

Investment Management Annual Update

Harry Papp, Chairman, Investment Committee
Mark Steed, Chief Investment Officer



ANNUAL EMPLOYER-LOCAL BOARD CONFERENCE

MARCH 1, 2023



Harry Papp – Trustee

*Vice Chairman PSPRS Board of Trustees
Chairman of the Investment Committee*

Managing partner of L. Roy Papp & Associates, LLP

- 40 years experience portfolio management and security analysis

Master of Business Administration in Finance and Accounting, University of Chicago

Board service includes:

- Blue Cross/Blue Shield of Arizona
- Phoenix Zoo
- ASU Foundation
- Arizona State Board of Investment

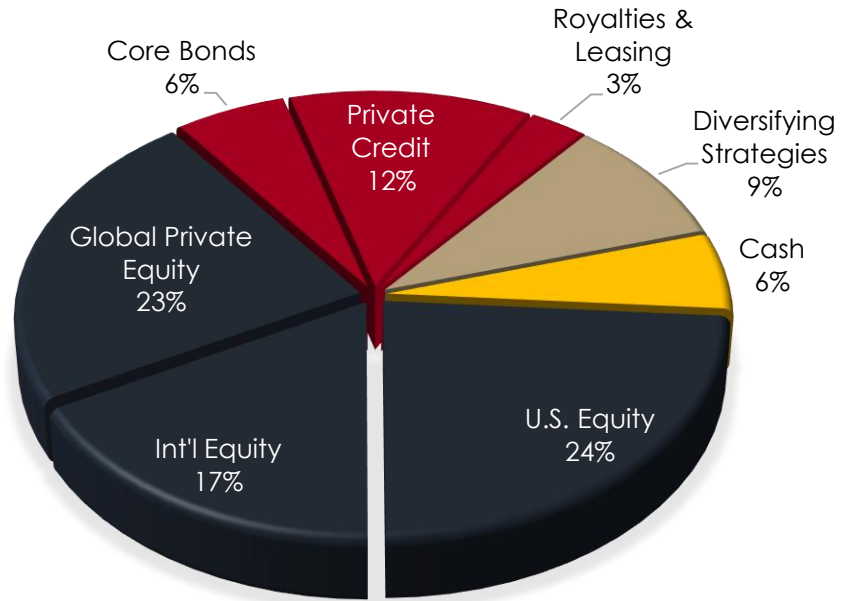
Executive Summary



- Performance
 - Modest loss of -1.85%, net of fees, for FY '22
 - Strong relative performance (top 11%) amongst peer group
 - Follows record-breaking returns of 27% in FY '21
- People
 - Investment Committee is fully allocated with no vacant seats
 - Investment team is fully staffed with no vacant positions
- Portfolio
 - Portfolio volatility is in-line with expectations
 - Substantial liquidity (~12%) in cash and Treasury Bills
 - Portfolio well positioned to capitalize on current dislocations
- Processes
 - New technology platform referenced last year is fully integrated for front, middle and back-office functions
- Expenses
 - Continues downward trend on an absolute basis and as a percentage of assets
 - Consistent with portfolio changes toward less expensive investments and growing economies of scale
- Outlook
 - From last year's annual meeting:
"Inflationary pressures combined with security prices that are at all-time highs means near-term return expectations are modest"
 - Recent market correction means long-run expectations are better

Asset Allocation

AS OF 2/24/2023



Capital Appreciation

Translates growth in the economy into growth in the trust's assets and includes:

- U.S. public equity
- International public equity
- Private equity
- Opportunistic real estate
- High yield bonds
- Emerging market equity
- Emerging market bonds

Contractual Income

Refers to investments where a contractual return is driving returns and includes:

