



Lawrence E. Alwin, CPA
State Auditor

February 13, 2002

Members of the Legislative Audit Committee:

The State Auditor's Office contracted with Independent Fiduciary Services, Inc. (IFS) to perform an independent evaluation of the Teacher Retirement System's (TRS) investment program and practices on behalf of the Legislative Audit Committee. IFS finds that, based on current requirements of state law, TRS investment program and practices are:

. . . well structured and managed in an effective and professional manner. TRS is a leader in the pension fund industry, and in many respects its investment program and processes are emblematic of "best practices" used by other large public pension funds. Compared to [IFS's previous 1996 report] the increased professionalism and preparedness of both the members of the Board of Trustees and the investment staff are impressive.

However, IFS believes that developments in the securities markets and accepted pension industry best practices are becoming increasingly out of sync with current Texas statutory and constitutional provisions. IFS does not identify any legal constraints that are harmful to TRS's investment program, but it does identify legal constraints that inhibit TRS's efforts to maximize investment returns, minimize risk, and operate efficiently.

IFS's recommendations are built around the principle that the TRS Board of Trustees (Board), as the fiduciary responsible for the effective management of the TRS Trust Fund, should be given the freedom to manage its responsibility prudently according to its best judgment. This freedom of prudent action should be counterbalanced by a high degree of accountability.

IFS's key legislative recommendations are summarized as follows:

- Make explicit the TRS Board's ability to delegate investment authority to internal staff.
- Allow the Board to delegate investment authority to external managers when warranted, subject to strict fiduciary standards.

An Independent Review of the Teacher Retirement System Investment Program

Conducted by Independent Fiduciary Services, Inc.
Under Contract to the State Auditor's Office

Plan of Work

The plan of work in the request for proposal developed by the State Auditor's Office for this project set forth the objectives and scope of IFS's report. The plan of work is included in IFS's report as Appendix 5. The summarized objectives are as follows:

- Determine if the TRS Board has the necessary authority required to manage TRS's investments optimally.
- Review the adequacy of the Board's investment policy, asset allocation, and monitoring processes.
- Address the status of key recommendations made in IFS's report on its 1996 investment review of TRS.
- Determine the sufficiency of information provided to the Board to support its consideration of investment issues.
- Address the use of qualified historically underutilized businesses for investment contracting and brokerage.
- Assess the adequacy of TRS's soft dollar policies and compliance with best industry practices.
- Review the current procedures used by TRS to assess trade execution and market impact.
- Assess TRS's alternative assets program and practices.
- Review TRS's implementation and utilization of its trade order management system.
- Assess the effectiveness of TRS's investment services department.

- Allow the Board to invest in any asset class, instrument, or strategy it deems prudent.
- Grant the Board budgetary, personnel, and procurement autonomy as it pertains to the investment program, while maintaining strict reporting and accountability to the Legislature.
- Offset increased Board autonomy by imposing the modern, prudent person standard of care.
- Use the principles imbedded in the Uniform Prudent Investor Act and the Uniform Management of Public Employees Retirement Systems Act.

Specifically, IFS states:

. . . TRS could further optimize its management effectiveness if legal constraints on Board authority regarding the investment program, budgetary process, procurement, and personnel matters were significantly eased or removed. . . . Reducing these constraints—while still retaining essential safeguards—could make an already well run and well organized pension fund even stronger, thus facilitating TRS’s ability to meet the retirement needs of its beneficiaries while minimizing TRS’s reliance on general revenue appropriations.

We appreciate the full support and diligent cooperation of TRS’s Board, management, advisors, and service providers throughout this project. TRS’s management has committed to fully exploring and considering all recommendations IFS offered. Please contact Carol Smith, Audit Manager, at (512) 936-9500 if you have any questions.

Sincerely,

Lawrence F. Alwin, CPA
State Auditor

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Enclosure: Independent Fiduciary Services, Inc.,
Report to the Legislative Audit Committee
Regarding the Investment Program and Practices
of the Teacher Retirement System of Texas

Purpose, Scope, and Presentation

Texas Government Code, Section 825.512(a), specifies that:

The legislative audit committee biennially shall select an independent firm with substantial experience in evaluating institutional investment practices and performance to evaluate the retirement system’s investment practices and performance.

The State Auditor’s Office managed the report process on behalf of the Legislative Audit Committee.

The plan of work developed by the State Auditor’s Office for the IFS report placed primary emphasis on reviewing investment practices and following up on the previous independent review of TRS conducted in 1996. The State Auditor’s Office placed less emphasis on investment performance because this area is included within the scope of a separate report that reviews the comparative investment performance of five large state investment funds. The comparative report will be prepared jointly by a consultant and the State Auditor’s Office and will cover the Teacher Retirement System, the Employees Retirement System, the Permanent School Fund, the Permanent University Fund, and the Long Term Fund (which is now known as the General Endowment Fund).

IFS’s report is organized into three major sections to facilitate the consideration of issues and recommendations by the Legislature, the Board of Trustees, and management. The report is available in two versions:

- The **unabridged version** contains the master executive summary; the legislative, Board of Trustees, and the management sections; and all six appendices.
- The **abridged version** contains the master executive summary and the legislative section of the report and does not contain any exhibits.



INDEPENDENT FIDUCIARY SERVICES, INC.

Report to the Legislative Audit Committee
Regarding the
Investment Program and Practices
of the
Teacher Retirement System of Texas

Prepared Under Contract to the Texas State Auditor's Office
And Released as Part of SAO Report No. 02-021

February 2002

Unabridged

Disclaimer

The findings and conclusions contained herein are the responsibility of Independent Fiduciary Services, Inc. The State Auditor's Office has not audited the contents of this report.



February 12, 2002

Legislative Audit Committee
1501 N. Congress Avenue
Austin, Texas 78701

Dear Committee Members:

This is to comment on the recently completed *Report to the Legislative Audit Committee Regarding the Investment Program and Practices of the Teacher Retirement System of Texas* by Independent Fiduciary Services, Inc. The report's coverage includes virtually all aspects of TRS investment management. We appreciate the manner in which the study was conducted by IFSI and the coordination provided by the State Auditor's Office during the course of the review.

Trustees and management strive to maintain a clear and continuous focus on matters that drive investment results--effective oversight and policies; sound methodology in establishing asset allocation; effective execution; cost efficiency; and performance measurement against well-defined standards. The report's favorable conclusions regarding these areas are noted.

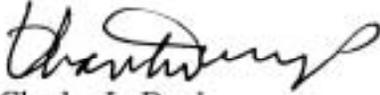
The pension trust fund is quite large and serves over one million members and annuitants. IFSI provides information and recommendations regarding core trustee issues. These include authority to delegate investment management; investment selection options that promote performance and risk management through diversification; reporting, accountability and compliance; and broad budgetary management authority intended to optimize portfolio management, including compensation programs for investment professional staff. We believe that you will find IFSI's work to be of value when considering authority that you may grant to trustees to facilitate their prudent management of the pension trust fund.

The report's recommendations will be useful as a guide for further enhancement of the TRS investment function. We look forward to evaluating each recommendation in the report and tracking consideration and implementation efforts. TRS trustees and staff understand their role in managing the pension trust fund, who it is intended to serve, and believe that it is worthwhile for the legislature to periodically receive independent

assessments such as the one before you. The legislature has already taken significant positive steps to address some of the issues raised in the report. We look forward to working with the legislature to continue to develop the best possible management and oversight of the pension trust fund.

We appreciate the opportunity to comment on the final report and would be pleased to respond in more detail at the Committee's request.

Sincerely,



Charles L. Dunlap

Table of Contents

	<u>Page</u>
Introduction	1-3
Master Executive Summary	5-10
Part I – Legislative Issues	11-36
Part II – Key Investment Issues Requiring the Consideration and Judgment of the TRS Board of Trustees	
Executive Summary	37-41
Section 1: Adequacy of Investment Policy, Asset Allocation and Monitoring Processes	
A. Review of Investment Policy Statement (“IPS”)	41-51
B. Review of the Asset Allocation Process	51-59
C. Assessment of the Process	59-65
D. Reasonableness of Current Asset Allocation	65-68
E. Adequacy of Monitoring Processes	68-75
Section 2: Adequacy of Alternative Assets Program and Practices	
A. Introduction	75-76
B. Description of Alternative Asset Class	76-87
C. Sufficiency of Selection and Monitoring Procedures	88-100
D. Other Areas for Enhancement Regarding Private Equity	100-102
Section 3: Sufficiency of Information Provided to Trustees to Support Their Consideration of Investment Issues	
A. Information Routinely Provided to TRS Board Members	103-108
B. Information Typically Provided to Public Pension Funds Boards to Facilitate Their Consideration of Investment Issues (Common and “Best Practices” Regarding Information)	108-115
C. Assessment of Whether Sufficient, Independent, Investment Information is Available to Trustees to Support their Oversight Function	115-117
D. Miscellaneous Board Issues	118-119



Section 4: Consideration of Board Organization and Process	
A.	Consideration of the Current Board Size and Qualification Prerequisites 119-120
B.	Appropriateness of Board’s Investment Decisionmaking Practices 120-124
Section 5: Review of Historically Underutilized Businesses Requirements	
A.	HUB Background 124
B.	HUB Administrative Expenditures 125
C.	HUB Brokerage Program 125-131
D.	Texas Minority Participation Requirements Compared to Those of Other Public Pension Plans 131-133
E.	Assessment of the TRS’s HUB Program 134-138
F.	Potential Use of HUB/MWOB External Investment Managers 138-139
Section 6: Review of Soft Dollar Policies	
A.	Need for Distinction Between Types of “Soft Dollar” Arrangements 140-141
B.	Assessment of Effectiveness and Impact of TRS Soft Dollar Practices 142-147
Section 7: Incentive Compensation Program 148-149	
A.	Pitfalls to Avoid Regarding Incentive Compensation 150
B.	Factors to Include 151
Part III – Key Issues Within the Purview of TRS Executive Management	
Executive Summary 153-155	
Section 1: Assessment of Trade Order Management System Implementation and Utilization	
A.	Selection and Implementation of the System 155-158
B.	Best Practices in Trade Order Management Systems 158-159
C.	Implementation Consistency with Procedures and Controls 159-164



Section 2: Evaluation of the Investment Services Department (ISD)		
A.	Mission and Objectives of the ISD	164-166
B.	Comparison of TRS's ISD Structure and Functions to other Public Pension Funds	166-169
C.	Appropriateness and Clarity of the Duties and Responsibilities of the ISD	169-178
D.	Role Regarding T+1 Implementation	179-182
E.	Compliance Reporting Structure within TRS	182-185
F.	Examination of the Role of the Investment Program Coordinator	185-186
G.	Effectiveness of the ISD's Investment Compliance Monitoring	186-187
End of Narrative Portions of the Report		188
Appendices		
1.	Status of Prior Recommendations	189-197
2.	Compensation and Turnover	199-210
3.	Summary of Current Recommendations	211-222
4.	Independent Fiduciary Services, Inc. -- Firm Overview	223-246
5.	Plan of Work	247-252
6.	Efficient Frontier Analysis	253-254



Independent Fiduciary Services, Inc.
Report to the Legislative Audit Committee
regarding the
Investment Program and Practices
of the
Teacher Retirement System of Texas

February 2002

I. INTRODUCTION

A. Reason for Study

The dual purpose of this Review is to (a) assess the current status of key investment issues, as identified collaboratively by the Texas State Auditor's Office (the "SAO") and the Teacher Retirement System of Texas ("TRS") and addressed in Independent Fiduciary Services, Inc.'s ("IFS") "Report to the Legislative Audit Committee Regarding the Investment Program and Practices of the Teacher Retirement System of Texas" (the "1996 Report"), and (b) evaluate additional, specific aspects of the TRS investment program also identified by the SAO.

B. Methodology

In completing this study, we proceeded through several steps.

First, was collection of information. We prepared an extensive set of requests for information, to which the TRS responded in detail. This included, for instance, numerous policy and procedural documents, minutes of Trustee meetings, internal memoranda, actuarial data, contracts with service providers, statutory materials and a great deal of other information.



Additionally, we collected information through a series of on site personal interviews with Trustees, TRS staff and service providers.

Based on the information collected, we prepared initial lines of analysis and tentative conclusions across the range of subjects included in our contract with the SAO. We submitted to both the SAO and the TRS numerous drafts of our work, for their comment and extensive discussion. Although much of this discussion was over the telephone, some was face to face in Austin. In light of comments and questions from the SAO and TRS, we revised and refined our drafts over time.

The process of draft, comment and redrafts enabled the parties to point out matters which, in their view, were either factually or conceptually inaccurate, incomplete or misleading. The process also enabled us to obtain additional information and prepare a final report that took into account all comments. Nevertheless, the final form and content of this Report reflects our final, independent judgment.

This Report is subject to several caveats. First, many of the subjects addressed are judgmental and not susceptible to definitive or absolute conclusions. Second, we relied on information provided to us, including, to some extent, oral and written representations. Thus, our conclusions are based on the information we considered as of the time we performed our work. While we sought to cross-verify certain information, the process of cross-verification was limited. Third, although the report considers various legal matters, it does not purport to provide or supplant the need for legal advice on such matters.

C. Explanation of Report Format

In light of the multiplicity of issues and the complex nature of this review, this Report has been divided into the Master Executive Summary (intended for all readers), this Introduction and three distinct “Parts.” Part I designed especially for the Legislature, Part II for the TRS Board of



Trustees and Part III for TRS Executive Management. Each Part begins with an “Executive Summary” directed to the specialized audience and each is designed to be a standalone document. Accordingly, a reader of all Parts will find some repetition. This format has been used in an effort to afford members of the Legislature, the TRS Board, and TRS Executive Management the option of selectively focusing on issues of greatest concern to them.

The Report is presented in two versions. The abridged version contains the Master Executive Summary and the legislative portion (Part I) of the Report only and does not contain any appendices. The unabridged version contains all three parts, Part I – Legislative Issues, Part II – Key Investment Issues Requiring the Consideration and Judgment of the TRS Board of Trustees and Part III – Key Issues Within the Purview of TRS Executive Management, as well as various appendices.

D. Independent Fiduciary Services, Inc.

Independent Fiduciary Services, Inc. (“IFS”) specializes in evaluating the organization, administration, and investment programs of pension systems with dual expertise regarding fund operations and fiduciary responsibility. Prior to completing this assignment, we have completed similar evaluations of numerous other public and private pension funds. A more extensive description of IFS is provided in Appendix 4, page 223.



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Master Executive Summary

The primary purposes of this review are:

- To assess the status of the key recommendations Independent Fiduciary Services (“IFS”) made five years ago in its first report concerning the investment program and practices of the Teacher Retirement System (the “1996 report”); and
- To evaluate the Teacher Retirement System’s (“TRS”) current investment practices.

Most Prior Recommendations Have Been Implemented

TRS has implemented most of the key recommendations contained in the 1996 report, and of those it has not, nearly all involve matters outside the agency’s control. Appendix 1 on page 189 contains an assessment of the status of each key recommendation from the 1996 report.

TRS’s Pension Fund Is Well-Managed Given Constitutional and Statutory Limitations

Considering the requirements imposed by governing law, TRS’s current investment program and practices are well structured and managed in an effective and professional manner. TRS is a leader in the pension fund industry, and in many respects its investment program and processes are emblematic of “best practices” used by other large public pension funds. Compared to 1996, the increased professionalism and preparedness of both the members of the Board of Trustees (Board) and the investment staff are impressive.

The 1996 report identified several provisions of law¹ limiting TRS’s ability to effectively manage its investment portfolio. Since then, the Legislature has eased some constraints by



allowing TRS to manage its assets according to what investment professionals call “modern portfolio theory.”² This approach facilitates diversification by allowing the Board and staff to evaluate each investment within the context of the whole portfolio, rather than in isolation. The Legislature also expanded the definition of “securities” to allow a broader range of investments, such as interests in various types of limited partnerships.³ These changes help TRS enhance earnings and manage risk. The Legislature, however, has further opportunities to help TRS achieve its potential as one of the nation’s largest public pension funds.

Certain constitutional and statutory provisions continue to constrain TRS’s operations, resources and investment program in ways that impair performance, risk control and operating efficiency. Specifically, (1) as noted in the 1996 report, the Board may not delegate investment authority to external investment managers⁴ and (2) state statutes limit the Board’s and management’s authority over budget, procurement and personnel.⁵ This report analyzes the impact of these limits and recommends amendments to address them.

The Prohibition Against Delegating Investment Authority Restricts Options that May Benefit the Trust Fund

As the complexity and range of generally acceptable asset classes and investment strategies has proliferated, modern investment practice and law have evolved to permit pension fund boards to delegate discretionary management functions to external firms. Texas law, however, still forbids the TRS Board to delegate these functions. This limitation lessens TRS’s ability to diversify its investments and restricts the prudent and effective management of the TRS investment program. IFS has found no other statewide pension fund outside Texas that is completely prohibited by law from delegating authority to external investment managers.

TRS employees manage most of its assets internally. Although TRS investment staff is highly competent, it is difficult to maintain sufficient expertise in all the investment products and strategies required of a broadly diversified portfolio. Further, even the degree to which TRS trustees can delegate investment authority to internal TRS staff is uncertain. As a result, the



Board limits staff choices to items on an “Approved Universe” of investments. Creating and updating this list is an unwieldy function for a Board that meets approximately eight times per year.

Other Limitations on TRS Board Authority Hamper Effectiveness

In addition to precluding the TRS Board from delegating investment decisions, statutes also limit Board and management authority over permissible investment selection, budget, procurement and personnel. Several of these limits were not applicable at the time of the 1996 report. These limitations restrict management options that we believe trustees should have. Further, these options are consistent with the authority we observe at other very large systems. Combined with an inability to delegate investment authority, these limitations materially constrain the TRS investment program, in ways that may impair its long-term, risk-adjusted, net investment returns.

The current limitations on budget, procurement, and personnel have:

- Constrained the risk, return and operational characteristics of the investment portfolios;
- Hampered effective participation in alternative asset limited partnerships;
- Limited options to control investment staff turnover; and
- Unintentionally created the expensive necessity of procuring goods and services by placing trades with brokers that offer goods and services as promotions (known as “soft dollars”). Procuring goods and services through brokerage activity rather than directly (“hard dollars”) often results in inferior securities trades and/or higher than normal commission



costs. The excess costs TRS incurred by using soft rather than hard dollars totaled nearly \$13 million for fiscal years 1997 and 1998⁶. The soft dollar impact may increase in future years given the Board's recent decision to increase the cap on soft dollar utilization from 15% to 25% of all stock trades.

The Legislature has a strong interest in the safety, soundness, and efficiency of TRS's assets and operations. The Legislature can effectively oversee TRS's investment function without restricting the management of TRS's daily operations beyond the degree typical of other large public pension funds. Today, Texas statutes contain detailed prescriptions regarding many functions commonly within a Board's purview:

- Number of staff TRS employs;
- Amount employees may be paid (including base compensation and incentive compensation);
- Expenditure of trust fund assets, including per diem amounts and travel cost maximums;
- Permissible investments;
- Tools and research available for effective portfolio management; and
- Hiring of outside experts such as counsel and consultants.

Although the Board could make a "fiduciary finding" to justify expending assets of the trust beyond the legislative appropriation,⁷ IFS perceives an understandable reluctance on the part of TRS to do so. This report recommends re-balancing enabling law to maintain legislative



oversight, while at the same time giving TRS greater flexibility in budget, procurement, and human resources management, subject to rigorous fiduciary standards.

Primary Recommendation

TRS should be granted the authority to delegate investment authority, make any investment it deems prudent, establish its own budget, hire and compensate its staff, and procure such goods and services as it reasonably deems necessary. However, as a counterbalance to greater Board independence, the TRS Board and management should be subject to stricter fiduciary standards and remain accountable to the Legislature. As discussed on page 32 of this review, IFS recommends a somewhat more rigorous fiduciary standard of care for the TRS Board and management than current Texas law requires. Such accountability should include specified reporting to the Legislature and periodic independent evaluations of TRS on behalf of the Legislature.

Additional Recommendations

Various non-legislative opportunities for improvement are presented in Parts II and III for Board and management consideration.



¹ E.g., Tex. Const. art. 16, §67(a)(3) and Tex. Gov't. Code Ann. §825.301(a).

² Tex. Gov't. Code Ann. §825.301(a), governing TRS administration, was amended to provide that investment decisions are subject to the standard provided in Tex. Prop. Code Ann. §113.056(a). Acts 1997, 75th Leg., ch. 1416, §25, eff. September 1, 1997.

³ The Legislature amended Tex. Gov't Code Ann. §825.301 in 1997 to incorporate the standard of care contained in the Tex. Trust Code Ann, Tex. Prop. Code Ann. §113.056(a). Acts 1997, 75th Leg., ch. 1416, §25, eff. September 1, 1997. The section was further amended in 1999 to include within the definition of "securities" several asset classes: "any investment instrument defined as such by Art. 581-4, VTCS, 15 United States Code §77(b)(a)(1), or 15 USC §78c(a)(10), an interest in a limited partnership or investment contract, and any instrument or contract intended to manage transaction or currency exchange risk..." Acts 1999, 76th Leg, ch. 1540, § 17, eff. Sept. 1, 1999.

⁴ Op. Tex. Att'y. Gen. No. JC-0043 (1999).

⁵ Tex. Gov't. Code Ann §821.003 makes TRS an agency of the State. §660.003 imposes travel restrictions on all state agencies. The 2002-2003 General Appropriations Act contains the biennial appropriation for all state agencies and higher education institutions. As stated in the bill's caption, the Appropriations Act authorizes and prescribed "conditions, limitations, rules and procedures for allocating and expending the appropriated funds." [of the State]. Art. III-40-42 contains the appropriation for TRS. At III-40, it imposes a cap on the number of full time equivalent employees TRS may employ. III-41 lists key management positions with allowed maximum salaries.

⁶ The cost assumptions for commission rates came from TRS's actual experience for full service trades and execution-only program trades. The market impact assumptions are incremental for each type of trade, and were based on academic studies by professors at Emery University and the University of North Carolina, regarding trading in general, not actual trades on behalf of TRS. We believe that the base assumptions were, at the time, reasonable for the market as a whole, but may have been more expensive than TRS's actual experience at the time.

⁷ Tex. Gov't. Code Ann §825.314(b)



PART I - Legislative Issues

Executive Summary

We have evaluated TRS's current investment practices to determine whether TRS has the necessary legal authority and operating autonomy to manage its investment program optimally. In our opinion, the System would benefit from additional authority. Consequently, we recommend that the Legislature consider giving the TRS Board of Trustees ("Board") greater discretionary authority, accompanied by strict fiduciary standards and accountability to the Legislature.

After allowing for the requirements of its governing laws, the current investment program and practices of TRS are proficiently run, comparatively sound (relative to other large public pension funds across the country) and in many respects representative of "best practices" utilized by such funds. In our view, TRS could further optimize its management effectiveness if legal constraints on Board authority regarding the investment program, budgetary process, procurement and personnel matters were significantly eased or removed. Such constraints are not consistent with "best practices" across the country for comparable funds. Reducing these constraints – while still retaining essential safeguards – could make an already well run and well organized pension fund even stronger, thus facilitating TRS's ability to meet the retirement needs of its beneficiaries while minimizing TRS's reliance on general revenue appropriations.

In order to facilitate optimal investment performance, we recommend that the Legislature allow additional flexibility for TRS in the management of its investment program, subject, however, to rigorous fiduciary standards and accountability to the Legislature. Specifically we recommend that TRS be granted:

- **Authority to delegate investment discretion to external investment management firms, subject to strict fiduciary standards and continuing**



legislative oversight. Implementing this recommendation will remove one of the most significant restrictions on TRS's ability to optimally manage the pension fund. Most public pension funds (statewide and local) outside of Texas are permitted to delegate at least some investment discretion to external investment firms.¹ However, TRS is precluded from doing so. TRS need not delegate its entire investment program to external firms to benefit from this approach. Indeed, TRS's internal investment program is impressive. However, in today's increasingly complex investment environment, it is difficult to hire and retain qualified investment staff expert in all the forms of investment required to prudently diversify an \$80 billion portfolio. The ban on delegation both unduly burdens the Board and management and precludes selective use of external management when warranted. **Additionally, the Board's ability to delegate to internal management should be clarified.** Uncertainty as to the permissibility of internal delegation causes the Board and management to devote unproductive time to maintaining an "Approved Universe" list of eligible securities – an administrative burden with no commensurate added value.

- **Broad authority to invest in any investments, strategies and instruments which, based on prudent analysis and strict fiduciary standards, the Board deems suitable,** rather than limiting TRS (as under current law) to whatever fits within the prevailing, static definition of "securities." The current definition of securities arguably breeds uncertainty about what investments are permissible, limits TRS's ability to construct a fully diversified investment portfolio, and as a result, restricts its ability to pursue maximum, long term, net investment returns at minimized risk.
- **Independent budgetary, personnel, and procurement authority, subject to strict fiduciary standards and accountability to the Legislature.** Granting TRS enhanced autonomy in these respects is consistent with "best practice" principles and the trend in the public pension fund industry to provide boards



sufficient tools to effectively and efficiently fulfill their fiduciary obligations. In particular, undue constraints on authority over budget, personnel and procurement will likely prove increasingly counterproductive as TRS continues to prudently diversify its portfolio by building out its “alternatives” investment program (e.g., private equity, venture capital, strategically traded securities). This recommendation is not intended to apply to the expenditure of general revenue funds, but rather only to TRS investment-related budgetary, personnel, and procurement expenditures made from the TRS Trust Fund.

Insufficient Authority and Autonomy Constrains Optimal Management of the TRS Investment Program

State law limitations on authority and autonomy unduly constrain the ability of TRS to optimize its investment management program. We believe that, the Board should be granted considerable autonomy, subject to ongoing legislative oversight and rigorous fiduciary standards.

Industry Legal Standards Exist for the Management of Public Pension Funds

Unlike private retirement systems that are governed principally by the federal Employee Retirement Income Security Act (“ERISA”), public pension funds are governed by their respective state laws. Many of these state laws have not kept pace with and do not reflect modern investment practices. As a result, although boards are required to prudently invest the assets of a pension fund, they may be unable to optimize returns at an appropriate level of risk because of outdated statutory requirements that do not reflect changed capital market conditions.

In recognition of the changing environment faced by public retirement systems, the National Conference of Commissioners on Uniform Laws (“NCCUL”) has developed two uniform laws² – The Uniform Prudent Investor Act (“UPIA”) was approved and recommended to all states August 5, 1994 and the Uniform Management of Public Employees Retirement Systems Act (“UMPERSA”) was approved and recommended to all states August 1, 1997.



UPIA and UMPERSA are collectively referred to as the “Acts.” We agree with the conclusions of the NCCUL that these two uniform laws effectively incorporate the major principles of portfolio management developed by the past 50 years of financial research.

The State of Texas has adopted neither of these Acts. A 1999 report issued by the Texas House Committee on Pensions and Investments expressed uncertainty regarding whether anything would be gained by adopting either UMPERSA or UPIA. Full adoption of these Acts may not be necessary for Texas. Nevertheless, we believe that the legislative enactment of certain relevant principles embodied in these Acts – namely, authorizing boards to delegate investment authority; permitting investments in any instruments and strategies deemed prudent; and greater operating autonomy – is consistent with “best practices” and would promote the ability of the TRS Board to fulfill its investment mission.

The relevant principles of the two uniform laws are set forth below.

Principles of the Uniform Prudent Investor Act (UPIA)

UPIA reverses common law rules that historically restricted the investment powers of trustees. UPIA has been adopted in 72% of the states and is endorsed by the American Bar Association and the American Bankers Association.³ Legislative adoption of UPIA principles would remove most of the current restrictions imposed by Texas law on the TRS Board’s investment authority. Additionally, it would allow the Board to delegate investment decisions to staff and qualified agents (e.g., external money managers), eliminate the legal concerns that we were advised led the Board’s fiduciary counsel to recommend the Board’s adoption of the “Approved Universe” list several years ago, and expand the range of permissible investments.



Principles of the Uniform Management of Public Employees Retirement Systems Act (UMPERSA)

The intent of UMPERSA is to modernize, standardize, and clarify the rules governing the management of public employee retirement systems. Like UPIA, UMPERSA was developed as a uniform law designed to replace laws that inhibit or prevent the use of modern investment practices – all restrictions on types of investment are abrogated and replaced by general but rigorous fiduciary standards of prudence and loyalty. Also like UPIA, UMPERSA affirms the power of a board of trustees to delegate investment and management functions.⁴ It also advocates independent management of a pension fund as a fundamental principle necessary to ensure that boards are able to perform their duties effectively and efficiently, subject, however, to strict fiduciary standards, clear reporting and legislative oversight. Thus, UMPERSA provides for independent procurement, contracting, budgetary, and personnel authority (e.g., the ability to hire, evaluate and compensate staff).

In exchange for this needed independence, boards are subjected to high fiduciary standards and held accountable pursuant to stringent reporting and disclosure requirements. UMPERSA imposes strict liabilities on fiduciaries for breaching their duties, including personal financial exposure and reporting and disclosure requirements. However, UMPERSA allows boards to use trust fund assets to purchase fiduciary liability insurance to protect them from such exposure. (To the extent that TRS Board members may already run some risk of similar exposure, TRS has, pursuant to statutory authority, purchased liability insurance coverage for the Board and specified employees.⁵)

UMPERSA also has been endorsed by the American Bar Association, and according to the National Conference on Public Employee Retirement Systems, has been introduced in 16 states. Only South Carolina has enacted specific portions of the Act (the fiduciary sections), although other jurisdictions have adopted many UMPERSA principles, e.g., Indiana recently enacted statutes governing that state's statewide teacher retirement system that contain UMPERSA principles.



The Trend Among Public Pension Plans is Toward Greater Autonomy

A survey recently conducted by IFS for the Iowa Governor’s Task Force on public pensions fund structure and governance found that increasing numbers of public pension funds are being granted enhanced levels of independence from the appropriation process. The survey respondents consisted of 50 public pension funds, principally state pension funds. The survey reflected that 90% of the respondent systems had independent budgetary authority or were not subject to the jurisdiction’s appropriations process. Numerous teacher retirement system boards have independent budgetary authority, pursuant to state statutes, including Indiana State Teacher Retirement System, Teachers’ Retirement System of Alabama, New York State Teachers’ Retirement System, North Dakota Teachers’ Retirement Fund, Teachers’ Retirement of Oklahoma, Ohio State Teachers Retirement System and Montana Teachers’ Retirement System.⁶

Clarify Authority to Delegate

The current provisions of Texas law governing the authority of the TRS Board to delegate investment discretion are contradictory, or at least confusing. On the one hand, constitutional provisions⁷ can be construed to prevent delegation. On the other hand, some statutory provisions⁸ expressly permit delegation (e.g., cash management by the custody bank and securities lending) and as a practical matter delegations to staff do occur (e.g., rebalancing portfolio investment allocations). In addition, playing “devil’s advocate” one may argue that investment in a limited partnership constitutes a “delegation” of investment discretion to the general partner. However, since TRS’s interest in such a partnership is by definition a “security”⁹ this argument illustrates the needless confusion that can arise between a permissible private investment and an impermissible delegation of investment discretion. These contradictions create an underlying theme of legal uncertainty that unduly limits TRS’s ability to optimally manage its investment program. In response to this uncertainty, TRS has foregone the benefits that delegation to external management may offer and has led to the unproductive “Approved Universe” mechanism.



Specific Authority for External Delegation is Needed

Most public pension funds outside of Texas have legal authority to delegate at least some investment discretion to external investment firms. TRS is precluded from doing so based on interpretation of Texas law by the Texas Attorney General. However, TRS need not delegate its entire investment program to external firms to benefit from this approach. In fact, among large public funds, internal asset management is common. Funds that manage assets internally typically manage more than half of their assets themselves.

In determining whether and to what extent a public fund's assets are better managed internally or externally, analysts consider four issues: (1) relative costs; (2) practical ability to attract and retain qualified investment professionals; (3) control over the investment process by appropriate parties; and (4) expected investment performance. These considerations apply with different results regarding the different types of assets and strategies TRS currently employs or may employ in the future.

For the bulk of its investments, we believe that TRS's use of internal management is a sound approach. The vast majority of TRS's internally managed assets consist of publicly-traded domestic stocks and bonds, relatively traditional and straightforward assets, traded in relatively efficient markets. By contrast, strategies or assets that require more esoteric expertise or research, with substantial prospects of materially outperforming (or under-performing) the relevant targeted return benchmark are often better managed externally. One example is a portfolio of international emerging market stocks, which may require unusual research, including knowledge of a range of local markets, laws and social conditions. Another example is a stock portfolio comprised of fast growing, newly formed companies with low capitalization ("small-cap growth" stocks), where very prompt, specialized information may be essential to success. In that instance, purchased research may not be sufficiently prompt, detailed or insightful, and the cost of maintaining a capable, in-house research staff may be prohibitive.



In some situations, another possible hazard of exclusively internal management is homogenization, i.e., dominance of a single investment style running across all parts of a fund's portfolio. By contrast, outside management by distinct firms may help distribute a fund's overall investment program across a true diversity of investment disciplines. Diversification is widely accepted in the industry as a primary method of decreasing investment risk.

Delegation in Substance with Limited Control

As reviewed above, recent changes in Texas law clarify that TRS may invest in limited partnerships and similar limited liability vehicles. Some observers could argue that in some cases a TRS limited partnership investment is a de facto delegation, since the outside general partner manages the partnership's investments on behalf of all limited partners (including TRS). This argument carries little weight with investments in private equity, where the limited partnership interest is the accepted industry-standard investment vehicle, and where there are numerous passive investor limited partners along side TRS. However, this argument is of greater weight where a real choice exists between a passive investment in a limited-liability vehicle such as a limited partnership and a contractual delegation to an external manager with a duty over a separate account devoted exclusively to TRS. For example, TRS currently invests in some private equity limited partnerships comprised of many passive investors, and in others - such as strategic securities trading and high yield bond limited partnerships (or other limited-liability entities) - in which TRS is the sole or largest investor. In order to minimize the risk that the latter situation could be challenged as a de facto delegation, TRS seeks to ensure that the limited partnerships are organized in strict compliance with applicable law, which by definition restricts the investor's degree of control over its assets.

In short, to the extent that TRS invests in "securities" in order to achieve diversification with necessary specialized investment expertise, but also observes the prohibition against delegation, it may needlessly surrender control over its assets. By contrast, if TRS were allowed to directly delegate authority to invest TRS assets to an external investment manager, it would be



better positioned to control the investment of TRS assets and impose on the external manager fiduciary duties and liabilities running exclusively and directly in favor of TRS. Better control can be achieved by TRS through a variety of means including maintaining the externally managed assets at TRS's custody bank, customized reporting requirements and investment guidelines, audit requirements, contractual fiduciary duty and liability provisions, and frequent oversight (e.g., through "management of managers").¹⁰

The issue is essentially the distinction between "passively investing" and "actively delegating." Which approach is more prudent depends on the circumstances of each case. Thus, the prohibition on delegation to external managers unduly hampers the Board. The Board should have reasonable discretion to employ both methods of investing TRS's assets.

Clarify the Authority to Delegate Internally

The "Approved Universe" is a list of securities the Board has pre-approved, from which staff must select the investments it purchases. Insofar as delegation to staff is not expressly authorized, the conservative view is that only the Board can legally make investment decisions. However, it is neither feasible nor prudent for the Board to make every investment decision for an enormous, sophisticated fund like TRS. Realistically, an internally managed pension fund like TRS must use investment staff and must provide that staff considerable investment discretion, within the framework of policies and procedures adopted by the Board. This is implicit in the fact that the Board is a part-time, uncompensated body. Arguably, using the artifice of the Approved Universe exposes the Board members to needless liability for supposedly approving individual investments as to which they cannot possibly have actual detailed knowledge. The staff is the trained and qualified instrument through which the Board exercises its investment authority by adopting policies and exercising oversight.¹¹ Therefore, the Board should be able to give specific or general authority to the staff without concern over improper "delegation," thus eliminating the need for the Approved Universe.



TRS Should Have Broad Authority to Invest in All Asset Classes Deemed Prudent

The ability to properly diversify assets is a tenet of fiduciary responsibility. Diversification mitigates investment risk. Accordingly, trustee boards are required, under trust law, to diversify the assets of the pension fund, unless under the circumstances it is clearly prudent not to do so.¹² However, the TRS Board does not have sufficient authority to properly and prudently diversify its portfolio. For example, many other public pension funds across the country have concluded that direct or indirect investing in real estate can enhance overall portfolio diversification. Real estate returns – both up and down – tend to have a relatively low correlation with those of publicly-traded stocks and bonds. Thus, investing in equity real estate may help counterbalance the different cycles of investing in publicly traded securities. Yet, TRS is legally precluded from direct real estate equity ownership. The last two years (ending December 31, 2001) provide an excellent example of how real estate can contribute to a successful diversified portfolio. During this period, while NASDAQ stocks were down over 50% and S&P 500 stocks were down nearly 20%, the broad, national index for institutional real estate (NCREIF) generated a positive return of 20.4%.

TRS's Authority to Invest is Uncertain

The 1996 IFS report recommended granting TRS authority to invest in a broader range of asset classes than was then permitted. Subsequently, the Legislature took action to broaden the range of permitted investments (or at least help to alleviate doubts about the scope of permitted investments) to include interests in limited partnerships, investment contracts, and instruments or contracts intended to manage transactions or currency exchange risk. However, although the range of permitted investments has been expanded and clarified by the Legislature, the extent of the Board's investment authority remains unduly limited in terms of real estate and cloudy in terms of permissible investment instruments.¹³ Legal arguments can be made for narrowly interpreting the Board's investment authority or broadly interpreting it; in the final analysis, the "right" conclusion remains uncertain.



