THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Power Cost Equalization Fund:

Investment Policy, Performance, Downside Risk, and Spending Volatility

March 2023

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Chief Investment Officer, Treasury Division
Alaska Department of Revenue

Power Cost Equalization Investment Discussion

Treasury Division:

- The Treasury Division is run by 40 professionals in portfolio management, accounting, operations, compliance, and cash management
- The Division helps state fiduciaries achieve investment objectives and manage risks
- $47 billion in assets managed as of 12/31/22:
  - Alaska Retirement Management Board - $39 Billion
  - Commissioner of Revenue/SOA - $8 Billion

Power Cost Equalization Investment Discussion:

- Program Background and Cashflows
- Investment Policy and Asset Allocation Process
- Performance through 2022
- Current Asset Allocation and Downside Risk
- Spending Volatility with 3 and 5-Year Asset Smoothing
- Risk Tolerance, Real Returns, and Downside Risk
- Conclusion and Summary Observations

Treasury Division

Portfolio Management
- Investment assets for State fiduciaries including the ARMB.
- Assists fiduciaries with asset allocation and investment policy
- Implements investment policies and produces results

Accounting and Operations
- Asset accounting
- Information technology
- Operations support

Compliance/Middle Office
- Performance reporting and operational efficiency
- Ensures investments meet policies
- Industry compliance and regulations

Cash Management
- Oversees cash receipts & expenditures
- Sets daily cash availability
- Coordinates with portfolio to maximize invested cash

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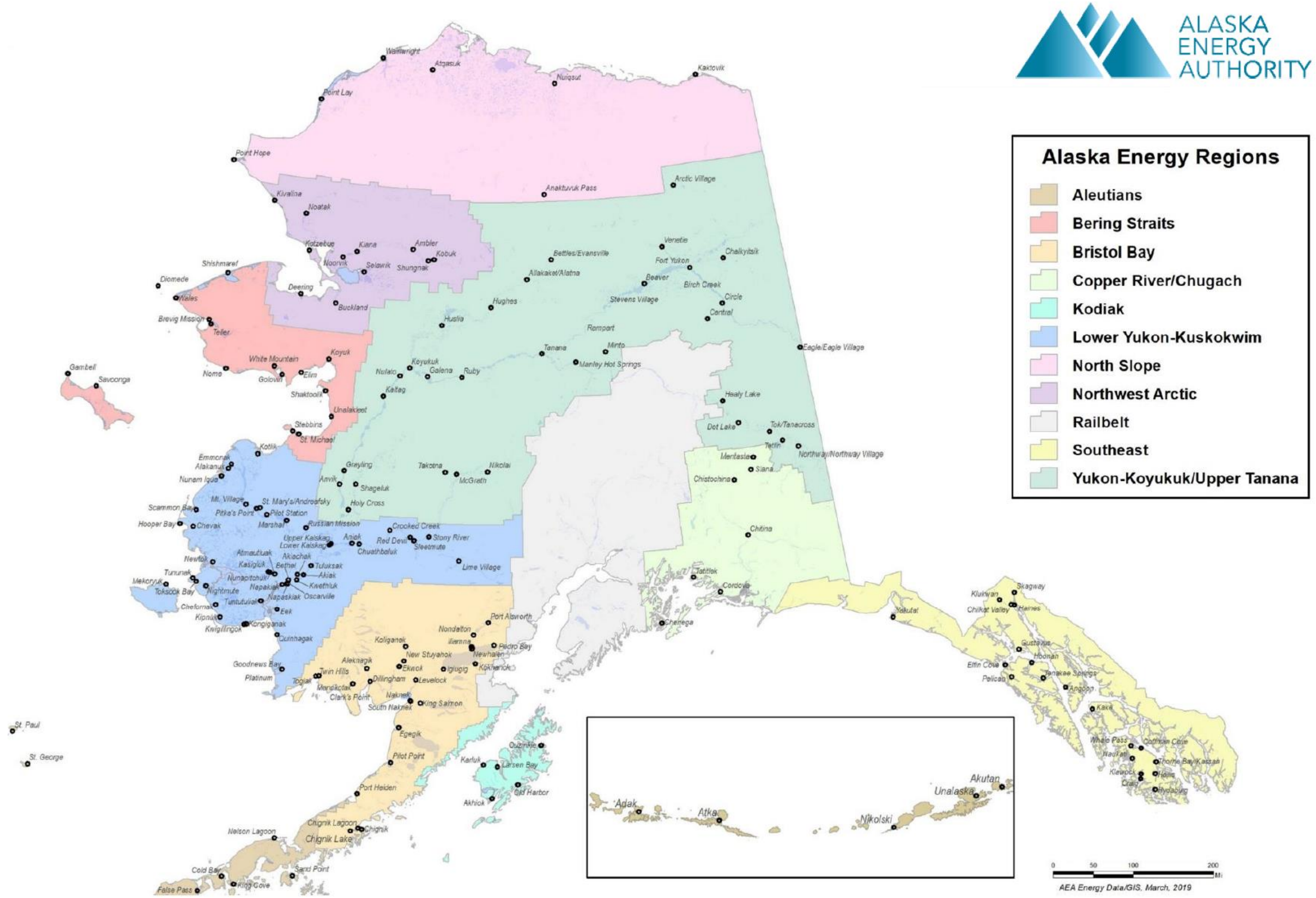
Power Cost Equalization Program Background

- Established in 1985, the Power Cost Equalization (PCE) program seeks to lower the cost of electricity in rural communities to a cost comparable to larger urban communities.
- PCE helps to ensure the financial viability of rural communities with high energy costs by serving close to 80,000 Alaskans in approximately 200 communities.
- The program has also supported community revenue sharing/assistance and energy grant programs.
- The Alaska Energy Authority (AEA) administers the PCE program.
- PCE payments are funded from the PCE Endowment Fund, which is managed by the Department of Revenue.
- Alaska Statute 42.45.085 provides that 5% of the PCE Endowment Fund's 3-year average market value may be appropriated to the program.
- The statute also has a provision that allows for additional spending if annual earnings exceed the 5% appropriation. 70% of the difference can be used first for up to $30 million in community assistance payments and then for up to $25 million for various energy-related grants. Other amounts may be appropriated directly.



PCE: Cashflows

- Despite a challenging 2022, the PCE investment program has met earnings expectations over the past 10+ years. Overall earnings have been $661 million and have averaged 6.8%, which has supported withdrawals of $467 million or an average of 4.3%
- The three-year average market value is impacted both by investment earnings and by withdrawals for spending. The decrease in fund balance from the end of FY21 to December of 2022 was $191.4 million - $54.6 million from spending and $136.7 million from investment losses.

