



# TRS Board of Trustees Meeting

September 18 – 19, 2014

**TEACHER RETIREMENT SYSTEM OF TEXAS MEETING  
BOARD OF TRUSTEES**

**AGENDA**

**September 18, 2014 – 8:00 a.m.**

**September 19, 2014 – 9:00 a.m.**

**TRS East Building, 5<sup>th</sup> Floor, Boardroom**

*The September 18-19, 2014 meeting of the TRS Board of Trustees will be held by telephone conference call as authorized under Texas Government Code Section 551.130. The Board intends to have a quorum physically present at the following location: **1000 Red River Austin, Texas 78701 in the TRS East Building, 5<sup>th</sup> Floor, Boardroom.***

*NOTE: The Board may take up any item posted on the agenda during its meeting on Thursday, September 18, 2014 or during the meeting on the following day beginning at the time and place specified on this agenda.*

*The open portions of the September 18-19, 2014 Board meeting are being broadcast over the Internet. Access to the Internet broadcast of the Board meeting is provided on TRS' website at [www.trs.state.tx.us](http://www.trs.state.tx.us).*

1. Call roll of Board members.
2. Consider Board administrative matters, including – David Kelly:
  - A. Approval of the July 10-11, 2014 Board meeting minutes.
  - B. Consider the election of the Board Vice-Chair.
  - C. Consider consenting to the Board Chair's appointment of committee members, and receive the Board Chair's public announcement of committee chairs.
  - D. Consider Board and committee meeting dates for calendar year 2015.
3. Provide opportunity for public comments – David Kelly.
4. Discuss and consider investment matters, including the following items:
  - A. Final Phase Review of the 2014 Asset Allocation Study – Britt Harris and Mohan Balachandran.
  - B. Performance Review: Second Quarter 2014 – Brady O'Connell and Steve Voss, Hewitt EnnisKnupp.

***NOTE:** The Board meeting likely will recess after the last item above to conduct committee meetings and resume upon adjournment of the committee meetings to take up the items listed below.*

5. Review and discuss the Executive Director's report on the following matters – Brian Guthrie:
  - A. Administrative operational matters, including goals for Fiscal Year 2015 and updates on financial, audit, legal, staff services, board administration activities, special projects, long-term space planning, and strategic planning.
  - B. Board operational matters, including a review of draft agendas for upcoming meetings.
6. Review the report of the Investment Management Committee on its September 18, 2014 meeting, and consider related matters – Committee Chair.
7. Review the report of the Risk Management Committee on its September 18, 2014 meeting, and consider related matters – Committee Chair.
8. Review the report of the Policy Committee on its September 18, 2014 meeting, and consider the following related matters – Committee Chair:
  - A. Consider proposed amendments to the Investment Policy Statement.
  - B. Consider proposed amendments to the General Authority Resolutions.
  - C. Consider proposed amendments to the TRS Board of Trustees Bylaws.
9. Review the report of the Compensation Committee on its September 18, 2014 meeting, and consider related matters, including amendments to and ratification of the Performance Incentive Pay Plan for the period beginning October 1, 2014 – Committee Chair.

***NOTE:** The Board meeting likely will recess after the last item above and resume Friday morning to take up items listed below.*

10. Provide opportunity for public comments – David Kelly.
11. Receive an update on the TEAM Program, including MyTRS changes – Adam Fambrough; Barbie Pearson; David Cook; and Jay Masci, Provaliant.
12. Receive a presentation from the TEAM Program Independent Program Assessment (IPA) Vendor – Michael Johnson, Bridgepoint Consulting.

13. Receive a report from Segal Consulting on the 2014 Actuarial Audit of Gabriel, Roeder, Smith & Co. – Kim Nichols and Matthew Strom, Segal Consulting; Joseph Newton, Gabriel, Roeder, Smith & Co.
14. Review the report of the Audit Committee on its September 19, 2014 meeting, and discuss and consider the following items – Committee Chair:
  - A. Proposed revisions to the Internal Audit Charter.
  - B. Adoption of the proposed Audit Plan for Fiscal Year 2015.
15. Review the reports of the Chief Financial Officer – Don Green:
  - A. Anticipated year-end overview.
  - B. Report of expenditures that exceed the amount of operating expenses appropriated from the general revenue fund and are required to perform the fiduciary duties of the Board.
16. Review the report of the Chief Benefit Officer, and consider the following related matters – Marianne Woods Wiley:
  - A. Approve members qualified for retirement.
  - B. Approve minutes of Medical Board meetings.
17. Review and discuss the Deputy Director’s Report, including matters related to administrative, financial, and staff services operations – Ken Welch
18. Consider personnel matters, including the appointment, employment, evaluation, compensation, performance, duties, discipline, or dismissal of the Executive Director, Chief Investment Officer, or Chief Audit Executive and the adoption of a resolution regarding salary limits for certain TRS employees listed as exempt positions in the 2014 - 2015 General Appropriations Act – David Kelly.
19. Review the report of the General Counsel on pending and contemplated litigation, including updates on litigation involving benefit-program contributions, retirement benefits, health-benefit programs, and open records – Carolina de Onís.
20. Consult with the Board's attorney(s) in Executive Session on any item listed above on this meeting agenda as authorized by Section 551.071 of the Texas Open Meetings Act (Chapter 551 of the Texas Government Code) – David Kelly.

# Tab 2 A

## Minutes of the Board of Trustees

July 10-11, 2014

The Board of Trustees of the Teacher Retirement System of Texas met on July 10, 2014 in the boardroom located on the fifth floor of the TRS East Building offices at 1000 Red River Street, Austin, Texas. The following board members were present:

David Kelly, Chair  
Todd Barth  
Karen Charleston  
Joe Colonna  
David Corpus  
Christopher Moss  
Anita Palmer  
Dolores Ramirez  
Nanette Sissney

### Others present:

Brian Guthrie, TRS	Dan Herron, TRS
Ken Welch, TRS	Lynn Lau, TRS
Amy Barrett, TRS	Rebecca Merrill, TRS
Janet Bray, TRS	Mike Pia, TRS
Carolina de Onís, TRS	Garry Sitz, TRS
Don Green, TRS	Rebecca Smith, TRS
Howard Goldman, TRS	Sharon Toalson, TRS
T. Britton Harris IV, TRS	Cindy Yarbrough, TRS
Betsey Jones, TRS	Grant Walker, TRS
Amy Morgan, TRS	Keith Robinson, Focus Consulting
Jerry Albright, TRS	Steve Huff, Reinhart Boerner Van Deuren
Lane Arnold, TRS	Brady O'Connell, Hewitt EnnisKnupp
Christine Bailey, TRS	Lenny Beaudoin, CBRE
Ronnie Bounds, TRS	Peter Jansen, CBRE
Amber Conrad, TRS	Will Douglas, CBRE
Chris Cutler, TRS	Peter Larkin, CBRE

Mr. Kelly called the meeting to order at 2:30 p.m.

### **1. Call roll of Board members.**

Ms. Lau called the roll. A quorum was present. Ms. Charleston, Mr. Colonna, and Mr. Moss were absent and arrived later in the meeting.

### **2. Consider Board administrative matters, including – David Kelly:**

#### **A. Approval of the June 5-6, 2014 Board meeting minutes.**

On a motion by Ms. Palmer, seconded by Mr. Corpus, the board unanimously adopted the minutes of the June 5-6, 2014 meeting, as presented.

**B. Consider excusing Board member absences from the June 5-6, 2014 Board meeting.**

On a motion by Ms. Sissney, seconded by Ms. Palmer, the board unanimously voted to excuse the absence of Ms. Ramirez from the June 5, 2014 board meeting and the absence of Mr. Barth from the June 6, 2014 board meeting.

**C. Setting, rescheduling, or canceling future Board meetings.**

Mr. Guthrie provided a proposed schedule of board meetings for 2015 for the board's review and consideration in September.

Mr. Moss arrived in the meeting at 2:38 p.m.

**3. Recognize the service of Amy Morgan – David Kelly.**

Ms. Morgan expressed her appreciation to the board for the support over the years and to the TEAM program, the opportunity to serve Texas public education employees and work with TRS staff. Trustees, Mr. Guthrie, and Mr. Welch acknowledged Ms. Morgan's accomplishments and expressed their appreciation to her contribution and dedication to the system. Mr. Kelly read the following resolution into record:

**Whereas**, Amy Morgan joined the Teacher Retirement System of Texas (TRS) in March 1995, as the Director of the Management Information Systems Department; and

**Whereas**, She was an active member of the Executive Council, who provided strategic technical direction for TRS; and

**Whereas**, In recognition of her leadership and significant contributions to TRS, she was named Chief Information Officer for the Information Technology Division in September 2009; and

**Whereas**, As a member of the Executive Steering Committee, she was a driving force for the current application modernization effort for the TRS Enterprise Application Modernization (TEAM) Program often sharing information with other retirement entities about lessons learned and best practices; and

**Whereas**, She professionally represented TRS with peer retirement organizations as the past president of Public Retirement Information Systems Management (PRISM); and

**Whereas**, Throughout her years of leadership to the retirement system and its members, Ms. Morgan's approach to employment has embodied a fiduciary's duties of loyalty and care, always placing the retirement system and its participants first, ahead of any personal concerns; and

**Whereas**, She has exhibited the highest level of integrity, providing technical insights, analyses, and advice that have been proven over time to be accurate and well thought out; and

**Whereas**, TRS recognized Ms. Morgan with a TRS Golden Apple Award in 1998 in part for her demonstrated ability to handle complex matters, maintain infinite attention to detail, meet challenging deadlines and deal successfully with high-pressure and high-profile situations; and

**Whereas**, She has demonstrated quiet courage and persistence in delivering sometimes unpopular advice and always handling challenging matters with grace, dignity and courtesy; and

**Whereas**, She has maintained the highest standards of professionalism and played an invaluable role to TRS and its beneficiaries; and

**Whereas**, She provided critical leadership during a time when the retirement system grew from approximately 769,000 to more than 1.3 million members and annuitants; reached \$130 billion in its investment portfolio by the time of her retirement; developed and implemented a statewide active member health benefits program; strengthened management controls; implemented electronic imaging to enhance business processes; led the effort for electronic reporting by public schools, charter schools and higher education; instituted changes necessary to support the new millennium; implemented software support for several cost-of-living adjustments for annuitants; ensured that TRS was prepared for disasters and business continuity through annual testing; provided a secure and robust technical environment to support members and business processes; and

**Whereas**, Amy Morgan is retiring from TRS after serving as the retirement system's Chief Information Officer for over 19 years and 37 years of public service, mindful of her duty to those who teach or otherwise serve our state's children and thereby shape its future; and now, therefore, be it

**Resolved**, That the board of trustees and staff of the Teacher Retirement System of Texas recognize the accomplishments and contributions of Amy Morgan during her 19-year highly successful career with the retirement system and express appreciation on behalf of TRS members both present and future, and be it further

**Resolved**, That a copy of this resolution be presented to Amy Morgan and entered into the record of the board for July 10, 2014.

**4. Provide opportunity for public comments – David Kelly.**

Mr. Kelly called for public comment. No public comment was received.

**5. Discuss TRS' long-term space planning project, including matters related to real property – Meredith Bell, CBRE Workplace Strategy; Lenny Beaudoin, CBRE Workplace Strategy; Peter Jansen, CBRE Public Institutions and Education Services; and Peter Larkin, CBRE Public Institutions and Education Services.**

Mr. Lenny Beaudoin, Mr. Peter Jansen, Mr. Peter Larkin, and Mr. Will Douglas of CBRE recapped the TRS workplace study findings and presented additional detail concerning TRS workforce growth assumptions, occupancy scenarios and market options. Mr. Jansen stated for Mr. Kelly that the scenarios and options were based on a 20-year time horizon. Mr. Beaudoin shared a few case studies of corporate space planning and their positive outcome.

Mr. Colonna arrived in the meeting at 3:02 p.m.

Whereupon, Mr. Kelly announced that the board would go into executive session on agenda item 5 under § 551.072 of the Government Code to discuss real property matters because deliberation in an open meeting would have a detrimental effect on TRS' position in negotiations with a third person. He asked all members of the public and staff not needed for executive session to leave the meeting room and take their belongings with them.

Whereupon, the open session of the board meeting recessed at 3:05 p.m. to go into executive session.

Ms. Charleston arrived during the executive session.

The board meeting reconvened in open session at 4:55 p.m. Mr. Kelly announced that the board would take up agenda item 6.

**6. Receive a presentation from Focus Consulting on the evaluation of the Chief Audit Executive, Chief Investment Officer, and Executive Director – Keith Robinson, Focus Consulting.**

Mr. Robinson provided an overview of the executive assessment process. He highlighted the key assessment results of each executive with a focus on their competencies, contributions and personality types. He explained for Ms. Sissney that the executives took tests to assess their personality types.

Mr. Kelly announced that the board would recess and reconvene following the conclusion of the Audit Committee meeting.

Whereupon, the board meeting recessed at 5:05 p.m.

The board reconvened at 6 p.m. Mr. Kelly announced that the board would take up agenda item 7.

**7. Discuss and consider personnel matters, including the following items:**

**A. Review the report of the Audit Committee on its July 10, 2014 meeting, and discuss and consider the evaluation and compensation of the Chief Audit Executive – Chris Moss.**

Mr. Moss, Committee Chair, presented the following report of the Audit Committee:

The Audit Committee met at 5:10 p.m. on Thursday, July 10, 2014, in the Fifth Floor Boardroom. The Audit Committee discussed and approved the recommendation to the Board of Trustees regarding the annual performance appraisal for the Chief Audit Executive. The Audit Committee deferred consideration of any salary increase to the Board of Trustees. The committee concluded at approximately 6:00 p.m.

On a motion by Mr. Moss as committee chair, the board approved the annual performance appraisal of the Chief Audit Executive for fiscal year 2014.

Whereupon, Mr. Kelly announced that the board would go into executive session on agenda items 7B through 7D under § 551.074 and § 551.071 of the Government Code to deliberate personnel matters, and as needed, to seek advice from legal counsel. He asked all members of the public and staff not needed for executive session to leave the meeting room and take their belongings with them.

Whereupon, the open session of the board meeting recessed at 6:00 p.m. to go into executive session.

- B. Discuss the evaluation, compensation, and duties of the Chief Investment Officer and provide input to the Executive Director – David Kelly and Keith Robinson, Focus Consulting.**
- C. Discuss and consider the evaluation, compensation, and duties of the Executive Director – David Kelly and Keith Robinson, Focus Consulting.**
- D. Discuss and consider the adoption of a resolution regarding salary limits for TRS employees listed as exempt positions in the 2014 - 2015 General Appropriations Act – David Kelly.**

The board meeting reconvened in open session at 8:17 p.m. Mr. Kelly announced that the board would continue deliberations on agenda item 7 the next day.

Whereupon the board meeting recessed at 8:20 p.m.

The Board of Trustees of the Teacher Retirement System of Texas reconvened on July 11, 2014 in the boardroom located on the fifth floor of the TRS East Building offices at 1000 Red River Street, Austin, Texas. The following board members were present:

David Kelly, Chair  
Todd Barth  
Karen Charleston  
Joe Colonna  
David Corpus  
Christopher Moss  
Anita Palmer  
Dolores Ramirez  
Nanette Sissney

Others present:

Brian Guthrie, TRS  
Ken Welch, TRS  
Amy Barrett, TRS  
Carolina de Onís, TRS  
Howard Goldman, TRS

Kelly Newhall, TRS  
Mike Pia, TRS  
Jim Pinkard, TRS  
Sarah Prince, TRS  
Kristi Vorce, TRS

Don Green, TRS  
T. Britton Harris, TRS  
Betsey Jones, TRS  
Amy Morgan, TRS  
Marianne Woods Wiley, TRS  
Jerry Albright, TRS  
Sylvia Bell, TRS  
Stuart Bernstein, TRS  
Ronnie Bounds, TRS  
Kendall Courtney, TRS  
John Dobrich, TRS  
Janie Duarte, TRS  
Cindy Haley, TRS  
Barbara Forssell, TRS  
Dan Junell, TRS  
Lynn Lau, TRS  
Scot Leith, TRS

Susan Wade, TRS  
Steve Huff, Reinhart Boerner Van Deuren  
Brady O'Connell, Hewitt EnnisKnupp  
Gunjan Kedia, State Street Bank  
Jay Hooley, State Street Bank  
Bob Carroll, BNY Mellon  
Yvonne Utz, BNY Mellon  
Samir Pandiri, BNY Mellon  
Bob Tumberlinson  
Sandra Tumberlinson  
Diane Mullen, Mullen Pension & Benefits Group  
Rameshea Waits, Ethos Benefit Services  
Philip Mullins, Texas State Employee Union  
Tim Lee, Texas Retired Teachers Association  
Ted Melina Raab, Texas American Federation of Teachers

Mr. Kelly called the meeting to order at 11:37 a.m.

**1. Call roll of Board members.**

Ms. Lau called the roll. All trustees were present.

**8. Provide opportunity for public comments – David Kelly.**

Ms. Rameshea Wait and Ms. Diane Mullen presented a health care cost-saving proposal to the board.

**9. Review and discuss the Executive Director's report on the following matters – Brian Guthrie:**

**A. Administrative operational matters, including financial, audit, legal, staff services, board administration activities, special projects, long-term space planning, and strategic planning.**

Mr. Guthrie shared with the board recent and upcoming notable events. He highlighted the Tri-State Institutional Investors Forum where he participated as a panelist discussing pension issues and sharing the Texas experience with the East Coast states. He also noted other upcoming events, including the joint public/private strategic partnership network (SPN) summit, NCTR trustee workshop, NASRA conference, training in Chicago by Hewitt EnnisKnupp, the Fiduciary Investors Symposium, and the TRTA fall conventions.

Mr. Guthrie provided an overview of the joint hearing conducted between the Pensions Committee and the House Appropriations subcommittee for TRS health care programs. He reported that, during the hearing, staff had received positive feedback and questions from the committee

members as well as requests for more information related to a long-term solution to health care issues. Based on the feedbacks at the hearing and recent public testimony presented to TRS Board, he suggested devoting the October board meeting to discussing the final drafts of the health care studies and other related issues and options.

**B. Board operational matters, including a review of draft agendas for upcoming meetings.**

Mr. Guthrie highlighted major agenda items planned for the September and November meetings.

**10. Review the report of the Compensation Committee on its July 11, 2014 meeting – Nanette Sissney.**

Ms. Sissney, committee chair, provided the Compensation Committee report, as follows:

The Compensation Committee met on July 11, 2014. The committee adopted the minutes of its June 5, 2014 meeting. The committee received a presentation from Mr. Brian Guthrie on matters related to compensation for TRS employees. Mr. Guthrie briefed the board on his plan to develop a TRS compensation philosophy and discussed current compensation challenges faced by the Legal Division in recruiting and retaining staff. TRS will address any misclassified employees and resolve compensation issues related to Legal staff by implementing targeted market adjustments and using positions outside the state classification plan as necessary. Mr. Guthrie also outlined budget items related to compensation for the FY 2016-2017 biennium.

Mr. Kelly announced that the board would take up agenda item 7 to consider personnel matters.

**7. Discuss and consider personnel matters, including the following items:**

**A. Review the report of the Audit Committee on its July 10, 2014 meeting, and discuss and consider the evaluation and compensation of the Chief Audit Executive – Chris Moss.**

On a motion by Mr. Moss, seconded by Mr. Corpus, the board unanimously adopted the following resolution regarding the base salary of the Chief Audit Executive:

**Whereas,** Section 825.208 of the Texas Government Code provides that, notwithstanding any other law, the Board of Trustees (the "Board") shall approve the rate of compensation of all persons it employs;

**Whereas,** Subsection 1.8(u) of the Board's bylaws provides that the Board shall be responsible for the selection, replacement, dismissal, performance evaluation, and compensation, in consultation with the Audit Committee and the Executive Director, of the Chief Audit Executive;

**Whereas,** The Board wishes to amend the salary of the Chief Audit Executive; now, therefore be it

**Resolved,** That effective September 1, 2014, the Board hereby increases the salary of the Chief Audit Executive as follows:

Chief Audit Executive's salary (the incumbent is Amy L. Barrett): Increase the base salary amount beginning in FY 2015 by 3%;

**Resolved,** That nothing in the adoption of this resolution alters the at-will nature of employment that TRS has with any of its employees, creates a contract between TRS and any TRS employee, or confers on any TRS employee the right to continued employment with TRS, including the Executive Director or any other employee holding a position in the Schedule of Exempt Positions.

**C. Discuss and consider the evaluation, compensation, and duties of the Executive Director – David Kelly and Keith Robinson, Focus Consulting.**

On a motion by Ms. Sissney, seconded by Mr. Barth, the board adopted the following resolution regarding the base salary of the Executive Director by a majority vote (8-1) with Ms. Charleston voting against the motion:

**Whereas,** Section 825.208 of the Texas Government Code provides that, notwithstanding any other law, the Board of Trustees (the "Board") shall approve the rate of compensation of all persons it employs;

**Whereas,** Subsection 1.8(d) of the Board's bylaws provides that the Board shall be responsible for the selection, job description, performance evaluation, and compensation of the Executive Director;

**Whereas,** The Board wishes to amend the salary of the Executive Director; now, therefore be it

**Resolved,** That effective September 1, 2014, the Board hereby increases the salary of the Executive Director as follows:

Executive Director's salary (the incumbent is Brian K. Guthrie): Increase the base salary amount beginning in FY 2015 by 5%;

**Resolved,** That nothing in the adoption of this resolution alters the at-will nature of employment that TRS has with any of its employees, creates a contract between TRS and any TRS employee, or confers on any TRS employee the right to continued employment with TRS, including the Executive Director or any other employee holding a position in the Schedule of Exempt Positions.

**D. Discuss and consider the adoption of a resolution regarding salary limits for TRS employees listed as exempt positions in the 2014 - 2015 General Appropriations Act – David Kelly.**

On a motion by Ms. Sissney, seconded by Mr. Barth, the board adopted the following resolution regarding the salary ranges for certain exempt positions by a majority vote (8-1) with Ms. Charleston voting against the motion:

**Whereas,** Section 825.208 of the Texas Government Code provides that, notwithstanding any other law, the Board of Trustees (Board) shall approve the rate of compensation of all persons it employs;

**Whereas,** The Bylaws of the Board of Trustees delegate authority to the Executive Director and Bylaw subsection 4.1.2(c) specifically provides that the Executive Director assumes responsibility for the compensation of all TRS personnel, with limited exceptions for the Executive Director and Chief Audit Executive whose salaries are set by the board;

**Whereas,** The General Provisions in the TRS Budget provide discretion to the Executive Director regarding salaries and specifically authorize the Executive Director to set the annual base salary rate for all exempt positions, other than the Executive Director position, within the not-to-exceed amounts listed in the General Appropriations Act that became effective September 1, 2014 ("GAA"), or any amended limits adopted by the board from time to time;

**Whereas,** The GAA, consistent with general law, provides that notwithstanding the compensation amounts set in the GAA, the board may determine the not-to-exceed amounts of the positions listed in the Schedule of Exempt Positions without limitation;

**Whereas,** For the majority of positions listed in the Schedule of Exempt Positions, the GAA not-to-exceed amounts are sufficient for the Executive Director to exercise his discretion in setting salaries under Bylaw subsection 4.1.2(c) and under the General Provisions of the TRS Budget, but the GAA not-to-exceed amounts for the Deputy Director Investment Officer and the Deputy Administrative Officer are not sufficient for the Executive Director to exercise his discretion in setting the salaries for those positions.

**Whereas,** For the purpose of allowing the Executive Director to exercise his discretion in setting the salaries of the Deputy Director Investment Officer and the Deputy Administrative Officer under Bylaw subsection 4.1.2(c) and under the General Provisions of the TRS Budget, the Board wishes to adopt adjusted GAA not-to-exceed amounts for FY 2015 for those positions and wishes to direct the Executive Director to move the incumbent Deputy Administrative Officer out of the Schedule of Exempt positions and to the Deputy Director III classified position; now, therefore be it

**Resolved,** That effective September 1, 2014, the board hereby adopts the following GAA not-to-exceed amounts for the Deputy Director Investment Officer and the Deputy Administrative Officer:

Deputy Director Investment Officer (incumbent Jerry G. Albright): Increase the GAA not-to-exceed amount to \$340,000; and

Deputy Administrative Officer (incumbent Ken Welch): Increase the GAA not-to-exceed amount by 2% above the current not-to-exceed amount;

**Resolved,** That the Board directs the Executive Director to move the incumbent Deputy Administrative Officer out of the Schedule of Exempt positions and to the Deputy Director III classified position as soon as possible after September 1, 2014;

**Resolved,** That nothing in the adoption of this resolution alters the at-will nature of employment that TRS has with its employees, creates a contract between TRS and any TRS employee, or confers on any TRS employee the right to continued employment with TRS, including any employee holding a position in the Schedule of Exempt Positions.

11. **Review the report of the Budget Committee on its July 11, 2014 meeting, and consider adoption of related matters, including the following – Nanette Sissney:**
  - A. **Consider the adoption of the proposed fiscal year 2015 pension trust fund administrative operations budget, general provisions, and resolution authorizing transfer of pension trust funds to the TRS expense account to cover the expenses approved under the fiscal year 2015 budget.**
  - B. **Consider the adoption of the proposed fiscal year 2015 administrative operations budgets and general provisions for the TRS health benefits funds (retired and active plans), including the optional long-term care insurance program.**
  - C. **Consider the adoption of the proposed fiscal year 2015 administrative operations budget and general provisions for the 403(b) company certification and investment product registration program.**

Ms. Sissney, committee chair, provided the Budget Committee report, as follows:

The Budget Committee met today Friday, July 11th at 10:00 am. The first item of business was approval of the minutes of the June 5, 2014 Budget Committee meeting.

Mr. Don Green then provided an overview of the recommended administrative operating budget for FY 2015. The total FY 2015 operating budget for all funds is \$155.2 million; which includes \$94.8 million for administrative operations, \$19.2 million for TEAM, \$33.1 million for soft dollars, \$4.6 million for the operation of TRS-Care, \$3.4 million for the operation of TRS-ActiveCare and \$207,528 for the 403(b) Certification Program.

The Budget Committee also discussed the TEAM program. The total operating and capital expenses budget is \$19.2 million. Mr. Green mentioned that an unexpended FY 2014 capital balance of \$7.7 million will be carried forward to FY 2015. Mr. Green referenced the board to Appendix A for more detailed supporting information related to the FY2015 Operating Budget.

Mr. Green reviewed TRS' Legislative Appropriations Request (LAR) for the next biennium. He highlighted that the pension fund salary growth assumptions are 2% for public education and 4% for higher education. He discussed issues related to the funding and long-term sustainability of TRS-Care. He discussed funding for compensation and facilities as they related to the LAR.

A resolution was discussed in the budget committee to bring to the board, authorizing expenditure and the transfer of trust funds for pension trust fund administrative operations in the amount of \$103,482,363; to pay the actual amount of performance incentive compensation; to pay expenses incurred and unexpended funds for the TEAM Program; and for operational recovery due to a catastrophic occurrence.

The committee discussed and considered the proposed budget.

On a motion by Ms. Sissney as the committee chair, the board unanimously adopted the fiscal year 2015 administrative operations budget for the pension trust fund, the TRS health benefits fund (retired and active plans), including the long-term care insurance program and the 403(b) certification program, as presented, and the general provisions described on pages 35 and 36 of the budget document.

On a motion by Ms. Sissney as the committee chair, the board unanimously adopted the following resolution authorizing staff to transfer pension trust funds to the TRS expense account for pension administrative operation expenses under the approved fiscal budget 2015:

**Whereas**, Section 825.312 of the Government Code provides that the retirement system shall pay from the expense account of the retirement system account for the pension trust fund all administrative expenses of the retirement system that are required to perform the fiduciary duties of the board;

**Whereas**, Section 825.313(d) of the Government Code provides that the TRS Board of Trustees (board) may authorize transferring from the interest account to the expense account of the retirement system an amount necessary to cover TRS' operating expenses for the fiscal year that are required to perform the fiduciary duties of the board;

**Whereas**, The General Provisions for the TRS Fiscal Year 2014 Budget adopted by the Board on June 13, 2013 authorizes the transfer of up to 12.5% of budgeted funds of an expense category between major expense categories so long as the total approved budget for operating expenses and capital outlay is not exceeded and the Executive Director in accordance with the General Provisions has authorized the transfer of Fiscal Year 2014 budgeted but unexpended funds from non-capital major expense categories in amounts less than 12.5% of each category into the TEAM Program capital expense category;

**Whereas**, Section 14.03(h) of Article IX of the General Appropriations Act for the 2014-2015 Biennium authorizes the transfer of appropriated but unexpended non-capital budget funds to capital budget funds and Section 14.03(i) of Article IX of the General Appropriations Act for the 2014-2015 Biennium provides that appropriated but unexpended capital budget funds from Fiscal Year 2014 are reappropriated and carried forward for Fiscal Year 2015; now, therefore be it

**Resolved**, That the board finds the expenditure of pension trust funds for operating expenses in Fiscal Year 2015 is required to perform the fiduciary duties of the board in administering the retirement system in the amount of \$103,482,363, as approved today in the Fiscal Year 2015 Budget and General Provisions for the Pension Trust Fund Administrative Operations, plus such additional amounts as may be necessary for the following expenditures:

- To pay the actual amount of performance incentive compensation payable in Fiscal Year 2015, if any; and
- To pay expenses incurred for the TEAM Program in Fiscal Year 2015 any unexpended TEAM Program capital budget funds that have been reappropriated in accordance with Section 14.03(i) of Article IX of the General Appropriations Act for the 2014-2015; and
- To achieve recovery of operational capabilities in the event of a catastrophic occurrence as contemplated by such General Provisions adopted by the board; and

**12. Consider the following statutory certifications of estimated state contributions – Don Green:**

Mr. Green explained the three certifications presented for the board's consideration in agenda items 12A through 12C.

**A. Consider certifying to the State Comptroller of Public Accounts the estimated amount of state contributions to be received by the retired school employees group health benefit fund for the fiscal year ending August 31, 2015.**

On a motion by Ms. Sissney, seconded by Mr. Corpus, the board unanimously adopted the following certification to the State Comptroller of Public Accounts:

At its meeting on July 11, 2014, the Board of Trustees of the Teacher Retirement System, on a motion by Ms. Nanette Sissney, seconded by Mr. David Corpus, voted to certify \$292,768,402 as the estimated amount of state contributions to be received by the retired school employees group insurance fund (TRS Care) for the 2015 fiscal year under the appropriations authorized by Chapter 1575 of the Insurance Code, the Texas Public School Retired Employees Group Benefits Program. This amount includes \$247,531,484 authorized in the General Appropriations Act (Senate Bill 1, 83rd Legislature, Regular Session), plus an amount of \$17,533,564 due to fiscal year 2014 payroll costs being more than previously estimated. These contributions are based on 1.0 percent of the salary of each active public school employee.

The amount certified also includes an estimated \$27,703,354 due to provisions in Rider 14 of the TRS bill pattern (Senate Bill 1, 83rd Legislature, Regular Session) which allows for any payments made by the pension fund for FY2014 settle up be re-appropriated to the Texas Public School Retired Employees Group Insurance Trust Fund.

This estimate of state contributions is required by Section 1575.209 of the Insurance Code.

**B. Consider certifying to the Legislative Budget Board and the Office of the Governor the estimate of state contributions to be received by the retired school employees group health benefit fund for fiscal years 2016 and 2017.**

On a motion by Mr. Barth, seconded by Mr. Moss, the board unanimously adopted the following certification to the Legislative Budget Board and the Office of the Governor:

At its meeting on July 11, 2014, the Board of Trustees of the Teacher Retirement System, on a motion by Mr. Todd Barth, seconded by Mr. Christopher Moss, voted to certify the following estimated amounts as necessary to pay the state's contributions to the retired school employees' group insurance fund for the 2016–2017 biennium:

Fiscal Year 2016	\$ 275,628,467
Fiscal Year 2017	\$ 281,141,037

These estimates are required by Section 1575.208 of the Insurance Code and are based on the assumption that covered payroll will grow 2% per year and that the minimum statutory contribution rate of 1.0 percent will apply to both fiscal year 2016 and fiscal year 2017. Additionally, the Board of Trustees will ask for an exceptional item in the Legislative Appropriations Request in the amount of \$874.8 million to sustain the program through the end of FY2017.

**C. Consider certifying to the State Comptroller of Public Accounts the estimate of state contributions to the Pension Trust Fund for fiscal years 2016 and 2017.**

On a motion by Mr. Moss, seconded by Ms. Ramirez, the board unanimously adopted the following certification to the State Comptroller of Public Accounts:

At its meeting on July 11, 2014, the Board of Trustees of the Teacher Retirement System, in compliance with Texas Government Code, Section 825.404 (b), on a motion by Mr. Christopher Moss, seconded by Ms. Dolores Ramirez, voted to certify the following estimated amounts as necessary to pay the state's contributions from General Revenue to the retirement system for the 2016–2017 biennium based on the appropriated contribution rate of 6.8% of the aggregate annual compensation of all members of the Teacher Retirement System to be:

Fiscal Year 2016	\$ 1,785,869,140
Fiscal Year 2017	\$ 1,825,724,466

These amounts are net of estimated funds to be received by the System for contributions based on compensation above the statutory minimum, other educational and general income, federal/private funding sources, and new member contributions. These estimates assume a covered payroll growth rate of 2% per year for public education and 4% per year for higher education.

**13. Consider authorizing the Executive Director to purchase directors' and officers' and fiduciary liability insurance for fiscal year 2015 through the State Office of Risk Management – Don Green.**

Mr. Green presented the memo from Jay LeBlanc outlining the specifics of the proposed directors' and officers' and fiduciary liability insurance coverage for FY 2015 through the State Office of Risk Management. On a motion by Mr. Moss, seconded by Ms. Ramirez, the board unanimously adopted the following resolution to authorize the executive director to purchase directors' and officers' and fiduciary liability insurance for FY 2015:

**Resolved,** That, pursuant to Texas Government Code Section 825.112, the Executive Director or his designee is authorized to purchase directors and officers insurance coverage, including fiduciary liability and employment practices liability insurance with coverage limits of up to \$25 million under each policy for fiscal year 2015, at a cost to be determined by the Executive Director, and to negotiate and agree to such terms and conditions of coverage as the Executive Director or his designee may deem in his or her discretion to be in the best interest of TRS, and to execute and deliver any authorizations to bind coverage and such other documents, applications, contracts, amendments, extensions, agreements, certificates, or affidavits, or modifications as may be necessary or desirable in connection with acquiring and maintaining such insurance.

**14. Review the reports of the Chief Financial Officer – Don Green:**

- A. Report on expenditures that exceed the amount of operating expenses appropriated from the general revenue fund and are required to perform the fiduciary duties of the Board.**
- B. Financial reports on TRS programs.**

Mr. Green presented a report of expenditures paid for the third quarter as of May 31, 2014.

**15. Review the report of the Chief Benefit Officer, and consider the following related matters – Marianne Woods Wiley:**

- A. Approve members qualified for retirement.**

Ms. Woods Wiley presented the list of members and beneficiaries receiving initial benefit payments during the reporting period from March 1, 2014 through May 31, 2014. She referred the board to the detailed list of payments made available for their review.

On a motion by Ms. Sissney, seconded by Ms. Palmer, the board unanimously approved the list of members and beneficiaries who qualified for retirement, disability, DROP, PLSO, survivor, or death benefits initiated during the reporting period.

- B. Approve minutes of Medical Board meetings.**

Ms. Woods Wiley presented the minutes of the March 11, 2014 Medical Board meeting.

On a motion by Ms. Palmer, seconded by Ms. Charleston, the board approved the minutes of the Medical Board meeting as presented, thereby ratifying the actions of the Medical Board reflected in those minutes.

**16. Review and discuss the Deputy Director’s Report, including matters related to administrative, financial, and staff services operations – Ken Welch**

Mr. Welch provided an update on TRS operations, including the high call volume in the summer, the building renovation, and the implementation plan for GASB 57. He also provided an update on the TEAM program, including the financial system replacement (FSR) project. He projected that a new vendor for the FSR project would be selected at the end of fiscal year 2015 and that the project would go live in fiscal year 2016.

- 17. Discuss and consider selecting a master custody services provider, including receiving presentations from vendor finalists and considering a finding that deliberating or conferring on the selection of a master custody services provider in open meeting would have a detrimental effect on the position of the retirement system in negotiations with a third person – Scot Leith, Sylvia Bell, and John Dobrich.**

Ms. Bell gave an overview of the master custody services used by TRS, including securities lending services. She explained the current process for selecting a provider of those services. She described the functions and minimum qualifications expected of a custody bank. She introduced two finalists: State Street Bank, incumbent custodian, and BNY Mellon.

Representatives of State Street Bank, Jay Hooley and Gunjan Kedia, described their bank's history, services, strengths, risk management function and relationship with TRS. Trustees asked questions regarding the performance of the current security lending program and the process for evaluating the custodian's services.

Prior to the presentation by the second finalist, BNY Mellon, the board took up agenda item 9A to acknowledge the departure of Mr. Stuart Bernstein.

- 9. Review and discuss the Executive Director's report on the following matters – Brian Guthrie:**

- A. Administrative operational matters, including financial, audit, legal, staff services, board administration activities, special projects, long-term space planning, and strategic planning.**

Mr. Kelly, Mr. Harris and Mr. Albright recognized the performance and contribution of Mr. Bernstein to TRS' investment program. Mr. Bernstein expressed his appreciation to the board and to Mr. Harris and Mr. Albright for their support of the Emerging Manager Program, which he directed.

The board took up agenda item 17 to receive the presentation from BNY Mellon representatives.

- 17. Discuss and consider selecting a master custody services provider, including receiving presentations from vendor finalists and considering a finding that deliberating or conferring on the selection of a master custody services provider in open meeting would have a detrimental effect on the position of the retirement system in negotiations with a third person – Scot Leith, Sylvia Bell, and John Dobrich.**

Mr. Bob Carroll, Ms. Yvonne Utz, and Mr. Samir Pandiri of BNY Mellon provided an overview of BNY Mellon, including its services and products, clientele and team structure. The representatives answered questions from trustees about how the system would transition to a new custodian and how long that would take. The representatives also addressed the customized services BNY Mellon could provide TRS and the benefits of switching to a new custodian.

On a motion by Mr. Barth, seconded by Ms. Sissney, the board voted unanimously to determine that deliberating or conferring in an open meeting about the procurement of a master custodian

and securities lending services provider would have a detrimental effect on TRS' position and negotiation with a third person.

Whereupon, based on the board's determination, Mr. Kelly announced that the board would go into executive session on agenda item 17 under § 825.115(e) and § 551.071 of the Government Code to discuss the procurement and, as needed, to seek the advice of legal counsel. He asked all members of the public and staff not needed for executive session to leave the meeting room and take their belongings with them.

Whereupon, the open session recessed at 1:35 p.m.

After completing the executive session, Mr. Kelly announced that the open session reconvened at 2:17 p.m.

Whereupon, on a motion by Ms. Sissney, seconded by Mr. Barth, the board unanimously voted to retain State Street to provide master custody and securities lending services.

