Nebraska Investment Council
Fixed Income Review – Proposed Structure and Managers

December 2021
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Executive Summary
Project Timeline

- The Fixed Income Blank Sheet review began in October 2019. JoLynn and Chris asked 13 investment managers to participate and share their ideas for our fixed income portfolio. Meetings were held with all of the investment managers.
- NIC received the manager’s presentations by January 2020.
- January –September 2020: JoLynn and Chris reviewed the presentations, meetings were held for the managers to present their ideas, and the manager’s final portfolio recommendations were received.
- Follow-up meetings were held with each manager so they could present their solution to the entire Council staff.
- Council staff met and discussed each fixed income presentation. The team summarized the key takeaways and outlined several ideas/topics that fit the portfolios.
- Council staff forwarded their thoughts along with the 13 manager submissions to Aon in late October.
- Aon reviewed the manager submissions and drafted discussion materials that included responses to the issues raised by Council staff and a preliminary structure recommendation; materials were reviewed in January 2021.
- A second meeting was organized in February to address follow-up items from January’s discussion; an agreement was reached on a proposed fixed income structure to present to the Board.
- Council staff and Aon structure recommendation previewed (high level) at the March Board meeting; Board feedback received
- Presentations on “areas of interest” from March meeting delivered in June
  - Active vs. Passive (Agg Bonds)
  - Illiquid Credit
- Updated Council staff and Aon structure proposal presented in September
- Final recommendation delivered in December
NIC DB/CBB* Plans – Proposed Fixed Income Component Structure**

Proposed Fixed Income Targets

- Return-Seeking Fixed Income, 10.0%
- Barings MAC, 3.3%
- PIMCO (Core-Plus), 5.0%
- BlackRock (Passive), 5.0%
- PIMCO MAC, 3.3%
- Loomis Sayles MSFI, 3.4%
- Baird (Core-Plus), 5.0%
- BlackRock (Core-Plus), 5.0%
- PIMCO (Core-Plus), 5.0%
- Risk-Reducing Fixed Income, 20.0%

Total Fund Asset Allocation Targets

- U.S. Equity, 27.0%
- Global Equity, 19.0%
- Real Estate, 7.5%
- Private Equity, 5.0%
- Non-U.S. Equity, 11.5%
- Total Fixed Income, 30.0%

Investor Select Fund -- Current Fixed Income Structure

<table>
<thead>
<tr>
<th>Target Allocation (% of Total Fund)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BlackRock (Passive)</td>
</tr>
<tr>
<td>PIMCO (Core-Plus)</td>
</tr>
<tr>
<td>BlackRock (Core-Plus)</td>
</tr>
<tr>
<td>Total Fixed Income</td>
</tr>
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Investor Select Fund -- Proposed Fixed Income Structure

<table>
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<th>Target Allocation (% of Total Fund)</th>
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<tr>
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</tr>
<tr>
<td>BlackRock (Core-Plus)</td>
</tr>
<tr>
<td>PIMCO MAC</td>
</tr>
<tr>
<td>Total Fixed Income</td>
</tr>
</tbody>
</table>

*Proposed structure also applies to OSERS' long-term AA targets. Interim policy targets may vary.

**Proposed structure for the Investor Select Fund’s (DC Plan) Fixed Income allocation is also included – see box on lower right.

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General Endowments – Proposed Fixed Income Component Structure

The Excess Liability Fund is invested 100% in fixed income. The current portfolio is invested with the same asset allocation as the fixed income portfolio in the General Endowments. It is proposed that any changes made to the General Endowment fixed income portfolio also be implemented within the Excess Liability Fund. (Weights adjusted to reflect 100% fixed income.)
Fixed Income Component Benchmarking – DB/CBB/OSERS Plans, General Endowments, Excess Liability Fund, and Investor Select Fund

- We propose formally separating the target allocations to fixed income into risk-reducing fixed income and return-seeking fixed income for reporting and benchmarking purposes
  - Better risk control, more accurate benchmarking

- For the risk-reducing fixed income allocations, we propose using the Bloomberg US Aggregate Bond Index at both the component and underlying manager level
  - Better alignment with the role of this component, better alignment with industry practices

