

# ASSET ALLOCATION RECOMMENDATION

NORTH DAKOTA STATE INVESTMENT  
BOARD – GRAND FORKS EMPLOYEES

OCTOBER 27, 2025



# PLAN AND ASSET ALLOCATION PROFILES



PROPRIETARY & CONFIDENTIAL

# OVERVIEW

- **Today's discussion covers the Asset Allocation recommendation for Grand Forks Employees.**
- **The plans' liability structure, funded status and discount rate (i.e., long-term return assumption) vary and are reviewed later in the deck; these factors were considered in the final recommendation**
- **Return expectations across the plans range from 6.50% to 7.25%; based on the NEPC March 31, 2025 capital market assumptions, it seems reasonable to expect that the long-term (30-year) return expectations could meet or exceed the current assumptions**
- **In addition to the current policy, we have presented in this deck a recommended allocation as an alternative to the current policy**

# WORK PLAN / ROADMAP

## North Dakota State Investment Board 2025 Pension Asset/Liability Project Plan

Step/Milestone	Estimated Timing
Collect all data relative to plan liabilities and structure	December 2024
Review of NEPC capital market assumptions, current policy expectations and plan objectives (with NDRIO Staff)	January 2025
Review, discuss, and consider revisions to portfolio/plan objectives (with NDRIO Staff)	February 2025
Discuss and identify potential alternatives to the current policy	May 2025
Scenario modeling for Current and Alternative Policies	May 2025
Review modeling results (with NDRIO Staff)	June 2025
Prepare draft of Board materials	July 2025
Board Materials and Recommendations Finalized	August 2025
Study Presented to Board and Decision Finalized	September Board Meeting

# GRAND FORKS EMPLOYEES PENSION PLAN: CURRENT STATE

Plan	Grand Forks Employees
Plan Year	1/1 - 12/31
Actuary	Deloitte
Participants (Total)	<u>377</u>
Actives	28
Terminated Vesteds	21
Retirees & Beneficiaries	328
Payroll	1,856,650
Actuarial Accrued Liability	103,046,911
Market Value of Assets	80,547,761
Actuarial Value of Assets	82,913,131
Unfunded Actuarial Liability	20,133,780
Funded Status (AVA)	80.5%
Discount Rate	7.00%
Payroll Growth Rate	2.50%
Normal Cost Rate	17.9%
Remaining Amortization Period	11
Asset Valuation Method	5-Year Smoothing
COLA	None
Open/Closed	Closed in 1996
Funding Policy	<p><u>ER</u>: Normal cost plus amortization of unfunded liabilities based on closed 30-yr amortization of unfunded liabilities ending 2034 (11 yrs left as of '24)</p> <p><u>EE</u>: Fixed Rate</p>

# CORE ASSET CLASS RETURN ASSUMPTIONS

	Asset Class	3/31/2025 10-Year Return	3/31/2024 10-Year Return	Delta
	Cash	3.9%	4.1%	-0.2%
	U.S. Inflation	2.6%	2.6%	-
Equity	U.S. Large-Cap Equity	6.4%	4.1%	+2.3%
	Non-U.S. Developed Equity	5.1%	4.3%	+0.8%
	Emerging Market Equity	7.7%	8.3%	-0.6%
	Global Equity*	6.5%	5.1%	+1.4%
	Private Equity*	8.8%	8.8%	-
Fixed Income	U.S. Treasury Bond	4.4%	4.4%	-
	U.S. Municipal Bond	4.0%	3.7%	+0.3%
	U.S. Aggregate Bond*	4.8%	4.8%	-
	U.S. TIPS	4.5%	4.7%	-0.2%
	U.S. High Yield Corporate Bond	6.5%	6.1%	+0.4%
	Private Debt*	8.3%	8.3%	-
Real Assets	Commodity Futures	4.4%	4.3%	+0.1%
	REIT	5.3%	6.1%	-0.8%
	Gold	4.5%	4.8%	-0.3%
	Real Estate - Core	5.6%	5.8%	-0.2%
	Private Real Assets - Infrastructure	5.8%	6.7%	-0.9%
Multi-Asset	60% S&P 500 & 40% U.S. Aggregate	6.1%	4.7%	+1.4%
	60% MSCI ACWI & 40% U.S. Agg.	6.1%	5.3%	+0.8%
	Hedge Fund*	6.5%	6.1%	+0.4%