**18. Consult with the Board's attorney(s) in Executive Session on any item listed above on this meeting agenda as authorized by Section 551.071 of the Texas Open Meetings Act (Chapter 551 of the Texas Government Code) – David Kelly.**

The board took up no further business under agenda item 18.

The meeting was adjourned at 2:20 p.m.

APPROVED BY THE BOARD OF TRUSTEES OF THE TEACHER RETIREMENT SYSTEM OF TEXAS ON THE 18TH DAY OF SEPTEMBER, 2014.

ATTESTED BY:

\_\_\_\_\_  
Dan Junell  
Secretary to the TRS Board of Trustees

\_\_\_\_\_  
Date

**Tab 2 D**



## **Board of Trustees**

### **RESOLUTION SETTING MEETING DATES**

**September 18-19, 2014**

**RESOLVED**, That the Board of Trustees of the Teacher Retirement System of Texas adopts the following meeting schedule for calendar year 2015, with each approved meeting to be held in Austin unless another location is selected:

February 11 – 13, 2015 (educational meeting)

March 26 – 27, 2015 (quarterly meeting)

May 1, 2015

June 11 – 12, 2015 (quarterly meeting)

July 24, 2015

September 24 – 25, 2015 (quarterly meeting)

October 23, 2015

November 19 – 20, 2015 (quarterly meeting)

# Tab 4 A



# Strategic Asset Allocation Proposal

Mohan Balachandran  
Senior Managing Director  
September 2014

# Agenda

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- I. Introduction
- II. SAA Review
- III. Final Recommendations
- IV. Transition Plans
- V. Other Issues

# Review: 2014 SAA Study: Objectives, Participants, Issues

## Objective of the SAA Study

1. Maximize the probability of achieving 8% returns over twenty years, without an unacceptable risk of intermediate-term downside volatility
2. Continue to meet the Long-Term Goals and Obligations of the Plan as set forth in Section 1.4 of the Investment Policy Statement
  - a. Control risk through *proper diversification of asset classes and by establishing long-term risk and return expectations; and*
  - b. *...[A]chieve a long-term rate of return that:*
    - i. *Exceeds the assumed actuarial rate of return...*
  - c. Ensure proper diversification without unacceptable risk of intermediate term downside volatility

## Key Participants

- TRS Board of Trustees
- TRS Investment Management Division
- TRS Executive Counsel and Legal
- Hewitt EnnisKnupp
- Dr. Keith Brown
- Gabriel, Roeder, Smith & Company
- Strategic Partners
- Select External Managers

## Environmental Issues

- Low inflation and low interest rates
- Secular deleveraging
- High intermediate-term valuations could result in low intermediate-term returns
- Potential for inflation in the future
- Increased government share of GDP relative to the private sector
- Global geopolitical issues

# Teacher Retirement System of Texas: Current Situation

TRS Trust Valuation	FY 2013 (Aug 13)	FY 2012 (Aug 12)	Change
Funded Ratio	80.8%	81.9%	-1.1%
Unfunded Accrued Liability	\$28.9 B	\$26.1 B	+2.8 B
Texas Credit Rating	AAA	AA +	+
TRS Pension / TX State GDP <sup>1</sup>	10.0%	10.2%	-0.2%

Key Facts	
Duration of Liabilities	24 years
Benefit Payments	\$8.9 B
Member/State Contributions <sup>2</sup>	6.8%
Net Payout Ratio <sup>3</sup>	3.2%

**Trust Actuarial Asset Value:**  
**\$117.4 Billion<sup>1</sup>**

**GRS 30-year Asset Growth Rate:**  
**4.1%**

**GRS 30-year Liability Growth Rate:**  
**3.6%**

Expected Passive Returns – By Portfolio	
	Long-Term Return <sup>4</sup>
Global Equity	7.9%
Stable Value	3.6%
Real Return	7.3%
Passive Return	7.4%

Long-Term Risk-Adjusted Portfolio Returns	
Total Trust Expected Return	8.4% <sup>5</sup>
Projected Risk	11.4%
Projected Sharpe Ratio	0.50

**GOALS: Long-Term Sustainability of TRS Pension System, Optimal Long-Term Investment Return**

<sup>1</sup> Trust Valuation figures from GRS. TX State GDP from the US Bureau of Economic Analysis. Both numbers as of August 31, 2013.

<sup>2</sup> 8.6% Annual Required Contribution Rate

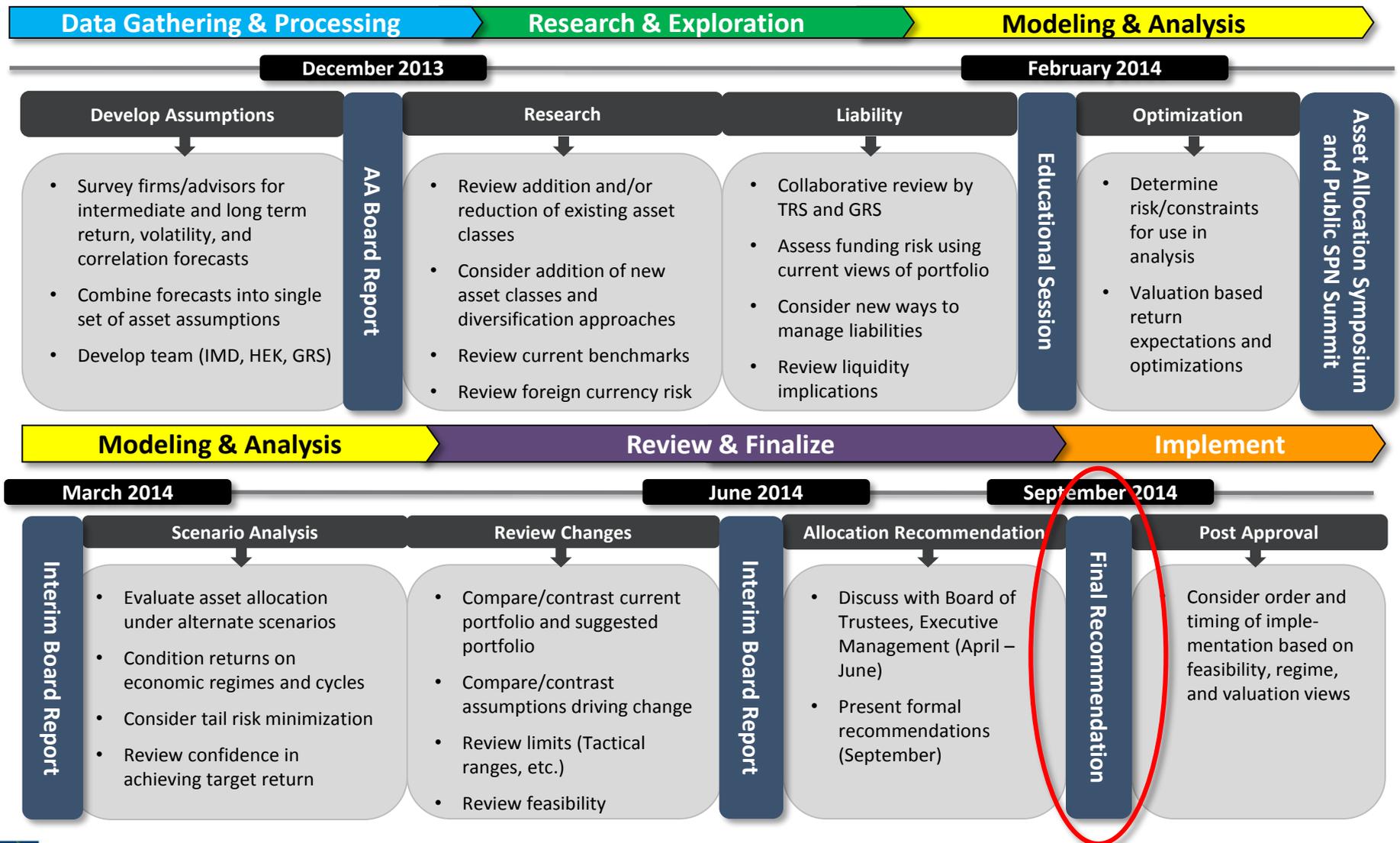
<sup>3</sup> As a % of Trust Assets- March 31, 2014

<sup>4</sup> Risk, return and correlation estimates sourced from 2014 TRS Capital Markets Expectations Survey. Assumes current Policy allocation

<sup>5</sup> Long-Term Passive Return (+) 100 bps of Alpha



# Review: 2014 SAA Study Process Map



# Process Review

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- Review of best practices (HEK)
- Review of fiduciary responsibilities (Reinhart)
- Education on investment strategies and metrics (Dr. Brown)
- Determination of goals
- Development of analytics team (IMD, HEK, GRS, SPN, others)
- Analytical review of market conditions and Capital Market Expectations
- Consideration of asset allocation modifications and new/expanded strategies
- Trustee participation and input

# SAA Study Findings

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- Current investment policy with alpha is projected to achieve 8% over the duration of the TRS pension liability (24 Years)
- No major changes seem necessary or appropriate at this time based on the information received and analysis conducted over the course of the SAA Study
- Projected long-term returns are generally below historical average returns
- Global fixed income is no longer projected to contribute significantly to the Trust's total return objective (8%)
- Intermediate-term investment returns may be lower than 8%

# Recommendations

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- Policy Refinements outlined in this report
  - 5% increase to Private Markets
  - 5% addition of Risk Parity
  - Pro-rata Funding
  - Multi-year Transition Plan
- Continue to collaborate with key parties to ensure the Trust has proper funding, benefits, and investment resources

# Proposed Changes – Balanced Funding

Asset Allocation	Current Policy	Proposed Policy	Change
<b>Global Equity</b>			
US Large Cap	18%	16%	-2%
US Small Cap	2%	2%	0%
Non-US Developed	15%	13%	-2%
Emerging Markets	10%	9%	-1%
Directional Hedge Funds	5%	4%	-1%
Private Equity	11%	13%	2%
<b>TOTAL GLOBAL EQUITY</b>	<b>61%</b>	<b>57%</b>	<b>-4%</b>
<b>Stable Value</b>			
US Treasuries	13%	11%	-2%
Absolute Return	0%	0%	0%
Stable Value Hedge Funds	4%	4%	0%
Cash	1%	1%	0%
<b>TOTAL STABLE VALUE</b>	<b>18%</b>	<b>16%</b>	<b>-2%</b>
<b>Real Return</b>			
Global Inflation-Linked Bonds	5%	3%	-2%
Commodities	0%	0%	0%
Energy and Natural Resources	3%	3%	0%
Real Assets	13%	16%	3%
<b>TOTAL REAL RETURN</b>	<b>21%</b>	<b>22%</b>	<b>1%</b>
<b>Risk Parity</b>	0%	5%	5%
<b>TOTAL TRUST</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

# Implications of Proposed Changes

	Current Policy	Proposed Policy	Change
<b>Global Equity</b>	61%	57%	-4%
<b>Stable Value</b>	18%	16%	-2%
<b>Real Return</b>	21%	22%	1%
<b>Risk Parity</b>	0%	5%	5%
Non-US Exposure	25%	22%	-3%
Hedge Fund Total	9%	8%	-1%
Public Equity	45%	40%	-5%
Total Liquid + HF	73%	63%	-10%
Total Private	27%	32%	5%
Expected Return (with alpha)	<b>8.4%</b>	<b>8.7%</b>	0.3%
Volatility	<b>11.4%</b>	<b>11.6%</b>	0.2%
Sharpe Ratio	<b>0.50</b>	<b>0.52</b>	0.02
Liquidity Score	<b>2.82</b>	<b>3.05</b>	0.24

# Relationship to IPS Objectives

**Conclusion:** Increasing the Private Markets allocation by 5% and introducing a 5% Risk Parity allocation increases the Trust's probability of achieving full funding and raises projected returns without a significant increase in risk.

Objective Statement	Test	Key Impact of Increasing Private Markets and Adding Risk Parity
1.	Probability of achieving an 8% Return	Increases from 55% to 61%
2a.	Historical Stress Period Analysis	Same or decreased losses across historical stress periods
2b.	Environmental Regime Analysis	Returns improve and volatility decreases in Global Equity and Real Return regimes
2c.	Volatility	Expected volatility increases modestly from 11.4% to 11.6%
3a.	Liquidity	Trust becomes less liquid, liquidity score increases from 2.82 to 3.05
3b.	Leverage	Risk Parity introduces leverage into policy (approx. 4%)

# 2014 SAA Study: Process Review

# Comparison to Other Large, Long-Term Investment Structures

	Expected Passive Return	+100 bps Alpha	Expected Volatility	Expected Passive Sharpe Ratio	Liquidity Score
Current TRS Policy	7.4%	8.4%	11.4%	0.50	2.82
CEM Peer Survey	7.0%	8.0%	12.3%	0.43	2.43

Comparison of Strategic Asset Allocations					
	TRS	Public	Private	Endowment	Canadian
<b>Global Equity</b>					
US Large Cap	18.0%	27.5%	24.2%	9.0%	9.5%
US Small Cap	2.0%	3.6%	3.0%	1.1%	1.2%
Non-US Developed	15.0%	19.8%	12.0%	10.8%	15.4%
Emerging Markets	10.0%	5.5%	3.1%	7.6%	3.9%
Directional Hedge Fund	5.0%	N/A <sup>1</sup>	4.5% <sup>2</sup>	11.4% <sup>2</sup>	N/A <sup>1</sup>
Private Equity	11.0%	10.7%	5.7%	18.3%	14.7%
<b>Global Equity Total</b>	<b>61.0%</b>	<b>67.1%</b>	<b>52.6%</b>	<b>58.2%</b>	<b>44.7%</b>
<b>Stable Value (Deflation)</b>					
Cash	1.0%				
Fixed Income/Credit	0.0%	23.5%	38.8%	6.8%	24.5%
US Long Treasuries	13.0%				
Stable Value Hedge Fund	4.0%	N/A <sup>1</sup>	3.7% <sup>2</sup>	9.3% <sup>2</sup>	N/A <sup>1</sup>
<b>Stable Value Total</b>	<b>18.0%</b>	<b>23.5%</b>	<b>42.5%</b>	<b>16.2%</b>	<b>24.5%</b>
<b>Real Return (Inflation)</b>					
TIPS	5.0%				7.4%
Real Assets	13.0%	9.5%	5.0%	14.2%	23.5%
ENR	3.0%			11.5%	
<b>Real Return Total</b>	<b>21.0%</b>	<b>9.5%</b>	<b>5.0%</b>	<b>25.7%</b>	<b>30.8%</b>
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Data from plans has been aggregated and presented as median allocations. Public plans compiled from 2013 CEM Peer Survey data. Private plans compiled according to Top 100 private plans as reported by P&I Investments data as of 9/30/13 (Accessed 5/12/14). Endowments and Canadian plans come from investment policy materials from their respective investment company websites. Endowments consist of Harvard, Yale, Stanford, and UTIMCO. Canadian plans consist of Canadian Pension Plan, Ontario Teachers, and Ontario Municipal.

<sup>1</sup> Hedge Fund allocation is not explicitly given for Canadian plans. For Public plans, although the median HF allocation of the CEM Peer Survey is zero, there were some plans with an explicit allocation to HF, and across those plans the median allocation was 6%.

<sup>2</sup> Hedge Fund allocations are not distinguished by the data provider, Pensions and Investments. They are split between Directional HF and Stable Value HF at an assumed ratio of 55%/45%.

# Review of Long-Term Investment Return Projections

	Historical Norm <sup>1</sup>	JP Morgan Estimate	Survey Results			Volatility	Beta to MSCI World
			Median	Max	Min		
Inflation	3.6%	2.3%	2.2%	2.7%	1.9%	2.0%	0.01
<b>GLOBAL EQUITY</b>							
US Large Cap	12.0%	7.5%	6.7%	7.5%	4.4%	16.2%	0.89
US Small Cap	12.1%	7.5%	7.5%	10.7%	3.2%	21.3%	1.11
Non-US Developed	9.5%	7.5%	7.3%	11.0%	5.5%	18.3%	1.11
Emerging Markets	11.5%	9.0%	8.1%	12.0%	4.9%	23.6%	1.31
Directional Hedge Funds	7.3%	5.8%	5.4%	7.8%	3.5%	6.5%	0.27
Private Equity	12.5%	8.0%	9.2%	12.1%	4.0%	18.3% <sup>4</sup>	1.01
<b>STABLE VALUE (Deflation)</b>							
Cash	5.5%	2.0%	2.0%	3.8%	1.3%	0.6%	0.00
US Treasuries -- Intermediate	7.5%	4.3%	3.6%	4.6%	2.0%	3.1%	-0.05
US Treasuries -- Long	9.0%	3.3%	2.9%	5.1%	1.0%	10.8%	-0.20
US Aggregate	8.0%	4.3%	3.0%	4.6%	0.1%	4.2%	0.02
US Investment Grade	8.5%	5.0%	3.3%	5.0%	2.1%	5.6%	0.14
US High Yield	9.5%	6.0%	4.6%	6.0%	2.1%	11.1%	0.49
Emerging Market Debt	9.8%	6.7%	5.3%	6.7%	3.5%	11.7%	0.36
Stable Value Hedge Funds	6.3%	5.2%	5.2%	6.1%	3.0%	6.8%	0.20
<b>REAL RETURN (Inflation)</b>							
TIPS	7.5%	4.8%	3.1%	4.8%	1.0%	6.0%	0.09
Real Assets	6.7%	6.0% <sup>2</sup>	7.3%	12.7%	3.9%	17.1% <sup>4</sup>	1.01
Infrastructure	7.8%	7.3% <sup>2</sup>	7.5%	9.7%	4.9%	13.8%	0.93
ENR	7.3%	7.6%	8.8%	11.0%	4.2%	14.5% <sup>3</sup>	1.01
Commodities	3.4%	3.8%	3.4%	7.2%	1.0%	19.6%	0.79
Gold	4.9%	4.1%	4.1%	5.7%	0.4%	18.8%	0.21

Source: TRS, JP Morgan, Bloomberg

<sup>1</sup> All estimates of Historical Norm provided by JP Morgan for 1979-2013 except for the following assets/start dates: Directional Hedge Funds (HFRI Fund-of-Funds Index) – Jan 1990, Private Equity (State Street Private Equity Index) – Mar 1997, Emerging Market Debt (JP Morgan Emerging Market Bond Index) – Mar 1994, Stable Value Hedge Funds (HFRI Fund-of-Funds Conservative Index) – Jan 1990, Infrastructure (UBS Infrastructure and Utilities 50/50 index)- Jan 1995.

<sup>2</sup> Estimates are unlevered.

<sup>3</sup> Volatility for ENR is estimated as a 50/50 combination of Private Equity and Real Assets volatility estimates.

<sup>4</sup> Volatility for Private Equity estimated as 1.15x that of US Large Cap and Real Assets estimated as 0.84x that of US REITs using TRS Risk Group proxy methodology.



# Key Options: Private Markets and Risk Parity

As introduced in the March 2014 SAA Study review, there are two key options to efficiently improve projected long-term results (assuming current resources and organizational structure)

## 1. Increase illiquidity via purchase of additional holdings in Private Markets

- Private Equity
- Real Estate
- Energy

## 2. Increase Risk Parity

- Alternative return stream
- More balanced risk framework
- Uses leverage to improve returns, within pre-specified risk framework

### Key Sample Portfolios from March Board Report

	Current Policy	Private	Risk Parity
		32% / Sell Liquids	95% Trust / 5% Liquid Risk Parity
Long Term Return	7.4%	7.5%	7.4%
+100 bps Alpha	8.4%	8.5%	8.4%
Long Term Volatility	11.4%	11.4%	11.3%
Long Term Passive Sharpe Ratio	0.50	0.51	0.50
Liquidity Score	2.82	2.96	2.82

# Risk Parity Based Asset Allocation

Asset Class	Capital Allocation		Risk Contribution	
	Current Policy	Risk Parity	Current Policy	Risk Parity
US Large Cap	18.0%	10.0%	23.8%	8.5%
US Small Cap	2.0%	4.0%	3.3%	3.8%
Non-US Developed	15.0%	10.0%	22.5%	11.0%
Emerging Markets	10.0%	8.0%	18.5%	11.8%
Directional Hedge Funds	5.0%	0.0%	2.1%	0.0%
Private Equity	11.0%	0.0%	15.6%	0.0%
<b>Global Equity</b>	<b>61.0%</b>	<b>32.0%</b>	<b>85.8%</b>	<b>35.0%</b>
Cash	1.0%	0.0%	0.0%	0.0%
US Treasuries -- Long	13.0%	40.0%	-2.3%	18.3%
Non-US Sovereign Bonds	0.0%	60.0%	0.0%	7.5%
High Yield	0.0%	4.0%	0.0%	2.5%
Stable Value Hedge Funds	4.0%	0.0%	1.8%	0.0%
<b>Stable Value</b>	<b>18.0%</b>	<b>104.0%</b>	<b>-0.5%</b>	<b>28.4%</b>
Real Assets	13.0%	0.0%	10.5%	0.0%
US TIPS	5.0%	50.0%	0.8%	22.0%
Commodities	0.0%	14.0%	0.0%	14.6%
ENR	3.0%	0.0%	3.3%	0.0%
<b>Real Return</b>	<b>21.0%</b>	<b>64.0%</b>	<b>14.7%</b>	<b>36.6%</b>
<b>TOTAL</b>	100%	200%	100%	100%
<b>Standard Deviation</b>	<b>11.4%</b>	<b>10.0%</b>		

In a given year, what is the probability of achieving...

	Positive Return	8% Return
S&P 500	70.8%	49.9%
<b>Risk Parity</b>	<b>82.4%</b>	<b>55.2%</b>
Current Policy	77.7%	53.2%

Over a 3-year period, what is the probability of achieving...

	Positive Return	8% Return
S&P 500	80.2%	46.5%
<b>Risk Parity</b>	<b>94.0%</b>	<b>56.8%</b>
Current Policy	89.4%	53.0%

Over a 25+ year period, what is the probability of achieving...

	Positive Return	8% Return
S&P 500	98.0%	35.7%
<b>Risk Parity</b>	<b>99.9%</b>	<b>66.5%</b>
Current Policy	99.9%	55.4%

Note: Risk Parity fund is shown for illustrative purposes at 2x leverage and uses only liquid Trust benchmark assets. While indicative of the Risk Parity approach, these weights will vary over time. Probabilities estimated through 1 million simulations of returns on the S&P 500, a Risk Parity strategy, and Current Policy using the 2014 TRS Capital Markets Expectation Survey. Probability simulations include alpha of +100 bps for Current Policy and tracking error of +285 bps.



# Comparison of Current Allocation Strategy to Risk Parity

		Historical Analysis Last 20 Years					
		Current Policy			Risk Parity		
Return		8.1%			10.5%		
Volatility		11.2%			10.2%		
Sharpe Ratio		0.49			0.79		
<b>Correlation</b>							
		S&P 500	UST	CPI	S&P 500	UST	CPI
5 years		0.95	-0.23	-0.13	0.50	0.19	-0.12
10 years		0.95	-0.12	0.09	0.57	0.29	0.06
20 years		0.93	-0.07	0.04	0.57	0.37	0.05
Drawdowns		0.94	-0.11	0.02	0.10	-0.01	0.09
<b>Drawdown Period</b>							
Maximum		-43.4%			-25.0%		
Length to Recover (Months)		26			21		
Trough Date		Feb 2009			Oct 2008		
<b>Market Cycle Performance</b>							
Corrections (22% of the time)		-20.1%			-7.4%		
Recoveries (42% of the time)		16.8%			15.3%		
Expansions (36% of the time)		16.2%			17.0%		
<b>Market Cycle Betas to S&amp;P 500</b>							
Corrections (22% of the time)		0.75			0.42		
Recoveries (42% of the time)		0.70			0.24		
Expansions (36% of the time)		0.57			0.51		
<b>VaR Analysis</b>							
95% Historical VaR		7.1%			6.5%		
<b>Relative Performance Analysis</b>							
Max Underperformance Period		-53.0% Feb 2009			-21.9% Dec 2009		

Source: TRS, Bloomberg, Bridgewater, AQR

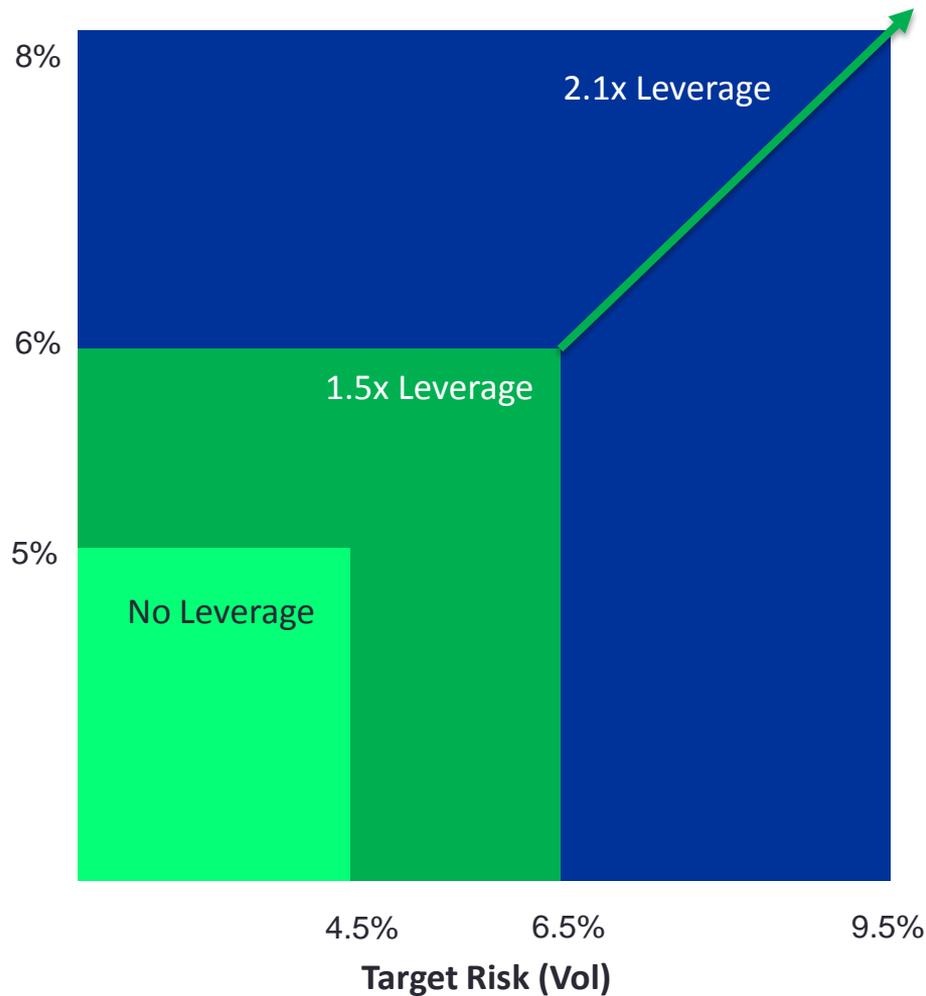
Risk Parity is modeled as a 50/50 allocation between Bridgewater All-Weather strategy and the AQR GRP Strategy, both of which are investable Risk Parity strategies. Actual track records are used back to the inception date of the strategies (June 1996 for Bridgewater and January 2006 for AQR). Firm-provided back tests are used to simulate performance prior to inception. VaR estimates provided by State Street Bank



# Comparison of Risk

## *Traditional Strategy versus Risk Parity*

Target Return



- Traditional Strategy
- Risk Parity at Different Leverage Levels

# TRS Private Equity Summary

PERFORMANCE <sup>1</sup>			
Asset Class	1-Year TWR	3-Year TWR	10-Year TWR
Private Equity	23.8%	15.2%	17.8%
Policy Benchmark <sup>3</sup>	<u>17.9%</u>	<u>12.0%</u>	<u>9.8%</u>
Excess Return	5.9%	3.2%	8.0%
<b>TUCS Peer Comparison</b>	<b>4th</b>	<b>8th</b>	<b>1st</b>

PORTFOLIO GROWTH <sup>2</sup>			
PE (\$ millions)	1-Year	3-Year	10-Year
Ending Value	\$14,833	\$14,833	\$14,833
less Starting Value	13,324	9,622	905
less Contributions	2,206	8,140	17,828
plus Distributions	3,589	8,645	12,804
<b>Investment Return</b>	<b>\$2,892</b>	<b>\$5,716</b>	<b>\$8,905</b>

LONG-TERM MARKET RETURN AND RISK EXPECTATIONS				
Style	Portfolio Target Weight	Strategic Goal	Expected Market Return <sup>4</sup>	Public Risk Proxy <sup>5</sup>
Buyout	70%	Equity Alpha	13.3%	25.3%
Growth Equity / Venture	15%	Equity Alpha	11.3%	30.9%
Credit / Special Situations	15%	Diversification	11.3%	18.7%
<b>PRIVATE EQUITY TOTAL</b>	<b>100%</b>	<b>Equity Alpha / Diversification</b>	<b>12.7%</b>	<b>25.2%</b>

ALLOCATION SUMMARY						
Style	% of Portfolio			% of Total Trust		
	12/31/2013	12/31/2012	Change	12/31/2013	12/31/2012	Change
Buyout	77.5%	78.8%	-1.3%	8.6%	9.2%	-0.6%
Growth Equity / Venture	9.3%	7.4%	1.9%	1.0%	0.9%	0.1%
Credit / Special Situations	13.2%	13.8%	-0.6%	1.8%	1.6%	0.2%
<b>PRIVATE EQUITY TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-</b>	<b>11.4%</b>	<b>11.7%</b>	<b>-0.3%</b>

<sup>1</sup> State Street as of 3/31/13.

<sup>2</sup> State Street as of 12/31/13, 12/31/10, 12/31/03, excludes ENR.

<sup>3</sup> Policy benchmark provided by State Street.

<sup>4</sup> Hamilton Lane, 20 years of data ending 12/31/13.

<sup>5</sup> TRS Risk Group/Morgan Stanley. Represents the public markets proxy of de-smoothed private assets as used in the TRS Risk Model. For comparison, S&P 500 is 20.0%.



# TRS Real Assets Summary

PERFORMANCE			
Asset Class	1-Year Return	3-Year Return	5-Year Return
Real Assets TWR	12.6%	12.2%	5.4%
Real Assets Benchmark TWR	<u>12.9%</u>	<u>12.5%</u>	<u>5.0%</u>
Excess TWR	(0.3%)	(0.3%)	0.4%
Real Assets IRR	12.4%	12.2%	9.7%
<b>TUCS Peer Comparison TWR<sup>1</sup></b>	<b>25<sup>th</sup></b>	<b>25<sup>th</sup></b>	<b>45<sup>th</sup></b>

PORTFOLIO GROWTH <sup>2</sup>			
Real Assets (\$ millions)	1-Year	3-Year	5-Year
Ending Value	\$15,138	\$15,138	\$15,138
less Starting Value	13,266	7,654	2,967
less Contributions	2,548	7,635	13,132
plus Distributions	2,439	4,422	5,443
<b>Investment Return</b>	<b>\$1,763</b>	<b>\$4,271</b>	<b>\$4,482</b>

LONG TERM MARKET RETURN AND RISK EXPECTATIONS				
Style	Portfolio Weight	Strategic Goal	Expected Market Return <sup>3</sup>	Public Risk Proxy <sup>4</sup>
Core	30.0%	Diversification/Beta/Inflation Protection	6.3%	20.3%
Value-Add	10.0%	Return Enhancement/Inflation Protection	7.3%	24.4%
Opportunistic	30.0%	Return Enhancement	9.3%	35.6%
Real Assets Special Situations (RASS)	12.0%	Relative Value	7.3%	21.6%
Other Real Assets	18.0%	Inflation Protection	7.5%	20.0%
<b>REAL ASSETS TOTAL</b>	<b>100.0%</b>	<b>Diversification/Inflation Protection</b>	<b>7.6%</b>	<b>25.6%</b>

ALLOCATION SUMMARY						
Style	% of Portfolio			% of Total Trust		
	12/31/2013	12/31/2012	Change	12/31/2013	12/31/2012	Change
Core	29.5%	31.4%	-1.9%	3.5%	3.5%	0.0%
Value Added	14.5%	13.7%	0.8%	1.7%	1.6%	0.1%
Opportunistic	37.6%	37.1%	0.5%	4.1%	4.0%	0.1%
Real Assets Special Situations (RASS)	9.8%	9.8%	0.0%	1.1%	1.2%	-0.1%
Other Real Assets	7.4%	7.2%	0.2%	1.2%	2.1%	-0.9%
Emerging Managers	1.1%	0.8%	0.3%	0.2%	0.1%	0.1%
<b>REAL ASSETS TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-</b>	<b>11.9%</b>	<b>12.7%</b>	<b>-0.8%</b>

<sup>1</sup>TUCS Report as of 3/31/14.

<sup>2</sup>State Street reports as of 12/31/13, 12/31/10, and 12/31/08, excluding ENR.

<sup>3</sup>Townsend

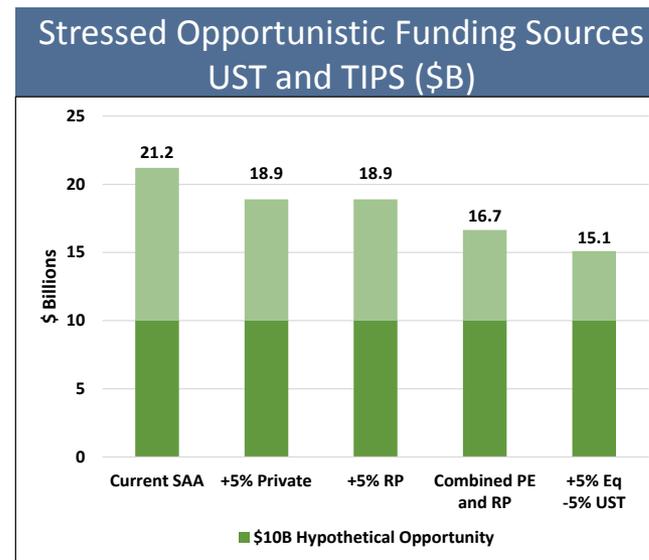
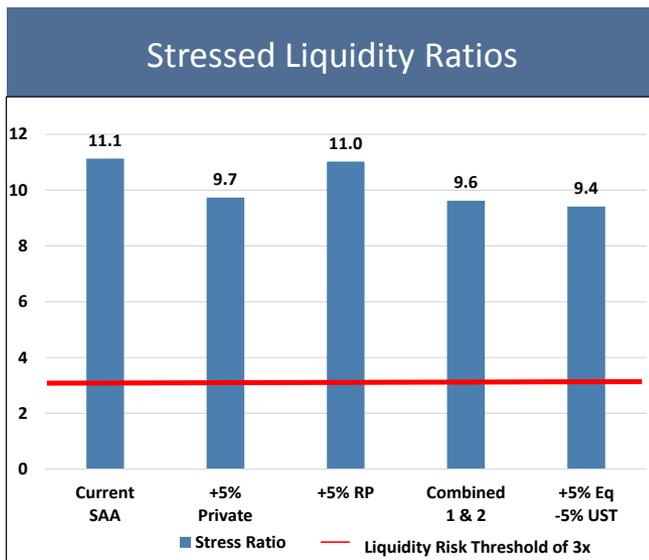
<sup>4</sup>TRS Risk Group



# Liquidity Analysis - Increase Private Markets by 5%

## Increase of 5% to Illiquid Asset Classes (2% Private Equity and 3% Real Assets)

- Funded from 3% liquid equities, 1% UST and 1% TIPS
- 10 bps in additional expected return
- Increase in Sharpe ratio
- Potential for additional alpha in manager selection
- No significant impact on stress liquidity ratios
- Still allows sufficient liquidity to opportunistically redeploy assets



# Risk Analysis

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- Probability of achieving 8%
- Drawdown scenarios
- Economic regimes and cycles
- Tail risk
- Other risk metrics

# Risk Analysis: Probability and Drawdown Analysis

## Probability of Achieving an 8% Return<sup>1</sup>

	Expected Return (%)	Probability of Achieving an 8% Return (%)			
	Long Term	1 Year	3 Years	10 Years	25 Years
<b>Current Policy</b>	<b>8.4</b>	<b>53.2</b>	<b>53.0</b>	<b>53.8</b>	<b>55.4</b>
<b>Risk Parity</b>	<b>8.9</b>	<b>55.2</b>	<b>56.8</b>	<b>61.0</b>	<b>66.5</b>
Balanced Funding					
+5% Private	8.5	53.7	53.9	55.6	58.1
+5% Risk Parity	8.5	53.8	53.8	55.5	57.9
Combined	8.7	54.2	54.9	57.0	60.5

## Historical Stress Period Analysis<sup>2</sup>

	Expected Return (%)	Portfolio Drawdown Analysis (%)			
	Long Term	Bond Crash	Ruble Crisis	Tech/ Telecom	GFC
<b>Current Policy</b>	<b>8.4</b>	<b>(1.2)</b>	<b>(3.7)</b>	<b>(17.8)</b>	<b>(31.1)</b>
<b>Risk Parity</b>	<b>8.9</b>	<b>(7.2)</b>	<b>(0.5)</b>	<b>(3.7)</b>	<b>(21.1)</b>
Balanced Funding					
+5% Private	8.5	(0.9)	(2.9)	(16.9)	(31.1)
+5% Risk Parity	8.5	(1.4)	(3.5)	(17.2)	(31.0)
Combined	8.7	(1.1)	(2.7)	(16.3)	(31.1)

<sup>1</sup> Table provides probability of portfolio achieving returns of at least 8% over different time horizons. All probabilities are estimated using 1 million simulations and inputs from the 2014 TRS Capital Markets Expectations Survey. Assumes alpha of 100 bps and tracking error of 285 bps for all portfolios except for the 100% allocation to Risk Parity.

<sup>2</sup> Historical Stress Periods include the following time periods: Bond Crash (Jan 1994-March 1994), Ruble Crisis (Jul 1998-Sept 1998), Tech/ Telecom (Apr 2000-Dec 2002), and GFC (Jan 2007-Jun 2009). All drawdowns calculated on a quarterly basis.

# Risk Analysis: Environmental Regime and Market Cycle Analysis

## Environmental Regime Analysis<sup>1</sup>

	Expected Return (%)	Environmental Regime Analysis (Annualized, %)					
		Global Equity		Stable Value		Real Return	
	Long Term	Return	Vol	Return	Vol	Return	Vol
<b>Current Policy</b>	<b>8.4</b>	<b>12.5</b>	<b>8.3</b>	<b>(1.8)</b>	<b>12.7</b>	<b>3.0</b>	<b>14.9</b>
<b>Risk Parity</b>	<b>8.9</b>	<b>13.6</b>	<b>8.2</b>	<b>2.6</b>	<b>11.1</b>	<b>5.9</b>	<b>12.3</b>
<b>Balanced Funding</b>							
+5% Private	8.5	12.6	7.9	(1.9)	12.4	3.5	14.5
+5% Risk Parity	8.5	12.7	8.1	(1.7)	12.7	3.2	14.7
Combined	8.7	<b>12.7</b>	<b>7.8</b>	<b>(1.8)</b>	<b>12.4</b>	<b>3.6</b>	<b>14.3</b>

## Market Cycle Analysis<sup>2</sup>

	Expected Return (%)	Market Cycle Performance (Annualized, %)		
		Correction	Recovery	Expansion
Long Term				
<b>Current Policy</b>	<b>8.4</b>	<b>(9.9)</b>	<b>13.3</b>	<b>14.2</b>
<b>Risk Parity</b>	<b>8.9</b>	<b>(5.7)</b>	<b>15.2</b>	<b>14.8</b>
<b>Balanced Funding</b>				
+5% Private	8.5	(9.3)	13.2	14.0
+5% Risk Parity	8.5	(9.9)	13.5	14.2
Combined	8.7	<b>(9.3)</b>	<b>13.5</b>	<b>14.1</b>

<sup>1</sup>Returns calculated from Jan 1990 – Dec 2013 using quarterly data. Volatility estimated from Jan 1960 – Dec 2013 using quarterly data. All numbers are annualized.

