023 CMAs and 4.5% distribution.

Projected Geometric Return: 6.04%



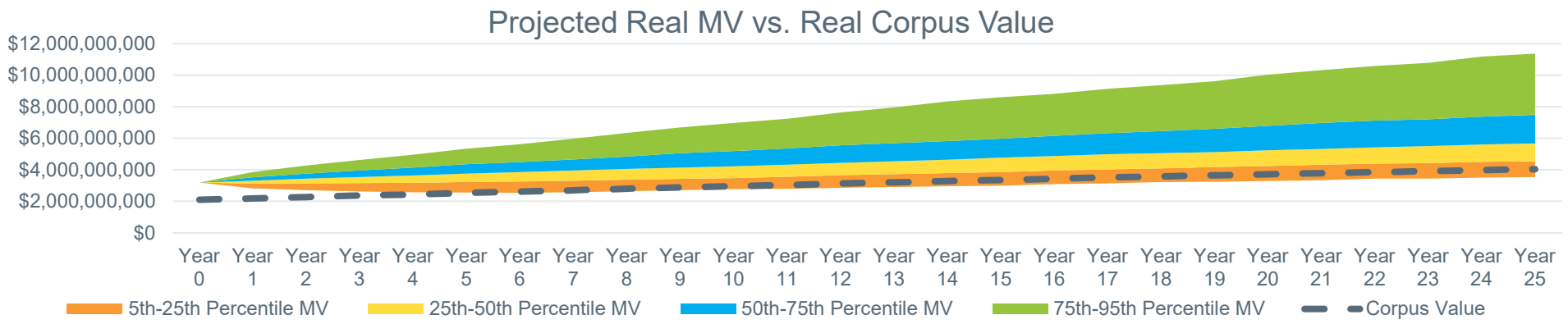
IGE : 72.4% / Corpus Breach: 18.5%

Projections utilize Monte Carlo analysis conducted with 5,000 paths of returns. Percentiles represent the respective outcomes of each year across the 5,000 return paths and does not reflect a representative path. Probability of breaching corpus is calculated across all periods and paths.

SITFO's Corpus Modeling – 5.0% Distribution

Base case: Current LT Target with 2023 CMAs and 5.0% distribution.

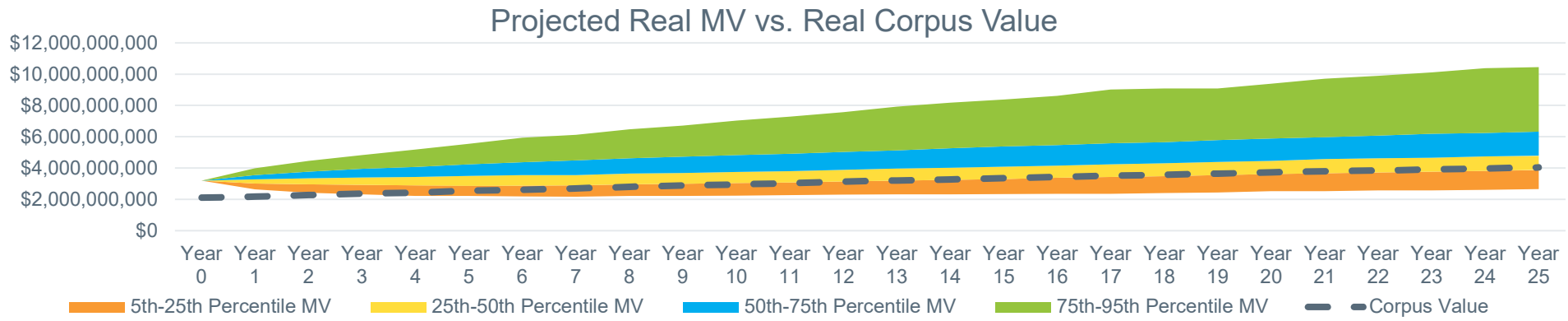
Projected Geometric Return: 7.42%



IGE : 86.7% / Corpus Breach: 8.3%

Risk Target: 70/30 portfolio with 2023 CMAs and 5.0% distribution.