- U.S. treasuries
- IG bonds
- Private lending
- Leasing
- Royalties

Diversifying Strategies

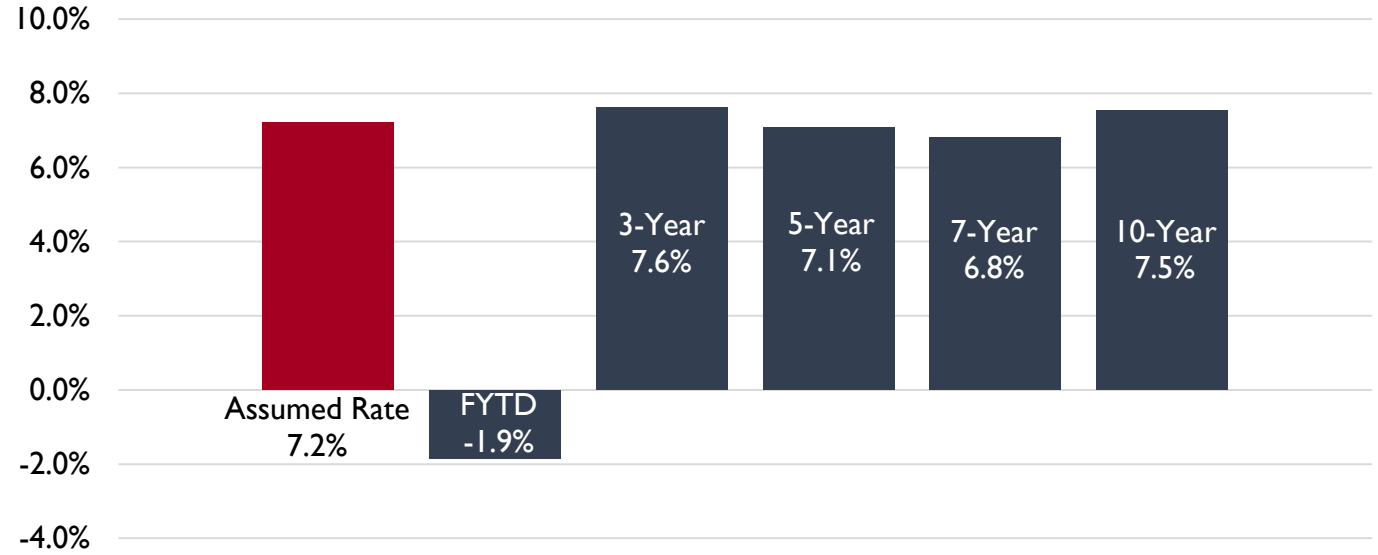
Investments designed to generate positive returns over time, with little to no correlation to traditional asset classes. Examples include:

- Global tactical asset allocation
- Long/short equity
- Merger arbitrage

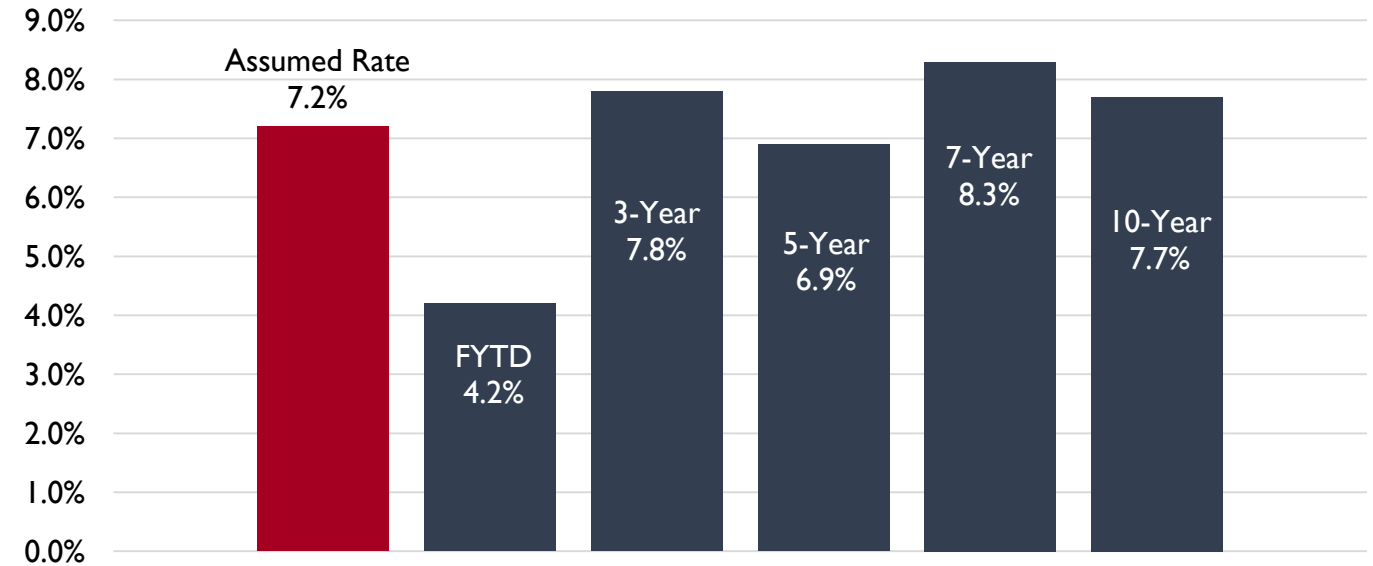
Portfolio Performance

- Performance in-line with actuarial assumption of 7.2%
- Reported on net of fee basis
- Portfolio designed to maximize performance within policy risk limits

Returns for the Trust as of 6/30/2022, Net of Fees



Returns for the Trust as of 1/31/2023, Gross of Fees (about 0.20% – 0.30%)



Investment Management & Governance



Investment Committee

Primarily tasked with oversight of asset allocation, investment policies and compliance.