Period Ended	Deposits	Earnings	Withdrawals	Net Gain/(Loss)	Ending Balance	Percent of Begin. Balance	
						Earnings	Withdrawals
Jun-12	$ 400,000,000	$ 10,947,889	$ (23,696,811)	$ (12,748,922)	$ 751,780,453		
Jun-13		$ 111,487,778	$ (23,053,356)	$ 88,434,422	$ 840,214,875	14.8%	-3.1%
Jun-14		$ 171,111,667	$ (33,459,175)	$ 137,652,492	$ 977,867,367	20.4%	-4.0%
Jun-15		$ 33,192,304	$ (41,670,240)	$ (8,477,936)	$ 969,389,431	3.4%	-4.3%
Jun-16		$ 8,912,404	$ (31,363,776)	$ (22,451,372)	$ 946,938,059	0.9%	-3.2%
Jun-17		$ 112,330,514	$ (35,702,909)	$ 76,627,605	$ 1,023,565,664	11.9%	-3.8%
Jun-18		$ 76,602,411	$ (26,789,663)	$ 49,812,748	$ 1,073,378,412	7.5%	-2.6%
Jun-19		$ 74,141,548	$ (74,694,579)	$ (553,030)	$ 1,072,825,381	6.9%	-7.0%
Jun-20		$ 48,303,424	$ (42,971,946)	$ 5,331,478	$ 1,078,156,859	4.5%	-4.0%
Jun-21		$ 150,299,199	$ (79,290,610)	$ 71,008,589	$ 1,149,165,449	13.9%	-7.4%
Jun-22		$ (143,841,594)	$ (37,908,189)	$ (181,749,783)	$ 967,415,665	-12.5%	-3.3%
Dec-22		$ 7,104,777	$ (16,718,997)	$ (9,614,220)	$ 957,801,445		
	Totals:	**$ 660,592,322**	**$ (467,320,251)**	**$ 193,272,070**	**Averages:**	**6.8%**	**-4.3%**
					Pre-2022 Averages:	**9.2%**	**-4.4%**

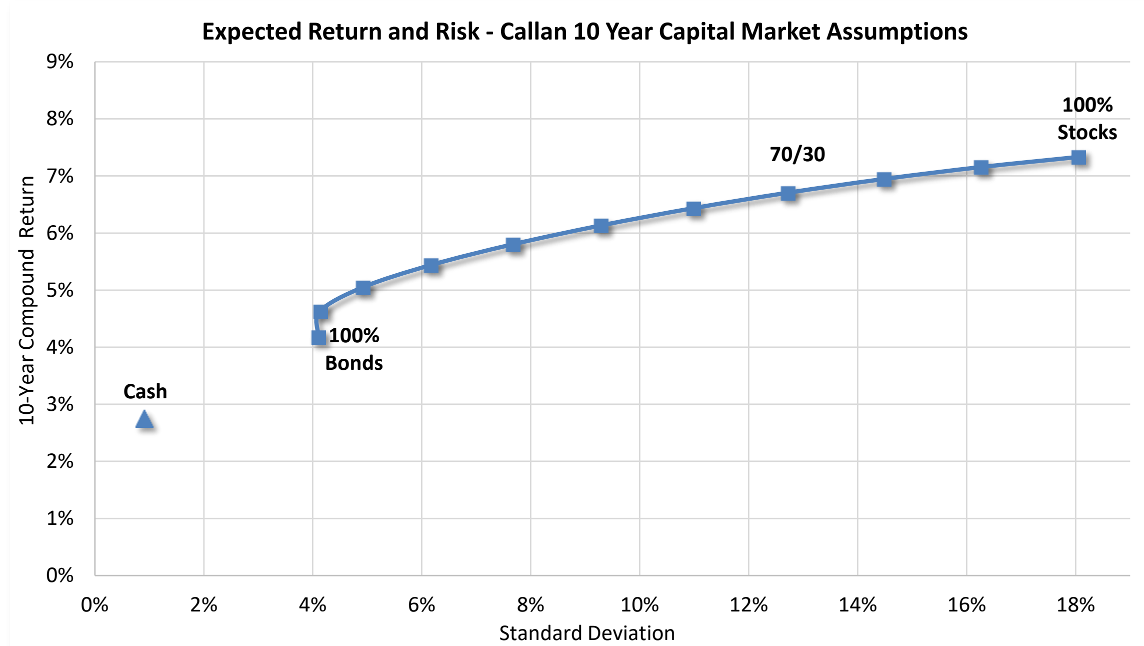
DOR/PCE Endowment Fund

Investment Policy and

Asset Allocation Process

State Investment Policy and Asset Allocation Process

- The Commissioner of Revenue is the fiduciary for over $8 billion in state assets across 100+ accounts pooled into 24 funds with similar assets or mandates.
- Setting investment policies and asset allocations are key fiduciary duties for these funds.
- Treasury staff reviews and makes recommendations on the investment policy and asset allocation of each fund at least annually.
- Each investment program is designed to balance fund investment objectives, risk tolerance, and other attributes:
  - Time horizon
  - Nominal or real return objectives
  - Cashflows, liquidity, and income needs
  - Capacity for loss or volatility over short, medium, and longer time horizons
- Performance, investment policy, and asset allocations are discussed quarterly in a transparent process with an independent investment advisory committee.



Fund - Account	Assets (12/31/22)	Risk Tolerance
Short-Term Funds	$194,011,556	Lowest
CBRF - AY19	$1,065,484,526	
GeFONSI - AY01	$2,406,833,530	
International Airport - AY04	$187,603,887	
GeFONSI II - AY3F	$1,679,890,840	
Retiree LTC - AY11	$690,978,275	
PCE Endowment - AY13	$957,801,445	Highest
Public School Trust Fund - AY08	$700,344,157	
AK Higher Education - AY3L	$347,149,154	
Illinois Creek Mine - AY9J	$1,254,891	
Education Endowment - AY3G	$936,165	
Total	$8,232,288,426	