Projected Geometric Return: 6.04%

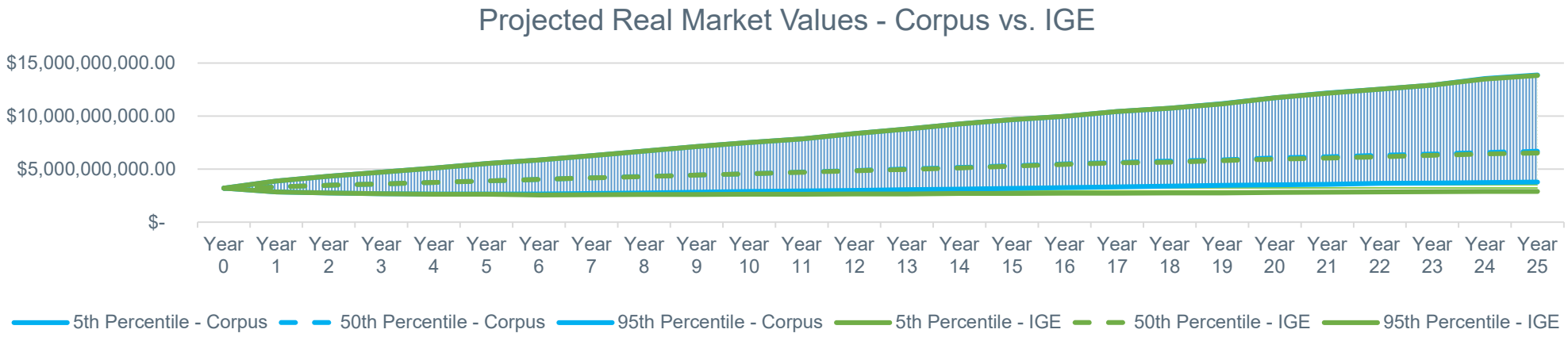


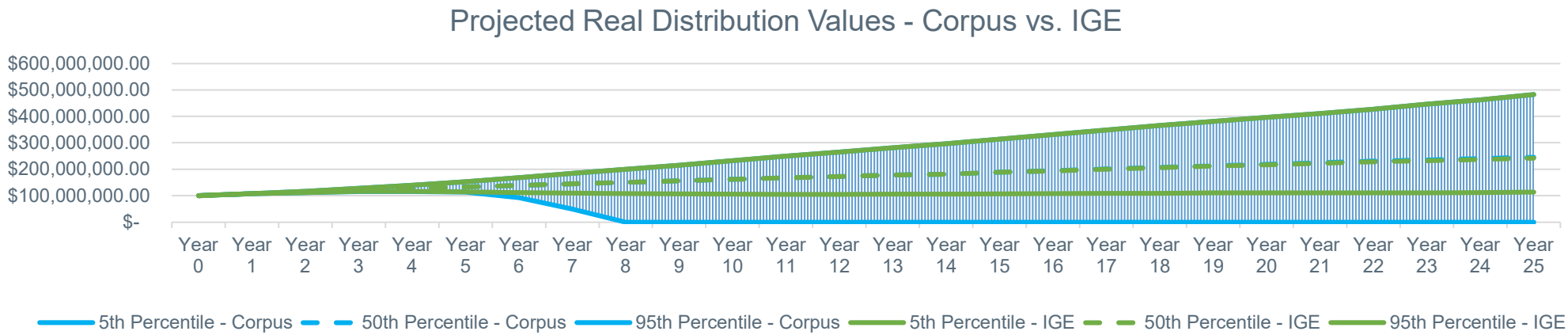
IGE : 68.9% / Corpus Breach: 20.5%

Projections utilize Monte Carlo analysis conducted with 5,000 paths of returns. Percentiles represent the respective outcomes of each year across the 5,000 return paths and does not reflect a representative path. Probability of breaching corpus is calculated across all periods and paths.

SITFO's Corpus Modeling vs. IGE

As reflected in the graphs below, the corpus model provides a modestly higher projected 5th percentile market value, however this comes as a result of suspended distributions not present in the IGE model. Median and 95th percentiles do not present discernably different outcomes.





Projections utilize Monte Carlo analysis conducted with 5,000 paths of returns. Percentiles represent the respective outcomes of each year across the 5,000 return paths and does not reflect a representative path. All analysis includes current 4% distribution policy.

Stress Tests – Contribution & Distribution Rates

- The table below evaluates the projected impact adjustments to forward looking annual distribution rates and real contributions have on expected outcomes.

	Inviolate Corpus			True IGE		
	4.0% Distribution Rate	**4.5% Distribution Rate**	**5.0% Distribution Rate**	**4.0% Distribution Rate**	**4.5% Distribution Rate**	**5.0% Distribution Rate**
Baseline Real Contributions	• IGE: **91.6%** • Corpus Breach: **5.6%**	• IGE: **89.3%** • Corpus Breach: **6.8%**	• IGE: **86.7%** • Corpus Breach: **8.3%**	• IGE: **83.1%** • Corpus Breach: **9.3%**	• IGE: **77.6%** • Corpus Breach: **11.8%**	• IGE: **70.0%** • Corpus Breach: **15.1%**
0.5x Real Contributions	• IGE: **73.5%** • Corpus Breach: **5.3%**	• IGE: **66.2%** • Corpus Breach: **6.4%**	• IGE: **58.1%** • Corpus Breach: **7.9%**	• IGE: **68.4%** • Corpus Breach: **8.9%**	• IGE: **60.3%** • Corpus Breach: **11.4%**	• IGE: **51.5%** • Corpus Breach: **14.6%**
1.5x Real Contributions	• IGE: **97.8%** • Corpus Breach: **6.0%**	• IGE: **97.2%** • Corpus Breach: **7.2%**	• IGE: **96.7%** • Corpus Breach: **8.6%**	• IGE: **91.5%** • Corpus Breach: **9.8%**	• IGE: **88.0%** • Corpus Breach: **12.3%**	• IGE: **83.7%** • Corpus Breach: **15.5%**

All scenarios are 25 years.

Stress Tests – Return Path

- The table below evaluates the impact that past market events would have on the projected outcomes of the portfolio. Historical event returns are calculated based on the index returns of the current policy index and are applied to year one of the analysis.

