



## TRA Board position on 8.5% assumption

***The TRA Board supports maintaining the interest assumption at 8.5% as the long-term (30-50 year) investment earnings assumption. The Board believes this assumption should be based on long-term, not short-term, expectations. Over the long-term, SBI has achieved returns well in excess of 8.5%. SBI's average annual compounded return since 1980 is over 10%.***

### Rationale:

- Based on advice of TRA's actuary (formerly LCPR- retained actuary): "...our preference is to leave the 8.5% assumption in place for now and then reevaluate the investment return assumption as part of future experience studies..."
- Investment expert analyses reflect mainly short timeframes (10 years or less), not long term (30-50 years) which is more appropriate for pension funding.
- Investment analyses tend to react to most recent market conditions creating overly pessimistic or optimistic views of future returns.
- Long-term historical data show 8.5% is attainable over 30-year rolling periods.
- SBI's estimate of 8.36% is not significantly below 8.5%, especially given recent pessimistic short-term bias.
- SBI has outperformed other public funds.



# Cavanaugh Macdonald

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September 7, 2011

Ms. Laurie Hacking  
Executive Director  
Teacher Retirement Association of Minnesota  
60 Empire Drive, Suite 400  
St. Paul, MN 55103

### **Re: Impact of Change in Investment Return Assumption**

Dear Laurie:

As you are aware, there has been considerable discussion across the nation regarding the investment return assumptions currently used by public retirement systems in the actuarial valuation process. The assumed rate of investment return is a key assumption and one of the most powerful factors in determining the liabilities of the System and the resulting actuarial contribution rate. Even small changes to this assumption typically create dramatic changes in the costs of the System. Due to the importance of this assumption, we believe that **changes should be made only after considerable study and thorough analysis.**

Like many other Boards of Trustees, TRA has been reviewing their current 8.50% investment return assumption. As actuaries, we are often called upon to make recommendations to the Board regarding actuarial assumptions, including the investment return assumption. In the current environment, it is particularly challenging to evaluate the available information and provide a recommendation for the investment return assumption. The following factors tend to muddy the waters and create uncertainty about future investment returns:

- We rely on the **investment experts** to provide the capital market assumptions to be used for forward looking analysis, which creates certain challenges:
  - These assumptions usually **reflect a ten year or shorter timeframe.**
  - These assumptions are often changed annually and, at times, significantly indicating they **may not be good estimates to use for longer term projections.**
  - Capital market assumptions as set by the investment consultants **tend to react to recent market experience.**
  - There is **considerable variation** in capital market assumptions among various “experts”.
- Long term historical data for multiple periods of the US economy indicate that a **8.5% return has been attainable in the past for portfolios similar to TRA.** In addition, **actual historical returns for TRA also support the 8.5% return assumption.**
- **Current market conditions, possibly somewhat irrational, may be creating an overly pessimistic view of the future.**
- Our goal in setting this assumption is typically to be neither aggressive nor conservative as this decision has far reaching impact on all stakeholders (members and taxpayers).

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## Capital Market Assumptions

When setting the investment return assumption, actuaries are guided by Actuarial Standard of Practice Number 27 (ASOP 27) which reinforces that we are supposed to maintain a long term perspective. In the context of pension funding, long term translates to a 30 to 50 year timeframe. It is recognized that over this period, the actual annual returns will be both higher and lower than the assumed rate of return, but the assumption is set with the intention of it being the average compound return over the period. Obviously, no one knows what the future holds so there is uncertainty in setting this assumption, just as with other actuarial assumptions.

Since we are trained as actuaries and not as investment professionals, we consider the input of others with that expertise. For TRA, the State Board of Investments (SBI) is responsible for investing System assets and provides investment expertise so we look to them to provide the capital market assumptions that we use in our forward looking modeling. At the August TRA Board meeting, Mr. Bicker from SBI presented information from a recently completed study that identified the expected return based on the capital market assumptions of eight major investment consulting firms. The expected return used by SBI is the average of the real rate of return for the eight firms or 5.36% (see attachment A for more detailed information). In a similar study in 2008, the average of the real rates of return was 6.36% so there has been a significant shift in expectations, at least for the short term.