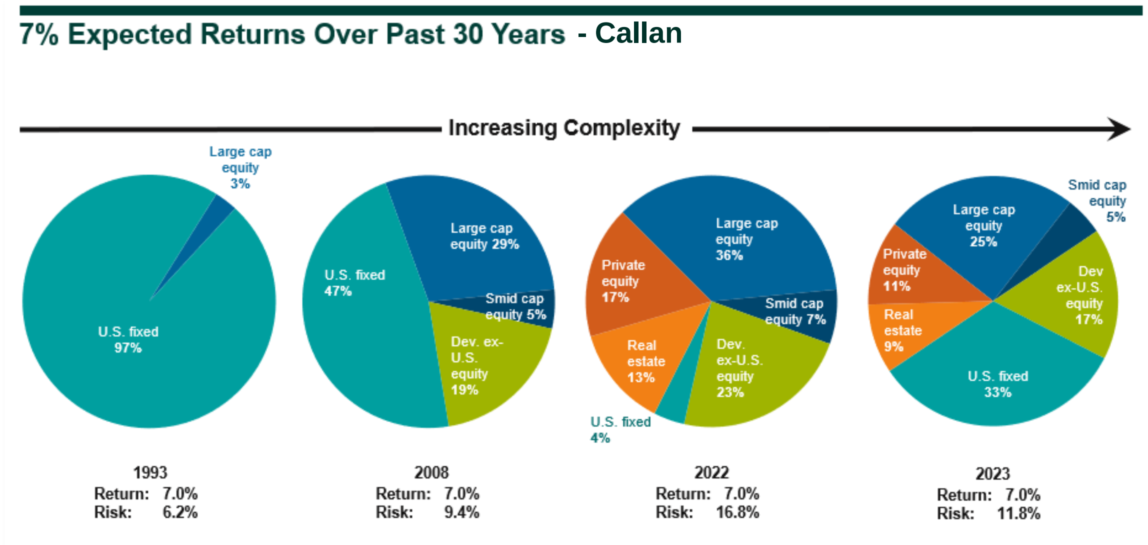
Asset Allocation

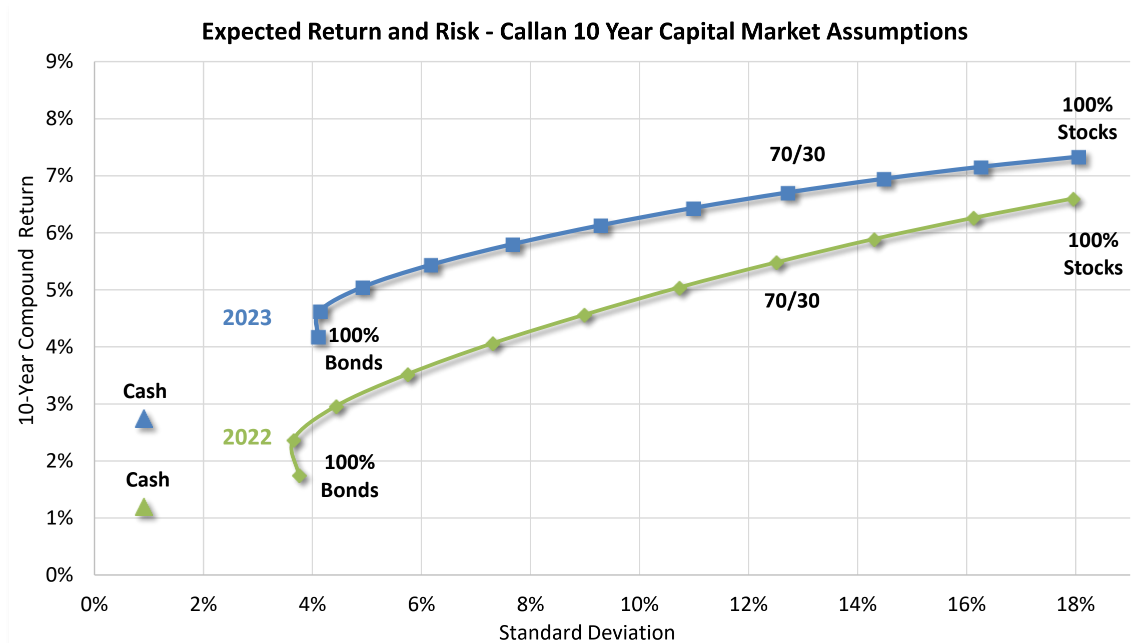
- Callan is an investment consultant that annually develops 10-year capital market assumptions for clients including the Alaska Retirement Management Board and the Alaska Permanent Fund Corporation. DOR uses these assumptions for independence and consistency.

- Return expectations have generally fallen over the past 30 years as interest rates, growth, and inflation expectations declined. Forward return expectations have now increased due to inflation, higher starting interest rates and the pullback in equity markets.

- Treasury staff evaluates Callan's capital market assumptions and current market conditions to develop an asset allocation approach for each state fund.

- The goal is to maximize return or minimize risk consistent with investment objectives and risk tolerance using a combination of Modern Portfolio Theory and account specific constraints and characteristics.





2023 Capital Market Assumptions

- In January, Callan released their 10-year capital market assumptions for 2023. Forward return expectations increased due to higher starting interest rates and the pullback in equity markets.
- Staff selects a subset of these asset classes for use in state funds based on risk, return, diversification, complexity, and cost.
- DOR is currently using Broad U.S. Equities, International Equities, Government 1-3 Fixed Income, Broad U.S. Fixed Income, U.S. REITs, and Cash Equivalents for state funds.
- For some portfolios, staff also invests up to 25% of the fixed income allocation in a tactical bond portfolio that opportunistically invests in high yield, TIPS, and other fixed income asset classes in a risk-managed fashion.
- State funds were not allowed to purchase unregistered investments, including alternative investments, prior to a late 2020 change in the SEC's definition of accredited investor.
- Even with the SEC change, illiquid investments are still problematic for State funds subject to annual budgetary and policy changes since many alternative investments take years to sell without a significant discount.

Asset Classes	10-Year Geometric Return	Return Change	Standard Deviation	Correlation to Domestic Equity	Real Return
Broad U.S. Equity	**7.35%**	**0.75%**	**18.05%**	**1.00**	**4.85%**
Large Cap U.S. Equity	*7.25%*	*0.75%*	*17.75%*	*1.00*	*4.75%*
Small/Mid Cap U.S. Equity	*7.45%*	*0.75%*	*22.15%*	*0.92*	*4.95%*
International Equity	**7.45%**	**0.65%**	**21.25%**	**0.80**	**4.95%**
Developed ex-U.S. Equity	*7.25%*	*0.75%*	*20.15%*	*0.75*	*4.75%*
Emerging Market Equity	*7.45%*	*0.55%*	*25.70%*	*0.82*	*4.95%*
Cash Equivalents	**2.75%**	**1.55%**	**0.90%**	**-0.06**	**0.25%**
Government 1-3 year Bonds	**3.80%**	**2.30%**	**2.30%**	**0.04**	**1.30%**
Core U.S. Fixed Income	**4.25%**	**2.50%**	**4.10%**	**0.02**	**1.75%**
TIPS	*4.00%*	*2.75%*	*5.30%*	*-0.07*	*1.50%*
Emerging Market Sovereign Debt	*5.85%*	*2.25%*	*10.65%*	*0.66*	*3.35%*
High Yield	*6.25%*	*2.35%*	*11.75%*	*0.76*	*3.75%*
Core Real Estate	5.75%	0.00%	14.20%	0.44	3.25%
REITs	**6.90%**	**0.70%**	**20.90%**	**0.79**	**4.40%**
Private Equity	8.50%	0.50%	27.60%	0.80	6.00%
Hedge Funds	5.55%	1.45%	8.45%	0.68	3.05%
Inflation	2.50%	0.25%			
70/30 Portfolio	**6.71%**	1.23%			

PCE Investment Policy is Based on Statute

- By statute, the DOR Commissioner is directed to:
  - Apply the prudent-investor rule.
  - Invest the assets of the fund considering the preservation of purchasing power over time.
  - Maximize the expected total return.