Event	Inviolate Corpus			True IGE		
	4.0% Distribution Rate	4.5% Distribution Rate	5.0% Distribution Rate	4.0% Distribution Rate	4.5% Distribution Rate	5.0% Distribution Rate
Global Financial Crisis: Oct 2007 – Mar 2009; Return -24%	• IGE: **88.1%** • Corpus Breach: **14.0%**	• IGE: **85.9%** • Corpus Breach: **15.8%**	• IGE: **83.2%** • Corpus Breach: **17.8%**	• IGE: **70.8%** • Corpus Breach: **25.8%**	• IGE: **62.5%** • Corpus Breach: **31.0%**	• IGE: **54.0%** • Corpus Breach: **36.7%**
COVID Market Recovery: Mar 2020 – Dec 2021; Return +34%	• IGE: **94.6%** • Corpus Breach: **2.6%**	• IGE: **92.3%** • Corpus Breach: **3.3%**	• IGE: **90.3%** • Corpus Breach: **4.2%**	• IGE: **90.1%** • Corpus Breach: **4.1%**	• IGE: **85.8%** • Corpus Breach: **5.5%**	• IGE: **81.0%** • Corpus Breach: **7.1%**
Three Years Projected 5th Percentile; Return ~ -11%	• IGE: **86.9%** • Corpus Breach: **22.4%**	• IGE: **84.8%** • Corpus Breach: **24.2%**	• IGE: **82.3%** • Corpus Breach: **26.1%**	• IGE: **62.2%** • Corpus Breach: **44.0%**	• IGE: **53.3%** • Corpus Breach: **50.4%**	• IGE: **43.6%** • Corpus Breach: **56.5%**
Three Years Projected 95th Percentile; Return ~ +23%	• IGE: **96.8%** • Corpus Breach: **1.1%**	• IGE: **95.5%** • Corpus Breach: **1.5%**	• IGE: **93.7%** • Corpus Breach: **2.0%**	• IGE: **94.8%** • Corpus Breach: **1.7%**	• IGE: **92.3%** • Corpus Breach: **2.3%**	• IGE: **88.9%** • Corpus Breach: **3.2%**

- Projected Three Year annual returns are applied to the first three years of the analysis.

All scenarios are 25 years.

Advantages of IGE vs. Corpus

Inviolate corpus investing ensures that fund principal remains in perpetuity, however periods of significant stress could result in a failure to distribute benefits to beneficiaries.

- Intergenerational equity focuses on the Fund's ability to achieve its vision over the long-term. Utilizing a holistic approach that assesses the fiscal health of the Fund by incorporating anticipated natural resource revenues and spending policy to ensure egalitarian equity between present and future generations of Utah School Children, aiming to provide a safeguard that citizens of tomorrow have the same opportunities and purchasing power as citizens of today.
  - Intergenerational equity requires fund perpetuity to maintain equitable distributions across generations.
  - While breaches of corpus would result in a suspension of distributions, a suspension of distributions would be a breach of intergenerational equity.
  - Intergenerational equity requires thoughtful consideration of the sustainability of spending policies in order to balance benefits across generations, accounting for inflation and student population growth.

