DAVID Y. IGE
GOVERNOR

THOMAS WILLIAMS
EXECUTIVE DIRECTOR

KANOE MARGOL
DEPUTY EXECUTIVE DIRECTOR

STATE OF HAWAII
EMPLOYEES' RETIREMENT SYSTEM

October 21, 2022

ADDENDUM NO. 2
Employees' Retirement System of the State of Hawaii
Request for Proposals
Investment Consultant Services
RFP 2022-05
Issued September 20, 2022

OFFERORS:

In accordance with Section VI. Of the Request for Proposals (RFP), the Employees' Retirement System of the State of Hawaii (ERS) is providing the following responses to questions from potential offerors:

1. QUESTION: Can we submit our hard copy on the due date? Or do they require the hard copy in person on the due date?

    RESPONSE: Please see Page 3 of 39, Item VII, Submission of Proposals for requirements for this solicitation.

2. QUESTION: What is the current fee paid to your existing general consultant Meketa?

    RESPONSE:

Year 1:	$399,500
Year 2:	$407,500
Year 3:	$413,500
Year 4:	$424,000
Year 5:	$432,000
Year 6:	$441,000

3. QUESTION: Could you provide a copy of the most recent ACFR.

RESPONSE: Current and past ACFR can be found on the ERS website: https://ers.ehawaii.gov/resources/financials

4. QUESTION: Could you provide a 2Q22 Detailed Performance Report that shows individual managers and mandates versus their respective benchmarks with cumulative and since inception returns.

RESPONSE: Please see Exhibit A

5. QUESTION: Being a closely-held Limited Liability Company (LLC), it has been our policy since the inception of the firm not to disclose our financial data unless and until our confidentiality agreement has been signed. We have provided a copy of the agreement and will supply our financial data upon receipt of a signed document.

RESPONSE: The ERS will not sign confidentiality agreements in connection with the RFP. Confidentiality of responses to the RFP will be handled consistent with the Hawaii Public Procurement Code (chapter 103D, Hawaii Revised Statutes) and Hawaii's public records law (chapter 92F, Hawaii Revised Statutes). See, section 103D-105, Hawaii Revised Statutes. Financial statements for closely held companies may be marked confidential pursuant to III on page 11 of the RFP. The ERS will treat such financial statements as confidential and, if a copy of the financial statements is requested pursuant to a public records request, the ERS will assert the appropriate exception to disclosure to the extent permitted by law. Proposals submitted without the required financial statement will not be considered.

6. QUESTION: How much is your current consulting firm being compensated annually to provide investment consulting service to ERS? Are there project-related fees associated with the current arrangement that are not part of the base fee?

RESPONSE: See response to question #2 above for the current general consultant annual fees. There are no project-related fees associated with the current arrangement.

7. QUESTION: When was the last time ERS performed a liability-based asset allocation study? Could you please share it with us?

RESPONSE: 2019. Please see – Exhibit B

8. QUESTION: Do you anticipate making any changes to the asset allocation of the fund? Are asset allocation changes typically made in concert with a new asset-liability study?

RESPONSE: No material asset allocation changes are anticipated. Yes, material asset allocation changes are typically made in concert with a new asset-liability study.

9. QUESTION: What investment issues are under current consideration by the Board of Trustees? What strategic decisions are currently pending that the new consultant, should you determine to make a change, would likely become involved with?

RESPONSE: There are no investment issues under current consideration by the Board of Trustees. The Board of Trustees will be reviewing and approving an asset-allocation study in the first half of 2023.

10. QUESTION: To what extent does your current general investment consultant support your investment staff's manager research efforts? Does the current consultant frequently evaluate new strategies at the request of the ERS?

RESPONSE: The current general consultant provides manager research upon request. The current general consultant does evaluate strategies at ERS's request.

11. QUESTION: We can't locate "Attachment B" that you reference? "Attachment A is a sample contract used by the ERS for investment consulting services. In submitting a proposal, the offeror will be deemed to have agreed to each provision set forth in Attachment B unless the offeror identifies the provision to which objection is made and submits alternative language." Can you direct us to this attachment?

RESPONSE: Please see Addendum No. 1, Page 6 of 39 (revised 10/21/2022).

12. QUESTION: You have both a WORD and EXCEL RFP Questionnaire. Are we required to submit both?

RESPONSE: Please complete and submit both versions.

13. QUESTION: As a private company, we generally do not share our detailed financial statements with the public. Would ERS be willing to execute an NDA to receive these financials? If so, we can execute an NDA and send the information along with our proposal response.

RESPONSE: Please see response to Question No. 5.

14. QUESTION: Are the Board of Trustees and Investment Committee meeting dates for 2023 available? If so, can you please provide them?

RESPONSE: The meeting dates for 2023 have not been finalized. This is the link to our website where they will be posted: ERS | Board of Trustees (ehawaii.gov). The dates are tentative and subject to change. General consultant is required to attend all Investment Committee meeting and four Board of Trustees meetings.

15. QUESTION: Could you clarify if all meeting attendance by the GC is expected to be in person, or would virtual attendance be acceptable in certain instances?

RESPONSE: Unless advised otherwise, the general consultant is expected to attend meetings in person.

16. QUESTION: Can you please provide the current fee being paid for investment consulting services?

RESPONSE:

Year 1:	$399,500
Year 2:	$407,500
Year 3:	$413,500
Year 4:	$424,000
Year 5:	$432,000
Year 6:	$441,000

17. QUESTION: Can you please advise how many full-time employees are dedicated to working on the ERS' Investment Portfolio?

RESPONSE: Currently, a staff of seven investment professionals are dedicated to working on the investment portfolio.

18. QUESTION: Regarding consultant attendance at Board and Investment Committee meetings– To what extent is mix attendance (i.e., a combination of in-person and video conference participation) permitted?

RESPONSE: Unless advised otherwise, the general consultant is expected to attend meetings in person.

19. QUESTION: When does ERS expect to conduct its next custodian bank search?

RESPONSE: The contract terminates on June 30, 2024 and may be extended at the state's option on the same terms and conditions in effect as of June 30, 2024 up to December 31, 2024.

Thomas Williams
Executive Director

EXHIBIT A

MEKETA

Asset Class Performance Summary

	Market Value	% of Portfolio	QTD	Rank	1 Yr	Rank	3 Yrs	Rank	5 Yrs	Rank
Traditional Equity	**4,511,094,352**	**100.0**	**-15.1**	-	**-16.8**	-	**6.6**	-	**7.4**	-
Traditional Equity Benchmark [1]			*-15.8*	*-*	*-16.5*	*-*	*6.0*	*-*	*6.7*	*-*
BlackRock Alpha Tilt	547,726,715	12.1	-14.7	45	-14.6	48	6.7	52	7.8	44
Legal & General	796,452,915	17.7	-15.5	60	-15.7	55	6.5	54	7.4	54
Alliance Bernstein	649,472,631	14.4	-14.7	45	-18.9	78	-	-	-	-
Longview	731,535,272	16.2	-12.2	22	-8.8	17	6.5	55	-	-
Wellington (Mid-Large Cap)	646,966,188	14.3	-15.7	63	-18.7	77	-	-	-	-
MSCI ACWI			*-15.7*	*63*	*-15.8*	*56*	*6.2*	*60*	*7.0*	*62*
Wasatch	451,083,858	10.0	-22.9	96	-29.5	90	7.6	28	-	-
Wellington (Small Cap)	477,168,472	10.6	-16.5	57	-16.5	27	6.2	45	6.2	46
MSCI ACWI Small Cap			*-17.1*	*61*	*-21.8*	*59*	*4.4*	*74*	*4.7*	*72*
Hillhouse China A Shares	210,688,301	4.7	-	-	-	-	-	-	-	-
MSCI China A			*1.6*	*-*	*-14.0*	*-*	*10.6*	*-*	*5.1*	*-*

MEKETA

State of Hawaii Employees' Retirement System (HIERS)

Public Growth | As of June 30, 2022

Asset Class Performance Summary

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs
Stabilized Equity	1,790,474,708	100.0	-10.6	-11.8	2.2	3.3
Stabilized Equity Benchmark [1]			*-9.3*	*-6.0*	*3.2*	*4.3*
Gateway	429,727,968	24.0	-9.5	-10.1	3.1	3.4
Neuberger Berman	280,211,681	15.7	-7.9	-9.1	3.3	3.4
Global Put-Write Custom Benchmark			*-7.6*	*-4.6*	*4.0*	*3.7*
Lord Abbett	340,947,083	19.0	-15.5	-20.7	--	--
ICE BofA All US Convertibles TR			*-15.7*	*-20.6*	*--*	*--*
Robeco	374,561,468	20.9	-9.3	-3.5	4.1	5.5
TOBAM	365,026,509	20.4	-10.7	-19.3	1.9	3.5
MSCI All Country World Minimum Volatility (Net)			*-9.3*	*-6.4*	*2.9*	*5.7*

MEKETA

State of Hawaii Employees' Retirement System (HIERS)

Public Growth | As of June 30, 2022

Asset Class Performance Summary

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs
Global Credit	**1,294,587,466**	**100.0**	**-2.0**	**0.8**	**6.8**	**5.8**
Global Credit Benchmark [1]			*-5.4*	*-5.8*	*2.1*	*3.1*
Carval Credit	238,352,096	18.4	-0.5	3.0	--	--
HPS Credit	570,814,893	44.1	-4.3	-3.4	--	--
Lafayette Square USA	5,187,500	0.4	--	--	--	--
OHA Tactical	113,304,676	8.8	1.6	11.0	--	--
50% BBgBC Glb HY Hdg +1%/50% S&P/LSTA Lev Loan +1% 1mo Lag			*-3.2*	*-3.9*	*3.1*	*3.8*
PIMCO Private Income Fund	98,798,101	7.6	1.2	--	--	--
SilverRock Credit	268,130,200	20.7	-0.7	5.9	--	--
50% BBgBC Glb HY Hdg +1%/50% S&P/LSTA Lev Loan +1% 3mo Lag			*-2.5*	*0.8*	*4.5*	*4.8*

MEKETA

State of Hawaii Employees' Retirement System (HIERS)

Private Growth | As of June 30, 2022

Asset Class Performance Summary

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs
Private Growth	4,089,143,640	100.0	2.1	29.6	26.1	22.2
Private Growth Benchmark			*-4.9*	*8.3*	*15.6*	*13.4*
Hamilton Lane	3,954,153,589	96.7	1.8	29.5	26.2	22.2
HITIP Stafford	13,457,425	0.3	-9.6	-2.5	-4.3	5.7
HITIP II Stafford	40,983,488	1.0	11.1	43.8	23.2	21.2
HITIP III Stafford	18,174,513	0.4	6.7	26.3	--	--
Other Private Equity Funds	62,374,626	1.5	18.9	40.1	24.8	23.3

[1] Benchmark definitions are provided in the Appendix.
Performance shown is a mix of gross and net of fees returns.