- Investment objectives and risk assessment:
  - PCE can adopt a high risk-tolerance since it has a long time-horizon and liquidity needs are manageable.
  - To maximize total expected return and consider the preservation of purchasing power, Treasury staff recommended targeting the level of risk of a 70% domestic equity, 30% core bond portfolio.

- The degree of asset smoothing impacts spending volatility.

- There can be a natural tension between current spending and the degree of forward expected inflation proofing, which can impact the preservation of purchasing power over time.

AY13: FY2023 PCE Endowment Investment Policy

AS 42.45.080 as amended, directs the commissioner to apply the prudent-investor rule and invest the assets of the fund considering preservation of the purchasing power of the fund over time while maximizing the expected total return from both income and appreciation.

Investment Topic	Proposed Policy	Current Policy
Investment Objective	Returns require relatively high exposure to principal loss in return for higher expected longer-term returns. Limited current income requirement. Long-term inflation protection expectation.	Changed
Risk Tolerance	High	No Change
Policy Risk/Loss Range	>10%	No Change
Time Horizon	Long	Intermediate
Asset Allocation	Broad U.S. Equity 39% ± 5%	32% ± 5%
	International Equity 25% ± 5%	20% ± 5%
	U.S. REITs 5% ± 3%	4% ± 3%
	Core U.S. Fixed Income 30% ± 5%	43% ± 5%
	**may include up to 7% in tactical fixed income*	
	Cash Equivalents 1% - 1%/+2%	1% - 1%/+2%
Expected Return - Long-Term	5.60%	5.00%
Risk - Standard Deviation	12.41%	10.12%
Probability of Loss - 1 Year	32.6%	31.6%
10% Probability of Annual Loss (10% cVaR)	16.2%	12.9%

The proposed policy is effective July 1, 2022:

Performance

Through December 31, 2022

Capital Market Performance Update

- Investment performance was challenging for both stocks and bonds in 2022 due to inflation and rising interest rates.
- Cash was one of the only investments with positive performance for the year.
- U.S. Fixed Income was down 13% and U.S. Equities were down 19%, which led to historically difficult conditions for balanced stock and bond portfolios.

Asset Mix	2022 Return
Cash Only	1.5%
U.S. Bonds Only	**-13.0%**
20% Stock/80%Bond	-14.2%
40% Stock/60%Bond	-15.5%
60% Stock/40%Bond	-16.7%
70% Stock/30%Bond	**-17.3%**
80% Stock/20%Bond	-18.0%
U.S. Stocks Only	**-19.2%**

- 2022 losses were concentrated in the first half of the year and markets rebounded modestly in the second half.

2018	2019	2020	2021	2022	2022-Half1	2022-Half2
Cash Equivalents 1.9%	Broad U.S. Equity 31.0%	Broad U.S. Equity 20.9%	REITs 41.3%	Cash Equivalents 1.5%	Cash Equivalents 0.1%	High Yield 3.5%
Core U.S. Fixed Income 0.0%	REITs 28.7%	TIPS 11.0%	Broad U.S. Equity 25.7%	High Yield (11.2%)	TIPS (8.9%)	International Equity 3.0%
TIPS (1.3%)	International Equity 21.5%	International Equity 10.7%	International Equity 7.8%	TIPS (11.8%)	Core U.S. Fixed Income (10.3%)	Broad U.S. Equity 2.4%
High Yield (2.1%)	High Yield 14.3%	Core U.S. Fixed Income 7.5%	TIPS 6.0%	Core U.S. Fixed Income (13.0%)	High Yield (14.2%)	Cash Equivalents 1.3%
REITs (4.0%)	Core U.S. Fixed Income 8.7%	High Yield 7.1%	High Yield 5.3%	International Equity (16.0%)	International Equity (18.4%)	Core U.S. Fixed Income (3.0%)
Broad U.S. Equity (5.2%)	TIPS 8.4%	Cash Equivalents 0.7%	Cash Equivalents 0.0%	Broad U.S. Equity (19.2%)	REITs (19.2%)	TIPS (3.2%)
International Equity (14.2%)	Cash Equivalents 2.3%	REITs (5.1%)	Core U.S. Fixed Income (1.5%)	REITs (24.9%)	Broad U.S. Equity (21.1%)	REITs (7.1%)

PCE Performance Through December 31, 2022

- Investment performance was challenging for both stocks and bonds in 2022 due to inflation and rising interest rates. The only asset class with positive performance was cash.
- PCE fund performance is driven by its long-term asset allocation to both stocks and bonds.
- The State's asset class building blocks have all performed within expectations with most providing modest excess returns.

12/31/2022 PCE Cumulative	3 Months	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years
AY13: PCE Endowment Fund	7.27%	0.72%	-14.95%	-0.61%	2.43%	4.86%	6.29%
Benchmark	7.15%	0.53%	-15.20%	-0.63%	2.42%	4.83%	6.15%
Excess Return	0.12%	0.19%	0.24%	0.01%	0.00%	0.02%	0.14%

DOR Commissioner's Report: Net Pool Performance for Month Ending 12/31/2022

Pool Performance (Net of Fee)	1 Month	3 Month	FYTD	1 Year	3 Year	5 Year	7 Year	10 Year
Broad Market Fixed Income Pool	-0.57%	2.20%	-2.51%	-12.24%	-2.30%	0.30%	1.15%	1.24%
Domestic Equity*	-5.86%	7.21%	2.45%	-19.08%	7.08%	8.79%		
Intermediate-term Fixed Income Pool	0.17%	0.85%						
Internally Managed REITs	-4.94%	4.17%	-7.07%	-24.86%				
International Equity*	-0.74%	14.24%	2.89%	-15.92%	0.10%	1.03%		
Short-term Fixed Income Pool	0.43%	0.95%	1.50%	1.60%	0.83%	1.39%	1.27%	0.96%
Tactical Bond Pool	-0.48%	2.74%	-0.03%					