- For the return-seeking fixed income allocations, we propose using market-based benchmarks that reasonably align with each allocation’s manager opportunity sets
  - NIC’s return-seeking fixed income allocations in the DB/CBB/OSERS Plans, General Endowments/Excess Liability Fund and Investor Select Fund will all be constructed differently and will have somewhat different exposures
    - Vehicle availability (endowments/excess liability); vehicle availability and administrative ease (Investor Select)
    - Aon typically models MAC for CMA purposes as 1/3 HY corporate bonds, 1/3 bank loans, 1/3 EMD* 
      - All of NIC’s return-seeking fixed income (i.e., MAC) allocations will have a higher quality emphasis than the 1/3 HY corporate bonds, 1/3 bank loans, 1/3 EMD* MAC proxy utilized by Aon
  - We recommend the following benchmark mixes for the return-seeking fixed income allocations within the DB/CBB/OSERS Plans, General Endowments/Excess Liability Fund, and Investor Select Fund:
    - **DB/CBB/OSERS** = a mix of 25% IG corporate bonds, 25% HY corporate bonds, 25% bank loans, and 25% USD EMD
    - **General Endowments/Excess Liability** = a mix of 50% IG corporate bonds, 30% HY corporate bonds, and 20% USD EMD
    - **Investor Select** = a mix of 1/3 IG corporate bonds, 1/3 HY corporate bonds, and 1/3 USD EMD
  - At the individual manager level, we recommend using benchmarks that best reflect each manager’s opportunity set
    - E.g., PIMCO Diversified Income benchmark = 1/3 IG corporate bonds, 1/3 HY corporate bonds, 1/3 USD EMD

*50% JPM EMBI GD Index, 50% JPM GBI-EM GD Index*
Appendix: Materials Presented in September
Nebraska Investment Council
Fixed Income Review – Proposed Structure and Managers

September 2021
Project Timeline

- The Fixed Income Blank Sheet review began in October 2019. JoLynn and Chris asked 13 investment managers to participate and share their ideas for our fixed income portfolio. Meetings were held with all of the investment managers.
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  - Illiquid Credit
- **Updated Council staff and Aon structure proposal presented in September**
- Final recommendation delivered in December
The DB Plans target a 30% allocation to fixed income.

A breakdown of the existing fixed income component target structure is provided above:
- Mandate type / sub-asset class components
- Risk-Reducing fixed income vs. Return-Seeking fixed income (Aon classifications)
A breakdown of the proposed fixed income component target structure is provided above
- Mandate type / sub-asset class components
- Risk-Reducing fixed income vs. Return-Seeking fixed income
NIC DB Plans – Proposed Fixed Income Component Structure (Cont’d)

**Total Fund Asset Allocation Targets**

- **U.S. Equity, 27.0%**
- **Non-U.S. Equity, 11.5%**
- **Global Equity, 19.0%**
- **Real Estate, 7.5%**
- **Private Equity, 5.0%**

**Proposed Fixed Income Targets**

- **Fixed Income, 30.0%**
  - BlackRock (Passive), 5.0%
  - PIMCO (Core-Plus), 5.0%
  - Loomis Sayles MSFI, 3.4%
  - Barings MAC, 3.3%
  - PIMCO MAC, 3.3%
  - Baird (Core-Plus), 5.0%
- **Return-Seeking Fixed Income, 10.0%**
  - Barings MAC, 3.3%
  - BlackRock (Passive), 5.0%
- **Risk-Reducing Fixed Income, 20.0%**
  - PIMCO (Core-Plus), 5.0%
  - BlackRock (Core-Plus), 5.0%
Comparing Current Structure to Proposed – 10 Year Return and Volatility Forecasts* for Fixed Income Component