<sup>2</sup>Market cycle periods are determined by the level and direction of changes in the price of the S&P 500. Corrections occur when the S&P is in drawdown and price declines from a prior high. Recoveries occur when the level of the S&P is advancing, but has yet to surpass its prior high. Expansions occur when the S&P is gaining in value and setting new highs.

# Risk Analysis: Volatility, Liquidity, and Leverage

## Volatility, Liquidity, and Leverage

	Expected Return (%)	Risk Metrics			
	<u>Long Term</u>	<u>10 Year Std Dev (%)<sup>1</sup></u>	<u>VaR (%)<sup>2</sup></u>	<u>Liquidity</u>	<u>Leverage</u>
<b>Current Policy</b>	<b>8.4</b>	<b>9.7</b>	<b>7.1</b>	<b>2.82</b>	<b>0.99x</b>
<b>Risk Parity</b>	<b>8.9</b>	<b>10.2</b>	<b>6.5</b>	<b>3.75</b>	<b>2.00x</b>
<b>Balanced Funding</b>					
+5% Private	8.5	9.6	7.3	2.97	0.99x
+5% Risk Parity	8.5	9.7	7.2	2.90	1.04x
Combined	8.7	9.6	7.4	3.05	1.04x



<sup>1</sup> Standard deviation is measured using quarterly data and is annualized.

<sup>2</sup> State Street Bank

# Transition Plan

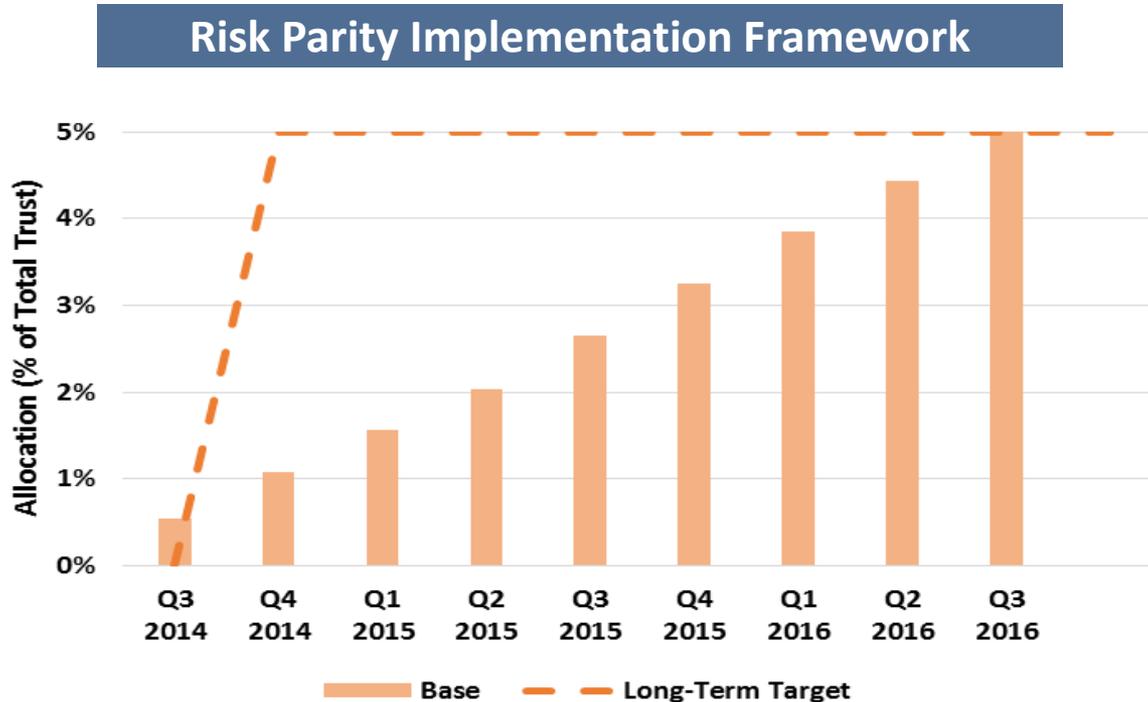
# Transition Plan: Overview



Note: All analysis assumes annual Trust growth of 2%. RA Transition Plan assumes average investment fund life of 10 years with a 3 year investment period with 50% of capital called over the first half of the investment period, and the remaining 50% called through the end of the investment period, and distributions distributed evenly across the fund lifecycle. PE Transition Plan assumes average fund life of 10 years with a 5 year investment period. PE capital calls are spread evenly throughout the first 2 years, accelerating to a 75% bias during the first half of the remaining 5 year investment period. PE distribution assumptions include 90% of capital returned in first half of fund life, 7.5% returned in years 6-8, and the remaining 2.5% returned in years 9-10.

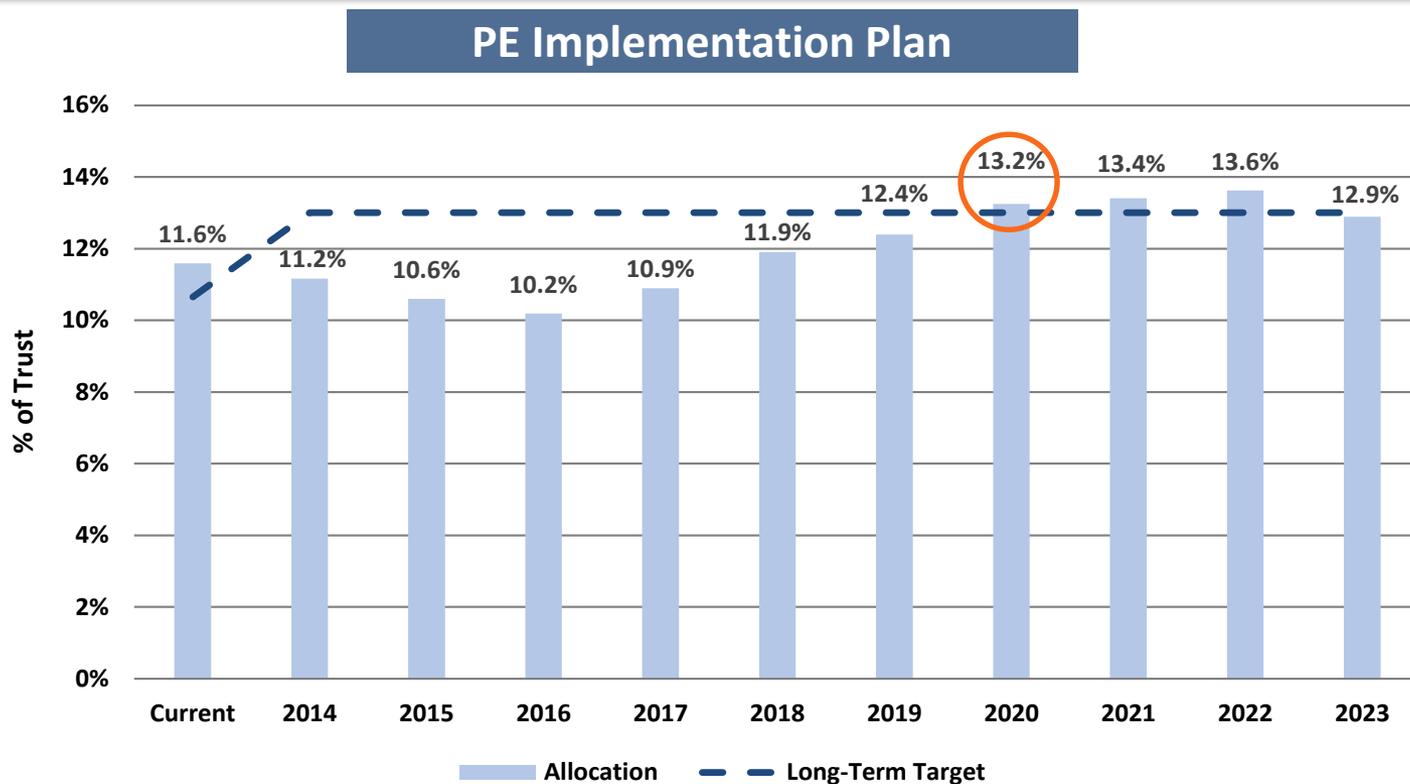


# Transition Plan: Risk Parity



- 5% Long-Term target weight with 0% Lower-bound and 10% Upper-bound
- IMD proposes a 50% internal, 50% external implementation of the Risk Parity allocation
- Expect to allocate an additional \$3.7 billion through Q4 2015 and \$2.5 billion in 2016
- Flexible 2-year implementation period allows risk-controlled buildup of internal allocation

# Transition Plan: Private Equity

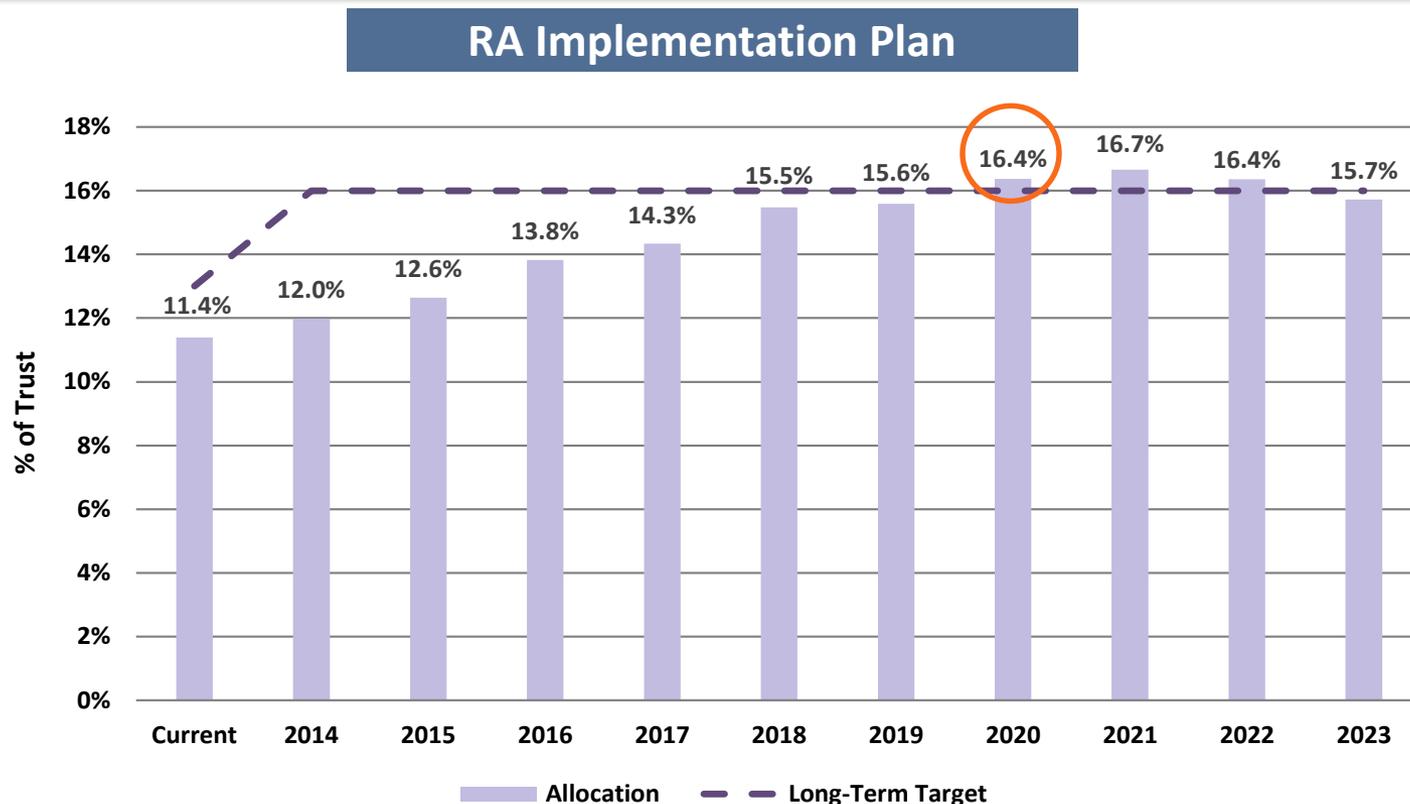


- Proposed Long-Term target of 13% with 8% Lower-bound and 18% Upper-bound
- Based on current funding and distribution expectations, Private Equity allocation will be at target weight in 6 years
- Expect average net contributions of \$600 million until 2020 offset by accelerated distributions lasting through 2016
- During this time PE underweight will be offset by allocation to public equity and bonds



*Note:* All analysis assumes annual Trust growth of 2%. PE Transition Plan assumes average fund life of 10 years with a 5 year investment period. PE capital calls are spread evenly throughout the first 2 years, accelerating to a 75% bias during the first half of the remaining 5 year investment period. PE distribution assumptions include 90% of capital returned in first half of fund life, 7.5% returned in years 6-8, and the remaining 2.5% returned in years 9-10.

# Transition Plan: Real Assets



- Proposed Long-Term target of 16% with Lower-bound of 11% and Upper-bound of 21%
- Based on current funding and distribution expectations, Real Assets allocation will be at target weight in 6 years
- Expect to make average net contributions of \$1.3 billion per year until fully funded in 2020
- During this time RA underweight will be offset by allocation to public equity and bonds



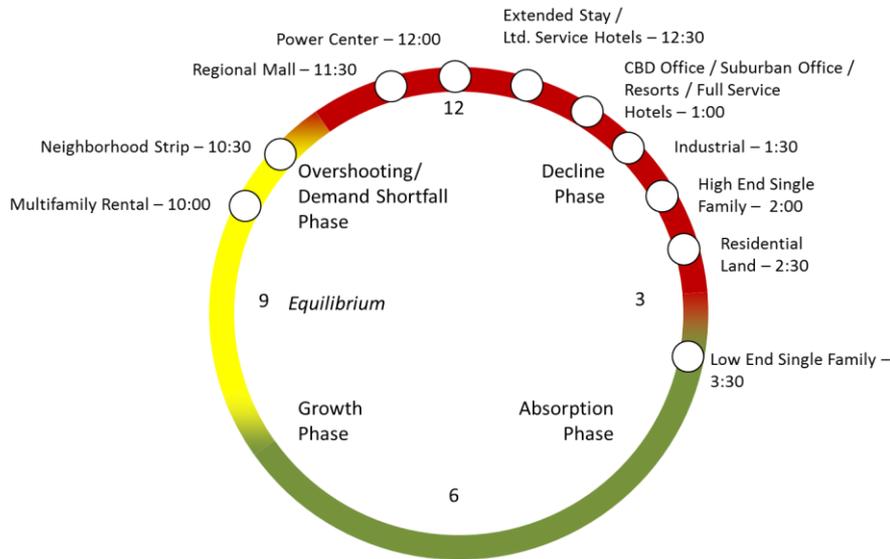
*Note: All analysis assumes annual Trust growth of 2%. RA Transition Plan assumes average investment fund life of 10-years with a 3-year investment period with 50% of capital called over the first half of the investment period and the remaining 50% called through the end of the investment period, and distributions distributed evenly across the fund life cycle.*

# Market Conditions

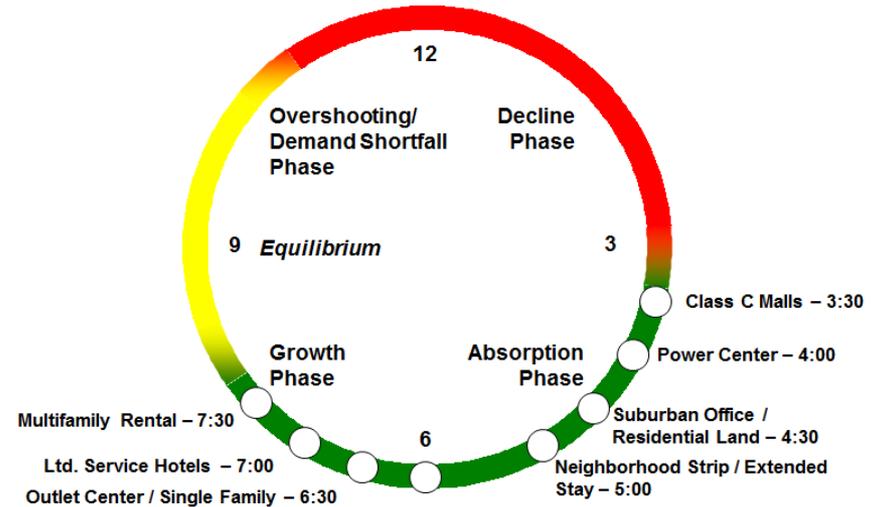
## Real Estate Fundamentals

- Supply and demand fundamentals are excellent as continued shortage of new supply has helped keep the market strong

### End of Year 2009



### End of Year 2013



# Final Recommendations of the 2014 SAA Study & Proposed IPS Changes

## 5 Proposed Changes Resulting From 2014 Strategic Asset Allocation Study

Description	IPS Modification Number
Adjust asset allocation percentages via balanced funding options <ul style="list-style-type: none"><li>Increase Private Markets allocation: +3% Real Assets, +2% Private Equity</li></ul>	1a.
Add a 5% line-item allocation to Risk Parity	1b.
Dynamic asset allocation weights for Real Assets, Private Equity, Energy and Natural Resources, Risk Parity	1c.
Consolidate US Large Cap and US Small Cap into a single line-item asset class	1d.
Allow non-US developed sovereign bonds to be held in the US Treasury portfolio	1e.

# Final SAA Study Recommendation

Asset Allocation	Current Policy	Proposed Policy	Change
<b>Global Equity</b>			
USA <sup>1</sup>	20%	18%	-2%
Non-US Developed	15%	13%	-2%
Emerging Markets	10%	9%	-1%
Directional Hedge Funds	5%	4%	-1%
Private Equity	11%	13%	2%
<b>TOTAL GLOBAL EQUITY</b>	<b>61%</b>	<b>57%</b>	<b>-4%</b>
<b>Stable Value</b>			
US Treasuries	13%	11%	-2%
Absolute Return	0%	0%	0%
Stable Value Hedge Funds	4%	4%	0%
Cash	1%	1%	0%
<b>TOTAL STABLE VALUE</b>	<b>18%</b>	<b>16%</b>	<b>-2%</b>
<b>Real Return</b>			
Global Inflation-Linked Bonds	5%	3%	-2%
Commodities	0%	0%	0%
Energy and Natural Resources	3%	3%	0%
Real Assets	13%	16%	3%
<b>TOTAL REAL RETURN</b>	<b>21%</b>	<b>22%</b>	<b>1%</b>
<b>Risk Parity</b>	0%	5%	5%
<b>TOTAL TRUST</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

	Current Policy	Proposed Policy	Change
<b>Global Equity</b>	61%	57%	-4%
<b>Stable Value</b>	18%	16%	-2%
<b>Real Return</b>	21%	22%	1%
<b>Risk Parity</b>	0%	5%	5%
Non-US Exposure	25%	22%	-3%
Hedge Fund Total	9%	8%	-1%
Public Equity	45%	40%	-5%
Total Liquid + HF	73%	63%	-10%
Total Private	27%	32%	5%
Expected Return (with alpha)	8.4%	8.7%	0.3%
Volatility	11.4%	11.6%	0.2%
Sharpe Ratio	0.50	0.52	0.02
Liquidity Score	2.82	3.05	0.24

## Proposed Policy Allocation



# APPENDIX

# Risk Parity Categorization Study

Risk Parity is a relatively new asset allocation strategy that focuses on long-only  
Beta management

- **IMD completed a review of Risk Parity's proper designation**
  - Investment consultants
  - Other similar funds
- **Key Question: Is Risk Parity a Hedge Fund?**
  - Consultants: No
  - Similar pension funds: No
- **What is Risk Parity?**
  - An alternative asset allocation methodology that focuses on marginal risk contributions rather than aggregate asset distribution
  - Seeks to reduce outsized exposure to declining equity markets by equalizing risk contributions across all normal economic regimes
  - Relatively passive strategy that relies exclusively on beta to generate real returns and risk controlled leverage to achieve the target Return on Assets (8%); no alpha is normally assumed
  - Cost structure is significantly lower than actively-managed, alpha-seeking hedge funds

# Hedge Funds and the 2014 SAA Proposal

The 2014 SAA Proposal reduces Directional Hedge Funds by 1% and makes no change to Stable Value Hedge Funds, reducing total Hedge Fund exposure from 9% of the Total Trust to 8%

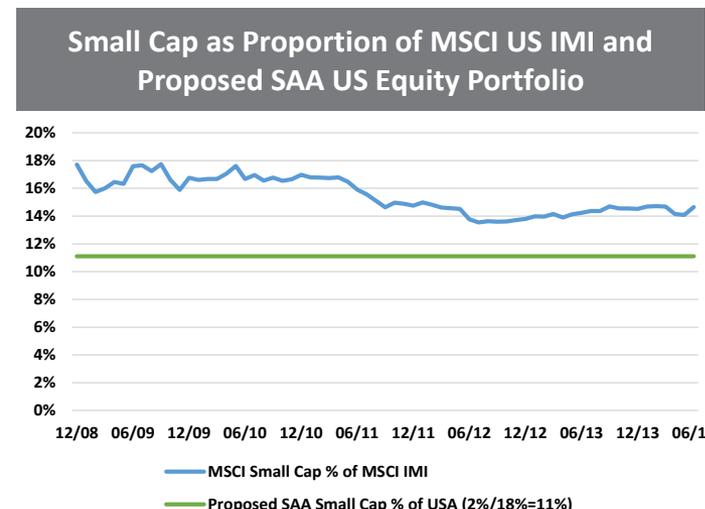
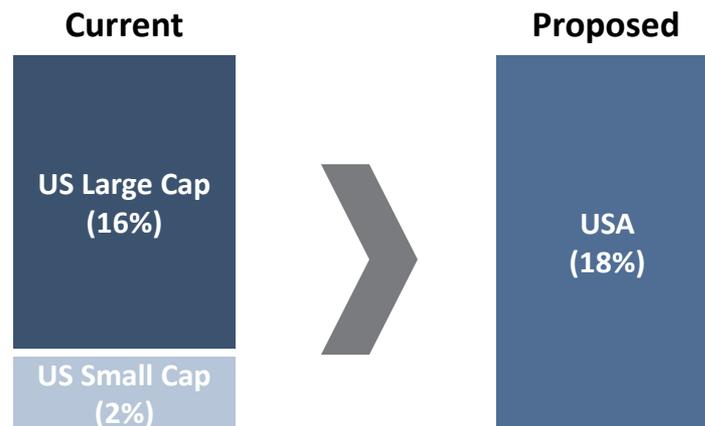
## Why maintain significant exposure to Hedge Fund strategies?

- Hedge funds offer incremental returns (alpha-stacking) as Hedge Fund returns are earned with virtually no impact on trust risk
- Sharpe ratio for both the Directional and the Stable Value Hedge Funds is 50% to over 100% higher than in long-oriented strategies over the past 3-years
- Directional Hedge Funds allow the trust to earn 8% with a higher probability over full market cycles
- Stable Value Hedge Funds should outperform Treasuries (2.4% YTM) long-term while also reducing the Trust's downside risk during equity market declines

# Consolidate US Small Cap and US Large Cap

**Recommendation:**  
**Consolidate US Small Cap and US Large Cap into a single US Equity line-item benchmarked to the MSCI US Investible Markets Index (MSCI US IMI)**

- Small Cap allocation has declined from 5% of Trust in 2010 to just 2% today
- Relative allocations between Small Cap and Large Cap portfolios roughly similar to the market capitalization of US Public Equity
- Consolidating into a single line-item simplifies the Strategic Asset Allocation mix and process while maintaining similar risk/return characteristics to existing policy



Source: TRS, MSCI



# Benchmarking Risk Parity

Most potential benchmarks for Risk Parity are not useful:

- Low correlation
- Significant tracking error

Addition of Risk Parity under policy still requires the choice of a benchmark

- Total Trust benchmarking purposes
- Performance compensation

Risk Parity <sup>1</sup> Average Tracking Error and Correlation (Jun 1996 - May 2014)			
	60/40	LIBOR + 200 bps	Levered Asset Blend <sup>2</sup>
Risk Parity Tracking Error vs. Benchmark (bps)	834	992	503
Correlation to Risk Parity	0.63	-0.04	0.87
Contribution to Total Trust TE <sup>3</sup>	<b>+48</b>	<b>+44</b>	<b>+23</b>

## Recommendation:

Benchmark to a basket of externally managed, Risk Parity strategies selected annually by the CIO in conjunction with consultant, HEK

- Initial benchmark will consist of two managers, but may expand over time as additional suitable Risk Parity strategies are identified
- Broadly representative of TRS Internal Risk Parity (IRP)
  - Correlation: >0.9
  - Annualized Tracking Error: 300-350 bps

<sup>1</sup> Risk Parity returns simulated as 100% allocation to Bridgewater All-weather strategy (BW) from 1996-2006; 50/50 BW and AQR Global Risk Premia (AQR) strategies from 2006-2013; Actual TRS weights to BW/AQR and TRS Internal Risk Parity 2013-onward

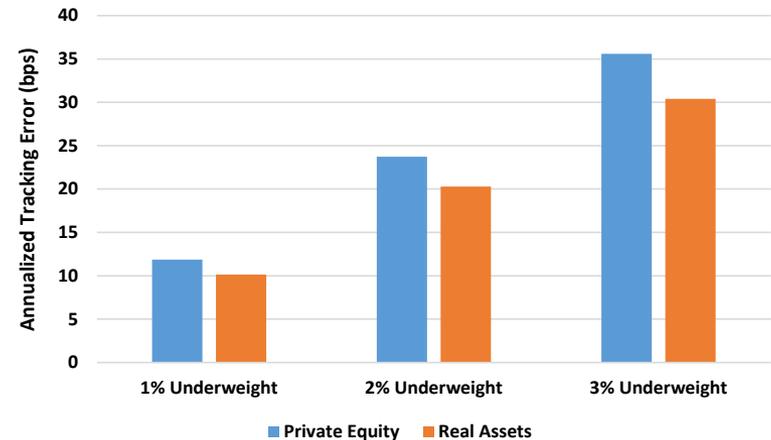
<sup>2</sup> Levered Asset Blend aims to represent the long-run positioning of a naive Risk Parity strategy by adopting the following static weights: 10% US Large Cap, 4% US Small Cap, 10% Non-US Developed Equities, 8% Emerging Market Equities, 40% US Treasuries, -100% Cash, 50% TIPS, 4% High Yield, 60% World Global Bond Index (hedged) and 14% Commodities

<sup>3</sup> Contribution to Total Trust Tracking Error calculated assuming cross-asset correlations derived from the 2014 TRS Capital Markets Expectations Survey

# Dynamic Benchmarking Process

- Unlike Public Markets, it is impossible to hit precise target weights in the Private Market asset classes (Real Assets, Private Equity, ENR)
- Allocations to Private Markets are difficult to rebalance and will fluctuate due to manager-driven decisions on distributions and capital calls
- Persistent Private Market mismatches to fixed target weights generate unintended tracking error and increase the complexity of asset allocation

## Tracking error impact from underweight positions in Private Market assets<sup>1</sup>



## Recommendation: Adopt a dynamically weighted benchmark that:

1. Identifies actual allocation to Private Market assets
2. Adjusts allocation to Public Market assets to offset any underweights or overweights in Private Markets
3. Resets on a quarterly basis

# Dynamic Trust Benchmark Example: Private Markets

## Private Market Allocation Adjustment

- 20% USA
- 20% Non-US Dev
- 20% Emerging Mkt
- 20% US Treasuries
- 20% Global TIPS

This example illustrates how Dynamic Benchmarking adjusts the Total Trust Benchmark in response to a 2% Real Assets underweight position

	A	B	C	D	A + D
	Original Benchmark Weights	Actual Trust Allocations (Hypothetical)	Private Markets vs. Benchmark	Private Market Allocation Adjustment	Adjusted Total Trust Benchmark
<b>Asset Allocation</b>					
USA	18.0%	18.0%		+0.4%	18.4%
Non-US Developed	13.0%	14.0%		+0.4%	13.4%
Emerging Markets	9.0%	9.0%		+0.4%	9.4%
Directional Hedge Funds	4.0%	4.0%			4.0%
Private Equity	13.0%	13.0%	0.0%		13.0%
<b>Total Global Equity</b>	<b>57.0%</b>	<b>58.0%</b>		<b>+1.2%</b>	<b>58.2%</b>
US Treasuries	11.0%	11.0%		+0.4%	11.4%
Absolute Return	0.0%	0.0%			0.0%
Stable Value Hedge Funds	4.0%	4.0%			4.0%
Cash	1.0%	1.0%			1.0%
<b>Total Stable Value</b>	<b>16.0%</b>	<b>16.0%</b>		<b>+0.4%</b>	<b>16.4%</b>
Global Inflation-Linked Bonds	3.0%	4.0%		+0.4%	3.4%
Commodities	0.0%	0.0%			0.0%
Energy and Natural Resources	3.0%	3.0%			3.0%
Real Assets	16.0%	14.0%	0.0%	-2.0%	14.0%
<b>Total Real Return</b>	<b>22.0%</b>	<b>21.0%</b>		<b>+0.4%</b>	<b>20.4%</b>
<b>Total Risk Parity</b>	<b>5.0%</b>	<b>5.0%</b>			<b>5.0%</b>
<b>TOTAL TRUST</b>	<b>100.0%</b>	<b>100.0%</b>	<b>-2.0%</b>	<b>+2.0%</b>	<b>100.0%</b>

2% Real Assets Underweight

0.0%

-2.0%



# Dynamic Trust Benchmark Example: Risk Parity

## Risk Parity Allocation Adjustment

- 20% USA
- 20% Non-US Dev
- 20% Directional HF
- 20% US Treasuries
- 20% Global TIPS

Dynamic Benchmarking will also apply to the Trust's Risk Parity allocation until 2016

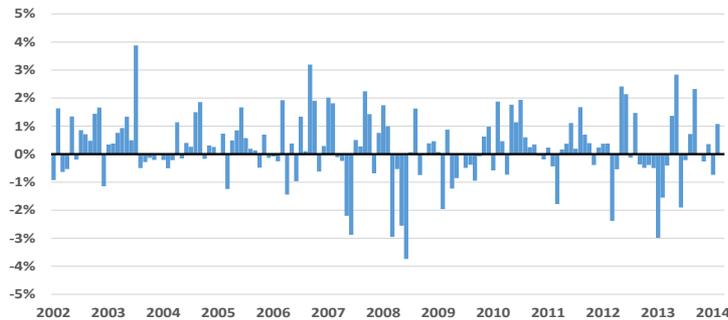
	A Original Benchmark Weights	B Actual Trust Allocations (Hypothetical)	C Risk Parity vs. Benchmark	D Risk Parity Allocation Adjustment	A + D Adjusted Total Trust Benchmark
<b>Asset Allocation</b>					
USA	18.0%	18.0%		+0.4%	18.4%
Non-US Developed	13.0%	13.0%		+0.4%	13.4%
Emerging Markets	9.0%	9.0%			9.0%
Directional Hedge Funds	4.0%	4.0%		+0.4%	4.4%
Private Equity	13.0%	13.0%			13.0%
<b>Total Global Equity</b>	<b>57.0%</b>	<b>57.0%</b>		<b>+1.2%</b>	<b>58.2%</b>
US Treasuries	11.0%	11.0%		+0.4%	11.4%
Absolute Return	0.0%	0.0%			0.0%
Stable Value Hedge Funds	4.0%	4.0%			4.0%
Cash	1.0%	1.0%			1.0%
<b>Total Stable Value</b>	<b>16.0%</b>	<b>16.0%</b>		<b>+0.4%</b>	<b>16.4%</b>
Global Inflation-Linked Bonds	3.0%	4.0%		+0.4%	3.4%
Commodities	0.0%	0.0%			0.0%
Energy and Natural Resources	3.0%	3.0%			3.0%
Real Assets	16.0%	16.0%			16.0%
<b>Total Real Return</b>	<b>22.0%</b>	<b>23.0%</b>		<b>+0.4%</b>	<b>22.4%</b>
<b>Total Risk Parity</b>	<b>5.0%</b>	<b>3.0%</b>	<b>-2.0%</b>		<b>3.0%</b>
<b>TOTAL</b>	<b>100.0%</b>	<b>99.0%</b>	<b>-2.0%</b>	<b>+2.0%</b>	<b>100.0%</b>

2% Risk Parity Underweight

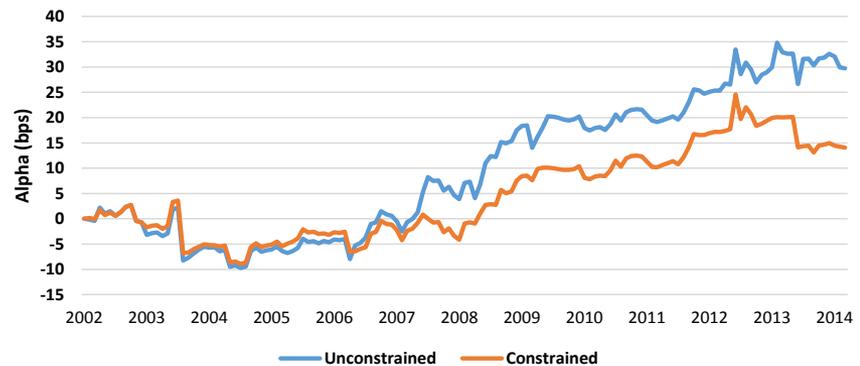
# Non-US Sovereign Debt and the UST Portfolio

**Recommendation:** Allow underweights to non-US developed sovereign bonds to be offset against US Treasuries

Monthly Positions  
Sovereign Bond Model



Cumulative Returns  
Sovereign Bond Model  
Constrained vs. Unconstrained



- No natural home for Global Developed Sovereign Debt in policy outside of Absolute Returns, which has a weight of 0% in Policy
- Current structure constrains Tactical Asset Allocation process, which may express dynamic views on developed sovereign debt
- Benchmark of Long US Treasuries Index and risk limits will all remain unchanged
- No more than 2% of the Total Fund can be employed in this capacity, all other non-US developed sovereign bonds will continue to be classified as Absolute Return

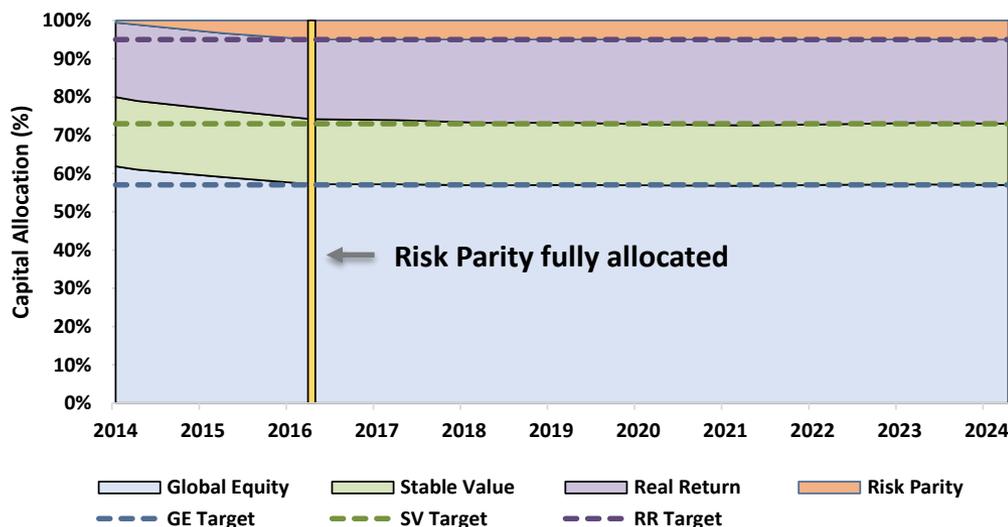
# Transition Plan Detail

## NAV (\$bn) of Transition Assets

	Current	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Private Equity	15.09	14.67	14.22	13.94	15.18	16.89	17.85	19.35	20.42	21.63	21.34
Real Assets	14.84	15.75	16.96	18.92	19.99	21.95	22.45	23.91	25.38	25.98	26.03
Risk Parity	0.71	1.45	4.51	6.78	6.90	7.02	7.13	7.23	7.55	7.87	8.20

## Allocation by Regime Through Transition Period

When Risk Parity reaches full funding in 2016, Dynamic Benchmarking process will keep Trust regime weights at target while Private Equity and Real Assets are still ramping up



# Review of Investment Risk Premia

## Expected Annual Risk Premia Projected and Historical

	Historical Premia (%)	Projected Premia from Median Survey Response (%)	Definition
Cash vs Inflation	1.9	(0.2)	Cash less Inflation
<b>Duration</b>			
Intermediate	2.0	1.6	Int Treasury less Cash
Long-Term	1.5	(0.7)	Long less Int Treasury
<b>Credit</b>			
Investment Grade	1.0	(0.3)	Inv Grade less Int Treasury
High Yield*	1.1	1.3	High Yield less Inv Grade
<b>Public Equity</b>			
Large Cap	3.5	3.4	Large Cap less Inv Grade
Small Cap	0.1	0.8	Small Cap less Large Cap
<b>Private Equity</b>			
Private Equity*	4.6	2.5	Private Equity less Large Cap

\*All comparisons made from 1979-2013 except for asset classes where data was not fully available: High Yield Premium (Dec 1983-Dec 2013), Small Cap Premium (Dec 1983-Dec 2013) and Private Equity Premium (Mar 1997-Dec 2013).

# Historical Alpha Opportunities for a Median Plan

## Historical Value Added (Alpha) for the Median Plan in the Trust Universe Comparison Service (TUCS)

Ten Years Ending 3/31/14  
(Annualized Returns, %)

	TUCS Median Return	Market Return	Median Plan Alpha	Top Quartile Return
US Large Cap	7.8	7.3	0.5	8.3
US Small Cap	9.9	9.3	0.6	10.8
EAFE	8.1	6.7	1.4	9.5
Emerging Markets	11.3	10.1	1.2	13.1
Hedge Funds	7.6	3.1	4.5	9.5
Private Equity	11.0	9.8	1.2	12.9
Real Estate	6.9	8.7	(1.8)	9.1

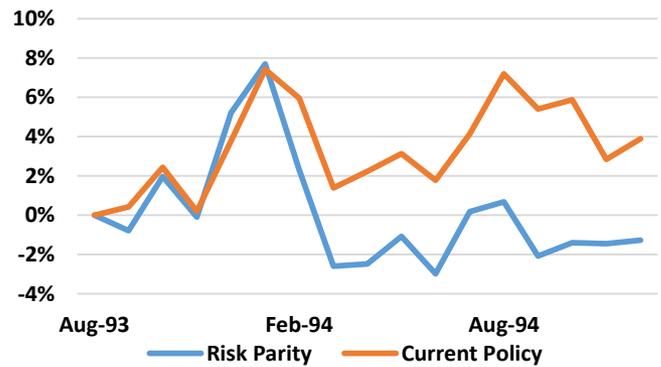
Source: TUCS, TRS

Market Returns are MSCI USA Large Cap, MSCI USA Small Cap, MSCI EAFE + Canada, MSCI Emerging Markets, HFRI FOF Composite, TRS Private Equity Policy Benchmark, and the NCREIF Property Index respectively.