Benchmark Performance	1 Month	3 Month	FYTD	1 Year	3 Year	5 Year	7 Year	10 Year
Broad Market Fixed Income Pool	-0.45%	1.87%	-2.97%	-13.01%	-2.71%	0.02%	0.89%	1.06%
Domestic Equity*	-5.86%	7.18%	2.40%	-19.21%	7.07%	8.79%		
Intermediate-term Fixed Income Pool	0.18%	0.73%						
Internally Managed REITs	-4.97%	4.14%	-7.14%	-24.95%				
International Equity*	-0.75%	14.29%	2.96%	-16.00%	0.07%	0.88%		
Short-term Fixed Income Pool	0.36%	0.84%	1.31%	1.46%	0.72%	1.26%	1.07%	0.76%
Tactical Bond Pool	-0.45%	1.87%	-2.97%					

Relative Performance (Net of Fee)	1 Month	3 Month	FYTD	1 Year	3 Year	5 Year	7 Year	10 Year
Broad Market Fixed Income Pool	-0.12%	0.32%	0.46%	0.77%	0.42%	0.27%	0.26%	0.18%
Domestic Equity*	0.00%	0.03%	0.05%	0.13%	0.01%	0.00%		
Intermediate-term Fixed Income Pool	-0.01%	0.12%						
Internally Managed REITs	0.03%	0.03%	0.07%	0.09%				
International Equity*	0.01%	-0.05%	-0.07%	0.09%	0.03%	0.14%		
Short-term Fixed Income Pool	0.07%	0.11%	0.19%	0.14%	0.10%	0.13%	0.20%	0.20%
Tactical Bond Pool	-0.03%	0.86%	2.94%					

PCE Performance Compared with Prior Asset Allocations

- By request, DOR has compared the returns of PCE to the returns that would have existed if several historical asset allocations had remained in place.
- Recent asset allocation changes:
  - Prior to 2020, the asset allocation was set in pursuit of a higher ~7% potential withdrawal rate.
  - Effective July 2020, the nominal return target was decreased to the 5% potential withdrawal rate.
  - Effective July 2021, the nominal return target remained at 5% and low bond yields necessitated an equity increase.
  - Effective July 2022, the prudent investor standard was in effect which called for maximizing return and the consideration of future purchasing power.

Portfolio	Stock/Bond	Annualized Returns Ending 12/31/2022		
		1 Year	2 Years	3 Years
7% Target Return - Pre-2020	68%/32%	-15.77%	-3.02%	2.50%
5% Target Return - July 2020	39%/61%	-14.06%	-4.60%	-0.64%
5% Target Return - July 2021	56%/44%	-15.27%	-4.69%	-0.71%
PCE Actual - July 2022 - Prudent Investor	**69%/31%**	**-14.95%**	**-4.55%**	**-0.61%**

- PCE with the July 2022 prudent investor change outperformed the asset allocation that was in effect prior to the change.
- The original 7% target portfolio had the worst performance in 2022, but the strongest performance over the past three years.
- The current PCE portfolio is very similar to the original 7% portfolio and DOR has a transparent process that is subject to independent review for all asset allocation changes.

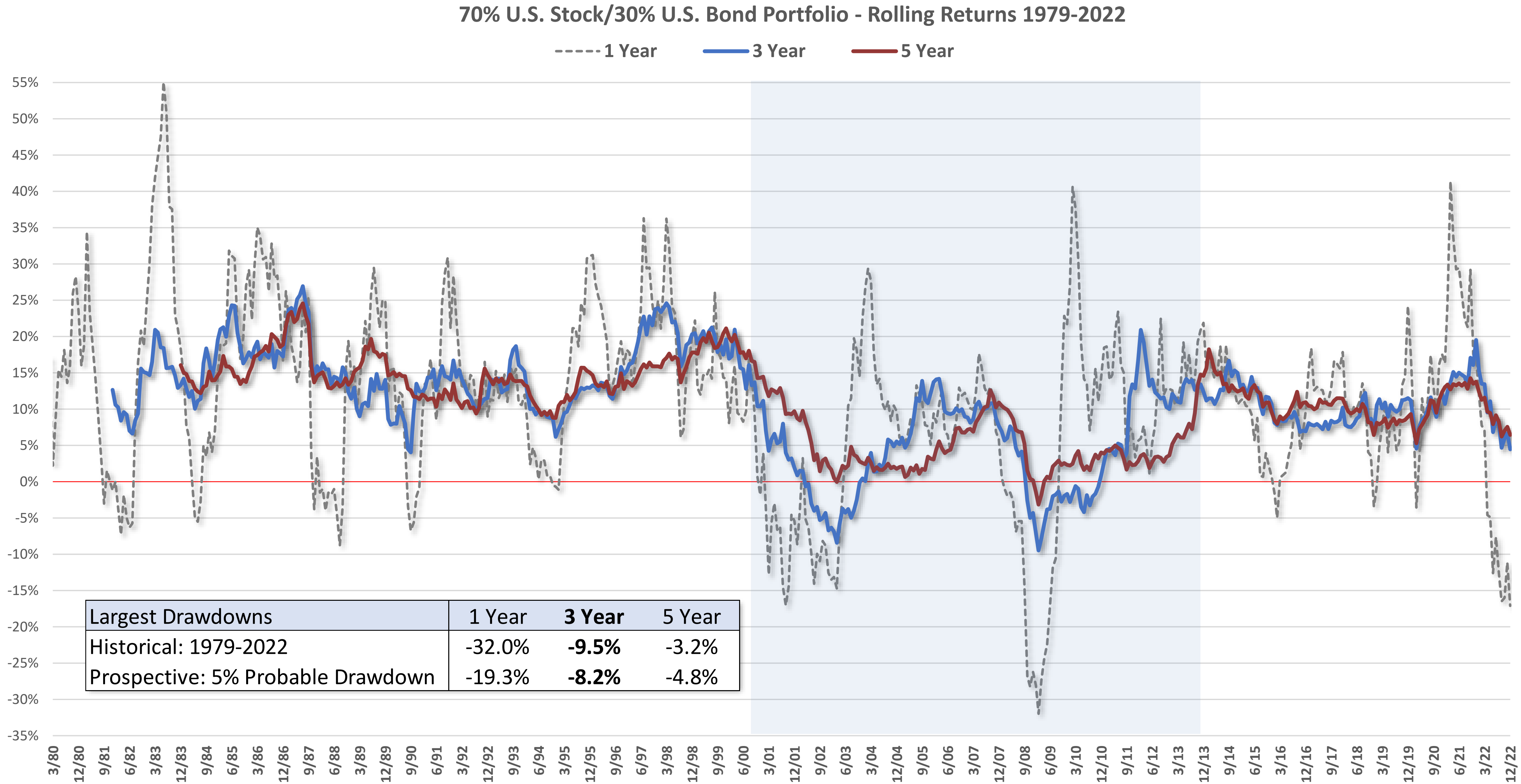
Asset Allocation,
Downside Risk, and
Spending Volatility

The Risk and Return Tradeoff

- The asset allocation is designed to use PCE's long time-horizon to achieve the statutory goals of prudently maximizing total return while considering the preservation of purchasing power over time.
- Based on preliminary FY24 capital market expectations, the 10-year expected return is 6.8% and the real return above 2.5% inflation is 4.3%.
- There is an expected tradeoff between spending/preserving purchasing power and losses/downside volatility:
  - Low levels of risk are unlikely to produce acceptable spending and/or to preserve purchasing power.
  - High levels of risk increase expected downside losses and spending volatility and test the bounds of prudence.
- Asset smoothing is the primary volatility reduction measure. Prospective downside investment risk as illustrated by the 5% probable return over 3 years is -8.2% and 5-year smoothing would reduce this to -4.8%.

