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New Mexico Educational Retirement Board

Asset-Liability Study

June 15, 2012

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25 Years 1986-2011

Asset Allocation Defined

- **The process of allocating assets across a spectrum of investments to achieve an expected return at an expected level of risk**
  - "Expected" is a statistics term, which is different from the common use of the word
  - Expected return is the weighted average of all possible returns, where the weights are the probabilities that each return will occur

- **Asset allocation decisions include, but are not limited to:**
  - Equities/Bonds/Cash/Real Estate/Private Equity/Hedge Funds/Commodities/Agriculture/Energy/Timber/etc
  - Domestic/International/Global
  - Liquid vs. Illiquid

- **Structure: refers to implementation decision**
  - Core vs. Value/Growth
  - All Cap vs. Large/Medium/Small Cap
  - Active vs. Passive
  - Global vs. US/Foreign

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Purpose

- **This report presents the results of the asset-liability study conducted on the Educational Retirement Board of New Mexico**

- **The goals of the study are to:**
  - Review the current and projected financial status of the Retirement plan over the next 5-10 years
    - Project pension liabilities and benefit payments
    - Project asset growth and contribution levels
  - Assess the appropriateness of the current asset allocation relative to the expected progress of liabilities and cash flows
    - Analyze the benefits of asset class diversification
  - Understand the contributions to risk/volatility of both asset returns and funded status
  - Review the current asset allocation target for the Retirement Plan
  - Help decide on a new asset allocation target for the Retirement Plan

Summary

- **The System's funded status declined in fiscal 2011, as it had in the prior two fiscal years**
- **Funded status is expected to deteriorate even further over a 10-year horizon, even if assets earn the expected return and statutory contributions are made**
  - Expected return for the Current Allocation using NEPC's 2012 assumptions is 7.4%
  - As of June 30, 2011, plan funded status was 63.0% on an **actuarial value** basis, and 62.7% on a **market value** basis
  - Using actual asset returns through February 2012, funded status is estimated to drop to 59.8% as of June 30, 2012 on an actuarial value basis
    - Takes into account the changes to assumptions adopted for the 2011 fiscal year
- **Expected annual benefit payments exceed annual contributions over the next 10 years, creating a negative annual net cash flow**
- **Current actual asset allocation is expected to achieve the 7.75% actuarial return assumption over 30 years, but not in the 5-7 year time frame**
  - Expected average return over the next 5-7 years is 7.4%, according to NEPC 2012 assumptions, and 7.9% over 30 years
  - However, potential for excess returns from active managers could drive expectations closer to target over next 5-7 years
  - NEPC forward-looking expected asset returns have declined in 2012, and in every year since 2009 (see Appendix for actual assumptions)
- **Current target allocation is expected to achieve the 8.5% over 5-7 years, and 8.7% over 30 years**

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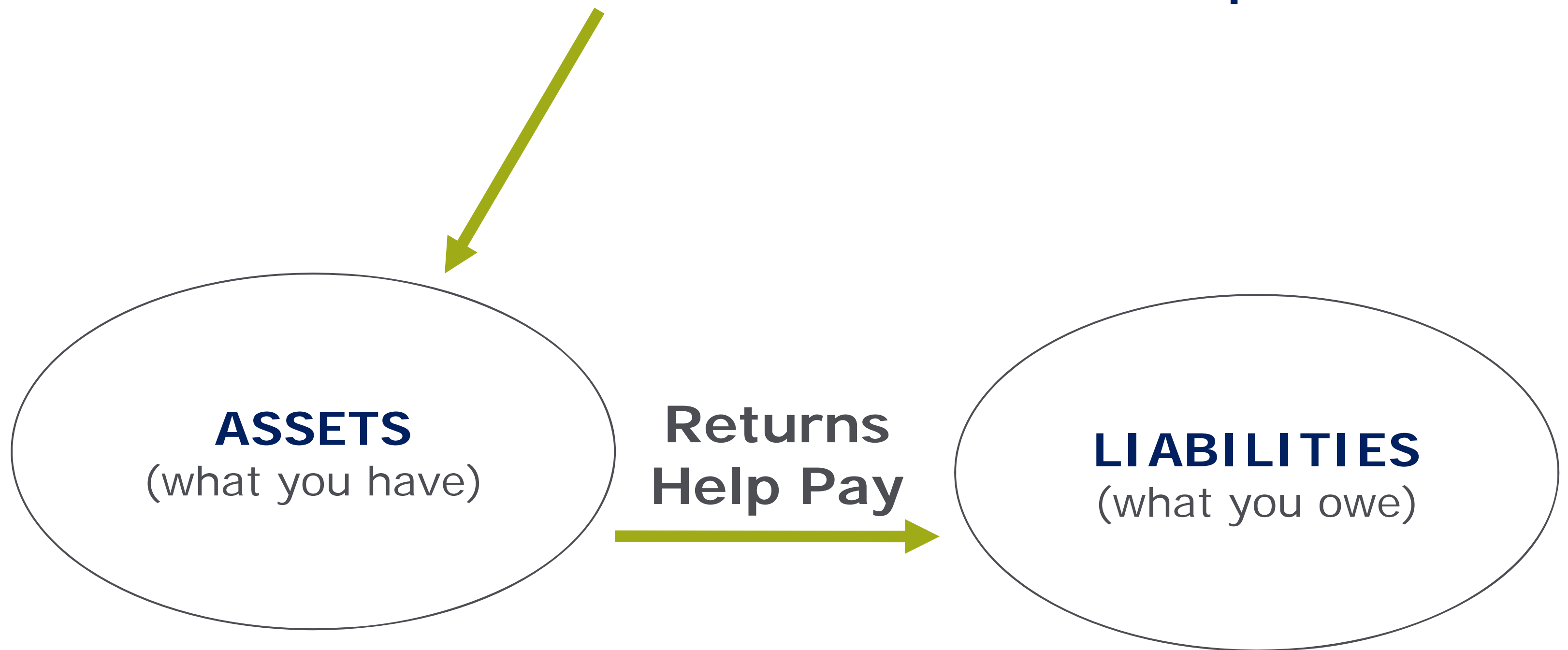
C + I = B + E



