

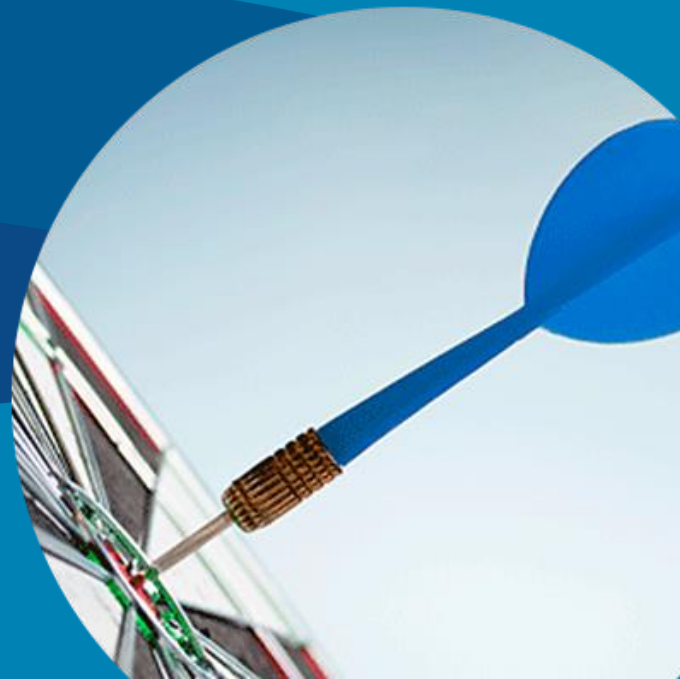


# North Dakota Teachers' Fund for Retirement Plan Management Policy Score Update Based on the July 1, 2024 Actuarial Valuation

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# Purpose

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- Additional advance warning metric regarding plan sustainability (or unsustainability)
- Supplements valuation measures of contribution sufficiency
  - Actuarially Determined Contribution
  - Time to full funding
- Valuation metrics based on single outcome if all goes as planned
- Plan Management Policy Score attempts to take broader view of the realm of possibilities and gauge resilience
- Advances the fulfillment of fiduciary duties of the Board

# Scoring Metrics

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- Current funded ratio (3)
- Downside funded ratio in 2030 (3)
- Target funded ratio in 2040 (4)
- Improvement in funded ratio over a 10-year period (2)
- Ability to recover from/withstand a market downturn (2)



# Approach

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- Perform stochastic simulation of investment returns
- Investment return mean and standard deviation determined using
  - 2024 Horizon Survey of Capital Market Assumptions (20+ years) by asset class
    - Survey of 41 investment consultants (26 provided 20+ year assumptions)
  - TFFR asset allocation

# Scoring Perspective

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- **Highly sensitive to current capital market expectations and recent returns**
- Sensitive to valuation assumptions (experience studies, etc)
- Fixed data points 2030/2040 will start to take on different meaning as time passes
- Most informative piece of information is long-term trend of this score
  - need to maintain the context
- Another gauge on the dash, not the only one

# Asset Allocation and Capital Market Assumptions Used

	Asset Class	Target Allocation	Weighted Return	Expected Return	Standard Deviation
Equity	US Large Cap	23.0%	1.87%	8.13%	16.52%
	US Small Cap	4.0%	0.37%	9.28%	20.57%
	International Developed	14.9%	1.33%	8.91%	18.06%
	Emerging Markets	3.1%	0.33%	10.54%	23.61%
	Private Equity	10.0%	1.18%	11.81%	22.57%
Fixed	US Core	18.0%	0.91%	5.04%	5.90%
	High Yield	8.0%	0.46%	5.70%	10.98%
Alt/Other	Real Estate	9.0%	0.66%	7.36%	16.61%
	Commodities/Timber	1.3%	0.08%	6.33%	17.81%
	Infrastructure	7.7%	0.65%	8.46%	16.02%
	Cash	1.0%	0.03%	3.44%	1.10%