MEKETA INVESTMENT GROUP

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State of Hawaii Employees' Retirement System (HIERS)

Real Assets | As of June 30, 2022

Asset Class Performance Summary

	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs
Real Assets	**3,255,748,859**	**100.0**	**5.7**	**15.4**	**10.4**	**9.3**
Real Assets Benchmark			*6.1*	*22.9*	*9.6*	*8.5*
Core Real Estate	1,151,319,268	35.4	15.0	23.3	14.2	10.5
NCREIF ODCE 1Qtr Lag			*7.1*	*27.3*	*10.3*	*8.9*
NonCore Real Estate	**902,366,438**	**27.7**	**5.4**	**20.0**	**11.2**	**10.8**
NCREIF ODCE +1% Qtr Lag			*7.4*	*28.5*	*11.3*	*9.9*
Infrastructure	**405,882,484**	**12.5**	**1.1**	**7.0**	**15.6**	**14.9**
CPI + 4%			*3.7*	*13.3*	*9.2*	*8.1*
Agriculture	**31,646,759**	**1.0**	**1.4**	**--**	**--**	**--**
NCREIF Farmland 1Qtr Lag			*2.6*	*--*	*--*	*--*
Timber	188,105,997	5.8	10.1	11.1	2.5	4.2
NCREIF Timberland 1Qtr Lag			*3.2*	*11.8*	*4.7*	*4.1*
Other Real Assets	576,427,912	17.7	-3.7	--	--	--

[1] Benchmark definitions are provided in the Appendix. Prior to 7/1/20, the Real Assets benchmark is not fully relevant to the reconstituted composite.
Performance shown is a mix of gross and net of fees returns.

MEKETA

State of Hawaii Employees' Retirement System (HIERS)

Liquid Defensive | As of June 30, 2022

Asset Class Performance Summary	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs
Liquid Defensive	**3,057,241,471**	**100.0**	**11.7**	**17.2**	**9.5**	**6.5**
Liquid Defensive Benchmark [1]			*1.3*	*2.7*	*4.7*	*3.4*
Defensive Return Capture	**921,024,921**	**30.1**	**19.6**	**22.6**	--	--
AHL Defensive	208,575,311	6.8	-1.6	-10.6	--	--
P/E Global Macro	295,366,275	9.7	28.9	51.3	5.5	6.3
36 South Cap Adv	186,934,689	6.1	29.7	--	--	--
Saba	230,148,646	7.5	18.2	--	--	--
90-day T-Bill +2.5% [2]			*0.7*	*2.7*	*3.0*	*3.6*
Systematic Trend Following	**1,427,397,103**	**46.7**	**18.8**	**38.2**	**19.3**	**11.6**
AlphaSimplex	312,845,333	10.2	28.3	60.3	30.9	--
Aspect	322,237,815	10.5	15.7	45.8	17.3	10.8
Crabel Advanced Trend	483,467,310	15.8	11.0	20.2	17.4	11.4
Mount Lucas	308,846,645	10.1	19.1	31.0	15.8	--
MLM Global Index LT 15V			*14.7*	*23.6*	*12.6*	*6.7*
Treasury Agency Duration	**708,819,448**	**23.2**	**-6.5**	**-10.1**	**2.8**	**3.5**
Treasury Agency Duration Benchmark [3]			*-7.4*	*-13.1*	*0.9*	*2.9*
Bank of Hawaii	176,022,727	5.8	-2.4	-6.9	-0.3	--
Bloomberg US Intermediate Agg ex Credit			*-2.7*	*-7.6*	*-0.8*	--
First Hawaiian Bank	176,719,411	5.8	-2.4	-6.6	-0.5	0.8
Bloomberg US Intermediate Agg ex-Credit (Blended)			*-2.7*	*-7.6*	*-0.8*	*0.7*
SLC Management Treasury	356,077,309	11.6	-11.6	-14.5	--	--
Long Treasury Benchmark [3]			*-11.9*	*-15.2*	*-0.8*	*1.8*

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State of Hawaii Employees' Retirement System (HIERS)

Liquid Diversifying | As of June 30, 2022

Asset Class Performance Summary						
	Market Value	% of Portfolio	QTD	1 Yr	3 Yrs	5 Yrs
Liquid Diversifying	2,517,153,173	100.0	4.1	6.7	3.4	7.7
Liquid Diversifying Benchmark			0.7	2.7	3.1	4.5
Alternative Return Capture	1,181,799,211	46.9	11.4	16.8	6.6	9.7
Brevan Howard Alt Ret	345,791,396	13.7	7.9	--	--	--
Credit Suisse Alt Ret	216,273,065	8.6	12.2	--	--	--
Graham Quant Macro	411,604,752	16.4	16.6	34.0	14.5	23.2
Lombard Odier	208,129,997	8.3	4.8	5.3	-2.5	--
90 Day T-Bill +2.5%			0.7	2.7	3.1	4.5
Relative Value Arbitrage	1,335,348,642	53.0	-1.8	-1.9	--	--
Aequim Arbitrage	57,778,742	2.3	-1.7	2.9	--	--
Aequim Relative Value Arbitrage	230,043,025	9.1	-3.8	5.4	--	--
Aristeia Relative Value Arbitrage	301,849,487	12.0	1.2	4.6	--	--
Monashee Relative Value Arbitrage	231,248,585	9.2	1.1	-12.7	--	--
Shaolin Relative Value Arbitrage	266,773,412	10.6	-6.1	-2.7	--	--
UBS O'Connor	247,655,391	9.8	-2.3	--	--	--
90 Day T-Bill +2.5%			0.7	2.7	3.1	4.5

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State of Hawaii Employees' Retirement System (HIERS)

Illiquid Diversifying | As of June 30, 2022

Asset Class Performance Summary

	Market Value	% of Portfolio	QTD	1 Yr
Illiquid Diversifying	**939,643,394**	**100.0**	**2.1**	**2.1**
Illiquid Diversifying Benchmark			*0.1*	*3.1*
Idiosyncratic Return Capture	**511,091,828**	**54.4**	**0.3**	**3.8**
Co-Investment/Niche	349,111,371	37.2	-1.7	--
BlackStone Mauna	275,843,912	29.4	-1.4	1.9
Cloverlay Leahi	46,197,859	4.9	-8.1	--
Parabellum Partners III	27,069,600	2.9	0.0	--
90 Day T-Bill +3.5%			*1.0*	*3.7*
Special Situation	**161,980,456**	**17.2**	**4.3**	**22.1**
Petershill IV	9,381,774	1.0	77.9	108.2
Myam Asian Opportunity	152,598,684	16.2	1.7	--
90 Day T-Bill +3.5%			*1.0*	*3.7*
Insurance Linked	**428,551,565**	**45.6**	**4.3**	**1.2**
Pillar Enso	231,069,909	24.6	1.6	0.2
Nephila Ulu	197,481,657	21.0	7.6	2.6
Swiss Re Global Catastrophe Bond Index			*-0.8*	*2.6*

MEKETA INVESTMENT GROUP

EXHIBIT B

State of Hawaii Employees' Retirement System

Asset-Liability Study Update

October 2019

Project Recap

March 2019 Meeting

Introductory Session

April 2019 Meeting

New Strategic Classes for Consideration

May 2019 Meeting

Survey Results

June/July/August 2019

Development of Model (i.e., embed GRS liability model, initial optimizations, discussions between Staff/Meketa, additional optimizations, etc.)

September 2019 Meeting

Modeling Process Overview and Initial Takeaways

October 2019 Meeting

Approval of New Strategic Allocation Policy Mix

Executive Summary

Executive Summary

- The recommended long-term strategic allocation (see below) exhibits modest changes relative to the current long-term policy allocation

  – The recommended allocation has a long-term expected return of 7% while exhibiting less downside risk than the current long-term policy allocation

  – While near-term returns may prove challenging, the recommended strategic allocation will allow for implementation flexibility to help ERS Staff better navigate the environment

  – It is expected that the new strategic allocation will help keep the ERS closer to its progress on the funding path

Strategic Class	Component	Current Long-term Allocation	Recommended Allocation
Broad Growth	Private Growth	18.3%	18%
	Traditional Growth	22.3%	20%
	Stabilized Growth	22.3%	20%
Real Return		10%	7%
Diversifying Strategies*		27%	35%

