



# TRS Board of Trustees Meeting

February 11 – 13, 2015

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

**AGENDA**

**February 11, 2015 – 10:00 a.m.**

**February 12, 2015 – 8:30 a.m.**

**February 13, 2015 – 8:00 a.m.**

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

*NOTE: Any item posted on the agenda may be taken up during the Board meeting on Wednesday, February 11, 2015, or during the continuation of the meeting on Thursday, February 12, 2015, or Friday, February 13, 2015, or both, beginning at the times and place specified on this agenda.*

*The open portions of the February 11-13, 2015 Board meetings are being broadcast over the Internet. Access to the Internet broadcast of the Board meeting is provided on TRS' Web site at [www.trs.state.tx.us](http://www.trs.state.tx.us).*

1. Call roll of Board members.
2. Consider the following Board administrative matters – David Kelly:
  - A. Approval of the November 20-21, 2014 meeting minutes.
  - B. Excusing Board member absences from the November 20-21, 2014 Board meeting.
  - C. Setting, rescheduling, or canceling future Board meetings.
3. Provide opportunity for public comment – David Kelly.
4. Review and discuss the Executive Director's report on the following matters – Brian Guthrie:
  - A. Receive an overview of the Board meeting agenda and theme.
  - B. Discuss TRS' organizational structure, including a discussion of agency accomplishments and goals.
  - C. Preview draft agendas for upcoming Board meetings.
  - D. Receive the Board training calendar.

- E. Discuss and receive information on retirement plan benefits, investment activity and operations, health-benefit programs and operations, and administrative operations, including financial, audit, legal, and staff services and special projects.
5. Review the reports on the Historically Underutilized Business (HUB) Program, and consider related goals, as appropriate, for fiscal year 2015 – John Dobrich and Darryl Gaona.

***NOTE:** The Board meeting likely will recess after the last item above for a lunch break and resume after lunch to take up the items listed below.*

6. Discuss the following investment management items:
- A. Receive a presentation on and discuss historical economic cycles and investing – Steve Voss and Brady O’Conner, Hewitt EnnisKnupp; and Dr. Keith Brown.
  - B. Engage in a conversation about the evolving world and the economic machines behind it – Ray Dalio, Bridgewater and Britt Harris.
  - C. Receive an update on the Emerging Manager Portfolio – Cheryl Hines.
  - D. Receive a presentation on and discuss the energy and natural resources markets – R.T. Dukes, Wood Mackenzie; Doug Kimmelman, Energy Capital; and Britt Harris.
  - E. Review the Investment Management Division Best Ideas Survey results – Britt Harris.
  - F. Receive an update on the preferred destination initiative – Britt Harris.

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

7. Provide opportunity for public comment – David Kelly.
8. Receive an overview of the February 12, 2015 agenda – Brian Guthrie.
9. Review the Deputy Director’s report on the following matters – Ken Welch:
- A. Board of Trustee election update.
  - B. Matters related to administrative, financial, and staff services operations.
10. Receive an overview of the Texas budgeting process and a legislative and appropriations update – Ken Welch, Don Green, and Ray Spivey.

11. Receive an update on TRS' long-term space planning project, including satellite offices and matters related to real property – Brian Guthrie

*NOTE: The Board meeting likely will recess after the last item above for a lunch break and resume after lunch to take up the items listed below.*

12. Receive a presentation on and discuss investment compliance and ethics – Heather Traeger.
13. Receive fiduciary and legal training, and consider rule adoption, including:
  - A. Review procurement and fiduciary responsibility – Steve Huff, Reinhart Boerner Van Deuren, s.c.
  - B. Discuss the roles of TRS General Counsel and the TRS fiduciary counsel; receive legal training on open government matters; and review trustee roles, responsibilities, fiduciary duties, qualifications for office, and governance – Keith Johnson and Steve Huff, Reinhart Boerner Van Deuren, s.c.; Luke Biernan, Raymond Sarola, and Suzanne Dugan, Cohen Milstein Sellers & Toll PLLC; and Carolina de Onís.
  - C. Consider the adoption of proposed amendments to TRS Rule § 25.26 of Title 34 of the Texas Administrative Code, relating to Annual Compensation Creditable for Benefit Calculation.
14. Receive an overview of the Division of Strategic Initiatives, including a discussion of the TRS Strategic Plan – Rebecca Merrill.
15. Discuss the following financial matters – Don Green:
  - A. Receive an overview of the Financial Services Division.
  - B. Receive a financial update through December 31, 2014, including the cash report.
  - C. Discuss an update on implementation of Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68.
16. Receive an overview of the Benefits Division, including a review of the Telephone Counseling Center – Tom Guerin.
17. Receive an overview of the Human Resources Department, including a workforce overview – Janet Bray.
18. Receive an overview of the Communications Department, including a screening of the updated Video Value Brochure – Howard Goldman.

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

19. Provide opportunity for public comment – David Kelly.
20. Receive an overview of the February 13, 2015 agenda – Brian Guthrie.
21. Receive the presentation “Maximize the Value from Analytics in the Context of Internal Audit” – Christer Johnson and James Walton, EY
22. Discuss matters related to governance, risk management, internal control, compliance violations, fraud, regulatory reviews or investigations, new and outstanding complaints, fraud risk areas, audits for the annual internal audit plan, or auditors' ability to perform duties – Amy Barrett.
23. Receive an overview of the Information Technology Division – Chris Cutler.
24. Receive an update on the TEAM Program – Adam Fambrough; David Cook; Jamie Pierce; and Jay Masci, Provaliant.
25. Discuss Bridgepoint’s role in TEAM now and looking ahead – Michael Johnson, Bridgepoint.
26. 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 – David Kelly.
27. 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

November 20-21, 2014

The Board of Trustees of the Teacher Retirement System of Texas met on November 20, 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:

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

### Others present:

Brian Guthrie, TRS	Dan Junell, TRS
Carolina de Onís, TRS	Lynn Lau, TRS
Amy Barrett, TRS	Don Stanley, TRS
Janet Bray, TRS	Teresa Lwin, TRS
Don Green, TRS	Dr. Jingshan Fu, TRS
Howard Goldman, TRS	Eric McDonald, Former Board Trustee
T. Britton Harris IV, TRS	Dr. Keith Brown, Investment Advisor
Jerry Albright, TRS	Steve Huff, Reinhart Boerner Van Deuren
Jase Auby, TRS	Steve Voss, Hewitt EnnisKnupp
Michael Aluko, TRS	Bill Hickman, Gabriel Roeder Smith & Company
Dr. Mohan Balachandran, TRS	Joe Newton, Gabriel Roeder Smith & Company
Ronnie Bounds, TRS	Amy Cohen, Gabriel Roeder Smith & Company
Robert Dunn, TRS	Ronnie Jung, Texas Retired Teachers Association
Tom Guerin, TRS	Patti Featherston, Legislative Budget Board
Mike Pia, TRS	Diana Hodges, Senator Huffman
Jamie Pierce, TRS	Fran Plemmons, Texas Retired Teachers Association
Dale West, TRS	Bill Barnes, Texas Retired Teachers Association
Lane Arnold, TRS	Tim Lee, Texas Retired Teachers Association
Chris Cutler, TRS	Josh Sanderson, Association of Texas Professional Educators
Susan White, TRS	Philip Mullins, Texas State Employees Union
Bob Jordan, TRS	Patricia Del Rio, Aetna
Cindy Haley, TRS	Adriana S. Garza, Caremark
David Veal, TRS	John Grey, Texas State Teachers Association
Yimei Zhao, TRS	Ted Melina Raab, Texas American Federation of Teachers
Hugh Ohn, TRS	Ann Fickel, Texas Classroom Teachers Association
Edward Esquivel, TRS	Meredyth Fowler, Speaker of the Texas House of Representatives
Sylvia Bell, TRS	Carole Buchanan, Texas Retired Teachers Association
Kendall Courtney, TRS	Tom Rogers, Austin Retired Teachers Association & Texas
Sunitha Downing, TRS	Retired Teachers Association
Solomon Gold, TRS	

Ms. Sissney called the meeting to order at 8:45 a.m.

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

Ms. Lau called the roll. A quorum was present. Ms. Ramirez and Mr. Kelly were absent.

**2. Consider Board administrative matters, including the following – Nanette Sissney:**

**A. Approval of the October 17, 2014 meeting minutes.**

On a motion by Mr. Moss, seconded by Ms. Palmer, the board unanimously adopted the minutes of the October 17, 2014 meeting, as presented.

**B. Excusing Board member absences from the October 17, 2014 Board meeting.**

On a motion by Mr. Barth, seconded by Mr. Corpus, the board unanimously excused the absence of Mr. Colonna from the October 17, 2014 meeting.

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

The board did not take up agenda item 2.C.

**3. Recognize the service of Marianne Woods Wiley – Nanette Sissney.**

On behalf of the board, Ms. Sissney recognized the service of Ms. Marianne Woods Wiley and read the following resolution into record:

**Whereas**, Marianne Woods Wiley joined the Teacher Retirement System of Texas (TRS) in July 1998, as the manager of Benefit Processing; and

**Whereas**, In recognition to her leadership and significant contributions to TRS, she was named chief benefit officer for the Benefit Services Division in December 1998; and

**Whereas**, She was an active member of the Executive Council, who provided strategic technical direction for TRS; 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 president of the State and Local Government Benefits Association (SALGBA) and held the SALGBA Lifetime Certified Government Benefits Administrator designation; and

**Whereas**, Throughout her years of leadership to the retirement system, Ms. Woods Wiley has been devoted to providing exemplary customer service to TRS members; and

**Whereas**, Her 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 insights, analyses, and advice that have been proven over time to be accurate and well thought out; and

**Whereas**, TRS recognized Ms. Woods Wiley with a TRS Golden Apple Award in 2000 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 883,000 to more than 1.3 million members and annuitants; surpassed \$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; introduced enhancements to better serve members and retirees in understanding and accessing their TRS benefits; implemented benefit delivery systems support for several cost-of-living adjustments for annuitants; and

**Whereas**, Marianne Woods Wiley is retiring from TRS after serving the retirement system for 16 years, and 27 years of public service beginning with her work providing benefit advice to employees at Texas A&M University, 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 Marianne Woods Wiley during her 16-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 Marianne Woods Wiley and entered into the record of the board for Nov. 20, 2014.

On a motion by Mr. Moss, seconded by Mr. Colonna, the board unanimously approved the resolution.

Whereupon the board took a brief recess for staff to resolve technical issues.

#### **4. Provide opportunity for public comments – Nanette Sissney.**

Mr. Tim Lee of Texas Retired Teachers Association (TRTA) expressed his appreciation to the TRS board and staff for improving the fund's actuarial condition. He also introduced Fran Plemmons, TRTA State Association President.

Ms. Ann Fickel of Texas Classroom Teachers Association addressed the impact that statutory changes standardizing the school year to September through August had on members' retirement benefit calculation. She stated that some districts still maintained an August-through-July pay cycle and that the statutory changes resulted in one paycheck from their employees' annual salary not being counted towards calculation of their employees' future annuities. She stated that the issue can be resolved if those districts change their pay cycle to September through August. She stated that she hoped that staff could come up with solutions to resolve the issue. Ms. Smith explained the issue and the challenges. Mr. Guthrie stated that staff would try to present solutions for the board's consideration in February 2015.

**5. Review the TRS Pension Trust Fund Actuarial Valuation as of August 31, 2014 and consider adoption of adjusted mortality assumption – Joseph Newton, Gabriel, Roeder, Smith & Company.**

Mr. Newton presented the pension trust fund actuarial valuation as of August 31, 2014. He introduced the new pension accounting standards adopted by the Governmental Accounting Standards Board (GASB), GASB 67. He highlighted key evaluation results, including the projected Unfunded Actuarial Accrued Liability (UAAL) and funding ratio, and current industry trends that might impact the pension plan. He noted that the system had a funding period of 30 years (29.8 years) and was projected to have an increasing funded status going forward. He stated that the net deferred investment gains may generate a better funded ratio next year. He stated that the mortality rates from 2005 to 2010 had increased faster than expected and would require a margin in the mortality assumption for its expected further improvement. He confirmed for Ms. Sissney that the recommended review cycle for mortality assumptions was three to five years. Mr. Guthrie stated that the review cycle would be kept at four years after the experience study next year. Based on the findings of the recent mortality trends, Mr. Newton stated that GRS recommended that the assumption on the mortality rates be increased by 0.7 years or 7 percent margin to create a reasonable assumption for future improvement.

On a motion by Mr. Moss, seconded by Mr. Barth, the board unanimously approved the adjusted mortality assumption, as presented by staff and the board's actuary.

Mr. Newton confirmed for Mr. Harris that the current mortality improvement was the fastest growth of life expectancy. Mr. Newton explained its impact on a defined benefit plan. Ms. Sissney stated that the system needs to address and prepare for the impact. Mr. Newton noted that the mortality assumptions affect how benefits are determined. He noted that the current mortality improvement affects pension plans across both public and private sectors and more so the private sector because of its longer delay in adjusting its assumption set. Responding to a question from Mr. Guthrie, he explained the basis for using the 30-year amortization period.

**6. Review the TRS-Care Actuarial Valuation and Other Post Employment Benefit (OPEB) reports as of August 31, 2014 and receive an overview and update on TRS-Care and TRS-ActiveCare – Joseph Newton; Amy Cohen; and William Hickman, Gabriel, Roeder, Smith & Company.**

Mr. Guthrie opened by noting that TRS would continue to use data from the health care study with the Legislature until updated information became available in March per the request of the Legislature.

Mr. Newton presented the report on Other Post-Employment Benefits (OPEB) based on GASB Statements No. 43 and No. 45. He presented the actuarial valuation report as of August 31, 2014, and highlighted key changes to the OPEB, including updating the mortality assumption to match the pension fund valuation. He also laid out the cost drivers and funding sources of the plan. He stated that the current total contribution from active employees, local employers, and state was 2.2 percent of payroll and that it would require 6.42 percent (or about \$1.36 billion) to reach sustainability.

Mr. Hickman profiled the TRS-Care plans, including their coverage, plan designs, participations and membership status, savings, claim costs, funding sources, and historical expenditures. Responding to a question from Ms. Palmer regarding the drastic increase of the administrative costs in 2014, Mr. Hickman stated that it was mainly associated with internally managing the Medicare Part D plan. He confirmed for Ms. Sissney that the gap between costs and revenue was projected to widen and changes would need to be made to sustain the plans. Mr. Guthrie suggested producing comparative data to show how TRS-Care plan cost drivers compare with other state-wide and nationwide plans.

Mr. Hickman profiled the TRS-ActiveCare plan, including plan design changes, their impact on reducing claim costs, funding sources, and cost drivers. He also discussed the impact of public exchanges on the plan.

After a recess at 10:55 a.m., the meeting reconvened at 11:14 a.m.

**7. Discuss the following investment matters :**

**A. Performance Review: Third Quarter 2014 – Brady O’Connell and Steve Voss, Hewitt EnnisKnupp.**

Mr. Voss presented the trust fund performance review for the third quarter of 2014. Dr. Brown asked if future reports could reflect the attribution of internal versus external management to the total value added. Mr. Voss stated that the current report did not track the difference, but could in the future. Mr. Harris stated that staff did track the difference. He clarified that external managers were given more latitude for risk taking because a higher return was expected of them compared with internal managers. He stated that the two had the same target ratio of risk taking. Mr. Voss noted the exceptional results in the three- and five-year excess returns relative to benchmark and attributed the results to more diversification of the program that generated a lower risk level.

**B. Receive an update on the Strategic Partnership Network – David Veal**

Mr. Veal provided an update on the Strategic Partnership Network, including its performance and positioning. He also highlighted strategic priorities for the team and the research projects completed during the first half of 2014. Per Dr. Brown’s request, he provided details on the research project completed by KKR and Apollo based on their individual funding financial model. Per Mr. Barth’s request, Mr. Harris provided a brief overview of a study conducted on the fund’s top private equity, real assets, and special relationships. He stated that he would present the findings to the board in February. Per Mr. Colonna’s request, Mr. Harris also provided his projections and analysis on next year’s US macro environment and the outlook for the global equity market.

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

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

Mr. Guthrie referred trustees to copies of the GRS valuation report, the Comprehensive Annual Financial Report (CAFR), and the health care study for reference. He stated that the publications would be available online.

Mr. Guthrie provided an update on several operational matters. He stated that the reclassification of misclassified employees had been completed. He also stated that a pilot program had been launched for staff to work remotely from home one day a week. Depending on the initial test results, he said, the program might be expanded. Mr. Guthrie provided an update on the upcoming board election for trustees. He also explained the election process and requirements. Mr. Guthrie announced that TRS had been named a top workplace in Austin for the third year in a row. He also showed a feature video. Mr. Guthrie announced that Chris Cutler had been selected to be the new Chief Information Officer. Mr. Cutler provided a brief remark on his new position. Mr. Guthrie also announced that Tom Guerin would serve as an acting Chief Benefit Officer (CBO). Mr. Guerin provided his remarks on his new position. Mr. Guthrie stated that the goal was to fill the CBO position by May 2015. Mr. Guthrie introduced the 2014 Golden Apple winners: Beverly Grass of Investment Accounting, Carol Kolb of General Accounting, Russel Firestone of Benefit Processing, Sunitha Downing of Project Management, Susan White of General Accounting, and Cindy Yarborough of Human Resources. He also showed a video featuring agency events, including the agency award ceremony and the charitable campaign. He stated that staff would present a new video for the TRS value brochure in February.

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

Mr. Guthrie highlighted major agenda items planned for the February meeting.

Whereupon a recess was taken at 12:35 p.m. for a lunch break and to conduct committee meetings.

The meeting reconvened at 2:54 p.m.

**9. Review the Comprehensive Annual Financial Report for fiscal year 2014 – Jamie Pierce and Cindy Haley.**

Ms. Pierce and Ms. Haley presented the Comprehensive Annual Financial Report for fiscal year ending August 31, 2014. Ms. Pierce recognized staff from various divisions for their contribution to the project.

- 10. Review the reports of the Chief Financial Officer, including a 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 – Don Green.**

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

- 11. Review the report of the Investment Management Committee on its November 20, 2014 meeting – Todd Barth.**

Mr. Barth, committee chair, provided the Investment Management Committee report, as follows:

The Investment Management Committee met today, November 20th. The first presentation given was a review of the Asset Allocation Group which was presented by Mohan Balachandran and Mark Albert. Following there was a review of the risk management and strategies presented by Jase Auby and James Nield.

- 12. Review the report of the Policy Committee on its November 20, 2014 meeting, and consider committee recommendations on the following related matters – Joe Colonna:**

- A. Adoption of proposed amendments to the Resolution Designating Persons Authorized to Sign TRS Vouchers.**
- B. Adoption of proposed amendments to the TRS Board of Trustees Training Policy.**
- C. Adoption of the four-year statutory rule review of TRS rules in Chapters 21-51 of Title 34 of the Texas Administrative Code, including the readoption of rules in those chapters with or without changes, and the adoption of proposed amended rules in the following chapters:**
  - i. Chapter 25 (Membership Credit);**
  - ii. Chapter 27 (Termination of Membership and Refunds);**
  - iii. Chapter 29 (Benefits);**
  - iv. Chapter 31 (Employment After Retirement);**
  - v. Chapter 39 (Proof of Age);**
  - vi. Chapter 41 (Health Care and Insurance Programs);**
  - vii. Chapter 47 (Qualified Domestic Relations Orders); and**
  - viii. Chapter 51 (General Administration).**

Mr. Colonna, Committee Chair, provided the Policy Committee report, as follows:

The Policy Committee met today, November 20th. The committee adopted the minutes of the September 18th meeting. The Committee recommended adoption of amendments to the Resolution Designating Persons Authorized to Sign TRS Vouchers. The committee also conducted the required review of the Board Training Policy and recommended amendments to the board. The committee recommended to the board adoption of a proposed order, completing the four-year statutory rule review of **Chapters 21 through 51 of TRS'** rules and adopting proposed rule amendments in Chapters 25 through 51. The committee authorized public comment publication and proposed amendments to TRS Rule Section 25.26.

On a motion by Mr. Colonna as the committee chair, the board unanimously adopted the revised Resolution Designating Persons Authorized to Sign TRS Vouchers, as recommended by the Policy Committee.

On a motion by Mr. Colonna as the committee chair, the board unanimously adopted the revised Board Training Policy, as recommended by the Policy Committee.

On a motion by Mr. Colonna as the committee chair, the board unanimously adopted the order completing the four-year statutory rule review of Chapters 21 through 51 of TRS rules and adopting the proposed rule amendments in Chapters 25 through 51, as recommended by the Policy Committee.

**13. Review the report of the Risk Management Committee on its November 20, 2014 meeting – Karen Charleston.**

Ms. Charleston, Committee Chair, provided the Risk Management Committee report, as follows:

Risk Management and Strategic Planning provided a report on the Enterprise Risk Management function, which included an update on the spotlight report and related Enterprise Risk Management activities.

Whereupon, the board meeting recessed at 3:29 p.m.

The Board of Trustees of the Teacher Retirement System of Texas reconvened on November 21, 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:

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

Others present:

Brian Guthrie, TRS	T. A. Miller, TRS
Ken Welch, TRS	Karen Morris, TRS
Amy Barrett, TRS	Jamie Pierce, TRS

Janet Bray, TRS  
Chris Cutler, TRS  
Carolina de Onís, TRS  
Don Green, TRS  
Tom Guerin, TRS  
Robert Dunn, TRS  
Michelle Bertram, TRS  
Dan Junell, TRS  
Lynn Lau, TRS  
Adam Fambrough, TRS

Barbie Pearson, TRS  
David Cook, TRS  
Beckie Smith, TRS  
Jay Masci, Provaliant  
Steve Huff, Reinhart Boerner Van Deuren  
Michael Johnson, Bridgepoint Consulting  
Ann Fickel, Texas Classroom Teachers Association  
Victor Ferrero, HP  
Ernie Sanders, HP  
Philip Mullins, Texas State Employees Union

Ms. Sissney 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. Mr. Kelly and Ms. Ramirez were absent.

**14. Provide opportunity for public comments – Nanette Sissney.**

Ms. Sissney called for public comments. No public comments were received.

**15. Receive an update on the TEAM Program, including an update on the process improvement plan – Adam Fambrough; Barbie Pearson; David Cook; Ernie Sanders, and Jay Masci, Provaliant.**

Mr. Masci provided a status report as of November 5, 2014, including program progress and milestones. He highlighted the reporting entity outreach (REO) project which involved districts in their testing and certification process. Mr. Masci also provided an update on interdependencies. Per Ms. Sissney's request, future reports would include both old and new dates for interdependencies for comparison purposes. Mr. Cook provided an update on the budget summary. Mr. Fambrough and Mr. Sanders of HP provided an overview of the activities and accomplishments completed during the eight-week Process Improvement Phase (PIP) within the line of business (LOB) project. Mr. Fambrough provided an update on the contact and workflow management project. He stated that, based on staff's reassessment of the project and evaluation of two vendors, the E5 workflow vendor and Microsoft Dynamic CRM, staff decided to continue to use Microsoft Dynamics. He confirmed for Ms. Sissney that the decision from the reassessment was made about a month and half ago. Mr. Masci confirmed that he and staff were comfortable with the current process. Mr. Cook confirmed for Ms. Sissney that the reengagement of the current vendor would not have an impact on the overall schedule. Mr. Miller provided an overview of the project to decommission the legacy system. He explained two components of the project that involved decommissioning applications and bridging data between the new and legacy systems. He further explained data bridging for Ms. Sissney. In response to a question from Ms. Sissney, Mr. Miller stated that the current plan was to bridge the new and legacy data daily, a process which could be done more frequently, if needed.

**16. Receive a presentation from the TEAM Program Independent Program Assessment (IPA) Vendor – Michael Johnson, Bridgepoint Consulting.**

Mr. Johnson of Bridgepoint Consulting provided an overview of observations and current status

for this period. He highlighted the recommendation on integrating the internal control evaluation into the overall project plans. He stated that the process was monitored by subject matter experts and Internal Audit. Mr. Cook provided an update on the co-location of TRS and HP project team members in functional groups. Per Mr. Moss' request, the subject matter experts would share their experience from the TEAM project with the board in February. Responding to a question from Mr. Moss about reporting timing, Mr. Johnson laid out the timeline of reporting schedule updates, completed activities, outputs from the Process Improvement Phase (PIP), and key risks to the board in February and March. Ms. Sissney asked what Mr. Johnson's biggest concerns were for the TEAM project. Mr. Johnson stated that it would be the quality of deliverables from the process, which was the reason why the PIP came into play.

**17. Review the report of the Audit Committee on its November 21, 2014 – Christopher Moss.**

Mr. Moss, Committee Chair, provided the Audit Committee report, as follows:

The Audit Committee met at 8 a.m. on Friday, November 21st, 2014, in the fifth floor boardroom. The State Auditor's Office staff discussed results of the audit of the TRS comprehensive annual financial report for fiscal year (FY) 2014. Internal Audit staff presented a status report on activities regarding TRS employers, quarterly investment testing for FY 2014 Internal Audit annual report, and the status of prior auditing and consulting recommendations in audit administrative matters. Myers and Stauffer LLC presented information of the technology risks. The TRS manager of network infrastructure and support, along with Myers and Stauffer, represented and provided updates on TRS initiatives regarding colocation, mobile device, and cloud computing projects. The following agenda items were discussed in closed session: Internal Audit, TRS management, and Myers and Stauffer represented and discussed the results of the information security follow-up audit, Enterprise Risk Management (ERM) internal audit, and information technology. Staff discussed the related ERM and information security program initiatives. Internal Audit staff presented the annual report, follow-up activity, and routine administrative reports. The Audit Committee concluded at 10:02 a.m.

**18. Review Deputy Director's Report, including matters related to administrative, financial, and staff services operations – Ken Welch**

Mr. Guthrie presented the item on behalf of Mr. Welch during the first day of this meeting.

**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.**

The board members had no questions about the litigation report.

- 20. 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 – Nanette Sissney.**
- 21. 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) – Nanette Sissney.**

The board took up no further business under agenda items 20 and 21.

The meeting was adjourned at 11:25 a.m.

APPROVED BY THE BOARD OF TRUSTEES OF THE TEACHER RETIREMENT SYSTEM OF TEXAS ON THE 11TH DAY OF FEBRUARY, 2015.

ATTESTED BY:

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

\_\_\_\_\_  
Date

**Tab 4**



Teacher Retirement System of Texas

# Executive Director's Report

Brian Guthrie

February 11, 2015

# Overview

- Meeting agenda and theme.
- Strategic plan overview:
  - Pension fund sustainability.
  - Customer-focused relationships.
  - Health benefits programs.
  - Recruitment and retention.
  - Historically underutilized business (HUB) program.
- Board Training Calendar.
- Upcoming Agendas.

# Meeting Agenda and Theme

# Agenda – Wednesday, February 11<sup>th</sup>

Item	Time
Executive Director's Report	10:45 a.m. - Noon
Adopt Historically Underutilized Business (HUB) Goals for CY 2015	Noon – 12:15 p.m.
Investment Matters: <ul style="list-style-type: none"><li>- Historical Economic Review</li><li>- Conversation with Ray Dalio on Evolving World and Economic Machines Behind It</li><li>- Emerging Manager Update</li><li>- Energy and Natural Resources Update</li><li>- Best Ideas Survey Results</li><li>- Update on Preferred Destination Initiative</li></ul>	12:15 - Recess

# Agenda – Thursday, February 12<sup>th</sup>

Item	Time
Public Comment and Day's Agenda	8:30 – 8:45 a.m.
Deputy Director Report	8:45 – 9:15 a.m.
Texas Budgeting and Legislative Overview	9:15 – 10:00 a.m.
Space Planning Discussion (Closed Session)	10:00 – 11:30 a.m.
Investment Compliance and Ethics	11:30 a.m. - Noon
Legal and Fiduciary Matters <ul style="list-style-type: none"><li>- Procurement and Fiduciary Responsibility</li><li>- Legal Training (Closed Session)</li><li>- Adoption of TRS Rule 25.26</li></ul>	Noon – 2 p.m.
Overviews <ul style="list-style-type: none"><li>- Strategic Initiatives</li><li>- Finance and Financial Matters</li><li>- Benefits</li><li>- Human Resources</li><li>- Communications</li></ul>	2:00 - Recess

# Agenda – Friday, February 13<sup>th</sup>

Item	Time
Public Comment and Day's Agenda	8:00 – 8:15 a.m.
Analytics in Auditing	8:15 – 8:45 a.m.
Audit Discussion (Closed Session)	8:45 – 9:15 a.m.
Information Technology Divisional Overview	9:15 – 9:45 a.m.
TEAM Update	9:45 – 10:45 a.m.
Bridgepoint's Role in TEAM	10:45 – Adjourn

# Meeting Agenda and Theme

- Meeting theme follows TRS Strategic Plan theme of “Drive to Goal.”
- Strategic Plan serves as a guiding document that not only establishes agency and departmental goals but also provides framework to gauge success.
- Plan was adopted last summer and rolled out in the fall. Implementation began with engagement phase.

# Meeting Agenda and Theme

- Goal of engagement was to communicate:
  - Strategic Plan purpose and process;
  - Where each department's work is reflected; and
  - Development of assessment process.
- Engagement process:
  - 5-week Poster campaign;
  - Department specific maps; and
  - Meetings with each department to discuss Strategic Plan purpose, process, and goals.

# Meeting Agenda and Theme

- Strategic plan guides presentations by:
  - Presenting agency initiatives in context of strategic plan goals and objectives; and
  - Presenting departmental overviews in the appropriate context.

# Meeting Agenda and Theme

- Goals and objectives state what the agency will accomplish with a particular initiative and how we will get there.
- “True North” for all initiatives is the TRS mission.

# Meeting Agenda and Theme



WHAT IS YOUR  
MISSION?

## TRS Mission

Improving the retirement security of Texas educators by prudently investing and managing trust assets and delivering benefits that make a positive difference in members' lives.

# Strategic Plan

- Five Strategic Plan Goals:
  - Sustain a financially sound pension trust fund.
  - Build and maintain strong, customer-focused relationships.
  - Facilitate access to competitive, reliable health care benefits for our members.
  - Attract, retain, and develop a highly competent staff.
  - Promote purchasing selection practices that foster meaningful and substantive inclusion of historically underutilized businesses (HUBs).

# Strategic Plan

**Goal 1: Sustain a financially sound pension trust fund.**

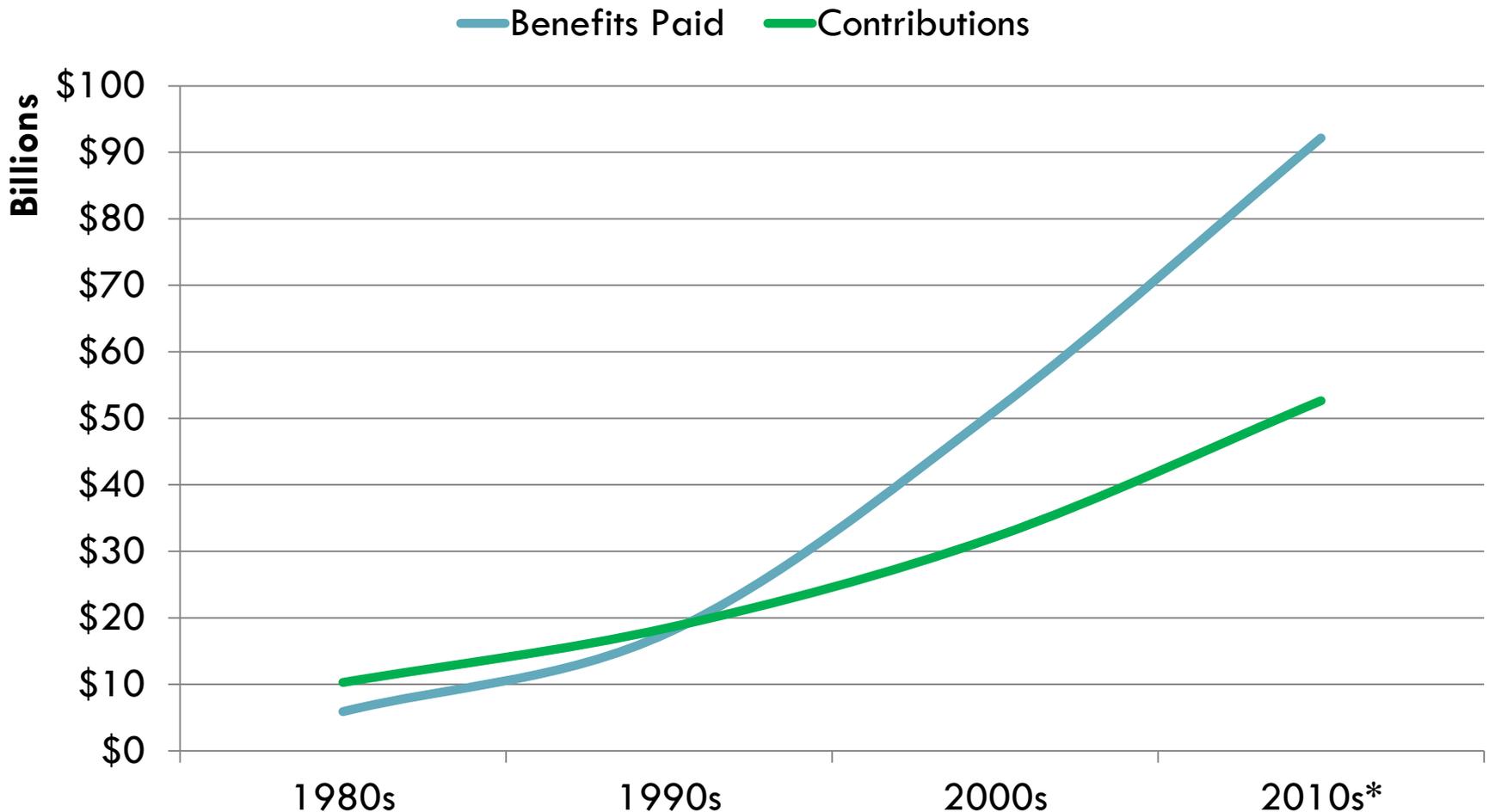
# Goal 1: Sustain a financially sound pension trust fund.

TRS Trust Fund Actuarial Snapshot	8/31/14
Funded Ratio	80.2%
State Contribution Rate	6.8%
Non-Social Security School District Contribution Rate	1.5% Starting in FY 2015
Member Contribution Rate of Payroll	7.70% Ultimate Rate by FY 2017
Funding Period (years)	29.8 years
Annual Required Contribution (ARC)	8.66%
Are contributions sufficient to fund future liabilities?	Yes

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

- Pension Fund Facts as of 8/31/14:
  - The average retirement check is \$1,995 per month.
  - \$8.5 billion paid in retirement benefits in 2014.
  - \$4.9 billion received in member / state contributions in FY 2014.
  - Over 1.4 million active members & annuitants.
  - Actuarially sound.

# Cumulative Benefits Paid vs Contributions

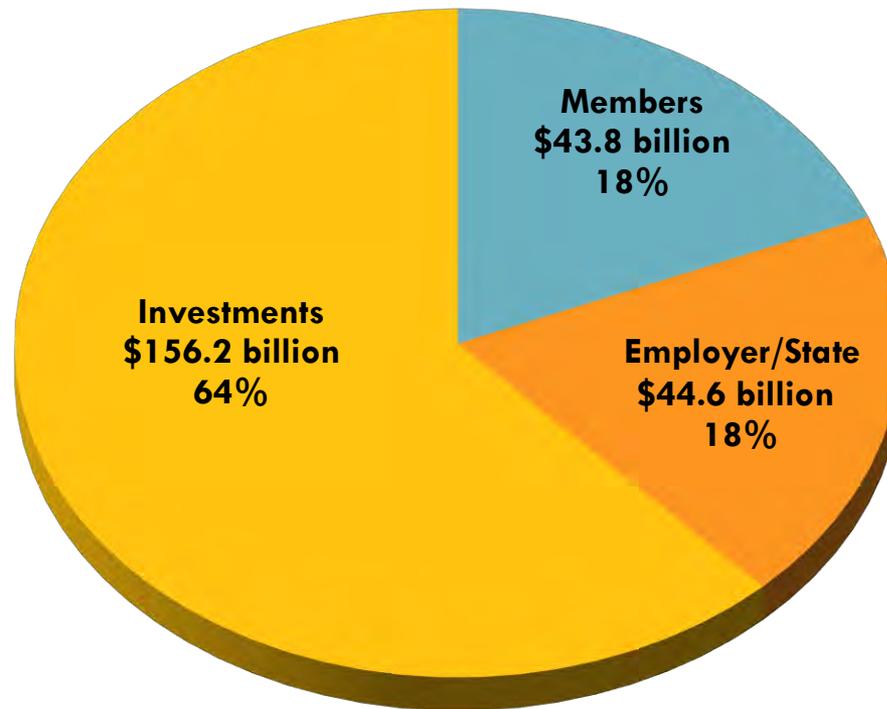


Benefits paid exceeded contributions for first time in 1996; cumulative total of \$36.3 billion since (through FY2014).

\*Actual through FY2014 and projected through FY2019.

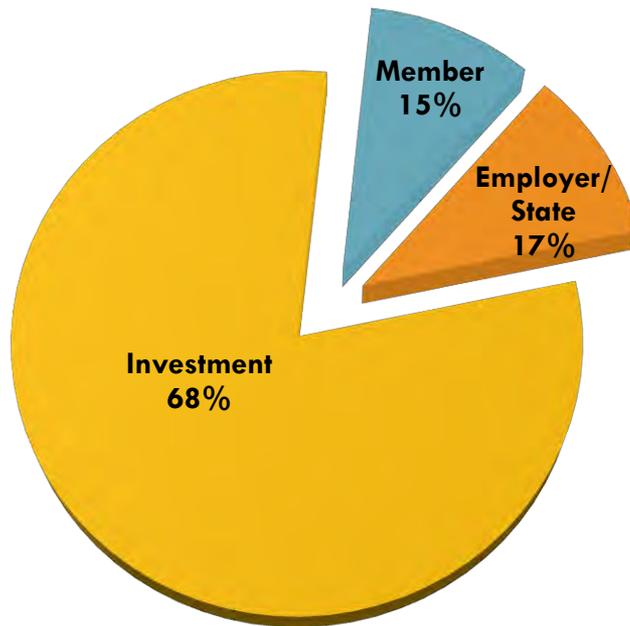
# Goal 1: Sustain a financially sound pension trust fund.

## Sources of Pension Fund Revenue (1938 – 2014)



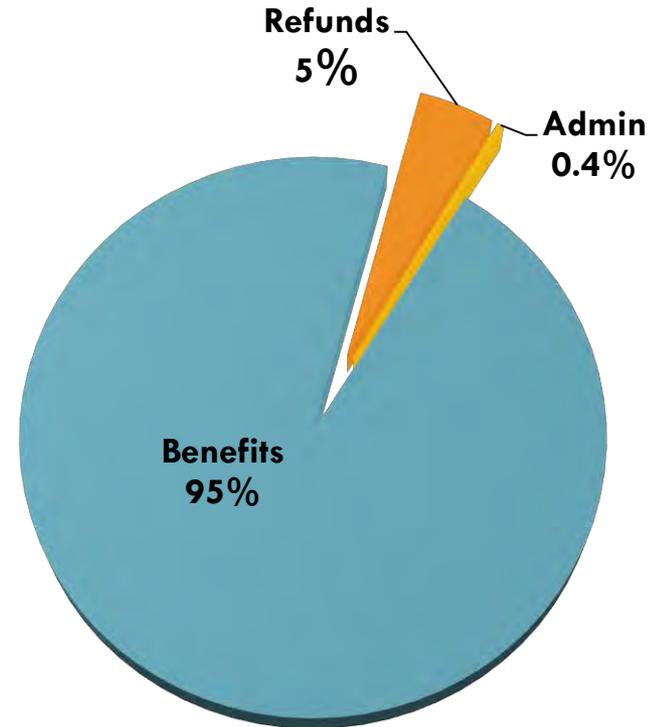
# Goal 1: Sustain a financially sound pension trust fund.

## FY 2014 Additions



**\$24.5 billion**

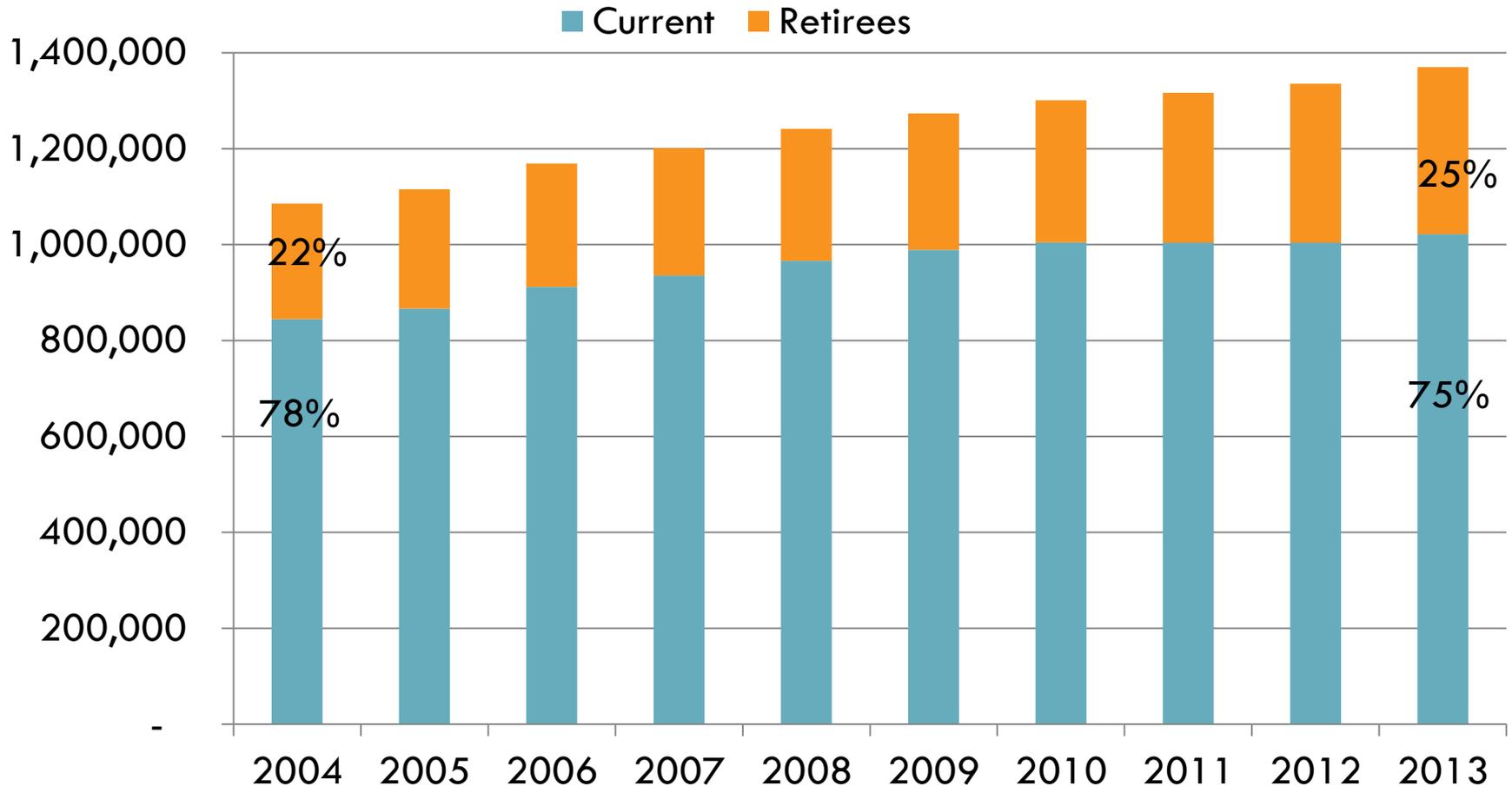
## FY 2014 Deductions



**\$9.1 billion**

**\$15.4 billion addition to net assets**

# Membership Growth, 10 Yr Trend



Active members – 21% growth  
Retired members – 45% growth



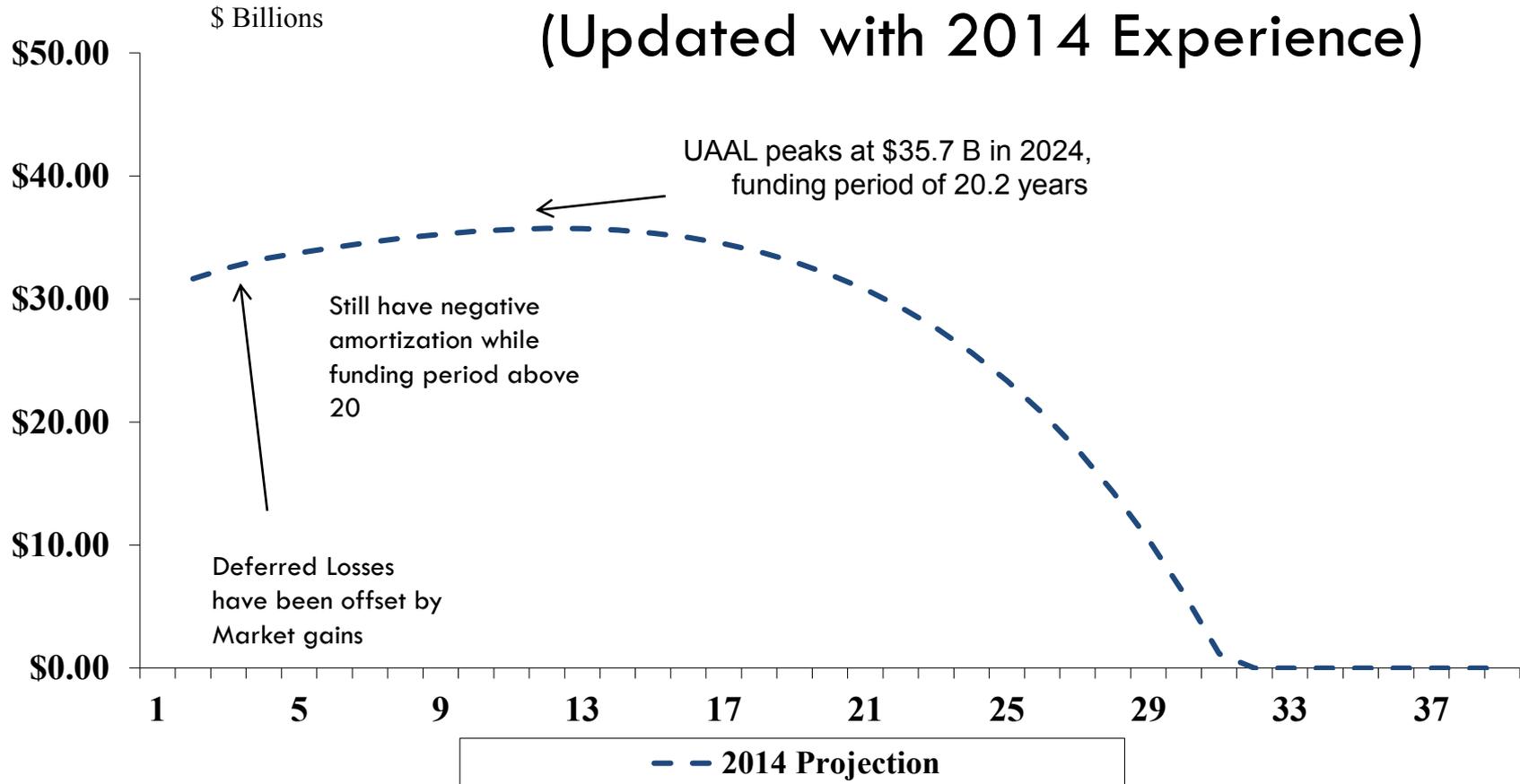
# TRS Pension Overview

## Before and After 2013 Legislation

	Before	After
State Contribution Rate	6.4%	6.8%
Member Contribution Rate	6.4%	6.4% in FY 14 gradually increasing over four years to 7.7% in FY 17
Non-Social Security School District Contribution Rate	None	1.5%
Normal-Age Retirement	Rule of 80 + either No minimum age or minimum age 60 depending on when member joined the system	Rule of 80 + 62 for new hires and non-vested members
Pre-62 Retirement Penalty	Varied	5% per year
Depletion Date	2069	None
COLA	Ad hoc	3% (capped at \$100 /mo) for those retired on or before 8/31/2004. First COLA in over a decade was paid beginning October 2013.

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

## Projection of UAAL (Updated with 2014 Experience)



The above assumes all assumptions exactly met, including 8% annual investment returns

Assumes no changes to benefit policy

Assumes current statutory contribution policy remains throughout period



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

- Strategic Plan initiatives for pension fund soundness include:
  - Serving as a trusted educational resource to the legislature;
  - Continuing effective investment processes, governance structures, asset allocation, and risk monitoring; and
  - Monitoring trust fund status and key actuarial assumptions, including Experience Study summer 2015.

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

- Monitoring trust fund status and key actuarial assumptions includes:
  - The mid-year valuation conducted by Gabriel Roeder Smith & Company (GRS) “as of” February 28, 2015 and reported at the March Board meeting; and
  - An actuarial experience study to be conducted by GRS and TRS staff summer 2015 with new assumption set adopted in fall 2015.

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

- From the experience study, the Board will adopt a smoothing methodology, an actuarial cost methodology, and a number of assumptions, including:
  - Investment return;
  - Inflation;
  - Payroll growth;
  - Mortality expectations;
  - Retirement rates; and
  - Disability assumptions.

# Strategic Plan

**Goal 2: Build and maintain strong, customer-focused relationships.**

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

- According to the 2014 Member Satisfaction Survey:
  - Retiree satisfaction was particularly high, with an overall approval rating (satisfied or very satisfied) of 97.9%
  - Active members also gave TRS a very high overall rating (satisfied or very satisfied) of 97.3%.

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

- In addition to the Member Satisfaction Survey, ongoing functions to build and maintain strong, customer-focused relationships including key performance measures and annual CEM benchmarking.
- Key performance measures are reported to the Legislative Budget Board (LBB) and tracked as part of our Legislative Appropriations Request.

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

Key Performance Measures	Target	FY 2014 Actual	Explanation
TRS expense per member (Benefit Administration Expenses)	\$27.00	\$29.62	Actual was higher than target as a result of a 2% - 3% growth in membership coupled with a slight increase in costs
Investment expense per member in basis points	22bp	15.94bp	Target is higher than actual because target reflects expected future increases in expenses as TRS expands its investment allocation spectrum to diversify risk.
Average customer hold time (Note for FY 15 the measure has changed from hold time to service level)	2.00 min	1.03min	Target was exceeded as a result of hiring additional telephone counselors and a workforce manager.
Number of benefit claim applications processed annually (service and disability retirements, refunds, and death claims)	72,000	69,589	All applications are processed. The variance is due to the number of applications received.

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

- CEM annual pension administration benchmarking captures a variety of metrics including cost, service levels, and number and types of transactions.
- TRS uses CEM data to:
  - Compare cost and service levels to our peers;
  - Monitor progress and identify areas of need using an outside benchmark; and
  - Understand and identify cost drivers.

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

- For FY 2014 CEM reported that TRS':
  - Total pension administration cost was \$30 per member (\$55 below the peer average of \$85).
  - Biggest drivers of low cost were economies of scale and higher transactions per FTE (greater productivity).
  - Total service score was 69 out of 100 (peer median is 67).
  - Service score consists of member transactions, member communication, and quality indicators.

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

- Strategic Plan initiatives for strong customer-focused relationships include:
  - TEAM;
  - Review and consider relevant industry benchmarks; and
  - Develop and maintain ongoing stakeholder information.

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

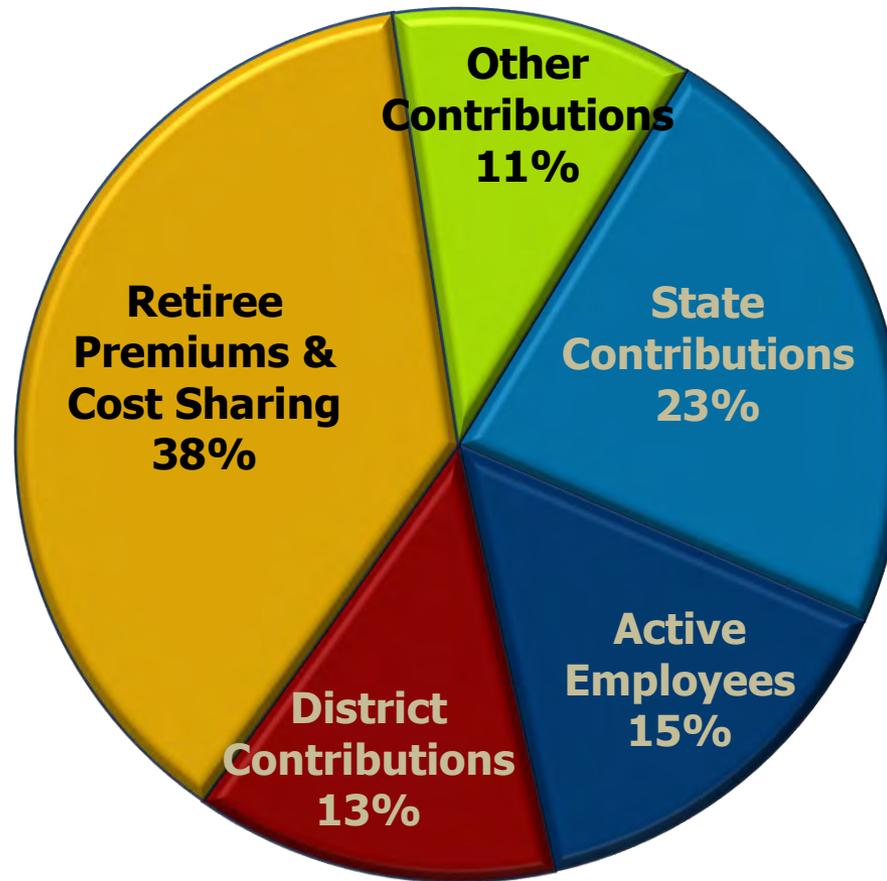
- Develop and maintain ongoing stakeholder information includes:
  - Potential partnerships with Educational Service Centers to expand regional benefit counseling and education, including reporting entity education (Also relates to effective space utilization under Goal 4 of the Strategic Plan); and
  - Expanding member education and information available online, such as Financial Education video and Turning 65 video on Medicare.

# Strategic Plan

**Goal 3: Facilitate access to competitive, reliable health care benefits for our members.**

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

**TRS-Care Funding Sources**



**State Contributions:**  
1.0% of active member payroll by law.

**Active Employees:**  
Contribute 0.65% of payroll.

**District Contributions:**  
Contribute 0.55% of active member payroll.

**Retiree Contributions:**  
Retirees pay premiums for any plan option other than TRS Care-1.

**Other Contributions:**  
Includes Medicare Part D subsidy and investment income.

\*The funding is based on active member payroll and not actual health care costs.

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

TRS-Care Funding Financial History & Projection Through FY 2019 with Data Through December 2014

Fiscal Year	Contributions								Expenditures				Ending Balance (Incurred Basis)
	Retiree Contributions	State Contributions	Supplemental Appropriations	Active Employee Contributions	District Contributions	Investment Income	CMS& Part D Subsidies	ERRP Subsidy	Medical Incurred	Drug Incurred	Medicare Advantage Premiums	Administrative Costs	
FY 1986	\$0	\$0	\$250,000	\$17,625,194	\$0	\$572,153	\$0	\$0	\$0	\$0	\$0	\$362,371	\$18,084,976
FY 1987	\$22,617,624	\$25,931,680	\$0	\$18,522,629	\$0	\$2,568,998	\$0	\$0	\$50,988,845	\$7,044,825	\$0	\$3,941,936	\$25,750,301
FY 1988	\$23,948,600	\$31,357,632	\$0	\$19,598,520	\$0	\$5,703,832	\$0	\$0	\$16,157,649	\$12,441,672	\$0	\$4,614,755	\$73,144,809
FY 1989	\$25,428,632	\$37,420,711	\$0	\$20,789,215	\$0	\$8,802,914	\$0	\$0	\$32,926,324	\$15,458,710	\$0	\$5,212,073	\$111,989,174
FY 1990	\$37,556,561	\$44,369,915	\$0	\$22,184,958	\$0	\$13,098,835	\$0	\$0	\$50,171,919	\$19,835,965	\$0	\$7,186,851	\$152,004,708
FY 1991	\$46,563,787	\$47,277,743	\$0	\$23,638,871	\$0	\$15,801,047	\$0	\$0	\$82,697,189	\$28,683,081	\$0	\$8,258,029	\$165,647,857
FY 1992	\$56,395,797	\$50,392,512	\$0	\$25,196,592	\$0	\$17,314,372	\$0	\$0	\$74,307,953	\$33,829,694	\$0	\$8,862,560	\$197,946,923
FY 1993	\$65,154,653	\$54,029,406	\$0	\$27,014,703	\$0	\$17,181,190	\$0	\$0	\$101,627,864	\$40,700,513	\$0	\$10,067,359	\$208,931,140
FY 1994	\$80,128,944	\$56,912,083	\$0	\$28,456,041	\$0	\$16,467,438	\$0	\$0	\$108,284,693	\$45,712,060	\$0	\$11,668,828	\$225,230,065
FY 1995	\$89,006,331	\$59,849,850	\$0	\$29,924,925	\$0	\$16,841,673	\$0	\$0	\$122,054,551	\$50,782,093	\$0	\$12,219,847	\$235,796,353
FY 1996	\$82,622,236	\$63,634,087	\$0	\$31,817,043	\$0	\$16,818,747	\$0	\$0	\$135,982,304	\$57,074,921	\$0	\$13,593,578	\$224,037,663
FY 1997	\$87,657,784	\$67,616,395	\$0	\$33,808,197	\$0	\$16,202,440	\$0	\$0	\$148,823,489	\$62,530,982	\$0	\$14,097,454	\$203,870,554
FY 1998	\$91,390,173	\$72,210,190	\$0	\$36,105,095	\$0	\$15,260,517	\$0	\$0	\$156,537,913	\$76,256,158	\$0	\$14,616,678	\$171,425,780
FY 1999	\$96,474,107	\$76,488,424	\$0	\$38,244,213	\$0	\$9,762,741	\$0	\$0	\$184,398,533	\$93,459,890	\$0	\$14,905,196	\$99,631,646
FY 2000	\$120,227,960	\$85,505,637	\$0	\$42,738,069	\$0	\$6,923,485	\$0	\$0	\$203,029,971	\$110,903,247	\$0	\$16,837,127	\$24,256,451
FY 2001	\$131,213,445	\$90,118,787	\$76,281,781	\$45,059,394	\$0	\$5,824,134	\$0	\$0	\$250,691,898	\$139,774,848	\$0	\$18,237,767	(\$35,950,521)
FY 2002	\$143,797,748	\$94,792,026	\$285,515,036	\$47,378,092	\$0	\$7,140,560	\$0	\$0	\$287,729,918	\$163,979,754	\$0	\$19,017,292	\$71,945,978
FY 2003	\$162,954,010	\$98,340,798	\$124,661,063	\$49,170,399	\$0	\$3,394,956	\$0	\$0	\$368,462,963	\$203,281,400	\$0	\$21,690,329	(\$82,967,487)
FY 2004	\$248,552,679	\$198,594,194	\$298,197,463	\$99,297,097	\$79,457,387	\$4,840,982	\$0	\$0	\$366,840,457	\$214,514,500	\$0	\$26,332,200	\$238,285,158
FY 2005	\$322,780,191	\$202,397,566	\$64,172,167	\$101,198,783	\$80,914,228	\$11,300,868	\$0	\$0	\$431,036,095	\$229,522,988	\$0	\$33,333,010	\$327,156,868
FY 2006	\$326,844,982	\$215,666,940	\$0	\$140,183,511	\$118,607,527	\$21,435,792	\$34,611,607	\$0	\$427,553,404	\$259,532,887	\$0	\$34,434,969	\$462,985,967
FY 2007	\$323,957,945	\$238,190,720	\$0	\$154,823,968	\$136,008,512	\$32,671,539	\$52,329,617	\$0	\$437,519,747	\$304,773,401	\$0	\$35,878,194	\$622,796,927
FY 2008	\$328,505,433	\$254,722,174	\$0	\$165,569,413	\$141,672,630	\$29,252,347	\$59,486,239	\$0	\$498,767,038	\$334,742,500	\$0	\$39,656,301	\$728,839,324
FY 2009	\$329,723,191	\$267,471,299	\$0	\$173,856,344	\$149,562,613	\$17,482,143	\$61,530,735	\$0	\$531,239,020	\$353,893,845	\$0	\$43,184,393	\$800,148,391
FY 2010	\$332,481,933	\$279,250,547	\$0	\$181,512,856	\$155,918,241	\$11,679,229	\$70,795,686	\$0	\$575,539,788	\$395,817,017	\$0	\$45,465,776	\$814,964,302
FY 2011	\$345,164,271	\$282,782,431	\$0	\$183,808,580	\$158,724,010	\$8,168,640	\$66,258,008	\$70,629,797	\$608,461,321	\$384,017,059	\$0	\$47,151,354	\$890,870,304
FY 2012	\$363,348,030	\$271,925,242	\$0	\$176,751,407	\$154,607,926	\$5,189,934	\$71,575,942	(\$2,941,996)	\$687,987,585	\$454,143,825	\$0	\$48,181,723	\$741,013,656
FY 2013	\$355,685,504	\$139,213,557	\$102,363,704	\$180,824,522	\$160,952,396	\$3,041,001	\$98,628,841	\$0	\$686,321,003	\$496,229,923	\$1,075,388	\$47,048,587	\$551,048,281
FY 2014	\$363,631,292	\$290,775,235	\$36,058,148	\$189,003,903	\$169,847,447	\$2,061,745	\$135,536,021	\$0	\$663,776,623	\$539,842,962	\$27,507,107	\$48,894,894	\$457,940,487
FY 2015	\$374,428,080	\$296,590,741	\$0	\$192,783,981	\$173,034,641	\$1,678,119	\$183,708,809	\$0	\$735,910,022	\$660,871,143	\$64,493,043	\$51,841,683	\$167,048,967
FY 2016	\$382,265,628	\$302,522,555	\$0	\$196,639,661	\$176,297,139	\$413,829	\$175,379,817	\$0	\$759,108,906	\$740,314,886	\$84,577,049	\$51,708,284	(\$235,141,529)
FY 2017	\$388,173,551	\$308,573,006	\$0	\$200,572,454	\$179,624,887	\$0	\$186,661,286	\$0	\$805,494,708	\$842,528,250	\$97,723,716	\$50,817,734	(\$768,100,754)
FY 2018	\$393,869,327	\$314,744,467	\$0	\$204,583,903	\$183,019,190	\$0	\$198,197,844	\$0	\$852,005,380	\$956,321,470	\$112,580,063	\$51,042,235	(\$1,445,635,171)
FY 2019	\$399,787,253	\$321,039,356	\$0	\$208,675,581	\$186,481,379	\$0	\$209,737,829	\$0	\$904,269,638	\$1,082,681,753	\$129,173,300	\$51,983,660	(\$2,288,022,125)

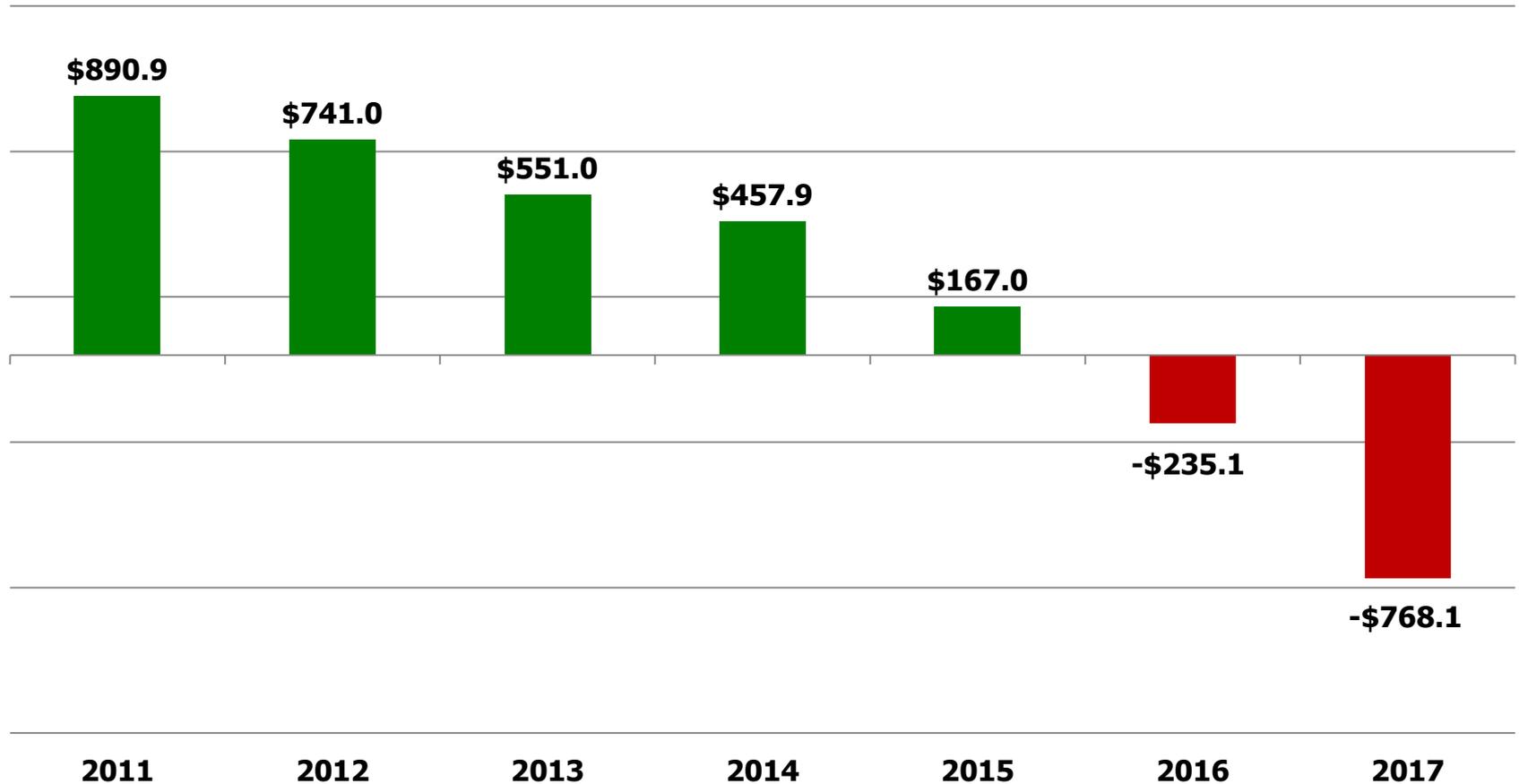
**NOTES**

- Invoice data through December 31, 2014
- 70% participation in Medicare Advantage and 83% participation in Part D plan, which was effective 1/1/2013; CY2015 CMS Subsidy values assumed for Part D Revenue.
- State Contribution rate of 1%; District Contribution rate of 0.55%; and Active Contribution rate of 0.65%.
- Enrollment assumptions based on GASB headcounts
- 4% increase in payroll growth for FY2014; 2% increase in payroll growth thereafter.
- Medical trends: 7% for Care 1; 7% for Care 2; 7% for Care 3.
- Pharmacy trends: 9% for Care 2; 9% for Care 3; 9% for EGWP plans.
- Interest Rate = 0.4%

# TRS-Care Balance Projection

## Fund Balance

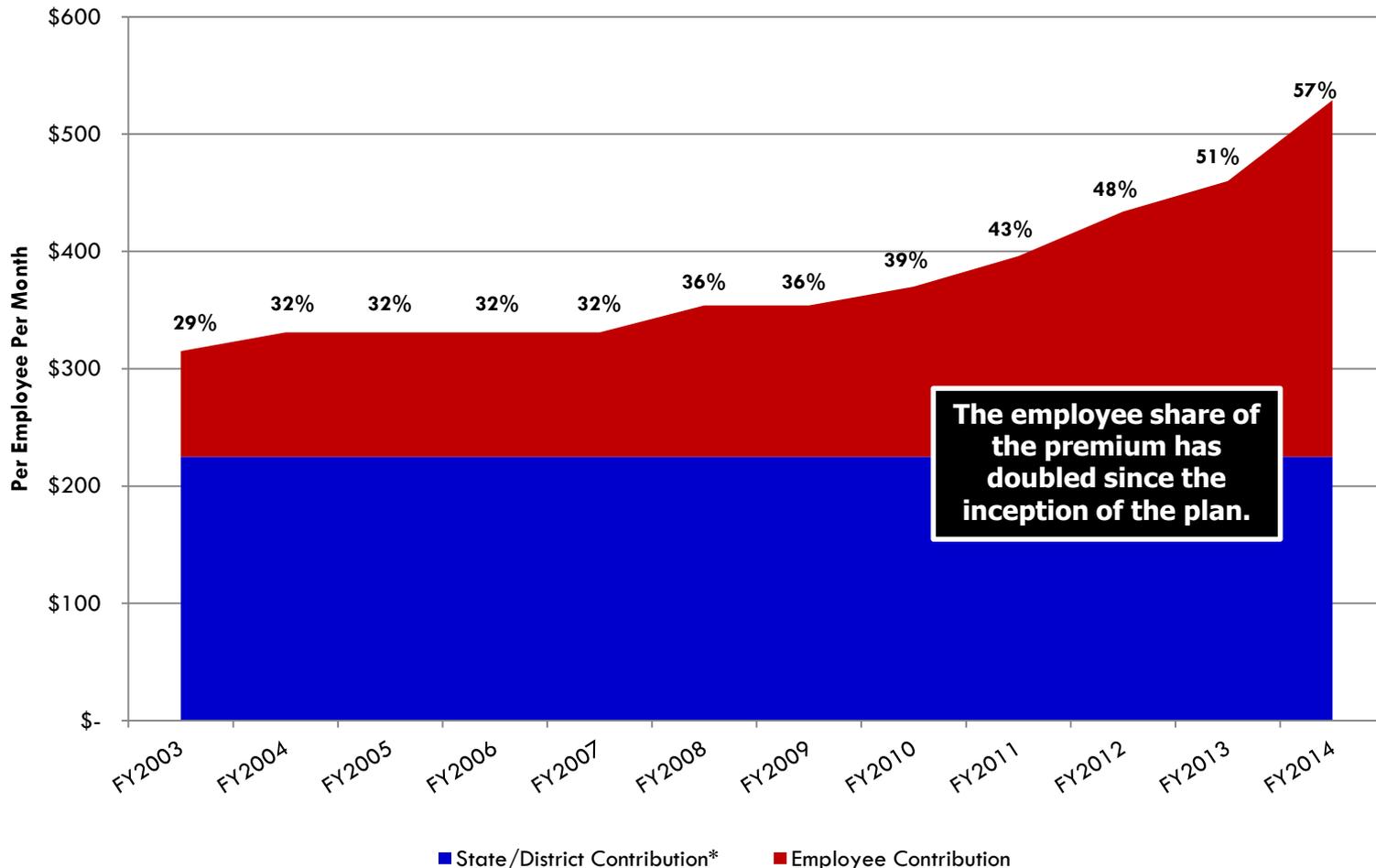
(Incurred Basis in Millions)



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

## TRS-Active Care Historical Premiums

TRS-ActiveCare 2 - Employee Only Coverage Tier



\*Assumes a \$75 state and \$150 minimum district contribution per month toward the cost of coverage.



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

- Strategic Plan initiatives for facilitating access to competitive, reliable health care benefits include:
  - Serving as a trusted resource for the legislature on health benefits programs and financing;
  - Continuing cost-containment strategies; and
  - Educating stakeholders on and implementing any legislative program changes.

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

- Serving as a trusted resource for the legislature includes being responsive to and serving as a resource for the Legislative Budget Board (LBB) on TRS-Care recommendations made in its Government Effectiveness and Efficiency Report (GEER).
- In the GEER, LBB recommended that TRS produce a report detailing cost containment strategies. TRS is developing that report currently.

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

- Additionally, the LBB recommended allocating among the stakeholders the projected future cost to maintain TRS-Care solvency as follows:

Source	Percentage Allocation of Solvency Cost
State	50%
Retirees	*25%
School Districts	12.5%
Active Members	12.5%

\*Retiree increase is through increased premiums, benefit adjustments, or a combination of both (action by TRS needed).

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

- Proposed allocation would result in the total contribution rates for TRS-Care:

Source	Current Contribution Rate	LBB Recommended Contribution Rate
State	1.00%	1.60%
School Districts	0.55%	0.73%
Active Members	0.65%	0.80%

# Strategic Plan

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

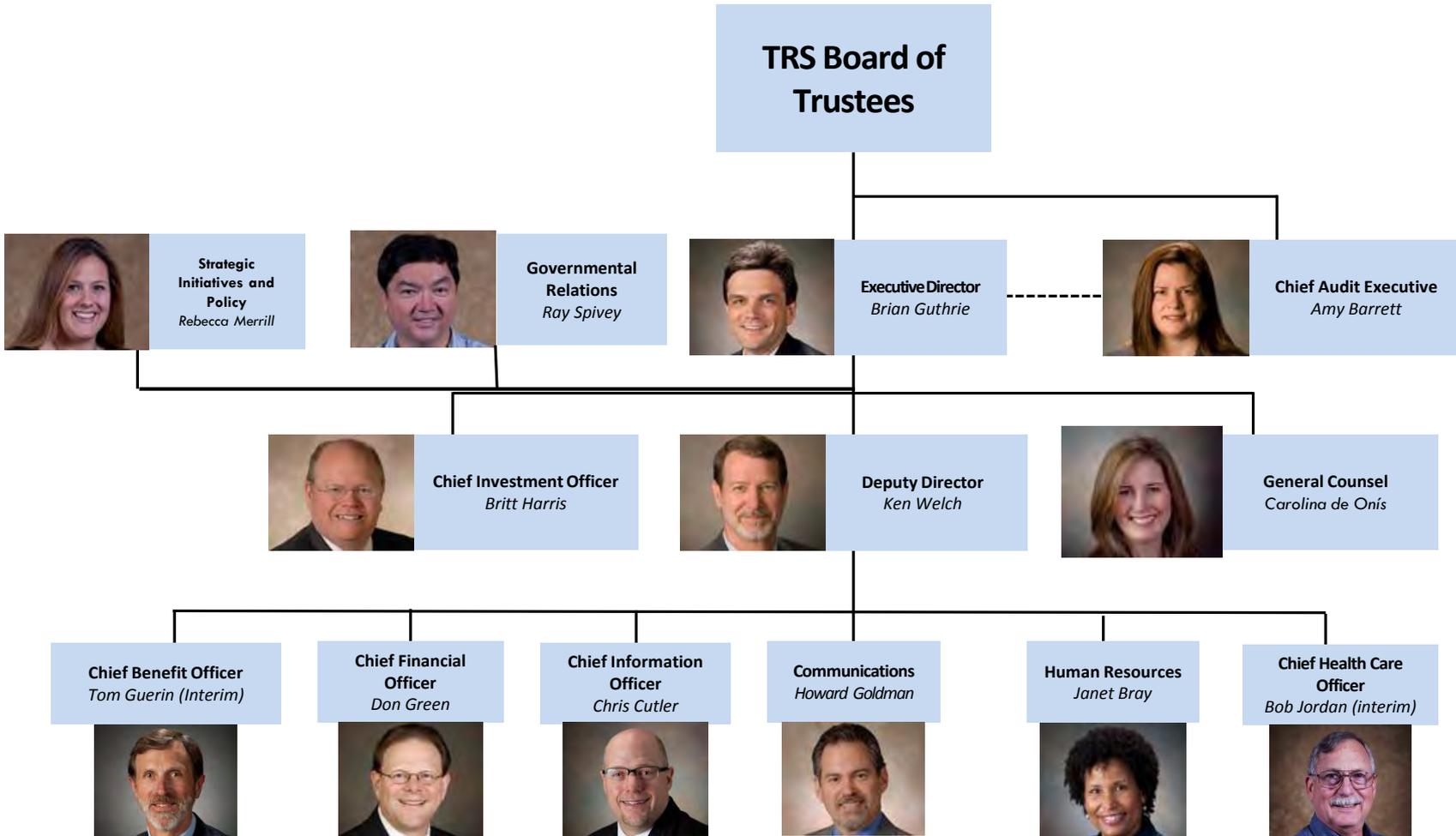
## Goal 4: Attract, retain, and develop a highly competent staff.

- Strong recruitment and retention begins with the right organizational structure.
- Executive Council retreated in mid-January to reexamine organizational and reporting structures.
- Sought input from department managers in pension, health insurance, and finance on potential structural adjustments.

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

- Confirmed that the agency's basic structure works extremely well. Executive Council identified some adjustments to improve processes, including:
  - CFO title is expanded to include Administrative Officer, which includes greater focus on program evaluations;
  - Governmental Relations reports directly to ED;
  - Strategic Initiatives also includes public policy and internal project implementation;
  - TEAM may result in some additional organizational changes; and
  - Projects are underway to examine best locations for mail, print shop, imaging, and contract administration.

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



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

- Strategic Plan initiatives for attracting, retaining, and developing a highly competent staff include:
  - Developing and maintaining a desirable work environment; and
  - Developing an effective recruitment/retention strategy and a competitive total rewards package.

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

- Developing and maintaining a desirable work environment includes an efficient use of space. Potentially entails expanding our access to members in partnership with Educational Service Centers and expanding our access to investment opportunities with an enhanced international presence.
- Developing an effective recruitment/retention strategy and a competitive total rewards package includes continuing to refine the agency's compensation approach and utilizing effectively any merit appropriations from legislature.

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

- For FY 2015 merit allocations were centralized.
- Executive Director and Deputy Director worked with managers to determine merit allocations through a departmental analysis.
- Going forward, merits will continue to be centralized and will operate on the following schedule:
  - IMD merits effective October 1; and
  - Red River merits effective February 1.

# Strategic Plan

**Goal 5: Promote purchasing selection practices that foster meaningful and substantive inclusion of historically underutilized businesses (HUBs).**

## Goal 5: Meaningful and substantive inclusion of historically underutilized businesses (HUBs).

- Strategic Plan initiatives for promoting practices that foster meaningful and substantive inclusion of historically underutilized businesses (HUBs) include:
  - Exceeding the aggregate State of Texas HUB expenditure performance;
  - Attending and conducting annual HUB forums;
  - Assisting HUBs when inquiring on how to do business with TRS; and
  - Updating the Contract Administration Manual.