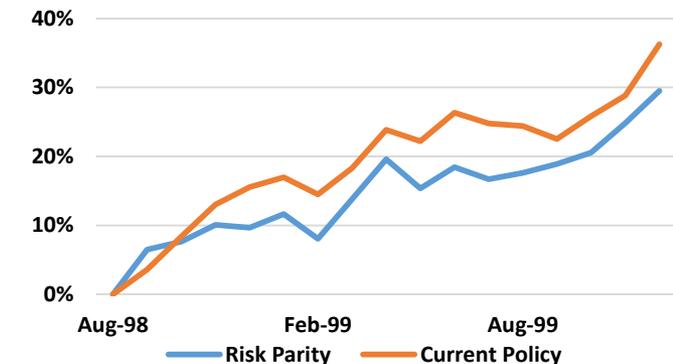


# Risk Parity: What if Rates Rise?

**Risk Parity Cumulative Performance**  
9/1993 – 12/1994  
10-Yr Rates Increase 2.4%



**Risk Parity Cumulative Performance**  
9/1998 – 12/1999  
10-Yr Rates Increase 2.0%



- Given Risk Parity’s large allocation to Treasury Bonds, a common concern is that the strategy will suffer in rising interest rate environments
- History shows that Interest Rate increases may hurt performance, but the performance of other asset classes matters as well – ex. 1998
- Concern is when rates rise **and** correlations across assets break down
  - May/June 2013 – 10-Yr Interest Rates increase 0.81% and Risk Parity loses 12%

Source: TRS, Bloomberg, Bridgewater, AQR

Risk Parity is modeled as a 50/50 allocation between Bridgewater All-Weather strategy and the AQR GRP Strategy, both of which are investable Risk Parity strategies. Actual track records are used back to the inception date of the strategies (June 1996 for Bridgewater and January 2006 for AQR). Firm-provided back tests are used to simulate performance prior to inception.



# Additional Illiquidity Impacts

IMD looked at increasing private allocations by an additional 20% to examine an extreme impact on the Trust's Illiquidity Tests

Sources of Liquidity (\$, billions)	Current SAA		+20% added to Illiquids	
	Market Value	Stressed Value	Market Value	Stressed Value
Liquid Assets Not on Loan (Cash, UST, TIPS, Equity, Commodities)	56.1	34.3	33.4	25.8
Securities Lending Collateral (Cash, Fixed Income)	23.0	18.0	21.0	16.4
<b>Total Sources of Liquidity</b>	<b>79.1</b>	<b>52.3</b>	<b>54.4</b>	<b>42.2</b>
<i>Note: Excluded Illiquid Assets (Private Equity, Real Assets, Hedge Funds, Other)</i>	23.1	NA	47.8	NA
<i>Note: Excluded Liquid Assets remaining on loan</i>	21.5	NA	21.5	NA

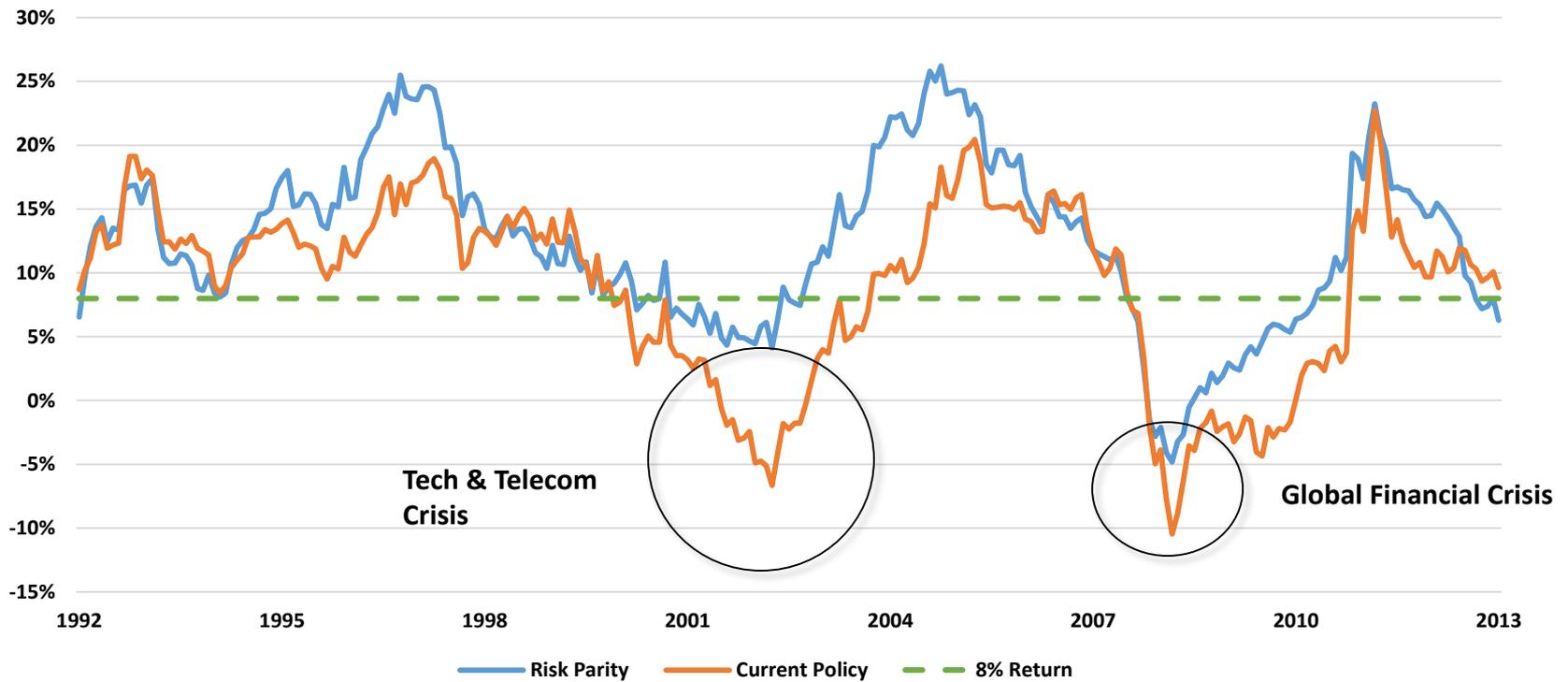
Uses of Liquidity (\$, billions)	Current SAA		+20% added to Illiquids	
	Market Value	Stressed Value	Market Value	Stressed Value
Normal Uses of Liquidity	0.1	0.1	0.1	0.1
Stressed Securities Lending		-2.3		-1.3
Stressed Derivatives		-0.5		-0.4
Stressed Private Markets		-2.0		-3.4
<b>Total Uses of Liquidity</b>	<b>0.1</b>	<b>-4.7</b>	<b>0.1</b>	<b>-5.1</b>

Liquidity Ratio	
Sources of Liquidity	52.3
Uses of Liquidity	-4.7
<b>Ratio (Sources/Uses)</b>	<b>11.1</b>
Alert Threshold	4.0
Fail Threshold	3.0
<b>Test Result</b>	<b>Pass</b>
<i>Note: Net Liquidity (Sources less Uses)</i>	47.6
<i>Note: 12 Months Benefit Payments (at 3% Annual)</i>	3.7

Assumptions: In the stress case, Liquid Assets are valued at 56% and Securities Lending collateral is valued at 78% which is meant to approximate 1.5x the worst monthly performance of these assets in the past ten years plus an additional liquidity stress. Within Securities Lending, 50% of equity on loan and 0% of US Treasuries on loan are assumed to be returned to TRS. Derivatives are assumed to experience the same market stress applied to the Liquid Assets. Private Market investment are assumed to not return any capital and experience capital calls at 6x the normal amount expected for a month.

# Risk Parity Provides Greater Safety In Drawdowns/Recessions

## Trailing 3-Year Annualized Returns – Risk Parity vs. Current SAA Policy



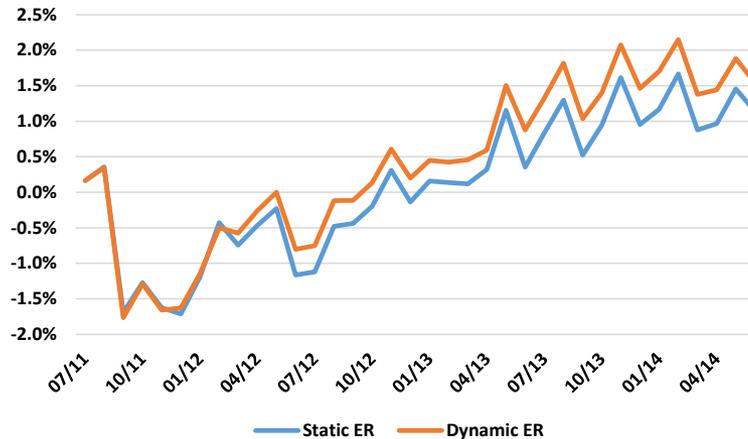
Source: TRS, Bloomberg, Bridgewater, AQR

Risk Parity is proxied with a 50/50 allocation to the simulated performance of the Bridgewater All Weather strategy and the AQR Global Risk Parity strategy, scaled to match a targeted annualized standard deviation of 10%. All returns are simulated and do not represent an actual investment track record. If Risk Parity was implemented using external managers, additional management fees would be incurred.

# Historical Impact of Adopting a Dynamic Benchmark

When evaluated over the past 3-years, adopting a Dynamic Benchmark would have **increased Alpha by 14 bps** and reduced tracking error.

TRS Actual Cumulative Excess Returns vs. Static and Dynamic Benchmarks (7/2011 – 7/2014)



## Prior 3-Yr Total Return and Alpha

Total Trust 3-Year Return: +9.59%

	BM Return	Trust Alpha
Static BM	9.34%	+0.26%
Dynamic BM	9.19%	+0.40%
Impact of Switch	-0.14%	<b>+0.14%</b>

## Prior 3-Yr Tracking Error by Estimation Method

	Quarterly	Risk Proxies
Static BM	2.02%	2.82%
Dynamic BM	1.96%	2.55%
Impact of Switch	<b>-0.06%</b>	<b>-0.27%</b>

# Preliminary Recommendation

## Balanced Funding Options

Legend	
	Decrease from Current Policy
	Increase from Current Policy

	Current Policy	Portfolio Alternatives			
		1 +5% Private	2 +5% Risk Parity	3 Combined	4 +5% Equity/ -5% LTreasury
<b>Liquid Strategies:</b>					
<b>Global Equity</b>					
Large Cap	18%	17%	17%	16%	20%
Small Cap	2%	2%	2%	2%	2%
<b>Total US Equity</b>	<b>20%</b>	<b>19%</b>	<b>19%</b>	<b>18%</b>	<b>22%</b>
Non-US Developed	15%	14%	14%	13%	17%
Emerging Markets	10%	9%	10%	9%	11%
<b>Total Non-US Equity</b>	<b>25%</b>	<b>23%</b>	<b>24%</b>	<b>22%</b>	<b>28%</b>
<b>TOTAL LIQUID EQUITY</b>	<b>45%</b>	<b>42%</b>	<b>43%</b>	<b>40%</b>	<b>50%</b>
<b>Stable Value</b>					
Cash	1%	1%	1%	1%	1%
Long-Term Treasury	13%	12%	12%	11%	8%
<b>Total Liquid Fixed Income</b>	<b>14%</b>	<b>13%</b>	<b>13%</b>	<b>12%</b>	<b>9%</b>
<b>Real Return</b>					
TIPS	5%	4%	4%	3%	5%
<b>TOTAL LIQUID ASSETS</b>	<b>64%</b>	<b>59%</b>	<b>60%</b>	<b>55%</b>	<b>64%</b>
<b>Hedge Fund Strategies:</b>					
Directional Hedge Funds	5%	5%	4%	4%	5%
Stable Value Hedge Funds	4%	4%	4%	4%	4%
<b>TOTAL HEDGE FUNDS</b>	<b>9%</b>	<b>9%</b>	<b>8%</b>	<b>8%</b>	<b>9%</b>
<b>Illiquid Strategies:</b>					
Private Equity	11%	13%	11%	13%	11%
Real Assets	13%	16%	13%	16%	13%
ENR	3%	3%	3%	3%	3%
<b>TOTAL ILLIQUID ASSETS</b>	<b>27%</b>	<b>32%</b>	<b>27%</b>	<b>32%</b>	<b>27%</b>
<b>Risk Parity</b>	0%	0%	5%	5%	0%
<b>TOTAL TRUST</b>	100%	100%	100%	100%	100%
<b>Net Leverage</b>	0.99x	1.00x	1.04x	1.04x	1.00x



# Preliminary Recommendation

## Funded from Fixed Income Only

Legend	
	Decrease from Current Policy
	Increase from Current Policy

	Current Policy	Alternatives Funded by UST and TIPS			
		5 +5% Private	6 +5% Risk Parity	7 Combined	8 +5% Equity/ -5% LTreasury
<b>Liquid Strategies:</b>					
<b>Global Equity</b>					
Large Cap	18%	18%	18%	18%	20%
Small Cap	2%	2%	2%	2%	2%
<b>Total US Equity</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>	<b>22%</b>
Non-US Developed	15%	15%	15%	15%	17%
Emerging Markets	10%	10%	10%	10%	11%
<b>Total Non-US Equity</b>	<b>25%</b>	<b>25%</b>	<b>25%</b>	<b>25%</b>	<b>28%</b>
<b>TOTAL LIQUID EQUITY</b>	<b>45%</b>	<b>45%</b>	<b>45%</b>	<b>45%</b>	<b>50%</b>
<b>Stable Value</b>					
Cash	1%	1%	1%	1%	1%
Long-Term Treasury	13%	10%	10%	5%	8%
<b>Total Liquid Fixed Income</b>	<b>14%</b>	<b>11%</b>	<b>11%</b>	<b>6%</b>	<b>9%</b>
<b>Real Return</b>					
TIPS	5%	3%	3%	3%	5%
<b>TOTAL LIQUID ASSETS</b>	<b>64%</b>	<b>59%</b>	<b>59%</b>	<b>54%</b>	<b>64%</b>
<b>Hedge Fund Strategies:</b>					
Directional Hedge Funds	5%	5%	5%	5%	5%
Stable Value Hedge Funds	4%	4%	4%	4%	4%
<b>TOTAL HEDGE FUNDS</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>	<b>9%</b>
<b>Illiquid Strategies:</b>					
Private Equity	11%	13%	11%	13%	11%
Real Assets	13%	16%	13%	16%	13%
ENR	3%	3%	3%	3%	3%
<b>TOTAL ILLIQUID ASSETS</b>	<b>27%</b>	<b>32%</b>	<b>27%</b>	<b>32%</b>	<b>27%</b>
<b>Risk Parity</b>					
	0%	0%	5%	5%	0%
<b>TOTAL TRUST</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>Net Leverage</b>	<b>0.99x</b>	<b>1.00x</b>	<b>1.04x</b>	<b>1.04x</b>	<b>1.00x</b>



# Preliminary Recommendation

*Funded from Fixed Income Only*

	Alternatives Funded by UST and TIPS				
	Current Policy	5 +5% Private	6 +5% Risk Parity	7 Combined	8 +5% Equity/ -5% LTreasury
<b>Global Equity</b>	61%	63%	61%	63%	66%
<b>Stable Value</b>	18%	15%	15%	10%	13%
<b>Real Return</b>	21%	22%	19%	22%	21%
<b>Risk Parity</b>	0%	0%	5%	5%	0%
Non-US Exposure	25%	25%	25%	25%	28%
Hedge Fund Total	9%	9%	9%	9%	9%
Public Equity	45%	45%	45%	45%	50%
Total Liquid + HF	73%	68%	68%	63%	73%
Total Private	27%	32%	27%	32%	27%
Expected Return (with alpha)	8.4%	8.6%	8.6%	8.9%	8.5%
Volatility	11.4%	12.0%	11.9%	12.6%	12.3%
Sharpe Ratio	0.50	0.49	0.50	0.49	0.47
Liquidity Score	2.82	2.98	2.73	2.92	2.84

# Risk Analysis: Probability of Achieving a Positive Return

## Probability of Achieving a Positive Return

	Expected Return (%)	Probability of Achieving a Positive Return (%)		
	<u>Long Term</u>	<u>Quarter</u>	<u>1 Year</u>	<u>3 Years</u>
<b>Current Policy</b>	<b>8.4</b>	<b>63.2</b>	<b>77.8</b>	<b>89.4</b>
<b>Risk Parity</b>	<b>8.9</b>	<b>67.9</b>	<b>82.4</b>	<b>94.0</b>
<b>Balanced Funding</b>				
+5% Private	8.5	63.5	78.1	89.8
+5% Risk Parity	8.5	63.4	77.9	89.5
Combined	8.7	63.6	78.2	89.9

Note: Table provides probability of portfolio achieving returns of more than 0% over different time horizons. All probabilities are estimated using 1 million simulations and inputs from the 2014 TRS Capital Markets Expectations Survey. Assumes alpha of 100 bps and tracking error of 285 bps for all portfolios except for the 100% allocation to Risk Parity.

# Review: HEK on Best Practices in Reviewing an SAA

1	<b>Update/Review Long-Term Objectives</b>	<ul style="list-style-type: none"> <li>▪ What are long term goals? What has changed?</li> <li>▪ What level of risk is tolerable?</li> </ul>
2	<b>Develop Forward Looking Capital Market Assumptions</b>	<ul style="list-style-type: none"> <li>▪ Which asset classes to add or eliminate?</li> <li>▪ Develop return, risk, correlation assumptions</li> </ul>
3	<b>Evaluate Alternative Portfolios/Model Results</b>	<ul style="list-style-type: none"> <li>▪ Determine metrics for comparing alternatives</li> <li>▪ Review benchmarks and ranges</li> <li>▪ Consider practices of peers</li> </ul>
4	<b>Consider Other Issues</b>	<ul style="list-style-type: none"> <li>▪ Currency hedging</li> <li>▪ Review risk budgets</li> <li>▪ Incorporate investor competitive advantages</li> </ul>
5	<b>Adopt a New Target Asset Allocation</b>	<ul style="list-style-type: none"> <li>▪ Review current target relative to alternatives</li> <li>▪ Formally adopt a new target in IPS</li> </ul>
6	<b>Implementation and Monitoring</b>	<ul style="list-style-type: none"> <li>▪ Design plan for implementation of any changes</li> <li>▪ Monitor compliance with new targets and ranges over time</li> </ul>

# Review: SAA Study Best Practices

<u>1. Update/Review Long-Term Objectives</u>	<u>In Plan?</u>	<u>TRS Study Timing</u>	<u>Status</u>
What circumstances have changed since the last AA review?	✓	February 2014: Reviewed by IMD	Complete – February Board Meeting
What are the long term goals and objectives of the plan?	✓	February 2014: Set in IPS; Reviewed by IMD	Complete – February Board Meeting
What level of risk can the investor tolerate?	✓	February 2014: Reviewed by GRS	Complete – February Board Meeting
What does the liability stream look like, what are contribution levels?	✓	February 2014: Reviewed by GRS	Complete – February Board Meeting
What are the current actuarial assumptions?	✓	February 2014: Reviewed by GRS	Complete – February Board Meeting
What changes in circumstances may be on the horizon?	✓	February 2014: Reviewed by GRS	Complete – February Board Meeting
How might we define reward and risk of a portfolio?	✓	December 2013: Reviewed by Dr. Brown	Complete – February Board Meeting

# Review: SAA Study Best Practices

<u>2. Develop Forward Looking Capital Market Assumptions</u>	<u>In Plan?</u>	<u>TRS Study Timing</u>	<u>Status</u>
What current asset classes should be evaluated?	✓	October 2013	Complete – February Board Meeting
Which asset classes should be considered for addition or subtraction?	✓	October 2013	Complete – March Board Meeting
Develop / Determine set of expected returns, risk and correlations for various asset classes	✓	October-February 2014	Complete – March Board Meeting
Test reasonableness of assumptions and explore alternatives	✓	January-March	Complete – March Board Meeting

# Review: SAA Study Best Practices

<u>3. Evaluate Alternative Portfolios / Model Results</u>	<u>In Plan?</u>	<u>TRS Study Timing</u>	<u>Status</u>
Determine metrics for comparing alternative portfolios (risk adjusted returns, median expected return, downside risk, etc.)	✓	February-May	Complete – March Board Meeting
Determine liquidity tolerance	✓	January-March	Complete – March and June Board Meetings
Consider alternative asset allocation targets	✓	May-September	Complete – March and June Board Meetings
Review asset class benchmarks	✓	January-September	Complete – Consolidate US Large Cap and Small Cap into a single line-item benchmarked to the MSCI USA IMI Index
Review ranges around asset class targets	✓	February-May	Complete – No recommended changes
Review allocation targets and strategies used by peer investors	✓	February 2014	Complete – February and June Board Meetings
Model impact of various economic scenarios on both asset portfolios and projected benefit payments	✓	May-September	Complete – February Board Meetings
Consider alternative portfolio construction approaches (risk based, etc.)	✓	February-April	Complete – June Board Meeting

# Review: SAA Study Best Practices

<u>4. Consider Other Issues</u>	<u>In Plan?</u>	<u>TRS Study Timing</u>	<u>Status</u>
Risk targets/budgeting	✓	February-May	Complete – No recommended changes
Ability to access the asset class (investible market size, manager access issues)	✓	October-March	Complete – March Board Meeting
Exploit competitive advantages	✓	February-September	Complete –March Board Meeting, June Board Meeting

# Review: SAA Study Key Elements

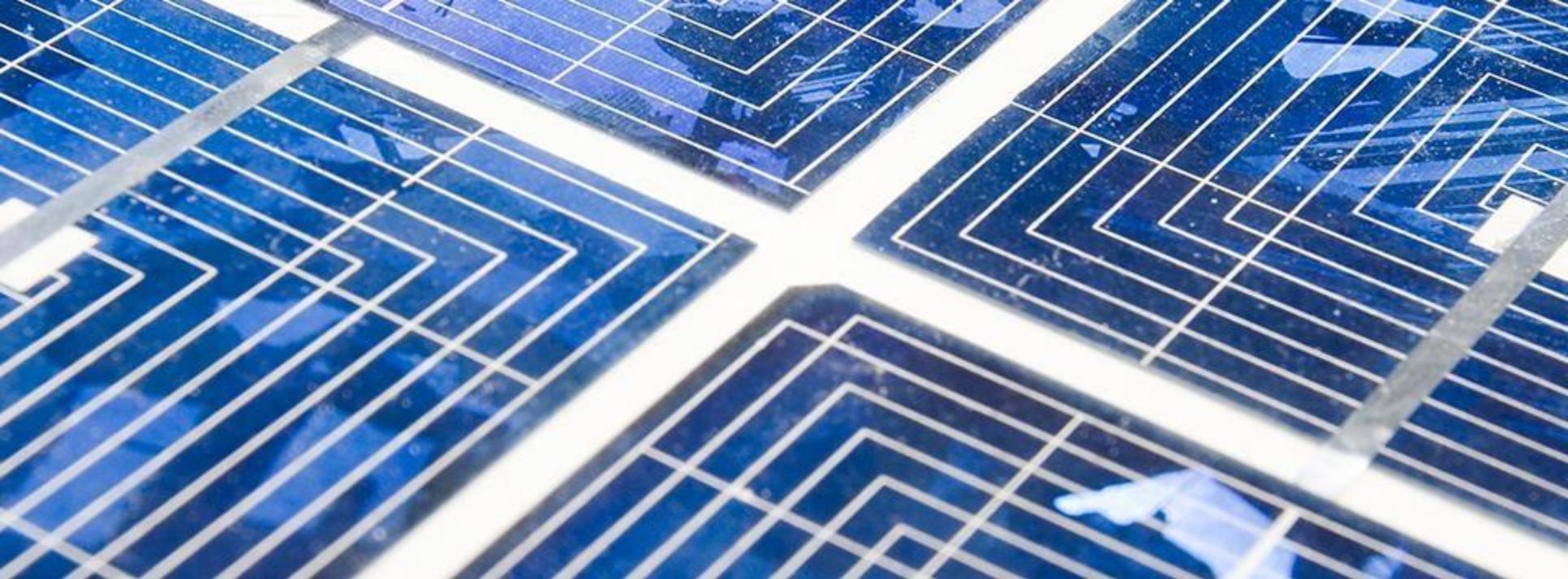
<u>5. Adopt a New Target Asset Allocation</u>	<u>In Plan?</u>	<u>TRS Study Timing</u>	<u>Status</u>
Review current allocation target relative to suitable alternatives	✓	June-September	Complete – June Board Meeting
Adopt a new target allocation (or keep previous targets)	✓	September	Complete – June Board Meeting
Review plan for implementation of any changes	✓	September	Subject of September Board Meeting
Update IPS to reflect any changes in asset allocation targets, ranges, benchmarks, or risk budgets	✓	September	Subject of September Board Meeting

<u>6. Implementation and Monitoring</u>	<u>In Plan?</u>	<u>TRS Study Timing</u>	<u>Status</u>
Execute on plan (time horizon for implementation will vary significantly based on liquidity of asset classes involved and magnitude of changes)	✓	September-TBD	Subject of September Board Meeting
Monitor actual portfolio to ensure compliance with policy targets	✓	Ongoing	Subject of September Board Meeting

# Review: SAA Study Attributes

<u>HEK Identified Best Practice</u>	<u>In Plan?</u>	<u>How did TRS achieve this?</u>
<b>Documentation:</b> Thorough documentation before, during and after the strategic asset allocation process is complete.	✓	TRS Project Plan, SAA Study Memos, Project Archive, and Board Materials
<b>Transparency:</b> Internal investment teams / consultants need to provide open access to assumptions, research, models and other critical inputs.	✓	Collaborative, regular interaction and input from Management Committee and Consultants
<b>Education:</b> Know contemporary best practices; conduct independent research; hold educational sessions throughout process.	✓	Review peer approaches, assigned TRS team on all topics (SAA plus IMD experts), Asset Allocation Symposium, and 4 Board presentations
<b>Active Participation:</b> All key stakeholders need to actively participate: Board members; internal investment teams; the executive office; consultants.	✓	Kick-off meetings plus monthly/quarterly discussions with Management, Consultants and Board

**Tab 4 B**



# Teacher Retirement System of Texas

Performance Review: Second Quarter 2014  
September 2014

**Hewitt**ennisknupp

*An Aon Company*

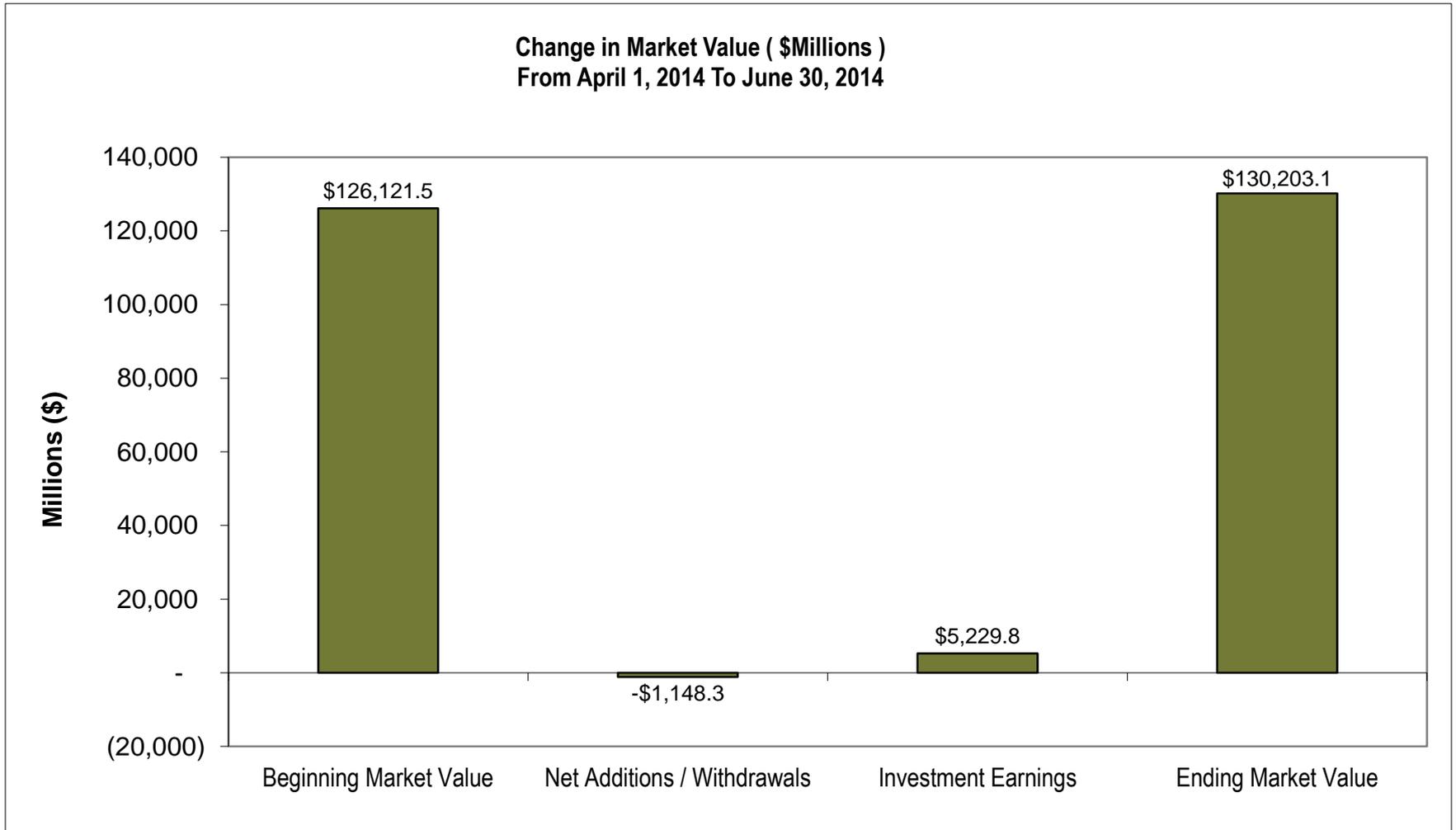
# Summary

- Strong second quarter for equity markets driven by the renewal of the U.S. economic recovery, stabilization of emerging market data, and further loosening of monetary policy by the European Central Bank.
  - The Treasury yield curve flattened during the second quarter, driven by long bond yields falling and short rates moving slightly higher. Recent moves in interest rates were in significant part attributable to the U.S. Federal Reserve as it endeavors to keep the adjustment to more “normal” interest rates gradual and well flagged in advance.
- TRS gained 4.2% during the second quarter and outperformed its performance benchmark by 0.3%
  - During the trailing 12 month period, TRS returned 16.3% vs. 15.5% of its performance benchmark
  - TRS performance remains strong on an absolute and relative basis during the trailing 3, 5, and 10 year periods
- Major sources of outperformance during the second quarter included:
  - Outperformance within Private Equity, Directional Hedge Funds , and Real Assets
  - Above benchmark performance from Energy and Natural Resources
  - An underweight to Energy and Natural Resources, which posted negative results during the quarter
- Investments that detracted from relative results included:
  - Underperformance within non-US Developed and Domestic Equities

# 1. Market Summary – Second Quarter 2014

	Second Quarter	YTD	One Year	Three Years	Five Years	Ten Years
<b>Global Equity:</b>						
MSCI USA Standard	5.2%	7.1%	25.0%	16.6%	19.0%	8.0%
MSCI USA Small Cap	3.5	6.1	26.4	16.0	22.4	9.7
MSCI EAFE + Canada Index	4.6	5.4	23.8	7.6	11.7	7.2
MSCI Emerging Markets Index	6.6	6.1	14.3	-0.4	9.2	11.9
HFRI Fund of Funds Composite Index	1.6	2.2	7.7	3.3	4.3	3.4
State Street Private Equity Index (qtr lagged)	3.2	9.6	18.6	11.5	15.3	12.3
Global Equity Policy Benchmark	4.6	6.6	20.3	9.0	14.6	
<b>Stable Value:</b>						
Barclays Capital Long Treasury Index	4.7%	12.1%	6.3%	8.8%	7.4%	7.2%
HFRI Fund of Funds Conservative Index	1.2	2.5	6.6	3.4	4.1	2.8
3 Month LIBOR + 2%	0.6	1.1	2.2	2.3	2.3	4.1
90 Day US Treasury Bill	0.0	0.0	0.1	0.1	0.1	1.6
Stable Value Policy Benchmark	3.7	9.3	6.0	7.8	6.4	
<b>Real Return:</b>						
Barclays Capital US Treasury TIPS Index	3.8%	5.8%	4.4%	3.6%	5.6%	5.2%
NCREIF ODCE (qtr lagged)	2.3	5.3	12.7	12.0	6.3	
Cambridge Nat. Resources (75) / CPI (qtr lagged) (25)	-1.6	1.0				
Goldman Sachs Commodities Index	2.7	5.7	10.4	0.2	3.7	0.1
Real Return Policy Benchmark	2.1	4.8	9.8	9.0	9.2	
TRS Policy Benchmark	3.9%	6.7%	15.5%	9.3%	12.3%	7.0%

## 2. Market Value Change



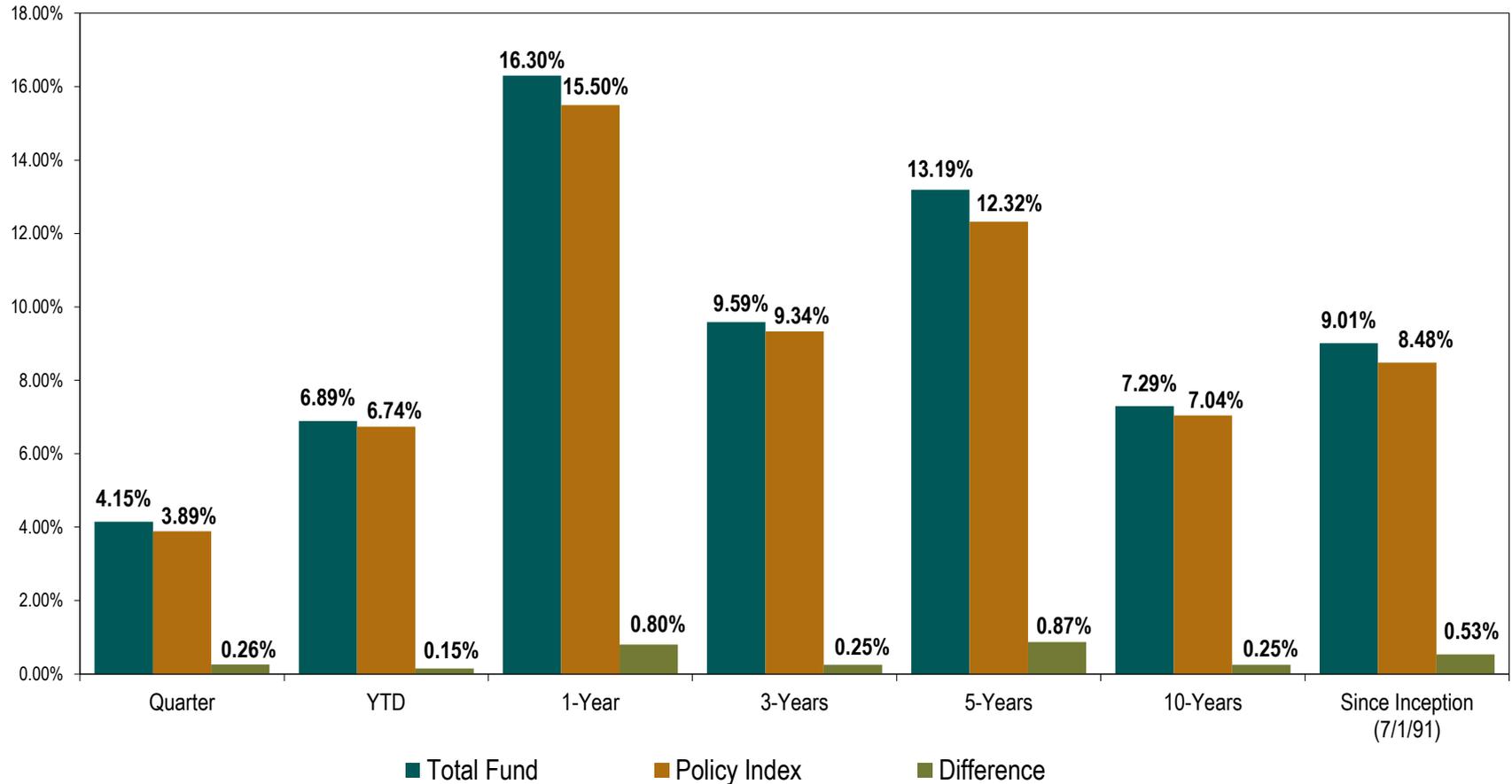
### 3. Asset Allocation Detail

	Market Value (\$ in millions) as of 6/30/2014		Policy Target	Relative Allocation to Policy Target	Ranges
	(\$)	(%)			
<b>Total Fund</b>	<b>\$130,203</b>	<b>100%</b>	<b>100%</b>	<b>---</b>	<b>--</b>
U.S. Large	\$25,729	19.8%	18%	+1.8%	13-23%
U.S. Small	\$2,366	1.8%	2%	-0.2%	0-7%
Non-U.S. Developed	\$19,513	15.0%	15%	0.0%	10-20%
Emerging Markets	\$14,348	11.0%	10%	+1.0%	5-15%
Directional Hedge Funds	\$6,563	5.0%	5%	0.0%	0-10%
Private Equity	\$15,266	11.7%	11%	+0.7%	6-16%
<b>Global Equity</b>	<b>\$83,785</b>	<b>64.3%</b>	<b>61%</b>	<b>+3.3%</b>	<b>54-68%</b>
Long Treasuries	\$15,820	12.1%	13%	-0.9%	0-20%
Stable Value Hedge Funds	\$5,193	4.0%	4%	0.0%	0-10%
Absolute Return (including OAR)	\$832	0.6%	0%	+0.6%	0-20%
Cash	\$529	0.4%	1%	-0.6%	0-5%
<b>Stable Value</b>	<b>\$22,374</b>	<b>17.2%</b>	<b>18%</b>	<b>-0.8%</b>	<b>13-23%</b>
TIPS	\$6,398	4.9%	5%	-0.1%	0-10%
Real Assets	\$15,171	11.7%	13%	-1.3%	8-18%
Energy and Natural Resources	\$2,316	1.8%	3%	-1.2%	0-8%
Commodities	\$160	0.1%	0%	+0.1%	0-5%
<b>Real Return</b>	<b>\$24,045</b>	<b>18.5%</b>	<b>21%</b>	<b>-2.5%</b>	<b>16-26%</b>