*Includes Principal Protection assets

Marginal-to-modest changes throughout the portfolio
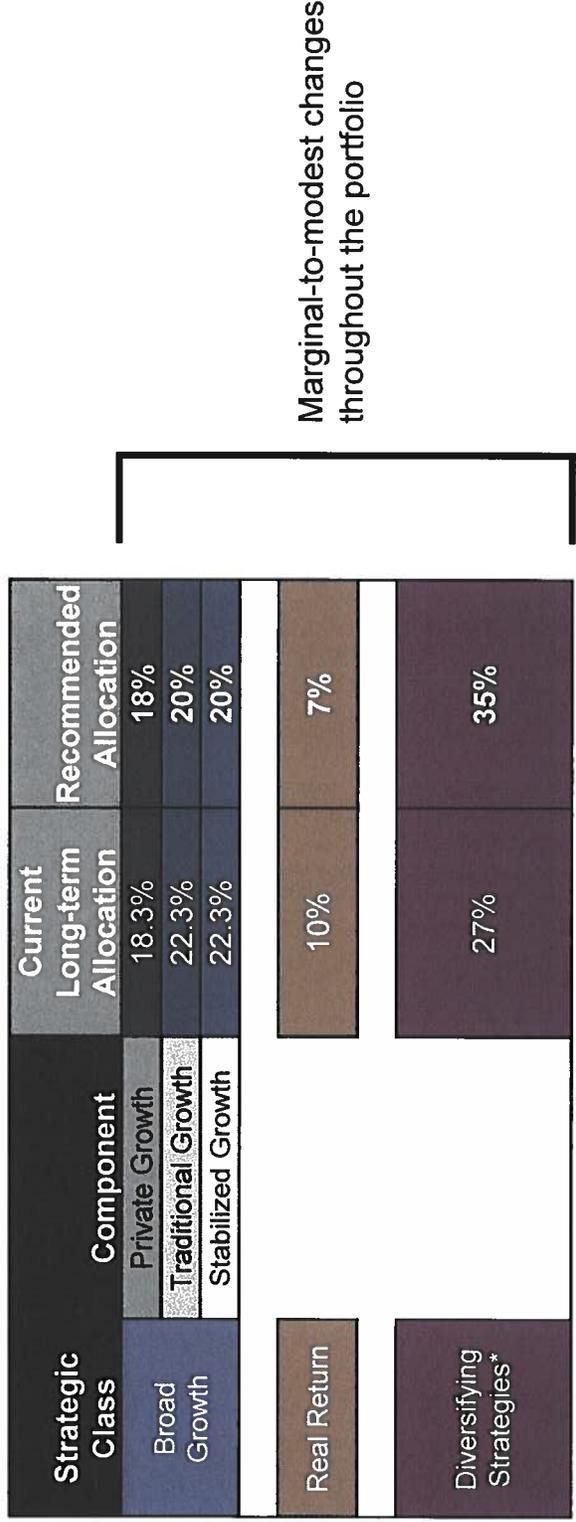
Review of Modeling Process

Work/Time Allotment

80%

- Development of risk/return assumptions
  Development of constraints
- Model engineering, testing, and refinement
  - Optimization runs

20%

- Examining reasonableness
- Initial transition planning
- Smoothing out any over-engineering

Primary area of focus during Sept/Oct
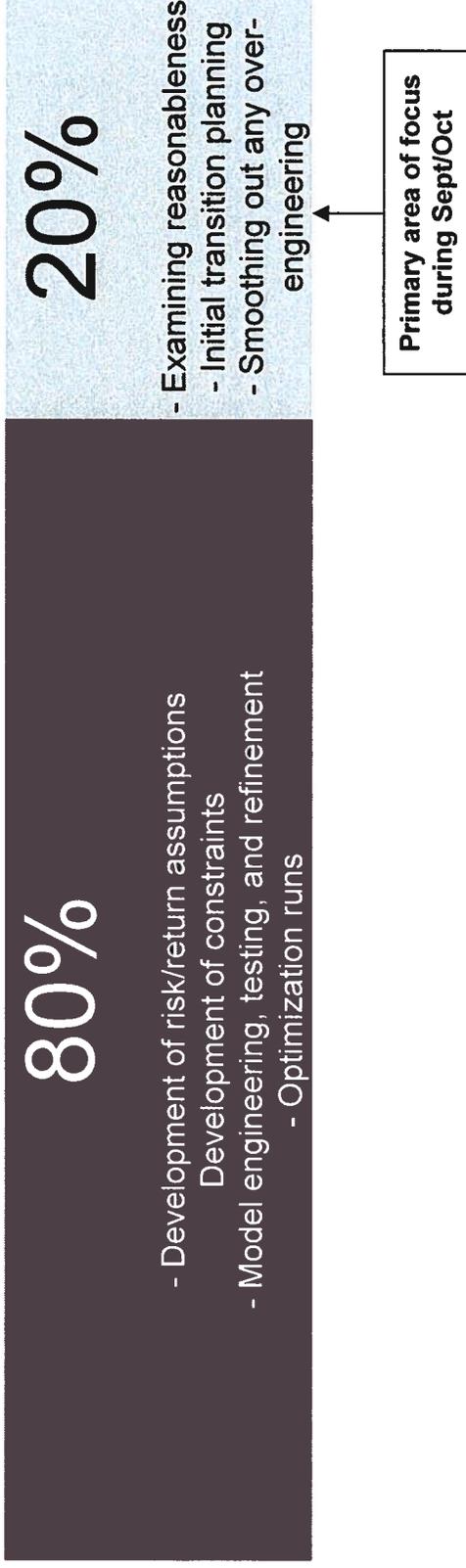
- "All models are wrong, but some are useful" – George Box, English Statistician

- "Prediction is very difficult, especially if it's about the future" – Nils Bohr, Nobel Laureate in Physics

Approaches to Analysis

- Meketa utilizes an "ensemble" approach to the asset-liability modeling process

- Core Component: Simulation-based optimizations that include the full GRS liability model

  - This is the primary mechanism for determining the potential portfolios

  - Meketa simulates thousands of 25+ year experiences that directly incorporate the liability model and its stochastic (i.e., variable) elements

- Supplementary Components: Traditional mean-variance optimization/analysis that incorporates multiple correlation matrices

  - The correlation assumptions reflect varying degrees of aggressiveness/conservatism

  - This process is used to provide additional checks/confirmations of reasonableness

- As discussed at prior ERS Board meetings, ERS Staff and Meketa incorporated the following enhanced allocation framework into the modeling process:

Enhanced Framework

Strategic Class	Component	
Broad Growth	Private Growth	
	Traditional Growth	
	Stabilized Growth	
Real Return	Illiquid Assets	
	Liquid Assets	
Diversifying Strategies	Other Diversifiers	
	CRO	

No changes relative to the current structure

Additional component for other diversifying strategies ("diversify your diversifiers")

Embedded *Principal Protection* into CRO in order to have better oversight/management of U.S. Treasury-based mandates

- ERS Staff and Meketa incorporated the following return/risk assumptions and allocation constraints into the modeling process

Modeling Assumptions and Constraints

Strategic Class	Component	Strategy	Expected Geometric Return	Expected Volatility	Minimum Allocation	Maximum Allocation
Broad Growth	Private Growth	Private Equity/Non-Core Real Assets	8.45%	27.00%	5%	20%
	Traditional Growth	Global Equity	7.35%	19.50%	20%	50%
	Stabilized Growth	Low Volatility Equity	6.60%	15.50%	0%	15%
		Options-based Equity	6.25%	13.00%	0%	15%
		Core Real Estate	5.70%	12.75%	3%	10%
		Credit	6.65%	14.30%	3%	20%
Real Return	Illiquid Assets	Timber/Agriculture/Infrastructure	5.40%	10.00%	0%	5%
	Liquid Assets	U.S. TIPs	3.40%	7.00%	0%	20%
Diversifying Strategies	Other Diversifiers	Reinsurance/Etc.	6.00%	12.00%	0%	5%
	CRO	Global Macro	5.90%	15.00%	0%	10%
		Alternative Risk Premia	4.90%	10.00%	0%	10%
		Long U.S. Treasuries	3.20%	16.00%	0%	12%
		Principal Protection (Intermediate Bonds)	3.00%	4.00%	0%	20%
		Systematic Trend Following	5.30%	18.00%	0%	15%

- While the constraints are imposed at the strategy level, the actual implementation of the portfolio will incorporate flexibility at the strategy level based on opportunities and market dynamics

Diversifying Strategies Detail

- Contains current "Crisis Risk Offset" and new "Other Diversifiers" as the two components

- Crisis Risk Offset:

  – Similar construct as current portfolio

  – Focus on liquid, lower-fee strategies

  – *Principal Protection* has been incorporated to better manage U.S. Treasury Bond exposure

- Other Diversifiers:

  – More alpha-oriented strategies

  – Potentially higher fees (but better expected net-of-fee results – aligned with Trustee Risk Survey)

  – Liquidity will vary and certain strategies may be illiquid

  – Examples: Reinsurance, Specialty Finance, Relative Value, Long-Short Credit, etc.

Other Modeling Considerations

- Asset-liability modeling is very long-term (25+ years) in nature

- Long-term focus suggests a 7% return is achievable

  - However, broadly accepted viewpoint is over the short-term ($\approx$1-10 years), current expected returns are considerably lower (but also more variable)

- Asset-liability modeling also incorporates certain simplifying assumptions:

  - Rebalancing frequency

  - Timeliness of contributions

 - Timeliness of investments

  - Etc.

Key Modeling Considerations from Survey Results

- **"Maintain funding progress and minimize major total portfolio drawdowns"**
  - <u>Result:</u> Find portfolios that achieve ≈7% long-term returns with a focus on minimizing funding deterioration rather than simply asset volatility

- **"Cash-flow position is a key consideration when selecting a portfolio"**
  - <u>Result:</u> Embed the ERS liability structure into the portfolio optimization process

- **"Opportunistic investments can add value"**
  - <u>Result:</u> Board's primary focus will be on high-level, strategic classes while allowing for prudent implementation flexibility at the strategy level

- **"Illiquid strategies typically return more than similar-risk, liquid strategies"**
  - <u>Result:</u> Utilize wide constraints (i.e., mins/maxes) for potential private markets allocations

- **"A CRO-like class, as well as other strategies, can help to stabilize the total portfolio"**
  - <u>Result:</u> Implement a *Diversifying Class* and incorporate flexibility at the strategy level

Portfolios for Consideration

Strategic Allocation Policy – Selection Process

- Institutional investors typically examine an "efficient frontier" when conducting asset allocation exercises (e.g., asset-liability studies)

- Efficient Frontier = graphical representation of the tradeoff between return/risk for various portfolio allocation options