Asset Allocation Analysis

Proposed Asset Allocation Mixes

	Actual Allocation (12/31/2011)	Long Term Policy Target	Mix A	Mix B	Mix C	Long Term Policy Target (9/30/2005)
Cash	3%	1%	1%	1%	1%	0%
Large Cap Equities	23%	23%	20%	0%	6%	40%
Small/Mid Cap Equities	2%	2%	2%	0%	2%	6%
Int'l Equities	5%	5%	5%	0%	6%	18%
Emerging Int'l Equities	9%	10%	10%	0%	3%	2%
Total Equity	**39%**	**40%**	**37%**	**0%**	**17%**	**66%**
Core Bonds	18%	5%	7%	31%	18%	20%
High Yield Bonds	0%	0%	0%	5%	5%	
Opportunistic Credit	13%	20%	20%	15%	15%	5%
Global Bonds	0%	0%	0%	6%	3%	
Emerging Market Debt	2%	2%	2%	10%	3%	0%
TIPS	0%	0%	0%	5%	2%	4%
Total Fixed Income	**33%**	**27%**	**29%**	**72%**	**46%**	**29%**
Private Equity	5%	7%	8%	7%	0%	0%
Real Estate	6%	5%	5%	5%	0%	5%
Absolute Return	7%	8%	3%	8%	0%	0%
Inflation-Linked Assets	1%	7%	7%	7%	36%	0%
Global Asset Allocation	2%	2%	5%	0%	0%	0%
Risk Parity	4%	3%	5%	0%	0%	0%
Total Alternatives	**25%**	**32%**	**33%**	**27%**	**36%**	**5%**
Expected Return (compound) (5-7 Years)	7.4%	8.5%	8.5%	6.5%	7.6%	6.8%
Expected Risk (volatility) (5-7 Years)	10.9%	12.7%	12.7%	7.5%	11.7%	12.8%
Sharpe Ratio (5-7 Years)	0.56	0.57	0.57	0.70	0.55	0.43
Sortino Ratio (0% Minimum Acceptable Return)	0.87	0.87	0.87	1.20	0.85	0.65
Probability of < 0% over 1 year	24.9%	25.1%	25.2%	19.4%	25.7%	29.8%
Probability of < 0% over 5 Years	6.5%	6.7%	6.8%	2.7%	7.2%	11.8%
Probability of < 7.75% over 5 Years	52.7%	44.8%	45.0%	65.1%	51.0%	56.8%
Expected Return (compound) (30 Years)	7.9%	8.7%	8.6%	6.9%	8.0%	7.6%
Total Expected Yield - % (Cash Flow)	2.9%	3.4%	3.3%	3.7%	4.7%	2.7%
Total Expected Yield - $$ (Cash Flow)	$ 275,785,000	$ 318,725,000	$ 317,015,000	$ 347,082,500	$ 441,797,500	$ 253,650,000

Notes

Expected return and risk based on 2012 NEPC Capital Market Assumptions

Totals may not add to 100% due to rounding

Alternative Asset Allocations Modeled

- **The actual allocation as of 12/31/2011 and the current policy target are modeled along with the following alternative mixes, as suggested**
- **Mix A:**
  - A slight variation from the Current Target
  - Shifts 2% from Large Cap equities to Core Bonds
  - Takes 5% from Absolute Return to greater fund GTAA and Risk Parity
- **Mix B:**
  - A "risk off" allocation with 0% in equities
  - Moves the entire 37% equity allocation and 5% GTAA and Risk Parity allocations into fixed income
  - Retains 27% in alternative asset classes
- **Mix C:**
  - A defensive allocation with a heavy inflation protection
  - Moves 20% from equities into fixed income and inflation-linked assets, with 17% remaining in equities
  - Eliminates the entire 27% allocation to "alternative" asset class exposure (real estate, private equity, hedge funds, GTAA, risk parity), and funds inflation-linked assets
- **Long Term Policy Target (created 9/30/2005):**
  - An "old school" allocation close to 65%/35%
  - A heavily reliance on equities with 66% allocated
  - 29% in fixed income, and 5% in real estate for diversification

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Risk Budgeting

- **Risk budgeting considers the portfolio from a total risk perspective rather than total return**
- **A way to determine the contribution to overall portfolio risk by each asset class in the portfolio, based on**
  - Asset class volatility assumptions
  - Correlations between asset classes
- **Shows the benefit of diversification within a portfolio**
  - Risk exposures in relation to allocation size

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Current Asset Allocation Risk Analysis

Asset Allocation: Cash 3%, Core Bonds 18%, Opportunistic Credit 13%, EMD 2%, GAA/Risk Parity 6%, Lg Cap 23%, Sm/Mid Cap 2%, Int'l 5%, Emerg 9%, PE 5%, PRA 1%, RE 6%, HF Low Vol 7%

Asset Risk: Treas 1%, Credit 2%, MBS 2%, TIPS 1%, Opportunistic Credit 14%, Glob Bonds 0%, EMD 2%, Lg Cap 36%, Sm/Mid Cap 4%, Int'l 9%, Emerg 17%, PE 8%, PRA 1%, RE 1%, HF Low Vol 3%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

- **The Plan's current allocation has approximately 44% to equities (both public and private), which equates to 73% of the asset volatility of the plan**

Notes: Expected return and risk based on 2012 NEPC 5-7 Year Capital Market Assumptions

Totals may not add to 100% due to rounding

Asset Risk Budgeting

	Expected Volatility
Current Allocation	10.9%
Current LT Target	12.7%
Mix A	12.7%
Mix B	7.5%
Mix C	11.7%
Prior LT Target	12.8%

0.0 2.0 4.0 6.0 8.0 10.0 12.0 14.0

Cash, Treasuries, IG Corp Credit, MBS, TIPS, Opportunistic Credit, Global Bonds, EMD, Large Cap Equities, Small/Mid Cap Equities, Int'l Equities, Emerging Int'l Equities, Private Equity, Private Debt, Private Real Assets (Illiquid), Real Estate (Core), Hedge Funds Low Vol, Hedge Funds Mod Vol, Commodities

Notes: Expected return and risk based on 2012 NEPC 5-7 Year assumptions

Totals may not add to 100% due to rounding

Plan Review

Plan Summary

- **As of June 30, 2011, the System was 63.0% funded on an actuarial basis**
  - Liabilities were discounted at a long term rate of 7.75%
  - Discount rates for corporate pension plans have declined since the end of 2008
    - However public sector pension plans are not immediately affected by moves in interest rates and have more gradual adjustments

- **As of June 30, 2012, the System is estimated to be 59.8% funded on an aggregate actuarial basis**
  - Using actual asset return information for the first 8 months of FYE 2012, with expected returns after that date based on NEPC 2012 assumptions
  - Discount rate is assumed to remain at 7.75%
  - Assumption changed adopted for fiscal 2011 were reflected

- **Annual Required Contributions are expected to increase over the projection period**
  - However, actual contributions are based on statutory rates determined by the Board, which are currently lower than the Annual Required Contributions

- **Annual benefit payments are greater than annual contributions from both employer and employee**
  - Therefore any shortfall needs to be made up through investment returns in excess of expected

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Plan Funded Status

	6/30/2011 Funding	6/30/2012 Estimated Funding
Number of Participants		
Active	61,673	
Retirees and Beneficiaries	35,457	
Inactive + Due Refunds	33,011	
Total	130,141	n/a
1. Total payroll (in $ millions)	$2,524	$2,618
2. Actuarial Accrued Liability (in $ millions)	$15,293	$15,953
3. Actuarial Value of Assets (in $ millions)	$9,642	$9,544
Funded Status (3 divided by 2)	63.0%	59.8%
4. Market Value/Fair Value of Assets (in $ millions)	$9,589	$9,613
Funded Status (4 divided by 2)	62.7%	60.3%