# Board Training Calendar

# Board Training Calendar

<b>March</b>	<b>29 – April 1</b>	<b>TEXPERS Annual Conference – Austin, TX</b>
April	7 - 8	The 2015 Pension Bridge Annual – Four Seasons, San Francisco
	14 - 15	Introduction to Investments, Callan College, Atlanta
July	TBD	NCTR Trustee Institute and Workshop, East Coast
August	1 - 5	NASRA Annual Convention, Monterey, CA
	16 - 18	TEXPERS Summer Education Forum – San Antonio, TX
October	10 - 14	NCTR Annual Convention, Hilton La Jolla Torrey Pines, La Jolla, CA
	27 - 28	Introduction to Investments, Callan College, Chicago

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# Upcoming Agendas

# 2015 Board Agendas

## **March 26-27, 2015 Major items include** (2 Day Quarterly Meeting):

- Report on Q4 Earnings.
- Mid-Year Valuation Update.
- TEAM Update.

### Committees

- **Audit Committee Meeting**
  - Report on the Payables Audit.
  - ISD Audit.
- **Investment Management Committee Meeting**
  - Internal Public Markets Review.
  - Trading Management Group Presentation.
  - Private SPN Update
- **Policy Committee Meeting**
  - Recommend adoption of amendments to Contractor Code of Ethics.
- **Risk Management Committee Meeting**
  - Bi-Annual Risk Report.

## **May 1, 2015 Major items include** (1 Day Off-Quarter Meeting):

- No Committees
- Legislative Update.

# 2015 Board Agendas

## June 11-12, 2015 Major items include (2 Day Quarterly Meeting):

- Report on Q1 Earnings.
- Legislative Update.
- TRS-Care and TRS-ActiveCare Rates and Plan Design Adoption.
- Begin the Pension Fund Experience Study
- SPN Update.

## Committees

- **Audit Committee Meeting**
  - SAO Performance Incentive Pay Plan Audit and various ISD Audits.
- **Benefits Committee Meeting**
  - Recommend adoption of TRS-Care and TRS-ActiveCare Rates and Plan Design.
- **Budget Committee Meeting**
  - FY 2016 Operating Budget (Discuss only – adopt in July).
- **Investment Management Committee Meeting**
  - Private Equity Review.
  - Real Assets Review.
  - Energy and Natural Resources Portfolio.
- **Policy Committee Meeting**
  - Begin review of Authority to Approve Benefit and Refund Payments Policy.
- **Risk Management Committee Meeting**
  - Enterprise Risk Management Update.

# 2015 Board Agendas

## **July 24, 2015 Major items include** (1 Day Off-Quarter Meeting):

- Adopt TRS FY 2016 Operating Budget.
- TEAM.
- Executive Evaluations.

### Committees

- **Audit Committee Meeting**
  - Evaluate the Chief Audit Executive.
- **Budget Committee Meeting**
  - Recommend adoption of FY 2016 Operating Budget.

# 2015 Board Agendas

## **September 24-25, 2015 Major items include** (2 Day Quarterly Meeting):

- Report on Q2 Earnings.
- Board Committees and Committee Chairs.
- Board Meeting Dates for CY 2016.
- Conclude Experience Study and Adopt Assumption Set.

### Committees

- **Audit Committee Meeting**
  - Adopt the Annual Audit Plan.
- **Investment Management Committee Meeting**
  - External Public Markets Portfolio.
  - Public SPN Update.
- **Risk Management Committee Meeting**
  - Bi-Annual Risk Report.
- **Policy Committee Meeting**
  - Recommend adoption of any necessary rule amendments for legislative implementation.

# 2015 Board Agendas

## **October 23, 2015 Major items include (1 Day Off-Quarter Meeting):**

- No Committees.
- TEAM Update.

## **November 19-20, 2015 Major items include (2 Day Quarterly Meeting):**

- Comprehensive Annual Financial Report (CAFR).
- Pension Fund Valuation.
- TRS-Care Valuation (Other Post Employment Benefits — OPEB) Valuation.
- TRS-ActiveCare Benefits Briefing.

### Committees

- **Investment Management Committee Meeting**
  - Asset Allocation Group Presentation.
  - Risk Group Presentation.
- **Risk Management Committee Meeting**
  - Enterprise Risk Management
- **Policy Committee Meeting**
  - Recommend Adoption of Mission Statement Amendments, if any.
  - Recommend Adoption of Performance Incentive Pay Plan Amendments, if any.
- **Audit Committee Meeting**
  - Report on the CAFR Audit.

**Tab 5**

Teacher Retirement System of Texas

# Historically Underutilized Business (HUB) Program

Annual Status Report – Fiscal Year 2014

John Dobrich

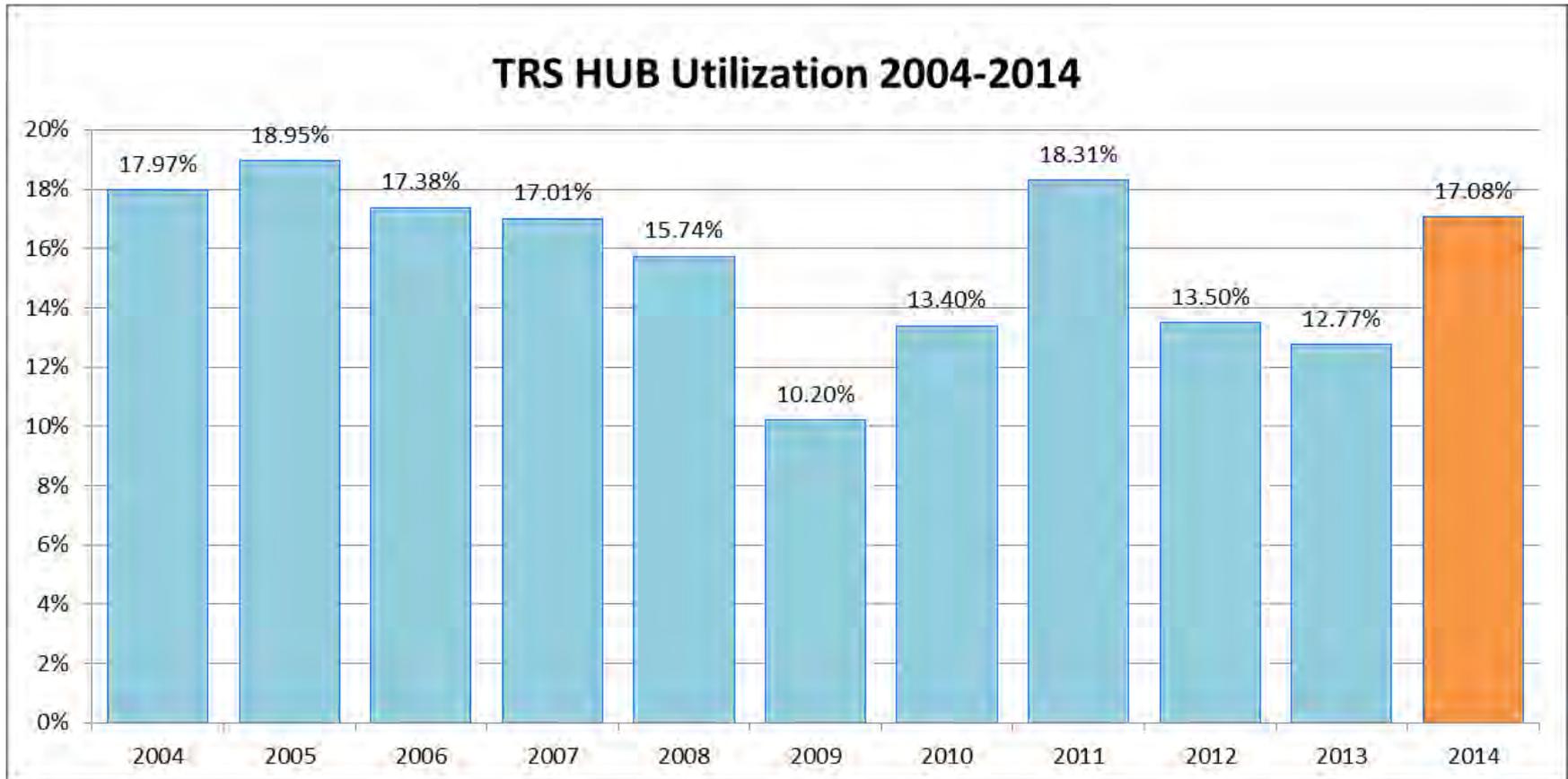
Darryl Gaona

# TRS Strategic Plan Support

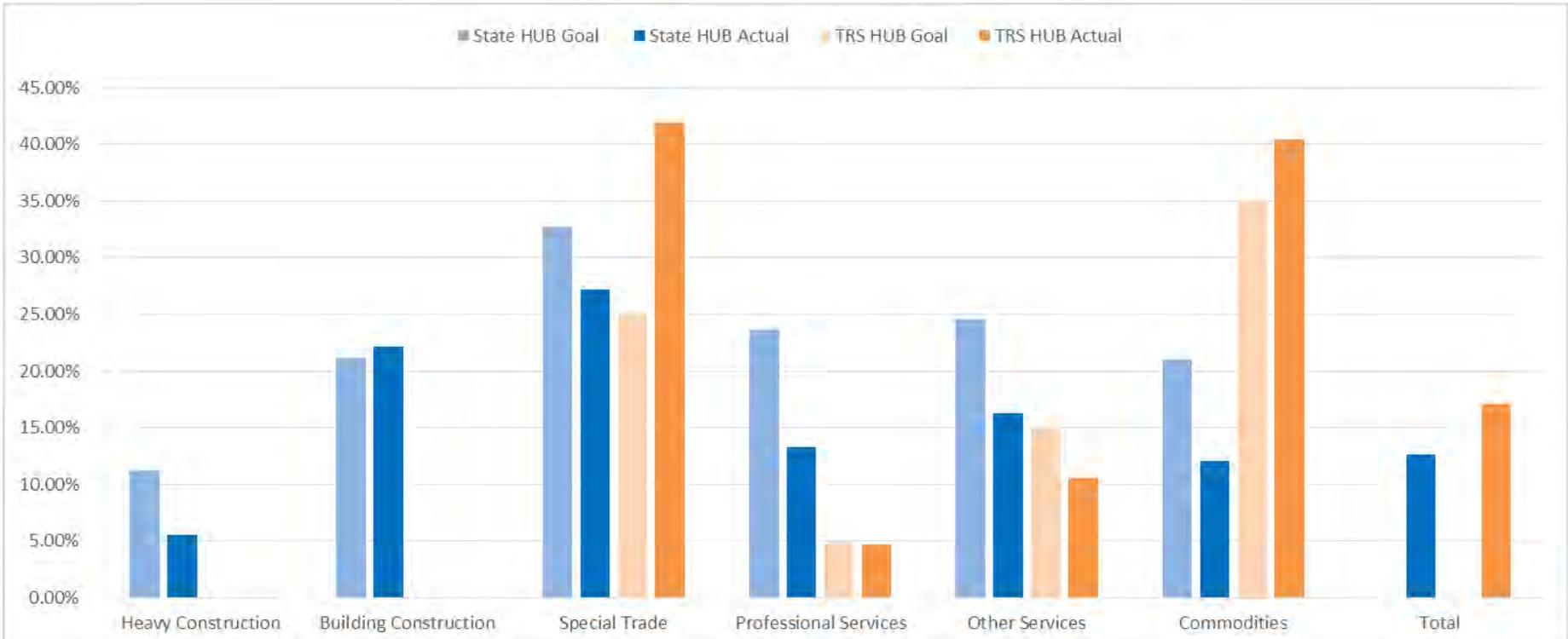
TRS' HUB Program supports TRS' Strategic Plan Goal #5 to promote purchasing selection practices that foster meaningful and substantive inclusion of Historically Underutilized Businesses (HUBs) as follows:

- **Objective 1:** TRS' FY2014 aggregate HUB expenditure exceeded the State of Texas aggregate HUB expenditure by 4.5% (17.08% vs 12.58%).
- **Strategy 1:** TRS continues to educate staff on HUB utilization goals as well as identifying and providing procurement opportunities to HUBs.
- **Tactic 1:** TRS voluntarily complies with the Comptroller's HUB Program guidelines on soliciting HUB vendors.
- **Tactic 2:** When Subcontracting opportunities are identified for purchases over \$100,000, TRS requires vendors to submit completed HUB Subcontracting Plans with their response.
- **Tactic 3:** TRS attempts to maximize HUB opportunities under existing statewide contracts.
- **Tactic 4:** TRS has and will continue to attend HUB forums to broaden HUB outreach.
- **Tactic 5:** TRS will host a joint annual HUB forum with the Texas Workforce Commission on April 23, 2015.
- **Tactic 6:** TRS routinely assists HUB vendors in doing business with TRS and other state agencies. Our *12 Tips for Contracting with State Agencies for Good or Services* and *Secrets of Selling to the State* continue to be warmly received.

# Historical Perspective



# TRS 2014 Comparison with State of Texas by HUB Category



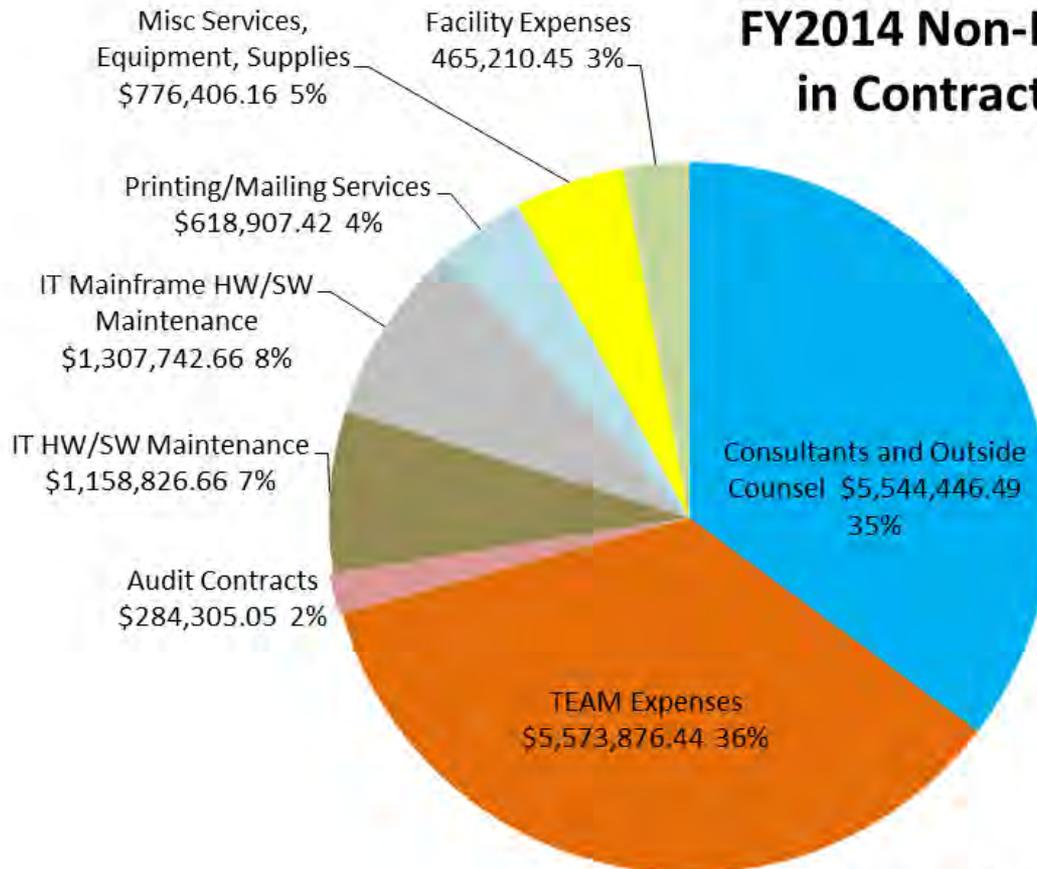
	Heavy Construction	Building Construction	Special Trade	Professional Services	Other Services	Commodities	Total
State HUB Goal	11.20%	21.10%	32.70%	23.60%	24.60%	21.00%	
State HUB Actual	5.53%	22.13%	27.20%	13.25%	16.29%	12.06%	12.58%
TRS HUB Goal	0.00%	0.00%	25.00%	5.00%	15.00%	35.00%	
TRS HUB Actual	0.00%	0.00%	41.95%	4.69%	10.59%	40.43%	17.08%

# TRS HUB Expenditure Comparison FY2013 and FY2014

FY2013							
	Total Expenditures	Non-HUB Expenditures	Non-HUB %	HUB Expenditures	HUB %	TRS Goal %	State Annual Procurement Goal %
Heavy Construction	\$ -	\$ -		\$ -			11.20%
Building Construction		\$ 44,575.00		\$ -			21.10%
Special Trade	\$ 566,306.00	\$ 439,056.00	77.53%	\$ 127,250.00	22.47%	25.00%	32.70%
Professional Services	\$ 3,169,241.00	\$ 3,031,491.00	95.65%	\$ 137,750.00	4.35%	5.00%	23.60%
Other Services	\$ 10,103,211.00	\$ 9,084,409.00	89.92%	\$ 1,018,801.00	10.08%	20.00%	24.60%
Commodity Purchasing	\$ 3,508,967.00	\$ 2,578,294.00	73.48%	\$ 930,672.00	26.52%	50.00%	21.00%
<b>Total:</b>	<b>\$ 17,347,725.00</b>	<b>\$ 15,177,825.00</b>	<b>87.49%</b>	<b>\$ 2,214,473.00</b>	<b>12.77%</b>		
FY2014							
	Total Expenditures	Non-HUB Expenditures	Non-HUB %	HUB Expenditures	HUB %	TRS Goal %	State Annual Procurement Goal %
Heavy Construction	\$ -	\$ -		\$ -			11.20%
Building Construction	\$ (99,626.00)	\$ (99,626.00)	100.00%	\$ -			21.10%
Special Trade	\$ 984,475.00	\$ 571,465.00	58.05%	\$ 413,009.00	41.95%	25.00%	32.70%
Professional Services	\$ 3,386,295.00	\$ 3,227,545.00	95.31%	\$ 158,750.00	4.69%	5.00%	23.60%
Other Services	\$ 19,242,300.00	\$ 17,205,392.00	89.41%	\$ 2,036,908.00	10.59%	15.00%	24.60%
Commodity Purchasing	\$ 6,033,861.00	\$ 3,594,612.00	59.57%	\$ 2,439,248.00	40.43%	35.00%	21.00%
<b>Total:</b>	<b>\$ 29,547,305.00</b>	<b>\$ 24,499,388.00</b>	<b>82.92%</b>	<b>\$ 5,047,915.00</b>	<b>17.08%</b>		

# Primary Non-HUB Contracting Categories

## FY2014 Non-HUB Expenditures in Contracts Over \$50,000



Represents 82.92% of Non-HUB Expenditures

# FY2015 TRS HUB Goal Resolution

**Whereas**, TRS staff met on January 30, 2015 and reviewed the report of the Texas Comptroller of Public Accounts on TRS HUB expenditures for fiscal year 2014 and discussed the 2014 HUB Program Annual Status Report to be presented to the TRS Board of Trustees (Board);

**Whereas**, TRS staff developed proposed HUB goals for fiscal year 2015 for the Board to consider; and

**Whereas**, The Board has received and discussed the HUB expenditure reports, and the Board desires to adopt TRS' HUB goals for fiscal year 2015; now, therefore, be it

**Resolved**, That the Board hereby adopts the following HUB expenditure goals for fiscal year 2015:

Category	TRS FY14 Goals	TRS FY14 Actual	TRS FY15 Goals
Special Trade	25%	41.95%	<b>35%</b>
Professional Services	5%	4.69%	5%
Other Services	15%	10.59%	15%
Commodity Purchases	35%	40.43%	<b>45%</b>

# Future Initiatives

TRS will continue to:

- Support and implement responsibilities as determined by Texas Comptroller of Public Accounts (CPA)
- Host HUB Forums with other agencies and participate in local and selected statewide HUB events including CPA Forums
- Conduct one-on-one meetings with HUB vendors and assist with identifying business opportunities with TRS and other State agencies and assist vendors in becoming certified or re-certified as a Texas HUB
- Encourage vendor participation in the Mentor-Protégé Program
- Support and enhance the Emerging Managers program initiated by the Investments Division

While TRS' initiatives, including subcontracting and attendance of HUB Economic Opportunity Forums, have been successful, TRS is committed to improving its outreach to HUBs to increase their utilization and success.

# Conclusion

- Since the inception of the HUB Program, TRS' HUB utilization percentages have fluctuated from 1.25% in FY 1992 up to a high point of 25.83% in FY 2000. The FY 2014 percentage is 17.08%, up 4.31% from FY13.
- TRS' overall HUB utilization performance is higher at 17.08% than the overall State of Texas performance of 12.58%.
- TRS recognizes the importance of the HUB program and develops initiatives to promote and increase HUB opportunities. TRS is committed to achieving established goals and making a good faith effort in all areas.

# Appendix A – HUB Definition

A HUB is defined as a corporation, sole proprietorship, partnership or joint venture formed for the purpose of making a profit in which the principal place of business is in the State of Texas and at least 51% is owned, operated, and actively controlled and managed by one or more persons who are members of the following economically disadvantaged groups:

- Black Americans
- Hispanic Americans
- Asian Pacific Americans
- Native Americans
- American Women
- Veterans with at least a 20% service-connected disability

# Appendix B

## *Secrets of Selling To The State*

*Secrets of Selling to the State* is a presentation created in order to provide vendors a better understanding of the State's and TRS' contracting processes, the resources and tools readily available for use by vendors to identify and earn contracting opportunities, and instructions on how to use them. Vendors can benefit from this knowledge at no cost and with a minimum investment of time.

The presentation contains sections specific to those vendors seeking opportunities both as prime contractors and subcontractors.

This was first presented at the 10th Annual TRS-TWC HUB Forum and is available on TRS' website at:

[http://www.trs.state.tx.us/info.jsp?submenu=procurement&page\\_id=/procurement/selling\\_to\\_state](http://www.trs.state.tx.us/info.jsp?submenu=procurement&page_id=/procurement/selling_to_state)

# Appendix C

## *TRS' 12 Tips for Contracting with State Agencies*

*TRS' 12 Tips for Contracting with State Agencies* is a two page handout that covers all the basic information for any vendor that wants to do business with the State. This document provides essential information in a concise and easily understood format. It is provided to vendors at Economic Opportunity Forums, one-on-one meetings, and when vendors contact us about how to do business with TRS.

This document is also available on the TRS web site at:

[http://www.trs.state.tx.us/info.jsp?submenu=procurement&page\\_id=/procurement/contracting\\_tips](http://www.trs.state.tx.us/info.jsp?submenu=procurement&page_id=/procurement/contracting_tips)

# Questions?



**Tab 6 A**

# Teacher Retirement System of Texas

## Review of Economic Regimes, Historical Capital Markets, and Investment Strategy

Presented by:

Dr. Keith C. Brown, University of Texas  
Brady O'Connell, Aon Hewitt Investment Consulting

February 11, 2015



# Introduction

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Understanding the relationship between indicators of economic regimes (or prevailing economic conditions) and capital market performance

- **Purpose of understanding the relationship between economics and asset class investments**
  - Diversifying the portfolio across potential economic regimes:
    - Strategic Asset Allocation
  - Anticipating and exploiting future economic regimes:
    - Tactical Asset Allocation
  
- **Review of research literature**
  - What is the theoretical connection?
  - Empirical evidence connecting economic regimes and capital market returns
  
- **Summary of TRS approach to viewing economic regimes**
  - TRS definition of regimes
  - Which asset classes perform well under each regime?
  
- **Selecting an asset allocation strategy within the regime model**



# Purpose for Understanding the Relationship Between Economic Regimes and Capital Market Behavior

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- There is by now a considerable body of research linking both the short-term and the long-term performance of a variety of asset class investments to variations in the extant level of macroeconomic conditions.
  - For instance, equity holdings tend to produce higher returns than fixed-income holdings in periods of rising growth in real GDP and stable or falling levels of inflation.
- The logical conclusion of this evidence can be summarized as follows:

*Different asset classes perform differently in different economic regimes.*

- One immediate implication of this fact is that in order to fully diversify their portfolios, investors must consider the underlying economic causes for when and why various asset classes produce different investment performance at different points in time.
- Extending this notion, it is reasonable to think that what investors ultimately do is to diversify their portfolios prudently across economic regimes instead of across asset class categories per se.



# Purpose for Understanding the Relationship Between Economic Regimes and Capital Market Behavior (cont.)

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- Long-term investors, such as Texas TRS, can use information about the relationships between capital market investments and economic regimes in at least two ways. First, and foremost, it is useful to consider the connection on a **non-predictive basis**.
  - Without making any effort to forecast future economic conditions, knowing that different asset classes produce different returns in different environments suggests that **investors should hold a diversified set of asset class positions** in order to avoid the risk of *not owning* something that will benefit from whichever economic regime occurs.
  - The important implication of this is that, in order to avoid making implicit forecasts of future economic conditions, investors should own a well-diversified set of asset class holdings designed to produce payoffs in a variety of possible economic regimes.
  - This is the investor's **Strategic Asset Allocation** decision.
- The second way investors can exploit this relationship is on a **predictive basis**.
  - That is, if future economic regimes can be forecasted accurately, it is possible to temporarily adjust the target weights in the investor's strategic asset allocation scheme in an effort to **produce higher-than-expected risk-adjusted returns** (i.e., "alpha").
  - For instance, if the investor forecasts an economic regime of high GDP growth with low inflation for the next investment period, an overweight position in equities (and offsetting underweight position in fixed-income securities) might be expected to outperform the target allocation portfolio.
  - This is the investor's **Tactical Asset Allocation** decision.



# Reviewing the Research Literature: Theory and Evidence

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- Much of the academic and practitioner-oriented research literature on the subject focuses on using **predictable economic relationships** and **changes in economic regimes** to inform the investor's asset allocation decisions.
- There have been a number of **theoretical** and **empirical** studies on this topic.
  - The most significant theoretical research in this area dates to the work of Merton (*J. of Economic Theory*, 1971; *Econometrica*, 1973), who developed an approach to solving a multi-period portfolio allocation problem with shifting investment opportunities, and Cochrane (NBER, 1999), who showed how the portfolio choice problem can change when security returns are predictable.
  - A general conclusion of this theoretical research is that investors will often **seek to hold a diversified portfolio** with a somewhat lower average return or higher variance provided that it **provides a hedge against economic downturns** (e.g., Campbell, Chan, and Viceira (*J. of Financial Economics*, 2003)). From this it can be inferred that different asset classes produce different payoffs in various economic conditions.
  - On the other hand, most of the empirical work in the area simply tries to **document statistical links** between a series of indicators of economic conditions and the returns, risks, and correlations associated with a variety of popular asset classes. This research has also been extended to show how superior risk-adjusted returns are produced by exploiting these links on a tactical basis.



## Reviewing the Research Literature: Theory and Evidence (cont.)

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- On the following pages, we highlight some of the **main findings** from the myriad **empirical studies** that have been produced on this subject.
- There are some **important points to take away** from this research with respect to TRS' asset allocation process.
  - Although economic regimes have been defined in the literature in myriad ways, a consistent result is that **asset classes can produce very different investment results during different economic regimes**. So, both allowing for and anticipating future economic conditions can be valuable activities.
  - Since TRS is a very long-term investor, the most important way in which this relationship is used is in setting the **strategic asset allocation policy**. That is, rather than trying to anticipate regimes and make significant adjustments to benchmark positions, TRS has aligned various asset classes to each regime and sized them based on the anticipated frequency with which they may occur.
  - TRS also makes relatively modest attempts to integrate economic forecasting into their **tactical process for adjusting strategic asset allocation** weights in order to take advantage of perceived regime changes.



# J. Brocato and S. Steed, 1998, “Optimal Asset Allocation Over the Business Cycle,” *The Financial Review*

## Return/risk summary statistics (1972–1993)

This table shows geometric average annual total returns and annualized standard deviations for the nine asset classes from January 1972 through December 1993.

Asset class	Expansions	Recessions	Full period
<b>Common Stocks</b>			
Geometric Annual Total Return (%)	14.691 *	4.237	12.965
Annualized Standard Deviation	14.121 **	21.597	15.588
<b>Small Cap Stocks</b>			
Geometric Annual Total Return (%)	20.452 *	5.608	17.445
Annualized Standard Deviation	20.181 **	27.715	21.616
<b>Treasury Bills/Cash Equivalents</b>			
Geometric Annual Total Return (%)	6.848 *	9.754	7.319
Annualized Standard Deviation	2.786	3.158	2.760
<b>Long-Term Government Bonds</b>			
Geometric Annual Total Return (%)	7.815 *	22.228	10.069
Annualized Standard Deviation	9.880 **	15.300	11.016
<b>Intermediate Government Bonds</b>			
Geometric Annual Total Return (%)	7.952 *	18.627	9.574
Annualized Standard Deviation	5.070 **	10.023	6.201
<b>Long-Term Corporate Bonds</b>			
Geometric Annual Total Return (%)	8.232 *	20.660	10.183
Annualized Standard Deviation	8.336 **	15.627	9.942
<b>Real Estate</b>			
Geometric Annual Total Return (%)	16.812 *	2.535	14.483
Annualized Standard Deviation	12.895	19.010	14.099
<b>Foreign Stocks</b>			
Geometric Annual Total Return (%)	17.876 *	-0.113	14.592
Annualized Standard Deviation	16.198 **	24.611	17.875
<b>Precious Metals</b>			
Geometric Annual Total Return (%)	14.254 *	8.508	12.838
Annualized Standard Deviation	30.314	44.336	32.944
Average Annual Total Return (All Assets)	12.770	10.227	12.163
Average Annual Standard Deviation (All Assets)	13.309 *	20.153	14.671

\* Expansion average is significantly different from recession average at the 5% level.

\*\* Expansion standard deviation is significantly different from recession standard deviation at the 5% level.

- In this early study of the relationship between economic regimes and asset class performance, the authors define regimes by peaks and troughs in the business cycle, as designated by the National Bureau of Economic Research.
- Using nine debt, equity, real estate, and commodity assets over 1972-1993, they show:
  - Expansions favor equities and recessions favor debt.
  - Correlations between asset classes vary greatly over economic regimes.
  - The overall volatility of a strategic allocation combining these asset classes is not smoothed out over the economic cycle.

## G. Jensen and J. Mercer, 2003, “New Evidence on Optimal Asset Allocation,” *The Financial Review*

### Summary of return and risk measures, 1972–1999

Table entries are annualized from monthly observations (annual return =  $[1 + \text{monthly geo mean return}]^{12} - 1$ ; annual standard deviation = monthly standard deviation  $\times 12^{1/2}$ ).

	Monetary cycle		Business cycle		Full period %
	Expansive phase %	Restrictive phase %	Expansion phase %	Recession phase %	
<b>Large company stocks</b>					
Mean annual return	21.06*	4.84	15.42	5.92	14.07
Annual standard deviation	13.66*	17.01	14.08*	21.25	15.24
<b>Small company stocks</b>					
Mean annual return	23.71*	4.49	16.14	10.60	15.36
Annual standard deviation	18.64*	23.40	19.50*	28.07	20.83
<b>Treasury bills</b>					
Mean annual return	5.75*	8.26	6.37*	9.43	6.78
Annual standard deviation	0.60*	0.82	0.69*	0.86	0.77
<b>Long-term gov't bonds</b>					
Mean annual return	8.60	8.78	7.45	16.70	8.67
Annual standard deviation	9.87	11.49	9.57*	15.32	10.55
<b>Intermediate gov't bonds</b>					
Mean annual return	8.16	8.73	7.21	16.18	8.39
Annual standard deviation	5.07*	6.90	4.93*	9.84	5.89
<b>Long-term corporate bonds</b>					
Mean annual return	9.67	7.55	7.64	16.29	8.79
Annual standard deviation	8.35*	10.71	7.99*	15.52	9.39
<b>Real estate</b>					
Mean annual return	19.27*	2.41	12.85	6.67	11.98
Annual standard deviation	12.47*	14.95	12.61*	19.34	13.69
<b>Foreign stocks</b>					
Mean annual return	21.97*	2.63	16.20	-1.79	13.56
Annual standard deviation	15.97	18.26	15.62*	24.36	17.10
<b>Precious metals</b>					
Mean annual return	1.28*	15.69	5.83	14.73	7.01
Annual standard deviation	17.82*	27.27	20.63*	30.96	22.29

\* Indicates a significant difference at 5% between returns or standard deviations in Expansive vs. Restrictive (and, separately, between Expansion vs. Recession) phases. Table 1 contains business cycle and monetary cycle dates.

- In a follow-up to the Brocato-Steed study, the authors of this research redefined economic regimes in terms of turning points in the monetary cycle (i.e., expansionary or restrictive Fed policies) instead of turning points in the business cycle.
- Using nine debt, equity, real estate, and commodity assets over 1972-1999, they show:
  - Monetary expansions and restrictions affect equity and real estate more than debt.
  - Monetary restrictions tend to favor precious metals the most.
  - Portfolios formed with respect to monetary cycle changes tend to outperform those based on business cycle changes on a risk-adjusted basis.

## A. Dzikevicius and J. Vetrov, 2012, “Analysis of Asset Classes Through the Business Cycle,” *Business Management and Education*

- This study looks at the historical performance of six different asset classes (US equity, global equity, bonds, gold, REITs, and commodities) from 1976-2011
  - Average returns and risk statistics are calculated for four different phases of the business cycle, using the OECD Composite Leading Indicator (CLI) measure:
    - Expansion (CLI increasing and above 100)
    - Downturn (CLI decreasing and above 100)
    - Slowdown (CLI decreasing and below 100)
    - Recovery (CLI increasing and below 100)

**Table 1.** Data of asset classes (Source: created by authors)

Asset Class	Representing index	Source	Time period
US Stocks	S&P 500 index.	finance.yahoo.com	
EAFE stocks (Europe/Japan equity)	MSCI EAFE index	mscibarra.com	
Bonds	Barclays Capital U.S. Aggregate Bond Index	bloomberg.com	1976.02– 2011.08 (monthly)
Gold	Gold	World gold council	
Real estate	FTSE NAREIT US Real Estate Index	ftse.com	
Commodities	S&P GSCITM Total Return Index	Bloomberg.com	

## A. Dzikevicius and J. Vetrov, 2012, (cont.)

**Table 3.** Performance of assets through business cycle (Source: own calculations)

	S&P 500	EAFE	Bonds	Gold	REIT	Commodities
<b>Average monthly growth</b>						
Recovery	1.29%	1.92%	0.66%	0.68%	1.86%	1.16%
Expansion	0.62%	0.88%	0.28%	0.60%	0.49%	1.65%
Slowdown	0.48%	0.49%	0.71%	1.74%	1.31%	1.11%
Downturn	0.48%	-0.25%	1.14%	-0.08%	0.70%	-1.03%
<b>Standard Deviation</b>						
Recovery	3.83%	4.43%	1.56%	4.82%	3.45%	4.63%
Expansion	4.10%	4.45%	1.10%	5.06%	4.20%	4.43%
Slowdown	3.85%	4.17%	1.55%	5.98%	3.87%	5.86%
Downturn	5.57%	6.38%	2.13%	6.17%	6.90%	6.71%
<b>Return/Standard deviation</b>						
Recovery	0.34	0.43	0.42	0.14	0.54	0.25
Expansion	0.15	0.20	0.25	0.12	0.12	0.37
Slowdown	0.13	0.12	0.46	0.29	0.34	0.19
Downturn	0.09	-0.04	0.53	-0.01	0.10	-0.15

- The authors reach several conclusions:
  - Asset prices rise and fall significantly during the business cycle.
  - Asset classes show markedly different performance—both return and risk—during different phases of the business cycle.
  - Knowledge of future business cycle conditions can be exploited by investors in designing their asset allocation policies.

## A. Sheikh and J. Sun, 2011, “Regime Change,” JPMorgan Asset Management Working Paper

- This study analyzes how various asset classes perform over the 1973-2010 period in four different economic regimes and then presents a framework for a regime-based asset allocation strategy.
  - The authors look at four primary economic variables: real GDP growth, inflation, monetary policy, and labor market slack.
  - They use this information to define four economic regimes over their holding period and document the best and worst asset class investments in each regime:
    - Rising Growth & Rising Inflation
    - Rising Growth & Falling Inflation
    - Falling Growth & Rising Inflation
    - Falling Growth & Falling Inflation

EXHIBIT 1: AVERAGE ANNUAL RETURN (%) FROM DIFFERENT ASSET CLASSES OVER DIFFERENT HISTORICAL ECONOMIC REGIMES

Asset class	Regime 1 Rising growth + Rising inflation 32 periods	Regime 2 Rising growth + Falling inflation 34 periods	Regime 3 Falling growth + Rising inflation 36 periods	Regime 4 Falling growth + Falling inflation 47 periods
U.S. Dollar	-4.7 (Worst)	2.6	-2.8 (Worst)	1.7
Commodities	9.1 (Best)	1.5 (Worst)	11.7 (Best)	-6.3 (Worst)
Treasuries	3.9	8.7	5.5	11.5
Credit	6.8	12.6	2.1	12.1 (Best)
U.S. Equities	4.5	14.7 (Best)	1.0	5.5
Average return	3.9	8.0	3.5	4.9

Source: J.P. Morgan Asset Management. For illustration purposes only. Analysis based on quarterly data and rolling annual returns from Q4 1973 to Q4 2010.

## A. Sheikh and J. Sun, 2011 (cont.)

- The authors reach three main conclusions:
  - The four economic regimes are useful ways to define the investment environment and these regimes dominate financial market performance.
  - No single portfolio is resilient to all economic regimes.
  - A regime-based asset allocation may have a significant impact on portfolio efficiency.
  
- They recommend investors: (i) develop the relationship between economic factors and financial markets, (ii) model the behavior of different asset classes in different economic regimes, and (iii) assess the impact of different economic regimes at the portfolio level.

**EXHIBIT 6: IMPLIED ASSET CLASS RELATIVE PERFORMANCE UNDER DIFFERENT ECONOMIC REGIMES TO YEAR ENDING DECEMBER 2011**

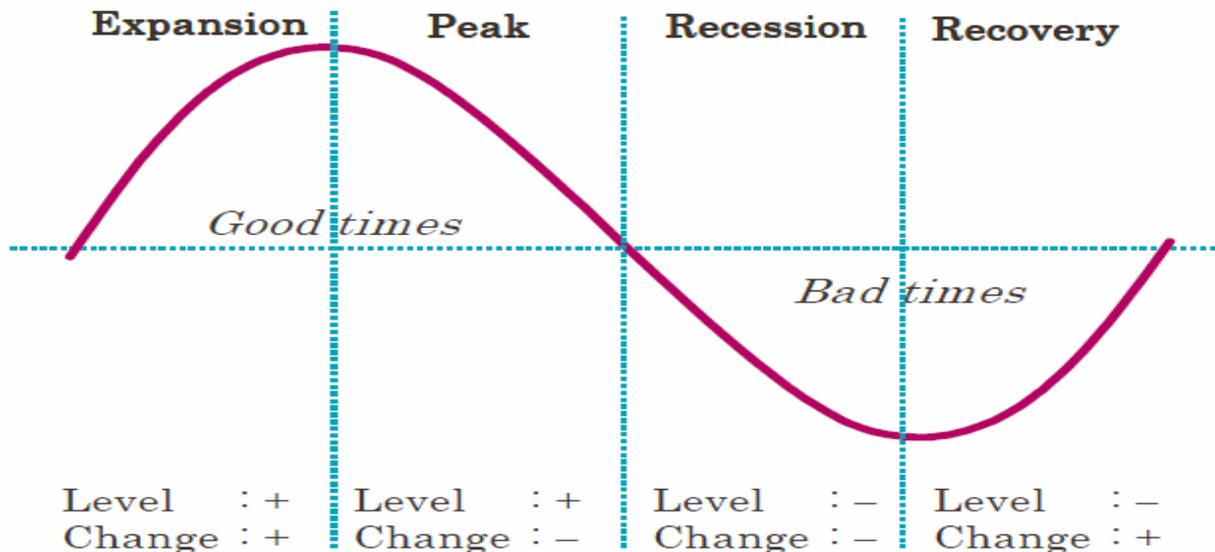
Scenario	FROM		TO				
	Year ended December 2010	Severe recession	Recession	Stagnant economy	Moderate recovery	Strong recovery	Strong recovery with inflation
1. Best performer	Commodities	U.S. Dollar	Treasuries	Treasuries	U.S. Equities	U.S. Equities	Commodities
2. Above median performer	U.S. Equities	Treasuries	U.S. Dollar	Credit	Credit	Commodities	U.S. Dollar
3. Median	Credit	Credit	Credit	U.S. Dollar	Treasuries	Credit	Treasuries
4. Below median performer	Treasuries	U.S. Equities	U.S. Equities	U.S. Equities	Commodities	Treasuries	U.S. Equities
5. Worst performer	U.S. Dollar	Commodities	Commodities	Commodities	U.S. Dollar	U.S. Dollar	Credit

Source: J.P. Morgan Asset Management. For illustration purposes only.



P. Van Vliet and D. Blitz, 2011, “Dynamic Strategic Asset Allocation: Risk and Return Across Economic Regimes,” *Journal of Asset Management*

- Using data for the period 1948-2007, this study identifies four regimes in the economic cycle and finds that these regimes capture pronounced time-variation in the risk and return properties of several different asset classes, as well as in the risk of a traditional strategic allocation comprising these asset classes.
  - Eight different asset classes are used: US large-cap equity, US small-cap equity, US value equity, US growth equity, US credit fixed-income, US treasuries, commodities, and cash.
  - Four economic indicators are used: Credit Spreads, Earnings yields, US Manufacturers Production index, US unemployment rate.
  - These economic indicators are then used to produce the following economic regimes:



**Figure 1:** Economic cycle with 4 regimes

## P. Van Vliet and D. Blitz, 2011, (cont.)

	Equity	Value	Growth	Small	Credits	Bonds	Comm	SAA
<b>Panel A</b>								
Full sample	5.6%	6.4%	4.7%	6.6%	0.5%	0.6%	1.3%	2.9%
<b>Panel B</b>								
Expansion	3.7%	3.2%	3.9%	0.9%	-1.0%	-0.4%	5.7%	1.8%
Peak	0.2%	1.9%	-1.6%	2.9%	-3.0%	0.1%	-0.2%	0.5%
Recession	10.2%	11.1%	9.0%	12.7%	1.6%	1.4%	-3.7%	4.8%
Recovery	5.1%	7.1%	3.3%	9.4%	3.0%	1.2%	6.1%	3.4%

**Table 4:** Annualized excess return of asset classes during each economic regime. Sample period 1948-2007

	Equity	Value	Growth	Small	Credits	Bonds	Comm	SAA
<b>Panel A</b>								
Full sample	14.2%	14.0%	15.4%	18.9%	6.4%	4.7%	15.6%	6.2%
<b>Panel B</b>								
Expansion	13.8%	14.0%	14.6%	18.7%	4.5%	3.5%	14.0%	5.6%
Peak	13.7%	13.8%	15.2%	19.8%	5.1%	3.9%	18.1%	5.7%
Recession	14.6%	14.0%	16.0%	18.7%	8.2%	5.6%	15.9%	6.6%
Recovery	13.9%	13.3%	15.3%	18.5%	6.4%	5.1%	15.7%	6.4%

**Table 3:** Risk of asset classes for each economic regime. Risk is defined as annualized volatility. Sample period 1948-2007

- The authors conclude that:
  - Asset class excess returns vary greatly over different economic regimes.
  - Asset class risk levels also vary over different economic regimes, but not as dramatically as do excess returns.
  
- They also show that a dynamically adjusted strategic allocation scheme can produce superior risk-adjusted returns to either a static strategic allocation policy or even a tactical asset allocation approach that does not explicitly control the risk level of the investment.

## Implementation at TRS: Economic Regimes Defined

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- TRS generally uses a four quadrant approach to defining different economic regimes with each regime defined by two variables: economic growth (as measured by Gross Domestic Product growth) and overall price levels (as measured by the Consumer Price Index).
  - This approach is similar to Sheikh and Sun paper discussed earlier—a research effort that grew out of TRS SPN collaboration.

	<b>Low Inflation</b>	<b>High Inflation</b>
<b>Low Growth</b>		
<b>High Growth</b>		



## Implementation at TRS: Economic Regimes Defined (cont.)

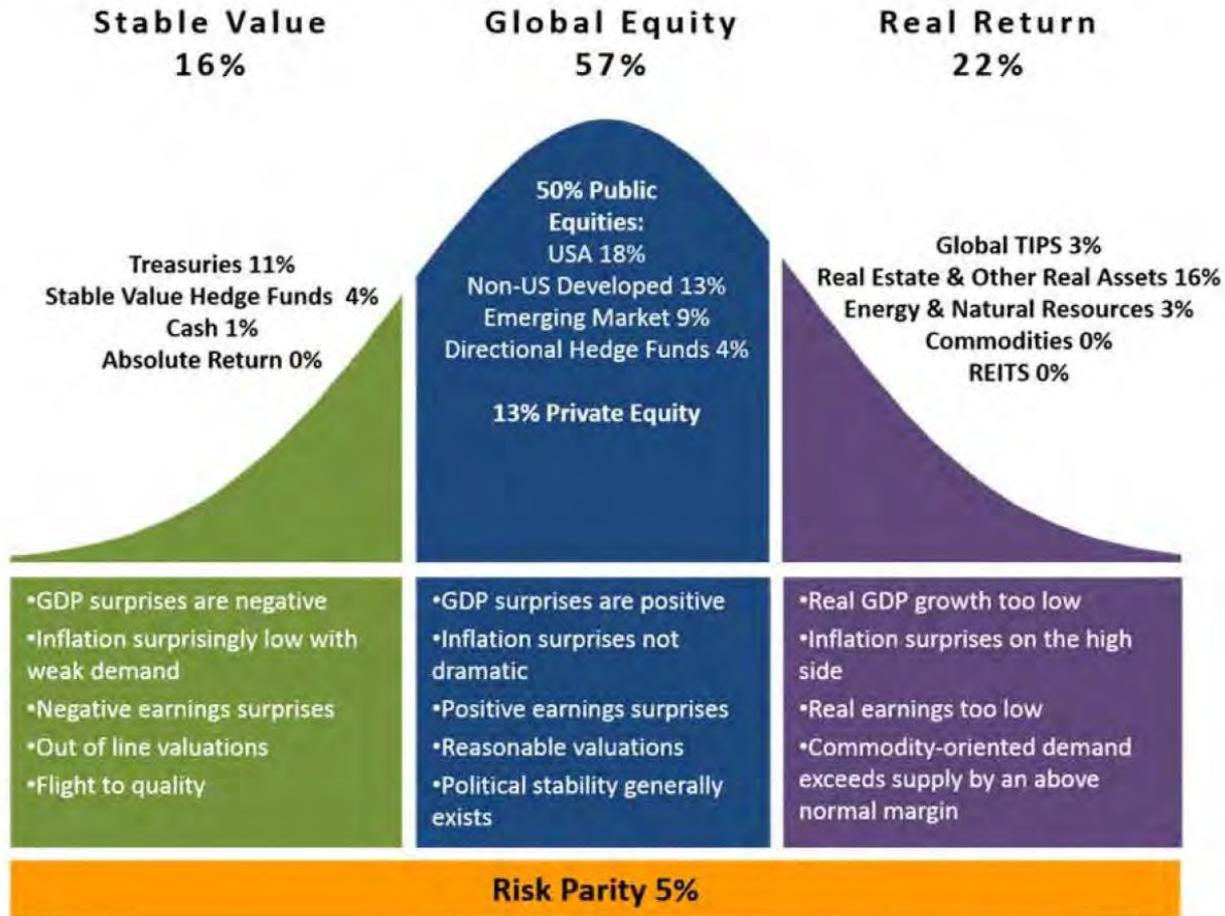
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- The TRS adaptation of this approach involves viewing the high growth quadrants as one regime—given it tends to favor equities and other growth-oriented investments, and naming each of the regimes to correspond with an asset category as defined in the TRS Investment Policy Statement.
  - Each of these broad asset categories consists of several underlying asset classes that generally perform well in each specific environment.

	<b>Low Inflation</b>	<b>High Inflation</b>
<b>Low Growth</b>	Stable Value	Real Return
<b>High Growth</b>	Global Equity	



# TRS Asset Allocation Policy



Target Weights as of October 1, 2014



Source: TRS Investment Management Division

## TRS Historical Asset Allocation Positioning

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- TRS has not always been as well diversified as now.
- As was the case for many other public funds, up until relatively recent times, asset portfolios were rather simple with government bonds dominating early investments with the next major step towards diversification being the addition of US equities.
- The table that follows illustrates a high level summary of TRS asset allocation strategy over time. We have used these broad asset allocation targets to “simulate” historical performance of an investment portfolio for longer time periods.
  - Actual quarterly and monthly rates of return for TRS investments only go back to 1991, so we simulate the actual allocation to illustrate how TRS *would or could have* performed over longer periods of time.



## TRS Historical Allocation Positioning (cont.)

School Year July 1 - June 30	Fixed Income	Public Equity	Private Equity	Hedge Funds	Real Estate/ Real Assets	REITs	Commodities
1937 - 1957	100.0%						
1957 - 1962	88% - 95%	5% - 12%					
1962 - 1969	80% - 85%	15% - 20%					
1969 - 1972	73% - 78%	22% - 27%					
1972 - 1980	69% - 71%	29% - 31%					
1980 - 1984	65% - 70%	29% - 32%			1% - 3%		
1984 - 1991	54% - 63%	31% - 38%			6% - 10%		
1991 - 1992	39.0%	54.4%			6.6%		
1992 - 1993	44.2%	50.9%			4.9%		
1993 - 1994	41.7%	53.9%			4.4%		
1994 - 1995	40.8%	55.6%			3.6%		
1995 - 1996	37.3%	59.7%			3.0%		
1996 - 1997	34.6%	63.4%			2.0%		
1997 - 1998	39.1%	59.3%			1.6%		
1998 - 1999	34.3%	64.7%			1.0%		
1999 - 2000	33.7%	65.7%			0.6%		
2000 - 2001	34.5%	63.7%	0.3%	0.8%	0.7%		
2001 - 2002	31.2%	66.6%	0.5%	1.1%	0.6%		
2002 - 2003	28.7%	68.8%	0.8%	1.2%	0.5%		
2003 - 2004	30.9%	66.2%	1.2%	1.3%	0.4%		
2004 - 2005	28.6%	68.1%	1.9%	1.3%	0.1%		
2005 - 2006	30.7%	65.0%	2.3%	1.7%	0.3%		
2006 - 2007	29.7%	63.3%	3.4%	2.5%	1.1%		
2007 - 2008	26.1%	56.0%	5.8%	3.8%	3.5%	1.7%	3.1%
2008 - 2009	27.0%	53.8%	6.7%	4.1%	4.3%	2.2%	1.9%
2009 - 2010	28.1%	49.5%	8.6%	4.4%	5.2%	2.0%	2.2%
2010 - 2011	19.1%	51.8%	9.3%	3.8%	11.9%	1.5%	2.7%
2011 - 2012	17.4%	46.8%	11.9%	3.5%	17.6%	2.1%	0.7%
2012 - 2013	18.3%	47.1%	12.1%	8.7%	13.5%		0.4%
2013 - 2014	18.5%	47.6%	12.3%	8.0%	11.7%		1.9%

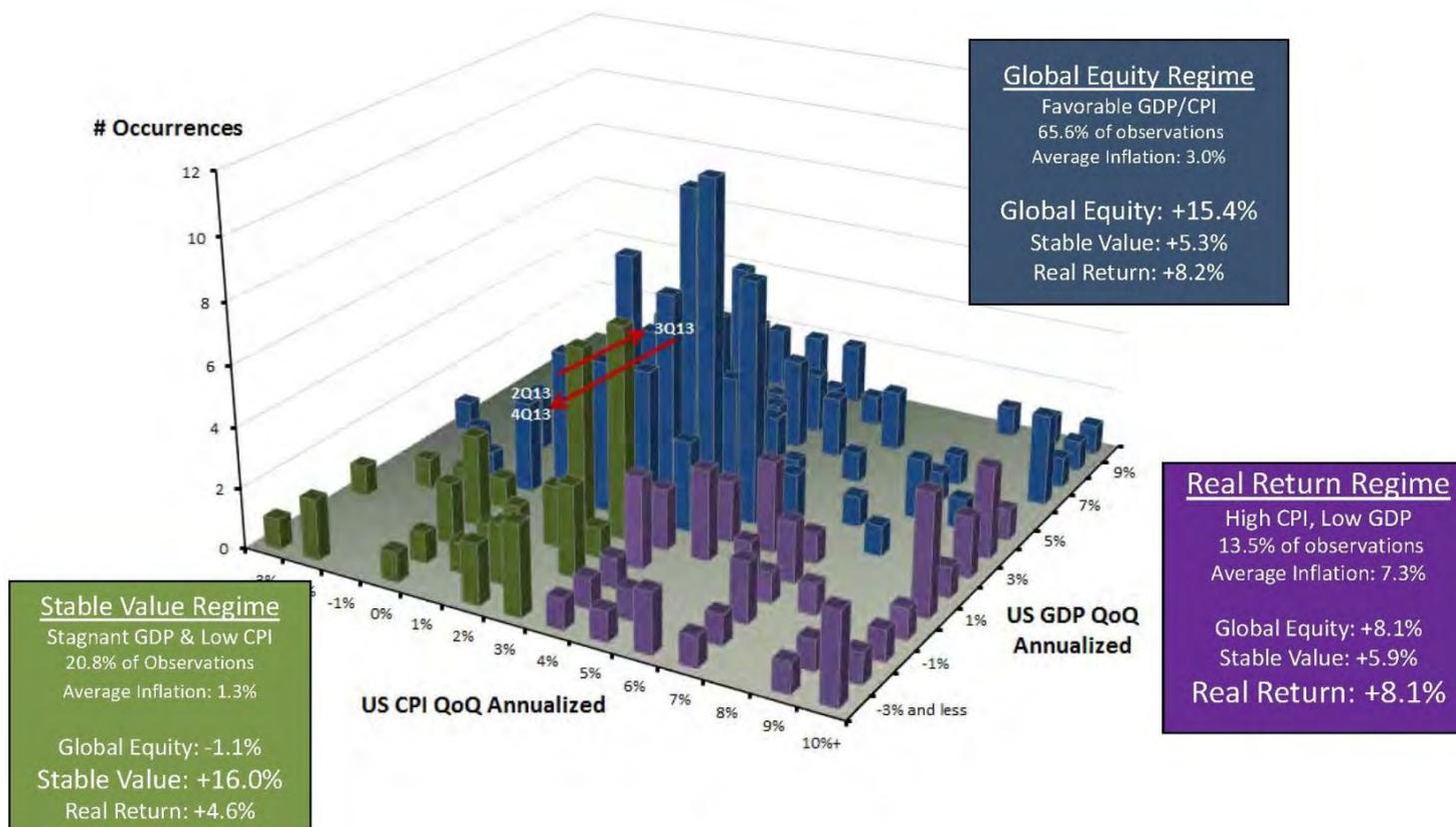
TRS Asset  
Allocation  
"Modern Era"



Source: TRS

# IMD Regime Tracking Exhibit

- While adopting a new and more diversified asset allocation, TRS also now regularly views performance through the lens of economic regimes.
- Below is a chart that is shared with the Board which plots the current and recent past regimes—and therefore which asset category should be expected to perform best.

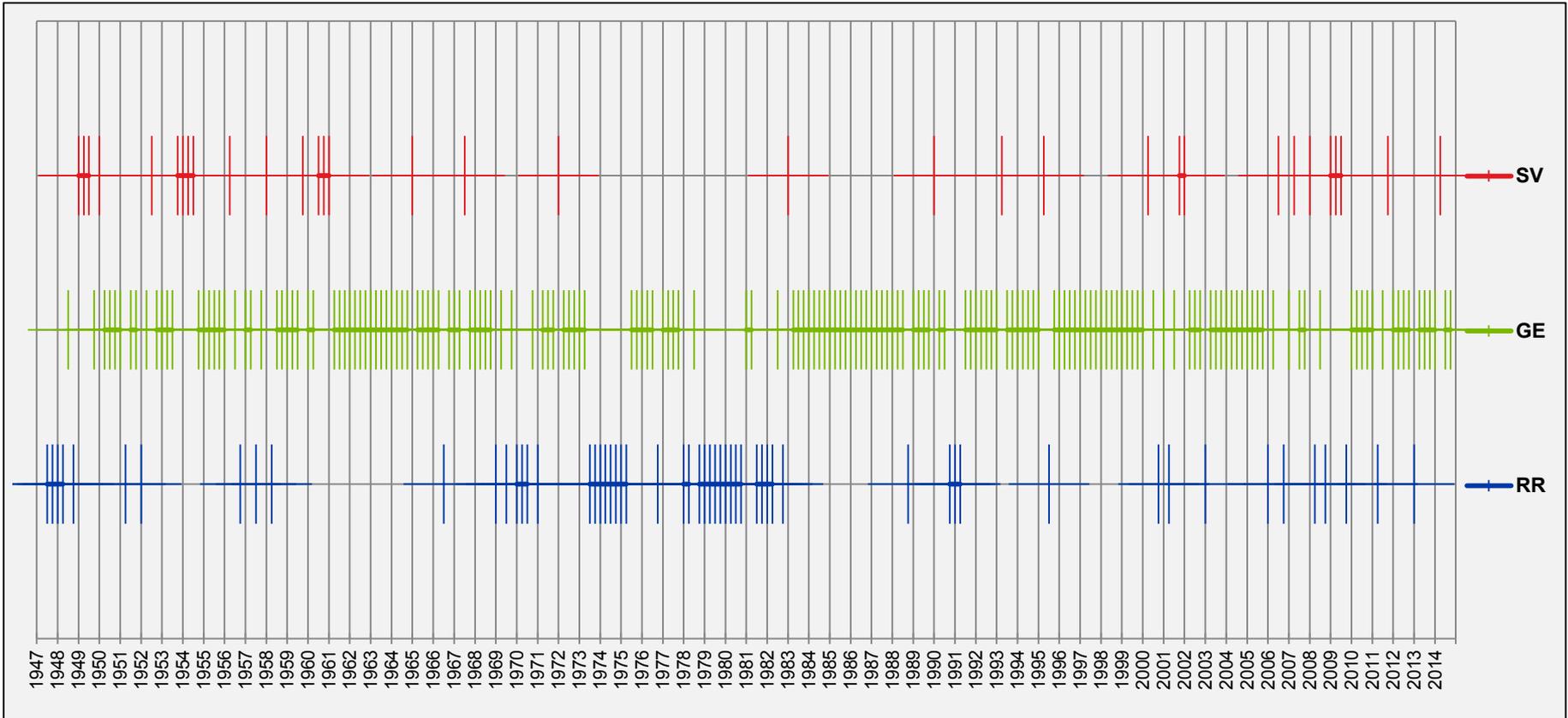


Source: TRS Investment Management Division



# TRS Investment Strategy Analysis

- A timeline of regime occurrences further illustrates the dominance of Global Equity over time but also reinforces the episodic nature of these regimes.



## Regime Frequency

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- As the previous picture illustrates, the **Global Equity regime has dominated** over time and it is often the longest lived regime.

Regime	Frequency Since 1947	Average Regime Duration (Quarters)	Longest Regime Duration (Quarters)
Global Equity	67.8%	4	22
Real Return	19.6%	2	9
Stable Value	12.6%	1	4

- While the Real Return and Stable Value regimes occur less frequently, asset class performance during those periods differs significantly than during Global Equity regimes.
- TRS asset allocation strategy roughly aligns with the historical frequency of each regime.**



## Historical Capital Market Performance

- While we do not have historical returns going back to 1947 for all current TRS asset classes, we can simplify the analysis by focusing on the major asset classes where we do have long term performance:
  - US Equities as a proxy for Global Equity
  - Treasury Bonds as a proxy for Stable Value
  - Consumer Price Index as a proxy for Real Return.
  
- As illustrated below, the proxy asset classes performed on average how we would expect them to – each posting the **highest average quarterly return in their respective economic regimes.**

	SV	GE	RR
<b>Regime</b>			
CPI	0.4%	0.7%	2.0%
Treasury Bonds	2.0%	1.3%	1.8%
U.S. Public Equity	0.8%	3.5%	0.2%
<b>TRS Composite</b>	<b>1.3%</b>	<b>2.1%</b>	<b>1.0%</b>



## Various Regimes In Focus

- The quarterly average data from the previous slide tends to mask some of the extreme performances during discrete regimes.
- We have highlighted below the performance of these proxy asset classes during periods when each of the 3 regimes dominated.

Regime	SV	GE	RR
	1953	1984-1987	1977-1981
CPI	1.0%	3.3%	10.0%
Treasury Bonds	4.1%	14.0%	1.2%
U.S. Public Equity	-1.2%	15.0%	8.1%
<b>TRS Composite</b>	<b>3.3%</b>	<b>17.3%</b>	<b>5.1%</b>



# Summary

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- There is a considerable body of academic research linking performance of a variety of asset class investments to variations in the level of macroeconomic conditions.
  - No single portfolio or asset class performs well in all economic regimes.
  - Asset classes can produce very different investment results during different regimes.
  - **Knowledge of economic regimes is helpful in setting long-term Strategic Asset Allocation.**
- The TRS portfolio is designed with broad asset categories that will perform well in specific economic regimes.
  - Within the asset categories, TRS has further diversification among various asset classes.
  - The size of the broad categories roughly corresponds to the historical frequency with which they have occurred.
  - While TRS is now highly diversified across asset classes and economic regimes, this has not always been the case.
- The IMD tracks regimes over time and helps stakeholders understand how various asset classes perform in these economic conditions.
  - Many of the asset classes now a part of policy were not viable alternatives in the past.
  - Prevailing economic conditions will influence the performance of the asset portfolio but the influence can sometimes be indirect and hard to anticipate with precision.



## Summary (cont.)

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- For a Board of Trustees charged with overseeing the investment portfolio, understanding asset allocation in the context of economic regimes is of critical importance.
  - We should expect some asset classes to be out of favor...this is by design.
  - Think of how Long Treasuries have performed during short periods of time in various quarters since the global financial crisis.
    - Underperformance by itself is not indicative of an investment strategy problem, but due to one regime being in favor over the other.
    - Long Treasuries can provide significant downside protection during the Stable Value regime, a period during which the bulk of the TRS asset portfolio--Global Equities—should struggle.
    - Stable Value regimes have been very short, lasting *on average* only 1 quarter.
- As was illustrated in great depth during the recent Strategic Asset Allocation review, in order to achieve its long term performance objective, TRS needs to embrace Global Equity as the most frequently occurring regime.
  - To ensure proper diversification, and mitigate downside risk, TRS also needs Real Return and Stable Value portfolios.



# Appendix: Historical Regime Details (1947 – Present)



## Appendix – Asset Performance Under Various Regimes

From	To	Regime	TRS Composite	Equity Composite	US Treasury Bonds	CPI
4/1/2014	9/30/2014	GE	4.15%	2.62%	2.21%	1.27%
1/1/2014	3/31/2014	SV	2.64%	1.08%	1.84%	0.49%
1/1/2013	12/31/2013	GE	12.07%	22.80%	-2.02%	0.92%
10/1/2012	12/31/2012	RR	2.49%	2.88%	0.21%	1.26%
10/1/2011	9/30/2012	GE	15.33%	20.99%	5.47%	1.43%
7/1/2011	9/30/2011	SV	-7.06%	-17.42%	3.85%	0.67%
4/1/2011	6/30/2011	GE	1.30%	0.25%	3.89%	1.35%
1/1/2011	3/31/2011	RR	4.23%	4.42%	0.04%	0.94%
10/1/2009	12/31/2010	GE	3.52%	3.34%	1.32%	0.40%
7/1/2009	9/30/2009	RR	12.46%	17.86%	2.29%	0.95%
10/1/2008	6/30/2009	SV	-12.87%	-15.25%	2.90%	-2.88%
7/1/2008	9/30/2008	RR	-10.21%	-16.61%	2.55%	2.37%
4/1/2008	6/30/2008	GE	0.58%	-1.58%	-3.03%	0.83%
1/1/2008	3/31/2008	RR	-4.54%	-9.28%	5.80%	1.43%
10/1/2007	12/31/2007	SV	-0.66%	-1.79%	4.25%	0.76%
4/1/2007	9/30/2007	GE	7.63%	10.95%	3.75%	2.05%
1/1/2007	3/31/2007	SV	2.23%	2.48%	1.75%	0.76%
10/1/2006	12/31/2006	GE	5.71%	9.06%	0.72%	-0.49%
7/1/2006	9/30/2006	RR	3.79%	4.50%	3.43%	1.10%
4/1/2006	6/30/2006	SV	-0.90%	-0.79%	0.10%	0.70%
1/1/2006	3/31/2006	GE	4.58%	6.97%	-1.09%	0.10%
10/1/2005	12/31/2005	RR	2.30%	3.33%	0.57%	2.15%
1/1/2003	9/30/2005	GE	3.44%	4.69%	0.49%	0.66%



## Appendix – Asset Performance Under Various Regimes

From	To	Regime	TRS Composite	Equity Composite	US Treasury Bonds	CPI
10/1/2002	12/31/2002	SV	5.64%	7.74%	0.80%	0.67%
1/1/2002	9/30/2002	GE	-14.35%	-25.11%	12.03%	1.35%
7/1/2001	12/31/2001	SV	-1.54%	-6.78%	5.26%	0.68%
4/1/2001	6/30/2001	GE	3.80%	2.70%	-0.56%	0.46%
1/1/2001	3/31/2001	RR	-6.93%	-12.48%	2.82%	0.98%
10/1/2000	12/31/2000	GE	-2.00%	-6.56%	4.73%	0.69%
7/1/2000	9/30/2000	RR	0.37%	-5.48%	3.04%	1.05%
4/1/2000	6/30/2000	GE	-1.58%	-3.87%	2.00%	0.95%
1/1/2000	3/31/2000	SV	2.76%	1.11%	2.28%	0.71%
7/1/1995	12/31/1999	GE	3.29%	4.45%	1.29%	0.57%
4/1/1995	6/30/1995	RR	5.18%	4.72%	6.01%	0.86%
1/1/1995	3/31/1995	SV	4.06%	3.47%	4.86%	0.74%
4/1/1993	12/31/1994	GE	1.59%	2.66%	-0.02%	0.65%
1/1/1993	3/31/1993	SV	6.16%	8.52%	5.65%	0.78%
4/1/1991	12/31/1992	GE	1.41%	0.49%	2.83%	0.73%
7/1/1990	3/31/1991	RR	4.97%	-1.12%	9.09%	4.50%
1/1/1990	6/30/1990	GE	-0.59%	-7.23%	2.37%	2.79%
10/1/1989	12/31/1989	SV	3.54%	3.83%	3.36%	0.72%
10/1/1988	9/30/1989	GE	16.01%	25.59%	9.85%	5.06%
7/1/1988	9/30/1988	RR	1.41%	0.41%	1.39%	1.11%
1/1/1983	6/30/1988	GE	0.37%	0.54%	0.27%	0.08%
10/1/1982	12/31/1982	SV	11.07%	17.52%	8.11%	0.62%
7/1/1982	9/30/1982	RR	11.70%	6.30%	13.10%	2.63%
4/1/1982	6/30/1982	GE	1.21%	-2.41%	3.08%	0.64%
4/1/1981	3/31/1982	RR	1.98%	-14.99%	11.50%	8.26%



## Appendix – Asset Performance Under Various Regimes

From	To	Regime	TRS Composite	Equity Composite	US Treasury Bonds	CPI
10/1/1980	3/31/1981	GE	3.14%	5.66%	1.00%	5.57%
7/1/1978	9/30/1980	RR	1.65%	4.14%	1.13%	2.89%
4/1/1978	6/30/1978	GE	1.82%	6.85%	0.01%	1.91%
10/1/1977	3/31/1978	RR	0.91%	2.18%	0.62%	3.13%
10/1/1976	9/30/1977	GE	6.83%	2.52%	6.54%	6.67%
7/1/1976	9/30/1976	RR	2.98%	-0.33%	3.88%	1.60%
4/1/1975	6/30/1976	GE	2.79%	3.08%	1.93%	1.41%
4/1/1973	3/31/1975	RR	-0.17%	-2.98%	1.48%	2.57%
1/1/1972	3/31/1973	GE	1.95%	4.36%	0.94%	0.87%
10/1/1971	12/31/1971	SV	4.62%	5.76%	3.86%	0.74%
1/1/1971	9/30/1971	GE	6.62%	11.92%	4.69%	3.05%
10/1/1970	12/31/1970	RR	6.49%	5.73%	6.07%	1.29%
7/1/1970	9/30/1970	GE	7.44%	13.24%	4.71%	1.04%
10/1/1969	6/30/1970	RR	5.49%	-19.24%	6.11%	4.62%
7/1/1969	9/30/1969	GE	-2.80%	-3.94%	-2.38%	1.38%
4/1/1969	6/30/1969	RR	-0.79%	-2.98%	-0.88%	1.68%
1/1/1969	3/31/1969	GE	0.33%	-1.53%	1.71%	1.13%
10/1/1968	12/31/1968	RR	-2.00%	1.98%	-1.77%	1.15%
7/1/1967	9/30/1968	GE	1.73%	3.33%	1.43%	1.06%
4/1/1967	6/30/1967	SV	-2.56%	1.28%	-2.71%	0.61%
7/1/1966	3/31/1967	GE	7.15%	9.36%	6.94%	1.92%
4/1/1966	6/30/1966	RR	-0.91%	-4.25%	-0.32%	1.25%
1/1/1965	3/31/1966	GE	0.50%	1.82%	0.41%	0.48%
10/1/1964	12/31/1964	SV	1.09%	1.58%	0.87%	0.32%
1/1/1961	9/30/1964	GE	1.39%	3.33%	0.80%	0.28%



## Appendix – Asset Performance Under Various Regimes

From	To	Regime	TRS Composite	Equity Composite	US Treasury Bonds	CPI
4/1/1960	12/31/1960	SV	6.00%	7.80%	6.18%	1.29%
10/1/1959	3/30/1960	GE	5.47%	-1.01%	5.88%	0.75%
7/1/1959	9/30/1959	SV	-0.49%	-1.92%	-0.25%	0.59%
4/1/1958	6/30/1959	GE	-0.14%	7.74%	-0.85%	0.24%
1/1/1958	3/31/1958	RR	2.19%	6.21%	2.27%	1.13%
10/1/1957	12/31/1957	SV	6.55%	-4.64%	6.65%	0.46%
7/1/1957	9/30/1957	GE	-0.20%	-9.55%	0.97%	0.93%
4/1/1957	6/30/1957	RR	-1.85%	--	-2.23%	0.94%
7/1/1956	9/30/1956	RR	-1.52%	--	-1.07%	1.34%
4/1/1956	6/30/1956	GE	0.65%	--	1.14%	0.37%
1/1/1956	3/31/1956	SV	0.01%	--	0.07%	0.04%
7/1/1954	12/31/1955	GE	-0.01%	--	-0.14%	-0.02%
7/1/1953	6/30/1954	SV	7.91%	--	7.02%	0.64%
7/1/1952	6/30/1953	GE	-0.79%	--	-0.36%	0.87%
4/1/1952	6/30/1952	SV	0.39%	--	0.38%	0.04%
1/1/1952	3/31/1952	GE	1.10%	--	0.84%	1.11%
10/1/1951	12/31/1951	RR	-0.12%	--	0.33%	0.96%
4/1/1951	9/30/1951	GE	1.14%	--	1.03%	2.09%
1/1/1951	3/31/1951	RR	-0.12%	--	0.33%	0.96%
1/1/1950	12/31/1950	GE	1.05%	--	0.69%	3.51%
10/1/1949	12/31/1949	SV	0.00%	--	0.20%	-0.13%
7/1/1949	9/30/1949	GE	0.84%	--	0.59%	-0.92%
10/1/1948	6/30/1949	SV	2.83%	--	2.19%	-1.97%
7/1/1948	9/30/1948	RR	0.09%	--	0.64%	0.59%
4/1/1948	6/30/1948	GE	0.39%	--	0.64%	0.59%
4/1/1947	3/31/1948	RR	0.34%	--	0.89%	10.24%



**Tab 6 B**

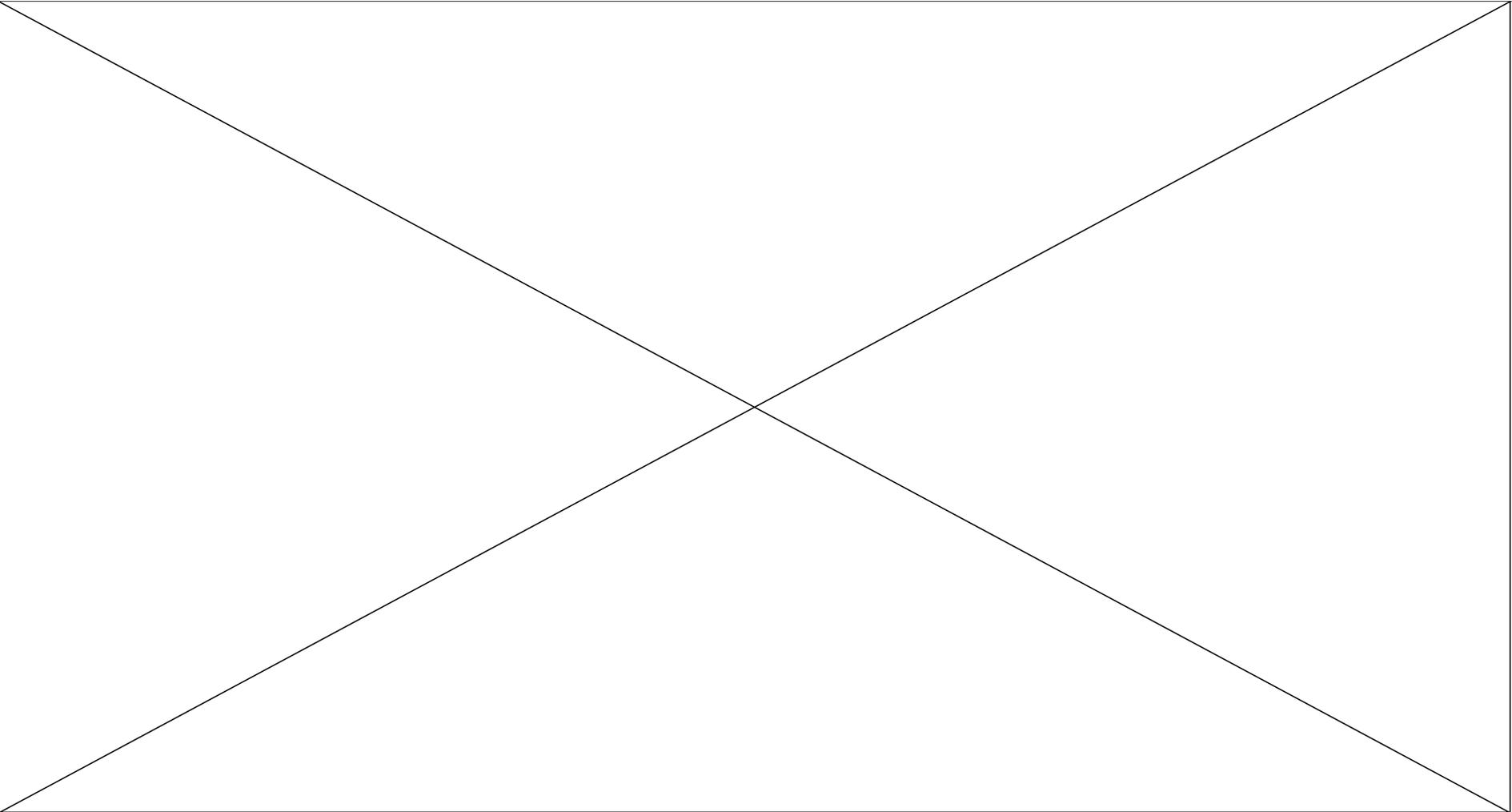


## Teacher Retirement System of Texas

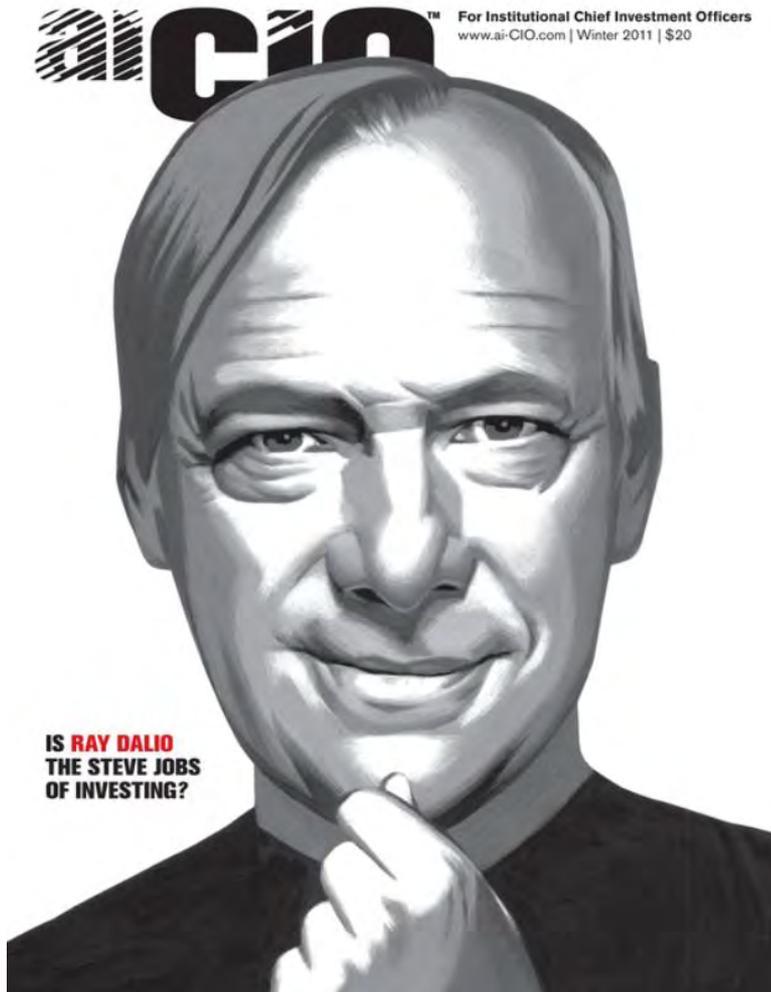
### **A Conversation About Our Evolving World and the Economic Machines Behind It**