Board Fiduciary Consultant – NEPC

- Works with chief investment officer but also reports directly to the investment committee and the PSPRS Board of Trustees.
- Presents quarterly performance and return attribution.
- Provides portfolio oversight and monitors compliance with the investment policy.
- Works with staff, the system's actuary and the investment committee to set asset allocation and long-term return expectations.

Investment Staff

Source, monitor and manage the day-to-day investment activity.

Investment Management & Governance



Specialty Consultant

Function as an extension of staff to identify promising alternative investments and provide middle-office support as needed.

- **Albourne Partners**, Alternative Investments. Albourne advises more than 40 public pension funds across a variety of alternative investments. Based in London, Albourne has eight offices from San Francisco to Singapore.
- **ORG Real Property**, Real Estate. ORG is a dedicated real estate advisory. In this capacity, the firm supports PSPRS' legacy real estate investments.

Investment Management & Governance



Investment Committee

- Primarily tasked with oversight of asset allocation and investment policy
- Monthly meetings are open to the public and streamed online

Key Committee Presentations

- Portfolio performance – Monthly, quarterly, FYTD, CYTD, 1-yr, 3-yr, 5-yr, 7-yr and 10-yr performance broken down by asset class
- Risk analysis – Volatility decomposition, factor analysis, scenario and stress-testing
- Global financial market developments – review of major market (stocks, bonds, commodities and currencies) developments relative to historical central tendencies as well as an analysis of investor expectations about growth and inflation
- Quarterly. Detailed performance review by independent fiduciary consultant
- Quarterly. Discussion about trends in institutional asset management
- Annually. Review of portfolio asset allocation and assumed earnings rate

Investment Management & Governance

Key Investment Committee Projects in FY '22

1. Investment Book of Record

- A new concept amongst institutional investors, the IBOR upgrades middle and back-office investment functions
- Uses machine learning to eliminate manual processes, search and organize documents online and improve portfolio analytics using programs designed especially for multi asset-class portfolios
- Project will conclude 3/31/23 (manageable three-month delay relative to last year's estimate of 12/31/22)

2. RFP for external consultants

- Completed RFP for alternative investment consultants that reduced the number of external advisors from three to one

Projects in FY '23

1. Review of Cancer Insurance Plan asset allocation and cash flows
2. Review of Trust asset allocation and investment policy statement

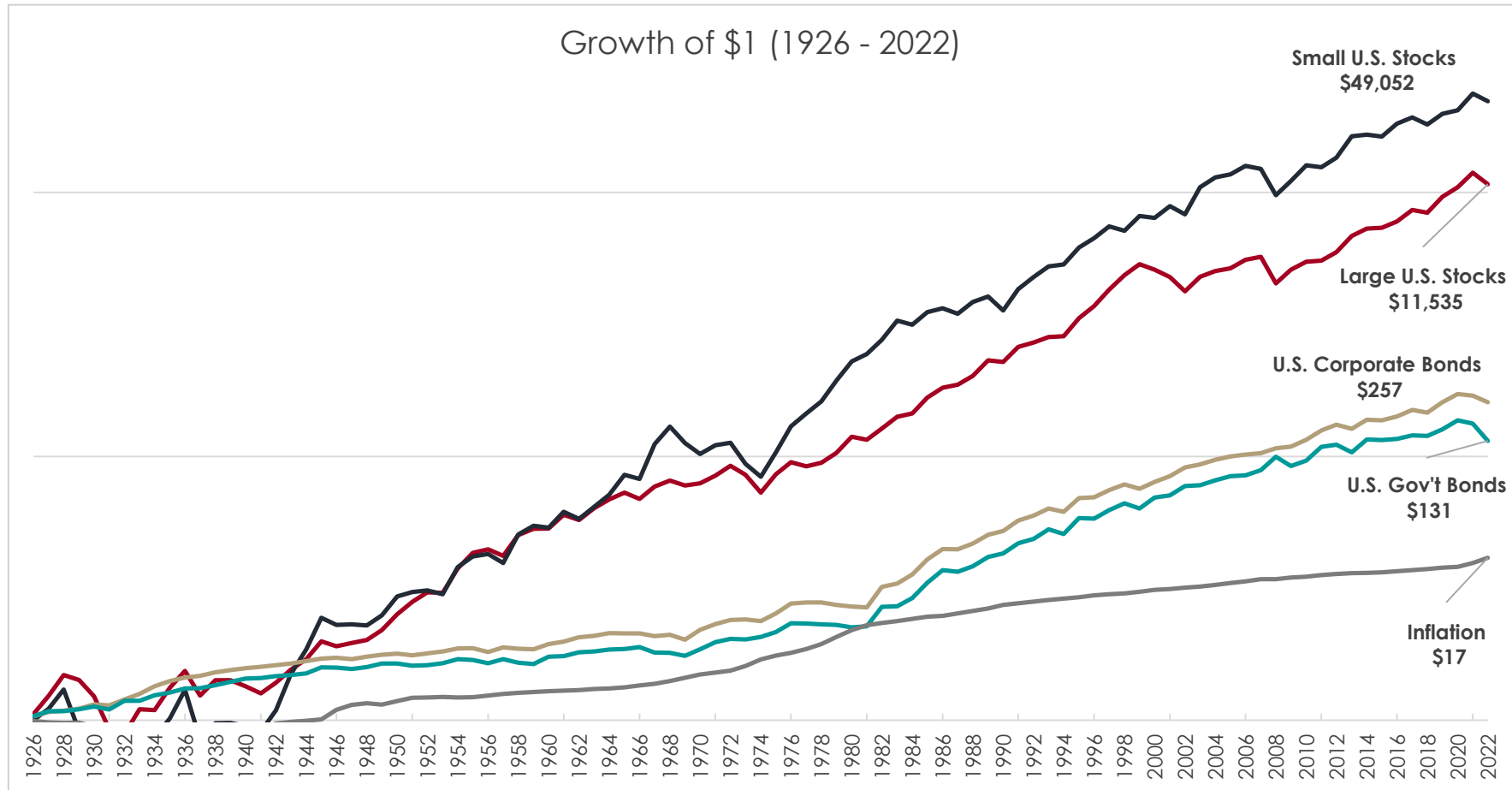
Outlook and long-term return expectations

