MEMORANDUM

TO:	Supplemental Retirement Board of Trustees
FROM:	Loren de Mey, Assistant Investment Director
DATE:	September 17, 2018
SUBJECT:	Discussion / Action: NC 401k and NC 457b Plans: Recommend Replacement Fund for the PIMCO Inflation Response Multi Asset Fund

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At its August 22, 2018, Investment Subcommittee meeting, staff recommended and the Subcommittee approved, the termination of the the PIMCO Inflation Response Multi-Asset Fund within the NC 401k and NC 457 Plans and NC 403b Program. Please see the memo dated August 22, 2018, attached. The decision to terminate the PIMCO Fund will be under consideration by the Supplemental Retirement Board of Trustees at its upcoming meeting.

The following outlines a recommended replacement manager for the PIMCO Inflation Response Multi-Asset Fund (IRMAF) for the NC 401k /NC 457 Plans. A separate recommendation memo has been provided for a replacement fund within the NC 403b Program.

The Investment Management Division (IMD) staff and Mercer recommend hiring BlackRock's diversified real assets strategy, the BlackRock Strategic Completion Fund (SCF), to replace the current investment manager, the PIMCO Inflation Response Multi Asset Fund, within the NC 401k and NC 457 Plans. The approximate amount of the mandate is $374.2 million. Given the lower fees and expenses of the BlackRock Fund, 0.10% for the BlackRock Fund compared to 1.22% for the PIMCO Fund, savings to participants are approximately $4.2 million on an annual basis (based on assets of $374.2 million).

The key reasons supporting this recommendation include:

1. Diversified real assets offering
2. BlackRock's disciplined investment process
3. Experienced investment team
4. Low fees and expenses

IMD staff worked with Mercer to screen the universe of potential Real Asset managers to replace the PIMCO Fund. IMD staff reviewed the fund materials including due diligence questionnaires, manager presentations, consultant reports, and performance and risk statistics of the strategy. IMD staff conducted conference calls with BlackRock and Mercer to review the SCF Fund. After reviewing all materials and conducting conference calls with BlackRock, staff and Mercer recommend BlackRock's Strategic Completion Fund to replace the current manager, PIMCO, within North Carolina's Inflation Sensitive white label fund.

Organization
BlackRock (BLK) was founded in 1988 and is a leading provider of investment management services to institutional and retail clients. The firm provides risk management and advisory services that combine capital markets expertise with internally-developed systems and technology. BlackRock manages $6.29 trillion across equity, fixed income, real estate, cash management, alternatives, and asset allocation strategies, with $4 trillion in index strategies (as of June 30, 2018). The firm has more than 13,500 employees with over 2,000 investment professionals with offices in 34 countries.

Investment Team
The Strategic Completion Fund is managed by both the Multi Asset Solutions Lifetime Asset Allocations Team, headed by Matt O'Hara, and the ETF & Index Investment Strategies Index Asset Allocation Team. Mr. O'Hara is also Head of Research for the US Retirement Group. He has ownership of the strategic asset allocation, research, product and development and enhancements of the strategy. He has been with BlackRock, originally BGI, since 2003. Alan Mason is Head of Americas ETF and Index Investments (EII). Mr. Mason has been with BlackRock, originally BGI, since 1992. Amy Whitelaw is the Head of the US & Canadian iShares Equity Portfolio Management team within BlackRock's Index Equity team. Ms. Whitelaw has been with BlackRock, originally BGI, since 1999. The EII team manages SCF on a day to day basis. This team ensures adherence to the investment guidelines and rebalances the portfolio on a monthly basis back to the target mix. Greg Savage was added to the team in 2018 as lead Portfolio Manager, having been with the firm, originally BGI, for 19 years. Three of the lead individuals have been involved with SCF since the Fund's launch in September of 2011.