Ray Dalio, Chairman & Co-CIO, Bridgewater  
Britt Harris, CIO, TRS

# Ray's First Charlie Rose-Style Interview...



# “Steve Jobs of Investing”



- Pioneered the separation of alpha and beta
- Developed the modern approach to currency overlay management
- First US Manager of Inflation-Linked bonds and advised the US Treasury on the formation of the TIPS market
- Developed the first risk parity strategy in 1996, All Weather



# Personal Characteristics

- **Ray (through Britt's eyes):**
  - Nobody loves mistakes more than Ray
  - Nobody has an aversion to anything “normal” or “established” more than Ray
  - Nobody is as devoted to radical openness as Ray
  - Nobody employs the legions of very young people that Ray does
  - Nobody claims to read less than Ray does

# Innovative Culture



- Meaningful work and meaningful relationships through radical truth and radical transparency
- Foster independent thinking and thoughtful disagreement
- Bring problems and weaknesses to the surface
- Know what people are like
- Systemize decision making; timeless and universal

# Principles

## PRINCIPLES

### People

- Meaningful work and meaningful relationships through radical truth and radical transparency
- Foster independent thinking and thoughtful disagreement
- Bring problems and weaknesses to the surface
- Know what people are like
- Systemize decision making; timeless and universal

### Investments

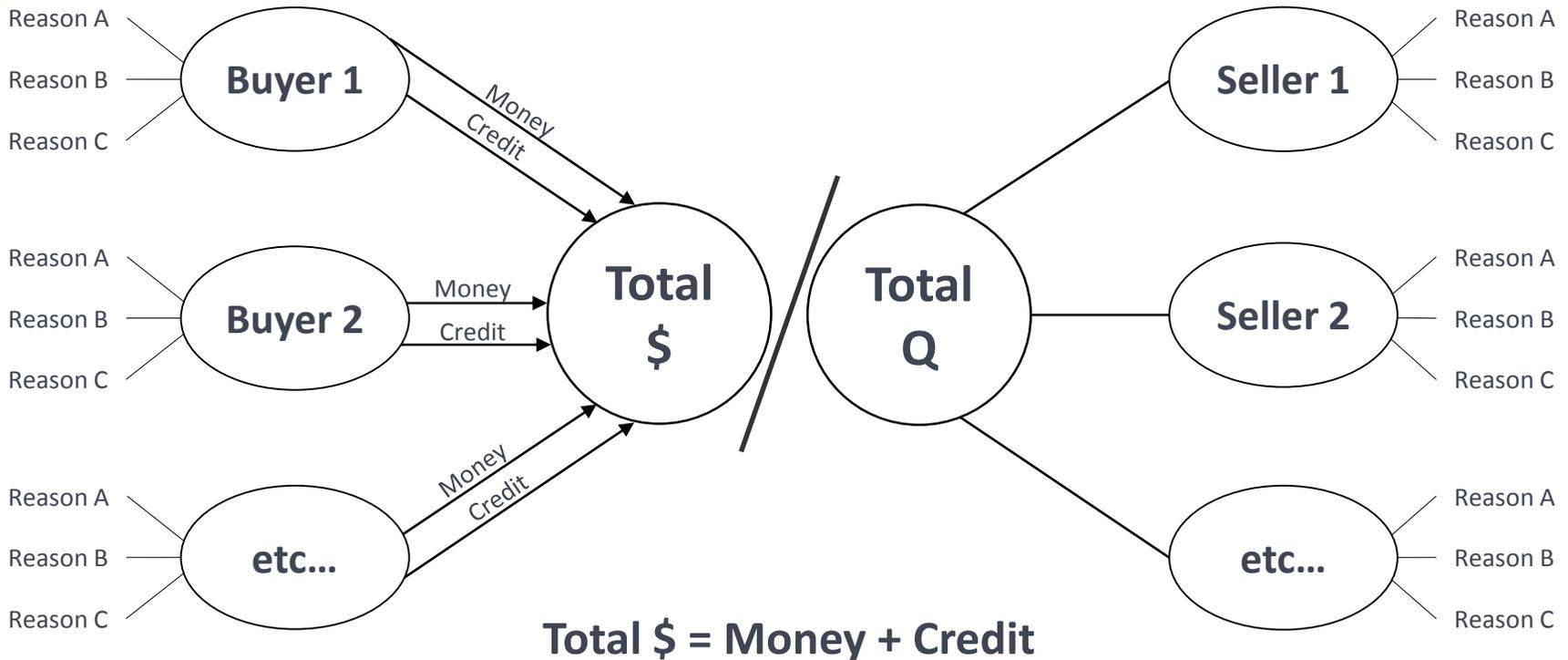
- Everything is a transaction
- Theoretical value = present value of future cash flow
- Asset classes will outperform cash over the long term
- The outperformance of asset classes over cash (i.e. beta) cannot be very positive for too long
- Assets are priced to discount future expectations, so when inflation, growth, risk premia and discount rates change, asset prices change
- Every investment is a return stream
- The key to good investing is to create good portfolios of good return streams
- Return streams can be either betas or alphas
- Portfolio return = risk free rate + beta + alpha
- Return streams can be risk adjusted to be risk balanced
- The holy grail of investing is finding 15 or more good uncorrelated return streams
- Systemize decision making; timeless and universal

### Economics

- Incomes and spending are driven by three big forces: productivity, long-term and short-term debt cycles
- Equilibrium levels for a country are when:
  - Debt growth is in line with the income growth that is required to service debts
  - Economic capacity utilization is neither too high nor too low
  - Projected returns of equities are above the projected returns of bonds which are above the projected returns of cash by appropriate risk premiums
- Spending on financial assets is driven by differences in expected returns and changes in liquidity
- Financial asset spending drives spending on goods and services through the wealth effect
- Systemize decision making; timeless and universal

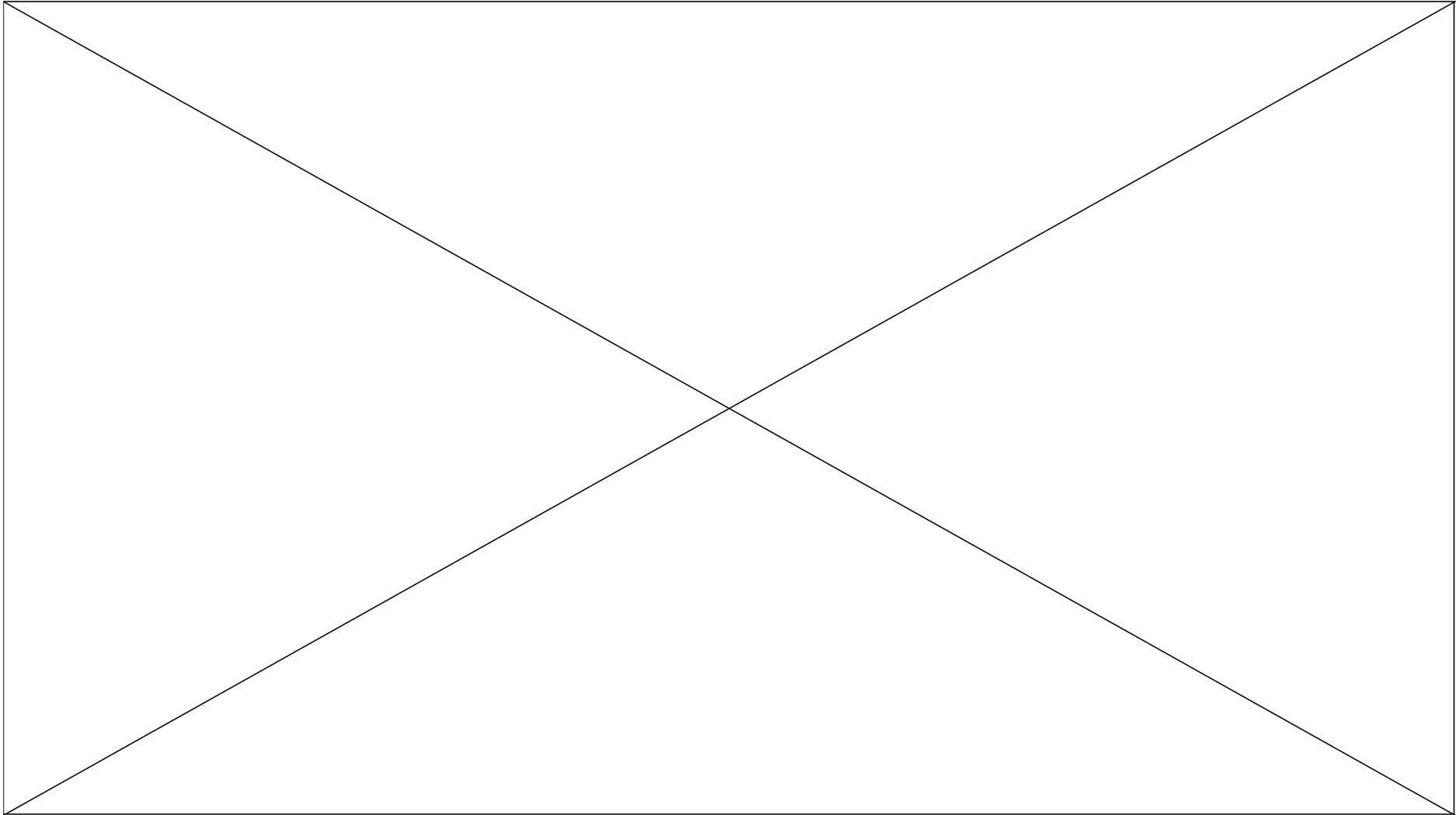
# Everything is a Transaction

$$\text{Price} = \text{Total } \$ / \text{Total } Q$$



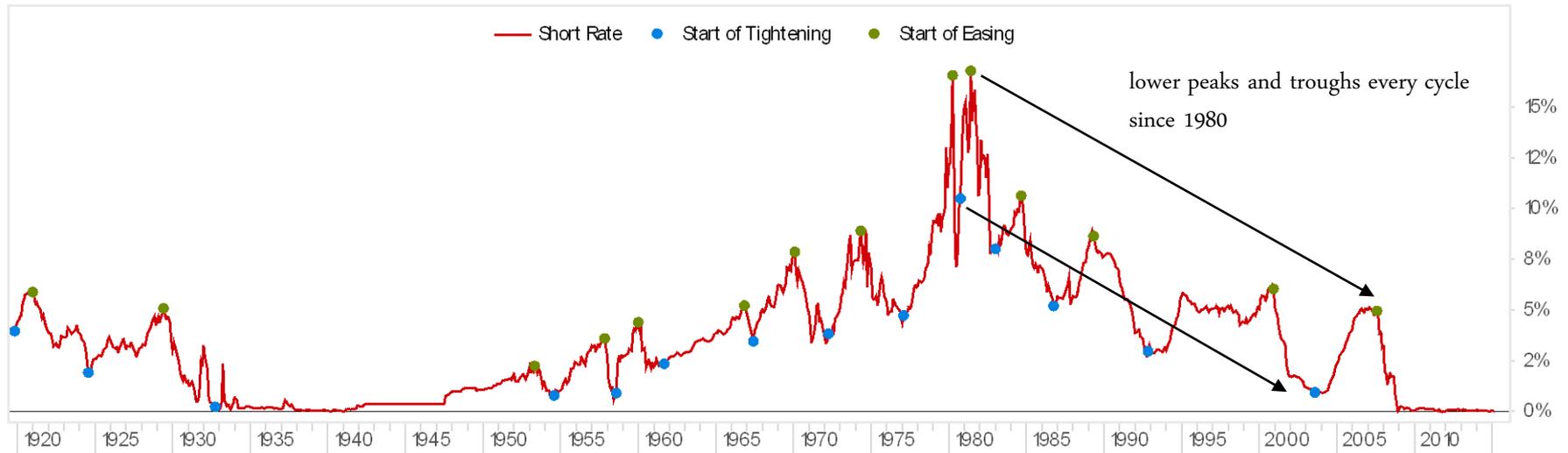
# How the Economic Machine Works

[www.economicprinciples.org](http://www.economicprinciples.org)

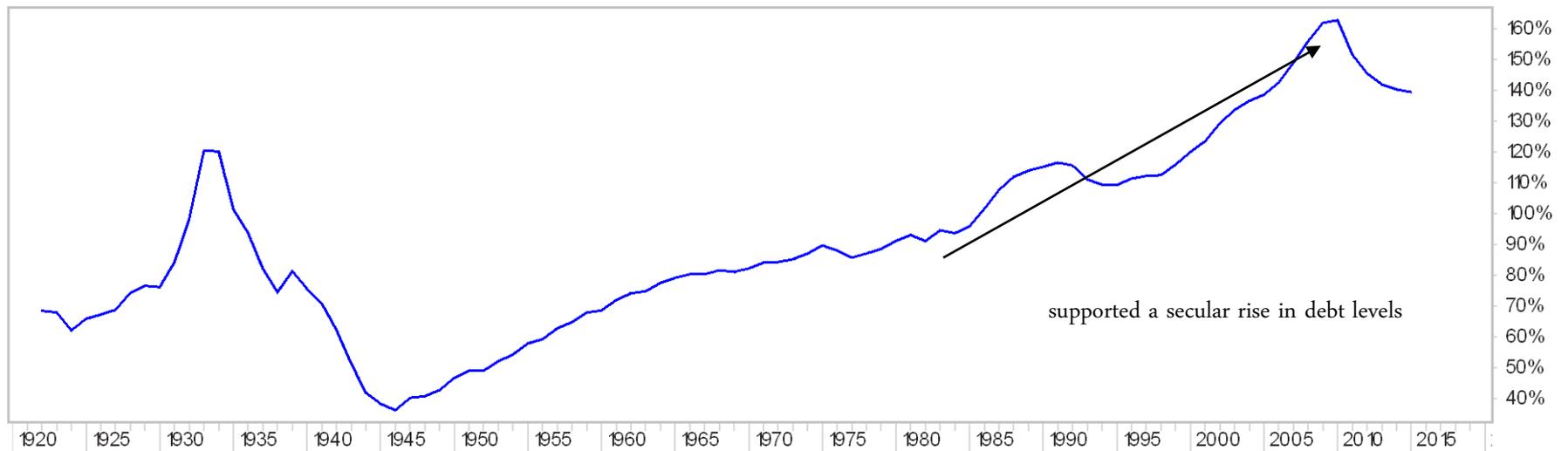


# End of the Monetary Super-Cycle

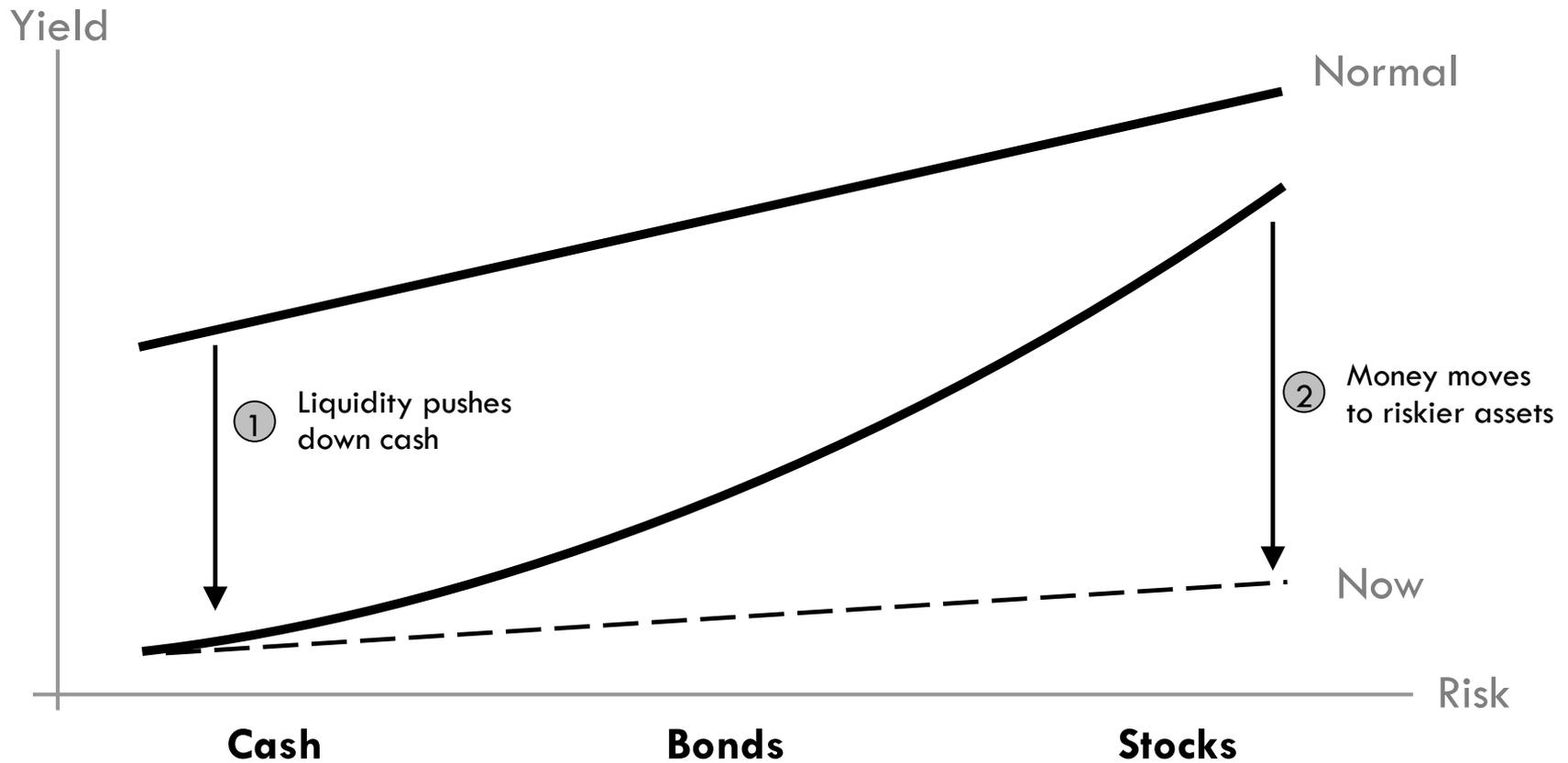
## US Interest Rate Cycles



## US Nonfinancial Private Sector Debt (% PGDP)



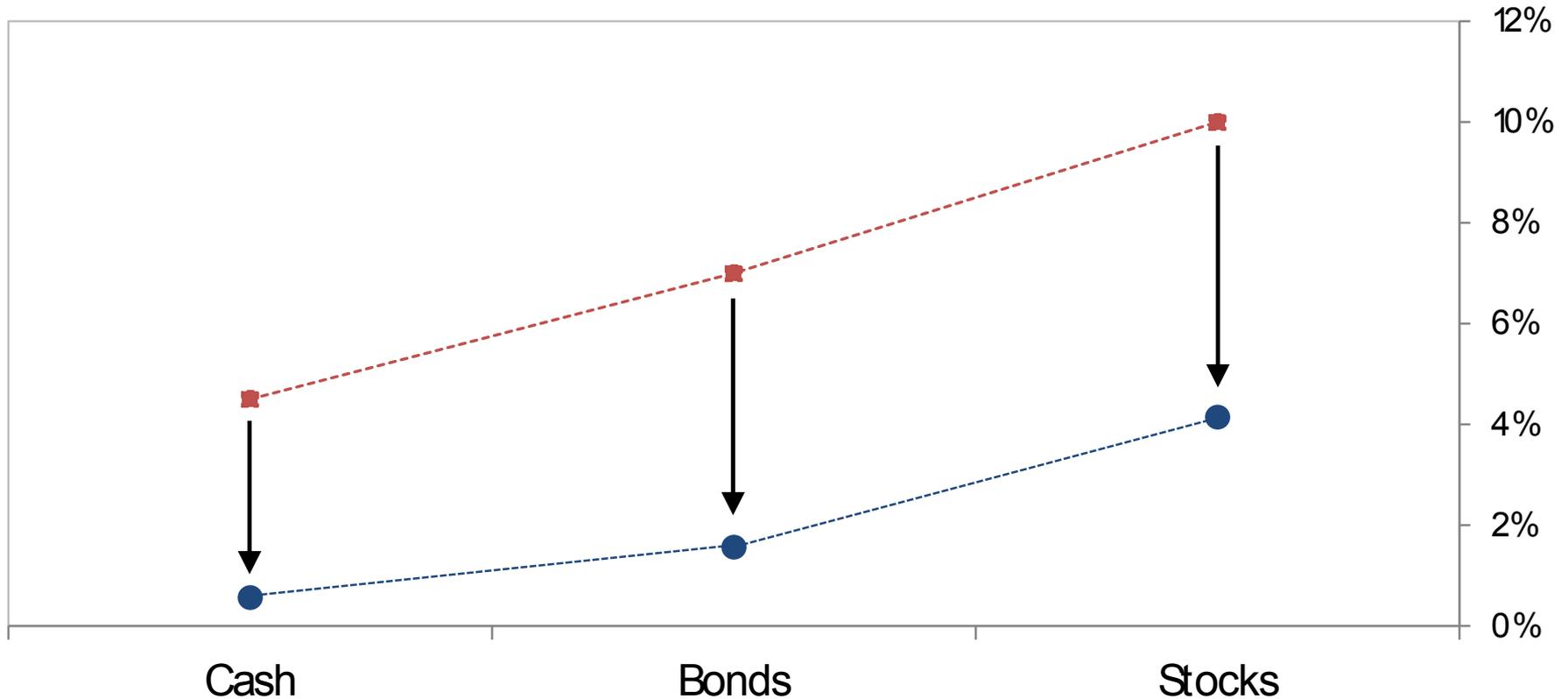
# Money Moving Out the Curve



# Liquidity Has Lowered Expected Returns

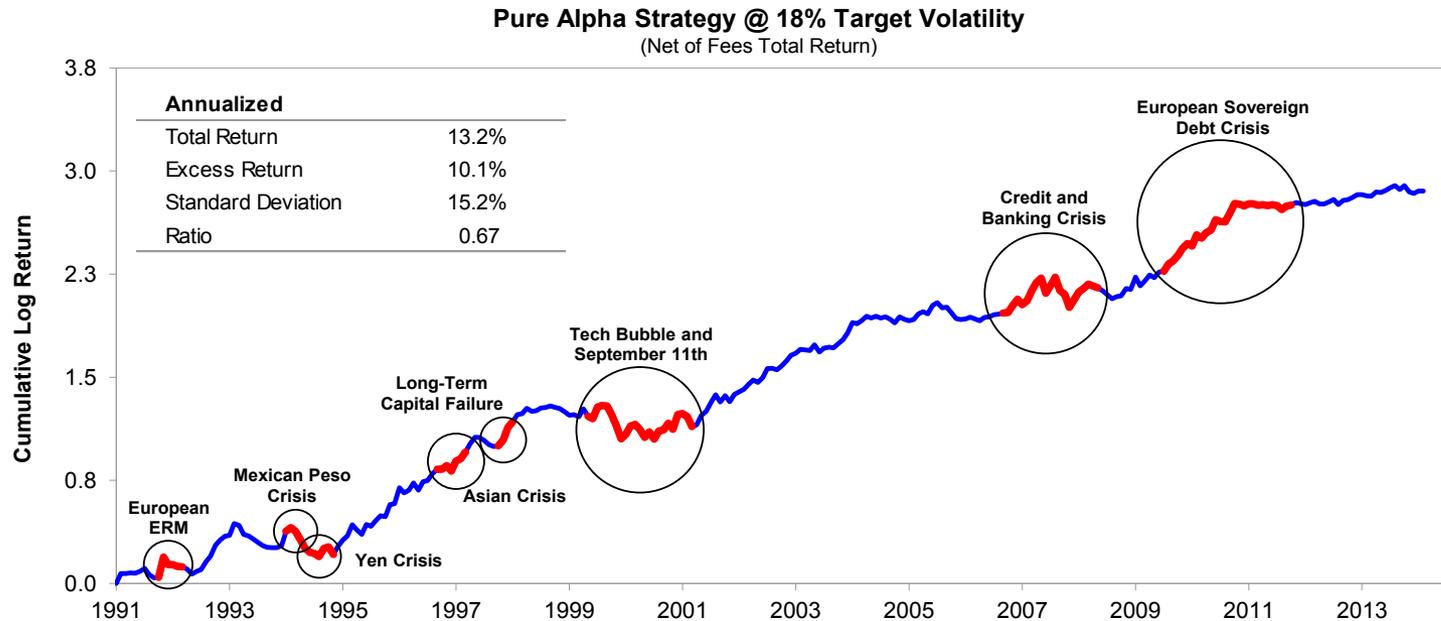
Expected 10 Year Return on Assets

---●--- Today    ---■--- Average of Past 30 Years



# Pure Alpha

## Innovative Investment Management



- Received over 50 industry awards including awards for industry innovation, performance, quality of research, client service and client satisfaction, quality of operations and operational infrastructure.
- Ray has been given three lifetime achievement awards and Time Magazine named him one of the 100 Most Influential People in the World.
- Largest Hedge Fund manager in the world, has generated over \$60 billion for its clients since inception.

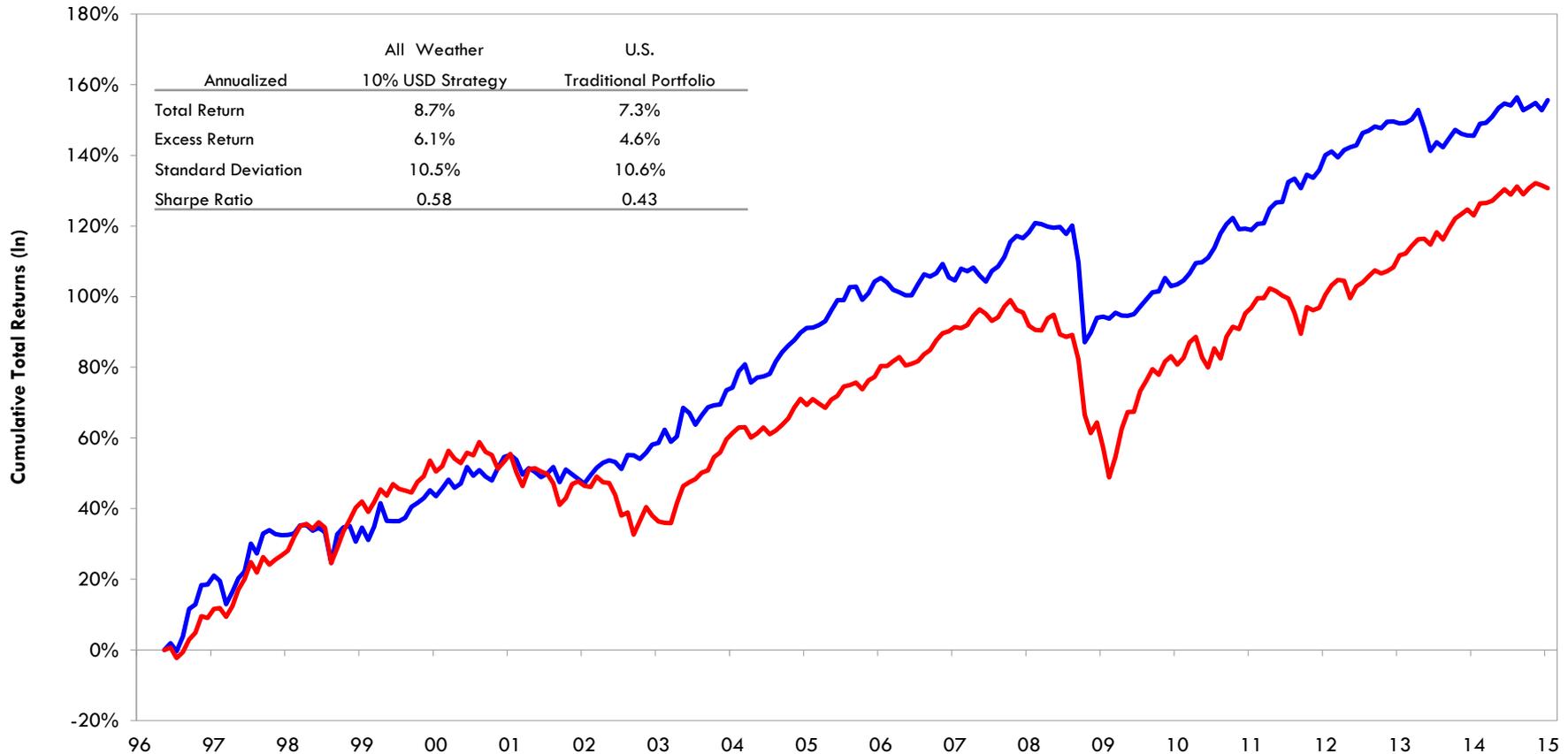
Past results are not necessarily indicative of future results. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Please review the "Important Disclosures and Other Information" located at the end of this presentation.



# All Weather Optimal Beta

## All Weather Strategy @ 10% Volatility (Net of Fees Total Return)

— All Weather 10% USD Strategy (Net) — U.S. Traditional Portfolio



Data through Dec-2014.

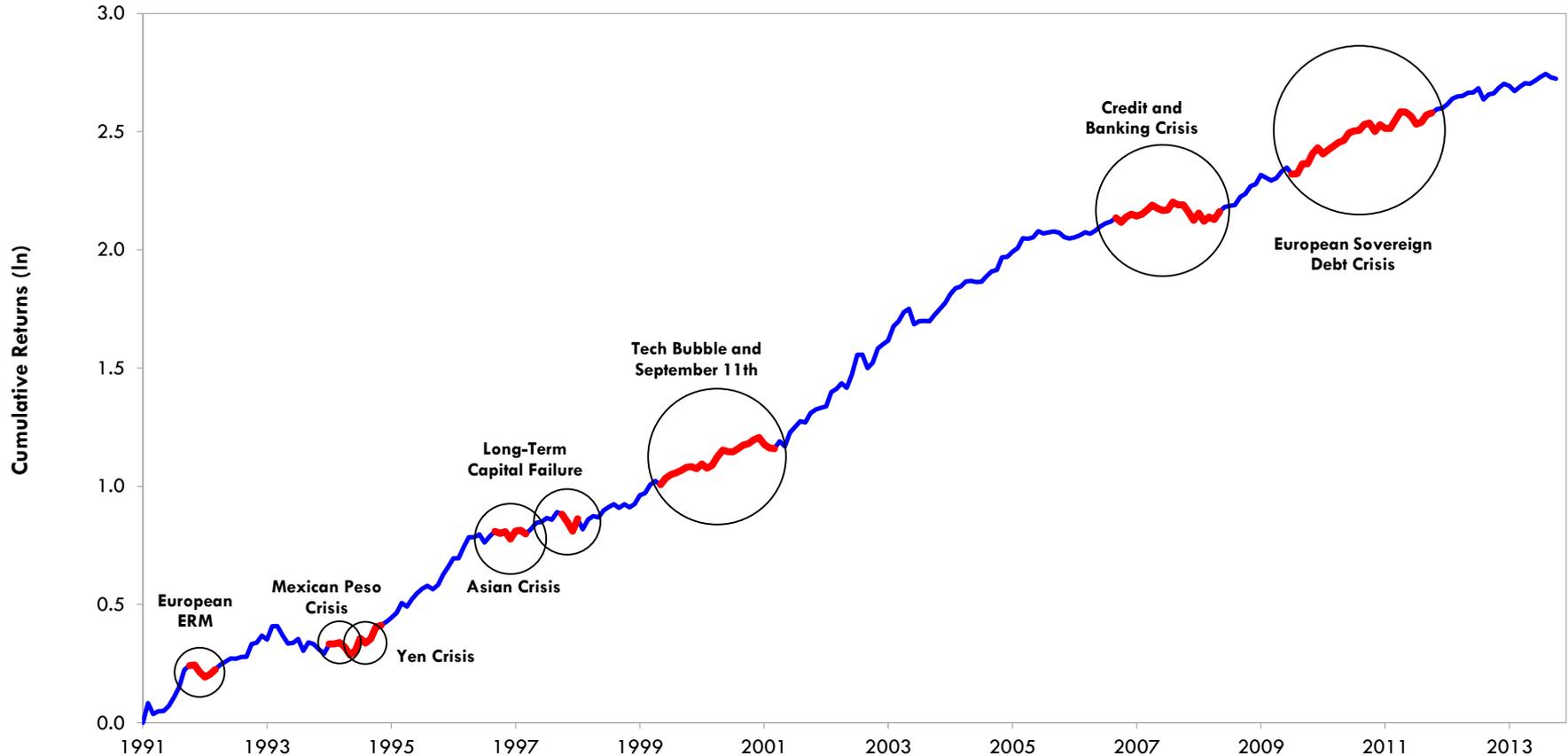
Past results are not necessarily indicative of future results. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Please review the "Important Disclosures and Other Information" located at the end of this presentation.



# Optimal Portfolio

## Optimal Combination of Alpha and Beta

**Optimal Portfolio Strategy**  
(Net of Fees Total Return - Simulation)

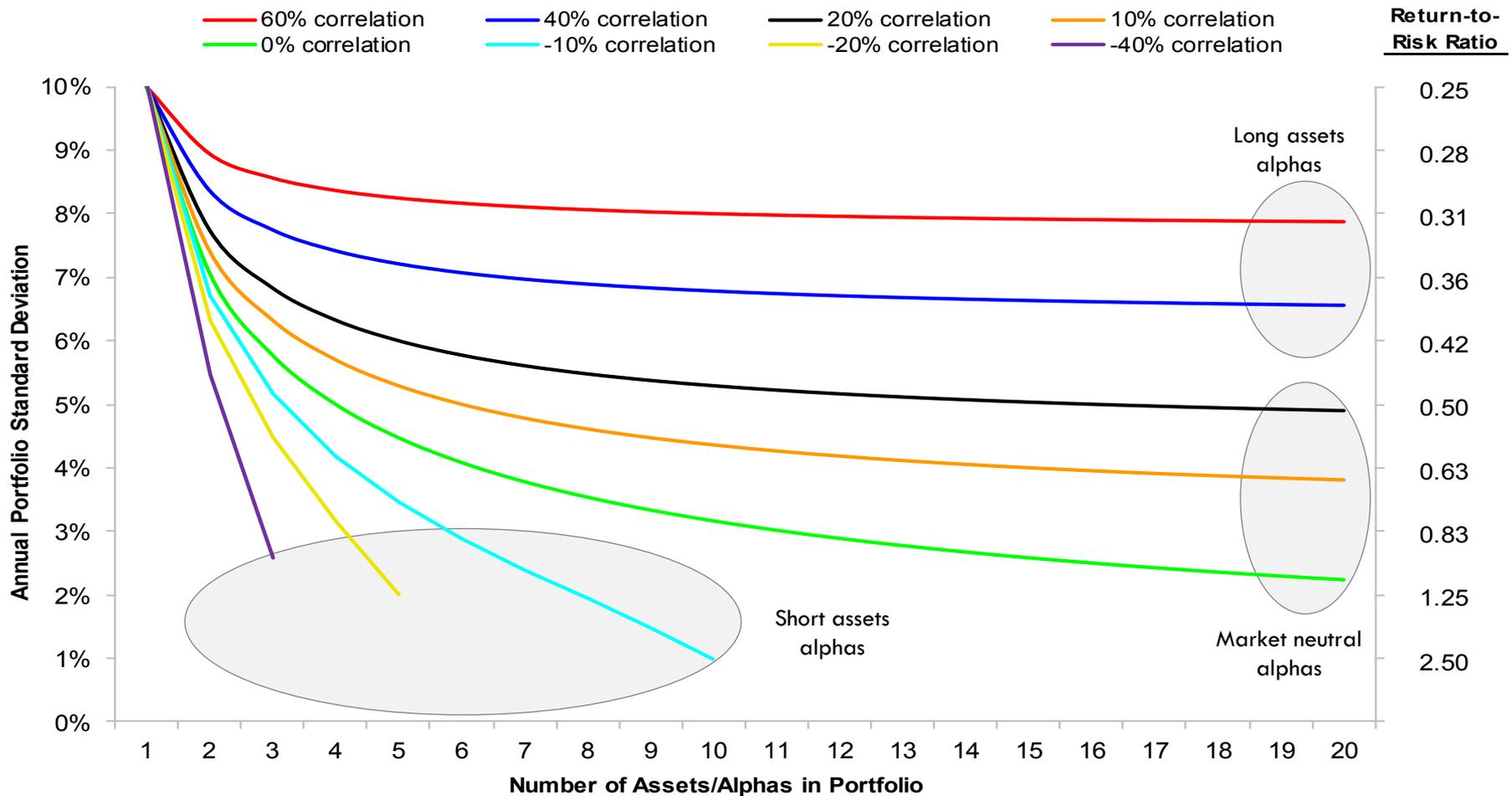


Performance shown through August 2014. Standard deviation is calculated using gross of fees performance. Ratio is calculated using the annualized standard deviation of gross of fees performance. Simulated performance of Optimal Portfolio is based on the Optimal Portfolio Strategy. It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology and the underlying market data. Please review the "Important Disclosures and Other Information" located at the end of this presentation. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Past performance is not indicative of future results.



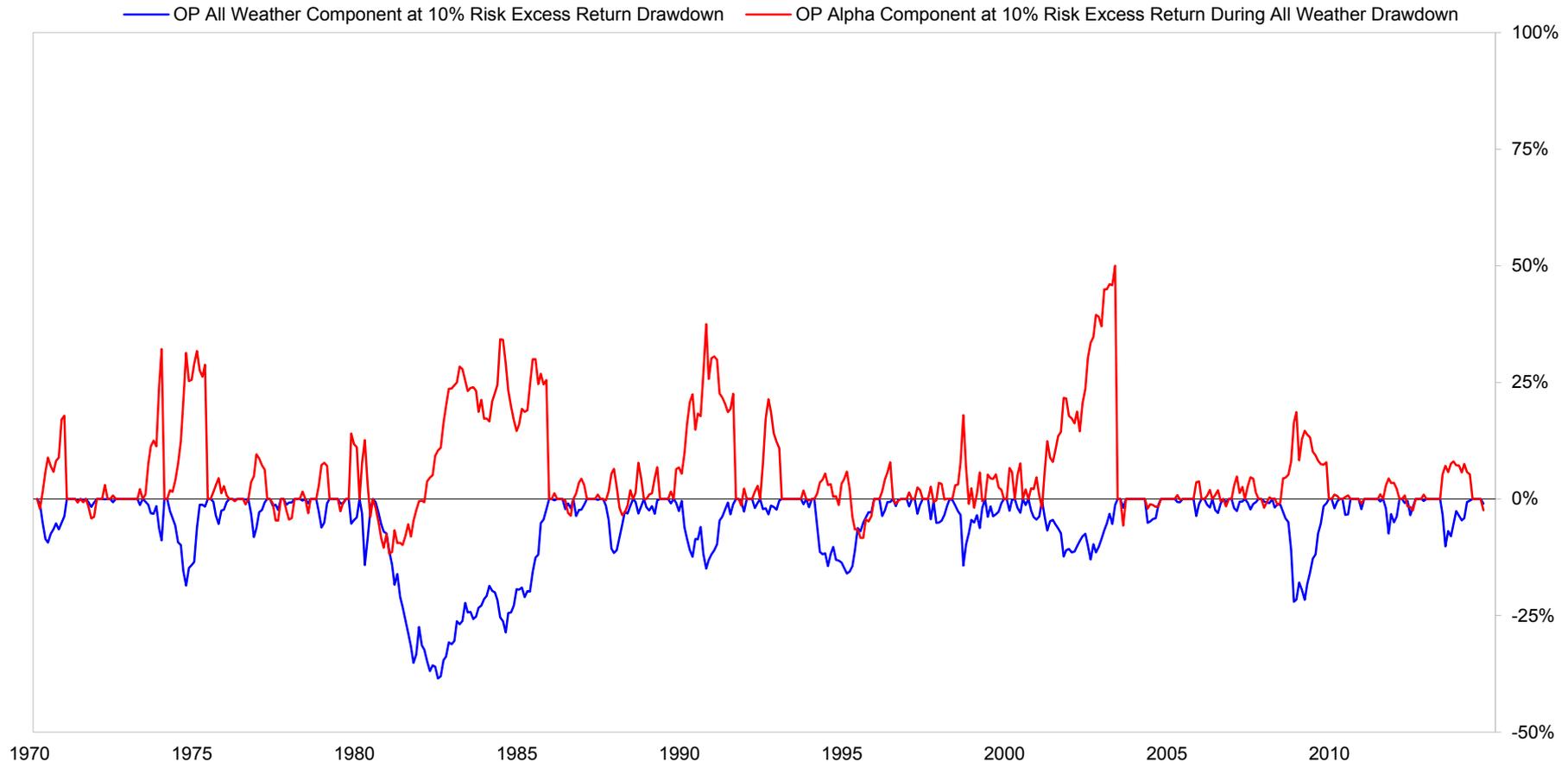
# The Holy Grail of Investing

- Negatively correlated alpha is more valuable than positively correlated alpha



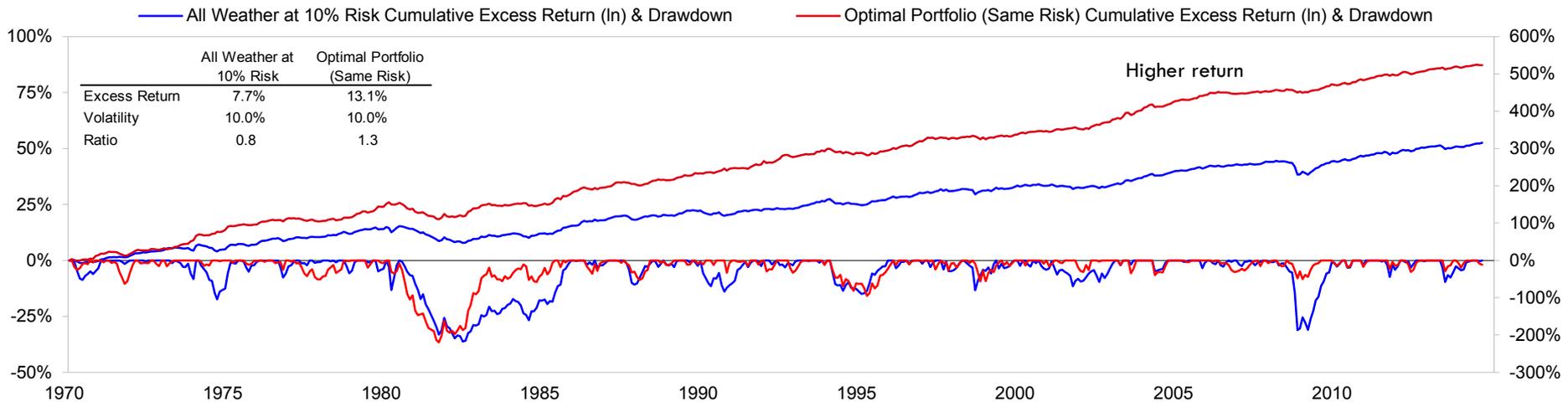
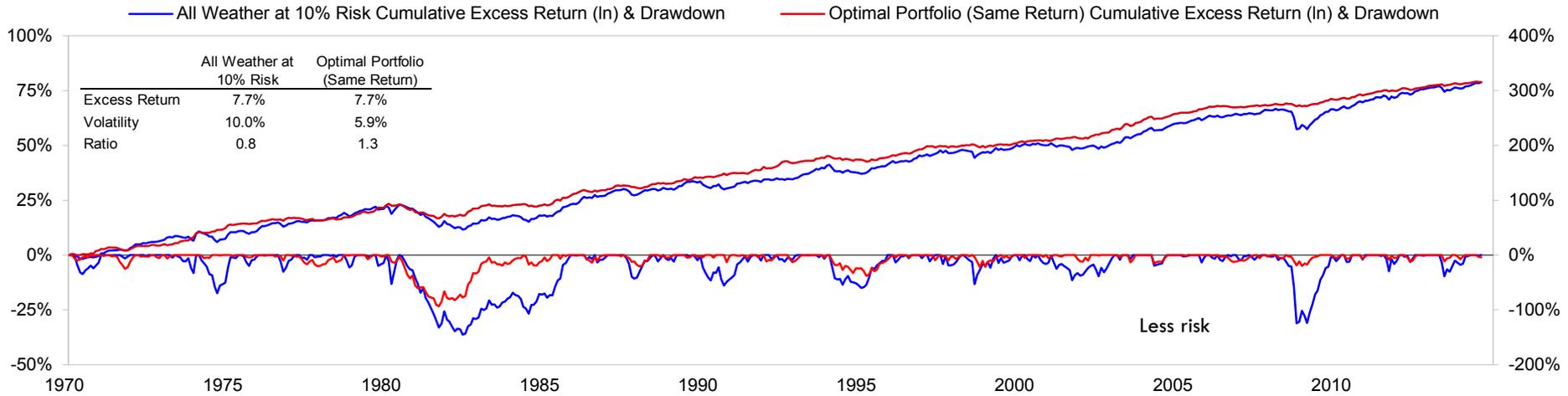
# Giving Preference to Risk-Reducing, Value-Adding Trades Is a Better Way to Combine Alpha with Beta

- Risk-reducing alpha trades minimize the drawdowns of beta



Performance shown through August 2014. Simulated performance of OP All Weather and OP Alpha is based on the Optimal Portfolio Strategy. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. No part of this discussion or the material shown herein may be (i) taped, repeated, copied, or duplicated in any form by any means or (ii) redistributed to the public or the press in any way without the prior written consent of Bridgewater® Associates, LP. Please review the "Important Disclosures and Other Information" located at the end of this presentation.

# Risk Reduction Can Be Converted to Higher Returns



Performance shown gross of fees through August 2014. Simulated performance of All Weather is based on the All Weather Asset Mix. Simulated performance of Optimal Portfolio is based on the Optimal Portfolio Strategy. It is expected that the simulated performance will periodically change as a function of both refinements to our simulation methodology and the underlying market data. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. Past performance is not indicative of future results. Please review the "Important Disclosures and Other Information" located at the end of this presentation.



# APPENDIX

## **Important Disclosures and Other Information**

Please read carefully the following important disclosures and other information as they provide additional information relevant to understanding the assumptions, research and performance information presented herein. Additional information is available upon request except where the proprietary nature of the information precludes its dissemination.

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This presentation has been prepared solely for informational purposes and is not an offer to buy or sell or a solicitation of an offer to buy or sell any security or to participate in any trading strategy. Any such offering, will be made pursuant to a definitive offering memorandum (the “OM”) which will contain the terms and risks of making an investment with Bridgewater in the relevant fund and other material information not contained herein and which will supersede this information in its entirety. In the event of any discrepancy between the information shown in this presentation and the OM, the OM will prevail. Investors should not construe the contents of this presentation as legal, tax, accounting, investment or other advice. Any decision to invest in a Bridgewater fund or strategy described herein should be made after carefully reviewing the OM (including the risks described therein) and all other related documents, conducting such investigations as the prospective investor deems necessary and consulting such investor’s own investment, legal, accounting and tax advisors in order to make an independent determination of the suitability and consequences of an investment in such fund or strategy.

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Certain information contained herein constitutes forward-looking statements (including projections, targets, hypotheticals, ratios, estimates, returns, performance, opinions, activity and other events contained or referenced herein), which can be identified by the use of terms such as “may,” “will,” “should,” “expect,” “anticipate,” “project,” “estimate,” “intend,” “continue” or “believe” or other variations (or the negatives thereof) thereof. Due to various risks, assumptions, uncertainties and actual events, including those discussed herein and in the OM, actual results, returns or performance may differ materially from those reflected or contemplated in such forward-looking statements. As a result, prospective investors should not rely on such forward-looking statements in making their investment decisions. Any forward-looking statements contained herein reflect Bridgewater’s current judgment and assumptions which may change in the future, and Bridgewater has no obligation to update or amend such forward-looking statements.

**HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING. ALSO, SINCE THE TRADES HAVE NOT BEEN EXECUTED, THE RESULTS MAY HAVE UNDER-OR-OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFIT OR LOSSES SIMILAR TO THOSE SHOWN.**

Any tables, graphs or charts relating to past performance, whether hypothetical, simulated or actual, included in this presentation are intended only to illustrate the performance of indices, strategies, or specific accounts for the historical periods shown. When creating such tables, graphs and charts, Bridgewater may incorporate assumptions on trading, positions, transactions costs, market impact estimations and the benefit of hindsight. For example, transaction cost estimates used in simulations are based on historical measured costs and/or modeled costs, and attribution is derived from a process of attributing positions held at a point in time to specific market views and is inherently imprecise. Such tables, graphs and charts are not intended to predict future performance and should not be used as a basis for making any investment decision. Bridgewater has no obligation to update or amend such tables, graphs or charts.

Statements regarding target performance or target ratios related to assumed risk budgets, liabilities, volatility, target volatility, tracking error or other targets should not be considered a guarantee that such results can or will be achieved. For example, Bridgewater may adjust returns to match, for instance, the annualized standard deviation of two or more return series but this adjustment does not suggest that the returns or assets are similar with respect to other aspects of the risk such as liquidity risk. Any statements with respect to the ability to risk match or risk adjust in the future are not a guarantee that the realized risks will be similar and material divergences could occur. All performance and risk targets contained herein are subject to revision by Bridgewater and are provided solely as a guide to current targets.

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Where shown, information related to markets traded may not necessarily indicate the actual historical or current strategies of Bridgewater. Markets listed may or may not be currently traded and are subject to change without notice. Markets used for illustrative purposes may not represent the universe of markets traded or results available and may not include actual trading results of Bridgewater. Other markets or trading, not shown herein, may have had materially different results. Attribution of performance or designation of markets and the analysis of performance or other performance with respect to scenario analysis or the determination of biases is based on Bridgewater's analysis. Statements made with respect to the ability of Bridgewater, a fund, a strategy, a market or instrument to perform in relation to any other market, instrument or manager in absolute terms or in any specific manner in the future or any specified time period are not a guarantee of the desired or targeted result.

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This presentation was written in connection with the promotion or marketing of a Bridgewater fund or strategy, and it was not intended or written to be used and cannot be used by any person for the purpose of avoiding penalties that may be asserted under the U.S. Internal Revenue Code.

All amounts and percentages in this presentation are approximate and have been rounded for presentation purposes.

Statements in this presentation are made as of the date appearing on this presentation. Neither the delivery of this presentation or the OM shall at any time under any circumstances create an implication that the information contained herein is correct as of any time subsequent to such date. Bridgewater has no obligation to inform potential or existing investors when information herein is stale, deleted, modified or changed.

# Pure Alpha Strategy 18% Target Vol USD Disclosure

## Pure Alpha Strategy Performance (Net of Fees) (18% Target Volatility)

	Pure Alpha Total Return in USD
<b>Last 1 Year</b>	3.6%
<b>Last 3 Years</b>	3.2%
<b>Last 5 Years</b>	14.8%
<b>Last 10 Years</b>	10.1%

Annualized Returns (Dec-91 through Dec-14)

## Net Since Inception Dec-91 through Dec-14

<b>Annualized Total Return</b>	13.2%
<b>Standard Deviation</b>	15.2%
<b>Information Ratio</b>	0.67

Standard deviation is calculated using gross of fees performance. Information ratio is calculated using the annualized standard deviation of gross of fees performance. Past results are not necessarily indicative of future results. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

## Bridgewater Pure Alpha Strategy 18% Volatility Performance Disclosure:

Returns after April 2005 are the actual returns of the longest running fully funded Pure Alpha account with a target tracking error of 18%, a United States cash benchmark, and fully unconstrained active management guidelines. From December 1991 through the end of April 2005 the performance history provided is based on the performance of the Pure Alpha strategy run at a 12% target volatility. A description of the 12% target volatility performance is provided below. The value added (or excess returns) of the 12% target volatility gross of fees performance history have been scaled to an 18% target volatility. Monthly value added returns are scaled linearly by a factor of 1.5 (18% divided by 12%). The Benchmark return (cash) is subsequently added back to the adjusted value added to arrive at a total return. For the period December 1991 through April 1999, the Benchmark is the imputed return of the US repo rate. After April 1999, the Benchmark is the actual return on cash experienced. Due to the effects of compounding, annualized historical returns, volatilities, and information ratios will not scale linearly. The returns are considered simulated or hypothetical.

## Bridgewater Pure Alpha Strategy 12% Volatility Gross Performance Disclosure:

The performance history provided is based on actual Bridgewater Pure Alpha accounts. Returns since the strategy's inception in December 1991 through April 1999 are based on the actual performance of a partially funded account (where interest income has been removed to arrive at the excess returns), and are adjusted to include the imputed interest return on the full notional value using the US repo rate. Returns from May 1999 forward are the actual returns of the longest running fully funded Pure Alpha account with a target tracking error of 12%, a United States cash benchmark, and fully unconstrained active management guidelines. Bridgewater manages additional Pure Alpha portfolios not included in this performance history.

Gross of fees performance is gross of management and performance fees only and includes the reinvestment of interest, gains, and losses.

Net of fees performance for the entire period shown have been calculated by applying our standard Pure Alpha 18% Volatility Strategy fee schedule, which are the highest fees charged. Investment advisory fees are described in Bridgewater's ADV Part 2A. From December 1991 through June 2008, using a monthly high water concept (and after June 2008, using a quarterly high water concept), deduction of incentive fees may vary and may be higher or lower than the fees actually charged to the account for the same time period. These returns reflect all fees (which are at our Pure Alpha standard rates), expenses and interest actually charged or credited to the account.

No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.



# Optimal Portfolio Strategy Disclosure

## Optimal Portfolio Strategy Performance (Net of Fees)

	Optimal Portfolio Strategy Total Return in USD
<b>Last 1 Year</b>	6.4%
<b>Last 3 Years</b>	6.5%
<b>Last 5 Years</b>	10.2%
<b>Last 10 Years</b>	10.5%

Annualized Returns (Feb-70 through Aug-14)

## Net Since Inception Feb-70 through Aug-14

<b>Annualized Total Return</b>	15.2%
<b>Standard Deviation</b>	9.6%
<b>Ratio</b>	1.0

Past performance is not indicative of future results. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

## Bridgewater Optimal Portfolio Strategy Performance Disclosure:

The simulated performance for Optimal Portfolio Strategy was derived by applying Bridgewater's current active investment systems and portfolio construction logic to historical market returns across the sub strategies and markets selected for Optimal Portfolio Strategy and using the relative weightings selected for Optimal Portfolio Strategy. We use actual market returns when available and otherwise use Bridgewater Associates' proprietary estimates, based on other available data and our fundamental understanding of asset classes. In certain cases, market data for an exposure which otherwise would exist in the simulation may be omitted if the relevant data is unavailable, deemed unreliable, immaterial or accounted for using proxies. Examples of markets omitted or accounted for using proxies for part of the simulation period include, but are not limited to, emerging market equities, emerging market debt, and certain commodities. There is no guarantee that the mix and weightings of markets traded for Optimal Portfolio Strategy will not change in the future.

**Simulated asset returns are subject to considerable uncertainty and potential error**, as there is a great deal that cannot be known about how assets would have performed in the absence of actual market returns. The Optimal Portfolio Strategy simulation is an approximation of our actual process but not an exact replication, and may have differences including but not limited to the precise mix of markets used and the weights applied to those markets. It is expected that the simulated performance will periodically change as a function of changes to our simulation methodology, investment systems, portfolio construction logic, and the underlying market data. Transaction costs are accounted for and are estimates themselves based on historical measured costs and/or modeled costs. Actual transaction costs experienced could have been higher or lower than those reflected in the simulation. For total returns shown a proxy for the return on US dollar cash is added to the simulation. Where noted, the Optimal Portfolio Strategy Net of Fees returns have been calculated using the expected standard fee schedule for a minimum size account, which are the highest fees we would charge an account.

No claim is being made of the Optimal Portfolio Strategy's ability to perform in absolute terms or relative to any market return in the future, during market events not represented or during market events occurring in the future. Market conditions and events vary considerably, are unpredictable and can have unforeseen impacts resulting in materially adverse performance results.

# All Weather Strategy Disclosure

## All Weather Strategy Performance (Net of Fees)

	All Weather Total Return in USD
<b>Last 1 Year</b>	7.5%
<b>Last 3 Years</b>	5.8%
<b>Last 5 Years</b>	10.5%
<b>Last 10 Years</b>	6.5%

Annualized Returns (Jun-96 through Dec-14)

## Net Since Inception Jun-96 through Dec-14

<b>Annualized Return</b>	8.6%
<b>Standard Deviation</b>	10.5%
<b>Sharpe Ratio</b>	0.57

Past results are not necessarily indicative of future results.

## Bridgewater All Weather Strategy Performance Disclosure:

For the period June 1996 (the inception of the strategy) through August 2001 the performance is based on the total return of the Bridgewater All Weather strategy as implemented for Bridgewater's principals and their affiliates and was not fully hedged to the US Dollar. The All Weather strategy is structured to be fully hedged, and the performance reflected after August 2001 includes these hedging transactions. For the period of August 2001 through present the performance shown is the actual total returns of the longest running fully funded All Weather account. For the entire history excess returns are calculated by subtracting the cash return of the US repo rate from the total returns described above. Of note, the All Weather strategy's target leverage, volatility and return, as well as the asset mix varied from June 1996 to July 2005. From August 2005 through the present the strategy has targeted 10% volatility. Bridgewater manages additional All Weather portfolios not included in this performance history.

Gross of fees performance is gross of management fees and includes the reinvestment of interest, gains, and losses. Returns will be reduced by the investment advisory fees and any other expenses that may be incurred in the management of the account.

Net of fees performance has been calculated using our standard fee schedule for a minimum size account, which are the highest fees we have or would currently charge an account. Investment advisory fees are described in Bridgewater's ADV Part 2A.

No representation is being made that any account will or is likely to achieve returns similar to those shown. Trading in futures is risky and can result in losses as well as profits. PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. Performance as of the current month is estimated and subject to change.

# US Traditional Portfolio

## US Traditional Portfolio Disclosure:

This page contains the allocation information for the historical simulation of the Traditional portfolio, from 1970 onwards, as well as forward looking assumptions for expected returns, volatility, tracking error, and correlations used in this analysis. Where shown, prior to 1970 the portfolio was constructed by weighting 65% U.S. Equities and 35% U.S. 10-year bonds.

The portfolio capital allocation weights (illustrated below) are estimates based either upon Bridgewater Associates' understanding of standard asset allocation (which may change without notice) or information provided by or publicly available from the recipient of this presentation. Asset class returns are actual market returns where available and otherwise a proxy index constructed based on Bridgewater Associates understanding of global financial markets. Information regarding specific indices and simulation methods used for proxies is available upon request (except where the proprietary nature of information precludes its dissemination). Results are hypothetical or simulated and gross of fees unless otherwise indicated. HYPOTHETICAL OR SIMULATED PERFORMANCE RESULTS HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE AN ACTUAL PERFORMANCE RECORD, SIMULATED RESULTS DO NOT REPRESENT ACTUAL TRADING OR THE COSTS OF MANAGING THE PORTFOLIO. ALSO, SINCE THE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THE RESULTS MAY HAVE UNDER OR OVER COMPENSATED FOR THE IMPACT, IF ANY, OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN.

Asset Type	Benchmark	Nominal Exposure	Fx Exposure	Beta Volatility	Beta Ratio	Alpha Volatility	Alpha Ratio
Commodities	S&P GSCI Index	2.0%	—	20.9%	0.20	—	—
Equities	U.S. Large-Cap Equities	20.0%	—	14.6%	0.25	5.0%	0.25
Equities	U.S. Large-Cap Equities	20.0%	—	14.6%	0.25	—	—
Equities	U.S. PE / VC	3.0%	—	20.6%	0.25	10.0%	0.25
Equities	U.S. Small-Cap Equities	5.0%	—	18.0%	0.25	5.0%	0.25
Equities	World Equities Ex-US	14.0%	Unhedged	15.4%	0.30	5.0%	0.30
Hedge Fund	Cash	5.0%	—	—	—	7.0%	0.70
IL Bonds	U.S. IL Bonds	3.0%	—	7.1%	0.25	1.0%	0.25
Real Estate	U.S. Real Estate	5.0%	—	19.6%	0.25	6.0%	0.25
Nominal Bonds	U.S. Govt Bonds	4.6%	—	4.4%	0.25	2.0%	0.25
Nominal Bonds	U.S. Govt Bonds	4.6%	—	4.4%	0.25	—	—
Corporate Bonds	U.S. Corporate Bonds	4.6%	—	6.9%	0.30	3.0%	0.25
MBS	U.S. MBS	4.6%	—	4.1%	0.25	2.0%	0.25
MBS	U.S. MBS	4.6%	—	4.1%	0.25	—	—

**Tab 6 C**



Teacher Retirement System of Texas

# Emerging Manager Program

Cheryl Lynette Hines, Director  
February 11, 2015

# Emerging Manager Team

## *Bios*



**Cheryl Lynette Hines**  
**Director**  
*MBA, Columbia*  
*BA, Cornell*



**Andy Cronin**  
**Associate**  
*BBA, Texas A&M*



**Krista Kerr**  
**Analyst**  
*BS, UT Austin*



**Edgar Mayorga**  
**Contract Analyst**  
*BA, UT Austin*



Evaluators



ROCK CREEK

Fund of Funds



# Portfolio Update

## *Allocation Summary\**

The Emerging Manager Program has committed a total of \$2,044 million in 138 funds and co-investments, as of 9/30/2014

### Direct Program:

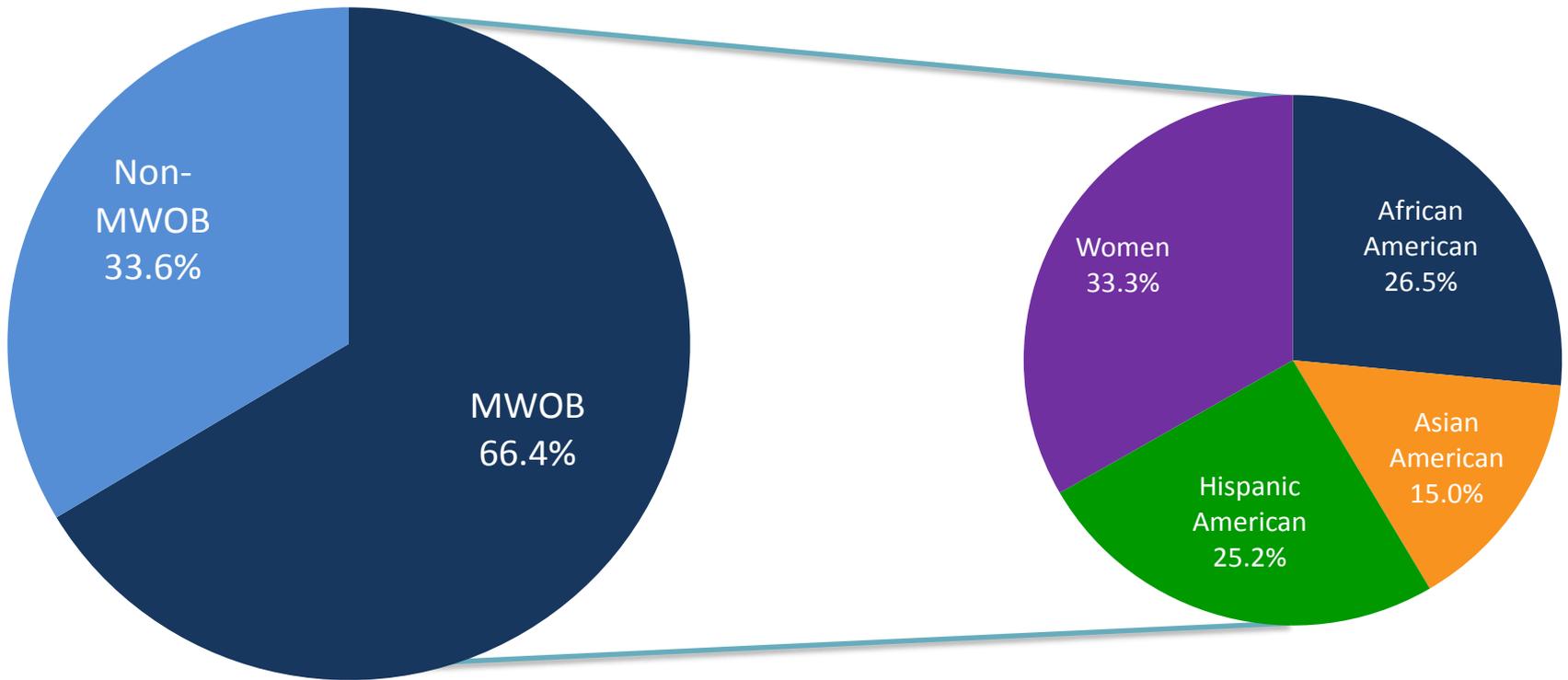
- Private Equity – \$260 million in 16 funds
- Real Assets – \$385 million in 15 funds
- Hedge Funds – \$146 million in 13 funds
- Long-Only – \$95 million in 7 funds
- Total Direct – \$886 million in 51 funds

### Indirect Program:

- Private Equity – \$789 million in 68 funds and co-investments
- Real Assets – \$219 million in 19 funds and co-investments
- An additional \$150 million has been allocated in the program and is expected to be fully deployed by the end of 2015
- In 2014, an evergreen structure was added to the contract language to ensure capital will be permanently available via the fund-of-funds vehicle going forward
- Total Indirect – \$1,158 million in 87 funds and co-investments

# Portfolio Update

## *Direct Portfolio Commitments*



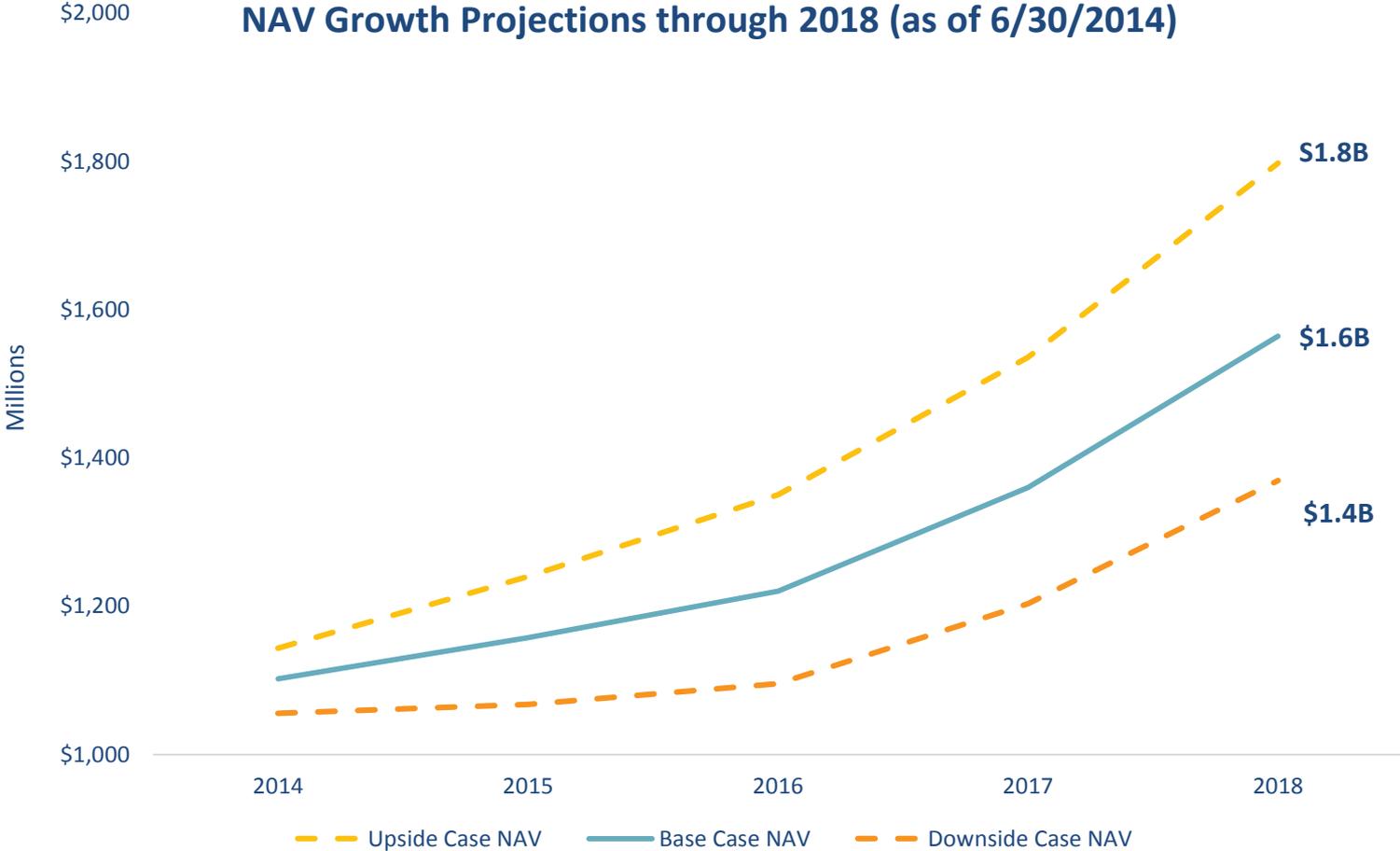
# Portfolio Update

*Performance as of 9/30/2014*

- Overall, portfolio performance has met expectations
- Active equity managers struggled to outperform, valuations continued to increase, and the markets became increasingly more competitive
- The total Emerging Manager Program had a one-year time weighted return of 14.5%
  - Private Equity Portfolio: 18.7%
  - Real Assets Portfolio: 12.3%
  - Hedge Funds Portfolio: 5.0%
  - Long-Oriented Portfolio: 13.5%
  - Energy and Natural Resources Portfolio: 2.5%
- Direct Portfolio continues to move out of the j-curve. Since inception IRR:
  - Private Equity Portfolio: (11.8%)
  - Real Assets Portfolio: 12.7%
  - Energy and Natural Resources Portfolio: 2.5%

# Portfolio Update

## Capital Plan



Source: GCM Grosvenor, TRS IMD  
Projections based on \$250 million in annual new commitments through the direct program, as well as capital recycling through the evergreen fund-of-funds structure



# Emerging Managers Program

## *2015 Priorities*

- Enhance portfolio management capabilities through a top-down approach
- Continue to improve our communication with managers
- Strengthen our brand and leadership position among our peers

**Tab 6 D**



Teacher Retirement System of Texas

# Energy & Natural Resource Update on Oil

Britt Harris, Chief Investment Officer  
February 11, 2015

# TRS Exposure and Dry Powder

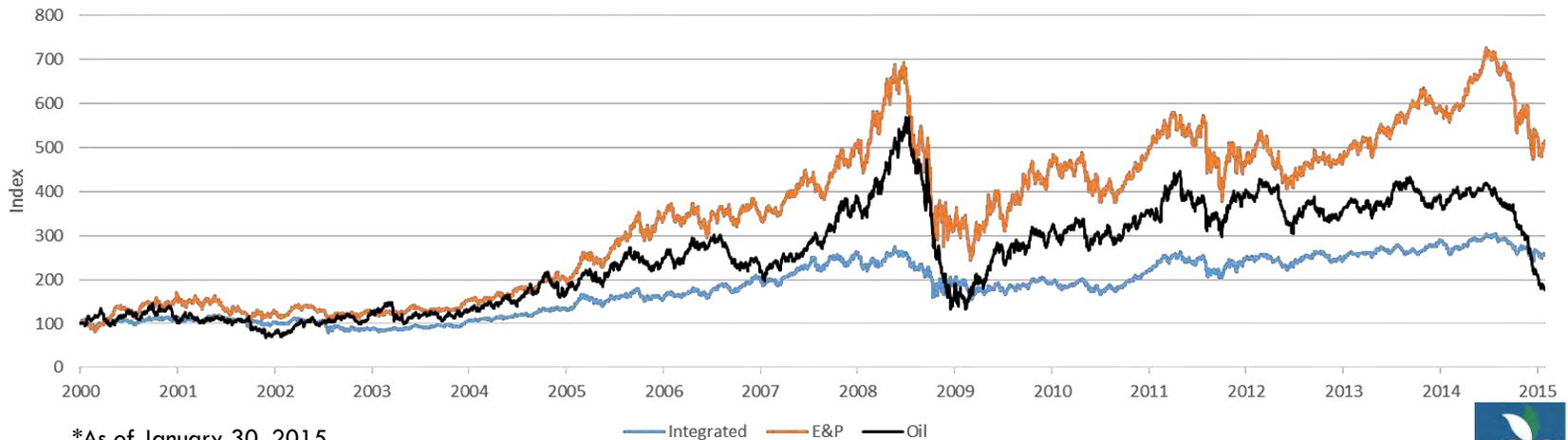
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# Oil Prices, High Yield Credit, and Public Market Relative Returns

## Oil vs. High Yield Spread to Treasuries

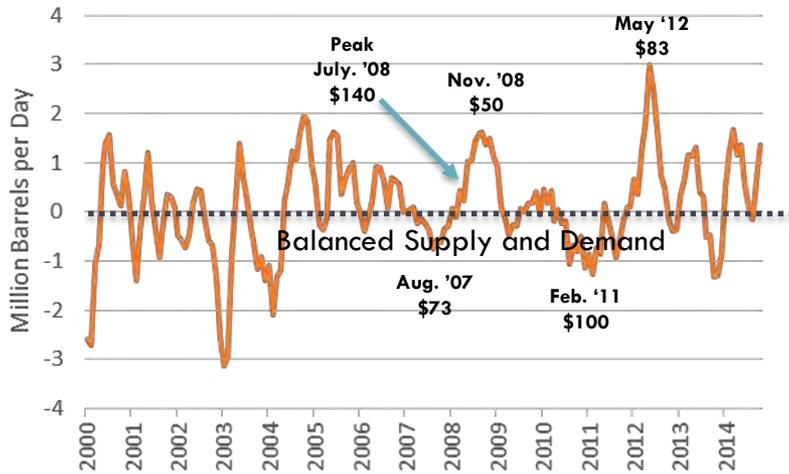


## Relative Public Market Returns (Year 2000 = 100)



# Supply and Demand Balance

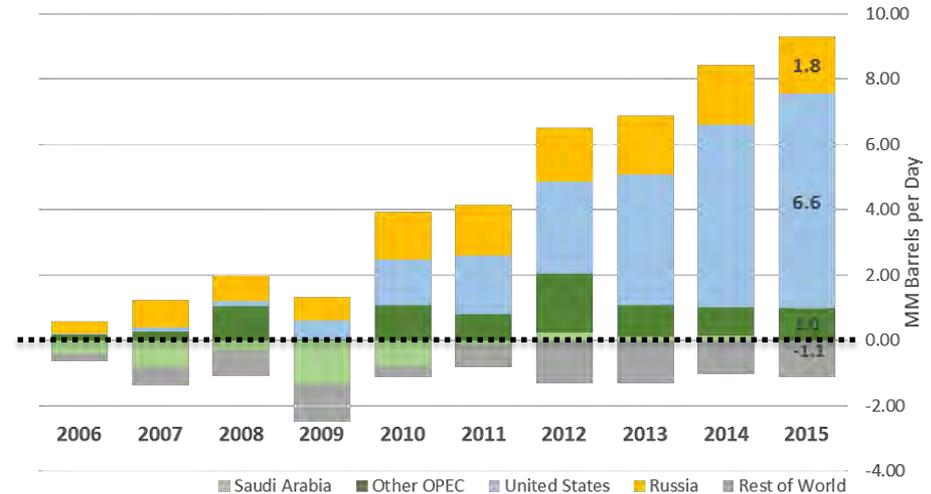
Supply and Demand Balance



Source: Bloomberg, Energy Intelligence Group

- The supply demand balance doesn't seem abnormal, what has changed?
  - US production continues to grow rapidly
  - Emerging market demand growth is slowing
  - OPEC is not stepping in to balance
- US is the primary source of incremental oil supply

Growth in Oil Production  
 Last 10 years in millions of barrels/day

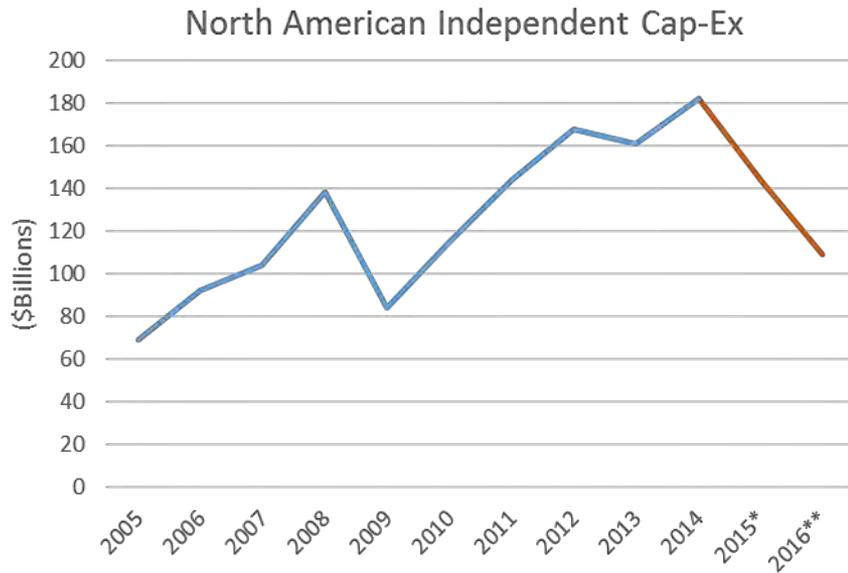


Supply Change - Million Barrels per Day			
	2005	2015	Change
Saudi Arabia	9.6	9.5	0.0
Other OPEC	25.4	26.4	1.0
<b>Total OPEC</b>	<b>35.0</b>	<b>35.9</b>	<b>1.0</b>
<b>USA</b>	<b>8.3</b>	<b>14.9</b>	<b>6.6</b>
Russia	11.8	13.5	1.8
Rest of World	29.5	28.4	-1.1
<b>Total</b>	<b>84.6</b>	<b>92.7</b>	<b>8.2</b>