We believe uncertainty is a more serious impediment to structuring and operating the TRS investment program than even an unnecessarily limited, but clear set of rules. This is because, as a practical matter, the TRS Board and staff are unlikely to take actions that may be subject to legal challenge. For instance, given the authority to invest in limited partnerships, in all probability, the Board could legally buy a limited partnership interest in a professionally managed, high quality, nationally diversified real estate limited partnership. However, because real estate per se is not a permitted investment, and delegation to external managers has been interpreted by the Texas Attorney General as unlawful under existing law, even a prudently evaluated and structured investment of this sort may not be entirely free from legal challenge. Thus, as a practical matter, the Board and staff are unlikely, in our view, to make any such investment, even if they conclude, as a matter of investment practice, that it would help diversify the overall TRS portfolio.

Limited partnership investments also provide another example of contradictory authority and uncertainty, as discussed above. After TRS law was clarified regarding investments in limited partnerships, TRS invested in limited partnerships which, in turn, invest in high yield bonds. Notwithstanding this, TRS management has stated that it is uncertain whether TRS would be open to criticism on legal grounds if it purchased interests in limited partnerships that, for example, invest in certain traditional asset classes such as publicly traded stocks or bonds. Nevertheless, through its “strategically traded securities” investments – one component of the alternative asset program – TRS does invest in external fund vehicles that use publicly-traded stocks and related instruments (e.g., options) to implement specific trading strategies.

The uncertainties that surround TRS’s investment program impede the ability of the Board to optimally manage and diversify its portfolio. This is especially true because, as we understand the law, Board members run at least a theoretical risk of personal liability for losses TRS suffers as a result of their fiduciary breaches. If the Board were to invest in, for example, a limited partnership which appears lawful and the investment subsequently did poorly, the Board would risk, with the benefit of hindsight, a legal challenge to its authority to have made the



investment in the first place. On the other hand, because investing in such a partnership interest is probably lawful, if the Board decides not to proceed and the partnership subsequently does well, the Board may be second-guessed for being too conservative by not having pursued a successful investment opportunity. Either way, the Board is unduly influenced by the legal uncertainty, and constrained from focusing on the genuine investment merits.

TRS Investment Authority Compared to Other Statewide Public Pension Funds

Most statewide public pension funds are not subject to restrictions on permissible investments (often called “legal lists”). Most statewide public pension funds operate under some version of a prudent person standard, which permits boards to invest in any investment which, after following a diligent process of analysis, they have found prudent, within the context of the overall portfolio. On the other hand, several statewide pension funds still labor under some form of legal lists including, for example, the New York State and Local Fund, as well as the Louisiana Teachers Fund and the West Virginia Board of Investment. In the past five years, many legislatures, including those in South Carolina, Wisconsin, Minnesota, Florida, Michigan, Oregon, Washington, and Mississippi, have eliminated or diminished investment restrictions on public retirement systems.¹⁴

Enhance TRS’s Budgetary, Personnel, and Procurement Autonomy

TRS’s relative lack of operating autonomy impairs its ability to optimally manage its investment program so as to maximize returns, while minimizing risk and expense for the benefit of plan participants. The Legislature should grant greater autonomy to the TRS Board, allowing it to establish its own personnel policies, independent procurement authority, and budget which, taken together, allow expenditures for necessary investment-related goods and services to be made directly out of fund assets. This action would be consistent with the principles advocated by UMPERSA and the practice employed in numerous other states.



Today, TRS spending is in practice limited by the General Appropriations Act. TRS's enabling statute¹⁵ gives the TRS Board the authority to utilize a "fiduciary finding" to justify expending assets of the trust beyond its legislative appropriation. However, there appears to be a reluctance to exercise this authority for fear of impairing relations with the Legislature. Given this reluctance, the "fiduciary findings" option is of limited practical value.

The following specific examples demonstrate how TRS's lack of autonomy impairs its ability to optimally manage its investment program:

Budgetary Process Creates Potential for Conflicting Objectives

A pension fund's trustees are different from the leaders of other state entities. This is due to the extensive and stringent fiduciary duties and responsibilities that govern operations, including, most significantly, the obligation to manage fund activities solely in the interest of the participants and beneficiaries, and not for other interested parties. These duties and responsibilities both necessitate and validate autonomy. In the absence of autonomy, boards may be forced to decide between fulfilling their fiduciary duties and responsibilities or making decisions based on more wide-ranging, and possibly conflicting, sets of interests, such as requirements to invest in economically targeted investments at below market rates of return.



Budgetary Process Encourages Costly Use of Soft Dollars

When a compelling need has arisen in the face of an insufficient appropriation, the Board's lack of budget autonomy has led to use of soft dollars to pay for certain otherwise ordinary expenses such as the fees of the consultant that helps implement the Alternative Assets program. Soft dollars are payments to a brokerage firm in exchange for credits (similar to frequent flier miles) for the client/investor. The client can use these credits to pay third-party firms for goods and services like investment research, subscriptions, and consulting services. The potential risk to the client (TRS) is that brokers will be selected, not on the strength of trade quality and lowest cost, but rather because of the availability of their soft dollar programs.

Subjecting the TRS to legislative appropriation creates a risk that budgetary pressures will lead to excessive levels of soft dollar brokerage that impair securities execution, indirectly increasing (and hiding) overall costs. In other words, if TRS lacks sufficient appropriated monies to pay for essential services in "hard dollars" (direct, conventional payment), then TRS must direct securities transactions to soft dollar brokers to generate the soft dollars needed to pay for these required services. However, soft dollar payments are typically more costly than direct hard dollar payments for equivalent services. Soft dollar payments can also create undue commission costs and produce poor securities execution (buying stocks and bonds at unduly high prices, selling at unduly low prices).

An analysis of TRS's soft dollar transactions for 1997 and 1998 demonstrates that for 1997, TRS paid approximately \$5.1 million more using soft dollars than if it had used hard dollars. The corresponding excess cost for 1998 soft dollar program approximates \$7.8 million.¹⁶ The Board recently authorized an increase in the soft dollar transaction maximum from 15% to 25% of transactions. Future excess costs may continue to grow as the soft dollar program increases in size.



While the use of soft dollars may be inefficient, the goods and services purchased with soft dollars provided important resources to TRS's investment program. Lack of access to these resources (i.e., loss of the soft dollar program without a corresponding increase in the ability to pay hard dollars) may cost TRS far more in terms of lost investment performance than the inefficiencies identified above.

The Board's Ability to Attract and Retain Qualified Staff is Constrained

The Board's lack of authority to delegate investment management authority to external managers (discussed above) makes the limitations that exist on its authority over compensation for the investment staff especially problematic. The inability to delegate to external managers increases TRS's required reliance on internal asset management. The ability to attract and retain top-notch investment staff is therefore critical.

The primary tools employers use to attract and retain qualified employees are providing a conducive work environment and compensation. Yet, TRS's ability to offer competitive compensation is inhibited by state budgetary and personnel processes. Turnover among investment personnel at the TRS is relatively low compared to other parts of state government, but quite high compared to other statewide pension funds across the country. [Turnover comparison charts are included in Appendix 2, page 199 of this Report.] The latter suggests TRS's ability to attract and retain necessary investment professionals, in the context of the regional and national market for such professionals sought by both public and private institutional investment organizations, is impaired. In our experience, at public pension funds, while non-competitive compensation is generally a contributing factor, other factors such as complications and frustrations with the bureaucratic process also add to turnover.

High turnover exposes TRS to undue "governance risk" – risk of disrupting the investment program because of loss of personnel and need for time to train new personnel.¹⁷ TRS has designed its internal asset management program in light of this risk – meaning that it utilizes only tightly constrained, highly quantitative investment techniques. The idea is to run



only those investment strategies that can survive the loss of key personnel. However, in at least some portions of the financial markets, a measure of more active and flexible investment management may be preferable. In short, constraints on compensation to investment staff and operating practices translate into troublesome constraints on the investment program.

In recent years, TRS has been allowed to increase base pay for many of its investment staff. In seeking to attract and retain qualified investment personnel, one possible further approach increasingly used among other public pension funds with significant internal asset management programs is to use incentive compensation. In a well-constructed incentive compensation program, the interests of staff and the fund are aligned: higher pay is earned only in exchange for genuinely improved investment performance. In a fund as massive as TRS, this can be a very attractive trade-off. However, under current law, TRS's flexibility in designing and implementing a well conceived incentive compensation program is constrained and subject to uncertainty.¹⁸ Accordingly, we recommend that the Legislature clarify the Board's authority to design and adopt a well designed and soundly monitored incentive compensation program for investment staff. The funding for the program should exist outside the state legislative appropriations process. To the extent incentive compensation is earned through generating sufficiently favorable returns for TRS, payment should come from trust assets.

The empirical support and more detailed analysis regarding all these compensation issues are set forth in Appendix 2 on page 199 of this Report.

State Travel Limitations Constrain TRS's Ability to Optimally Manage its Investment Program

Currently TRS is subject to both per diem and budgetary maximum travel expense limitations that restrict opportunities to attend training and educational conferences, investigate investment opportunities, and participate in advisory board meetings. TRS is limited to the state per diem for employee travel. For FY02, the state per diem for in-state travel is \$80 for lodging



and \$30 for meals. The out-of-state maximum reimbursement rates are set by the State Comptroller based upon the particular travel destination.

In addition to the per diem limitation, there is a state-imposed agency cap on aggregate travel expenses. For FY02, the aggregate travel cap for TRS was increased to \$425,000, an increase from the prior year's \$337,472. The budget allocated to the investment division, while increased, is still believed inadequate. In our opinion, the limitation impedes TRS's ability to effectively operate its investment program, particularly its private equity, international and emerging markets investment programs, and unduly restricts the ability to attend worthwhile educational conferences.

The impact of the travel limitations on the private equity program illustrates the problem. TRS allocated approximately \$3.5 billion to alternative investments (as of March 31, 2001) and is actively seeking to meet that target. Once it meets that target, TRS will likely be a limited partner in as many as 30 to 40 partnerships, in which TRS may often be the largest investor. The travel expense limitation hinders the alternative investment staff's ability to conduct on-site investigative visits and to sit on the advisory boards of the limited partnerships in which TRS participates. Advisory boards are generally composed of three to nine representatives of the largest limited partners. Participation on such boards is highly desirable to insure that the interests of the limited and general partners are appropriately aligned.

Partnership advisory boards provide limited partners with a means to exchange views and important information about partnership investments. For purposes of Texas law, we were advised that although advisory boards may have some limited authority, such as determining whether the general partner has a conflict of interest, they arguably do not involve official acts by state employees. We also understand that although most private equity partnerships in which TRS has invested will pay for travel or reimburse the advisory board members for their actual expenses, various restrictions arguably prohibit TRS employees from directly accepting such payments beyond the per diem limitation.¹⁹ We were advised that these restrictions include the



statutory prohibition against state employees' acceptance of travel reimbursements from certain persons, requirements relating to state agency use of state travel contracts, Texas Penal Code chapter 36, state ethics laws, and the TRS Ethics Policy adopted by the Board.²⁰

Texas Government Code §660.016 provides that a state employee may not accept travel expense reimbursement from a person that the employee's employing agency intends to audit, examine, or investigate, or is auditing, examining or investigating. We have been advised that this statute was probably not intended to apply to a public pension fund's monitoring of its partnership investments through attendance at advisory board meetings, but that it arguably creates uncertainty whether TRS employees may accept reimbursement of actual advisory board travel expenses. This is because such partnerships could be audited, examined, or investigated by TRS or on its behalf. It is also arguable that the state travel regulatory scheme deems any third party reimbursement in excess of per diems allowed under Texas rules to be a gift *to the employee* to that extent.

Under state travel regulations, TRS employees generally must travel using state contracts – making TRS business travel at the expense of a third party partnership difficult, if not unlawful.²¹ We understand that TRS does follow the state travel regulations and reimburses TRS employees attending partnership meetings up to the state per diem, and then in turn invoices the partnership for that amount. However, the expenses associated with many advisory board meetings exceed the state per diem in cost, especially for lodging, even at the higher out-of-state levels allowed. Thus, TRS employees attending advisory board meetings must make other arrangements (e.g., stay at a less expensive hotel remote from the meeting hotel and incur additional ground transportation costs) or pay out of their own pocket for any costs exceeding the per diem allowed under state law.

Under a conservative interpretation of the TRS Ethics Policy (at Section VIII A of the Ethics Policy) an employee's acceptance of travel and lodging expenses from entities in which TRS invests is deemed to be either an improper gift or economic benefit *to the employee* (as



opposed to a benefit to TRS), and is thus prohibited. In light of Texas statutes, regulations and ethics opinions relating to state employee travel, amendment of the TRS Ethics Policy to allow advisory board travel at partnership expense may not be possible unless the regulations are revised to provide TRS with greater flexibility in travel for investment management purposes.²²

The travel restrictions also limit TRS staff's ability to participate directly in key financial markets with individuals who have similar responsibilities, and conduct necessary due diligence particularly regarding the \$8.7 billion international investment portfolio (as of March 31, 2001). Since TRS is prohibited from using external managers, the international investment program is managed internally. International equity offers potential for enhanced returns and added diversification, but not without commensurately additional risk. In order to mitigate such risk, appropriate research and due diligence is essential. Such due diligence often necessitates international travel, particularly regarding emerging market investments. International travel is generally quite expensive and the Travel Regulations Act, Tex. Gov't Code §660,024, requires agency-head approval for international travel. However, the General Appropriations Act requires agency *governing board* approval prior to travel, which must be attached to the documentation provided to the Texas Comptroller. The TRS Board meets only eight times per year, sometimes making timely approvals cumbersome. Even more significantly, we believe that it is more appropriate for the Board to focus on policy making matters and allow decisions concerning travel by staff for investment-related matters to be handled by TRS management.

Specific examples of trips foregone for both domestic and international analysts and managers include:

- *Deutsche Banc Telecommunications and Technology Conference* – held annually in a European city, and viewed as one of the most important international conferences in the telecommunications and technology sector. More than 300 major institutional investors attend and more than 100 major telecommunications and technology companies attend and make presentations.



- *Bank of America Technology Conference* – held domestically. We were informed that the Director of Equities believes that participation in the conference could have assisted in managing the turn in technology stocks a month earlier.
- *Edison Electric Institute Conference* – considered by some to be the premier electric utility investment conference. Because of the sweeping changes going on in the utility industry as a result of deregulation, attendance could have enhanced the knowledge base of the investment staff relating to investor owned utilities.

It is essential that TRS staff have the opportunity to attend educational conferences to become more knowledgeable, receive ongoing training, and interact with their peers from other pension funds. This is particularly true when new complex programs, such as alternative investments and strategically traded securities, are being implemented. TRS saves investment management fees from internal investing, but these savings ultimately depend on the staff's ability to achieve investment results equal to that of external managers. Superior results are nearly impossible to achieve consistently over time without spending a reasonable amount of time and money on independent research, continuing education and exposure to industry developments. Staff is faced with the unfair dilemma of paying the difference between the per diem and the actual cost out of their personal funds or foregoing travel and risking negative portfolio performance.

Investment Division FTE Limitation Should be Eliminated

TRS is also subject to the State FTE (Full Time Equivalent) limitations. This requirement subjects TRS to statewide budget mandates which limit maximum staffing levels without any apparent recognition that the costs of TRS's operations are paid out of the pension trust fund, rather than from general revenue. As a result, to ensure effective administration of its operations, the Investment Division must compete with the agency as a whole for needed positions. At an investment division such as TRS, where almost all assets are managed



internally, the degree of portfolio earnings (or losses) at stake over time far overshadows the incremental differences in increased investment personnel costs needed to insure sufficient staffing.

Independent Procurement Authority Should be Expanded

Texas Government Code §825.207(b) is another constraint. It states that, “*The comptroller shall pay money from the accounts of the retirement system on warrants drawn by the comptroller*” This provision limits decisions by the Board insofar as the comptroller can – for reasons only indirectly related (or completely unrelated) to TRS – withhold certain payments to third party vendors who provide necessary services to TRS as well as certain payments of travel reimbursement or incentive compensation to employees. In fact, we understand that on occasion the Comptroller has in fact withheld such payments even when TRS believed payment was appropriate and necessary for the TRS mission.

Purview of the Attorney General

The Texas Attorney General is statutorily designated as the legal representative of TRS.²³ As in the case with other state agencies, TRS also employs its own internal legal staff. Although the TRS General Counsel’s office appears to be fairly independent of the Attorney General’s Office, and this relationship has worked in practice over the years, it poses an inherent potential for conflict. For example, even in the event of litigation where the Attorney General deems the interest of the State to differ from that of TRS, TRS does not have the authority to independently retain outside counsel unless the Attorney General agrees. The potential for conflict is increased since there is no formal understanding defining the relationship. We find it is best to address this type of relationship issue before a dispute occurs.

The designation of the Attorney General as the legal representative of TRS is a problem because the interest of the State, the TRS Board, and the TRS beneficiaries and participants may



not always be aligned. Examples could include a dispute regarding the interpretation of a statutory provision, a benefits dispute, or whether outside legal counsel is needed. The fact that the State Attorney General is the legally-designated representative of TRS can present questions of objectivity and an inherent potential for conflict of interest or the appearance thereof. While it may be possible to address this issue through a memorandum of understanding, we believe it is better to clarify statutorily and expand internal legal counsel's authority.

Increased Authority and Autonomy Should be Offset by Strict Fiduciary Standards and Continued Legislative Oversight

To the extent TRS is granted greater authority over the System's investment program, we recommend that the Board be subject to both continuing reporting requirements and the modern prudent person standard of care. In our opinion, rather than imposing overall budgetary and other legal limits, accountability can be ensured by requiring reasonable evidence that expenditures provide appropriate results.

The model statute most relevant to pension fund responsibility, UMPERSA, does not advocate independence (autonomy) without accountability. Rather, fiduciaries are subject to strict fiduciary standards and potential liability for breaching such standards, as well as reporting and disclosure requirements. Specifically, and at a minimum, in exchange for the autonomy we recommend, TRS should be required to provide periodic reports to the Legislature regarding costs and investment performance and/or undergo a periodic independent review of its investment program (i.e., whether its operations are effective and efficient).

Furthermore, in exchange for providing the Board greater authority over permissible investments, ability to delegate, broader budgetary authority and to hire and pay staff, the Legislature may also want to consider imposing a fiduciary standard on the Board that is more rigorous than the present common law standard. The Texas Constitution imposes an "ordinary" prudent person standard based on the common law long applicable to trusts in Britain and the U.S. That standard establishes that in making investments, a board shall exercise the judgment and care



under the circumstances then prevailing that persons of ordinary prudence, discretion, and intelligence exercise in the management of their own affairs. This common law prudence standard appears less rigorous than either the modern prudent person standard, which requires the prudence of others “acting in a like capacity and *familiar with those matters*” [emphasis added] or the even more rigid “prudent expert” rule.

UMPERSA stakes out a middle ground prudent person standard. The model law prescribes not “ordinary prudence...in the management of their own affairs,” as at common law, nor the most exacting “prudent expert” standard, but the standard of others “acting in a like capacity and familiar with those matters.” The comments to UMPERSA indicate that fiduciaries should not be evaluated against a prudent expert standard. Rather, fiduciaries should be evaluated in terms of the actions of prudent fiduciaries for other similar systems facing similar circumstances. The standard gives consideration to factors such as size, complexity, and the purpose of the pension fund. Case law under ERISA varies on this point. Some courts have described the standards of Section 404(a)(1) of ERISA as a prudent person standard, like UMPERSA, while others have considered and applied it as a prudent expert standard. While the exact meaning of the current Texas common law standard of care is not entirely clear, we believe that it is less rigorous than the modern prudent person standard (e.g., under UMPERSA) and certainly less rigorous than the prudent expert standard (which arguably applies under ERISA). In conclusion, raising the standard for the TRS Board from the present common law “prudent person” standard to the modern “prudent person in similar circumstances” will provide greater accountability without raising the legal liability bar so high that capable people will refuse to serve on the Board.



Summary of Legislative Recommendations

- 1) Make explicit the Board's ability to delegate investment authority to internal staff.
- 2) Allow the Board to delegate investment authority to external managers when warranted, subject to strict fiduciary standards.
- 3) Allow the Board to invest in any asset class, instrument, or strategy deemed prudent.
- 4) Grant the Board budgetary, personnel and procurement autonomy as it pertains to the investment program, while maintaining strict reporting and accountability to the Legislature.
- 5) Increased authority and autonomy should be offset by imposing the modern, prudent person standard of care.
- 6) Utilize the principles imbedded in UPIA and UMPERSA to accomplish the preceding recommendations.



¹ Some other Texas public retirement systems are permitted, under Tex. Gov't Code §802.204, to delegate investment discretion.

² “Uniform” designation indicates that there is a substantial reason to anticipate enactment in a large number of jurisdictions and standardization is the principal purpose. By contrast, a “model” designation means uniformity is not the principal objective and a significant number of jurisdictions are not expected to adopt the Act in its entirety since its purpose can be achieved by adoption of its principles.

³ Information source – The National Conference of Commissioners on Uniform Laws.

⁴ Id.

⁵ Tex. Gov't Code §825.112

⁶ Employee Retirement Income Security Act of 1974, Sec. 404(a)(1)(C); Uniform Prudent Investor Act, Sec 3; and Uniform Management of Public Employees Retirement Systems Act, Sec. 8(a)(2).

⁷ E.g. Tex. Const. art. XVI, §67(a)(3)

⁸ Tex. Gov't Code §825.302 (Custody and Investment of Assets Pending Transactions); §825.303 (Securities Custody and Securities Lending).

⁹ See, e.g., Tex. Gov't Code §825.301(a) ((deeming a limited partnership interest to be a security for purposes of the Board's investment in "securities" under Tex. Const. art. 16, §67(a)(3)).

¹⁰ See, e.g., Tex. Gov't Code §§ 802.204; .205 (authorizing other Texas public retirement systems to appoint investment managers and requiring a separate custody account for the assets under external management); ERISA §403(c)(3), 29 U.S.C.A. §1102(c)(3) (authorizing a plan fiduciary to appoint an investment manager for an ERISA plan); ERISA §405(d)(1), 29 U.S.C.A. §1105(d)(1) (providing that an ERISA plan trustee is not liable for the acts or omissions of an appointed investment manager).

¹¹ See, e.g., Tex. Gov't Code §825.113(b) (stating that Board shall develop and implement policies and separate policy-making from management responsibilities of the staff); Tex. Gov't Code §825.212(a), (e) (requiring Board to adopt and enforce ethics policies for staff and external consultants).

¹² Employee Retirement Income Security Act of 1974, Sec. 404(a)(1)(C); Uniform Prudent Investor Act, Sec 3; and Uniform Management of Public Employees Retirement Systems Act, Sec. 8(a)(2).

¹³ The definition of “securities” as used in Article 16 §67(a)(3) of the Texas Constitution was last interpreted by the Attorney General. in Op. Tex. Att’y. Gen. No. JC-0043 (1999). The Opinion advised that the TRS may invest in instruments defined as securities under the UCC definition. Following the issuance of Opinion No. JC-0043, the Texas Legislature amended §825.301(a) to add a definition of “securities” and specified that the definition included interests in limited partnerships, investment contracts, and instruments or contracts intended to manage transactions or currency exchange risk. However, the A.G. has advised that direct ownership of real property is not a “security.” (JC-0043 reaffirmed Op. Tex. Att’y. Gen. MW-152 (1980).) Accordingly, direct ownership of real estate (rather than through a limited partnership) is still prohibited.

¹⁴ Information source – Survey conducted by IFS for the Iowa Governor’s Task Force on IPERS Structure and Governance.



¹⁵ Tex. Gov't. Code Ann. §§ 825.314(b) and 825.313(d).

¹⁶ The cost assumptions for commission rates came from TRS's actual experience for full service trades and execution-only program trades. The market impact assumptions are incremental for each type of trade, and were based on academic studies by professors at Emory University and the University of North Carolina, regarding trading in general, not actual trades on behalf of TRS. We believe that the base assumptions were, at the time, reasonable for the market as a whole, but may have been more expensive than TRS's actual experience at the time.

¹⁷ Public Pension Systems Statements of Key Risks and Common Practices to Address Those Risks, July 2000. Endorsed by the Association of Public Pension Fund Auditors (APPFA), the National Association of State Retirement Administrators (NASRA), and the National Council of Teachers Retirement (NCTR).

¹⁸ Tex. Gov't. Code §825.208 prescribes that TRS compensation rates "may not exceed those paid for similar services for the state." Section 825.210 can be read to limit TRS employees from having "a direct or indirect interest in the gains from investments," which can be read to require caution in creating an incentive-based compensation program. Finally, §825.213(b) appears to tie employee raises to "annual performance evaluations that are based on documented employee performance," and uses the term "merit pay," suggesting that base salary increases are already based on documented performance. Legislative action thus may be needed to relieve TRS from the salary limitations contained in these provisions if an incentive-based compensation structure were to be implemented.

[Please note that on this and certain other technical legal analyses regarding Texas law, IFS has necessarily considered -- but sought to critically evaluate -- guidance from TRS legal staff who are members of the Texas bar and SAO staff].

¹⁹ It is also uncertain whether TRS itself could incur travel expenses and accept reimbursements for them in excess of state per diems, even when expending pension trust funds.

²⁰ *See, e.g.*, Tex. Gov't Code §660.017 (Excess Reimbursements); Tex. Penal Code §36.08; .09 (Gift to Public Servant by Person Subject to His Jurisdiction); Tex. Penal Code §36.09 (Offering Gift to Public Servant); Tex. Gov't Code §572.051(1) (stating that a state employee should not accept gifts, favors or services that might reasonably tend to influence the employee in his official duties).

²¹ 1 Tex. Admin. Code §125.19 (requiring executive branch state agencies to use the travel agency, charge card, rental car, airline, hotel, and other travel services negotiated by the state travel management program, but expressly exempting higher education institutions and TRS sister fund Employee Retirement System of Texas).

²² Advisory board travel expenses come out of funds provided by limited partners as set forth in the partnership agreement. However, TRS is in the same position as any other limited partner in this respect. If TRS does not serve on the advisory board, other investors, including other public pension funds, will do so. TRS will still indirectly bear these expenses as a limited partner. If TRS is to diversify its portfolio, it should be in a position to fully monitor its investments without undue legal constraint.

²³ Tex. Gov't Code §825.203.



Part II - Key Investment Issues Requiring the Consideration and Judgment of the TRS Board of Trustees

Executive Summary

We found the TRS investment program, taken as a whole, well structured and operated. We believe TRS is a leader in the pension fund industry and in many respects its investment program and processes are emblematic of “best practices” utilized by other large public pension funds. Nevertheless, we have identified a number of impediments to the investment program which – if alleviated – could make the TRS investment program and practices even stronger.

Five major themes emerged during our review of TRS. Although most of these are discussed in greater detail in Parts I and III of this Report, the Board should be alerted to them all:

1. The Board’s ability to effectively and efficiently carry out its fiduciary responsibilities is impeded by constitutional and statutory provisions. (See Part I, directed to the Legislature.)
2. The Investment Services Department (“ISD”) could play a very valuable role in the overall TRS investment program, helping to achieve compliance with investment criteria, manage risk and provide practical support. However, to effectively perform that role, the structure and duties of the ISD should be better articulated. (See Part III, directed to Executive Management.)
3. The TRS’s new trade order management system has made significant improvements in efficiency and control over stock portfolio management, but still requires further development and – once fully implemented –



could significantly facilitate several additional aspects of the investment program (Part III).

4. Excessive use of soft dollars is not an efficient method of paying for vital goods and services. Using hard dollars in place of some soft dollar purchases may generate sufficient savings to justify the Board's making a budgetary fiduciary finding (Part II).
5. A range of policy and procedural matters regarding the investment program of TRS should be enhanced (Part I and II).

Enhancements to Programs, Policies and Procedures

Overall, we found the policies and procedures of TRS sound, in depth and consistent with those utilized by a sophisticated investment management entity. For that reason, in general, our findings and recommendations in this area are mostly fine-tuning adjustments rather than a detection of any major deficiencies.

Institute in-depth, independent investment performance evaluation

Currently, TRS staff calculates risk-adjusted returns and does performance attribution. However, only some attribution information is provided to the Board and no peer group comparisons are provided. Consistent with industry best practices, performance attribution, risk-adjusted return analysis, and peer group comparisons should be prepared and provided to the Trustees by an expert, independent of the TRS staff, as part of the quarterly performance review process. Wellington is not a traditional investment consultant and may not be well-positioned to provide this type of information; furthermore, we understand that Wellington does not intend to seek renewal of its contract, which expires on August 31, 2002. However, TRS's current custodian, Northern Trust, has the ability to provide this information, as would any other top tier



custodian. Whichever firm succeeds Wellington as general consultant may likewise be capable of performing this function. We believe that Northern or another capable, independent party should provide this service to the TRS. Therefore, we propose that TRS seek promptly to implement an independent performance evaluation process.

Expanded Asset Allocation Study

We found that the TRS investment policy statement and asset allocation are in most respects well-considered and designed, subject only to the caveats discussed below and later in the report.

One caveat concerns treatment of owned real estate. Real estate can serve as a valuable means of portfolio diversification. However, because of the prior definition of “securities” and current practical uncertainty as to whether real estate investing in any form is acceptable to the Legislature, real estate has not been considered as an available asset class when asset allocation studies are performed. We believe that this asset class can add diversification, volatility stabilization and other benefits of value to the total portfolio. Consequently, we encourage TRS to consider it as an asset class in its next asset allocation study.

Historically Underutilized Businesses (“HUBS”)

Like many other Public Employee Retirement Systems (“PERS”) across the country, the TRS Board has encouraged utilization of minority owned brokerage firms, while still adhering to its fiduciary responsibility to act in the financial interest of the participants and beneficiaries. We find that the process for approving brokers, including HUBs, and thereafter evaluating the quality of their trade execution is quite extensive, thoughtful and generally consistent with industry best practices.



Nevertheless, we believe that the TRS should seek to refine the approval and evaluation process in a few specific ways. First, implementation of the complete Bloomberg Trade Order Management System should assist in providing additional data needed to enhance the ability to measure and evaluate the quality of securities execution for all brokers. Second, we recommend instituting further analysis at the “front end” in an effort to assess the likely quality of execution that TRS can reasonably expect from any firms – whether HUBs or not – that are “introducing brokers¹.”

Alternative Asset Class

The alternative asset program is relatively new and consists of two primary components – private equity limited partnerships and strategically traded securities (“STS”).

We found the investment policy for the private equity program, as well as the guidelines for that program, well drawn and complete, with only minor caveats. By contrast, in our opinion, the guidelines for the STS program require substantial upgrading. Upgrading those guidelines – and observing them in practice – is especially important because the STS program involves types and levels of risk and expense absent from more conventional investment programs involving publicly-traded securities and because the STS program is new and politically visible.

The specialty consultant to the Board and staff regarding the private equity program performs an essential role. We found the contract between the TRS and that consultant to be well articulated and the list of functions and responsibilities for the consultant is very complete. The staff’s role also is essential to assist the Alternative Assets Committee of the Board. We reviewed a randomly selected sample due diligence memo prepared by staff and, with some caveats explained below, found it to be well prepared.

¹ An introducing broker is a firm that “introduces” the client/investor to – or helps generate trading business for – the separate broker dealer that actually performs the trade, i.e., executes and clears it.



Organization and Resources

We found that in connection with the TRS investment program, the organization and resources of the Board are sound in most respects, and compare favorably to other public pension funds. This includes, for example, the Board's committee structure and operations, by-laws, and sources of information and advice, both from staff and outside parties.

Section 1: Adequacy of Investment Policy, Asset Allocation and Monitoring Processes

A. Review of Investment Policy Statement ("IPS")

1. Determine Whether the Current IPS Reasonably Reflects the Trustees' Approved Investment Strategy and Accountability

a) Purpose and Nature of an IPS

In General

Generally speaking the purpose of a System's IPS is first, to establish that all transactions are in the sole interest of System participants and their beneficiaries and designed to provide benefits and defray reasonable expenses of plan administration in a prudent manner, and second, to articulate the Board's consensus view of the System's mission and purpose, investment objectives, risk tolerance, liquidity needs and decision-making process.

An IPS should also be used to formulate policies to assist the Board with:

- developing a suitable long-term strategic asset allocation and rebalancing policy,



- selecting appropriate investment managers or commingled funds within the framework of that strategic asset allocation,
- prudently monitoring and evaluating the performance of the overall Fund and such investment managers or commingled funds and
- various specific programs the Board may wish to adopt, e.g., whether and how to use directed brokerage and soft- dollars, how to structure and effectuate proxy voting, etc.

Investment Objectives

Investment objectives are established in light of the investment horizon of the fund, its current and expected future cash flow needs and liability stream. On the most fundamental level, the Board of Trustees should establish clear investment performance objectives for the entire investment portfolio as a basic framework for the overall investment program (e.g., “earn a rate of return in excess of inflation, which meets or exceeds the Fund’s assumed actuarial rate and is consistent with the Fund’s long-term Policy Index”).

Responsibilities

An IPS should also be used to outline the assignment of responsibilities among the Board, TRS staff, and external service providers to the System, such as investment advisors, general partners and others.

An IPS should:

- Establish a long-term total fund target asset allocation, based on the analysis and advice of TRS Staff, its advisors and consultants;



- Establish a process for evaluating the performance of TRS internal investment staff and evaluating and selecting external investment managers, such as alternative asset general partners, where needed; and
- Establish a process for monitoring and evaluating manager and total fund performance.

Asset Allocation

Another fundamental purpose of an IPS is to establish the Total Fund Target Asset Allocation. This should be based on and generally consistent with the results of TRS's most recent asset allocation or asset/liability study. The target should reflect the balance between the Board's risk tolerance (willingness to accept short-term volatility of returns and the possibility of negative total return over short periods) and the desire to achieve the Fund's long-term investment return objectives. Rebalancing ranges around long-term targets should be designed to ensure that asset allocation "drift" is controlled in a cost effective way. When an asset class exceeds the range around the long-term target, the IPS should describe the process and timing for rebalancing to target. Over time, disciplined rebalancing can enhance performance and manage overall risk.

Measuring and Evaluating Investment Performance

An IPS should also establish the standards and measures of investment performance, including designating benchmarks which reflect performance expectations for each asset class and for the fund as a whole. For the total fund, "best practices" suggest employing a Total Fund Policy Index and an Asset Allocation Index. Published market indices are weighted to create a "Policy Index" that matches the Fund's long-term normal asset allocation and the weights remain fixed over time. The Policy Index serves as an objective measure of total fund performance.



Differences in performance between the Fund's actual return and the Policy Index can be attributed to:

- Asset allocation "drift" from the long-term target
- Over or under-performance by the Fund's investment managers
- Tactical decisions to overweight or underweight an asset class

As an additional measure, many funds also (as a matter of policy) establish an "Asset Allocation" index. This also is constructed using published market benchmarks. In contrast to the Policy Index, the Asset Allocation Index's asset class weights change to reflect the actual asset allocation of the fund as it "drifts" or as tactical decisions are made to overweight or underweight an asset class. Therefore, this benchmark adjusts for the asset allocation drift over time. A fund's excess or under-performance versus the Asset Allocation Index is mainly attributable to the performance of the underlying investment managers (internal or external).

IPS vs. Guidelines

Many institutional investors distinguish between investment policy provisions applicable to the Fund as a whole from more particularized investment guidelines for individual portfolios and investment managers (internal or external). Consistent with those institutional investors, we believe investment manager guidelines should be separate and distinct from the IPS. The IPS should reflect policy provisions that apply to all managers, internal and external, for the portfolio as a whole and for broad asset classes (e.g., minimum levels of diversification, prohibited securities or strategies, etc.). By contrast, customized guidelines should be developed for each manager or account to articulate and manage the particular risks associated with the unique investment process, strategy and risk characteristics of each.



Prohibited Strategies

An IPS should also indicate the types of investment strategies, vehicles and sub-classes that, as a matter of policy, are permissible and those that are prohibited across the entire Fund, such as the following:

- International (non-dollar) denominated stocks and bonds (if permitted, currency hedging should also be addressed)
- Below investment-grade fixed income
- Derivatives
- Real estate
- Alternative investments (e.g., hedge funds, private equity)

b) Adequacy of TRS IPS

Overall we find the IPS to be very thorough and well constructed and have listed some of its strengths and weaknesses below. The mission of the TRS, as stated in the Consolidated Annual Financial Report (“CAFR”) and in the IPS, is:

- To deliver retirement and related benefits authorized by law for members and their beneficiaries; and
- To prudently invest and manage the assets held in trust for members and beneficiaries in an actuarially sound system administered in accordance with applicable fiduciary principles.



The IPS addresses the need to comply with the “prudent man” standard, in accordance with the Texas Constitution. The long-term objectives of the Total Fund are to:

- Exceed the assumed actuarial rate of return adopted by the Board (8%);
- Exceed the long-term rate of inflation by an annualized 4%; and
- Exceed the composite index (i.e., “Policy Index”) operating within the defined risk parameters for the various asset classes.