Asset Allocation	PCE *FY24*	Other asset allocations from lowest to highest risk					
Equity	69%	0%	20%	40%	60%	80%	100%
Core Bonds	30%	0%	80%	60%	40%	20%	0%
Cash Equivalents	1%	100%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%
Return Statistics - 10 Year:							
Nominal Return - %	**6.8%**	2.7%	5.0%	5.8%	6.4%	6.9%	7.3%
Nominal Return - $MM	65	26	48	56	62	67	70
Real Return after 2.5% Inflation - %	**4.3%**	0.2%	2.5%	3.3%	3.9%	4.4%	4.8%
Real Return after 2.5% Inflation - $MM	41	2	24	32	38	43	46
Expected Inflation Proofing with 5% Spend	**73%**	0%	2%	32%	57%	78%	93%
Risk Statistics:							
Risk - Standard Deviation	12.7%	0.9%	4.9%	7.7%	11.0%	14.5%	18.1%
10% Probable Downside Return - 1 Year	**-15.4%**	1.2%	-3.6%	-7.7%	-12.8%	-18.5%	-24.3%
5% Probable Downside Return - 1 Year	-19.3%	0.9%	-5.1%	-10.0%	-16.2%	-22.9%	-29.9%
5% Probable Downside Return - 3 Years	**-8.2%**	1.7%	-0.8%	-3.3%	-6.6%	-10.3%	-14.2%
5% Probable Downside Return - 5 Years	-4.8%	1.9%	0.5%	-1.3%	-3.7%	-6.4%	-9.3%

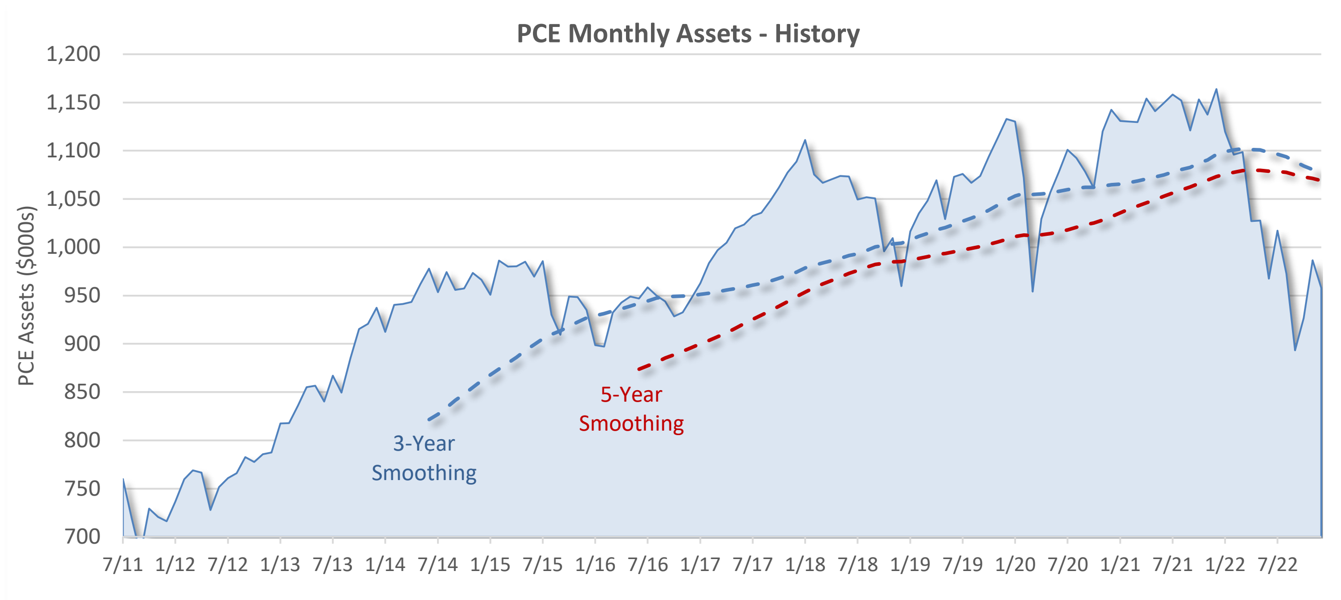
Hypothetical Historical Drawdowns of a 70% Stock / 30% Bond Portfolio