While the capital market assumptions of investment consultants is an important factor to consider in setting the investment return assumption, we believe there are several reasons why it should not be the only factor considered. When setting this assumption, the actuary is taking a very long term view of the future. However, the capital market assumptions developed by investment consultants are shorter term estimates, typically set for the next ten years. Of the eight firms used by SBI for their analysis, only one used a 30 year time horizon and one other used a 20 to 30 year timeframe. The other six used periods of around ten years. Given the current economic situation, it may not be appropriate to use capital market assumptions that were developed for the next ten years as the basis for a 30 to 50 year projection. In addition, we would point out that there are significant differences among the "investment experts" as to the expected rate of return. In the SBI study, the real rates of return ranged from a low of 4.03% to a high of 6.49%, a very wide spread. This further reinforces the fact that there is significant uncertainty regarding future returns at this point in time. This raises the question of whether now is the time to make a change in the assumption. Furthermore, it is common for investment consultants to change their capital market assumptions every year and sometimes more frequently. They often appear reactive to recent market experience which tends to create volatility in the capital market assumptions from year to year. In the past, the capital market assumptions have indicated projected returns above the 8.50% assumed rate of return, yet there was no action to follow the returns indicated by the capital market assumption and increase the assumed rate of return. To our knowledge this is the first time the expected return, as published by SBI, has been below the 8.50% assumption. This again begs the question as to whether the rate should be lowered now based on this data alone.

Although SBI's expected return of 8.36% is below the current 8.50% assumed rate of return, it is not significantly below the assumption. The development of the expected return, along with the underlying inflation assumption which is a component of the return assumption, is not a precise calculation. Actual experience could easily vary from the assumption. For example, if actual inflation is slightly higher than





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3.0%, say 3.15%, then the expected return would be 8.50%. Because these numbers are estimates and lack significant precision, a difference of 0.14% in the investment return assumption is not significant, particularly given the other factors discussed earlier.

## Historical Analysis

### *US Market Returns*

When actuaries make recommendations with respect to setting economic assumptions, we also typically analyze the long term historical data. To analyze this historical information with a longer term view, we used the historical returns on the S&P 500 and corporate bonds, which were available from 1926 through 2010. Since indices for some of the asset classes used by SBI were not available, we used a hypothetical asset allocation of 80% stocks and 20% corporate bonds for purposes of our analysis. In all but two of the 30 year rolling periods, the compound rate of return was 8.5% or higher (see Exhibit B attached). We recognize that this type of analysis is not perfect in that the rates of return are not applied to the fund balance and the net cash flows for each year during the period. However, it still provides an important historical perspective with respect to the current assumption. It is true that the past is not always a good indicator of the future. However, the period of time included in this analysis (1926 to 2010) covers a significant number of unusual events in the US economy including the depression, World War 2, the Arab Oil Embargo, the Vietnam War, the Gulf War, the 9/11 terrorist attack, and the economic crash of 2008/09. This information substantiates the 8.5% return in past years, which creates some expectation that it could also be attained in the future.

In addition to the factors discussed above, the market has been very volatile and reactive to global situations. This volatility, and often times irrational behavior in the market, creates a lot of uncertainty about the market and the economy in general. As a result, there seems to be an overly pessimistic view of the future, particularly in the short term.