<table>
<thead>
<tr>
<th></th>
<th>Current Exposure (% of Total DB Plan)</th>
<th>Proposed Exposure (% of Total DB Plan)</th>
<th>Annualized Return (10 Year Forecast)</th>
<th>Standard Deviation (10 Year Forecast)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Reducing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core / Core+ Bonds</td>
<td>20.0%</td>
<td>20.0%</td>
<td>1.2%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Return-Seeking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International (Sovereign)</td>
<td>1.5%</td>
<td>--</td>
<td>1.0</td>
<td>10.0</td>
</tr>
<tr>
<td>High Yield Corporate</td>
<td>3.5</td>
<td>--</td>
<td>3.8</td>
<td>12.0</td>
</tr>
<tr>
<td>Bank Loans</td>
<td>5.0</td>
<td>--</td>
<td>4.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Multi-Asset Credit**</td>
<td>--</td>
<td>10.0%</td>
<td>4.1</td>
<td>9.2</td>
</tr>
<tr>
<td><strong>Total Fixed Income -- Current</strong></td>
<td>30.0%</td>
<td>--</td>
<td>2.1%</td>
<td>4.1%</td>
</tr>
<tr>
<td><strong>Total Fixed Income – Rec.</strong></td>
<td>--</td>
<td>30.0%</td>
<td>2.2%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

- Current and Proposed structures are essentially the same from a capital markets modeling perspective
  - Benefit of proposed structure = more efficient implementation of the return-seeking allocation though the use of multi-sector / multi-asset credit mandates

*Based on Aon 3Q 2020 CMAs
**Modeled as 1/3 HY, 1/3 Bank Loans, 1/3 EMD
A Multi Asset Credit (MAC) strategy is a fixed income strategy that seeks to add value by capturing the credit premium across different credit sectors

- Broader diversification, more tools for the manager to add value
- Outsources the control of at least some of the timing decision to the investment manager
Return-Seeking Fixed Income Allocation
How Broader Mandates Could Improve Implementation of Return-Seeking Fixed Income

<table>
<thead>
<tr>
<th>Periods Ending 3/31/2021</th>
<th>Trailing 1 Year</th>
<th>Trailing 3 Years</th>
<th>Trailing 5 Years</th>
<th>Trailing 10 Years</th>
<th>Since Inception</th>
<th>Inc. Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loomis Sayles (MSFI)</td>
<td>16.2%</td>
<td>7.0%</td>
<td>7.3%</td>
<td>6.6%</td>
<td>7.2%</td>
<td>7/2006</td>
</tr>
<tr>
<td>BB Universal Index*</td>
<td>3.0</td>
<td>4.9</td>
<td>3.6</td>
<td>3.8</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Wellington (Glo. Bond)</td>
<td>4.5%</td>
<td>2.6%</td>
<td>2.4%</td>
<td>--</td>
<td>1.7%</td>
<td>9/2014</td>
</tr>
<tr>
<td>BB Global Agg Index</td>
<td>4.7</td>
<td>2.8</td>
<td>2.7</td>
<td>--</td>
<td>1.8</td>
<td></td>
</tr>
<tr>
<td>Loomis Sayles (BL)</td>
<td>15.0%</td>
<td>2.6%</td>
<td>3.5%</td>
<td>--</td>
<td>2.9%</td>
<td>6/2014</td>
</tr>
<tr>
<td>S&amp;P LSTA Lev Loan Ind.</td>
<td>20.7</td>
<td>4.1</td>
<td>5.3</td>
<td>--</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Franklin Templeton (BL)</td>
<td>14.1%</td>
<td>1.6%</td>
<td>3.4%</td>
<td>--</td>
<td>2.7%</td>
<td>7/2014</td>
</tr>
<tr>
<td>CS Lev Loan Split BB Ind.</td>
<td>16.4</td>
<td>3.4</td>
<td>4.2</td>
<td>--</td>
<td>3.7</td>
<td></td>
</tr>
</tbody>
</table>

- Within the return-seeking fixed income allocation, NIC currently employs two types of mandates:
  - Focused mandates that emphasize one specific “plus” (i.e., non-Agg) sector
    - Global bonds, bank loans
  - Multi-sector mandates that can invest across sectors
    - Loomis Sayles’ multi-sector fixed income strategy
- NIC has had more success (from both an absolute and relative return perspective) with the multi-sector approach
Return-Seeking Fixed Income Allocation
How Broader Mandates Could Improve Implementation of Return-Seeking Fixed Income (Cont’d)