Sources: 6/30/2011 values from 6/30/2011 Actuarial Report from GRS

6/30/2012 estimated funding results calculated by NEPC

Assumptions: 6/30/2012 assets and liabilities based on actual asset returns through 2/29/12 and NEPC 2012 Capital Market Assumptions, and an assumed discount rate of 7.75%

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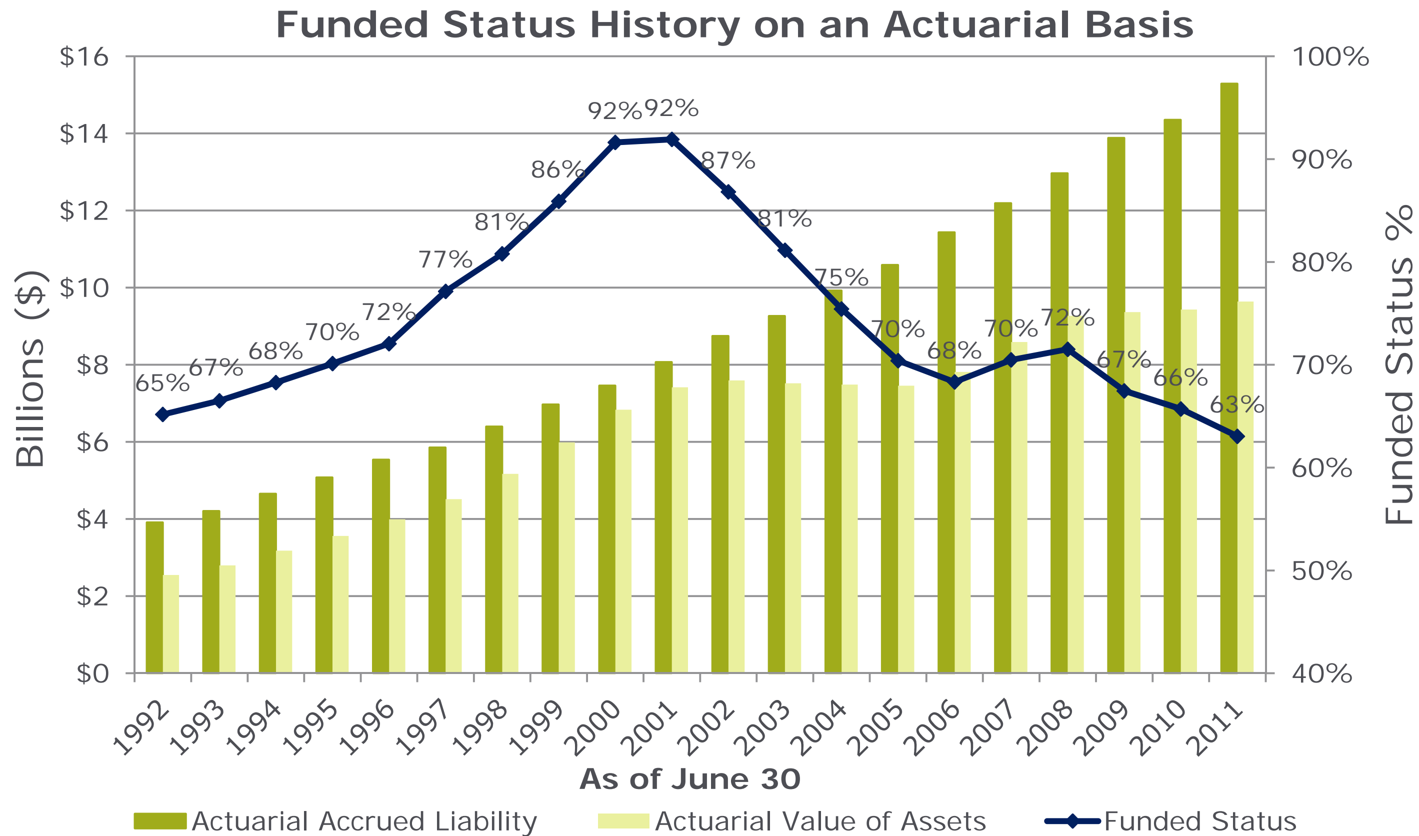
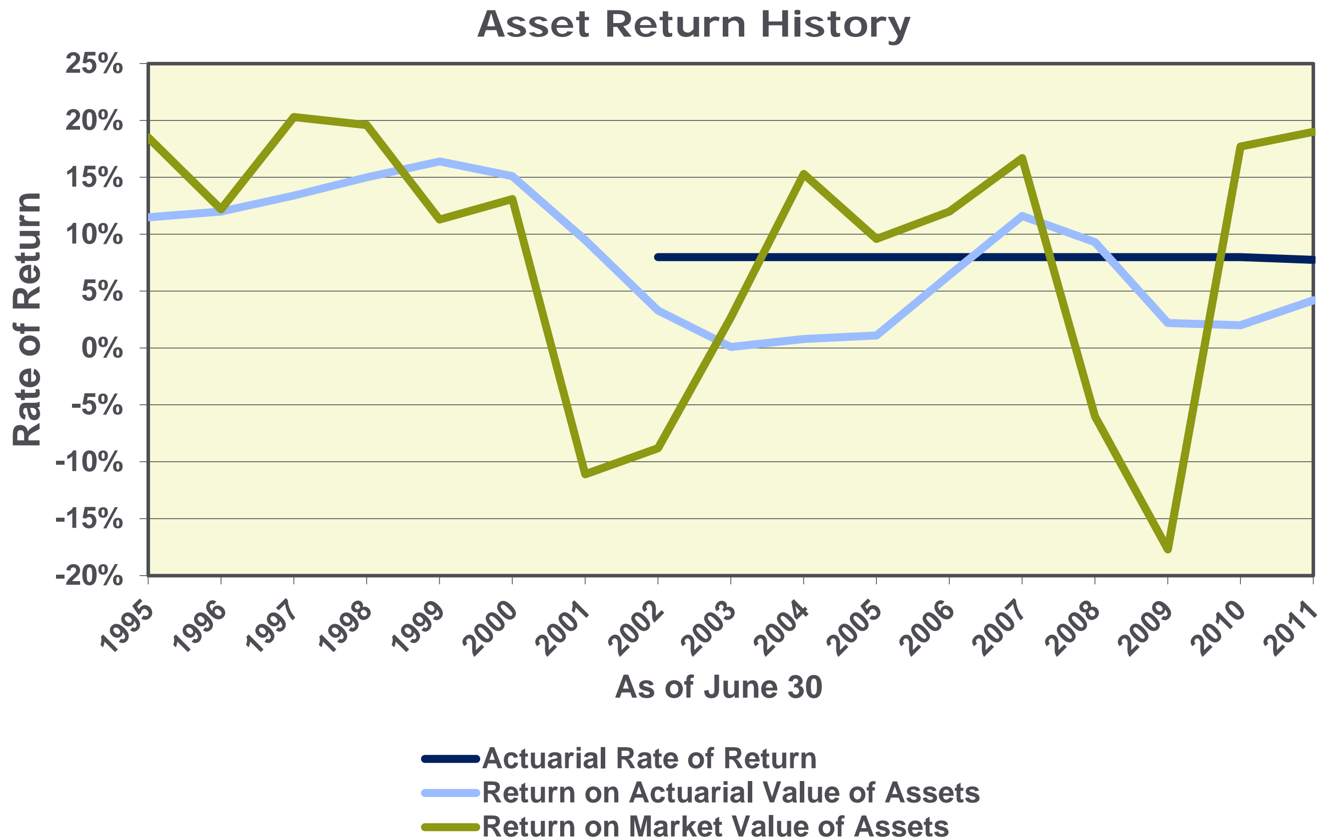
Historical Review