Source: Bloomberg



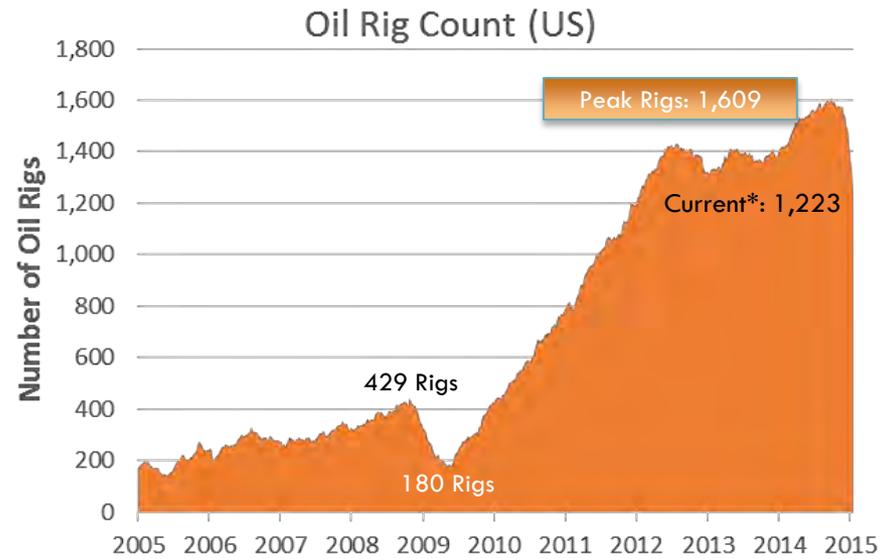
# Capital Spending



Source: Bloomberg, IHS CERA

\*2015 based on aggregated company guidance and IHS estimates of -21%

\*\*2016 based on rough industry estimates of -40%



\*As of January 30, 2015

Source: Bloomberg, Baker Hughes

# US Energy Price to Book Value



As of January 30, 2015

# 2015 Best Ideas Survey

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## North America

R.T. Dukes

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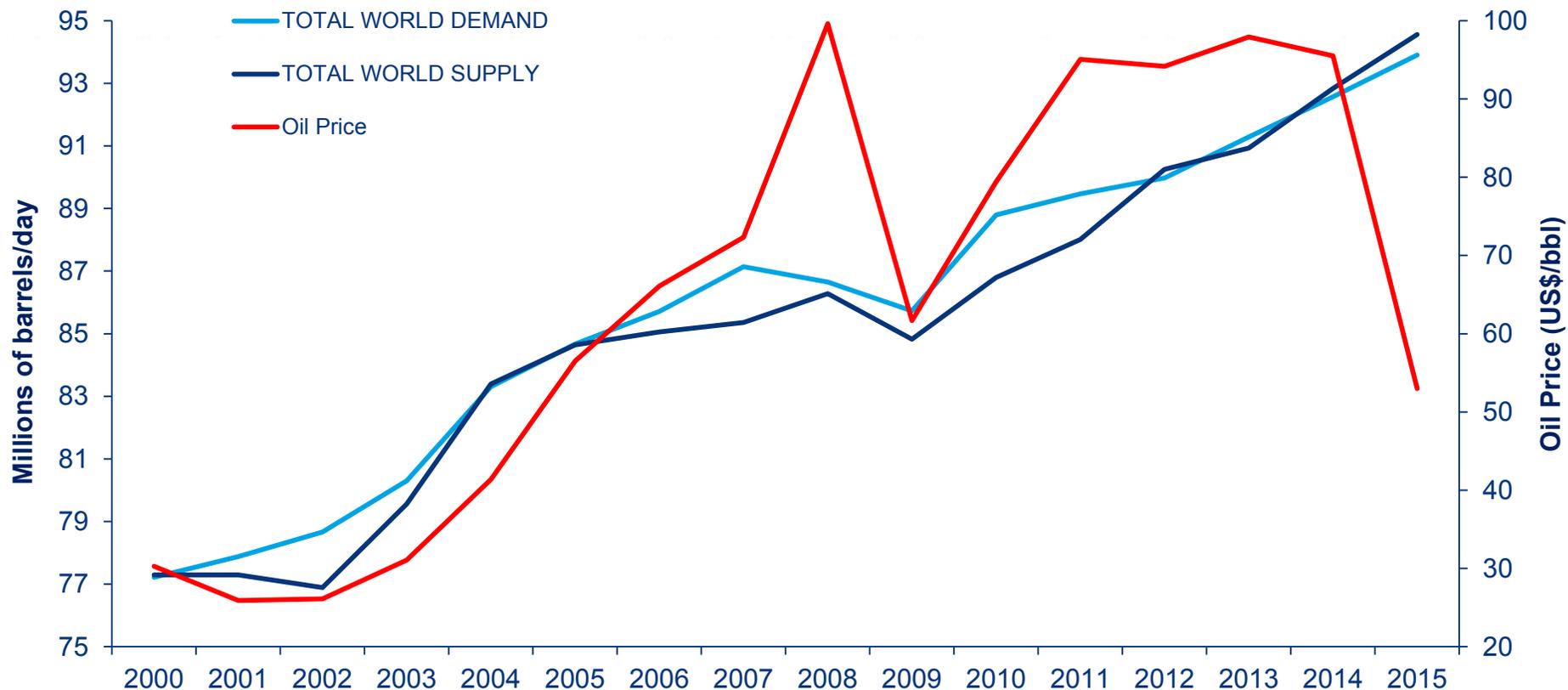
T: [@rtdukes](#)

[LinkedIn.com/in/rtdukes](https://www.linkedin.com/in/rtdukes)

# World oil supply surpassed demand in the second half of 2014

## North American supply up ~5 million b/d 2010-2014

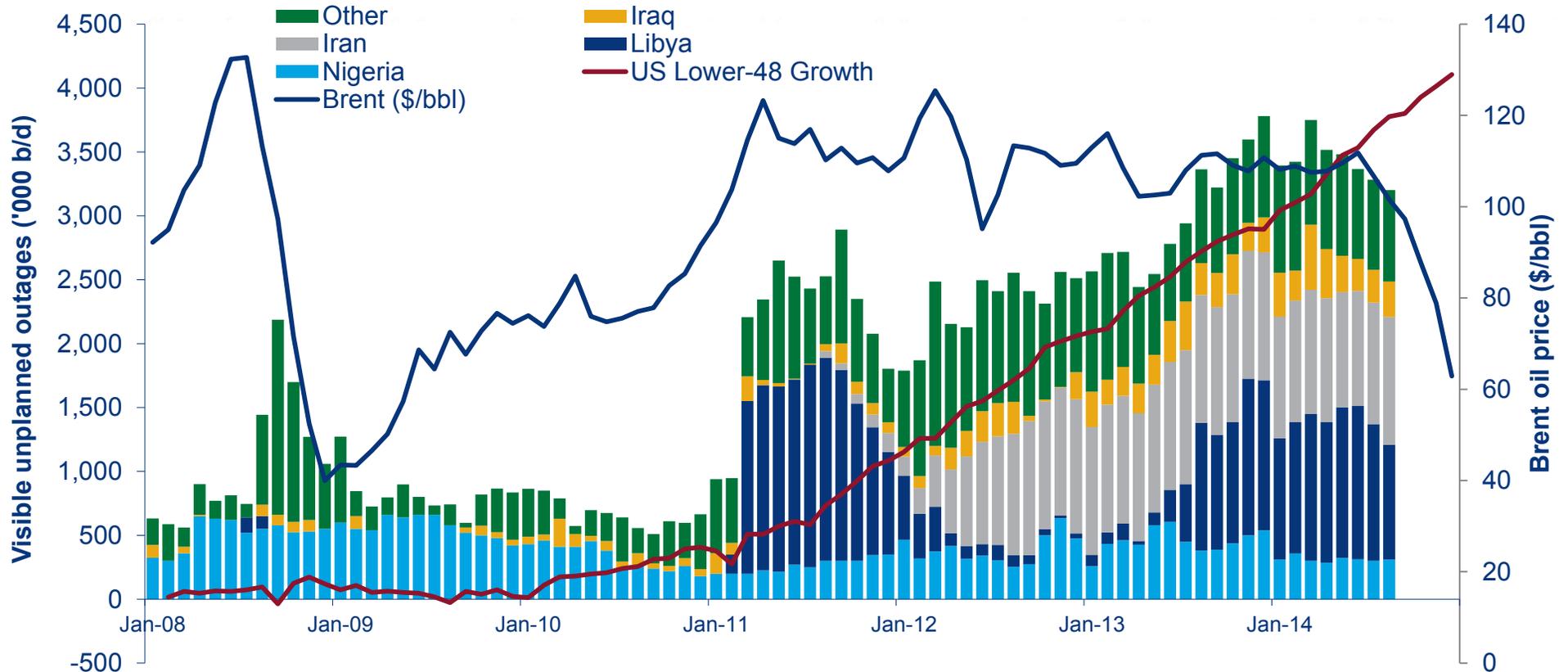
### World Oil Supply and Demand Growth



Source: Wood Mackenzie

# Growing US tight oil offset unplanned outages... What lies ahead?

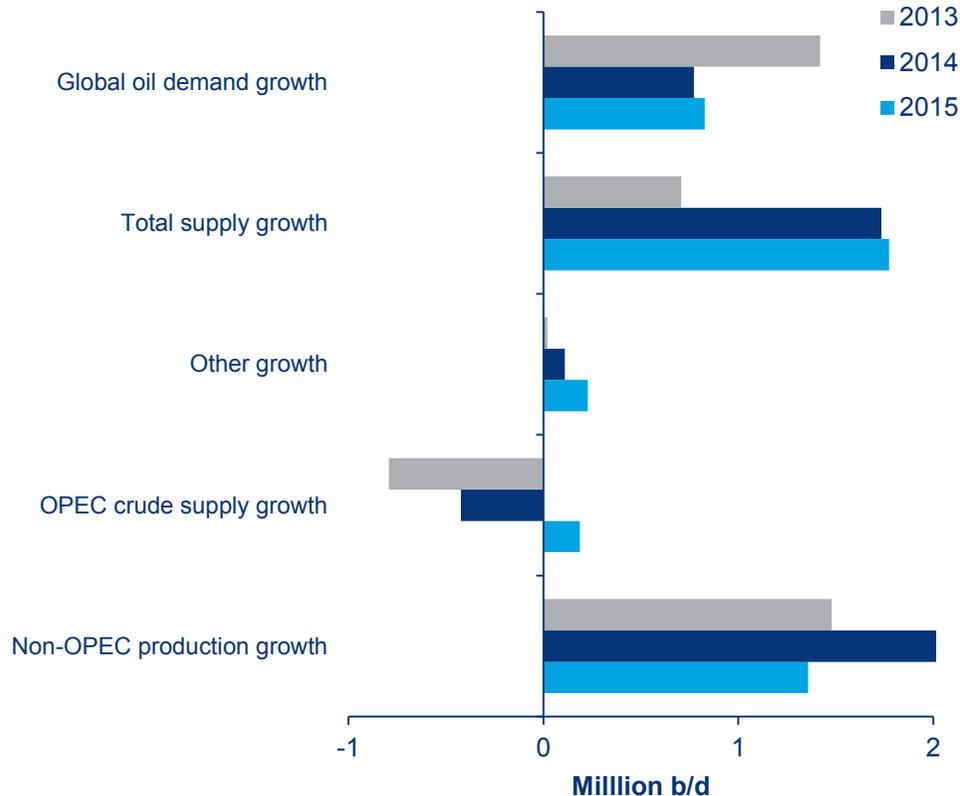
## US tight oil growth keeping pace with rise in losses



Source: Wood Mackenzie; EIA

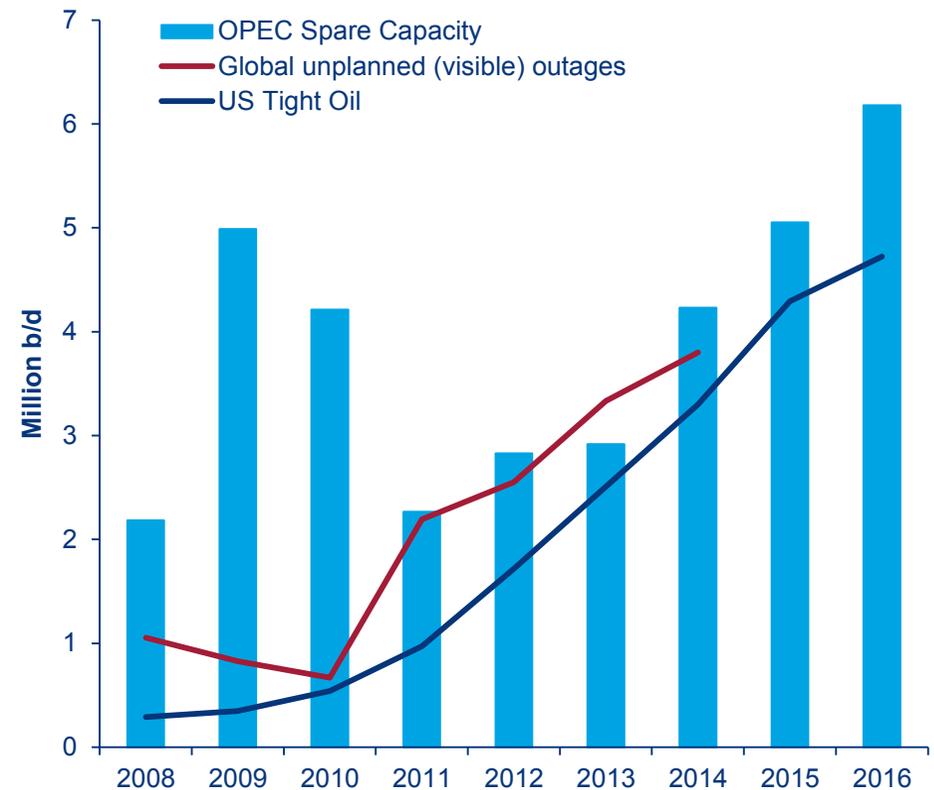
# Weakening demand growth unfolded in 2014, along with strong US supply gains and OPEC's decision not to cut production

## Global supply and demand dynamics 2013-2015 – pre November OPEC meeting



Source: Wood Mackenzie

## OPEC spare capacity increases in near-term

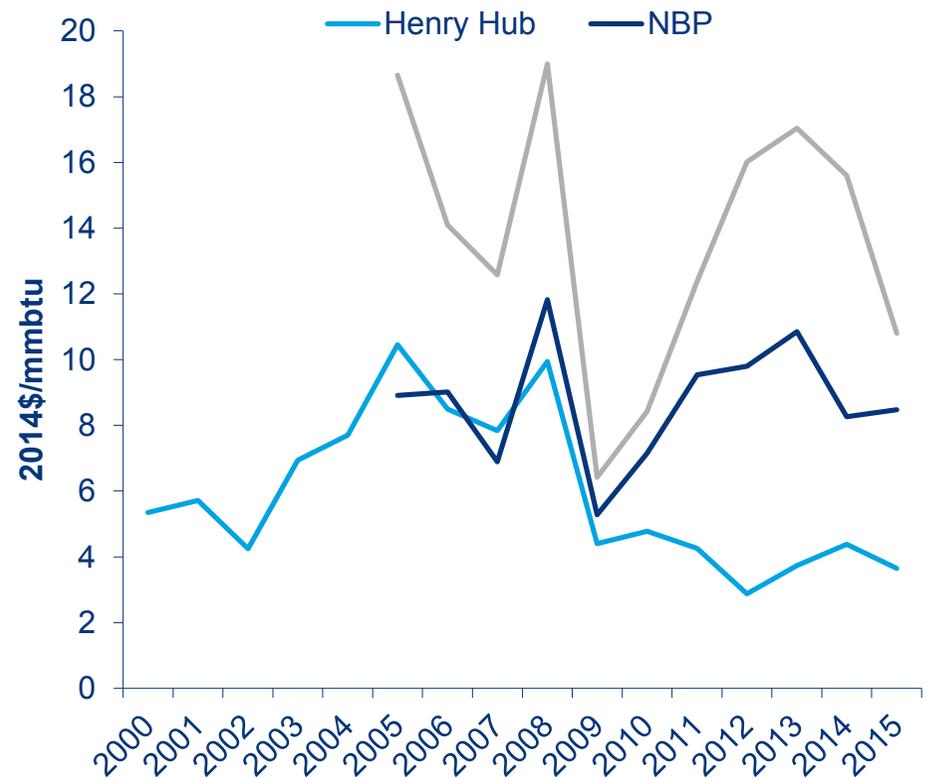
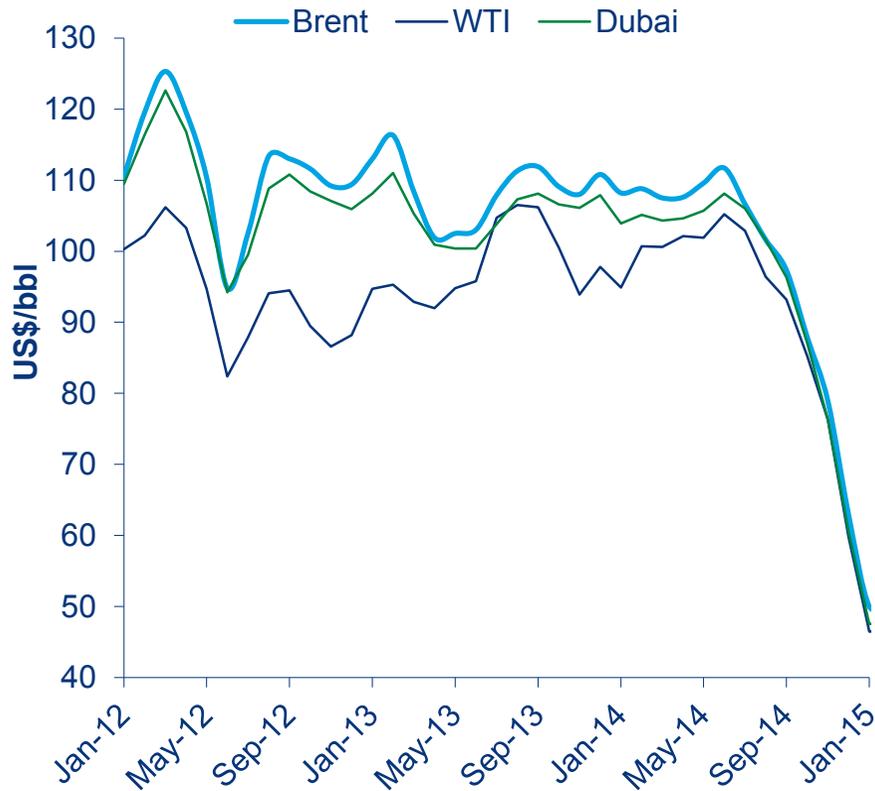


Source: Wood Mackenzie

# Oil & Gas Price Outlook – This isn't 1986

Oil lower than expected and gas stabilizing as new markets emerge

## Oil & Gas Prices



Source: History - Argus; Forecast - Wood Mackenzie

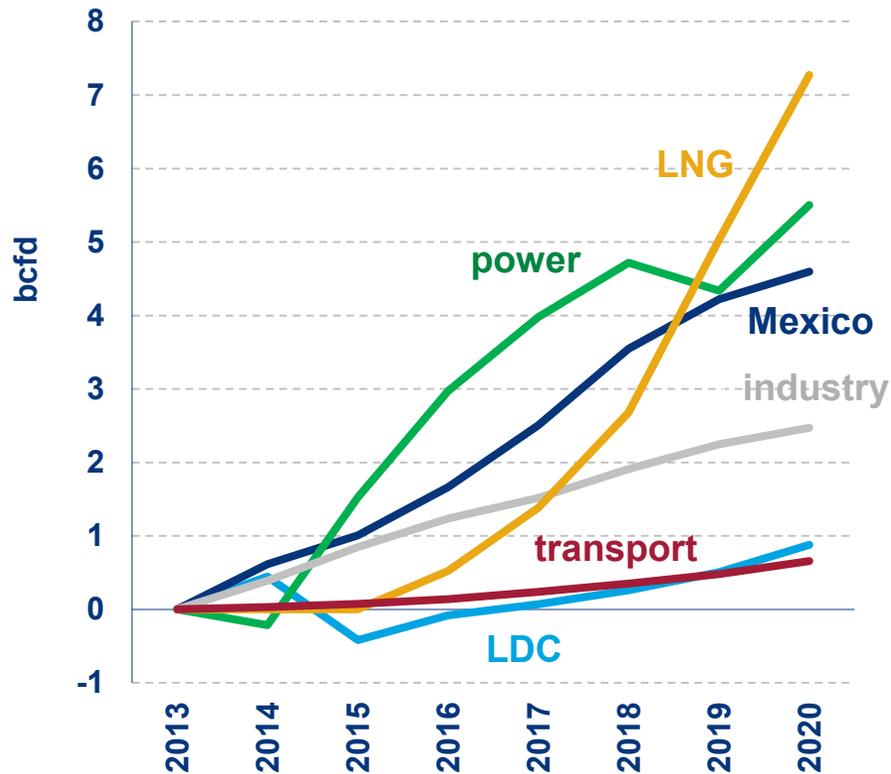
Source: Wood Mackenzie

5 Trusted commercial intelligence  
www.woodmac.com

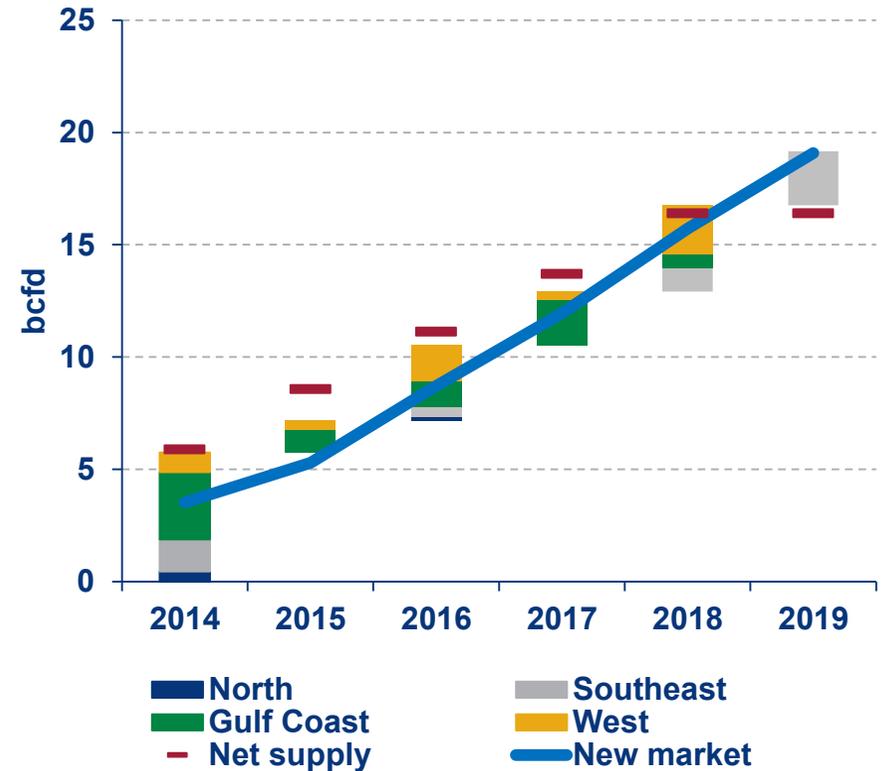
# Good news and bad news for gas producers...

New premium markets emerge, but new Northeast supplies keep pace

### US market growth relative to 2013



### Northeast pipe buildout relative to 2013

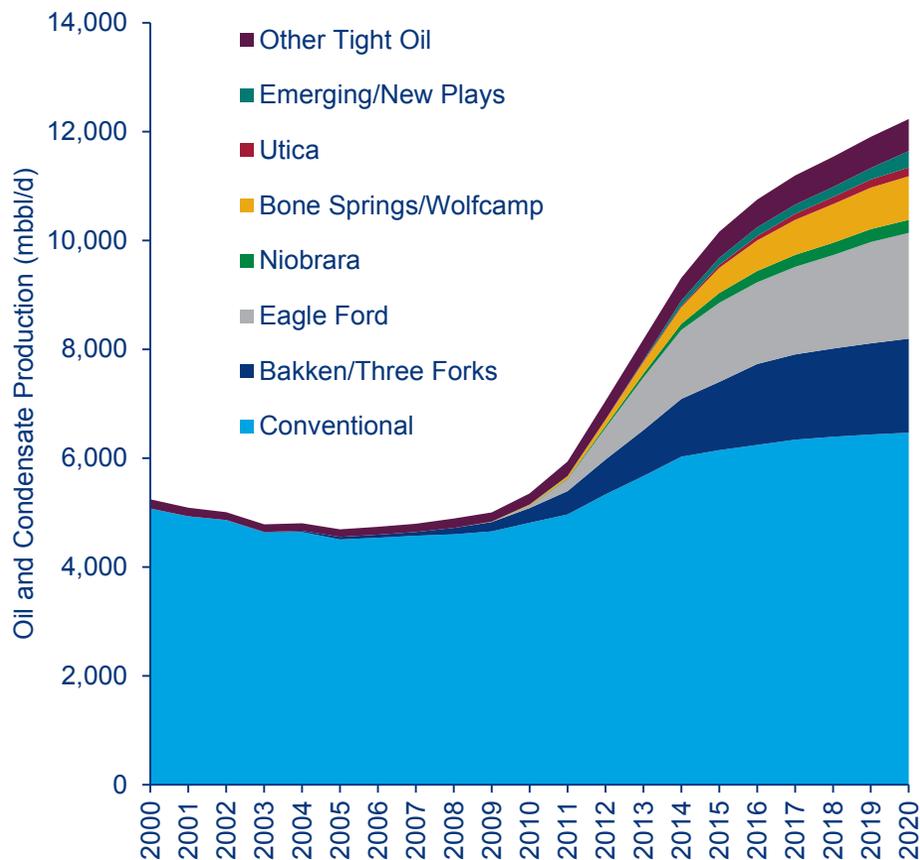


Source: Wood Mackenzie

# US tight oil production growth remains strong through H1 2015, but significant volumes eroded thereafter

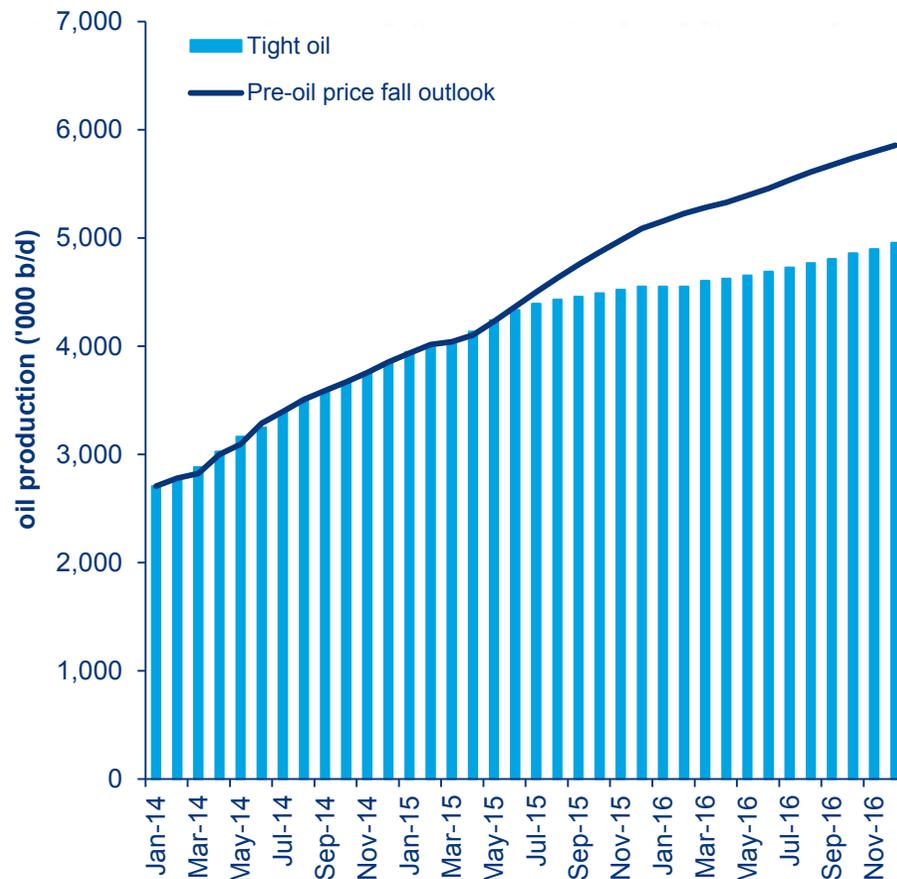
Tight oil production flexes earliest, levelling off in late 2015

## US oil outlook (Fall 2014)



Source: Wood Mackenzie

## Monthly US tight oil production forecast (mid-Dec)

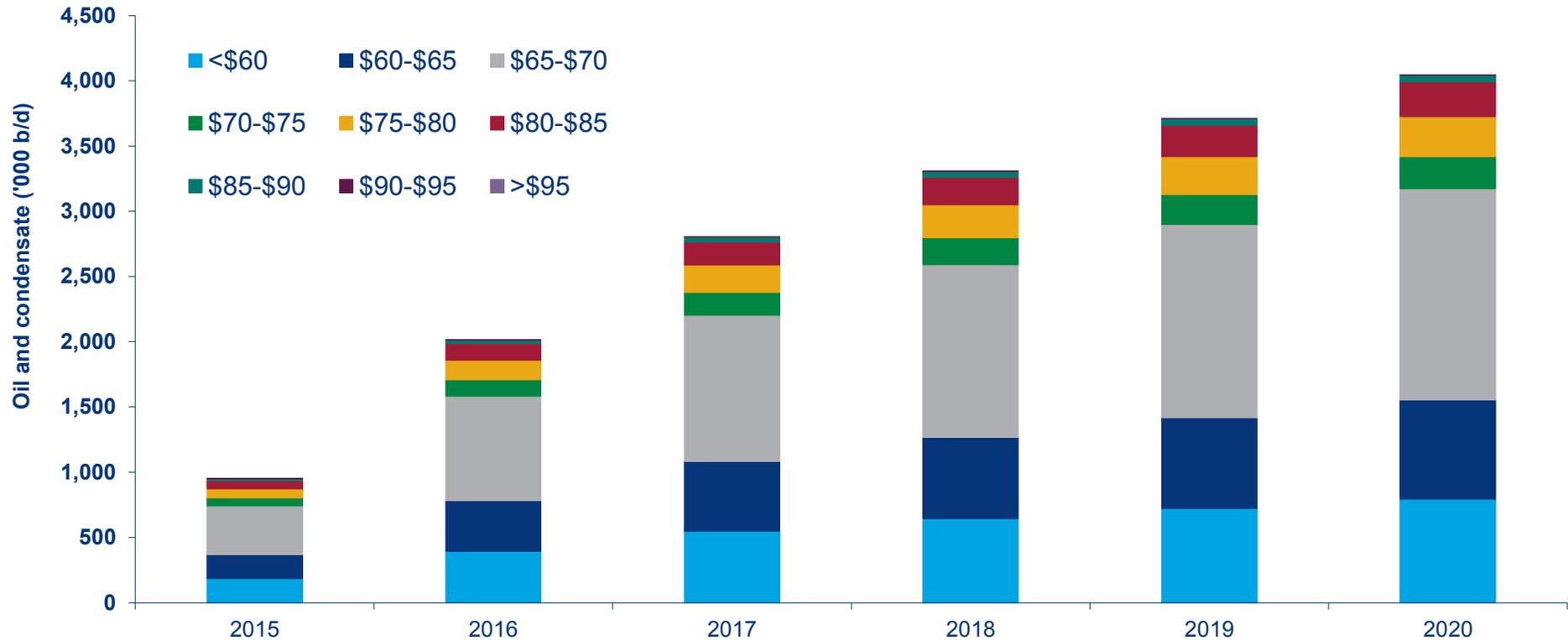


Source: Wood Mackenzie

## 2) US tight oil: prices have not tested the plays that matter (Fall 2014)

Most core well locations economic to US\$70 (WTI). Non-core sub-plays are the most at threat and companies will focus on drilling the core at the lowest possible cost

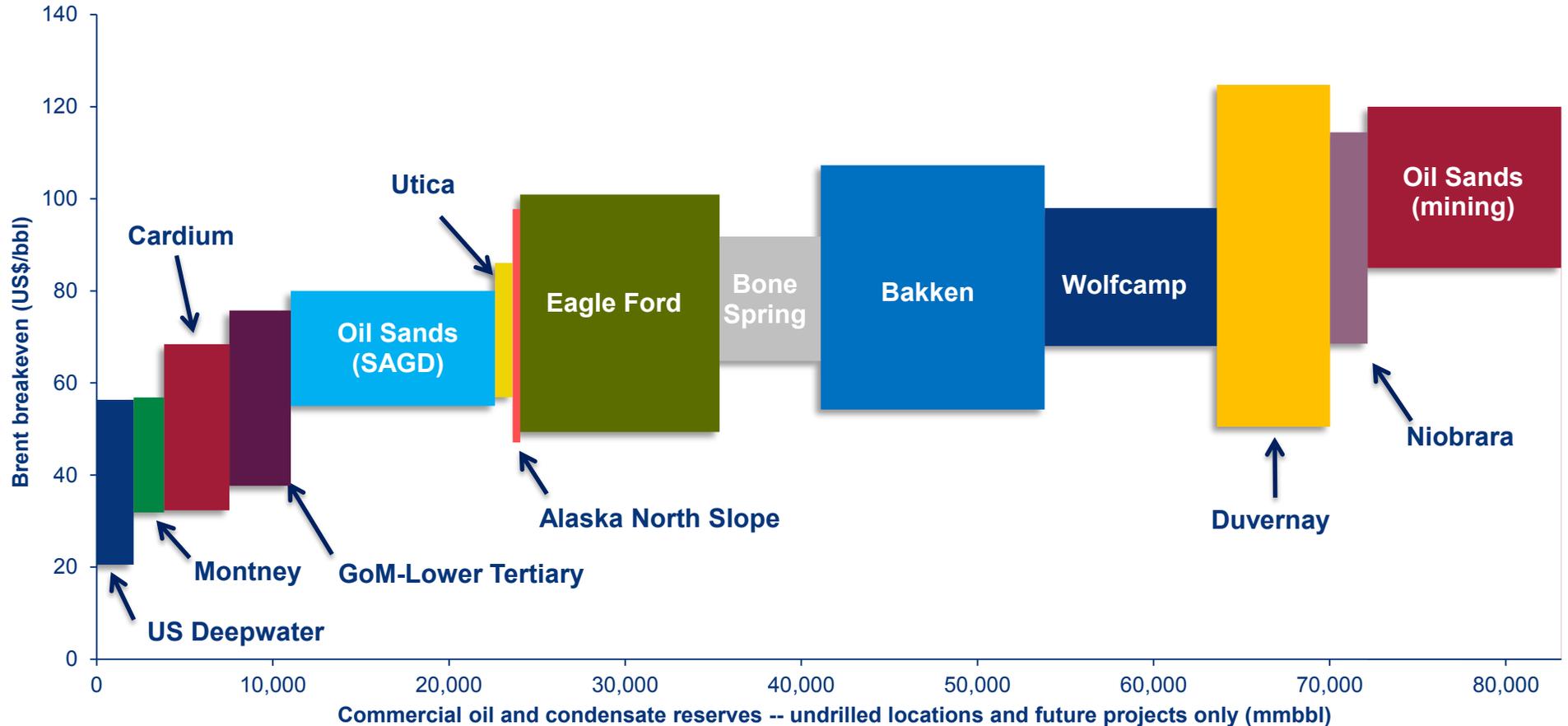
New US tight oil supply by breakeven



# North America: a number of play types are high cost (Fall 2014)

Future oil sands mining projects and the fringes of unconventional plays potentially offer big rewards, but are under threat if oil prices fall further

North American breakevens by play and theme



Source: Wood Mackenzie, note US deepwater excludes Lower Tertiary

# Swift downward movement in service and operational costs expected

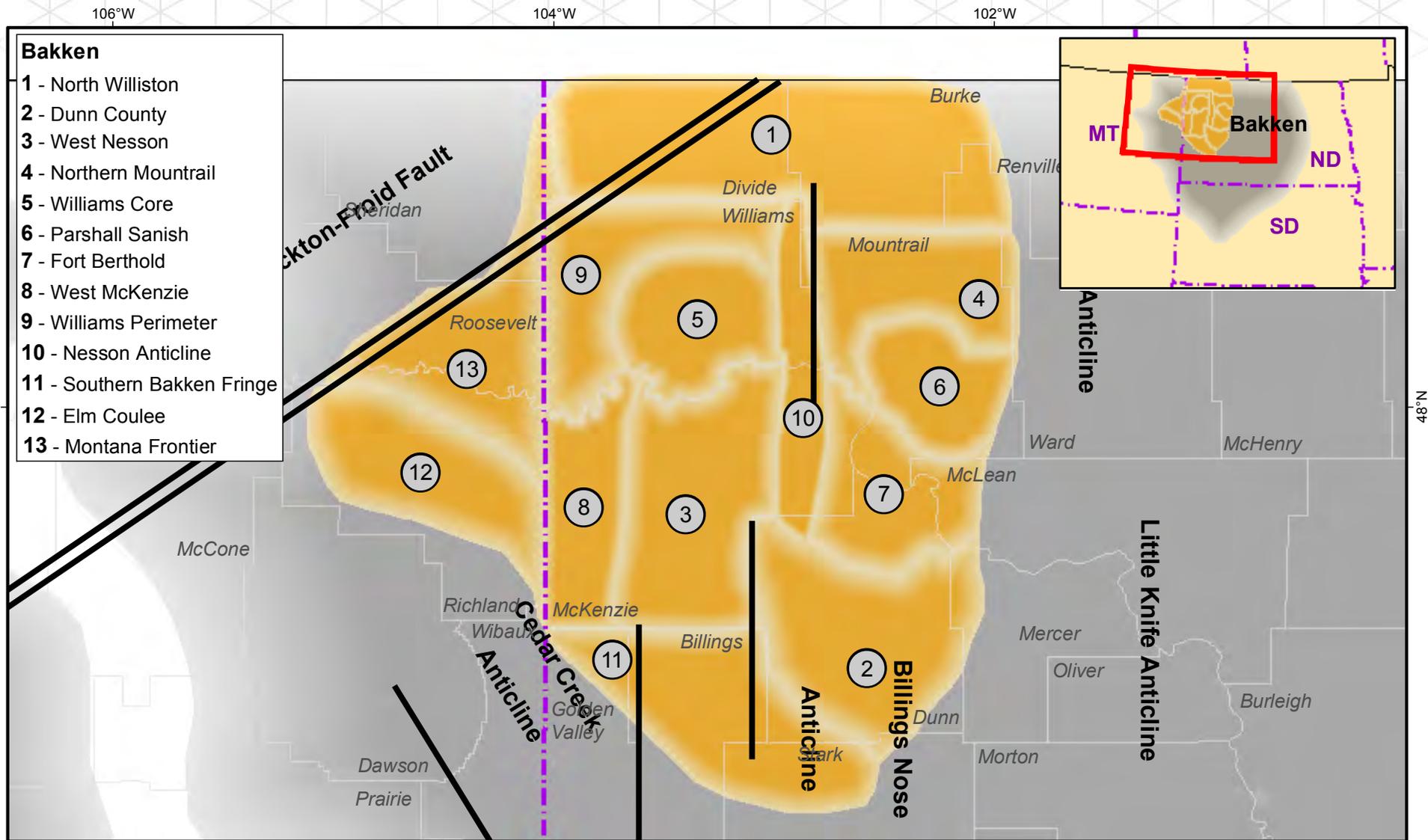
## Cost sensitivities on three core Bakken areas



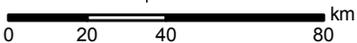
Source: Wood Mackenzie

- ◆ Service firms fight to keep market share
  - » Expect price cuts of 15-20% to avoid idling equipment and personnel
- ◆ Three Bakken sub-plays:
  - » 20% cost reduction lowers WTI breakeven by \$7-\$12 per barrel (10% rate of return)
- ◆ Other economic improvements may materialise:
  - » Lower transportation tariffs
  - » Greater monetisation of flared gas/NGLs
  - » Supply chain efficiency improvements

# Thirteen Bakken sub-play areas

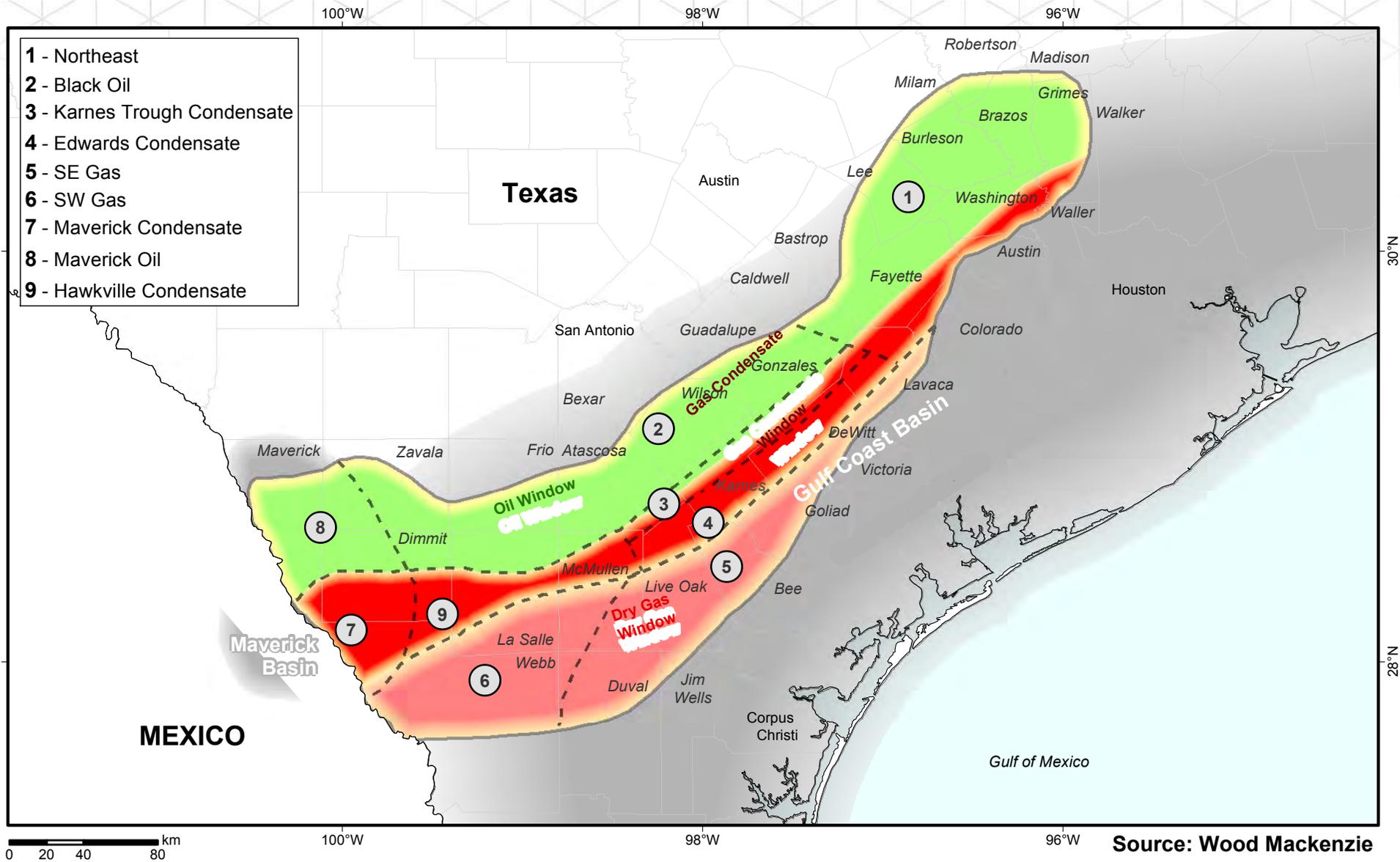


- Bakken**
- 1 - North Williston
  - 2 - Dunn County
  - 3 - West Nesson
  - 4 - Northern Mountrail
  - 5 - Williams Core
  - 6 - Parshall Sanish
  - 7 - Fort Berthold
  - 8 - West McKenzie
  - 9 - Williams Perimeter
  - 10 - Nesson Anticline
  - 11 - Southern Bakken Fringe
  - 12 - Elm Coulee
  - 13 - Montana Frontier

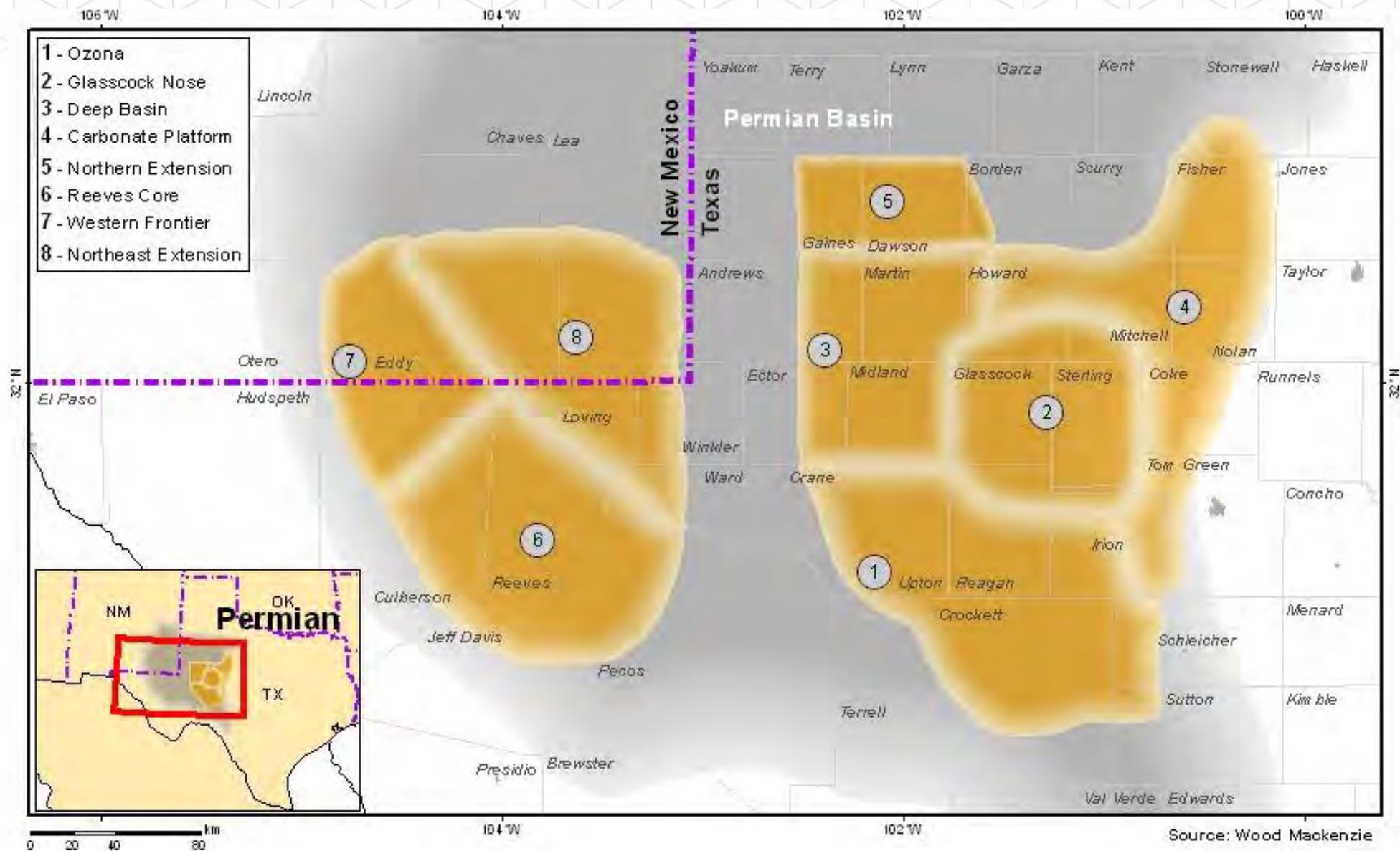


Source: Wood Mackenzie

# Nine Eagle Ford sub-play areas

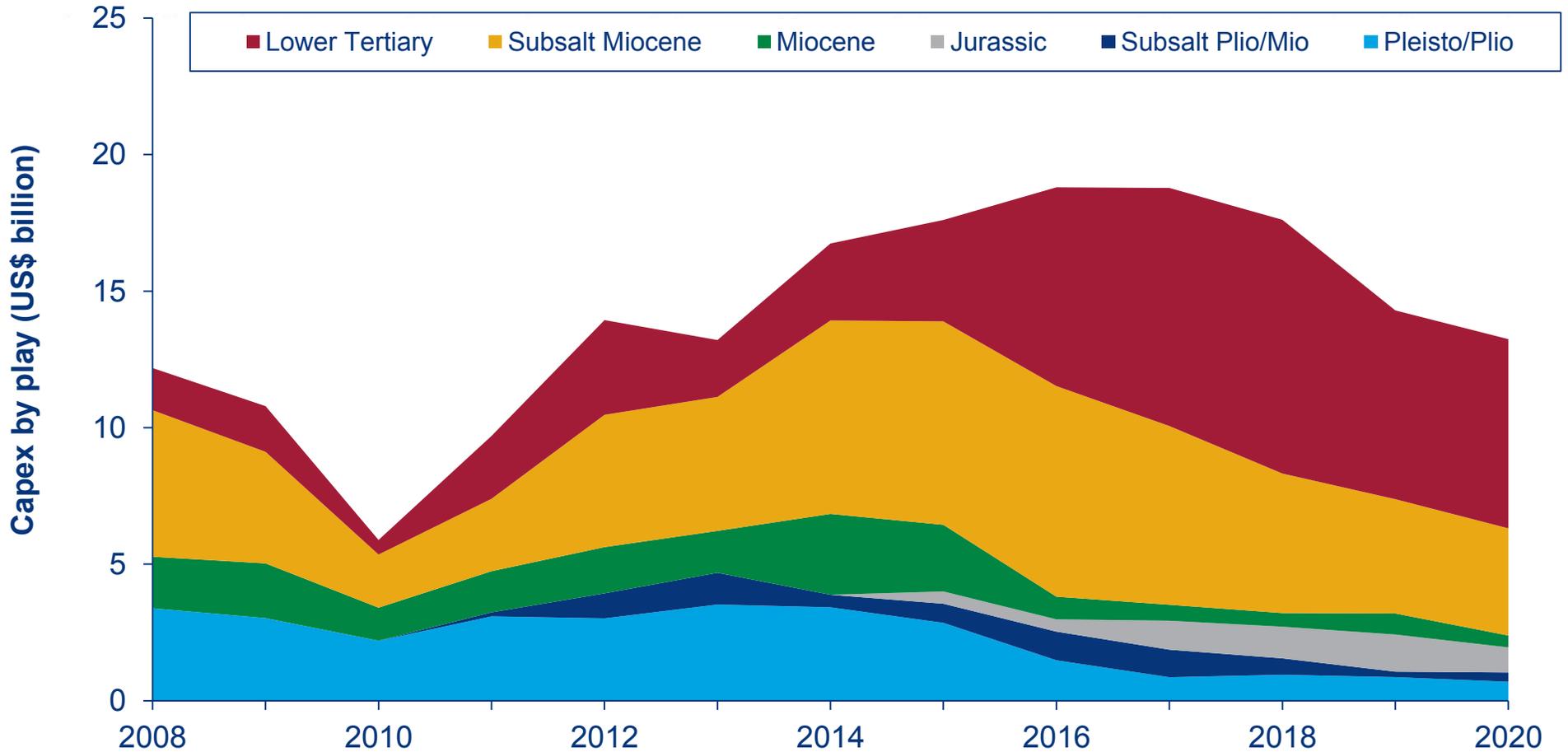


# Eight Wolfcamp sub-play areas



# Lower Tertiary displaces Subsalt Miocene as key investment area as region approaches new capex peak in 2016 (Fall 2014)

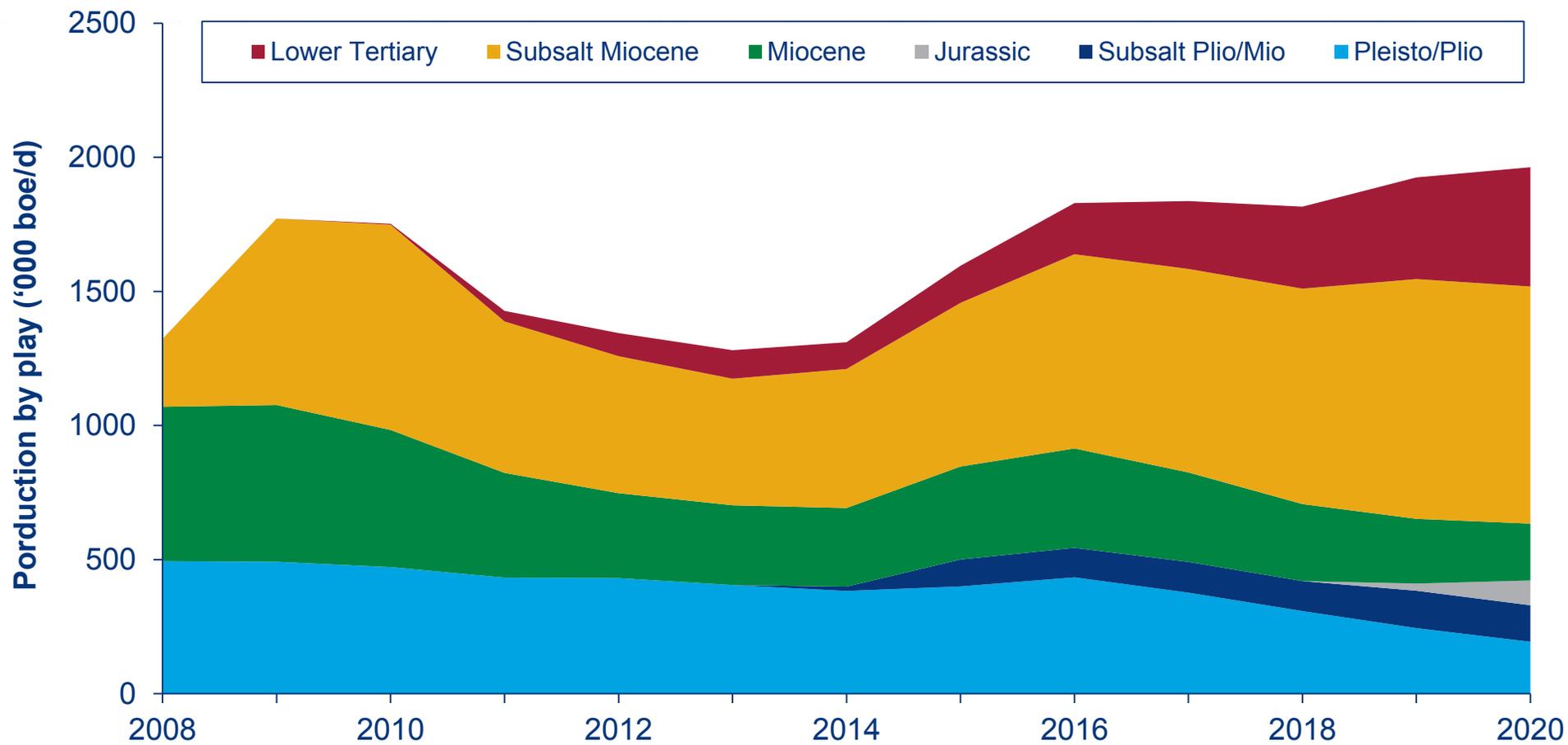
Development capex by play (2008-2020)



Source: Wood Mackenzie Upstream Data Tool (UDT)

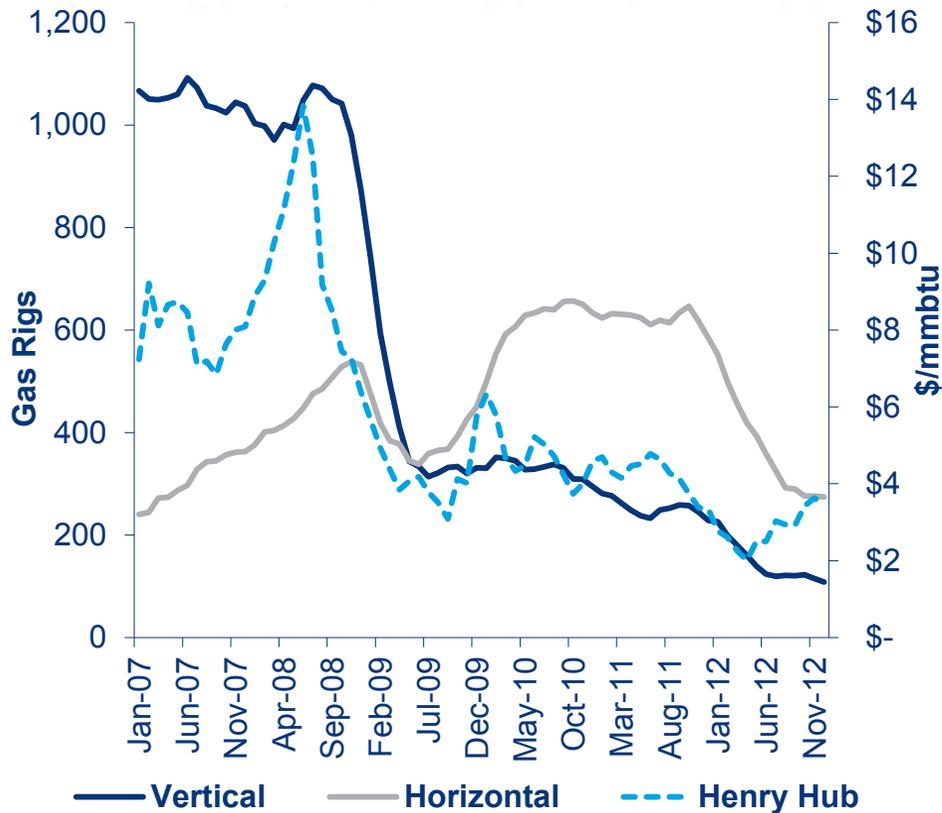
# Subsalt Miocene represents almost half of 2014 production with emerging plays catching up at the end of the decade (Fall 2014)

Commercial production by play (2008-2020)



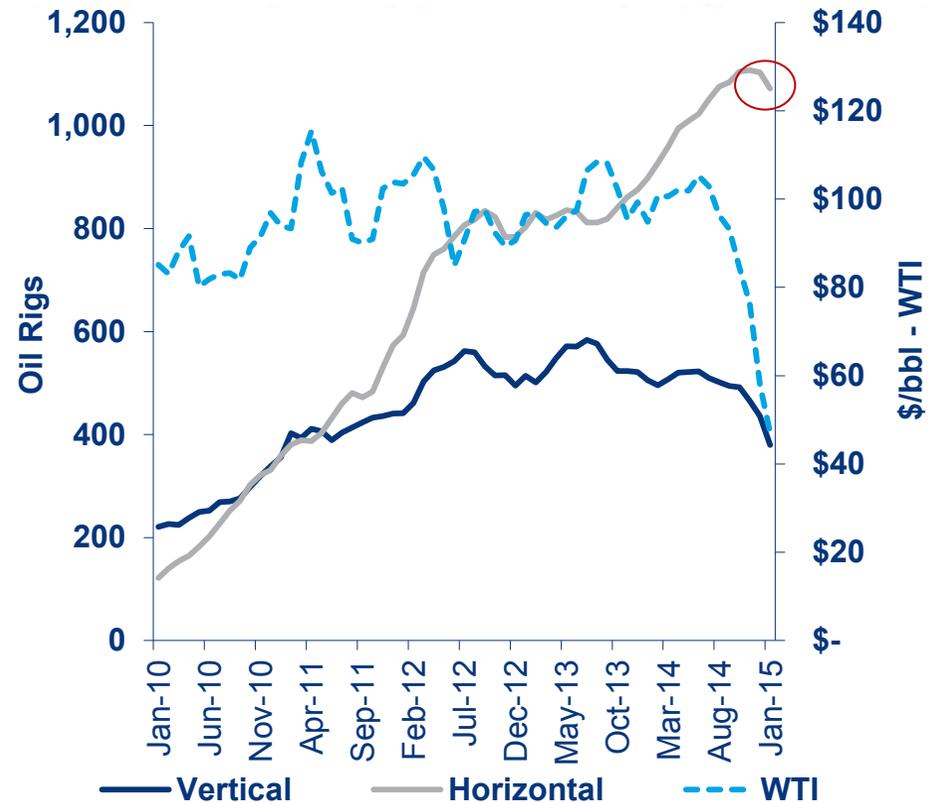
# Lessons from the 2008-09 gas price collapse for US oil drilling's response to current prices

US gas drilling by rig type with US natural gas prices



Source: Wood Mackenzie, Baker Hughes

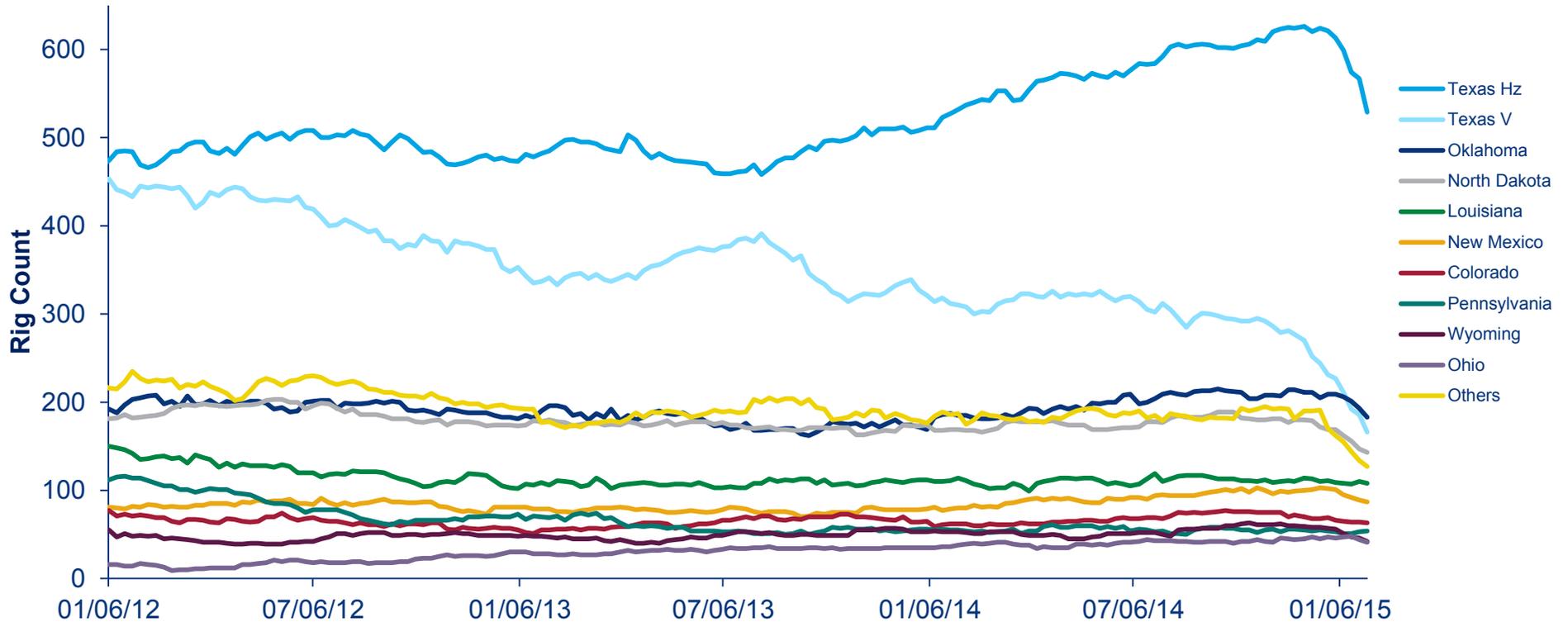
US oil drilling by rig type with US crude (WTI) prices



Source: Wood Mackenzie, Baker Hughes

# Resource states are hit the hardest by oil's fall

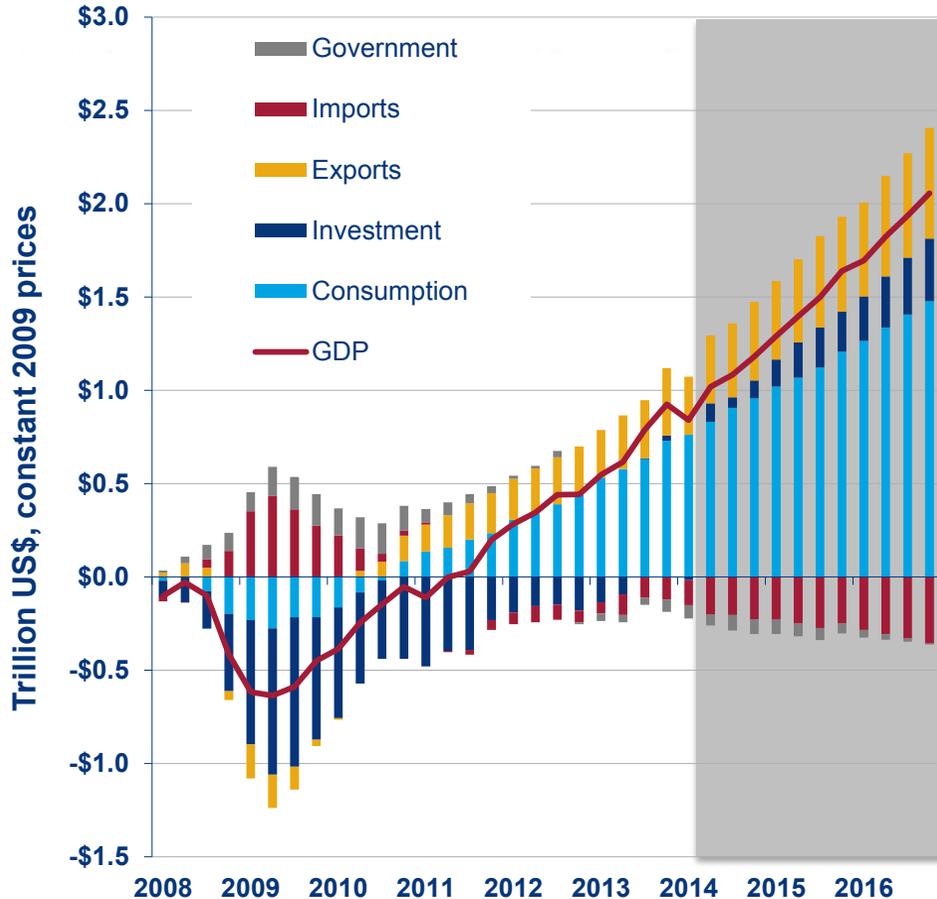
Texas is the biggest oil producing state and will be hit the hardest



Source: Wood Mackenzie

# What are the drivers of US GDP growth?

## US GDP: change vs Q4 2007



Source: US BEA, Wood Mackenzie

## Key Statistics

- ◆ Resource extraction has grown 50% since end-2007
- ◆ 'Resource States' have contributed 40% to the gain in US GDP since end-2007
- ◆ Texas alone has contributed 25% of the gain in national GDP since end-2007
- ◆ 25% of growth in Texas is down to resource extraction (alone)
- ◆ US has added 1.3 million jobs since end-2007
  - » Resource States added 1.6 million jobs
  - » Texas added 1.1 million jobs



## R.T. Dukes

Senior Analyst – US Lower 48 Upstream Research

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- ◆ R.T. has held various research and consulting roles within Wood Mackenzie. Currently, he manages the company's detailed analysis of major upstream developments through the North American Key Play service.
- ◆ In prior roles, he has covered the Gulf Coast and led the Rocky Mountains regional team. Mr. Dukes specializes in play description, decline curve analysis, production forecasting, and economic modelling. Mr. Dukes has also been involved with numerous domestic upstream consulting projects ranging from asset opportunity screenings, third-party valuations, due diligence, and strategic reviews.
- ◆ Prior to Wood Mackenzie, R.T. was a principal in a company investing in oil and gas producing interests.
- ◆ Mr. Dukes graduated Cum Laude from Texas A&M University with a bachelors degree in accounting and a masters degree in finance. He currently serves on the Former Student Advisory Board for the Professional Program in Accounting.

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# Energy Capital Partners Energy Market Opportunities

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*Power Generation & Midstream  
February 2015*

# Energy Capital Partners Overview

## Fossil Generation



## Midstream



## Renewable Generation



## Environmental Infrastructure



## Energy Services



- A private equity and mezzanine debt firm which pursues starting, buying and building energy asset platforms in North America
- Firm founded in 2005; certain ECP principals began investing at Goldman Sachs in 1997
- \$13 billion in equity and mezzanine fund commitments
- Historically owned over 200 power generation facilities
  - Currently owns 33 current facilities totaling ~8,700MW
- Owns 2,500 miles of operating pipeline
- 49 fund level employees; 12,000+ portfolio company employees
  - Over 400 years of energy sector experience
- Control investor in equity funds with heavy operational and management involvement

# The Shale Revolution

- The U.S. shale boom has experienced significant growth and we believe we are still in very early days of the development of these vast resources; other nations are initiating shale exploration now
- Why the U.S.?
  - Technological advances in hydraulic fracturing and horizontal drilling; legal construct for private mineral rights ownership; public comfort with drilling activity; hydrocarbons found in largely rural regions; existing interstate pipeline and rail systems; well capitalized industry participants and capital markets support
- Gas production growth is expected to continue due to an abundant low-cost resource base and strong demand growth in this low gas price environment
  - CERA estimates that nearly 1,000 Tcf of North American gas resources are economic at \$4 / MMBtu

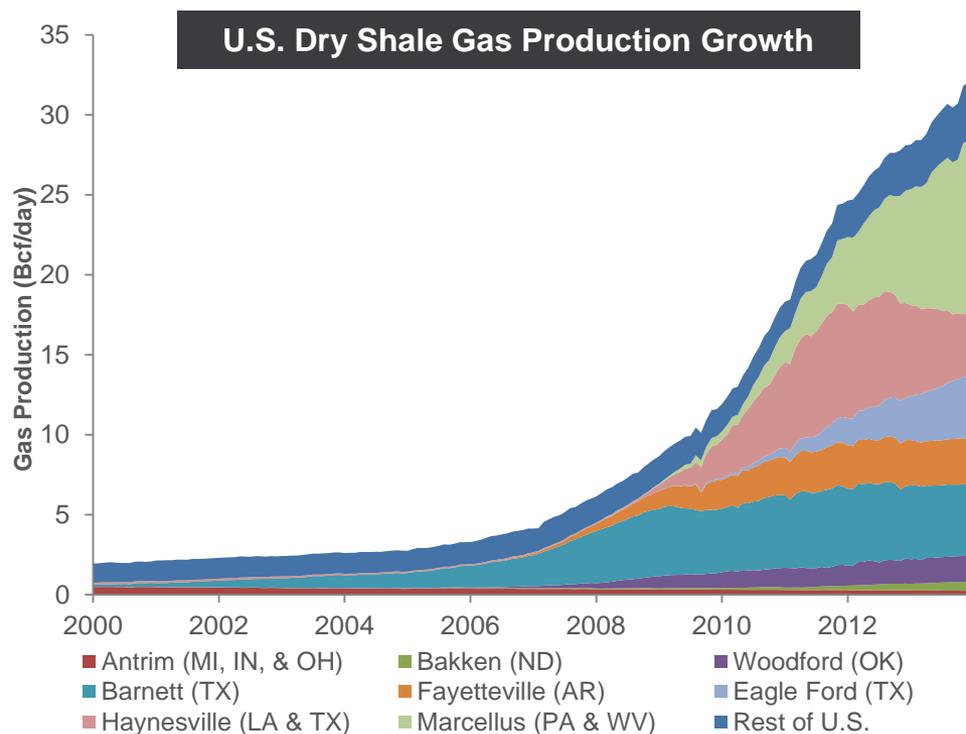


Chart Source: U.S. EIA.

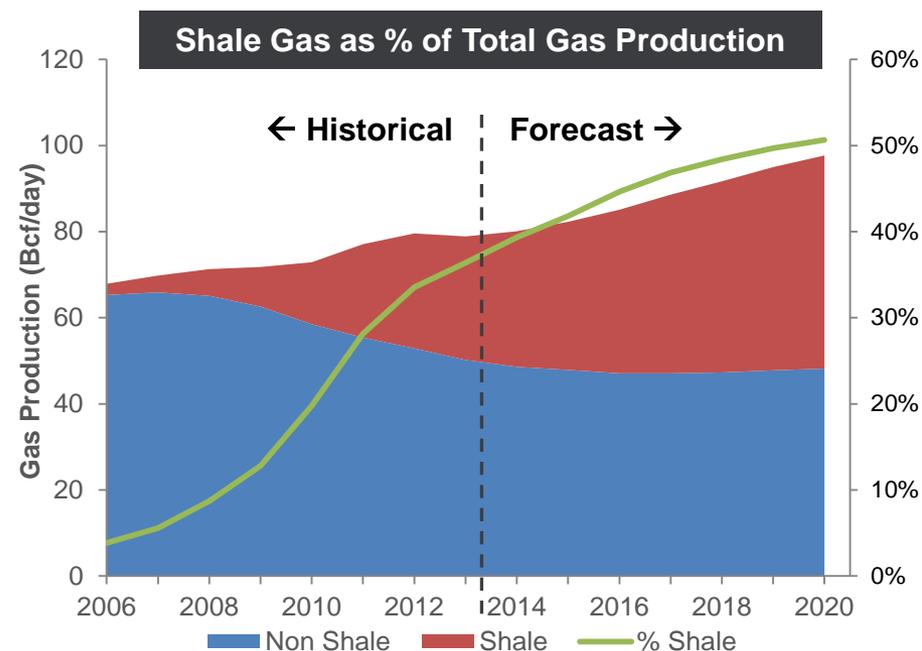


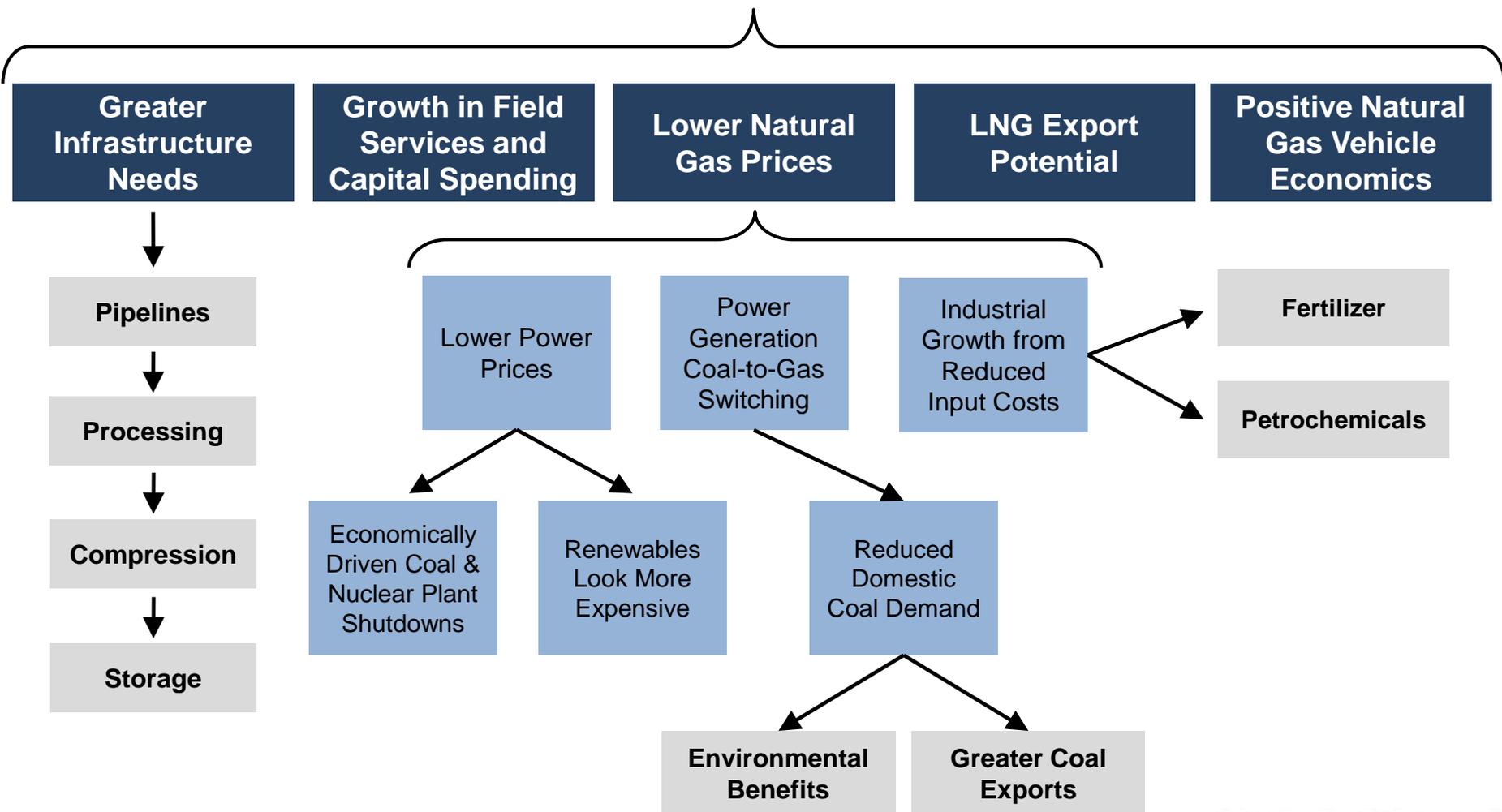
Chart Source: Wood Mackenzie.

Source: IHS CERA, "North American Energy – A revolutionary decade".

Note: The projected figures above are based on certain assumptions made by unaffiliated third parties, which may not prove accurate and therefore actual figures may differ materially. The inclusion of projected figures should not be regarded as an indication that ECP considers the projections to be a reliable prediction of future events and the projections should not be relied upon by investors.

