Investment Committee
Agenda Item 5a

April 16, 2018

Item Name: Affiliate Trust Asset Allocation Review: Supplemental Income Plans

Program: Trust Level Portfolio Management & Affiliate Investment Programs

Item Type: Action

Recommendation
Approve recommended asset allocation Glide Path for CalPERS Supplemental Income Plans.

Executive Summary
Staff engaged the consulting services of RVK, Inc. (RVK) to review and refresh the asset allocation Glide Path for CalPERS Supplemental Income Plans (CalPERS SIP) to be compatible with the changing characteristics of the plan participants and financial market conditions. After careful analyses and discussions with RVK, Staff recommends refreshing the existing asset allocation Glide Path to focus more on asset accumulation at the expense of a slight increase in risk, as proposed by RVK to improve overall expected retirement outcomes for CalPERS SIP participants. Staff will make the corresponding changes to the affected investment policies via the administrative policy change process pending approval by Investment Committee. An Opinion letter from Wilshire Associates, Inc. follows as Attachment 2.

Strategic Plan
The refresh of the asset allocation Glide Path for CalPERS SIP supports CalPERS Strategic Plan goal to strengthen the long-term sustainability of the pension fund. Although CalPERS SIP is separate from the Public Employees' Retirement Fund (PERF), its prudent management seeks to improve the retirement outcomes for SIP plan participants, who may or may not be members of the PERF.

Investment Beliefs
This agenda item is consistent with the following CalPERS Investment Beliefs:

- Investment Belief 1. Liabilities must influence the asset structure. The review and refresh of the asset allocation Glide Path is based on the replacement income goal of the SIP participants.

- Investment Belief 2. A long investment horizon is a responsibility and an advantage. The Glide Path is designed according to the risk/return trade-off during the whole life cycle of a representative full-career participant.

- Investment Belief 7. CalPERS will take risk only where we have a strong belief we will be rewarded for it. Both short-term and long-term risks are evaluated in every step of the Glide Path design process.

- Investment Belief 9. Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error. In this analysis, RVK evaluated additional risk measures, such as probability of replacement income shortfall, and the median additional suggested contribution.

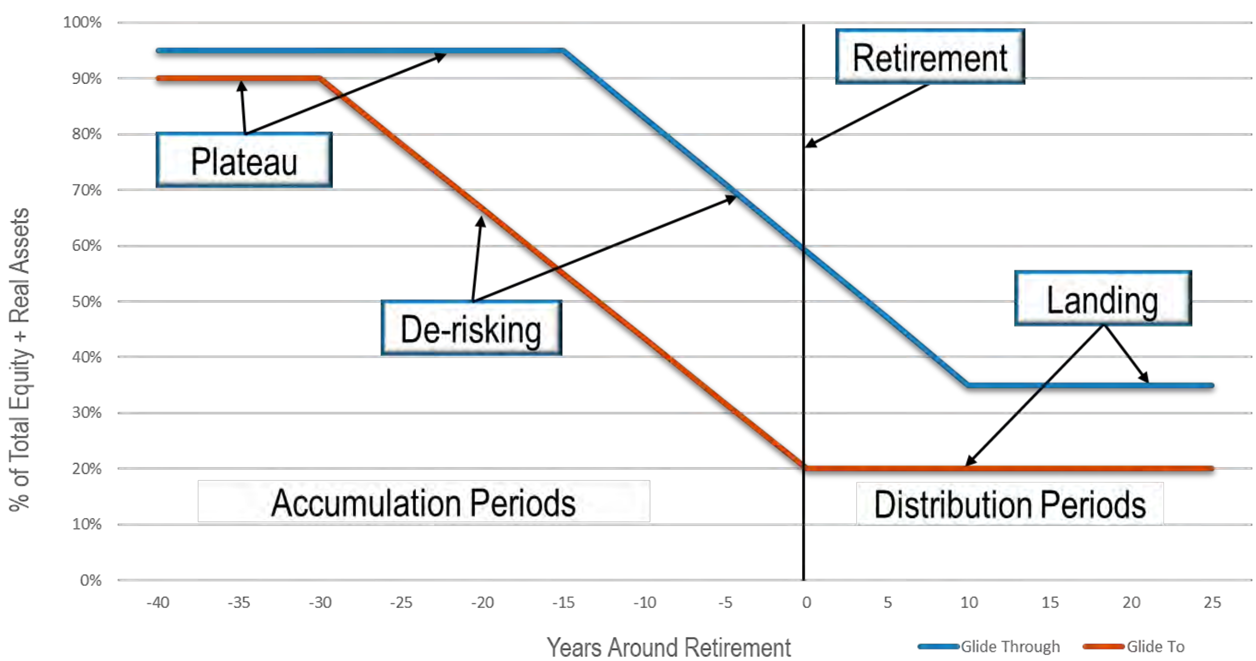
Background
The CalPERS SIP consists of the CalPERS 457 Plan, the Placer County 401(k) Plan, and the Supplemental Contributions Program. Staff has been working with RVK to conduct a periodic review of the SIP program. Staff is presenting the results of the investment portion, which comprises the following components:

1. A review and recommendation to update the asset allocation and Glide Path for the Target Retirement Date funds, based on participant demographic data. This agenda item 5a is focused on this component, as this modification will have a broad impact on the program.