Note: Actual allocations above are based upon Account Level information

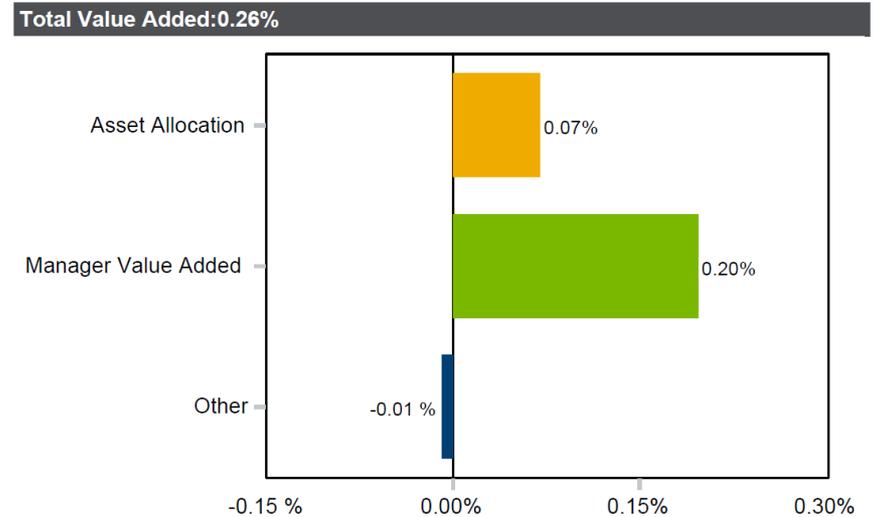
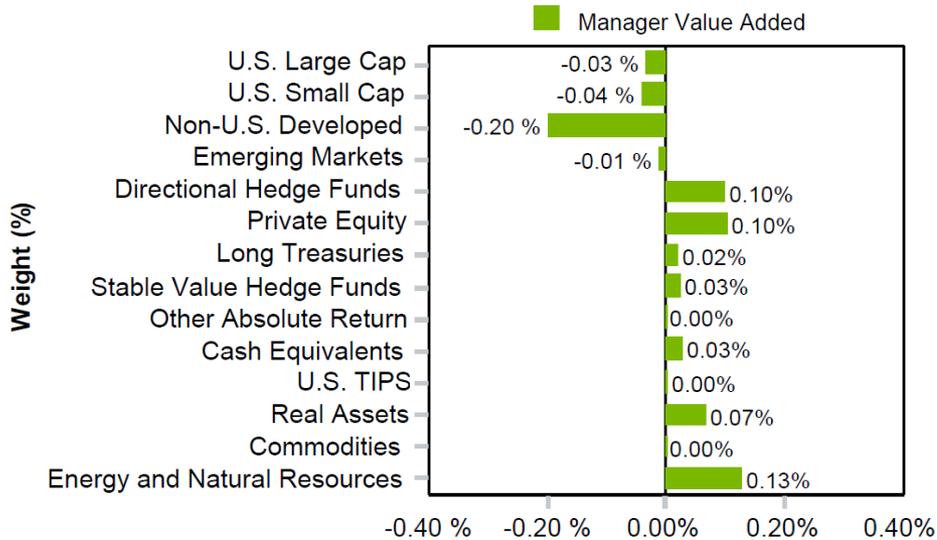
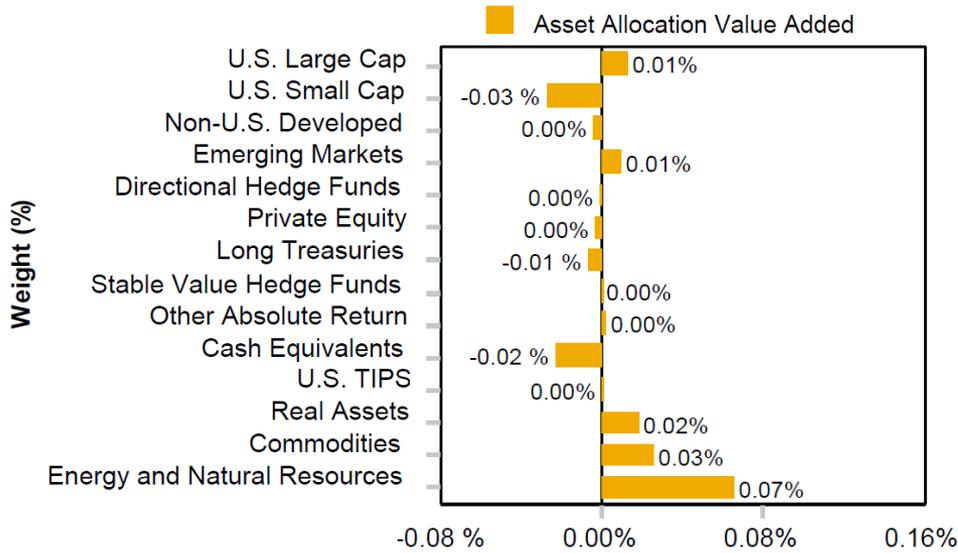
## 4. Total TRS Performance Ending 6/30/2014

### Investment Results As of 6/30/2014

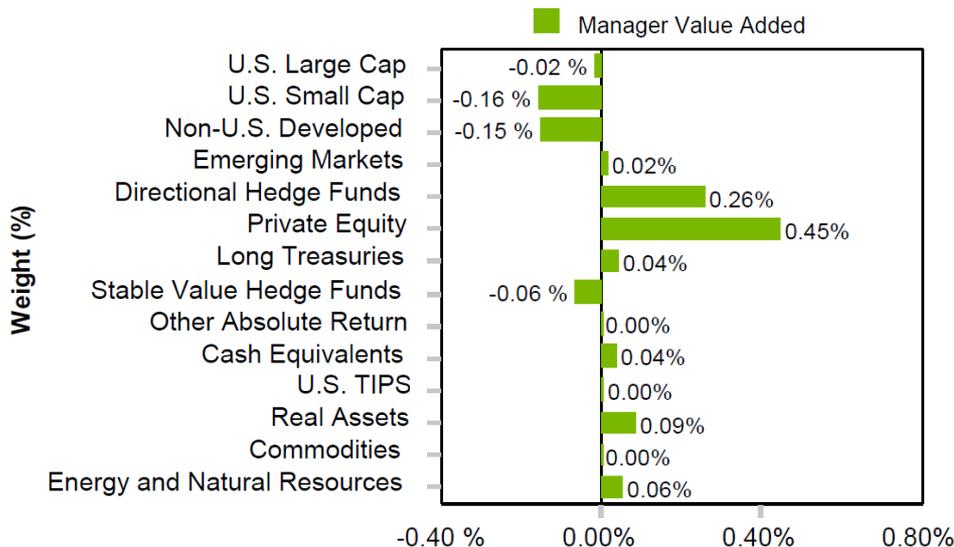
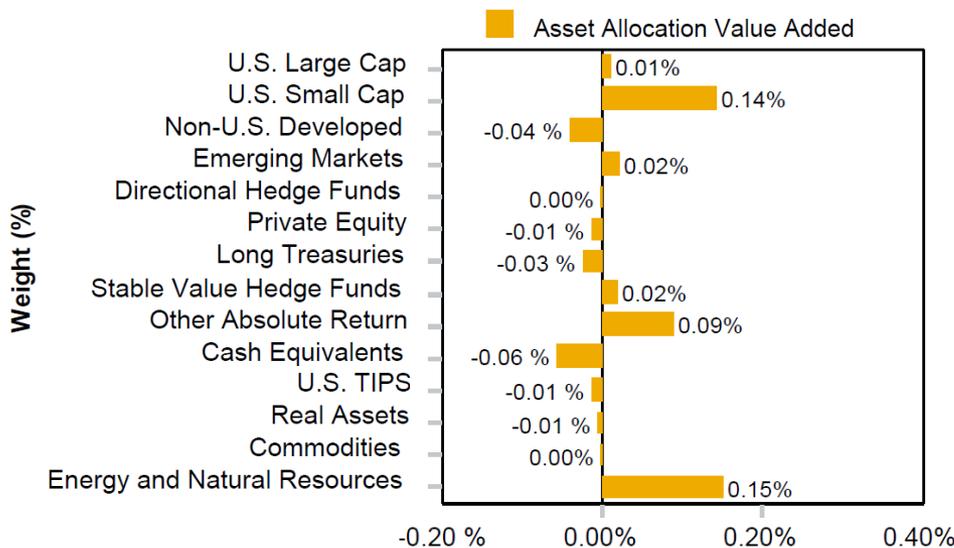


Note: The excess returns shown above may not be a perfect difference between the actual and benchmark returns due entirely to rounding.

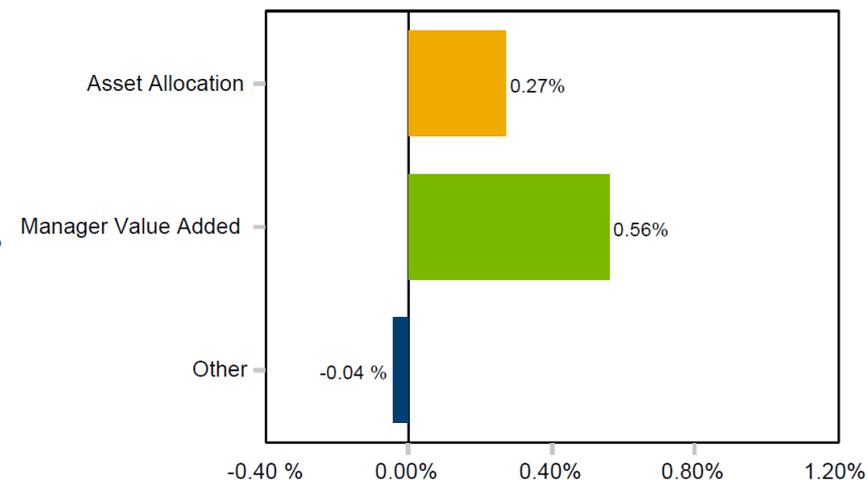
# 5. Total Fund Attribution - Quarter Ending 6/30/2014



# 5. Total Fund Attribution – Trailing One Year Ending 6/30/2014



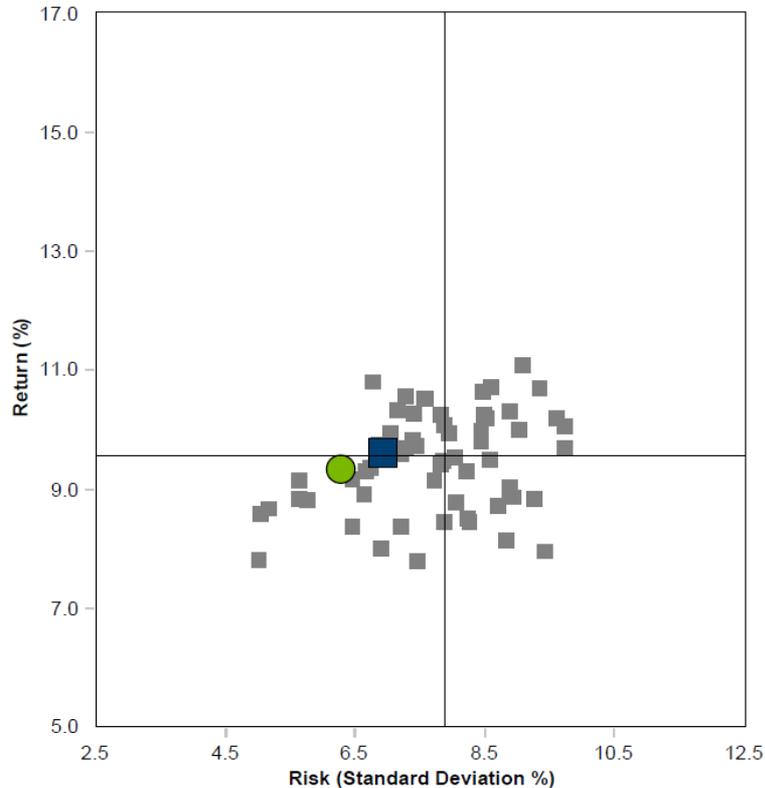
**Total Value Added: 0.80%**



## 6. Risk Profile: Total Fund Risk-Return vs. Peers

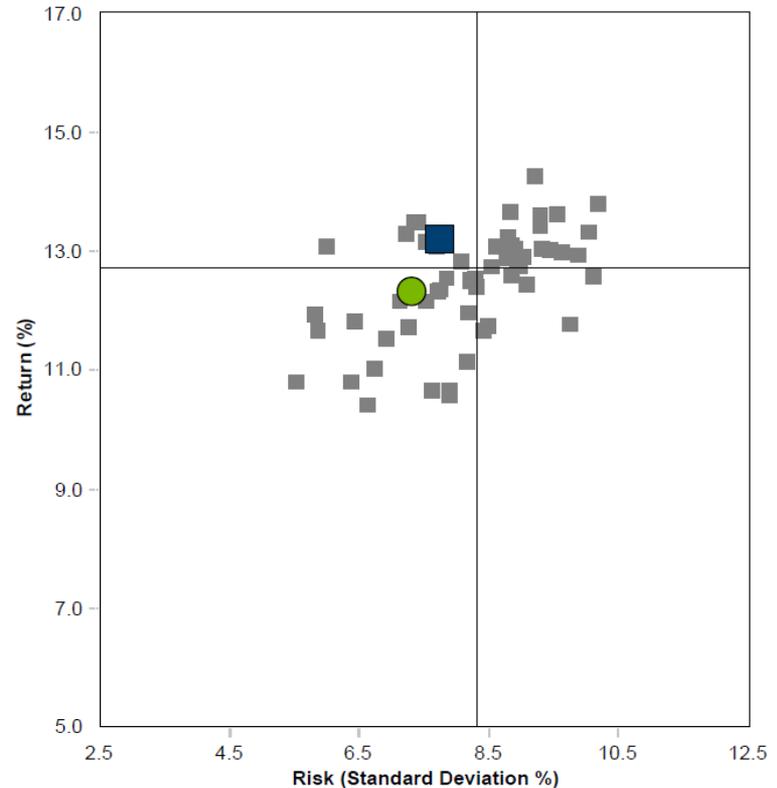
All Public Plans > \$1B-Total Fund

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending June 30, 2014



	Return	Standard Deviation
■ Total Fund	9.59	6.94
● Total Fund Benchmark	9.34	6.29
— Median	9.56	7.88

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending June 30, 2014

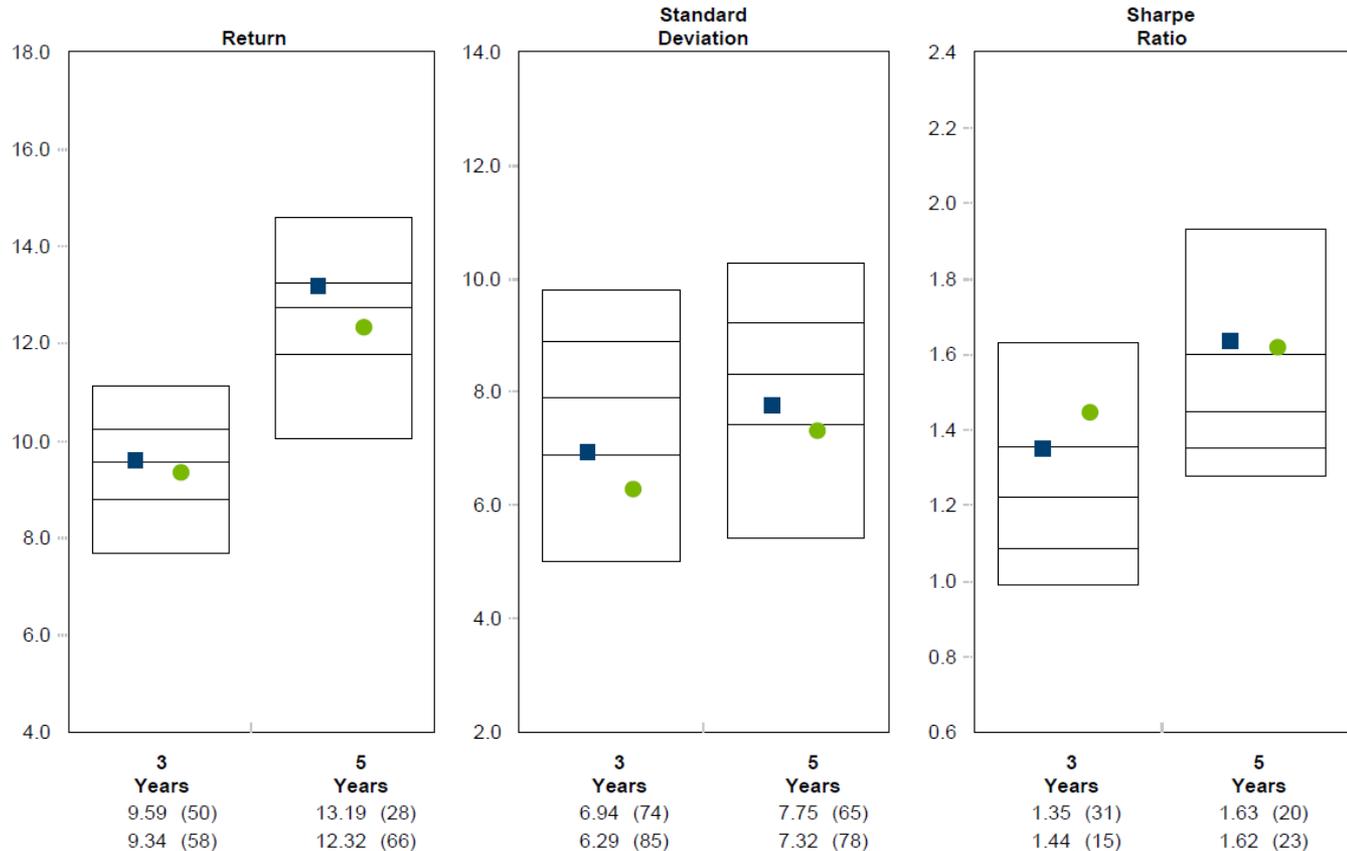


	Return	Standard Deviation
■ Total Fund	13.19	7.75
● Total Fund Benchmark	12.32	7.32
— Median	12.72	8.32

Plan Sponsor Peer Group composed of 68 public funds with total assets in excess of \$1B as of 6/30/14.

# 6. Risk Profile: Trailing 3-Year and 5-Year Risk Metrics Peer Comparison

All Public Plans > \$1B-Total Fund vs. 90 Day U.S. Treasury Bill



Plan Sponsor Peer Group composed of 68 public funds with total assets in excess of \$1B.

## 7. Global Equity: Performance Summary Ending 6/30/2014

	Second Quarter	YTD	One Year	Three Years	Five Years
<b>Total Global Equity</b>	<b>4.4%</b>	<b>6.4%</b>	<b>21.0%</b>	<b>9.8%</b>	<b>14.8%</b>
Global Equity Benchmark	4.6	6.6	20.3	9.0	14.6
<i>Difference</i>	-0.2	-0.2	+0.7	+0.8	+0.2
<b>Total U.S.</b>	<b>4.5</b>	<b>5.9</b>	<b>24.5</b>	<b>15.5</b>	<b>18.8</b>
U.S. Benchmark	5.0	7.1	25.1	16.2	19.2
<i>Difference</i>	-0.5	-1.2	-0.6	-0.7	-0.4
<u>U.S. Large Cap</u>	<b>5.0</b>	<b>6.5</b>	<b>25.1</b>	<b>16.0</b>	<b>18.7</b>
Large Cap Benchmark	5.2	7.1	25.0	16.6	18.7
<i>Difference</i>	-0.2	-0.6	+0.1	-0.6	0.0
<u>U.S. Small Cap</u>	<b>1.7</b>	<b>1.3</b>	<b>20.0</b>	<b>15.6</b>	<b>21.3</b>
Small Cap Benchmark	3.5	6.1	26.4	16.0	21.9
<i>Difference</i>	-1.8	-4.8	-6.4	-0.4	-0.6
<b>Non-U.S. Equity</b>	<b>4.6</b>	<b>4.7</b>	<b>19.1</b>	<b>4.7</b>	<b>11.0</b>
Non-U.S. Benchmark	5.4	5.7	20.0	4.4	10.8
<i>Difference</i>	-0.8	-1.0	-0.9	+0.3	+0.2
<u>Non-U.S. Developed</u>	<b>3.2</b>	<b>3.9</b>	<b>22.8</b>	<b>8.2</b>	<b>12.1</b>
MSCI EAFE + Canada	4.6	5.4	23.8	7.6	11.7
<i>Difference</i>	-1.4	-1.5	-1.0	+0.6	+0.4
<u>Emerging Markets</u>	<b>6.5</b>	<b>5.9</b>	<b>14.5</b>	<b>0.6</b>	<b>9.9</b>
MSCI Emerging Markets	6.6	6.1	14.3	-0.4	9.2
<i>Difference</i>	-0.1	-0.2	+0.2	+1.0	+0.7

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

## 7. Global Equity: Performance Summary Ending 6/30/2014 (cont'd)

	Second Quarter	YTD	One Year	Three Years	Five Years
<b>Directional Hedge Funds</b>	<b>3.6%</b>	<b>5.1%</b>	<b>12.6%</b>	--	--
HFRI Fund of Funds Composite Index	1.6	2.2	7.7	--	--
<i>Difference</i>	+2.0	+2.9	+4.9	--	--
<b>Total Public Equity</b>	<b>4.5</b>	<b>5.2</b>	<b>20.9</b>	<b>8.8</b>	<b>13.9</b>
Public Equity Benchmark	4.9	5.9	20.8	8.6	13.9
<i>Difference</i>	-0.4	-0.7	+0.1	+0.2	0.0
<b>Total Private Equity</b>	<b>4.0</b>	<b>11.6</b>	<b>21.7</b>	<b>15.0</b>	<b>18.8</b>
Private Equity Benchmark	3.1	9.3	17.6	11.2	17.7
<i>Difference</i>	+0.9	+2.3	+4.1	+3.8	+1.1

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

## 8. Stable Value: Performance Summary Ending 6/30/2014

	Second Quarter	YTD	One Year	Three Years	Five Years
<b>Total Stable Value</b>	<b>4.0%</b>	<b>9.1%</b>	<b>6.2%</b>	<b>7.1%</b>	<b>9.0%</b>
Total Stable Value Benchmark	3.7	9.3	6.0	7.8	6.4
<i>Difference</i>	+0.3	-0.2	+0.2	-0.7	+2.6
<b>Long Treasuries</b>	<b>4.9</b>	<b>12.3</b>	<b>6.6</b>	<b>9.3</b>	<b>7.9</b>
Treasury Benchmark	4.7	12.1	6.3	8.8	7.4
<i>Difference</i>	+0.2	+0.2	+0.3	+0.5	+0.5
<b>Stable Value Hedge Funds</b>	<b>1.9</b>	<b>2.7</b>	<b>5.1</b>	<b>2.6</b>	<b>4.3</b>
Hedge Funds Benchmark	1.2	2.5	6.6	5.0	3.9
<i>Difference</i>	+0.7	+0.2	-1.5	-2.4	+0.4
<b>Other Absolute Return</b>	<b>4.3</b>	<b>7.6</b>	<b>12.3</b>	<b>14.0</b>	<b>17.8</b>
Other Absolute Return Benchmark	0.6	1.1	2.2	2.3	2.3
<i>Difference</i>	+3.7	+6.5	+10.1	+11.7	+15.5
<b>Cash Equivalents</b>	<b>2.2</b>	<b>2.3</b>	<b>3.1</b>	<b>1.7</b>	<b>0.5</b>
Cash Benchmark	0.0	0.0	0.1	0.1	0.1
<i>Difference</i>	+2.2	+2.3	+3.0	+1.6	+0.4

*Note: Performance of Cash Equivalents is shown net of fees paid to TRS Strategic Partners*

*Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.*

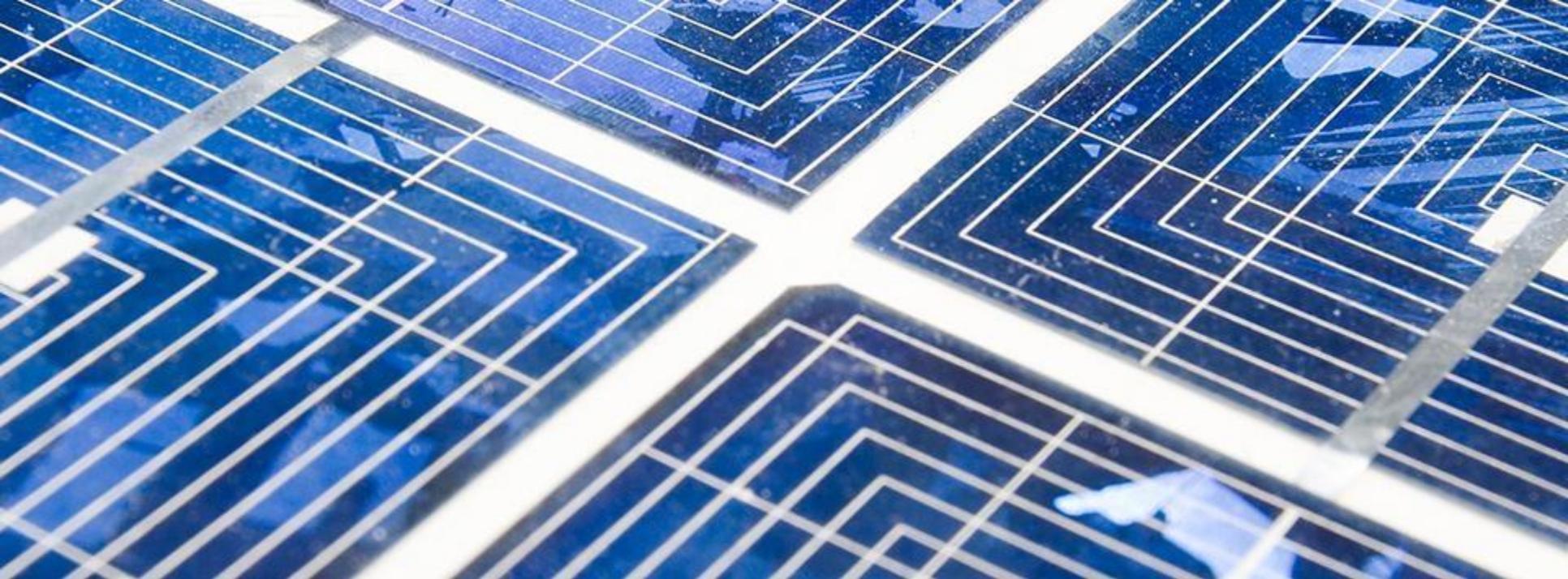
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An Aon Company

## 9. Real Return: Performance Summary Ending 6/30/2014

	Second Quarter	YTD	One Year	Three Years	Five Years
<b>Total Real Return</b>	<b>3.5%</b>	<b>6.7%</b>	<b>10.6%</b>	<b>8.4%</b>	<b>10.0%</b>
Real Return Benchmark	2.1	4.8	9.8	9.0	9.2
<i>Difference</i>	+1.4	+1.9	+0.8	-0.6	+0.8
<b>TIPS</b>	<b>3.9</b>	<b>5.9</b>	<b>4.5</b>	<b>3.7</b>	<b>5.9</b>
U.S. TIPS Benchmark	3.8	5.8	4.4	3.6	5.8
<i>Difference</i>	+0.1	+0.1	+0.1	+0.1	+0.1
<b>Real Assets</b>	<b>2.9</b>	<b>6.9</b>	<b>13.4</b>	<b>12.0</b>	<b>13.1</b>
Real Asset Benchmark	2.3	5.3	12.7	12.0	7.1
<i>Difference</i>	+0.6	+1.6	+0.7	0.0	+6.0
<b>Energy and Natural Resources</b>	<b>5.6</b>	<b>5.0</b>	--	--	--
Energy and Natural Resources Benchmark	-1.6	1.0	--	--	--
<i>Difference</i>	+7.2	+4.0	--	--	--
<b>Commodities</b>	<b>27.8</b>	<b>42.8</b>	<b>32.2</b>	<b>-8.8</b>	<b>-0.6</b>
Commodities Benchmark	2.7	5.7	10.4	0.2	3.7
<i>Difference</i>	+25.1	+37.1	+21.8	-9.0	-4.3

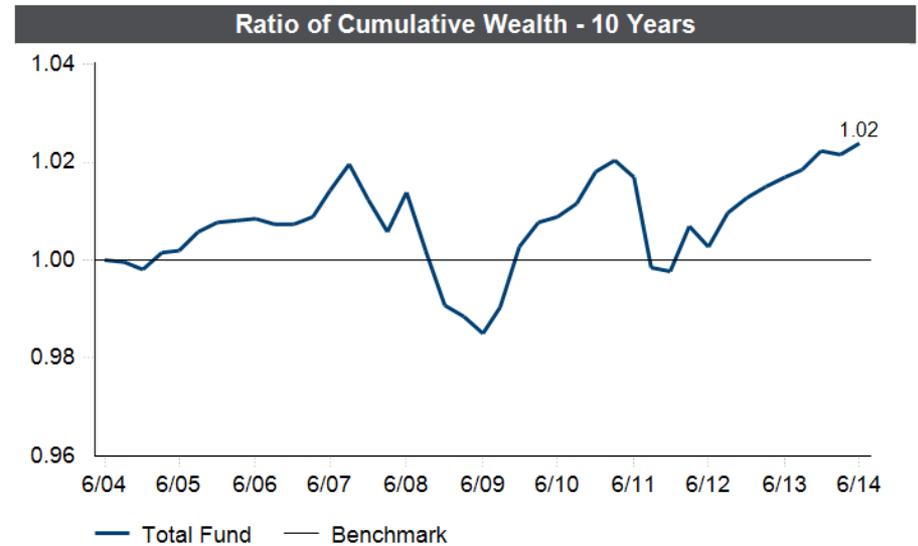
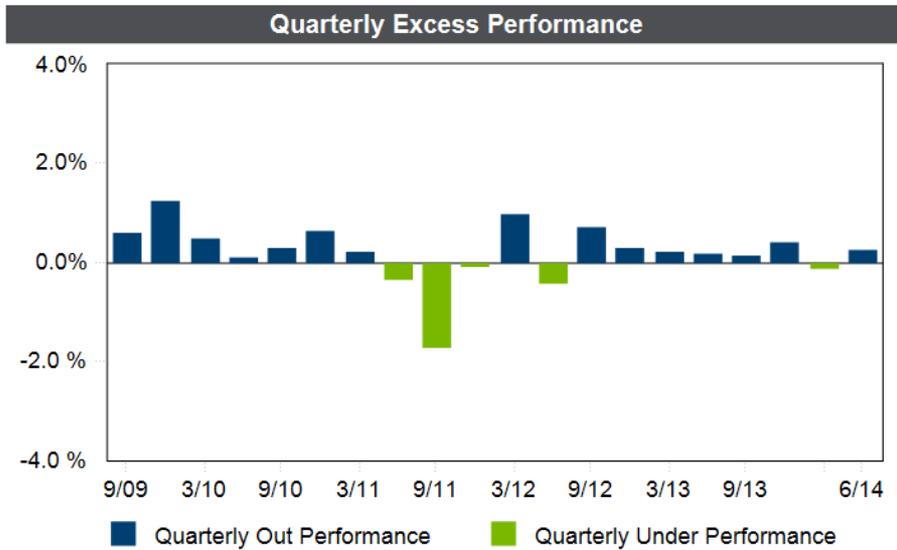
Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.



## Appendix – Supplemental Reporting

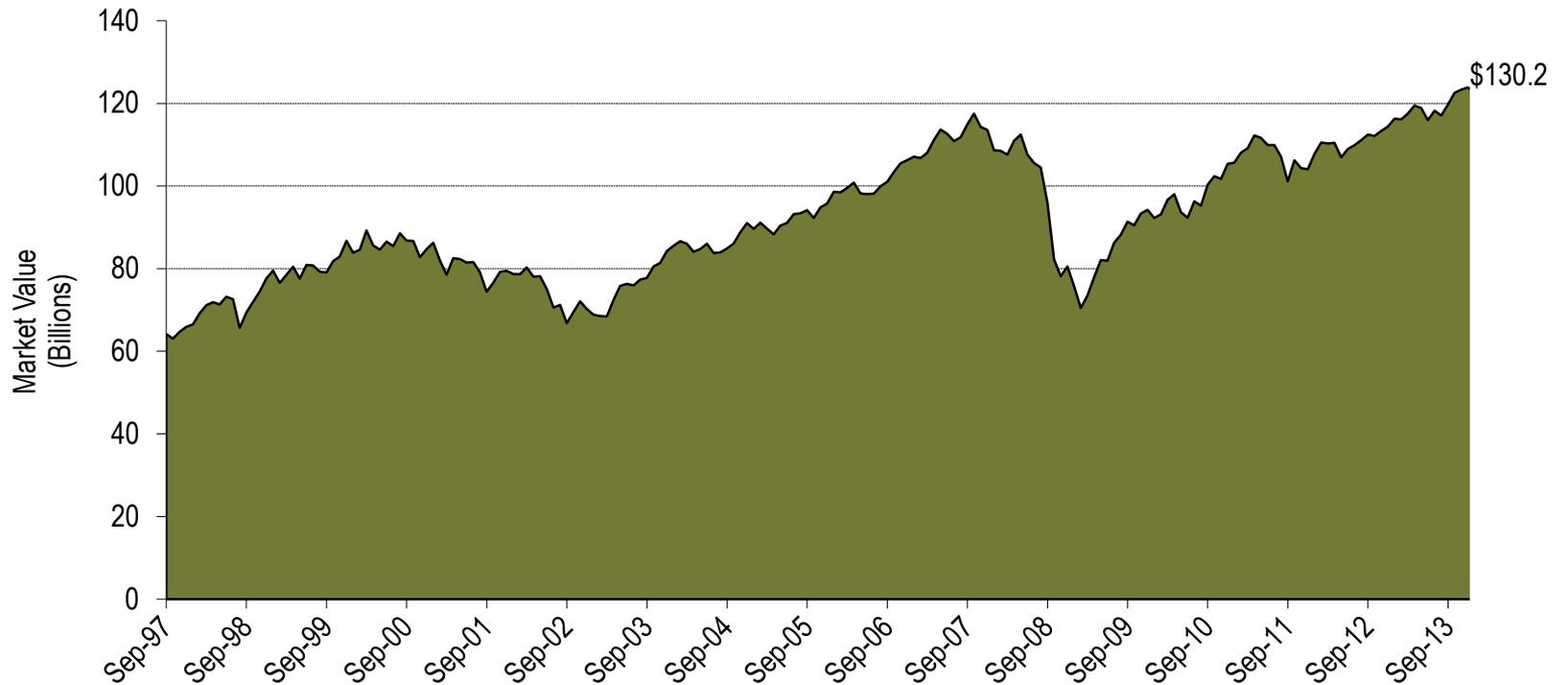
# Historical Excess Performance

**Quarterly and Cumulative Excess Performance  
Total Fund vs. Total Fund Benchmark**



# TRS Asset Growth

Total Fund Historical Growth (September 1997 - June 2014)



# External Manager Program: Public Equity Performance as of 6/30/2014

	Allocation (\$ in billions)	Second Quarter	YTD	One Year	Three Years
<b>EP Total Global Equity</b>	<b>\$36.7</b>	<b>4.2%</b>	<b>5.3%</b>	<b>20.2%</b>	<b>8.9%</b>
EP Global Equity Benchmark	--	4.7	5.6	19.4	7.9
<i>Difference</i>	--	-0.5	-0.3	+0.8	+1.0
<b>EP U.S. Large Cap</b>	<b>\$8.1</b>	<b>4.5</b>	<b>6.4</b>	<b>24.8</b>	<b>16.0</b>
EP Large Cap Benchmark	--	5.2	7.1	25.0	16.6
<i>Difference</i>	--	-0.7	-0.7	-0.2	-0.6
<b>EP U.S. Small Cap</b>	<b>\$2.0</b>	<b>2.2</b>	<b>3.0</b>	<b>22.6</b>	<b>15.1</b>
EP Small Cap Benchmark	--	3.5	6.1	26.4	16.0
<i>Difference</i>	--	-1.3	-3.1	-3.8	-0.9
<b>EP Non-U.S. Developed</b>	<b>\$5.9</b>	<b>1.7</b>	<b>2.8</b>	<b>23.1</b>	<b>7.9</b>
MSCI EAFE + Canada Index	--	4.6	5.4	23.8	7.6
<i>Difference</i>	--	-2.9	-2.6	-0.7	+0.3
<b>EP Emerging Markets</b>	<b>\$8.6</b>	<b>6.7</b>	<b>6.4</b>	<b>14.3</b>	<b>0.8</b>
MSCI Emerging Markets Index	--	6.6	6.1	14.3	-0.4
<i>Difference</i>	--	+0.1	+0.3	0.0	+1.2
<b>EP World Equity</b>	<b>\$5.7</b>	<b>4.3</b>	<b>5.3</b>	<b>23.9</b>	<b>12.4</b>
EP World Equity Benchmark	--	5.0	6.2	22.9	10.3
<i>Difference</i>	--	-0.7	-0.9	+1.0	+2.1
<b>EP Directional Hedge Funds</b>	<b>\$6.4</b>	<b>3.5</b>	<b>5.3</b>	<b>13.2</b>	<b>--</b>
HFRI Fund of Funds Composite Index	--	1.6	2.2	7.7	--
<i>Difference</i>	--	+1.9	+3.1	+5.5	--

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

# External Manager Program: Stable Value/Total Program Performance as of 6/30/2014

	Allocation (\$ in billions)	Second Quarter	YTD	One Year	Three Years
<b>EP Total Stable Value</b>	<b>\$5.5</b>	<b>2.1%</b>	<b>3.3%</b>	<b>6.3%</b>	<b>4.9%</b>
EP Stable Value Benchmark	--	0.0	0.1	0.1	0.5
<i>Difference</i>	--	+2.1	+3.2	+6.2	+4.4
<b>EP Stable Value Hedge Funds</b>	<b>\$5.2</b>	<b>1.9</b>	<b>2.7</b>	<b>5.1</b>	<b>2.6</b>
EP Stable Value Hedge Funds Benchmark	--	1.2	2.5	6.6	5.0
<i>Difference</i>	--	+0.7	+0.2	-1.5	-2.4
<b>EP Absolute Return</b>	<b>\$0.3</b>	<b>6.0</b>	<b>15.1</b>	<b>36.5</b>	<b>35.3</b>
EP Absolute Return Benchmark	--	0.6	1.1	2.2	2.3
<i>Difference</i>	--	+5.4	+14.0	+34.3	+33.0
<b>Total External Public Program</b>	<b>\$42.2</b>	<b>3.9</b>	<b>5.1</b>	<b>18.4</b>	<b>9.0</b>
EP External Public Benchmark	--	4.2	5.2	17.8	8.3
<i>Difference</i>	--	-0.3	-0.1	+0.6	+0.7

Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.