- Correctly timing changes to fixed income sector allocation is difficult


<table>
<thead>
<tr>
<th></th>
<th>Trailing 1 Year</th>
<th>Trailing 3 Years</th>
<th>Trailing 5 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB Global Agg Index</td>
<td>5.3%</td>
<td>7.5%</td>
<td>6.4%</td>
</tr>
<tr>
<td>BB US Agg Index</td>
<td>7.7</td>
<td>6.8</td>
<td>6.3</td>
</tr>
</tbody>
</table>

**Performance of Global Bonds vs. US Agg, AFTER Funding Global Bonds on 3/31/2012**

<table>
<thead>
<tr>
<th></th>
<th>Following 1 Year</th>
<th>Following 3 Years</th>
<th>Following 5 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB Global Agg Index</td>
<td>1.2%</td>
<td>-0.2%</td>
<td>0.4%</td>
</tr>
<tr>
<td>BB US Agg Index</td>
<td>3.8</td>
<td>3.1</td>
<td>2.3</td>
</tr>
</tbody>
</table>

**U.S. Treasury Yield Curve**

First bank loan mandate funded in mid-2014; market consensus was interest rates had nowhere to go but up

Current interest rates
Risk-Reducing Fixed Income Allocation
Proposed Structure

- We are proposing that the structure of the 20% risk-reducing fixed income allocation remain largely the same
  - Only difference:
    • Proposing 20% core and core-plus mandates instead of 18.5% core and core-plus mandates + ½ (1.5%) of global aggregate mandate

- In June we discussed the benefits and drawbacks of an all active (core-plus) approach to the risk-reducing fixed income allocation
  - Primary benefit = increased long-term return expectations
  - Primary drawback = increased volatility, expectation of worse outcomes during down equity markets

- The Board appeared more comfortable with maintaining some exposure to passive aggregate bonds to provide protection in downside scenarios
  - This strikes us as reasonable, particularly given the DB Plans’ level of equity market risk
Risk-Reducing Fixed Income Allocation
Proposed Managers

- While we are proposing the structure of the risk-reducing fixed income allocation stay more-or-less the same, we are proposing that one of the core-plus managers be replaced.

- Neuberger Berman was downgraded from “Buy” to “Qualified” by Aon’s manager research team in mid-2019
  - Action was deferred, pending the fixed income blank sheet review, which was scheduled to commence later in 2019.

- Rationale for the Aon research rating downgrade included the following:
  - Meaningful changes to the fixed income team’s leadership, including the retirement of the Neuberger Berman’s Head of Global Investment Grade Fixed Income.
  - A belief that Neuberger Berman’s investment process, while still viable, had fallen a notch below “best-in-class”.
  - Reduced confidence that Neuberger Berman would be able to achieve their performance targets.

- Additional details on our rating change can be found in our “Neuberger Berman Fixed Income Strategies Downgraded to Qualified” Flash Report, which has been included under separate cover.

- We are proposing that Neuberger Berman be replaced by Baird Advisors.
  - Baird was selected as the preferred candidate after reviewing our core-plus Buy list with Council staff.
  - An Aon InTotal with additional details on Baird’s core-plus bond strategy can be found under separate cover.
### DB/CBB Plan Fixed Income Component – Current (as of 3-31-2021) vs. Proposed (at target)