\*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

# NDRIO ASSET ALLOCATION

## LONG-TERM (30-YEAR) RETURN EXPECTATIONS ABOVE 7.25%

	Grand Forks Employees	Grand Forks Parks	PERS	TFFR	Bismarck Police	Bismarck Employees
Cash	1.0%	0.0%	0.0%	1.0%	0.0%	0.0%
<b>Total Cash</b>	<b>1.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>1.0%</b>	<b>0.0%</b>	<b>0.0%</b>
Global Equity	55.0%	47.0%	51.0%	45.0%	46.0%	42.0%
Private Equity	5.0%	7.5%	7.0%	10.0%	5.0%	4.0%
<b>Total Equity</b>	<b>60.0%</b>	<b>54.5%</b>	<b>58.0%</b>	<b>55.0%</b>	<b>51.0%</b>	<b>46.0%</b>
US Aggregate Bond	17.0%	18.0%	16.0%	18.0%	22.0%	27.0%
US High Yield Corporate Bond	3.5%	3.8%	3.5%	4.0%	3.5%	3.5%
Private Debt - Direct Lending	3.5%	3.8%	3.5%	4.0%	3.5%	3.5%
<b>Total Fixed Income</b>	<b>24.0%</b>	<b>25.5%</b>	<b>23.0%</b>	<b>26.0%</b>	<b>29.0%</b>	<b>34.0%</b>
Real Estate - Core	5.3%	7.5%	8.3%	6.8%	9.0%	8.6%
Real Estate - Non-Core	1.8%	2.5%	2.7%	2.3%	3.0%	3.4%
Private Real Assets - Natural Resources	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Private Real Assets - Infrastructure	7.0%	9.0%	7.0%	8.0%	7.0%	7.0%
<b>Total Real Assets</b>	<b>15.0%</b>	<b>20.0%</b>	<b>19.0%</b>	<b>18.0%</b>	<b>20.0%</b>	<b>20.0%</b>

<i>Expected Return 10 yrs (Geometric)</i>	<b>6.6%</b>	<b>6.7%</b>	<b>6.7%</b>	<b>6.8%</b>	<b>6.6%</b>	<b>6.5%</b>
<i>Expected Return 30 yrs (Geometric)</i>	<b>7.6%</b>	<b>7.7%</b>	<b>7.7%</b>	<b>7.7%</b>	<b>7.5%</b>	<b>7.5%</b>
<i>Standard Deviation</i>	<b>13.4%</b>	<b>13.1%</b>	<b>13.6%</b>	<b>13.2%</b>	<b>12.4%</b>	<b>11.6%</b>
<i>Sharpe Ratio (10 years)</i>	<b>0.20</b>	<b>0.21</b>	<b>0.20</b>	<b>0.22</b>	<b>0.21</b>	<b>0.22</b>
<i>Sharpe Ratio (30 years)</i>	<b>0.31</b>	<b>0.32</b>	<b>0.31</b>	<b>0.32</b>	<b>0.32</b>	<b>0.34</b>

# RECOMMENDATION, CONCLUSIONS AND NEXT STEPS



# RECOMMENDATION

## ADOPT RECOMMENDED MIX FOR GRAND FORKS EMPLOYEES

	Current Policy	Actual 6/30/25	Recommended Mix (Initial Allocation)
Cash	1.0%	0.3%	1.0%
<b>Total Cash</b>	<b>1.0%</b>	<b>0.3%</b>	<b>1.0%</b>
Global Equity	55.0%	53.5%	34.7%
Private Equity	5.0%	7.3%	5.0%
<b>Total Equity</b>	<b>60.0%</b>	<b>60.8%</b>	<b>39.7%</b>
US Aggregate Bond	17.0%	17.7%	0.0%
US High Yield Corporate Bond	3.5%	3.7%	0.0%
Intermediate Duration Fixed Income	0.0%	0.0%	0.0%
Long Duration Fixed Income	0.0%	0.0%	42.5%
Private Debt - Direct Lending	3.5%	3.5%	2.8%
<b>Total Fixed Income</b>	<b>24.0%</b>	<b>24.9%</b>	<b>45.3%</b>
Real Estate - Core	5.3%	3.2%	3.2%
Real Estate - Non-Core	1.7%	2.6%	2.6%
Private Real Assets - Natural Resources	1.0%	1.1%	1.1%
Private Real Assets - Infrastructure	7.0%	7.1%	7.1%
<b>Total Real Assets</b>	<b>15.0%</b>	<b>14.0%</b>	<b>14.0%</b>
<b>10-Year Expected Return (Geo)</b>	<b>6.6%</b>	<b>6.7%</b>	<b>6.5%</b>
<b>30-Year Expected Return (Geo)</b>	<b>7.6%</b>	<b>7.7%</b>	<b>7.6%</b>
<b>Asset Volatility</b>	<b>13.4%</b>	<b>13.7%</b>	<b>11.5%</b>