2. A review and affirmation of the current capital preservation and fixed income options. Evaluating product offerings in the market to determine suitability is appropriate, but may not result in a modification. After evaluation, it was concluded that additional options would move away from index management, introduce added risk and complexity to the program, and increase cost to participants.

Analysis

Basic Elements of a Glide Path



As evidenced by the above graph and Slide 13, in Attachment 1, the main goal of a Glide Path is to afford a disciplined approach to adjust asset allocation as the plan participant goes through his/her life cycle. There are two distinctive periods during a typical participant's life: the Accumulation Period when participants work and save to accumulate financial capital and the

Distribution Period when participants retire and withdraw financial capital. Finance theory indicates that participants have higher risk tolerance and gain more utility from higher exposure to growth risk when their human capital is much higher than their financial capital at the early stages of the Accumulation Period. This is the Plateau phase where there is higher allocation to risky assets (Total Equity plus Real Assets). Subsequently, human capital decreases and financial capital increases relatively as participants gradually approach retirement. Accordingly, the Glide Path diligently reduces exposure to risky assets in a risk-controlled framework, forming the De-risking phase. In the end, the Glide Path ends up at the Landing phase when human capital has been depleted and participants are less risk tolerant and gain more utility from having higher liquidity in their financial assets, thus there is lower allocation to risky assets. A design question arises: is it optimal to glide to the Landing phase at the point of retirement ("Glide To" approach) or glide through the point of retirement and land sometime after ("Glide Through" approach)? This choice will lead to different lengths of the Plateau phase. RVK resolves this question by analyzing the demographics of CalPERS SIP participants.

RVK's Glide Path Design epitomizes the principle of building efficient portfolios on the risk/return trade-off of the Accumulation plus Distribution Periods, instead of any static point in time.

RVK's analysis utilizes these component parts:

- Inflation expectations from an RVK macro economic forecast
- Capital market assumptions from CalPERS 2017 ALM
- Salary growth from CalPERS 2017 experience study
- Estimated participant contributions from 2016 CalPERS 457 plan data
- Household life expectancy from the Society of Actuaries Mortality Tables

The Analysis projects Income Adequacy during the Distribution Periods by modeling an average annual income replacement goal, household income sources and annual plan distributions. Additional inputs to the analysis are derived from CalPERS data, public governmental information, and recognized retirement studies.

After completely modeling out the Accumulation and Distribution periods, an RVK stochastic optimization process identifies potential Glide Paths by either maximizing the median replacement income without significantly increasing market risk or minimizing market risk without significantly decreasing median replacement income based on each run of 2,000 iterations. In addition to the above two measures, annualized return before distribution, 5th percentile return before distribution, 1-year or 5-year 5th percentile returns right after the start of distribution, and probability of no shortfall are all constantly monitored during each iteration to prevent (mitigate) deterioration. After each run, the optimizer modifies the Glide Path according to feedback from those measures. Other design features are built according to the demographics of the CalPERS SIP participants.