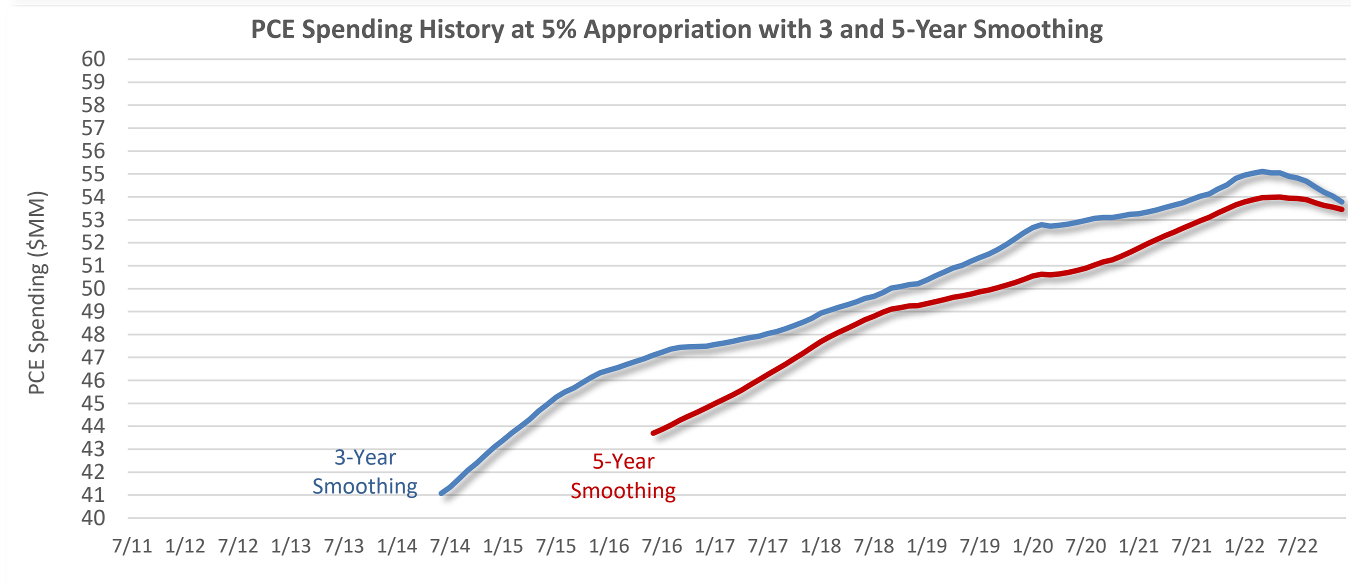


Largest Drawdowns	1 Year	**3 Year**	5 Year
Historical: 1979-2022	-32.0%	**-9.5%**	-3.2%
Prospective: 5% Probable Drawdown	-19.3%	**-8.2%**	-4.8%

Spending Volatility Reduction with Smoothing - History

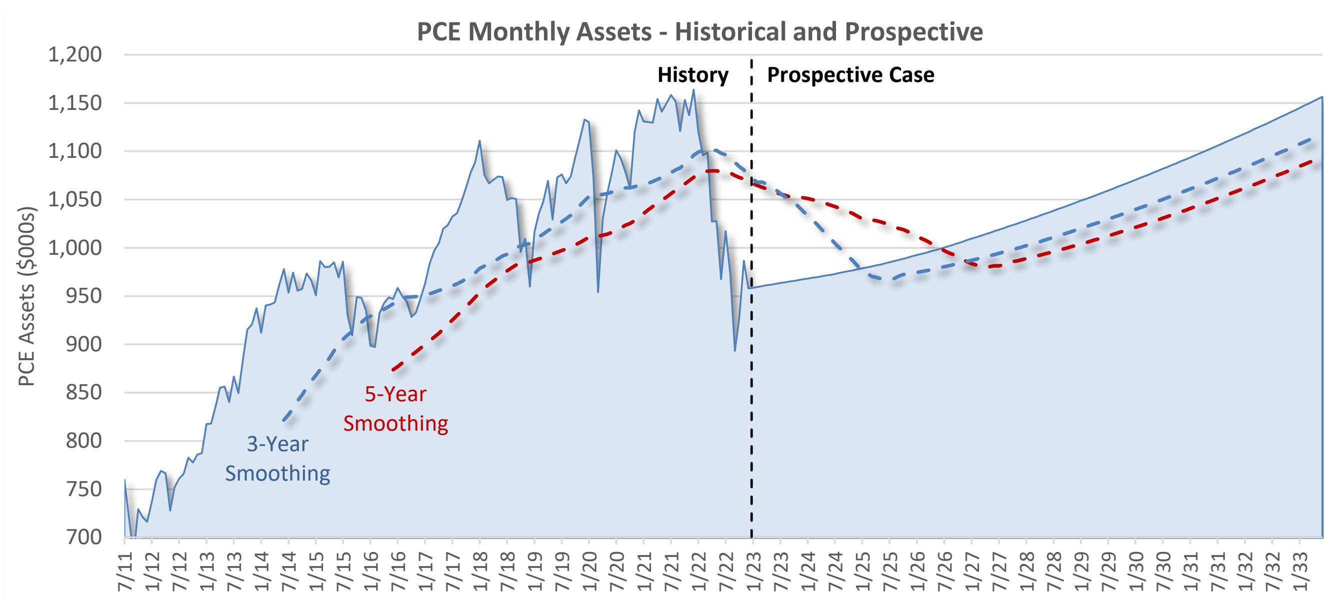
- 3-year smoothing does provide material volatility reduction and reacts more quickly to both good and bad markets.
- Historically, 3-year smoothing would have been in excess of 5-year smoothing due to a unique period of largely rising markets and PCE's spending profile.
- Both spending and market performance effect average asset levels and spending.
- Over a three-year period, spending evenly at ~5% lowers the average value of the fund by 7.5%.
- In a downside case that results in a 3-year 5% probable loss of 8.2%, the total reduction in the three-year average would be roughly 16% when combined with spending.