# Public Strategic Partnership Program (SPN): Performance Summary as of 6/30/2014

	Allocation (\$ in billions)	Second Quarter	YTD	One Year	Three Years
<b>Public Strategic Partnership</b>	<b>\$6.4</b>	<b>4.3%</b>	<b>6.9%</b>	<b>18.2%</b>	<b>10.3%</b>
Public SPN Benchmark	--	5.0	7.7	17.5	9.9
<i>Difference</i>	--	-0.7	-0.8	+0.7	+0.4
<b>Blackrock</b>	<b>\$1.6</b>	<b>4.2%</b>	<b>7.0%</b>	<b>18.2%</b>	<b>9.6%</b>
<b>J.P. Morgan</b>	<b>\$1.7</b>	<b>4.3%</b>	<b>6.2%</b>	<b>17.8%</b>	<b>10.5%</b>
<b>Neuberger Berman</b>	<b>\$1.6</b>	<b>5.1%</b>	<b>7.7%</b>	<b>18.1%</b>	<b>9.4%</b>
<b>Morgan Stanley</b>	<b>\$1.6</b>	<b>3.3%</b>	<b>6.8%</b>	<b>18.2%</b>	<b>11.9%</b>

- The Public SPNs in aggregate underperformed the benchmark during the second quarter and year-to-date, however have outperformed the benchmark for trailing one-year and three-year periods
  - Neuberger Berman and BlackRock have 3-year returns below the benchmark

*Note: The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.*

# Benchmarks

---

- **Total Fund Performance Benchmark** – 18% MSCI US Standard, 2% MSCI US Small Cap, 10% MSCI Emerging Markets, 15% MSCI EAFE plus Canada, 5% HFRI FoF Composite Index, 11% State Street Private Equity (1 qtr lagged), 13% BC Long Term Treasury, 4% HFRI FoF Conservative Index, 1% Citigroup 3 Mo T-Bill, 5% BC US TIPS, 13% NCREIF ODCE (1 qtr lagged), and 3% Energy and Natural Resources Benchmark.
- **Global Equity Benchmark**– 24.6% MSCI EAFE plus Canada, 29.5% MSCI US Standard, 3.3% MSCI US Small Cap, 16.4% MSCI Emerging markets index, 8.2% HFRI FoF Composite Index, and 18.0% State Street Private Equity (1 qtr lagged)
  - US Large Cap Benchmark - MSCI US Standard Index
  - US Small Cap Benchmark - MSCI US Small Cap Index
  - Emerging Markets Benchmark – MSCI Emerging Markets
  - Non-US Developed Benchmark– MSCI EAFE plus Canada
  - Directional Hedge Funds – HFRI Fund of Funds (FoF) Composite Index
  - Private Equity Benchmark - State Street Private Equity (1 qtr lagged)

*Note: Returns and market values (based on account level) reported are provided by State Street. Net additions/withdrawals are reported on a gross (adjusted for expenses) total fund level as provided by State Street. All rates of return for time periods greater than one year are annualized. The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.*

## Benchmarks (cont'd)

---

- **Stable Value Benchmark** – 22.2% HFRI FoF Conservative Index, 72.2% BC Long Term Treasury, and 5.6% Citigroup 3 mo T-Bill.
  - US Treasuries Benchmark – Barclays Capital (BC) Long Term Treasury
  - Stable Value Hedge Funds – HFRI Fund of Funds (FoF) Conservative Index
  - Other Absolute Return Benchmark - 3 Mo LIBOR + 2%
  - Cash Benchmark - Citigroup 3 Mo T-Bill
- **Real Return Benchmark** – 23.8% BC US TIPS, 61.9% NCREIF ODCE, and 14.3% Energy & Natural Resources Benchmark
  - US TIPS Benchmark – BC US TIPS Index
  - Real Assets Benchmark – NCREIF ODCE (1qtr lagged)
  - Energy and Natural Resources – 75% Cambridge Associates Natural Resources (reweighted) / 25% quarterly Seasonally-Adjusted Consumer Price Index (1qtr lagged)
  - Commodities Benchmark – Goldman Sachs Commodity Index

*Note: Returns and market values (based on account level) reported are provided by State Street. Net additions/withdrawals are reported on a gross (adjusted for expenses) total fund level as provided by State Street. All rates of return for time periods greater than one year are annualized. The excess returns shown in this presentation may differ from State Street statements due entirely to rounding. These differences are generally within a few basis points and are not material.*

## Description of Performance Attribution

---

- A measure of the source of the deviation of a fund's performance from that of its policy benchmark. Each bar on the attribution graph represents the contribution made by the asset class to the total difference in performance. A positive value for a component indicates a positive contribution to the aggregate relative performance. A negative value indicates a detrimental impact. The magnitude of each component's contribution is a function of (1) the performance of the component relative to its benchmark, and (2) the weight (*beginning of period*) of the component in the aggregate.
- The individual Asset Class effect, also called Selection Effect, is calculated as  
$$\text{Actual Weight of Asset Class} \times (\text{Actual Asset Class Return} - \text{Asset Class Benchmark Return})$$
- The bar labeled Allocation Effect illustrates the effect that a Total Fund's asset allocation has on its relative performance. Allocation Effect calculation =  $(\text{Asset Class Benchmark Return} - \text{Total Benchmark Return}) \times (\text{Actual Weight of Asset Class} - \text{Target Policy Weight of Asset Class})$ .
- The bar labeled Other is a combination of Cash Flow Effect and Benchmark Effect:
  - Cash Flow Effect describes the impact of asset movements on the Total Fund results. Cash Flow Effect calculation =  $(\text{Total Fund Actual Return} - \text{Total Fund Policy Return}) - \text{Current Selection Effect} - \text{Current Allocation Effect}$
  - Benchmark Effect results from the weighted average return of the asset classes' benchmarks being different from the Total Funds' policy benchmark return. Benchmark Effect calculation =  $\text{Total Fund Policy Return} - (\text{Asset Class Benchmark Return} \times \text{Target Policy Weight of Asset Class})$
- Cumulative Effect  
$$\text{Cumulative Effect calculation} = \text{Current Effect } t \times (1 + \text{Cumulative Total Fund Actual Return } t-1) + \text{Cumulative Effect } t-1 \times (1 + \text{Total Fund Benchmark Return } t)$$

# Tab 5

# Teacher Retirement System of Texas



## *Executive Director's Report*

Brian Guthrie  
September 18, 2014





- Agency goals and objectives for Fiscal Year 2015.
- Professional development goals and objectives for Fiscal Year 2015.
- Overview of *MyTRS* Rewards Program
- Upcoming agendas.



# Goals and Objectives

## Fiscal Year 2015

- Fiscal Year 2015 goals and objectives are centered around the Strategic Plan.
- The Strategic Plan covers a five-year period and contains additional elements not articulated here.
- The following goals and objectives are key and are achievable this fiscal year.



# Strategic Goal 1: Sustain a financially sound pension trust fund

- Continue trust fund earnings growth.
  - Outperform TRS benchmarks net of fees.
  - Transition to new asset allocation in accordance with investment policy, including additional resources if necessary.
  - Continue work toward becoming the preferred destination for large and attractive long-term investments.
  - Reexamine and delineate compliance activities (develop and adopt investment compliance charter).
  
- Maintain an effective working relationship with legislative stakeholders on trust sustainability issues.
  - Engage legislature (especially new legislators) on issues such as actuarial valuation and plan design.
  - Throughout the state budget process emphasize the importance of maintaining new state and member contribution rates and request appropriate funding levels.



## Strategic Goal 2: Build and maintain strong, customer-focused relationships

- Continue to improve quality of work and customer service levels for our members.
  - Examine current customer service metrics and benchmarks for potential improvements.
  - Identify opportunities for “member engagement.” Includes not only providing outstanding customer service but also examining how members obtain and use information from TRS.
  
- Maintain and enhance stakeholder communication.
  - Reevaluate and document the agency-wide communications plan for the digital age, to include examining how we communicate with public education associations.
  - Work with reporting entities and state-wide stakeholders on GASB implementation, including audit matters.
  - Update video Value Brochure.
  - Finalize Turning 65 Health Care video and Financial Education video.



## Strategic Goal 2: Build and maintain strong, customer-focused relationships

- Advance the TEAM Program.
  - Project Improvement Plan (PIP).
  - Implement Quarterly Executive Review Sessions with TRS executive management to review the Line of Business Project status and address issues and concerns in a timely manner.
  - Continue to augment TEAM resources with backfills and contract IT professionals.
  - Move forward on the Financial System Replacement RFO development.
  - Negotiated contract for Phase II of the Data Management Project.
  - CIO Search.



## Strategic Goal 3: Facilitate access to competitive, reliable health care benefits for our members

- Continue focusing on TRS health care programs.
  - Hold health care focused October Board meeting.
  - Release final TRS-Care and ActiveCare Study in November.
  - Work with the Legislature and serve as a resource on crafting options to address health care challenges.
  - Continue to identify and take advantage of savings opportunities in the marketplace.
  - Monitor adequacy of provider networks.
  - Monitor implementation of Affordable Care Act.



## Strategic Goal 4: Attract, retain, and develop a highly competent staff.

- Continue to develop effective recruitment/retention strategy.
  - Execute the workforce plan (red zone employees, talent management).
  - Redesign merit pool allocation and establish agency-wide schedule for performance evaluations or 360 assessments, as applicable.
  
- Promote a strong workplace culture.
  - Implement Strategic Plan, including agency-wide informational campaign, integration of resource planning with strategic planning, and tracking of accomplishments.
  - Identify and execute agency-wide team-building opportunities.
  
- Provide a physical work environment that enhances productivity.
  - Refresh and update TRS facilities as needed to ensure effective space utilization.
  - Research and decide on options regarding a more effective space utilization and explore possibility of removing capital view corridor restrictions.



## Strategic Goal 5: Promote purchasing selection practices that foster meaningful and substantive inclusion of historically underutilized businesses

- Develop and implement plan for increasing the use of HUBs through purchasing contracts and subcontracts.
  - Revise contracting guidelines.
  - Follow CPA guidelines on soliciting HUBs.
  - Solicit HUBs from existing statewide contracts when possible.
  - Conduct annual HUB forum.



# Professional Development Goals and Objectives

## Fiscal Year 2015



# Professional Development Goals for Fiscal Year 2015

- Ask the naive question.
  - When examining a process or project ask what approach would be best to use if starting from scratch. (e.g. on the benchmarks project, ask “would we use these same customer service benchmarks if adopting benchmarks for the first time?”)
  
- Continue developing investment knowledge.
  - CFA Institute Claritas Program.
  - Explore additional opportunities with Dr. Brown.
  
- Expand involvement in national organizations.
  - Serve on NCTR Executive Committee.
  - Identify opportunities for increased NASRA involvement.



***MyTRS* Rewards**  
Member Discount Program



## *MyTRS* Rewards

- *MyTRS* Rewards offers members and retirees money-saving opportunities ranging from auto insurance to wireless phones, restaurants, theme park tickets and more.
- Program was designed as an incentive to encourage members to sign up for *MyTRS*, the online personal access portal.
- Members must first register for *MyTRS*. Then, they can access the *MyTRS* Rewards website as well as register for subscription emails that provide program updates.



## *My*TRS Rewards

- Initially discussed at the Sept. and Oct. 2013 board meetings; update given at the Dec. 2013 Benefits Committee meeting.
- In the fall of 2013, TRS issued a Request for Proposals to select a firm to manage the agency's new member discount website.
- *My*TRS Rewards launched Nov. 1, 2013 with a link to the TRS website.



## *MyTRS* Rewards

- *MyTRS* Rewards is administered by Beneplace, a private company in Austin that provides access to employee discount programs.
- Contract with Beneplace is at no cost to TRS. The contract began on July 30, 2013 with up to five additional one-year renewal options.
- All discount products and services offered through *MyTRS* Rewards require TRS' prior approval. TRS may cancel a vendor at any time.

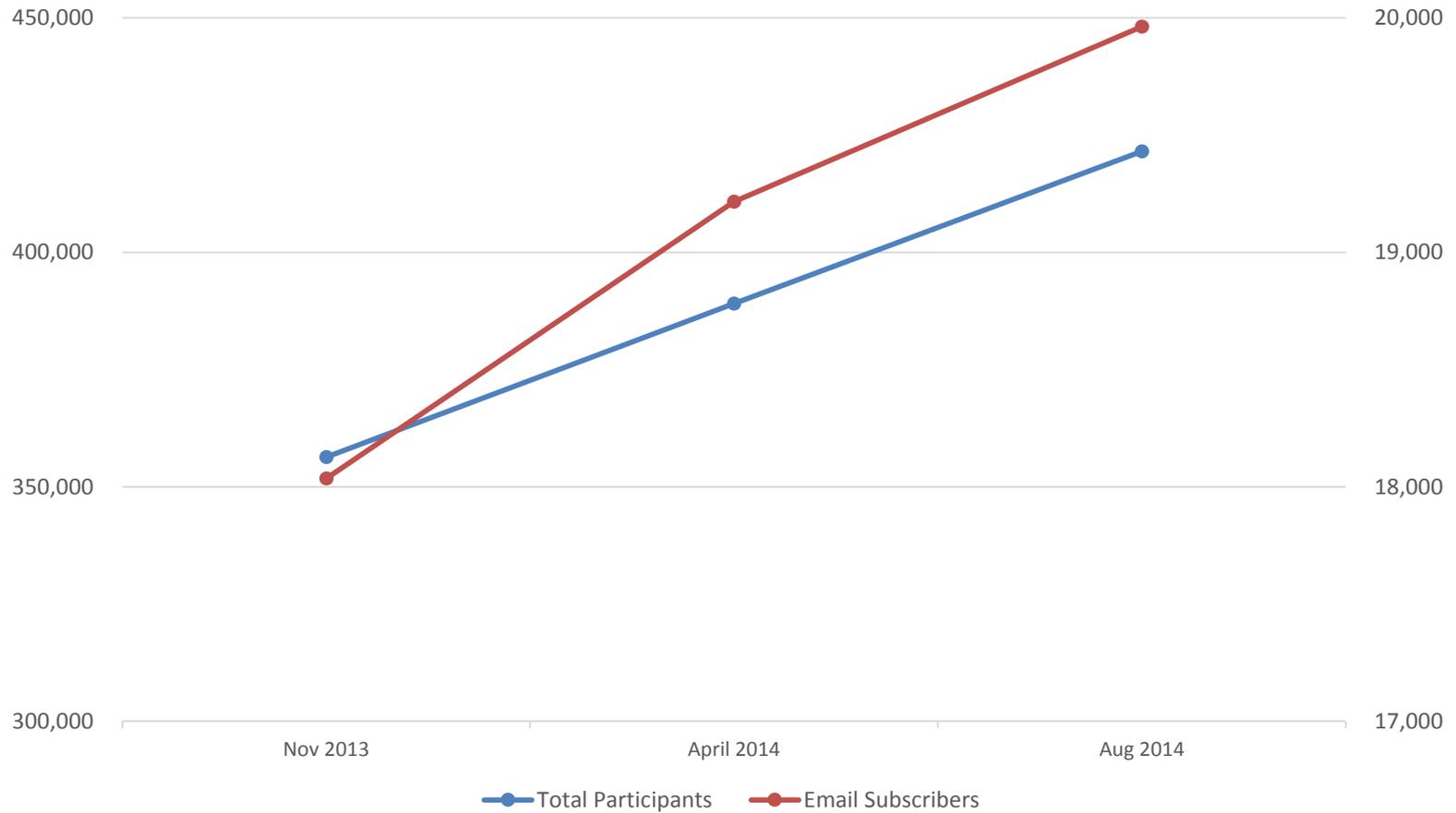


- Beneplace provides similar programs to:
  - Employees Retirement System of Texas
  - State Bar of Texas
  - Austin ISD
  - Texas State University
  - Lone Star College
  - Texas Tech University
  - University of North Texas



# MyTRS Rewards

### MyTRS Trends since November 2013





## MyTRS Rewards

- As of 08/26/2014 – 2,158 members have subscribed to *MyTRS* Rewards emails.
  - 1,282 active members
  - 876 retirees
  
- The discount program home page has been visited 88,977 times, with over 41,000 “click-throughs” (or possible purchases) to vendor websites. \*
  
- Top five categories of sites visited by TRS members:
  - Wireless;
  - Dining;
  - Entertainment;
  - Retail; and
  - Home & Garden.

\*Reporting period: Nov. 1, 2013 to Aug. 22, 2014



# Upcoming Agendas



# October 18 & November 20-21, 2014 Board Agendas

## **October 17, 2014 Major items include** (1 Day Meeting):

- Update on TRS-Care and ActiveCare Study.
- Discuss and consider a minor plan design change to TRS-Care to comply with Affordable Care Act.
- Discuss options for TRS-Care PBM.
- RAC Meeting will occur after the October Board Meeting.



# October 18 & November 20-21, 2014 Board Agendas

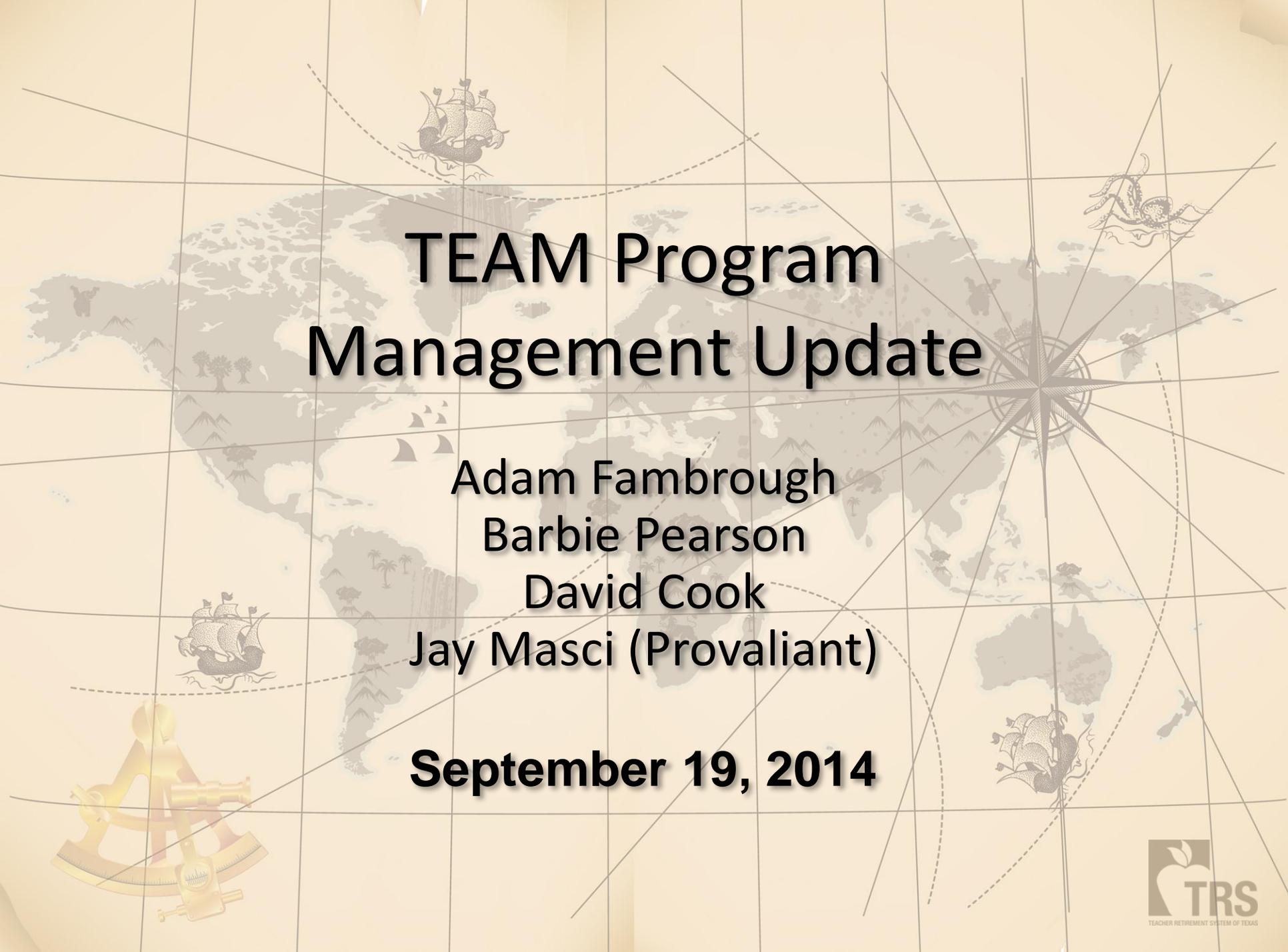
## **November 20-21, 2014 Major items include** (2 Day Quarterly Meeting):

- Report on Q3 Earnings.
- Comprehensive Annual Financial Report (CAFR).
- Pension Fund Valuation.
- TRS-Care Valuation (Other Post Employment Benefits – OPEB) Valuation.
- TRS-ActiveCare Benefits Briefing.
- SPN.

## Committees

- **Investment Management Committee Meeting**
  - Strategic Asset Allocation Group Presentation.
  - Risk Group Presentation.
- **Risk Management Committee Meeting**
  - Enterprise Risk Management.
- **Policy Committee Meeting**
  - Complete the Four-Year Rule Review.
- **Audit Committee Meeting**
  - Report on the CAFR Audit (if ready).

**Tab 11**

The background features a stylized world map with a grid of latitude and longitude lines. Several navigation-related icons are scattered across the map: a three-masted sailing ship in the upper left, a compass rose on the right side, another sailing ship in the lower left, and a decorative floral or scrollwork element in the lower right. A golden sextant is positioned in the bottom left corner.

# TEAM Program Management Update

Adam Fambrough  
Barbie Pearson  
David Cook  
Jay Masci (Provaliant)

**September 19, 2014**

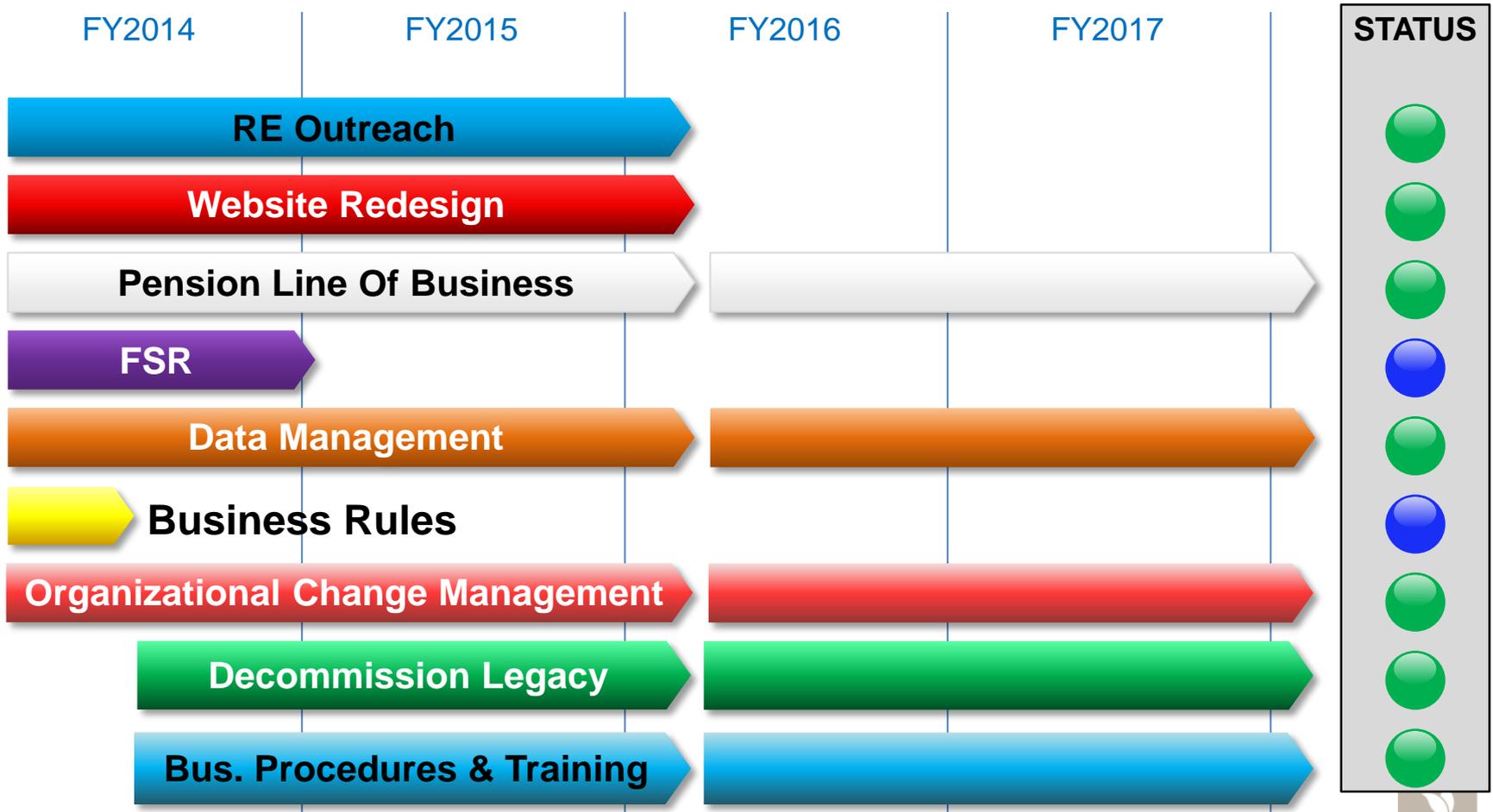
# TEAM PROGRAM

## Update Items

- TEAM Program Progress
- TEAM Program Budget Summary
- TEAM Program Project Interdependencies
- Line of Business (LOB) Update
- MyTRS
- TEAM Project Milestones
- TEAM Project Accomplishments

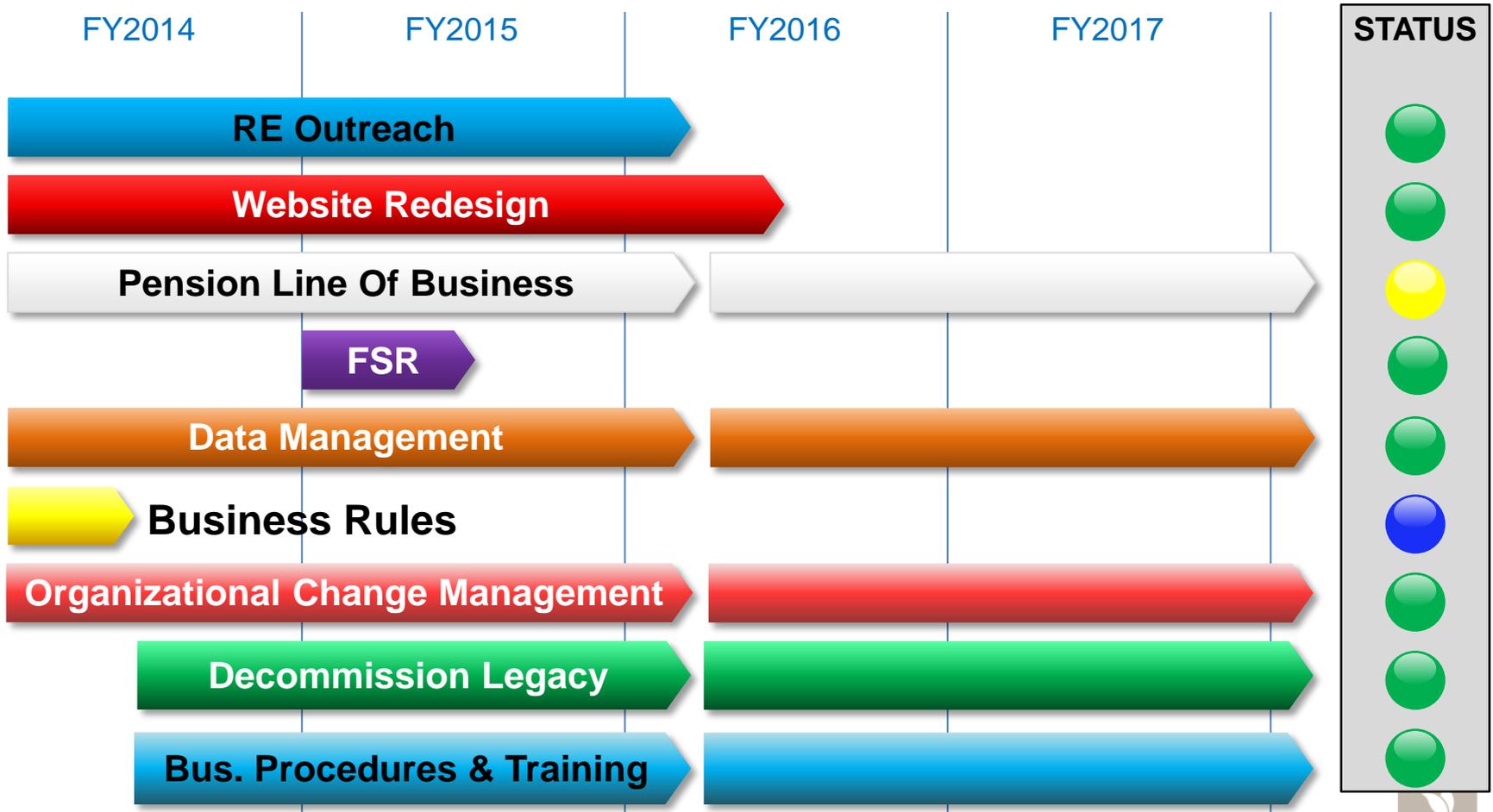
# TEAM PROGRAM

## TEAM Progress as of May 12, 2014



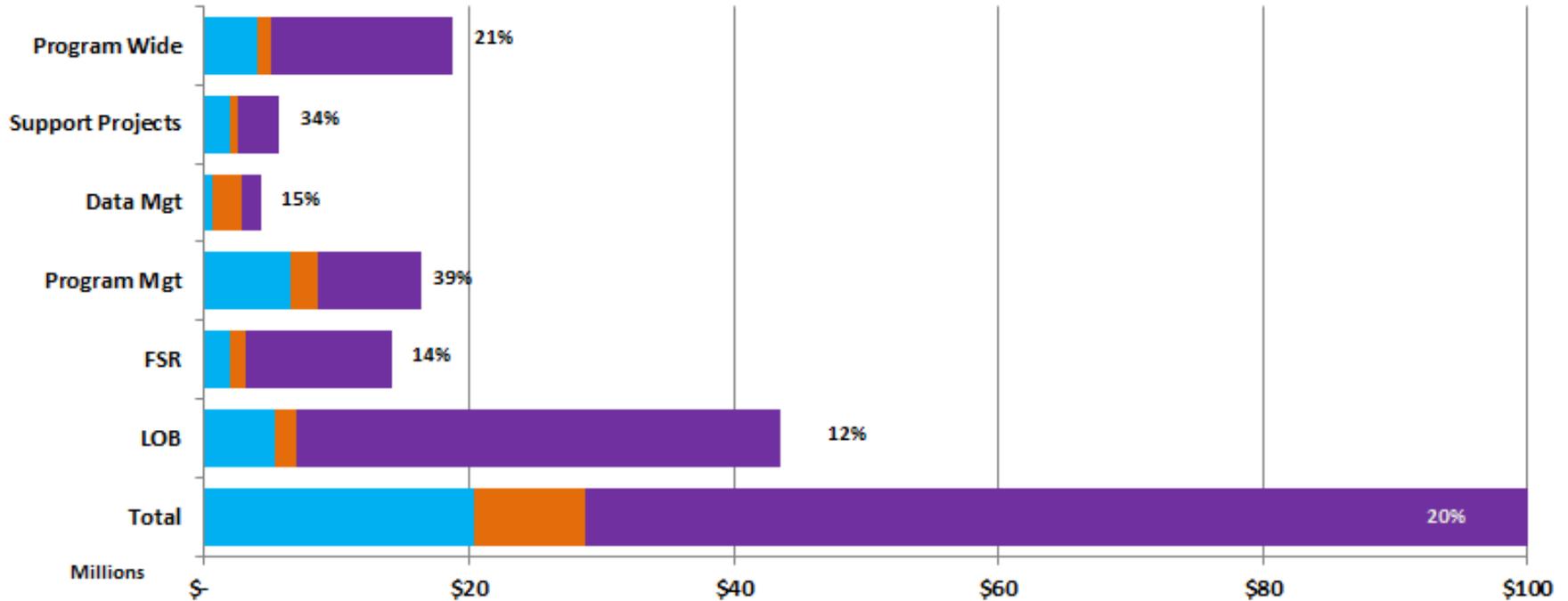
# TEAM PROGRAM

## TEAM Progress as of August 26, 2014



# TEAM PROGRAM

## Program Budget by Project (% spent indicated)



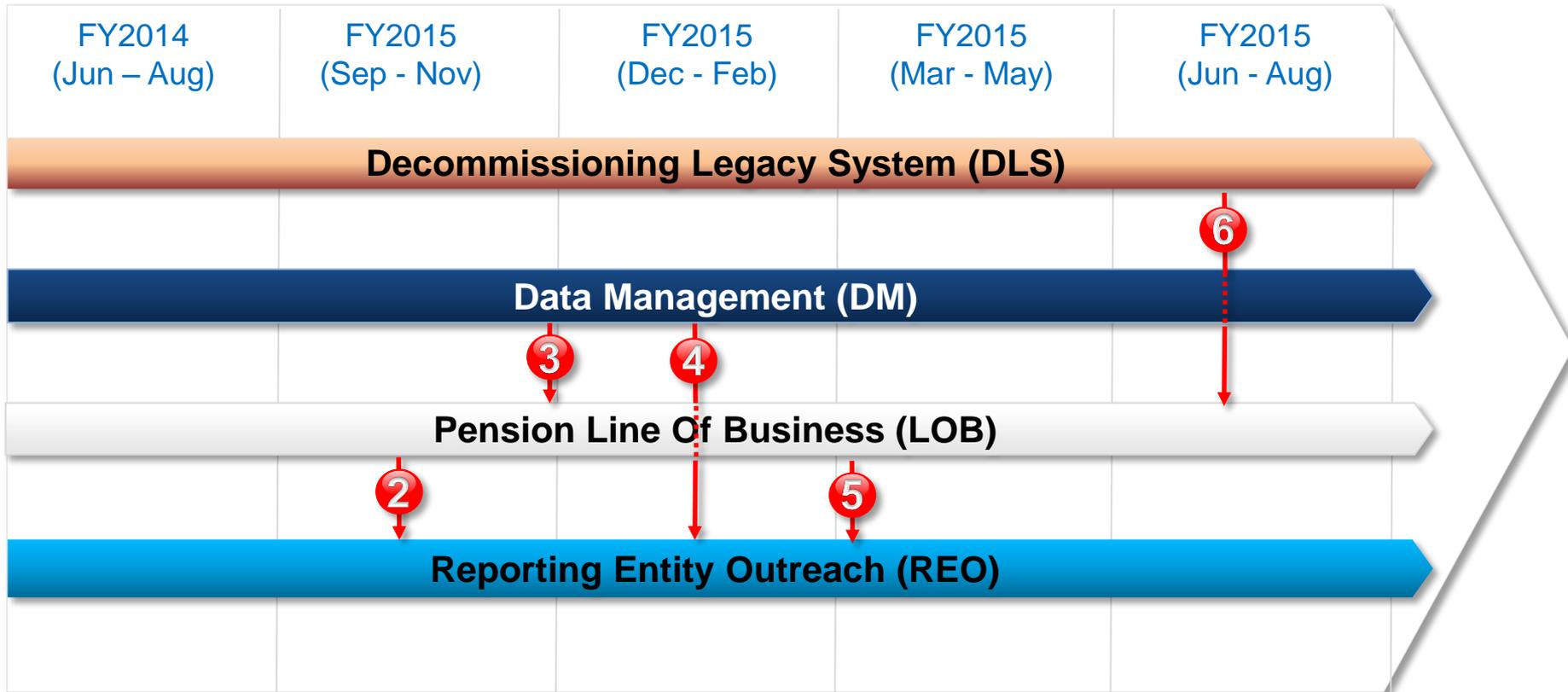
	Total	LOB	FSR	Program Mgt	Data Mgt	Support Projects	Program Wide
Expended	\$20,368,681	\$5,247,301	\$1,983,533	\$6,482,329	\$659,627	\$1,937,675	\$4,058,215
Encumbered	\$8,473,970	\$1,624,645	\$1,082,720	\$2,145,620	\$2,133,606	\$576,857	\$910,522
Remainder	\$73,780,169	\$36,673,012	\$11,090,221	\$7,701,153	\$1,511,179	\$3,053,717	\$13,750,887

Indicator ■ ■ ■ ■ ■ ■ ■

Notes: Total Project cost is \$102.6 million. Does not include services or maintenance beyond 2017. FSR figure is estimate only.

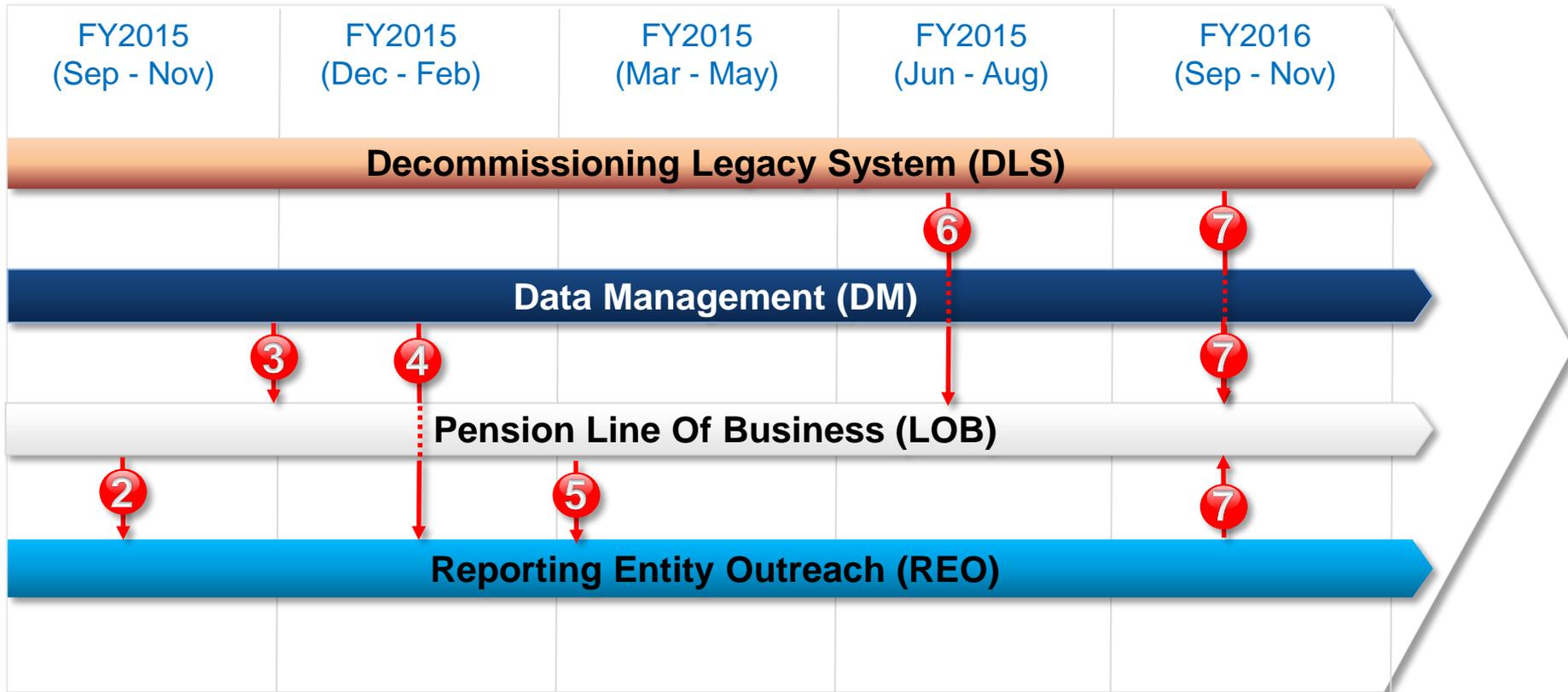
# TEAM PROGRAM

## TEAM Project Interdependencies



# TEAM PROGRAM

## TEAM Project Interdependencies



# TEAM PROGRAM

## TEAM Project Interdependencies

- 2** 10/10/14 – The REO project needs the employer reporting file layout
- 3** 11/24/14 – The LOB project needs assessed and migrated data for testing
- 4** 01/12/15 – The REO project needs assessed and migrated data for user acceptance testing
- 5** 03/02/15 – The REO project needs the certification environment available to begin Reporting Entity certification
- 6** 07/07/15 – The LOB project needs the unit testing of the revised DLS functionality to be completed so that the integration between this functionality and pension line of business system can be tested during User Acceptance Testing
- 7** 09/28/15 – The deployment of the first phase, “active membership” of the new Pension Line of Business system into production, which needs:
  - The legacy pension to be decommissioned and updated to support all “active” membership activities being performed in the new pension line of business system
  - The data to be conditioned and migrated from the legacy pension system to the new pension line of business system
  - The reporting entities have to be certified and ready to submit their reports to the new pension line of business system

# TEAM PROGRAM

## Line of Business Update

### Project Issues

Current Project Status = Yellow (Caution)

Project Management Team is working with TRS staff and HP to address the following issues:

- Detailed Level Requirements gathering and review are taking longer than expected
- Contact Management and Workflow functionality
- Staffing issues; both HP and TRS
  - experience
  - concentration of key resources
- Lack of consistent business-process oriented approach

### Other Project Considerations

New GASB Accounting Standards  
Full Payroll Reporting

### Plan of Action

Process Improvement Phase (PIP)

### Activities

Refine processes & document templates  
End-to-end process reviews

### Schedule Impact

There will be an impact to the schedule. TRS is working with HP to determine the full impact.