- Most asset classes have higher expected returns relative to last year after the 2022 market correction
- Going forward, returns for major asset classes are forecasted to be in-line with central tendencies
- Near-term inflationary pressures are expected to weigh heavily on security prices

10-year Asset Class Return Expectations as of 12/31/2022		
Asset Class	NEPC*	JPMorgan
U.S. Large-Cap Equities	5.4%	7.9%
U.S. Private Equity	9.2%	9.9%
Private Lending	8.8%	7.8%
EM Equities	9.6%	10.1%
U.S. Real Assets	6.6%	6.3%
U.S. Gov't Bonds	4.2%	4.0%
Int'l Equities	5.6%	7.9%

*PSPRS Trust's independent fiduciary consultant

Historical Returns of Major Asset Classes





Mark Steed – Chief Investment Officer

Master of Science, Predictive Analytics,
Northwestern

Asset Allocator of the Year, Institutional
Investor

Rising Star, Money Management

Previous portfolio experience:

- Public equity
- Private equity
- Venture capital
- Real estate
- Fixed income
- Private lending

PSPRS Trust Investment Policy

The Trust's Investment Policy Statement identifies the following priorities for investment staff:

1. Provide a return on plan assets that meet or exceeds the Assumed Earnings Rate (currently 7.2% over 7-years)
2. Ensure Trust assets are available to meet current and future obligations
3. Manage performance volatility for a given return target
4. Minimize total expenses through negotiation and operational efficiency

PSPRS Trust Investment Policy

1. Provide a return on plan assets that meets or exceeds the Assumed Earnings Rate (currently 7.2% over 7-years)
 - Note that a longer horizon, 20-30 years, is crucial in matching the System's actual obligations in terms of cash-flows. Staff and Trustees track both short and long-term horizons to manage near-term expectations and contribution rate volatility on the one hand and asset efficiency on the other
2. Ensure Trust assets are available to meet current and future obligations
 - The Trust is cash-flow positive and has substantial liquidity
 - Modest portfolio demands of approximately 1%-3% are required at longer time horizons and are easily dealt with given the portfolio's liquidity

PSPRS Trust Investment Policy

3. Manage performance volatility for a given return target
 - The Trust has one of the best risk-adjusted returns in the country

Period	Sharpe Ratio	Sortino Ratio
3-Year	Top 10%	Top 8%
5-Year	Top 12%	Top 11%

4. Minimize total expenses through negotiation and operational efficiency
 - Portfolio repositioning towards more cost effective investments is primary driver for recent savings
 - In-house investment management is also a contributor

	FY '22	FY '21	FY '20
Investment Expense	\$30.5m	\$67.7m	\$75.5m
Assets	\$17.7bln	\$15.6bln	\$10.8bln

PEER RANKINGS

- Current CIO began September of 2018
- Portfolio shows marked improvement over all major time horizons owing to:
 - More efficient asset mix aligned with system cash-flows
 - Upgraded performance within asset classes
 - Cost management

	1-Year	3-Year	5-Year	7-Year	10-Year
as of 9/30/2018	48 th	97 th	60 th	87 th	89 th
as of 12/31/2022	11 th	14 th	19 th	46 th	46 th