We recognize that the State sets the constitutional minimum and maximum contribution rates of 6% and 10%, respectively, and that the Legislature cannot enact a benefit change if the amortization period would be greater than 31 years. However, as discussed more fully below, we believe that the Board could develop an opinion as to how much risk is appropriate for the Fund to take. For instance, the Asset Liability Model (“ALM”) study completed by Watson Wyatt in May 2000 analyzed the probability of achieving various funding ratios and contribution rates (at or above the minimum rate) along with downside risk for the six portfolios which were modeled.

The Board has also appropriately developed policies to deal with all of the major issues normally addressed in a policy statement. The IPS outlines the responsibilities of the Board, TRS staff, Investment Counsel, other advisors and the consulting actuary. The IPS requires that an asset/liability study be performed every five years and outlines the long-term normal allocations and allowed ranges. The IPS requires that the “asset weightings will be reviewed and compared with their respective long-term normal positions and with the ranges around those positions” on a quarterly basis and that TRS staff has 90 days to bring any asset class that falls outside the approved range for a period of three consecutive business days back into compliance. The CIO is required to report at the next Board meeting if the asset weightings fall out of range.



RECOMMENDATION Part II, Section 1-A-1: The Board may also want to specify the time period over which the portfolios are to be judged, (e.g., over a market cycle, or 3-5 years) the method for calculating the rate of return (e.g., total rate of return, that is, investment income plus realized and unrealized capital gains and losses) as well as how performance is calculated, (e.g., on a time-weighted basis by linking dollar-weighted monthly rates of return). The separate performance standards referenced in the IPS are not clear with respect to time measurement criteria. We note, however, that quarterly, one, three and five year returns are reported to the Board on a quarterly basis.

Each asset class and portfolio has its own section of objectives and guidelines, which are reviewed below.

2. Equity Portfolio Provisions of the IPS

Since all TRS publicly-traded equity assets are managed internally, there is no need for separate guidelines for external investment managers at this time. The provisions of the IPS that concern equities outline which securities are approved for investment, including the definition of the Equity Approved Universe, as well as investment restrictions, e.g., TRS may purchase no more than 5% of the outstanding shares of any company. The IPS states the investment objective, style and portfolio characteristics for the various equity portfolios and the benchmarks. The guidelines for the portfolio characteristics, such as diversification, return variability, yield, etc., help to control the level of risk within the portfolio. For the international portfolios, the IPS states that they are generally not currency hedged.

3. Fixed Income Portfolio Provisions of the IPS

Since all TRS publicly-traded fixed income assets are managed internally, or are in commingled accounts, there is no need for separate guidelines for external investment managers



at this time. However, the Board should insure that the guidelines for the commingled accounts are consistent with the System's own guidelines. The Fixed Income IPS outlines which securities are approved for investment, investment restrictions and quality standards. TRS can purchase only Commercial Mortgage Backed Securities ("CMBS") that are on the Wellington "approved list." This list, which is confidential and not normally distributed to clients, is generated by Wellington's credit research department for use by its own portfolio managers. This requirement was added to give the Board an added level of risk control since Wellington has a much larger credit research capability than TRS. The IPS states the investment objective, strategy and the fixed income benchmarks. The guidelines for the portfolio for sector weights, quality and effective duration help to control the level of risk within the portfolio. However, it is unclear why ranges for Government, Mortgage and Corporate sectors are different from the weightings of those sectors in the benchmark, potentially allowing for significant tracking error. We understand from Wellington that it is attempting to heighten the awareness of the relative risk and absolute risk of the Fixed Income portfolio and may propose to align it more closely with the benchmark in the future.

RECOMMENDATION Part II, Section 1-A-2: We recommend that Wellington or its successor discuss with the Board of Trustees and staff whether and why the sector weightings in the Fixed Income portion of the IPS should materially differ from those in the applicable performance benchmark.

A related issue is whether an equivalent list of approved securities can be obtained when Wellington ceases to serve as TRS's investment consultant. This issue is only partly interconnected with the overall Approved List issue. Due to the complexity of CMBS analysis, TRS may not be able to cost effectively obtain the necessary in-house expertise to identify acceptable securities in this asset class. If TRS determines that it cannot through its own resources replace the Wellington list, there are at least three possible alternatives short of discontinuing to invest in these securities. First, since Wellington is not discontinuing its investment operations, but only their consultancy, TRS might in theory be able to negotiate



continuing access to the list for a fee. However, we are told that Wellington has declined to provide such access. Second, TRS may be able to negotiate access to a similar set of guidelines from another fixed income manager for a fee. As long as TRS is prevented from hiring such a manager for investment management per se, the manager may be willing to share otherwise competitive information. Third, and perhaps most likely, TRS might use agency ratings (S&P, Moody's) to allow purchase of CMBS with a minimum agency rating (such as investment grade or above).

4. IPS could be Enhanced by Documenting the Following Subject Areas

a) Frequency of Review

Although we understand from staff that the IPS is reviewed annually, there is not a formal requirement stated in the IPS to review the statement periodically. The process for making changes to the IPS is covered in the "Role of Staff and Advisors." In addition, the "Bylaws of the Board of Trustees," in Section 1.8 (Responsibilities of the Board), states that the Board shall "adopt and periodically review policies for the operation of the system." We note that the System has conducted annual reviews for some time via the Board Policy Committee and that Wellington annually expresses its view on policy adequacy.

RECOMMENDATION Part II, Section 1-A-3: There should be a formal statement in the IPS regarding the process for the periodic (e.g., annual) review of the document.

b) Proxy Voting Policy

TRS proxy voting policy is implemented using Institutional Shareholder Services ("ISS") to vote shares based on general guidelines provided by TRS. ISS sends TRS a listing of votes to be cast, giving TRS the opportunity to override default instructions. However, the IPS does not



indicate who has responsibility for voting proxies. We acknowledge that a proxy voting policy does exist, although it is not mentioned or incorporated by reference in the IPS.

RECOMMENDATION Part II, Section 1-A-4: The IPS should indicate who has responsibility for voting proxies and the process for monitoring those votes and related matters. (This is not to say we find the actual proxy voting process insufficient, but rather that additional Board clarification of proxy voting responsibilities in the IPS may be helpful.) Monitoring may be procedural (i.e., assuring that all votes that could be cast were in fact cast) and/or substantive (i.e., assuring that all votes were consistent with general policy). The IPS should also require periodic reporting of proxy voting (no less than annually), and it should indicate whether or not abstentions are permitted or whether votes should be either “for” or “against.”

c) Asset Allocation Index

The IPS states that returns for each asset class and the total fund will be compared with their benchmarks on a quarterly basis and the portfolio will be reviewed for compliance with the IPS.

RECOMMENDATION Part II, Section 1-A-5: The Board should also measure performance against an “Asset Allocation Index” whose asset class weights would change as the actual asset allocation drifts away from the long-term normal weightings in order to show excess or under-performance solely attributable to the underlying portfolio manager. This would be in addition to the Composite (or “Policy”) Index to which performance is already being compared.

d) Other Investment Objectives

RECOMMENDATION Part II, Section 1-A-6: The Board should also consider its position regarding the following additional potential objectives as part of the IPS:



- Seeking to maintain a certain minimum funded ratio (e.g., above 100%). (According to the Actuarial Valuation as of August 31, 2000, the TRS was at that point fully funded (107.4%).) This is not to say that the Board is in a position to control benefit levels or contribution levels; however, as a matter of policy, the Board may wish the structure and risk of the investment portfolio to take into account the structure and value of the liabilities, for instance, in an effort to control to some degree the volatility of the funded ratio.
- Seeking to achieve investment results that would provide the Legislature with the means to enhance future benefit levels.
- Seeking to minimize the risk of negative returns over some number of years.

B. Review of the Asset Allocation Process

1. The Asset Allocation Decision

As we discussed in our 1996 report, asset allocation is the process of diversifying an investment portfolio among asset classes (stocks, bonds, real estate, alternatives, etc.) in order to have a high probability of achieving a particular investment objective, such as consistently achieving a certain level of total return and controlling risk. Empirical research has shown that asset allocation typically has a more significant impact on investment performance than the choice of investment managers or individual security selection. For example, the amount of the portfolio allocated to fixed income will generally have a greater effect on investment performance than which fixed income managers are selected or which bonds they buy. Allocation decisions should be made or approved at the Board level (rather than the staff or



advisors) where – pursuant to the Investment Policy Statement – it can be coordinated with funding policies, actuarial condition and investment objectives.

At TRS, as with comparable funds, the Board of Trustees is responsible for setting the System’s overall asset allocation. The Board obtains advice and analysis on asset allocation from TRS staff as well as outside consultants and advisors

2. The Asset Allocation Study Process

As we reported in our 1996 study, the process for determining the appropriate asset allocation is not an exact science, but one can use computer modeling and relevant reasonable assumptions to help meet long term investment objectives within an acceptable tolerance of risk. Mean variance optimization continues to be the most widely used method used by sophisticated institutional investors, although newer approaches such as “risk budgeting” are gaining popularity. Based on forward looking assumptions for asset class risk, return and correlation, a computer program identifies a set of asset class mixes which provides a series of “efficient” portfolios for various combinations of risk and return. The series of efficient portfolios is called the “efficient frontier.” A portfolio is considered “efficient” when – compared to all other possible combinations of permissible assets – it produces the highest expected return for a given level of expected risk (or, conversely, the lowest level of risk given a desired level of expected return). The optimal portfolio is the efficient portfolio that best matches the Board’s requirements regarding return, cash flow, risk and other essential criteria. Asset allocation modeling is a “garbage in, garbage out” exercise: the output is only as sound as the quality and objectivity of the inputs employed in the process. The assumed levels of risk, return and correlation for each asset class are critical to the process.

Small adjustments to any of the assumptions can profoundly alter the conclusions as to which portfolios are efficient. Asset allocation inputs should be forward looking, i.e., they in effect project how each asset class may be expected to perform in the future. While clearly this



cannot be known with certainty, a simple mechanistic extrapolation of past data may ignore changed environments and may fail to consider where various markets currently are within their cycles. In our view, the ultimate fiduciary decision maker should seek to understand the process used to develop the assumptions and to assure that the process is fundamentally sound. This process is an art, not a science. We believe that there is a range of acceptable inputs, rather than a single, precise set of “correct” inputs for each asset class. Modeling techniques can use ranges as well as specific points to generate expected future results.

- **Asset Allocation Study Completed in December 1999**

TRS investment staff saw the need for increased diversity within the Fund’s assets. Watson Wyatt Investment Consulting was hired to conduct a “limited scope” asset allocation study to see if TRS would benefit from additional investment opportunities before proceeding with the full-blown asset liability study, which was required by Investment Policy to be conducted in 2000. TRS investment staff wanted an “unconstrained” analysis of multiple asset classes – in part to serve as an educational tool for the Board, to illustrate the potential benefits of increased diversification in achieving a better risk/return ratio. After meeting with TRS, Watson Wyatt considered the allocation to the existing asset classes, expanding the basic asset classes to include additional sub-classes, e.g., high yield bonds and emerging markets, as well as including new asset classes that were not currently being used, e.g., several types of alternatives.

Watson Wyatt surveyed 27 state and municipal funds to aid in determining which asset classes/sub-classes should be targeted for inclusion. Watson Wyatt used mean variance optimization to develop several efficient frontiers including different asset classes and expanded constraints on existing asset classes and compared them to a baseline analysis. The results of the analysis showed that TRS could move to a higher efficient frontier with higher expected return and reduced risk by re-weighting or increasing the asset classes/sub-classes allowed. Watson Wyatt did note that there are some negatives to investing in alternative asset classes (e.g.,



illiquidity, higher fees, lack of transparency) that should be considered in addition to the potential benefits of higher returns and increased diversification.

TRS decided to further evaluate the new asset classes through an asset liability model (“ALM”) that would also consider practical issues such as liquidity and capacity constraints.

3. Asset/Liability Study Process – Study Completed in May 2000

In accordance with the TRS requirement (stated in the Investment Policy Statement), to complete an Asset Liability study every five years, TRS hired Watson Wyatt to do an ALM. The reasons for the study, according to the Introduction to the May 2000 report, were as follows:

- Study the effectiveness of the current asset allocation with respect to future contribution and funding levels.
- Investigate whether there would be long-term advantages gained by increasing the current asset allocations in equity-type investments and expanding into several new alternative asset classes.
- Learn how investment risk and asset allocation affect the long-term probability that TRS can achieve its benefit goal of a continuing series of Consumer Price Index (“CPI”) ad hoc Cost of Living Adjustments (“COLAs”), and
- Evaluate whether the new Partial Lump Sum Option (“PLSO”) will have a significant negative effect on external cash flow and asset allocation. We understand that the PLSO was designed to be actuarially neutral.



According to Watson Wyatt's report, the key liability side assumptions were as follows:

- (1) Demographic assumptions
 - (a) Active membership will expand at 3% per year through August 31, 2005, and then the growth rate will decline 0.25% per year down to an ultimate growth rate of 1% per year beginning in 2012 over the remainder of the 20 year projection period
 - (b) Retirements, deaths, disabilities, and withdrawals consistent with the new actuarial assumptions developed in the 1999 Experience Study
 - (c) Future salary increases for continuing active members assumed to equal forecasted inflation plus the new actuarial assumptions for the step-rate/promotional components
 - (d) Starting pay for future new entrants assumed to increase from one year to the next by forecasted inflation plus a 1% real increase
- (2) Benefit assumptions
 - (a) No change in the current benefit provisions
 - (b) Biennial ad hoc increases beginning September 1, 2001 equal to inflation since the last increase, but only if the increase does not cause the funding period to exceed 30 years.



The model uses the 1999 Experience Study actuarial assumptions for all actuarial values. Projection starts with participant and financial data as of August 31, 1999, and projects through August 31, 2019. The State (constitutional minimum) contribution rate is 6% as long as this rate will produce a funding period less than or equal to 30 years.

According to Watson Wyatt, if the valuation as of the August 31 preceding a legislative session indicates that a 6% rate produces a funding period in excess of 30 years, then the rate for the following biennium is assumed to be the rate necessary to produce a 30 year funding period.

Any such increased rate cannot exceed the constitutional maximum of 10% of pay. We understand that the legislature can only approve benefit enhancements if the Fund can amortize any consequent unfunded actuarial liability in less than 31 years.

- **Capital Markets Assumptions**

Watson Wyatt developed risk, return and correlation statistics for the following asset classes, including real estate (although real estate was not modeled in the portfolios):

Asset Class	Expected Return (%)	Average Standard Deviation (%)
Large Cap Stocks	10.1	16.0
Mid Cap Stocks	10.5	18.0
Small Cap Stocks	11.0	21.0
International Equity	10.1	18.0
Emerging Markets (Equity)	14.0	35.0
US Fixed Income	7.1	6.1
High Yield Bonds	9.6	12.4
Real Estate – Direct	7.5	10.0
Venture Capital	15.0	30.0
Buyouts	13.0	25.0
Re-Start Capital (Distressed)	10.3	18.0
Risk Arbitrage	6.8	6.0
Cash Equivalents	5.1	2.5
Inflation	2.5	2.9



TRS staff and Board reviewed and accepted the assumptions used by Watson Wyatt. After consultation with TRS staff and Board, Watson Wyatt was directed to model six portfolios – Portfolios A-F, as shown below.

Asset Class	Portfolios (%)					
	A	B	C	D	E	F
Large Cap Stocks/S&P 500	40.00	46.00	42.50	49.00	40.00	36.00
Mid Cap Stocks	6.00	6.00	7.50	6.00	9.00	11.00
Small Cap Stocks	2.00	2.00	2.50	2.00	3.00	4.00
International Equity	10.00	10.00	12.00	10.00	14.00	15.00
Emerging Markets			0.50	1.00	1.00	2.00
US Fixed Income	40.00	34.50	30.00	27.00	26.50	22.00
High Yield Bonds			1.00	1.00	1.50	2.50
Venture Capital	1.00	1.00	1.00	1.00	1.00	1.50
Buyouts			1.50	1.50	2.00	4.00
Re-Start Capital (Distressed)			0.50	0.50	0.75	0.75
Risk Arbitrage			0.50	0.50	0.75	0.75
Cash Equivalents	1.00	0.50	0.50	0.50	0.50	0.50
Total	100.00	100.00	100.00	100.00	100.00	100.00
Subtotal Traditional Equity	58.00	64.00	65.00	68.00	67.00	68.00
Subtotal Non-Traditional	1.00	1.00	3.50	3.50	4.50	7.00
Subtotal Traditional Equity and Non-Traditional	59.00	65.00	68.50	71.50	71.50	75.00
Total Cash + Fixed Income	41.00	35.00	31.50	28.50	28.50	25.00
Expected Return	8.51	8.63	8.82	8.87	8.94	9.19
Expected Risk (Standard Deviation) ¹	9.92	10.66	10.78	11.22	10.99	11.29

As may be seen, Portfolio A was more conservative and produced a lower standard deviation than the then current policy asset allocation, which is represented as Portfolio B.

¹ Standard deviation is a measure of risk commonly used in modern Portfolio Theory. The higher the number, the greater the degree of dispersion in possible future expected returns and hence, the greater the risk.



Portfolios C-F included varying allocations to Emerging Markets, High Yield Bonds, and other types of alternative investments (in addition to Venture Capital) – Buyouts, Re-Start Capital and Risk Arbitrage.

Watson Wyatt modeled results for 3, 5, 10 and 20 year time periods and plotted where the six sample portfolios would appear on several different charts. After receiving recommendations and input from TRS staff, Wellington, the investment advisors, Watson Wyatt and others, the Board voted to adopt a portfolio that is a blend of Portfolios C and E at its June 2000 meeting, which was presented in a memo from the TRS Chief Investment Officer (“CIO”), John Peavy, on June 15, 2000.

Asset Class	Range of Mix %		Long-Term Normal
	Minimum	Maximum	
Active Large Cap Stocks	16.00	27.00	21.00
Passive Large Cap Stocks	16.00	27.00	21.00
<i>Total Large Cap</i>	<i>32.00</i>	<i>50.00</i>	<i>42.00</i>
Active Mid Cap Stocks	0.00	6.00	3.75
Passive Mid Cap Stocks	0.00	6.00	3.75
	<i>0.00</i>	<i>10.00</i>	<i>7.50</i>
Active Small Cap Stocks	0.00	3.00	1.50
Passive Small Cap Stocks	0.00	3.00	1.50
<i>Total Small Cap</i>	<i>0.00</i>	<i>5.00</i>	<i>3.00</i>
Active International Equity	0.00	18.00	9.00
Passive International Equity	0.00	18.00	4.00
<i>Total International</i>	<i>0.00</i>	<i>18.00</i>	<i>13.00</i>
US Fixed Income	20.00	40.00	28.50
High Yield Bonds	0.00	3.00	1.00
<i>Total Fixed Income</i>	<i>20.00</i>	<i>40.00</i>	<i>29.50</i>
Venture Capital	0.00	2.00	1.00
Buyouts	0.00	3.00	2.00
Strategically Traded Securities	0.00	3.00	1.50
<i>Total Alternatives</i>	<i>0.00</i>	<i>5.00</i>	<i>4.50</i>
Cash Equivalents	0.00	3.00	0.50
Total			100.00



Separate memos were received by the Board from the TRS CIO, Wellington and advisor Craig Hester. The Board reached a decision that was a “compromise” of the original recommendations received, based on a subsequent memo from the CIO.

C. Assessment of the Process

1. Adequacy of Current Methodology

As we concluded in our 1996 report, we believe that the TRS Board, in conjunction with staff, its consultants and advisors, once again followed a sound and well articulated methodology in developing a range of reasonable allocation options with acceptable risks, all with an expected return required to meet the System’s actuarial requirements. Participants in the process were pleased with the “Task Force” approach used, which included the participation of Board members, investment advisors, investment consultant, TRS investment staff as well as Watson Wyatt.

a) Capital Markets Assumptions

We understand that Watson Wyatt developed the inputs for the ALM, but that TRS staff, investment advisors and Wellington reviewed them and found them to be satisfactory. TRS staff wanted the assumptions to be rather conservative given the potential foray into new asset classes. We do not have more than a basic outline of Watson Wyatt’s methodology for developing its assumptions, but present our own assumptions in the table on page 65 in Section D. Developing assumptions for publicly-traded securities can be complicated given the plethora of publicly available data on risk, return and correlation. Deciding how to interpret the data, i.e., which time periods to emphasize, etc. can create difficulties.

We believe expected returns should be developed with both historical analysis and with forward looking observations, given various historical and current market valuation measures.



Some of the classes modeled by Watson Wyatt would be deemed subsets of the major asset classes, rather than asset classes in their own right, by some public funds and investment consultants. For example, many institutional investors and/or their consultants would consider U.S. Equities to be an asset class with large, mid and small cap domestic equities as sub classes. Thus, such investors and consultants would not quantitatively model these subclasses and would stop the modeling at the “higher” level of the asset class. In other words, such practitioners distinguish between asset allocation and portfolio structure: the former can be modeled using mean variance optimization (“MVO”), while the latter includes various policy judgments and some quantitative work, but not full-blown MVO. For instance, many boards of trustees determine the weighting amongst large, mid and small cap stocks in their domestic equity portfolio not by asset allocation analysis, but instead, by referring to the weighting in the Wilshire 5000 Index for each of those categories and then deciding, as a matter of policy, to what extent they want their portfolio to resemble that broad standard.

In the same vein, U.S. Fixed Income is often considered to be one asset class, with subclasses of investment grade and high yield. International Equities is also sometimes treated as one asset class with Emerging Markets as a sub-class (although here we do believe that there can be substantial differences in risk and correlation assumptions).

We are not saying that Watson Wyatt’s approach is incorrect, rather that there are multiple ways to tackle the asset allocation decision (see also IFS asset allocation example on page 65 below). TRS believes that there is substantial differentiation among various subcategories of assets, and that asset allocation modeling can adopt materially different assumptions for the returns, risks and correlations among those subcategories. By contrast, we believe the data for the broader asset classes are more dependable, as the subclasses are more difficult to delineate and have shorter histories. When asset classes are defined more broadly, many institutional investors will not try to model each category quantitatively through computer optimization, rather they will make informed judgments or “policy decisions” for strategy



purposes, without purporting scientific precision. Neither approach is right nor wrong; this is a matter of judgment and policy.

In its previous ALM, conducted in 1995, we understand that TRS approved a long term normal equity position of 60%, which included about 7% in mid cap stocks, 10% in international stocks and 1% in venture capital. TRS also included the 5% for international bonds within the 34% long term normal bond position.

Assumptions for alternative assets/private markets can be even more complicated to develop than those for publicly traded securities.

Watson Wyatt developed risk, return and correlation statistics for several different types of alternative assets, including Venture Capital, Buyouts, Re-Start Capital and Risk-Arbitrage. Developing assumptions for asset classes where there is limited reliable data can be difficult and quite subjective. Therefore, Watson Wyatt appears to have used conservative return and volatility assumptions for these asset classes, when compared to the historical data presented in their December 16, 1999 "Study on Expanded Investment Opportunities." Formulating expected risk, return and correlation statistics for private market assets is more difficult due to the lack of a public market; the limited history and availability of data; the use of book value accounting; and greater potential for variation among investment results, depending on the skill and approach of the general partner (compared to generally lesser variations among results for managers of publicly traded securities, which tend more closely to approximate index results), among other reasons.

Educating the Board is especially important in the arena of alternative investments and it is crucial that they are aware of the limitations of the optimization model and the assumptions used. Rather than attempting to quantify the expected risk, return and correlation for each category within the alternatives group, another approach would be to allocate a prescribed amount to non- traditional or alternative assets as an overall class and treat judgments as to how



to allocate amounts to the sub-classes as “policy” decisions. Historical data and general observations about the expected nature of each category within the alternatives group can be used to aid in the strategic decisions. This is the method employed by IFS in Section D, on page 65 below. Another possible approach, in order to entirely avoid attempts to quantify private market assets, would be to include the various non-traditional sub-classes within the major categories of equity and fixed-income, where applicable, and make all allocations to alternatives a “policy” level decision.

RECOMMENDATION Part II, Section 1-C-1: For the next asset allocation study, consider modeling broader asset classes, rather than using subsets of these classes, (e.g., Domestic Equity, Domestic Fixed Income, International Equity, International Fixed Income, Alternatives, Real Estate) and using statistical data and judgment to make educated allocations to asset sub-classes as policy decisions. We also ***RECOMMEND Part II, Section 1-C-2*** that the CIO, Wellington and Watson Wyatt discuss with the Board the pros and cons of the approach Watson Wyatt used compared to this broader approach, and how ultimately, the Board is responsible for making judgments on asset allocation.

b) Constraints on Permitted Asset Classes

Real estate was excluded from Watson Wyatt’s ALM study for several reasons. Among these was, as one Trustee put it, “the cloud hanging over real estate” because of uncertainty as to whether equity real estate was constitutionally permissible, as well as a history of difficulties with the prior program. We believe that there are several reasons for at least considering the potential benefit of real estate equity for the whole portfolio, as follows:

- (1) Real estate equity may enhance the diversification of the overall TRS portfolio. Real estate returns – both up and down – tend to have a relatively low correlation with publicly traded stocks and bonds. For example, over the 18-year period from November 30, 1982 to



December 31, 2000, the average five-year rolling correlations have been as follows: 0.68 with the Wilshire 5000, 0.63 with the S&P 500 and 0.25 with the Lehman Aggregate.

- (2) Another way of making the same point is to recognize that over particular time periods real estate may help counterbalance downward cycles in common stocks. For example, over the full calendar year 2000, while the S&P 500 index lost 9.08%, the real estate market (as measured by the Wilshire Real Estate Securities Index) returned 30.74%.

Investing in real estate equity is very common for PERS across the U.S. Among statewide defined benefit PERS, the average allocation to equity real estate as of year 2000 was 3.8%, according to the latest survey issued by Greenwich Associates. In addition, 43% of the public funds in the Greenwich survey reported investing in equity real estate. Among a few select examples of other large statewide PERS with substantial internal asset management, the approximate percentages invested in equity real estate as of year end 2000 were as follows:

- CalPERS – 5.3%
- Ohio PERS – 6.3%
- Florida State Board of Administration – 4%
- State of Michigan Retirement System – 8.5%
- New York State Retirement System – 6%

Practical circumstances at TRS have changed, e.g., now the Board has some familiarity with other “appraised assets” through the alternative assets program (e.g., private equity of various types); the Board has an increasing understanding (again through efforts of the new CIO and alternatives program) of the benefits of diversification. Investment returns during 2000 and 2001 underscore the value of real estate as a diversifier in difficult markets for equity securities. Additionally, the prior legal “cloud” may have partially dissipated. Investing in real estate



through a limited partnership interest appears permissible. Using such an LP mitigates the need to build an extensive in-house staff to structure and manage an internal real estate program and to expend associated time and resources at the level of the Board and staff that the prior program required.

We believe that despite the foregoing reasons, and in light of remaining practical concerns among some parties, a modest, relatively palatable way of investing in real estate equity would be through limited partnership vehicles, along with other limited partners where the general or managing partner is a nationally recognized real estate expert, investing in core properties (fully developed and leased in prime locations), diversified by type, size, geographic and economic location. This strategy is markedly different from one of taking control positions in individual properties assembled through an in-house real estate staff.

RECOMMENDATION Part II, Section 1-C-3: The Board should permit the next asset allocation study to include real estate equity as a permissible asset class. At the least, seeing the effect of including and excluding real estate will assist the Board and staff in determining whether pursuing the issue has a beneficial investment argument to support it.

Overall, we believe the Asset Liability Model used by Watson Wyatt is sophisticated and superior to a “plain vanilla” asset allocation used by many institutional investors and/or investment consultants. Compared to an “asset only” approach, the ALM allowed the Board to consider, among other items, a probability analysis of the expected impact of the investment portfolio on future contribution levels and funding ratios, the impact of benefit policy changes, changing demographics and COLAs on funding levels and cash flow, as well as the amount of downside protection across various time periods. Moreover, the ALM analyzed such impact based not only on the expected average long-term investment returns, standard deviation and correlations for the asset classes which comprise the whole portfolio, but also on many different economic scenarios which incorporate the behavior of inflation and long bond yields over time.



As noted above, the Board involved TRS staff, the Investment Consultant, and the investment advisors in the process performed by Watson Wyatt and participated in a “Task Force.”

D. Reasonableness of Current Asset Allocation

1. Comparison of Current TRS Allocation to “Efficient Frontier”

Part of the purpose of our report is to illustrate additional approaches to asset allocation and to demonstrate the sensitivity to alternative approaches on the “optimal” asset allocation. As stated earlier, we believe that Watson Wyatt used an appropriate process in its Asset/Liability modeling study. It prepared capital market assumptions for twelve different asset classes. By contrast, IFS’ approach to an asset allocation analysis involves fewer asset classes. We used our own assumptions for risk, return and correlation to develop an efficient frontier through mean variance optimization (see Appendix 6 on page 253). The assumptions we used for risk and return were in general relatively similar to those used by Watson Wyatt, despite the different number of asset classes considered, and are as follows:

Asset Class	<i>IFS’ Assumptions</i>		<i>Watson Wyatt’s Assumptions</i>	
	Annual Return (%)	Annual Risk (%)	Annual Return (%)	Annual Risk (%)
U.S. Stocks	10.5	17.0		
<i>Large Cap</i>			10.1	16.0
<i>Mid Cap</i>			10.5	18.0
<i>Small Cap</i>			11.0	21.0
Non U.S. Stocks	10.5	18.0	10.1	18.0
<i>Emerging Markets</i>			14.0	35.0
Fixed Income	6.0	7.0	7.1	6.1
<i>High Yield Bonds</i>			9.6	12.4
Cash	5.0	1.0	5.1	2.5
Alternative Assets	14.0	35.0		
<i>Venture Capital</i>			15.0	30.0
<i>Buyouts</i>			13.0	25.0
<i>Re-Start Capital</i>			10.3	18.0
<i>Risk Arbitrage</i>			6.8	6.0
Equity Real Estate	8.0	14.0	7.5	10.0



Our analysis shows that both TRS's current portfolio structure (as of March 31, 2001) and "Long-Term Normal" (or "target") allocation lie very close to the efficient frontier, with the target portfolio offering a slightly higher level of expected return and risk than the current portfolio. As can be seen in the table below, these numbers are similar on a relative basis to those calculated by Watson Wyatt in its study, although IFS has projected both slightly higher risk and return levels and the portfolios analyzed are not identical in composition. Watson Wyatt did not model the current target portfolio as it is a combination of two portfolios which were considered in the ALM study, Portfolios C and E. Therefore the target's risk and return statistics should fall between those of Portfolios C and E.

	Expected Return (%)	Expected Risk (%)
<i>IFS Analysis</i>		
3/31/01 Portfolio	8.86	11.24
Target Portfolio	9.30	12.40
<i>Watson Wyatt ALM</i>		
Previous Policy Portfolio (B)	8.63	10.66
Portfolio C	8.82	10.78
Portfolio E	8.94	10.99

As we noted in our 1996 report, statistical analysis and computer modeling are not 100% accurate and cannot identify one absolute and optimal asset mix. It is possible to identify a range of viable portfolio mixes with acceptable levels of risk and return, however. As before, we believe that TRS and its advisors continue to follow a reasonable and comprehensive process to construct a suitable portfolio with acceptable expected risk and returns designed to meet the future requirements of TRS, with the few minor caveats mentioned above regarding the number of asset classes modeled and the time frames involved.



2. TRIS Allocation Compared to the Allocation Used by Other Public Pension Funds

a) Caveats Regarding Comparability

Given TRIS's large asset base, and its constraints on external management, it is difficult to find a large universe of pension funds that are truly comparable. The 2000 Greenwich Associates survey includes a universe of 427 public funds comprised of 124 state funds and 294 municipal funds. Of these funds, 77 are over \$5 billion³, 101 are between \$1 billion and \$5 billion and the rest are less than \$1 billion in size. Of the public funds, only 19% use internal management, although 36% of the state funds use internal management, for an average of 39% of their assets.

b) Survey Comparisons

The public funds in the survey had an average of 47.6% in domestic stocks (20.4% actively managed and 27.2% passively managed), 13.0% in international stocks (9.5% actively managed and 3.5% passively managed), 27.7% in domestic bonds (22.6% active bonds and 5.1% passive bonds), 1.4% in international bonds, 3.1% in equity real estate, 1.1% in real estate mortgages, 0.6% in guaranteed investment contracts, 2.4% in private equity, 2.5% in short-term securities/cash and 0.5% in other.

As can be seen in the table below, compared to the universe surveyed, TRIS holds a slightly greater weighting in domestic stocks and the same amount in international stocks. TRIS also has a higher target weighting of domestic bonds, but it does not have a specific allocation to international bonds at this time. In addition, excluding foreclosed real estate held for sale, TRIS does not hold any equity real estate nor does it own any guaranteed investment contracts. TRIS's target weight of 4.5% to alternatives is greater than the 2.5% held by the public funds in private equity, but TRIS also holds less cash than the average public fund.

³ The Greenwich Associates study does not break out funds with assets greater than \$5 billion.



Asset Class	TRS Target Portfolio (%)	Public Funds Surveyed (%)
U.S. Stocks	52.5	47.6
Non-U.S. Stocks	13.0	13.0
Fixed Income	29.5	27.7
Non-U.S. Fixed Income		1.4
Equity Real Estate		3.1
Real Estate Mortgages		1.1
Guaranteed Investment Contracts		0.6
Alternatives/Private Equity	4.5	2.4
Short-Term/Cash	0.5	2.5
Other		0.5

As noted earlier, the state fund segment of the Greenwich public fund universe holds an average of 3.8% in equity real estate, and an average of 3.2% in private equity, slightly higher than the average public fund.

Overall, TRS's asset allocation appears consistent with its peers, based on this comparison against "asset side" survey data (without considering the structure and amount of TRS's particular liabilities).

E. Adequacy of Monitoring Processes

1. Sufficiency of Investment Performance Benchmarks

a) Overview

As we discussed in our 1996 report, performance benchmarks are objective standards used to assist in evaluating a manager's or fund's investment performance. Institutional investors typically use at least two types of performance benchmarks: "policy" benchmarks and "strategic" benchmarks.



Policy benchmarks generally represent the investment opportunities of the total fund or a broad asset class. They are used as a reference point against which investors can compare the total fund or total asset class returns. For example, a domestic equity investment structure designed to provide broad asset class exposure may use the Wilshire 5000 or Russell 3000 (a broad measure of the domestic stock market) as a policy benchmark as opposed to the S&P 500, which is more concentrated in larger-cap stocks. Policy benchmarks also help define the types of investment managers that should be used to achieve the Board's investment objectives for the asset class and the nature of the manager's investment mandate. In addition, policy benchmarks can help to measure the impact of "tactical" asset allocation decisions away from the policy benchmark.

Strategic benchmarks are generally more narrowly defined and typically focus on a particular investment "style" within the asset class, e.g., value, growth or core. Strategic benchmarks more explicitly describe the expected range of investment opportunities for a given manager so they can more objectively measure the manager's value added, i.e., the manager's return independent of its investment style. For example, a manager who seeks to purchase large capitalization stocks that the manager believes are undervalued relative to earnings or asset values (a "large cap value" manager) may be benchmarked against a large cap value benchmark such as the S&P/Barra Large Cap Value Index. Therefore the manager's excess return above the comparable style specific strategic benchmark would be due to the manager's active decisions as opposed to its investment style being "in favor" relative to a style neutral benchmark, such as the S&P 500.

b) TRS Policy Benchmark

The Investment Policy Statement for TRS states that the Total Fund should achieve a long-term return that "exceed[s] a composite index composed of the long-term normal asset mix weighting of the major asset classes, operating within the defined risk parameter for the various asset classes," as shown below.



Asset Class	Benchmark	Long-Term Normal %
Fixed Income:		
Investment Grade	Salomon Large Pension Fund	28.5
High Yield	Salomon High Yield Index	1.0
Domestic and International Equities:		
Active Large Cap	S&P 500 Index	21.0
Passive Large Cap	S&P 500 Index	21.0
Active Mid Cap	S&P 400 Index	3.75
Passive Mid Cap	S&P 400 Index	3.75
Active Small Cap	S&P 600 Index	1.5
Passive Small Cap	S&P 600 Index	1.5
International Active	ACWI Free ex-US Index	9.0
International Passive	ACWI Free ex-US Index	4.0
Alternatives:		
Venture Capital	Russell 2000* plus 500 bps ⁴	1.0
Buyouts	Russell 2000* plus 500 bps	2.0
Strategically Traded Securities	6 months T-Bill plus 300 bps	1.5
Real Estate	N/A	0.0
Cash Equivalents	91-day T-Bill	0.5
		100.0
<i>*Based on a 10 year moving average.</i>		

Since TRS uses a composite index of its long-term normal weights, moves away from this long-term asset allocation, within the range approved by the Board, can be evaluated. For example, a decision to hold the minimum allowable allocation to domestic equities would hurt the portfolio during a time period in which domestic equities outperformed other asset classes, even if the domestic equities outperformed their S&P benchmarks. Overall, the above policy benchmarks implemented by TRS represent generally accepted benchmarks commonly used by other institutional investors for the above asset classes.

For fixed income, an alternate approach that TRS could consider would be to have a policy benchmark such as the Lehman Universal, which includes high-yield securities. For domestic equities, TRS could consider using the S&P 1500 (or Russell 3000 or Wilshire 5000) for the entire domestic equity portfolio in order to judge how effective the allocation decision



within domestic equities is. (See also the discussion in the section on asset allocation and treating domestic equities as one broad class versus three separate classes.)