# TEAM PROGRAM

## Line of Business Update

### Contact Management & Workflow



MS Dynamics CRM was included in original contract for contact management and workflow



HP has presented another option for Contact Management and Workflow called e5 Workflow.

TRS staff is currently evaluating e5 functionality to see if it is a good, long-term fit for TRS.

### Contract Reserve Amount

\$7,251,631 or 20% of the HP contract total

The reserve may be used for payment of additional work under the HP contract or as otherwise determined by TRS for the TEAM Program for services rendered by HP.

# TEAM PROGRAM

## Line of Business Update



# TEAM PROGRAM

## Line of Business Accomplishments

Clarety screens branded with TRS logo and styles

TRS Reporting Entities

LOG IN

HPRS Log In

Enter your User ID and Password below.

User ID

Password

[Forgot Password](#)

Log In

**Are you a Payroll Specialist?**  
If you would like to open an account to perform payroll activities for  
[Open a Payroll Specialist Account](#)

**Are you a Web Administrator?**  
You are a Web administrator if you already have a user ID and password  
now.

**Not Sure?**  
If you have questions, [Contact Us](#). We will be happy to help you.

**Tell Me More**  
**User ID** - This is a unique name that grants you access to your Clarety account that cannot be less than 6 characters in length.  
**Password** - This is a unique set of characters chosen by you and your administrator. If you are having trouble with your password, please click on the [Password Rules](#) link.

- Successfully migrated some data from Legacy systems to new Clarety solution
- Have accepted over 100 requirements documents

### Key Decisions

- Legal Orders bridging
- Use of Data Driven Processes

# TEAM PROGRAM

## MyTRS – September 2014



### Changes Coming to MyTRS Starting September 2014

We know that this is going to increase mail and phone volumes, and management realizes that this may affect our process times and service levels. This is a temporary issue that will provide our members better service when we complete the Line of Business Project.



Note: Any Email Subscription service selected will also be mailed.



# TEAM PROGRAM

## MyTRS – September 2014

### ANNUAL STATEMENTS

#### What's changing?

Beginning in the fall of 2014 after year-end processing, all active members will receive a hard-copy of their annual statements. Members who signed up to receive notification of annual statements through MyTRS email will now receive **both** an email message and a hard copy in the mail.

### 1099s FOR ANNUITANTS

#### What's changing?

Beginning in January 2015 for tax year 2014, annuitants will receive hard-copy 1099 forms. Annuitants who signed up to receive notification of 1099s through MyTRS email will now receive **both** an email message and a hard copy in the mail.

### BENEFICIARY INFORMATION

#### What's changing?

Beginning in the fall of 2014 after year-end processing, members will no longer be able to view beneficiary gender or date of birth online.

### SERVICE PURCHASE FORMS

#### What's changing?

Beginning in the fall of 2014 after year-end processing, members who have a bill for Special Service Purchase on the system or are already on monthly installments will no longer be able to access information about their payments online, which could increase our call volume. Members will still be able to request withdrawn bills online.

### REQUEST FOR REPLACEMENT RETIREMENT PACKET

#### What's changing?

Beginning in the fall of 2014 after year-end processing, members will no longer be able to request a replacement retirement packet online.

### ONLINE CALCULATORS

#### What's changing?

Beginning in the fall of 2014 after year-end processing, TRS will remove the generic retirement calculator from the public portion of the website. The MyTRS calculators will remain active and will provide members with account-specific information using member data, which will include the member's tier. In addition to the retirement calculators the Sick Leave and Unreported Services Calculators will also be moved within the MyTRS Application.

# TEAM PROGRAM

## Milestones

Planned Milestones (from June Board Meeting)	Previous Planned Date	Current Planned Date	Status
Issue Website Redesign RFO	8/29/2014	11/30/2014	<b>Behind Schedule</b>
Assessment of Level 1 Data	7/23/2014	7/23/2014	<b>Completed</b>

Upcoming Milestones (next fiscal quarter: September - November)	Previous Planned Date	Current Planned Date	Status
Phase 1 - Detail Level Requirements Definition		9/22/2014	<b>Behind Schedule</b>
Conditioning of Level 1 Data		9/30/2014	<b>On Schedule</b>

# TEAM PROGRAM

## Accomplishments

### Data Management

- Completed Initial Assessment of Data Levels 1-4 of 8 Levels
- Loaded data for Data Levels 1-4
- Provided initial demographics data set for HP migration to Clarety
- Developed process to build Employment/Position History for all current & past members and for TRS employees

# TEAM PROGRAM

## Accomplishments

### Data Conditioning

- Made the decision to use business rules to correctly determine retirement tier information instead of migrating “flag” information for each member
- Made the decision to use the International Organization for Standards (ISO) Foreign County Names as the standard in foreign addresses in both current and future databases

# TEAM PROGRAM

## Accomplishments

### Pension Line of Business (LOB)

- Majority of Detailed Requirements for Increment #1 of Phase I signed off and ready for development activities
- Major infrastructure/software components enabled in the development environment
- First delivery of data Migrated from LOB-TSD to Clarity Database (Demographic Information)

# TEAM PROGRAM

## Accomplishments

### Business Procedures & Training (BPT)

- Held the official project kick-off meeting

### Financial System Replacement (FSR)

- 25% of the commitment gathering completed

### Organization Change Management (OCM)

- Conducted 75 one-on-one “pulse-check” interviews

**Tab 12**

# **Teacher Retirement System of Texas**

**TEAM Program:**

## **Independent Program Assessment Board Presentation**

**September 2014**



- Independent Program Assessment (IPA):
  - Provide independent reporting and oversight to the TRS Board and Executive Director or designee regarding critical risks related to the TRS Enterprise Application Modernization (TEAM) Program to enable informed decision-making.
  
  - Critical Risks Focus:
    - Failure to meet TEAM objectives
    - Lack of user acceptance
    - Program substantially delayed
    - Program substantially over budget

# Overview of Work Performed

- Bridgepoint Consulting reviewed and evaluated current LOB, DM and BPT project schedules and related project management documentation
- Attended and observed LOB Detail Level Requirements (DLR) review working sessions and project management meetings
- Reviewed completed and approved LOB DLR deliverables
- Evaluated project progress and performance based on best practices
- Followed up on management responses to prior observations

# Area of focus – Execution Risks

1. Tracking to baseline project plan – verify that each project is executing work according to approved published schedule:
  - *Line of Business (LOB) Project schedule developed by HP, high level baseline set in February 2014, Rolling Wave (RW) 2 baseline set in May 2014*
  - *Data Management (DM) Project schedule baseline set in July 2013*
  - *Business Procedures and Training Project schedule, baseline not yet developed*
2. Quality and acceptance of deliverables – verify quality of deliverables, acceptance documentation and confirm conformance to vendor contract
3. Risks and Issues Management – verify that project issues are addressed timely, including tracking of Risk, Action and Decision items
4. Planning for LOB code development, testing and training.

# IPA Overall Scorecard

<b>TEAM Program Governance</b>	<b>Prior Score</b>	<b>Current Score</b>	<b>Observations</b>
1. Program/Project Management	2	3	4,5, 16, 21
2. Risk Management	1	1	
3. Issues Management and Tracking	2	2	19
4. Program Communication	1	1	
5. Change Management/ Quality Control	2	2	18 ,22
6. Staffing and Organization	3	3	4, 13 – 15, 20
7. Budget Tracking	1	1	
<b>TEAM Projects</b>			
1. LOB Implementation	2	3	13 15, 16, 17, 18, 21-22
2. FSR Implementation	2	2	9
3. Data Management	2	2	16
4. Reporting Entity Outreach	1	1	
5. Organizational Change Management	1	1	
6. Business Rules Development	1	1	
7. Business Procedures and Training	NA	2	20
8. Decommissioning Legacy Systems	NA	1	
9. External Website Enhancement	NA	NA	

**Legend**

1= LOW

2= GUARDED

3= CAUTION

4= ELEVATED

5= SEVERE

N/A= Project not started, rating is not applicable at this time



# Observations – Strengths

1. PMO Project Director implemented improved deliverable approval process to ensure accurate recording of:
  - project artifact review by subject matter experts and
  - acceptance by the business process managers
  
2. OCM SME interviews well managed, provided valuable feedback on TEAM and DLR sessions. Additionally, continue to improve:
  - Ongoing communication with stakeholders
  - Addressing concerns regarding increased stress levels
  - Stakeholders knowledge of project progress

# LOB Project by Major Milestones

## High Level Overview



HPLOB High Level Project Schedule Baseline set in February 2014

LOB Phases and All Major Milestones	Baseline Finish	Revised (RW3)	Actual Finish	Status
MS Phase 1 – High Level Requirements (Active Mem)	4/22/14	n/a	4/30/14	Late
MS Phase 1 – Detail Level Requirements – Increment 1	6/30/14	7/21/14		Delayed
– Detail Level Requirements – Increment 2	9/22/14	11/25/14		Delayed
MS Phase 1A – Design and Build All Increments	1/08/15	1/23/15		
MS Phase 1A – User Acceptance Testing All Increments	2/09/15	3/16/15		
<b>MS Phase 1A – GO LIVE (Active Mem. REO Cert only)</b>	<b>2/20/15</b>	<b>3/23/15</b>		
MS Phase1B – Design and Build All Increments	7/02/15	7/23/15		
MS Phase 1B – User Acceptance Testing	9/04/15	9/17/15		
<b>MS Phase 1B – GO LIVE (Active Membership)</b>	<b>9/21/15</b>	<b>9/25/15</b>		
MS Phase 2 – Requirements Definition Complete (Benefits)	5/27/16	6/10/16		
MS Phase 2 – Design and Build all Increments	2/17/17	3/3/17		
MS Phase 2 – User Acceptance Testing All Increments	5/23/17	5/30/17		
<b>MS Phase 2 – GO LIVE (Benefits)</b>	<b>5/23/17</b>	<b>5/30/17</b>		

# DM Project by Major Milestones

## High Level Overview

Data Management Project Schedule Baseline set in July 2013

Data Management – All Major Milestones	Baseline Finish	Actual/Forecast Finish	Status
MS Phase 1 Business Rules – Active membership	2/6/14	4/4/14	✓
MS Phase 1 Active Membership Data Assessment	6/20/14	7/23/14	✓
MS Phase 1 Active Membership Data Conditioning	8/28/14	1/14/15	
MS Phase 1 Active Membership Data Migration to LOB Sample	n/a	7/24/14	✓
MS Phase 1 Active Membership Data Migration to LOB All Data	n/a	11/21/14	
MS Phase 2 Benefits Data Assessment	1/21/16	4/27/16	
MS Phase 2 Benefits Data Conditioning	6/2/16	8/16/16	
MS Phase 2 Benefits Data Migration to LOB Sample	n/a	6/29/16	
MS Phase 2 Benefits Data Migration to LOB All Data	n/a	6/29/16	

# Observations – Execution Risk

## Observation #20 - TEAM Resource allocations

Task level resource allocations are not consistently incorporated within TEAM MS Project Schedules and resources are not leveled between projects. For example,

- Line of Business (LOB) project plan does not include task level resource allocations (HP and TRS) and
- Business Procedures and Training (BPT project) resource loaded detail project schedule has not yet been developed

### Risk:

The lack of fully resource loaded project schedule increases the risk of inadequate TRS resource levels and potentially could impact overall project cost and timeline. Additionally, conflicting priorities for key project staff may not be detected and resolved on time.

### Recommendations:

Assign specific resources to all project tasks to allow for fully resource loaded project schedules, including the BPT project.

## Observation #20 - TEAM Resource allocations - continued

### Management Responses:

- *Management partially agrees with the observation.*
- *Management does not dispute the facts. While the Business Procedures and Training Project Schedule has not yet been fully developed, resource assignments have been made at a project level as part of the global TEAM Resource plan.*

### Action:

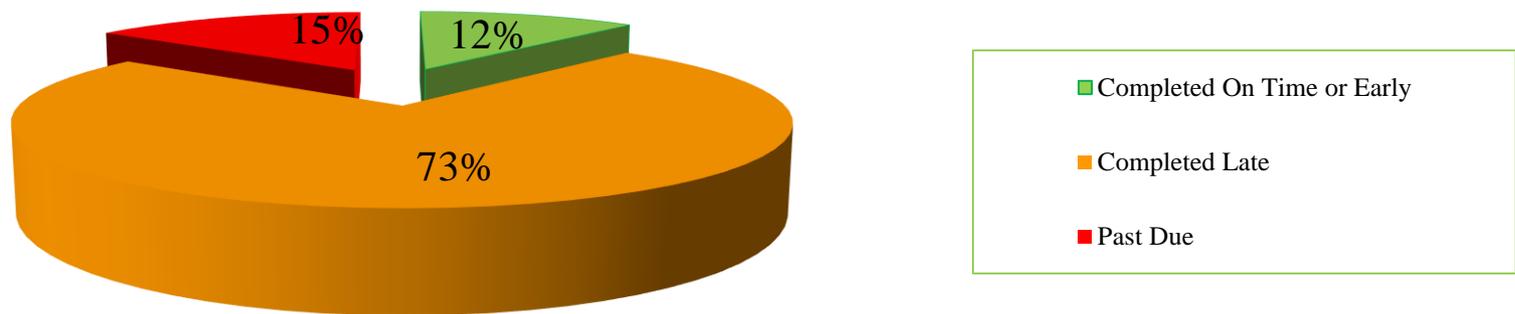
*The Resource Plan will be updated to include Line of Business resources at a milestone level, not a task level, and it will also be updated to reflect lessons learned in the project thus far.*

Owner: PMO

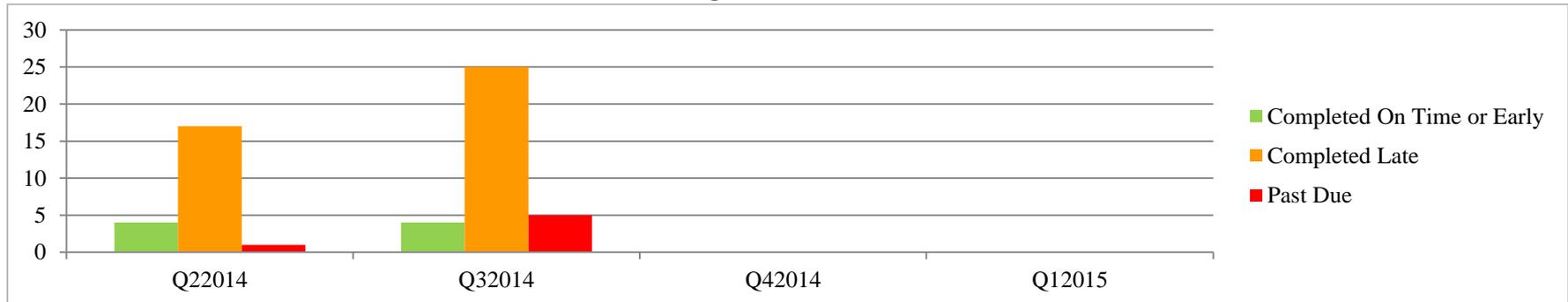
Implementation Date: September 30, 2014

# Milestone Tracking – LOB Project Current Period

## Reviewed 34 Key LOB Milestones Due – Tracking to Baseline



## *Milestone Dates Tracking to Baseline Schedule - Trend*



# Milestone Tracking – LOB Project

## Current Period status



34 Key Milestones verified Per Baseline set in RW2 LOB MS Project Schedule; Actual Finish date as of 8/29/2014 extract

Key Phase 1 Milestones per HP LOB Plan	Baseline Finish	Actual Finish	Status
MS - RE Setup - HP Initial Submission to TRS	06/09/14	06/19/14	Completed 10 days late
MS - RE Setup - TRS Signoff received	06/18/14		Past Due
MS - Web Rebranding - HP Initial Submission to TRS	05/23/14	06/08/14	Completed 16 days late
MS - Web Rebranding - TRS Signoff Received	06/06/14	07/16/14	Completed 40 days late
MS - Web Self-Service - Package 1 - Initial to TRS	05/30/14	06/06/14	Completed 7 days late
MS - Web Self-Service - Package 1 -TRS Signoff Received	06/18/14	07/03/14	Completed 15 days late
MS - Web Self-Service - Package 2 - Initial to TRS	06/16/14	06/25/14	Completed 9 days late
MS - Web Self-Service - Package 2 -TRS Signoff	06/30/14		Past Due
MS - RE Reporting - Package 1 - Initial to TRS	06/13/14		Past Due
MS - RE Reporting - Package 1 - TRS Signoff	06/30/14		Past Due
MS - Cash Receipts - Package 1 -Initial to TRS	06/13/14	06/23/14	Completed 10 days late
MS - Cash Receipts - Package 1 -TRS Signoff	06/30/14	8/20/14	Completed 51 days late
MS - MAM - Package 1 -Initial Submission to TRS	05/09/14	05/18/14	Completed 9 days late
MS - MAM - Package 1 -TRS Signoff Received	05/23/14	07/17/14	Completed 55 days late
MS - MAM - Package 2 -Initial Submission to TRS	06/13/14	06/15/14	Completed 2 days late

# Milestone Tracking – LOB Project

## Current Period status



Continued from prior slide ...

Key Phase 1 Milestones per HP LOB Plan	Baseline Finish	Actual Finish	Status
MS - MAM - Package 2 -TRS Signoff Received	06/30/14		Past Due
MS - General LOB - Package 1 -HP Initial to TRS	05/22/14	06/01/14	Completed 10 days late
MS - General LOB - Package 1 -TRS Signoff	06/06/14	07/10/14	Completed 34 days late
MS - General LOB - Package 2 -HP Initial to TRS	06/16/14	06/19/14	Completed 3 days late
MS - General LOB - Package 2 -TRS Signoff	06/30/14	7/24/14	Completed 24 days late
MS - Service Credit Calculation - Initial to TRS	05/15/14	05/18/14	Completed 3 days late
MS - Service Credit Calculation - TRS Signoff	06/02/14	06/05/14	Completed 3 days late
MS - Benefit Estimates - Package 1 - Initial to TRS	06/11/14	06/19/14	Completed 8 days late
MS - Benefit Estimates - Package 1 - TRS Signoff	06/26/14	07/14/14	Completed 18 days late
MS - Benefit Calculation - Initial to TRS Complete	06/13/14	07/02/14	Completed 19 days late
MS - Benefit Calculation - TRS Signoff Received	06/30/14	07/31/14	Completed 31 days late
MS - Non Functional Requirements - Initial to TRS	06/12/14	06/26/14	Completed 14 days late
MS - Non Functional Requirements - TRS Signoff	06/30/14	08/08/14	Completed 39 days late
MS – Data Migration - Load Other Demographics to LOB-TSD	04/29/14	4/29/14	Completed On Time
MS –Data Migration- Load Employment History data to LOB-TSD	06/13/14	6/13/14	Completed On Time

# Milestone Tracking – LOB Project

## Current Period status

Continued from prior slide ...

Key Phase 1 Milestones per HP LOB Plan	Baseline Finish	Actual Finish	Status
MS – Exstream - Print Output Technical Spec WPR Complete	06/03/14	7/18/14	Completed 45 days late
MS - Exstream - FileNet- Technical Spec WPR Complete	06/03/14	7/18/14	Completed 45 days late
MS –Data Migration- Load Contribution History data to LOB-TSD	06/23/14	6/23/14	Completed On Time
MS – Data Migration Load Invoicing/Srvc Credit data into LOB-TSD	06/19/14	6/13/14	Completed Early

# Observations – Execution Risk

## Observation #21 – LOB Project Schedule Delays

LOB project milestones continue to be completed late against baseline project schedule. Past due detail milestones related to Phase 1 Detail Level Requirements Increment 1 may have impact on the end LOB date. Also, as observed earlier, it is indication that tasks may take longer than anticipated.

Risk: Key milestone delays impact critical path and could result in increased project cost, timeline and other implementation issues. (this is an emerging risk - an issue that is perceived to be potentially significant, but which may not be fully understood or identified)

### Recommendations:

Improve project schedule estimating task duration and monitoring progress, including resource allocations.

## Observation #21 - LOB Project Schedule Delays - continued

### Management Responses:

- *Management agrees with the observation.*
- *Few milestones were delivered on time in the past quarter and improvements need to be made in both estimating and execution. TRS Management has already identified this as an issue (one of the reasons the overall project status is changed to yellow) and is working on a process improvement plan with HP.*

### Action:

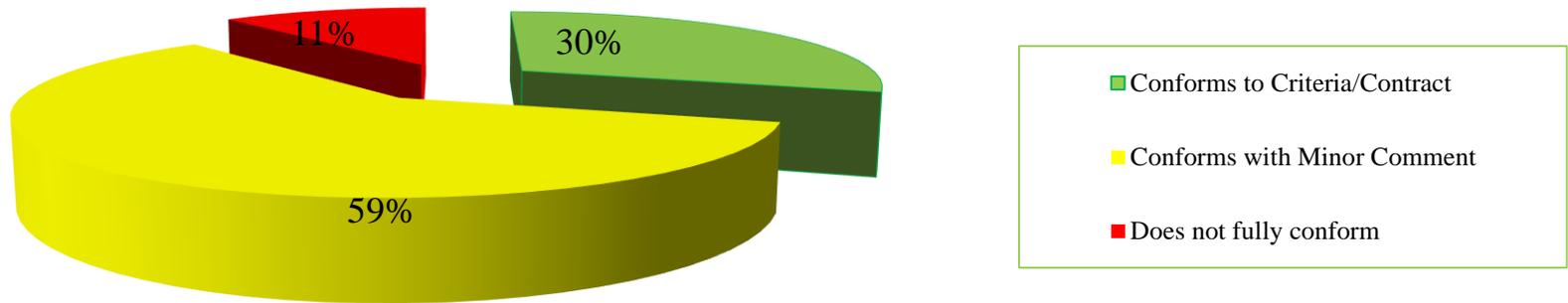
*TRS Management has already identified this as an issue (one of the reasons the overall project status is changed to yellow) and is working on a process improvement plan with HP.*

Owner: PMO

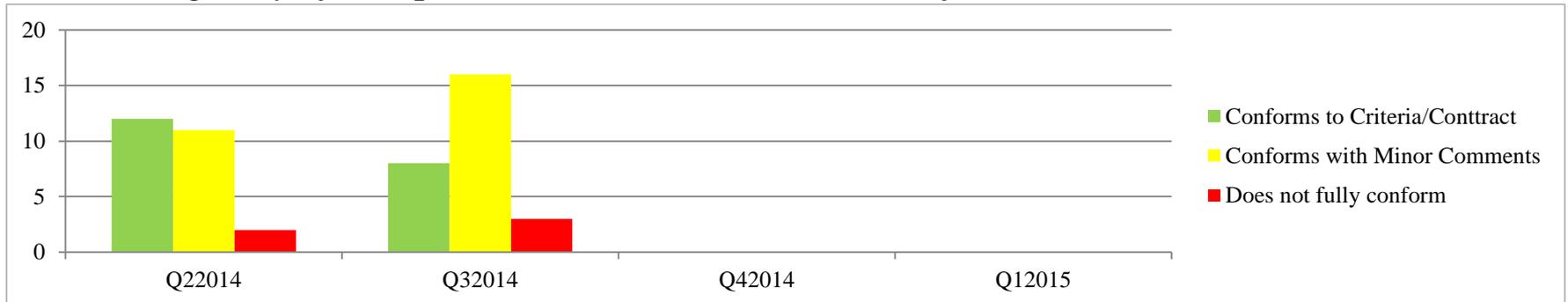
Implementation Date: October 31, 2014

# Accepted Deliverables Reviewed – LOB Current Period

## 27 Accepted LOB Vendor Deliverable Artifacts Reviewed



## Quality of Accepted LOB Vendor Deliverable Artifacts - Trend



# Observations – Execution Risk

## Observation # 22 - Quality of LOB DLR deliverables

Inconsistent quality of LOB Detail Level Requirements (DLR) sessions and deliverable artifact documentation:

- DLR sessions and artifact approvals taking longer than expected
- Inconsistent quality of documentation of DLR meetings (agendas, meeting minutes with follow up items)
- Critical Functional SMEs/Business Process owners not always available or included for DLR sessions and/or artifact reviews
- Some artifacts approved without review notes being cleared or requirements related questions clearly answered
- Artifact versioning not always documented or correspond to version history
- Requirement traceability could not be verified due to pending ALM update and commitment transfers

Risk: LOB deliverables are potentially incomplete or inaccurate.

### Recommendations:

Continue to improve quality of LOB DLR deliverables and consider assigning first level review/approval responsibility to appropriate key business Subject Matter Experts (SMEs).

# Observations – Execution Risk

## Observation #22 - Quality of LOB DLR deliverables - continued

### Management Responses:

- *Management partially agrees with the observation.*
- *Management does not dispute the facts, but we assess the impact and likelihood of the risk less than Bridgepoint. We do agree with part of the recommendation.*

### Action:

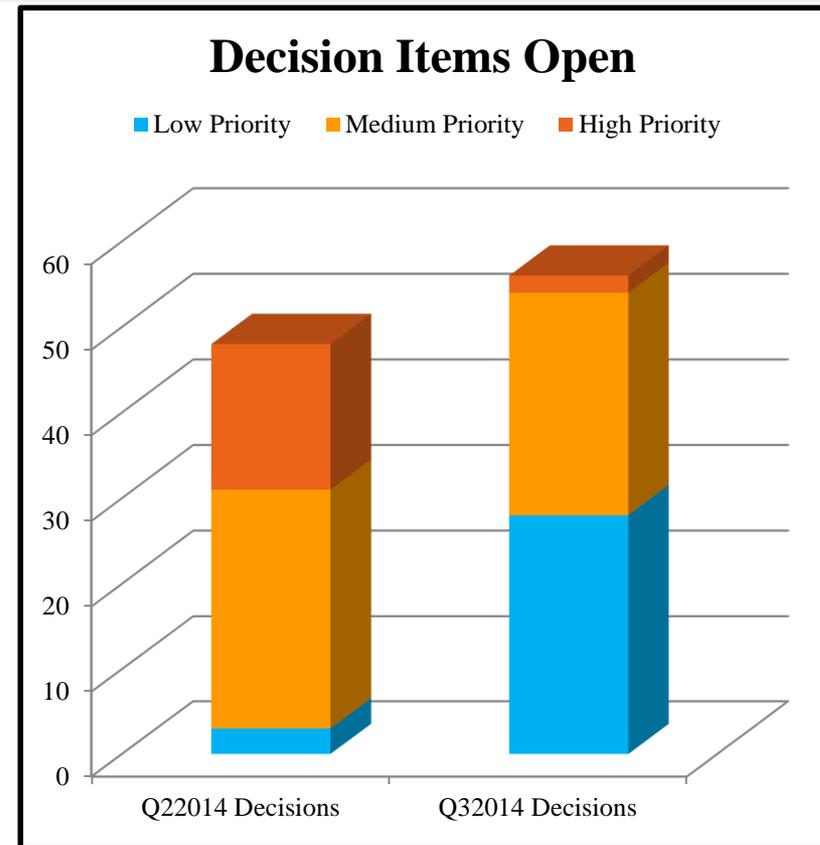
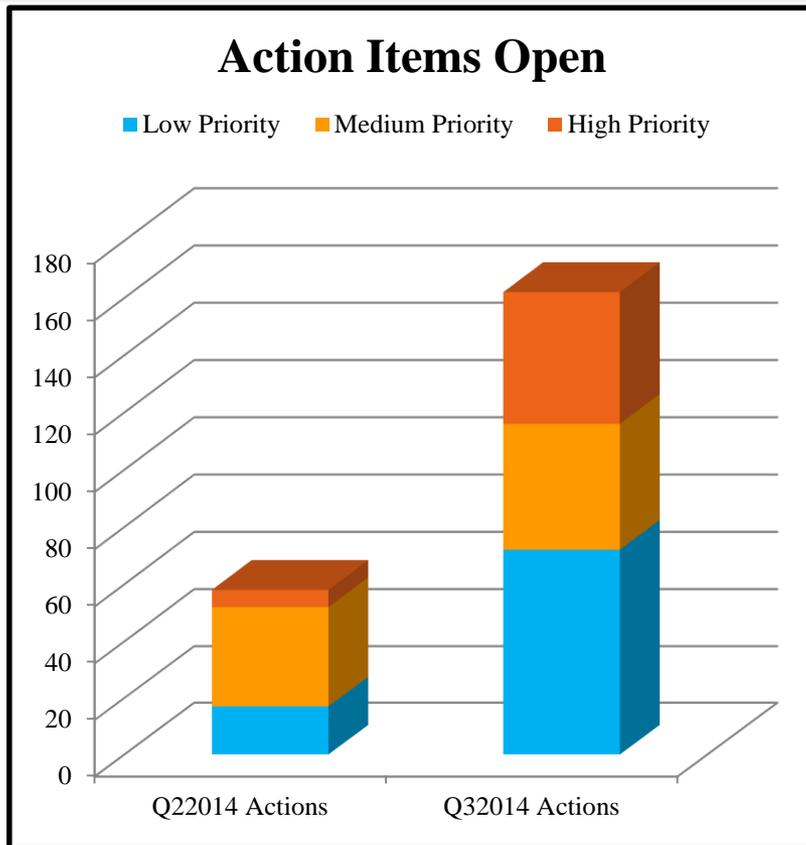
*Continue to improve LOB DLR deliverable quality--and have implemented steps to improve the overall quality by developing a review checklist and also by working with HP on a process improvement plan.*

Owner: PMO

Implementation Date: October 31, 2014

# TEAM Risks & Issues Management

## Open Actions & Decisions (per 8/21/14)



#### ➤ Total Current Open Actions:

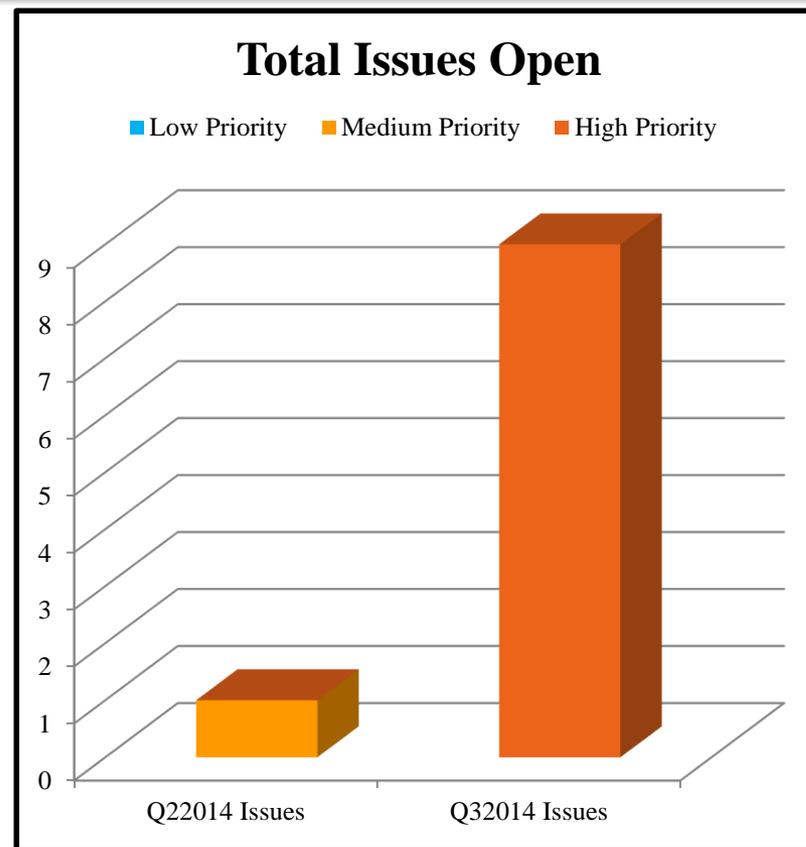
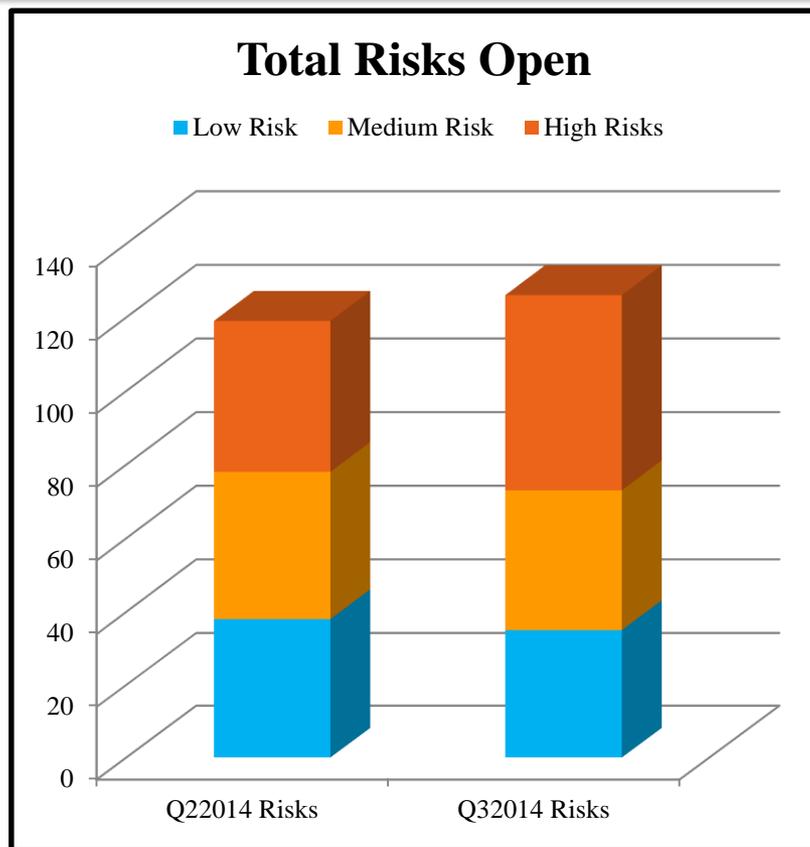
162 action items open  
 46 of total are HIGH priority action items  
 57 of total logged over a month ago (35%);

#### ➤ Total Current Open Decisions:

56 decision items open  
 2 of total are HIGH priority decision items  
 35 of total logged over a month ago (63%)

# TEAM Risks & Issues Management

## Open Risks and Issues (per 8/21/14)



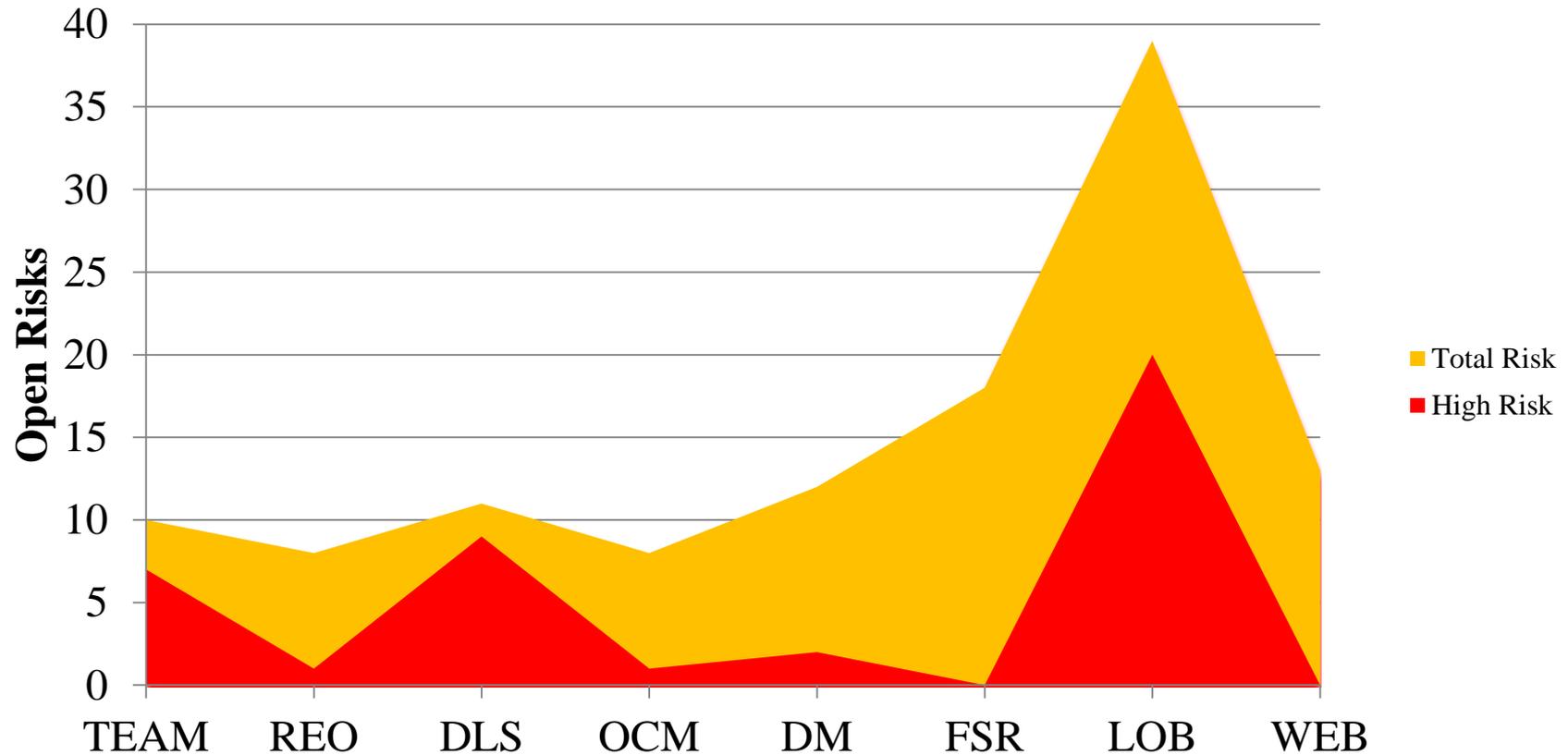
- **Total Current Open Risks:**
  - 119 Total Open Risks identified
  - 41 Risks with HIGH risk scores (rated 12+)

- **Total Current Open Issues:**
  - 9 issues open
  - All HIGH priority LOB related issues

# TEAM Risk Distribution

## Open Current Period (per 8/21/14)

### TEAM Program Risk Distribution by Project



# Activities Completed – Current Period

1. Attended weekly CMT status meetings, Executive Briefing or ESC, LOB, Project Interdependency, DM and PMO Team Meetings.
2. Continued with a detailed project management documentation review, including: overall TEAM Program Management status reports, individual project schedules and status reports, project Action and Decision Logs and other program/project related reports.
3. Assessed LOB and BPT Project Team meetings, observed interaction between vendors and TRS teams, current project issues and risks identified during team meetings.
4. Completed the review of Phase 1, Increment 1 HP LOB deliverables and artifact acceptance documentation such as – 27 Detail Level Requirements artifacts and other milestone deliverable artifacts. Discussed minor follow up questions/suggestions with PMO and LOB Program Manager.
5. Attended and observed 25 different LOB Detail Level Requirements development sessions, related to the following functional areas: Benefit Calculations, Benefit Estimate, Member Account Maintenance, Reporting Entity Setup, Cash Receipts, Legal Orders, Service Credit Purchase and Security requirement sessions.
6. Reviewed new TEAM Business Procedures and Training Project Charter and updated TEAM Organizational Change Management Charter and LOB HP Training plan to continue to evaluate training and documentation development scope, timeline and responsibilities within TEAM Program.
7. Interviewed key LOB Business Subject Matter Experts to assess their involvement with LOB detail requirements sessions.

