The TRS Board Retreat was called to order by **Tony Smith, President**. **CEO Dick Ingram** introduced the first presenter, **Rogier Slingerland, of CEM Benchmarking**. Slingerland has responsibility for business development and relationship management in the United States and Europe. His presentation contained different segments related to TRS operations, namely Pension Administration, Service, and Investment Benchmarking. Pension Administration amounts to $81.00 per annuitant which is $2.00 below TRS Peers located in U.S., Netherlands, Canada, UK and Australia. Service scores have been below peers, but have improved recently. They also did a comparison with a custom peer group of State Retirement Systems that are comparable in size and function. The Total Pension Administration cost is 22.4%, or 2% higher than the Custom Peer Group. The higher cost is due to higher Human Resources and Information Technology as a result of recent improvement. Higher salaries, building, HR, IT cost rose by 1.5% per year. Service benchmarking was based on interaction with members. Member call length of wait time was 7% higher than peer group. Related to the website, there were fewer tools found compared to peers. One on one counseling had a higher percentage than peers. Members attending a presentation had a lower percentage than peers. Recently call wait time decreased considerably as did undesired outcomes such as hang-ups or unsolved problems. In addition, constant or continuous surveying of satisfaction is now occurring rather than once a year. Slingerland then discussed Global administration menus of peers compared to TRS, i.e. eliminating paper, reducing complexity, and more automated IT that has become more cost effective. Related to Investment Benchmarking, they studied a five year window of 17 peer organizations. TRS had a median net of fees return of 7.6% compared to the peers of 7.2%. Fixed Income poor returns and higher Real Estate and Private Equity were taken into consideration. Although, Fixed income had poorer returns, TRS had a lower investment cost. All asset classes were reviewed. Several trustees had questions of clarification or comments including **Laura Pearl, Tony Smith, Dan Winter, Cinda Klickna and Andy Hurshman**. **Dick Ingram, CEO and Stan Rupnik, CIO** provided responses and included future plans for improvement. Stan emphasized that TRS has lower risk and higher returns vs peers. Slingerland supported that comment by stating that Asset Risk was 9.8% compared to Peer of 10.1%. Asset Liability Risk for TRS was 13.3% compared to Peers 13.9%. Discussion then focused on the cost impact of paying more or less for external asset management, concluding the presentation.

The next presentation was from **Z Scott of Foley and Lardner, LLP** on the topic of Ethics. Scott has substantial experience representing companies and individuals in complex commercial litigation, corporate internal investigations, counseling on corporate compliance matters and white collar crime. Ms. Scott also served as Executive Inspector General for the Office of the Governor of Illinois. She began by discussing the role of Trustees...Fiduciary responsibility and Due Diligence, How you make your decisions providing Governance by which an organization is directed and controlled. Annuitants can go online to find governance procedures of trustees. The Board has a process for dealing with issues and solution procedures. The Board needs to have a clear understanding of their fiduciary responsibility. To that end, TRS retains the services of an attorney whose sole focus is in Fiduciary responsibilities. Good governance is being accountable, transparent, efficient, responsive, inclusive and participatory. They must
follow the Rule of Law. Good governance adds value through increased returns and shareholder confidence. Trustees should not be involved in management, day to day operations, tactical decisions, or staff functions. They can tell the staff what they want them to do, but not how to do it. This is a fine line. Scott continued with a review of the Board of Trustees Manual that covers the oversight and governance of the System. An individual trustee has no authority with the system apart from his or her Board membership. Trustees do not have unilateral authority to act on behalf of the system. Common Ethical Issues faced by trustees include inappropriate expenditure of plan assets, relationship with third parties (investing with a firm that employs a relative), gifts, using position for personal gain, pay to play, conflicts of interest and confidentiality. Violations can lead to civil or criminal liability, harm to beneficiaries/participants, and reputational damage to the fund, employees and board members. A trustee may have to recuse themselves on a particular action if a conflict is possible. Due diligence means the care and attention to their responsibilities such as asking for explanations, as well as reviewing and preparing for all board and committee meetings. All of this leads to adherence to these TRS Fundamental Ethical Principles in the board handbook:

- Avoid conflicts of interest
- Maintain confidentiality
- Reimbursement only for allowable expenses
- Refuse gifts, hospitality or other preferential treatment that might affect judgement
- Act honestly and ethically
- Act with diligence
- Abide by all laws and act in the best interest of TRS

A trustee should regularly attend conferences at the System’s expense to increase their understanding of investment issues. Diligence is lacking if a trustee regularly misses meetings and fails to review material prepared by the investment staff prior to the meeting. If a trustee meets regularly with investment advisors who do business with TRS is a sign of divided loyalties or not acting in the best interest of the Pension system. Of course, one of the most serious issues can be accepting kickbacks and bribes while serving as a trustee. Trustees need to recognize that ethical dilemmas can occur. Likewise they need to understand their ethical and legal obligations and governance as a trustee. The staff of TRS and legal counsel are in place to help trustees avoid any of these issues.