RVK

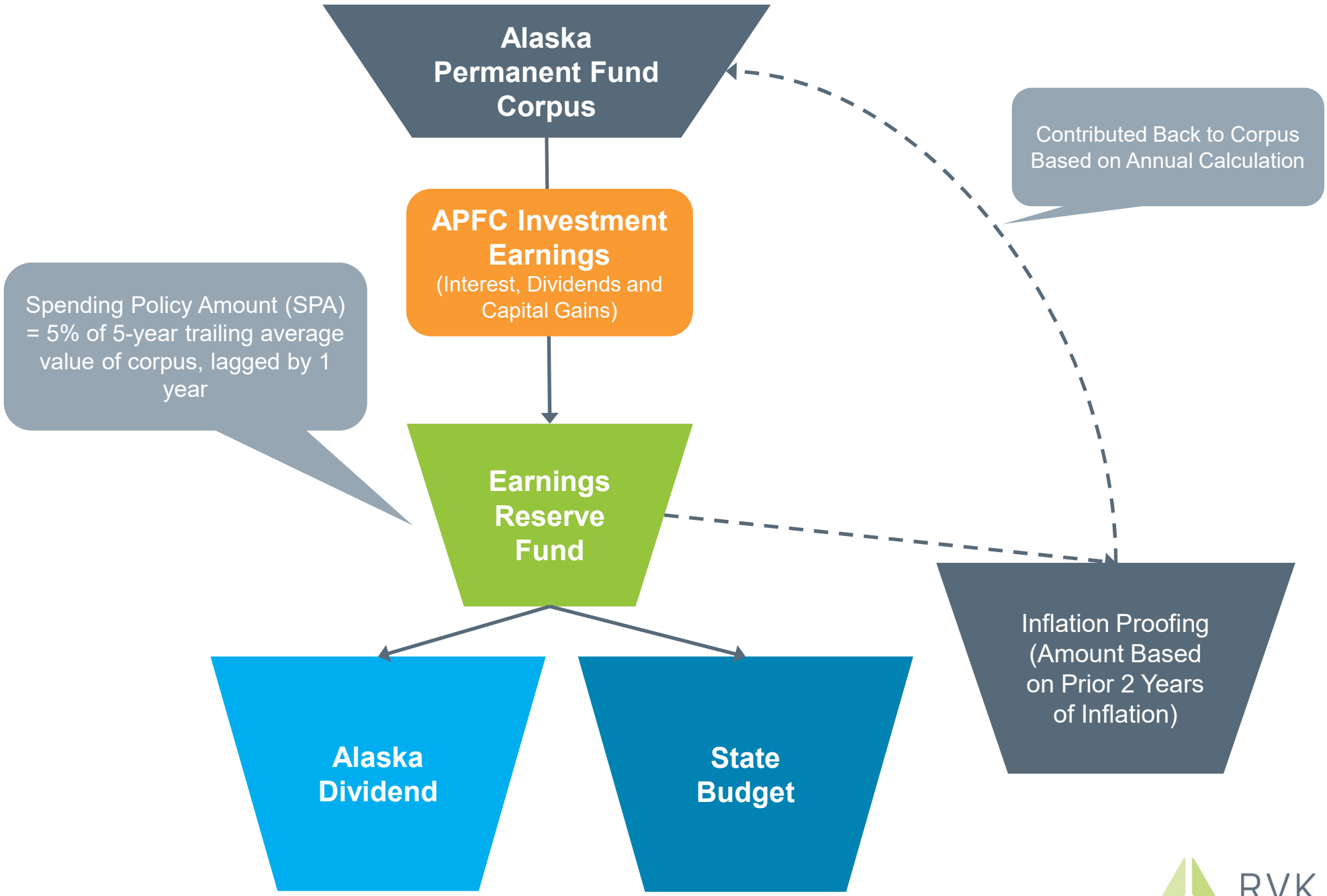
Constraints and Spending

Reserve Fund Usage

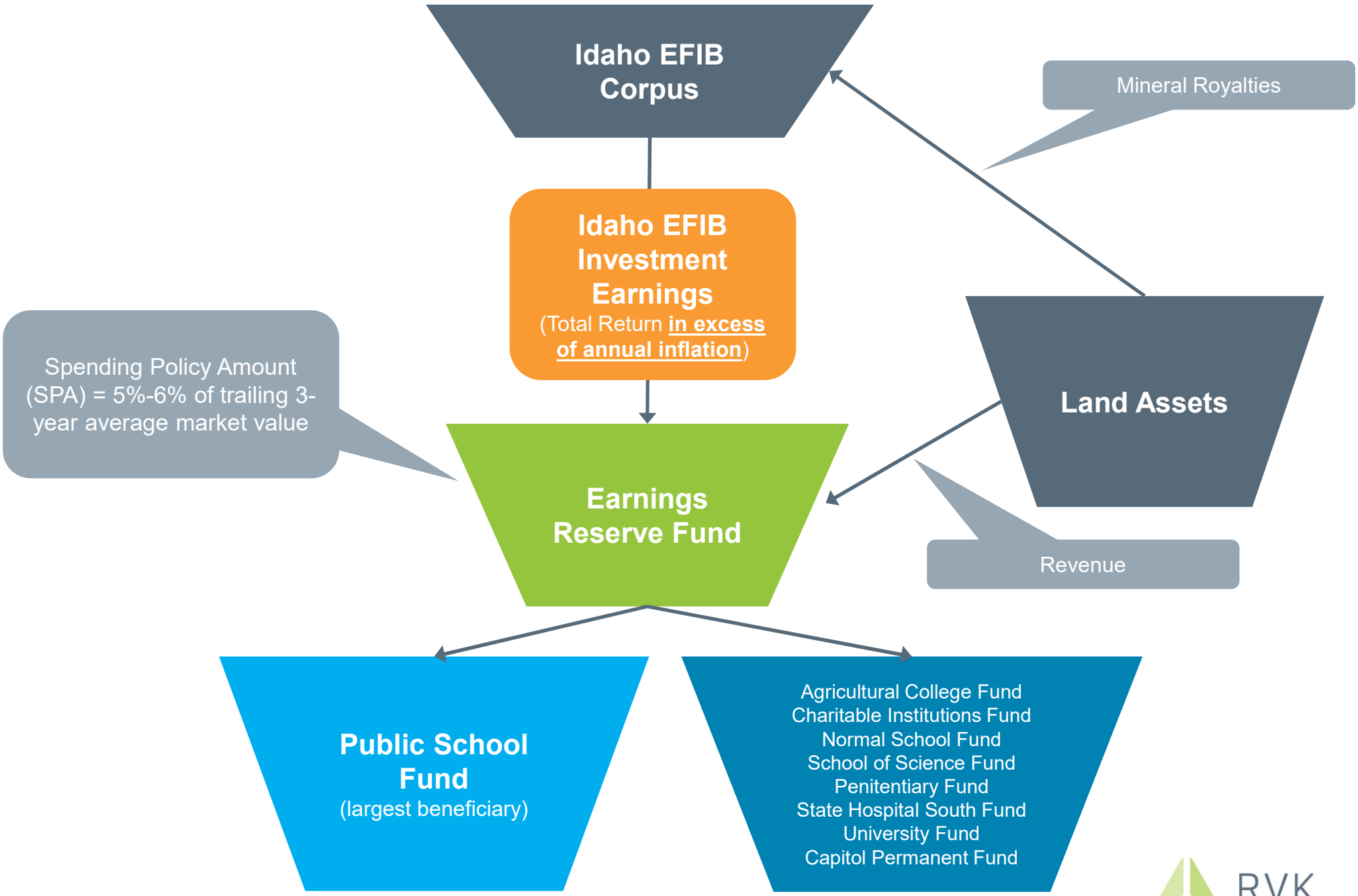
- Reserve Funds are used by some Funds to facilitate annual spending. 2 examples of how Reserve Funds are utilized by other programs:
  - Idaho EFIB – reserve fund holds 500%-700% of annual spending to ensure stable and predictable distributions.
    - The total return of the permanent fund (above the rate of inflation) is deposited to the reserve fund each year. Rate of Inflation is added to corpus each year.
    - Land revenue is also deposited directly into the reserve fund.
    - Reserve fund is invested in same asset mix as permanent fund.
    - Reserve fund can not be spent by the Legislature.
  - Alaska PFC – reserve fund currently holds 400%-500% of annual spending.
    - Interest, dividends, rental income, realized and unrealized gains (losses) are deposited to the reserve account. A portion of the earnings are appropriated back into the permanent fund as an inflation-proofing mechanism, based on a calculation made each year.
    - Reserve fund is invested in same asset mix as permanent fund.
    - Reserve fund can be spent by the Legislature.