- The recommended mix offers a slightly higher long-term return than the current policy
- Volatility for the recommended mix is significantly less than that of the current policy
- The recommended mix offers reduced risk to support the liquidity needs, closed status and shorter time horizon of the plan
- NDRIO worked with NEPC to develop a glide path presented on the next slide which is designed to reduce the risk of the asset allocation as the plan matures and its funding level improves

# GLIDE PATH ASSET ALLOCATION PROFILES

## GRAND FORKS EMPLOYEES

	Current Policy	Actual June 30	70-79% Funding	80-84% Funding	85-89% Funding	90-94% Funding	95-99% Funding	100% or better Funding
Cash	1.0%	0.3%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<b>Total Cash</b>	<b>1.0%</b>	<b>0.3%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>1.0%</b>
Global Equity	55.0%	53.5%	34.7%	34.1%	29.1%	24.0%	16.5%	10.0%
Private Equity	5.0%	7.3%	5.0%	4.4%	2.9%	1.5%	0.7%	0.0%
<b>Total Equity</b>	<b>60.0%</b>	<b>60.8%</b>	<b>39.7%</b>	<b>38.5%</b>	<b>32.0%</b>	<b>25.5%</b>	<b>17.3%</b>	<b>10.0%</b>
US Aggregate Bond	17.0%	17.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
US High Yield Corporate Bond	3.5%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Intermediate Duration Fixed Income	0.0%	0.0%	0.0%	0.0%	10.0%	20.0%	30.0%	39.0%
Long Duration Fixed Income	0.0%	0.0%	42.5%	50.0%	50.0%	50.0%	50.0%	50.0%
Private Debt - Direct Lending	3.5%	3.5%	2.8%	2.1%	1.4%	0.7%	0.4%	0.0%
<b>Total Fixed Income</b>	<b>24.0%</b>	<b>24.9%</b>	<b>45.3%</b>	<b>52.1%</b>	<b>61.4%</b>	<b>70.7%</b>	<b>80.4%</b>	<b>89.0%</b>
Real Estate - Core	5.3%	3.2%	3.2%	1.9%	1.3%	0.6%	0.3%	0.0%
Real Estate - Non-Core	1.7%	2.6%	2.6%	1.6%	1.0%	0.5%	0.3%	0.0%
Private Real Assets - Natural Resources	1.0%	1.1%	1.1%	0.7%	0.4%	0.2%	0.1%	0.0%
Private Real Assets - Infrastructure	7.0%	7.1%	7.1%	4.3%	2.8%	1.4%	0.7%	0.0%
<b>Total Real Assets</b>	<b>15.0%</b>	<b>14.0%</b>	<b>14.0%</b>	<b>8.4%</b>	<b>5.6%</b>	<b>2.8%</b>	<b>1.4%</b>	<b>0.0%</b>