<table>
<thead>
<tr>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DB/CBB MV at 3-31-2021</strong></td>
<td><strong>DB/CBB MV at Target</strong></td>
</tr>
<tr>
<td><strong>% of FI Component</strong></td>
<td><strong>% of FI Component</strong></td>
</tr>
<tr>
<td><strong>% of Total DB/CBB</strong></td>
<td><strong>% of Total DB/CBB</strong></td>
</tr>
<tr>
<td>$712,269,476</td>
<td>$914,094,171</td>
</tr>
<tr>
<td>15.0%</td>
<td>16.5%</td>
</tr>
<tr>
<td>3.9%</td>
<td>5.0%</td>
</tr>
<tr>
<td>$673,270,343</td>
<td>$914,094,171</td>
</tr>
<tr>
<td>14.2%</td>
<td>16.5%</td>
</tr>
<tr>
<td>3.7%</td>
<td>5.0%</td>
</tr>
<tr>
<td>$885,039,639</td>
<td>$914,094,171</td>
</tr>
<tr>
<td>18.6%</td>
<td>16.5%</td>
</tr>
<tr>
<td>4.8%</td>
<td>5.0%</td>
</tr>
<tr>
<td>$761,852,599</td>
<td>$914,094,171</td>
</tr>
<tr>
<td>16.0%</td>
<td>16.5%</td>
</tr>
<tr>
<td>4.2%</td>
<td>5.0%</td>
</tr>
<tr>
<td>$567,956,211</td>
<td>$609,396,113</td>
</tr>
<tr>
<td>12.0%</td>
<td>11.0%</td>
</tr>
<tr>
<td>3.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>$292,469,758</td>
<td>$609,396,113</td>
</tr>
<tr>
<td>6.2%</td>
<td>11.0%</td>
</tr>
<tr>
<td>1.6%</td>
<td>3.3%</td>
</tr>
<tr>
<td>$400,511,014</td>
<td>$609,396,113</td>
</tr>
<tr>
<td>8.4%</td>
<td>11.0%</td>
</tr>
<tr>
<td>2.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td>$407,603,295</td>
<td>$27,738,361</td>
</tr>
<tr>
<td>8.6%</td>
<td>0.5%</td>
</tr>
<tr>
<td>2.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>$27,738,361</td>
<td>$1,555,079</td>
</tr>
<tr>
<td>0.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>0.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>$1,555,079</td>
<td>$22,122,388</td>
</tr>
<tr>
<td>0.0%</td>
<td>0.4%</td>
</tr>
<tr>
<td>0.0%</td>
<td>0.1%</td>
</tr>
<tr>
<td>$22,122,388</td>
<td>$22,122,388</td>
</tr>
<tr>
<td>0.5%</td>
<td>0.1%</td>
</tr>
<tr>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Total Fixed Income</strong></td>
<td><strong>Total Fixed Income</strong></td>
</tr>
<tr>
<td>$4,752,388,163</td>
<td>$5,535,980,852</td>
</tr>
<tr>
<td>100.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>26.0%</td>
<td>30.3%</td>
</tr>
<tr>
<td><strong>Total DB/CBB Plan</strong></td>
<td><strong>Total DB/CBB Plan</strong></td>
</tr>
<tr>
<td>$18,281,883,420</td>
<td>$18,281,883,420</td>
</tr>
</tbody>
</table>

- We are planning to propose that PIMCO Diversified Income and Barings Global HY Credit Strategies (Barings) be added as multi-asset credit strategies.

- These two strategies and Loomis Sayles Multi-Sector Fixed Income would comprise the return-seeking fixed income allocation:
  - PIMCO Diversified Income and Barings were selected as the preferred MAC candidates after reviewing our MAC Buy list with NIC’s investment staff.
  - Aon InTotals with additional details on PIMCO and Barings’ MAC strategies can be found under separate cover.
Fixed Income Component Benchmarking

- We propose formally separating the 30% target allocation to fixed income into risk-reducing fixed income (20%) and return-seeking fixed income (10%) for reporting and benchmarking purposes
  - Better risk control, more accurate benchmarking

- For the risk-reducing fixed income allocation, we propose using the Bloomberg Barclays US Aggregate Bond Index at both the component and underlying manager level
  - Better alignment with the role of this component, better alignment with industry practices
    - Of our clients that apply the Bloomberg Barclays US Aggregate Bond or Universal Indices as their total risk-reducing fixed income benchmark,
      - 150+ utilize the BB Aggregate Bond Index; 5 utilize the BB Universal Index

- For the return-seeking fixed income component, we propose using a market-based benchmark that reasonably aligns with the managers’ opportunity sets
  - Aon typically models MAC for CMA purposes as 1/3 HY corporate bonds, 1/3 Bank Loans, 1/3 EMD
  - NIC’s MAC allocation will have a higher quality emphasis (PIMCO, Loomis Sayles), with meaningful IG exposure
  - As such, we recommend a benchmark that is a mix of 25% IG corporate bonds, 25% HY corporate bonds, 25% bank loans, and 25% EMD
  - At the individual manager level, we recommend using benchmarks that best reflect managers’ opportunity sets
    - E.g., PIMCO Diversified Income benchmark = 1/3 IG corporate bonds, 1/3 HY corporate bonds, 1/3 EMD