Idealized Efficient Frontier

Long-term Expected Return

"Optimal" portfolios are up and to the left
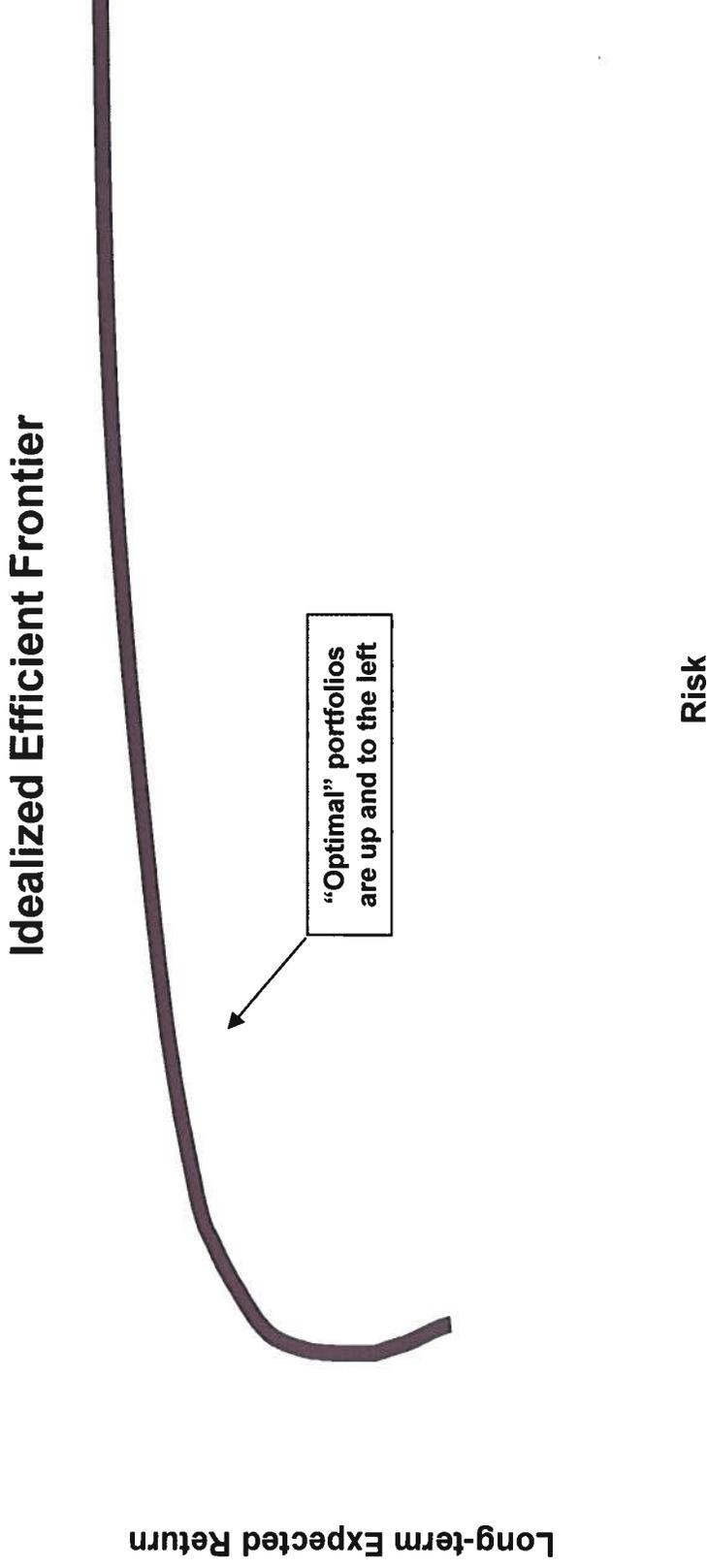
Risk

Strategic Allocation Policy – Selection Process

- Efficient frontiers generally give a false sense of precision and the illusion that there is one absolutely correct (or optimal) portfolio at any given risk/return level

  – A better way to interpret efficient frontiers is to recognize it is more of a gradient underneath

  – This gradient represents "near-optimal" portfolios

Idealized Efficient Frontier with Gradient

Long-term Expected Return

Risk

Strategic Allocation Policy – Selection Process

- Further compounding the problem of interpretation is estimation error of inputs

- The efficient frontiers below incorporate the ERS's return/risk assumptions and constraints and represent "optimal" portfolios using different correlation assumptions (i.e., mean-variance analysis)

    - Optimistic (i.e., highly diversifying) to Conservative (i.e., less diversifying)

ERS Efficient Frontiers: Mean-Variance Analysis

Optimistic Correlations

"Middle" Correlations

Conservative Correlations

Reward
(Long-term Return)

Risk
(Standard Deviation)
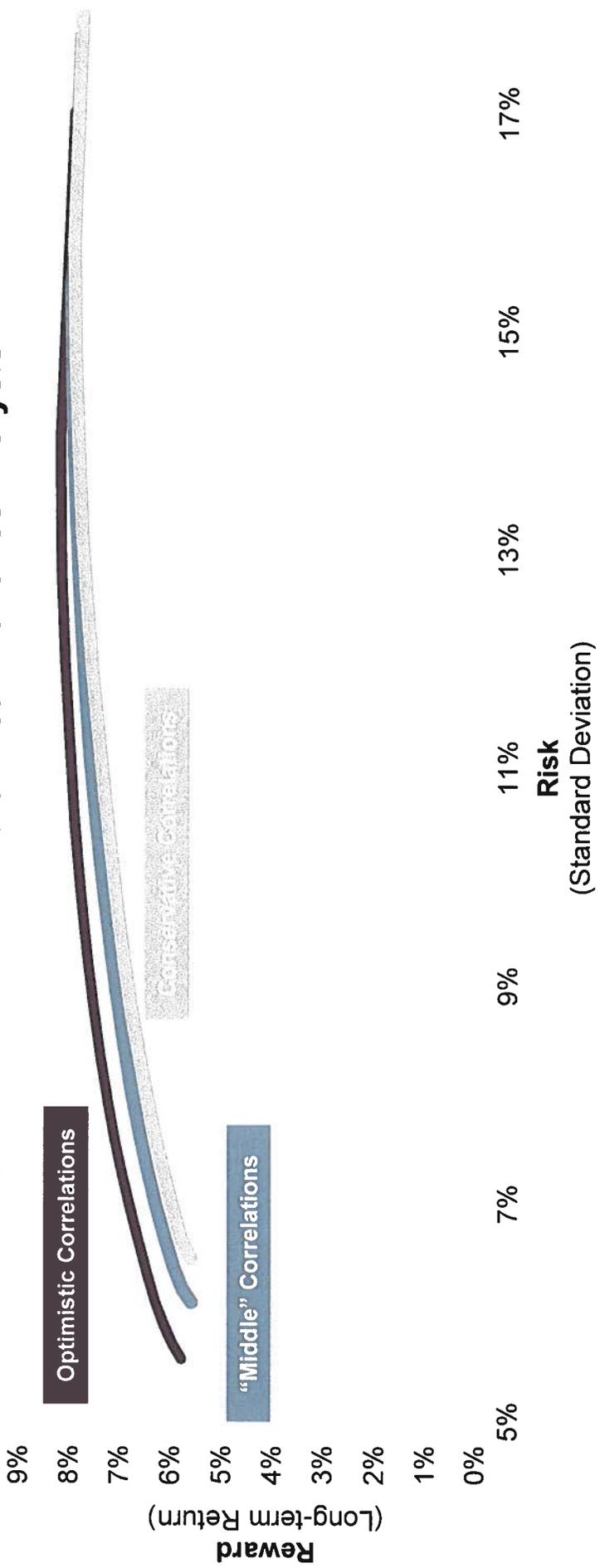
Strategic Allocation Policy – Selection Process

- To better reflect humility and account for modeling shortcomings, ERS Staff and Meketa spent a considerable amount of time examining "near-optimal" portfolios

  – This included examining implementation feasibility, impacts of different assumptions, etc.

ERS Efficient Frontiers: Mean-Variance Analysis

Examined various "near-optimal" portfolios around 7% return expectations

Reward (Long-term Return)

Risk (Standard Deviation)
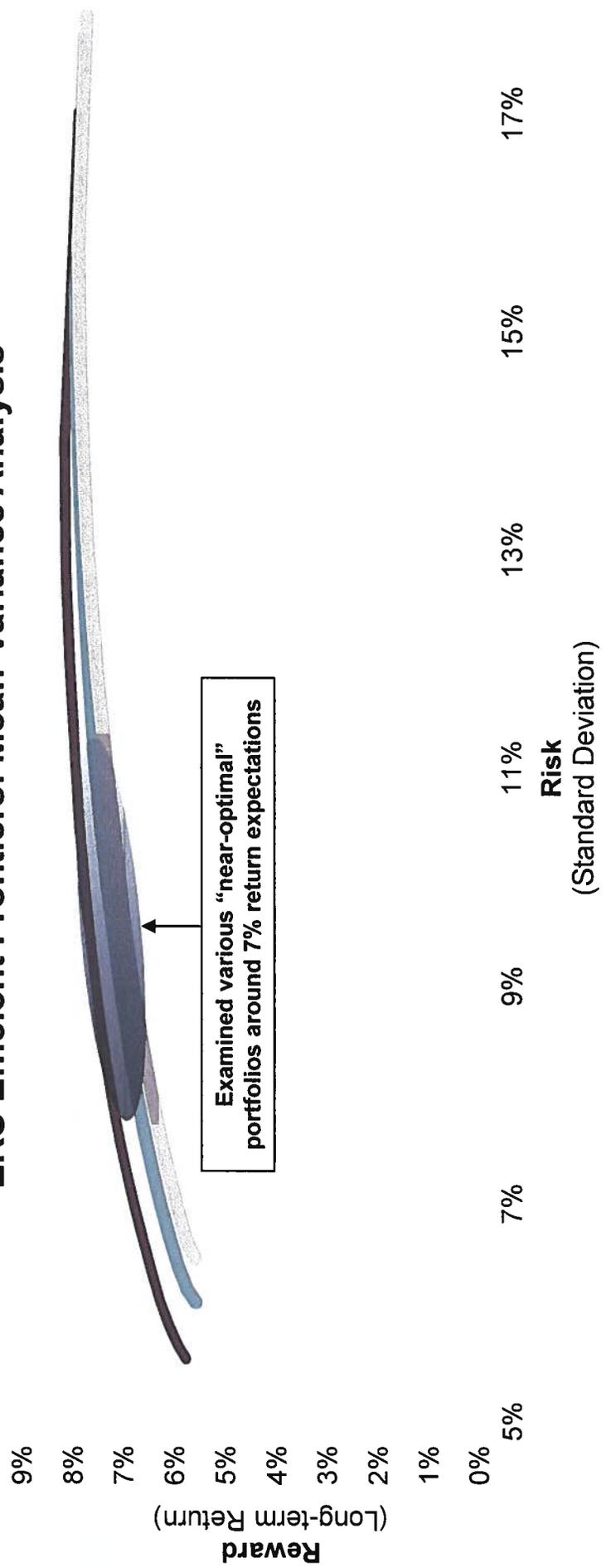
Strategic Allocation Policy – Selection Process