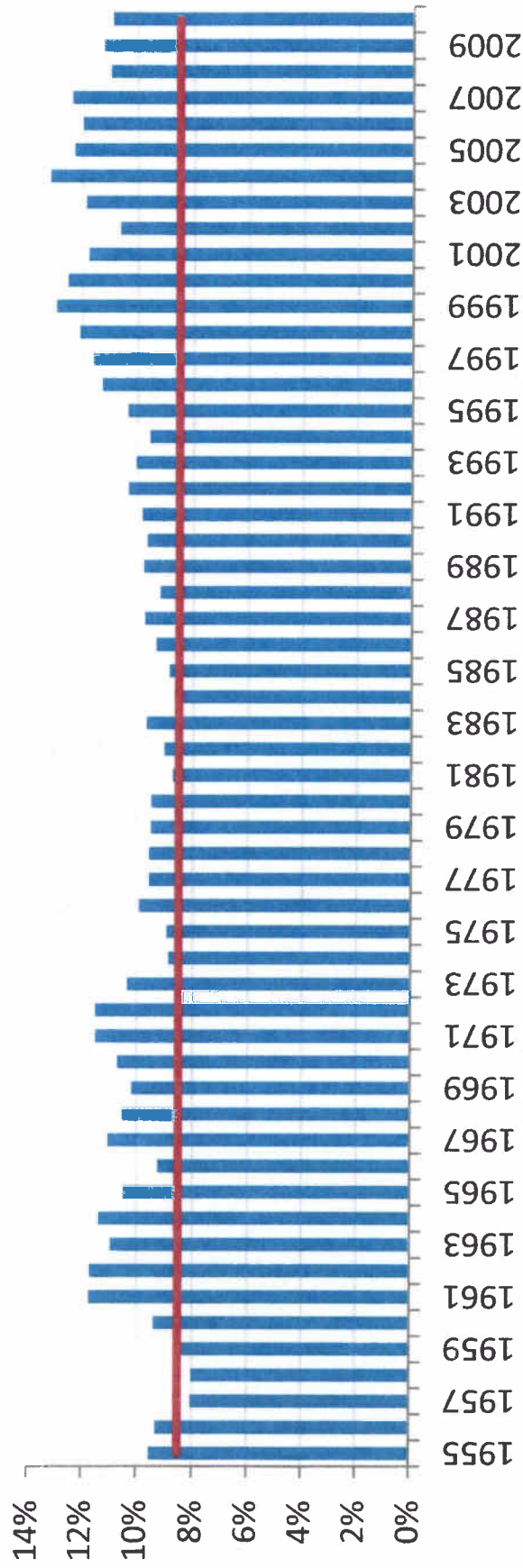
### *State Board of Investment (SBI)*

Like the actual returns for most other public retirement systems, SBI has fallen short of the assumed return over the last ten years, but has exceeded it over longer periods. Again, from an actuarial perspective the long term view is more appropriate as we recognize that returns are volatile from year to year. The twenty year return for SBI was 8.80% and the return since 1980 has been 10.13%. SBI maintains a long term perspective with respect to asset allocation which has resulted in a diversified portfolio with nearly 80% of assets invested in equities or alternatives. While this approach results in a higher expected return, it also creates more volatility. SBI's current asset allocation is:

- Domestic Stocks: 45%
- International Stocks: 15%
- Bonds: 18%
- Alternatives: 20%
- Cash: 2%

Asset allocation is one of the most important factors in determining the investment return assumption. Often the investment return assumptions used by other statewide retirement systems are compared using

# 30-Year Compound Returns 80% S&P 500, 20% Corporate Bonds



Thirty Years Ending December 31,



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the information in the Public Fund Survey, published by the National Association of State Retirement Administrators (NASRA). When comparing the return assumption, it is important to note the underlying asset allocation of the other systems. SBI's asset allocation is different from the average of the funds in the Public Fund Survey, as shown below, which may help to explain why the assumed rate of return is higher:

<b>Asset Category</b>	<b>Allocation</b>
Equities	52%
Fixed Income	28%
Real Estate	6%
Alternatives	10%
Cash	2%
Absolute/Real Return	3%

Because TRA's assets are invested more aggressively than the average system in the NASRA survey, it follows that a higher than average return should also be anticipated.

### **Impact on Stakeholders**

The investment return assumption is a critical assumption that has a tremendous impact on the liabilities and costs of the System. The goal in setting assumptions, in general, is typically not to be aggressive nor conservative. However, recent experience has undoubtedly created an environment where conservatism is highly valued. If the assumption is set to be more conservative, we expect actual experience to be more favorable than expected over the long term which results in decreasing costs. While it is easier to absorb favorable experience than unfavorable, being more conservative in setting this assumption for TRA will have ramifications for all stakeholders, including the members. The cost of living adjustment (COLA) for retirees is not scheduled to resume to its prior level until the Plan is 90% funded. Lowering the investment return assumption will increase the actuarial accrued liability and, therefore, lower the funded ratio, resulting in a longer period before COLAs can revert to the 2.5% level. In addition, a lower investment return will increase the cost to fund the plan and it is likely that active members and employers will have to increase contribution rates or benefits may be lowered in the future. **Given the broad ramifications of the change to all stakeholders, careful analysis should be performed before a change in the return assumption is made.**

### **Select and Ultimate Approach**

In evaluating the available data, the challenge is to balance the short term and long term perspectives. **While our preference would be to leave the 8.5% assumption in place for now and then reevaluate the investment return assumption as part of future experience studies,** we realize that there are a variety of perspectives reflected in the legislature and other interested groups. Clearly, the single rate of return approach could be maintained, but using a lower investment return assumption. However, if we believe that the 8.5% return is reasonable for the long term, such a move would unnecessarily increase costs in the short term. One approach to setting the investment return assumption that directly reflects the difference in the short term view of less optimistic returns with a longer term expectation for higher returns is called a "select and ultimate" approach. Essentially, a lower rate of return would be used as the



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discount rate for the next few years (called the “select” period) and a higher rate would be used for the period beyond the select period. While there is no magic number for the select period, there are some practical considerations that enter into the decision.