- Over the past 20 years, liabilities have grown an average of 7.5% per year
- Valuation Assets have recently not kept pace with liability growth, growing on average 12.0% per year in the first 10 years, and 2.7% per year in the last 10 years as market turmoil has affected most pension plans

Source: GRS

Historical Review



- **Market Value reflects strong performance in 2010 and 2011 fiscal years**
- **Actuarial Value lags behind Market Value as gains and losses are reflected over 5 years per chosen smoothing method**

Source: 6/30/2011 Valuation Report from GRS
Note: Actuarial rate of return is unknown prior to 2002

Deterministic Projection Assumptions

- **On the following three pages we show some deterministic projections of the Plan**
- **Actual asset returns through February 29, 2012 were used, with NEPC 2012 Base Case assumptions used for expected return after that date**
- **The basis for liability calculations was the June 30, 2011 actuarial valuation report by your actuary, Gabriel Roeder Smith & Company**
  - NEPC projected accrued liability, normal cost, and asset values according to System's benefit provisions and actuarial assumptions and methods
- **Expected contributions**
  - Employer contributions are assumed to be the statutory contribution schedule
    - Ultimately 13.9% of payroll after fiscal 2014
  - Employee contributions are assumed to be as scheduled, ultimately 7.9% of payroll each year after fiscal year 2013
- **Other assumptions**
  - Discount rate is assumed to remain at 7.75% as of 6/30/2012 and in all future years
  - Total payroll is assumed to increase at the annual rate of 3.75%
  - Benefit payments are as projected by the actuary
  - Normal Cost is expected to remain level as a percentage of payroll
  - No assumed benefit changes and workforce remains at current levels

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Deterministic Projections – Funded Status

- **Funded status declines slowly over the next ten years under this Base Case scenario**
  - Discount rate remaining level at 7.75% and assets returning as assumed (approximately 6.6%)
  - Contributions are assumed to be made as projected on the following page
- **Actuarial Accrued Liability is forecast to increase at an average annual rate of 4.2%**
- **Actuarial Value of Assets is forecast to grow at an average annual rate of 3.0%, and therefore cannot keep pace with growing liabilities**
- **Funded status under various scenarios are reviewed in the next section**

Projection of Funded Status under Current Asset Allocation and Base Case Assumptions

Billions ($)

$25
$20
$15
$10
$5
$0

Funded Status %

100%
90%
80%
70%
60%
50%
40%

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Funded Status	63%	60%	58%	59%	59%	58%	57%	57%	56%	55%

Actuarial Accrued Liability | Actuarial Value of Assets | Funded Status

Note: Liability and Asset values after 2011 were estimated by NEPC

Deterministic Projections - Contributions

- **Employer required contribution as a percentage of payroll is expected to increase over the next 10 years, while statutory employer contributions level out at 13.9%**
  - This will create increases in the Unfunded Accrued Liability and drive funded status lower
- **Employee contributions are assumed to remain level at 7.9% of payroll after 2013**
- **Total payroll is assumed to grow at approximately 3.75% annually**

Projected Employer Contributions as a % of Payroll

Fiscal Year Ending June 30	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Payroll (Billions)	$2.68	$2.78	$2.88	$2.99	$3.10	$3.22	$3.34	$3.47	$3.60	$3.73
Required Employer Contributions as % of pay	14.5%	17.4%	19.5%	19.3%	19.3%	19.8%	20.1%	20.5%	20.8%	21.1%
Employer Contributions as % of pay	9.2%	10.9%	13.2%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%	13.9%
Employee Contributions as % of pay	11.2%	9.4%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%	7.9%

Note: Payroll and contributions after 2011 were estimated by NEPC

Deterministic Projections – Net cash flow

- **Annual benefit payments are greater than outgoing annual contributions**
  - Excess must be made up through investment returns greater than expected
- **Actual employer contributions are forecast to increase by 70% over the next ten years**
- **Employee contributions are projected to increase by 13% over the same time period**
- **Annual benefit payments are projected to grow at an average rate of 6% per year over the next 10 years, or 78% cumulatively**

Millions ($)

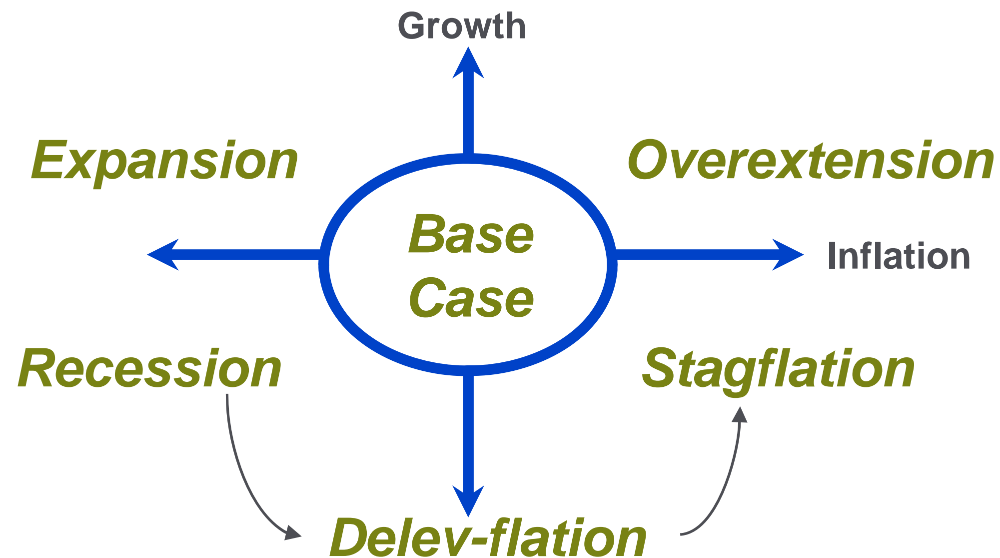
Fiscal Year Ending June 30	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Employee Contributions	$251	$299	$261	$228	$236	$245	$254	$264	$274	$284
Employer Contributions	$308	$249	$307	$384	$420	$436	$453	$470	$505	$524
Expected Benefit Payments	($737)	($891)	($864)	($926)	($988)	($1,053)	($1,120)	($1,184)	($1,249)	($1,314)
Net Cashflow	(178)	(343)	(295)	(314)	(332)	(371)	(413)	(451)	(470)	(506)

