Investment Program

ASSET ALLOCATION PROCESS OVERVIEW

5-23-2017 FED IC ITEM #2(1)

Introduction

- The following slides provide a view of the general process used to determine the **strategic asset allocation.**
  - Strategic is generally defined as the long-term, multi-year target asset allocation.
  - Distinct from tactical asset allocation, where decisions made with a shorter investment horizon.
  - Tactical decisions are deviations from the strategic allocation and can include 1) opportunistic rebalancing, 2) opportunistic positioning, 3) risk mitigation, and 4) managing cash flows.
  - **This presentation is focused on long-term strategic asset allocation**.
- The strategic asset allocation is used to determine the policy benchmark and policy performance.
  - Each strategic asset class target weight is multiplied by the related benchmark performance to determine its contribution to policy benchmark performance.
- The pension plans have used the process outlined in the following slides for the past few years.
- In addition, historical asset allocation activity is provided for additional context.

Note: The words Capital Market Assumptions or CMA is used throughout this presentation. Capital Market Assumptions are a forecaster's best estimate for how financial markets will perform over some period of time, typically the long-term (e.g. 10-20 years). Capital Market Assumptions have 3 components, 1) a return estimate for each asset class, 2) an estimate of volatility for each asset class, and 3) an estimate for how each asset will correlate with every other asset class. As a simple reference: return, volatility and correlation.

Asset Allocation Process

1Q: Consultant prepares capital market assumptions (CMA)

- CMA are presented to investment committee (IC) and board, with potential methodology and/or y-y changes highlighted.
- The current strategic asset allocation is presented with prior and updated expected return and volatility, using the new CMA.

2Q: Asset allocation review or (in select years) full asset liability modeling (ALM) work begins

- *The long-term strategic asset allocation of the Fund will be reviewed at a minimum every five years based on the results of an asset liability study. However, since projected liability and risk/return expectations may change such studies may also be performed on an interim basis, as necessary.* **Source: Investment Policy Statement.**
- A full ALM exercise analyzes the asset allocation in conjunction with the liability side (i.e. projected benefit obligations), whereas an asset allocation review focuses on the asset side only.

2Q: Staff and the consultant develop potential alternative asset allocations (mixes)

- The asset allocations that are produced incorporate qualitative assessment, investment philosophy, investment beliefs and biases, and quantitative modeling.
- Mean variance optimization (MVO) is perceived as the quantitative backbone of asset allocation work; in reality, qualitative judgement dominates this stage of the asset allocation process.
- An understanding of the uncertainty in CMA should cause skepticism of MVO output; the return and volatility estimates for many particular asset allocation mixes are likely to have no statistically significant difference.

Asset Allocation Process, continued

2Q/3Q: Many tools evaluate the potential asset allocation mixes

- Stress tests, scenario analysis (historical and hypothetical), economic regime management (ERM), a new analytical tool from Meketa High Dimension Optimization (HDO), and liquidity analysis
- The process is iterative, with various mixes considered and viewed through the multiple lenses until a selection is made.

2Q/3Q: The investment committee and board select an asset allocation

- Appropriate ranges around asset class targets are selected; ranges can be symmetric or asymmetric
- In addition, asset class benchmarks are established

3Q and beyond: An implementation plan is developed

- Individual asset classes are structured, determining the composition of the underlying asset class. Factors include active vs. passive, long-only versus hedged, types of investment strategies to include, etc.
  - Once structured and populated with strategies, an asset class can have meaningful tracking error relative to its benchmark.
- Transition managers may be utilized to implement new asset allocations and asset class structures.
- Where identified in the asset class structuring process, investment strategies are diligenced and recommended.