<b>10-Year Expected Return (Geo)</b>	<b>6.6%</b>	<b>6.7%</b>	<b>6.5%</b>	<b>6.4%</b>	<b>6.2%</b>	<b>6.1%</b>	<b>5.9%</b>	<b>5.7%</b>
<b>30-Year Expected Return (Geo)</b>	<b>7.6%</b>	<b>7.7%</b>	<b>7.6%</b>	<b>7.4%</b>	<b>7.2%</b>	<b>7.0%</b>	<b>6.7%</b>	<b>6.5%</b>
<b>Asset Volatility</b>	<b>13.3%</b>	<b>13.7%</b>	<b>11.5%</b>	<b>11.2%</b>	<b>10.4%</b>	<b>9.8%</b>	<b>9.3%</b>	<b>9.0%</b>
<b>Sharpe Ratio (10 years)</b>	<b>0.20</b>	<b>0.20</b>	<b>0.22</b>	<b>0.22</b>	<b>0.22</b>	<b>0.22</b>	<b>0.21</b>	<b>0.20</b>
<b>Sharpe Ratio (30 years)</b>	<b>0.31</b>	<b>0.31</b>	<b>0.35</b>	<b>0.35</b>	<b>0.36</b>	<b>0.36</b>	<b>0.35</b>	<b>0.33</b>
<b>Interest Rate Hedge Ratio</b>	<b>8%</b>	<b>9%</b>	<b>46%</b>	<b>57%</b>	<b>66%</b>	<b>74%</b>	<b>84%</b>	<b>93%</b>

### Liquidity Profile

<b>Tier 1 (Daily Liquidity)</b>	<b>56.0%</b>	<b>53.8%</b>	<b>38%</b>	<b>35%</b>	<b>30%</b>	<b>25%</b>	<b>18%</b>	<b>11%</b>
<b>Tier 2 (Semi-liquid)</b>	<b>20.5%</b>	<b>21.4%</b>	<b>43%</b>	<b>50%</b>	<b>60%</b>	<b>70%</b>	<b>80%</b>	<b>89%</b>
<b>Tier 3 (Illiquid)</b>	<b>23.5%</b>	<b>24.8%</b>	<b>20%</b>	<b>15%</b>	<b>10%</b>	<b>5%</b>	<b>2%</b>	<b>0%</b>

Note: Funding level noted in top row above is determined on a "termination Basis" with a discount rate based on a high-quality investment-grade yield curve.

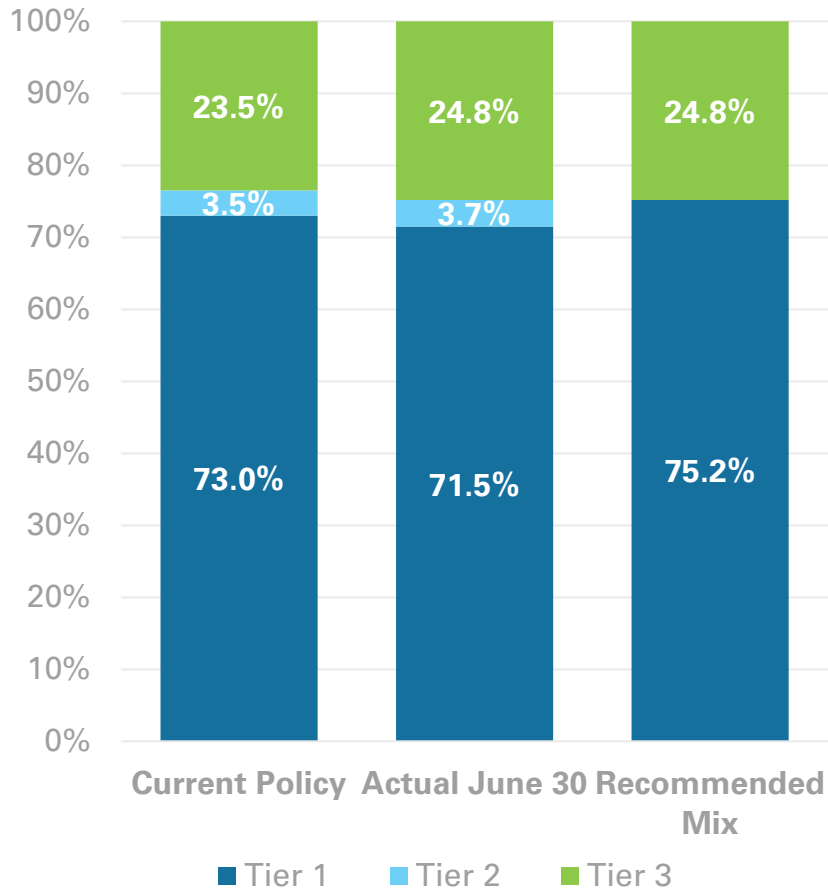


# IMPLEMENTATION CONSIDERATIONS AND NEXT STEPS

- **Suspend private investments going forward**
  - No new commitments
  - Enter redemption requests where possible
  - Continue to use the corridor rules to adjust allocations to public markets to account for over/under-allocation to private markets
  - Update a private markets pacing plan annually to determine the expected allocation to private markets over time
  - Explore options for liquidity including but not limited to ownership transfer between plans
- **Establish a process for measuring “termination basis” funding level on a monthly basis going forward**