Investment Philosophy and Process
BlackRock's Strategic Completion Fund originated at BlackRock as a way to provide Defined Contribution participants direct access to a complementary asset class. The Fund seeks returns that provide a hedge to inflation over the medium to long-term. SCF follows an asset allocation strategy constructed on the same platform and utilizing the same methodology and philosophy as BlackRock's own proprietary LifePath target date funds. BlackRock utilizes their firm's existing target-date methodology to determine the asset allocation and strategic target weights. The Strategic Completion Fund allocates to three underlying asset classes: US TIPS, Commodities and Global Real Estate, through three underlying Collective Investment Fund structures.

1. US TIPS: The inflation protecting feature of US TIPS can protect an investor's real purchasing power. While providing bond like volatility, TIPS have traditionally been less correlated to traditional fixed income. The allocation range within SCF has historically been 35%-41% since inception. The current allocation to US TIPS is 41%. The benchmark for this portion of the fund is the Bloomberg Barclays US TIPS Index. This index includes inflation indexed bonds issued by the US Treasury. The index covers 37 bonds with an effective duration of approximately 8 years.

2. REITS: The REIT allocation within SCF is meant to provide participants with some participation with growth over the long-term. The historical range within SCF since inception has been 36-37%. The current allocation to Global REITs is 37%. The benchmark for this portion of the Fund is the FTSE EPRA/NAREIT Developed Real

Estate Index. This index provides exposure to a diverse set of real estate holdings, across countries, property types, and geography.

3. Commodities: Commodities are most sensitive to short-term inflation and will traditionally react favorably in an environment where supply is unexpectedly constrained or demand outstrips capacity. The historical range within SCF since inception has been 22%-29%. The current allocation within SCF to Commodities is 22%. The benchmark for this portion of the Fund is the Bloomberg Roll Select Commodity Index. This index provides broad diversification across various commodity markets. The index covers six major commodity sectors including precious metals, industrial metals, energy, grains, livestock and soft commodities (sugar, coffee, and cotton).

SCF Asset Allocation

	TIPS	Commodities	REITS
Current Allocation*	41.17%	21.45%	37.38%

*as of 6/30/18

BlackRock's SCF allocates to three underlying BlackRock collective investment trusts (CITS), including the US TIPS Index NL E Fund, the Bloomberg Commodity Roll Select Index E Fund, and the Developed Real Estate Index Non-Lendable E Fund.

SCF's allocations are strategic and long-term in nature, thereby seeking to avoid high turnover, elevated transaction costs and more extreme outcomes typically associated with a tactical asset allocation approach. SCF is rebalanced monthly back to the benchmark's target static weighting.

BlackRock SCF Performance, *(net performance as of 6/30/18)*

	YTD	1 Year	3 Year	5 Years	Since Inception
BlackRock SCF	0.3%	4.8%	2.5%	1.9%	3.0%
Benchmark	0.2%	4.7%	2.4%	1.8%	2.9%

Note: net performance assuming fees of 0.10%
Benchmark: Bloomberg Barclays US TIPS Index, FTSE EPRA/NAREIT Developed Real Estate Index, Bloomberg Roll Select Commodity Index