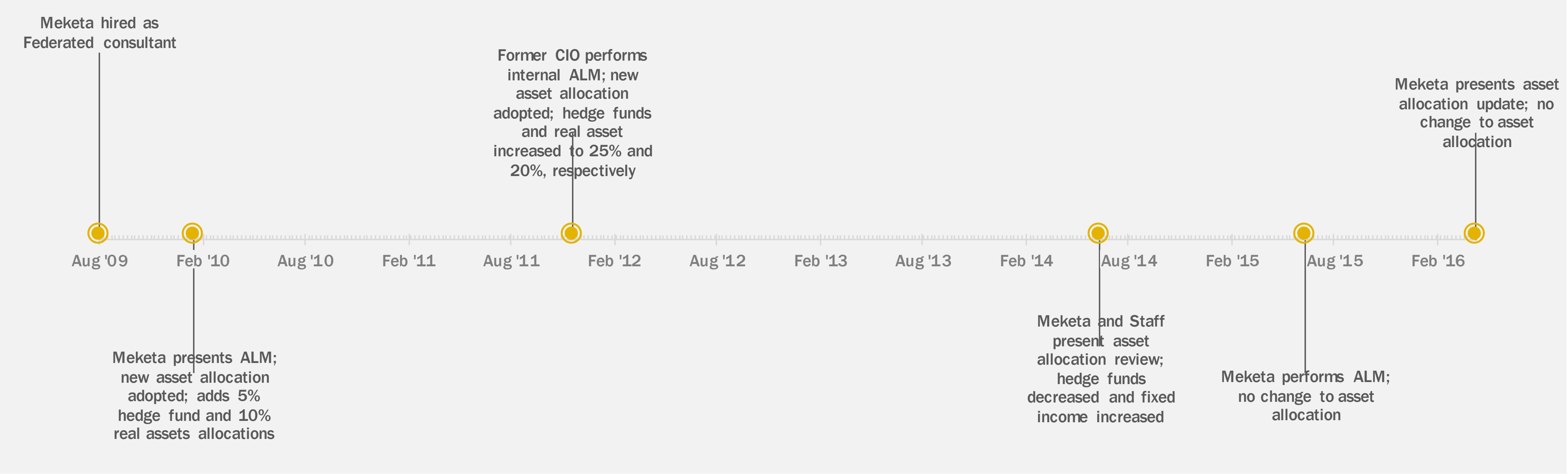
Process Summary

Activity	Prepared by	Reviewed by	Accepted/Approved by
CMA	Consultants*	Staff, Board	Board
Asset Allocation mixes	Staff, Consultants, Board	Board	Board
Analysis of mixes	Consultants	Staff, Board	Board
Asset Allocation ranges	Staff, Consultants	Board	Board
Transition plan	Staff, Consultants	Board	Board
Investment structures	Staff, Consultants	Board	Board

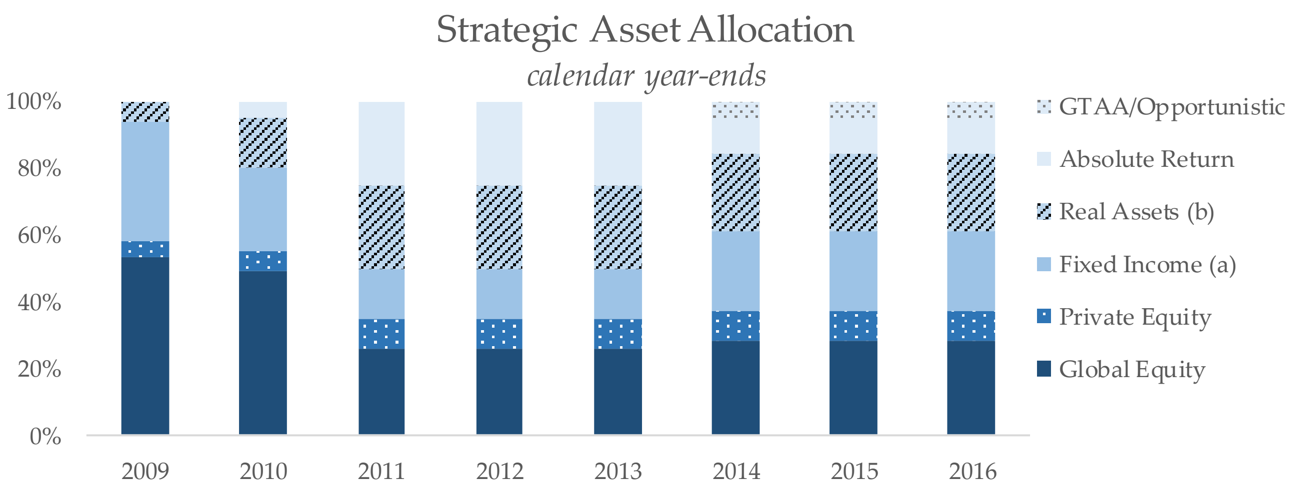
* In 2013 Staff prepared CMA for Federated, although this is not the typical process.

Federated Asset Allocation History

Federated Asset Allocation History since 2009



Federated Asset Allocation History



	12/31/09	12/31/10	12/31/11	12/31/12	12/31/13	12/31/14	12/31/15	12/31/16
Global Equity	53%	49%	26%	26%	26%	28%	28%	28%
Private Equity	5%	6%	9%	9%	9%	9%	9%	9%
Fixed Income (a)	36%	25%	15%	15%	15%	24%	24%	24%
Real Assets (b)	6%	15%	25%	25%	25%	23%	23%	23%
Absolute Return	0%	5%	25%	25%	25%	11%	11%	11%
GTAA/Opportunistic	0%	0%	0%	0%	0%	5%	5%	5%
Total	100%	100%	100%	100%	100%	100%	100%	100%

(a) Includes Private Debt.

(b) Includes Real Estate.

(c) Strategic allocation approved in December 2011 was modified in March 2012 when investment structure approved; March 2012 figures are shown at the 12/31/11 date.

Source: ORS.