# Shale Production has Transformed the Energy Landscape

## Expanded Shale Gas Production

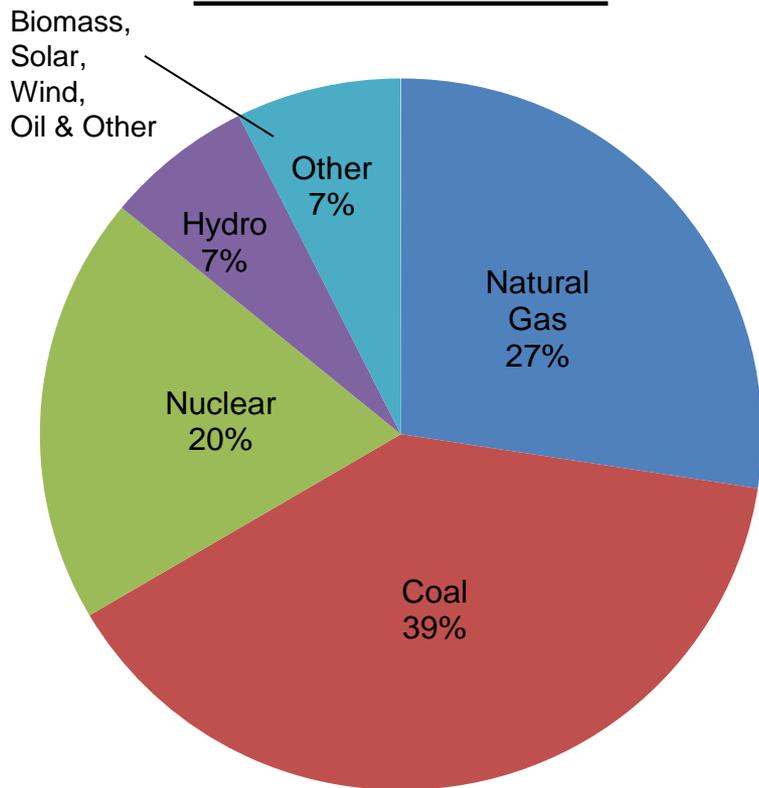


# Power Generation in the U.S.

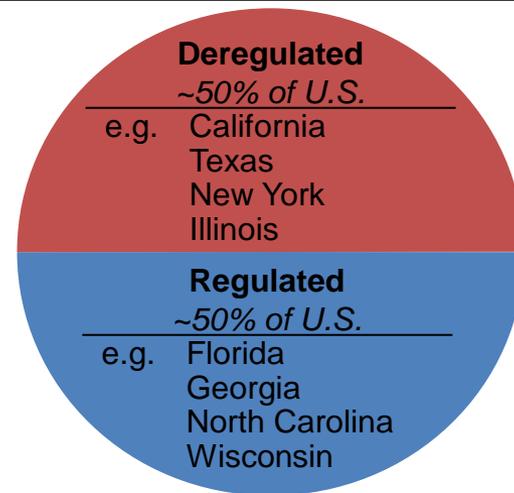
## Approximate Market Share of Electricity Production

~1 million megawatts of installed capacity

### 2013 Net Generation

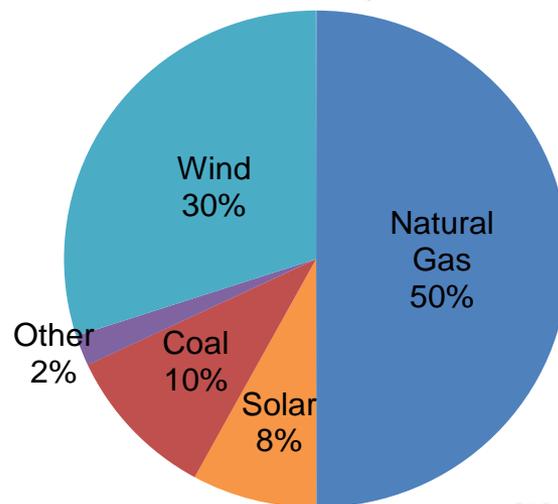


## Deregulated vs. Regulated Power Markets



## Generation Capacity Additions Past 10 Years

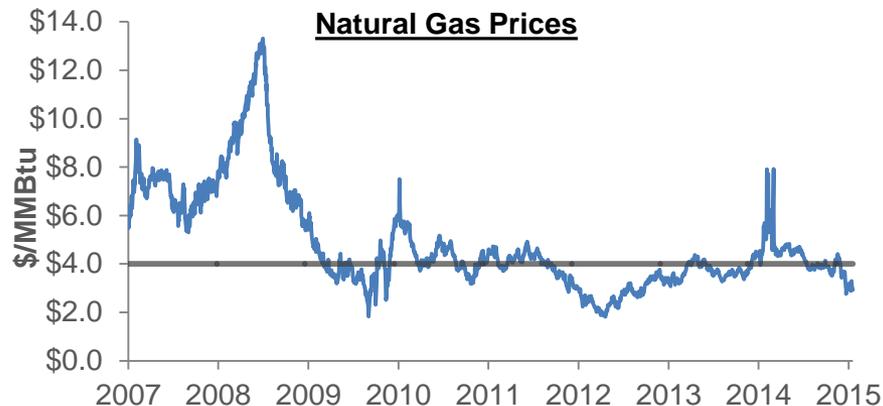
~150,000 megawatts



Source: U.S. EIA Electricity Data

# Power Generation – Supply Shrinkage

## Economically Driven

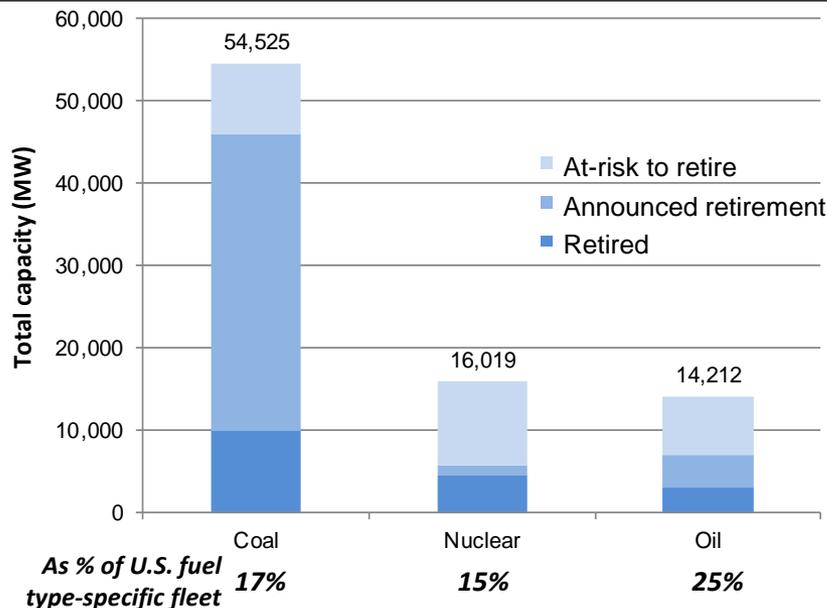


Source: Daily Henry Hub spot prices - Bloomberg (as of 1/20/2015).

## Environmentally Driven

- **MATS – Mercury Air Toxics Standard**
- **Cooling Water**
- **Coal Ash Controls**
- **CO2 Emissions**

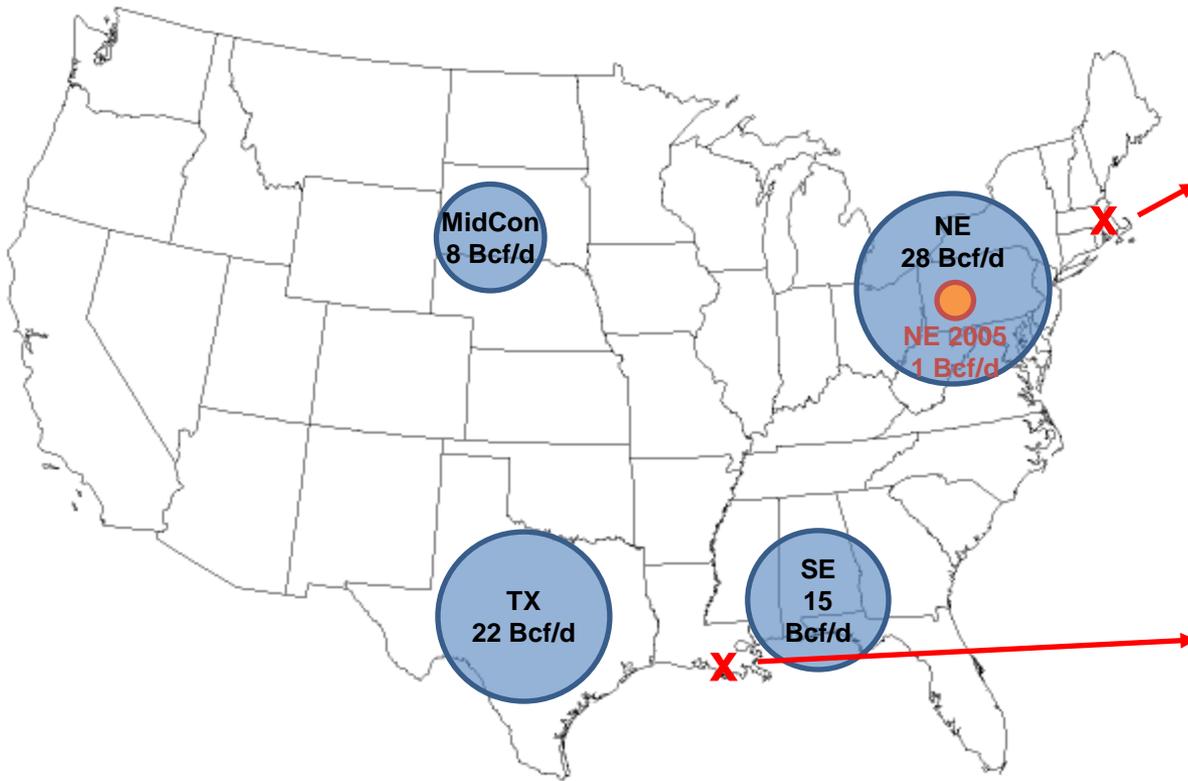
## Power Plant Closures (2010-2020): Announced, Retired, & At-Risk



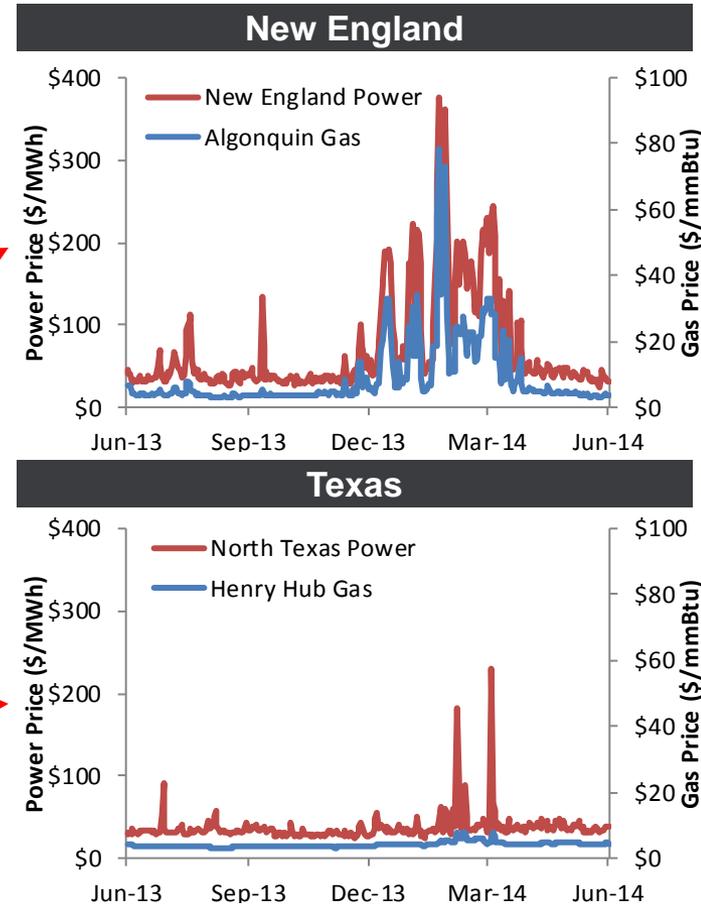
Source: SNL Energy.

# Increased Power Price Volatility – Gas Constraints

- U.S. has a new abundance of natural gas, but it still cannot always get where it needs to be, when it needs to be there
  - More interstate pipe needed to meet winter peak demand in certain regions

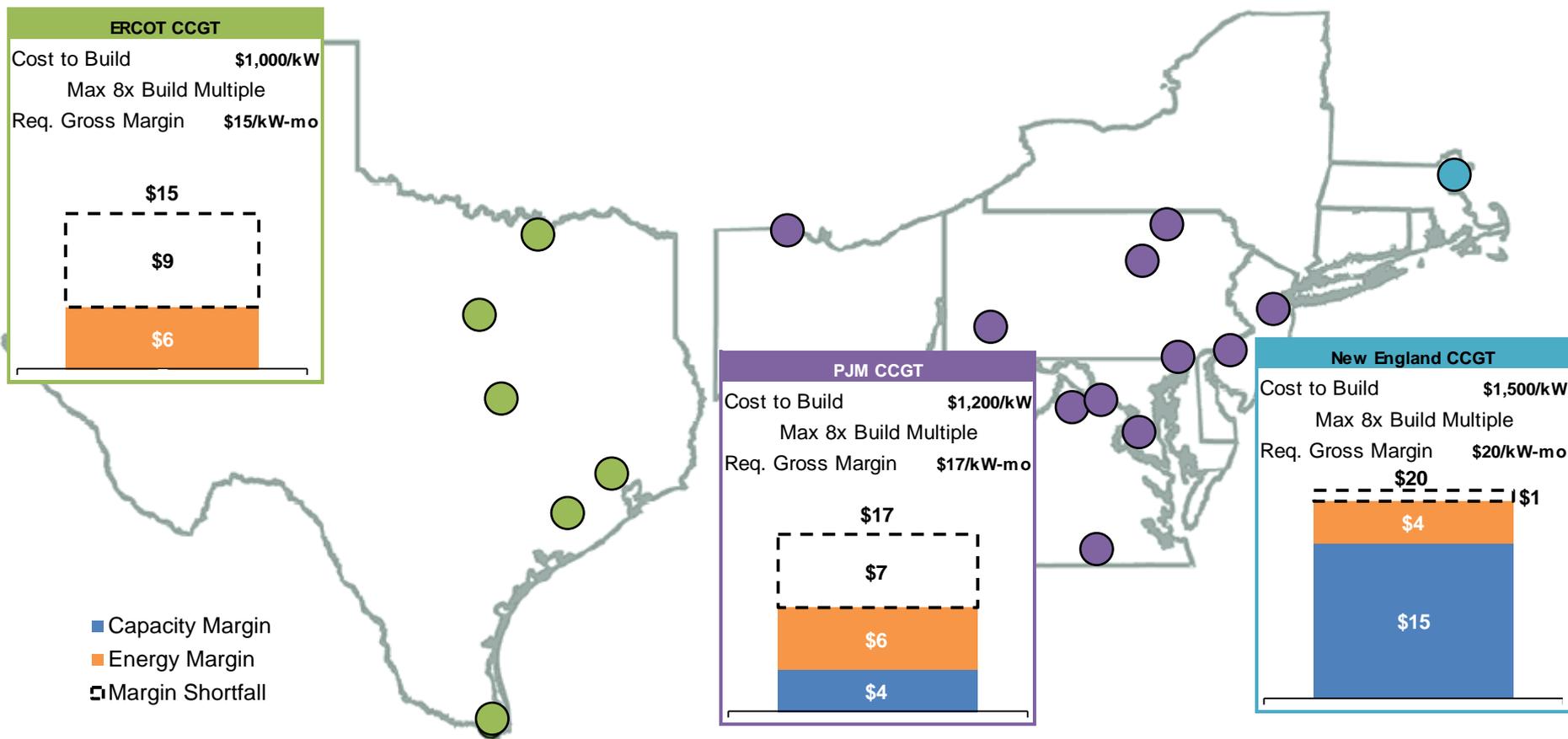


Selected gas production basins, sized by 2019E production



# Anticipated New Supply of Natural Gas Plants

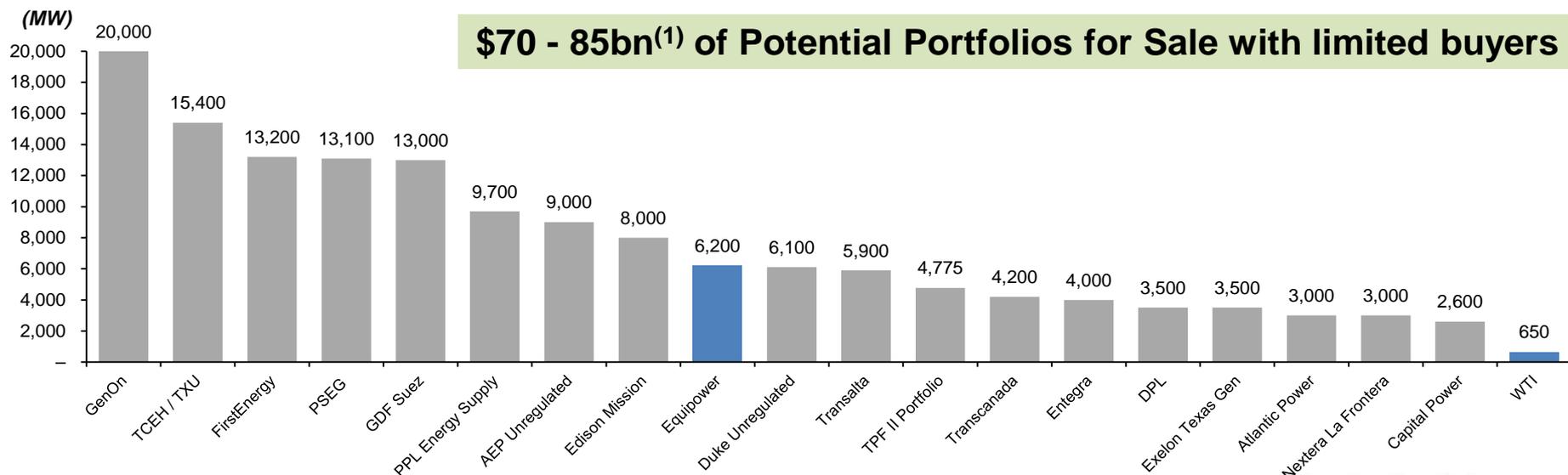
- Focused in Eastern U.S. and Texas
- We believe these new plants are uneconomic given any reasonable margin expectations
- Driven by strong debt markets and pockets of optimistic equity



Note: Illustrative gross margin comparison. For illustrative purposes only. The inclusion of projected figures should not be regarded as an indication that ECP considers the projections to be a reliable prediction of future events and the projections should not be relied upon by investors.

# Competitive Dynamics Favor Large, Flexible Buyers

- **Utilities shedding generation and investing in regulated businesses**
  - Refocusing on stable, dividend-yielding businesses
- **Very few buyers for large generation businesses**
  - DYN / NRG are only recent buyers and now appear to be on the sideline
  - Strategic buyers generally have company-specific constraints (e.g. no coal, accretion)
  - Limited number of financial buyers with core power generation expertise
- **Potential Portfolios in the Market:**



(1) ECP estimate.

# Power Generation – Summary Investment Thesis

## *Tightening supply / demand creates bullish outlook*

### Reliability Measures Are Shrinking

- Low natural gas prices reduce power prices
- Coal / nuclear facilities are increasingly uneconomic in low gas price environment
- Environmentally driven shutdowns continue
- Uncertainty around how available “demand resources” are
- Wind and solar resources are not always available to meet demand
  - ▶ Renewables replacing fossil resources reduce availability measures
- Natural gas pipeline deliverability is lacking into high power generation demand areas

### New Capacity Is Slow to Respond

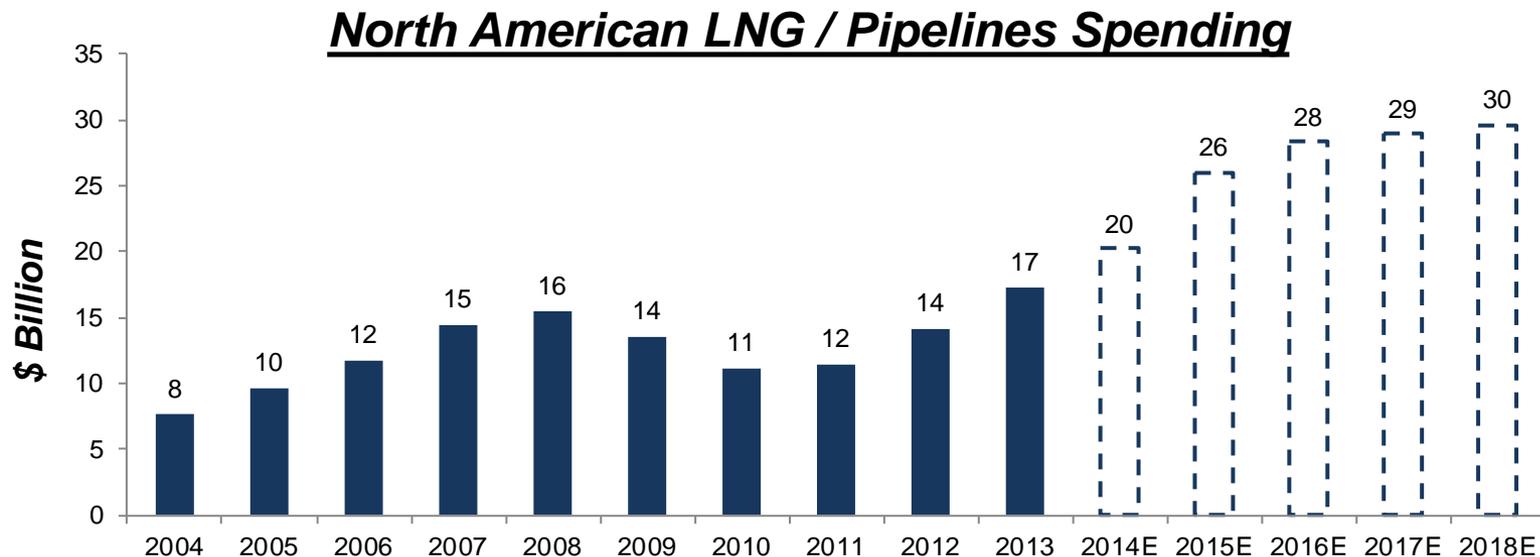
- Power prices are currently too low to stimulate new build (construction of new power facilities)
- New build permitting is slow; at least 5 years for development and construction
- Capacity market prices have been slow to respond and have been subject to regulatory adjustments

### Storage Initiatives Are Years Away

- Electricity is not a commodity that can be naturally stored
- Large scale battery storage is still expensive and in the early stages of development

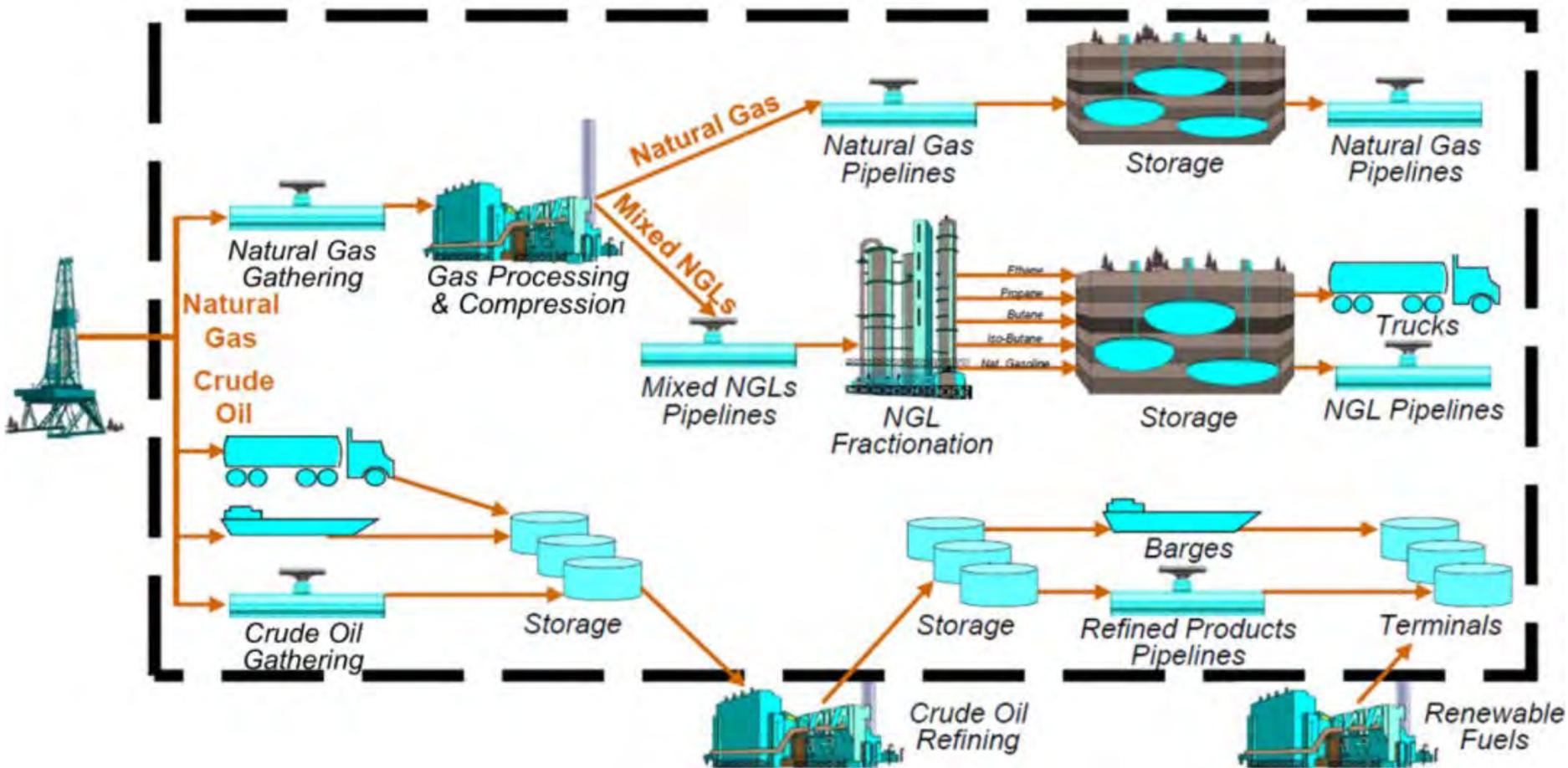
# Midstream Macro

- U.S. shale production has continued to exceed expectations
- Changes in gas flow as well as production from new basins has led to the need for continued and increased investment in midstream assets
- Though the recent oil price decrease will affect capital expenditures, particularly in North America, spending for ongoing projects will continue as expected
  - However once capital investment returns, the recovery in the U.S. is expected to occur quickly as a result of the short cycle nature of shale production



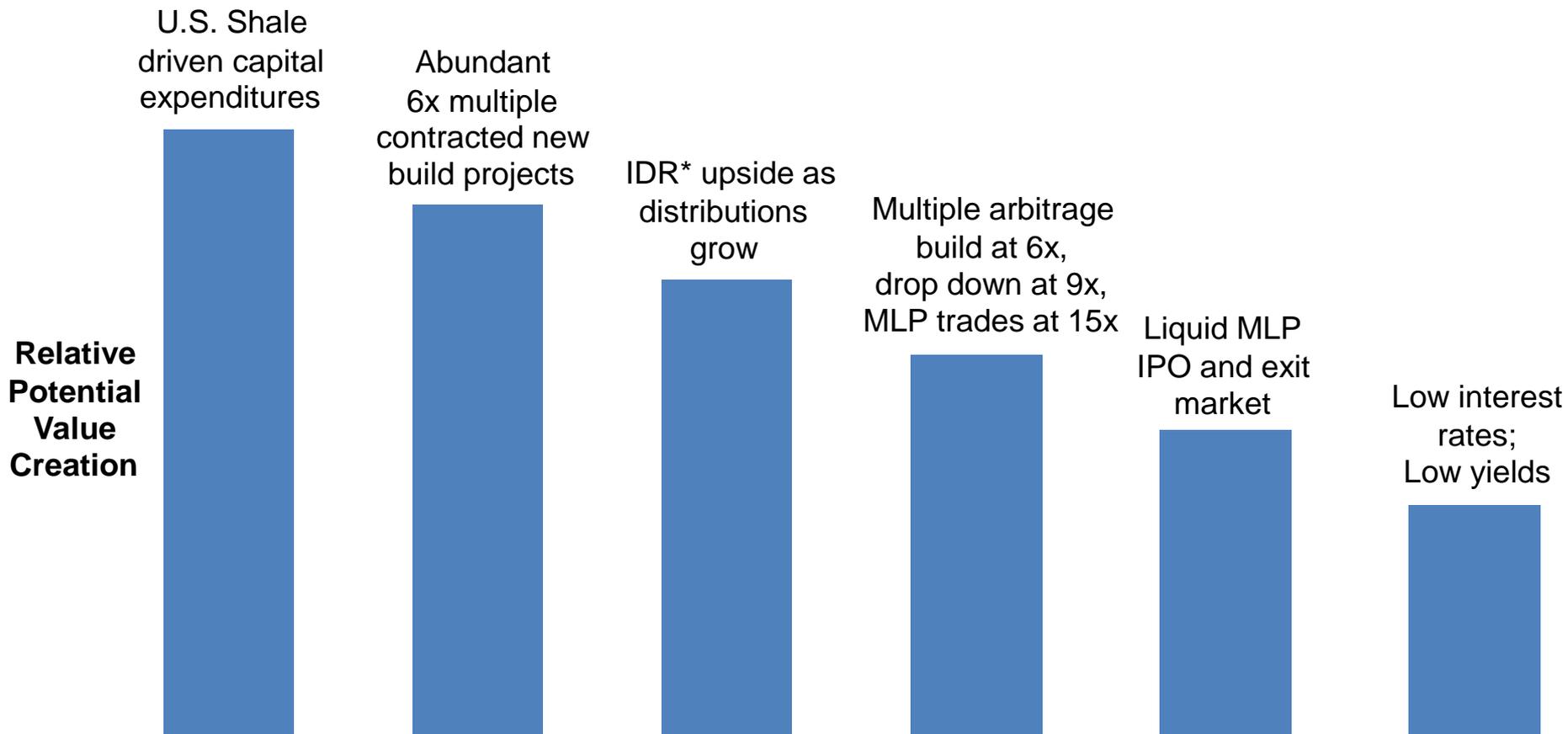
Source: IHS Global Upstream Spend Report, Q3 2014.

# Opportunities and the Midstream Value Chain



# MLP Economic Gains

## What are the Drivers?



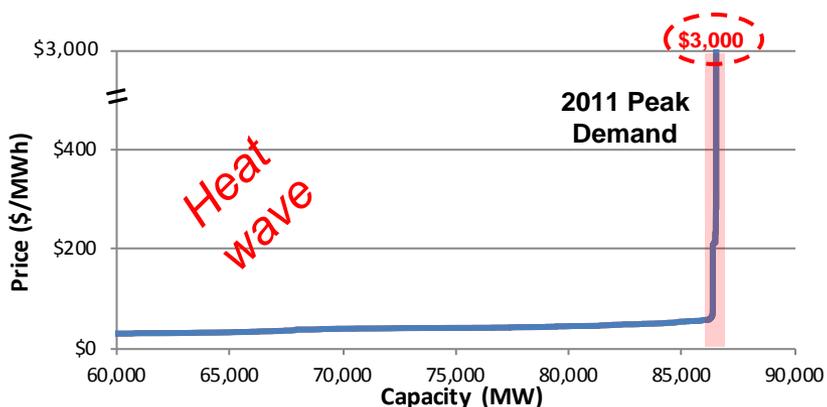
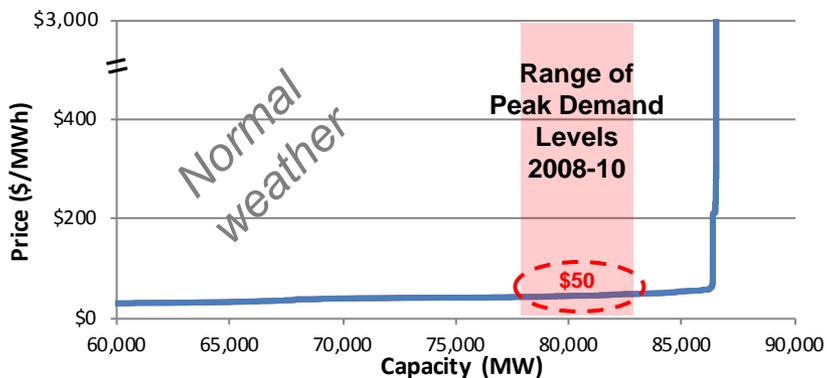
# Appendix

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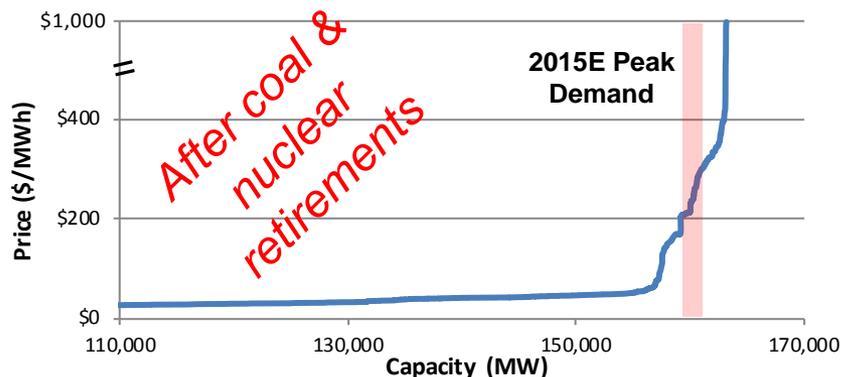
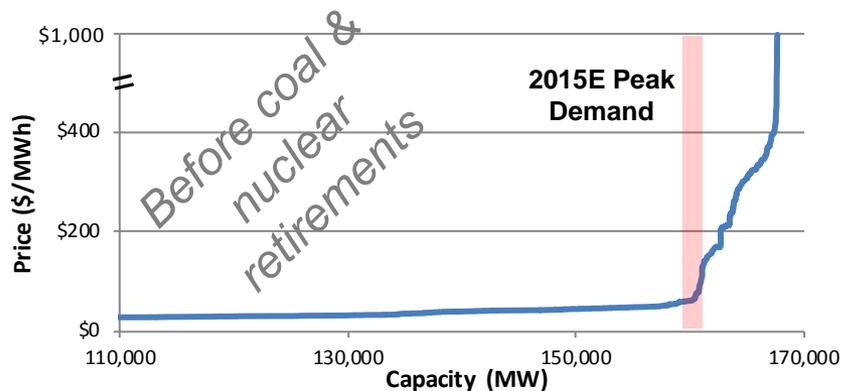
# Increased Power Price Volatility – Supply / Demand

- Tipping point dynamics in regions most impacted by retirements
  - At times, small degrees of tightening result in large degrees of power price rise

**Historical Example**  
ERCOT – 2011



**Potential Future Example**  
PJM – 2015



Source: Energy Velocity Supply Stack Data, October 2014.

Note: The projected figures above are based on certain assumptions made by unaffiliated third parties, which may not prove accurate and therefore actual figures may differ materially. The inclusion of projected figures should not be regarded as an indication that ECP considers the projections to be a reliable prediction of future events and the projections should not be relied upon by investors.

# Increased Power Price Volatility – Demand Response

- **The U.S. is increasing its reliance on demand response in many areas**
  - Demand response is residents / businesses promising not to use electricity on the hottest and coldest days of the year
  - When triggered, results in extreme power prices, as high as \$1,000/MWh

	ISO-NE	PJM	NYISO
Installed Generation Capacity (MW)	~32,000 MW	~182,000 MW	~41,000 MW
Peak Demand (2013)	27,379 MW	157,508 MW	33,956 MW
Formal Capacity Market	✓	✓	✓
2018 Reserve Margin	17.80%	17.50%	20.40%
Demand Response (MW)	3,041 MW	12,314 MW	1,558 MW
2018 "Steel in the Ground" Reserve Margin <sup>(1)</sup>	7.70%	10.10%	15.90%

Source: PA Consulting Confidential Diligence Report, March 2014.

(1) Reserve margin excluding demand response, imports and expected new builds.

# Investment Benefits of Being the GP of an MLP

- **Incentive Distribution Rights (“IDRs”)**
  - Public MLP pays 50% of incremental distributions over a target level to the GP
  - As a result, this split creates an incentive to grow distributions to the public unitholders
  - If successful, the GP value can grow at an accelerating rate
- **Private GP allows for new assets to be built prior to cash flow generation**
  - Not constrained by public market need for quarterly cash flow growth
  - Can generally build these assets at a much lower cash flow multiple than where an operating asset trades
- **Mature GP assets are then sold to the public MLP**
  - Creates accretion to the MLP’s distribution growth
  - Value enhancing sale from GP to MLP
- **This GP / MLP structure capitalizes on the continuing high level of midstream spend to drive cash flow growth**

# Certain Risks / Disclosures

Energy Capital Partners has prepared the previous briefing (this “Presentation”) for presentation, on a confidential and limited basis, to existing investors for their use in becoming familiar with updates regarding Energy Capital Partners’ private equity business. This Presentation is not an offer to sell to any person, or a solicitation to any person to buy, any securities in any entity, and is solely intended to provide an overview of Energy Capital Partners and its prior funds’ investment strategies and certain industry specifics relating to private equity investing. Any such offer or solicitation will be made only pursuant to a Private Placement Memorandum (as amended and/or supplemented from time to time, and including, without limitation, the legends contained therein, the “PPM”) and subscription documents, and will be subject to the terms and conditions contained in such documents and the PPM.

Energy Capital Partners’ investment strategies are subject to various risks, none of which are outlined herein. A description of certain risks involved are described in the PPM and the Form ADV Part 2 for Energy Capital Partners Management, LP, available upon request and filed with the U.S. Securities and Exchange Commission.

**Tab 6 E**



Teacher Retirement System of Texas

# 2015 Best Ideas Survey

Britt Harris, Chief Investment Officer  
February 11, 2015

# Agenda

- 2014 Survey Evaluation
- 2015 Top Ideas
- Key Findings
- S&P 500 Forecasts
- Appendix

# Evaluation of 2014 Expectations

## Correct

- Negative view on Energy Commodities
- US Dollar strength
- Volatility increasing
- US Treasury underperformance

## 2014 Result

- ✓ GSCI Energy down 44%
- ✓ DXY up 13%
- ✓ VIX up 40%
- ✓ US Treasuries up 5% (5.6 duration)

## Incorrect

- Emerging Markets most favorable market
- European Equities second most favorable market

- ✗ EM up 5% (local)
- ✗ Europe up 5% (local)

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# S&P 500 Forecasts

	2015		2014		2013	
<u>Bank</u>	<u>Close</u>	<u>EPS</u>	<u>Close</u>	<u>EPS</u>	<u>Close</u>	<u>EPS</u>
BAC	2200	126	2000	118	1600	110
BMO	2250	126	1900	116	1575	106.3
Barclays	2100	127	1900	119	1525	105
Citi	2200	127	1975	117.5	1615	108
CSFB	2200	126.5	1960	115.9	1550	104.9
DB	2150	123	1850	119	1500	108
GS	2100	122	1900	116	1575	107
JPM	2250	127	2075	120	1580	110
Oppenheimer	2311	126	2014	115	1585	108
UBS	2225	126	1950	116	1425	108
Wells F.	2222	127	1875	113.5	1390	103
<b>Median</b>	<b>2200</b>	<b>126</b>	<b>1950</b>	<b>116</b>	<b>1575</b>	<b>108</b>
High	2311	127	2075	120	1615	110
Low	2100	122	1850	113.5	1390	103
<b>Actual</b>			<b>2059</b>	<b>113</b>	<b>1848</b>	<b>107</b>

# Teacher Retirement System of Texas

## Appendix

# Survey Overview

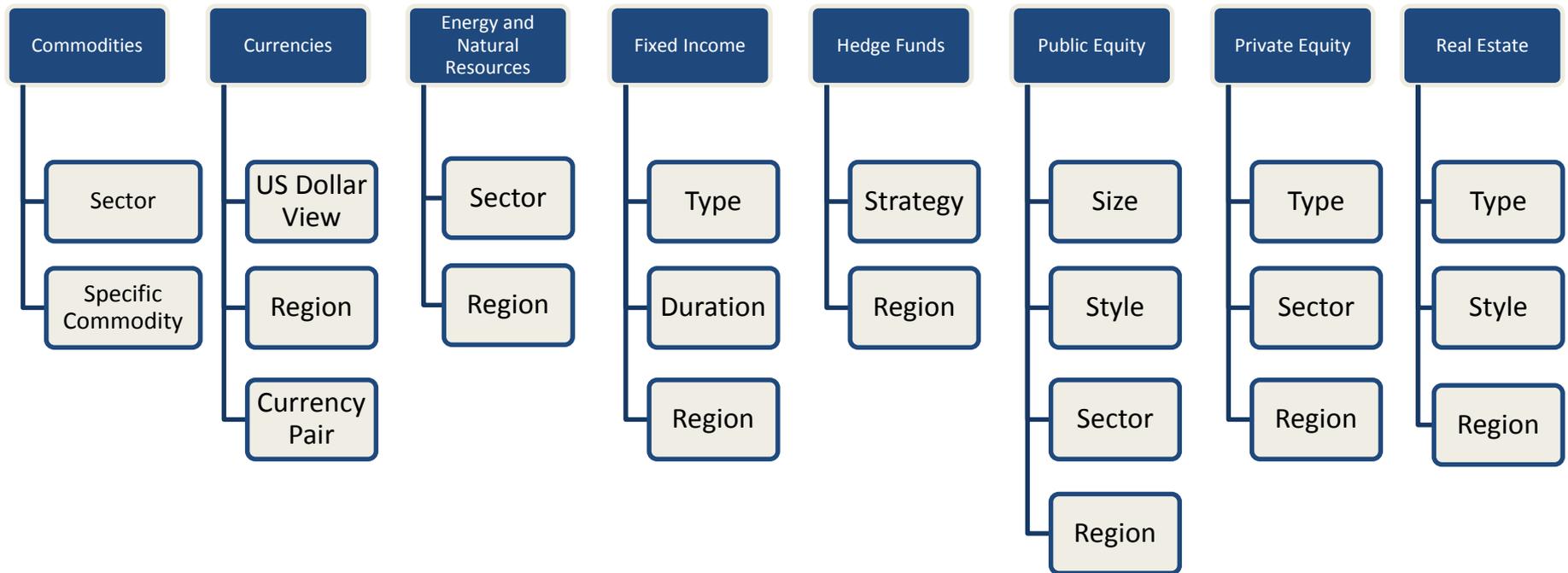
- Methodology: An email containing a survey link was sent to 288 organizations (Public and Private) on our premier list that asked:
  - What are the three most attractive risk/reward investments that a large fund could make now on a **1-year** investment horizon? On a **3-year** horizon?
  - What are the three least attractive risk/reward investments that a large fund could make now on a **1-year** investment horizon? On a **3-year** horizon?
- The attached presentation includes data from all of our partners, both public and private:

<u>Manager Type</u>	<u>Responses</u>	<u>% of Total</u>
Hedge Fund	58	26%
Long Oriented	44	20%
OAR	3	1%
Private Equity	27	12%
Real Assets	33	15%
SPN	6	3%
ENR	7	3%
Emerging Managers	46	21%
Total	224	100%

- A total of 2,517 ideas were provided

# Survey Overview

- Methodology: In addition to providing an open ended response to each of the questions shown on the prior slide, managers were asked to categorize their ideas based on the following options:



**Tab 6 F**



**Teacher Retirement System of Texas**  
**Task Force Preferred Destination – Gold Tour**  
**Overview**

Britt Harris, Chief Investment Officer  
February 11, 2015

# Agenda

- Preferred Destination Strategy
- Gold Tour
- Competitive Landscape
- Plan of Action

# IMD 2017 Priorities



# Enhanced Returns

Private Equity				
Investment Type	# Investments	\$ Amount	% of Portfolio	5-Year IRR
Principal Investments	20	\$2.2 B	15%	26.6%
Fund Investments		\$12.9 B	85%	16.5%

Private Equity Percent of Total Trust		
2010	2015	2020
9%	12%	13%

Excess Principal Investment Returns: ~1,000 bps

Real Assets				
Investment Type	# Investments	\$ Amount	% of Portfolio	5-Year IRR
Principal Investments	34	\$3.4 B	22%	17.4%
Fund Investments		\$12.0 B	78%	11.8%

Real Assets Percent of Total Trust		
2010	2015	2020
9%	12%	16%

Excess Principal Investment Returns: ~560 bps

As of September 30, 2014



# “Olympic” Categorization

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# Platinum/Gold Managers

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# Gold Tour Discussion Template

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# TRS Competitive Landscape

World's Largest Sovereign Wealth Funds (SWFs)					
Rank	Country	Name	Assets (\$ Billion)	Inception	Origin
1	Norway	Government Pension Fund - Global	\$893	1990	Oil
2	UAE - Abu Dhabi	Abu Dhabi Investment Authority	\$773	1976	Oil
3	Saudi Arabia	SAMA Foreign Holdings	\$757	NA	Oil
4	China	China Investment Corporation	\$653	2007	Non-Commodity
5	China	SAFE Investment Company	\$568	1997	Non-Commodity
6	Kuwait	Kuwait Investment Authority	\$548	1953	Oil
7	China - Hong Kong	Hong Kong Monetary Authority Investment Portfolio	\$400	1993	Non-Commodity
8	Singapore	Government of Singapore Investment Corporation	\$320	1981	Non-Commodity
9	Qatar	Qatar Investment Authority	\$256	2005	Oil & Gas
10	China	National Social Security Fund	\$202	2000	Non-Commodity
11	Singapore	Tamesek Holdings	\$177	1974	Non-Commodity
12	Australia	Australian Future Fund	\$95	2006	Non-Commodity
13	UAE - Abu Dhabi	Abu Dhabi Investment Council	\$90	2007	Oil
14	Russia	National Welfare Fund	\$88	2008	Oil
15	Russia	Reserve Fund	\$86	2008	Oil

- SWF assets have grown from \$3.3 trillion in 2007 to an estimated \$7.1 trillion at the end of 2014
- Consistently identified during Gold Tour as increasingly important LPs by TRS managers

Source: Sovereign Wealth Fund Institute estimations as of December 2014

# TRS Competitive Landscape

## Principal Investment Landscape

	TRS	CPPIB	CalPERS	OTPP	Temasek	GIC	BLK PEP	AlpInvest	FoFs	Recent/Current Deals
--	-----	-------	---------	------	---------	-----	---------	-----------	------	----------------------

### Total Program

Office Footprint (# of Countries & Locations)	1 US	4 CA, UK, HK, US	1 US	4 CA, UK, HK, NYC	9 US, MX, UK, Asia (6x)	9 US (2x), UK, Asia (6x)	4 US, UK, CH, HK	4 NL, US (2x), HK	Various
AUM	~\$130bn	C\$201bn	\$257bn	\$130bn	S\$215	>\$100bn	\$17bn	€35bn	\$90bn*
# Employees	~100	906	>260	>900	>450	>1200	40	108	NA

### Private Equity

AUM	\$15bn	C\$36bn	\$42bn	\$23bn	NA	NA	\$17bn	€35bn	\$90bn
% Total AUM	11%	18%	16%	18%	NA	11-15%	100%	100%	100%
# Employees	11	29	>50	40	NA	NA	40	70	NA

### Private Equity Principal Investments

AUM	\$2.2bn	C\$10bn	NA	NA	NA	NA	\$3bn	€6.2bn	\$30bn**
% Total AUM	2%	5%	NA	NA	NA	NA	18%	18%	30%
% PE AUM	15%	28%	NA	NA	NA	NA	18%	18%	30%
# Employees	3	68	NA	24	NA	NA	40	25	NA
% Total Employees	3%	8%	NA	3%	NA	NA	100%	23%	NA
AUM/Employee	\$730m	\$150m	NA	NA	NA	NA	\$75m	€250m	NA
Core Competencies	Co Inv, Direct	Co Inv, Direct	Co Inv	Co Inv, Direct	Co Inv, Direct	Co Inv, Direct	Co Inv	Co Inv, Mezz Direct	Various

- **BMC Software** - GIC and Bain Capital co-sponsors
- **Kronos** - GIC and Blackstone co-sponsors
- **Venari** - Temasek, Warburg, Kelso, and the Jordan Co co-sponsors
- **Alliance Boots** - CPPIB and KKR co-sponsors
- **LHP Hospital Group** - CPPIB and CCMP co-sponsors
- **Neiman Marcus** - CPPIB and Ares co-sponsors
- **Shriram Group** - Temasek and Blackstone co-sponsors
- **Kyobo Life Insurance** - OTPP sponsor



\* Source: Preqin; total FoF capital raised from 2009-2013

\*\* Based on Hamilton Lane's 2013 Market Overview historical co-investment funds raised as a percentage of total funds raised

Note: All information is based on most recent publicly available numbers from each organization's respective website

# Meeting with GIC

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# What would it take for TRS to be the Preferred Destination?

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# Growing Principal Investment Team

## External Private Markets

Eric Lang

PE

ENR

RA

Neil  
Randall

John Ritter

Grant  
Walker

Mike  
Lazorik

Jennifer  
Wenzel

Jeff  
Edwards

## Support Team

PE Associates  
(2)

ENR  
Investment  
Manager (1)

RA Investment  
Managers (5)

RA Associates  
(3)

Analyst Team (6)

## Special Opportunities

Mohan  
Balachandran

Ashley  
Baum

Don  
Stanley

## Alpha Opportunities

Chi Chai

Ralph Linn

David  
DeStefano

KJ  
VanAckeran

Adam  
Kogler

# Private Investment Models

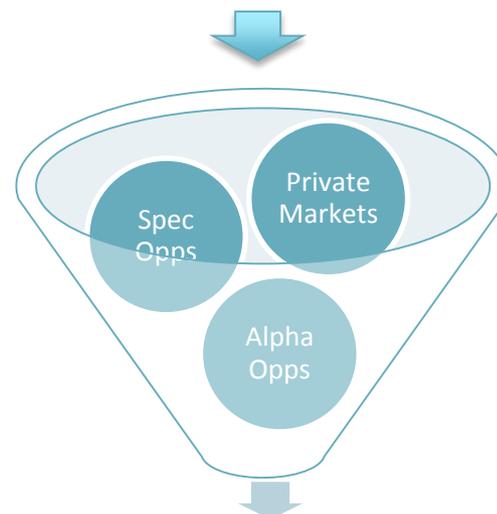
	Sovereign Wealth Funds		TRS IMD
	Historical		
<b>Deal Sourcing</b>	Total External	Primarily Internal	Internal/External Balance
<b>Investment Structure</b>	No Principal Transactions	Focus on Principal Transactions	Focus on Principal Transactions
<b>External Network</b>	Large # of GPs / Small Allocation	Limited Allocation to GPs	Focus on GP Network
<b>GP Collaboration</b>	Limited Collaboration with GPs	Competitors to GPs	Maximum Collaboration with GPs
<b>Capital Allocation</b>	Fund to Fund Relationship	Phasing Out GPs	Directing Capital to Best GPs
<b>Strategic View</b>	No Strategic View	Some Strategic View	Some Strategic View
<b>Geographic Focus</b>	Primarily Local	Global	Global
<b>Resourcing</b>	Minimal Internal Resources	Significant Internal Resources	Moderate Internal Resources
<b>Cost</b>	Relatively Expensive	Less Expensive	In Between
<b>Returns</b>	Lower Expected Returns	Higher Expected Returns	Higher Expected Returns
<b>Strategy Source</b>	Consultant Driven	SWF Driven	IMD Driven

# Principal Investment Review Process

*Illustrated*

	<u>Typical</u> <u>SWF</u>	<u>Typical</u> <u>GP</u>
Deals Received	1,000	1,000
Deals Considered	500	500
Significant Review	100	100
Full Analysis	50	50
<b>Investments Made</b>	<b>25</b>	<b>25</b>
Co-Investments Offered		<b>5</b>

TRS IMD Co-Investment Opportunities Received	
Platinum/Gold Managers	60
Silver Managers	30
Bronze Managers	10
<b>Total</b>	<b>100</b>
<b>Full Analysis</b>	<b>50</b>



**25 Principal Investments  
per Year**

**TRS Texas Way Starts Here**



# SPN: Our Platinum Relationships

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# APPENDIX

# Task Force Preferred Destination

## *Mission*

- Increase the opportunity set available to TRS to be the preferred destination for large attractive principal investments, through:
  - Understanding current market dynamics
    - General Partner and Limited Partner perspectives
  - Assessment and categorization of current set of managers
  - Market engagement (i.e. the “Gold Tour”)
  - Intelligent application of lessons learned
- Supports Strategic Plan Goal 1 of sustaining a financially sound pension trust

# Gold Tour Assessment

## TRS Objective:

- Increase the level of service from key relationships
- Earn it, not just expect it
  - Recognizing capital commitments across entirety of manager platform and focus on being a top partner
  - Creating value-added relationships
    - Common purpose
    - Execution focus
    - Collaborative
    - Joint understanding of capabilities and constraints

# Gold Tour Assessment

*Market Insight Gained*

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# Action Items

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# Principal Investment Process Improvement Draft Recommendation

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# Principal Investors Competitive Advantages

*TRS's Existing Circles of Competence*

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**Tab 8**

# Agenda – Thursday, February 12<sup>th</sup>

Item	Time
Public Comment and Day's Agenda	8:30 – 8:45 a.m.
Deputy Director Report	8:45 – 9:15 a.m.
Texas Budgeting and Legislative Overview	9:15 – 10:00 a.m.
Space Planning Discussion (Partial Closed Session)	10:00 – 11:30 a.m.
Investment Compliance and Ethics	11:30 a.m. - Noon
Legal and Fiduciary Matters <ul style="list-style-type: none"><li>- Procurement and Fiduciary Responsibility</li><li>- Legal Training (Closed Session)</li><li>- Adoption of TRS Rule 25.26</li></ul>	Noon – 2 p.m.
Overviews <ul style="list-style-type: none"><li>- Strategic Initiatives</li><li>- Finance and Financial Matters</li><li>- Benefits</li><li>- Human Resources</li><li>- Communications</li></ul>	2:00 - Recess

**Tab 9**



Teacher Retirement System of Texas

# Deputy Director's Report

Ken Welch

February 12, 2015

# 2015 Board Election Update

## Board of Trustees – Composition

- Three *direct* appointments of the governor
- Two trustees appointed from a list prepared by the State Board of Education
- Two active public education members
- One retired member
- One higher education member\*
- All TRS trustees appointed by the governor

\* *Will become an at-large position in 2017*

# 2015 Board Election Update

## Four positions requiring nominating elections

<u>Position</u>	<u>Current Trustee</u>	<u>Term Expires</u>
Active Public Ed	Nanette Sissney	Aug. 31, 2015
Active Public Ed	Delores Ramirez	Aug. 31, 2019
Retiree	Anita Smith Palmer	Aug. 31, 2017
At-large*	Karen Charleston	Aug. 31, 2017

\* *Currently is the higher education position.*

# 2015 Board Election Update

## Active Public Education Employee Positions

- Eligibility requirements
  - Most recent credited service with a public school district, charter school or education service center
  - Nominated by 250 eligible public education members
  - Appointed by the governor from a list of three candidates receiving the most votes in an election

# 2015 Board Election Update

<b><u>Activity</u></b>	<b>2014</b>					<b>2015</b>				
	<b><u>June</u></b>	<b><u>July</u></b>	<b><u>Oct</u></b>	<b><u>Nov</u></b>	<b><u>Dec</u></b>	<b><u>Jan</u></b>	<b><u>March</u></b>	<b><u>May</u></b>	<b><u>June</u></b>	<b><u>Sept.1</u></b>
TRS News		X			X		X			
TRS Update	X		X	X		X				
MyTRS email	X	X	X	X	X	X				
Website info	X	X	X	X	X	X	X	X	X	X
Petitions available	X	X	X	X	X	X				
Petitions due						X				
Ballot drawing						X				
Ballots mailed							X			
Ballots due								X		
Results tabulated								X		
Results certified								X		
Gov. appoints trustee									X →	X

# 2015 Board Election Update

## 2015 Board Election Candidates

- Brandon Duck
- Nanette Sissney
- Hiram Burguete
- Robert DeGarimore
- Sylvia Atkinson
- Greg Gibson

# Operations Update

- Operation

# Operations Update

- TRS Happenings
  - Leadership Development Graduation



# Operations Update

- Holiday Celebration
- Holiday Party



# Operations Update

- State Employee Charitable Campaign (SECC)



**Tab 10**

# Teacher Retirement System of Texas

## Overview of the Texas Budget Process

Ken Welch, Deputy Director

Don Green, Chief Financial Officer

## Legislative Landscape

Ray Spivey, Director of Gov't Relations

Board of Trustees Meeting, February 2015

# Texas Budgeting Timeline

## Even Year; 2014

- Feb - March Strategic Planning Instructions to Agencies
- Mar - May Negotiate Structure and Measure Changes
- May Biennial Budget Request Instructions sent
- June - July Agencies Submit Strategic Plans
- July - August Agencies Submit Budget Requests (LARs)
- August - Sept GOBPP/LBB Joint Budget Hearings
- November LBB meets to adopt a spending limit
- Sept - Dec LBB and GOBPP Budget Preparations

# Texas Budgeting Timeline

## Odd Year; 2015

- January LBB submits budget estimates to 84th Leg
- January Comptroller releases Biennial Revenue Est
- February Governor delivers budget by State of the State
- Jan - April House and Senate produce appropriations bill
- May Legislature adopts final appropriations bill
- June Comptroller certifies appropriations bill
- June Governor signs bill with line item vetoes
- June - August Agencies develop Budgets for FY 2016
- September New fiscal year begins for FY 2016

# The Budget Players

## ■ Legislative Budget Board

- Adopts a constitutional spending limit
- Prepares a general appropriations bill
- Prepares agency performance reports
- Prepares, fiscal notes identifying the probable costs of proposed legislation and impact statements

## ■ Comptroller of Public Accounts

- Submits the *Biennial Revenue Estimate* (BRE)
- Certifies the appropriations bill by determining whether appropriations are within available revenue
- Collects state taxes, tracks revenue and spending funds

# The Budget Players

## ■ Office of the Governor

- Involved in the budget process beginning with strategic planning and ending with budget execution
- Provides overall vision, mission, and philosophy, as well as statewide goals and benchmarks
- Has line-item veto power

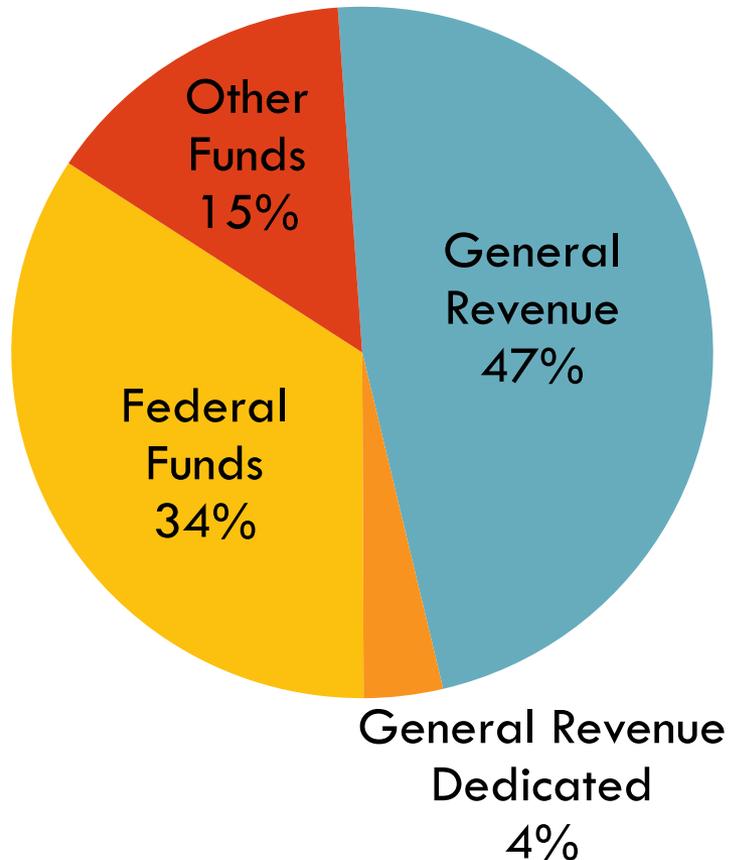
## ■ State Auditor's Office

- Serves as independent auditor of state agencies, including institutions of higher education
- Audits the accuracy of reported performance measures and assesses the related internal controls

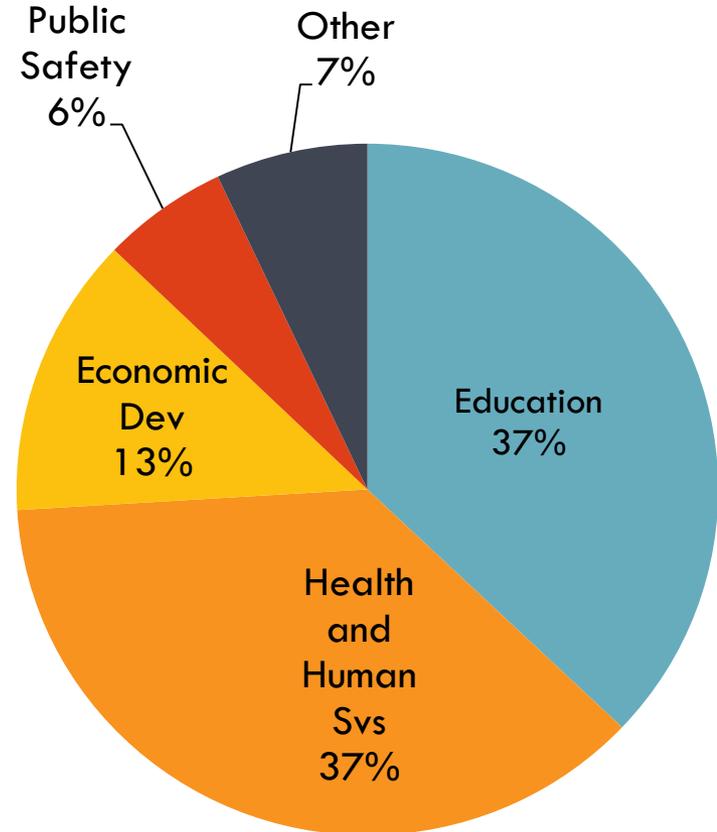
# FY 2014-15 State Budget Overview

TOTAL = \$200.4 Billion

## Sources of Funds



## Uses of Funds

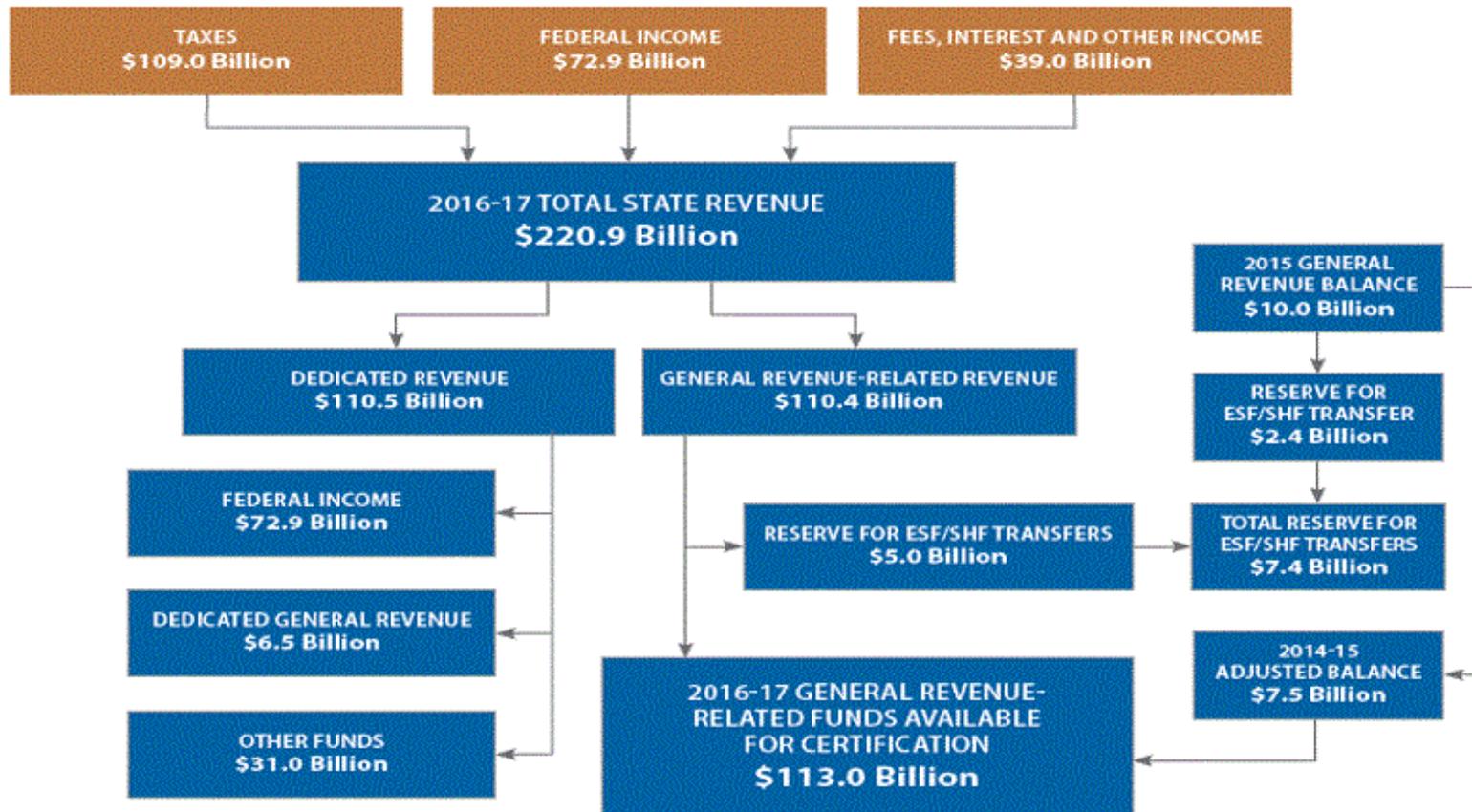


# Constitutional Spending Limits

- **Pay-As-You-Go Limit**: Requires bills making appropriations be sent to the Comptroller of Public Accounts (CPA) for certification
- **Limitation on the Growth of Certain Appropriations**: Limits the biennial growth of appropriations from state tax revenue not dedicated by the Constitution to the estimated rate of growth of the state's economy (11.68%)
- **Welfare Spending Limit**: Provides the amount that may be paid out of state funds for assistance grants not exceed 1 percent of the state budget in any biennium
- **Debt Limit**: Limits the authorization of additional state debt, if in any fiscal year, the resulting annual debt service payable from unrestricted GR exceeds 5 percent of the average annual unrestricted GR funds for the previous three years

# Comptroller Biennial Revenue Estimate (BRE)

## Flow of Major Revenues for the 2016-17 Biennium



Note: Totals may not sum because of rounding.  
SOURCE: Glenn Hagar, Texas Comptroller of Public Accounts.

# Comptroller Biennial Revenue Estimate (BRE)

## ESTIMATE BY THE NUMBERS:

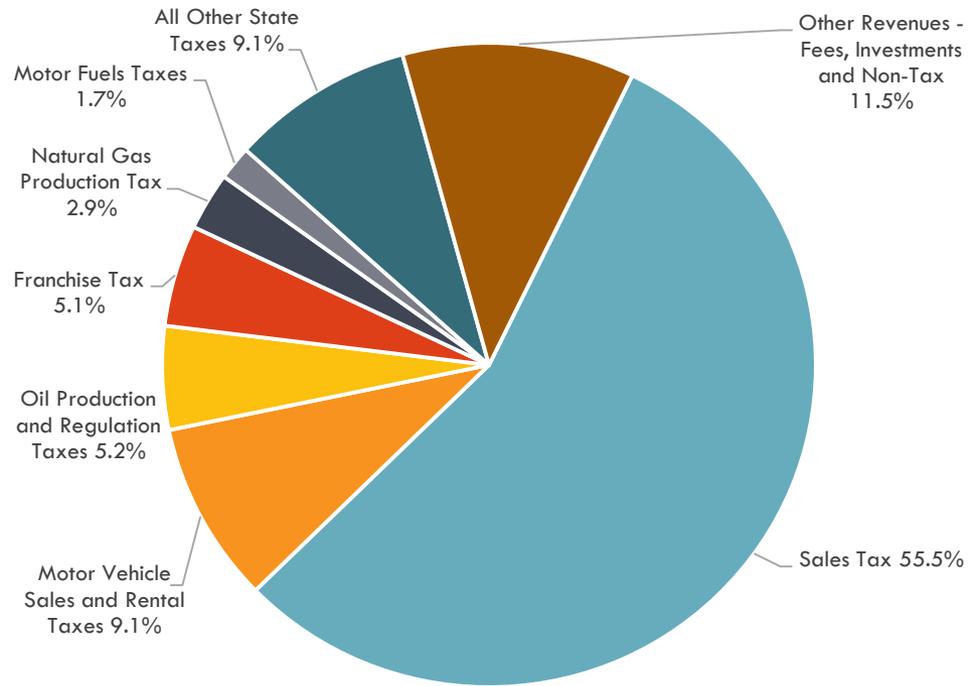
IN BILLIONS OF DOLLARS

Beginning Balance	+	\$7.5
General Revenue-Related Collections	+	\$110.4
Reserved for Transfers to Economic Stabilization Fund	-	\$2.5
Reserved for Transfers to State Highway Fund	-	\$2.5
<hr/>		
Revenue Available for General Purpose Spending*	=	\$113.0

\*Total does not sum due to rounding

Source: Texas Comptroller of Public Accounts Biennial Revenue Estimate 2016-2017.

# Sources of General Revenue-Related Funds



Source: Texas Comptroller of Public Accounts Biennial Revenue Estimate 2016-2017

# Major Revenues Sources

Taxes and Non Tax - Collections \$110.4 billion include:

- \$61.2 billion in sales tax
- \$11.9 billion in vehicle sales, rental and fuel taxes
- \$ 5.6 billion in franchise taxes
- \$ 8.9 billion in natural gas and oil production taxes
- \$10.1 billion on all other taxes, e.g.
  - Cigarette/tobacco and Alcoholic beverages
  - Hotel occupancy
  - Insurance taxes
- \$12.7 billion in non- taxes collections in fees, fines, lottery, etc.

# State Revenue Sources and Economic Outlook

- Comptroller's FY 2016-17 Revenue Estimate \$113.0 billion (9.5% increase over FY 2014-15)
  - GR-Related less reserve for ESF Transfers \$105.5 billion
  - 2015 GR Balance less reserve for ESF Transfers \$7.5 billion
- Rainy Day Fund
  - Constitutional fund created by the voters in 1988
  - Proposition 1 approved by voters in November 2014 modified the calculation of transfers to the ESF
  - When collections are sufficient, the fund receives an amount of GR equal to at least 37.5%, but no more than 75% of oil production and natural gas production tax collections in excess of 1987 levels plus one-half of unencumbered GR funds balance at end of each biennium

# Budget Drivers

**Budget Drivers:** Economic, demographic, or legal factors and trends that, absent intervening changes to state/federal policy or law, will influence funding increases (or decreases) to programs that comprise the state budget.

Selected Budget Drivers	2014-15 All Funds Appropriation (in billions)
Public Education (FSP)	\$40.4
Higher Education	\$17.9
Medicaid	\$56.2
Mental Health	\$ 3.3
Transportation	\$22.1
Water	\$ 2.1
<u>ERS and TRS</u>	<u>\$10.7</u>
<b>Total, Selected Budget Drivers</b>	<b>\$152.7</b>
As % of Total 14-15 All Funds Budget of \$200.4 Billion Source: Legislative Budget Board	76.2%

# Major Budget Indicators, 2002 and 2014

Indicators	2002	2014	% Change
Avg Daily Attendance – Public Schools	3,900,00	4,800,000	23.1
Fall Headcount Enrollment – Universities	455,719	603,674	32.5
Fall Headcount Enrollment – Community/Junior Colleges	498,408	693,791	39.2
Avg Monthly Caseload – Medicaid Clients	2,100,000	3,700,00	76.2
Avg Inmate Population – Dept of Criminal Justice	144,561	150,747	4.3

**General state population has been approximately 20.7%.**

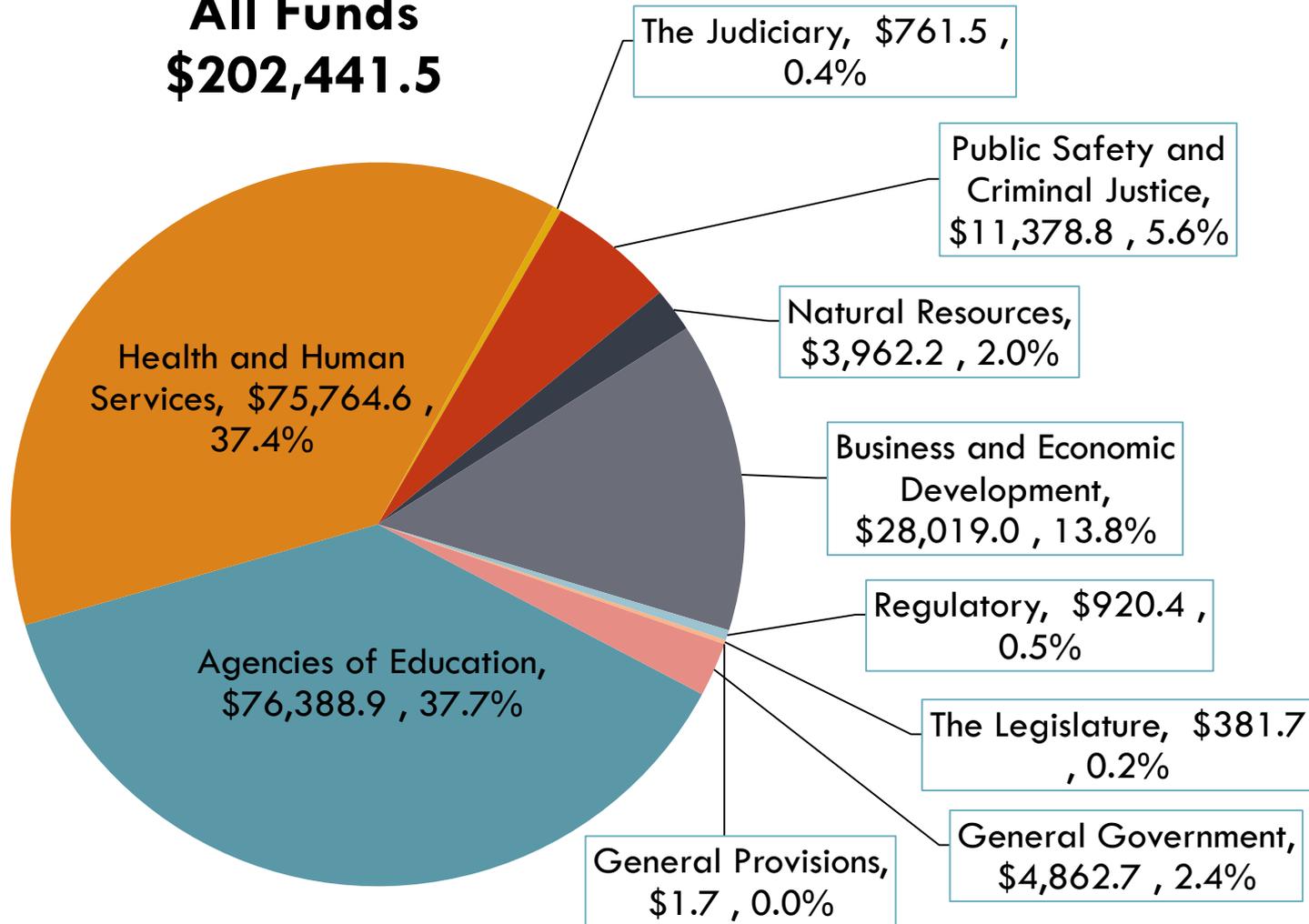
**Source: Texas Department of State Health Services**



# FY 2016-17 Biennial Recommendations

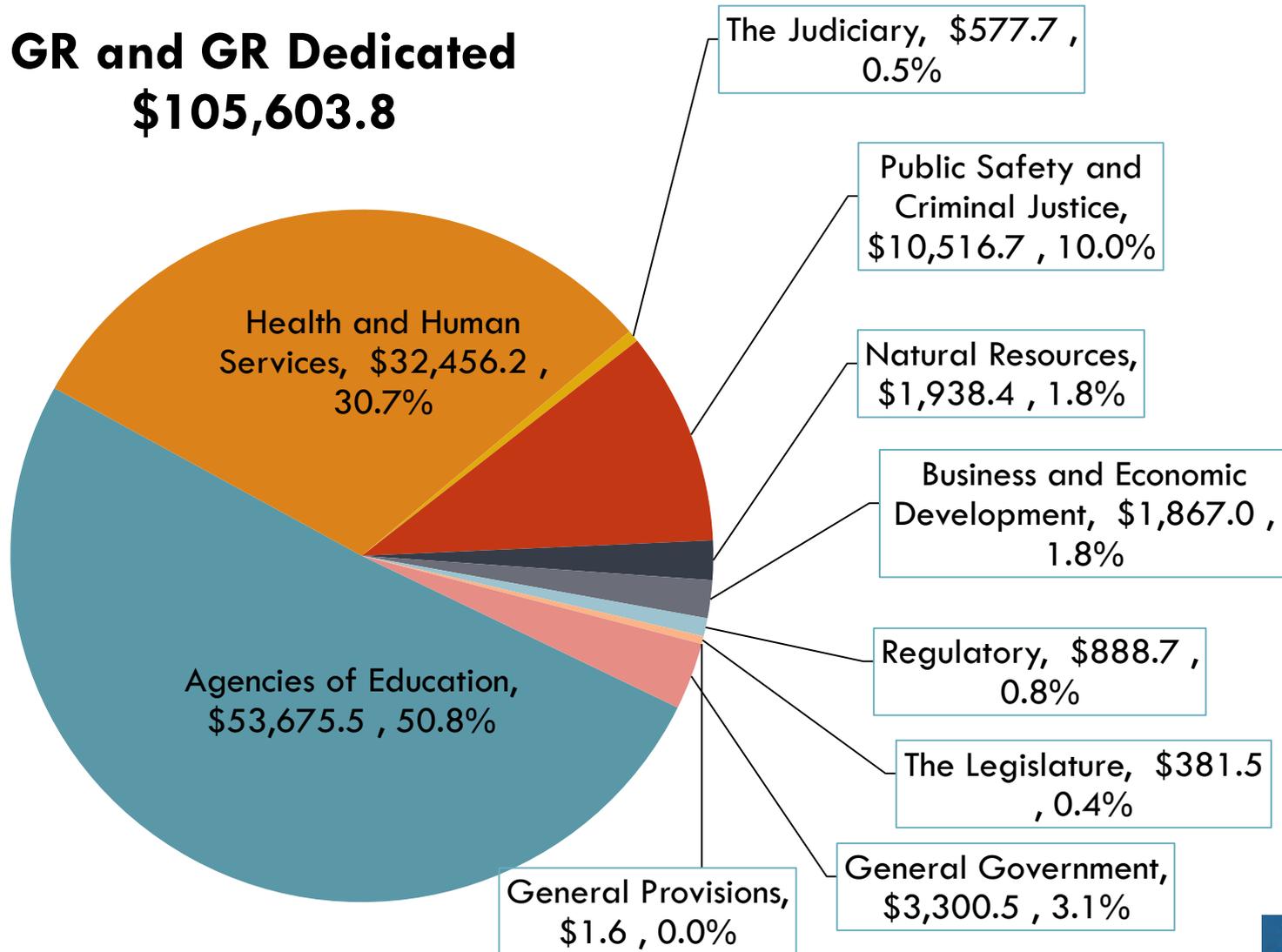
## House Bill 1

**All Funds**  
**\$202,441.5**



# FY 2016-17 Biennial Recommendations House Bill 1

## GR and GR Dedicated \$105,603.8



# FY 2016-17 LBB Budget Recommendations House Bill 1

**\$ in Billions**

	<b>2014-15 Approp</b>	<b>2014-15 Adjusted Base</b>	<b>2016-17 House Bill 1</b>	<b>Biennial Increase</b>	<b>Percent Change</b>
General Revenue	95.0	95.2	98.9	3.8	3.9%
All Funds	200.4	202.1	202.4	0.35	0.2%

**Source: Legislative Budget Board**

# LBB Recommendations for TRS 2016-17

- The introduced LBB budget for TRS totals \$4.3 billion in all funds and \$4.1 billion in general revenue.
- This represents 2.1% of the state's all funds budget and 4.1% of the general revenue budget.
- Funded 6.8% state contribution rate
- Funded 1.0% state contribution rate for TRS Care with updated covered salary projections

# TRS Administrative Budget

- 100% of funding comes from pension trust fund – not GR.
- \$6.4 million each year for cost escalators including utilities, 816 Congress lease, software licenses and staff related costs

## **Capital Budget Items**

- \$40.3 million for TEAM including 11 additional FTEs
- \$0.5 million each year for building renovations
- \$3.6 million for new capital budget projects including garage fire suppression, sump pump and power generator
- \$1.2 million each year for PC refresh, mainframe and telecommunications upgrades

# TRS Appropriations Priorities

- Exceptional Item Request for TRS-Care
  - \$875 million exceptional request to provide for fiscal solvency through the end of fiscal year 2017.
  - The most recent estimate is \$768 million as of 12/31/2014.