# LIQUIDITY PROFILE

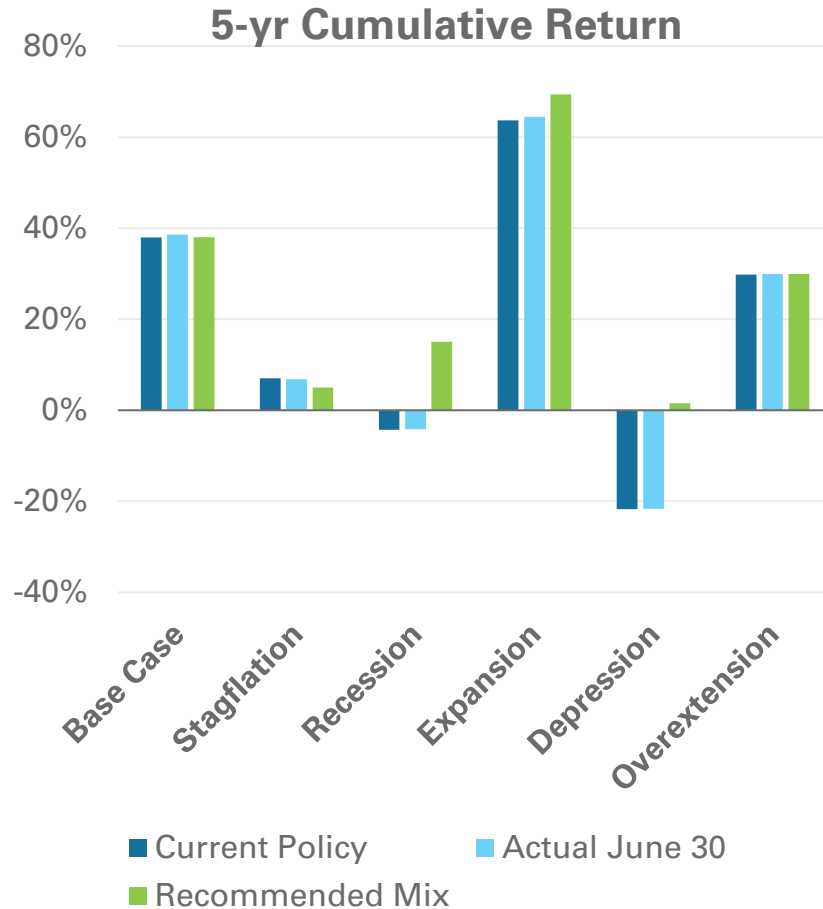
## RECOMMENDED MIX INCREASES LIQUIDITY



- **Net cash flow is expected to remain negative over next 10 years, averaging -11.9% outflow**
  - Healthy steady-state outflow typically ranges from -2.0% to -4.0% of assets
- **Deeply negative cash flow is typical for a closed pension plan in its wind down phase**
- **Liquidity and downside protection take precedent over growth potential when it comes to asset allocation**
- **Recommended Mix increases liquidity while recognizing actual value of illiquids as of June 30**

# SCENARIO ANALYSIS

## RECOMMENDED MIX DECREASES DOWNSIDE RISK



- **Scenario analysis illustrates the potential performance of different portfolios across changing macroeconomic environments**
  - High/low growth
  - High/low inflation
- **Recommended mix provides less downside risk in negative environments and similar or better performance in neutral and positive environments**