For international equities, both the active and passive portfolios are evaluated versus either the Morgan Stanley Capital International (“MSCI”) All Country World Index Free (“ACWIF”) ex-US or a custom benchmark “consisting of the ACWIF ex-US in which (1) no country’s capitalization weight exceeds 30% and (2) the total capitalization of the emerging markets component does not exceed 13%.” Thus, it is not clear whether simply the ACWIF ex-US is used for the Total Fund performance evaluation. **RECOMMENDATION Part II, Section I-E-1:** The Investment Objective should state more clearly under what circumstances which benchmark for international equities should be used. The benchmarks for the Alternatives class will be discussed below.

c) TRS Strategic Benchmark

As outlined in TRS’s Investment Policy Statement, each component of the Total Equity Portfolio and the Total Fixed Portfolio has a strategic benchmark.

Domestic Equity Portfolio: All of the TRS equity portfolios are “core” portfolios, i.e., they are tilted toward neither value nor growth, so style specific benchmarks (other than capitalization specific) are not called for with the current investment structure. In addition, the “active” portfolios are managed using a risk controlled, quantitative approach with a fundamental overlay so that they all track their given benchmarks very closely.

Both the Active and Passive Large Cap portfolios are benchmarked against the S&P 500 Index. This benchmark has been used by TRS for many years for its large cap portfolio. As we noted in our 1996 report, the S&P 500 is the most well known and widely used equity index and

⁴ At the time the review was conducted, the benchmark for Venture Capital and Buyouts was the S&P 500 plus 500 basis points.



it is appropriate for TRS large cap core strategies. As shown in the December 31, 2000 quarterly report the Domestic Active Large Cap and the Passive Large Cap portfolios track the S&P 500 index very closely for all of the characteristics provided. See the following chart for examples.

Characteristic	Active Large Cap	Passive Large Cap	S&P 500
Beta	1.00	1.00	1.00
R ²	1.00	1.00	1.00
Yield	1.16%	1.19%	1.18%
Trailing P/E (x)	36.74	36.45	36.54
Book to Price	20.0%	21.0%	21.0%

Both the Active and Passive Mid Cap portfolios are benchmarked against the S&P 400 Index. The Mid Cap portfolio was restructured in 1997 into Mid Cap Active and Passive portfolios and a Small Cap Passive portfolio, with a Small Cap Active portfolio added subsequently. The benchmark was changed from the Wilshire 750 to the S&P 400 and S&P 600, respectively, and approved by the Board in April 1997. Reasons cited by TRS for choosing these benchmarks include the desire to be consistent with the large cap benchmark (S&P 500) and the potential to increase performance by owning those names in the S&P 400 index that get moved up to the S&P 500 index.

As shown in the December 31, 2000, quarterly report, the active and passive portfolios track the S&P 400 index very closely for all of the characteristics provided. See the chart below for examples.

Characteristic	Active Mid Cap	Passive Mid Cap	S&P 400
Beta	1.00	1.00	1.00
R ²	1.00	1.00	1.00
Yield	0.95%	0.99%	0.99%
Trailing P/E (x)	32.77	32.27	32.32
Book to Price	31.0%	33.0%	33.0%

Both the Active and Passive Small Cap portfolios are benchmarked against the S&P 600 Index. As shown in the December 31, 2000, quarterly report the active and passive small cap



portfolios track the S&P 600 index very closely for all of the characteristics provided. See the following chart:

Characteristic	Active Small Cap	Passive Small Cap	S&P 600
Beta	0.99	1.00	1.00
R ²	1.00	1.00	1.00
Yield	-0.19%	-0.17%	-0.17%
Trailing P/E (x)	25.48	25.48	25.59
Book to Price	41.0%	44.0%	44.0%

Given the highly quantitative core nature of the investment strategy approved by the Board, and the desire to have the flexibility to over/under weight various capitalization ranges, the S&P 500, 400 and 600 indices are a reasonable choice for TRS

International Equity Portfolio: The International Active and Passive portfolios are benchmarked against the MSCI ACWIF ex-US index or as noted above, a custom benchmark that limits a country's capitalization weight to 30% and the emerging markets component to 13%. (These portfolios are unhedged.) Before the component for emerging markets was added in 2000, the portfolio was managed against EAFE, so staff determined it made sense to stick with the MSCI index family and move to ACWIF. TRS staff did consider other indices, such as the Financial Times (FT) World, but noted that ACWIF is being used more and more by large institutions. This would also minimize any transition costs. The international equity portfolios are allowed slightly more tracking error than the various domestic equity portfolios, but they still track the benchmark quite closely, as shown on the December 31, 2000, report and as shown in the chart below.

Characteristic	Active International	Passive International	MSACWIF ex-US
Beta	1.01	1.01	1.00
R ²	0.95	0.99	N/A
Yield	1.7%	1.9%	1.9%
Trailing P/E(x)	24.9	25.0	25.1
Price/Book (x)	4.4	4.3	4.5



Tracking error has been hurt by the inability to invest in Taiwan, India and Russia, due to unresolved indemnification issues with the custodian. Northern Trust will indemnify TRS only against Northern's gross negligence (vs. ordinary negligence), which TRS views as too loose a standard. TRS has been able to indirectly invest in India and Taiwan through the purchase of equity-linked notes.

Fixed Income Portfolios: The benchmark for the Investment Grade Portfolio is the Salomon Large Pension Fund Index ("SLPF"). This has been the benchmark since December 1995; TRS previously used the Lehman Aggregate. When we did our report in 1996, Holbein compared various segments of the portfolio (Government/Corporate, Mortgages and International) to three different indices and the overall portfolio to the SLPF. This is no longer the case and the overall portfolio is compared only to the SLPF. Due to the Board's desire for a long-duration portfolio, to be more closely aligned with the long-term nature of the System's liabilities, we find that this is still an appropriate benchmark

As of December 31, 2000, the characteristics of this portfolio closely tracked those of the benchmark:

Characteristic	Investment Grade	SBLPF Index
Effective Duration	6.99	7.00
Yield to Maturity	6.57%	6.70%
Treasury/Agency	40.0%	40.0%
Corporate Sector	32.0%	30.0%
Mortgage Sector	28.0%	30.0%

However, the non-US Dollar portion of the portfolio, which may make up 0-10% of the total portfolio and was 0.5% of the fixed income portfolio at March 31, 2000, is not included in the benchmark. This is currently not problematic since the actual allocation is quite small at the present time. If the allocation were increased to the maximum of the allowable range it would be appropriate to have a benchmark that included international fixed income securities. In addition, this segment was not included as a separate asset class in Watson Wyatt's ALM.



RECOMMENDATION Part II, Section 1-E-2: If a decision is made to invest in non-US Dollar fixed income securities on an ongoing strategic basis (rather than merely opportunistically), consider treating this portion of the portfolio as a distinct portion of the portfolio structure with an appropriate benchmark depending upon the strategy employed.

The benchmark for the High Yield Portfolio is the Salomon High Yield Index. The High-Yield portfolio is new and is not invested in individual securities, rather in limited partnerships and commingled funds. TRS staff is considering requesting permission to invest in dollar-denominated below investment grade emerging markets bonds. The benchmarks regarding the TRS alternatives program are discussed below in the section on alternative investments.

2. Sufficiency of Provisions for Policy Compliance and Avoidance of Ethical or Conflict Issues

For those Trustees interested in our analysis of the System's procedures for compliance with investment criteria and ethical provisions, please see the discussion of the Investment Services Department in Part III.

Section 2: Adequacy of Alternative Assets Program and Practices

A. Introduction

Compared to more conventional investments in publicly-traded securities and real estate, "alternative investments" offer an opportunity for relatively high long-term returns and further portfolio diversification (low correlation to public security markets). Negatives associated with alternatives include: (i) lower liquidity, (ii) potentially low or negative initial returns, in some cases (for example private equity), and (iii) the demands of significant time, resources and expertise to prudently assess, manage, measure and oversee the more complicated strategies and structures.



Illiquidity is a disadvantage relative to public market assets if funds are needed for benefit or other types of payments. While secondary markets exist in private equity (where private equity investments can be sold prior to their maturity), this is typically not an efficient way to raise cash. A flip side of illiquidity, and an advantage, is that illiquidity forces an investor to take a long-term perspective. Approaching investing from a long-term perspective often produces better long-term returns.

Goldman Sachs & Co. and Frank Russell in a report produced in 2000 estimate that asset allocations to alternative assets in 1999 by U.S. investors were:

- Endowments/Foundations – 13.8%
- Corporate Pension Funds – 7.3%
- Public Pension Funds – 5.6%.

B. Description of Alternative Asset Class

Categories commonly included within alternative investments are: (i) private equity, (ii) hedge funds (strategically traded securities portfolios), (iii) natural resources, and (iv) managed futures and commodities.

1. Private Equity

Private equity investments are investments in non-public companies or private security investments in public companies. They typically offer relatively high expected rates of return and relatively low correlation to public securities. They do, however: (i) provide lower liquidity, (ii) have potentially low or negative initial returns (the “j-curve” effect), and (iii) require significant time commitments to assess and manage their more complicated structures.



The “j-curve” effect, low or negative initial returns, results from private equity investments ordinarily being carried at cost. The “market value” of the investment normally does not change unless and until – over time – there is a material event (e.g., going public, a substantial discovery, a subsequent sale, going out of business) or the investment otherwise starts to return proceeds. In the meantime while waiting for an event, fees are paid quarterly to the general partner/investment manager (assuming a general partner/investment manager is involved). Additionally, particularly with venture capital investments, there may be investments written off prior to more profitable investments being recognized. The fees and potential early losses reduce the investment value, resulting in initially potentially negative or low returns.

Institutional investors typically make private equity investments through limited partnership structures. Investment managers (“general partners”) act as intermediaries between the investors (“limited partners”) and the issuers. The investment managers make the decisions as to which companies (“issuers”) to include in the portfolio. Limited partnerships are blind pools where investors decide to commit funds to the partnership without knowing specifically what companies the partnership will invest in. Investors typically decide which partnerships to enter based, among other issues, on the general type of investment involved, fees and other costs, other partnership provisions, and the track record and reputation of the general partner. Investors also look for general partners to have: relevant experience including industry knowledge and operational experience, experience as a team, skills in an organization which are complementary, good communication with limited partners, and integrity. Investors negatively view general partners with: high staff turnover, little discipline in the amount they are willing to pay for investments, limited breadth, quality and volume of deal flow sources, and a lack of alignment of interests between the general and limited partners. The life of a limited partnership is commonly ten years, with the option to add two or three one-year extensions. General partners receive a management fee, and they share in the profits (“carried interest”) typically above a certain threshold (i.e., after a preferred return to limited partners).



Institutional investors can also make private equity investments directly into either private or public companies without the intervention of a general partner. With direct investments, investors deal directly with the company. Relative to limited partnerships, these types of investments require more expertise and require a greater time commitment. However, with these investments there are no general partners with whom to share fees or carried interest.

Private equity investments are commonly divided into sub-classes, which include:

- **Venture** – provides growth capital to companies in early stages of their development. These investments typically have a greater risk than other private equity investments, but they provide the potential for higher returns.

Venture investments can be classified into:

- *early stage* – private companies that have undeveloped or developing products or revenue
 - *middle stage* – private companies that are beyond start-up but may not be generating revenues or profits
 - *later stage* – private companies that have growing revenue streams from existing products or services.
- **Leverage buyout** – funding that provides both controlling and non-controlling investments in established companies that have the potential to improve greater value through improved performance and/or industry consolidations. These partnerships are typically of greater value than other private equity categories, because the capitalization of the companies



targeted by LBO funds is typically greater than those that receive venture financing. An example of an investment which might be in an LBO fund is the former division of a large company which had not been receiving its fair share of capital. Perhaps the division was no longer considered to be a part of the company's core business. Divisional management wanted the division to become an independent company because they felt with increased capital, they could make improvements which would substantially improve earnings.

- **Distressed** – investments made in financially troubled companies with the intent of initiating a recovery via restructuring or the introduction of management expertise including debt of companies that are about to go into bankruptcy or cannot meet their obligations (debt can sometimes be bought at a discount from sellers whose guidelines don't allow holdings rated below investment grade). The objective is to increase the value of the debt through negotiations and restructuring.
- **Mezzanine** – investments in the subordinated debt of privately held companies. The debt holder participates in equity appreciation through conversion features such as rights, warrants, or options.
- **International** – private equity investments in companies that are based outside the United States. These investments may be in developed or emerging market countries. This is especially challenging and risky because of complexities and uncertainties regarding the operations and nature of the local capital markets, regulatory and legal structure, taxes and related matters.



General partners, particularly within venture capital funds, often have active participation in portfolio companies. Experienced general partners can often fill voids in finance, marketing, human resources or administration needed by start-up companies. In other less active situations general partners may have board participation in portfolio companies where they contribute advice and are used as a sounding board.

Exit strategies for private equity investments include acquisition of the portfolio company or the sale of securities to the public. Investors may receive cash or securities. Securities received may or may not be publicly traded, and may or may not have restrictions as to when they can be sold. While restricted securities are not permitted to be sold for a specified time-frame, non-publicly traded securities may be able to be sold privately. When receiving securities instead of cash, the investor needs to decide whether to sell the security immediately or whether to hold the security for later sale. The investor needs to decide whether these sell decisions are to be made internally, or whether an external investment manager should be hired to manage the securities.

Investors in private equity include public pension funds, corporate pension funds, endowments and foundations, bank holding companies, wealthy families and individuals, insurance companies, investment banks, and non-financial corporations (often looking for investments that fit into their strategic objectives).

Limited partners, particularly if they are large investors in a fund, or if they have a particular skill set may be asked by the general partner to participate on the fund's advisory board. Advisory boards typically approve valuation of portfolio securities, address potential conflicts of interest (e.g., a general partner with an interest in a potential investment), and may serve as an advisor on general matters. Advisory board members, because of meetings with the general partner, have an opportunity to gain additional perspective on the general partner and the firm's investment philosophy and to better understand the portfolio and the underlying investments.



For the 12 years ending in 2000 *The Private Equity Analyst* estimated that more than \$540 billion was committed to private equity funds by U.S. investors. The most significant portion of these funds was committed to buyout funds, with lesser amounts going to venture capital. Relatively small amounts were committed to distressed, mezzanine, and international funds.

In recent years there has been a large increase in the amount of money committed to private equity funds. In many cases, general partners have dramatically increased the size of the partnerships for which they are raising funds. It is important for investors to find general partners who are disciplined in what they are willing to pay for potential investments. Auction bidding for potential investments may be avoided by general partners who have value-added strategies, or who are able to generate proprietary deals. Due to the amount of dispersion among private equity managers, it is in the best interest of plan sponsors to invest with top-tier managers. Even if a top-tier manager is raising money during an overheated or slow time-frame there are benefits for plan sponsors to commit to these funds. Top-tier funds may not in the future want “unreliable” money from sponsors who attempt to time the market. Because many top-tier managers have over-subscribed funds, these managers have the luxury to turn money away.

After investors make a commitment to a partnership it may take five or six years until all the funds are drawn down by the partnership. Investors periodically need to request estimated take-down schedules from partnerships, and investors need to develop a strategy of what to do with “committed funds” prior to their take-downs. Possible strategies include: (1) investing funds until needed with the asset allocation of the pension fund’s public securities; (2) investing in a public asset class which as closely as possible monitors the private equity partnership investment style, or (3) investing in short-term securities. With options 1 or 2, a possible strategy is to fund take-down requests from the general “cash reserves” of the pension fund, and replenish the cash reserves as needed.



Historical performance for the period ending December 31, 2000:

Venture Economics' US Private Equity Performance Index™ (PEPI)					
Investment Horizon Returns as of 12/31/2000 (percentages)					
Fund Type	1 Year	3 Year	5 Year	10 Year	20 Year
Early/Seed	51.2	93.7	65.5	35.8	23.8
Balanced	33.2	61.5	42.9	27.0	17.5
Later Stage VC	19.9	31.7	31.1	25.2	18.3
All Venture	37.6	64.8	48.0	29.9	19.9
All Buyouts	9.7	14.3	17.4	16.6	19.2
Mezzanine	14.9	10.8	11.1	12.4	11.7
All Private Equity	20.0	30.3	28.3	22.1	19.3

2. Hedge Funds

The term hedge fund (strategically traded securities portfolios) has become a catch-all for funds investing in non-traditional or alternative investments. The term hedge fund is misleading in that a hedge fund does not necessarily have to hedge. Hedge funds are partnerships which invest in almost any asset class in any market in which the investment manager believes returns are available at reduced risks. Among these investments are publicly traded securities and/or derivatives, including options, currencies and/or financial futures. A majority of hedge funds employ some form of hedging: shorting stock, utilizing “puts”, or other devices. There is an absolute return objective; the objective is a positive return rather than an attempt to outperform an index or benchmark. For investors, hedge funds are typically not as liquid as are traditional public securities. Hedge funds are less regulated than other large players in financial markets, and some hedge funds are highly leveraged.

Fund-of-funds are a popular structure, with hopefully knowledgeable intermediaries evaluating, selecting, and monitoring quality managers.

Hedge funds, like private equity, require substantial amounts of expertise and time to assess the managers and their portfolios. Adding to the difficulty is that hedge funds are



typically not “transparent,” i.e., their managers typically want to disclose little information about the content and strategies of their portfolios.

Investors in hedge funds have traditionally been wealthy families and individuals, and endowments and foundations. More recently corporate pension funds and public pension funds have invested in this area.

Negatives about hedge funds include: structures and strategies are often complicated; they may involve substantial risks, e.g., extreme leverage; and the costs and fees involved. Investors should not make these investments unless they are prepared to spend the time to develop the expertise needed to understand the investments involved.

Hedge funds categories include:

- Relative Value – these strategies are not dependent on the general direction of market movements; they seek to profit from the mispricing of related financial instruments. This discipline utilizes quantitative and qualitative analysis to identify securities or spreads between securities that deviate from their fair value and/or historical norms. Typical strategies in this category include:
 - *Market neutral*: long/short equity (attempts to minimize the impact of the overall market by taking long positions in securities the investment manager believes are undervalued while taking short positions in securities the investment manager believes are overvalued).
 - *Convertible hedging*: long convertible bonds/short underlying common stock



- Event driven – strategies concentrate on companies that are, or may be, subject to extraordinary corporate events such as restructurings, takeovers, mergers, liquidations, bankruptcies or other special situations. The goal of this discipline is to profit when the price of a security changes to more accurately reflect, as more current information becomes available, the likelihood and potential impact of the occurrence or non-occurrence of such an extraordinary event. Typical strategies include:
 - Distressed securities
 - Merger Arbitrage

- Hedged Directional or Long/Short – strategies that invest in equity and/or fixed income securities, combining long investments with short sales to reduce market exposure and isolate performance of the fund from the asset class as a whole. These strategies involve buying and/or selling a security or financial instrument believed to be significantly under or over priced by the market in relation to its potential value. These disciplines may concentrate on a specific company, industry or country. Typical strategies include:
 - Equity
 - Natural resources
 - Fixed income
 - Macro

Morgan Stanley Asset Management, in a June 2001 research article, estimated that total equity in hedge funds worldwide is approximately \$400 billion. Historical performance as measured by the Hedge Fund Research Performance Index:



Annual Returns of HFR Index (HFRI) 1994-2001 (percentages)	
1994	4.1
1995	21.5
1996	21.1
1997	16.8
1998	2.6
1999	31.29
2000	4.98
2001	4.73
Annualized Return '94 – '01	12.9%

3. Natural Resources

Another category of alternative investments includes natural resource investments. Natural resource investments can be categorized into:

- Oil & gas – investments that provide funding for the development or purchase of energy producing properties and/or companies operating within the energy industry.
- Timber – investments which provide funding for the development and funding of timberland.

The most conservative oil and gas strategy is investing in producing properties. A strategy with more risk is investing in properties with proven reserves, but which are not yet in production. The approach with the most risk is investing in the exploration of new reserves.



Timber managers offer both commingled funds and separate accounts. These managers generally operate properties themselves including: planting, growing, harvesting, and selling the timber. Historical performance as measured by the NCREIF Timberland Index is as follows:

NCREIF Timberland Index 1990-2000 (percentages)	
1990	11.1
1991	20.3
1992	37.3
1993	22.4
1994	15.4
1995	13.8
1996	10.7
1997	18.9
1998	9.1
1999	12.9
2000	4.4
2001	N/A ⁵
Annualized Return '90-'00	15.7%

4. Managed Futures and Commodities

A futures contract is an agreement for the buyer to purchase (or take delivery) and the seller to sell (or deliver) a specified amount of a financial instrument or commodity (or its cash equivalent) at a predetermined price at a future, specified date. Generally speaking, an investor who expects future prices to exceed current projections will buy or “go long” the futures contract; an investor who expects prices to fall will sell or “go short”.

⁵ This information is not yet available.



Futures contracts relate to a broad range of underlying instruments and commodities. Broadly defined, these may include: (i) financial instruments, such as U.S. Treasury securities and “baskets” of securities such as the S&P 500 Index stocks, (ii) commodities, such as metals, energy products and agricultural goods, and (iii) currencies.

Managed futures can: (i) reduce overall portfolio risk through diversification, (ii) earn an attractive risk-adjusted rate of return in their own right, and (iii) enhance the return of the overall investment portfolio. Negatives associated with managed futures are the demands of significant time, resources and expertise to prudently assess, manage, measure and oversee the program. It is essential with managed futures to address and implement sufficient risk controls and cost controls.

Managed Account Reports (“MAR”) estimates that at December 31, 1999 approximately \$44 billion was invested in managed futures assets. Historical performance as measured by Zurich Financial Services Group is as follows:

Annual Returns of Zurich Fund/Pool Qualified Universe Index 1991-2000 (percentages)	
1991	10.7
1992	1.0
1993	15.2
1994	(2.2)
1995	9.7
1996	11.9
1997	9.5
1998	6.8
1999	1.5
2000	9.4
Annualized Return '91-'00	7.2%



C. Sufficiency of Selection and Monitoring Procedures

1. Sufficiency of Written Policies and Procedures

a) Assessment of Current Investment Policy and Procedures for Alternative Assets

(1) Adequacy of Policy

The processes for prudently monitoring alternative investments differ from those required for publicly-traded securities investments. This is because alternative investments involve types of instruments, strategies and operational risks largely or entirely absent from publicly-traded investments and thus require special types of expertise, analysis and controls.

In general, we found the IPS for the alternative investment program very thorough and well articulated. The IPS is well-drawn and comprehensive in terms of setting forth the varying types of strategies and distinguishing among them, and addressing essential subjects such as portfolio structure, forms of diversification, roles of the Board, Committee and staff, minimum criteria, reporting, prohibited strategies and risks, etc.

(2) Suggested IPS Enhancements

Regarding the IPS, we have only a few further suggestions, most of which the staff has recently addressed. First, some types of reporting that the IPS requires are impractical and are already being revised accordingly.

Second, in the past, staff struggled with whether and to what extent the sector diversification of the alternative portfolio should be structured with reference to – or independently of – the public markets. For example, while the public markets include substantial weightings in the financial services industry, private equity opportunities in that industry are



proportionately far more restricted than, say, in various forms of telecommunications and biotechnology. Since our discussion with staff on this subject, we understand that staff has conferred with Pathway on it.

Finally, we suggest addressing the subject of proxy voting by the general partners (“GP”) of the private equity partnerships in which TRS invests. The Board has not established a policy regarding proxy voting by its private equity managers (GPs), i.e., how TRS would like the GPs to vote proxies of portfolio companies. Depending on the particular partnership, TRS may be entitled to provide its preference (which may depend on whether it is on an advisory committee) or only informational reporting. Even if TRS’s influence on a particular GP is insufficient, GP proxy guidelines may be a worthwhile subject for due diligence, i.e., when deciding whether to invest in the partnership. **RECOMMENDATION Part II, Section 2-C-1:** The Board should explore with GPs their corporate governance/proxy policies, including review of how GPs vote proxies each year.

b) Assessment of Guidelines for Strategically Traded Securities

In contrast to the guidelines for the private equity portion of the alternatives investment program, the draft guidelines for the strategically traded securities portion are far less developed and require substantial upgrading. The staff and Alternatives Committee recognize that developing this sort of document and these sorts of procedures is essential. Furthermore, we believe that, given the particular types of risks associated with strategically traded securities, the relatively high level of costs, the operational issues and the potential for political visibility regarding any difficulties encountered in such a new program, these guidelines should be promptly upgraded, while the program is still young. Developing, installing and observing well-considered guidelines should help contain the risk of future mishaps.

Based on our review of the current draft, we offer the following specific comments and suggested changes:



Benchmarks

- Section A(1) says the performance objective for strategically traded securities (“STS”) is to enhance risk-adjusted return for the entire TRS portfolio, whereas subsection (3) says STS are expected to provide returns in excess of 6 month T-bills plus 300 basis points. Currently, this benchmark amounts to a nominal return of less than 5%. We question whether this is a high enough return to justify the operational and investment risks and costs (in terms of fees, and time and effort from staff and the Committee) associated with the STS program.

We understand the benchmark was developed with reference only to risk arbitrage strategies although the STS is expected to include several other strategies as well. Each STS strategy is distinct, with objective and risk characteristics very different from each other and from other asset classes. Although organizationally managed within a section of the portfolio called STS, each strategy should have its own policies and benchmark.

Acceptable and unacceptable risks

- The draft policy for STS does not enumerate many of the specific types of risk associated with particular types of STS programs which the staff and Committee should seek to monitor, in conjunction with the Investment Services Department.
- **RECOMMENDATION Part II, Section 2-C-2:** We recommend the staff and Committee develop and document acceptable and unacceptable types of risk for the STS program. For example, certain strategies within the



STS program will likely utilize futures and options. The staff and Committee should develop and document criteria regarding use of futures, including leverage, acceptable types of futures contracts, and stop losses. Regarding options, the staff and Committee should develop and document criteria regarding time until expiration, how deeply “in” or “out of the money” options may be purchased, use of “covered” vs. “naked” options and related matters. This sort of documentation should also assist the ISD in developing appropriate criteria to monitor and procedures to monitor them.

- Section C states that staff should establish and adhere to comprehensive due diligence underwriting procedures for potential investment opportunities. However, this draft does not do so. The type of document described immediately above should assist in developing such procedures.
- ***RECOMMENDATION Part II, Section 2-C-3:*** We recommend that before further investing in the STS program the staff prepare at least an advanced draft listing the various risks associated with each strategy in which investments are expected in the near term as well as the “underwriting procedures” designed to identify and control such risks, the process and criteria for selecting STS vehicles (including the involvement of the Alternatives Committee in the selection process), required reporting (see below) and other relevant matters.

Additional Observations

- Section B(2) – here and elsewhere (e.g., B(3)) the draft seems to incorporate concepts more appropriate for private equity investing than for STS, e.g., “deal flow.”



- Section G, regarding compliance, specifies that TRS should have access to sufficient data to evaluate each STS investment. As part of the more refined documentation we recommend above, we suggest much more specificity as to the types of “transparency” required for STS vehicles in which TRS invests.

2. Evaluation of the Roles of the Various Parties Involved in the Consideration and Monitoring Process

a) Alternative Assets Committee Role

Based on our observations of the Committee’s deliberations on March 29 and May 24, 2001, we found the Committee to be attentive, well-prepared and actively involved in the process of reviewing the recommendations and analysis submitted by staff and Pathway.

Nevertheless, we have some concerns (shared by some interviewees) as to whether the Committee has sufficient capability to adequately control the process on behalf of the Board. The expertise of Committee members in alternative investing is for the most part quite limited; the pressure at this early stage to “get the program off the ground” by making initial investments is considerable; and as to each “slot” considered for investment, the Committee hears only a single proposal from a single candidate recommended by both staff and Pathway, rather than multiple candidates for the slot.

A further concern is that the Committee has on a few occasions chosen to go beyond the recommendations of staff and Pathway to increase the amount invested in a particular partnership. Clearly, the Committee is authorized to reject or modify any recommendation from staff or Pathway or both. However, we expect that staff and Pathway have carefully evaluated the level of investment in each case relative to the overall TRS portfolio plan and to the size of the limited partnership. If this is the case, the Committee’s role should probably be to



understand why that amount is chosen, and, if dissatisfied, to request another recommendation, rather than to changing it without further analysis. If the staff is not bringing to the Committee its fully reasoned recommendation, it should be required to do so.

RECOMMENDATION Part II, Section 2-C-4: We recommend that the Alternative Assets Committee adopt a policy not to increase the amount of a limited partnership investment, and not to reduce the amount (except by fully rejecting the proposed investment) recommended by staff and Pathway, unless the Committee has clearly determined, after further analysis from staff and Pathway, that the latter have underestimated the allocation availability and the risk.

We recognize that several factors are designed to produce prudent results, such as screening by both staff and Pathway (rather than just one of them), recommendations from both, significant expertise of one Committee member and probing questions (which Committee members support) from fiduciary counsel to the Committee. (As noted elsewhere, many of counsel's questions address essential business and practical matters, rather than strictly legal matters). Still, the program is novel, the subject matter is very complex, and decisions are subject to even more imponderables than involved in selecting investment managers for conventional accounts involving publicly-traded securities. Consequently, we ***RECOMMEND Part II, Section 2-C-5*** that the Committee consider obtaining additional consulting advice regarding the STS program, independent of and in addition to the input of staff, Pathway and fiduciary counsel. This could be achieved either by retaining as additional consultants individuals comparable to Mr. Hester and Dr. Brown or by retaining a consulting firm with expertise in this niche. (Insofar as TRS incurs additional consulting fees, however, and continues to work within the limitations of appropriated budgets, pressures could increase to pay consulting fees through more soft dollar trades, as is already the case with Pathway. As discussed in Part I, soft dollar expenditures may be unduly costly.)



b) Investment Staff's Role

(1) Evaluation of Current Role

Generally staff's role is to identify possible deals, coordinate with and critique due diligence Pathway performs, undertake its own due diligence, prepare policies and procedures (as discussed above), monitor adherence to those policies and procedures and provide recommendations to the Committee and Board.

We agree that these are suitable roles for staff and that it is healthy in this private equity program for the Committee to receive independent assessments from staff and the external consultant.

We reviewed a sample due diligence memo prepared by staff. We generally found it well prepared, thorough and clear. We have, however, several caveats, basically in order presented in the memo:

- The date of the memo to the AACB was November 8, but the date in the heading on subsequent pages of the due diligence report was April 4. This may be an editorial oversight, or may indicate old data.
- The total fund being recommended is \$3.5 billion, close to three times the size of the GP's largest other funds. No evidence of the ability of the GP to place that much capital without diluting performance, particularly in an overall market of larger funds formed by many GPs, was included. Moreover, the GP's continuing ability to place the bulk of the investments on a non-competitive basis, despite the significantly larger amount of dollars being invested, is stated without question.



- There was no explanation of how the investment fits into the overall TRS private equity program.
- Statements alluding to commitment to the fund by key GP personnel did not include evidence of the nature of the commitment, e.g. financial incentives or disincentives.
- Data on the GP's other fund sizes and rates of return were inconsistent between different parts of the report. This may be editorial error or confusion among definitions. As an example, page 9 says that CP I invested \$100.4 million and CP II invested \$1.33 billion (the fund being proposed is CP III). However, the chart on page 3 shows \$400 million for CP I, and agrees on the CP II amount.
- That the GP's principals invest personally in the fund's transactions is given as a positive aspect. There is no discussion, however, of whether their investments are on an equal basis (rather than a more favorable or conflicting one) to the GP and LPs.

(2) Distinctive Skill Sets and Resources Needed

Compared to conventional publicly traded securities, alternative investments have several distinctive features and successfully evaluating and managing them requires distinctive skills and resources.

Take, for example, one of the more significant types of alternative investments – private equity. Evaluating and managing private equity requires “private market” skills. For example, private equity investing, by definition, requires specialized skills in valuation: without public markets to define fair market value, the private equity investor must determine fair value through



his own analysis. The problem of valuing private equity is compounded by the relative lack of available information regarding the companies in question. Thus, investing in private equity typically requires extensive “digging” to acquire and analyze information that is not publicly or even readily available.

Another distinctive aspect of private equity is that the general partner is often involved in assisting or guiding the portfolio companies in which the GP invests, e.g., regarding operating efficiencies, financing, marketing and other aspects of the underlying business. Thus, GPs often require specialized skill and experience in the operational aspects of the particular types of businesses in which they invest.

Private equity deals are largely matters of contract – defined by the limited partnership agreement and the private securities issued by the portfolio companies to the limited partnership or other investment vehicle. Thus, successful private equity investing requires extensive legal skills. Whereas the rights of investors in public securities are often standardized and regulated by securities exchanges, private market transactions are not. Private equity participation documents are often complex and require comprehensive and current knowledge of relevant law and industry standards. Sufficient review of such documents generally requires a level of specialization beyond what in-house counsel possesses.

Successful private equity investing also requires understanding how to “exit” a private transaction. While the purchaser of a public security can simply sell his investment, the private equity investor often gets back his money (hopefully with a positive rate of return) to the extent the portfolio companies somehow produce liquidity, e.g., through a private sale to a third party, a recapitalization or a going public transaction. Thus, before making an investment, the private equity investor should have sufficient skills to assess the feasibility of the proposed exit strategies.



If a public employee retirement system such as TRS invests by way of external general partnerships, the pension fund's staff time mostly concerns evaluating, selecting and monitoring the general partner. Successfully performing those functions itself requires particular skills – skills different from those involved with evaluating, selecting and monitoring managers of publicly-traded securities. Successfully assessing a general partner requires expertise and experience with the risks, business challenges, legal matters, exit strategies and other features characteristic of private equity investing that the GP itself must understand. Thus, for example, prudent selection of a GP requires some sense of the pricing of deals, critically evaluating company management, arranging financing and how to exit a private investment.

Similarly, distinctive resources are needed to evaluate and monitor private equity. In addition to the legal resources mentioned above, assessing the investment performance of private equity requires specific resources for benchmarking returns. One example is the Venture Economics Private Equity Performance Database (“PEPD”). The PEPD tracks the performance of over 1,400 U.S. venture capital and buyout funds formed since 1969 and over 425 European private equity funds formed since 1980.

Because it involves distinctive subjects and issues, private equity also requires special resources in terms of investment consulting. Consultants may assist with portfolio construction, due diligence, monitoring and reporting.

Another type of alternative investments – hedge funds and other types of investments involving derivatives (swaps, options, futures), leverage, short selling or currencies (as in the STS program) – require other distinctive skill sets. Hedge funds are largely unregulated, and are able to invest in a wide array of asset classes and investment vehicles. These various types of investments involve different issues from those associated with long only publicly traded securities. Issues requiring distinctive skill sets for due diligence, monitoring and evaluation include: (i) limited available public information on hedge funds, (ii) limited “transparency” of portfolio holdings, (iii) leverage (which magnifies gains and losses), (iv) potential limited



diversification (e.g., concentrated portfolios) which may result in more volatile return patterns, (v) importance of executing trades designed to capture narrow spreads in fast moving and volatile markets, (vi) benchmarks which do not as accurately define return expectations, (vii) derivatives which require more robust monitoring, (viii) more complex operational issues involving custodians and prime brokers (typically major brokerage firms which provide clearance, settlement and custody functions for hedge funds) and (ix) counterparty risk.

(3) Distinctive Training is Needed

Training in alternative investing is needed to develop and maintain the necessary distinctive skill sets unique to this asset type. Reading, attending conferences, conversing with alternative investment managers (e.g., general partners of private equity limited partnerships), attending educational presentations by investment managers, and talking with other plan sponsors can help staff members develop these skills. Another way for staff to gain training is to independently evaluate potential investments presented to the TRS and compare their evaluation to that of a recognized expert alternative consultant (e.g., Pathway).

Practical experience in raising private capital for a business, negotiating terms with partners or adversaries, operating a business and similar experiences can also be effective educational tools for anyone who becomes responsible for due diligence regarding private equity. In that sense, experience with real estate investing – again involving private markets – may be helpful training for private market equity investing.

Regarding other types of alternatives, training may be gained through working for a hedge fund or a broker dealer can provide helpful training. Experience with derivatives, leverage, short selling or currencies may be obtained through those types of employers. Experience with operational issues involving custody and trading of options, futures and market neutral strategies can also be gained through working with a prime broker.



Members of the Alternative Assets Committee can become more conversant with alternative investments through reading, attending conferences, and conversing with Pathway. They also can attend educational presentations by investment managers on various topics. Staff can arrange these presentations and many knowledgeable alternative investment managers are happy to help in an educational effort.

c) Alternative Asset Consultant's Role

In several respects, we believe the relationship with Pathway is well-designed. First, the list of functions and duties imposed on Pathway by contract is very complete and well defined. Second, throughout our interviews, the Board and staff expressed considerable satisfaction with the quality of Pathway's performance thus far.

Based on our review of Pathway's due diligence reports, we concur. In our opinion, the range of subjects covered, the relevance of those subjects and the clarity of the written presentation are all high quality.

Pathway appears to have the needed tools to identify and evaluate opportunities. Trustees and staff recognized Pathway's other activities (fund of funds) could be both an advantage and a potential conflict. However, the Committee has recognized the need for disclosure from Pathway, in order to detect and manage those potential conflicts. Nevertheless, the Committee has not adopted any formal requirement specifying exactly what Pathway should disclose in writing.

Pathway and staff perform separate due diligence evaluations; somewhat overlapping, somewhat different. In our view, some "double teaming" of this sort is probably healthy, at least at this early stage in the program.