Note: Contributions after 2012 were estimated by NEPC

Scenario Analysis

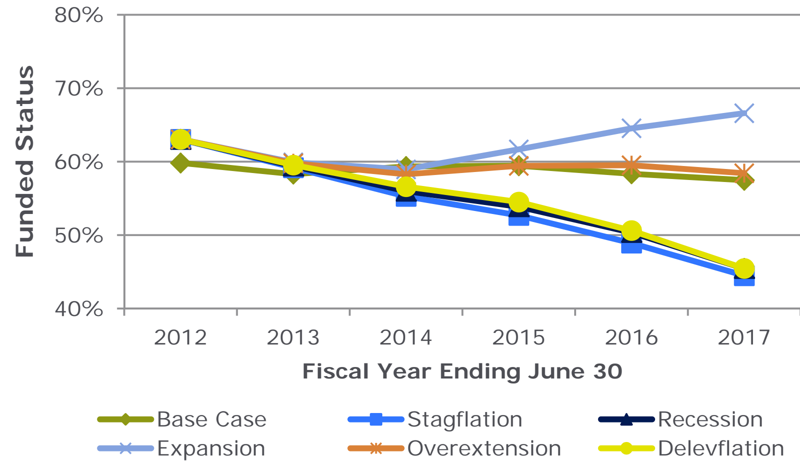
Scenario Analysis

- **NEPC Scenario Analysis allows plan sponsors to understand their risk tolerance for an investment program under multiple economic scenarios**
  - Allows better understanding of risk exposures under contrasting inflation and economic growth regimes
  - Can understand the effect on both assets and liabilities (funded status)
- **Scenarios are based on high and low growth and inflation, as illustrated in the diagram below**

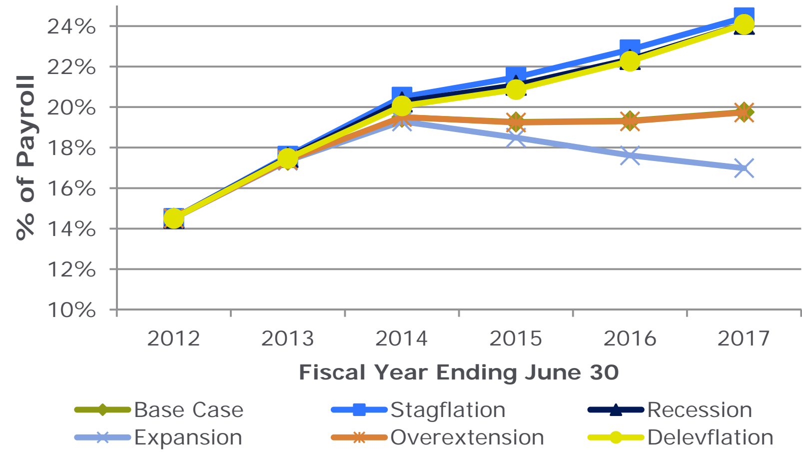


Scenario Analysis – Current Allocation

Projected Funded Status



Required Contributions (as % of pay)

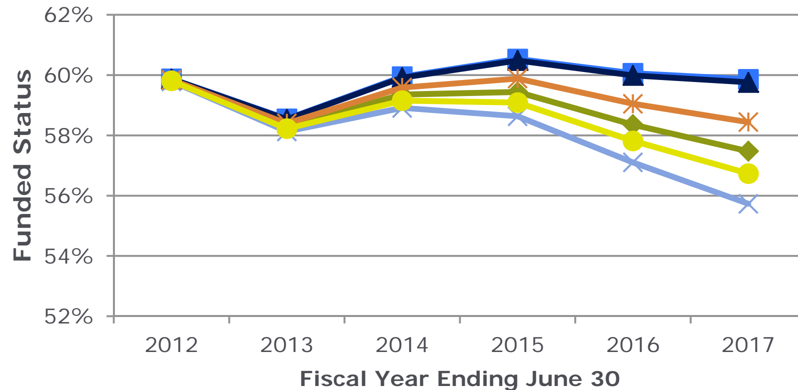


- **Under the Current allocation, funded status is estimated to decline or hover below 60% under almost every scenario (except Expansion)**
  - Wide ranges of outcomes, from 44% to 66% in FYE 2016, depending on economic regime
  - Expansion scenario shows improving funded status after investment losses from 2008/09 are fully recognized in 2013
  - In weaker economic environments, investment returns struggle to keep pace with growing liabilities, and contribution requirements increase

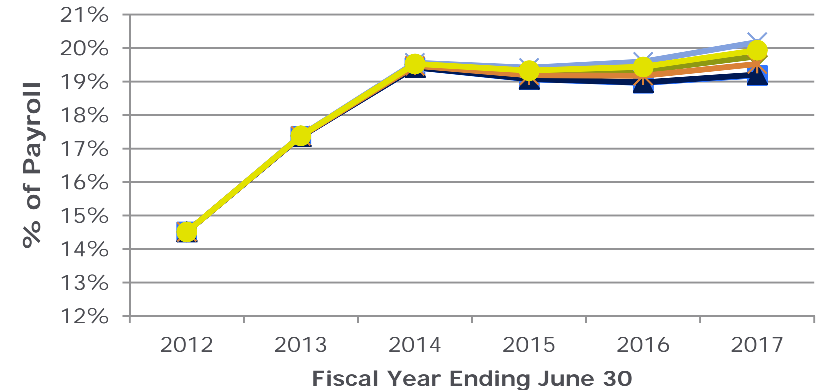
- **Employer required contributions are estimated to increase under every scenario**
  - Outcomes range from 17% of payroll to 24% of payroll in FYE 2017
  - Statutory employer contributions (at 13.9%) are lower than required contributions calculated under all scenarios, in all years

Asset Mix Comparison under Base Case

Projected Funded Status



Required Contributions (as % of pay)



- **Under the Base Case scenario, the Current Target and Mix A have the highest projected funded status and lowest projected contributions**
  - Better outcomes than the Current Allocation and prior Long Term Policy Target
- **The decreased return expectations for mixes B and C result in a lower funded status result by FYE 2017**
  - Mix B's funded status is even less than the Prior LT Target allocation
- **However, the various asset mixes do not show much variation in contribution results**
  - Returns for the different asset classes vary under each economic scenario, but the Base Case scenario has positive returns for each asset class in each year of the projection
  - Unfunded Accrued Liability amortization is smoothed over 30 years, masking the differences between the asset mixes