- For asset-liability studies, efficient frontiers should be framed to relate to asset-liability measures

- Similar to the mean-variance output, it is important to examine "near-optimal"

ERS Efficient Frontier: Simulation-based Analysis

Current Long-term Policy

Examined various "near-optimal" portfolios around 100% funded expectations

Reward
(Long-term Expected Funded Ratio)

140%
120%
100%
80%
60%
40%
20%
0%

Risk
(Expected "Worst Case" Funding Ratio in Year 5)

55% 50% 45% 40% 35%
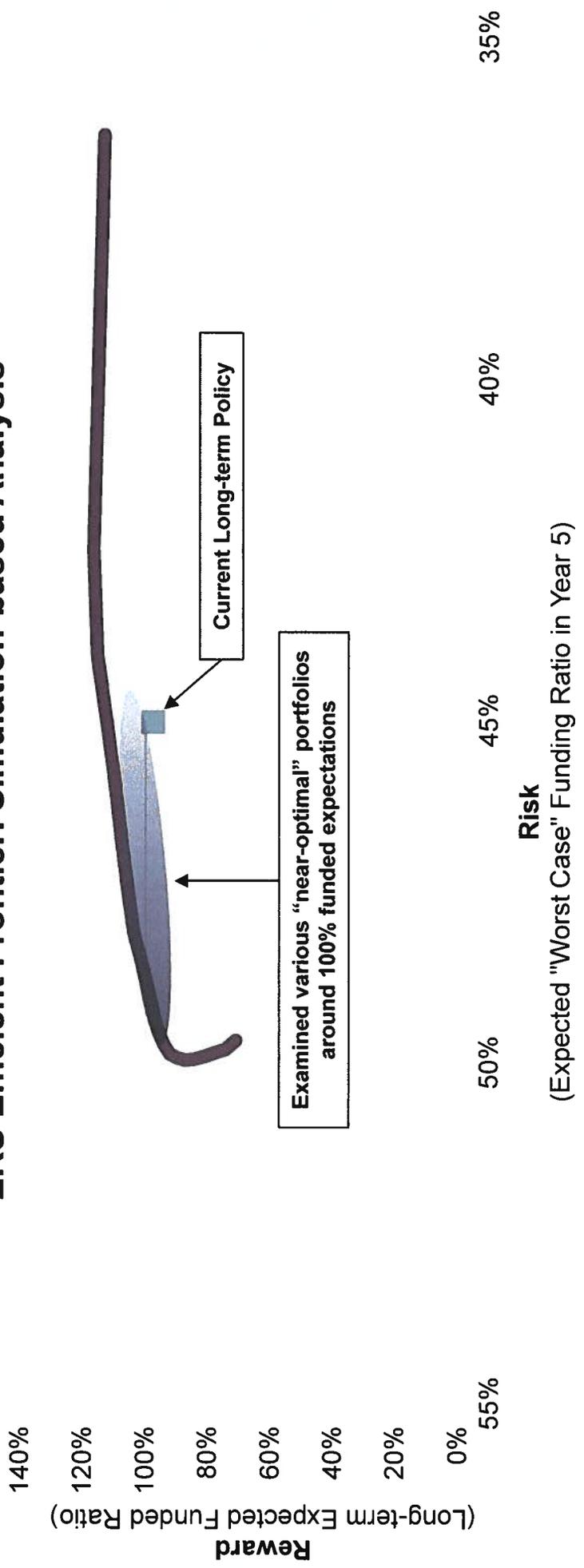
- Relative to the current long-term policy targets, the potential portfolios that Staff/Meketa recommend generally exhibit modest changes at the strategic class level

Strategic Class	Component	Current Long-term Allocation	Potential Portfolio Allocations
Broad Growth	Private Growth	18.3%	18%
	Traditional Growth	22.3%	20%
	Stabilized Growth	22.3%	≈16-22%
Real Return		10%	≈4-7%
Diversifying Strategies*		27%	≈33-42%

Broad Growth expected to marginally decrease across the three segments

Real Return expected to modestly-to-materially decreases

Diversifying Strategies expected to modestly-to-materially increases

*Includes Principal Protection assets

Potential Portfolios - Allocations

- After detailed review of options, ERS Staff and Meketa believe there are three final portfolios remaining for consideration

- Each portfolio is expected to generate a compound return of ≈7% with less downside risk (i.e., greater efficiency) than the current long-term policy portfolio

- Relative to the current long-term policy, these three portfolios primarily differ in two ways:

  1) The level of change relative to the current long-term policy (Option #3 has the most change)

  2) Where "stabilizer" strategies reside (i.e., Stabilized Growth, Real Return, Diversifying Strategies)

Strategic Class	Component	Current Long-term Allocation	Option #1	Option #2	Option #3
Broad Growth	Private Growth	18.3%	18%	18%	18%
	Traditional Growth	22.3%	20%	20%	20%
	Stabilized Growth	22.3%	22%	20%	16%
Real Return		10%	7%	7%	4%
Diversifying Strategies*		27%	33%	35%	42%

*Includes Principal Protection assets

State of Hawaii Employees' Retirement System (ERS)

Potential Portfolios – Allocations and Statistics

Strategic Class	Component	Current Long-term Allocation	Option #1	Option #2	Option #3
Broad Growth	Private Growth	18.3%	18%	18%	18%
	Traditional Growth	22.3%	20%	20%	20%
	Stabilized Growth	22.3%	22%	20%	16%
Real Return		10%	7%	7%	4%
Diversifying Strategies		27%	33%	35%	42%

Modeling Statistics

	Current Long-term Allocation	Option #1	Option #2	Option #3
Long-term Compound Return	≈7%	≈7%	≈7%	≈7%
Volatility (varies by model)	10.2%-12.0%	9.7%-11.5%	9.4%-11.4%	9.1%-11.2%
25-year Funding Ratio	≈97.4%	≈99.0%	≈99.9%	≈100.8%
Worst Calendar Year	-21.3%	-20.3%	-18.4%	-15.3%
Avg. Max Drawdown	-35.7%	-32.9%	-29.8%	-25.1%
Avg. "Worst Case" 5-year Funding	45.0%	45.9%	46.7%	47.7%

All statistics improve as we move to the right but at the cost of more challenging implementation considerations

- Each sequential option moves closer to the efficient frontier, but each sequential option also exhibits more change and more challenges with respect to feasibility

- All three options represent enhancements relative to the current long-term policy

ERS Efficient Frontier: Simulation-based Analysis

Reward
(Long-term Expected Funded Ratio)

140% 120% 100% 80% 60% 40% 20% 0%

55% 50% 45% 40% 35%

Risk
(Expected "Worst Case" Funding Ratio in Year 5)

Current Long-term Policy

Option 1
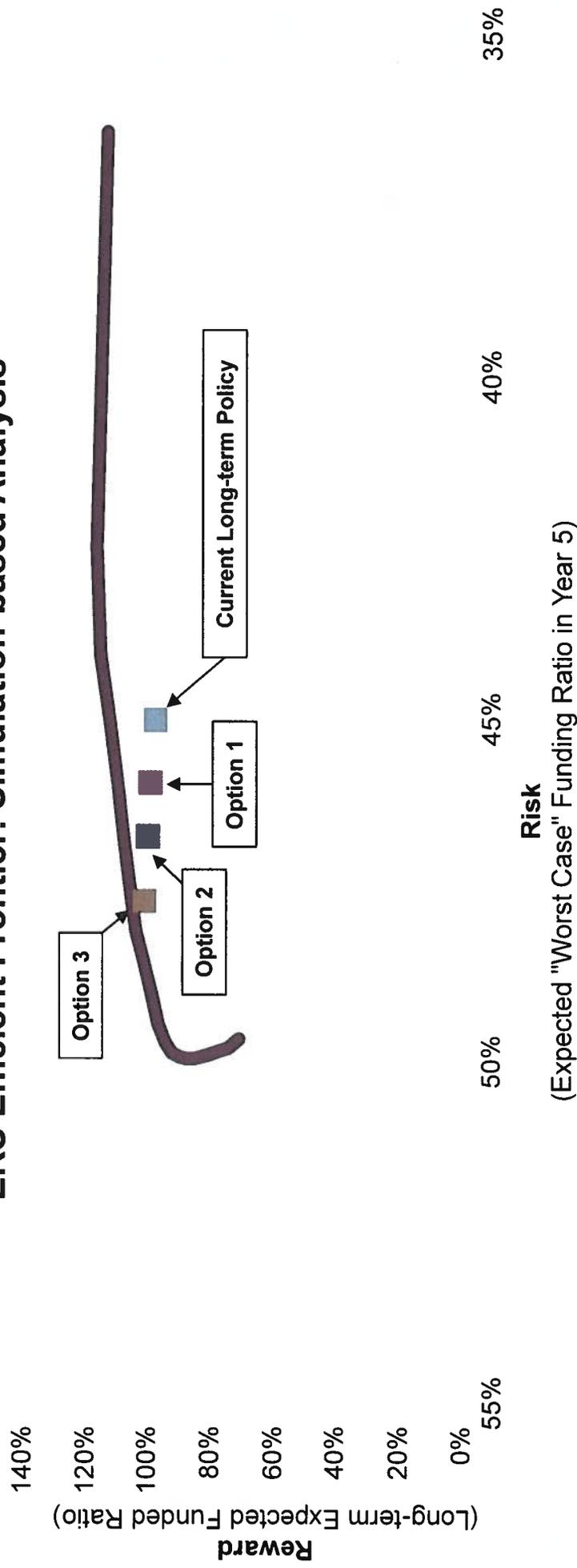
Option 2

Option 3

Current Long-term Portfolio – Simulation Model Output

Funded Ratio

- 90th percentile represents a "best case"
- 10th percentile represents a "worst case"

| 200% |
| 180% |
| 160% |
| 140% |
| 120% |
| 100% |
| 80% |
| 60% |
| 40% |
| 20% |
| 0% |