RVK

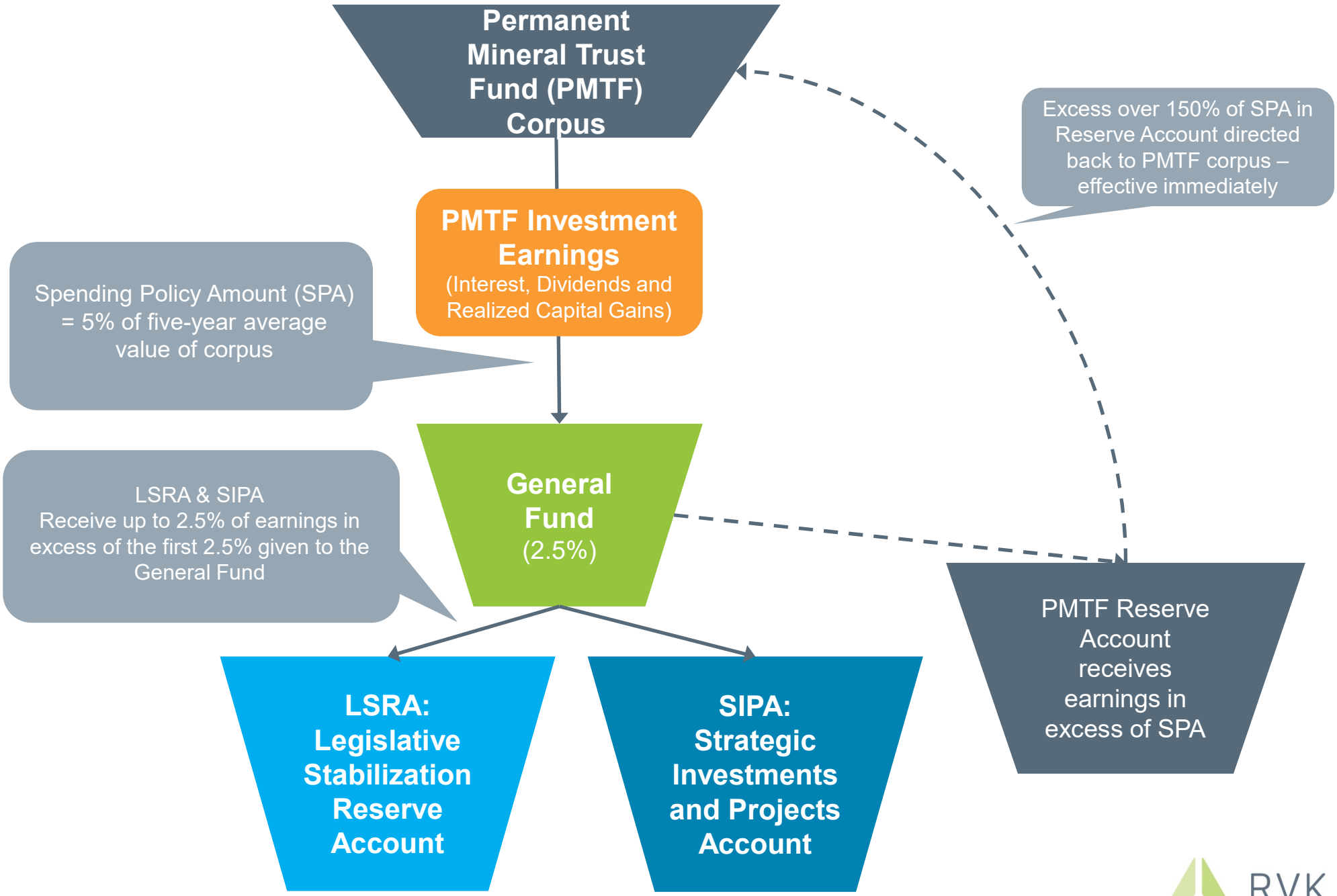
Alaska Permanent Fund Spending Policy



Idaho EFIB Spending Policy



Wyoming PMTF Spending Policy

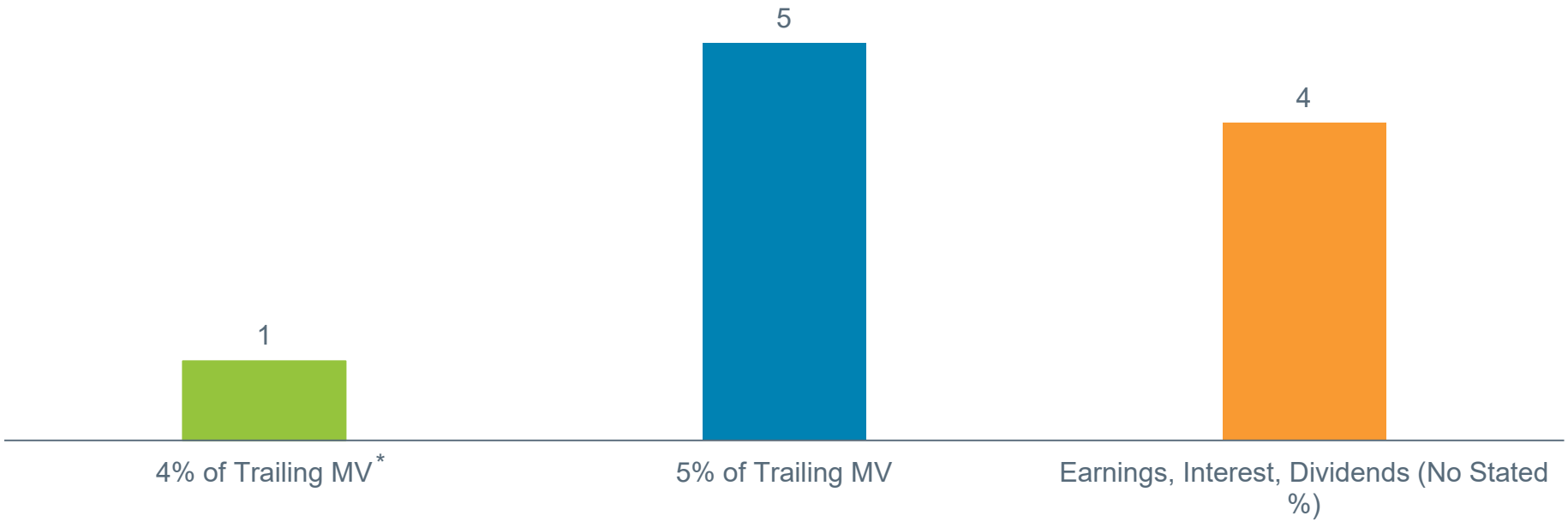


Constraints and Spending

Spending Framework

- There are two commonly used frameworks for determining the level of distributions.
  1. Predetermined percentage (commonly 4-5%) applied to the trailing 3-5 year total fund market value.
  2. Investment Income (realized gains/losses, interest, and dividends).

Survey Results - Spending Methodology



*Utah SITFO's spending policy is an average of: 4% of the average market value over the past 5 years & prior year distribution adjusted for student enrollment growth and inflation. Spending is also capped at no greater than 4% of trailing 5-year average market value.

RVK

Constraints and Spending

Objective, Constraints, and Spending Policy

	Utah SITFO
Fund Horizon:	• Permanent Fund (Perpetual)
Investment Constraints:	• Corpus cannot be spent.
Investment Goals:	• Achieve net of fees return in excess of inflation + 5%. • Preserve purchasing power of funds and maintain stable distributions to beneficiaries.

Spending Policy:	• Annual distribution is based on an average of:
	  • 4% of trailing 5 year average market value
	  • Prior year distribution, adjusted for student enrollment growth and inflation
	• Distribution cannot exceed 4% of trailing 5-year average market value

Observed Allocation Changes over Past 10 Years	• Materially decreased US equity allocation and significantly expanded diversification

RVK

Concluding Thoughts

Portfolio Construction

- SITFO places an emphasis on mitigation of drawdown risk, incorporated specifically through the Defensive allocation within the portfolio
- Long-term, higher allocations to equities and other return seeking assets appears appropriate for perpetual funds with intergenerational objectives; with corpus in place appropriate considerations must be made as part of volatility management and how certain types of investments are approached (ie. positive convexity, private markets)