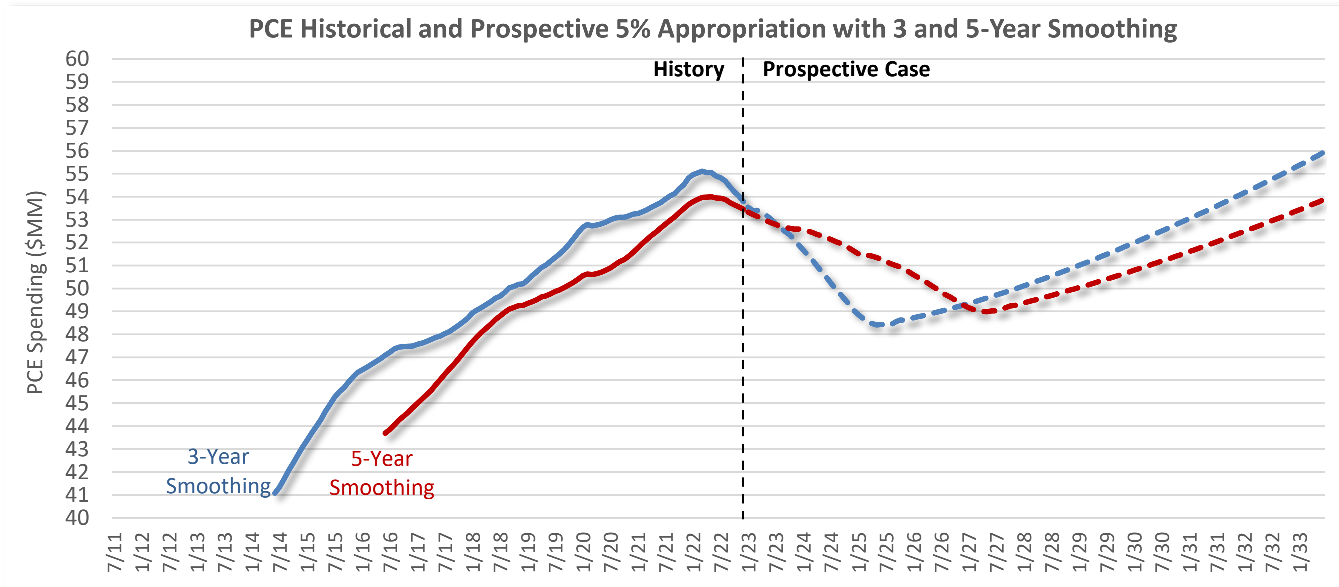




Prospective Spending with Smoothing – Median Forward Case

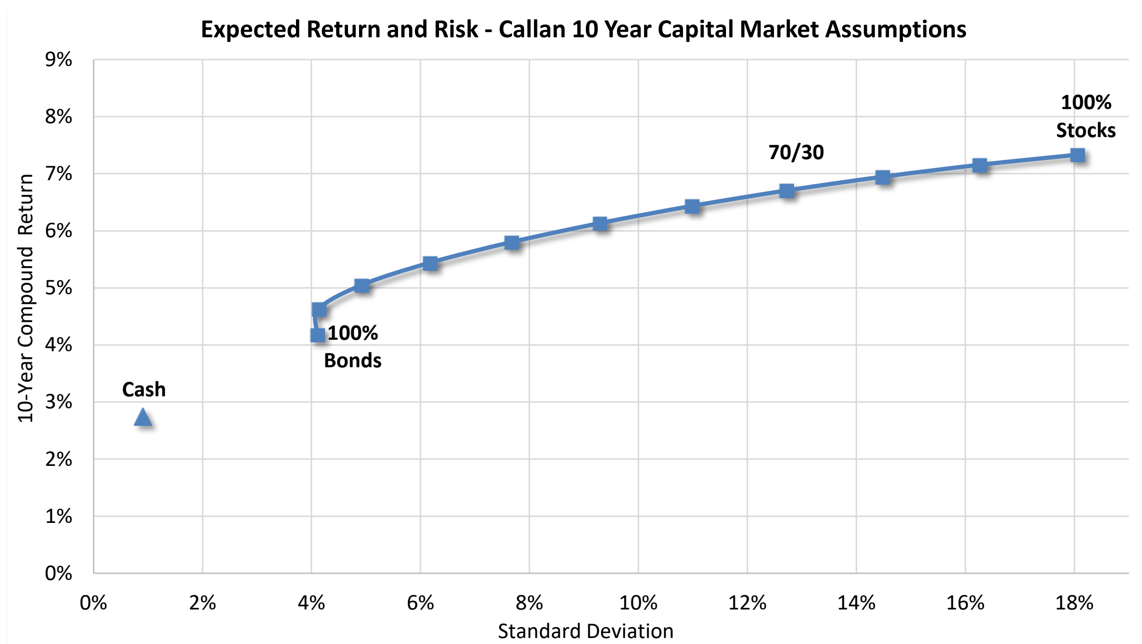
- DOR does not make short term projections on the direction of markets, however if PCE had median returns for the next 10 years and spent at the statutory maximum, PCE spending would decline to $48 million for the FY27 budget with 3-year smoothing and then rise back to current nominal levels.
- In this case, 5-year smoothing would be roughly $2 million higher for FY27 but would eventually be lower than 3-year smoothing.
- A 5-year smoothing period is a common volatility reduction measure for endowments and is often used in conjunction with spending controls.





Conclusion and Summary Observations

- The Department of Revenue has a comprehensive and transparent process to review and approve investment policies.
- The current asset allocation is designed to use PCE's long time-horizon to achieve the statutory goals of prudently maximizing total return while considering the preservation of purchasing power over time.
- 3-year asset smoothing dampens market volatility. A 5-year smoothing period would dampen market volatility further and is a common volatility reduction measure for endowments.
- Forward spending policies that can accommodate downside returns on top of asset reductions due to annual spending are recommended.
- Long term results for PCE, including a difficult 2022, have met or exceeded expectations and the current asset allocation positions the portfolio to best maximize total return and future purchasing power.



Questions?

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Appendix

PCE Statutory Investment Powers and Duties

PCE Statute 42.45.080

- AS 42.45.080(a) was amended such that the DOR Commissioner shall have the powers and duties under 37.10.071 and shall:

  “apply the prudent-investor rule when investing the fund; the "prudent-investor rule" as applied to investment activity of the fund means exercising the judgment and care under the circumstances then prevailing that an institutional investor of ordinary prudence, discretion, and intelligence exercises in the designation and management of large investments entrusted to it, not in regard to speculation, but in regard to the permanent disposition of funds, considering preservation of the purchasing power of the fund over time while maximizing the expected total return from both income and the appreciation of capital.”

The DOR Commissioner exercises investment powers & duties under AS 37.10.071

- Secure safe and adequate custodial facilities for assets; maintain accounting records in accordance with GAAP.
- Exercise the powers of an owner of these assets.
- Concentrate or diversify investments as appropriate.
- Delegate investment, custodial and depository authority to employees of the state and to external firms.
- Utilize consultants, advisors, custodians, investment services and legal counsel.
- Apply the Prudent Investor Rule and exercise duty in the sole financial best interest of the beneficiaries.

Prudent Investor Rule (AS 13.36.230–290)

- Consider the purposes and requirements of the trust.
- The risk and return objectives should be reasonably suited to the trust.
- Investment decisions should be evaluated in the context of the portfolio as a whole.
- Make a reasonable effort to verify the facts relevant to the investment and management of assets.
- Diversify and evaluate investments in the context of the whole portfolio.
- Prudently delegate and periodically review actions to monitor performance and compliance.
- Incur reasonable and appropriate costs.

Asset Allocation Comparison – PCE, ARMB, and APFC

- State funds only invest in public stocks and bonds and do not have alternative investments:
  – State funds were not allowed to purchase unregistered investments, including alternative investments, prior to a late 2020 change in the SEC's definition of accredited investor.
  – Even with the SEC change, illiquid investments are still problematic for State funds subject to annual budgetary and policy changes since many alternative investments take years to sell without a significant discount.
- Both the ARMB retirement funds and APFC are not subject to these considerations and have significant exposure to less liquid alternative investments.
- PCE has both lower expected risk and lower expected return than both the ARMB and APFC.
- Adjusting a public markets asset allocation like PCEs to the same level of standard deviation as the ARMB as an exercise to make them more comparable results in a portfolio that has an expected return of 6.0% versus 6.3% for the ARMB.

Asset Class	**PCE**	**"PCE" with ARMB 13.9% Risk**	**ARMB**	**APFC**
Public Equity	69%	77%	45%	36%
Fixed Income/Cash	31%	23%	19%	22%
Alternative Investments	0%	0%	36%	42%
Private Equity			*14%*	*17%*
Real Assets			*14%*	*9%*
Private Income/Other			*8%*	*16%*
Total	100%	100%	100%	100%
Expected 10-Year Return	5.6%	6.0%	6.3%	6.2%
Standard Deviation	12.4%	**13.9%**	**13.9%**	13.3%

Note: Uses 2022 capital market assumptions for comparability.