# Activities for Next Period

1. Continue to attend and observe weekly Executive Steering Committee (ESC) and Core Management Team (CMT) meetings.
2. Assess Business Procedures and Training Project Team meetings, observe interaction between vendor staff and TRS teams, current project issues and risks identified during team meetings.
3. Review and evaluate updated consolidated TEAM Program level resource allocation plans; verify that resource requirements are aligned with schedule within each project plan and resource contentions across projects are clearly identified.
4. Review and evaluate updated and consolidated TEAM Interdependency schedule (when available) including updated LOB, REO, BPT, DLS and Data Management project schedules and related interdependencies.
5. Review and evaluate LOB Development plan documentation and detail level project schedule to verify updated timeline and resource allocations.
6. Continue to monitor TRS risk mitigation activities related to execution risks.

# IPA Budget Status

## IPA Financial summary status through July 31, 2014

➤ Total hours incurred	2,284
➤ Total calculated cost incurred	\$403,895
➤ Total billings for deliverables	\$380,000
➤ Variance	\$23,895

- Supporting Details:
  - DM Current Milestone Tracking
  - LOB Accepted Deliverables Reviewed – Status
- List of prior IPA identified Risks and Recommendations with Status to date

# Milestone Tracking- Data Management

## Current Period status



Reviewed status of 4 Current Milestones Due per Data Management MS Project Schedule extract as of 8/15/2014

Current Milestones per DM Plan	Baseline Finish	HP LOB Dates	Actual	Status
Member Demographic LOB to TSD Load & Reconcile	9/25/13	5/01/14	4/29/14	Completed
Employment History LOB to TSD Load & Reconcile	10/29/13	6/23/14	6/13/14	Completed
Contribution History LOB to TSD Load & Reconcile	3/10/14	6/23/14	6/16/14	Completed
Employer Invoicing LOB to TSD Load & Reconcile	4/29/14	8/6/14	7/22/14	Completed

# Accepted Deliverables Reviewed - LOB Current Period

Reviewed 27 accepted LOB DLR vendor deliverable artifacts for completeness and compliance to acceptance criteria, vendor contract and/or best practices.

ID	LOB Deliverables Reviewed	Comp	Notes/Observation
0-1	LOB TRS_SSP-System Security Plan	N	Does not appear to be completed; missing information
22-1	UI5527 – SVC View Service Credit	Y	Version number approved does not match cover page
22-2	BR5528 – SVC Calculate Service Credit	Y	Version number approved does not match cover page
22-3	UC4745 - SVC Calculate Service Credit	Y	Version number approved does not match cover page
22-4	UC4746 – SVC View Service Credit	Y	Version number approved does not match cover page
22-35	UI5636 – WSS Access Chat and Share	Y	
22-33	UC4467 – WSS Access Chat and Share Screen with TRS	Y	
22-34	UI5634 – WSS Access Forms Present.	Y	
22-36	UC4465 – WSS Access Form	Y	
22-32	UC4466 – WSS Access Presentation	Y	

# Accepted Deliverables Reviewed - LOB Current Period



Continued from prior page

ID	LOB Deliverables Reviewed	Comp	Notes/Observation
22-85	BR5617 - BE Generate Retirement Est.	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared.
22-129	UC4728 – BNC Calculate Benefits	Y	No Business SME review was recorded
22-27	UI5568 - GLOB Maintain System Msgs	Y	Version number approved does not match cover page
22-31	UI5569 - GLOB Maintain Config. Data	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared
22-24	UC4779 GLOB Maintain sys Msgs	Y	Version number approved does not match cover page
22-30	UC4769 - GLOB Maintain Config Data	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared
22-28	UC4767 - GLOB View Participant Account Home Page	N	Does not appear to be completed; missing information
22-86	UC4749 - BE Generate Retirement Est.	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared
22-127	UI5733 - Web Rebranding	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared
22-38	UI5654 - MAM View Member Account	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared

# Accepted Deliverables Reviewed - LOB Current Period



Continued from prior page

ID	LOB Deliverables Reviewed	Comp	Notes/Observation
22-18	LS5543- MAM Beneficiary Designation Notification to TRS	Y	
22-14	UC2458 – MAM Maintain Beneficiary	Y	
22-15	UC4378 – MAM Maintain Person	Y	No audit and/or security review was recorded
22-91	UC4777 – GLOB Request Batch Job	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared
22-130	BR5696 – BNC Calculate Retirement Benefits	Y	Artifact does not appear to be the final version, edit notes not resolved or cleared
22-103	SUP5639 – Non Functional Spec	Y	
22-128	SUP5734 - NF Detail Level Requirements	N	Does not appear to be completed; missing information

# SUMMARY List of IPA Risks & Recommendations to Date

ID	Area	Risks Identified	Recommendations	Status
1	Internal Controls	Inadequate internal controls environment Increased cost to design post go-live	Incorporate internal controls assessment and design into applicable project plans (LOB, FSR etc.)	Addressed & Monitor
2	Staffing	Inadequate investment in IT staffing to accomplish TEAM objectives and ongoing sustainability	Consider including cost/benefit analysis for Hire new graduates and train/develop, Train and develop existing staff, Hire experienced staff, Outsource or combination of the above	Addressed & Monitor
3	Project Plan and Reporting	Incomplete or inaccurate project plan Delays in projects may not be accurately reported	Update project schedules or all projects currently in-progress with tasks and milestones.	Addressed & Monitor
4	Staffing	Inadequate investment in staffing to accomplish TEAM objectives and ongoing sustainability	<ol style="list-style-type: none"> <li>1. Update project plans to include detail roles and responsibilities by each team member</li> <li>2. Develop a detailed staffing matrix for all TEAM projects and a resource management plan</li> </ol>	RACI developed, but not individual level
5	Project Interdependencies	Data source may not be cleansed in time Program Management structure may not operate effectively. Lack of resources or conflicts in staffing allocation to projects	<ol style="list-style-type: none"> <li>1. Develop a consolidated MS Project Plan with interdependencies identified</li> <li>2. Establish Monthly Project Interdependency meetings.</li> </ol>	Addressed & Monitor

# SUMMARY List of all IPA Risks & Recommendations to Date

ID	Area	Risks Identified	Recommendations	Status
6	FSR	New Financial Systems may not be implemented within TEAM program on time and/or within budget	<ol style="list-style-type: none"> <li>1. Develop a contingency plan with cost/benefit analysis to facilitate Go/No-Go decision</li> <li>2. PM schedule should be updated to reflect current project direction.</li> </ol>	FSR Delayed & Monitor
7	OCM	Lack of clarity as to who has the overall responsibility for organizational readiness. Lack of staff acceptance. Unclear communication	<ol style="list-style-type: none"> <li>1. Clarify roles between HR, OCM, TEAM Communications Sub-Team and the "Business Procedures and Training" projects.</li> <li>2. Consider adding HR representation to the CMT</li> </ol>	Addressed & Monitor
8	CM /QA	Lack of visibility and appropriate authorization to changes that impact scope, schedule and/or cost	<ol style="list-style-type: none"> <li>1. Develop Change Management procedures</li> <li>2. Procedures should identify quality standards and plan in place to manage quality.</li> </ol>	Addressed & Monitor
9	Resource Allocation	LOB and FSR executed concurrently Increase demand on TRS staff IT expertise	Develop a consolidated MS Project Plan fully resources loaded; plan should incorporate estimated major milestones and interdependencies from each key project in order to determine proper resource allocation.	FSR delayed. Monitor.
10	DM	Delayed deliverables may impact overall schedule and timeline	<ol style="list-style-type: none"> <li>1. MS Deliverable delays should be reported and highlighted within the published TEAM Dashboard.</li> <li>2. Ensure that deliverables accepted according to the acceptance criteria in the contract.</li> </ol>	Addressed & Monitor

# SUMMARY List of all IPA Risks & Recommendations to Date

ID	Area	Risks Identified	Recommendations	Status
11	FSR	Scope of project may expand substantially during the design phase	Reevaluate FSR implementation timeline and consider reducing scope. Recommend using the same approach as LOB for ease of maintenance.	FSR Delayed & Monitor
12	Budget	Unclear program and project level financial results – specifically life-to-date and annual Actual to Budget variance	<ol style="list-style-type: none"> <li>1. Include TEAM program and project level life-to-date financial information within status reports to ESC (and Board).</li> <li>2. Determine cost categories to include in financial reporting and allocate project cost</li> </ol>	Addressed & Monitor
13	Resource Allocation	The lack of fully resource loaded project schedule increases the risk of inadequate TRS resource levels. Conflicting priorities for key project staff may not be detected and resolved on time	<ol style="list-style-type: none"> <li>1. Identify LOB Core Project Team members and document their specific area of project roles</li> <li>2. Update project schedule or TEAM – Resource Plan to include resource allocations and resolve over allocations (level resources)</li> <li>3. Consider adding a TEAM Project Controller position to provide additional help</li> </ol>	Not Addressed Risk Accepted
14	Business Resource Allocation	Key functional decisions may not always be made timely without adequate allocation of resources. Conflicting priorities for key staff	Assign designated business leads from significant functional areas to work on the project closer to 100% of their time as possible.	Not Addressed Risk Accepted
15	IT Resource Allocation	Partially dedicated IT staff may not be able to develop the appropriate technology skills to provide sufficient technical support	<ol style="list-style-type: none"> <li>1. Assign designated IT staff to work on the project closer to 100% of their time as possible</li> <li>2. Develop an individual training plan for each IT staff according to HP technology training plan</li> </ol>	In Progress

# SUMMARY List of all IPA Risks & Recommendations to Date

ID	Area	Risks Identified	Recommendations	Status
16	TEAM/ LOB/DM	Key milestone delays may impact critical path and could result in increased project cost, timeline and other implementation issues.	Improve project schedule estimating task duration and monitoring progress, including resource allocations.	Due: 6/14 In Progress
17	LOB	The LOB project may take longer and require more effort than anticipated if the contract functional fit estimate is incorrect.	Ensure that vendor deliverables conform to contract required Gap Analysis documentation before acceptance.	Due: 8/14 In Progress
18	LOB	LOB deliverables are potentially incomplete or inaccurate.	Improve quality control of LOB deliverables and consider assigning first level review/approval responsibility to SMEs instead of having all artifact's approved by PMO only.	Due: 6/14 In Progress
19	Issues Managem ent	Issues/actions/decisions may not be completed or resolved on time and may result in delayed or incomplete project tasks.	Improve issues management by keeping original assigned due date and add another column for "revised" due date in order to accurately determine aging and impact of delays.	Due: 6/14 In Progress

**Tab 15 A**

# Teacher Retirement System of Texas



## FY2014 Estimated Year End

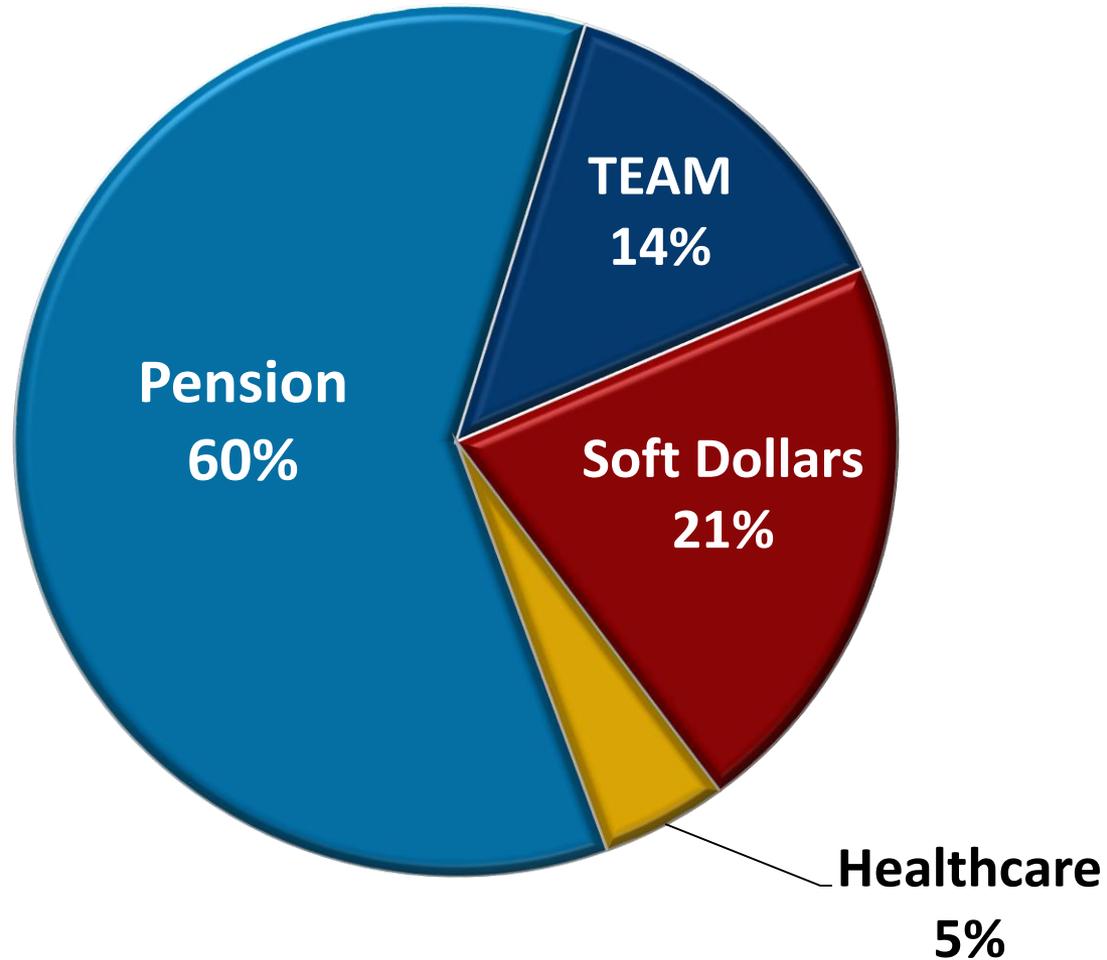
**Don Green, Chief Financial Officer**

Board of Trustees Meeting  
September 19, 2014



# Recap of Budget by Fund

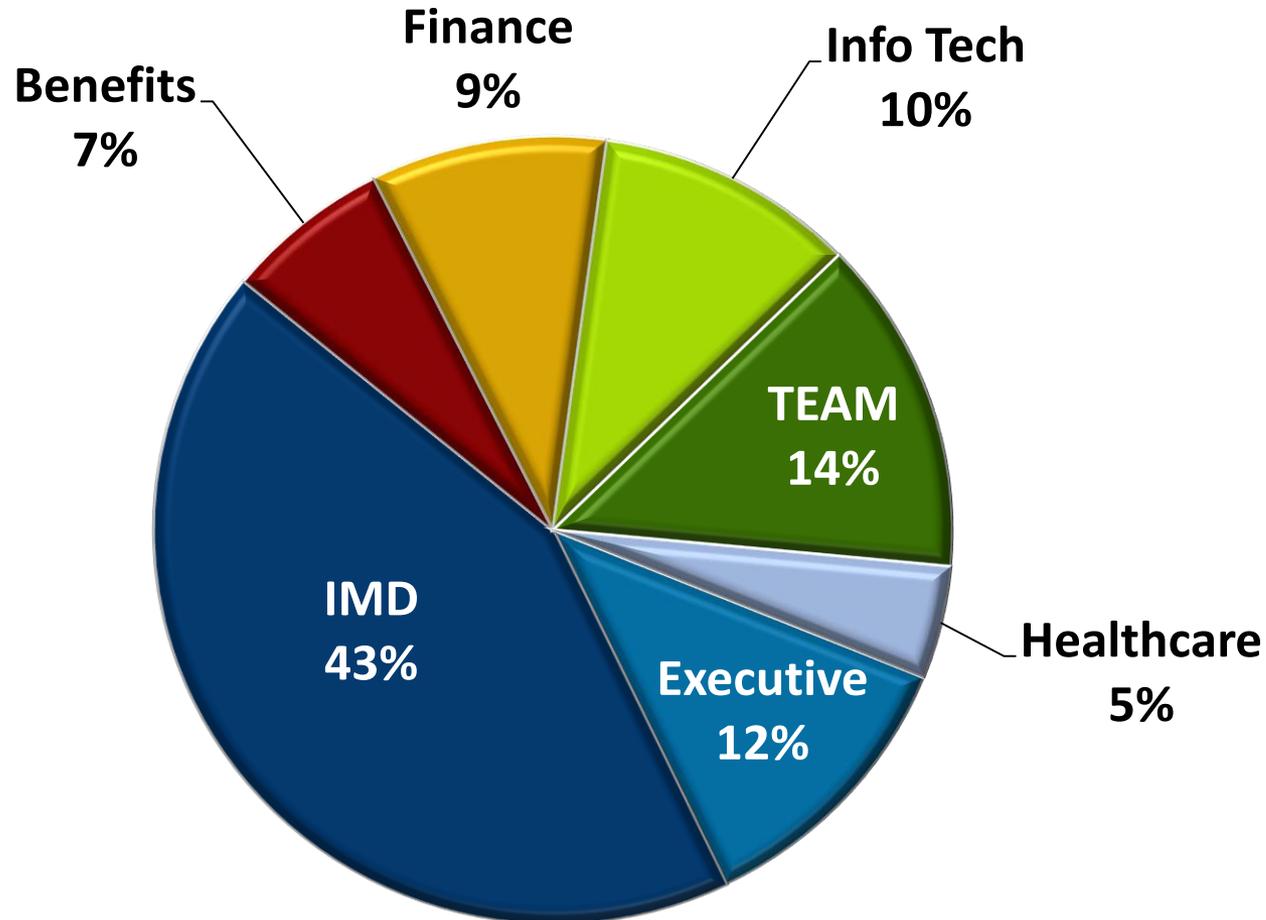
The total operating budget is \$155,315,234 across all funds.





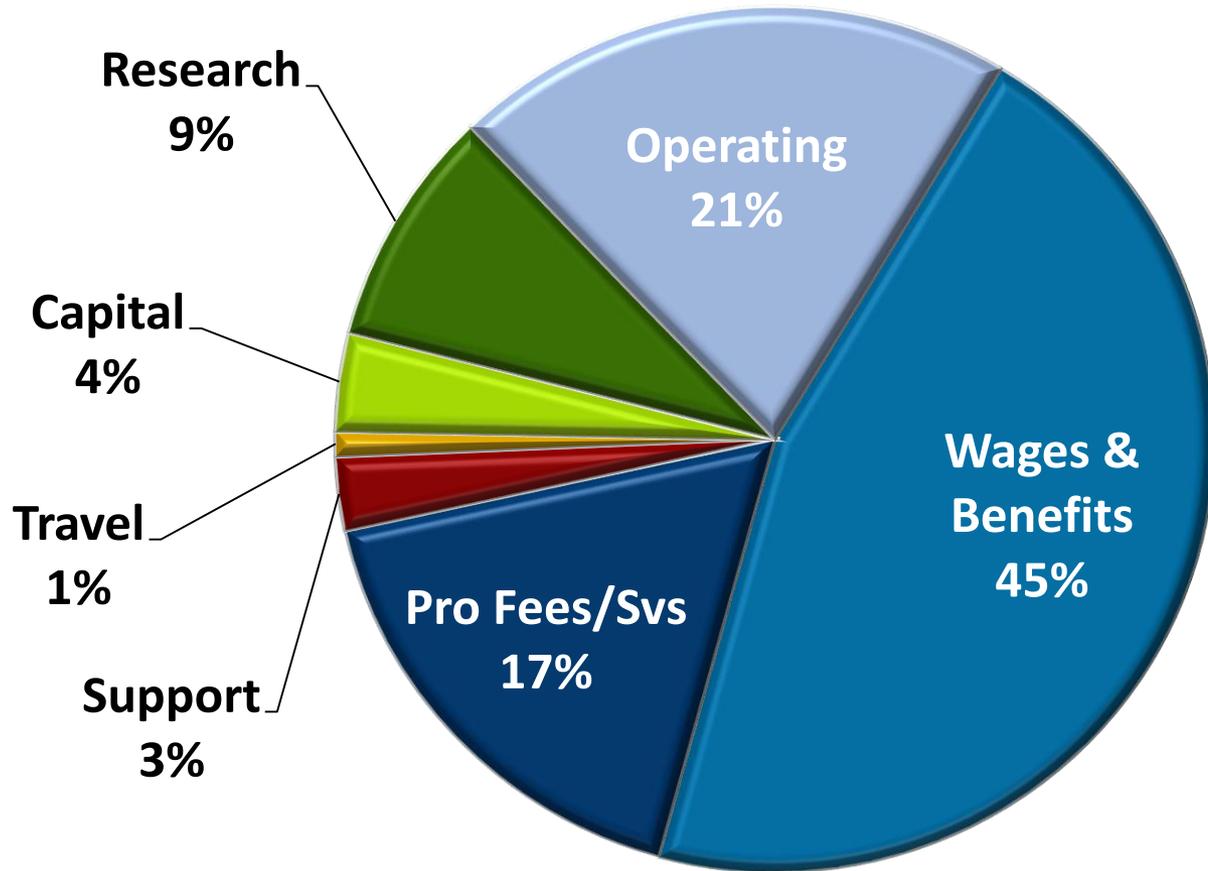
# Recap of Budget by Division

The Executive Division includes executive, human resources, communications, internal audit, strategic initiatives, risk management and legal.





# Recap of Budget by Expense



**Operating costs:**

- Software
- Hardware
- Postage
- Printing
- Equipment
- Reference materials

**Professional fees and services:**

- Contractors
- Consultants
- Contractual services

**Support:**

- Rent
- Utilities
- Supplies



# Summary By Fund

Fund	Budget	Exp/Enc	% Spent	Balance
Pension	93,622,916	79,753,427	85.2%	13,869,489
TEAM	21,413,786	12,836,653	59.9%	8,577,133
Soft Dollars	33,085,494	27,236,627	82.3%	5,848,867
Healthcare	7,193,038	6,405,275	89.0%	787,763
<b>Totals</b>	<b>155,315,234</b>	<b>126,231,982</b>	<b>81.3%</b>	<b>29,083,252</b>

# Pension Fund

Explanation of Balance	\$13.9 Million	
Salaries/Benefits	\$6.0 M	\$2.6M for incentive compensation \$1.8M in benefits \$1.6M (4%) in salary due to staff turnover
Professional Fees/Services	\$1.4 M	\$793K for outside legal counsel \$305K in IT consulting services \$302K in investment consultants, actuary services, etc.
Travel	\$351 K	24% of total travel budget 46% (\$161K) is IMD with \$55K in reimbursable out of state travel
Operating Costs	\$256 K	\$111K in utilities; \$78K in supplies and \$67K in rent



# Pension Fund (continued)

Explanation of Balance	<b>\$13.9 Million</b>	
Capital Budget	\$4.1 M	\$3.5 M for air handler project \$360K for stairwell project (breakout by project included)
Other Operating Expenses	\$1.8 M	1.1% of total budgeted amount compared to 1.2% last FY  Includes various expenditure items such as software, hardware, postage, printing, dues, fees, etc.



# Capital Budget (non TEAM)

Project	Budget	Exp/Enc	% Spent	Balance
Investment Systems	370,000	253,448	68.5%	116,552
PC Upgrades	350,000	339,887	97.1%	10,113
Telecom Upgrades	380,000	321,465	84.6%	58,535
Mainframe Upgrades	420,000	367,141	87.4%	52,859
Bldg Renovations	218,750	189,738	86.7%	29,012
Air Handlers	3,597,990	114,285	3.2%	3,483,705
Stairwells	360,000	0	0%	360,000
<b>Totals</b>	<b>5,696,740</b>	<b>1,585,964</b>	<b>27.8%</b>	<b>4,110,776*</b>

\*Will be carried forward to FY2015.



# Pension Fund – Available Lapse

The intent was to increase TEAM funding in FY15 based on existing authority in the GAA, Art IX, Sec 14.03 and FY15 board budget resolution adopted in July.

<b>Pension Fund Lapse</b>	<b>\$13.9 million</b>
Incentive Compensation	(2.6 million)
Benefits	(1.8 million)
Capital Budget	<u>(4.1 million)</u>
<b>Available Lapse</b>	<b>\$5.4 million</b>

## Notes

Incentive Compensation is limited by an appropriation rider to the actual payment amount.

Benefits are separately appropriated and limited to the actual payment amount.

Capital budget authority is transferrable to the following fiscal year and therefore unavailable in the current year.



# TEAM Authority

## TEAM Authority Update for FY2015

FY2014-15 Authority	34,623,621
FY2014 Expended	12,836,653
UB to FY2015	21,786,968
Additional UB	4,000,000
<b>TOTAL Available</b>	<b>25,786,968</b>
Expected Funding Needed	\$21.0 - 23.5 million

# Soft Dollar Funding



Explanation of Balance	\$5.8 Million	
SSB Partnership Agreement and Commission Sharing Arrangement (CSA)	\$5.8 M	<p>\$5.8 million difference between budget and actual spent is related to a reduction in investment research, contractor staffing and data &amp; systems expenses</p> <p>\$200K is related to SSB partnership agreement and \$5.6M is related to CSA</p> <p>Any unspent revenue will carry forward to subsequent fiscal years</p>



# Healthcare Funds

Explanation of Balance	\$787 Thousand	
TRS Care Administrative Operations	\$423 K	\$58K for salary and benefits  \$365K for consulting services and other support costs
ActiveCare Administrative Operations	\$364 K	\$126K for salary and benefits  \$238K for consulting services and other support costs

**Tab 15 B**

# Teacher Retirement System of Texas



## Cash Disbursements July and August, 2014

Don Green, Chief Financial Officer

Board of Trustees Meeting

September 19, 2014





# Pension Trust Fund Cash Disbursements

	<b>FY 2013</b>	<b>FY 2014</b>	<b>Variance</b>
September	\$6,956,188	\$6,970,179	\$13,991
October	7,527,488	6,917,337	(\$610,151)
November	7,342,717	6,708,686	(\$634,031)
December	5,384,514	6,566,553	\$1,182,039
January	13,588,764	15,411,211	\$1,822,447
February	5,410,553	6,792,019	\$1,381,466
March	7,046,291	9,006,093	\$1,959,802
April	5,272,203	7,342,010	\$2,069,807
May	6,204,350	8,790,333	\$2,585,983
June	5,034,559	6,980,832	\$1,946,273
July	6,663,591	6,055,221	(\$608,370)
August	6,527,999	7,567,194	\$1,039,195
<b>Totals</b>	<b>\$82,959,217</b>	<b>\$95,107,668</b>	<b>\$12,148,451</b>

**Tab 16 A**

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TEACHER RETIREMENT SYSTEM OF TEXAS  
BOARD REPORT  
SUMMARY OF DISBURSEMENTS

PAGE 1

	June 1, 2014 through August 31, 2014		
	NUMBER OF	GROSS	AVERAGE
	PAYMENTS	PAYMENT TOTAL	PAYMENT
	-----	-----	-----
Service Retirees	7,799	17,696,709.78	2,269.09
Disability Retirees	224	264,915.02	1,182.65
Survivor Benefits	333	83,750.00	251.50
Survivor Benefit Lump Sum Payment	2,750	16,161,336.54	5,876.84
Life Annuity as Death Settlement	54	101,703.28	1,883.39
60 Monthly Payments as Death Settlement	50	63,961.26	1,279.22
Refund of Deposit as Death Settlement	144	2,913,882.74	20,235.29
Twice Annual Salary as Death Settlement	341	11,967,675.64	35,095.82
Lump Sum DROP Member Payment	18	3,279,870.85	182,215.04
5 Annual DROP Member Payments			
10 Annual DROP Member Payments	1	18,406.32	18,406.32
60 Monthly DROP Member Payments			
120 Monthly DROP Member Payments	6	12,319.89	2,053.31
DROP Payments to Beneficiary of Active Member			
12 Month Partial Lump Sum Option Payment	698	22,650,904.92	32,451.15
24 Month Partial Lump Sum Option Payment	377	24,809,995.08	65,809.00
36 Month Partial Lump Sum Option Payment	978	94,514,792.46	96,640.89
Totals:	----- 13,773	----- 194,540,223.78	----- 14,124.75

SUMMARY OF DISBURSEMENTS  
Glossary

The Summary of Disbursements on the preceding page provides data related to annuitants added to the payroll during the quarter. Specifically, for each category listed, the data includes: (1) the number of new payment inceptions, (2) the gross total of all new payments, and (3) the average of all payments. The categories are defined as follows:

**Service Retirees:** Members who have met the eligibility requirements and applied for a monthly service retirement annuity.

**Disability Retirees:** Members who have met the eligibility requirements, applied and been approved for a monthly disability retirement annuity.

**Survivor Benefits:** Monthly survivor benefits paid to eligible beneficiaries of deceased active members and retirees.

**Survivor Benefit Lump Sum Payment:** Single lump-sum survivor benefit, or reduced lump-sum in conjunction with monthly survivor benefit, paid to eligible beneficiaries of deceased active members and retirees.

**Life Annuity as Death Settlement:** Actuarially reduced monthly life annuity payment to eligible beneficiary of deceased active member. (One of several options which may be payable upon the death of an active member.)

**60 Monthly Payments as Death Settlement:** Monthly standard annuity payment, for a period of 60 months, to eligible beneficiary of deceased active member.

**Refund of Deposit as Death Settlement:** Payment of accumulated contributions and interest to beneficiary of deceased active member.

**Twice Annual Salary as Death Settlement:** Lump-sum payment equal to twice the member's annual salary rate, not to exceed \$80,000, paid to beneficiary of deceased active member.

**Lump Sum DROP Member Payment:** One-time, lump-sum distribution, at retirement, of member's DROP account balance. (One of several DROP distribution options that may be elected by a retiree.)

**5 Annual DROP Member Payments:** Initial or subsequent annual DROP payment under this DROP distribution election.

**10 Annual DROP Member Payments:** Initial or subsequent annual DROP payment under this DROP distribution election.

**60 Monthly DROP Member Payments:** Initial or subsequent monthly DROP payment under this DROP distribution election.

**120 Monthly DROP Member Payments:** Initial or subsequent monthly DROP payment under this DROP distribution election.

**DROP Payments to Beneficiary of Active Member:** Lump-sum distribution of DROP account balance to beneficiary of deceased active member who participated in DROP prior to death.

**12 Month Partial Lump Sum Option Payment:** Lump-sum payment to retiree who elected a partial lump-sum option (PLSO) distribution equal to 12 months of standard annuity.

**24 Month Partial Lump Sum Option Payment:** Lump-sum payment to retiree who elected a partial lump-sum option (PLSO) distribution equal to 24 months of standard annuity.

**36 Month Partial Lump Sum Option Payment:** Lump-sum payment to retiree who elected a partial lump-sum option (PLSO) distribution equal to 36 months of standard annuity.

**Tab 16 B**

**TEACHER RETIREMENT SYSTEM OF TEXAS  
MEDICAL BOARD MEETING  
OPEN SESSION AGENDA  
May 13, 2014**

The Medical Board of the Teacher Retirement System of Texas met at 12:00 p.m. Tuesday, May 13, 2014 in the TRS offices.

**The following members were present:**

Dr. Alice Cox, Fredericksburg  
Dr. James Allen Reinartz, Austin  
Dr. Larry Wilson, Austin

**Others present:**

Ms. Marianne Woods Wiley, Chief Benefit Officer, TRS  
Ms. Kirsten Morgan, Legal Services, TRS  
Mr. Mike Rehling, Manager, Benefit Processing, TRS  
Ms. Denise Hope, Benefit Consultant, Benefit Processing, TRS

**Dr. Wilson called the meeting to order at 12:13 p.m.**

**1. REVIEW OF MINUTES FROM THE MARCH 11, 2014 MEETING.**

The minutes of the March 11, 2014 meeting were reviewed and approved.

**2. CONSIDERATION OF FILES OF TRS MEMBERS WHO ARE CURRENTLY APPLYING FOR DISABILITY RETIREMENT AND THE FILES OF DISABILITY RETIREES WHO ARE DUE A RE-EXAMINATION REPORT.**

Dr. Wilson announced that the Medical Board would enter into Executive Session, as provided by section 551.078 of the Texas Government Code, to deliberate medical information of individual members and retirees.

The Board entered into closed session at 12:25 p.m.  
The meeting was re-opened at 12:45 p.m.

**3. REVIEW OF DISABILITY STATISTICS.**

**PG. 2 TRS Medical Board Minutes  
May 13, 2014**

**4. DISCUSSION OF “A YEAR IN THE LIFE OF A MILLION AMERICAN WORKERS”.**

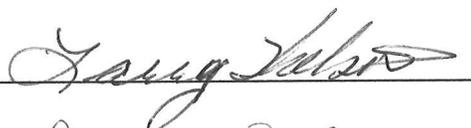
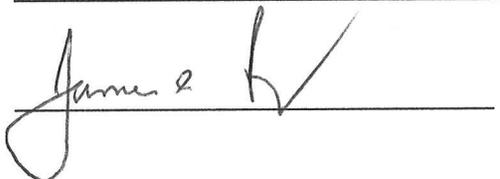
Dr. Wilson discussed this publication and how their statistics relate today.

**5. DISCUSSION OF ITEMS TO BE PLACED ON FURURE AGENDAS.**

**6. DISCUSSION OF THE DATE OF NEXT BOARD MEETING.**

The next Medical Board meeting was scheduled for July 8, 2014.  
The meeting was adjourned at 1:06 p.m.

**Dr. Larry Wilson, Chairman  
TRS Medical Board**

  
\_\_\_\_\_  
*Larry Wilson*  
  
\_\_\_\_\_  
*Ann D Cox, MD*  
  
\_\_\_\_\_  
*James E. H.*

**Attest:**

  
\_\_\_\_\_  
**Denise Hope**

**Tab 18**

**TEACHER RETIREMENT SYSTEM OF TEXAS  
BOARD RESOLUTION**

**Regarding the Salary Ranges for Certain Exempt Positions  
September 18, 2014**

**Whereas**, Section 825.208 of the Texas Government Code provides that, notwithstanding any other law, the Board of Trustees (Board) shall approve the rate of compensation of all persons it employs;

**Whereas**, The Bylaws of the Board of Trustees delegate authority to the Executive Director and Bylaw subsection 4.1.2(c) specifically provides that the Executive Director assumes responsibility for the compensation of all TRS personnel, with limited exceptions for the Executive Director and Chief Audit Executive whose salaries are set by the board;

**Whereas**, The General Provisions in the TRS Budget provide discretion to the Executive Director regarding salaries and specifically authorize the Executive Director to set the annual base salary rate for all exempt positions, other than the Executive Director position, within the not-to-exceed amounts listed in the General Appropriations Act that became effective September 1, 2013 ("GAA"), or any amended limits adopted by the board from time to time;

**Whereas**, The GAA, consistent with general law, provides that notwithstanding the compensation amounts set in the GAA, the board may determine the not-to-exceed amounts of the positions listed in the Schedule of Exempt Positions without limitation;

**Whereas**, for the majority of positions listed in the Schedule of Exempt Positions, the GAA not-to-exceed amounts are sufficient for the Executive Director to exercise his discretion in setting salaries under Bylaw subsection 4.1.2(c) and under the General Provisions of the TRS Budget, but the GAA not-to-exceed amount for the Deputy Administrative Officer is not sufficient for the Executive Director to exercise his discretion in setting the salary for that position.

**Whereas**, in order to allow the Executive Director greater discretion in setting the Deputy Administrative Officer's salary, the Board on July 11, 2014 increased the not-to-exceed amount for the Deputy Administrative Officer by 2% and directed the Executive Director to move the Deputy Administrative Officer out of the Schedule of Exempt Positions and into the State Classification Plan under Deputy Director III.

**Whereas**, The Executive Director has subsequently determined that meaningful discretion over the Deputy Administrative Officer's salary necessitates setting the not-to-exceed amount for the Deputy Administrative Officer to the maximum salary amount for the Deputy Director III on the State Classification Schedule prior to moving the Deputy Administrative Officer onto the State Classification Plan; now, therefore be it

**Resolved**, That effective September 19, 2014, the board hereby adopts the following GAA not-to-exceed amount for the Deputy Administrative Officer:

Deputy Administrative Officer (incumbent Ken Welch): Increase the GAA not-to-exceed amount to the maximum salary amount for the Deputy Director III on the State Classification Schedule;

**Resolved**, That the Board directs the Executive Director to move the incumbent Deputy Administrative Officer out of the Schedule of Exempt positions and to the Deputy Director III classified position as soon as possible after September 19, 2014;

***Resolved,*** That nothing in the adoption of this resolution alters the at-will nature of employment that TRS has with its employees, creates a contract between TRS and any TRS employee, or confers on any TRS employee the right to continued employment with TRS, including any employee holding a position in the Schedule of Exempt Positions.