Total Weighted Return 7.87%  
 Adjusted to Geometric -0.80%

Total Long-Term Return **7.07%**  
 Standard Deviation 12.21%

Prior Year Result  
**7.39%**  
 12.28%

# Prior Year Results

Score = 9

1	Current year funded ratio is 69%	If current ratio is 90% or higher: <b>+3</b> If current ratio is between 80% to 90%: <b>+2</b> If current ratio is between 70% to 80%: <b>+1</b> If current ratio is less than 70%: <b>+0</b>	<b>+0</b>
2	27% probability of funded ratio <65% in 2030	Under 65% funded ratio with less than 20% probability: <b>+3</b> Under 65% funded ratio with less than 30% probability: <b>+2</b> Under 65% funded ratio with less than 40% probability: <b>+1</b> Under 65% funded ratio with more than 40% probability: <b>+0</b>	<b>+2</b>
3	61% probability of funded ratio >85% in 2040	85% or higher with more than 50% probability: <b>+4</b> (61% probability) 80% or higher with more than 50% probability: <b>+3</b> (65% probability) 75% or higher with more than 50% probability: <b>+2</b> (70% probability) 70% or higher with more than 50% probability: <b>+1</b> (74% probability) Not more than 70% with more than 50% probability: <b>+0</b>	<b>+4</b>
4	63% probability of improvement over 10 years	Funded ratio improves by +5% over 10 years with 66% probability: <b>+2</b> Funded ratio improves by +5% over 10 years with 50% probability: <b>+1</b> Ratio does not improve by +5% over 10 years with 50% probability: <b>+0</b>	<b>+1</b>
5	54% probability of recovering from market downturn*	Funded ratio improves by +5% over 10 years with 50% probability: <b>+2</b> Funded ratio improves by +5% over 10 years with 33% probability: <b>+1</b> Ratio does not improve by +5% over 10 years with 33% probability: <b>+0</b>	<b>+2</b>

**+9**

\* 1,377 scenarios contain -10% average or worse over 2 years (in the first 10 years), 743 of which "recover."

# Plan Experience During FY 2024

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- 8% fair value return during 2024
- Total payroll growth 6.9% compared to 3.25% assumed
  - Takes pressure off of contributory payroll
  - Slightly negative impact on score
- Positive plan experience offset change in capital market expectations



# Current Results – July 1, 2024 Valuation

Score = 10

1	Current year funded ratio is 70%	If current ratio is 90% or higher: <b>+3</b> If current ratio is between 80% to 90%: <b>+2</b> If current ratio is between 70% to 80%: <b>+1</b> If current ratio is less than 70%: <b>+0</b>	Prior year: +0 based on funded ratio of 69%	<b>+1</b>
2	27% probability of funded ratio <65% in 2030	Under 65% funded ratio with less than 20% probability: <b>+3</b> Under 65% funded ratio with less than 30% probability: <b>+2</b> Under 65% funded ratio with less than 40% probability: <b>+1</b> Under 65% funded ratio with more than 40% probability: <b>+0</b>	Prior year: +2 based on 27% probability of funded ratio <65% in 2030	<b>+2</b>
3	56% probability of funded ratio >85% in 2040	85% or higher with more than 50% probability: <b>+4</b> (56% probability) 80% or higher with more than 50% probability: <b>+3</b> (62% probability) 75% or higher with more than 50% probability: <b>+2</b> (67% probability) 70% or higher with more than 50% probability: <b>+1</b> (72% probability) Not more than 70% with more than 50% probability: <b>+0</b>	Prior year: +4 based on 61% probability of funded ratio >85% in 2040	<b>+4</b>
4	61% probability of improvement over 10 years	Funded ratio improves by +5% over 10 years with 66% probability: <b>+2</b> Funded ratio improves by +5% over 10 years with 50% probability: <b>+1</b> Ratio does not improve by +5% over 10 years with 50% probability: <b>+0</b>	Prior year: +1 based on 63% probability of improvement over 10 years	<b>+1</b>
5	53% probability of recovering from market downturn*	Funded ratio improves by +5% over 10 years with 50% probability: <b>+2</b> Funded ratio improves by +5% over 10 years with 33% probability: <b>+1</b> Ratio does not improve by +5% over 10 years with 33% probability: <b>+0</b>	Prior year: +2 based on 54% probability of recovering from market downturn	<b>+2</b>

**+10**

\* 1,538 scenarios contain -10% average or worse over 2 years (in the first 10 years), 818 of which "recover."

# Evolution of the Plan Policy Score

Valuation Year	Score	Notable Events	Geometric Mean Used in Simulation
2019	6	First Score	7.47%
2019	7	Post-experience study changes	7.47%
2020	6	Market return FY 2020 = 3%	7.25%
2021	9	Market return FY 2021 = 26%	6.77%
2022	7	Market return FY 2022 = -6%	6.86%
2023	9	Market return FY 2023 = 7%	7.39%
2024	10	Market return FY 2024 = 8%	7.07%



## Looking ahead

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- Some metrics will have different meaning as time elapses
  - Projected funded ratio in 2030
- Should re-evaluate policy well before 2030
- But need trend for score to be meaningful
- Re-evaluate policy in late 2026
  - Will have four years to re-score under new policy

# Summary

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- Good plan experience offset dampened capital market assumptions
- No red flags from this assessment

# Actuary's Qualifications

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- We believe the recommended set of actuarial assumptions should present a more accurate portrayal of TFFR's financial condition and should reduce the magnitude of future experience gains and losses.
- The study was conducted in accordance with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board
- Dana and Paul meet the Qualification Standards of the American Academy of Actuaries