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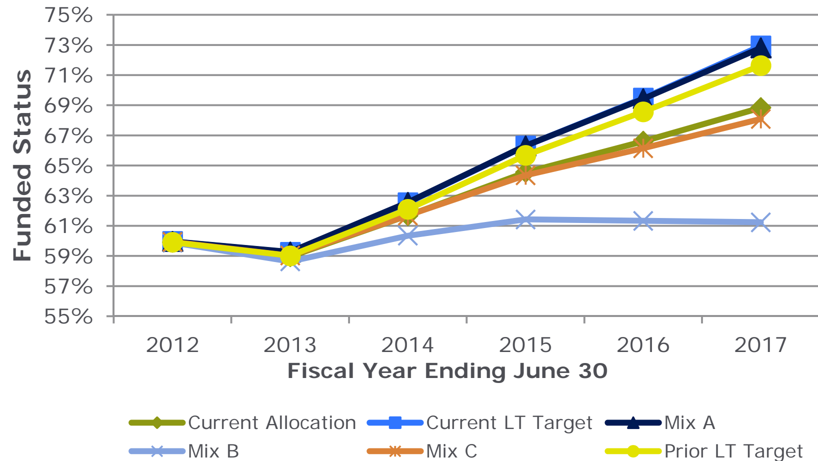
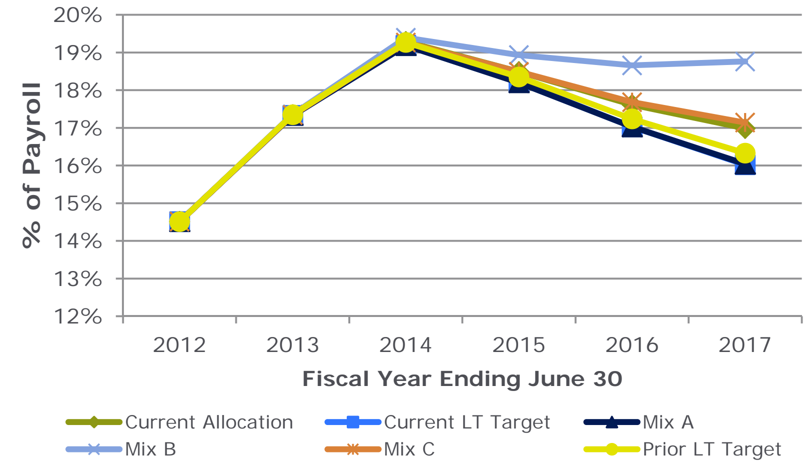
Asset Mix Comparison under Expansion

Projected Funded Status



Required Contributions (as % of pay)



- **Under a strong growing economy like Expansion, allocations with higher equity exposure will do well**
  - Losses from 2008 are still being recognized through 2013, thus dampening actuarial value of assets and lowering funded status
  - After 2013, funded status improves under all allocations by varying degrees
- **Mix B is the poorest performer, resulting in an almost flat funded status over the 5-year projection and the highest contributions**
- **The Current Target and Mix A have the strongest performance, with some equity exposure balanced with fixed income and alternatives**
  - The Prior Long-term Target also outperforms with heavily reliance on equities
- **By FYE 2017, Mix A is estimated to have an 11.5% higher funded status than Mix B and lower contributions by 2.8% of payroll**

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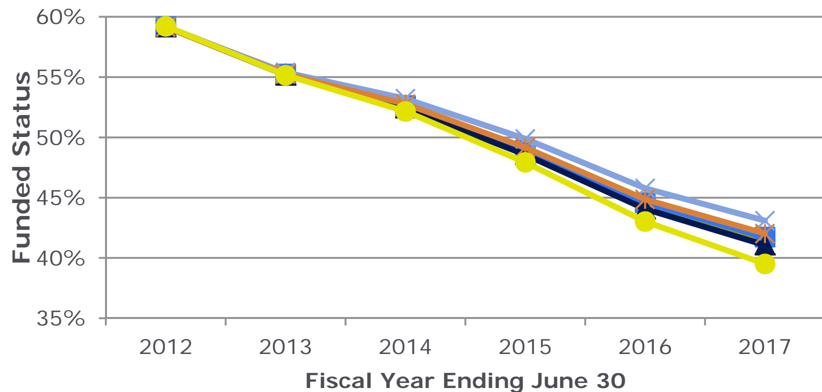
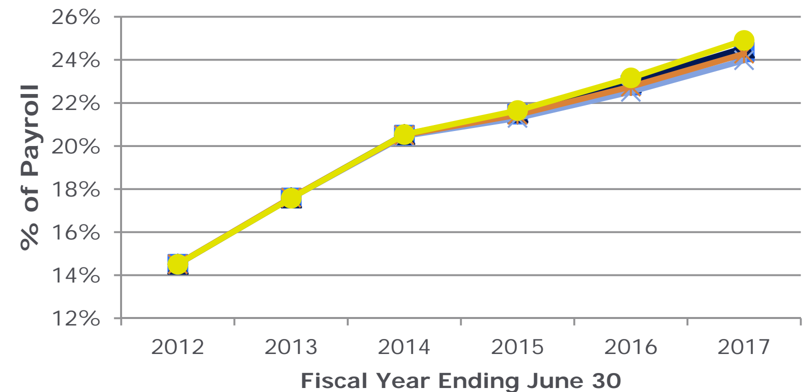
Asset Mix Comparison under Stagflation





- **Under a Stagflation environment, all mixes are hurt by declining markets and rapid inflation**
  - Allocations with greater equity exposure get hurt by the declining markets
    - Prior Long-term Target and Mix A are hurt the most, lagging Mix B by 2% to 3.5% in funded status in FYE 2017
  - Allocations with inflation protection perform better than those that don't
    - 1% higher funded status in FYE 2017 under Mix C than Mix A
- **Fixed income asset classes struggle as well in a rising rate environment**
- **Contributions follow funded status, with the mixes resulting in lower funded status and having higher required employer contributions**
- **Again, the asset mixes show similar results**
  - Liabilities remain unchanged and are the same for each scenario given the stable discount rate
  - Asset returns vary only by allocation, and gains and losses are smoothed over 5 years, per asset smoothing method

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Summary and Recommendations

- **Funded status of the plan is expected to decline in the next years, even if our expected investment returns are met**
  - Losses from 2008/09 still being recognized
  - Expected return for the Current Allocation is 7.4% for fiscal 2012
- **Employer required contributions are expected to increase as participant benefits continue to accrue**
  - Required contributions are higher than statutory employer contributions in all years under all economic scenarios
- **Current Target is expected to exceed the plan's expected return target of 7.75% in the near and long term**
  - In addition, we believe additional return is possible through increased diversification and specific opportunities in the current market
    - Increase GTAA and Risk Parity, lowering Real Return
  - Mix A highlights these views and has a 30-year expected return of 8.6%
- **Mix B and Mix C represent defensive allocation ideas**
  - The opportunity cost of this level of market and inflation protection may not be a desired trade under the Base Case and strong economies
- **Risk budgeting analysis reveals there is still a reliance on equity markets for positive returns**
  - 74% of the volatility of the Current Allocation is still tied to the equity markets
  - Allocations with additional diversifying assets have been added to mitigate market exposure
    - However these allocations (Current Target and Mix A) also come with increased volatility from other sources such as Opportunistic Credit