### Periods Ending 3-31-2021

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Trailing 3 Years</th>
<th>Trailing 5 Years</th>
<th>Trailing 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB Universal Index (Current Total FI Component Benchmark)</td>
<td>4.9%</td>
<td>3.6%</td>
<td>3.8%</td>
</tr>
<tr>
<td>BB US Agg Index (Recommended Risk-Reducing FI Benchmark)</td>
<td>4.7%</td>
<td>3.1%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Custom RS FI Benchmark* (Recommended Return-Seeking FI Benchmark)</td>
<td>4.8%</td>
<td>5.6%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

*25% BB US Corporate (IG) Index, 25% BB US Corporate HY Index, 25%S&P LSTA Lev. Loan Index, 12.5% JPM EMBI GD Index, 12.5% JPM GBI-EM GD Index

Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.
Comparing Current DB/CBB Fixed Income Structure to Proposed – What Changes and What Stays the Same?

What Would Change?

1) Fixed income component would be formally sub-divided into “risk-reducing” and “return-seeking” sub-components to enhance risk-control and monitoring / enable better performance measurement
   - Risk-reducing component and managers would be benchmarked to the BB US Aggregate Bond Index; return-seeking component would be benchmarked to a custom benchmark representative of the managers’ opportunity set

2) 20% “risk-reducing” fixed income component goes from 18.5% core / core+ bonds + half of the 3% Global Agg mandate to 20% core / core+ bonds

3) Discreet “plus sector” mandates – i.e., Global Bonds and Bank Loans – would be replaced by multi-sector / multi-asset credit mandates
   - Expanded opportunity set, more diversification, ability for managers to make relative valuation judgments amongst fixed income sub-asset classes

4) Neuberger Berman core-plus would be eliminated and replaced with a Buy-rated core-plus strategy (Baird)

What Stays the Same?

1) Overall allocation maintains the same mix of risk-reducing and return-seeking fixed income

2) Overall risk posturing of the fixed income portfolio stays essentially the same (See capital markets modelling on slide 5)
   - At the margin, overall credit quality may improve slightly, while portfolio duration may modestly increase (≈0.3 years)
Why the Proposed Structure*?

1) More efficient implementation
2) Increased diversification
3) Better benchmarking + risk management
The current targets for the General Endowments’ fixed income allocation are illustrated above.

The General Endowments’ fixed income allocation is more streamlined than that of the DB/CBB Plans:
- Smaller asset base
- Vehicle availability

This has contributed to the General Endowments’ fixed income allocation being more conservative than that of the DB/CBB Plans:
- I.e., lower allocation to “return-seeking” fixed income

- BlackRock (Passive), 47.5%
- PIMCO Core-Plus, 23.0%
- Neuberger Berman Core-Plus, 23.5%
- Loomis Sayles MSFI, 6.0%
We propose a structure for the General Endowments that better aligns with DB/CBB Plans’ fixed income allocation
- Roughly 2/3 “risk-reducing”, 1/3 “return-seeking”
  - Barings omitted owing to lack of vehicle availability

Forecasted risk and return would both be increased
- Endowments should be able to bear increased volatility, owing to relatively low target equity allocation

Forecasted yield, and in turn, spending, would also increase
- Endowments have no set sending policy (e.g., x% of market value of assets); instead, they spend net income / yield
  - Wtd. average coupon of fixed income portfolio increases by ≈0.4% (from 2.8% → 3.2%) using data as of 3/31/2021
General Endowments – Proposed Fixed Income Component Structure (Cont’d)

Total Fund Asset Allocation Targets

- U.S. Equity, 19.0%
- Non-U.S. Equity, 8.0%
- Global Equity, 13.0%
- Real Estate, 5.0%
- Private Equity, 5.0%

Proposed Fixed Income Targets

- Fixed Income, 50.0%
- Return-Seeking Fixed Income, 15.0%
- Risk-Reducing Fixed Income, 35.0%