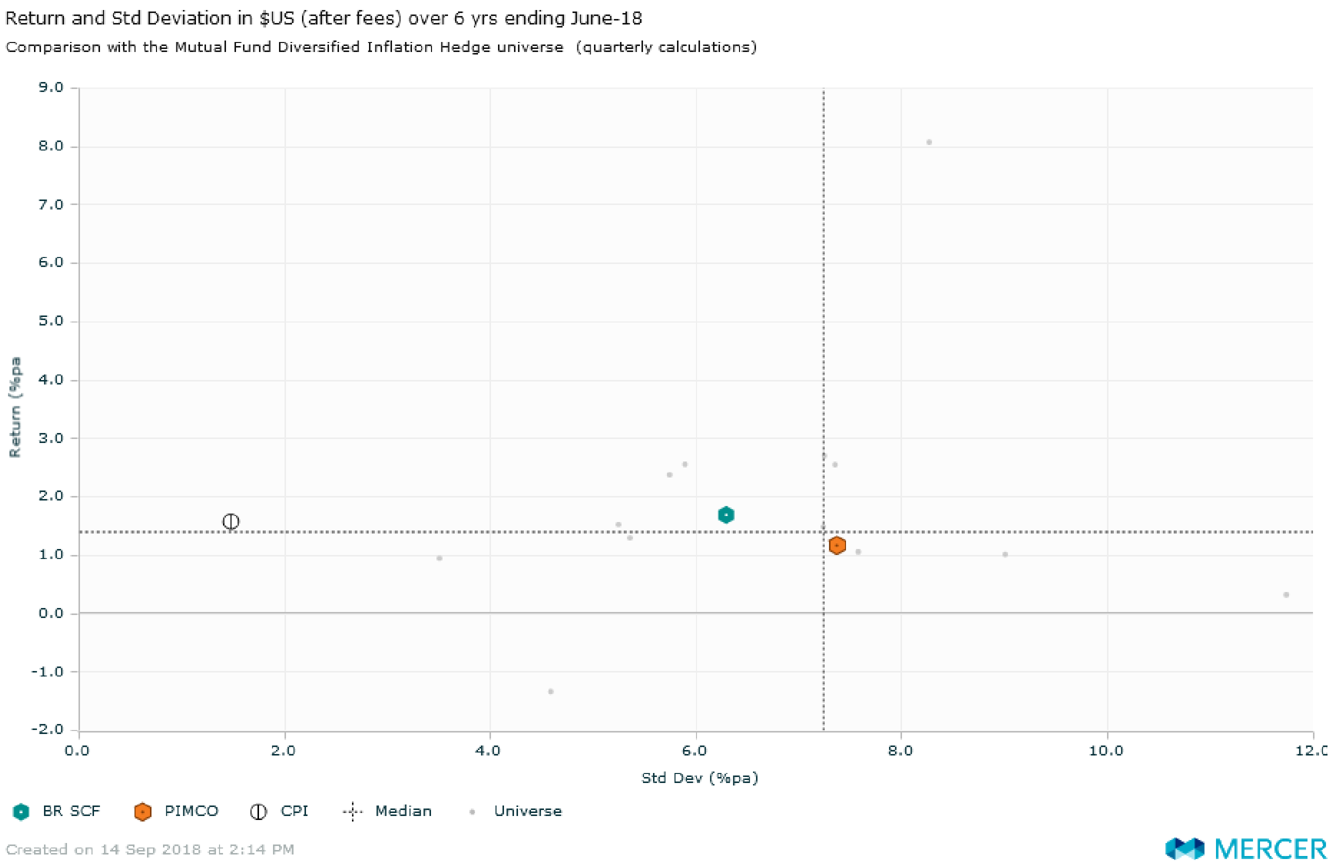
Compared to PIMCO

	YTD	1 Year	3 Year	5 Year	6 Year
BlackRock SCF	0.3%	4.8%	2.5%	1.9%	1.7%
PIMCO	-0.2%	5.9%	3.6%	2.5%	1.2%

	Standard Deviation
BlackRock SCF	6.3
PIMCO	7.4

INVESTMENT MANAGEMENT

Blackrock SCF has shown comparable historical performance with lower risk and much lower expenses compared to PIMCO IRMAF.



GoalMaker Fit
The Mercer asset allocation team modeled the GoalMaker portfolios assuming a manager change to the BlackRock SCF Fund and would not recommend making any changes to the glidepath asset allocation models given this change. The underlying allocations to TIPS for each Fund are very similar and the remaining allocations are to real asset sectors that are more growth oriented, such as REITs and commodities. Also, the Fund change caused only slight changes to the risk and return expectations to the GoalMaker portfolio with the highest allocation to the PIMCO Fund. Therefore, the Mercer asset allocation modeling team does not recommend making any changes to the underlying glidepath asset allocation models within GoalMaker.