The next presentation was a presentation on the TRS Enterprise Matrix by Bob Jiroutek, Risk Officer and Cynthia Fain, Sr. Legal Counsel. Cynthia began by indicating there is a staff committee that meets monthly to discuss risk programs at TRS to determine any circumstance that could interfere with the fiduciary duties of trustees. There are twenty areas of impact within the TRS functions such as Investments, Communications, Purchasing, IT and Member Services. This is a new committee chaired by Cynthia Fain. Members of the committee (Risk Designees) represent all of the various TRS functions. They are using an adapted version of the Texas Teachers Risk Management Model. TRS is using many ideas and report models from Texas. The committee is divided into small groups to work with each individual risk category. Staff has established a definition for each risk category, followed by a reporting session from each subgroup. An example of the Member Services risk category begins with a Goal for Member Services,
followed by a commentary that further explains that category. Risk details are then outlined as well as mitigation procedures. This is compiled in a report that is a part of the Risk Matrix. So collectively this becomes the TRS Risk Matrix covering all TRS functions. Bob continued the presentation with a discussion of mitigation. Once risks have been identified, mitigation activities begin. Bob continued with a discussion of the Risk Heat Index. The highest risk identified is State Funding. Some risk factors are out of the control of TRS. Tony Smith, President discussed staff departure as a risk. How do you protect staff continuity or how do you identify people who can step up and fill the void. This needs to be addressed. Cinda Klickna, Vice President believes that Morale and Culture needs to be addressed. She stated that increasing knowledge, confidence and satisfaction of staff is important. Should that be a part of the activities of the Risk Matrix? Is culture in place to insure that positive climate? That concluded the Risk Matrix session.

The final session of the day was presented by Dick Ingram, CEO. Dick has been meeting with the heads of each department for review and comment. The Budget discussion is not as far along. Discussions included the accounting system. The current system is outdated and should be in the Strategic Plan. He suggested replacing it with an Agile Methodology that creates more collaboration and relating to users. Jana Bergschneiner, Chief Fiscal Officer stated that things are moving at a faster pace and the accounting system needs to support that. Dick then discussed the Huddle concept for each area of TRS to foster more collaboration. Trustee Ann Deters questioned the high amount budgeted to redo Pension Accounting and Management. A Gap Analysis will do a comparison of the systems and the cost of replacing the system. Ann thinks TRS needs to look at other options rather than the high cost for automation. Jana indicated the current system works fine, but doesn’t provide all the additional information members want. Dick added that investing in IT Desktop would be more efficient and provide more security. Ingram continued with a discussion of the Mission and Vision of the Strategic Plan. TRS needs to serve Employers (school districts) as well and current teachers and retirees. One of the main issues facing TRS is State Funding. Cinda Klickna, Vice President asked if the problem facing Tier II members is being addressed. Tier II Teachers can retire after 35 years of service, but can’t collect pension until age 67. Dick believes TRS needs to develop a way for Tier II members to do their own investments to cover the multiple year period between retirement and collecting pension. Trustee Mark Bailey wondered if there is any possibility of the State of Illinois developing something to address the problem. Ingram continued a discussion of the Strategic Plan including Communication Systems, Member Services, Human Resources and Accounting Systems, Staff Recruitment and Diversity, Information Technology and Fiscal Sustainability.