Yr 0 Yr 1 Yr 2 Yr 3 Yr 4 Yr 5 Yr 6 Yr 7 Yr 8 Yr 9 Yr 10 Yr 11 Yr 12 Yr 13 Yr 14 Yr 15 Yr 16 Yr 17 Yr 18 Yr 19 Yr 20 Yr 21 Yr 22 Yr 23 Yr 24 Yr 25 Yr 26 Yr 27 Yr 28 Yr 29

— 90th   — 75th   — Median   — 25th   — 10th
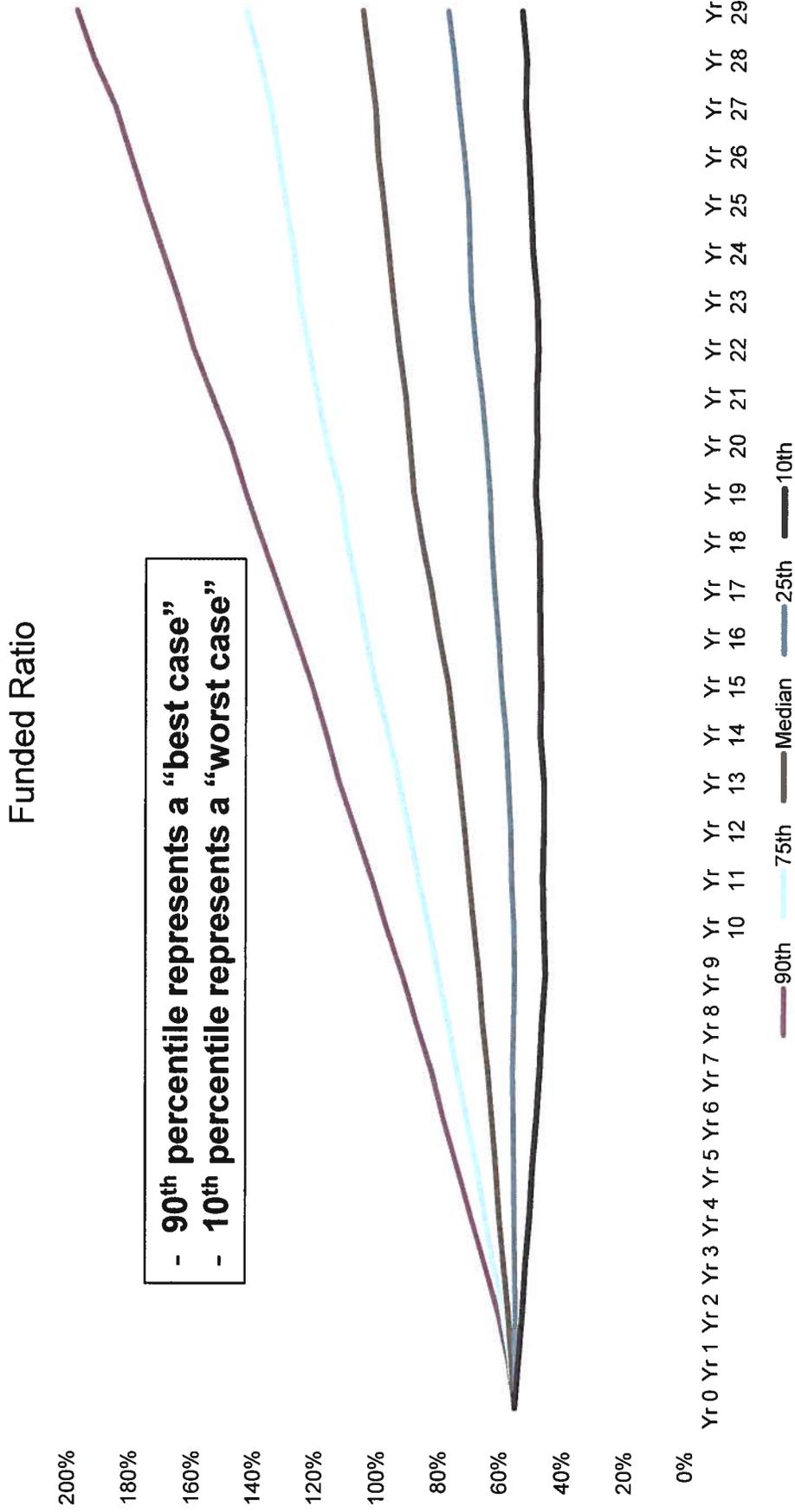
- This chart represents the "base case" to compare Options #1-#3 to

Funded Ratio Ranges - Simulation Model Output

Option #1

Current Long-term Policy

Option #3

Option #2

Each sequential option exhibits a narrower range of expectations (stays closer to the funding path)

Narrowest range

200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%

200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%

Funded Ratio Ranges - Simulation Model Output

Funded Ratio

- This combines all four portfolios into one chart
- Each sequential option exhibits a narrower range of expectations (stays closer to the funding path)

200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%

Yr 0 Yr 1 Yr 2 Yr 3 Yr 4 Yr 5 Yr 6 Yr 7 Yr 8 Yr 9 Yr 10 Yr 11 Yr 12 Yr 13 Yr 14 Yr 15 Yr 16 Yr 17 Yr 18 Yr 19 Yr 20 Yr 21 Yr 22 Yr 23 Yr 24 Yr 25 Yr 26 Yr 27 Yr 28 Yr 29

90th CLTP
10th Opt. 3
90th Opt. 1
10th Opt.2
90th Opt. 2
10th Opt.1
90th Opt. 3
10th CLTP
Median

- Each sequential option exhibits a narrower range of expectations (stays closer to the funding path)

Option #1– Simulation Model Output

Funded Ratio

- Option #1 generates a slightly narrower range compared to the Current Long-term Policy

Option #2 – Simulation Model Output
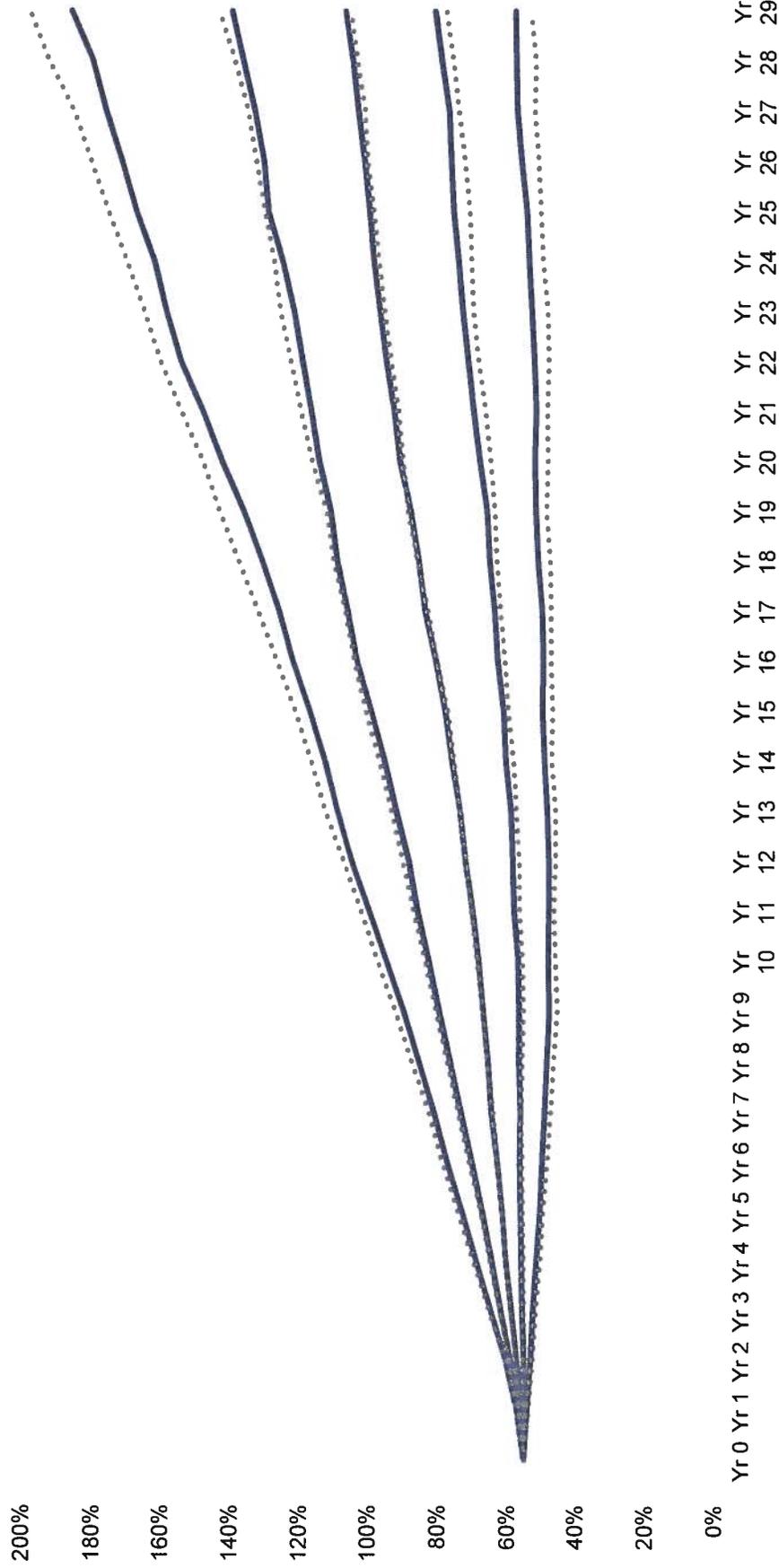
Funded Ratio