Fee Schedule
Standard Fees are 0.17% per annum.

North Carolina has negotiated a discounted fee of 0.10% for the Strategic Completion Fund Non-Lendable F Share Class.

Investment Management Fee: 0.09%
Administrative Fee: 0.01% (capped at 0.01% per annum)

Appendix A: Investment Team Biographies

Greg Savage, Managing Director (Lead Portfolio Manager)
Years of Industry Experience: 21
Years at BlackRock: 19
Years with Strategy: Since 2018
Greg Savage, CFA, Managing Director, is the Head of the Americas Index Asset Allocation team within BlackRock's ETF and Index Investment Group. He is responsible for overseeing the management of the LifePath Target Date Funds as well as a wide range of fund of funds for both Institutional and Defined Contribution clients. Previously, Greg was the Head of iShares Equity Portfolio Management team within BlackRock's Index Equity team where he was responsible for overseeing the management of the Americas listed iShares equity funds. Mr. Savage's service with the firm dates back to 1999, including his years with Barclays Global Investors (BGI), which merged with BlackRock in 2009. At BGI he was a senior portfolio manager and team leader in the iShares Index Equity Portfolio Management Group and was previously a transition manager in the Transition Management Group. Prior to BGI, Mr. Savage worked at Pacific Investment Management Company (PIMCO) from 1997 to 1999 in various roles. Mr. Savage earned a BS degree in Accounting from the University of Colorado at Boulder in 1994.

Matthew O'Hara, Managing Director
Years of Industry Experience: 15
Years at BlackRock: 14
Years with Strategy: Since Inception
Matthew O'Hara, PhD, CFA, Managing Director, is the co-head of LifePath. Dr. O'Hara's service with the firm dates back to 2003, including his years with Barclays Global Investors (BGI), which merged with BlackRock in 2009. As part of the Multi Asset Strategies (MAS) group Dr. O'Hara is responsible for all investing aspects of lifetime asset allocation globally including the LifePath complex globally and the 529 complex in the US as well as new product development in those areas. At BGI, he was Director of Research for the US & Canada Defined Contribution Group. He was responsible for research on defined contribution and pension outsourcing issues. Prior to joining the DC group, he was responsible for all research and model creation for asset-backed and commercial mortgage-backed securities. He also worked on corporate long/short strategies including the launch of the Fixed Income Global Alpha (FIGA) fund. Previous to working in finance, he worked as a research and design engineer in the disk drive industry. Dr. O'Hara has been a lecturer in the MFE program at UC Berkeley. He also serves as President of the board of the CFA Society of San Francisco. Dr. O'Hara earned a bachelor's degree in mechanical engineering from the University of Maryland in 1992. He earned an MS degree and a PhD in mechanical engineering from the University of California at Berkeley in 1995 and 1997, respectively. He also graduated as valedictorian and was awarded the Pyle Prize for best student paper from the Master's in Financial Engineering program at UC Berkeley in 2003.

Alan Mason, Managing Director
Years of Industry Experience: 26
Years at BlackRock: 26
Years with Strategy: Since Inception
Alan Mason, Managing Director, is Head of Americas Portfolio Engineering for the ETF and Index Investments business. Mr. Mason's investment team is responsible for Index Equity, iShares Equity, Alternative Beta and Asset Allocation portfolios. Mr. Mason is a member of the EII Markets and Investments management committee and the Global Human Capital Committee. He is a global sponsor for OUT, the firm's LGBT employee network. Mr. Mason's service with the firm dates back to 1991, including his years with Barclays Global Investors (BGI), which merged with BlackRock in 2009. At BGI, Mr. Mason served as head of portfolio management and strategy for US transitions, strategist for the Global Index and Markets Group, head of US Asset Allocation, and most recently as head of Global Portfolio Management, Client Solutions. Mr. Mason has led three key growth efforts: developing the US transition capability from a service to a business, growing the key asset allocation product for the firm's US DC platform, LifePath, and building the foundation for key dimensions of the firm's rapidly growing solutions business. Mr. Mason earned a BA degree in music from Baylor University in 1983, *summa cum laude,* an MA degree in musicology from the University of Louisville in 1989, *with honors*, and an MA degree in ethnomusicology from University of California Berkeley in 1991. In the same year that Mr. Mason became head of portfolio management for BGI's transitions business, he was advanced to Ph.D. candidacy in ethnomusicology at UC Berkeley, having completed all coursework for the degree and comprehensive doctoral oral examinations with distinction.