Ideas for private equity investments come from both Pathway and staff. Pathway appears very willing to assess the staff's "finds," which we again believe is healthy. Furthermore, generally staff will not pursue an investment if Pathway does not intend to support it. Thus, both must reach favorable conclusions before proposing an investment in a particular private equity limited partnership to the Board Alternative Assets Committee.

Both Pathway and staff reports are provided to the Committee, plus their oral recommendations, plus a personal presentation by the partnership's general partner GP. The Alternative Assets Committee probes these proposals and makes its own decision accordingly. The Committee's recommendation is then presented to the full Board.

D. Other Areas for Enhancement Regarding Private Equity

1. Additional Compliance and Ethical Concerns

a) General Description of Typical Concerns

Private equity investing involves ethical considerations beyond those involved with publicly traded equity securities because of at least two key differences between investing in private vs. public markets. First, the limited partner in a private equity investment is, in essence, investing capital (albeit through the limited partnership) in the underlying portfolio company. By contrast, the investor that buys a publicly traded equity security is not (except in an initial public offering) infusing capital into the portfolio company; but rather, indirectly (through a broker) paying the seller of the stock on the secondary market, thus merely transferring ownership rather than creating it. Second, whereas the limited partner in a private equity investment is typically purchasing its LP interest directly from an identifiable general partner, on behalf of the limited partnership, the buyer of a publicly traded stock on the secondary market is buying from an anonymous seller, through a broker as intermediary. From the standpoint of the ethics policy of a PERS these two distinctions create a heightened risk of abusive transfers of



pension fund assets in the case of private equity investing, compared to buying publicly traded stock. The recipient of the pension fund's money is identifiable in advance and the transfer of that money to the recipient is more direct. Thus, the fund should have in place special safeguards to prevent abusive transfers to such parties.

Examples of such safeguards include:

- Investment policies and procedures that require appropriate disclosures from any Trustees or TRS staff when such persons are financially or personally related to the general partner or underlying portfolio company management.
- Policies and procedures designed to prevent investments that are motivated by undue political factors, e.g., investments driven primarily by desire to support the local economy or "pay back" those who have made significant political contributions to Texas officials with influence over the TRS investment program.

The TRS Ethics Policy, as currently designed, seems to sufficiently address the concerns described in the first paragraph above, but not the second. The Ethics Policy prohibits Trustees and employees from (a) participating in investment matters involving TRS that would benefit the Trustee or employee and (b) recommending or causing discretionary TRS business to be transacted with or for the benefit of a relative. These provisions seem broad enough to capture the situation where either a Trustee or staff member is financially or personally related to the general partner or underlying portfolio company, as mentioned in the first paragraph. However, neither these provisions nor others in the Ethics Policy seem to capture the situation where a general partner makes a political contribution to a political official with influence over TRS, including any TRS Trustees or employees.



RECOMMENDATION Part II, Section 2-D-1: We recommend amending the Ethics Policy to require any general partner or comparable manager of an investment entity in which TRS invests to disclose any political contributions it made to State governmental officials with a material degree of influence over the TRS investment program.

We have not observed any attempts by a current or prospective general partner to impose undue influence over the Board by way of political contributions to influential governmental officials. Nevertheless, the potential exists for GPs to make political contributions to governmental officials with direct or indirect influence over the process of selecting partnerships for investment. At least one other statewide fund of which we are aware with a very significant allocation to private equity – the Washington State Investment Board – recognizes this potential in its contracts with external firms, and requires appropriate disclosures, representations and warranties.

RECOMMENDATION Part II, Section 2-D-2: Require a contractual representation from each general partner (whose LP is selected for investment by TRS) whether, when and to whom in the State government it has made any political contributions within the relevant past and a contractual warranty that it will immediately notify the Board in writing if and when it makes any such contribution.

b) Other Matters

Pathway maintains a fund of funds, as general partner, in which it invests in limited partnerships comparable to those in which TRS may invest.

RECOMMENDATION Part II, Section 2-D-3: To avoid potential conflicts of interest in that regard, the Board should require written disclosure from Pathway of whether its fund of funds has invested in or considered the vehicle under consideration.



Section 3: Sufficiency of Information Provided to Trustees to Support Their Consideration of Investment Issues

A. Information Routinely Provided to TRS Board Members

The Trustees routinely receive information from their staff and outside service provider to support their investment decisions. Set forth below, first, is an overview of the information from staff; next, from external advisors; and finally, our suggested enhancements.

1. From Staff

a) To Assist the Board in its Asset Allocation Decision

TRIS staff made a presentation on asset allocation in June 1999, which was followed by Watson Wyatt's Study on Expanded Investment Opportunities of December 1999. Staff also initiated reports to the Board on their recommendations regarding the 2000 Watson Wyatt ALM study. After being integrally involved in the process, TRIS staff reviewed the results of the ALM study and presented their recommendation to the Board as to which portfolio structure they thought would be the best for TRIS. To facilitate discussions with the Board, TRIS staff also proposed a "compromise" portfolio, which lay between those recommended by the various parties, as well as procedures for implementing the changes.

b) To Assist the Board in Making Decisions Regarding Alternatives Investments

Staff prepares a due diligence report/recommendation on each potential investment, independent of what is prepared by Pathway. In our opinion, this provides a constructive check and balance. As of the date we completed our field work, the Private Equity program was not sufficiently mature to report performance.



c) To Assist the Board in its Performance Evaluation Process

Included in the quarterly Board book, Investment Accounting provides a “snapshot” view of the various equity and fixed income portfolios at quarter end, reporting relevant portfolio characteristics, sector weights and top holdings. In addition, for the domestic equity portfolio, staff prepares a limited attribution analysis which provides the “portfolio management effect” and the “asset allocation effect” for the total domestic equity portfolio.

d) To Assist the Board in Monitoring Trade Execution

One page of the quarterly report shows the volume of shares traded, market value, number of shares and the volume of the top 10 international and domestic brokers.

e) To Assist the Board in Monitoring Proxy Voting

A one page quarterly “Proxy Exceptions Report” is provided by the Investment Services Department (“ISD”) in the quarterly Board book. This report summarized those votes where either a TRS standard does not exist for a particular item or where the vote was not in accordance with TRS standard policy.

f) To Assist the Board in Monitoring Securities Lending

ISD prepares a quarterly report on securities lending as part of the Board book. The report shows:

- earnings and return by domestic and international equities and fixed income
- the amount on loan by the above categories and compares to the maximum allowed by Policy; and



- a snapshot of the collateral reinvestment pool.

g) To Assist the Board in its Review of Soft Dollar Expenditures

The ISD staff provides a soft dollar expenditure report in the quarterly board book. The report shows the annual budget, expenditures to date and amount remaining for the various expense categories, (e.g., telephone, online data services, etc.).

h) To Assist the Board in Monitoring Initial Public Offering (“IPO”) Activity

The staff provides a quarterly report that shows an investment summary of the domestic stocks purchased through IPOs, including the gain or loss on each position and the current status, i.e., whether the stocks are in the Approved Universe and are currently held.

2. From the Board’s External Experts, the Following Information is Received

Quarterly performance evaluation reports from third party measurement firms are provided to the Board as part of the book on “Investment Matters Only.”

Northern Trust provides basic charts comparing the performance of the various asset classes to their benchmarks on a quarterly, one, three and five year basis. We believe that it would be useful to also provide performance for longer time periods, e.g., 10 years, where available. The Northern Trust reports we reviewed do not provide any risk-adjusted return information or peer universe comparisons, only straight return information is in the Board book.

Wellington prepares performance summary reports for the total fund and the various asset class segments of the portfolio as part of its “Investment Review, Performance and Outlook”



report. Wellington also rates the performance of the portfolios for the three and five year time periods, where available (e.g., “S” = Satisfactory). Wellington also provides market and economic commentary. In our opinion, Wellington’s report is fairly basic and could be more in-depth.

Wellington provides a few summary bullet points on attribution (“What Helped” and “What Hurt”) regarding sector and overall security selection, but doesn’t provide a detailed attribution analysis for the portfolio that includes all the sectors or industries or gives any specific stock attribution. The attribution comments it does provide are based on the analysis prepared by TRS investment staff. Wellington does not perform an independent attribution analysis of the portfolio. We understand that there has been some discussion as to whether or not Wellington should receive the raw data and perform an independent analysis.

The Wellington reports do not include any risk-adjusted return information or peer universe comparisons. Wellington does not have the capability to perform peer universe comparisons and this was noted in the RFP process.

3. Areas Where Enhancements Could Facilitate the Monitoring Process

We believe that additional information could be useful to the Board on a quarterly basis as part of the Investment Matters book, such as:

- An Executive Summary of key points of interest to the Board. At the June 2001 Board meeting, Wellington proposed adopting a more concise two page “Portfolio Performance Report” that would take the place of some of Wellington’s reports and would summarize some of the attribution analysis. The Board asked that staff and the advisors propose a report format to the Board. We think moving to a more succinct performance



report would be beneficial and could serve as part of the recommended Executive Summary.

- Risk-adjusted return information (e.g., Sharpe ratio) and risk/return four-quadrant chart. We understand that some risk-adjusted returns are calculated internally by TRS's investment staff, but they are not reported to the Board. The investment staff and advisors should consult with the Board to inform them what types of risk-adjusted return information could be made available to them and the benefits of conducting that analysis. As noted above, no third-party measurement firm is currently calculating risk-adjusted return information.
- Holdings based style maps to compare the style of the various equity portfolios, as well as the overall equity portfolio, to their benchmarks. This type of report would show how well the portfolio managers are adhering to their stated styles, and how closely they match the benchmark, as well as where adjustments to the overall equity portfolio might be needed.
- Universe comparisons to an appropriate peer group (e.g., state or large public funds) for the total fund and especially for subsets of the total fund. It can be very informative to see how the returns of asset classes and individual portfolio accounts compare to their peers, e.g., external money management firm with the same/similar investment mandates.

RECOMMENDATION Part II, Section 3-A-1: Negotiate with Northern Trust (or include as a requirement in the upcoming custodian RFP) and/or request Wellington (or its upcoming replacement) to provide reports on the areas where additional information would be useful to the Board, including:



- Enhanced performance measurement and analysis;
- Attribution analysis;
- Independent analysis of investment performance;
- Peer data;
- Execution monitoring; and
- Risk-adjusted return information.

B. Information Typically Provided to Public Pension Funds Boards to Facilitate Their Consideration of Investment Issues (Common and “Best Practices” Regarding Information)

1. In General

In our opinion, TRS provides reports to its Board which are similar in style and content to those of other large internally managed public pension funds, covering the major topics of asset allocation, performance, economic and market outlook as well as specific reports on each asset class.

Asset allocation reports generally cover the current asset allocation structure, the long-term “normal” or “target” allocation, as well as how the structure has changed over time.

The TRS reports show how the Fund plans on reaching its “Long-Term Normal” allocation, but one minor difference is that they only show how the current allocation differs from that of one quarter or one year ago for the very broad asset class categories (Equities, Fixed Income, Alternative Assets and Cash Equivalents), but not for all of the classes which have specific policy targets, which could give the Board a useful perspective. In addition, some funds show an even longer history of the market value of the overall fund as well as how some statistics, such as funding ratios, have changed over time.



In Section 1, we recommended the use of an Allocation Index, which is used by some other large public funds, in addition to a Policy Index, which is used by TRS.

Most large public funds also provide peer universe comparisons, for the various asset classes as well as for the total fund, when presenting performance information to the Board, as we recommended earlier in this section. Many funds will also show a longer history of performance, e.g., last 10 years, especially for composites such as the Total Fund.

The conciseness and clarity of the “Outlook” section presented by Wellington compares favorably with that provided by other large internally managed funds. When compared to other similar funds, TRS investment staff does a reasonable job of presenting holdings, sector and characteristics information on each of the asset classes. Some attribution analysis is provided for the overall Domestic Equities portfolio, which we find to be positive, and we understand that work is being done to show more fixed income attribution analysis as well.

Overall, the Investment Matters book provided to the TRS Board compares favorably with reports prepared by comparable large public plans although we believe that a few additions to the report, noted in our earlier recommendations in this section, would be valuable.

2. Functions the Investment Experts (Consultants) are Expected to Perform⁶

a) Determine Whether Their Performance is Consistent with TRS’s Expectations

Our assessment of Alternative Assets Investment Consultant is set forth in Section 2 on page 75.

⁶ Some of the TRS service provider terminology is somewhat atypical than that commonly used in the pension fund industry. As used in this Report, “investment advisors” means, the individuals, Dr. Brown and Mr. Hester; “investment counsel” means the firm that serves as investment consultant; and “fiduciary counsel” means outside legal counsel.



Dr. Brown and Mr. Hester – Overall, our assessment of TRS’s current individual investment advisors is positive. Both advisors appear well-prepared and thorough at the Board meetings and take clearly stated positions. The Board appears satisfied with their input and confident that input is independent of staff. Both individuals are somewhat “reactive” in their approach, which is consistent with expectations, given their respective contracts and payment terms.

Wellington – Again, our overall assessment here is also positive, in terms of quality, reputation and responsiveness. However, this is subject to caveats noted in subsection (c), below.

TRS used an outside professional advisor to provide performance evaluation of the securities lending program, i.e., absolute and risk-adjusted returns for the TRS securities lending program compared to those of other comparable programs. The advisor is no longer able to provide the securities lending reports. Staff expressed a desire to obtain this type of information from another source in the future. We concur in that view. An important aspect of any securities lending program is the competitiveness of the net, absolute and risk-adjusted returns the program generates. Thus, for purposes of monitoring and evaluation – as with other investment accounts – the TRS staff should obtain on an ongoing basis sufficient data to assess how the returns earned through the TRS securities lending program compare to other comparable programs. Inasmuch as Northern is the securities lending agent, it is not appropriate for Northern as custodian to provide this.

b) Determine Whether Performance of Investment Experts is Consistent with Their Respective Contract and Any Written Procedures Governing Their Functions

We understand that there are no written procedures for the experts to follow, other than what is in their respective contracts.



(1) Craig Hester

The contract requires the Advisor, in general, to attend quarterly meetings regarding investments (and others as requested), be knowledgeable about the IPS and other relevant documents (as requested) and to offer advice to the Board on investment matters.

Board members are pleased that Mr. Hester often takes the time to put his recommendations in writing, when this is not required and freely voices his opinion.

(2) Dr. Keith Brown

Dr. Brown's contract has the same requirements as Mr. Hester's. His tenure on the Board has not been very long to date, but he appears to be fulfilling the requirements of his agreement.

Dr. Brown, through his university contacts, has also been helpful in recruitment of staff and interns.

(3) Wellington

Wellington appears to be fulfilling its contractual requirements as noted below. Per the contract, Wellington is required to consult on the "Development and Review of Investment Policy and Objectives." Wellington is involved on a routine basis with reviewing the Investment Policy Statement and making recommendations for change when it deems necessary, or as requested. We did hear some minor reservations from Board members that Wellington sometimes seems to wait "until the last minute" to bring up certain items, but it is understood that everyone has a limited amount of time to review the information before the meetings.

Wellington also reviews the asset allocation studies. For the most recently completed ALM study in 2000, Wellington served on the Project Lead Team with TRS staff, Trustees and



Watson Wyatt consultants and was actively involved in the process of reviewing the assumptions used and the portfolios that were to be modeled. Wellington wrote a memo to the Board regarding its review of the Asset Liability Study in which it recommended what asset mix it thought was most appropriate for TRS and chose an asset mix that was more conservative than that recommended by the staff.

Wellington is also contractually required to consult on “Portfolio Management.” Wellington appears to have a relatively open dialogue with TRS investment staff and the Board, although we understand that Wellington has been a bit more involved in providing strategy advice on the fixed income portfolio than the equities portfolio. It has been involved with the decisions on which benchmarks should be adopted. For example, it did an analysis on choosing the S&P 600 and S&P 400 indices when the equity mid-cap restructuring took place. Wellington also regularly monitors the performance of the portfolios and makes recommendations when it deems necessary or when asked by TRS.

According to section 3.2.2(f) of its contract – “Wellington shall, on a quarterly basis, review and comment on tactical asset allocation relative to TRS’s normal positions.” We understand that Wellington would talk about this during their presentation if necessary but did not provide anything in writing. We recognize, however, that Wellington’s quarterly reports do include their views on current market conditions and which asset classes or sectors performed the best on a relative basis.

The contract also requires Wellington to provide quarterly performance commentary, which it presents as part of the Investment Matters book to the Board. Wellington has been instrumental in developing the attribution analysis reports in the Board book that were added this past year. One item in the contract that does not appear to be followed, however, is under Section 3.2.3 of the contract “Performance Commentary,” where it states that it should provide comparisons for “the latest quarter and the latest one, three, five and 10 year periods as well as ratings for all periods three years or longer.” No 10 year performance numbers are provided in



the report. We recognize that 10-year performance data may not be as relevant as shorter-term data due to some major changes including the use of different benchmarks, a different investment approach and larger historical allocations to particular sectors. However, we believe that it is consistent with industry best practices to show longer-term performance information when available, even though the investment strategy may have changed over time. We understand that Wellington gets performance information from TRS staff, so we do not know if this information has been provided to Wellington. It would also be helpful if the criteria behind the ratings used by Wellington were footnoted in the report as well.

Wellington is required to provide a quarterly "Economic and Strategic Outlook." Wellington provides a summary of the economy and the market along with its performance commentary in the quarterly Board book and at the meetings.

As part of its general services, Wellington is asked to "notify the Board of any unresolved substantive differences with staff" on investment policy as well as portfolio management issues. We understand that Wellington does offer differing opinions from staff when necessary, however see also the section immediately below.

c) Strengths and Weaknesses of the Current Process and, If Applicable, Recommendations for Improvement

One repeated caveat is a desire among both Board members and staff for Wellington to be more proactive, to take positions more clearly and forcefully, to offer more advice on strategic implications and to express disagreements with staff when they exist (although they are said to be more active now than they were a few years ago). This concern was also expressed in connection with our 1996 report and subsequently, the Board added an express provision to the contract with Wellington, as reported above. Wellington believes that it does not have a problem expressing disagreements with the staff; when they feel strongly about an issue they will not hesitate to bring it up to the Board and state their opinion. One example is their recommendation



to adopt a different target asset allocation than that recommended by the staff and subsequent discussions leading to the adoption of a compromise position.

RECOMMENDATION Part II, Section 3-B-1: One further step the Board might take to address this issue is to reinforce its desire for a direct relationship with Wellington, i.e., for direct contact with either the Chairman of the Board or designated others – independent of staff – who act on behalf of the Board, such as Mr. Hester and Dr. Brown. This might be linked with the recommendation below, for the Board to fortify the advice it receives regarding evaluation of investment performance. We do understand that informal direct contact currently takes place between individual Board members and Wellington and Board members feel comfortable asking Wellington questions via e-mail, etc.

One noted strength is the diversity in the consultant staff. Mr. Hester has a practical investment background and Dr. Brown has an academic background and both report solely to the Board. Wellington works with the Board and the staff, although it does not appear that the staff independently uses Wellington very much except when required by the Board, such as reviewing the IPS and the ALM.

As we neared completion of this report, we were told that Wellington has tendered its resignation from the TRS account, effective not later than the August 31, 2002, current contract expiration date. In light of that development, we offer several recommendations regarding criteria for whichever firm the Board may select as a replacement for Wellington (“the replacement firm”).

RECOMMENDATION Part II, Section 3-B-2: We recommend that the replacement firm have the necessary depth and expertise to provide the types of “big picture” and policy matters where experience and judgment are essential, e.g., asset allocation analysis.

RECOMMENDATION Part II, Section 3-B-3: We recommend that TRS consider the benefit of having the replacement firm perform the function of independently (i.e., independently



of staff) calculating and evaluating the System's investment performance, as recommended in this report on pages 107 and 117).

RECOMMENDATION Part II, Section 3-B-4: We recommend that the TRS consider the benefit of having the replacement firm provide the additional advice we recommend elsewhere regarding the STS program(see above Section 2 of this Part II, C.2(a) of page 93).

RECOMMENDATION Part II, Section 3-B-5: We recommend that the Trustees maintain the current configuration, where the firm reports primarily to the Board, not the staff, so the Board retains access to "reference points" independent of – and in addition to – the staff.

C. Assessment of Whether Sufficient, Independent, Investment Information is Available to Trustees to Support their Oversight Function

1. Legal Advice

a) In-house Counsel

It appears, based on our observations, that the Legal Counsel's office lacks sufficient staff to promptly complete necessary legal work, especially regarding the Alternative Assets program. The concern is not with the quality of the work; to the contrary, the quality appears to be high. However, only one member of the Legal Counsel's office is assigned responsibility – and has time and expertise – to work on investment matters essentially full-time. Having only one attorney knowledgeable about the Alternative Assets program places TRS at significant "governance risk," although TRS is assisted by some outside counsel.

RECOMMENDATION Part II, Section 3-C-1: On a more immediate level – and without wading into the question of whether the Board should be more autonomous in budgetary authority recommended earlier in the Report – we recommend authorizing the hiring of additional legal staff to assist with the investment program.



b) Fiduciary Counsel

We found the current agreement used to retain fiduciary counsel to be sound and descriptive of the services desired. Based on the information we received and our empirical examination, it appears that fiduciary counsel is viewed by trustees and staff as a benefit to the investment process and is performing consistently with the terms of his agreement. In practice, based on our observations, it appears that the actual role performed, from time to time, transcends that of fiduciary counsel (which is typically confined to legal matters) and is more analogous to the role played by TRS's investment advisors, e.g., when counsel raises concerns or asks questions related to the business terms or operational aspects of proposed private equity investments. This is not to say that this role is harmful; to the contrary, the role appears helpful and indeed, necessary. We simply feel that legal counsel is not the appropriate professional primarily to fill this role.

RECOMMENDATION Part II, Section 3-C-2: For this reason, in our view, the Alternative Investment Committee would benefit from hiring one or two individuals with private equity investment expertise, to advise the Committee in a manner analogous to the roles played by Dr. Brown and Mr. Hester regarding publicly-traded securities, as discussed above.

2. Investment Performance Information

One common issue faced by pension funds that are largely internally managed is that the staff is, by definition, responsible for both investing and, to some extent, evaluating the results of the investment program. Thus, the independence and depth of the critical evaluation of the investment program may be uncertain. Boards commonly address this issue by retaining one or more independent firms to measure and evaluate the investment program, reporting directly to the Board. Here, Northern Trust measures the investment performance but does not present and interpret those reports through a representative who reports to the Board. In theory, Wellington should be in a position independently and professionally to present and interpret the Northern



Trust reports, but this has not historically been part of Wellington's contractual duties. ***RECOMMENDATION Part II, Section 3-C-3:*** We recommend that the Board retain an investment performance evaluation consultant to present and interpret quarterly investment performance reports. This might be accomplished by retaining a qualified personal consultant from Northern or by engaging Wellington's replacement or by obtaining performance measurement and evaluation services from an entirely separate investment consultant.

Trustees generally are very positive about the quality and depth of the information received and feel information is sufficient and appropriate to allow them to accomplish their duties and responsibilities. In our interviews we did detect some minor differences of opinion among Trustees as to whether board books are received timely; opinions seem to depend on individual receipt logistics and conflicting schedules. Nevertheless, the time frame appears consistent with that utilized by other public pension funds (i.e., 5 to 10 days before the scheduled meeting). Additionally, the Board members routinely received information of potential interest regarding TRS activities between meetings. This practice is superior to that commonly observed at other public pension funds.

Although portfolio and performance data lags this seems to be a reasonable compromise between timeliness on the one hand and accuracy and completeness on other.

Taken as a whole, we found the information received, and the timeframe of its receipt, to be reasonable and consistent with practices we have observed among other large, sophisticated pension funds.



D. Miscellaneous Board Issues

1. Approved Universe

As discussed on page 19 of Part I of the Report, regarding the Approved Universe of securities agreed to by the Board, we believe that the best solution is to eliminate the Approved Universe altogether through legislative action. However, until legislative action is taken or there is a changed legal opinion, we believe that in the meantime, some further changes to the Approved Universe criteria, to ease the administrative and fiduciary burdens, should be made by the Board. Options for Board consideration are discussed at greater length within Appendix 1 on page 189 as part of the discussion of prior recommendation I-A-2.

RECOMMENDATION Part II, Section 3-D-1: We recommend that, pending legislative action, the Board amend its criteria for the Approved Universe in order to expand the universe of “automatically” approved securities.

2. Incumbency Statement

A daily report (the “incumbency statement”) of all investment transactions is prepared and signed, and then filed at TRS. The managers who sign this generally have no direct knowledge of its content, including the accuracy of the transactions specified and do so knowing the report is not used for any purpose whatsoever. In addition to taking time and effort for no financial or control purpose, having managers sign these documents perfunctorily is a potentially risky precedent for their handling of other documents. While only a minor concern, developing a habit of automatically signing documents could flow to handling of other, more important papers.



RECOMMENDATION Part II, Section 3-D-2: We recommend that the Board eliminate the incumbency statement requirement, as well as any other purely perfunctory reporting requirements as they come to light.

Section 4: Consideration of Board Organization and Process

A. Consideration of the Current Board Size and Qualification Prerequisites

The general feeling among Trustees is that current size of the Board works well; more would be too cumbersome and fewer would overburden Trustees and make scheduling of subcommittee meetings more difficult.

With regard to investment knowledge and experience, five of the nine members are required to be persons with demonstrated financial expertise, who have worked in private business or industry and have broad investment experience, preferably in investment of pension funds. (§§825.001(b) and 825.003).

Based on our review of the Trustees' resumes, observation of their participation at meetings, and the interview process, we found the Trustees to be knowledgeable, generally well prepared and diligent, regarding the performance of their duties and responsibilities.

Subjectively assessing itself, members opined that the Board, as a whole, as well as the staff, had materially advanced and thus was more professional, committed, and attentive, than prior TRS Boards.

The Board size of public pension funds varies significantly. Based on a survey conducted in late 2000 by IFS for the Iowa Governor's Task Force on Governance and Structure of the



Iowa Public Employees Retirement System (the “Iowa Survey”)⁷, the median Board size of the 50 survey respondents was seven. The National Education Association published a study entitled “*The Characteristics of 100 Large Public Pension Plans*”⁸ several years ago. The median Board size in that study was nine members.

Only 26% of the respondents in the Iowa Survey indicated that minimum qualifications were imposed on Board membership.

B. Appropriateness of Board’s Investment Decisionmaking Practices

1. Review the System’s Governance Documentation, Including the Governing Statutes, By-laws, Administrative Procedures

In our opinion, the laws governing the management of the TRS investment program unnecessarily limit the ability of the pension fund to operate as effectively and efficiently, as it otherwise might, generate significant uncertainty and are not consistent with modern investment practices. These provisions limit the ability of the Board to control its budget, personnel, and procurement processes. These provisions constrain TRS’s ability to maximize its investment earnings, control risk and minimize operating expenses. Accordingly, in Part I, we recommend that the Legislature adjust controlling law and the investment program, to alleviate these constraints.

We found that TRS’s By-Laws appear to clearly define the duties of each of the Board’s Committees. When compared to the By-Laws of other public pension funds, we found them to be generally more detailed and illustrative of the type of document needed to guide trustees in the observance of their duties.

⁷ Report of Independent Fiduciary Services, Inc. to The Governor’s Task Force To Study Iowa Public Employees Retirement System Structure and Governance, issued November 17, 2000.

⁸ Characteristics of 100 Large Public Pension Plans, With Special Emphasis on Plans Covering Education Employees, prepared by the National Education Association, Research Division, August 1996.



We discuss the Board's other primary governing document, specifically the Investment Policy Statement in Section 1, above, at page 41.

2. Use of Committees

The By-Laws of the Board, in Chapter 3, clearly set forth the responsibilities, jurisdiction and composition of each of the six standing committees (Audit, Benefits, Budget, Alternative Assets, Policy, and Ethics). Identifying the scope and duties of each committee facilitates the ability of the trustees and staff to fulfill their mission. Committee action does not constitute a final decision. Rather, Committee action is advisory only, and results in a recommendation of the particular Committee to the full Board.

Trustees generally feel that the structure and use of committees with subsequent full board approval works effectively. Standing committees cover the needed areas of activity. If needed, the Board's By-Laws allow for formation of special committees to address particular issues (e.g., incentive compensation).

We observed that several Trustees generally attend meetings of subcommittees they do not serve on, in order to be better informed on topics when they come before the whole Board. Although there appears to be limited discussion on some issues at Board meetings, there has frequently been extensive discussion at subcommittee meetings. Further, we found Trustees are very active in raising issues during committee discussion. They do not necessarily follow staff and/or consultant recommendations precisely.

3. How TRS's Practice Compares to Industry "Best Practices"

Committees provide a systematic, focused approach for trustees to deal with issues and achieve objectives. Most boards have committees because smaller groups can generally work more efficiently and less formally.



The use of a Committee structure is a very common practice among public pension funds throughout the country. Two-thirds (33 out of 50) of the respondents in the Iowa survey reported that they utilized a committee structure. Commonly used committees include, investments, benefits, operations/administration, and audit, etc.

Much of the decisionmaking work of a pension fund board is handled through committees. Although almost universally, we find that committee action is only advisory in nature. The full Board is the final arbiter.

Having a distinct committee for private markets is more unusual, but not unprecedented; Washington State Investment Board has distinct investment committees for public markets in addition to private markets (real estate and alternatives). We believe this is a logical and effective arrangement.

Based on our observations, we believe that the use of a Policy Committee – while not common – is another salutary practice at TRS. The Policy Committee appears to be very effective in assuring review and approval of policies for both Board and operations. This committee also helps the TRS Board distinguish effectively between policy matters – the quintessential subjects the Board should address – versus matters of implementation – which are more suitable for the staff. In our experience, many other boards, unfortunately, blur this distinction.

Another process that TRS may want to establish in its By-laws, is the use of committee work plans for each of its committees. Work plans enhance the effectiveness of board committees. The work plan typically specifies the operational goals for the committee, strategies to meet the goals and timelines for completion of the goals. The goals established in each committee work plan should be consistent with the strategic goals established by the organization for the coming year(s). Work plans serve as an effective benchmark for measuring



the accomplishments of each committee, and the board as a whole. **RECOMMENDATION Part II, Section 4-B-1:** We recommend that the TRS Board consider establishing, in its By-Laws, the use of committee work plans.

4. Recommendations Regarding Optimum Structure

Decisions by the 77th Texas Legislature (2001) significantly increased Board and staff responsibility in the health care area and also regarding certification of companies offering 403(b) qualified investment products.

In light of additional responsibilities, the Board may have to establish additional committees and/or subcommittees or increase the size of existing ones. The Board may also find, in light of these additional responsibilities, that it is desirable to allot more time to subcommittee and board meetings. **RECOMMENDATION Part II, Section 4-B-2:** After expansion of responsibility is known, the Board may want to establish a special committee to evaluate committee size, time requirements, and the time demands on Trustees.

5. Consideration of Time, Detail and Discussion Devoted to Investment Issues by the Trustees

General consensus among Board members is that there is a good balance between the nature and level of work imposed on the Board and the time devoted by the Board. That is, Board members seemed satisfied that while this is a hardworking, attentive Board, which devotes considerable time and energy to investment matters before and after meetings, the number and duration of meetings is still manageable.

Discussion at Board meetings tends to be limited. However, discussion at committee meetings is active, extensive, and frequently involves assessment of differing viewpoints or approaches.



Based on our repeated observations of Board and committee meetings, we believe that Trustees have a good understanding of issues, are involved to a degree of detail appropriate for their role, and ask appropriate and applicable questions.

The By-Laws of the Board establishes that the Board will meet approximately eight times each fiscal year. The dates for these regular meetings are to be approved in advance by the Board. Records confirm that the Board adheres to its meeting requirements.

Section 5: Review of Historically Underutilized Businesses (“HUB”) Requirements

A. HUB Background

The Texas HUB program was established by the 73rd Legislature in 1993, with monitoring authority assigned to the Texas Building and Procurement Commission, formerly known as the General Services Commission. State agencies are required to make good faith efforts to meet a target of channeling ten percent of their administrative expenditures to HUBs. Technically, investment expenditures, including brokerage commissions, are not administrative expenditures subject to this law, but the Legislature has hinted at a willingness to impose requirements if voluntary efforts are deemed insufficient. To qualify as a HUB, a firm must have a “principal place of business in the State of Texas” and be at least 51% owned, operated, and actively controlled and managed by one or more African Americans, Hispanic Americans, Pacific Americans, Native Americans, or Women.

At TRS, two types of expenditures are targeted for HUB or other minority vendors – administrative expenditures and brokerage. We discuss each separately below.



B. HUB Administrative Expenditures

The TRS Board has set a goal of targeting to HUBs up to 20% of eligible administrative expenditures. TRS staff has reported to the Board that they exceeded this 20% target in the 2000, and 2001 fiscal years. Approximately 25% of TRS's administrative expenditures are "eligible," for activities that can be considered for direction to HUB firms.

TRS actively manages its administrative expenses HUB program. An overall HUB coordinator has been established within the General Accounting Department. An Investment HUB Coordinator manages investment-related expenses and is part of the ISD. As reported to the Board in December 2001, TRS actively works to identify and qualify HUB firms, and to encourage both direct and indirect (via subcontractor) use of HUB firms.

C. HUB Brokerage Program

1. Uncertainty Regarding Application

Based on discussions with TRS legal staff, we understand that the law is not entirely clear as to whether the TRS is required to channel any particular level of brokerage commissions to HUBs. However, the TRS Investment Staff has set a target of 5% of annual brokerage commissions to HUBs.

Over recent years, TRS has significantly increased the volume of brokerage done through HUB brokers, with reported increases in the number of firms (from one to sixteen in Fiscal Year 2000) and the level of commissions (\$80,000 to \$1,190,000) between 1994 and 2000. Investment staff has focused on Texas-based HUB firms in response to the recent legislative change in the HUB definition. In Fiscal Year 2001, three of the eight firms utilized were qualifying Texas HUBs, with the three Texas HUBs receiving roughly a third (\$365,000 of \$1,500,000) of the total commissions paid to all HUBs.



The issue of HUB brokers is not as straightforward as for administrative services. Selection and usage of HUB brokers are fiduciary acts and, thus, are subject to fiduciary standards of prudence and loyalty under applicable laws. These laws include the fiduciary standards prescribed by the state Constitution and the “exclusive purpose” rule under Section 401(a) of the Internal Revenue Code, applicable to tax-qualified retirement plans such as TRS. We understand that these fiduciary standards have been interpreted to mean that TRS may select and use a broker only if, based on objective investigation, staff has reasonably concluded that the broker is likely capable of providing TRS securities execution and trade value equivalent to other available brokers. At the least, TRS has determined – and we concur – that commission dollars should be paid only to those brokers who – based on objective and careful investigation by the Board and staff – are likely to be capable of providing TRS securities execution and trade value (including execution and research) equivalent to other available brokers.

TRS maintains a list of qualified brokers through whom all trades are executed. This list is established through a rigorous process of collecting information on potential brokers and evaluating them against a set of quality and risk criteria. TRS’s policy is that all approved brokers must be capable of providing quality execution and other appropriate services. Thus, minority brokers are evaluated against a quality standard and are not selected unless they can add meaningful value to TRS’s overall performance results. Prior to narrowing the HUB definition to include only Texas headquartered firms, TRS was able to execute a reasonable volume through out-of-state money center minority-owned firms. Finding qualified Texas brokers has been difficult.

2. HUB Texas-based Firm Requirement is Unrealistic

TRS does not meet its minority broker objectives solely with respect to Texas-based firms. It appears that this is because there are not a sufficient number of qualified minority brokers in Texas. However, TRS does meet its rule in terms of nationwide firms. TRS broker



selection guidelines distinguish between HUBs (Texas firms meeting State definition) and MWOBs (Minority/Women Owned Businesses) located elsewhere.

While TRS seeks to use HUBs, Texas minority brokerage firms are reportedly frequently found to be subsidiaries of non-Texas companies or ultimately not to be minority owned. They may not meet minimum capital requirements, lack institutional trading experience, or have an unsatisfactory track record of quality trade execution. In addition, often on personal visits, HUBs are found to have no actual trading capability, but merely take orders for execution by other firms. TRS feels that some material volume of brokerage can be economically executed through non-Texas MWOBs, but that the Texas HUB have generally not demonstrated their capability to offer financial value, and if used, may increase the System's cost and lower its net performance. In addition, many HUB firms do not offer any research products. Thus, many firms lack value-added service in trading or research.

3. Broker Selection Process

The effectiveness of the process to identify, qualify and use HUB brokers is closely tied to TRS's broker selection process. TRS has developed a comprehensive qualifications questionnaire which is sent to all broker candidates, including HUB and other minority firms. The questionnaire is limited to publicly available information. A full RFP seeking proprietary information and competitive quotes may not be feasible, because the responses are subject to Texas Open Records laws. Thus, brokers not selected (or selected, but not receiving what they perceive is their appropriate volume) could access information on competitors and might attempt to use it inappropriately against TRS.

TRS has formed a Broker Advisory Group, consisting of investment and trading professionals, plus the Investment HUB Coordinator. This Group evaluates the questionnaire responses and other information and establishes the list of approved brokers. Target volumes for broker usage are subsequently determined based on experience. The written guidelines for the



Broker Advisory Group include specific criteria for full service, execution only, soft dollar and minority/women-owned brokers. These criteria appear relevant to the selection of brokers who will add to the value of TRS, and are not designed simply to meet social considerations.