Corpus Implications

- Having underlying protection mechanisms in place for distributions is important, however emphasis on both an inviolate corpus and spending policy can pose challenges – as can an inviolate corpus with a total return framework

Probability of Corpus Breach

- Based on 5,000 Monte Carlo simulation paths over 25 years, the number of times corpus is projected to be breached is **5.6%**
- *Utilizes SITFO's current SAA returns, distribution policy in place, and projected baseline real contributions*

Earnings Reserve

- An "earnings only" distribution model introduces challenges and does appear to potentially influence asset allocation decision making in some cases (desire to avoid realized losses, emphasis on income producing assets)
- Has the potential to limit a SWFs ability to achieve intergenerational equity if the resulting allocations are too conservative

RVK

Appendix

YoY Change in IGE Score Attribution

2022 IGE: **78.2%**

2023 Capital Market Assumptions: +6.1%

- Return projections updated to include RVK 2023 assumptions
- Asset class return assumptions were broadly higher in 2023 vs. 2022

Contributions: -0.2%

- Updated SITLA revenue projections included, done in coordination with SITLA
- FY2023 Oil & Gas revenues treated as one off due to elevated results seen as an anomaly, growth rate based off previous expectations

Distributions/Inclusion of Corpus: +8.6%

- Inviolate corpus incorporated as part of analysis
- Maximum spending refined to be capped at no greater than 4% of trailing 5-year average market value

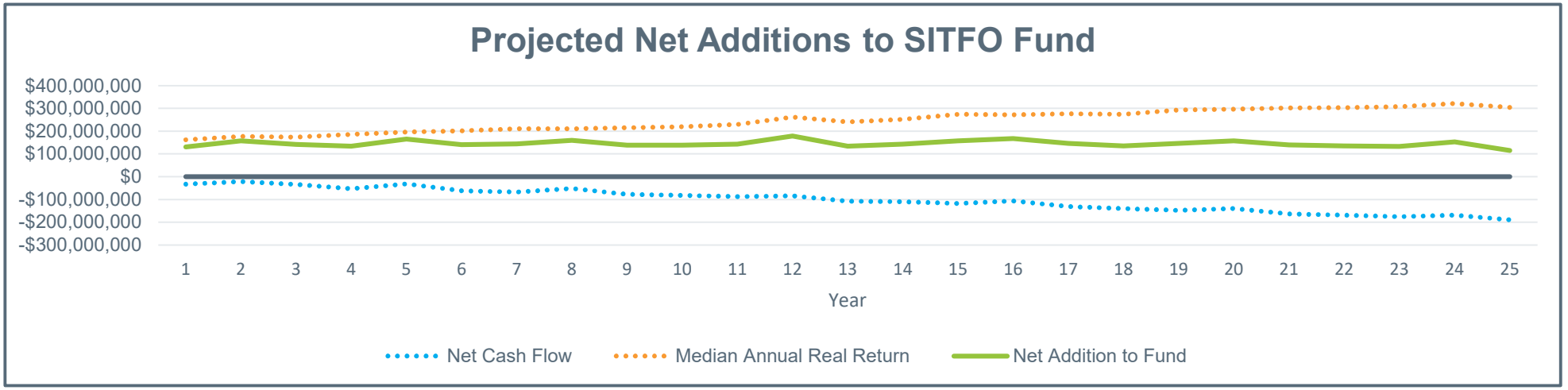
YoY Date Adjustments: -1.1%

- Starting Point adjusted to 6/30/2023 Fund market value
- Previous forecasted contributions and prior year's distribution shifted forward

2023 IGE: **91.6%**

Attribution based on evaluating each factor individually after YoY date updates included. Both year's IGE scores are based on current 4% distribution policy.