Amy Whitelaw, Managing Director
Years of Industry Experience: 23
Years at BlackRock: 18
Years with Strategy: Since Inception
Amy Whitelaw, Managing Director, is the Head of the US & Canadian iShares Equity Portfolio Management team within BlackRock's Index Equity team. She is responsible for overseeing the management of the Americas listed US & Canadian iShares equity funds. She is a member of the LifePath Executive Committee and serves as a member of the US & Canada Defined Contribution Operating Committee. Ms. Whitelaw also co-chairs the Women's Initiative Network on the West Coast. Ms. Whitelaw's service with the firm dates back to 1999, including her years with Barclays Global Investors (BGI), which merged with BlackRock in 2009. At BGI, she led the Defined Contribution Portfolio Management team in Client Solutions, responsible for the management of defined contribution strategies for institutional and retail investors. Previously, Ms. Whitelaw worked in the Transition Services group as both a transition manager and strategist, and was also an international equity trader on Barclays Global Investors' trading desk. Prior to BGI, she worked in the Institutional Derivatives Sales group at Goldman Sachs.Ms. Whitelaw earned a BA degree in International studies and French from Dickinson College in 1993.

To: North Carolina Supplemental Retirement Board of Trustees

From: Loren de Mey, Assistant Investment Director

Date: August 22, 2018

Subject: Discussion / Action: 401k, 457b, 403b Plans: Recommend Termination of the PIMCO Inflation Response Multi Asset Fund

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Staff is recommending to terminate the PIMCO Inflation Response Multi-Asset Fund due to the following reasons:

1. Increase in the net expense ratio
2. Mutual fund structure may provide less control over and insight into investment costs and expenses
3. The Fund's underlying investment strategies, such as the financing strategy within the TIPS portfolio, may be too complex for a defined contribution plan

PIMCO Inflation Response Multi Asset Fund – Increase in Net Expense Ratio

While conducting the quarterly performance and expense review of the PIMCO Inflation Response Multi-Asset Fund (IRMAF), Staff determined that the Fund's net expense ratio, as reported in the Fund's most recent prospectus, issued on July 30, 2018, had increased.

PIMCO's process for reflecting changes in costs or expenses in the Fund's net expense ratio is based on actual fund expenses incurred in the Fund's reporting year prior to the release of the prospectus. In this case, the increase in the net expense ratio was based on the average of the actual fund expenses incurred from March 31, 2017, through March 31, 2018. The actual increase in expenses were then reflected in the Fund's updated prospectus released on July 30, 2018.

The following chart breaks down the net expense ratio of the Fund.

	Current Net Expense Ratio	New Net Expense Ratio	Increase
Investment Management Fee	0.69%	0.69%	0.0%
Interest Expense	0.14%	0.53%	0.39%
Other Fund Fees	0.23%	0.29%	0.06%
Fee Waiver	-0.23%	-0.29%	-0.06%
Total Net Expense Ratio	**0.83%**	**1.22%**	**0.39%**

Increase in Interest Expense

The net expense ratio is increasing from 0.83% to 1.22% due to an increase in interest expense from 0.14% to 0.53%. The Fund had experienced an increase in interest expense during the March 31, 2017, through March 31, 2018, reporting period given the increase in interest rates over the year.