TRS utilizes a transaction cost analysis firm (the Plexus Group) to quantitatively measure and evaluate the quality of its securities execution. However, TRS has not utilized Plexus in connection with evaluating, at the “front end,” whether to approve any particular broker for TRS use.

TRS’s value-added criteria for approving HUBs and MWOBs are flexible, in that special research capabilities, sales coverage, access to underwritings, and the like, can substitute for trading capabilities. In such cases, TRS may direct brokerage to these firms through “step-outs.” A step-out is an arrangement whereby a portion of the commission on a trade, through an execution or full service broker, is allocated to another broker (in this case, a HUB broker), even though the HUB firm did not help execute or clear the transaction. Step outs, however, are not a free lunch. Step-out commissions reduce the amount of commissions available for other soft dollar purposes, including research and explicit soft dollar credits. Step outs also raise a fiduciary issue, namely, whether a pension fund’s fiduciaries may legitimately direct fund assets (commissions) to a third party which may or may not have provided anything of substance to the fund. Clearly, insofar as the HUB has genuinely provided, for example, valuable research or generous allocations of IPOs to TRS, paying step out commissions may be justified, purely in economic terms. But, to the extent the HUB has not provided any goods or services of genuine value, paying such commissions is subject to attack on fiduciary grounds.

To the extent that HUB and MWOB brokers are executing trades (or even just passing through orders and settlement information), the issue of Straight Through Processing and T+1 becomes critical. As discussed elsewhere, the ability of a broker to manage the speed and complexity of T+1 requirements is critical to its ability to continue to work with TRS in anything other than a step out status. T+1 may force additional changes in this program.



4. Use of Introducing Brokers

Nationally – not just in the case of TRS – step-outs are often utilized to compensate what are called “introducing brokers.” An introducing broker (“IB”) is a firm that “introduces” the client/investor to – or helps generate trading business for – the separate broker dealer that actually performs the trade (i.e., executes and clears it). Many minority-owned, or smaller brokerage firms are IBs, although some larger, nationally-known firms also use executing brokers to transact their business. We understand that most Texas-based brokerage firms that are HUBs are not able to execute trades directly in an efficient manner, and so function as IBs.

Whether performing a securities transaction through an IB benefits or harms the client/investor (in this case, TRS), strictly from an investment perspective, ultimately depends on the quality of securities execution. We do not believe it is possible to state categorically or generically whether TRS receives high quality execution on all trades TRS completes through HUBs (whether they are IBs or not). Indeed, as noted above, a number of nationally-known firms use executing brokers to transact their business and IBs may provide their clients genuine research, attractive allocation of IPOs and similar services of value. However, several operational factors put the quality of step out trades in question:

- If the executing broker knows it is performing a trade subject to a step-out (where a portion of the commission should be credited to the IB), it may place lower priority on the trade, in terms of resources, expertise and timing, compared to another, competing trade where it receives (and keeps) a full commission. Lower priority in effect leads to lower quality execution.
- If the executing broker does not know until after the trade is completed that a portion of the commission should be stepped-out, that particular trade may not suffer, but the future relationship between the client and that



broker may suffer. The next time the broker receives a trade order from that client, it may well be wary, suspecting the trade may be subject to a step-out; this wariness means less service, lower priority and poor future execution.

- On large securities transactions, executed over an extended time period, using an IB runs the risk of “leakage” of information that could disadvantage the client/investor. Using an IB increases the number of parties who learn of the investor’s trading strategy and thus, increases the risk that third parties will use that sensitive information to their own advantage (and to the investor’s disadvantage), before the entire trade is completed.
- The IB may be responsible for various types of administration, such as trade accounting, reconciliation and post-trade analysis. To the extent the IB is not up to the task, the client suffers. This may be exacerbated, insofar as the IB and executing broker become embroiled in disputes over the amount of the credit allocable to the IB (i.e., the proper amount stepped-out). On the other hand, some IBs are very capable administratively and do not typically dispute the credit allocable from the executing broker; as noted earlier, there are few hard and fast rules about IBs generically.

RECOMMENDATION Part II, Section 5-C-1: We recommend that TRS supplement its evaluation and screening of broker dealers (HUBs and non-HUBs) that seek brokerage business with TRS, before approving qualified firms, by using a transaction cost analysis firm to evaluate their capability to provide quality execution. This approach is designed to apply an objective, largely quantitative, standard policy and procedure to selection of qualified brokers, regardless of



whether they are HUBs or not. This approach presumes that TRS would pay for such analysis and that broker candidates would provide TRS sufficient data to permit the analysis.

This approach is relatively straightforward if the brokerage is well-established; in that case, detailed information regarding its trading capabilities and record may already be in the database of the transaction cost analysis firm. This might be the case for certain HUBs. On the other hand, if the brokerage is relatively unknown or new, it may be required to submit trading data to the analyst firm and that may pose practical issues. There is some possibility of inaccurate or invalid information, although we understand (based on discussion with one analysis firm) this is not likely. More problematic, however, is that lesser known brokerages may not have a track record regarding institutional sized trades, and thus, will not have the necessary data to supply. This alone may be reasonable, objective grounds for not approving the brokerage. Another issue is that if the HUB is only an IB, the analyst firm should focus on the quality of execution the executing broker achieves when (a) handling orders for the IB versus (b) directly executing and clearing trades (i.e., without the IB). This should help identify the impact of step-outs through this IB on the quality of execution that TRS obtains.

D. Texas Minority Participation Requirements Compared to Those of Other Public Pension Plans

The experience of other public employee retirement systems (“PERS”) largely corroborates our analysis and recommendations, as set forth above. Although some PERS take significant steps to channel material amounts of commissions to minority-owned firms, all seem cognizant of their overriding fiduciary duty to achieve best execution, in purely economic or investment terms.

Some other PERS across the country are subject either to legislative requirements or board-adopted policies to use in-state or minority-owned broker dealers. In both cases, the essential issue is the same: whether the expressed desire to achieve some political or social goal



(supporting local firms or historically-underutilized ones) likely sacrifices the fund's economic or investment results (i.e., reduces quality of security execution).

For example, the Ohio PERS is a \$55 billion fund, which historically has relied primarily on internal asset management. Its portfolio managers and traders report pressures to use in-state and minority brokerage firms. We understand that the Board and staff have been advised that fiduciary standards require them to utilize and evaluate such firms in light of the same objective criteria that apply to all other brokerage firms they consider, namely, whether such firms are likely to provide the fund best execution, in strictly economic terms.

In 1999, the Illinois State Teachers Retirement System adopted and revised a very detailed written policy regarding selection, usage and evaluation of all its broker dealers. That System is valued at approximately \$25 billion and is primarily externally managed. According to the System's policy and procedure document, the Department of Investment Accounting maintains a database of "minority, emerging, women-owned and disabled veteran brokerage firms." Furthermore, according to the policy and procedure document, the System is statutorily required to report the amount of commissions the System paid to such firms, name the firms utilized, and narratively discuss the current year and future year's expected usage. This report is filed with the Governor's office and the Senate Minority Leader.

Consistent with this framework, the Illinois System distributes the list of minority-owned firms to its external managers for their consideration. As the policy states, "Illinois TRS encourages minority use, given best price and execution." Illinois STRS has established the following criteria for manager trading:

- 1) Best price and/or execution
- 2) Commission recapture and/or soft dollars for the benefit of the System
- 3) Research



- 4) Minority brokers within the state of Illinois
- 5) Minority brokers outside the state.

In short, the Illinois System encourages use of minority-owned brokers, but expressly subject to the primary duty to obtain “best price and/or execution.”

A third example is the South Carolina Retirement Systems. This is a \$20 billion fund with equities that are entirely externally managed. A state statute requires the Systems’ annual investment plan to provide, “preference to brokerage firms domiciled in this State for conducting nondiscretionary brokerage transactions if these brokerage firms are able to meet the test of equal service and best execution...” In light of this legal provision, the Systems’ advisory committee (called the “Investment Panel”) recommended – and the Board adopted – a provision in its annual investment plan that provides, “In conducting security trades on behalf of the System, investment managers are directed to give preference to any licensed securities brokerage firm with brokerage office(s) located in the State of South Carolina, to the extent those conducting non-discretionary transactions through such brokers do not interfere with investment managers’ ability to achieve equal service and best execution in the purchase and sale of authorized investments.”

Finally, many PERS across the country utilize one or more transaction cost analysis firms to evaluate objectively the quality of securities execution achieved by the brokers selected by their investment managers (internal and external). In this practice, then, the Texas TRS is very much within the mainstream. On the other hand, we are not aware of any PERS that routinely use such a transaction cost analysis firm in the way we have suggested above, namely, to evaluate at the outset, whether to approve each broker which seeks to do business with the PERS. Nevertheless, we believe critically evaluating brokers before they are approved is sound in policy and practice.



E. Assessment of the TRS's HUB Program

Subject to our recommendation above (to apply transaction cost analysis when first approving (or disapproving) brokers that seek to do business with TRS), we believe that TRS's administrative HUB program appears to be well constructed and monitored, compliant with State guidelines and objectives, and generally successful. We heard no reports of loss of quality or waste of resources in this program. TRS's HUB brokerage program is also well constructed and implemented relative to serious limits on its ability to meet social objectives without compromising fiduciary ones.

1. Fiduciary Responsibilities are Generally Not Compromised

TRS's requirement that HUBs and MWOBs provide at least equivalent service seems to assure that investment requirements and fiduciary standards are not compromised. This is a reasonable and prudent standard. Safety and performance of the TRS to assure the ability to meet the benefits obligations is – and, as we understand the law, must be – the paramount priority of the Board and staff.

Applying a flexible standard to the kind of value a HUB/MWOB can provide is also sensible, in that it helps achieve the social objective without compromising the financial constraint. HUBs sometimes are able to provide TRS useful research and greater access to IPOs. The latter is true because HUBs are sometimes able (as members of an underwriting syndicate) to obtain relatively large IPO allocations.

2. Broker Selection and Evaluation Process

As explained above, TRS has installed a detailed process for selecting brokers. Trade execution is as much art as science, and TRS's broker selection process recognizes this. The commission paid on a trade is only a portion of the total cost of effectuating a sale or a purchase



of an equity security. Other factors include, where the settlement price falls relative to the bid and asked prices in the market at the time the trade is executed, where the price falls relative to the trading range for the day, how much time elapsed between placing and executing an order, and whether the entire order was filled, etc. These various measures are affected by market conditions in general, and for the security involved, including the conditions of the order (not just market vs. limit, but degrees of urgency expressed by the portfolio manager). All these boil down to the elusive concept of “best execution.” While various quantitative approaches are helpful, all suffer imperfections and many subjective criteria legitimately assist in evaluating quality of execution. TRS uses both quantitative analysis and subjective criteria. Most portfolio managers and traders have a gut feel for at least good execution under a given set of circumstances.

TRS considers a number of qualitative factors in its processes for including a broker on its trading list, both initially and for ongoing business, in addition to certain quantitative measures (handled through Elkins McSherry & Plexus):

- Value of the research provided by each respective broker dealer
- Execution capability
- Financial responsibility
- Responsiveness
- Trading experience
- Reputation and integrity
- Access to underwriting offerings and secondary markets
- Reliability and experience in keeping records
- Fairness in resolving disputes
- The timing and size of particular orders
- Available liquidity
- Reputation and integrity
- Access to underwriting offerings and secondary markets



- Reliability and experience in keeping records
- Fairness in resolving disputes
- The timing and size of particular orders
- Available liquidity
- Current market conditions
- Availability of electronic communication networks (“ECNs”)

TRS uses different brokers for different purposes, based on their expressed and demonstrated strengths. All of the above factors may be included in determining where and when to place a trade, at what commission, and under what particular conditions. In many circumstances the broker executing a trade may earn only a small portion of the commission, because TRS has designated that trade for a secondary purpose, such as soft dollar generation or HUB broker credit. In these “step-out trades” the broker is instructed to credit a portion of the commission to another broker. How and when the step-out is communicated to the broker’s trader is an important part of broker management, since a trader may be less motivated executing a two cent trade than a five cent one.

The measurement systems used by the outside trade execution firms vary in their approach and degree of sophistication. Elkins-McSherry, which TRS has used to evaluate international trades, uses a relatively simple formula comparing the execution price to the trade weighted price for the day. This is easy to calculate using readily available exchange and custodian or manager data. However, because it excludes all timing factors (a trade placed at 3:00 p.m. is compared to the entire day’s trading range the same way as one placed at 10:00 a.m.), the results can be reasonably evaluated only as ranges over a large number of trades. Plexus can provide more sophisticated analyses, but requires more detailed information about the trading process (e.g., the timing of different steps in the process) and previously did not provide international trading analysis for TRS. TRS is in the process of canceling the Elkins-McSherry contract and will be using Plexus for both domestic and international, once the Bloomberg Trade Order Management System (“BTOMS” or “TOMS”) international functionality is complete.



BTOMS has the functionality to identify (a) “step-out” trades (where the executing broker pays part of its commission to another firm such as a HUB, which TRS has designated), (b) other soft dollar and directed brokerage trades, and (c) the time of day that the TRS portfolio manager sends a trade instruction to a TRS trader, and then, the time the trader sends an order to a broker dealer. Once the BTOMS is programmed to provide this information, the ability to evaluate trading costs should be enhanced, including ability to use the “implementation shortfall” method (utilized by Plexus). This capability should also facilitate the ability to identify when use of HUBs and soft dollars compromises financial and fiduciary standards versus when it is consistent with those standards.

TRS’s process to select brokers for its approved list also seems reasonable and consistent with prudent trading and performance objectives, within the context of existing law. Maintaining competitiveness in brokerage often requires the collecting and evaluating of proprietary information whose disclosure could reduce the TRS’s ability to achieve best pricing and best execution. Thus, public disclosure laws potentially reduce competition and so work against TRS’s best financial interest.

RECOMMENDATION Part II, Section 5-E-1: We recommend that TRS continue its attempt to report State-mandated goals for HUB activity with State-defined HUBs and internally develop goals to utilize MWOBs nationwide-,without compromising investment and prudence standards. One specific process that should help in this regard is enhanced measurement and evaluation of the quality of trade execution by HUB and MWOB firms (after they have completed trades for TRS), compared to other firms. This should become possible with the implementation of expected upgrades to BTOMS.

RECOMMENDATION Part II, Section 5-E-2: We also suggest that TRS enhance its selection and evaluation process – including its evaluation of HUBs and IBs – by utilizing the data that should become available once the new BTOMS is fully installed. With that data, the



TRS (with assistance from a transaction cost analysis firm) should be able to assess, control and establish benchmarks regarding the reasonableness of commissions paid and execution quality achieved for various types of trades (e.g., execution only vs. full service, easy trades vs. more difficult ones), involving various types of brokers (HUBs, IBs, discount brokers and full service brokers).

F. Potential Use of HUB/MWOB External Investment Managers

If, in the future, TRS is permitted to delegate investment authority to external investment managers, one issue that may arise is whether TRS should then be required to use some combination of HUB or minority-owned investment firms. In anticipation of the possibility of such delegation, the State Auditor's Office requested that IFS address this issue.

In response to this issue, many public pension funds have developed a minority, emerging or "farm team" manager program. This is a program that seeks to identify and hire investment management firms which – because they are so newly-formed or have such a modest amount of assets under management – might otherwise be excluded from consideration. As a practical matter, many such firms may be owned by women or minority groups. Many public funds allocate a certain dollar amount or percentage of their total assets (e.g., up to 5%) to investment managers that meet the set criteria. The criteria for inclusion can either be purely financial (e.g., no more than a certain amount of assets under management) or based upon the ownership structure of the firm in question (e.g., whether the firm is a MWOB).

We believe that the stated purpose of the "farm team" should be solely financial – specifically, to enhance the Fund's investment program through the identification and development of new firms and new talent that otherwise – absent the program – would not be included. Similar to the selection and usage of HUB brokers, the selection of external investment managers is a fiduciary act and, thus, is also subject to fiduciary standards of prudence and loyalty under applicable laws. Any search for emerging managers should closely



parallel whatever procedures are followed in other external manager searches. (We recognize the TRS has not yet developed such procedures for external managers of publicly-traded securities because TRS does not have the authority to hire such managers). These criteria could include, for instance, the years the firm has been in business, years of experience of the key professionals, the number of their clients, and their total assets under management.

Terms of the “farm team” policy could also allow managers to “graduate” to mainstream external investment manager status if they meet certain standards after a stated period of time (e.g., five years). The emerging managers would have to attain specific investment objectives and demonstrate the continued ability to manage their business, assets and growth in a controlled fashion to be considered under the “mainstream” selection criteria. Alternatively, the emerging manager would be dropped from the program if it had not achieved its performance objectives or growth of assets.

One example of a public fund that uses a farm team approach is the DC Retirement Board (“DCRB”). The DCRB initiated the farm team concept in 1985, “to promote equal access to all who seek to provide financial services to the Board.” The current guidelines, last amended in September 2000 (which we understand are currently being updated), target “10% of the Board’s total assets for allocation to minority-owned investment management firms and for investment commitments to minority-sponsored private equity partnerships.” In order to participate, the investment managers must meet the definition of a minority business enterprise and they must “demonstrate financial soundness and a business plan to ensure continuity for a three-year period.” In all other ways, the farm team managers are subject to the same evaluation criteria for hiring and retention as other investment management firms (as well as private equity partnerships) hired by the DCRB.



Section 6: Review of Soft Dollar Policies**A. Need for Distinction Between Types of “Soft Dollar” Arrangements**

Various documents describing TRS’s policies and practices regarding brokerage do not clearly or consistently distinguish between various types of “soft dollar” arrangements. The related, but different terms “soft dollars” and “directed brokerage” are often used interchangeably. Clearly distinguishing between these distinct types of arrangements may help in identifying and installing suitable criteria for prudently structuring, operating and monitoring each one of them. This distinction is important, in that certain types of services (such as broker research, “first call” on breaking news, etc.) are obtainable only through trading activity, that is, only through paying “soft dollars;” they are not sold for hard dollars. However, the third party services TRS buys (such as Bloomberg and Pathway) are generally sold through a hard dollar contract, frequently at a lower cost than when bought with commission dollar trading credits through a broker.

The description of soft dollars in a TRS document dated January 28, 1999, entitled the “Consideration of Future Practices and Policy on Soft Dollars and Commission Recapture,” differs from the description in the System’s overall “Soft Dollar Policy” document. As described in the first document, soft dollars are amounts paid by brokers for third party services provided to TRS. In this type of arrangement, TRS enters into an agreement with the third party to provide TRS specific types of goods or services (e.g., publications, data or portfolio analytics), and the third party agrees to accept payment from the broker, who pays on behalf of TRS. The broker pays the third party by using some portion of the commission dollars it receives from TRS. The portion of the commission used for such payments (the “soft dollar” portion) is computed based on a “conversion ratio” which should be negotiated between TRS and the broker, e.g., every \$1.40 in commissions, will defray \$1 in hard costs. When utilizing this type of “third party converter,” TRS must be careful to channel to the converter only those types of trades where, despite give-up of soft dollars, the converter is likely to obtain best execution.



Typically, this means that difficult trades or trades requiring commitment of capital are not routed through such converters.

Over time, TRS may become authorized to delegate investment management authority to external managers. If and when it does delegate such authority, it may wish to direct its managers, to some extent, to trade through certain specified brokers, with the brokers, in turn, paying third parties for goods or services provided to TRS. In this situation, with an external investment manager involved, the use of soft dollars is commonly known as “directed brokerage.”

In contrast to the foregoing type of arrangement, TRS’s “Soft Dollar Policy” describes soft dollars as amounts paid by an investment decisionmaker (such as TRS, insofar as it manages assets internally) to a broker dealer for goods or services the broker dealer (not a third party) provides back to the decisionmaker, beyond securities execution and clearance. Such goods and services may include, for instance, research, hardware and software, educational conferences, and exchange feeds.

In any event, the critical point here is not semantics per se; rather, it is to distinguish between the situation where TRS uses its soft dollars to obtain, directly from the broker, valuable goods and/or services which are generally not sold for hard dollars as compared with the situation where TRS uses the soft dollars indirectly (through the broker) to pay a third party for goods or services (rather than paying in hard dollars, along with other, conventional budgeted expenses). The distinction may be important because the appropriate internal controls, accounting, transaction cost evaluation and reporting may differ between the two.



B. Assessment of Effectiveness and Impact of TRS Soft Dollar Practices

1. Cost

In mid-1998 and early-1999, TRS staff, with assistance from two leading consulting firms, endeavored to quantify the incremental cost of using soft dollars rather than hard dollars to pay for certain necessary investment services. The analysis also endeavored to quantify the third possible payment structure – commission recapture. Staff informed us that both consultants considered this a unique analysis, and that both reviewed and confirmed the reasonableness of the approach, assumptions and conclusions several times.

The “bottom line” is that paying for goods and services through soft dollars has been considerably more costly than if TRS paid directly in hard dollars. The exact amount of extra cost – and how it is computed – is set forth below.

The cost assumptions for commission rates came from TRS’s actual experience for full service trades and execution-only program trades. The market impact assumptions are incremental for each type of trade, and were based on academic studies by professors at Emory University and the University of North Carolina, regarding trading in general, not actual trades on behalf of TRS. We believe that the base assumptions were, at the time, reasonable for the market as a whole, but may have been more expensive than TRS’s actual experience at the time.

Despite the quality of the inputs and the review of the analysis by well qualified independent professionals, we believe there are two structural errors which, when corrected, cause the soft dollar process to be incrementally even more expensive than shown on the staff’s presentation exhibits.

The first error was to understate the number of shares needed to be traded in the soft dollar structure when calculating the market impact. The second error was to incorrectly deduct



the cost of services from the soft dollar alternative, resulting in the bottom line across all columns not reflecting the cost of the same set of benefits. As set forth in detail below, and assuming TRS's market impact cost was similar to the academic study data, the revised analysis shows that the incremental cost TRS incurred in 1997 and 1998 for trading and additional services totaled nearly \$13 million. The analysis restated will be:

Restatement of TRS Directed Brokerage Analysis for 1997

TRS 1997 Cost of Services Paid by Directed Brokerage			\$1,952,683
Average share price		\$	48.00
	Soft Dollar	Comm Recapture	Hard Dollar
Conversion Ratio	0.72	0.72	0
Commission Rate	0.05	0.05	0.03
Commission needed to generate	\$2,712,060	\$2,712,060	\$1,627,236
Shares needed to trade	54,241,200	54,241,200	54,241,200
Dollar value of trades	\$2,603,577,600	\$2,603,577,600	\$2,603,577,600
Incremental Market Impact	0.0023	0.00115	0
Incremental Market Cost	\$5,988,228	\$2,994,114	\$0
Total Trading Cost	\$8,700,288	\$5,706,174	\$1,627,236
Soft Dollar Credits	-\$1,952,683	-\$1,952,683	\$0
Cost of Services	\$1,952,683	\$1,952,683	\$1,952,683
Paid for trading & services	\$8,700,288	\$5,706,174	\$3,579,919

In short, according to the literal bottom line of the foregoing analysis (the line marked "Paid for trading & services"), the incremental cost to TRS in 1997 by using soft dollars rather than hard dollars for trading and additional services totaled \$5,120,369 (i.e., \$8,700,288 minus \$3,579,919).



The analysis for 1998 proceeds along the same lines. As the following chart shows, based on this analysis, the incremental cost to TRS by using soft dollars that year for the trading and additional services totaled another \$7,772,545. For the two years combined, the incremental cost thus came to \$12,892,914.

	Soft Dollar	Comm Recapture	Hard Dollar
Conversion Ratio	0.72	0.72	0
Commission Rate	0.05	0.05	0.03
Commission needed to generate	\$4,116,814	\$4,116,814	\$2,470,088
Shares needed to trade	82,336,280	82,336,280	82,336,280
Dollar value of trades	\$3,952,141,440	\$3,952,141,440	\$3,952,141,440
Incremental Market Impact	0.0023	0.00115	0
Incremental Market Cost	\$9,089,925	\$4,544,963	\$0
Total Trading Cost	\$13,206,739	\$8,661,777	\$2,470,088
Soft Dollar Credits	-\$2,964,106	-\$2,964,106	\$0
Cost of Services	\$2,964,106	\$2,964,106	\$2,964,106
Paid for trading & services	\$13,206,739	\$8,661,777	\$5,434,194

TRS has subsequently made several procedural changes in its soft dollar trading, which should lower (though not eliminate) the incremental cost. These primarily focus on pushing soft dollar trades through full service, Tier 1 brokers on a non-disclosed basis (i.e., not telling the brokers which trades are to be designated as soft dollar trades until after the trades are completed). However, as discussed elsewhere in the report, there is a limit as to how much trading can be done on this basis before costs go up and/or quality of execution suffers. There is some volume of soft dollar trading that TRS can generate with no or insignificant incremental



cost; at increasingly higher volumes larger incremental costs are incurred. Furthermore, in terms of total dollars costs, the efficiencies gained by this procedure are at least offset, and may become overwhelmed, by the growing size of the soft dollar program. While the use of soft dollars may be inefficient, the goods and services purchased with soft dollars provided important resources to TRS's investment program. Lack of access to these resources (i.e., loss of the soft dollar program without a corresponding increase in the ability to pay hard dollars) may cost TRS far more in terms of lost investment performance than the inefficiencies identified above.

RECOMMENDATION Part II, Section 6-B-1: We recommend revising and updating the analysis of soft dollar trading costs to support efforts to convince the Legislature to provide TRS Trustees with greater budgetary authority, allowing them to meet the entire budget with hard dollar spending. In the meanwhile, whether or not such legislation is ever passed, updating the soft dollar analysis should also put the Trustees in a better position to reach a fiduciary finding to justify direct hard dollar expenditures beyond those legislatively appropriated. As noted in Part I, on page 23, the Trustees are understandably reluctant to use the mechanism of a fiduciary finding and therefore, we do not view that route as a long term solution to the need for directly providing the Trustees broader budgetary authority.

2. Internal Controls

Payments with soft dollars are approved through the TRS Purchasing Department, which is not a part of the Investment Division. This is a sensible separation of functions and enhances internal control.



3. Managing the Soft Dollar Program

TRS's soft dollar program places significant demands on – and creates difficulty – for traders to place a specified amount of commission dollars in order to generate the money needed to pay for millions of dollars of services. The soft dollar component of TRS's budget has grown in recent years. The biggest impact has come from the contract for private placement consulting with Pathway; this contract has rising fees in future years as the dollars invested in the asset classes increase, while the investments themselves generate no brokerage. Similarly, as TRS increasingly invests in strategically traded securities ("STS"), it may incur additional consulting fees which may increase the pressure to use soft dollars.

During the past year, the trading volume has dropped from prior years' levels, while the soft dollar budget has increased. The combination puts pressure on the trading department to place a larger percentage of the shrinking pool of trades as soft dollar transactions to meet that budget. The TRS Board recently increased the maximum percentage of trades allowed for soft dollars from 15% to 25%. While in itself a 25% limit may not be excessive, it is in addition to the volume of trading directed for research and stepped out for HUBs. At some, perhaps immeasurable point, the execution cost of targeted brokerage becomes a material drag on fund performance. However, without adequate legislative budgetary support, TRS has to turn to directed brokerage to pay parties (e.g., Pathway) that it could otherwise pay in hard dollars.

In this environment, execution may suffer. Portfolio managers and traders believe that the targeted brokerage pressures may impair trade execution; and the available research, while somewhat subject to interpretation, seems to confirm this. Many staff would prefer budgetary authority to pay for any necessary goods and services with hard dollars, obviating the need for a soft dollar program. Generally, the soft dollar reporting from the ISD to the trading department keeps everyone apprised of progress toward the fulfillment of the soft dollar budget, although this was temporarily disrupted this year by BTOMS' inability to handle step-outs. It does not,



however, nor perhaps can it effectively, measure the cost in higher commissions and less effective execution.

The ISD is aware of the problem stemming from volume and budget trends moving in opposite directions. The ISD attempts to make the soft dollar brokerage budget more manageable for trading by:

1. Controlling the amount of the budget;
2. Reviewing brokers;
3. Negotiating more favorable conversion ratios (now down from 1.4 to 1.3, which is very favorable, compared to industry standards);
4. Currently re-evaluating and seeking to trim the number of brokers to enable more volume through each; and
5. Using brokers on fixed income new issues (generates soft dollars through seller's concession)

Soft dollar and directed brokerage programs can be a valuable and prudent part of overall portfolio management within limits. Services obtained directly from brokers often are available only via trading. A certain amount of soft dollar credit can frequently be obtained on "easy" trades without material market impact. A major aspect of the issue at TRS is the amount of credits that need to be generated and spent to obtain all the services TRS needs to manage its investments. As discussed elsewhere (see Part I, page 24), much of this need is a result of state budgeting and appropriations controls extending to use of TRS assets. Other demand is created as a result of the State Comptroller's office withholding payments to vendors for reasons unrelated to TRS business.



Section 7: Incentive Compensation Program

In Part I (addressing Legislative Issues), we point out that the Board's ability to attract and retain qualified staff is constrained. We acknowledge the Legislature's wisdom in allowing TRS to increase base pay for many investment-related positions. However, we note that TRS base pay continues to lag the relevant labor market. The disparity is even greater when bonuses/incentive compensation are factored in. (We provide empirical support and analysis regarding compensation issues in Appendix 2.) This disparity is significant since TRS does not have authority to delegate investment management to external managers and thus, relies on internal investment staff. Notwithstanding the size and complexity of the total portfolio, TRS's investment staff is not large. As a result, unforeseen vacancies or inability to timely fill positions can expose TRS to undue investment management risks. (See discussion of "governance risk" in Appendix 2, at page 206.) Accordingly, we believe that it is in TRS's interest to be competitive in terms of attracting and retaining high quality investment professionals.

Investment management professionals are attracted from and lost to a variety of competing investment entities, including other pension funds and asset management firms. TRS is unusual, relative to other large statewide public employee retirement systems across America, in that substantially all its investments are managed internally. As a result, its investment personnel needs are as comparable to those of large asset management firms as to other public employee retirement systems, which tend to rely more heavily than TRS on external management. The total cost of internal management at TRS is a fraction of the cost that would be incurred to engage external managers for the same responsibilities. The State and TRS members are well served by TRS's management approach so long as the net investment performance is satisfactory.

Since our 1996 report, the Legislature has significantly eased compensation pressures. Certain TRS investment positions have been exempted from statewide salary limits, and the classified ranges for most other investment professionals have been raised substantially. Current



position exemptions and the expanded classified ranges allow levels of base compensation that are now much more competitive with other statewide plans than was previously the case.

Nevertheless, virtually all external managers, with whom TRS competes for talent, and now an increasing number of the public pension plans as well, include incentive compensation plans (or bonuses) to supplement base compensation. Implementation of a reasonably structured plan can be achieved at a modest cost to TRS's trust fund if incentive compensation is paid only if, and when, the investment personnel involved have genuinely produced excellent investment returns, as measured against, suitable, objective benchmarks. The amount of incentive compensation paid should, of course, represent only a tiny fraction of the excess investment returns the investment personnel have generated for TRS.

RECOMMENDATION Part II, Section 7-1: We recommend that the Board seek full flexibility from the Legislature allowing TRS to establish a well-designed incentive compensation program for its investment staff and to pay such compensation from excess investment returns, outside of the legislative appropriations process.

If the Legislature adopts the recommendation, it is important that the program be structured properly. We recognize that TRS retained a firm to assist it in its consideration of compensation, including incentive compensation. Since TRS does not have an existing incentive program in place, we are not in a position to assess and make recommendations regarding specific features. Notwithstanding, to assist TRS in its efforts in this area, we set forth below some general observations regarding problems to avoid and components to include in structuring the basic framework of an incentive compensation program. We limit our observations to several fundamentals.



A. Pitfalls to Avoid Regarding Incentive Compensation

1. Uncertainty Regarding the Application of the Program

Some programs grant senior management the authority to annually identify the positions which will be eligible for the program for the year. In our opinion, the uncertainty associated with this practice is counterproductive to the purpose of such programs. In our experience, it is preferable to designate at the outset all positions eligible for the program.

2. Program Components that Promote Undue Risk Taking

Another pitfall to avoid is incentives which promote undue investment risk-taking. An example is the length of the measuring period for determining excess investment performance. If too short, this can promote such undue risk-taking. As some other public pension funds have concluded, using a single year as a measuring period may mean that an investment professional who caused significant under-performance by taking undue investment risk that year could nevertheless qualify for incentive compensation in a later year. Similarly, with a single year measuring period, a professional who enjoyed great success in year one and accordingly received incentive compensation, could underperform in year two by even more. Even if the cumulative two-year return fell shy of the benchmark, that individual would have received an incentive payment. On the other hand, using a multi-year period tends to discourage excessive risk-taking, does not unduly reward short-term success and encourages a longer term view, where cumulative performance is determinative. A caveat is that in a multi-year period, maintaining a consistent benchmark – rather than “changing the rules in the middle of the game” – is essential for fairness to the investment personnel involved.



B. Factors to Include

1. Eligibility Criteria

Establish the eligible group of employees who will participate in the plan. However, the program should make clear that eligibility does not necessarily mean the employee will participate in any distribution paid. In order to participate the employee must meet other pre-determined criteria as well.

2. Participation Criteria

- a. Continued employment in a covered position
- b. Achievement of minimum job standards

3. Suggested Plan Components

- a. Quantitative component – Non-discretionary award for beating a predetermined investment benchmark;
- b. Quantitative component – Discretionary – if performance exceeds the predetermined benchmark, an award may be granted for superior investment performance based upon such quantitative measures as: the degree the performance exceeds the benchmark, considering the risk associated with the performance; the difficulty of achieving performance relative to a peer group; the economic value the performance added to the fund;
- c. Qualitative component – Discretionary, based upon predetermined goals and objectives.



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Part III - Key Issues Within the Purview of TRS Executive Management

Executive Summary

Section III addresses issues for review and consideration by TRS's executive management. Depending on the exact nature of the steps taken, management may need to submit recommendations to a Board committee prior to implementation. This section supplements our recommendations in Parts I and II, which are also of interest to TRS management.

Trade Order Management System

Several years ago TRS undertook a major effort to develop and install an automated trade order management system with effective pre-trade controls over prohibited trades. Because no fully developed system met a sufficient amount of the system requirements, TRS contracted with Bloomberg to, in effect, co-develop such a system (the Bloomberg Trade Order Management Systems – "BTOMS"). The development and implementation is proceeding at a measured pace, and has begun to affect efficiency and security positively. Six more major functions remain to be developed, and a timetable to do so has been constructed. Once fully in place, this system should be a valuable tool for TRS's portfolio management and its trading and record-keeping efficiency.

The BTOMS adds important compliance controls to the TRS Compliance Officer's set of tools for monitoring adherence to portfolio guidelines. In particular, it is effective in identifying individual securities or classes of securities that are prohibited prior to a trade being executed. However, it does not cover all aspects of compliance. The BTOMS provides only a limited amount of whole portfolio analysis, especially pre-trade. Thus the Compliance Officer will continue to need additional tools. Many of these are available effectively and inexpensively through the bank custodian.



Although TRS has already developed many of the tools it will need to operate in a trade date plus one day (T+1) settlement environment, the automated trade order management system fully integrated with its clearing brokers will be an essential component of straight-through processing. Operationally, TRS's end of this development should be easily ahead of the securities industry's testing and implementation deadlines.

The system was developed and installed under the guidance of a multi-departmental TRS committee, primarily composed of major system users. While this structure appears to be achieving the goals, we have concerns that certain users may not have had equal input – especially with regard to priority setting, training, and development time – and that certain potentially helpful departments may not have been used as effectively as they could have been. We also believe that an undertaking of this magnitude can benefit from committee leadership that is in a position to take an outside and balanced look at the needs of all the interested parties. The BTOMS implementation may be far enough along that a change now is not needed, but we recommend that, in the future, large systems and other technical projects be directed by someone other than a primary user.

Investment Services Department

In March 2000, TRS established an Investment Services Department (ISD) within its Investment Division. The ISD is effectively a “middle office” charged with handling activities and controls required to support the investment operations and related functions. In particular, functions that do not clearly fall within the purview of investment management (front office) or settlement and portfolio accounting (back office) are handled by the ISD.

This is a fairly new concept among public funds, but one that is being more frequently recognized as valuable, especially where assets are managed internally. Because the middle office function is still new in the world of public pension funds, there is no clear set of best



practices. However, many of the functions performed by TRS's middle office are similarly assigned to the middle offices of those few other public employee retirement systems (PERS) that are using the concept. In addition, there are no definitive guidelines regarding where in the organization (particularly whether in or out of the Investment Division) the ISD best fits to maintain independence and objectivity.

TRS's ISD is relatively new and still being tested as to how it can best serve the organization. TRS needs to develop a clearer set of objectives and refine and expand policies for the ISD. The former Director of the ISD left TRS last year and TRS Executive Management needs to finalize its thoughts on the ISD's responsibilities. Once the objectives and duties of the ISD are defined, the question of succession can be properly addressed.