- Option #2 marginally improves on Option #1 (i.e., narrower range)

Option #3– Simulation Model Output

Funded Ratio

| | Yr 0 | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Yr 7 | Yr 8 | Yr 9 | Yr 10 | Yr 11 | Yr 12 | Yr 13 | Yr 14 | Yr 15 | Yr 16 | Yr 17 | Yr 18 | Yr 19 | Yr 20 | Yr 21 | Yr 22 | Yr 23 | Yr 24 | Yr 25 | Yr 26 | Yr 27 | Yr 28 | Yr 29 |
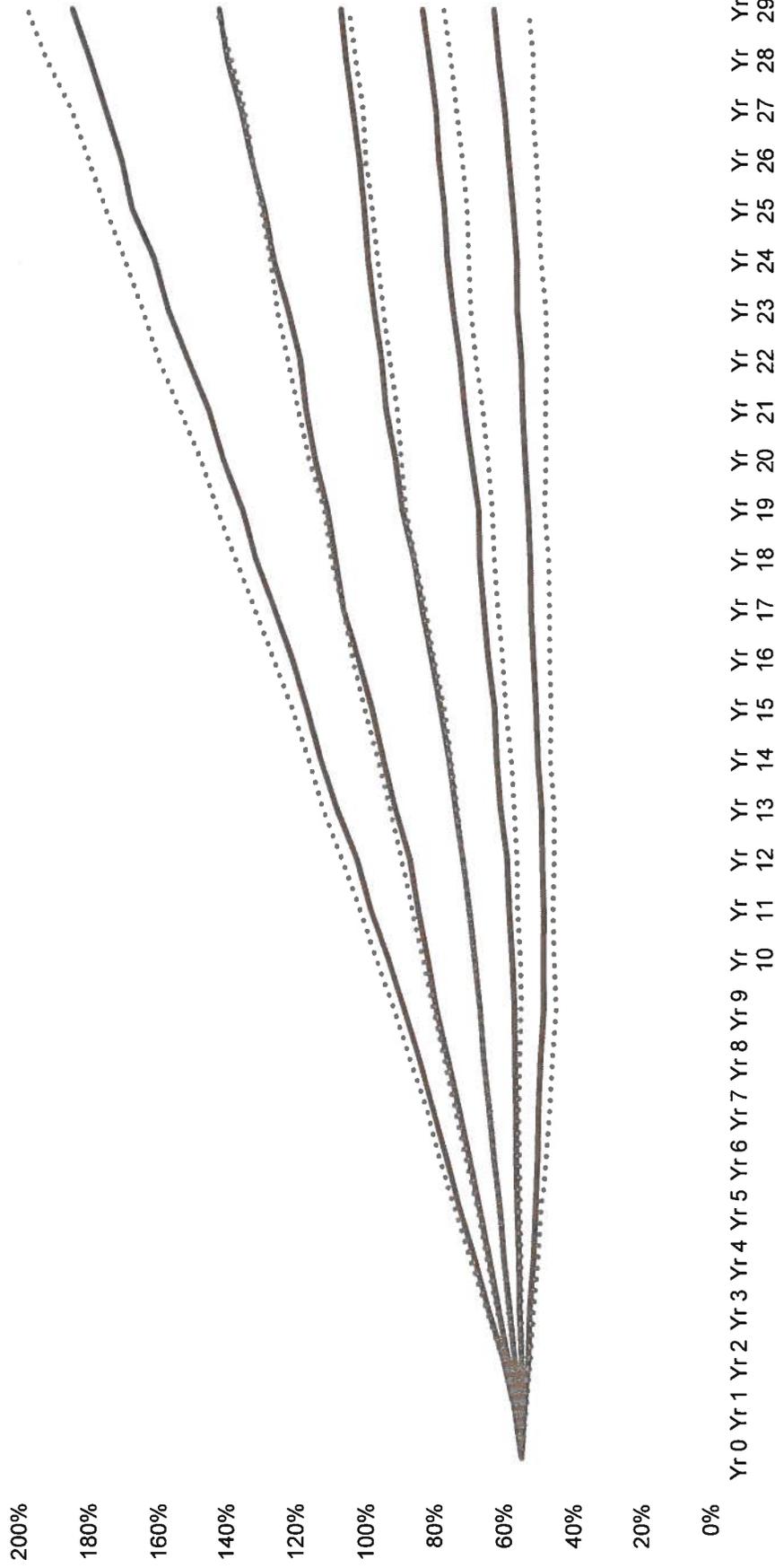
- Option #3 marginally improves on Option #2 (i.e., narrower range)

Recommendation

- ERS Staff and Meketa recommend that the ERS Board select Option #2

- Option #2 possesses the following attributes:
  - ≈7% expected long-term return
  - Expected to improve downside risk characteristics relative to the current long-term policy
  - Incorporates additional diversifying assets relative to the current long-term policy
  - Can feasibly be obtained within the next three-to-seven years
  - Allows for implementation flexibility that will make the best-use of current ERS resources

| Strategic Class	Component	Current Long-term Allocation	Option #2
Broad Growth	Private Growth	18.3%	18%
	Traditional Growth	22.3%	20%
	Stabilized Growth	22.3%	20%
Real Return		10%	7%
Diversifying Strategies		27%	35%

Next Steps

Next Steps

December

- Staff and Meketa will present a preliminary *Evolving Policy Plan* for transitioning the portfolio

Q1 2020 and Ongoing

- IPS updates and revisions to reflect new allocation and implementation flexibility

- Manager selections for new segments

- Strategic class structure reviews

Appendix

Review of Projected Funded Ratio
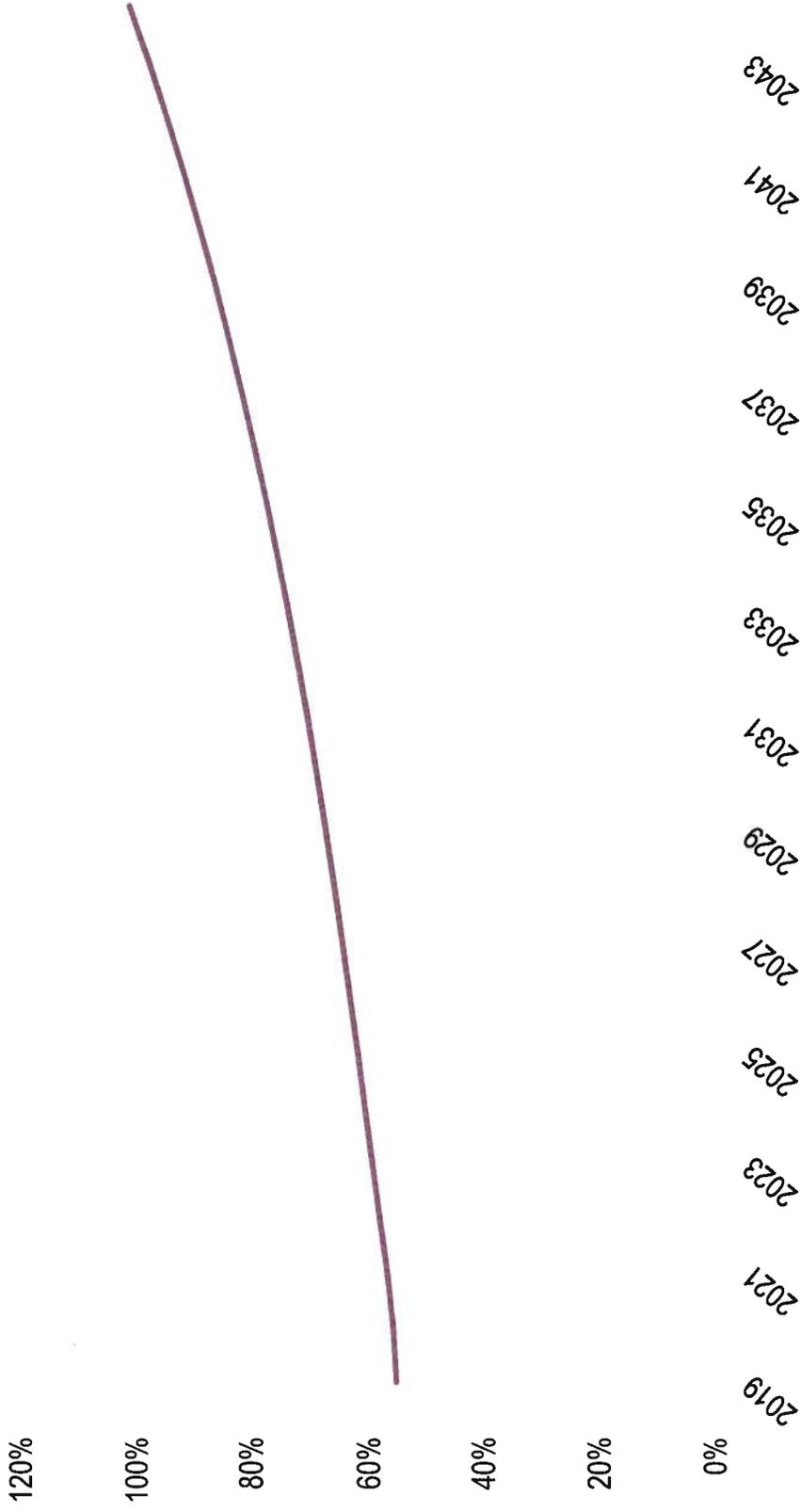

Source: GRS

- Assuming a constant 7% investment return and timely/complete contributions, the ERS becomes fully funded in fiscal year 2044 (25 years)