The idea of using a select and ultimate approach, in this situation, is reflective of the uncertainty of the current economic environment and an expectation that more information will be available at the end of the select period to assist in evaluating the long term return assumption. The expectation is that a permanent decision on the long term rate of return could be made at that point in time. Therefore, the select period needs to be long enough to provide more meaningful insight into expectations for the future. That has to be balanced with a reasonable timeframe so a permanent change could be made if appropriate. Because any change in the investment return assumption will require legislative action, the soonest the select and ultimate approach could be used would be the July 1, 2012 actuarial valuation. Typically analysis on the investment return assumption is performed as part of the quadrennial experience study. The next experience study report for TRA will be released in May 2013 which would afford the 2014 legislature the opportunity to take action, but we believe this period is too short to provide significantly better information than is currently available. The next experience study report after that will be issued in May 2017 and resulting legislative action could be taken in the 2018 session. This results in a select period of six years which we believe is adequate to provide the information needed to make an informed decision. Therefore, the cost projections in this letter use a six year select period with an investment return assumption of 8.0% (slightly below the 8.36% expected return for SBI) and an ultimate rate of return of 8.5%.

An argument could be made that salary increases for active members will also be impacted by the weak economy and the salary scale should be adjusted in a manner similar to the investment return assumption. While this may be true, we have mixed feelings about changing the long term assumption for salary increases for this purpose as the same argument could be made for other assumptions such as the termination of employment and retirement assumptions. It’s difficult to justify isolating the salary increase assumption and not considering changes to other actuarial assumptions. After thoughtful consideration, our preference would be to leave the current salary scale in place even if the select and ultimate assumption for investment return is used. For informational purposes, the cost impact of using a select and ultimate salary scale that is lower for six years, along with the six year select and ultimate investment return assumption, is shown in the last column of the table at the end of this letter.

### **Cost Impact**

The cost impact of using the “select and ultimate” rate of return approach as described above is shown in the table below. As with other studies we have recently prepared, the estimated 2011 valuation results shown below are based on the July 1, 2010 valuation prepared by Mercer using the new payroll and salary increase assumptions. They have been projected forward to July 1, 2011 and adjusted to reflect the proposed assumption changes using standard actuarial formulae and techniques. The projections assume that all actuarial assumptions, other than the investment return assumption, will be met exactly for the year ended June 30, 2011. TRA provided the estimated investment return for fiscal year 2011, which was used to estimate the market and actuarial values of assets. Please note that when the July 1, 2011 valuation is completed, the actual valuation results are expected to vary from the estimates provided here





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due to the fact they will reflect the actual demographic experience for the last fiscal year and will be developed using different valuation software (Cavanaugh Macdonald's software).

The estimated valuation results, based on the actuarial value of assets, are shown in the table below. Please note that the 2011 valuation results are shown on three different bases:

- 1) Using the 8.5% assumption and the "new" service based salary scale with a 3.75% payroll growth assumption as is currently in the law.
- 2) Using an 8.0% assumption and the "new" service based salary scale with a 3.75% payroll growth assumption.
- 3) Using a select and ultimate investment return assumption of 8.00% for the six year select period of July 1, 2012 through July 1, 2017 and an ultimate assumption of 8.50% with the same salary scale as identified in (1) above.
- 4) Using a select and ultimate assumption for both the investment return and the salary scale. The investment return assumption is a six year select assumption of 8.0% for July 1, 2012 through July 1, 2017 and an ultimate assumption of 8.50%. In addition, the salary scale would also be select and ultimate with salary increases lower by 0.50% for the six year period from July 1, 2012 through July 1, 2017 and then revert back to the regular salary scale for years after the six year select period.

Again, please remember that these numbers represent estimates. Actual valuation results will vary from those shown here.

Please let us know if you have any questions or need anything else.

We, Patrice A. Beckham and Brent A. Banister, are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely,

A handwritten signature in cursive script that reads 'Patrice Beckham'.

Patrice A. Beckham, FSA, EA, FCA, MAAA  
Consulting Actuary

A handwritten signature in cursive script that reads 'Brent A. Banister'.