A very intense discussion followed. Trustee Ann Deters brought up the topic of keeping the Pension System solvent. President Tony Smith asked if we should be looking at alternate ways to support the Pension System. Should we stay on the General Assembly doorstep or explore local district support. He believes Dick needs to be more aggressive. Are we using Dick’s ability to solve problems to the fullest extent? Deters added, do we need to inform annuitants of the problems TRS faces? Vice President Cinda Klickna stated that TRS has tried to work with legislators to improve the situation on funding without success. Ingram responded that perhaps we need to improve our message as to what the future holds for TRS. Smith asked, how far can TRS go to resolve issues? Trustee Andy Hurshman believed we were talking hypothetically. Do we need to develop a more concrete problem solution. Klickna believes we need to
educate the public as to the problems of underfunding. Patrick O’Hara, Fiduciary Attorney discussed the Settler Function that lies with the General Assembly. TRS’s role is strictly fiduciary. He cautioned against overreaching authority with trying to change the system. TRS can educate and inform the public, annuitants, and General Assembly of underfunding. Ingram indicated that the Illinois Policy Institute wants to sue the State of Illinois for the Tier II people. They are paying more into the system than they will ever receive in return. Tony Smith believes TRS needs to find the extent to which they can go to address the underfunding. Ingram believes he hasn’t been confrontational and aggressive with the message. His approach has been to soften the ground before becoming more aggressive by sharing the truth of the matter. Tony said he appreciates all the content of the Strategic Plan but this issue should also be included. Deters believes the Investment Staff are doing their job, so should the board spend less time reviewing investments and more time on the bigger picture. As an observer, this writer wonders if that would reduce the fiduciary responsibility of the Board of Trustees. Smith raised the agenda item on Governance. He asked Ingram to develop a more streamlined Governance Plan. Trustee Dan Winter feels that Dick should provide guidance to the Board as to what they should do. TRS has a competent staff. Should Board make decisions on all investments or should they give TRS Staff more authority and responsibility for investment decisions. Dan also believes streamlining Governance is in order. The Board then adjourned into Executive Session for a Salary issue.

The Board of Trustees reconvened on Friday, beginning with Financial Stress Tests and Solvency Scenarios. The TRS Actuary Firm of Segal and Bridgewater Associates Consulting firm were the presenters. Segal Consulting was represented by Kim Nicholl and Jake Libauskas. Looking at a recap of Valuation Results, the State Contribution according Segal using Actuarial Math is considerably higher than the Statutory Funding Plan of the General Assembly. This increases the Unfunded accrued Liability. After reviewing the Target Asset Allocations for each Asset Class and reviewing the 2016 Capital Market Assumptions, Segal presented the details contained in the 7% Investment Return Assumption. Beginning with a Gross Real Rate of Return of 5.54% and inflation of 2.50%, minus Investment Expense, Adjustment for Adverse Deviation and Negative Cash Flow the Real Rate of Return of 4.50% plus 2.50% inflation or a total 7.00% The probability of achieving the investment return of 7.00% is 53%. The projections are based on the capital market assumptions and confidence level used in the analysis of the investment return assumption last year. Trustee Andy Hurshman asked how this compares to other pension systems. TRS has a higher confidence level. Risks related to economic variables include investment return and wage and price inflation. Risks related to demographic events include mortality, payroll and/or population growth, and retirement, disability, or termination. Risks related to external forces include the State Budget, regulatory risk, litigation risk and political risk that are challenging to manage effectively. There is a 50% probability that TRS will cumulatively earn 7.2% or less by 2045 based upon capital market assumptions and asset allocation that were used to set the investment return assumption. Segal stress tested four State contribution scenarios.

- State pays 100% of all required contributions which vary based on investment returns
- State pays 75% of all required contributions which vary based on investment returns
- State pays 100% of required contributions, but no more than 100% of FY 2018 contribution increasing 2 per year
- State pays 100% of required contributions, but no more than 75% of FY2018 contribution increasing 2% per year

Most investment consultants expect lower investment returns over the next 10 years. Segal prepared projections based upon varying levels of contribution by the state through 2045. If the State caps contributions at 75% of the FY2018 contributions, increasing 2% per year, then TRS is at severe risk of asset depletion.

Representing the Bridgewater Consulting firm were Allen Bridgewater, Patrick Dimmick and Peter Estrepo. They began with observations on the current environment. Total returns are likely to be historically low over the next decade. The results will leave many investors with spending aspirations that require higher returns than are likely. Recognizing this is essential for building a game plan as investors moved toward progressively riskier assets. The amount of risk associated with this increases as you move from Cash to Bonds to Stocks. Recent period is on pace to be one of the best in modern history. As part of any financial stress test, there are three questions every fund should ask......What is your required return? What is your achievable return? How will losses affect you? Observations of the TRS circumstance indicate the underfunded TRS plan is highly dependent on contributions to meet its obligations. CEO Dick Ingram added that the lower the state contributions are, the more difficult it is to deal with declining returns on investments. The achievable return of TRS’s current asset allocations is in the 6% zone, creating a Return Gap vs What’s Required. If the contributions diminish, the return gap grows and places more stress on investment return. The challenge is to make payments to annuitants with reduced state contribution and lower investment return. The required investment return is 7.2% with underfunding contributions. Without them the required rate of return on investments rises to 16.2%. All predictions indicate that decreased returns are in the future, not increased returns. You must always remember that you cannot invest your way out of a financial crisis. If the situation involving underfunding continues or declines and investment returns decline, the funding ratio will deteriorate significantly. The Pension system could reach insolvency in 20 years.