PIMCO utilizes a strategy within its TIPS (Treasury Inflation Protected Securities) portfolio where they own a portion of their TIPS exposure through forward instruments. PIMCO finances these forward purchases paying a rate slightly less than LIBOR. When PIMCO finances this TIPS exposure, this creates interest expense from an accounting standard. This then frees up the Fund's cash whereby PIMCO seeks to add incremental return by investing in enhanced cash instruments that pay a yield advantage over their borrowing rate by approximately 40-50 basis points. Representatives from PIMCO have stated that while the interest expense is required to be reported within the net expense ratio, the additional yield or income advantage to investors, is not also required to be reported. However, this income will be included as part of the Fund's net return.

Interest Rates Likely to Continue to Increase

The interest expense increase is based on actual expenses incurred ending March 31, 2018. The Fed has increased rates an additional 25 basis points since the end of March and market expectations are for two additional increases by the end of this year. Therefore, interest expense will likely continue to increase within the Fund throughout 2018 given the Fed has and will likely continue to raise rates.

Mutual Fund Structure

Mutual fund structures in general provide fewer opportunities to negotiate the monitoring and management of expenses and costs relative to separately managed accounts and collective investment trusts. Although we are limited to mutual funds in the 403b Program, in the 401k and 457 Plans where the assets are much greater, Staff believes it is preferable, if possible, to increase our opportunities to monitor and manage costs and expenses by investing through collective investment trusts or separate accounts.

Underlying Investment Strategies

The PIMCO Inflation Response Multi-Asset Fund (IRMAF) is a real return asset allocation strategy that was designed to hedge global inflation risks while targeting enhanced return opportunities that inflation dynamics may present. The Fund invests in TIPS, commodities, emerging market currencies, REITs, and gold. The Fund may also pursue tactical use of floating rate securities. The Fund utilizes options, swaps, futures, forwards, derivatives and may pursue both long and short investment strategies.

Although the strategies the PIMCO Fund pursues have shown to provide alpha overtime, many of its strategies may be too complex for a defined contribution plan. For example, explaining the Fund's financing strategy within the TIPS portfolio is an example of this type of complexity. If we cannot break down the net expense ratio for our participants in a simple explanation, the Fund may not be the best fit for participants in a defined contribution plan.

North Carolina Supplemental Retirement Plan's Investments

PIMCO's IRMAF Fund is held in the North Carolina Supplemental Retirement 401k and 457 Plans and the 403b Program. Below are the assets within each Plan as of 7/31/18:

401k/457: $374.2 million ($349.8 million of which is in GoalMaker)
403b: $607,814 ($459,004 of which is in GoalMaker)

Total assets within PIMCO IRMAF: $1.13 billion (total assets within the mutual fund)

North Carolina Supplemental Retirement Plan's assets represent approximately 33.2% of the total PIMCO IRMAF assets.

Net Fund Returns, ending June 30 2018

	Quarter	YTD	One-Year	Three-Year	Since Inception *
PIMCO	-0.06%	-0.18%	5.90%	3.56%	2.3%
Benchmark	-0.02%	-0.72%	3.04%	1.30%	0.1%

Benchmark: 45% Bloomberg Barclays US TIPS, 20% Bloomberg Commodity Index, 15% JPMorgan Emerging Markets Index Plus (Unhedged), 10% Dow Jones US Select REIT Total Return Index, 10% Bloomberg Gold Subindex

**initial inception date of PIMCO account within NC SRP: October 2013 – initially the PIMCO account was funded as a separate account, and then moved to the mutual fund in December 2015.*

Recommendation

Given the reasons stated above, Staff recommends termination of the PIMCO Inflation Response Multi-Asset Fund within the 401k & 457 Plans and 403b Program. Staff will recommend replacement Fund options at the Supplemental Retirement Board of Trustees meeting on September 20, 2018.