Section 1: Assessment of Trade Order Management System Implementation and Utilization

A. Selection and Implementation of the System

Partly in response to recommendations II-A-4 and II-G-2 of the 1996 study, see pages 195 and 196 of Appendix 1: Status of Prior Recommendations, and partly in recognition of its developing needs for greater control and efficiency in the portfolio management and trading functions, TRS undertook a project to acquire and install a trade order management system. TRS was originally looking for an off-the-shelf system but none was in existence that met its needs. TRS was about to buy another system when Bloomberg requested an opportunity to demonstrate its enhanced (more user-friendly, improved compliance) system, which was in an advanced stage of development. Bloomberg was chosen chiefly because it contained automated pricing whereas the other system required separate external pricing. Bloomberg was also the current market information link in the Investment Division of TRS, and it met or exceeded the minimum functionality requirements set by TRS. Those requirements were pre-trade compliance checks that the user can configure, an electronic trade blotter that the trader uses to track what the portfolio manager has directed and what he has given to brokers, facilities to record and allocate



trades as they are reported by brokers, and an interface capability to PAM, the TRS portfolio accounting system.

The Bloomberg system was known to be new and still under development when TRS contracted to license it. Thus TRS was aware the installation process would involve extensive customization and development.

The BTOMS implementation was initially headed up by the prior Compliance Officer (CO), supported by staff members from various user functions within TRS. After the prior CO's departure, a users committee was formed to work with Bloomberg staff and to guide the development and implementation of the system. The committee is composed of individuals from Internal Audit, Investment Accounting, Compliance, Trading, Operations, International Equities, and Information Technology. The committee has maintained extensive and detailed minutes of its meetings and decisions, thoroughly documenting the process.

The principal members of the committee making the decisions for setting priorities and timetables for Bloomberg development are key users of the system. Bloomberg and TRS agree (and we concur) that technical development requires active, in-depth participation by the system's users. While the committee does not appear to have a formal hierarchy, the Chief Equity Trader acts as the coordinator and sets agendas and meeting dates.

The BTOMS specifications call for an administrator to oversee the operation of the system. TRS has identified two individuals jointly to handle this responsibility. One is currently the Trading Operations Manager and the other is in Investment Accounting. The incumbents are expected to attend Bloomberg training in order to be able to take on more formal responsibilities in the implementation process.

We have received comments from employees involved in the system development and implementation that the efforts have resulted in significant process improvements. Brokers and



traders have a more effective way of communicating transaction information. The Compliance Officer has obtained a better system of monitoring violations of Board mandated restrictions, including in particular, greater ability to identify certain inappropriate trades before, rather than after, execution. Staff also reports that there have been fewer trade errors due to miscommunications and multiple order entry.

While the major functions of the BTOMS have been implemented, approximately six more developmental issues remain, including analyst-to-portfolio manager workflow, handling of corporate actions, improved audit package, international straight-through processing, identification of multiple orders for the same security and time-stamped trades. Based on the demands of T+1 securities clearance and other future securities industry developments, it is highly probable that the development of the BTOMS will be an ongoing exercise. Having been instrumental in its initial development as well as being a major user puts TRS in the enviable position of being able to influence the direction and the detail of future enhancements.

We believe that the overall process of developing and installing the BTOMS has been effective, but are less convinced it has been efficient and equally responsive to all users and other interested parties. Individuals involved in the process have different views as to the levels of support and training they have received internally and from Bloomberg.

For example, one key function of the BTOMS is portfolio compliance. We are uncertain how effectively the issue of the BTOMS' capability to support certain compliance tests has been examined. There are also conflicting views as to the role and degree of involvement by TRS's Information Technology (IT) Department. There appears to be a difference of opinion as to the extent IT has been allowed to actively participate. TRS's IT Department has expressed the opinion that it could have been more helpful in negotiating with Bloomberg, if invited to do so, while the Investment Division believes that IT has been fully involved. In addition, we received conflicting opinions as to the time spent, particularly on site, by Bloomberg personnel and the



degree of training and attention provided. Overall we believe the process that set priorities and communicated them was not optimally effective, but not subject to any serious mismanagement.

In general, we feel that a project of the scope and importance of the BTOMS, crossing functional lines in several ways, is best implemented through a team that is led by an executive not from a primary user department and that includes all user groups on an equal basis. The absence of someone responsible for tying all parts of this project together could result in some users getting more attention to their needs than others, thus not making the most of all the capabilities of the BTOMS. The staff members responsible for most of the BTOMS implementation have many other responsibilities. An analysis of what is required to complete the remaining functions and identify future enhancements might be in order to determine whether the BTOMS at its current stage could still benefit from such a project manager.

RECOMMENDATION Part III, Section 1-A-1: We recommend that TRS consider appointing a “Project Manager” or “Administrator” with the available time to coordinate the remaining implementation within the BTOMS. On a more general basis, we recommend that large, cross-departmental projects be regularly coordinated by a person who is not a major user of the system.

B. Best Practices in Trade Order Management Systems

Trade order management systems are of particular importance, and their use is growing, among PERS that manage equity portfolios in-house. Such PERS function in much the same way as professional asset management firms and need the same types of controls. TRS is, in this area as in several others, ahead of the curve. We are aware of other major public funds, including Ohio PERS, Michigan Board of Investments and New York State Teachers, who are in the market for or are implementing systems to perform this function.



Having such a system is an essential control over certain investment activities. Both the timeliness and the conditions for implementing a trade must be efficiently communicated from the portfolio manager to the trader, if best execution is to be achieved. Automatic, real time interface to the portfolio accounting system is important so that portfolio managers have accurate portfolio information. For these reasons alone, an automated trade order management system is logically a best practice. Additionally, TRS's current limitation to an Approved List of securities requires a system that can identify and intercept unauthorized trades before, rather than a day or more after, they are made. Thus, this compliance function is of even more importance to TRS than to other managers, who usually have less troublesome securities restrictions. Finally, when real-time, straight-through processing of trades to enable T+1 settlement is implemented, a trade order management system that can communicate trades all the way through to the broker and the custodian will be essential.

C. Implementation Consistency with Procedures and Controls

The Bloomberg system was implemented to enhance the trading, portfolio management and compliance functions of TRS. Overall, and subject to the system still being under development and implementation, we find that the structure and functions are consistent with those objectives, and that the system is being used in the manner contemplated. The major functions of the system were described as minimum requirements in the initial order management system search. These include:

1. Pre-trade compliance checks that the user can configure

This control is accomplished through the E-Mail Alert System. The Compliance Officer creates rules within the system regarding securities and positions that are permitted. As discussed below, only certain rules work effectively within this system; others are more effective using other components within TRS's overall systems. The E-Mail Alert System notifies the Chief Equity Trader and the Compliance Officer to investigate any apparent violation and to take



immediate action to prevent or correct the violation before TRS traders execute a trade order that may be out of compliance with policy.

2. An electronic trade blotter that the trader uses to track what the portfolio managers asked him to trade and what he has given to the brokers

The BTOMS combines order generation tools with an electronic trade blotter to facilitate real-time communications between portfolio managers, traders and the back office. The trade blotter monitors the status and execution levels of orders in real-time.

3. Facilities to record and allocate trades as they are reported by the brokers

The BTOMS allocates executions across multiple funds. This enables portfolio managers and traders to combine trades from different portfolios in order to obtain better trading costs.

4. An interface to PAM, the TRS portfolio accounting system

The interface was accomplished using Gateway as the systems integrator. In order to create an effective integration between transactions and portfolio records, TRS had to make modifications to PAM.

5. Trading Controls

Implementation of the BTOMS is still under way. New features and functions are being identified as modules are tested and installed, which is typical for a system under development. Deficiencies are being discovered and fixed. Not all asset classes are operational and not all policy controls are yet programmed. After some repair and reprogramming, the small and mid cap domestic stock portfolios were both made fully operational by February 2001. International



stock functionality is still under development, in order to include certain costs unique to non-U.S. trading.

The BTOMS performs pre-trade compliance checks through its Pre-trade Compliance Package. This allows TRS to establish rules that will be checked at the time of order generation to ensure compliance with regulatory, prospectus-based and client-based restrictions. There are four different categories of rules that can be created and applied to the investment portfolios. They are Absolute, Calculated, Weighted Average and Summary rules. Calculated rules are not as flexible as staff would like.

6. Compliance Capability

The BTOMS is less effective than may have been initially expected for controlling certain types of investment criteria, especially calculated ones (e.g., percent of portfolio). This is probably not surprising, since measuring such criteria requires integration of data for the entire portfolio from PAM with the trade(s) entered for execution. Since the initial interviews, and during the course of their review, Bloomberg has worked with the Compliance Officer to establish a number of calculated rules and has also improved certain absolute rules to work more effectively. This was accomplished by setting up macros in the BTOMS that make the creation of calculated rules more user friendly. While PAM itself has certain compliance functions, concerns have been expressed that these do not satisfactorily perform necessary compliance tests.

The TRS Compliance Officer has written a “Summary of Compliance Rules and Procedures” for the fixed income, domestic equity and international equity portfolios. All except the international are currently operative.

Currently the Compliance Officer uses a combination of pre-trade checks within the BTOMS, a limited amount of overall portfolio characteristics evaluation using PAM data



analyzed on spreadsheets, and certain compliance testing capabilities available through the custodian, Northern Trust. The overall relationship with Northern Trust permits TRS to use any of Northern's standard services without additional cost. Northern Trust (like other top tier custodian banks) has developed fairly sophisticated post-trade compliance analytics packages.

Overall there appear to be data and systems capabilities to monitor all portfolio compliance requirements, but not through the elegance of a single system. Certain characteristics can and are being monitored effectively pre-trade through the BTOMS, and this should further improve as the remaining asset classes are installed and tested. Other characteristics are necessarily evaluated on whole portfolio levels, and have to rely on post-trade computations, PAM or, more likely, custodial functionality.

Trading violations are reported to the Executive Director and the Chief Investment Officer by the Compliance Officer. The Compliance Officer then reports the violations in a report to the Board. This process is discussed further in the section on the ISD.

RECOMMENDATION Part III, Section 1-C-1: We recommend that the Compliance Officer continue to develop and document a two-pronged approach for monitoring portfolio compliance, utilizing a combination of the BTOMS and Northern Trust (and possibly PAM). Documentation might include a matrix of all portfolio criteria and the source of checks for each.

At the March 2001 Board meeting portfolio compliance errors were discussed by the CO. Rather than a system deficiency, it appears that not all the controls had been implemented at that time and securities were purchased that were not on the "Approved List." This situation is being alleviated as BTOMS development and installation progresses, although it is possible that certain esoteric securities may have to continue to be controlled manually.

Whether TRS is using all appropriate features of the Bloomberg system to monitor, test compliance, account for, and report investment trades is not yet determinable. The issue is not



one of utilization, but of availability of features and effort to enhance. The committee overseeing the development of the system is sufficiently representative of all users that ultimately the needed functions should be identified and, if requested by TRS of Bloomberg, implemented. This process is underway.

TRS is being used as a test site for Bloomberg in building its system. TRS was aware of this situation when selecting the vendor. While this carries the disadvantage of a protracted and intense development process, it offers the advantage of obtaining a system that fully meets the needs of TRS. It may be impossible to determine whether TRS will have obtained the fully-developed system in a cost-effective (including personnel time) manner, given that there is no fully developed, integrated system to compare it to. IT indicated it would like to have had more involvement with the Investment Division's supplier negotiations and communications, believing its experience dealing with many software vendors would be beneficial, but we cannot know whether this would have yielded a benefit.

The committee is proceeding with development and implementation in a deliberate way. As an example, it has identified an 18-step process for implementing the international equities function. The original implementation priorities (first, addressing straight-through processing for fixed income; second, domestic equity; and third, international equity) appear reasonable. We see no reason to question the priority of current and future enhancements, with the possible exception of whether additional compliance functionality is being sufficiently addressed.

Overall, it appears that TRS is developing a system that will be beneficial, reduce costs and portfolio risks, and enable TRS to function in the T+1 environment, and that current and future enhancement development will advance that objective. We are less sure this is being achieved in the most effective way possible.

The Internal Audit Report on the BTOMS, dated August 29, 2000, contained the following finding on page 32.



Our objectives were to assess the following aspects of the system's development: adequacy of controls, audit trails and security features of the system; thoroughness and accuracy of system documentation; satisfaction of users' needs; compliance and contract provisions; and effectiveness of project management. To date the project has adequately addressed each of these issues. Internal Audit will continue to monitor the project's success.

Our findings indicate this to be an accurate statement.

Section 2: Evaluation of the Investment Services Department (ISD)

A. Mission and Objectives of the ISD

The Investment Services Department commenced operations in March 2000, in response to the 1996 IFS Report and the May 1998 Investment Process Audit performed by TRS Internal Audit. This unit, like similarly functioning departments in other organizations, is sometimes referred to as the “middle office”, implying an organizational or process fit between the standard concepts of “front office” (investment management and trading) and “back office” (clearance and accounting). However, the term “middle office” does not imply that the ISD is only an unimportant conduit between the more critical functions of the front and back offices. In fact, as suggested below, we believe the ISD can play a very valuable role for TRS.

The ISD's philosophy is to administer the fund-level activities required to support TRS investment management, other TRS divisions and departments, and external entities. In general, the ISD's interpretation of its primary objective is to assist investment management in its responsibilities to reduce risk, increase returns and enhance efficiency. According to the December 2000 Investment Report to the Board, which was referenced in the April 28, 2001 report from Internal Audit, the ISD's responsibilities included corporate governance, policy



development, risk management, compliance, reporting, soft dollar program, broker relations, resource management, performance measurement and performance attribution analysis. Our extent of agreement and partial disagreement with the inclusion of these functions is discussed in this section.

We believe that the fundamental functions of a middle office in an organization that manages its own assets are as follows:

- Investment Compliance
- Risk Management and Investment Oversight
- Investment and Investment Accounting Support Functions

As with many organizations, the actual set of duties performed by the department is a compromise between the official list and the abilities, interests and time constraints of the people assigned. Thus some responsibilities recommended for the ISD are performed elsewhere, primarily because of management preference. Given the departure of the Director last summer, TRS has an opportunity to reassess the appropriateness of the department's duties and restructure the unit accordingly.

An independent middle office provides a means of independent oversight of various functions of the front and back offices. As an example, addressing front office oversight, the ISD can be responsible for monitoring areas such as investment performance and risk measurement, trading compliance and (if used as a performance measurement tool rather than a portfolio management tool) attribution analysis. These functions should not be performed by the front office, to avoid the potential conflict of those traders and managers measuring and monitoring their own performance and compliance.

Where such a unit fits within the organization is a complicated issue, in some ways unique to the particular organization. The general rule for units whose function is assessing



compliance is to report outside the functional group being monitored. However, the ISD also performs a number of support services for other internal units, which may lead to the opposite conclusion. As discussed in more detail below, the structure of a separate department performing such a mix of functions is an emerging concept, so few precedents exist. As TRS refines its objectives for and responsibilities performed in the ISD, it should consider some combination of direct and “dotted line” reporting both within and outside the Investment Division. This will help make the ISD more accountable and independent.

The full range of functions performed by TRS’s ISD is important overall. We believe that the general notion of maintaining a middle office is a particularly sound practice for an organization such as TRS, with extensive internal asset management.

RECOMMENDATION Part III, Section 2-A-1: TRS management should make the ISD and its mission and objective more defined, formalized and stronger. Several parties should be involved in redesigning the operational aspects of the ISD, including the Executive Director, the Deputy Director, the Chief Investment Officer, Internal Audit, Investment Accounting and IT, so that the ISD serves as an effective point of coordination, support and cross-verification among them all. Redefining the ISD and clarifying its mission should include refining the functional lines of responsibility of the department, management and staffing and the specific responsibilities of each individual assigned to the “middle office.”

B. Comparison of TRS’s ISD Structure and Functions to other Public Pension Funds

The middle office concept in public pension plans is relatively new and therefore does not have any fixed structure. It is an effort to reconfigure some front office and back office functions and consolidate them with certain newly established functions, with the intention of segregating responsibilities for improved internal control. Some of the more common responsibilities center around coordination of performance measurement source data, coordination of new systems and analytics among the Investment Accounting and IT



Departments, coordination with the custody bank, project management, risk management and reporting, monitoring securities lending, transaction costs and trading performance, and analytics.

There is no perfect template for designing such a unit, either in its functions or in its place in the organization. As more PERS establish these departments and gain experience with them, some consensus may develop. Ultimately, though, how best to divide basic responsibilities will remain a matter of preference for each individual PERS. Nevertheless, as TRS continues to develop its ISD, understanding how other organizations are addressing the issue may be of value.

The Ohio PERS is internally managed and has recently created a middle office. The Ohio middle office is still developing, but is taking on many of the functions listed above.

Another fund reasonably comparable to TRS that has fully implemented a department similar in function to TRS's ISD is the New York State Teachers Retirement System (NYSTERS). At NYSTERS, the unit is called the Investment Information Department (IID). It includes many middle office functions plus the back office functions of investment accounting and related responsibilities. NYSTERS created the IID to eliminate redundancy in the former operations and to provide more efficient operations to the fund. The unit has been in operation for about two years.

NYSTERS established a committee with representatives from all affected departments and spent about two years developing, refining and implementing the concept, including obtaining agreement from all fund units. Their basic structural philosophy was to separate the functions having investment discretion from those reporting results of that investment discretion. The head of the IID reports to the Director of Administration, who reports to the Executive Director; IID is not housed within the investment division. (Although the Executive Director at NYSTERS is also CIO, the IID reporting chain runs to his ED responsibility.)



Although NYSTERS, unlike TRS, combines the portfolio accounting function organizationally with the middle office functions, the operational result is not significantly different. NYSTERS uses Portia as its portfolio accounting software, rolling transactions into a financial ledger system. A separate finance department generates the system reporting (e.g. CAFR), coordinating with the IID.

The IID has broad compliance responsibilities over investment policy and portfolio guidelines. NYSTERS has both internal and external management. Right now, portfolio compliance is post trade for internal as well as external managers. NYSTERS is currently looking at trade order management systems and would presumably add some pre-trade compliance through that function. Portfolio data for compliance testing come primarily from Portia. Some tests are performed within Portia, some externally using spreadsheets.

IID is also responsible for monitoring the quality of trading, broker fails and similar measures. It also monitors internal guidelines for usage of minority brokers, chiefly through calculation of commissions by broker. However, an outside firm determines quality of execution. IID plays no role in this, and therefore no role in determining trading costs for any particular broker subgroup. NYSTERS has no soft dollar arrangements. It has recently begun some commission recapture trading, but generally prefers to negotiate the lowest commission.

IID is not involved in portfolio structure issues, nor in measurement of performance and sources of performance (attribution analysis). Portfolio structure is handled within the investment division and performance measurement and attribution analysis by an outside consultant. Proxy votes are determined within the investment division also (subject to written guidelines) with NYSTERS casting the votes itself. There is a system to record the number of shares voted, reconciled to holdings.



IID plays a major role in monitoring and overseeing the domestic securities lending program, including compliance with guidelines, investment of collateral, mark-to-market requirements, broker concentration and similar matters.

NYSTERS policies are developed collaboratively across departmental lines; IID is a participant but not a driving force. Legal, Internal Audit, and the affected operational departments are closely involved. However, IID is the custodian of all policies and maintains the policy manual.

IID provides support functions for the development of the budget, including a significant role in software evaluation and implementation. Additionally, IID is expected to be a major participant in the soon to-be-organized T+1 effort.

In summary, while there are material organizational differences, some reflecting the regulatory and philosophical environments in which the two funds operate, there are broad similarities between NYSTERS' IID and TRS's ISD, including our recommendations regarding the ISD's future role.

C. Appropriateness and Clarity of the Duties and Responsibilities of the ISD

We have reviewed a TRS outline of areas that the ISD is currently responsible for performing. A discussion of each follows:

- (1) Portfolio and Asset Allocation Strategies – These should be considered as primary fiduciary responsibilities, controlled by the Board through its policies and senior management.

RECOMMENDATION Part III, Section 2-C-1: These areas are the responsibility of the Board of Trustees. The ISD's involvement should be limited



to monitoring the strategies to make sure they follow the policies set by the Board.

- (2) Policy – Establishing policies is clearly the responsibility of the Trustees and various members of management. The ISD’s involvement could include review of existing policies and to a limited, general degree, making general observations regarding existing policy for further consideration by upper management and the Board, e.g., regarding soft dollar and proxy voting policies and reporting requirements for alternative assets. To maintain adequate separation of functions, however, the ISD should not be directly involved in finalizing or adopting policy.

RECOMMENDATION Part III, Section 2-C-2: The ISD should not be a key part of the policy-making group, although it may be uniquely able to provide advice to policy-setting committees on specific aspects of a policy under development. Its primary involvement should be to monitor compliance with rules and procedures set by the Board.

- (3) Monitoring Performance Measurement – Northern Trust and the Investment Accounting Department of TRS both generate reports addressing this issue. The Board has made clear its preference for independent portfolio performance reporting. This structure is similar, and provides the same benefits, as the performance measurement control structure used by the best managed funds that use outside managers. With those funds, the investment manager calculates daily performance for portfolio management use, and then links daily returns to generate highly accurate monthly and longer rates of return. Separately the custodian, or an outside consultant using custodial data, calculates slightly less precise rates of return by month, usually using Modified Dietz or another Association for Investment Management and Research (AIMR) accepted algorithm. An internal analyst or outside consultant then reconciles the two rates



of return within a reasonable tolerance, effectively verifying the reasonableness of the result.

At TRS, Investment Accounting acts as the internal investment manager's performance calculator, providing daily information and linked periodic returns to portfolio managers. Northern Trust calculates the periodic rates of return. In our opinion it is appropriate for the ISD to perform or review the comparison of the two calculations, but inappropriate for the ISD to directly calculate or disseminate portfolio performance data. It is reasonable for the ISD to oversee process and standards for performance measurement and reporting by Northern Trust (or any other independent performance calculation firm that TRS may utilize in the future).

RECOMMENDATION Part III, Section 2-C-3: The ISD should monitor these reports for accuracy and refine quarterly reporting to the Board by ensuring that performance presentation meets AIMR standards for industry best practices.

- (4) Attribution Analysis – This function requires certain analytical skills and a familiarity with the TRS asset allocation strategies. Attribution analysis may be used as a portfolio management tool, as a performance measurement tool, or both. TRS uses performance attribution principally for fine tuning management of the portfolios, and given the objectives of managing the portfolios closely to their respective benchmarks, this is appropriate. Used this way, calculating performance attribution within the Investment Division is acceptable, and may be preferable. If TRS were to use attribution analysis to evaluate the portfolio managers, it should not be a function of the front office (i.e. by managers analyzing their own performance); it could be performed in the ISD or the Investment Accounting Department, or by the custodian and/or consultant in conjunction with portfolio performance measurement. We understand that TRS



management has decided that performance attribution will not be an ISD function, and will most likely be done by the custodian or investment consultant.

RECOMMENDATION Part III, Section 2-C-4: TRS should discuss with the new investment consultant, to be hired to replace Wellington (who has notified TRS it will not renew its current contract), how best to use attribution analysis to manage both the investing process and management's understanding of the sources of performance results.

- (5) Risk Assessment and Management – This function addresses the implementation of a comprehensive compliance program to measure, monitor and mitigate operational and financial risk to the TRS trust fund.

RECOMMENDATION Part III, Section 2-C-5: The ISD, with proper staffing, should be charged with this responsibility to include:

- Refining and documenting procedures for the compliance function;
- Monitoring compliance with the TRS Investment Policy Statement on a continuing basis;
- Updating the BTOMS with regard to compliance module rules and watch lists;
- Working with Northern Trust to develop a risk measurement program for the entire fund; and
- Developing plans to train additional staff in the ISD to handle various areas of risk management. The extent of the ISD's responsibility will



depend on staffing level and appropriate knowledge of the respective risk assessment areas.

- (6) Securities Lending – The ISD has been monitoring securities lending to a limited extent. The ISD has created a monitoring system to ensure Northern Trust adheres to the policy set by TRS and the guidelines in Northern Trust’s securities lending contract. The ISD has also started the process to investigate other opportunities for investment of cash collateral from securities lending. To the extent such opportunities involve consideration of expanded investment guidelines or direct in-house management of cash collateral, the Investment Division should be responsible in order to separate the asset management and compliance functions.

RECOMMENDATION Part III, Section 2-C-6: If TRS Management retains the basic objectives of the ISD, the ISD should be given clear responsibility for monitoring compliance with securities lending policies and measuring performance.

- (7) Soft Dollars – The original plan was to enhance the efficiency of this program by updating the soft-dollar manual and training other agency personnel in soft-dollar accounting and program management. The broad soft-dollar program encompasses several diverse functions, including trading, broker relations, accounting and procurement. Presently, an ISD staff member performs the following:

- Recommending changes to the soft-dollar policy;
- Developing procedures for the soft-dollar program;



- Contracting, procuring, budgeting and coordinating purchase requests with General Accounting and soft-dollar brokers;
- Consulting and coordinating with investment staff, soft-dollar brokers and TRS legal services regarding planned expenditures;
- Reconciling statements;
- Preparing and presenting broker commission allocations to Trading;
- Preparing expenditure reports for the Board; and
- Conducting program analysis to develop and recommend solutions to problems and implementing solutions.

RECOMMENDATION Part III, Section 2-C-7: The soft-dollar program clearly fits within the ISD's share of responsibilities. We recommend that, with adequate staffing, the ISD continue to oversee this program. Additionally, the ISD is an appropriate venue to assess the cost of soft-dollar generation (trading costs).

- (8) Proxy Voting – This responsibility is to develop, maintain, and monitor an effective control over domestic and international proxy voting. An ISD staff member is presently handling this. Some notable accomplishments the ISD has reported include:



- Reducing the cost of proxy voting services by requiring vendors to compete for the TRS engagement through a proposal process;
- Engaging additional services from Institutional Shareholder Services, the outside vendor, which reduce the amount of time Domestic and International Equities personnel spend on proxy voting related tasks;
- Documenting internal proxy voting procedures for staff; and
- Cross-training several people (back-up) for the voting for both domestic and international equities.

RECOMMENDATION Part III, Section 2-C-8: Proxy voting should continue to be a function of the ISD.

- (9) HUB/MWOB Brokers – The ISD’s plan is to continue to refine the process for doing business with Historically Underutilized Businesses (HUB) and Minority & Women-Owned Businesses (MWOB) by:
- Establishing a 5% target as an internal goal for broker commissions only, not operating budget;
 - Continuing to attend HUB conferences and meetings for the Investment Division;



- Continuing to recruit HUB/MWOB brokers for step-out trades; and
- Continuing to work with Plexus and TRS's Trading Department to determine the efficiency and qualifications of HUB/MWOB firms before getting involved with them.

RECOMMENDATION Part III, Section 2-C-9: Separate from the investment management and trading functions, the ISD can continue to play a valuable role with HUB/MWOB brokers, helping to assess the quality of securities execution TRS obtains across all aspects of its brokerage program.

- (10) Special Research Projects – The ISD could be involved in coordinating special investment research and analysis programs.

RECOMMENDATION Part III, Section 2-C-10: The ISD should be involved in this activity to the extent it has the time and knowledgeable staff available.

- (11) Audit Responsibilities – The ISD coordinates the implementation of internal audit, external audit, and compliance recommendations regarding investment related activities, including both the Investment Division and Investment Accounting.

RECOMMENDATION Part III, Section 2-C-11: The ISD should continue to be involved in this activity to the extent it has the time and knowledgeable staff available.



(12) Operating Guidelines, Procedures, Controls, Reports – The ISD updates all internal operating procedures and develops appropriate reports. For example, the ISD does or has done the following:

- Coordinating the updating of equities and fixed income operating guidelines now that the BTOMS is mostly in place;
- Developing with Pathway, the Investment staff and the Investment Accounting staff appropriate reporting of private equity portfolio information to the Board;
- Developing appropriate reporting for equities trading; and
- Assisting with the development of a Board website.

RECOMMENDATION Part III, Section 2-C-12: TRS should reassess the ISD’s staffing, and review the ISD’s responsibilities for operating guidelines, procedures, controls and reports. These responsibilities should be assigned to a department with appropriate staffing and knowledge. Such a change would be consistent with the overall philosophy of using the ISD as the focal point for policy compliance and using other departments for policy development.

(13) Ethics – The ISD is part of a team that reviews and recommends updates to the Board’s Code of Ethics Policy as required. The ISD does not presently have a representative on the internal staff Ethics Committee, which provides policy interpretations and guidance for the TRS staff.



RECOMMENDATION Part III, Section 2-C-13: The ISD should be represented on the internal staff Ethics Committee. However, to preserve separation of functions, we believe the ISD representative should participate as an observer and commentator, but not a decision-maker, arbiter or interpreter, regarding ethics policies or statutes.

RECOMMENDATION Part III, Section 2-C-14: We also conclude that the ISD is an appropriate unit for monitoring compliance by TRS personnel (other than themselves) with the Ethics Policy. However, this does not mean the ISD is necessarily the only appropriate unit. This subject requires TRS upper management to delineate the respective aspects of the monitoring function among the ISD, the Legal Department, and Internal Audit.

(14) Administrative – Some activities the ISD has reported regarding administration include:

- Streamlined and clarified travel and purchasing requests for the Investment Division;
- Created, and continues to maintain, databases for broker qualification submissions to the Investment Division; and
- Provided abbreviated budget training for all Admin Techs in the Investment Division.

RECOMMENDATION Part III, Section 2-C-15: Assuming management accepts our view of the basic role and functions of the ISD, we believe it is reasonable to house these administrative duties within the ISD.



D. Role Regarding T+1 Implementation

An additional role for the ISD, consistent in many ways with its other functions, is T+1 implementation. T+1 is the acronym for the securities industry's plan to shorten standard settlement terms for domestic stock transactions from a four-day process to a two-day process. Several years ago standard settlement was shortened from T+5 to T+3. The "T" refers to trading day and the number following it is the number of business days until settlement (delivery and payment). Thus with T+5, a trade on Tuesday settled the following Tuesday (given no holidays). Under T+3 (the current standard), a Tuesday trade settles on Friday. With T+1, the Tuesday trade will settle on Wednesday.

The change from T+5 to T+3 required the reporting system to work faster, but did not fundamentally change the overnight batch processing nature of trading and settlement. T+1, however, requires same-day, near real-time reporting and affirming of trades, and thus requires a fundamental change in how the process works. Such a reduction in time can be accomplished only if all counter parties implement straight-through-processing (STP) solutions. The industry objectives in implementing T+1 include expected cost savings from the reduction of errors, a change to exceptions-only processing and improvement in industry communications standards.

The T+1 standard is currently targeted to be fully implemented by June 2005, a deferral from June 2004. While both the loss of communications facilities and the concerns about the adequacy and redundancy of communications and settlement systems stemming from the September 11 attack may further delay this schedule, the goal remains in place. To achieve the 2005 target, however, preparation and testing of certain elements will have to begin much earlier. Every party to the trading and settlement process – investment managers, brokers, custodians, depositories – will have to be using STP systems for T+1 to work. Firms in the process that do not invest the time, equipment and software will not be able to participate. This T+1 project primarily affects stocks listed on U.S. exchanges.



With a domestic stock portfolio that is completely in-house invested, TRS is an investment manager for this effort, as well as a buy-side trader responsible for selecting brokers. TRS also fills the role of investor, with responsibility to select a custodian. Thus T+1 poses a major, fundamental issue for TRS on at least three levels. TRS functions that have a significant interest in the success of the nationwide T+1 effort include portfolio management, trading, broker selection, custodial oversight, portfolio accounting and cash management.

Given the number of TRS departments that will be impacted by T+1, the responsibility for T+1 preparation is suitable for TRS's ISD. TRS must assess not only its internal systems and processes, but also the extent to which the custodian and broker dealers it uses are ready for T+1. This process of assessment will be a project itself. Such project management is consistent with the ISD objective, and also consistent with our previous recommendation, that major process projects should be coordinated by someone who is not a primary user of the system.

IFS has been informed that the Investment Accounting Department is ready to handle T+1. We believe this particular part of the process is probably able to do that, inasmuch as certain other securities booked within Investment Accounting already have one day settlement, and given that accounting is largely an after-the-fact process. We also believe that the BTOMS will enable TRS's portfolio management and trading operations to do STP. However, the extent of T+1 readiness of external parties on which TRS relies – most notably, custodians and broker dealers – is unclear.

RECOMMENDATION Part III, Section 2-D-1: We recommend that the ISD be charged with responsibility for coordinating TRS's preparation for T+1 and that the ISD begin promptly to organize the process to manage TRS's internal and external T+1 effort.

Recommended planning steps for T+1:

- i. Management steps:



- Forming a steering committee
 - Designating the STP project as a reportable item to the Board
 - Reporting progress to all concerned parties
- ii. Identify project management. Name T+1 coordinator and set up a cross divisional/department team to examine streamlining of the organization.
- iii. Maintain an awareness program to keep all pertinent staff informed about future developments regarding T+1 (attend conferences, collect relevant information for implementation of T+1, STP and processing protocols).
- iv. Make senior management aware of the issues including all facets of the Fund (e.g., Trading Desk, Operations, Investment Accounting, IT staff).
- v. Participate in relevant industry groups to obtain information. TRS should communicate with its contacts at the Securities Industry Association, and at other public funds, to determine what committees it can be involved with addressing T+1 implementation. The Securities Industry Association (SIA) will be conducting a series of conferences on this issue as it progresses. Given TRS's size as a manager and a user of broker services, attendance by TRS's T+1 project manager is recommended. The SIA web site is a valuable resource for upcoming activities and issues.
- vi. Analyze current processing gaps to meet T+1 requirements. Review requirements for change with broker/dealers.



- vii. Develop a project plan to make necessary T+1 requirements.
- viii. Develop a budget and obtain funding approval.
- ix. Obtain necessary staff resources.
- x. Initiate discussions with other parties to discuss their T+1 readiness plans (such as service providers).
- xi. Identify vendors with proven track records and high-quality partnerships/alliances that can support order-through-settlement STP on a real-time basis.
- xii. Develop a communications plan for staff, clients, and partners addressing operational, systems and procedural changes and implications for all.

E. Compliance Reporting Structure within TRS

We have some concerns with the ISD's compliance function being within the Investment Division, insofar as the CIO could in theory suppress or ignore material violations of the investment policy. (We hasten to add we have not observed this and do not intend this as a comment on the incumbent; it is purely a theoretical possibility given the placement of the compliance function.) Generally recognized standards of control call for a separation between the unit being monitored and the enforcement of the monitored activity. TRS's organization offers several ways a sufficient degree of independence could be achieved short of moving the entire ISD out of the Investment Division. TRS has recently appointed a Deputy Director. Depending on the responsibilities given this individual, it may be feasible to have the Compliance Officer (CO) report (directly or dotted line) to the Deputy Director. Otherwise, providing the CO clear dotted line or contingent authority to report inappropriate activity to an



executive outside the Investment Division (e.g., Internal Audit, Legal, Executive Director) is wise.

RECOMMENDATION Part III, Section 2-E-1: We recommend that the Executive Director recommend to the Audit Committee how best to provide the CO independent reporting authority outside the Investment Division.

1. Lines of Responsibility regarding Investment and Ethical Compliance

Lines of responsibility between the ISD and Legal Counsel are fuzzy with respect to compliance monitoring. Neither ISD nor Legal Department personnel clearly understand who is responsible for which functions regarding various aspects of compliance monitoring.

RECOMMENDATION Part III, Section 2-E-2: We recommend that TRS's executive office direct the ISD and Legal Counsel to itemize in writing the functions they each believe someone should perform regarding investment and ethical compliance (including personal trading, receipt of gifts, travel, personal financial interests in TRS investments, reporting and related matters) and the functions they each believe they perform. In addition, Internal Audit should work with the CO in defining the lines of jurisdiction between the two groups.

The overall TRS compliance function includes at least three major ethics components: portfolio compliance to investment policy restrictions, personal trading restrictions relative to portfolio investment activity, and personnel compliance with other ethics requirements. We understand the CO currently has responsibility for the first two; the Legal Department takes full responsibility for the third. With regard to portfolio investment compliance, the CO uses the BTOMS as the primary pre-trade test for unauthorized securities. The BTOMS automatically sends an e-mail alert to the CO and the Chief Trader for any security not on the Approved List or otherwise not meeting pre-programmed criteria. Investment guidelines based on analysis of the entire portfolio are not able to be intercepted in the same way, and so require post-trade tests. While the CO has been able to define some of these within the BTOMS, use of other sources



(such as the custodian’s compliance modules or spreadsheet analysis) is needed for others. We have been advised that the compliance capabilities within PAM have not been able to provide the same functionality.

Monitoring employees’ compliance with trading restrictions is a necessary, though often not popular, exercise. The purpose is to ensure that an employee cannot use insider knowledge of TRS’s trading to profit personally, nor to reduce the fund’s profit. As currently structured, designated TRS employees are expected to voluntarily report their personal trading. Thus there is no institutionalized mechanism for detecting the employee who seeks to evade the system.

The Compliance Officer historically has reported to the (currently vacant) position of Director of Investment Services who in turn reports to the Chief Investment Officer. The Compliance Officer provides periodic reports to the Board Audit Committee. However, the “dotted line” is informal and is dependent upon the willingness and comfort level of the CO to draw on the resource. Likewise, the CO is aware he can go to the Internal Audit Department or the Executive Director in appropriate and necessary circumstances, but there is no clear, written authority and no assurance of career protection should he do so.

The CO is not part of the TRS internal staff Ethics Committee. [See discussion in Ethics section, page 177.]

Our perception, based on interviews, is that the functions of the compliance area are not sufficiently clear regarding compliance with the Ethics Policy and financial risk management and need clearer definition and establishment of authority from management. The specific role of the CO is not well defined, partly because several types of compliance are at issue, but not clearly articulated. These include compliance:

- of the investment portfolio with Board policies and risk standards;



- of the investment portfolio with legal requirements, including investment transactions with parties related to TRS, its Trustees or employees;
- with restrictions on personal trading by TRS employees; and
- with ethical rules regarding gifts and entertainment.

