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To: Supplemental Retirement Board of Trustees

From: Kevin SigRist and Loren de Mey

CC: Steve Toole, Mary Buonfiglio, and Reid Chisholm

Date: October 26, 2016

Subject: Updated North Carolina 403(b) Program Model Allocations

This memorandum presents recommendations to the Supplemental Retirement Board of Trustees ("SRP Board") with respect to the North Carolina 403(b) Program Model Allocations. The recommendations are updates to those made and approved by the SRP Board in 2015.

Background

In December 2015, the SRP Board took up certain staff recommendations to implement Custom Portfolios within the North Carolina 403(b) Program ("403(b) Program"). In light of terminating the Wells Fargo Target Date Funds and adding TIAA CREF's Custom Portfolios feature, the SRP Board approved directing TIAA CREF to adopt Custom Portfolios' structures that closely match the "Model Allocations" of the GoalMaker portfolios utilized in the North Carolina 401(k) and 457 Plans ("NC 401(k) / NC 457").

1. Appendix 1 contains the authorized NC 401(k) and NC 457 Model Allocations ("NC 401(k) / NC 457 Model Allocations").
2. Appendix 2 contains the 403(b) Program Custom Portfolios authorized in December 2015.

However, with the transition of the 403(b) Program to Prudential Retirement and the replacement of several investment products, the 403(b) Model Allocations structure should be reconfirmed by the SRP Board.

Analysis and Recommendation

Under separate cover, staff is recommending two product replacements for the 403(b) Program that impact the Custom Portfolios:

1. Replace J.P. Morgan Core Bond with Metropolitan West Total Return Bond
2. Replace TIAA Stable Value with Vanguard Short-Term Bond Index

As it relates to the Model Allocations, staff recommends that:

1. Each replacement investment product should be used within the Model Allocations without adjusting any of the underlying Model Allocations previously approved for the investment products being replaced.

2. The Wells Fargo Target Date Funds be terminated and SRP Board direct Prudential Retirement to use the tables in Appendix 3 for the Model Allocations within GoalMaker for the 403(b) Program.

Staff's rationales for the recommendations are as follows:

1. The NC 401(k) / NC 457 Model Allocation utilizes a white-labeled core-plus fixed income product within the actively managed fixed income subcomponent (see Appendix 1). The Metropolitan West Total Return Bond fund is also a core-plus fixed income product that:
 - a. Invests up to 20% of the fund's net assets in securities rated below investment grade.
 - b. Invests in the U.S. and abroad, including emerging markets, and may purchase securities of varying maturities issued by domestic and foreign corporations and governments.
2. The NC 401(k) / NC 457 Model Allocation utilizes a multi-manager stable value product managed by Galliard. This product has an expected risk and return profile that cannot be readily produced with non-stable value products and staff believes the best approach over the long-term, given the circumstances of the 403(b) Program, is to utilize the Vanguard Short-Term Bond Index within the Model Allocations.
 - a. Large, well-executed stable value products are distinguished by their ability to cost-effectively harvest various fixed income risk premia (e.g., duration, credit, prepayment, etc.) without providing mark-to-market volatility to the investors in a wide variety of market environments. For instance, by using book-value wraps, a stable value provider can invest in longer duration fixed income assets that provide a higher yield than money market investments, but have very similar volatility of yields as a money market fund maintained at amortized cost.
 - b. As described under separate cover, it is not possible to utilize a stable value product in the 403(b) Program at this time.
 - c. Within the context of the Model Allocations, staff believes that the Vanguard Short-Term Bond Index product provides very high credit-quality bond exposure with limited interest rate risk or duration. With interest rates generally expected to rise at some point over the intermediate-term, the Vanguard Short-Term Bond Index product should do a much better job of preserving investor capital than either of the longer duration fixed income products (i.e., Metropolitan West Total Return Bond or Vanguard Total Bond Market Index). The duration of the Vanguard Short-Term Bond Index fund is 2.76 years and the duration of the Metropolitan West Total Return Bond fund is 4.82 years.
 - d. The trailing twelve month yield of the Vanguard Short-Term Bond Index fund was 1.41% versus the 1.88% for the Metropolitan West Total Return Bond fund. This lower yield appears to be a reasonable "opportunity cost" for more mark-to-market downside protection. Such downside protection is one of the major attractions of stable value products and supports its role as the "anchor to windward" within the Model Allocations.

Please contact Mary Buonfiglio should there be any additional information Board members would like to receive before the Supplemental Retirement Board of Trustees Special Meeting on November 29, 2016.