# New Appropriation Rider Requests for Fiscal Years 2016 – 2017

- Appropriation Transfers between Fiscal Years for TRS-Care
- Contingency for GASB implementation
- Unexpended Balance Authority for Administrative Operations Strategy
- Unexpended Balance authority for TRS Enterprise Application Modernization (TEAM) between biennia

# Legislative Landscape

## **TRS cannot advocate or influence legislation**

Gov't Code § 821.008. PURPOSE OF RETIREMENT SYSTEM. The purpose of the retirement system is to invest and protect funds of the retirement system and to deliver the benefits provided by statute, not to advocate or influence legislative action or inaction or to advocate higher benefits.

Gov't Code § 825.215. ADVOCACY PROHIBITED. An employee of the retirement system may not advocate increased benefits or engage in activities to advocate or influence legislative action or inaction. Advocacy or activity of this nature is grounds for dismissal of an employee.

*These sections do not prohibit the use of system assets by an employee of the retirement system to comment on federal laws, regulations, or other official actions or proposed actions affecting or potentially affecting the retirement system that are made in accordance with policies adopted by the board.*

## TRS cannot advocate or influence legislation

Gov't Code § 825.315. PROHIBITED USE OF ASSETS. (a) Assets of the retirement system may not be used to advocate or influence the outcome of an election or the passage or defeat of any legislative measure. This prohibition may not be construed to prevent any trustee or employee from furnishing information in the hands of the trustee or employee that is not considered confidential under law to a member or committee of the legislature, to any other state officer or employee, or to any private citizen, at the request of the person or entity to whom the information is furnished. This prohibition does not apply to the incidental use of retirement system facilities by groups of members or retirees or by officers or employees of state agencies.

*This section does not prohibit the use of system assets by an employee of the retirement system to comment on federal laws, regulations, or other official actions or proposed actions affecting or potentially affecting the retirement system that are made in accordance with policies adopted by the board.*

# TRS Legislative Team

- Over 130 years experience working directly with the Texas Legislature.
- Many key TRS personnel from Legal, Benefits, Finance, and other divisions provide valuable expertise in analyzing legislation.
- Review and monitor more than 6,000 bills/joint resolutions typically filed and analyze 400 TRS-related bills plus amendments.

# Key Participants in the Legislative Process

- Members and Retirees
- Governor, Lt. Governor, Speaker, and the Legislature
- Committees
  - Senate State Affairs- Senator Joan Huffman
  - House Pensions Committee- New Chair
  - Senate Finance- Senator Jane Nelson
  - House Appropriations- New Chair
- Member and Retiree Associations

# Key Participants in the Legislative Process

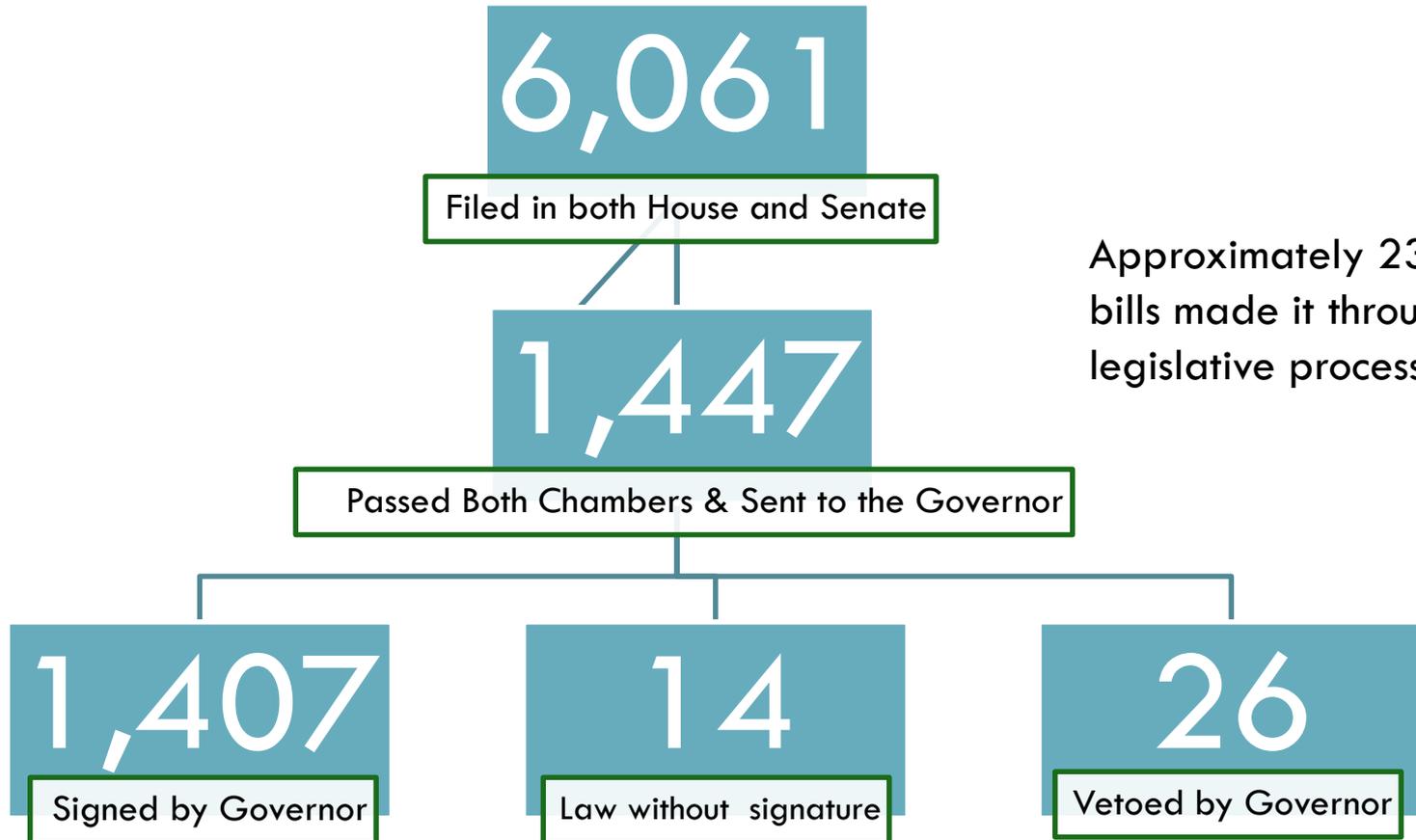
- Other agencies
  - Legislative Budget Board
  - Other Funds- four statewide systems (including ERS), UTIMCO
  - Pension Review Board
  - State Auditor
  - Comptroller
- Congress
- National Associations
  - NASRA –National Association of State Retirement Administrators
  - NCTR –National Conference on Teacher Retirement
  - NIRS –National Institute on Retirement Security
- Special Interest Groups

# TRS-related issues

## 80th – 83rd Legislative sessions

- SB 1458 2013
- COLA, Supplemental payments to retirees 2007, 2013
- Sunset Bill 2007; next Sunset date is 2019
- Investment Authority 2007, 2011
- 403(b) legislation 2009
- Standard School Year 2011
- Service Credit Purchases 2011
- Return-to-work 2011
- TRS Appropriations
  - Pension contribution rate
  - TRS-Care 1% funding
  - TEAM funding

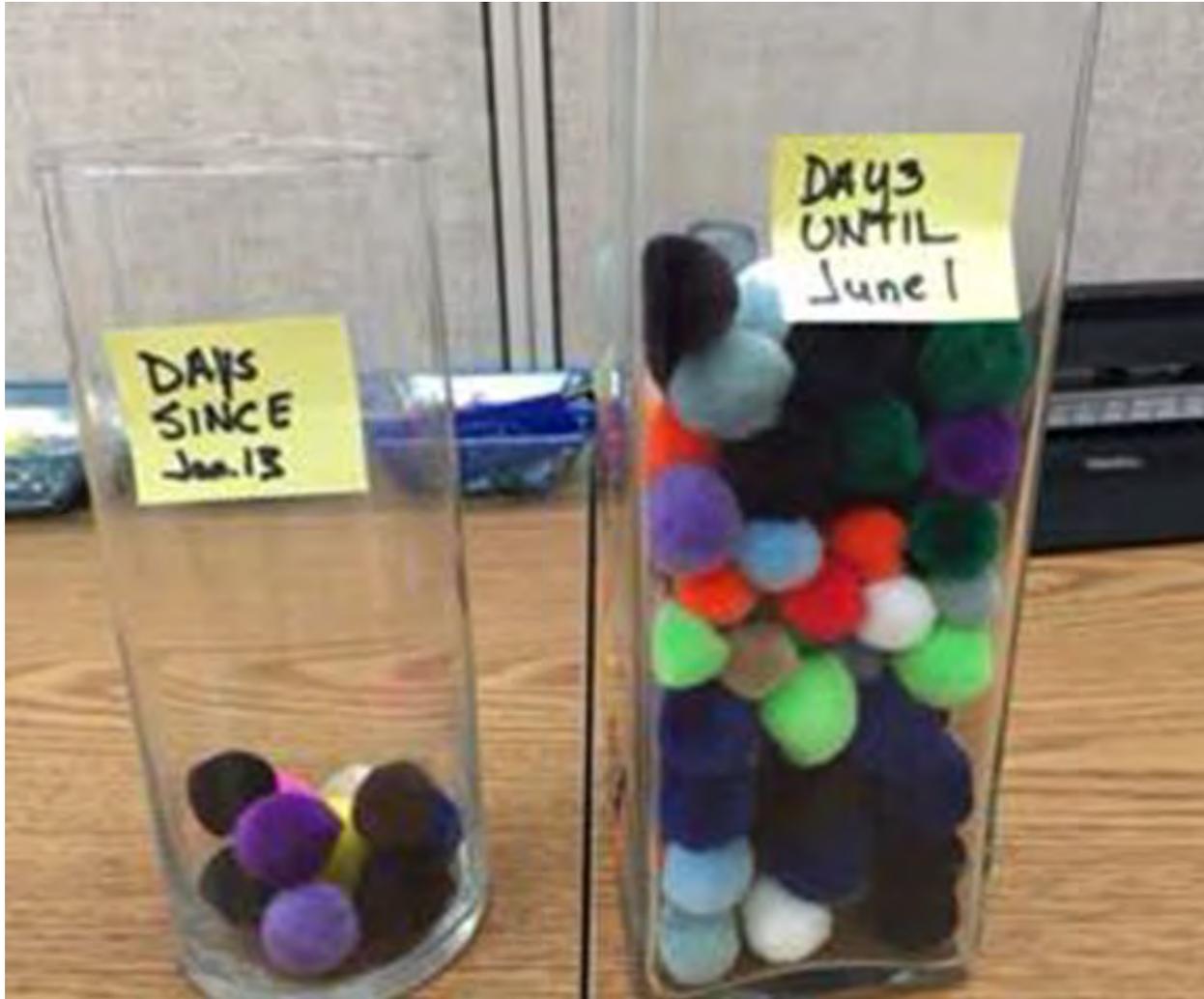
# Bill filed during 83<sup>rd</sup> Legislature



Approximately 23% of the bills made it through the legislative process

The Governor has three options: sign the bill into law, allow the bill to become law without his signature, or veto the bill.

# 84<sup>th</sup> Legislative Session



# 84<sup>th</sup> Legislative Session

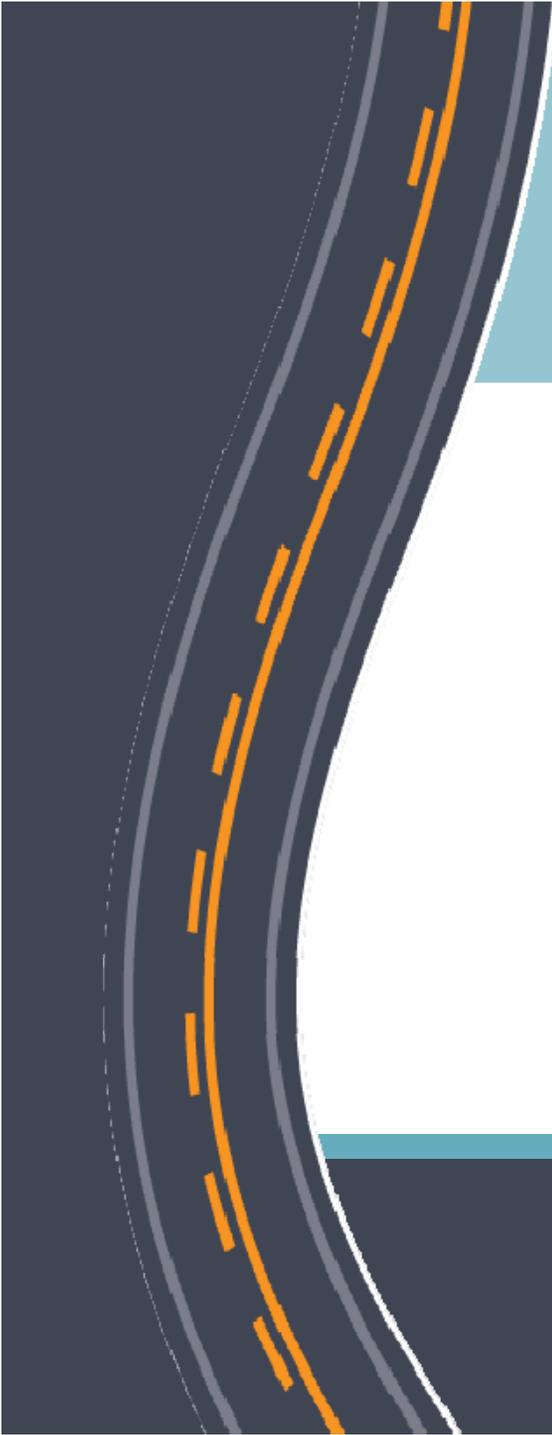
## **TRS-related Legislation**

- TRS-Care and TRS ActiveCare
  
- TRS Omnibus legislation
  - IRS/technical cleanup issues
  - Grant TRS more time to comply with Iran/Sudan divestment rather than the current 14 days.

## **Senate Nominations Committee**

Senator Brian Birdwell, Chair

**Tab 12**



Teacher Retirement System of Texas

## Compliance and Ethics at TRS

Heather Traeger  
Chief Compliance Officer  
February 2015



# Agenda

- Compliance and Ethics: What is it? Why do I care?
- Compliance at TRS
- Roadmap for the Future
- First 90 Days



# Compliance and Ethics

## Goals of Ethics Policies:

Fostering ethical thinking across an organization

Integrating the company's values

Giving all employees an active and positive role

Matching operations to thinking

# Compliance and Ethics

More than a policy

Unique to each company and its  
business activities

Tone at the top

Ethics

Employee buy-in

A “moral compass”

The foundation for compliance

# Compliance and Ethics

## Consequences of a weak ethics program and culture

Monetary Penalties

Prison

Reputational damage

Loss of TRS Investment  
opportunity or disadvantage to  
TRS investment

Enhanced statutory and or  
regulatory restrictions and  
oversight

# Compliance and Ethics

## Consequences of a strong ethics program and culture

Foster a culture of integrity

Attract and retain like-minded employees

Enhance the company's reputation for honesty and integrity

Meet statutory, regulatory & internal mandates for public pension fiduciary - i.e. enhance compliance

# Compliance and Ethics

## Goals of Compliance Program:

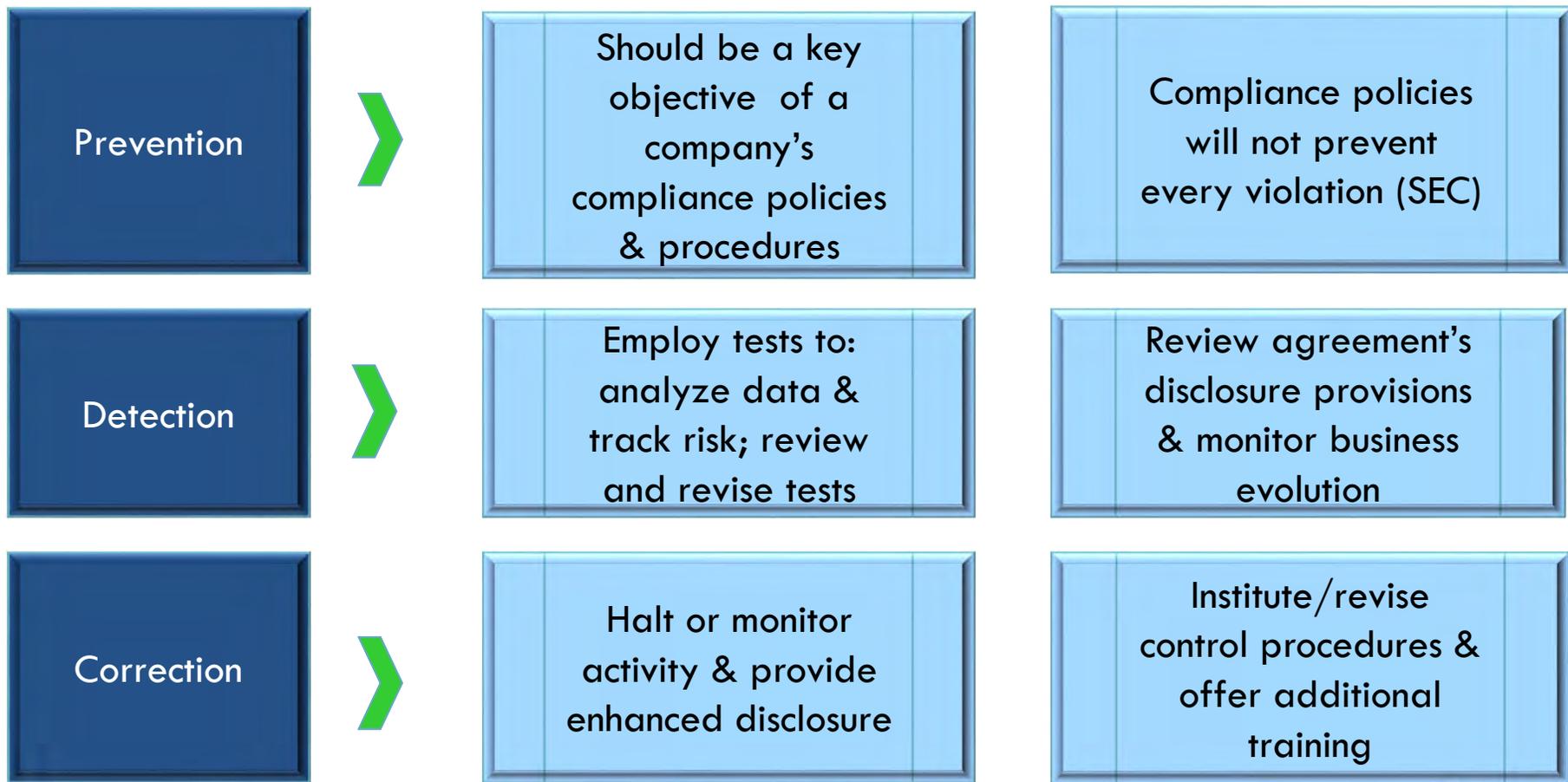
Independent control function that provides advice, training, and education regarding regulation and policies to business units and senior management

Violation Prevention, Detection, and Prompt Correction



# Compliance and Ethics

## Goals of Compliance Program



# Compliance and Ethics

## Factors for an effective compliance program

- ✓ Independence
- ✓ Partnering with other control functions
- ✓ Relationship with the Board, senior management, and business
- ✓ Early and regular inclusion and integration on matters
- ✓ Responsibility and authority to develop and enforce appropriate policies and procedures
- ✓ Appropriately resourced

# Compliance and Ethics

## Consequences of a strong compliance program and culture

Compliance as a state of mind

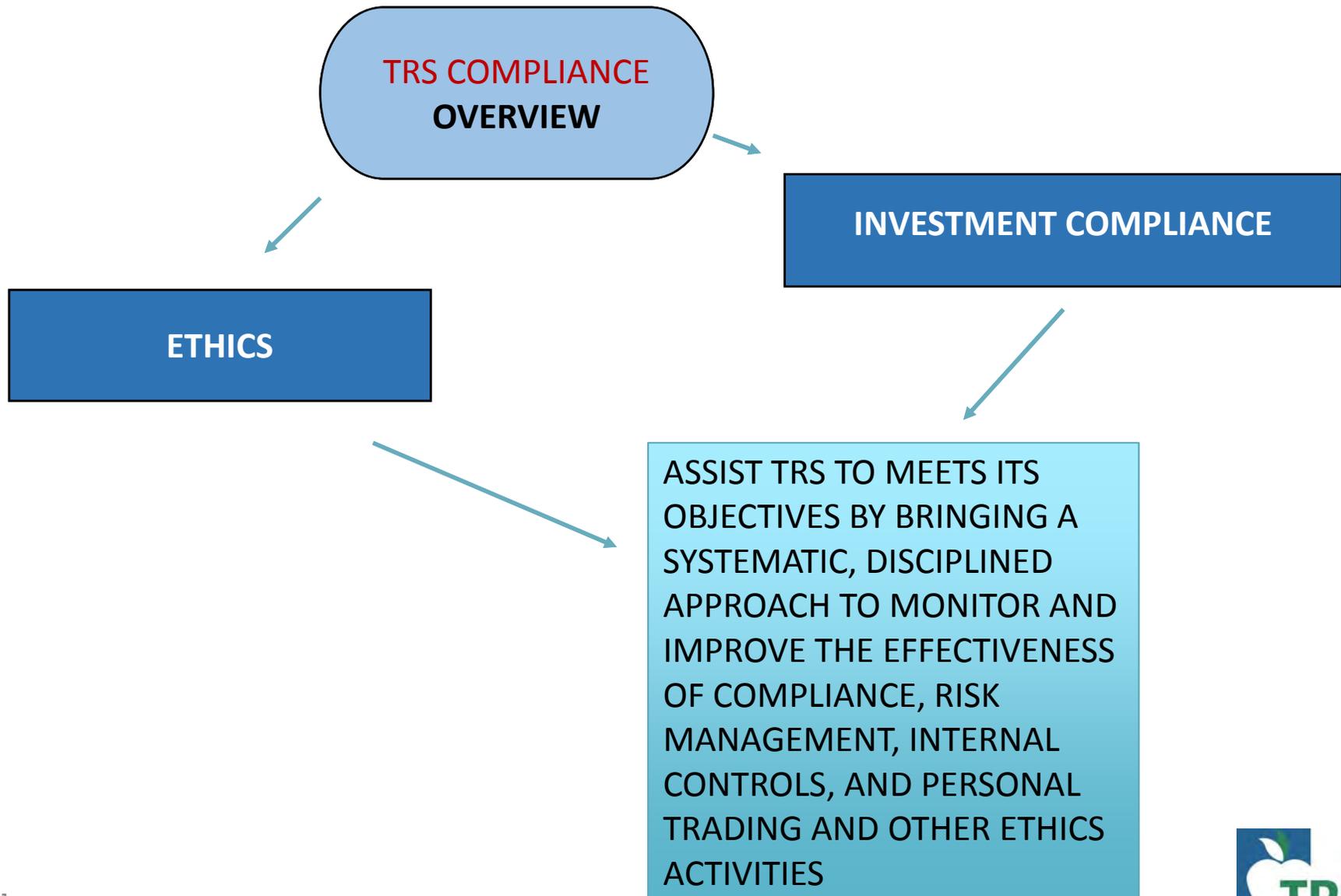
Protect company and beneficiaries

Tangible effect in how and with whom a company does business

Meet statutory, regulatory and internal mandates for public pension fiduciary

Be an industry leader

# Compliance at TRS



# Compliance at TRS

## Snapshot of Portfolio

Coordinate with TRS departments to promote adherence to ethics policies for employees, trustees, and contractors

Work with Internal Audit and ERM to improve internal controls related to compliance with ethics and investment policies

Maintain and monitor personal trading policy: MNPI, inside information and front running

Coordinate, maintain, and monitor the investment compliance program

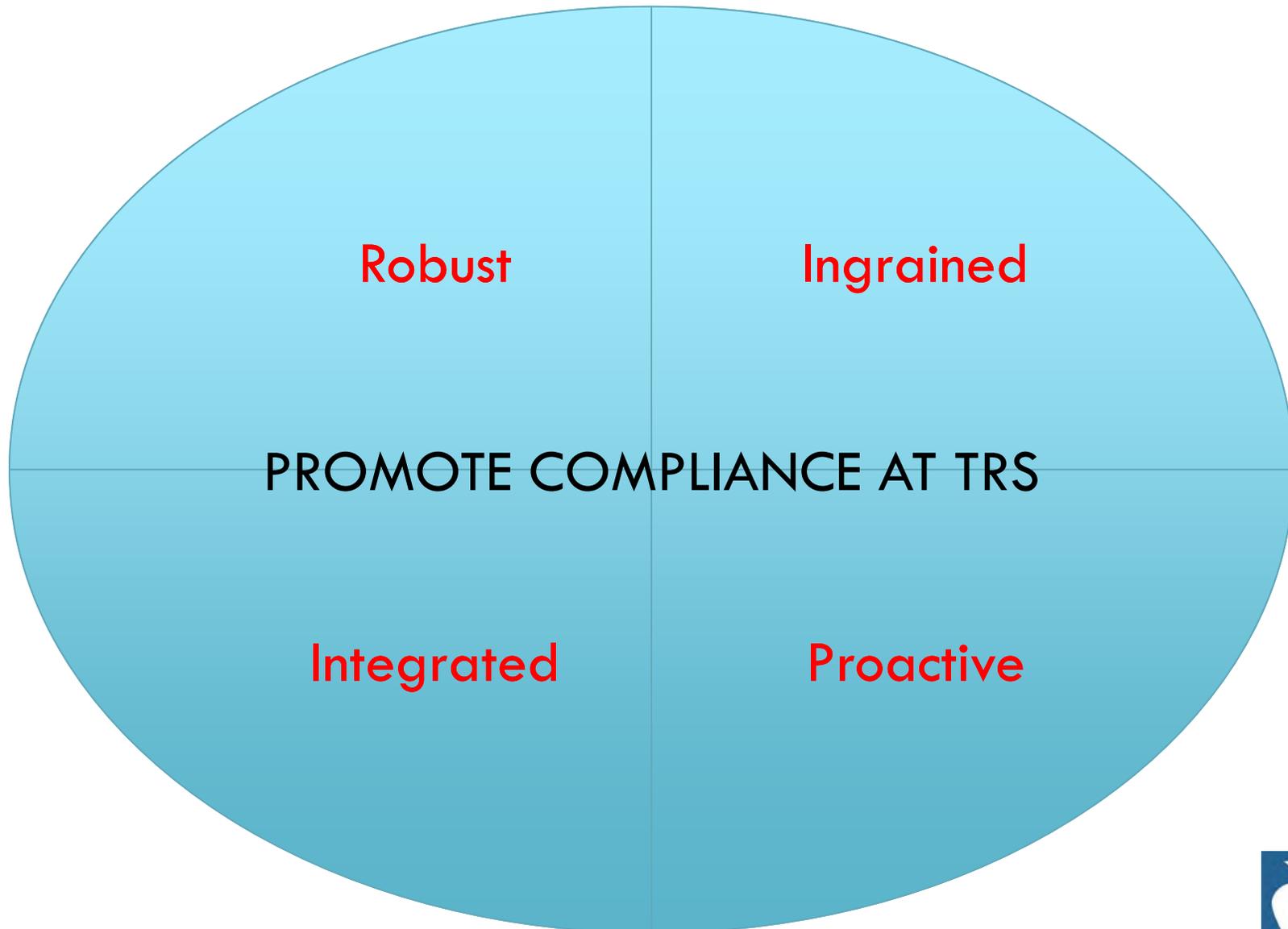
Monitor the requirements of the IPS, securities lending, and proxy voting policies in coordination with IMD Ops

Monitor certain components of external managers' IMAs in coordination with IMD, including SPNs

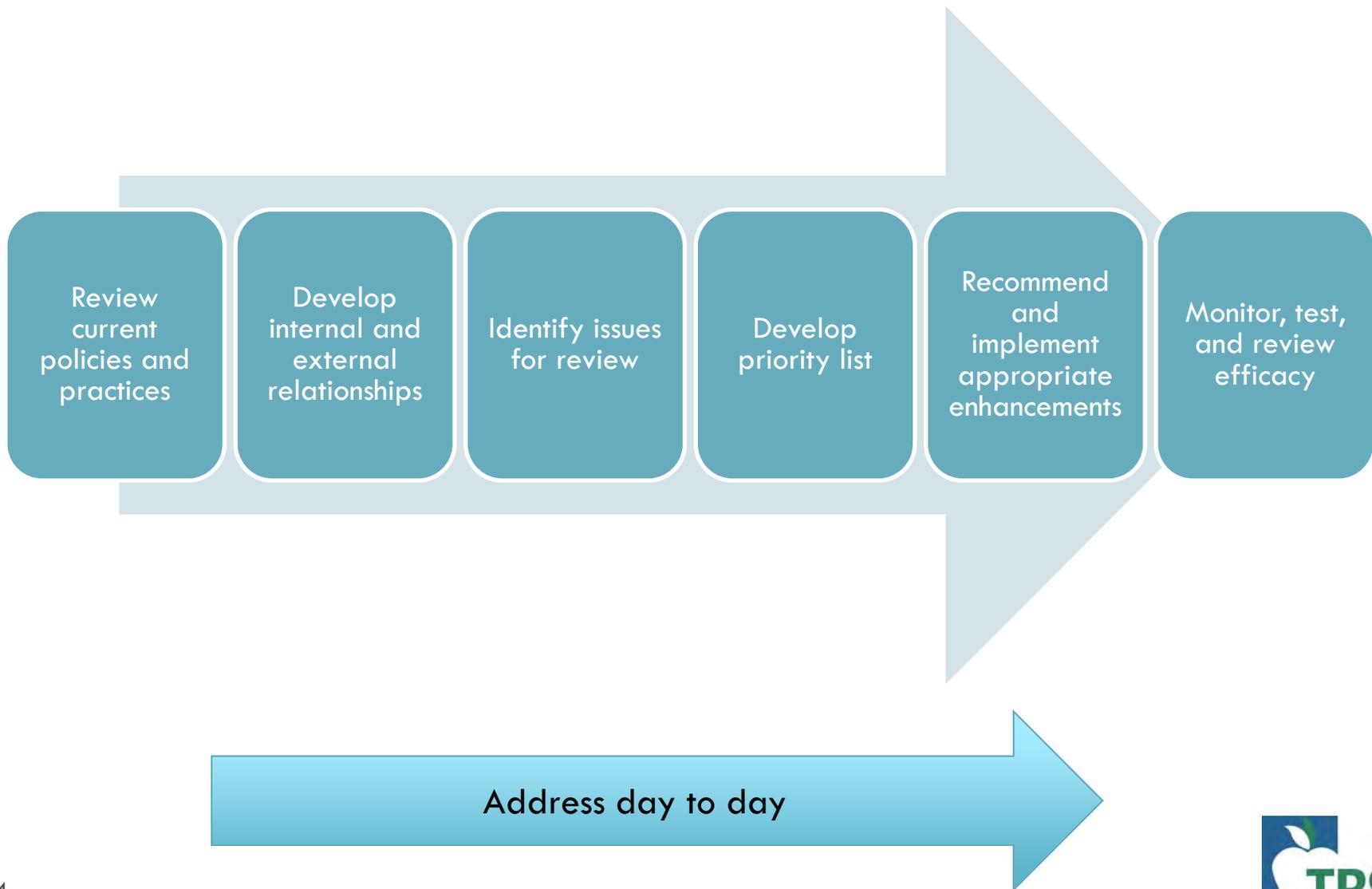
Monitor compliance with placement agent policy

Serve as resource to IMD and Legal on compliance

# Roadmap for the Future



# Roadmap for the Future



# Roadmap for the Future

Keep abreast of compliance trends and regulatory/statutory expectations

Pursue high-level integration of compliance function throughout TRS

Develop regular and systemic coordination with Investment Operations and Legal

Meet with IMD staff to discuss compliance; Arrange training on current issues

Become primary and centralized source of compliance advice

Enhance TRS' reputation as leader in compliance space

# First 90 Days - CCO

## Immerse in TRS

### Operations

Reviewing TRS policies and procedures

Reviewing TRS past and current practices with respect to certain policies and procedures

Reviewing Intranet and training materials

Reviewing TRS “fund documents”

Reviewing “Texas-isms”

### Personnel and Contractors

Meeting with Department, Division and Office heads across TRS

Meeting with compliance-related systems vendors

Meeting with certain TRS managers, including SPNs

Meeting regularly with IMD Compliance and with Legal

Developing relationships with other public pension funds



# First 90 Days – Compliance Team

Address personnel & contractor ethics issues: outside business activities, conflicts, gifts & entertainment

Implement new compliance monitoring process

Begin updating MNPI procedures & process

Coordinate with HR on new employee onboarding & training process

Attend to Restricted Securities, TRS Persons & Key Employee lists

Begin updating pre-clearance process & broker statements

# The First 90 Days – Compliance Team

Coordinate with Investment Operations to develop compliance risk matrix

Coordinate with Investment Operations to develop standardized compliance form/responses

Coordinate with Investment Operations to begin analysis of compliance systems used by TRS

Draft proposed amendments to Code of Ethics for Contractors

Attend to IPS-related issues and IMA revisions with Legal

Attend to Internal Audit requests and PIA issues

# Around the Corner

Revise trading policy,  
associated training,  
and related  
automated  
compliance systems

Revise TRS Investment  
Compliance Charter

Develop annual  
compliance report for  
Executive Director  
and Board

**Tab 13 C**



Legal Services

## Memorandum

**DATE:** January 30, 2015

**TO:** The Board of Trustees

**FROM:** Rebecca M. Smith, Assistant General Counsel

**COPY:** Brian Guthrie, Executive Director  
Ken Welch, Deputy Director  
Carolina de Onís, General Counsel

**RE:** Recommendation to Adopt Proposed Amendments to §25.26 (Annual Compensation Creditable for Benefit Calculation)

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Proposed changes to the §25.26 were published for public comment during the recently completed Four-Year Rule Review. However after the proposed changes were published, staff determined that application of the proposed changes at an earlier date would better serve the business needs of TRS. In order to complete the review in a timely manner and to ensure proper notice and effective adoption of the amended §25.26, the TRS Board of Trustees adopted §25.26 with changes to the published text by deleting subsection (f) and the reference in subsection (b) to the implementation date in subsection (f), as recommended by staff and the Policy Committee at the November 2014 meeting. The Policy Committee then authorized the publication of the proposed rule amendments with the new effective date for public comment. The proposed rule amendments to §25.26 with the earlier effective date were published December 26, 2014 in the *Texas Register* (39 TexReg 10384) and are now ready for the board to consider their adoption.

Section 25.26 describes the “standard” school year now used by TRS to determine annual compensation and service credit. The rule establishes how TRS will determine a member’s annual compensation for benefit calculation purposes. The most basic requirement is that annual compensation is the sum of 12 months of compensation paid from September 1 through August 31 for 12 months of work. The rule as currently adopted requires TRS to compare salaries using the standard school year with salaries using the member’s contract year and to use the 12 month period that provides the greater annual salary for benefit calculations. Experience with the rule has proven the comparison to be complex and to substantially increase the amount of time required to manually prepare the member’s retirement estimate. TRS originally adopted subsection (b) which requires the comparison to minimize the impact on annual compensation caused by the change to a standard school year. However, in some instances the TRS rule effectively results in a higher final average salary and a higher annuity than before the law change. Staff proposes to limit the comparison to the 2012-2013 school year which is the year of transition to the standard school year to reduce the administrative burden of manually comparing prior contract year salaries with standard school year salaries for school years prior to the 2012-2013 school year.

Specifically, staff proposes adding subsection (f) to limit the comparison of salaries required in §25.26(b) to only the 2012-2013 school year rather than to all prior years. The proposed rule change will apply to the calculation of benefits for retirements and deaths occurring after March 31, 2015. The comparison will continue to be made for retirements and deaths occurring prior to April 1, 2015. A marked rule text of the proposed changes to §25.26 is also attached to this memorandum for your review.

The proposed rule amendments have been published for at least 30 days before the board considers their adoption at the February meeting. To date TRS has not received any written comments regarding the proposed amendments. Any written comments that TRS receives after the date of this memorandum will be addressed in a separate document that will be available for your review at the February meeting. Staff proposes that the board adopt §25.26 without changes from the published text.

§25.26 Annual Compensation Creditable for Benefit Calculation

(a) Except as provided in subsection (b) of this section, for the purpose of computing the amount of a retirement benefit or a death benefit under §824.402, Government Code, annual compensation means creditable compensation for service paid to a member of the retirement system during a 12-month period beginning September 1 and ending August 31 of the next calendar year for service rendered during no more than a 12-month period. For the school year in which the member retires and except as provided in §25.24(e) of this title (relating to Performance Pay), creditable annual compensation earned by the date of retirement but not yet paid at the date of retirement shall be included in the annual compensation for that year. If due to an error of the employer, compensation earned by the retiree in the final school year before retirement is not paid and/or not reported before the first annuity payment is issued, upon notice to TRS and the submission of all required corrected reports and member and employer contributions on the compensation, TRS shall adjust its records. If the additional compensation results in increased benefits payable on behalf of the retiree, the adjusted benefit shall be paid beginning in the month TRS receives the additional contributions and the corrected reports. In no event may an error be corrected under this subsection after the end of the school year following the school year in which the member retired.

(b) For the purpose of computing the amount of a retirement benefit or a death benefit under §824.402, Government Code, for retirements or deaths before April 1, 2015 annual compensation paid prior to September 1, 2012 is the greater of:

(1) the amount of creditable compensation for service paid to a member of the retirement system during a 12-month school year as defined in §25.133(a) of this title (relating to School Year); or

(2) the amount of creditable compensation paid to the member during a 12-month period beginning September 1 and ending August 31 of the next calendar year.

(c) Unless otherwise provided by law or this chapter, a member shall receive credit only for annual compensation actually received.

(d) Compensation from which deductions for an Optional Retirement Program annuity were made shall not be included in annual compensation for benefit calculation purposes.

(e) If as a result of the requirement in §25.28(c) to report compensation in the month that it is paid rather than the month it is earned a member has only 11 months of salary credited by TRS in the 2014-2015 school year and that year of compensation would have been one of the years of compensation used in calculating the member's highest average salary for benefit calculation purposes, TRS will attribute an additional month of salary in the 2014-2015 school year for purposes of benefit calculation.

(f) For the purpose of computing the amount of retirement benefit or a death benefit under §824.402, Government Code, for retirements or deaths after March 31, 2015, annual compensation shall be calculated as follows:

(1) for the 2013-2014 school year and thereafter, annual compensation is the amount of creditable compensation for service paid to a member of the retirement system during a 12-month period beginning September 1 and ending August 31 of the next calendar year;

(2) for the 2012-2013 school year, annual compensation is the greater of:

(A) the amount of creditable compensation for service paid to a member of the retirement system during the 12-month school year as defined in §25.133(a) of this title (relating to School Year); or

(B) the amount of creditable compensation paid to the member during a 12-month period beginning September 1, 2012 and ending August 31, 2013.

(3) for school years prior to the 2012-2013 school year annual compensation shall be the amount of creditable compensation for service paid to a member of the retirement system during the 12-month school year as defined in §25.133(a) of this title (relating to School Year).



## Teacher Retirement System of Texas

### BOARD OF TRUSTEES ORDER ADOPTING AMENDED §25.26

The Board of Trustees (board) of the Teacher Retirement System of Texas (TRS) has decided to adopt amended TRS Rule 34 Tex. Admin. Code § 25.26 as set out below. The proposed rule amendments were published for public comment in the December 26, 2014 issue of the *Texas Register* (39 TexReg 10384) for 30 days before being considered for adoption. *No public comments were received in response to the published notice of the proposed amendments. The board has decided to adopt the amended rule without changes to the published text of the proposed rule.*

Section 25.26 is located in Chapter 25 (Membership Credit) of TRS' rules.

Rule §25.26, relating to Annual Compensation Creditable for Benefit Calculation, **describes the "standard" school year now used by TRS to determine annual compensation** and service credit. The rule establishes how TRS will determine **a member's annual compensation** for benefit calculation purposes. The most basic requirement is that annual compensation is the sum of 12 months of compensation paid from September 1 through August 31 for 12 months of work. The rule as currently adopted requires TRS to compare **salaries using the standard school year with salaries using the member's contract year** and to use the 12 month period that provides the greater annual salary for benefit calculations. Experience with the rule has proven the comparison to be complex and to **substantially increase the amount of time required to manually prepare the member's** retirement estimate.

The amendments limit the comparison to the 2012-2013 school year, which is the year of transition, to the standard school year to reduce the administrative burden of manually comparing prior contract year salaries with standard school year salaries for school years prior to the 2012-2013 school year. Specifically, the amended rule adds subsection (f) to limit the comparison of salaries required in §25.26(b) to only the 2012-2013 school year rather than to all prior years. The amendments apply to the calculation of benefits for retirements and deaths occurring after March 31, 2015. The comparison will continue to be made for retirements and deaths occurring prior to April 1, 2015.

The board certifies that the section as adopted has been reviewed by legal counsel and found to be within TRS' legal authority to adopt. The amended rule described in this Order is adopted under Government Code § 825.102, which authorizes the board to adopt rules for eligibility of membership, the administration of the funds of the retirement system, or the transaction of the business of the board.

NOW, THEREFORE, IT IS

ORDERED, That the board adopts amended TRS rule 34 Tex. Admin. Code § 25.26, *without* changes as published in the December 26, 2014 issue of the *Texas Register* (39 TexReg 10384);

ORDERED, That the board authorizes TRS staff to prepare and to file with the Secretary **of State's Office in proper form** and based on this Order the adopted rule preamble and the adopted rule text, including preparing and filing other rulemaking documents as required for publication in the *Texas Register* or *Texas Administrative Code*, or both, as appropriate;

ORDERED, That the board authorizes TRS staff to work with the Secretary of State's Office and to make any technical changes required for publication of the adopted rule documents;

ORDERED, That the related adopted rule text, applicable board materials and deliberations considered in the adoption of the rule, and adopted rule preamble published in the *Texas Register* are adopted by reference and made part of this Order; and

ORDERED, That the board authorizes its chairman to sign this Order on behalf of the board.

SIGNED ON BEHALF OF THE BOARD THIS \_\_\_\_\_ DAY OF FEBRUARY 2015.

\_\_\_\_\_  
R. David Kelly, Chairman  
TRS Board of Trustees

ATTEST:

\_\_\_\_\_  
Brian K. Guthrie  
TRS Executive Director

\_\_\_\_\_  
Carolina de Onís  
TRS General Counsel

**Tab 14**



Teacher Retirement System of Texas

# Division of Strategic Initiatives

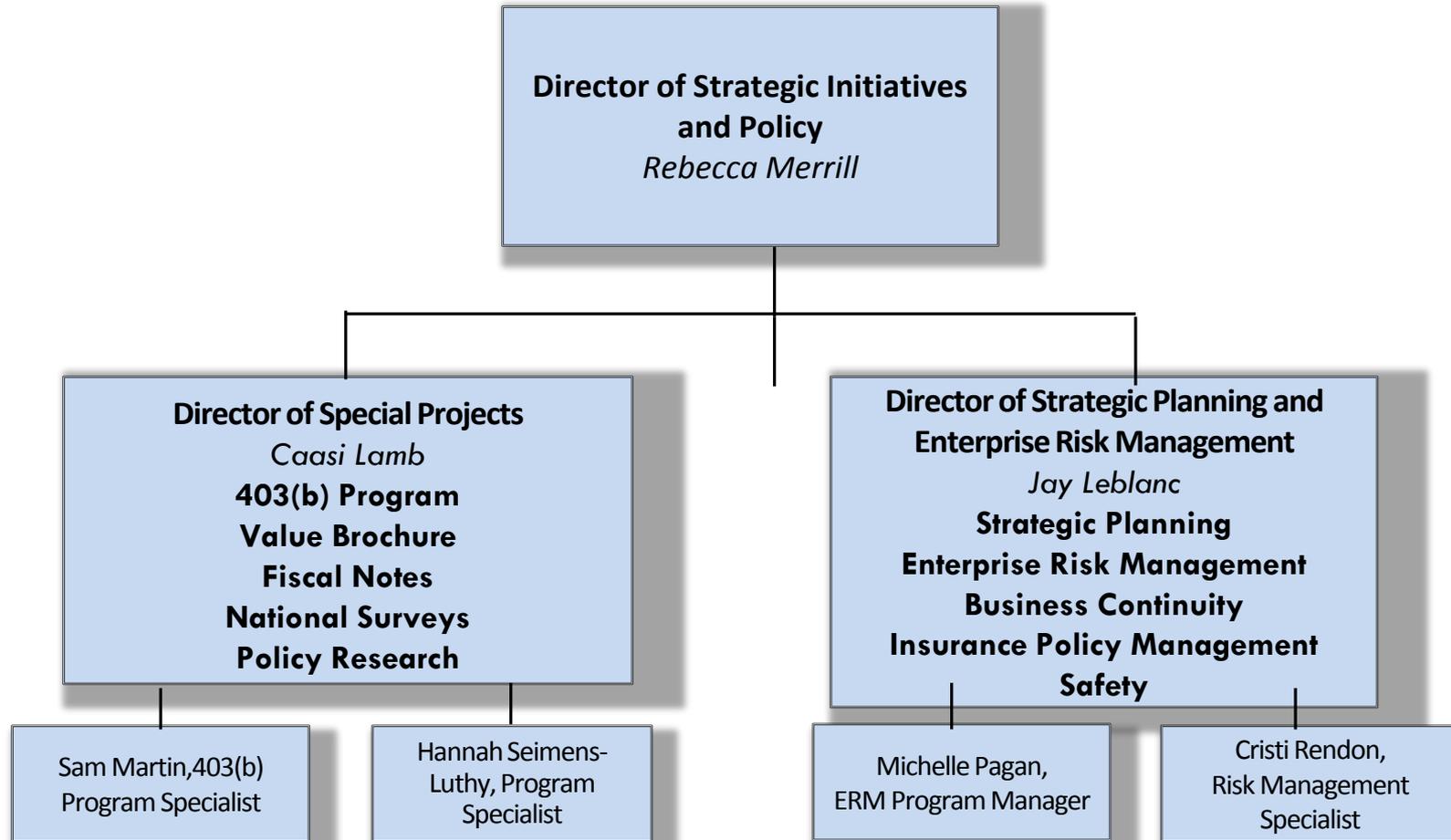
Rebecca Merrill

February 12, 2015

# Overview

- Division Structure and functions.
- Strategic Plan initiatives.

# Divisional Structure and Functions



# Strategic Plan Initiatives

# Strategic Plan Initiatives

- Strategic Plan Implementation.
- Value Brochure.
- Safety Committee.

# Strategic Plan Initiatives: Implementation

- Strategic Plan serves as a guiding document that not only establishes agency and departmental goals but also provides framework to gauge success.
- Implementation entails two parts: engagement and assessment.

# Strategic Plan Initiatives: Implementation

- Goal of engagement was to communicate:
  - Strategic Plan purpose and process;
  - Where each department's work is reflected; and
  - Development of assessment process.
- Engagement process:
  - 5-week Poster campaign;
  - Department specific maps; and
  - Meetings with each department to discuss Strategic Plan purpose, process, and goals.

# Strategic Plan Initiatives: Implementation

- Goal of assessment is to develop a framework for:
  - Discussing strategic planning with enterprise risk management and resource needs; and
  - Assessing progress towards strategic goals.
- Assessment process:
  - Map Strategic Plan to ERM Stoplight Report;
  - Assess both Stoplight Category and Strategic Plan progress in single session; and
  - Tie resource needs to Strategic Plan items.

# Strategic Plan Initiatives: Value Brochure

- Goal 1 - Sustain a financially sound pension trust fund.
- Value Brochure supports Goal 1 of the Strategic Plan by communicating information about the pension plan's economic value to key stakeholders such as legislators and TRS members.

# Strategic Plan Initiatives: Value Brochure

- Value Brochure Key takeaways:
  - Nearly 95% of the \$8.5 billion in benefit payments, or approximately \$8 billion, went directly to members who live and spend in Texas.
  - Every \$1 in benefits paid by TRS generates \$2.34 in economic activity.
  - For 2014, that economic activity resulted in total expenditures of \$18.9 billion and over 112,000 permanent jobs for Texas.

# Strategic Plan Initiatives: Value Brochure

- Value Brochure now provides economic impacts to certain industries.

Industry	Gross Product (millions)	Jobs
Restaurants	\$901.8	20,706
Motor Vehicle and Parts Dealers	\$692.5	10,363
Health Services	\$696.9	9,291

Source: “The Impact of Annuity Payments by the Teacher Retirement System on Texas and Local Areas Within the State” (The Perryman Group, November 2014)

# Strategic Plan Initiatives: Safety Committee

- Goal 4- Attract, retain and develop a highly competent staff.
- Safety Committee supports Goal 4 by providing a physical work environment that is safe and enhances productivity.
- Benefits of maintaining a safe work environment have a direct link to lower overall operating costs. Less frequent and severe work related injuries result in lower number of Workers' Compensation claims, increased productivity and improved levels of employee job satisfaction.

# Strategic Plan Initiatives: Safety Committee

- Committee is a cross section of TRS employees that meet quarterly to develop goals and implement plans that support safety efforts including:
  - Advising on emergency procedures;
  - Participating in annual trainings and drills to maintain preparedness;
  - Improving access to first aid; and
  - Distributing safety awareness and hazard guidance to staff within their respective departments.

# Questions

Questions?

**Tab 15 A**

# Teacher Retirement System of Texas

## Financial Services Overview

Don Green, Chief Financial Officer  
February 2015

# Drive to Goal

- Sustain a financially sound pension trust fund.
  - To manage an actuarially sound retirement system that maintains an amortization period of less than 31 years.
  - Develop and maintain a sound, professional and systematic risk management and capital allocation system.

# Drive to Goal

- Build and maintain strong, customer-focused relationships.
  - Implement modern pension and benefit information systems that allow TRS staff to serve our members and deliver accurate benefits effectively and timely.
- Facilitate access to competitive, reliable health care benefits for our members.
  - Manage the revenues and expenses of TRS-Care and TRS-ActiveCare.

# Drive to Goal

- Attract, retain, and develop a highly competent staff.
  - Develop and maintain a desirable work environment.

# Finance Division

## TRS Mission

*“Improving the retirement security of Texas educators by prudently investing and managing trust assets and delivering benefits that make a positive difference in members’ lives.”*

## Finance Division Purpose

*“To support the mission of TRS through sound, customer focused fiscal management that includes a variety of financial services while ensuring fiscal responsibility.”*

# Quick Facts

## Resources

- \$14.7 million budget
- 86.15 FTEs



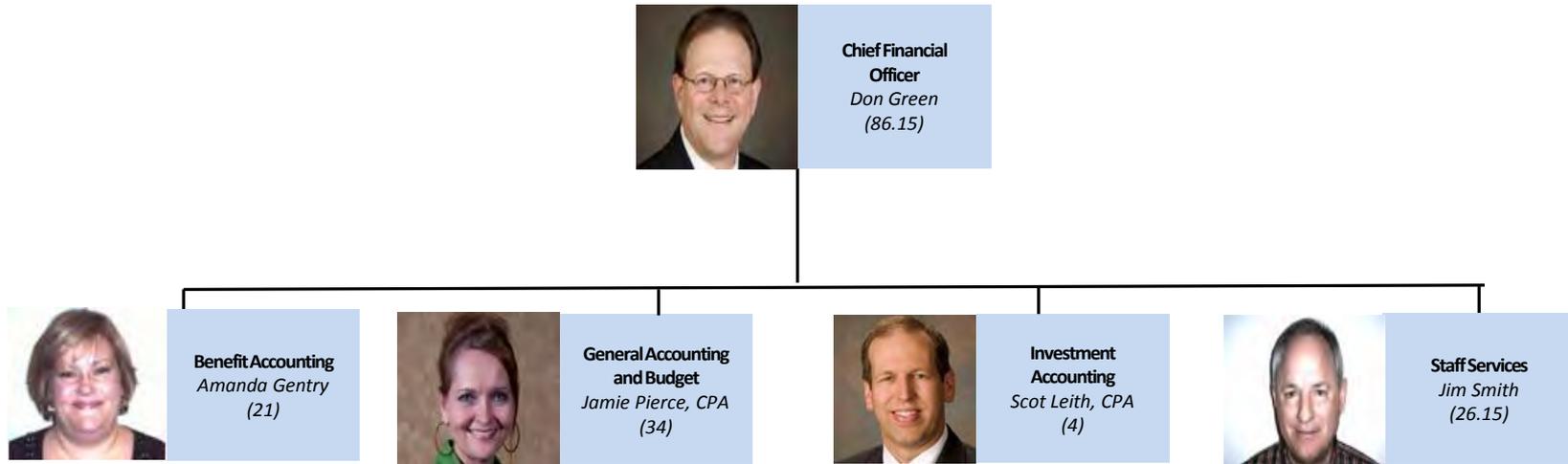
## Key Drivers

- 361,000 annuitants
- 1,365 employer entities
- 600+ employees
- 10,000+ annual visitors
- 217,976 square feet of space maintained on a 4 acre complex

## FY2014 Selected Outputs

- 2,950 vouchers processed
- 772 purchase orders issued
- 129 contracts over \$100K managed totaling \$6.6B
- 8,000 employee payroll transactions
- \$8.5 billion paid to annuitants
- 480,481 1099-Rs processed
- 10.1 million member account transactions
- 1.3 million pieces of mail processed
- 1,200+ work orders completed
- 1,257 external manager and general partner investment funding transactions processed totaling \$8.4 billion

# Financial Division



# Financial Services

## ☐ Don Green

- BS (Economics & Accounting), MBA, MPA, University of Texas at Austin
- 35 years of state service
- Board chair & trustee of Employees Retirement System (ERS) Board, 8 years
- Senior Financial Advisor for Lt. Governor, 3 years
- Director of Budget and Policy for Speaker of House, 6 years
- CFO for Health and Human Services Commission, 4 years
- CFO for Department of Mental Health and Mental Retardation, 4 years
- Senior Budget Analyst for Legislative Budget Board, 15 years

## ☐ Jamie Pierce

- BBA Finance, Texas A&M University
- Certified Public Accountant
- 29.5 years of TRS service

## ☐ Janie Duarte

- MBA, Southwest Texas State University (now Texas State University)
- BBA, University of Texas
- Former CFO of Texas Youth Commission (TYC), 16.5 years
- 21.5 years of state service

## ☐ Amanda Gentry

- 29 years of TRS service

## ☐ Jim Smith

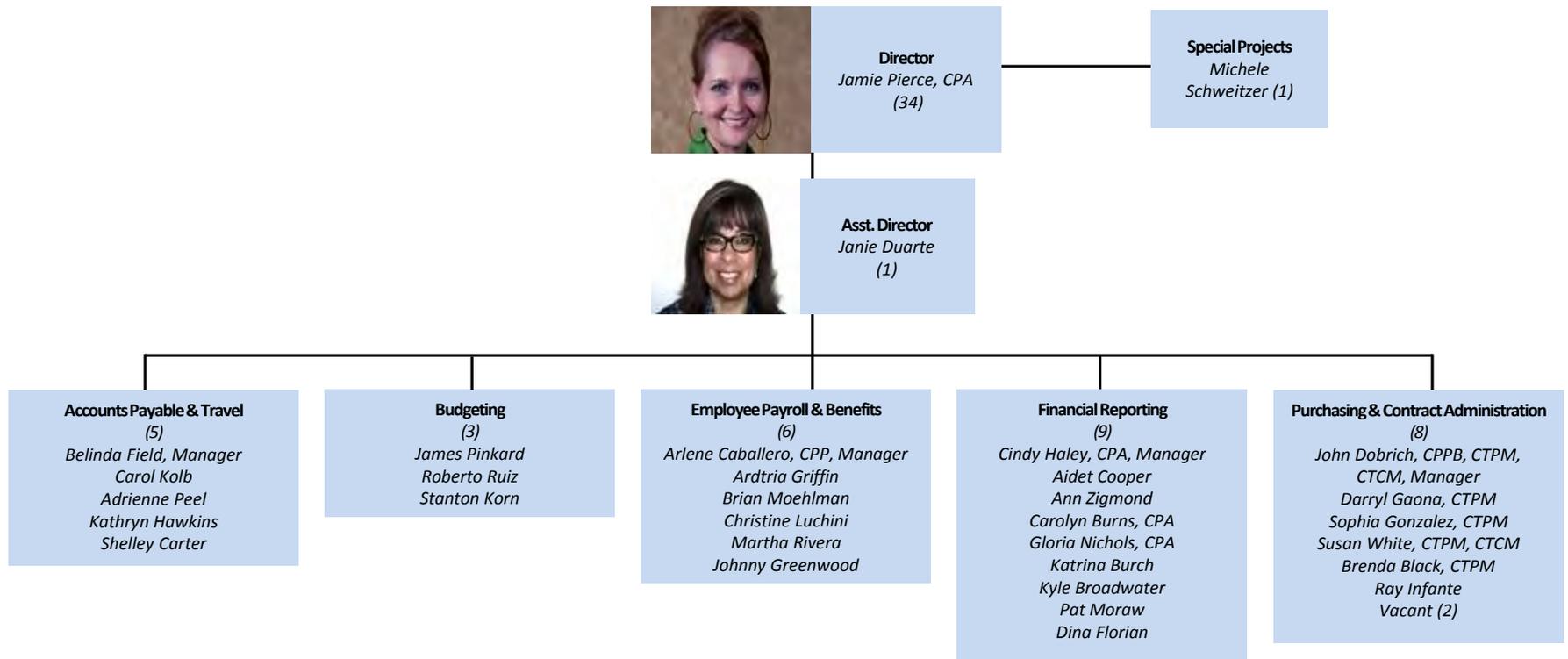
- BBA Accounting, University of Texas
- 10.5 years of TRS service
- Former CFO of Texas School for the Deaf, 12 years
- Past President of Texas State Agency Business Administrators Association
- Past President of Austin Chapter of the Institute of Internal Auditors

## ☐ Scot Leith

- MPA, University of Texas
- Bachelor of Science, Eastern Illinois University
- Certified Public Accountant
- 18 years of TRS service

# Financial Division

## General Accounting and Budget



# Financial Services

## General Accounting

- **Accounts Payable & Travel** - processes vendor payments, conducts 3-way matching of invoice, receiving document, and purchase orders, enter purchase requisitions, performs budget checks by department, enters travel requisitions, and audits travel claims including the issuance of advances when requested.
- **Budgeting** - prepares and administers agency operations budgets, maintains budgetary reports including board reports, interim budgetary statements, budget transfers, reconciliations, prepares the Legislative Appropriations Request (LAR) and Operating Budget reports, and assists in preparing the Comprehensive Annual Financial Report.

# Financial Services

## General Accounting

- **Employee Payroll & Benefits** - processes and maintains employee and excess benefit payee payments, as well as employee leave, employee insurance records, employee retirement records, retirement statements, and W-2s, conducts new hire orientations and employee exit meetings.
- **Financial Reporting** - prepares interim and board financial reports as well as coordinates, prepares and distributes the Comprehensive Annual Financial Report, coordinates financial transactions processing, federal tax reporting, and reconciliations.
- **Purchasing & Contract Administration** - responsible for acquiring goods and services, including development and advertising solicitations, evaluating responses, awarding purchase orders, contract negotiations, tracking and reviewing contracts, and reporting.

# Financial Division

## Investment Accounting



**Director**  
*Scot Leith, CPA*  
(4)

**Investment Accounting**  
**(3)**

*Vicki Garcia, CPA, Team Lead*  
*Beverly Grass, CPA*  
*Roberto Vasquez*

# Financial Services

## Investment Accounting

- **Valuation Oversight** - reviews and monitors TRS investment valuations including independently calculating and reconciling all Limited Partner (LP) valuations and activities and reviewing all audited General Partnership (GP) financial statements.
- **Financial Reporting** - verifies investment financial information reported by State Street bank and delivered to TRS.
- **Cash Funding** - verifies and approves all external investment fundings including capital calls, distributions, manager fee payments, derivative collateral movements, and comptroller cash transfers.
- **Custody Oversight** – manages the State Street Bank accounting custody relationship.

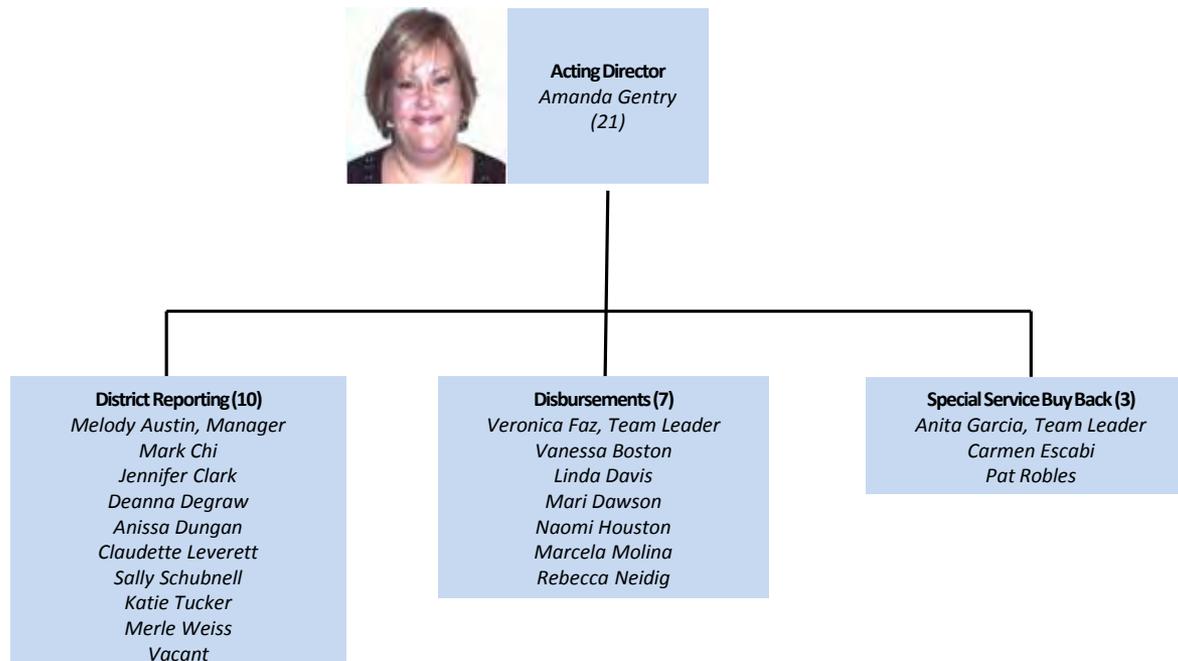
# Financial Services

## Investment Accounting

- **Annual CAFR Reporting** - contributes to financial statements and note disclosures related to investments.
- **Incentive Compensation** - calculates Investment Management Division (IMD) incentive compensation values.
- Liaison between Financial Division and Investment Division.

# Financial Division

## Benefit Accounting



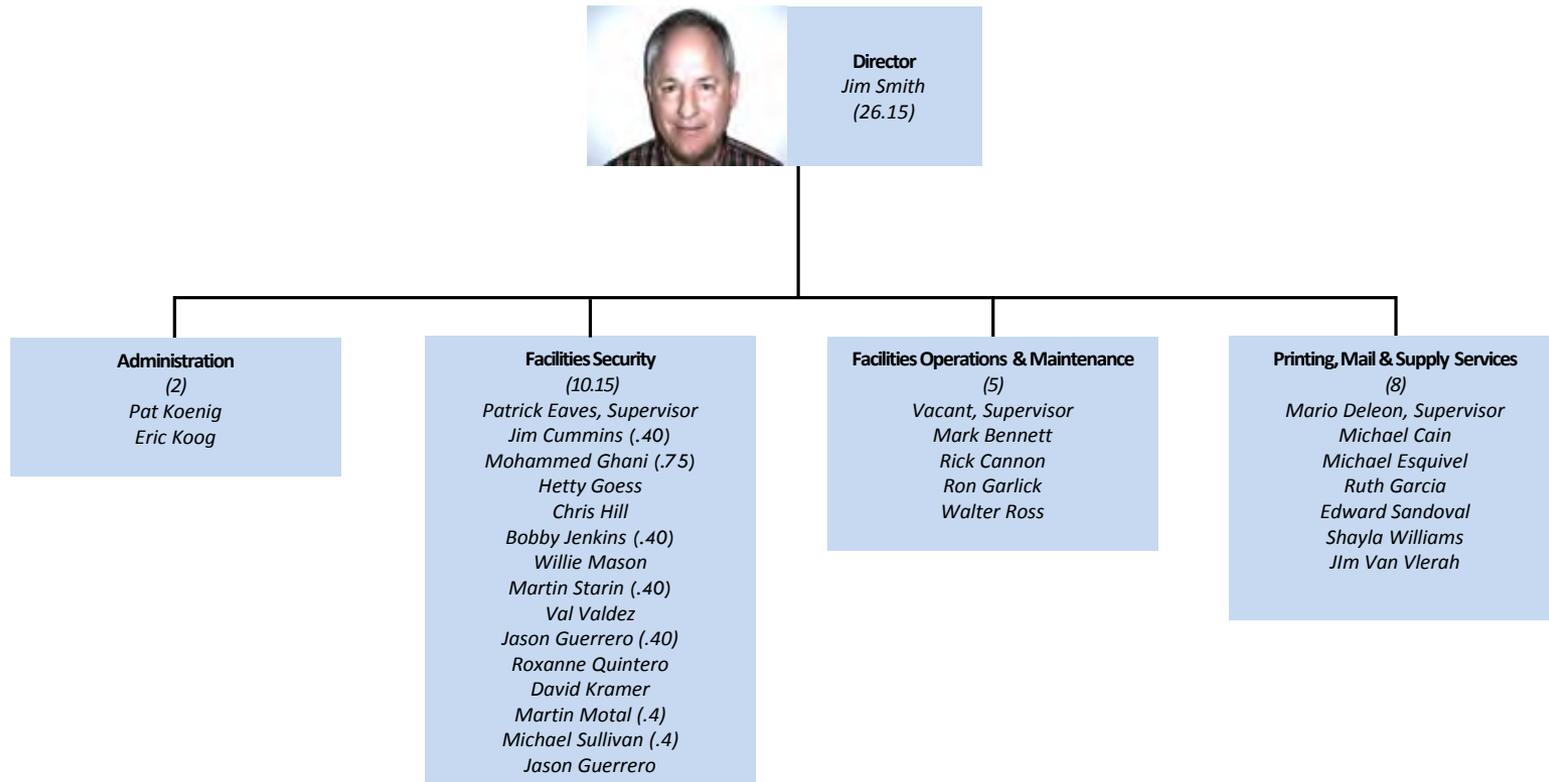
# Financial Services

## Benefit Accounting

- **Direct Reporting** - establishes accounts for new members and maintains accounts for existing members, collects monthly financial reports for member and reporting entity deposits, and provides training and communicates changes in TRS laws, rules and procedures as they relate to monthly reporting strong, customer-focused relationships.
- **Disbursements** - prepares, maintains and reviews regular and supplemental payrolls, reversals, stop payments, 1099Rs for retirees, maintains current tax tables, coordinates with Legal for QDROs, child support, bankruptcies and levies, collects association dues, and employment after retirement
- **Special Service Buy Back (SSBB)** - processes payments for purchase of special service through rollovers, payroll deductions, and installment payments.

# Financial Division

## Staff Services



# Financial Services

## Staff Services

- **Administration** - plan, organize, coordinate, direct and monitor all operations for Staff Services; identify, evaluate, estimate, and schedule major improvement projects; collaborate with the Texas Facilities Commission to select architects, engineers, and contractors for major projects; inspect and monitor construction and renovation projects to ensure adherence to building codes, specifications, and safety standards; and examine and inspect work progress of contractors to ensure that projects are completed on schedule and within budget.
- **Facilities Operations and Maintenance** - provide ongoing operations and maintenance for TRS grounds and facilities including kitchen equipment, sound equipment, mechanical equipment, irrigation systems, electrical systems, plumbing systems, and the heating, ventilation and air conditioning (HVAC) systems; set up conference rooms for meetings; moves furniture and set up work areas; and provide transportation as requested.

# Financial Services

## Staff Services

- **Facilities Security** - provides a 24/7 security presence, provides surveillance of TRS grounds and buildings, controls access to TRS grounds and buildings, and assigns and monitors parking.
- **Printing, Mail Room and Supply Services** - prints business cards, letterheads, envelopes, forms, pamphlets, and brochures; copies, collates, punches, binds, and delivers documents; processes and delivers all incoming and outgoing mail; purchases, receives, stocks, and distributes office supplies; and coordinates mass mailings with vendors.

# Financial Services

## Division Accomplishments

- Completed modifications to the 4<sup>th</sup> floor East Building to enhance space utilization and improve the work environment
- Received the Government Finance Officer's Association (GFOA) Certificate of Achievement for the Comprehensive Annual Financial Report (CAFR) for 24<sup>th</sup> year
- Received an unqualified opinion by State Auditor's Office for 2014 CAFR
- Successfully implemented GASB Statement 67 in the 2014 CAFR, investment reporting, and disclosure requirements

# Financial Services Division Accomplishments

- TEAM Project contracts awarded: Pension Administration Line of Business (LOB)
- TEAM Projects active in procurement process: Website Redesign Project (evaluation phase), Financial System Replacement (solicitation development), Master Custodian and Securities Lending Services
- Other contracts awarded: Wireless Communications Services (switching Blackberries to iPhones), Data Co-Location Services, TRS ActiveCare PBM, HPA, and HMO Contracts, and Facilities Contracts (Plumbing and Janitorial Services)

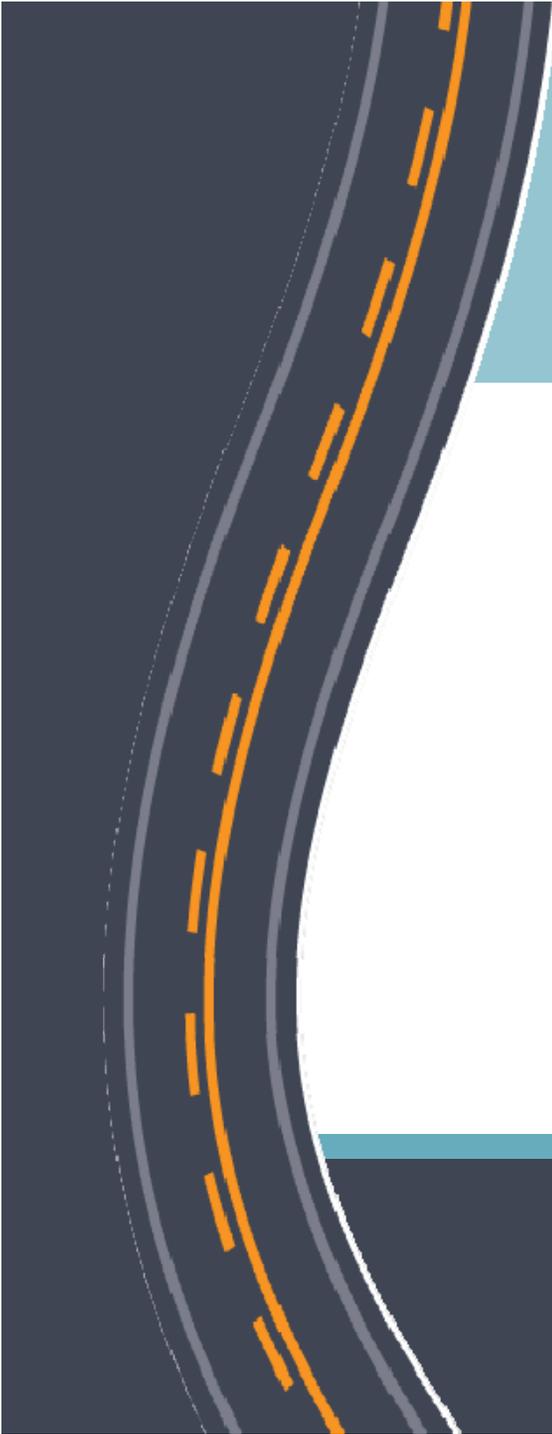
# Financial Services Division Accomplishments

- Participated with IMD in the competitive procurement of State Street Bank as TRS Custodian and accounting book of record
- Successfully transitioned State Street accounting services from a monthly processing team headquartered in Boston, MA to a daily processing team headquartered in Sacramento, CA
- Implemented GASB 67/68 Investment reporting and disclosure requirements.