Cash Flow Assumptions – 4.00% Distribution

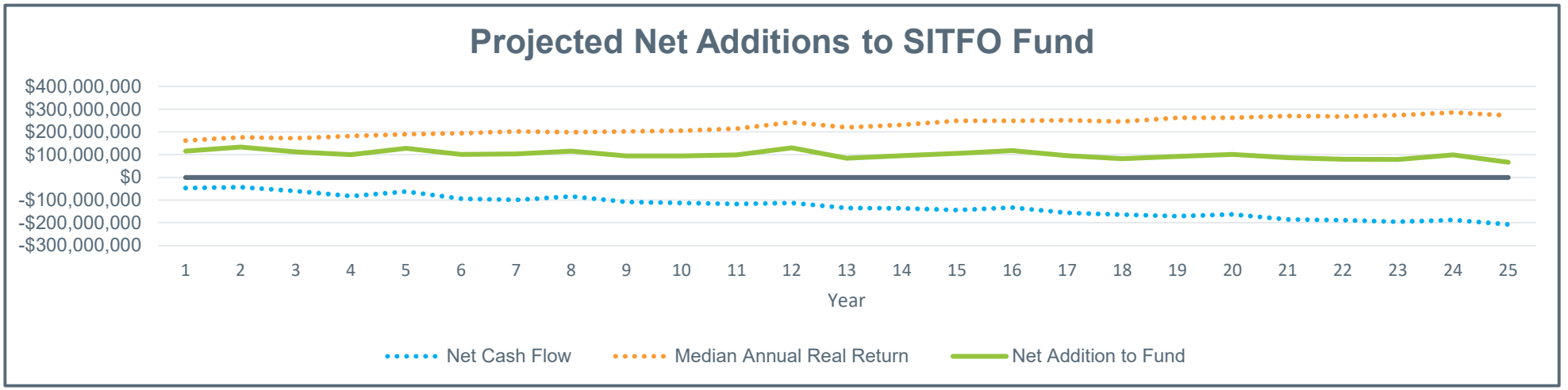


	Contribution Assumption	Median Distribution	Net Cash Flow	Net Cash Flow (% of Fund)	Median Annual Real Return	Net Addition to Fund	Median Market Value - Corpus Value
Year 1	$75,252,787	$107,566,313	-$32,313,526	-0.97%	$162,535,118	$130,221,592	$1,136,445,268
Year 2	$93,076,817	$114,013,143	-$20,936,326	-0.60%	$178,032,002	$157,095,676	$1,189,914,742
Year 3	$88,495,753	$121,625,278	-$33,129,525	-0.92%	$174,696,599	$141,567,074	$1,241,364,293
Year 4	$75,180,025	$127,785,857	-$52,605,833	-1.41%	$186,111,299	$133,505,467	$1,288,708,515
Year 5	$103,202,131	$133,936,646	-$30,734,515	-0.79%	$196,002,630	$165,268,115	$1,348,251,067
Year 6	$78,129,059	$139,845,500	-$61,716,441	-1.53%	$202,285,451	$140,569,011	$1,405,513,708
Year 7	$78,956,200	$145,687,904	-$66,731,704	-1.60%	$211,211,176	$144,479,473	$1,464,930,150
Year 8	$100,066,789	$151,446,435	-$51,379,646	-1.19%	$210,579,626	$159,199,980	$1,506,416,855
Year 9	$80,343,744	$156,873,271	-$76,529,527	-1.72%	$215,029,135	$138,499,608	$1,551,935,997
Year 10	$81,029,708	$162,280,976	-$81,251,269	-1.78%	$220,101,392	$138,850,124	$1,600,879,073
Year 11	$81,368,757	$167,897,247	-$86,528,490	-1.84%	$229,773,388	$143,244,898	$1,665,932,095
Year 12	$90,359,031	$173,531,848	-$83,172,817	-1.71%	$262,329,354	$179,156,537	$1,736,158,102
Year 13	$72,156,112	$178,843,703	-$106,687,591	-2.13%	$240,619,881	$133,932,289	$1,797,160,014
Year 14	$72,425,543	$181,620,852	-$109,195,309	-2.12%	$252,516,119	$143,320,810	$1,874,917,201
Year 15	$72,711,207	$189,451,669	-$116,740,461	-2.19%	$274,498,109	$157,757,647	$1,972,752,492
Year 16	$89,686,350	$195,467,000	-$105,780,651	-1.93%	$272,898,341	$167,117,690	$2,035,416,762
Year 17	$70,772,607	$201,616,694	-$130,844,087	-2.32%	$277,344,117	$146,500,031	$2,118,198,496
Year 18	$68,451,691	$207,689,130	-$139,237,439	-2.42%	$274,702,957	$135,465,518	$2,160,024,025
Year 19	$66,246,741	$213,378,456	-$147,131,715	-2.50%	$293,075,365	$145,943,650	$2,232,090,819
Year 20	$79,218,803	$219,078,938	-$139,860,135	-2.31%	$296,801,590	$156,941,455	$2,328,088,340
Year 21	$62,160,483	$225,023,642	-$162,863,159	-2.65%	$302,679,466	$139,816,308	$2,365,292,932
Year 22	$62,204,357	$231,153,746	-$168,949,388	-2.68%	$303,635,811	$134,686,422	$2,443,894,229
Year 23	$60,356,609	$235,300,459	-$174,943,850	-2.72%	$307,825,781	$132,881,931	$2,510,874,153
Year 24	$72,214,477	$240,686,550	-$168,472,074	-2.57%	$321,799,601	$153,327,527	$2,577,531,134
Year 25	$56,925,153	$245,885,669	-$188,960,515	-2.83%	$304,819,534	$115,859,018	$2,637,911,034

All data shown is in real terms. Average net cash flow as a percentage of the Fund is -1.90%.