Appendix 1: Supplemental Retirement Plans Authorized Model Allocations

The SRP Board has authorized a set of asset allocation models (“Model Allocations”) to be offered to participants of the Supplemental Retirement Plans. These models were designed to be sensitive to:

1. **Risk Tolerance.** Participants are able to select their risk tolerance from one of three levels, Conservative, Moderate and Aggressive.
2. **Investment Horizon.** For each of the three levels of Risk Tolerance, four investment horizon models have been selected. These investment horizon models become more conservative, with higher allocations to bonds and stable value investments, as the horizon becomes shorter. Each investment horizon model is designed to be consistent with the participants’ retirement date.

The Model Allocations are implemented by:

1. Utilizing the investment Options offered to the participants by the Supplemental Retirement Plans.
2. The Plans’ record-keeper automatically allocates any participant contributions and distributions across the Options in each Model Allocation, in order to maintain the targeted allocation (described below). The record-keeper rebalances the allocation across the Options back to the target allocation on a quarterly basis or more frequently if necessary due to market movements.

Conservative Model Allocation

The objective of the Conservative Model Allocation is to achieve long-term growth in excess of inflation with a minimal risk of capital loss over a full market cycle.

Conservative	C01	C02	C03	C04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Large Cap Value	1%	2%	3%	3%
Large Cap Index	4%	4%	7%	8%
Large Cap Growth	1%	2%	3%	3%
Small / Mid Cap Value	2%	3%	5%	7%
Small / Mid Cap Index	0%	0%	0%	0%
Small / Mid Cap Growth	2%	3%	5%	7%
Global	6%	10%	15%	23%
International	3%	5%	7%	11%
International Index	0%	0%	0%	0%
Fixed Income	16%	14%	12%	10%
Fixed Income Index	17%	14%	13%	10%
Stable Value	40%	35%	22%	10%
Inflation Sensitive	8%	8%	8%	8%

Moderate Model Allocation

The objective of the Moderate Model Allocation is moderate growth of principal with limited downside risk over a market cycle.

Moderate	M01	M02	M03	M04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Large Cap Value	2%	3%	4%	5%
Large Cap Index	5%	7%	7%	10%
Large Cap Growth	2%	3%	4%	5%
Small / Mid Cap Value	4%	5%	7%	10%
Small / Mid Cap Index	0%	0%	0%	0%
Small / Mid Cap Growth	4%	5%	7%	10%
Global	11%	15%	19%	25%
International	6%	7%	9%	12%
International Index	0%	0%	0%	0%
Fixed Income	13%	12%	10%	4%
Fixed Income Index	13%	13%	10%	5%
Stable Value	31%	21%	14%	5%
Inflation Sensitive	9%	9%	9%	9%

Aggressive Model Allocation

The primary investment objective of the Aggressive Model Allocation is to maximize growth of principal over the long term with a reasonable level of overall volatility.

Aggressive	A01	A02	A03	A04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Large Cap Value	3%	4%	5%	6%
Large Cap Index	7%	7%	8%	11%
Large Cap Growth	3%	4%	5%	6%
Small / Mid Cap Value	6%	7%	9%	11%
Small / Mid Cap Index	0%	0%	0%	0%
Small / Mid Cap Growth	6%	7%	9%	11%
Global	16%	19%	24%	30%
International	8%	9%	12%	15%
International Index	0%	0%	0%	0%
Fixed Income	12%	10%	5%	0%
Fixed Income Index	12%	10%	6%	0%
Stable Value	17%	13%	7%	0%
Inflation Sensitive	10%	10%	10%	10%

Appendix 2: November 2015 Approved NC 403(b) Program Model Allocations

In 2015, the SRP Board directed TIAA CREF to use the following tables for the Custom Portfolios.

NC 403(b) Program Conservative Model Allocation

The objective of the Conservative Model Allocation is to achieve long-term growth in excess of inflation with a minimal risk of capital loss over a full market cycle.

Conservative	C01	C02	C03	C04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Vanguard Windsor II	3%	5%	7%	9%
Vanguard 500 Index	4%	4%	7%	8%
T. Rowe Price Blue Chip Growth	3%	5%	7%	9%
DFA Small Cap Core	4%	6%	10%	14%
Global				
MFS Institutional International Equity	6%	10%	14%	22%
J.P. Morgan Core Bond	16%	14%	12%	10%
Vanguard Total Bond Market Index	17%	14%	13%	10%
TIAA Stable Value	40%	35%	22%	10%
PIMCO Inflation Responsive Multi-Asset	8%	8%	8%	8%

NC 403(b) Program Moderate Model Allocation

The objective of the Moderate Model Allocation is moderate growth of principal with limited downside risk over a market cycle.