The next item on the agenda dealt with Asset Allocation/Capital Markets/Rate of Return. Becky Gratsinger and Ian Bray of RV Kuhns began their discussion of Capital Markets Assumptions. CM assumptions are long-run, forward-looking estimates of the behavior of asset classes. The behaviors included are Return, Risk (volatility of returns) and Correlation coefficient (the relationship of asset class returns with all other asset classes). CM assumptions are almost always wrong when examined individually by asset class or over short horizons. Perhaps more important is how “right” they are relative to each other and over the long run. The forecast period is >10 years and based on historical data, current market data, financial theory, economic forecasts, and product performance. The 2017 Assumption is a 2.5% long-term inflation growth rate, no change relative to 2016 assumptions. Small Cap US Equity and High Yield Bond returns were reduced. US fixed income assumptions assume interest rates could continue rising. Hybrid asset classes i.e. Hedge Funds assumptions reflect underlying trends, similar to Equity and Fixed Income. Current trends indicate lower returns moving forward. Higher returns will not happen. There is a need to restructure the portfolio and make more modest investments. Drivers of diversification in a portfolio are based on Asset Class relationships. US Public Equity decreased small cap assumption. Large
and Mid Cap assumptions have not changed from 2016. The International Equity risk assumption was modestly increased due to Emerging Markets. Representing the TRS staff were Greg Turk, Director of Investments and Bill Thomas, Investment Officer as they discussed Return Forecasts and Methodology. A comparison of Return and Volatility Assumptions from TRS and RVK shows:

<table>
<thead>
<tr>
<th>Public Equity Category</th>
<th>Return Assumptions</th>
<th>Volatility Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TRS</td>
<td>RVK</td>
</tr>
<tr>
<td>Domestic Equity</td>
<td>5.50%</td>
<td>7.00%</td>
</tr>
<tr>
<td>International Equity</td>
<td>7.06%</td>
<td>8.85%</td>
</tr>
<tr>
<td>Developed Markets</td>
<td>6.25%</td>
<td>8.25%</td>
</tr>
<tr>
<td>Emerging Markets</td>
<td>9.75%</td>
<td>10.75%</td>
</tr>
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As you examine the chart, in almost every instance TRS staff model indicated lower assumptions than RVK. Turk commented that some future changes may reflect the Trump White House, but they haven’t seen any tangible evidence so far. Jerry Quandt, Investment Officer presented the Private Equity Assumptions developed by TRS staff. After a review of historical data covering the last ten years, Quandt discussed the Portfolio construction. The strategies included Buyout 79.7%, Venture Capital 10.1% and Special Situations 10.2% and involved Sectors of Consumer, Energy, Financial Services, Healthcare, Industrial/Materials and Technology. Companies represented are from North America, 72%, Europe 14.0% and Asia 14.0%. Capital Market Return Assumptions from RVK was 10.0% while TRS was more conservative at 9.0%. Historically TRS’ private equity portfolio was 0.54 correlated with the Russell 3000. Staff believes this is an unreliable figure given differences between private equity and public market valuations. RVK had a correlation of 0.75. while TRS believes a correlation range of 0.80 to 0.85 is more appropriate. The next portion of this report will utilize a Tag Team approach between TRS and RVK. The first dealt with Diversified Hedge Funds or Strategies. RVK believes structural headwinds such as the growing size, crowding and maturity of the asset class have resulted in lower expectations for diversified hedge funds. This resulted in an assumption of 5.25% expected return. TRS utilized the Albourne Capital market forward expectations, merging them into the TRS portfolio. The total return expectation for this is 5.45% in the base case scenario and 3.71% in a stress case scenario. The TRS recommendation is for a 5.5% return with 7.5% Risk. The remainder of the presentation did similar comparisons between TRS and RVK in Global Income, Real Estate and Fixed Income. Vice President Klickna commented that all day the Board has heard about projected returns of under 07%. The response was yes that is true. Trustee Deters stated that everything we heard justifies approaching the General Assembly with research supporting a lower rate of return, dictating a higher state contribution. Fiduciary Attorney Pat O’Hara believes that action would fall under the Board’s fiduciary responsibility. Cinda Klickna asked CEO Ingram if he would like suggestions in approaching the Legislature. Deters continued with a question….should we use fewer managers to save fees. CIO Stan Rupnik responded that with a $47B portfolio, it is such a large amount that it is necessary to have multiple managers. He continued that TRS was not out of line when compared to other Pension Systems their size. President Tony Smith said that with the problems in state contribution, perhaps we should examine active vs passive investing, risk and other overall factors of TRS investments. Meeting adjourned.

Respectfully submitted,
Dr. Don Davis, TRS Observation Committee