## Ongoing/Future Challenges

- Staffing needs as a result of TEAM
- High number of employees eligible for retirement
- Knowledge transfer/management
- Facility growth planning
- Governmental Accounting Standards Board (GASB) Statements 67 and 68 communication and implementation efforts
- Legislative changes

**Tab 15 B**



# Teacher Retirement System of Texas

Fiscal Year 2015 Financial Status  
as of December 31, 2014

Don Green, Chief Financial Officer  
February 2015



# Net Position by Fund as of December 31, 2014

## Net Position by Fund as of 12/31/2014

	Pension	TRS-Care	TRS-ActiveCare	403(b)
<b>Beginning Balance</b>	<b>132,779,243,085</b>	<b>457,940,487</b>	<b>22,839,112</b>	<b>328,156</b>
Contributions & Other	1,759,453,024	233,527,992		
Interest, Dividends, & Net Securities Lending	970,338,906	386,152	303,255	351
Net Decrease in Fair Value	(1,833,584,351)			
Premiums & Other		123,637,083	650,403,845	
Federal Revenue		17,997,835		
Cobra Premiums			1,676,127	
Certification & Product Registration & Other				36,000
Administrative	(31,718,732)	(1,273,788)	(760,841)	(18,137)
Benefits	(2,923,142,224)			
Refunds	(142,764,197)			
External Manager Fees	(51,294,762)			
Medical Claims & Processing		(253,235,472)	(371,987,584)	
Pharmacy Claims & Processing		(266,300,696)	(92,646,756)	
Premium Payments to HMOs		(13,963,181)	(59,855,350)	
Affordable Care Act Program Fees		(1,891,530)	(8,493,894)	
<b>Increase (Decrease) in Net Position</b>	<b>(2,252,712,336)</b>	<b>(161,115,605)</b>	<b>118,638,801</b>	<b>18,213</b>
<b>Ending Net Position</b>	<b>130,526,530,749</b>	<b>296,824,882</b>	<b>141,477,914</b>	<b>346,370</b>

# Expenditure by Division as of December 31, 2014

	<b>Budgeted</b>	<b>Expended</b>	<b>% Spent</b>	<b>Budget FTEs</b>	<b>Actual FTEs</b>
Executive	15,989,808	4,422,664	27.7%	63.50	60.50
Investment Management	37,039,958	8,339,351	22.5%	143.00	137.00
Soft Dollars	33,085,494	7,375,308	22.3%		
Benefit Services	10,537,416	3,325,730	31.6%	160.60	155.30
Financial	14,698,895	3,287,609	22.4%	70.15	66.65
Information Technology	17,037,111	4,759,114	27.9%	73.00	70.00
TEAM Program	23,180,175	3,876,947	16.7%	58.00	50.00
Interns	199,000	41,631	20.9%	3.45	3.45
TRS Care	4,575,407	1,257,891	27.5%	41.00	41.00
TRS ActiveCare	3,350,198	631,623	18.9%	19.00	18.00
403(b) Certification	207,528	19,283	9.3%	1.50	1.00
Adjustments & Reimbursements	-	(181,094)			
<b>Total Expenses</b>	<b>159,900,990</b>	<b>37,156,057</b>	<b>23.2%</b>	<b>633.20</b>	<b>602.90</b>

# Expenditure by Fund and Category as of December 31, 2014

## Expenditures by Fund

	Budget	Expended	% Spent	% of Total
Pension Fund	95,502,188	23,995,005	25.1%	64.6%
TEAM	23,180,175	3,876,947	16.7%	10.4%
Soft Dollars	33,085,494	7,375,308	22.3%	19.8%
TRS Care	4,575,407	1,257,891	27.5%	3.4%
ActiveCare	3,350,198	631,623	18.9%	1.7%
403 (b)	207,528	19,283	9.3%	0.1%
<b>Total Expenses</b>	<b>159,900,990</b>	<b>37,156,057</b>	<b>23.2%</b>	<b>100.0%</b>

## Expenditures by Category

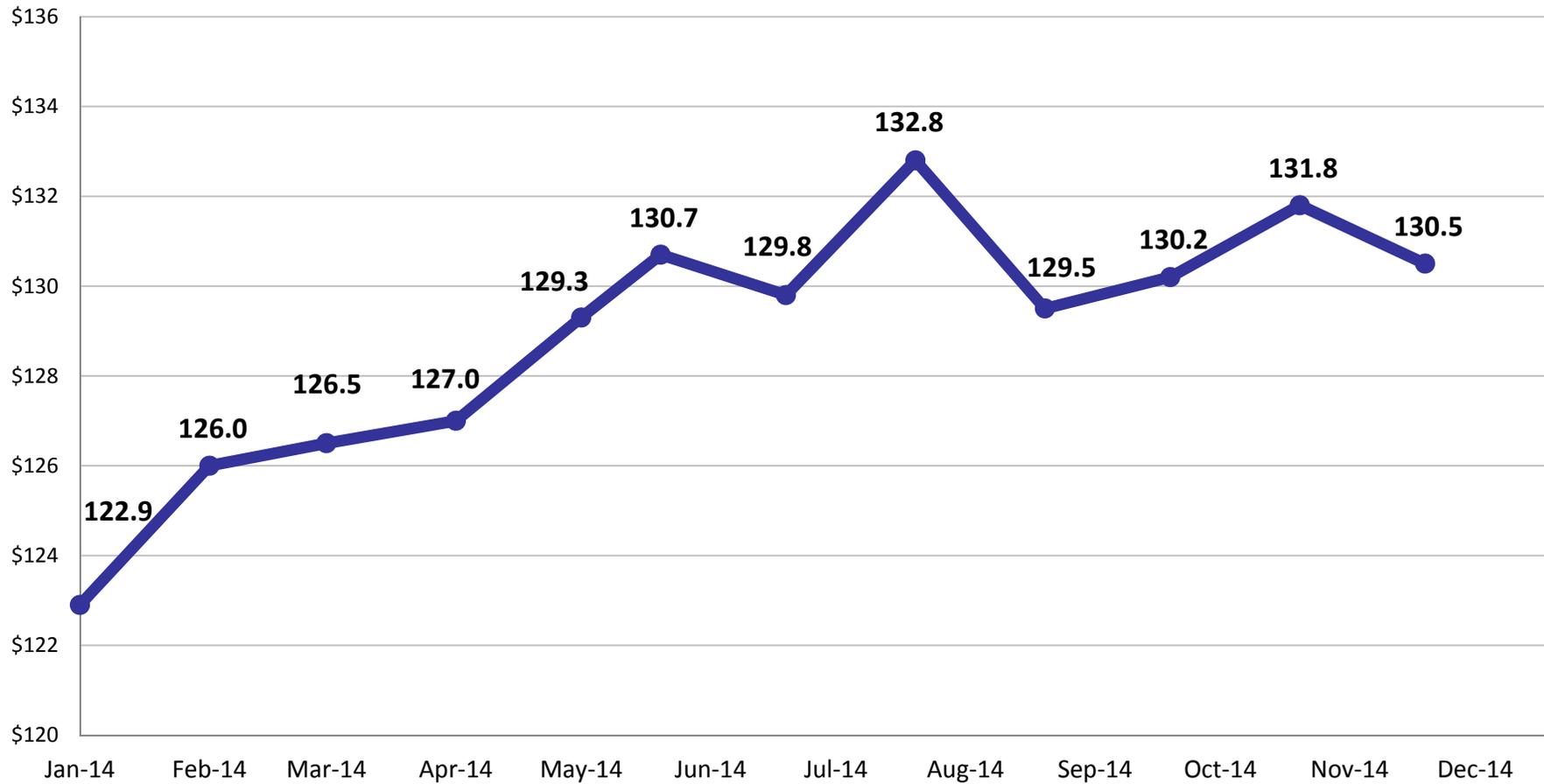
	Budgeted	Expended	% Spent	% of Total
Wages and Benefits	80,210,176	20,900,320	26.1%	56.3%
Professional Fees & Svs	26,093,606	2,912,644	11.2%	7.8%
Operating Costs	4,545,932	1,447,644	31.8%	3.9%
Travel	1,282,578	494,289	38.5%	1.3%
Research	11,361,520	2,852,558	25.1%	7.7%
Capital Projects	5,405,291	13,035	0.2%	0.0%
Other Operating Expenses	31,001,887	8,535,567	27.5%	23.0%
<b>Total Expenses</b>	<b>\$ 159,900,990</b>	<b>\$ 37,156,057</b>	<b>23.2%</b>	<b>100.0%</b>

## Pension Trust Fund Cash Disbursements

	<b>FY 2014 *</b>	<b>FY 2015</b>	<b>Variance</b>
September	\$6,970,179	\$8,329,726	\$1,359,547
October	6,917,337	8,291,727	1,374,390
November	6,708,686	5,966,718	<b>(\$741,968)</b>
December	6,566,553	9,042,869	\$2,476,316
<b>Totals</b>	<b>\$27,162,755</b>	<b>\$31,631,039</b>	<b>\$4,468,284</b>
* Cash disbursements totaled \$95,107,668 as of August 31, 2014.			

# Pension Trust Fund Net Position

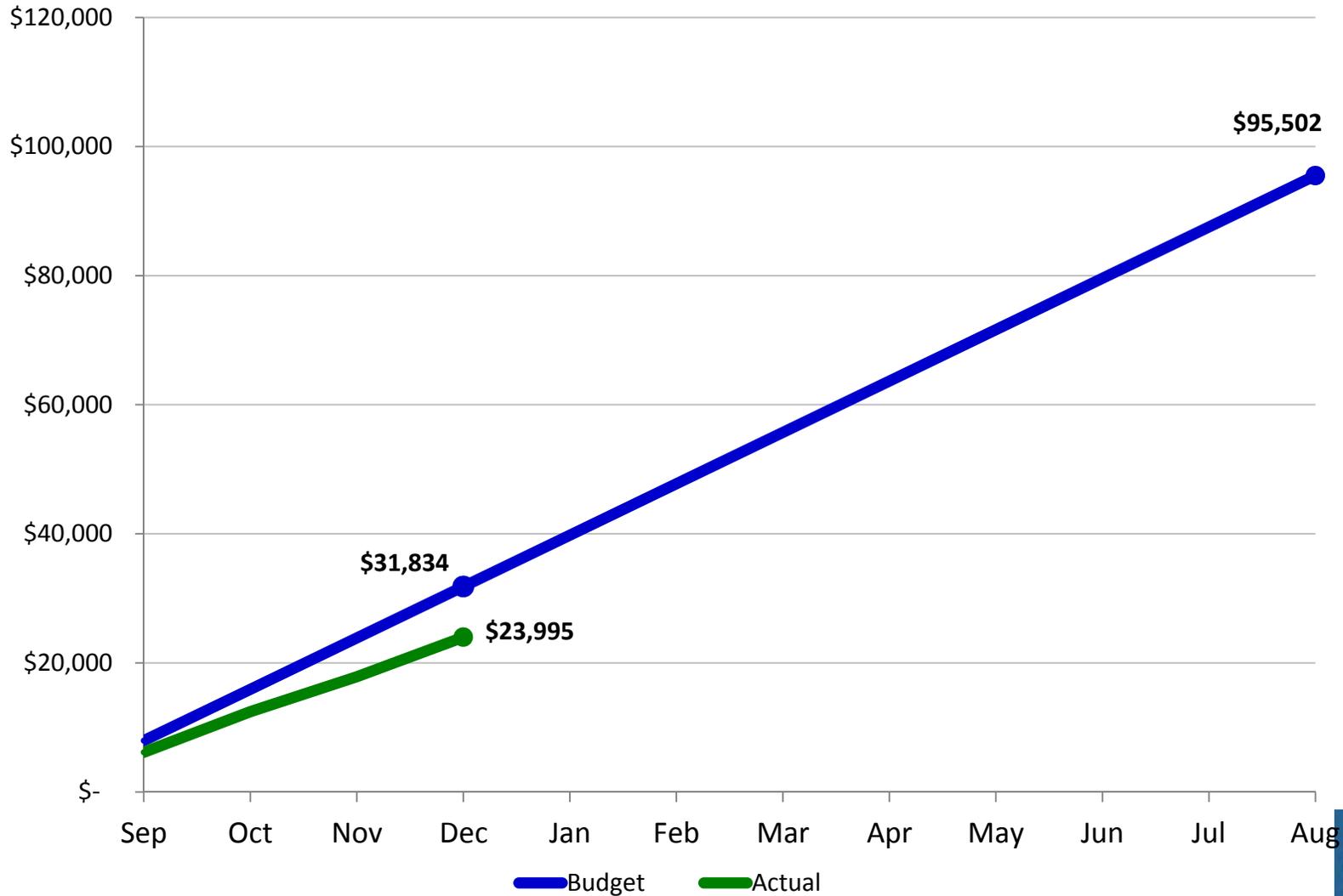
Graph in Billions



# Pension Trust Fund

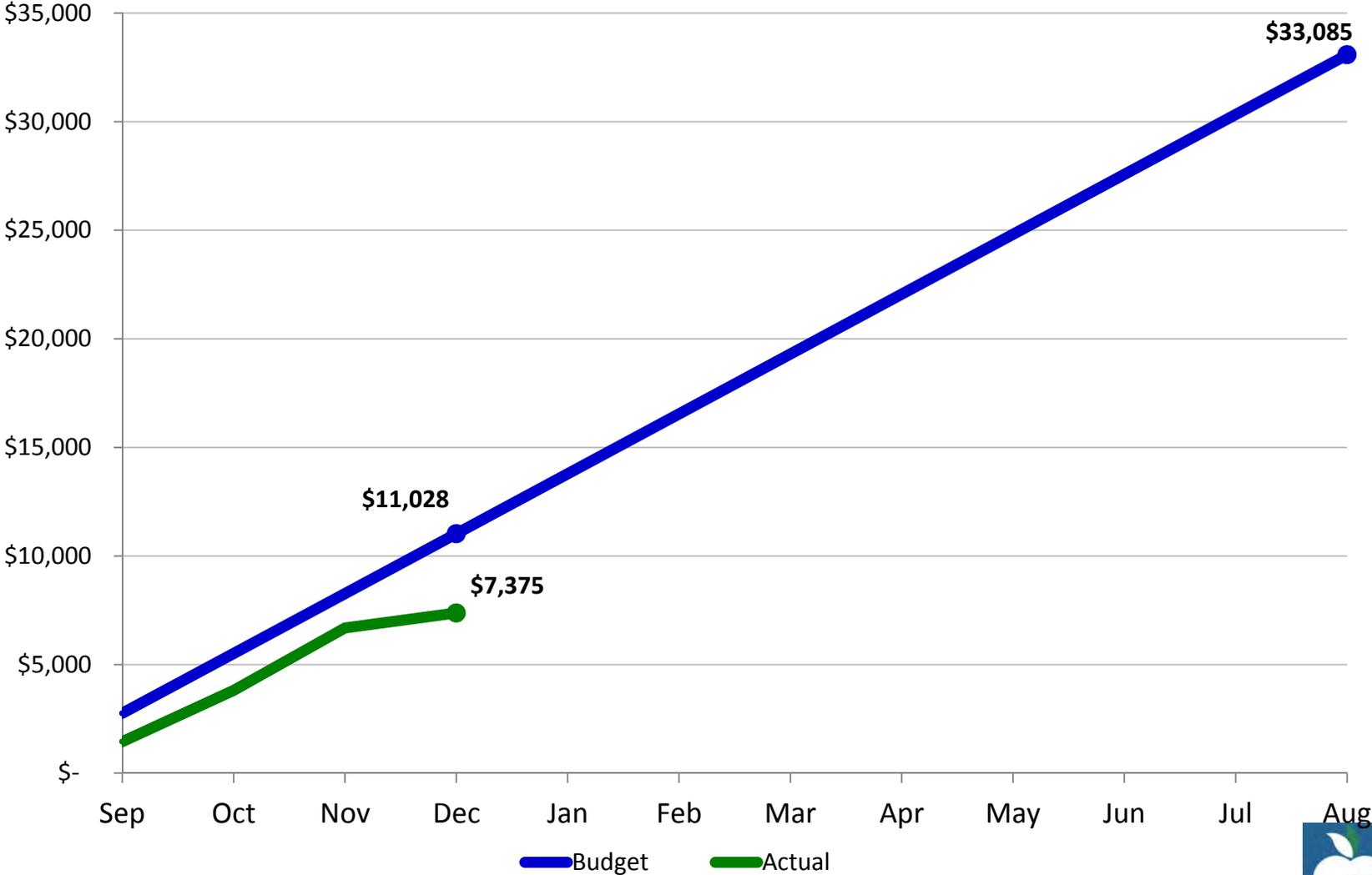
## Budget to YTD Actual (excludes Team)

Graph in Thousands



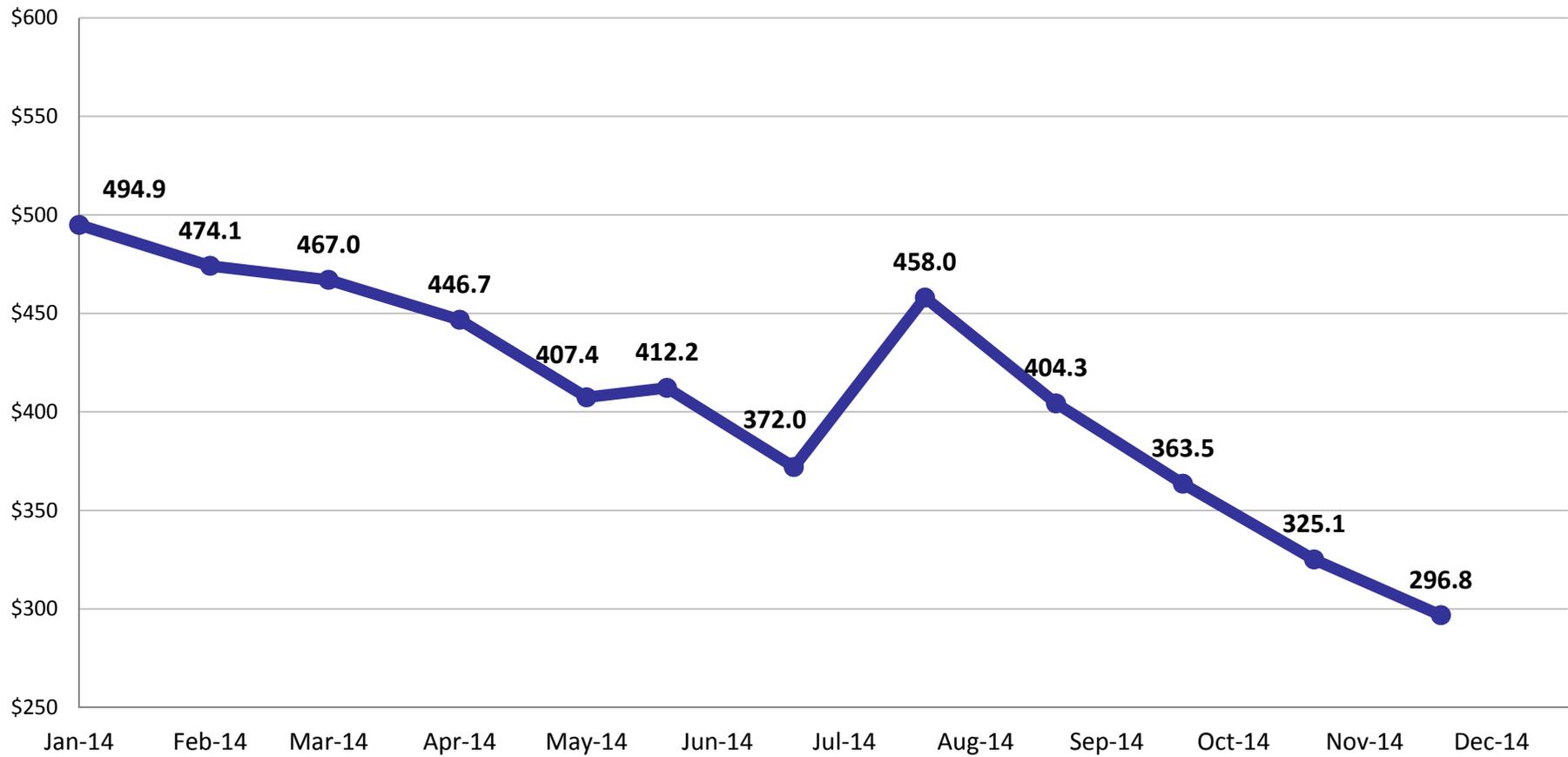
# Investment Soft Dollars Budget to YTD Actual

Graph in Thousands



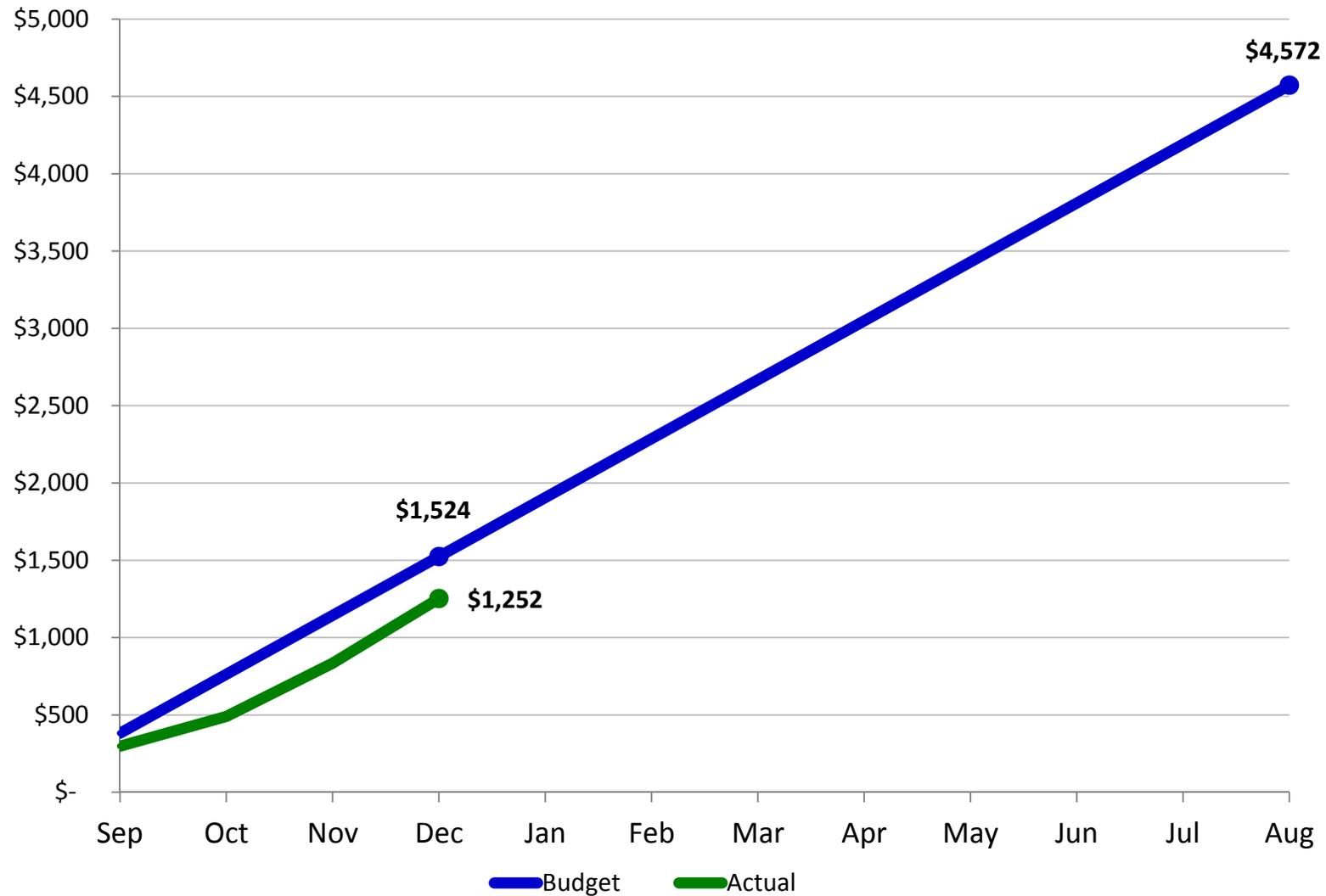
# TRS-Care Net Position

Graph in Millions



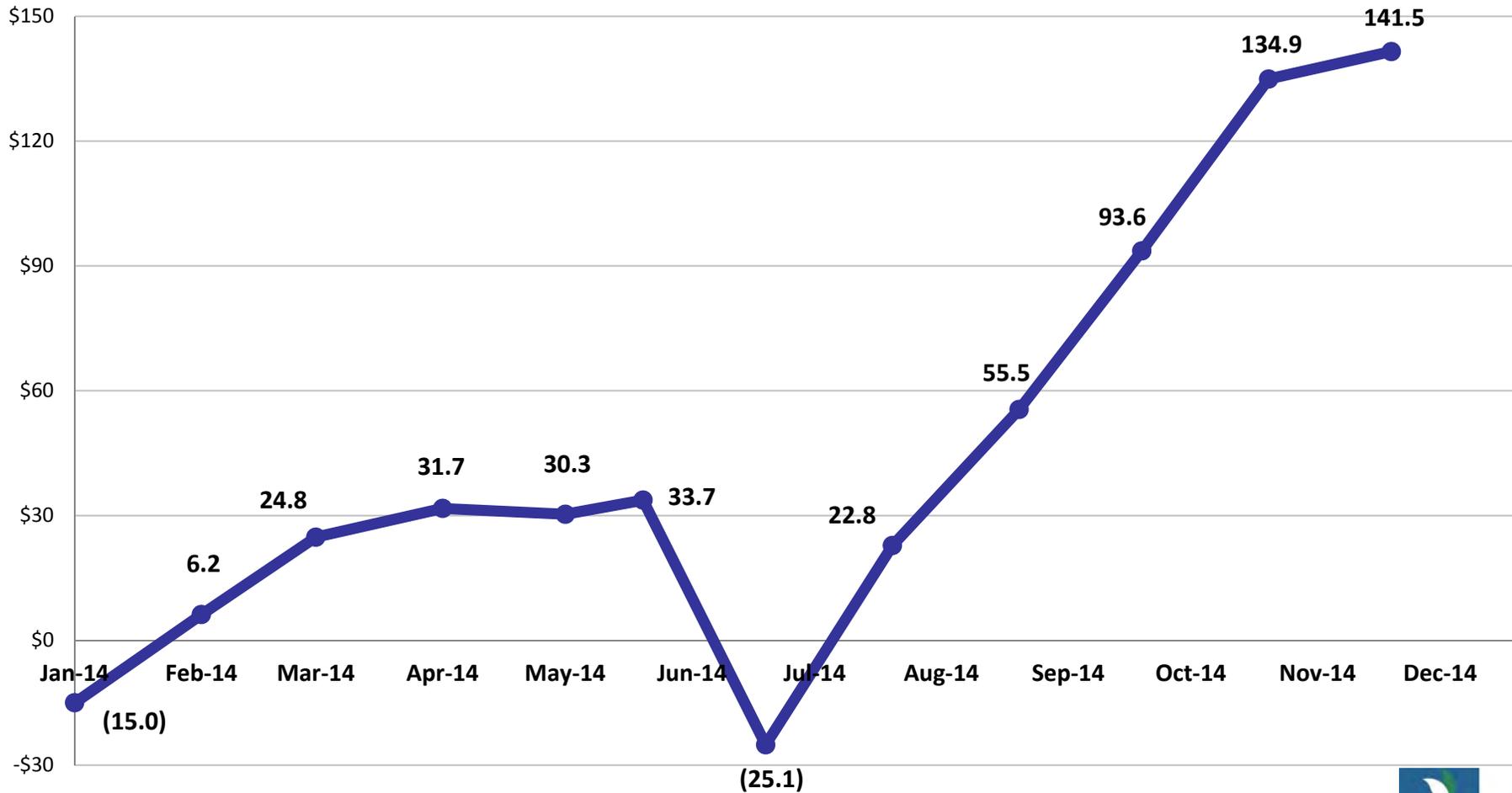
# TRS-Care Budget to YTD Actual

Graph in Thousands



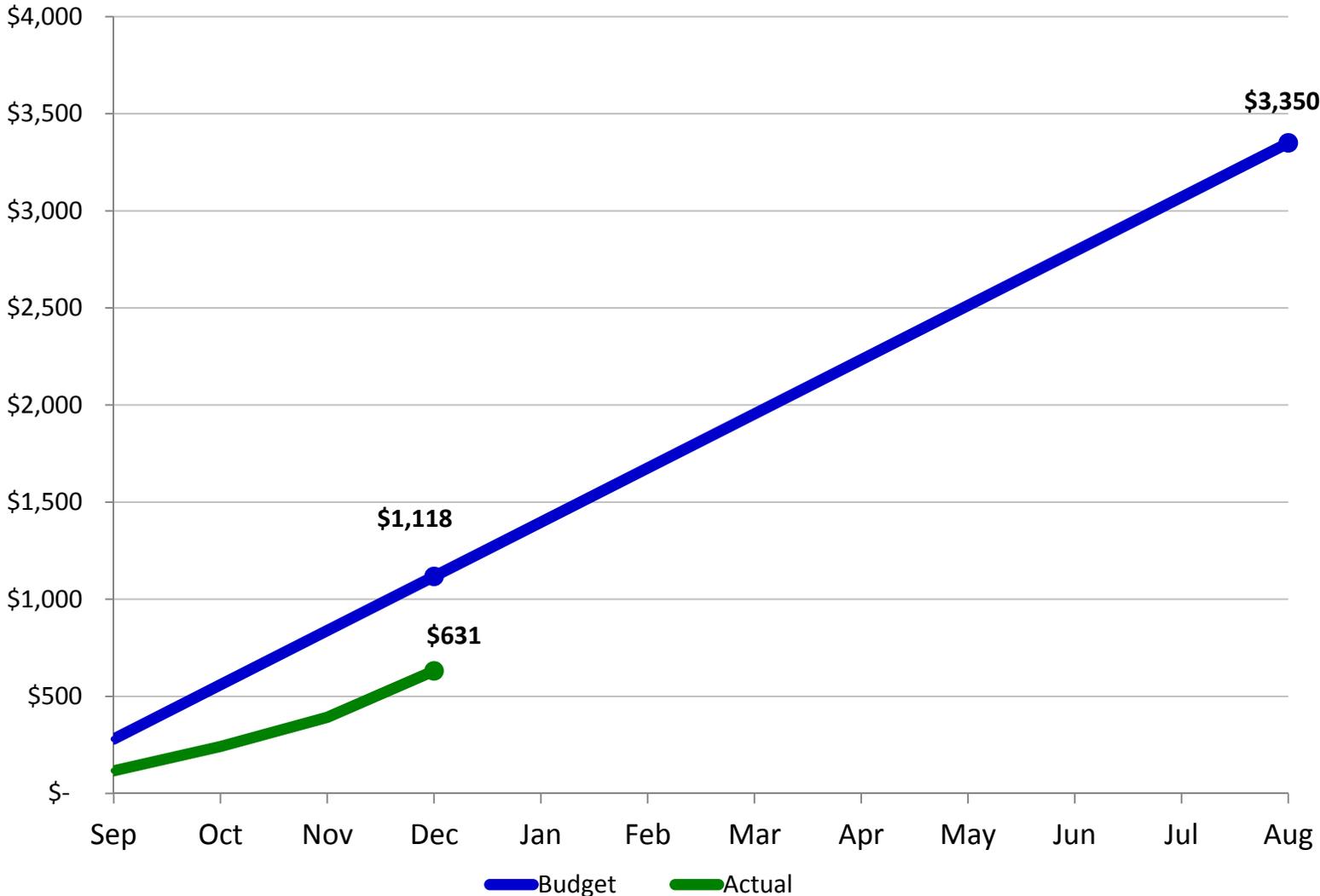
# TRS-ActiveCare Net Position

Graph in Millions



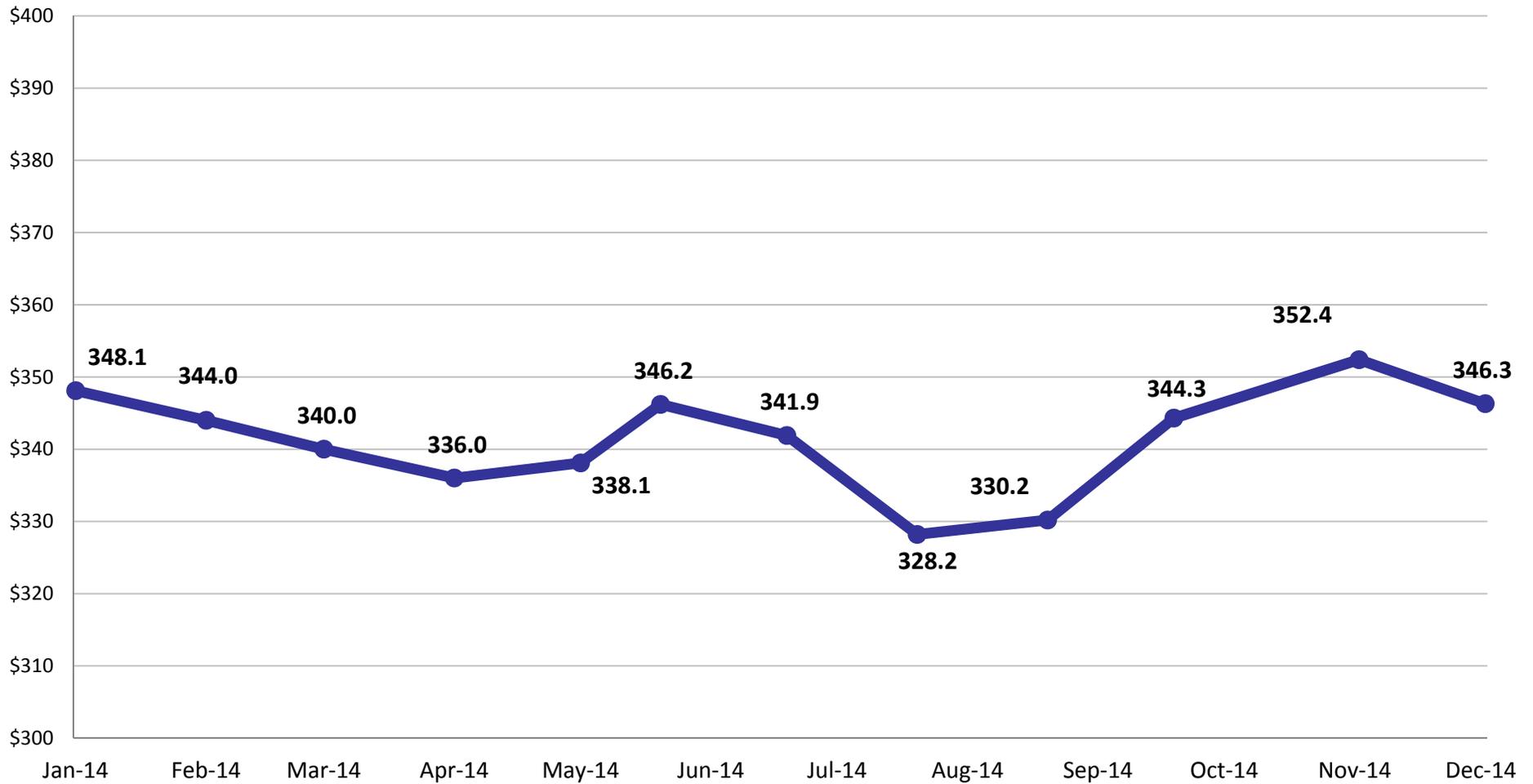
# TRS-ActiveCare Budget to YTD Actual

Graph in Thousands



# 403(b) Administrative Program Net Position

Graph in Thousands



**Tab 15 C**

Teacher Retirement System of Texas

# **GASB 67/68 Update**

Don Green, Chief Financial Officer

February 2015

# Drive to Goal

- Sustain a financially sound pension trust fund.
  - To manage an actuarially sound retirement system that maintains an amortization period of less than 31 years.
  - Develop and maintain a sound, professional and systematic risk management and capital allocation system.

# What is GASB 67/68?

- The Governmental Accounting Standards Board or GASB is an independent organization that establishes standards of accounting and financial reporting for U.S. state and local governments.
- The GASB has issued new reporting guidelines for the accounting of pension liabilities. The new rules affect governmental entities, including TRS and its covered school districts and colleges/universities.
- Statement No. 67 *Financial Reporting for Pensions* was issued by the GASB in June 2012 and applies to TRS' Comprehensive Annual Financial Report or CAFR. It changed the way the pension liability is calculated and reported. The actuary, GRS, had to make some changes to their process as a result of new standards.
- Since GASB establishes Generally Accepted Accounting Principles or GAAP, TRS must comply with the guidelines in order to get an unqualified or “clean” opinion on its financial statements. This fits into the goal to “sustain a financially sound pension trust fund”.

# What is GASB 67/68?

- Statement No. 68 *Accounting and Financial Reporting for Pensions* was issued by the GASB in June 2012 and applies to employers such as schools, higher education and the state.
- Starting in fiscal year 2015 GASB 68 requires the unfunded net pension liability be allocated and reported for the first time on many governmental entity balance sheets. For cost-sharing plans it must be allocated proportionately and is based on who makes contributions to the pension plan.
- Prior to GASB 67/68, the total unfunded net pension liability was not recorded on any school district, junior college or higher education entity financial statements. A small portion was previously reported as the Net Pension Obligation in the statewide Comprehensive Annual Financial Report.
- In accordance with GASB requirements and in cooperation with the State Comptroller and State Auditors Office, TRS determined that using one year of historical contributions is an appropriate allocation approach.

# What is the Impact on Employers?

- Reporting the Net Pension Liability is a book entry only. Nothing else will change including TRS contributions, funding, or budgeting as a direct result of GASB 67 and 68.
- Although this book entry may take the equity balance negative for some schools, it should not have an adverse effect on participating employer bond ratings. All the bond rating services have been aware of the pension liability and factored them into their ratings using their own methodology in the past.
- Moody's Investor Services (a bond rating agency) has stated that GASB 67 and 68 will not change its methodology used for U.S., state, and local governmental pension data in its rating process.
- TEA's State Accountability ratings include an attribute for financial standing. TEA staff is aware of the impact on their Financial Integrity Rating System of Texas (FIRST) ratings and is adjusting rules to avoid any unintended consequences.

# What is the Impact on Employers?

- Since the State of Texas pays the majority of the TRS contribution, the State is allocated the vast majority (75% to 80 %) of the net pension liability under the new accounting rules. The remaining 20% to 25% of the net liability will be allocated to the public school employers.
- Participating employers only pay contributions in certain situations (*for example: New Member, Statutory Minimum, Federal Grants, Non-OASDI - the 1.5% for the non-social security schools, etc.*). Collectively, these categories account for the 20 to 25% mentioned above. Each participating employer's proportionate share is based only on these contributions.

# Where Are We Now?

- TRS successfully implemented GASB 67 in the FY 2014 CAFR.
- TRS Financial Reporting staff is working with the following oversight agencies to provide information on GASB 68 for their constituents' implementation efforts. The assistance includes guidance on pension background, how to use the allocation schedule and the related disclosures.
  - Texas Education Agency for public education
  - Higher Education Coordinating Board for junior colleges
  - Comptroller of Public Accounts for higher education
  - State Auditor's Office for the allocation schedule audit on-behalf of all employers

# GASB 68 Communication

- In January TRS sent a letter with GASB FAQ's to State Legislators involved in pension matters
- Developing a GASB overview letter to send to all Superintendents, CFO's and Reporting Officials
- Past and Future Speaking Engagements with Employer Organizations by Financial Reporting
  - TASBO- Texas Association of School Business Officials including their annual conference to be held in Houston
  - TACCBO- Texas Association of Community College Business Officers
  - TASSCUBO- Texas Association of State Senior College and University Business Officers
  - HECB- Higher Education Coordinating Board
- Financial Reporting met with TEA in January to assist them with their GASB 68 efforts for public education entities
- Ongoing meetings with the State Comptroller as needed

# GASB 68 Communication

## TRS Website

- To prepare participating employers for the change, Financial Reporting along with help from Information Technology and Benefit Accounting has prepared a draft allocation schedule using FY 2013 data and the NPO (Net Pension Obligation) from that year
- That information and other details are posted on the TRS website with a prominent link on the homepage.  
[http://www.trs.state.tx.us/employers.jsp?submenu=reporting&page\\_id=/reporting/gasb67\\_68](http://www.trs.state.tx.us/employers.jsp?submenu=reporting&page_id=/reporting/gasb67_68). The 2013-2014 information will be posted later in 2015 once it has been audited by the State Auditor's Office.

# Impact on TEAM

- Since the GASB 67/68 Statements were issued nearly three years ago, and draft versions were available prior to that, commitments related to the financial reporting needs were included in the LOB contract from the beginning.
- An unexpected and more complicated requirement arose when the auditing requirements were issued.
- AICPA issued a white paper titled “AICPA Whitepaper on Governmental Employer Participation in Cost-Sharing Multiple-Employer Plans” in February 2014 which greatly increased the level of audit scrutiny for pension data used in calculating the liability. This has resulted in some additional requirements.

**Tab 17**



Teacher Retirement System of Texas

# HR and Workforce Overview

Janet Bray, Human Resources Director  
February 2015

# HR Overview

- Beyond basic administrative processes, the HR division focuses on a variety of workforce topics
- Current initiatives are aligned with the strategic plan



# HR Initiatives in the Strategic Plan

**Goal 4: Attract, retain and develop a highly competent staff**

**Workplace Culture**

Objective 1, Strategy 1

**Work Environment**

Objective 1, Strategy 2

**Workforce Planning**

Objective 2, Strategy 1

**Talent Acquisition  
and Management**

Objective 2, Strategy 2 and 3

**Employee Development**

Objective 2, Strategy 4

**Compensation and  
Total Rewards**

Objective 2, Strategy 5

# Workplace Culture

**Promote a strong workplace culture that exemplifies our core values and mission**

Current initiatives:

- Update performance management program
- Recognize employees who exemplify core values through recognition programs
- Analyze and monitor data from employee engagement surveys for areas of improvement

# Work Environment

**Provide a physical work environment that is safe and enhances productivity**

Current initiatives:

- Provide a mother-friendly workplace
- Explore and decide on options for an alternate work arrangement program (remote officing)

# Workforce Planning

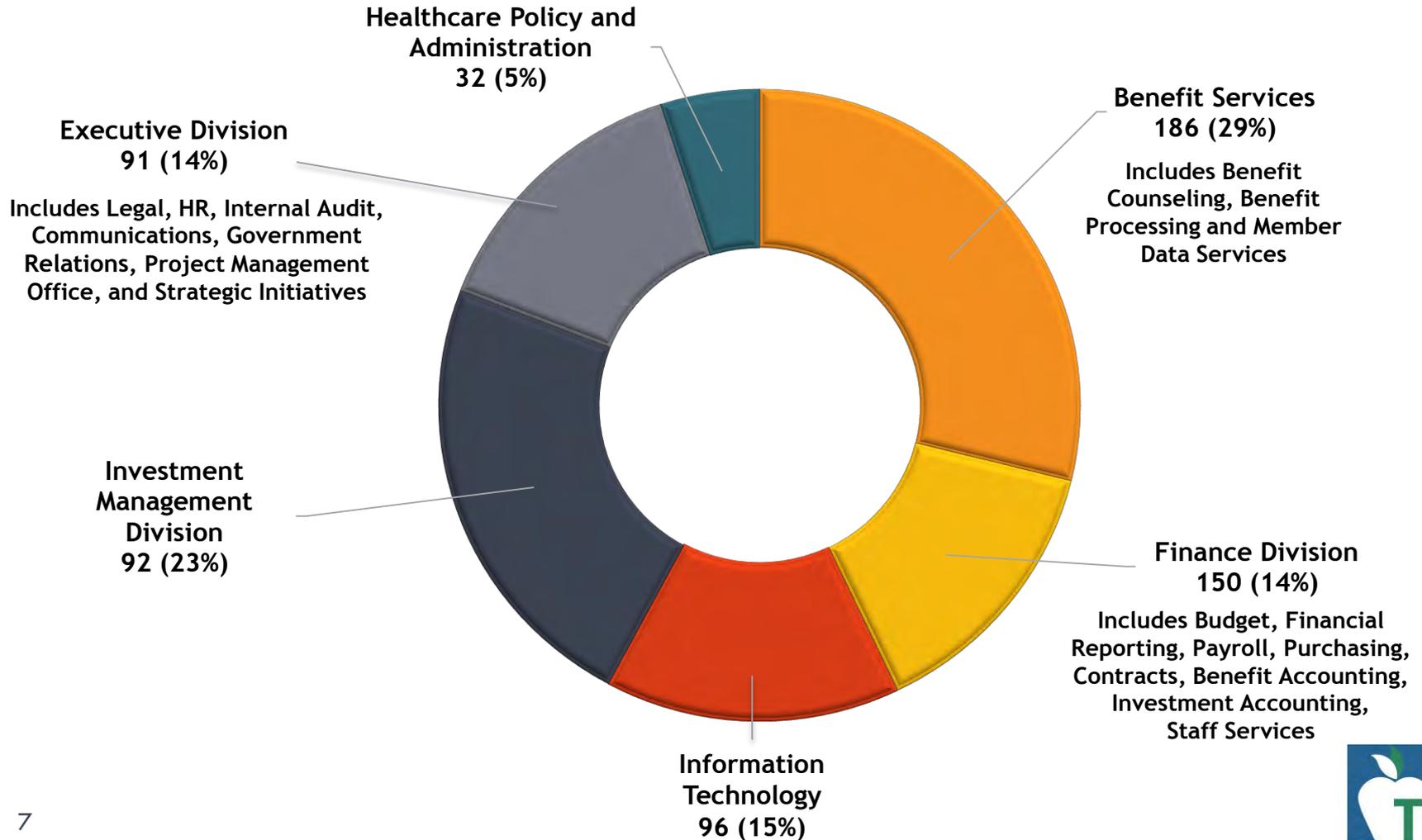
## Develop and execute TRS' workforce plan

### Current initiatives:

- Ongoing review of demographic and workforce data
- Analyze current workforce and identify future skill and staffing gaps
- Formalize succession planning process

# Workforce Planning

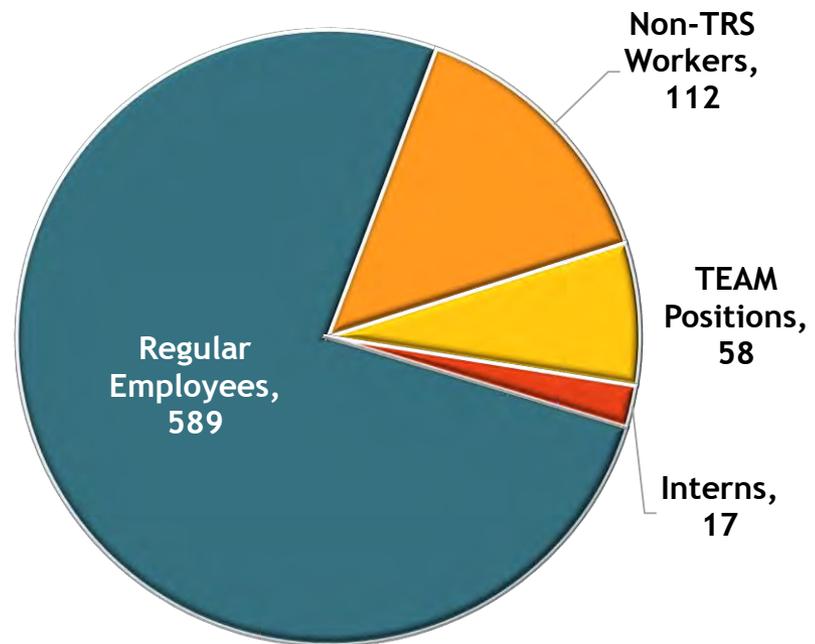
## Distribution Of Employees



# Workforce Planning

TRS currently uses a variety of workers to manage current business initiatives

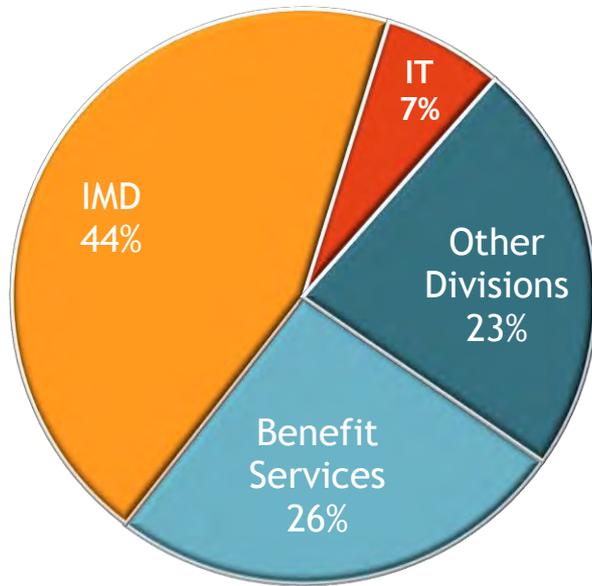
## TRS Workforce Profile



Position data as of December 2014

# Workforce Planning

## Percent of Promotions FY 2013 to Present



## Succession Management

Divisions with established career paths:

- Benefit Services
- Investment Management

Next steps:

- Evaluate additional opportunities to create career paths in other divisions
- Ensure bench strength for business continuity
- Prepare employees for new opportunities and challenges

# Talent Acquisition and Management

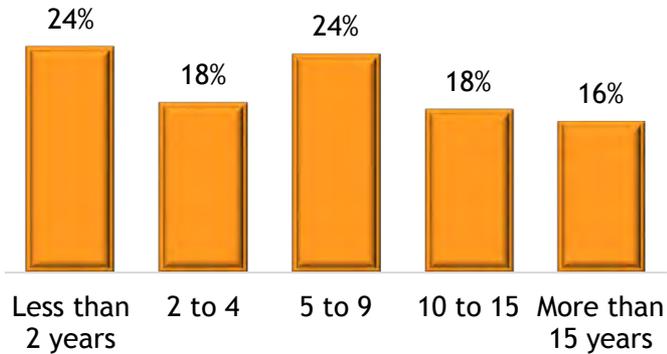
1. Expand recruitment efforts
2. Identify and implement successful strategies to retain and promote top-performing employees and managers

## Current initiatives:

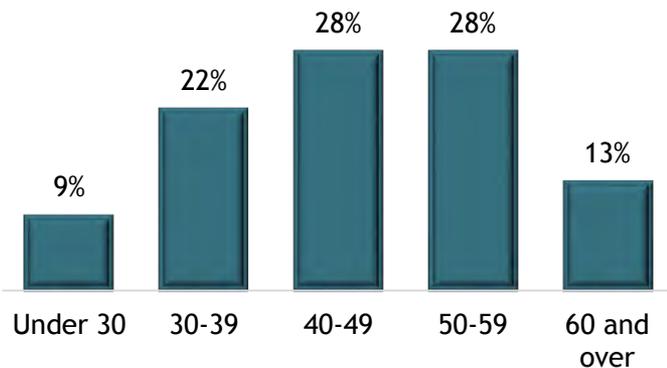
- Analyze turnover trends for areas of improvement
- Expand social media and web resources for recruiting

# Talent Acquisition and Management

## TRS Tenure



## Age



## Employee Demographics

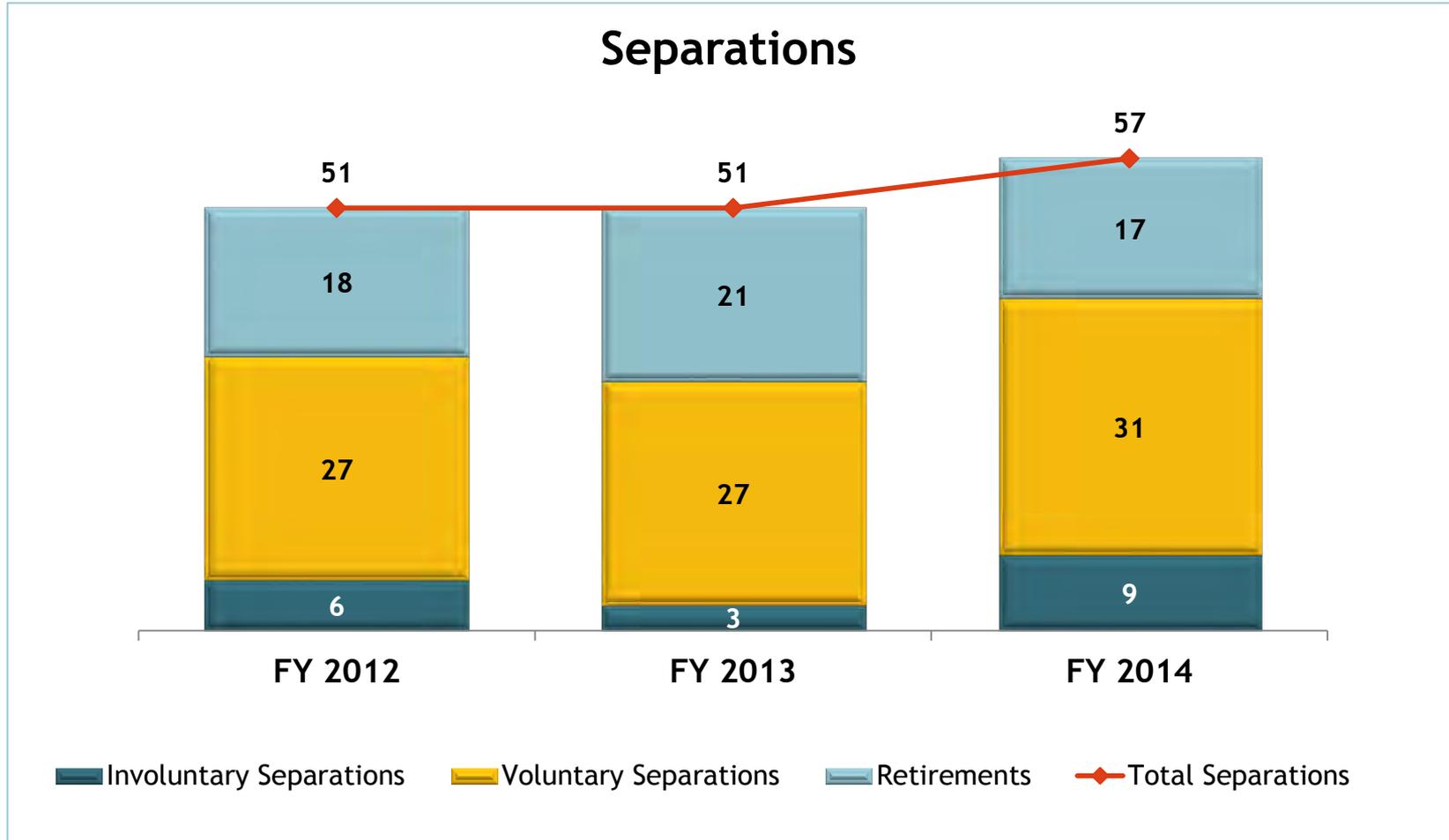
On average, TRS employees:

- are 46.5 years of age
- have 8.2 years of TRS service
- have 12.5 years of state service

During the past two fiscal years:

- 190 employees were hired
- 53 students completed internships
- 17 former interns are now full time employees (9-IMD; 8-Red River)

# Talent Acquisition and Management



# Talent Acquisition and Management

<b>Divisional Turnover Rates</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>
Finance	12.8%	12.1%	14.1%
Executive	14.0%	9.4%	13.2%
Healthcare Policy and Administration	12.3%	16.3%	9.4%
Investment Management	12.9%	7.1%	8.0%
Benefit Services	8.0%	10.5%	7.0%
Information Technology	3.4%	4.0%	2.1%
<b>TRS Total</b>	<b>9.6%</b>	<b>9.2%</b>	<b>9.6%</b>

# Talent Acquisition and Management

## Retirement Eligibility Projections Percent of TRS Employees Eligible to Retire as of:

Department	January 2014		January 2015		January 2018		January 2020	
	Eligible Employees	Percent Eligible						
Executive Division	22	28.6	23	25.3	30	33.0	32	35.2
Investment Management	5	3.9	6	4.0	8	5.3	8	7.3
Benefit Services	21	12.0	20	10.2	36	19.4	43	23.1
Finance	17	21.3	20	20.7	31	33.7	39	42.4
Information Technology	24	26.9	24	25.0	32	33.3	41	42.7
Healthcare Policy and Administration	2	7.4	2	6.3	6	18.8	7	21.9
<b>Total</b>	<b>91</b>	<b>16.9</b>	<b>95</b>	<b>14.7</b>	<b>143</b>	<b>22.1</b>	<b>173</b>	<b>26.7</b>
<b>Executive Council Members</b>	<b>6</b>	<b>42.9</b>	<b>4</b>	<b>30.8</b>	<b>6</b>	<b>46.2</b>	<b>6</b>	<b>46.2</b>

Estimates are based on the rule of 80 using active employees as of 12/31/2014 and include return-to-work retirees. Areas with more than 40% of employees eligible for retirement are highlighted.

# Employee Development

## Provide employee development opportunities

### Current initiatives:

- Continue to evaluate educational and professional development opportunities
- Implement mentorship program
- Enhance leadership development program

# Compensation and Total Rewards

## Review, update and enhance compensation and total rewards package

### Current initiatives:

- Formalize agency-wide compensation strategy
- Implement new merit planning process
- Analyze total rewards package

# Compensation and Total Rewards

## TRS Compensation Strategy



TRS will maintain a competitive compensation program to fulfill its mission and strategic goal to attract, retain and develop highly competent staff

# Compensation and Total Rewards

<b>Current Performance and Merit Process</b>		
	<b>FY 2014</b>	<b>FY 2015</b>
<b>Evaluation process</b>	Manager completes evaluations based upon employee anniversary date	
<b>Merit approval</b>	Managers evaluate employees and make individual recommendations throughout the year	Managers evaluate employees, submit recommendations for the entire division at one time, and merits are approved by Executive Director
<b>Budget approval</b>	Managers are allotted a set budget for merit and promotions (typically 1.5% of payroll)	In conjunction with the Executive Director, merit budget is approved based on agency-wide review
<b>Timing</b>	Merit increases and evaluations occur throughout the fiscal year	Evaluations occur throughout the fiscal year; merit increases (if approved) are effective February 1, 2015

# Compensation and Total Rewards

## Performance and Merit Process: FY 2016 and Beyond

<b>Evaluation process</b>	TRS moves to a consistent, common end date for employee evaluations	<pre>                     graph TD                         A[Performance measures set] --&gt; B[Appraisal period begins]                         B --&gt; C[Evaluations completed]                         C --&gt; D[Division merit proposal submitted]                         D --&gt; E[HR and Budget initial review]                         E --&gt; F[Executive Director approval]                         F --&gt; A                 </pre>
<b>Merit approval</b>	Managers evaluate employees, submit recommendations for the entire division, and merits are approved by Executive Director	
<b>Budget approval</b>	In conjunction with the Executive Director, merit budget is approved based on agency-wide review	
<b>Timing</b>	Evaluation period is consistent throughout the agency (June-July) merit increases (if approved) are effective August 1	

# HR Division



**Tab 18**

# Teacher Retirement System of Texas

## Communications Division

Howard Goldman

Director of Communications

February 12, 2015

# Communications Division Responsibilities

- Publications (internal and external)
- Media Relations
- Market Research
- Graphic Design
- Social Media
- Photography and Videography Service
- Website Design & Content Management
- Coordination of Board Elections
- Coordination of External Survey Responses

# Media Relations

- Develop and administer TRS External Communications Policies
- Respond to media requests (250+ responses in 2014)
- Assist trustees/staff in responding to media interview requests
- Provide annual media training for new trustees
- Work with Legal Services to respond to open records requests from the news media
- Issue news releases, advisories, daily news clippings, etc.
- Prepare fact sheets for media, website and social media distribution



# TRS Communications Plan

- Outlined in Strategic Plan (Goal 2, Objective 3, Strategy 1)
- Surveyed peer agencies to review their approaches – January
- Solicit suggestions from trustees and the Executive Council – February
- Review data/insights from 2014 Member Satisfaction Survey – February/March
- Solicit ideas from associations and reporting entities – March
- Evaluate potential new initiatives - March
- Prepare draft communications plan – April/May
- Finalize communication plan – June

# Social Media



FACEBOOK

SOCIAL SHARING  
SITE THAT HAS  
**1+ BILLION**  
USERS WORLDWIDE

LARGEST  
OPPORTUNITIES



COMMUNICATING WITH  
CONSUMERS

USERS  
SHARE   
**1 MILLION LINKS**  
EVERY 20 MINUTES



**1+**  
BILLION  
ACTIVE USERS



TWITTER

MICRO BLOGGING  
SOCIAL SITE  
THAT LIMITS EACH  
POST TO **140**  
CHARACTERS

LARGEST  
PENETRATION



BUT SPREADING

**5,700 TWEETS**  
HAPPEN  
EVERY SECOND 



**241**  
MILLION  
ACTIVE USERS



LINKEDIN

**BUSINESS  
ORIENTED**  
SOCIAL NETWORKING SITE

BRANDS THAT ARE  
PARTICIPATING  
ARE CORPORATE  
BRANDS 

GIVING POTENTIAL AND  
CURRENT ASSOCIATES  
A PLACE TO NETWORK  
& **CONNECT**



POWERS  
**50%** OF THE   
WORLD'S HIRES



**300**  
MILLION  
USERS

# Social Media Program

- Outlined in Strategic Plan (Goal 2, Objective 3, Strategy 3)
- Currently includes Facebook, Twitter, LinkedIn, and YouTube
- Offers timely two-way member engagement
- Helps resolve issues by directing members to proper resources
- Varied TRS uses of Facebook (#throwbackthursday, Friday Fun Fact, greater use of photos, promoting TRS website info)
- Tweet board dates and during board meeting webcasts

# Social Media Program

- Comprehensive new social media strategy now being finalized
  - Feature employees and members (rather than stock photos)
  - Incorporate TRS core values
  - Use identified analytics for targeted outreach
  - Social media contest to select student artwork for 2015 CAFR
  - Enhanced utilization of LinkedIn by HR for recruitment

# Social Media Program Growth

Platform	Jan. 2012	Jan. 2013	Jan. 2014	Jan. 2015	Jan. 2016 Goal
Facebook Likes 	603	4,145	6,079	7,045	9,250 (31% increase)
Twitter Followers 	50	636	1,048	1,572	2,250 (43% increase)
YouTube Views 	376	17,440	28,802	46,591	60,000 (28% increase)
LinkedIn Followers 	440	1,191	1,294	1,892	2,500 (31% increase)



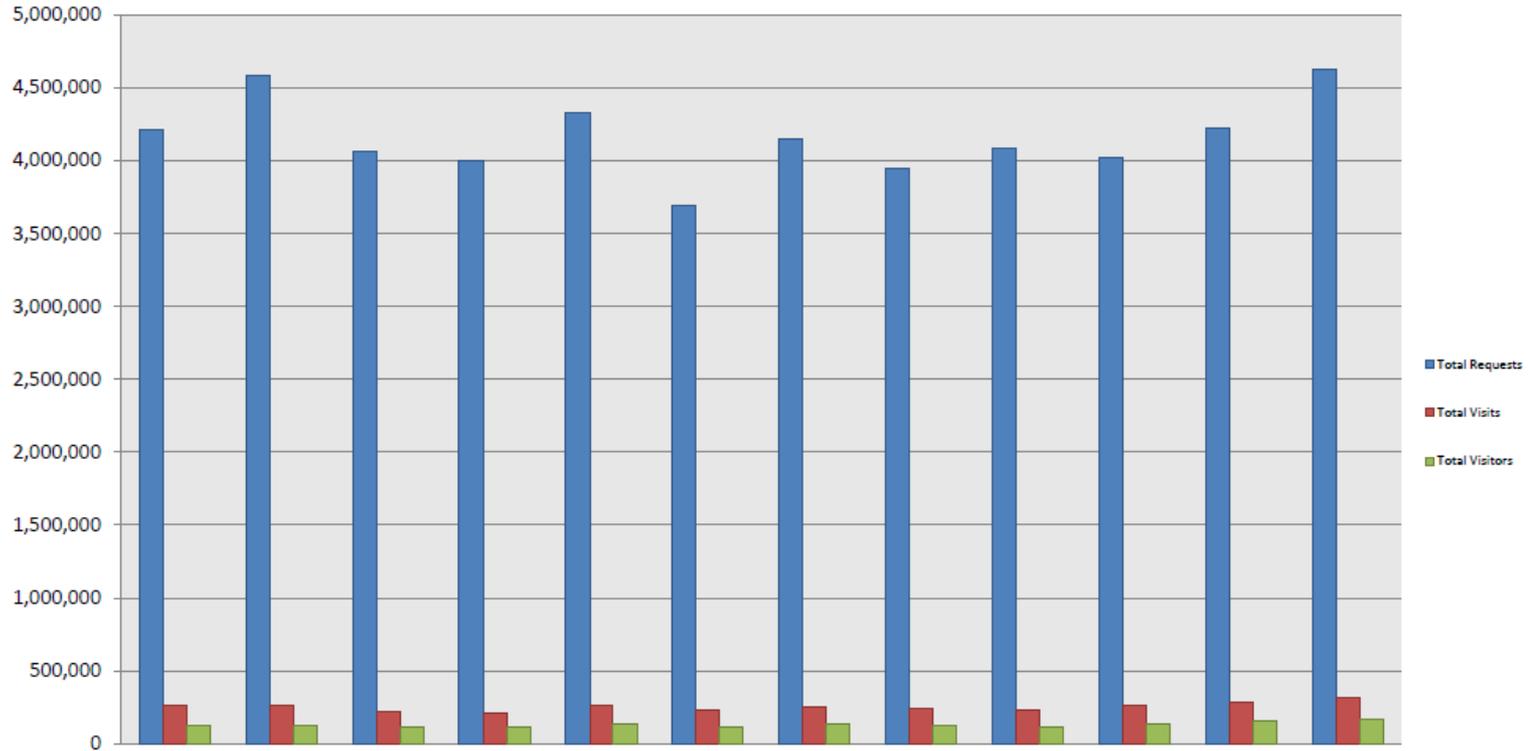
# “TRS Conversation Cloud”

- 1-19-15 thru 1-26-15



# TRS Website Review

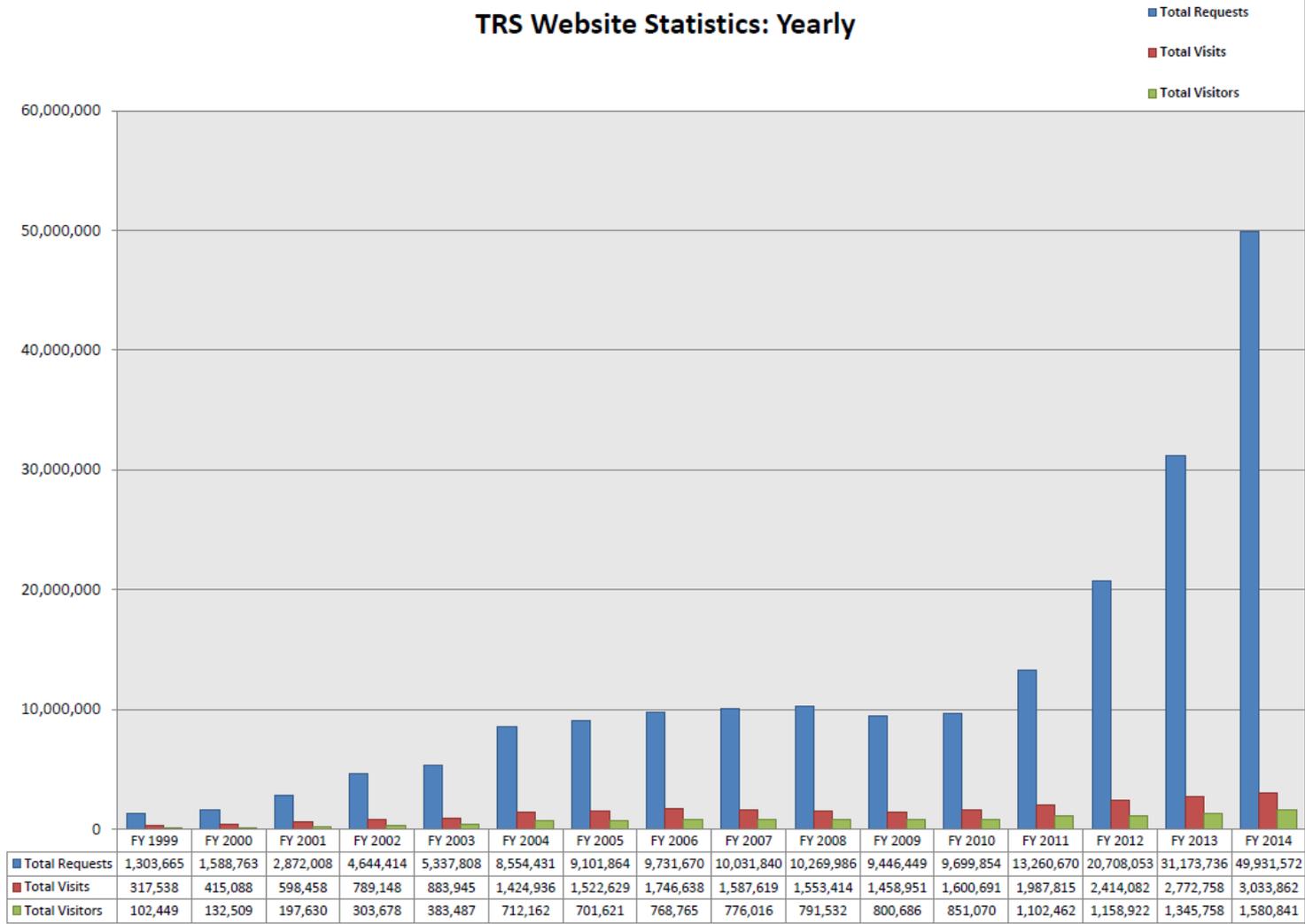
**TRS Website Statistics: Fiscal Year 2014**



	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14
Total Requests	4,216,325	4,586,086	4,060,783	4,002,241	4,326,287	3,691,071	4,150,913	3,941,481	4,085,820	4,019,651	4,226,930	4,623,984
Total Visits	257,708	265,139	224,224	208,740	259,542	226,914	255,638	238,023	234,762	261,594	284,403	317,175
Total Visitors	127,845	130,677	117,757	110,862	139,420	118,424	135,268	121,537	119,197	137,351	153,640	168,863

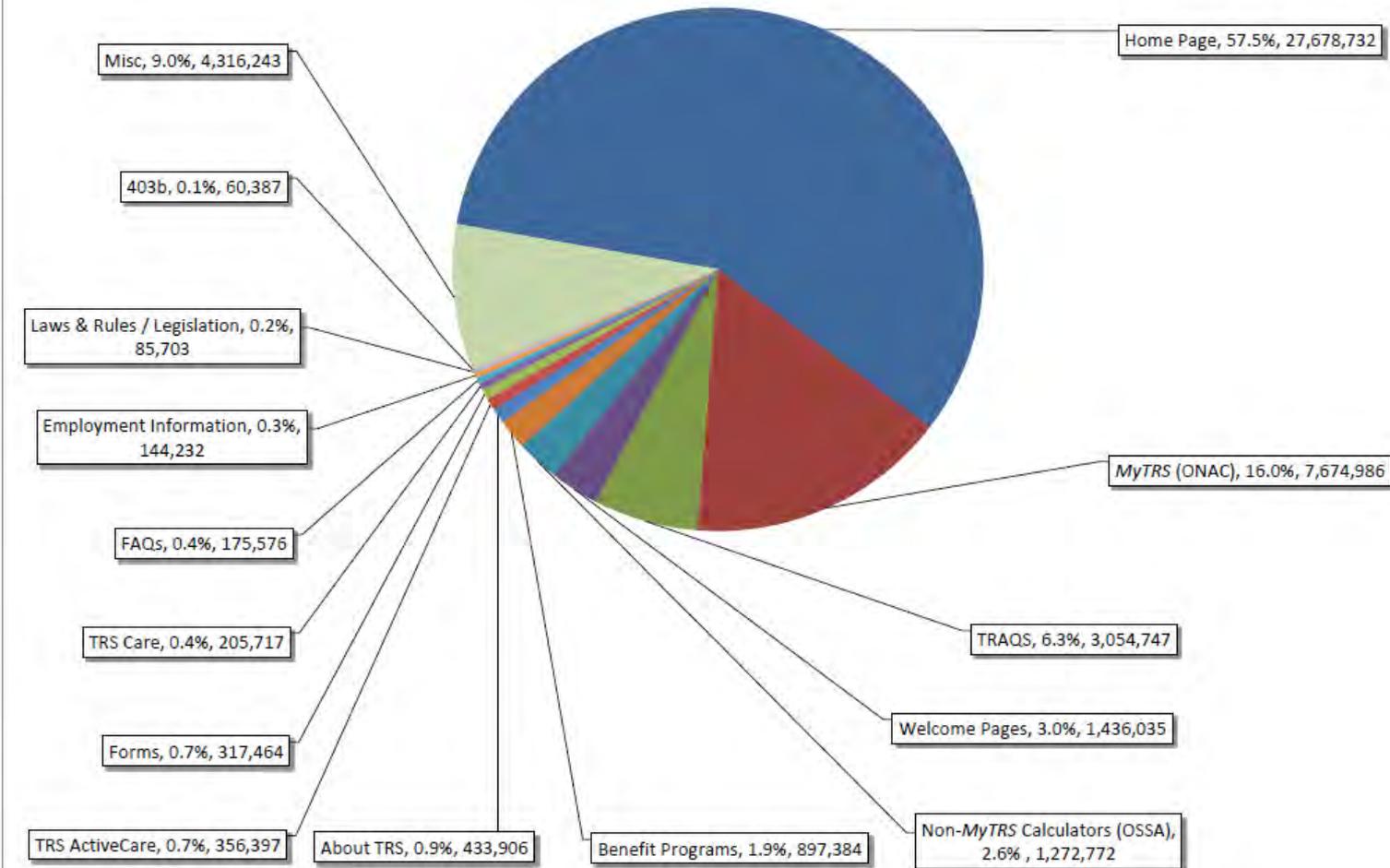
# TRS Website Review

## TRS Website Statistics: Yearly



# TRS Website Review

**Top Web Page Views  
September 2013 - August 2014**



# TRS Website Redesign Project

- Outlined in Strategic Plan (Goal 1, Objective 3, Strategy 1)
- Last website redesign project in 2006
- TEAM Committee guiding project development
- This project includes a website content management system, which will be the first time that one has been used by TRS.
- Request for offers issued in November 2014
- Proposals reviewed in December-January 2015
- Projected contract award by March 2015
- Project completion slated for Summer 2016

# TRS Video Projects

- Outlined in Strategic Plan (Goal 1, Objective 3, Strategy 1)
- Most recent video productions
  - Emerging Managers Conference video
  - Value Brochure video
- Upcoming video projects
  - Preparing for Age 65+/Medicare video
  - Financial Education videos
  - 2015 Legislative Summary video
  - Other videos identified as needed during development of the Communications Plan



# Questions?



**Tab 20**

# Agenda – Friday, February 13<sup>th</sup>

Item	Time
Public Comment and Day's Agenda	8:00 – 8:15 a.m.
Analytics in Auditing	8:15 – 8:45 a.m.
Audit Discussion (Closed Session)	8:45 – 9:15 a.m.
Information Technology Divisional Overview	9:15 – 9:45 a.m.
TEAM Update	9:45 – 10:45 a.m.
Bridgepoint's Role in TEAM	10:45 – Adjourn

**Tab 23**

Teacher Retirement System of Texas

# Information Technology Overview

Chris Cutler, Chief Information Officer  
February 13, 2015

## TRS Strategic Plan – IT Alignment

- Identify and implement technology resources across the investment division to enhance productivity and decision making abilities
- Implement modern pension and benefit information systems that allow TRS staff to serve our members and deliver accurate benefits effectively and timely by August 2017
- Attract, retain and develop a highly competent staff

# Information Technology

## TRS Mission

*“Improving the retirement security of Texas educators by prudently investing and managing trust assets and delivering benefits that make a positive difference in members’ lives.”*

## Information Technology

“Building TRUST through commitment to ethical, quality information technology service and support for our customers, ensuring retirement security for Texas educators.”