RVK

Cash Flow Assumptions – 5.00% Distribution



	Contribution Assumption	Median Distribution	Net Cash Flow	Net Cash Flow (% of Fund)	Median Annual Real Return	Net Addition to Fund	Median Market Value - Corpus Value
Year 1	$75,252,787	$121,770,854	-$46,518,067	-1.41%	$162,171,837	$115,653,770	$1,121,877,446
Year 2	$93,076,817	$136,036,635	-$42,959,818	-1.25%	$176,654,191	$133,694,373	$1,152,597,713
Year 3	$88,495,753	$148,495,902	-$60,000,149	-1.69%	$172,005,468	$112,005,319	$1,173,427,876
Year 4	$75,180,025	$157,337,980	-$82,157,956	-2.26%	$182,054,969	$99,897,014	$1,187,019,367
Year 5	$103,202,131	$165,088,838	-$61,886,707	-1.65%	$189,707,345	$127,820,638	$1,209,316,804
Year 6	$78,129,059	$171,773,083	-$93,644,023	-2.43%	$194,697,873	$101,053,850	$1,228,973,278
Year 7	$78,956,200	$177,931,730	-$98,975,530	-2.51%	$202,505,051	$103,529,521	$1,242,472,552
Year 8	$100,066,789	$183,501,231	-$83,434,442	-2.06%	$199,256,071	$115,821,629	$1,245,233,456
Year 9	$80,343,744	$188,476,735	-$108,132,990	-2.62%	$202,534,642	$94,401,651	$1,246,116,321
Year 10	$81,029,708	$192,952,082	-$111,922,374	-2.65%	$205,729,961	$93,807,587	$1,254,753,053
Year 11	$81,368,757	$197,865,805	-$116,497,048	-2.69%	$214,894,864	$98,397,816	$1,277,656,819
Year 12	$90,359,031	$202,892,721	-$112,533,690	-2.53%	$242,549,265	$130,015,574	$1,304,020,079
Year 13	$72,156,112	$207,319,308	-$135,163,196	-2.98%	$219,748,222	$84,585,025	$1,321,239,679
Year 14	$72,425,543	$208,498,418	-$136,072,876	-2.93%	$231,456,429	$95,383,553	$1,355,353,876
Year 15	$72,711,207	$216,030,517	-$143,319,309	-3.00%	$248,796,619	$105,477,310	$1,416,416,184
Year 16	$89,686,350	$221,889,523	-$132,203,173	-2.71%	$249,466,706	$117,263,532	$1,431,974,967
Year 17	$70,772,607	$226,483,828	-$155,711,220	-3.13%	$251,189,607	$95,478,387	$1,463,772,864
Year 18	$68,451,691	$232,123,237	-$163,671,546	-3.24%	$245,589,645	$81,918,099	$1,464,695,471
Year 19	$66,246,741	$237,165,586	-$170,918,845	-3.34%	$262,715,527	$91,796,682	$1,474,057,805
Year 20	$79,218,803	$241,585,381	-$162,366,579	-3.10%	$262,927,381	$100,560,802	$1,503,012,896
Year 21	$62,160,483	$246,712,521	-$184,552,038	-3.47%	$270,769,737	$86,217,699	$1,530,940,909
Year 22	$62,204,357	$250,787,150	-$188,582,792	-3.48%	$268,298,184	$79,715,392	$1,564,801,995
Year 23	$60,356,609	$255,314,033	-$194,957,424	-3.55%	$273,792,055	$78,834,630	$1,580,866,646
Year 24	$72,214,477	$259,091,257	-$186,876,781	-3.34%	$285,865,539	$98,988,758	$1,616,222,714
Year 25	$56,925,153	$263,783,014	-$206,857,860	-3.65%	$273,092,192	$66,234,332	$1,618,935,725

All data shown is in real terms. Average net cash flow as a percentage of the Fund is -2.71%.

RVK

Defining the Intergenerational Equity Objective

Maintaining intergenerational equity can only be achieved if it is defined and measured over time.

The Investment Policy Statement provides that the primary return objective is to maintain purchasing power while sustaining the current distribution amount which is a maximum of 4%. *Therefore, we might define maintaining intergenerational equity as preserving the economic value after inflation.*

The definition may also be expanded to account for other relevant factors such as an increase in the future demand of those assets (through population growth for example) and to reflect the depleting/decreasing nature of the real assets that provide contributions.

Research[1] published by the University of Utah estimates the State's population to increase on average by 1.3% until 2060. The population ages 5-17 is projected to increase however compose a smaller share of the population in 2060 than it does now. The school age population is projected to grow from 706,174 in 2020 to 811,572 in 2060, decreasing as a share of the total population from 21.5 percent to 14.9 percent, however still growing approximately 0.5% per year on average. To incorporate the non-renewable nature of certain revenue sources into the model, an additional 0.5% per year growth rate is added to account for anticipated reduction in revenues from finite resources.

This might inform us that in addition to preserving the economic value after inflation, an annual real growth rate of approximately 1.0% is appropriate.

[1]https://gardner.utah.edu/wp-content/uploads/Projections-Brief-Final.pdf, Jan 2022.

RVK

PORTLAND BOISE CHICAGO NEW YORK

RVK

Networking Event

Please take all personal items out of the meeting room.