- BlackRock (Passive), 15.0%
- PIMCO (Core-Plus), 10.0%
- Loomis Sayles MSFI, 7.5%
- PIMCO MAC, 7.5%
- Baird (Core-Plus), 10.0%
- Private Equity, 5.0%
- Real Estate, 5.0%
Comparing Current Structure to Proposed – 10 Year Return and Volatility Forecasts* for Fixed Income Component

<table>
<thead>
<tr>
<th>Risk Reducing</th>
<th>Current Exposure (% of Endowment)</th>
<th>Proposed Exposure (% of Endowment)</th>
<th>Annualized Return (10 Year Forecast)</th>
<th>Standard Deviation (10 Year Forecast)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core / Core+ Bonds</td>
<td>47.0%</td>
<td>35.0%</td>
<td>1.2%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Return-Seeking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International (Sovereign)</td>
<td>--</td>
<td>--</td>
<td>1.0</td>
<td>10.0</td>
</tr>
<tr>
<td>High Yield Corporate</td>
<td>3.0</td>
<td>--</td>
<td>3.8</td>
<td>12.0</td>
</tr>
<tr>
<td>Bank Loans</td>
<td>--</td>
<td>--</td>
<td>4.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Multi-Asset Credit**</td>
<td>--</td>
<td>15.0%</td>
<td>4.1</td>
<td>9.2</td>
</tr>
<tr>
<td>Total Fixed Income – Current</td>
<td>50.0%</td>
<td>--</td>
<td>1.4%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Total Fixed Income – Proposed</td>
<td>--</td>
<td>50.0%</td>
<td>2.1%</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

Annualized Return (10 Year Forecast) | Standard Deviation (10 Year Forecast) | Sharpe Ratio

| Total Endowment – Current             | 4.5%                                | 9.0%                               | 0.45                                 |
| Total Endowment -- Proposed           | 4.9%                                | 9.6%                               | 0.45                                 |

- Proposed structure increases both return and volatility forecasts relative to the current structure

*Based on Aon 3Q 2020 CMAs
**Modeled as 1/3 HY, 1/3 Bank Loans, 1/3 EMD
General Endowments’ Fixed Income Component – Current (as of 3-31-2021) vs. Proposed (at target)

<table>
<thead>
<tr>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General End. MV at 3-31-2021</td>
</tr>
<tr>
<td>BlackRock (Passive)</td>
<td>$243,736,422</td>
</tr>
<tr>
<td>PIMCO Core-Plus</td>
<td>$118,163,741</td>
</tr>
<tr>
<td>Neuberger Berman Core-Plus</td>
<td>$116,159,698</td>
</tr>
<tr>
<td>Loomis Sayles MSFI</td>
<td>$32,531,724</td>
</tr>
<tr>
<td>Total Fixed Income</td>
<td>$510,591,585</td>
</tr>
</tbody>
</table>

| Total General Endowment | $1,090,423,242 | Total General Endowment | $1,090,423,242 |

- The table above compares the fixed income component of the General Endowments as of 3/31/2021 (left) to the proposed structure (right)
  - The proposed structure would better align the fixed income components of the General Endowments and the DB/CBB Plans
- The Excess Liability Fund mirrors the target allocations of the General Endowments’ fixed income allocation
  - The proposed structure outlined above also applies to the Excess Liability Fund
Q&A

- **Q: What about OSERS?**
  - A: The proposed changes to the long-term target allocation of the NPERS DB/CBB fixed income portfolio would also apply to OSERS. However, please note that OSERS currently uses an interim target asset allocation policy that is updated on a yearly basis. OSERS remains meaningfully overweight alternatives (+≈7.5%) relative to its long-term policy target allocation, which means it must be underweight all other asset classes on an interim basis. Also, given uncertainty surrounding the future performance of the legacy alternatives investments, we prefer to keep OSERS’ fixed income allocation somewhat more conservative than the NPERS DB/CBB Plan fixed income allocations. Our expectation is that for the next few years, OSERS’ target allocation to fixed income will be somewhat less than 30%, and the percentage of the OSERS fixed income portfolio allocated to return-seeking fixed income will be lower than the NPERS DB/CBB Plans. These allocations will eventually converge with the long-term target allocations.