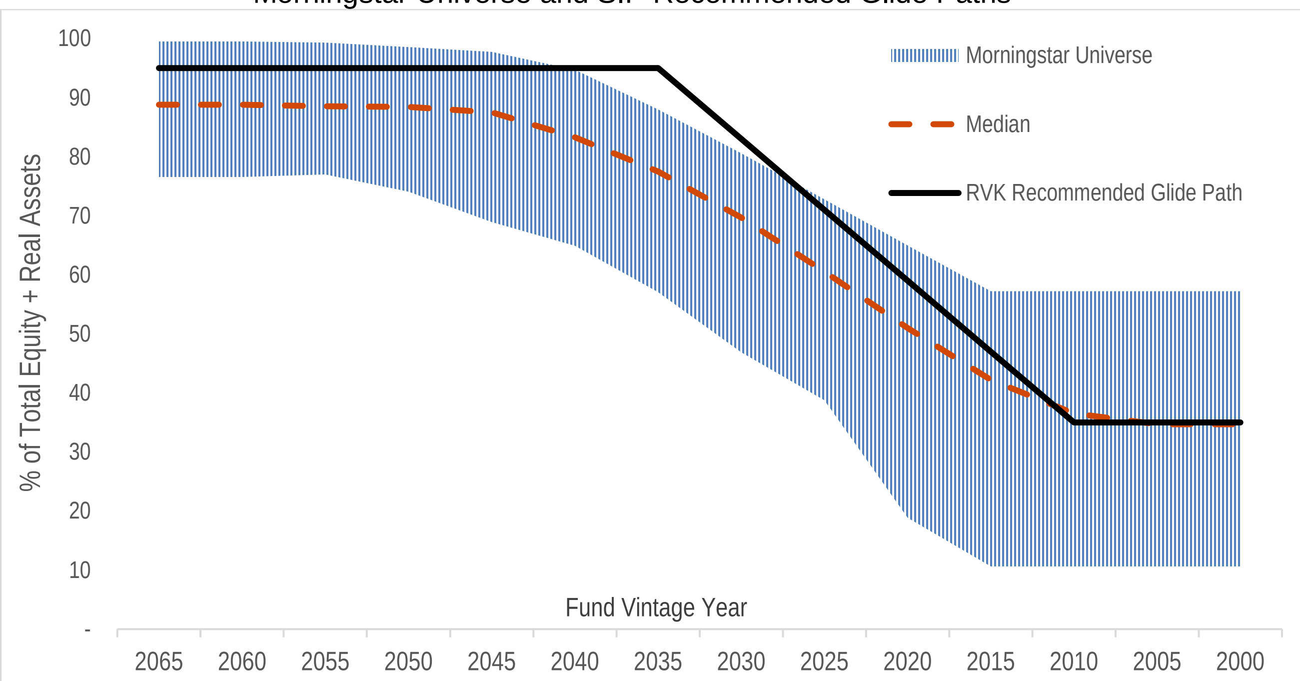
One of the most significant demographic characteristics is the distribution pattern shown on Slide 17 in Attachment 1. Firstly, Row A indicates that the majority of plan participants make no distributions before age 70, however, 31% of plan participants are taking distributions after age 65. Secondly, it is important to distinguish between two types of Fully Depleted Participants: Row C (Rollover) and Row D (Full Cash Distributions). Research indicates that participants who opt to rollover their assets into a different plan tend to remain invested, including a significant equity allocation. Thus a more encompassing measure of participants retaining investment exposure, including a portion in "Risky" assets such as equity, is the summation of Rows A+B

(Participants remaining in the plan) and C (Rollover). The indicated investment desire derived from the data suggests that the “Glide Through” path is a better fit than the “Glide To” alternative Incorporating those inputs and design choices, the RVK optimization and post-optimization analyses propose a new Glide Path as shown on Slide 20. The recommended Glide Path is shown relative to the Morningstar universe of Glide Paths on slide 21. The marginally higher allocation to equity and real assets through the accumulation and de-risking phases is believed warranted due to:

1. The Morningstar universe is composed of mostly off-the-shelf products that are not tailor-made according to the specific demographics of their participants.

2. Many funds within the Morningstar universe have an active component, where either the weights or the underlying portfolio or both are actively managed. Comparatively, CalPERS SIP is passively managed.

Morningstar Universe and SIP Recommended Glide Paths



The projected outcome for the median full-career participant is displayed on Slide 22. Although the median 457 plan participant can expect 5.8% replacement income to help them reach income replacement goals in their retirement years, there is still a relatively high probability (71%) that they will experience shortfalls. RVK’s analysis indicates that annual contributions, especially during early working years, and retirement age are the two most important contributors to retirement income adequacy. In particular, their analysis suggests that should participants increase their contributions by 1.5% per year, shortfall risk (or the probability that participants will deplete their account balances in retirement and are left to rely on CalPERS pension or other income sources) will be reduced to 50%. These projected outcomes compare favorably to those projected based on the current Glide Path as displayed on Slide 23.

Budget and Fiscal Impacts
Not Applicable.

Benefits and Risks
The benefits of approving the recommended Glide Path include:

1. Guide the scheduled Glide Path re-balancing on October 1st, 2018

2. Improve retirement outcome for CalPERS SIP participants based on current, well-researched assumptions and projections

The risks of approving the recommended Glide Path include:

1. The actual realization of future uncertainties may deviate significantly from model projections

Attachments
Attachment 1 – Affiliate Trust Asset Allocation Review: Supplemental Income Plans
Attachment 2 – Opinion Letter from Wilshire Associates

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