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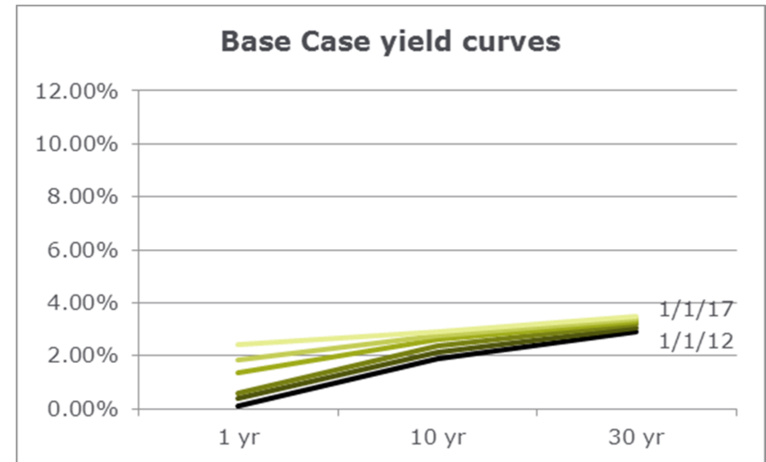
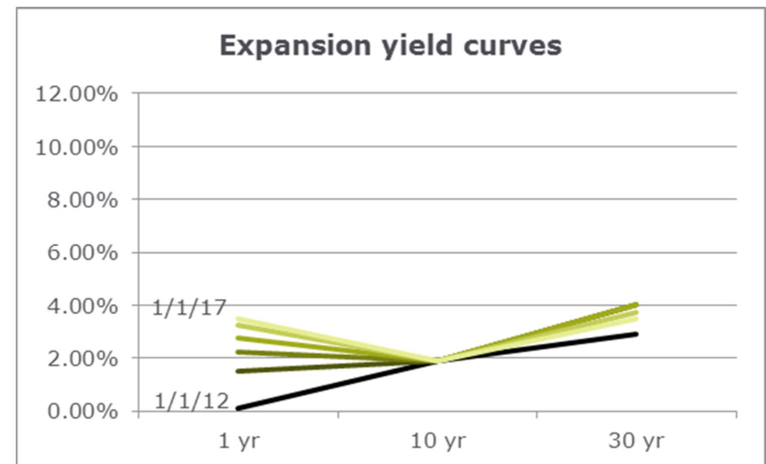
Appendix

Scenarios Considered

- **Base Case**
  - Low volatility
  - Asset returns over 5-year period in line with NEPC 2012 5-7 Year Assumptions
    - *Large cap equities: 7.25%*



- **Expansion**
  - Economy is growing by a strong, but seemingly sustainable level
  - Bond yields are stable, inflation is manageable, equities and other high volatility asset classes perform quite well in this environment
  - Historical example: 2004-2006
  - *Large cap equities time-series: 10%, 17%, 28%, 12%, 10%*



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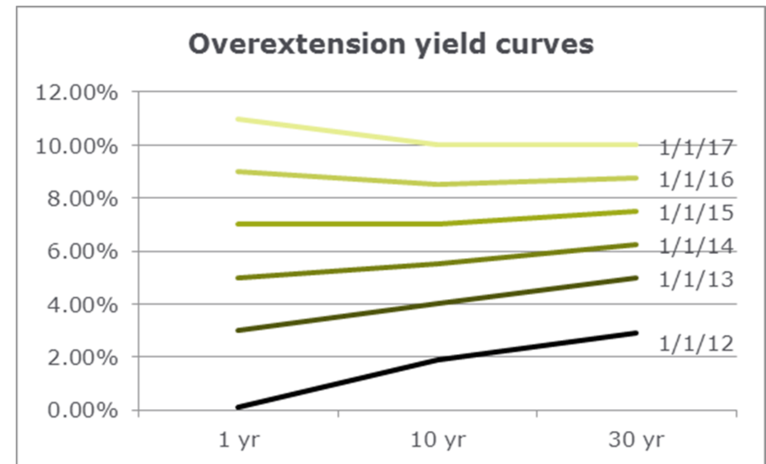
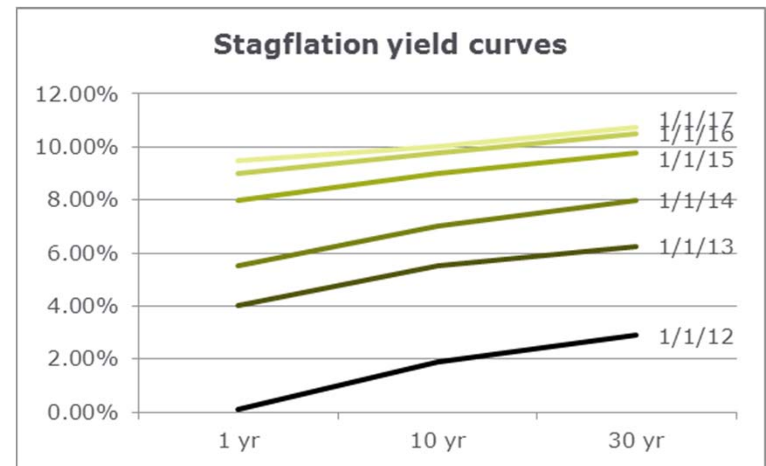
Scenarios Considered

- **Overextension**
  - Economy is growing at a rapid pace, inflation increases significantly – booming times but at the cost of future growth
  - Bond yields move higher as a result of inflation; high yield does well with confidence in the economy
  - Equities, real estate, and commodities fuel rapid expansion
  - Historical example: Vietnam War era (1967-1971)
  - *Large cap equities time-series: +12%, +16%, +6%, +8%, +10%*



- **Stagflation**
  - Two problems – (1) the economy is not growing, (2) inflation has skyrocketed
    - Inflation is sticky – once it gets high, it stays high for several years
    - Fed has limited options to kick-start economy because easing only promotes further inflation
  - Equities sag; bonds lose real value; real assets such as TIPS perform well on a relative basis because they are linked to inflation
  - Historical example: flat stock market and double digit inflation of the mid-1970s
  - *Large cap equities time-series: -8%, -15%, 0%, +9%, +12%*