# GLIDE PATH IMPLEMENTATION



PROPRIETARY & CONFIDENTIAL

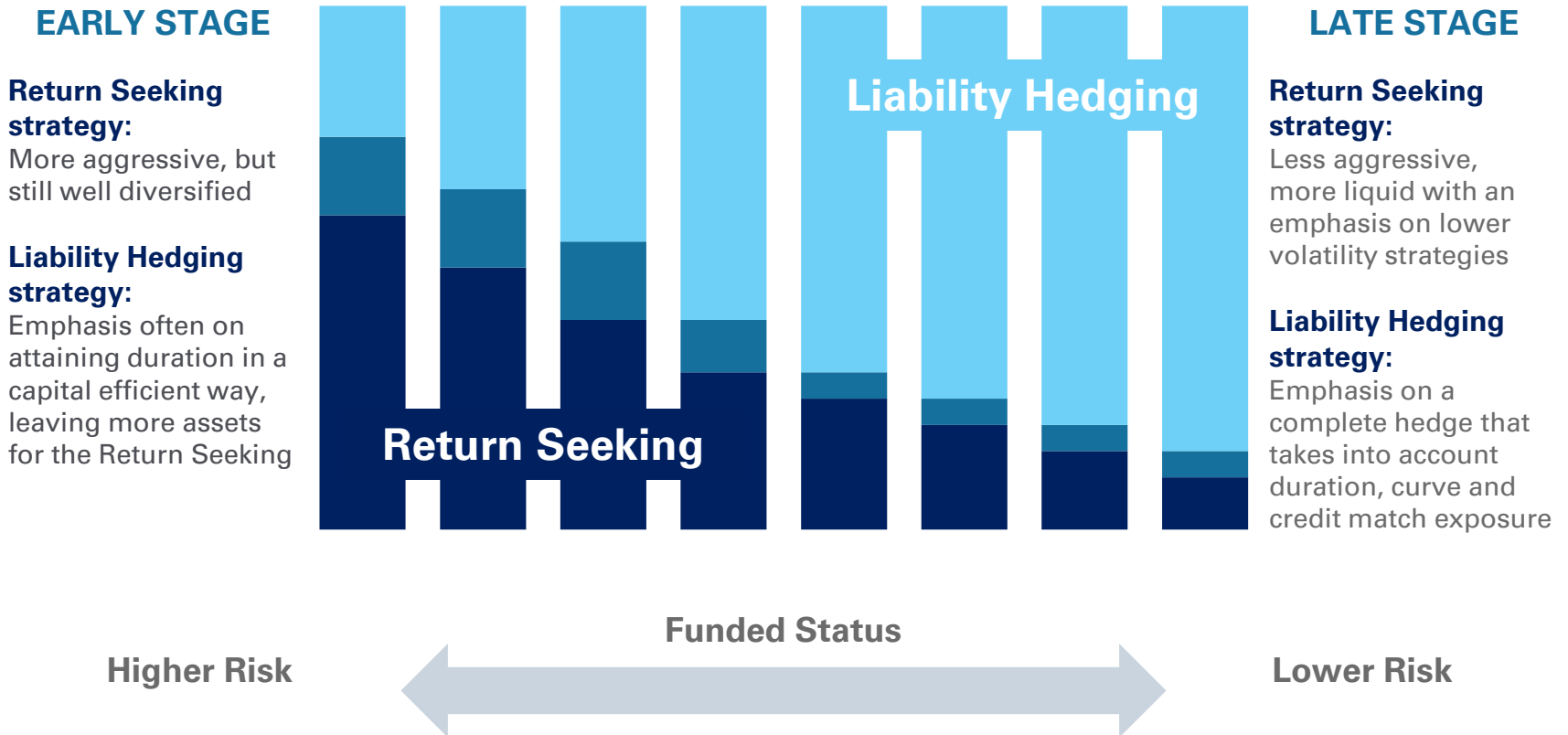
# A ROAD MAP FOR GRAND FORKS EMPLOYEES

- **NDRIO will work with NEPC to prepare a customized glidepath to de-risk the plan over time as it matures and the funding level improves**



# DERISKING GLIDEPATH FOR GRAND FORKS EMPLOYEES

- NDRIO will work with NEPC to prepare a glidepath to de-risk the plan as it matures and the funding level improves





# APPENDIX



# INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

NEPC, LLC is an investment consulting firm. We provide asset-liability studies for certain clients but we do not provide actuarial services. Any projections of funded ratio 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 opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

The projection of liabilities in this report uses standard actuarial projection methods and does not rely on actual participant data. Asset and liability information was received from the plan's actuary, and other projection assumptions are stated in the report.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

This report is provided as a management aid for the client's internal use only. This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