# Quick Facts

## Resources

\$17M Budget  
97 Full Time Employees  
2,400 sq ft Data Center  
358+ Network Servers  
1.8 Pb Storage  
1,200 PC Workstations  
1,048 Telephones  
92 Toll-Free lines  
92 Local phone lines  
160,000 Mainframe transactions  
per day  
160,000 Database transactions  
per month



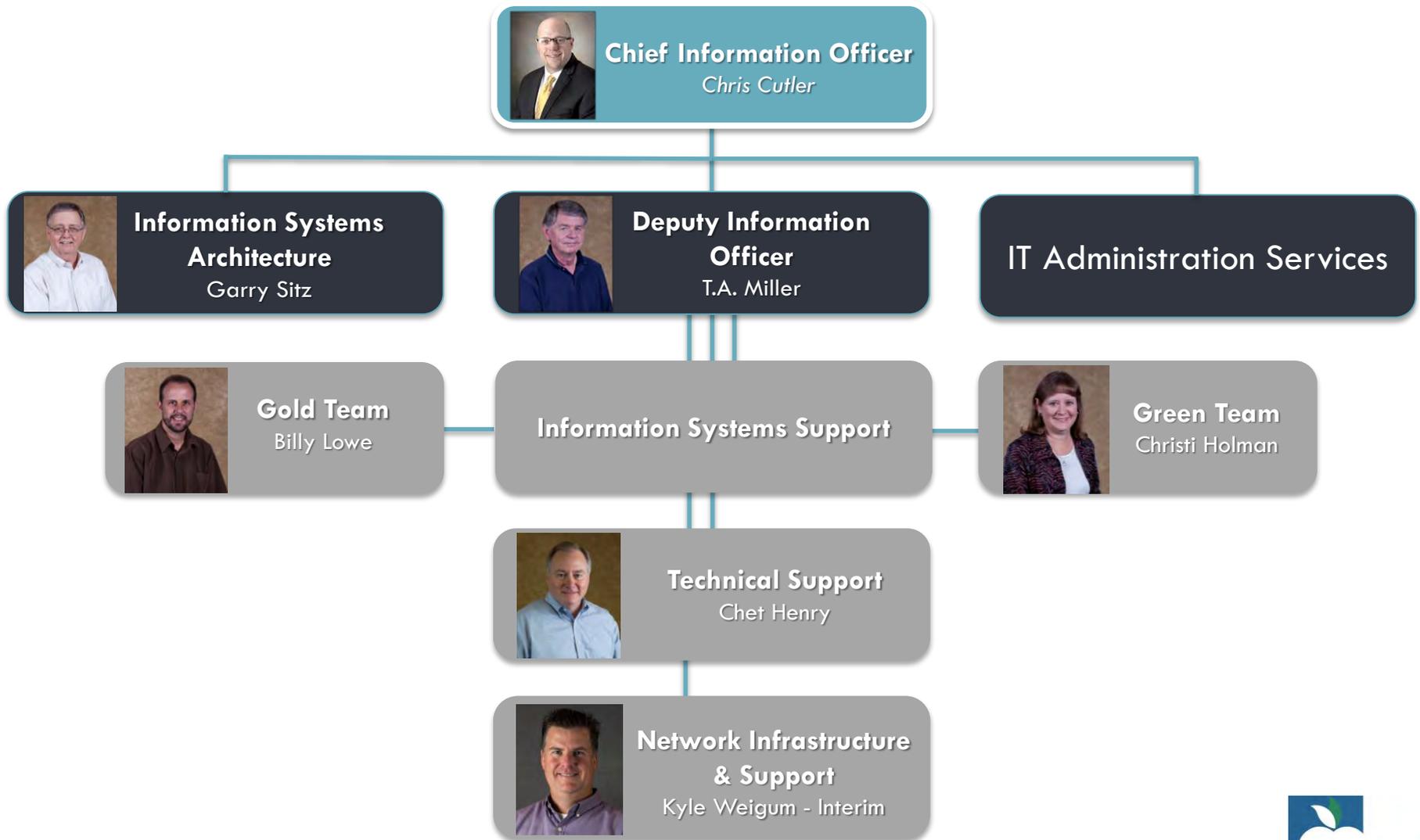
## Key Drivers

TEAM Program  
Core Business Applications and Support  
Business & Technology Changes  
Legislation – State & Federal  
Internal Service Request

## Outputs

1.3+ Million Members  
\$130B Net Assets  
593 TRS Staff  
98 TEAM Contractors  
70 Completed Project in FY14  
101 active IT Projects  
472 Contracts Managed  
22+ Million documents imaged  
62 Internally written applications  
54,677 Viruses blocked monthly  
750,000 emails per month  
24.4 million emails stored

# The IT Organization

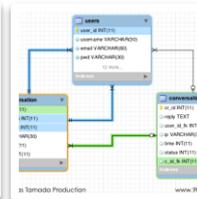


# Core Functions



IT Governance & Planning

Information System Architecture



Information Security

Information Systems Delivery & Support



IT Operations

# Critical Path to Success

- *Recruit, train and retain great IT people*
- *Build and maintain a robust IT infrastructure*
- *Develop and maintain a strong, creative applications development team*
- *Manage projects and application portfolios effectively*  
*- TEAM!*
- *Ensure partnerships within the IT department and with the business*
- *Develop a collaborative relationship with external partners*

# Technology Trends

- Technology transformation – Mainframe to Distributed computing
- Enterprise Service Bus
- Web Based Services
- Cloud Computing
- Personal and Mobile Devices
- Risk Based Security
- Data Management and Analytics

# Key Project Initiatives

## ■ TEAM

- Line of Business
- Financial System Replacement
- Data Management
- Business Rules
- Reporting Entity Outreach
- Organizational Change Management
- Decommissioning Legacy Systems
- Business Procedures and Training
- Maintenance and Enhancement of LOB
- Website Redesign

# Key Project Initiatives

- Investment Support
- Data Center Colocation
- Texas.Gov
- Mobile Device Management
- Data Center Enhancements
- Security
- Cloud Computing
- Data Management

# Issues and Challenges

- TEAM Program Schedule and Resource Alignment
- Staffing & Retirements
- Information Security
- IT Administrative Efficiencies
- Competing Priorities

# Looking Forward

## **Goals for 2015**

- *TEAM Program*
  - *Organizational Alignment*
  - *Staffing and Training*
  - *Technology Roadmaps*
- *Investment Management Division*
- *Colocation Implementation*
- *Security*
- *IT Administration*

# Questions?

**Tab 24**

# Teacher Retirement System of Texas

## TEAM Program Overview

Adam Fambrough

David Cook

Jamie Pierce

Jay Masci (Provaliant)

February 13, 2015

# TEAM Program

## Agenda

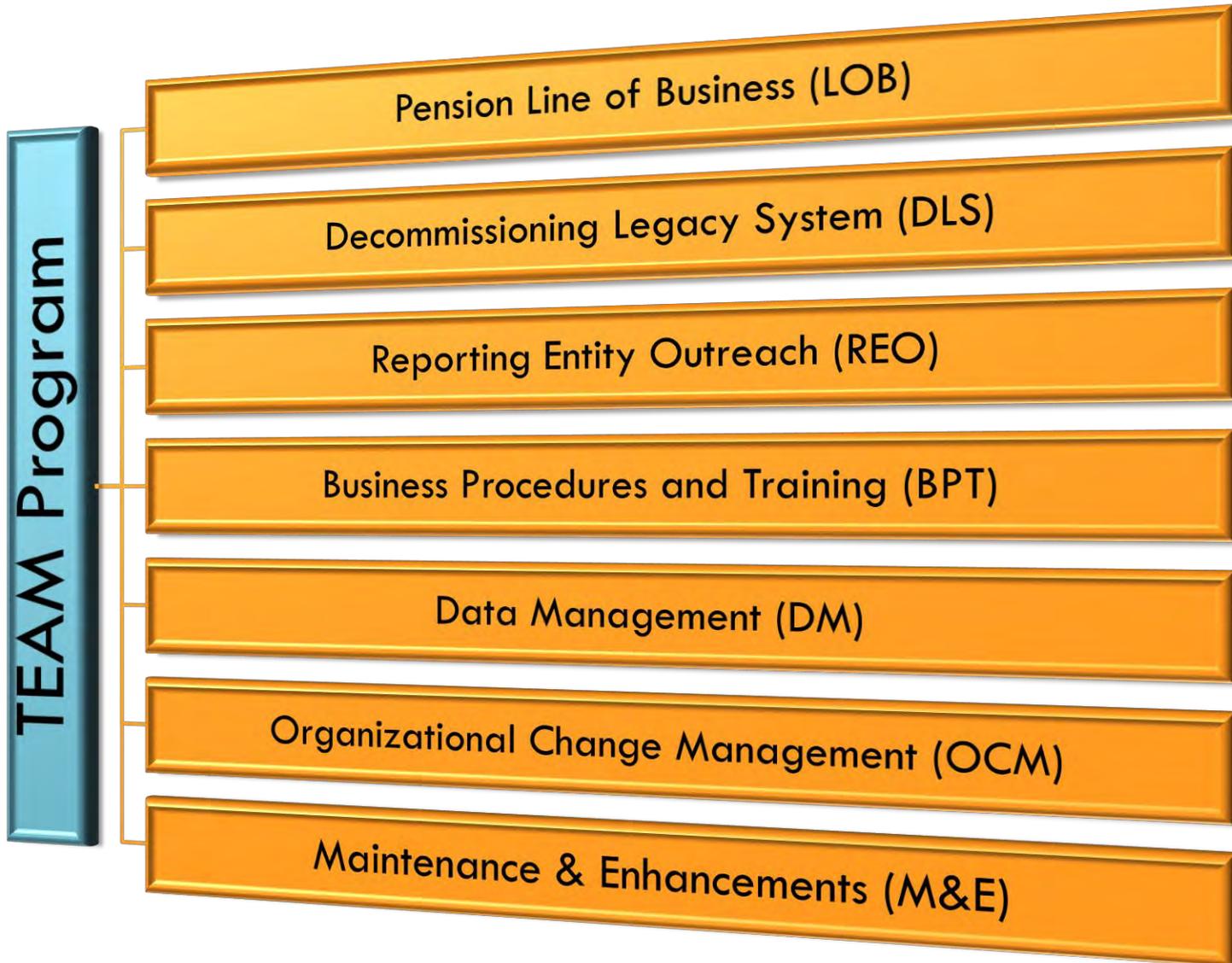
- TEAM Program Overview
- TEAM Program Status
- TEAM Program Project Interdependencies
- TEAM Project Milestones
- TEAM Project Accomplishments
- Financial System Replacement (FSR) Update
- Line of Business (LOB) Update
- TEAM Program Budget Summary

# TEAM Program

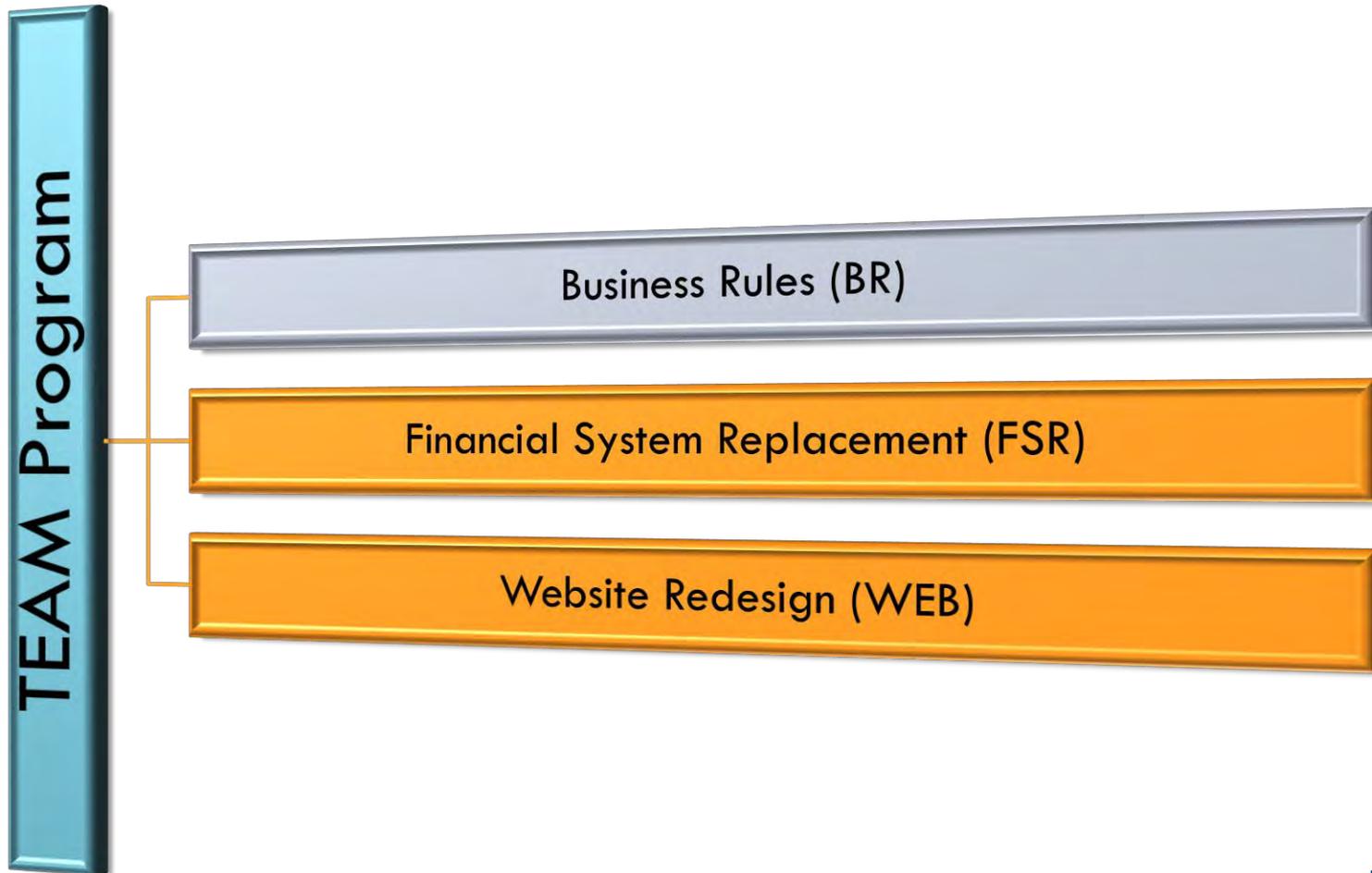
## TEAM Program Overview and Lessons Learned

Jay Masci

# TEAM Program



# TEAM Program



## Lessons Learned From Site Visits

1. What
2. When
3. Where
4. Who

## Lessons Learned From Site Visits

1. To gain knowledge from peers about public pension system replacement projects
2. When
3. Where
4. Who

## Lessons Learned From Site Visits

1. To gain knowledge from peers about public pension system replacement projects
2. In the fall of 2010
3. Where
4. Who

## Lessons Learned From Site Visits

1. To gain knowledge from peers about public pension system replacement projects
2. In the fall of 2010
3. Visited eleven (11) public pension organizations across the continental USA
4. Who

## Lessons Learned From Site Visits

1. To gain knowledge from peers about public pension system replacement projects
2. In the fall of 2010
3. Visited eleven (11) public pension organizations across the continental USA
4. Current members of the Executive Steering Committee (ESC) and Core Management Team (CMT)

# TEAM Program

## Site Visits Lessons Learned (Execution)

- 1** Make a conscious decision to spend a lot of time eliminating the exceptions instead of running on an exception basis
- 2** Establish a Steering Committee to resolve escalated issues and make major project decisions
- 3** Things will happen out of your control; be able to be flexible and adjust
- 4** Need to ensure that the vendor uses a business process approach rather than a screen by screen requirements gathering process
- 5** Prototyping should be required as part of the methodology

# TEAM Program

## Site Visits Lessons Learned (Execution)

6

Include internal auditing within the development process

7

There will be resistance to change so get the staff involved in requirements and testing early

8

Co-locate the core project team to a central area.

9

Set-up a dedicated conference room for the project team to utilize.

10

Early implementation and successes from a staged approach.

## Lessons Learned To Date From TEAM

- Need to improve the decision making/issue resolution turnaround time
- Need to empower the Core Program Team
- Need to improve the change request estimation process
- Need to limit the number of TRS attendees in the DLR (Detailed Level Requirements) sessions

# TEAM Program

TEAM STATUS

TEAM PROJECT INTERDEPENDENCIES

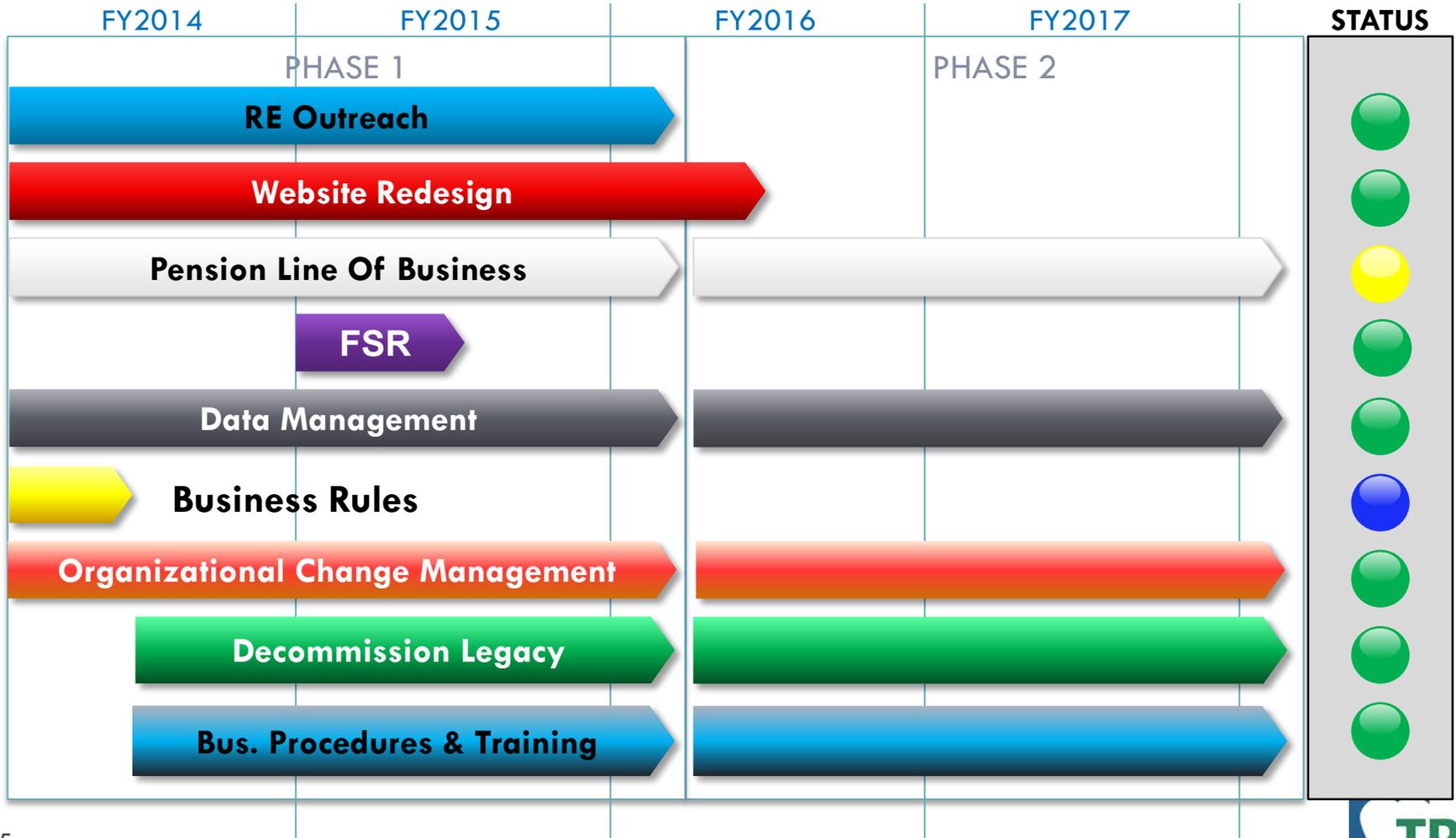
TEAM MILESTONES

TEAM ACCOMPLISHMENTS

JAY MASCI

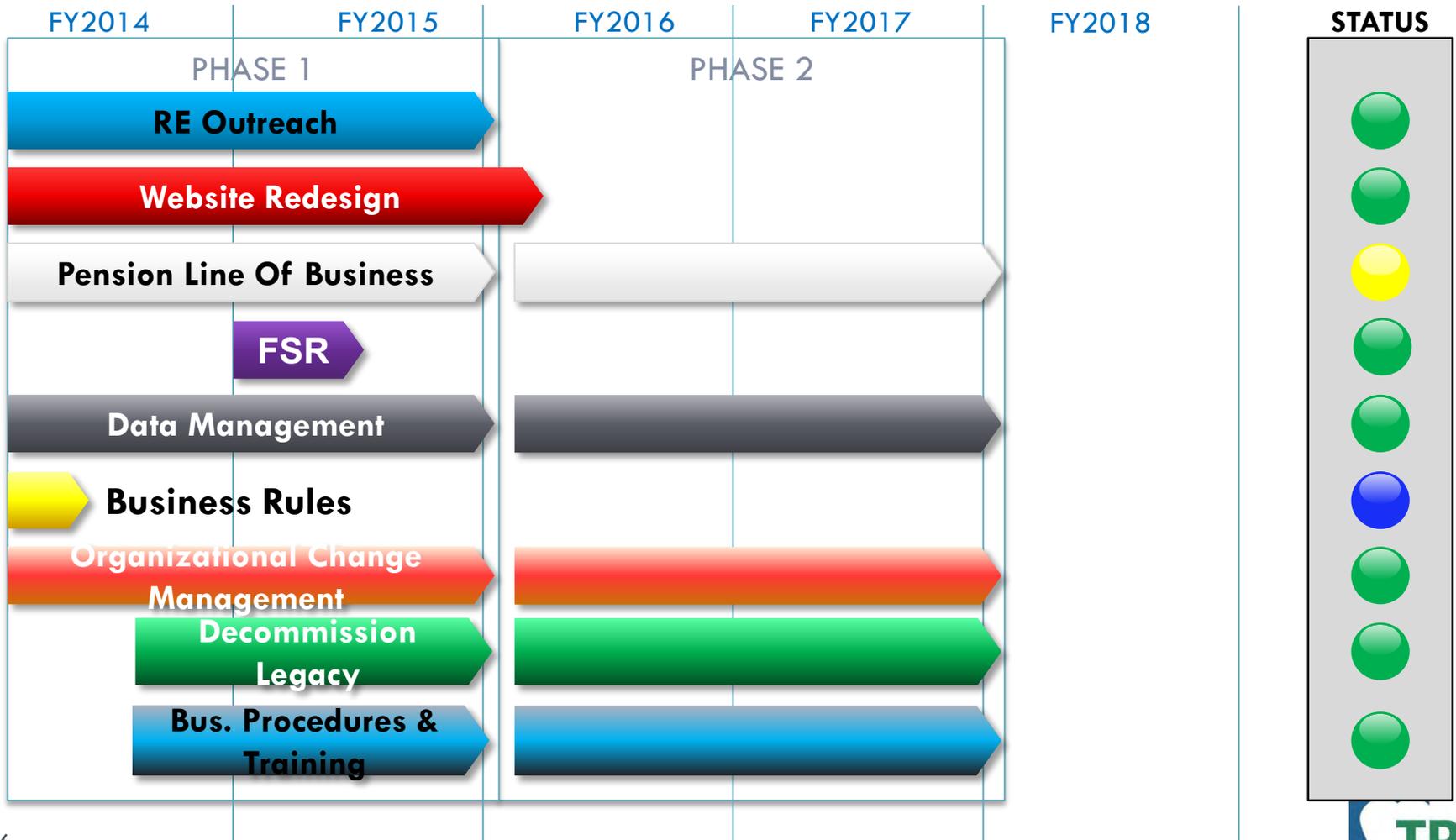
# TEAM Program

## TEAM Status as of November 5, 2014



# TEAM Program

## TEAM Status as of November 5, 2014



# TEAM Program

## TEAM Status as of January 30, 2015



## TEAM Project Interdependencies

The Project Managers will update the TEAM Project Interdependencies for the next Board meeting to match the new rebaselined schedule.

# TEAM Program

## TEAM Milestones

Planned Milestones (from November Board Meeting)	Previous Planned Date	Current Planned Date	Status
2014 Advisory Group Meetings Conducted		12/19/2014	Completed
Phase 1 - Detail Level Requirements Definition	9/22/2014	1/31/2015	Completed

Upcoming Milestones (next fiscal quarter: March - May)	Previous Planned Date	Current Planned Date	Status
<b>WILL UPDATE FOR THE NEXT BOARD MEETING TO MATCH THE NEW REBASELINED SCHEDULE</b>			

## TEAM Accomplishments

- Reporting Entity Outreach (REO)
  - Shared preliminary file format and data validations with Texas Computer Cooperative (ESC Region 20)
  
- Website Redesign (WEB)
  - In procurement process

## TEAM Accomplishments

- Organizational Change Management (OCM)
  - Conducted orientation for new members and kicked off 2015 advisory groups.
  - Finalized and posted Q&As from round two of TEAM Huddles.

## TEAM Accomplishments

- Pension Line of Business (LOB)
  - Process Improvement Phase outcomes have been evaluated with positive results
  - Resumed Detailed Level Requirements sessions
  - Accepted five requirements packages

## TEAM Accomplishments

- Pension Line of Business (LOB) cont.
  - Project Schedule has been adjusted to include the PIP impact as well as current and anticipated Change Requests
  
- Data Management (DM)
  - Business Data Conditioning Team formed
  - Migrated Demographic data to TRUST

## TEAM Accomplishments

- Financial System Replacement (FSR)
  - All financial commitments documented
  - Core Project Team participated in 7 vendor meetings/demonstrations
  - RFO draft developed and submitted to consultant for review
  - Consultant provided recommendations for next step in RFO process

## TEAM Accomplishments

- Decommissioning Legacy System (DLS)
  - Continued development and QA work on the application decommissioning
  - Continued work on migrating ‘mock’ data files to staging area for bridging

## TEAM Accomplishments

- Decommissioning Legacy System (DLS) - cont.
  - Many members of the DLS team are also participating in the Detailed Level Requirement (DLR) sessions that have resumed.
  - New project manager – Tom Fry

# TEAM Program

## Financial System Replacement (FSR) Project

Jamie Pierce

## Envision Phase Lessons Learned

- An affirmation of TRS' decision to commit only to an analysis or envision effort before making any determination on the suitability of the product for TRS' needs and the cost and workload associated with implementation.

## Envision Phase Lessons Learned

- TRS learned more information regarding its processes and interfaces to outside entities
- TRS has gained a better understanding of how to refine their requirements for the next RFO(s)
- TRS can also pursue cloud strategies with future RFOs.

## Envision Phase Lessons Learned

- As the capabilities of the HP Clarity pension Line of Business (LOB) system became clearer, the extensive requirements of the financial system are being reduced.

## Envision Phase Lessons Learned

- Any future RFOs can now reference TRS's architecture framework, which was developed as part of the LOB vendor selection and was not available when selecting CGI for the Consolidated Envision Phase

# TEAM Program

## FSR Next Steps

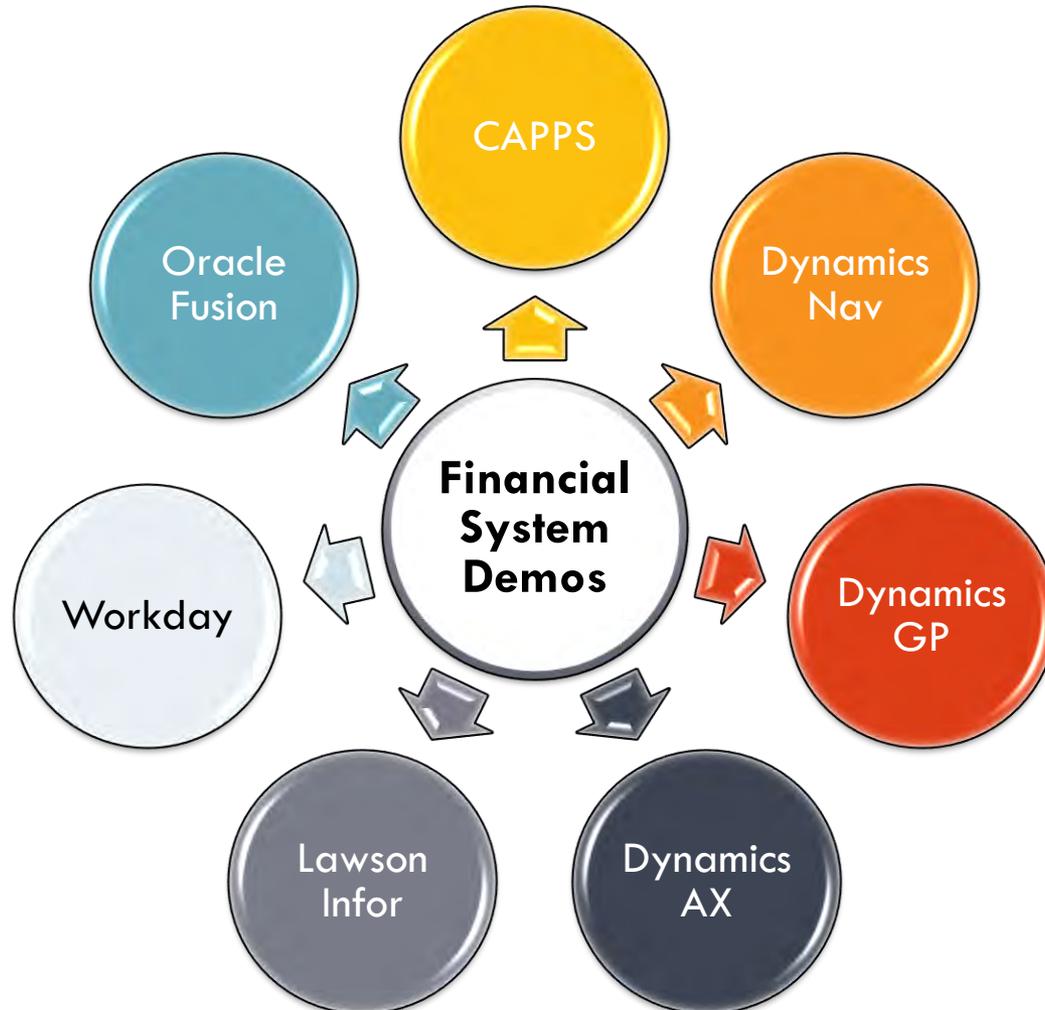


## Additional Lessons Learned

- TRS engaged Forrester for:
  - Industry research
  - High-level analysis of TRS's operations
  - RFO review
  - Procurement recommendations

# TEAM Program

## FSR ERP Demonstrations



# TEAM Program

## Line of Business (LOB) Project

Adam Fambrough

# TEAM Program

## High-level recap of what has been going on

- PIP
- GASB / Rule changes
- Continued DLR sessions

## **Evaluating and Providing Feedback on the PIP**

- Created evaluation questions based off of HP's success criteria for the PIP
- Created a template that would provide feedback down to the functional area and the specific evaluation question
- Set-up a weekly feedback process with HP

## Evaluating and Providing Feedback on the PIP

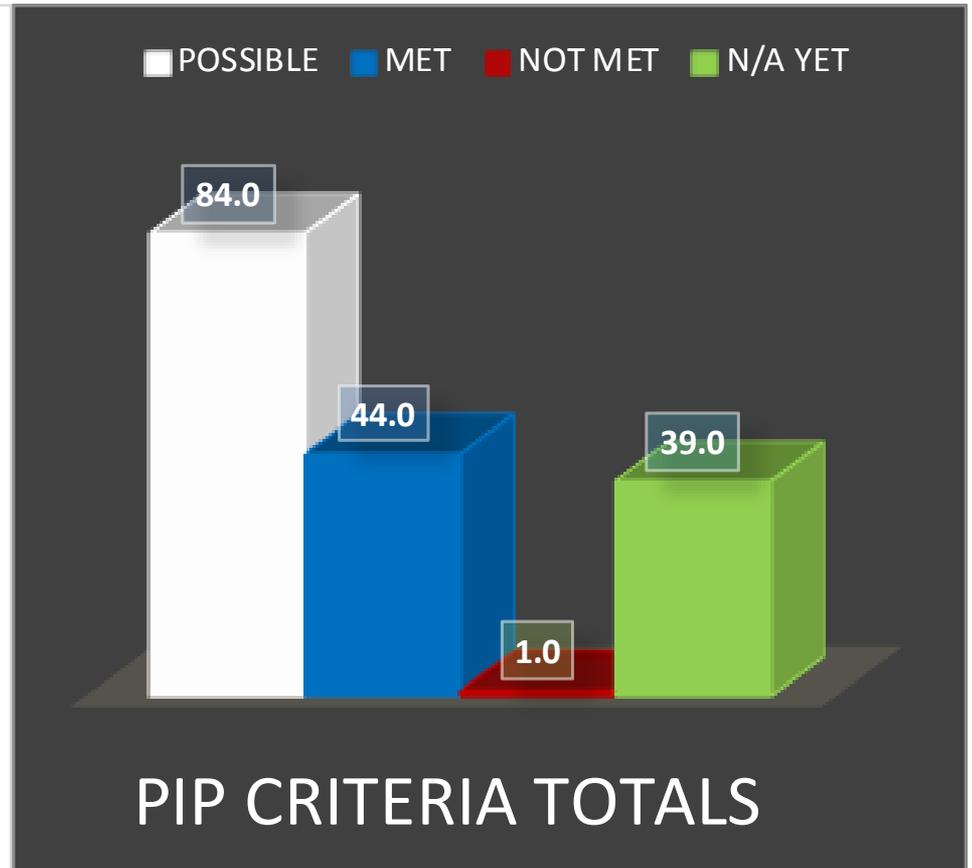
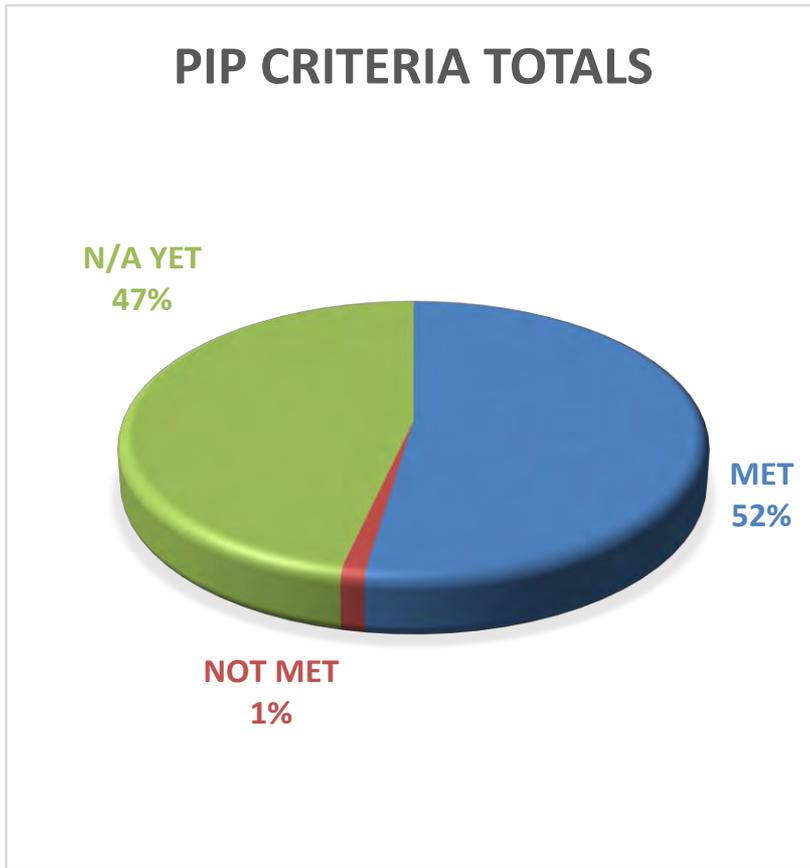
1. HP provided a graphical depiction of the business functional view of HP Clarety solution that was clear and provided a conceptual model that could be understood by TRS
2. HP had a good understanding of the current TRS process and provided potential system gaps between existing TRS business functional areas and Clarety
3. HP staff was able to articulate and demonstrate existing Clarety functionality to TRS
4. HP escalation process that is in place is being administered based on stated thresholds
5. Shared understanding exists between HP team (BA, Solution Architect, Technical Architect) of the overall solution (e.g. turnaround time for HP to provide answers on the solution or HP action items)

## Evaluating and Providing Feedback on the PIP

6. Initial business process workflow was defined as a result of the kick-off meeting
7. Agendas, DLR checklists, and artifact inventories are being used consistently
8. TRS staff have seen the artifacts prior to formal sign-off review
9. HP staff utilized their WPR (e.g. followed the checklist)
10. DLR sign-off was completed within the pre-defined number of review iterations
11. Overall the quality of the deliverables improved
12. The final specifications are self-supporting and TRS staff are able to use and understand with minimal training

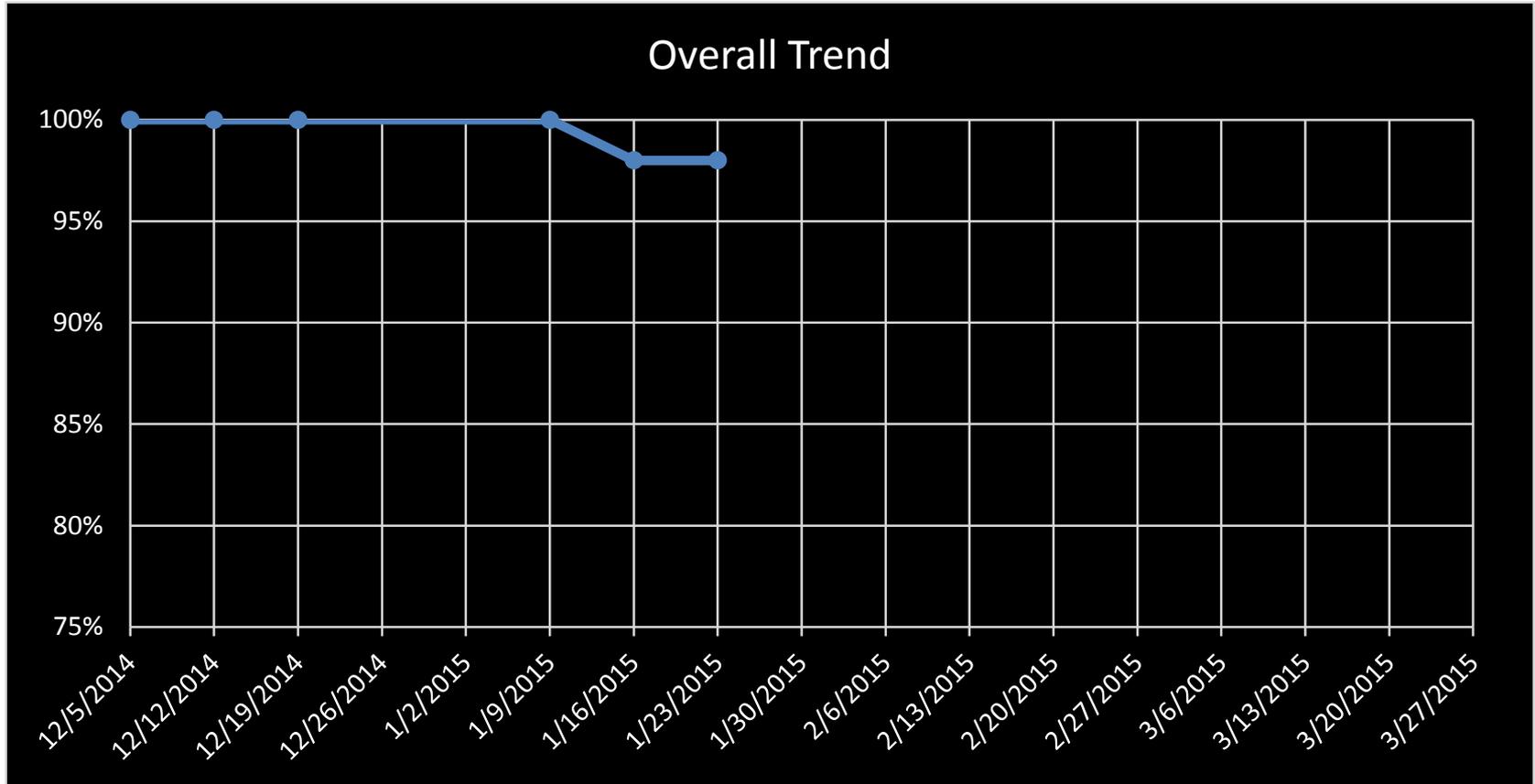
# TEAM Program

## Evaluating and Providing Feedback on the PIP



# TEAM Program

## Evaluating and Providing Feedback on the PIP



## Line of Business (LOB) Project

### **The Life of a Subject Matter Expert**

Amanda Gentry

Brian Zunker

## Legacy vs TRUST

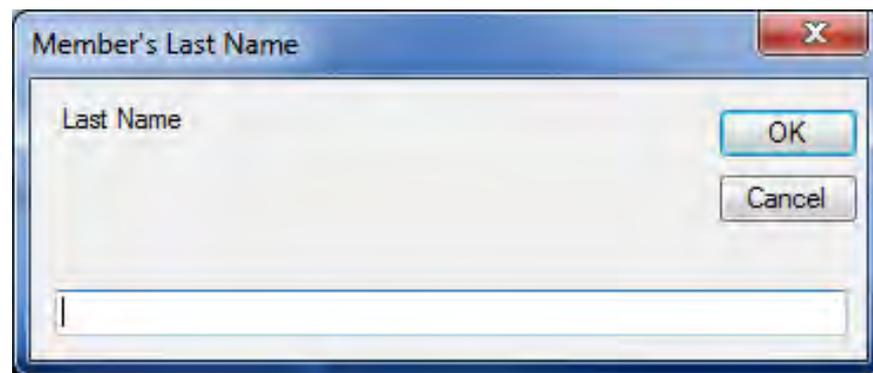
- The following slides show the difference between current Legacy functionality and future TRUST functionality.
- The TRUST examples are functionality that have already been developed by HP and are available to TRS in a test environment.

# TEAM Program

## Legacy Search

Limited to name searches,  
Social Security, and ID

Each system has a  
separate search function



A screenshot of a software dialog box titled "Member's Last Name". The dialog box has a blue title bar with a red "X" button in the top right corner. Inside the dialog, there is a text input field labeled "Last Name" with a cursor at the end. To the right of the input field are two buttons: "OK" and "Cancel". Below the input field is a horizontal line, possibly a separator or a scroll bar.

# TEAM Program

## TRUST Search

- Multiple search fields
- Unified search results
- Search results page behaves like modern web pages (Google, Amazon, etc.)

**Participant Search**

TRS Participant ID	<input type="text"/>
SSN	<input type="text"/>
XR Number	<input type="text"/>
First Name	<input type="text"/>
Last Name	<input type="text"/>
SoundEx	<input type="checkbox"/>
Results Per Page	30 ▾
TINS	<input type="text"/>
Phone Number	<input type="text"/>
Address Line 1	<input type="text"/>
Address Line 2	<input type="text"/>
Address Line 3	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zip	<input type="text"/>

**Search Results**

First Previous **1** 2 3 4 5 6 7 ... 146 147 148 Next Last Results Per Page 30 ▾



# TEAM Program

## Legacy

### Participant Summary

- Initial view of participant information
- Displays key demographic information along with account statuses

Tax Num:	100-01-0000	Go	Not Grandfathered
XR Num:	XR1758116		
70033166771	ACCOUNTONE, DEMO		
Name:	DEMO ACCOUNTONE		
Address:	1000 RED RIVER ST AUSTIN, TX 78701		
Status			
ACTIVE MEMBER			
RETIREMENT PENDING	Pending, 12/14		
BULLETIN(S)			
REFUNDING MEMBER	Paid 8/11/1998		
SSBB BILL	Lump Sum Bill Calculated		

# TEAM Program

## TRUST

### Participant Summary

- Initial view of participant information
- Displays key demographic information along with account statuses
- Quick access to update information

JOHN Blue	TRS Participant ID	000000	Account Status	Active	Membership Type	MBR
HPRS - Tier 1	SSN	300-29-2222	Membership Status	Active	Employment	Inactive

<b>Age</b>	<b>Service Credit</b>	<b>Membership Tier</b>	<b>First Eligible Retirement Date</b>	<b>Account Balance</b>
46 years	None	1	09/01/2026	\$659.20

Participant Accounts			
Owner SSN	Owner Name	Type	Status
300-29-2222	JOHN Blue	MBR	Active

Demographic Information			
Name:	JOHN Blue	Date of Birth:	08/28/1968
Gender:	Male	Age:	46 years
Address:	1000 Red River Austin, TX 78701-1010	Communication Preference:	Email
<a href="#">Update Demographics</a>			

Notes	
Notes:	No
<a href="#">View Notes</a>	

Account Flag Information	
Prepare Account:	No
Sensitive Person:	No
Under Construction:	Yes
Legal Order:	No
<a href="#">View account details</a>	

Account Activity	
Refund in Progress:	No
Pending Retirement:	No
Service Credit Purchase:	No
Death Reported:	No
DROP Participant:	No
TRS-Care Participant:	No
TRS-ActiveCare Participant:	No
ORP Elected:	No
<a href="#">View account details</a>	

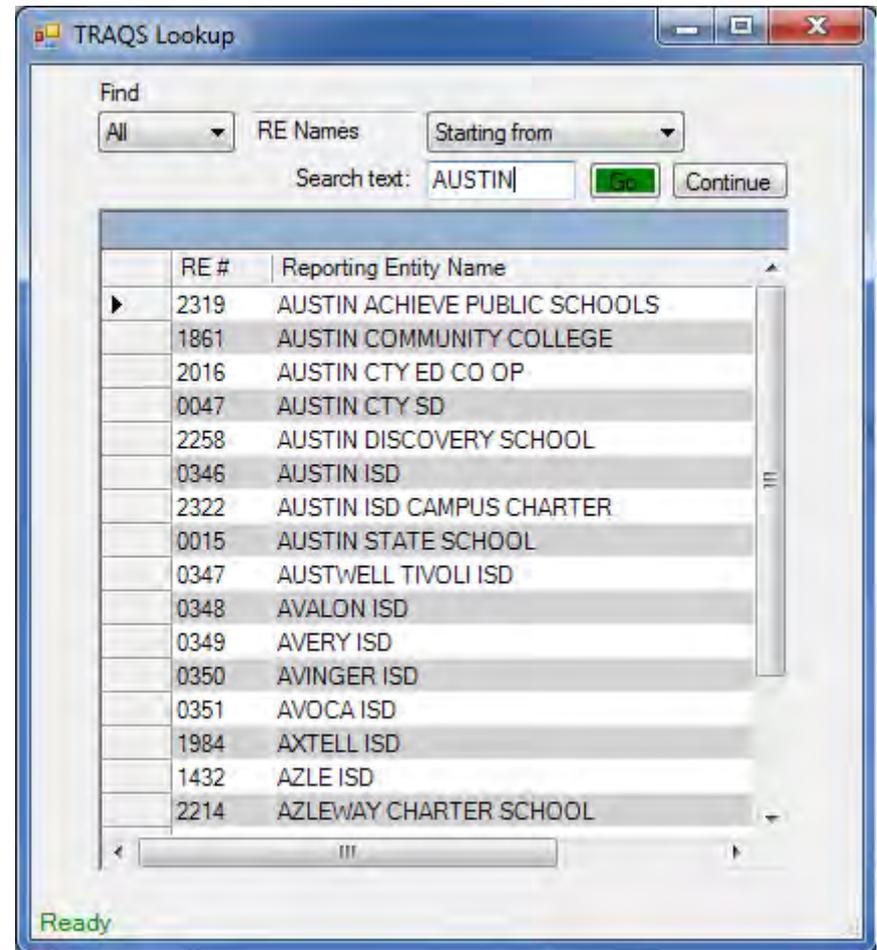
Legal Representatives	
<a href="#">Update Legal Representatives</a>	

# Legacy vs TRUST

## Legacy

### Organization Search

- Separate searches for Reporting Entities and other organizations



# Legacy vs TRUST

## TRUST

### Organization Search

- Unified search for all organizations
- (Reporting Entities, Financial Institutions, etc)
- Additional search fields

The screenshot shows a web form titled "Organization Search" with a green header. The form contains the following fields:

TRS RE Number	<input type="text"/>
Organization Name	<input type="text"/>
SoundEx	<input type="checkbox"/>
Routing Number	<input type="text"/>
EIN	<input type="text"/>
Phone Number	<input type="text"/>
Address Line 1	<input type="text"/>
Address Line 2	<input type="text"/>
Address Line 3	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zip	<input type="text"/>

At the bottom of the form are two buttons: "Search" and "Clear Form".

# Legacy vs TRUST

## TRUST – Organization Search Results

Search Results					
First	Previous	1	2	Next	Last
Name	TRS RE Number	Org Type	Address	City, State Zip	
<a href="#">ACADEMY BANK</a>		Bank			
<a href="#">ACADEMY BANK, A DIVISION OF ARMED FORCES BANK, N.A</a>		Bank			
<a href="#">ACADEMY ISD</a>	0303	Reporting Entity			
<a href="#">ACADEMY OF ACCELERATED</a>	2058	Reporting Entity			
<a href="#">ACADEMY OF AUSTIN</a>	2172	Reporting Entity			
<a href="#">ACADEMY OF BEAUMONT</a>	2173	Reporting Entity			
<a href="#">ACADEMY OF CAREERS &amp; TECH</a>	2192	Reporting Entity			
<a href="#">ACADEMY OF DALLAS</a>	2174	Reporting Entity			

## Schedule Rebaseline

Factors included:

### 1. PIP

### 2. Change Requests

#### a) GASB 67/68

- Full payroll reporting
- Concurrent employment and other complex edits

#### b) New Business Rules

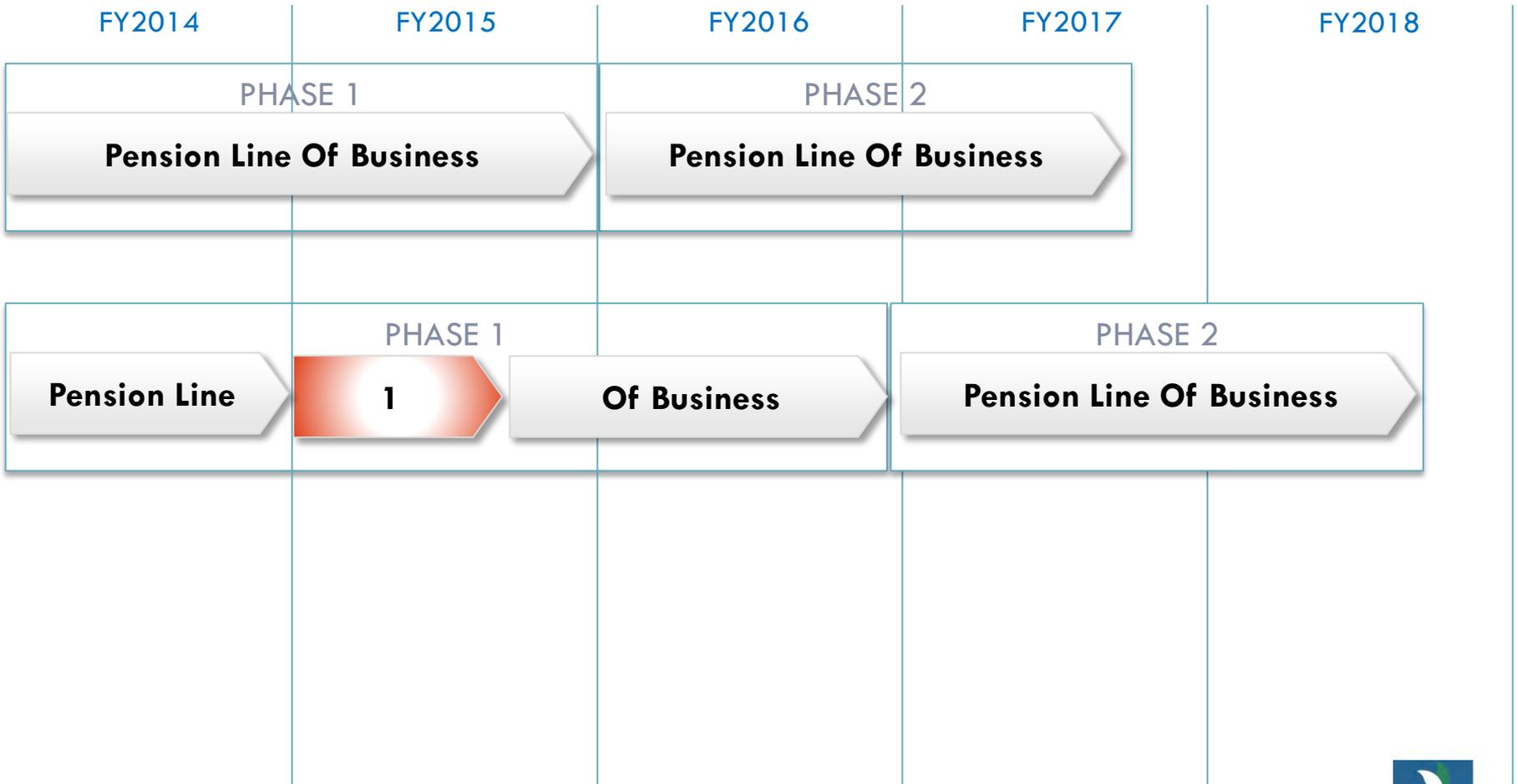
# TEAM Program

## Schedule Rebaseline



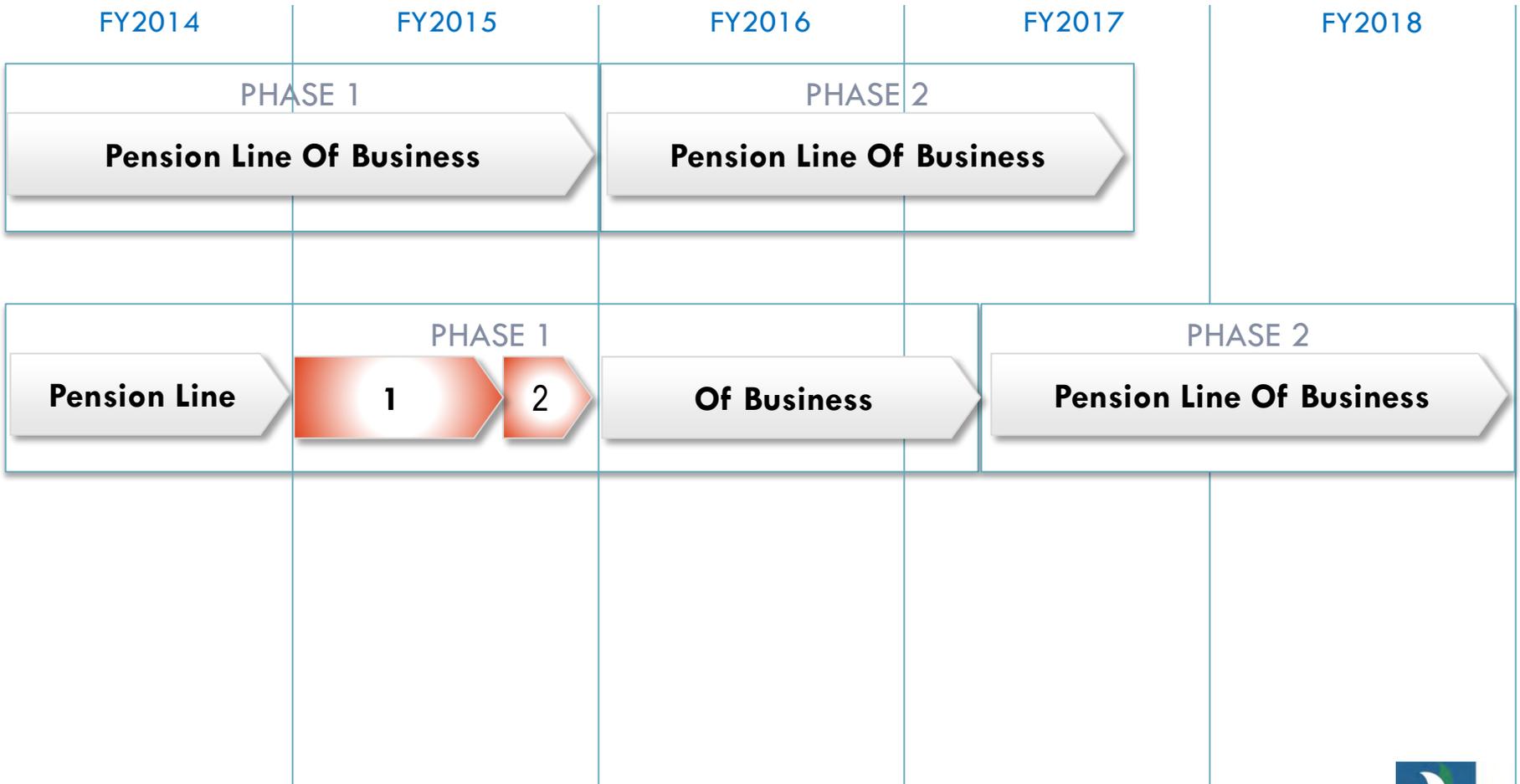
# TEAM Program

## Schedule Rebaseline



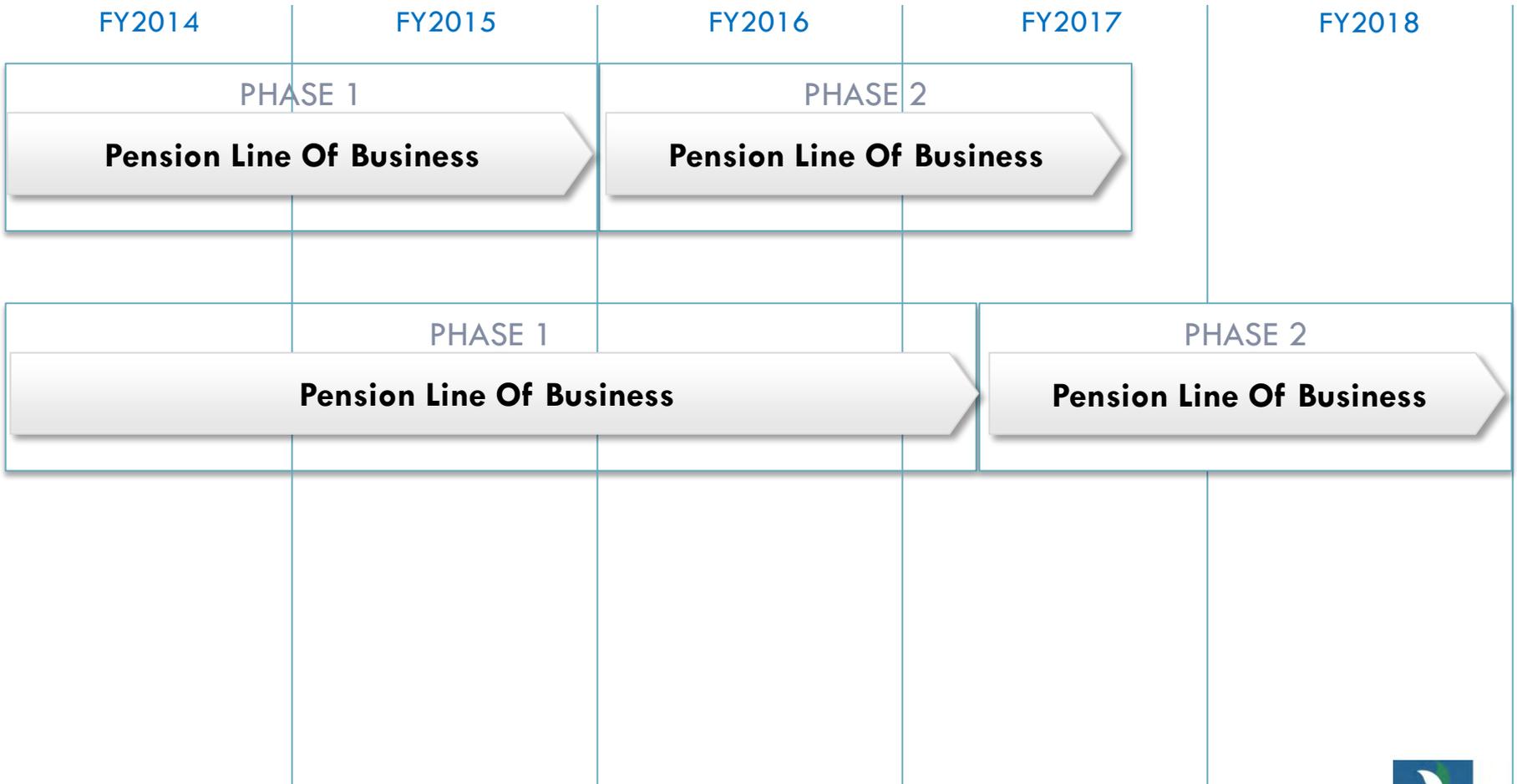
# TEAM Program

## Schedule Rebaseline



# TEAM Program

## Schedule Rebaseline



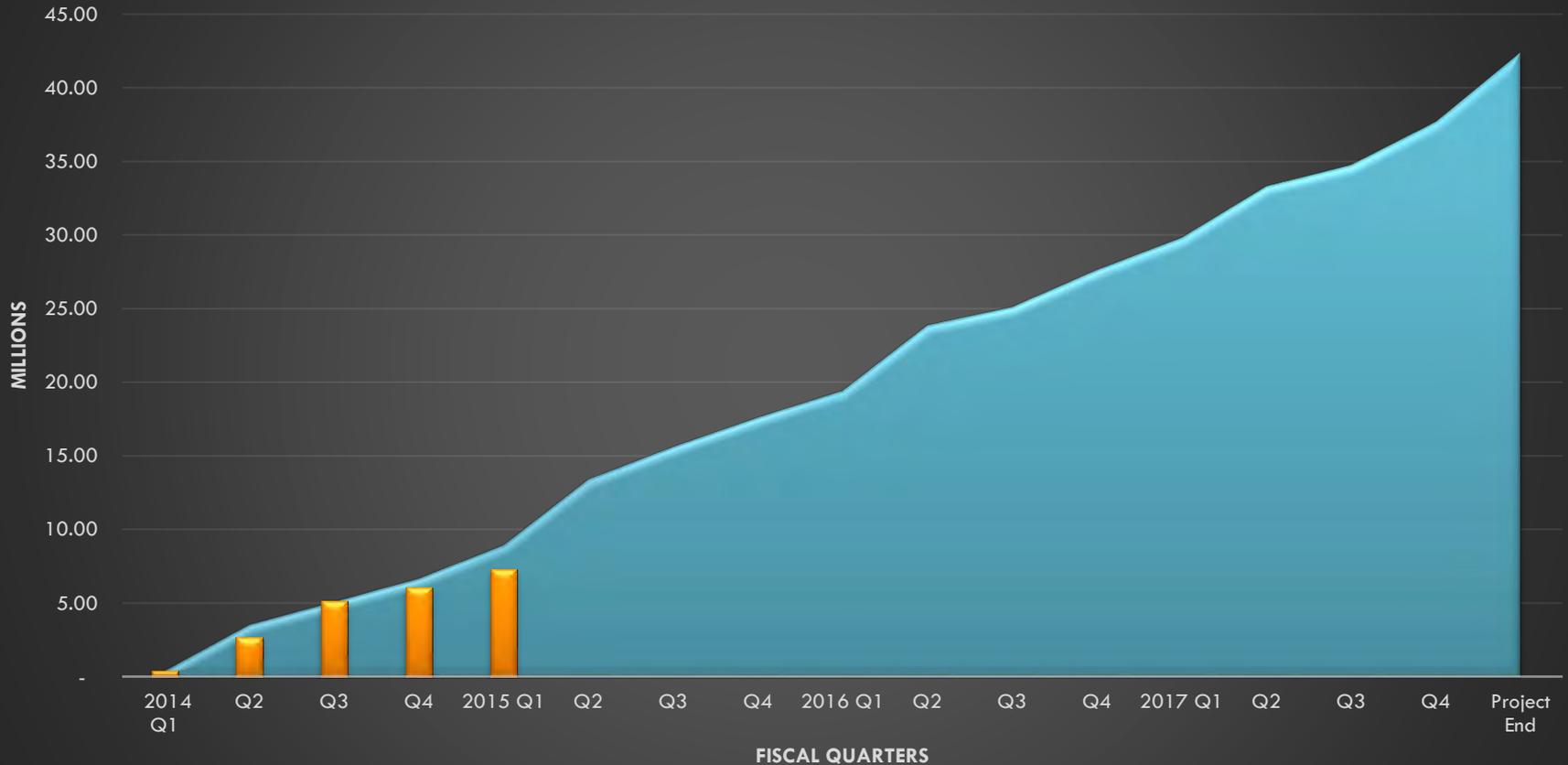
# TEAM Program

## TEAM BUDGET

David Cook

# TEAM Program

## LOB Project Actual vs Projected Cumulative Expenditures\*

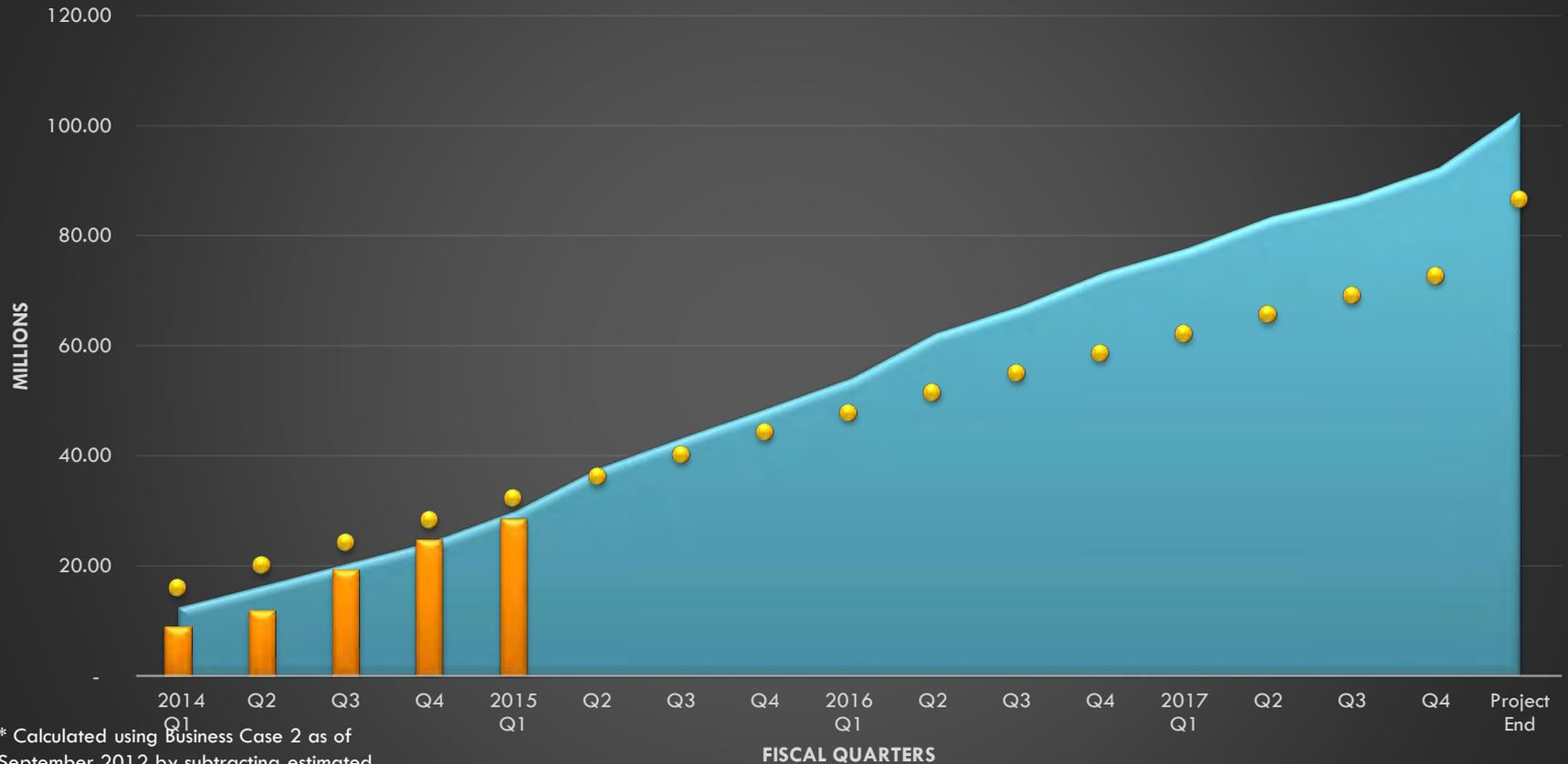


\* Includes \$7.2 million contingency

■ LOB Projected Cumulative Expenditures ■ LOB Actual Cumulative Expenditures

# TEAM Program

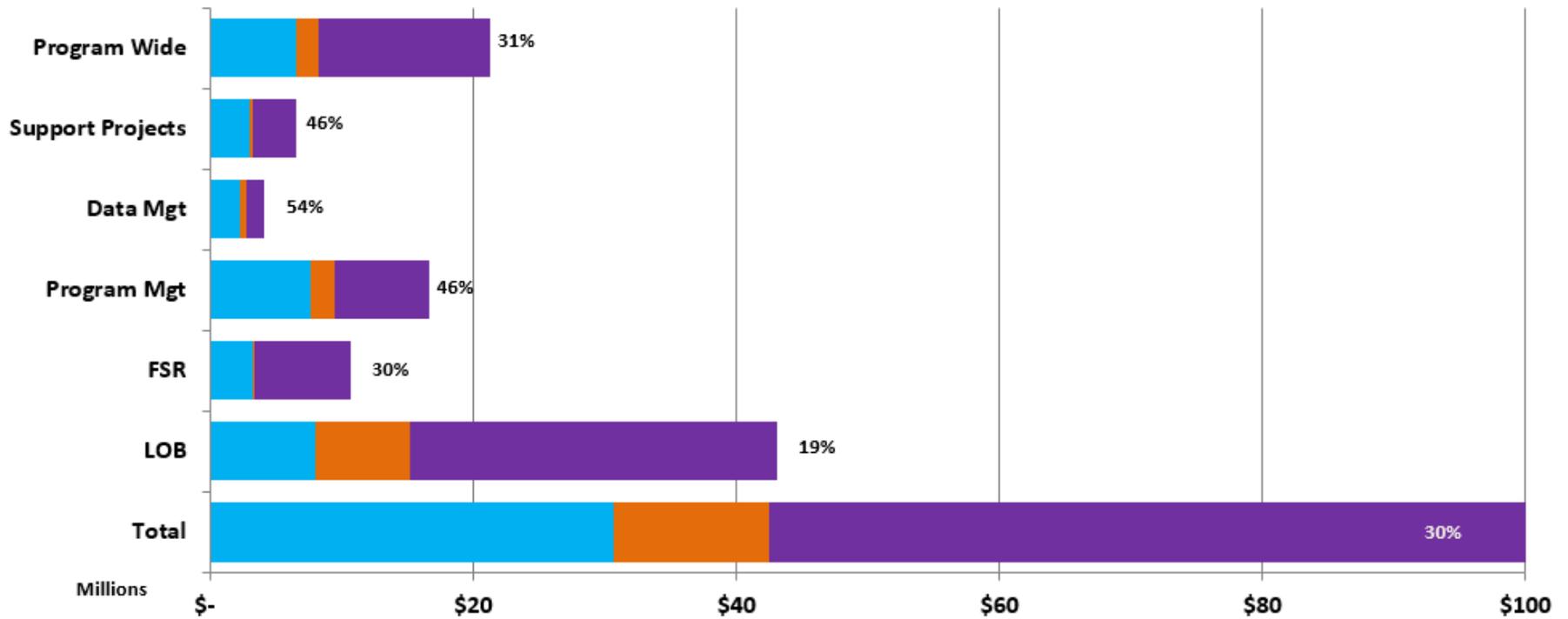
**TEAM Program Total Cumulative Expenditures  
Current Expected vs. Actual. vs Original Forecast\***



\* Calculated using Business Case 2 as of September 2012 by subtracting estimated agency personnel costs from estimated total project costs including contingency

■ Current Expected Expenditures    ■ Actual Expenditures    ● Original Forecasted Expenditures

# TEAM Program Budget

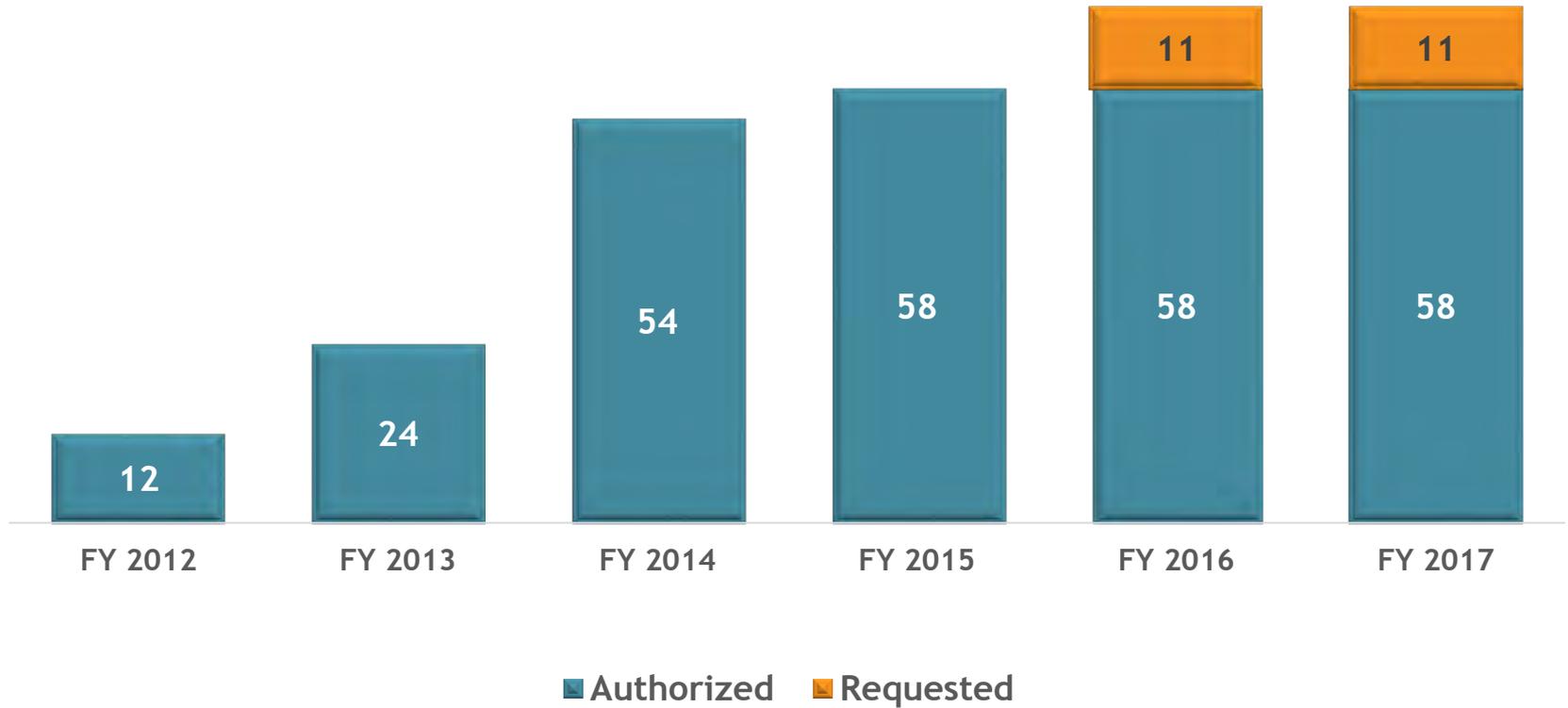


	Total	LOB	FSR	Program Mgt	Data Mgt	Support Projects	Program Wide
Expended	\$30,665,048	\$8,033,861	\$3,193,382	\$7,597,488	\$2,254,172	\$2,981,850	\$6,604,295
Encumbered	\$11,798,870	\$7,211,541	\$155,910	\$1,865,375	\$568,184	\$307,054	\$1,690,808
Remainder	\$60,002,515	\$27,865,461	\$7,379,300	\$7,192,835	\$1,337,582	\$3,233,812	\$12,993,525

Indicator ■ ■ ■ ■ ■ ■ ■

Notes: Total Project cost is \$102.5 million. FSR figure is estimate only.

# TEAM Position Overview



# TEAM Program

## QUESTIONS AND ANSWERS



**Tab 25**

# **Teacher Retirement System of Texas**

**TEAM Program:**

## **Independent Program Assessment Overview and 2015 Next Steps**

**February 2015  
Board presentation**



- **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
  - ✓ Substantial delays
  - ✓ Cost substantially over budget

# Role of Board Sponsor

- Meets with TEAM program management and IPA vendor on a quarterly basis unless more frequently needed
- Contact point for executive management for issue escalation
- Provides feedback to the Board on TEAM program progress

# IPA Overall Scope of Work

- ❑ Monitoring and Reporting TEAM Program and Project Level **activities** including:
  - Adherence to project schedules and budget
  - Risk management activities
  - Issues (Actions/Decisions/Changes) management tracking and resolutions
  - Quality Assurance and Quality Control process and activities
  - TEAM Program Management, Project Management and Vendor Activities
  - ESC and CMT (Project Sponsors) activities
  - Management's assessment and action plans regarding adequacy of resources to support TEAM
  
- ❑ Gathering, Analyzing and Reporting on TEAM program **documentation** to include the followings:
  - Project Plans and project documentation per Texas Project Delivery Framework (e.i.:Project Charters)
  - Project Milestone Deliverable artifacts (from Requirements, Design, Development, Testing, Training, Data Conversion, Cutover etc.)
  - Budget, Time/Schedule and Resources Tracking
  - Contractors Invoice and payment processing
  - Staffing, Training and Communications Plans
  - Security and Controls

## *Formal Reporting:*

1. Monthly reporting to Executive Director or the Executive Director's designee.
  - Status report shall provide a written critique of all identified gaps and potential risks, including feasible and actionable recommendations.
2. Quarterly reporting to TRS Board of Trustees
  - All reports submitted to the TRS' Board must be provided to the Executive Director a minimum of 3 weeks prior to a Board mail out.
    - All new observations first presented to CMT for Management Responses and then to ESC prior to reporting to Executive Director

## *Ongoing Consultation:*

- Attending regular TEAM project status meetings such as CMT, ESC and LOB and meeting with project managers, sponsors and stakeholders as needed
- Provide independent observations, best practices, feedback, templates and suggestions as requested

# TEAM Performance Assessment

1. Continue to report on project performance (Charts & Graphs)
  - Milestone dates tracking to baseline schedule
  - Quality and acceptance of key deliverables
  - Project Risks, Issues, Actions, Decisions and Change/Defect Management
  
2. Provide independent and objective evaluation of TEAM program performance with Earned Value analysis
  - Earned Value Management (EVM) technique used to show past and current performance and can predict future performance of TEAM
  - EVM is a commonly used methodology that combines scope, schedule and resource measurements to assess project performance and progress. EVM first emerged at the Department Of Defense as a financial analysis tool in the 1960s and it has been used as a KPI in project management since the late 1980s
  - Project performance can be objectively assessed based on the following three basic EVM elements:
    - Planned Value – the authorized budget assigned to the project to date
    - Actual Cost – the realized cost incurred for the work performed to date
    - Earned Value – aka “Budgeted Cost of Work Performed”, is a measure of work performed expressed in terms of the budget authorized for that work

- Assess LOB Implementation plan – is the new schedule realistic and complete?
  - *LOB RW5 Project Schedule includes all key milestones, resources and contingencies*
  - *Delay impact on the entire TEAM implementation effort, critical path interdependencies and all the key milestone dates impacting deployment*
  - *LOB DLR2 meeting schedule - key resources requested for DLR2 sessions and schedule extended through March or later*
  - *TEAM Resource Allocations – verify that resource are loaded to all current project schedules and resources are leveled between projects.*

- Review DLR deliverables and DLR artifact quality improvements, per Process Improvement Plan results:
  - DLR artifact quality and schedule
  - Delivery to Acceptance review cycle
  - PIP updated acceptance criteria

# IPA Focus - TEAM Key Deliverables for 2015



1. Detail Level Requirements (LOB-DLR) or Functional Design Specifications (Phase 1)
2. Traceability Matrix - Requirements Tracking – updated in ALM
3. Technical Design Documentation (Design Specs, Unit Testing, code walkthroughs)
4. Business Functional Test Plan (Schedule with Resources and Test cases and results Documentation)
5. Interfaces and Bridges Technical Specs and Test Plan
6. Application Performance Test Plan
7. User Acceptance Test Plan (Schedule with Resources and Test cases and results Documentation)
8. Cutover Plan including Contingency Plan, Disaster Recovery Plan

# IPA Focus on TEAM Key Deliverables for 2015 ...continue



9. End User Training Plan - Schedule with resource allocations for Phase 1A
10. Business Procedures and/or User Documentation Plan - Schedule with resource allocations for Phase 1A
11. Security roles configuration and Controls test plan.
12. Reporting Entity Outreach Project Plan – Schedule with resource allocations
  - Certification Testing
  - Conversion/cutover Plan
13. Review FSR RFO and vendor selection results
14. Review Website Redesign vendor selection results, contract and implementation plan

# Key Risks Related to Deliverables

- Not enough resources allocated
- Not the right resources
- Lack of business user involvement and/or training
- Defined business requirements not included in design
- System does not meet business requirements
- Inadequate data security
- Lack of change management rigor
- Process internal controls and or IT controls not effective
- Inadequate Data conversion and/or data validation
- Incomplete technical design documentation
- Incomplete unit testing of code
- Software quality failure
- System not designed properly, not operating effectively
- Inadequate or incomplete functional and/or systems testing
- Test results are not validated
- System not performing as designed