Moderate	M01	M02	M03	M04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Vanguard Windsor II	5%	7%	9%	12%
Vanguard 500 Index	5%	7%	7%	10%
T. Rowe Price Blue Chip Growth	5%	7%	9%	12%
DFA Small Cap Core	8%	10%	14%	20%
Global				
MFS Institutional International Equity	11%	14%	18%	24%
J.P. Morgan Core Bond	13%	12%	10%	4%
Vanguard Total Bond Market Index	13%	13%	10%	5%
TIAA Stable Value	31%	21%	14%	5%
PIMCO Inflation Responsive Multi-Asset	9%	9%	9%	9%

NC 403(b) Program Aggressive Model Allocation

The primary investment objective of the Aggressive Model Allocation is to maximize growth of principal over the long term with a reasonable level of overall volatility.

Aggressive	A01	A02	A03	A04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Vanguard Windsor II	7%	9%	11%	14%
Vanguard 500 Index	7%	7%	8%	11%
T. Rowe Price Blue Chip Growth	7%	9%	11%	14%
DFA Small Cap Core	12%	14%	18%	22%
Global				
MFS Institutional International Equity	16%	18%	23%	29%
J.P. Morgan Core Bond	12%	10%	5%	0%
Vanguard Total Bond Market Index	12%	10%	6%	0%
TIAA Stable Value	17%	13%	7%	0%
PIMCO Inflation Responsive Multi-Asset	10%	10%	10%	10%

Appendix 3: NC 403(b) Program Recommended Model Allocations

We recommend the SRP Board direct Prudential Retirement to use the following tables.

NC 403(b) Program Conservative Model Allocation

The objective of the Conservative Model Allocation is to achieve long-term growth in excess of inflation with a minimal risk of capital loss over a full market cycle.

Conservative	C01	C02	C03	C04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Vanguard Windsor II	3%	5%	7%	9%
Vanguard 500 Index	4%	4%	7%	8%
T. Rowe Price Blue Chip Growth	3%	5%	7%	9%
DFA Small Cap Core	4%	6%	10%	14%
Global				
MFS Institutional International Equity	6%	10%	14%	22%
Metropolitan West Total Return Bond	16%	14%	12%	10%
Vanguard Total Bond Market Index	17%	14%	13%	10%
Vanguard Short-Term Bond Index Fund	40%	35%	22%	10%
PIMCO Inflation Responsive Multi-Asset	8%	8%	8%	8%

NC 403(b) Program Moderate Model Allocation

The objective of the Moderate Model Allocation is moderate growth of principal with limited downside risk over a market cycle.

Moderate	M01	M02	M03	M04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Vanguard Windsor II	5%	7%	9%	12%
Vanguard 500 Index	5%	7%	7%	10%
T. Rowe Price Blue Chip Growth	5%	7%	9%	12%
DFA Small Cap Core	8%	10%	14%	20%
Global				
MFS Institutional International Equity	11%	14%	18%	24%
Metropolitan West Total Return Bond	13%	12%	10%	4%
Vanguard Total Bond Market Index	13%	13%	10%	5%
Vanguard Short-Term Bond Index Fund	31%	21%	14%	5%
PIMCO Inflation Responsive Multi-Asset	9%	9%	9%	9%

NC 403(b) Program Aggressive Model Allocation

The primary investment objective of the Aggressive Model Allocation is to maximize growth of principal over the long term with a reasonable level of overall volatility.

Aggressive	A01	A02	A03	A04
	0-5 Yrs	6-10 Yrs	11-15 Yrs	16+ Yrs
Vanguard Windsor II	7%	9%	11%	14%
Vanguard 500 Index	7%	7%	8%	11%
T. Rowe Price Blue Chip Growth	7%	9%	11%	14%
DFA Small Cap Core	12%	14%	18%	22%
Global				
MFS Institutional International Equity	16%	18%	23%	29%
Metropolitan West Total Return Bond	12%	10%	5%	0%
Vanguard Total Bond Market Index	12%	10%	6%	0%
Vanguard Short-Term Bond Index Fund	17%	13%	7%	0%
PIMCO Inflation Responsive Multi-Asset	10%	10%	10%	10%