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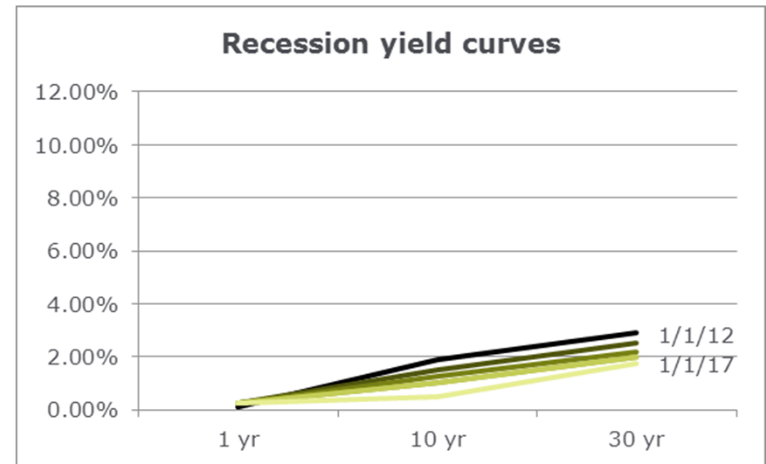
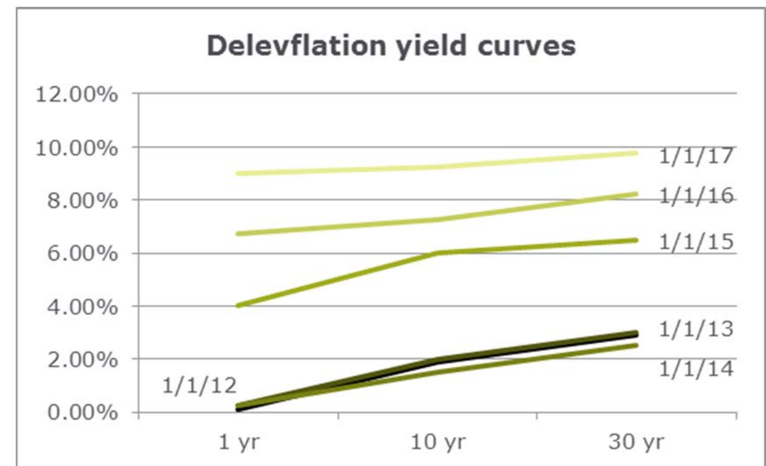
Scenarios Considered

- **Recession**
  - Economy stalls – there is a flight to quality as investors lose confidence
    - Equity markets fall
    - Bond yields fall
  - Interest-sensitive securities (bonds, especially long duration bonds) will perform well in this environment
  - Historical example: early 1990s
  - *Large cap equities time-series: -8%, -18%, -8%, +4%, -10%*



- **Delev-flation**
  - A potential outcome from the current financial crisis
  - Low/negative inflation in beginning years of forecast followed by rapid inflation due to massive government stimulus and policy incentive
  - Stocks move sideways as outcomes remain unresolved but move materially lower over forecast horizon
  - Nominal bonds lose value; inflation sensitive assets perform well
  - *Large cap equities time-series: 0%, -15%, -10%, +15%, -10%*



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NEPC 2012 5-7 Year Assumptions

Geometric Expected Return			
Asset Class	2011	2012	2012-2011
Cash	2.00%	1.25%	-0.75%
Treasuries	2.00%	1.50%	-0.50%
IG Corp Credit	4.00%	4.50%	0.50%
MBS	3.50%	3.25%	-0.25%
High Yield	6.50%	7.00%	0.50%
*US Bonds**	*3.03%*	*2.88%*	*-0.15%*
Global Bonds	1.75%	1.25%	-0.50%
Emerging Market Debt	6.25%	6.75%	0.50%
Diversified Credit	7.00%	6.00%	-1.00%
Large Cap Equities	7.00%	7.25%	0.25%
Small/Mid Cap Equities	7.00%	7.50%	0.50%
Int'l Equities	7.00%	7.75%	0.75%
Emerging Int'l Equities	9.00%	9.75%	0.75%
Private Equity	9.50%	9.75%	0.25%
Real Estate	6.50%	6.00%	-0.50%
Absolute Return (Hedge Funds)	5.75%	5.50%	-0.25%
TIPs	2.25%	1.75%	-0.50%
Commodities	4.50%	4.75%	0.25%
*Real Return***	*5.50%*	*6.25%*	*0.75%*
GTAA	6.25%	6.50%	0.25%

Volatility			
Asset Class	2011	2012	2012-2011
Cash	1.50%	1.50%	
Treasuries	6.00%	6.00%	
IG Corp Credit	7.00%	7.00%	
MBS	10.00%	9.00%	-1.00%
High Yield	13.00%	12.00%	-1.00%
*US Bonds**	*7.50%*	*7.00%*	*-0.50%*
Global Bonds	9.00%	10.00%	1.00%
Emerging Market Debt	15.00%	15.00%	
Diversified Credit	10.00%	7.00%	-3.00%
Large Cap Equities	18.00%	18.00%	
Small/Mid Cap Equities	22.00%	22.00%	
Int'l Equities	21.00%	21.00%	
Emerging Int'l Equities	28.00%	27.00%	-1.00%
Private Equity	28.00%	28.00%	
Real Estate	15.00%	15.00%	
Absolute Return (Hedge Funds)	7.00%	7.00%	
TIPs	7.50%	7.50%	
Commodities	20.00%	18.00%	-2.00%
*Real Return***	*13.00%*	*12.00%*	*-1.00%*
GTAA	12.00%	12.00%	

*US Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).
**Real Return assumption based on 40% Commodities, 20% TIPS, and 40% market weighted blend of Equities.

** Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Credit, and MBS).*

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NEPC 2012 30 Year Assumptions

Geometric Expected Return			
Asset Class	**2011**	**2012**	**2012-2011**
Cash	4.50%	3.25%	-1.25%
Treasuries	4.75%	3.50%	-1.25%
IG Corp Credit	6.00%	5.00%	-1.00%
MBS	5.50%	5.25%	-0.25%
High Yield	7.50%	6.25%	-1.25%
*US Bonds**	*5.34%*	*4.50%*	*-0.84%*
Global Bonds	4.75%	3.25%	-1.50%
Emerging Market Debt	8.00%	7.00%	-1.00%
Diversified Credit	6.50%	6.00%	-0.50%
Large Cap Equities	8.50%	8.00%	-0.50%
Small/Mid Cap Equities	9.00%	8.50%	-0.50%
Int'l Equities	9.00%	8.25%	-0.75%
Emerging Int'l Equities	10.00%	9.50%	-0.50%
Private Equity	10.50%	10.00%	-0.50%
Real Estate	7.00%	6.00%	-1.00%
Absolute Return (Hedge Funds)	6.50%	6.25%	-0.25%
TIPs	5.00%	3.75%	-1.25%
Commodities	5.50%	5.25%	-0.25%
*Real Return***	*5.25%*	*7.00%*	*1.75%*
GTAA	7.75%	7.20%	-0.55%

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Disclosures

- NEPC, LLC is an investment consulting firm. We provide asset-liability studies for clients but we do not provide actuarial services. Any projections of funded status or contributions contained in this report should not be used for budgeting purposes. We recommend contacting the plan's actuary to obtain budgeting estimates.
- The goal of this report is to provide a basis for substantiating asset allocation recommendations.
- The projection of liabilities in this report uses standard actuarial projection methods and does not rely on actual participant data. Liability and asset information was received from the plan's actuary, and other projection assumptions are stated throughout this report.
- Assets are projected using the methodology chosen by the client. Gains and losses are estimated through investment returns generated by applying NEPC's 5-7 year asset class assumptions and scenario assumptions for the current year.
- This report may contain confidential or proprietary information and may not be copied or redistributed.

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