Brent A. Banister, FSA, EA, FCA, MAAA  
Senior Actuary

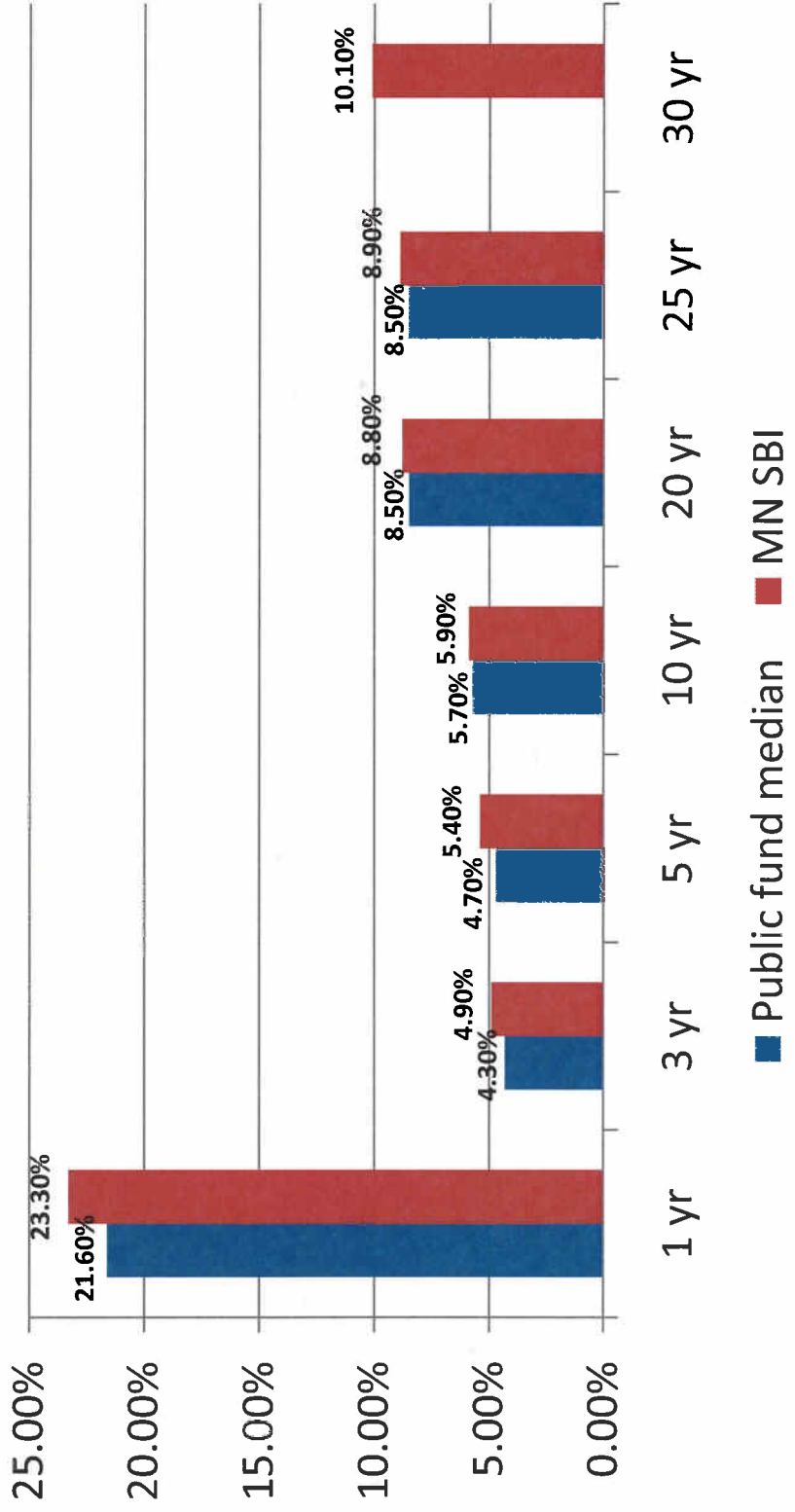




<b>\$ in Billions, Contributions as a % of Pay</b>	<b>July 1, 2011 Estimated Valuation Results</b>			
	<b>8.5% Return</b>	<b>8.0% Return</b>	<b>Select/Ulimate Return of 8.0%/8.5%</b>	<b>Both Select/Ulimate Return and Salary Scale</b>
Actuarial Accrued Liability	22.0	23.3	22.4	22.3
Asset Value	17.1	17.1	17.1	17.1
Unfunded Actuarial Accrued Liability (UAAL)	4.8	6.2	5.3	5.2
Funded Ratio	77.9%	73.5%	76.3%	76.7%
Normal Cost(with expenses)	8.4%	9.6%	8.8%	8.7%
Amortization of UAAL	7.7%	9.3%	8.3%	8.1%
Total Required Contribution	16.1%	18.9%	17.1%	16.8%
Member plus Employer Contribution Contribution Surplus/(Deficiency)	12.7% (3.4%)	12.7% (6.2%)	12.7% (4.4%)	12.7% (4.1%)
Future Increases in Contributions Adjusted Contribution Surplus/(Deficiency)	3.0% (0.4%)	3.0% (3.2%)	3.0% (1.4%)	3.0% (1.1%)

Numbers may not add due to rounding.

# Median public pension fund and Minnesota SBI investment returns for periods ended 6/30/11



Source: National Assn of State Retirement Administrators, Callan Associates, MN SBI