- **Q: The current NPERS DB/CBB Plan fixed income component includes a 7% target allocation to “Opportunistic” – why does the proposed structure eliminate this allocation?**
  - A: The opportunistic allocation was originally implemented to take advantage of a perceived market opportunity and was intended to be transient in nature. Those investments have effectively wound down at this point – the actual allocation to opportunistic is currently close to 0%. Should another attractive opportunity present itself, the opportunistic allocation could be re-introduced.

- **Q: How much might it cost to transition from the current DB/CBB Plan fixed income structure to the proposed structure?**
  - A: This will be dependent on numerous factors and is difficult to estimate. But a ballpark estimate for transactions costs is roughly 55 bps* on the portion of the portfolio that is traded, or roughly 6 bps at the total portfolio level.

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*Assumes no in-kind activity. In reality, there should be some opportunity for in-kinding, which should lower transactions costs.
Q&A

- **Q: What about ongoing costs? Would the new structure be more or less expensive from an investment management fee perspective than the existing structure?**
- **A:** Investment management fees for the DB Plan’s fixed income allocation would stay more or less the same. Investment management fees for the endowment’s fixed income allocation would increase by about 6 bps, driven by the increased allocation to return-seeking fixed income and a lower allocation to passive aggregate bonds.

- **Q: The bank loan allocation was originally implemented as a hedge against rising interest rates. Is now the right time to be reducing this hedge...particularly given the interest rate moves that were observed during 1Q?**
- **A:** This is a point worth consideration. Two thoughts in response:
  - Predicting future movements in interest rates is extremely difficult. “Market consensus” is often wrong.
  - When Aon originally recommend NIC adopt an allocation to bank loans, bank loans were both a useful interest rate hedge and a higher quality, less volatile way to get exposure to higher yielding, sub-investment grade credit. The latter is now in question – covenant-lite issuance and other deteriorations in terms have made the bank loan market less attractive from a credit quality standpoint than it was when NIC originally invested. The chart included in Appendix I illustrates the percentage of the bank loan and high yield corporate bond markets that were rated B or lower over the past decade. As shown, roughly 70% of the bank loan market is now rated B or lower. Historically, one argument for holding bank loans was that the default rates were low relative to high yield corporate bonds, and the recovery rates were generally higher. Given that the vast majority of defaults occur in B/CCC rated credits, this may not be the case on go forward basis.
Appendix I
Is Now the Right Time to Reduce Exposure to Bank (Leveraged) Loans?

Source: JP Morgan
Appendix II
Current NIC DB/CBB Plan Fixed Income Allocation Target Weightings + Avg Credit Quality by Mandate at 3/31/2021

Return-Seeking Fixed Income

- B+/B
- BB-
- BBB-
- A

Wound down…but risky
- Opportunistic -- PIMCO BRAVO II and Oaktree RE Debt, 7.0%
- Franklin Templeton (Bank Loans), 8.3%
- Loomis Sayles (Bank Loans), 8.3%
- Loomis Sayles (Multi-Sector Fixed Income), 5.0%
- Wellington (Global Agg), 10.0%
- Neuberger Berman, 15.0%

Risk-Reducing Fixed Income

- AA+/AA
  - BlackRock Passive, 16.0%
  - PIMCO, 17.5%
- A+
  - BlackRock (Active), 13.0%
- A
Appendix III
Proposed NIC DB/CBB Plan Fixed Income Allocation Target Weightings + Avg Credit Quality by Mandate at 3/31/2021

### Return-Seeking Fixed Income
- **A-**
- **BBB-**
- **B**
  - PIMCO Diversified Income, 11.0%
- **A**
- **AA+**
  - PIMCO, 16.7%

### Risk-Reducing Fixed Income
- **A+**
  - BlackRock Passive, 16.6%
  - BlackRock (Active), 16.7%
  - Baird, 16.7%
  - Loomis Sayles (Multi-Sector Fixed Income), 11.3%
  - Barings, 11.0%
  - PIMCO Diversified Income, 11.0%

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