## Review of Projected Assets and Liabilities

Source: GRS

—— Actuarial Accrued Liability (AAL)   —— Actuarial Value of Assets(AVA)
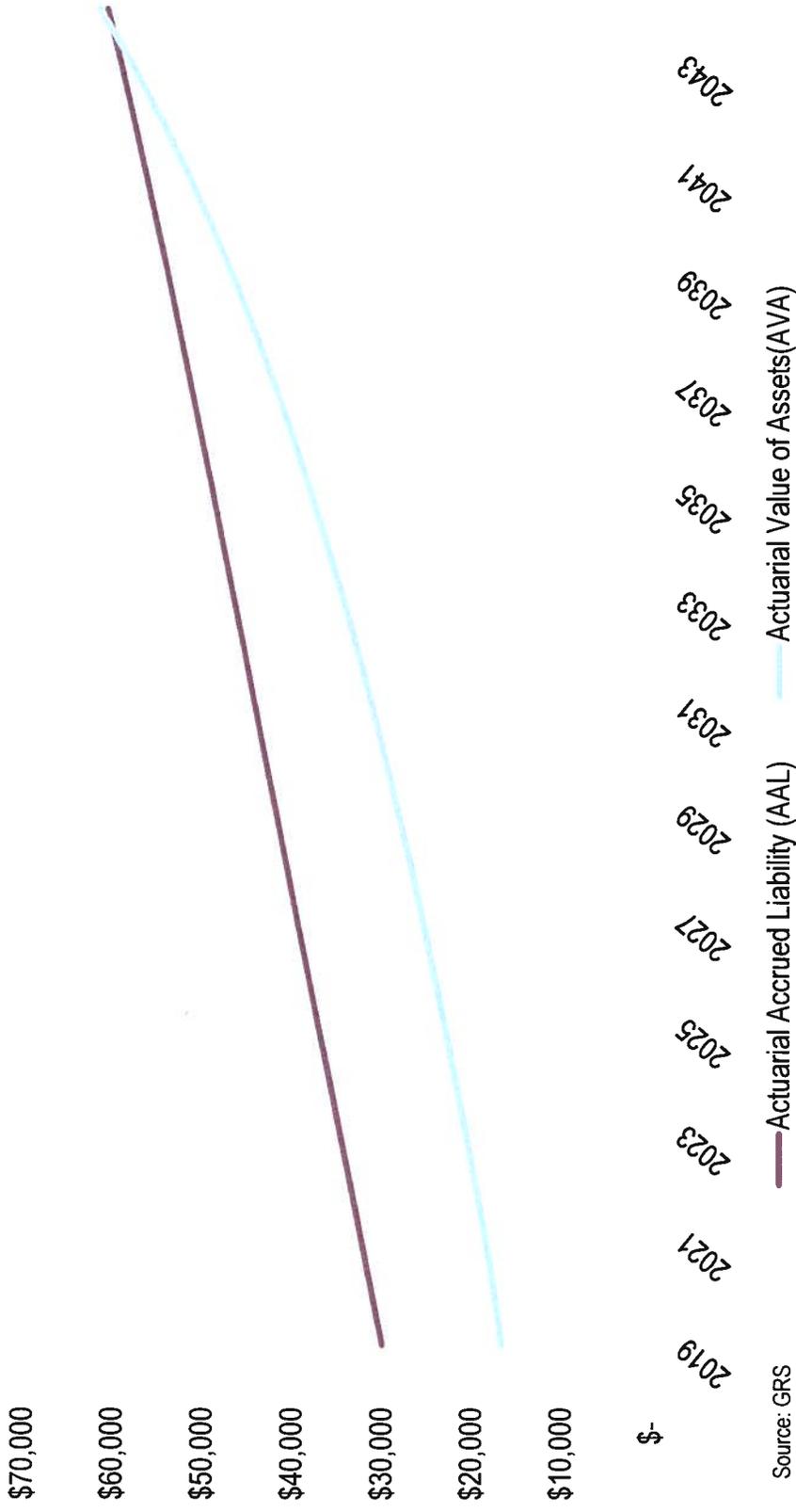
- Due to the deterministic nature of actuarial projections, the AAL and AVA steadily increase over time

Normalized Rankings of Objectives

Important

Maintaining consistent progress along the current Funding Progress Path (primarily focused on an intermediate-term goal)

Minimizing major total portfolio declines (greater than -10% in a fiscal year)

Achieving a final funding ratio of at least 100% by the end of the funding period (primarily focused on an end goal)

Minimizing contribution uncertainty (providing employer cost certainty)

Minimizing average contributions into the ERS

Higher Priority   Lower Priority

Higher Priority

Lower Priority

Risk Mitigation Questions - Summary

To avoid having the State increase its contribution rate, it is expected that the State will the ERS should minimize the increase its contribution rate likelihood of exceeding the statutory 30-year funding period.

During a market crisis, it is expected that the State will increase its contribution rate to support the ERS.

A CRO-like class can help the ERS stabilize progress along the Funding Progress Path.

There are other strategic classes that can help stabilize the Total Portfolio.

The cash-flow position of the ERS (e.g., net positive contributions or net negative benefit payments) is a key consideration when constructing an investment portfolio.

Agreement ⟵   ⟶ **Disagreement**

Implementation Questions - Summary

Agreement ← → **Disagreement**
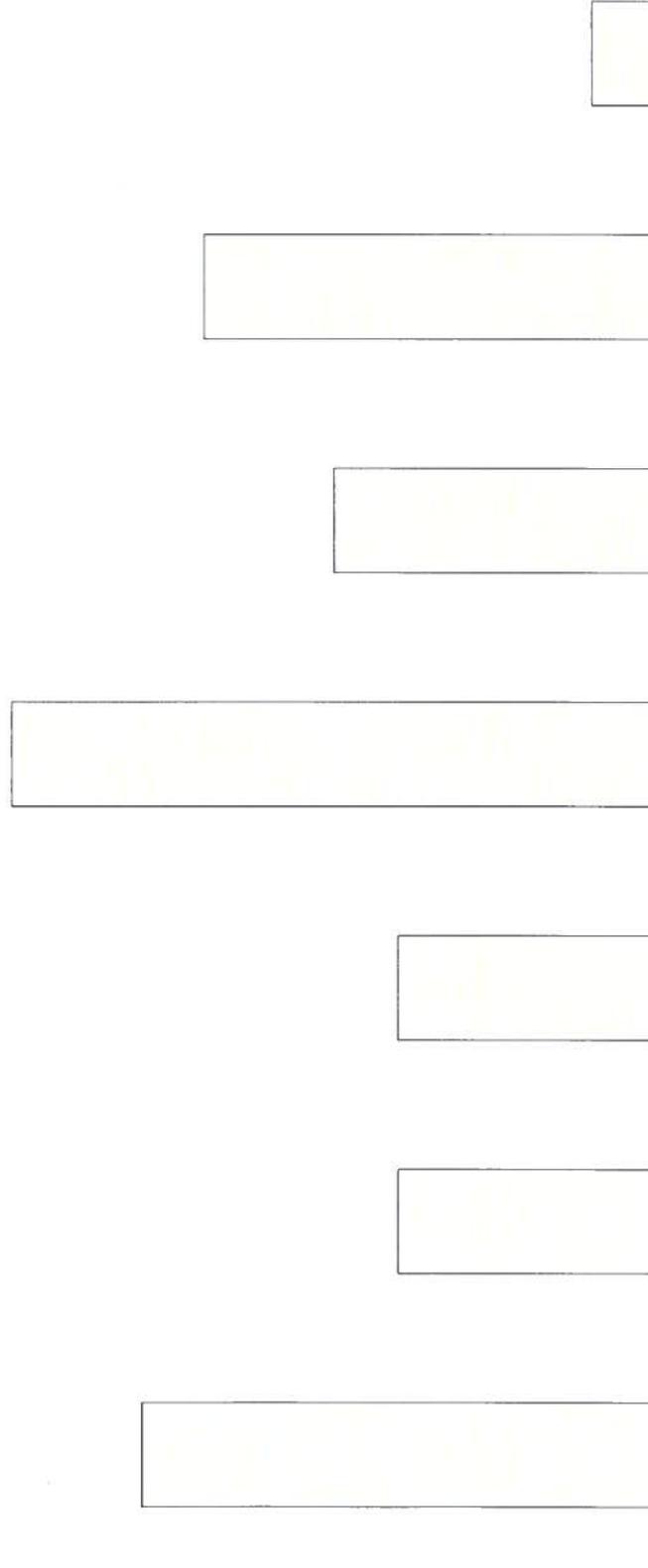
Shifting asset allocation away from policy (i.e., tactical allocations) from time-to-time adds value.

Maintaining the overall portfolio risk level (volatility) is more important than adhering closely to allocation targets for each strategic class.

Different strategies and/or risk classes are interchangeable if they share similar risk factor exposures and portfolio functions.

Opportunistic investments can add value.

High fee strategies are worthwhile if they produce high net-of-fee returns.

Illiquid strategies typically return more than similar-risk, liquid strategies (e.g., private equity typically returns more than public equity on a risk-adjusted basis).

Producing a return pattern that is different than peers is a risk (given the same long-term return).

Example Constructs for *Diversifying Strategies Class*

Strategic Class	Component	Strategy	Example Construct A	Example Construct B
Diversifying Strategies	Other Diversifiers	Reinsurance/Etc.	10%	10%
		Global Macro	5%	35%
		Alternative Risk Premia	10%	5%
	CRO	Long U.S. Treasuries	20%	35%
		Principal Protection (Intermediate Bonds)	15%	5%
		Systematic Trend Following	40%	10%
		Expected Long-term Return	≈5.2%	≈5.3%
		Expected Long-term Volatility	≈9.3%	≈9.3%

Note: Utilizes mean-variance analysis

- As demonstrated in the table above, two materially different structures for the *Diversifying Strategies* class result in nearly identical long-term expectations

- Further compounding this is the fact that there is estimation/modeling error for any forward-looking financial model

- Allowing Staff to maintain implementation flexibility at the strategy level is prudent and worthwhile

Example Constructs for *Stabilized Growth* Component

Component	Strategy	Example Construct A	Example Construct B
Stabilized Growth	Low Volatility Equity	10%	25%
	Options-based Equity	30%	40%
	Core Real Estate	25%	30%
	Credit	35%	5%
	Expected Long-term Return	≈6.6%	≈6.5%
	Expected Long-term Volatility	≈10.4%	≈10.4%

Note: Utilizes mean-variance analysis

- As demonstrated in the table above, two materially different structures for the *Stabilized Growth* component result in nearly identical long-term expectations

- As highlighted previously, estimation/modeling error further reinforces the need for humility and flexibility when implementing specific strategies

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