RECOMMENDATION Part III, Section 2-E-3: TRS management should recommend a more clearly defined CO role and place within the organization for consideration by the appropriate Board committees.

Recently, the CO has focused on establishing and re-defining the “Rules” within the Bloomberg Compliance module, with particular emphasis on the “Calculation” rule. The CO also has been reviewing and testing proxy voting and has just recently (with the departure of the ISD Director) started to monitor the securities lending program. The CO also responds to brokerage firm requests for information, works with the Legal Department in investment-related matters and is a liaison with internal and external auditors. He is also the liaison with brokers and authorized traders for TRS.

F. Examination of the Role of the Investment Program Coordinator

The Investment Program Coordinator (Investment Operations Manager) currently handles the majority of the other responsibilities of the ISD. This position’s responsibilities and the estimated percentage of time spent on each are as follows:

- 50% - Soft Dollar Program
- 25% - Investment Division Reporting
- 10% - Systems and Software Team chair
- 10% - Minority/HUB Broker Relationship Coordinator
- 5% - Operation Budget and Special Projects



In actual practice, the incumbent (with the assistance of an analyst) handles virtually all aspects of a broad range of administrative and service responsibilities. This workload is possible because of this individual's particular capabilities and institutional experience. Under other circumstances this work would likely need to be divided among several persons.

RECOMMENDATION Part III, Section 2-F-1: TRS management should review the functions of the Investment Program Coordinator and the number of staff members needed to perform them under ordinary circumstances and make appropriate recommendations to the Board.

G. Effectiveness of the ISD's Investment Compliance Monitoring

The Compliance function in the ISD has accomplished a number of tasks in its efforts to reduce both investment and operating risk as well as enhancing efficiency. Some notable reported items are:

- Assisted the Bloomberg System Administrator in completing the implementation of the Domestic Equities and Fixed Income portfolios onto the BTOMS and in identifying and correcting errors in the Bloomberg holdings database despite limited training from Bloomberg.
- Established manual monitoring procedures for portfolios that have not been implemented on the BTOMS.
- Improved method of monitoring weekly compliance queries that are conducted in the BTOMS Compliance Module.



- Established and implemented procedures for monitoring staff's personal securities transactions and the IPO approval process.
- Responded to a request from Wellington Management Company that successfully stated TRS's position on the compliance function and plans for the future.
- Worked with another state agency to assist in its development of an investment compliance function.
- Developed effective communications with the investment staff, a vital link in monitoring compliance.
- Developed manual procedures for equity portfolios not implemented on the BTOMS addressing the equity approved universe and whether or not the security is one of the types authorized by the Board.

The compliance monitoring function is still being implemented, given the new BTOMS and additions to asset classes. When all BTOMS applications are implemented, virtually all internally managed publicly marketable securities will be able to be monitored through some combination of the BTOMS, PAM and Northern Trust. Investments via limited partnerships such as Alternative Assets will be monitored through other means, which remain to be developed. This latter effort will require interaction between the ISD and those responsible for the Alternative Assets program. ***RECOMMENDATION Part III, Section 2-G-1:*** We recommend the ISD and the Alternative Assets program coordinate to develop a suitable compliance monitoring process.



END OF NARRATIVE PORTIONS OF THE REPORT

This concludes our detailed discussion of the issues. We appreciate the opportunity to be of service to the Legislative Audit Committee and the Texas State Auditor's Office. We also hope that this report will be of benefit to the Teacher Retirement System of Texas, its many participants and beneficiaries, its Board and management.



Status Of Prior Key Recommendations

For purposes of this report, certain recommendations from the 1996 Report have been designated as “key.” Classifying a recommendation as “key” is significant in several respects. First, that classification means that the recommendation is sufficiently important for IFS to highlight for purposes of the Board’s attention, rather than only a matter for TRS staff to implement or refine. Second, IFS has probed the status (as reported by TRS) of the System’s actions in response to any recommendation identified as key. IFS has accepted as accurate the reported status of any recommendations properly classified as non-key. The recommendation designation is based on labeling used in the 1996 Report and in the 1996 Report Status Matrix. Our assessment of the actual status of TRS efforts to address each key recommendation and our discussion of whether each recommendation merits continued efforts and/or legislative consideration follows:

RECOMMENDATION I-A-2: proposed that the Board seek to eliminate the Approved Universe of acceptable stocks. The 1996 Report Status Matrix reflects the status of this recommendation as “in progress.” The Investment staff has recommended the elimination of the Approved Universe. IFS concurs. Efforts include seeking legislation to establish that the Board may lawfully delegate to staff – within the context of prudent investment guidelines and prudent oversight – responsibility for selecting individual stocks. We believe this subject merits further legislative efforts because, in our opinion, adherence to the Approved Universe unproductively consumes Board and staff time and effort, without a corresponding benefit in terms of expected return or control of risk.

Although adherence to the Approved Universe still remains administratively burdensome, some changes have been made since our 1996 Report, which reduce the burden. At the time of the 1996 study, all stocks had to pass a financial screening test to be included in the Approved Universe and could be added to the Approved Universe only when the screen was performed. The revised list was approved every six months. Any stock not passing the screens had to be written up and approved by the Trustees. While the concept remains, subsequent TRS efforts have somewhat simplified the process, chiefly through a redefinition of the screen.

Securities that are in the benchmark index or that pass the screening process are automatically included in the Approved Universe. Securities that aren’t in the benchmark and don’t pass the screen must still be written up and presented to the Board, so that the major problem now is more an operational drain, rather than a significant investment constraint. Nevertheless, there are still a considerable number of write-ups to be prepared by staff and read and approved by the Board. Whether the Board has the time to do adequate review of each of these write-ups is questionable.



While we continue to believe that the best investment solution is to eliminate the Approved Universe, this will still require at least a changed legal opinion, and in all probability legislative action. Our recommendation continues to be to pursue such legal and legislative alternatives, however we believe that in the meantime, some further changes in the Approved Universe criteria will ease the administrative burden and lessen the fiduciary burden faced by the Board whenever they approve an exception.

Current screen requirements for stocks not in the applicable TRS benchmark index are (a) a three year operating history, (b) a market capitalization of at least \$50 million, and (c) a ratio test – for financial institutions: assets/equity ratio less than or equal to 18; and for non-financial institutions: three year average EBITDA/debt service ratio greater than 1.0. One effective way of simplifying the structure is to modify the requirements, while retaining a set that is prudent. For example, clarify that the operating history includes periods when the company was a division or subsidiary of another company that qualified (thus allowing spin-offs), either revise or specify different ratios for different industry groups, or eliminate this type of test entirely. A reasonable approach might be to include in the Approved Universe all stocks in a broad index such as the Wilshire 5000 or to permit any security which is listed on a recognized exchange (domestic or foreign), thus using the exchanges' listing requirements in the same manner as TRS is currently using the index sponsors' inclusion criteria. For foreign securities, specific exchanges (and/or countries) could be prohibited. Since our ultimate recommendation is to eliminate the Approved Universe, we are not specifically endorsing any of the above ways of expanding the universe of “automatically” approved securities as a possible alternative to its elimination.

Even in a more streamlined form, the Approved Universe creates an unfortunate legal implication, namely, that the Board knows and approves each individual security in the TRS portfolio. The Board under the current system is assumed to understand the tests and what they indicate regarding a security's appropriateness, as well as to have read and understand each exception write-up. We do not believe it is realistic or reasonable as a matter of practice to expect the Board to do so – nor to be held liable as a matter of law if it fails to do so.

RECOMMENDATION I-A-5: proposed that the Board consider the use of external managers for small-cap equities because TRS may not have or be able to obtain the depth and breadth of resources (e.g., experienced staff and access to research tools) necessary to perform the intensive and timely research that is generally critically needed to manage this asset class whose risks of significant tracking error are greater. This recommendation could not be implemented by TRS due to its inability to delegate investment authority to external investment managers and the 1996 Report Status Matrix reflects that fact.

Since IFS' 1996 report, the Mid Cap portfolio was restructured into Mid Cap and Small Cap Passive and Active portfolios. The Active Mid Cap was instituted in April 1997 and the Active Small Cap in December 1998. Both portfolios have performed well to date, since the restructuring, outperforming their benchmarks, the S&P 400 and 600, respectively. We believe this performance preliminarily supports the conclusion that TRS is capable of internally



managing both these portfolios. However, the performance history is not long enough to be definitive, and we continue to be concerned that the ability to manage a small cap portfolio effectively over time will be constrained by the limits of the Approved Universe and the restrictions on travel and purchase of investment research tools.

RECOMMENDATION I-A-6: proposed the expansion of TRS’s private equity program. The 1996 Report Status Matrix reflects the status as “completed in 2000.” The private equity program is being implemented.

TRS has planned for and begun implementing a private equity program. As of the time of our on-site observations in the spring of 2001, the Board’s Alternatives Assets Committee and staff were still “building out” the private equity portfolio, i.e., selecting limited partnerships to fill various “slots” within the overall private equity program. However, the program is not yet completed, insofar as the target allocation has not been achieved, many slots remain to be filled and aspects of the procedures and policies for this nascent program are still evolving

RECOMMENDATION I-A-9: proposed the expansion of TRS’s international equity program to include emerging markets and private equity. Based on the same rationale noted in I-A-5, to the extent that TRS decided to invest in emerging and/or private equity, we recommended that TRS consider the use of external management firms. This recommendation could not be fully implemented by TRS due to its inability to delegate investment authority.

TRS has expanded its international equity program, through internal management. External firms are being utilized for private equity investing through limited partnerships based on the recent statutory change defining the term “security.” In our opinion, it is too soon to judge the results of the implementation of our recommendation. However, we note that the travel restrictions (the per diem limitation and the agency travel expenditure cap), discussed earlier in the Report, could impede TRS’s ability to conduct both the research and the due diligence required to insure that alternative and international assets, particularly the emerging markets sector, are managed prudently.

RECOMMENDATION I-A-11: proposed that the Board promptly and expressly decide whether to renew the mortgage loan program, taking into consideration a number of investment and organizational issues.

TRS reports that the Board imposed an indefinite moratorium on real estate investments (i.e., commercial mortgages, as equity real estate was not permitted). The long term normal allocation for the class was set at zero percent in June 2000. This approach eliminated all future investments (pending a lifting of the moratorium) while still enabling TRS staff to dispose of the existing paper and properties in an orderly way. It also enabled a restructuring of both the Board, as it pertains to real property (Alternative Assets Committee replacing the Real Estate Committee), and the real estate investment staff.



A program was developed to work off the assets in an orderly manner. Part of this plan was the formation of a limited partnership (which had become an acceptable investment structure) to hold and manage the mortgages until disposition. A general partner was selected through a formal search process.

RECOMMENDATION I-A-14: proposed that the Board enhance compensation sufficiently to attract and retain qualified investment professionals. The 1996 Report Status Matrix reflects that Phase I was completed and that Phase II is in progress. We concur with the status as described.

TRS proposed a revised classification plan to the Texas Legislature that would enhance compensation for investment personnel. The proposal was supported by a compensation study prepared by Watson Wyatt. Management determined that the first priority was to establish a competitive base pay compensation program (Phase I) before addressing performance-based incentives (Phase II).

The Texas Legislature has supported this need by significantly increasing the classification ranges for investment professional positions. The revised structure established new titles and enhanced compensation levels. TRS investment positions were then reclassified pursuant to a classification conversion process. The new compensation structure went into effect on September 1, 1999. The reclassification resulted in systemic pay increases for most, but not all, investment personnel.

Attraction and retention of staff diminishes a pension fund's exposure to "governance risk." At TRS the need to attract and retain the highest quality employees and motivate high performance is heightened because it does not have the authority to delegate investment management to external managers. In order to facilitate their ability to attract and retain staff, TRS is currently evaluating a total compensation reward strategy. Total compensation consists of base pay, incentive compensation, benefits, cash/non-cash recognition and non-monetary awards. Watson Wyatt has assisted TRS in evaluating an incentive compensation component of its total compensation package for TRS investment professionals (Phase II).¹ The Board's Compensation Committee has oversight of the appropriate design. Watson Wyatt has made several presentations to the Compensation Committee. Cognizant of the 'fishbowl' environment, the Committee appears to be moving deliberately. The use of incentive compensation is discussed in the section of the Report entitled "viable options to stem turnover."

RECOMMENDATION I-A-16: proposed the establishment of a rating system, for a portfolio like the Core Equity Portfolio, that rewards excess return within a narrow band and treats slight under-performance, within a narrow band, as satisfactory. The 1996 Report Status

¹ At the time of our initial review, Watson Wyatt was in the process of designing an incentive compensation component of the compensation package. The Watson Wyatt portion of the incentive compensation study was completed in the Fall of 2001.



Matrix reflects the status as in progress. A rating system has been developed which is used by Wellington for Board reporting and evaluation of the equity and fixed income portfolios. Modifications to those standards, making some adjustments to the ranges, were proposed at the March 29, 2001 Board meeting and were adopted by the Board. For the passive portfolios, it is now considered “Outside Objectives” to have a wide positive or negative variation in returns from the benchmark, and “Within Objectives” to have a narrow tracking error, even if negative, which is appropriate for a passively managed portfolio. We note that the Compensation Committee is considering allowing incentive pay only when performance exceeds the respective benchmark.

RECOMMENDATION I-A-17: proposed enhancing the current rating system by including other measures of performance, such as “risk-adjusted return” and “peer comparisons.” The 1996 Report Status Matrix reflects the status as in progress. These two measures are not currently being reported to the Board although we understand that additional performance attribution can be provided under the current Northern Trust contract.

RECOMMENDATION I-A-18: proposed developing standardized evaluation forms and criteria for personnel. This recommendation has increased importance insofar as TRS is currently evaluating an incentive compensation study for investment staff. If incentive compensation is authorized and adopted, standardized evaluation criteria will be necessary to determine whether an employee’s performance qualifies for incentive recognition. The 1996 Report Status Matrix reflects the status of this recommendation as in progress. We concur.

RECOMMENDATION I-B-1: proposed extending the length of the investment counsel’s contract to at least three years and eliminating an annual review. The 1996 Report Status Matrix reflects that the contract for investment counsel was extended to three years with an annual review of the service provider. We believe that this will relieve TRS from having to unnecessarily embark on the time consuming request for proposal, review, selection, and contract negotiation process, while still providing a periodic review mechanism. The rationale behind this recommendation should also be applied to contracts for other TRS professional service providers (e.g., fiduciary counsel, tax counsel, the actuary, etc.)

RECOMMENDATION I-B-2: proposed refining the justification for and functions of the investment counsel. The 1996 Report Status Matrix reflects the status as completed. The response to this recommendation indicated that a new fiduciary counsel was hired. However, the recommendation pertains to the Board’s investment counsel (Wellington), not the fiduciary counsel. This recommendation should be addressed, however, when a new investment consultant is sought to replace Wellington, who is not renewing its contract, as discussed earlier in the report. TRS should outline the specific services it requires in seeking one or more firms to provide investment consulting services and determine if a more traditional retainer consultant could fill the void.



RECOMMENDATION I-B-3: proposed establishing a contract term of 2-3 years (as opposed to one year) for the TRS investment advisors. The 1996 Report Status Matrix reflects the status as completed. The rationale for this is the same as that for I-B-1 above. Investment advisors Craig Hester and Dr. Keith Brown both now have two-year contracts.

RECOMMENDATION I-B-5: proposed revising several aspects of the services provided by Holbein. At the time of the 1996 Report Holbein provided performance measurement services to TRS. Performance measurement is now being performed by Northern Trust Co. in a manner that largely addresses our concerns with Holbein. (TRS staff also does performance measurement.) Further enhancements to the performance measurement now done by Northern, however, may be appropriate as discussed elsewhere in the Report. Northern has also indicated that they will provide performance attribution to TRS at no additional cost (TRS is Northern Trust's largest client). We discuss the need for independent performance evaluation in the Report.

RECOMMENDATION I-B-6: proposed modification to the performance measurement and evaluation reports. The recommendation stated that portfolio statistics in the reports should include all material criteria from the investment guidelines to facilitate compliance monitoring and that TRS may wish to obtain reports that measure other aspects of risk and various types of sensitivity analysis. The 1996 Report Status Matrix reflects the status as in progress. The quarterly Board books do contain the policy ranges for certain risk statistics controlled by the investment guidelines for the various portfolios (e.g., Passive Large Cap Equities, Investment Grade Fixed Income, etc.). Regarding part two of this recommendation, some performance attribution information prepared by staff has been added (as discussed in Part II Section 3), but we have not seen any evidence of additional reports that address other aspects of risk. [Refer also to I-A-17.]

RECOMMENDATION I-B-12: proposed renegotiating real estate fees. The termination of all new real estate investment activity and the program to work off properties changed the entire scope and applicability of this recommendation. TRS had held not only a large number of mortgages, but also a number of physical properties taken over through foreclosure or action in lieu of foreclosure. Consequently, there was an extensive array of fees for advisors and property managers, which we had felt could be restructured and reduced.

With the full implementation of the moratorium and restructuring of the assets into the limited partnership, most of those advisors and managers were no longer needed. Physical properties are now down to one, and so the possibility of restructuring and achieving savings is limited at best.

RECOMMENDATION I-B-13: proposed negotiating a more favorable securities lending income split. The 1996 Report Status Matrix reflects the status as completed. The TRS split at the time of our 1996 Report was 60/40. The Northern Trust contract was renegotiated in August 2000. At that time, TRS negotiated a more favorable split. The split is now 80/20 on the



first \$25 million and 85/15 on lending revenue above \$25 million. Based on survey information available to us, the current average lending split for the industry is 75/25.² The TRS split is more favorable than the average.

RECOMMENDATION II-A-1: proposed to obtain an opinion of the State Attorney General or constitutional amendment to expand the use of permissible investment vehicles. The 1996 Report Status Matrix reflects that this would require legislative action.

We were informed that an A.G. Opinion was issued which narrowed the definition of “securities.” Shortly after the issuance of the Opinion, the Texas Legislature amended the statute to define “securities” and added clarification regarding instruments included in the definition. The expanded definition permits the use of more investment vehicles. However, TRS’s range of investment options is still limited. In our opinion, the Trustees should be granted exclusive discretion and control over the range of permissible investments and instruments, subject to the duty to invest TRS assets prudently in the best interests of the beneficiaries and participants; thus, we believe the limitation to “securities” should be removed. We recognize that the implementation of this concept could require a constitutional amendment and that the process to achieve an amendment would be arduous.

RECOMMENDATION II-A-2: proposed that TRS seek authority to net cash transactions from daily purchases and sales rather than requiring separate wires to and from the Treasury for each gross amount. The 1996 Report Status Matrix reflects the status as completed.

All material objectives of this recommendation have been accomplished. Transactional cash is now invested in the custodian’s STIF account, eliminating all need for transfers between the custodian and the treasurer for investment activity. This authority includes investing non-U.S. Dollar funds overnight as well, if the situation arises.

RECOMMENDATION II-A-4: proposed the systematization and upgrade of compliance monitoring by TRS’s investment consultant (Wellington). The 1996 Report Status Matrix reflects the status as in progress and to be completed in 2001. In fact, this function has been largely implemented internally.

A compliance officer has been hired and placed within the Investment Services Department. With an appropriate level of independence and authority, this solution can be equivalent to using an outside monitor such as the consultant or custodian. Not only PAM (TRS’s investment accounting system), but also the Bloomberg Trade Order Management System (“BTOMS”), which is currently under development, have compliance functionality used by the compliance officer. In addition, the compliance officer has (pursuant to the position description) certain ethics monitoring responsibility. However, the organizational structure does not appear to support this function (e.g., the compliance office is not part of the internal Ethics

² Average based on Bargerhuff securities lending performance composite. (Bargerhuff & Associates Inc. Dallas).



Committee and there appears to be minimal interface between the Legal Department and the investment compliance officer) and the measurement and reporting structure of this function are still being developed. This issue is discussed earlier in this report.

RECOMMENDATION II-B-1: proposed that TRS measure the duration of its liabilities and articulate how it expects the whole portfolio to perform during different interest rate scenarios, in terms of performance against various asset benchmarks and in terms of funded status. The 1996 Report Status Matrix reflects the status as completed. Watson Wyatt conducted an Asset/ Liability Modeling Study in May 2000. As part of that study, Watson Wyatt modeled six portfolios under many future economic scenarios and assigned probabilities to how each portfolio was projected to perform and how the funded status of TRS would be affected overall. However, the recommendation above is mainly a comment on the long duration of the bond portfolio and whether sufficient analysis has been conducted to determine that this is the best fixed income strategy for TRS to follow. Although we realize the complexity in calculating total portfolio duration, due to the complex manner in which changes in interest rates affect both asset values and the present value of liabilities, this type of evaluation can be instructive. We have not seen any documentation of what the duration of the liabilities is nor articulation of how the portfolio would perform under various interest rate scenarios, e.g., rapidly rising or falling interest rates.

RECOMMENDATION II-C-1: proposed that the Board consider high-yield bonds and emerging market equities as additional asset subclasses. The 1996 Report Status Matrix reflects the status as completed. As noted under Recommendation I-A-9, the international equity program has been expanded to include internally managed emerging markets. High-yield bonds have also been added to the fixed income portfolio (to a limited degree with a 1.0% target allocation) by investment in limited partnerships.

RECOMMENDATION II-D-1: proposed that the Board reconsider a concept contained in its investment policy statement in objective #3 related to fixed income securities. The 1996 Report Status Matrix reflects the status as completed. At the time of our 1996 Report, the objective in question stated that bonds are expected to provide diversification during periods of “falling equity prices and declining interest rates.” Objective #3 now simply states that bonds will “provide diversification to the total portfolio.”

RECOMMENDATION II-E-3: proposed that the legislature utilize oversight benchmarks to evaluate TRS’s performance. The 1996 Report Status Matrix reflects the status as in progress. We understand that the SAO is preparing and proposing a standardized investment performance report form intended to assist the legislature in comparing the investment performance of TRS against that of other large statewide funds.

RECOMMENDATION II-G-2: proposed that TRS consider additional trading technology. This recommendation has greater urgency today than in 1996. We believe that this recommendation is essential in light of the impact of the planned transition in the securities



industry to settlement of securities transactions only a single day after the date of the trade (referred to as “T+1”) on trading by an internally managed institutional investor organization.

The 1996 Report Status Matrix reflects the status as completed. As of the time of our review, the Bloomberg Trade Order Management System had been selected, contracted and installed for certain asset classes. However, the BTOMS and the processes and controls necessary for its optimal use are still under development. This subject is discussed in detail in Part III of the Report.

RECOMMENDATION IV-6: proposed that TRS institute a comprehensive records retention, archiving and disaster recovery process. The 1996 Report Status Matrix reflects the status as in progress. TRS has reported that the guidelines and procedures for retaining, safeguarding and archiving paper records have been completed, but not yet submitted to the State Library for approval. Once TRS receives State Library approval for paper documents, extending the program to electronic documents is expected to take another six months. Original contracts (e.g., limited partnership agreements regarding investments in private equity vehicles) are held by the custodian with copies at TRS.

While the untimely death of the manager handling this project has caused some of the delay in completing the records retention project relative to the original timetable, we find this timeframe is still of concern. The longer a complete and fully implemented records retention and backup copy system is not in place, the greater the risk of a costly loss. TRS has (per our recommendation IV-5) implemented two off site back up facilities (one partial in San Angelo and one fully equipped in Philadelphia, PA), which mitigates much of the concern for current activity records preservation. However, the risk of physical destruction of critical documents and electronic records remains. In our opinion, both approval and implementation of this activity should be a high priority.



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Compensation and Turnover

1. Current Compensation

As noted in the body of the Report, since our 1996 Report, the Legislature lessened the compensation challenges faced by the TRS Investment Division. However, further relief is needed to enhance TRS's ability to attract and retain highly qualified investment professionals.

Watson Wyatt & Company conducted a compensation study of investment positions for TRS. The purpose of the study was to compile and analyze current market data in relevant labor markets¹ in which TRS competes and then determine and report on TRS's competitive position relative to the labor markets. Watson Wyatt's Compensation Report was issued October 21, 1998 (the "1998 Compensation Report"). The 1998 Compensation Report found that TRS investment positions, on average, trailed base pay in the labor market by approximately 39% and base pay plus bonuses by approximately 62%. The gap was even more significant for the experienced positions (e.g., CIO, Investment Directors). Changes to the state classification plan were then proposed by TRS using the Compensation Report as support for the proposed modification.

The 1998 Compensation Report was updated by Watson Wyatt and another Compensation Report was issued November 8, 2000 (the "2000 Compensation Report"). The 2000 Compensation Report found that, on average, TRS base pay continued to trail the labor markets by approximately 22% and base pay plus bonuses trailed by approximately 67%. The 2000 Compensation Report found that the pay adjustments that went into effect September 1, 1999 had helped improve the competitiveness of market base pay. However, when compared to base plus bonuses, Watson Wyatt concluded that TRS's pay continues to be significantly below market and less competitive than when the original study was conducted in 1998.

¹ For purposes of this discussion, the term "labor markets" includes the public and private sector.



It is generally expected and accepted that public pension funds will not be able to compete with the salaries offered by private investment management firms. However, these private sector firms are the real competition for TRS. Because TRS does not have the authority to delegate investment management authority to external managers, TRS must employ investment professionals with highly specialized skills. Individuals with such skills are in great demand. If TRS does not provide competitive compensation, it runs the risk of not being able to attract individuals with the necessary skills and/or serving as a training ground for the private sector. This is a costly situation in that TRS could have a staff largely composed of employees in training – with lower skills and productivity – and then face losing them just as they reach the peak of their productivity and skill. The inability to fill positions exposes TRS to potential investment management risks that should be avoided. (See discussion regarding “governance risk” in the Turnover section below, on page 206 of this Appendix.)

The compensation of private sector investment management professionals is not subject to the public sector “fish bowl” complications and frustrations of government bureaucracy. As a result, private sector professionals are much better compensated relative to the value they create. The 2001 median total compensation for U.S. investment management professionals with more than 10 years of experience is approximately \$236,000. The top 10% of investment managers with more than ten years of experience expect to earn approximately \$880,000, with many earning seven figures.²

2. Comparison of current compensation level to public and private sector peers

The chart on page 202 compares TRS investment employee salaries to compensation for comparable positions at public and private sector peers. When reviewing the information presented, please note the following: (1) the number in parenthesis following the TRS position

² May 2001 Investment Management Compensation Survey, prepared by the Association for Investment Management and Research and Russell Reynolds Associates.



title is the number of incumbents on 9/1/01; (2) where there is more than one TRS incumbent, the reported salary represents the average for the position category – thus, an incumbent’s actual salary may be higher than the TRS salary reported in the chart; (3) TRS salary ranges are the current minimum and maximum for the position category under the state classification system; (4) Exempt positions (i.e., not subject to salary limitations under the State classification system), are noted; and (5) the salary information reported for public pension funds is based upon “actual” salaries rather than the median of the range for the position.



Appendix 2
 TRS Comprehensive Investment Evaluation – 2002
 Compensation and Turnover
 Page 202

Survey Position	TRS Investment Staff (as of 9/1/2001) rounded average salary		2000 Watson Wyatt Survey Public Pension Funds Salary Info ³			2000 McLagan Survey Investment Management/Advisory Firms			
	Position	Salary	Lowest	Median	Highest	25 th %tile	50 th %tile	75 th %tile	Total Cash Comp ⁴
Chief Investment Officer ⁵	CIO (1) Exempt	\$344,000	\$85,000	\$146,880	\$260,000	\$0.00 ⁶	\$412,080	\$515,100	\$1,069,348
Director of Equities ⁷	Director of Equities (1) Exempt	\$198,000	\$80,529	\$126,139	\$180,000	\$257,550	\$309,060	\$463,590	\$1,231,089
Director of Fixed Income ⁸	Director of Fixed Income (1) Exempt	\$170,000	\$82,600	\$126,000	\$180,000	\$231,795	\$309,060	\$412,080	\$1,030,200
Director of Alternative Assets ⁹	Dir. Alt. Assets (1) \$122,820-190,380	\$138,000	\$82,380	\$122,000	\$184,000	\$190,587	\$252,399	\$360,570	\$777,595
Director of Investment Services ¹⁰	Dir. Invest. Services (1) \$76,884-119,160	\$94,800	\$82,992	\$93,000	\$108,024	\$160,196	\$180,285	\$247,248	\$502,635
Investment Compliance Officer	Inv. Compliance Off. (1) \$49,740-77,100	\$62,000	\$46,000	\$57,000	\$84,296				
Chief Equity Trader ¹¹	Chief Equity Trader (1) \$97,104-150,504	\$107,000	\$70,200	\$85,900	\$97,600	\$103,020	\$131,866	\$155,869	\$270,717
Equity Trader	Equity Trader (4) \$52,992-105,348	\$75,000	\$41,377	\$65,625	\$90,000	\$55,630 ¹²	\$66,963	\$82,416	\$81,901
Sr. Equity PM ¹³	Sr. Equity PM (3) \$97,104-190,380	\$135,000	\$74,000	\$86,100	\$170,000	\$206,040	\$257,550	\$319,465	\$792,018
Equity PM	Equity PM (7) \$76,884-119,160	\$94,000				\$108,171	\$139,077	\$172,559	\$244,157
Equity PM - Entry	Equity PM – Entry (0) \$60,132-93,204	\$ NA				\$72,629	\$81,180	\$113,322	\$104,359
Sr. Fixed-Income PM ¹⁴	Sr. Fixed-Income PM (4) \$97,104-150,504	\$120,000	\$55,213	\$92,875	\$160,000	\$160,711	\$194,708	\$231,795	\$369,842
Fixed Income PM – Entry	Fixed Inc. PM Entry (0) \$60,132-93,204	NA				\$46,874	\$60,782	\$73,659	\$67,993
Sr. Investment Analyst ¹⁵	Sr. Invest. Analyst (3) \$60,132-119,160	\$79,000	\$52,083	\$66,973	\$112,000	\$113,322	\$139,077	\$160,711	\$233,237
Investment Analyst Intermediate	Investment Analyst (9) \$49,740-77,100	\$63,000				\$77,265	\$92,718	\$106,110	\$129,805
Entry Level Analyst	Entry Level Analyst (1) \$41,304-59,880	\$41,304	\$32,000	\$44,100	\$75,684	\$47,389	\$56,661	\$77,265	\$67,478

³ Customized survey of 18 public pension funds based on asset size and asset management style (combination of internal and external – only one survey participant uses total internal management, and four use exclusively external management).

⁴ “Total cash compensation” is defined as base pay plus short-term bonus incentive payments.

⁵ Responsible for total fund performance and overall investment operations. Invests assets within parameters set by Trustees.

⁶ As reported in 2000 McLagan Investment Management Survey.

⁷ Responsible for total equity fund performance and management activities for equity portfolio. Invests equity assets within established parameters. Supervises staff and recommends strategy, policies and programs to increase portfolio performance.

⁸ Responsible for total fixed-income performance and management of fixed-income portfolios. Invests fixed-income assets within established parameters. Supervises staff and recommends strategy and policies to increase portfolio performance.

⁹ Responsible for alternative asset fund performance and management activities for alternative asset portfolios (such as private equity and strategically traded securities). Invests alternative assets within established parameters. Recommends investment strategy, policies and programs to increase portfolio performance. Supervises professional staff.

¹⁰ Responsible for directing the investment services operations, including compliance program, performance measurement, and attribution analysis. Soft dollar program, corporate governance, and administrative functions (e.g., staffing and budget).

¹¹ Manages the execution of purchases and sales of equities according to decisions made by investment management staff. Analyzes previous trade activities and current technology to recommend and implement changes to increase effectiveness and efficiency of trades. Assesses market conditions.

¹² Intermediate Trader used (as opposed to junior trader) for purposes of comparison.

¹³ Responsible for the performance of an assigned sector/section of the equity portfolio. Independently invests equity assets within established parameters, including authorizing or originating purchases, sales and other investment transactions.

¹⁴ Responsible for the performance of an assigned sector of the fixed-income portfolio. Independently invests fixed-income assets within established parameters, including authorizing or originating purchases, sales and other investment transactions.

¹⁵ Under general direction, researches and keeps abreast of business and economic developments within assigned market sectors to assess impact on investment decisions.



Based on the McLagan survey information for investment management and advisory firms, (except for the average compensation paid to TRS equity traders) actual compensation for TRS investment professionals is below the median and materially below the 75th percentile and total compensation. In most cases, TRS salaries are also well below the 25th percentile. In contrast, the upper end of the salary ranges for several TRS investment professional positions are competitive with the private sector median and 75th percentile compensation amounts reported in the McLagan. For example, when the McLagan medians for the chief equity trader, equity trader, and entry level equity, fixed income and investment analyst positions are compared to the upper end of the TRS salary ranges for these positions, TRS compensation is competitive. In fact, the upper end of the salary ranges for the equity trader position category and entry-level fixed income category are competitive even with total compensation reported in the McLagan survey. Notwithstanding, these positions only represent a small portion of the overall Investment Division. Accordingly, overall, it is clear from the survey results that compensation for most TRS positions is not competitive with the private sector, particularly when compared to total compensation.

When compared to the public pension fund survey median salary, TRS compensation is much more competitive. The actual salary reported for virtually every TRS investment position category, except for the entry level analyst, exceeds the public pension fund median for the comparable category. Only three of the twelve actual salaries reported exceed the highest salaries reported for public pension fund comparable categories (e.g., CIO, Director of Equities and Chief Equity Trader). However, this is not the case when you compare the upper end of the TRS salary ranges to the highest public pension fund salaries. Where a comparable position exists, the upper end of the range for six out of nine TRS position categories exceeds the highest public pension fund salary. Two of the three TRS exempt positions exceed the highest public pension fund salaries. Accordingly, TRS appears to have the ability to increase salaries to levels that are very competitive with even the highest public pension fund salaries.



Since TRS is required to use virtually 100% internal management, which includes a significant portion under active management, TRS investment positions generally have greater duties and responsibilities than the typical positions in externally managed public sector funds. Due to the higher level of responsibility placed on them, TRS positions should be compensated at a correspondingly higher level than public sector funds positions that utilize primarily external management (four of the 18 survey participants use exclusively external management).

Non-competitive compensation has become a serious problem that public pension fund trustees and legislators have been forced to address. As a result, over the past two to three years, salaries in the public pension sector, although still not comparable with the private sector, have started to improve.

With significant internal asset management, the degree of portfolio earnings (or losses) at risk over time far outweighs the incremental costs of the increased investment personnel compensation needed to more effectively attract, retain and motivate staff to achieve a superior level of performance.

3. Investment Staff Turnover

Several comments were made during our interview process regarding the significant amount of turnover at TRS. As part of our review, we examined turnover to determine if in fact it is significant. At the time our review commenced in March 2001, the TRS Investment Division was comprised of 63 authorized full time employees (FTEs). The number includes investment professionals as well as support staff. At that time there were 13 vacancies.

Factors other than non-competitive compensation can contribute to turnover. These include high stress, lack of job challenge (e.g., monotony), dealing with government bureaucracy, poor working conditions (e.g., insufficient resources) and poor supervision. In



point of fact, we were informed that only one of the last four individuals that left the Investment Division listed compensation as their primary reason for leaving.

We examined the Investment Division’s turnover over the last four fiscal years. The following turnover statistics represent an unaudited calculation of employee separations versus average FTEs for the period. Based on the four year turnover information listed below, and notwithstanding the stated reasons provided for departures, it appears that TRS investment turnover has significantly decreased since the September 1999 systematic compensation enhancements were implemented, while statewide and TRS total agency compensation turnover levels have remained relatively static.

Turnover Comparison ¹⁶	FY98	FY99	FY00	FY01
TRS Investment Professionals	21.54%	17.48%	5.65%	12.32%
TRS Agency Total	16.84%	13.65%	16.00%	14.05%
Texas Statewide Agency	17.37%	17.58%	18.93%	17.59%

Investment Division turnover does not appear significantly high when compared to the agency as a whole or to statewide turnover statistics. However, if competitive compensation is a statewide issue the comparison is misleading. Therefore, we thought it more appropriate to compare TRS Investment staff turnover to the turnover at other public funds with substantial internal asset management.

The following chart compares TRS turnover to other public pension funds that use significant internal management. It is based on data for 2000.

¹⁶ Investment Division figures provided by TRS. TRS Agency and Texas Statewide figures were taken from Texas State Auditor’s Office Full Time Classified State Employee Turnover Reports.



Fund Name	Asset Size (Approx.)	Total Investment Staff¹⁷	2000 Annual Turnover (one year) (Approx.)
TRS	\$90 billion	52	6%
CalPERS	\$162.3 billion	100	5%
New York State Common	\$127 billion	27	0
State of Wisconsin Investment Board	\$67 billion	54	0
Washington State Investment Board	\$59 billion	44	12%
OPERS ¹⁸	\$57 billion	45	25%
Ohio Teachers	\$58 billion	104 ¹⁹	10%
Michigan BOI	\$49 billion	36	0
Colorado PERA	\$30.6 billion	28	0
Georgia ERS	\$14.4 billion	25	less than 1%
South Dakota Investment Council	\$5.1 billion	12	0

When compared to ten other public pension funds with major reliance on internal asset management, TRS investment staff turnover is considerably higher than six of the ten funds.

4. Significant turnover creates undue risk

Significant turnover subjects TRS’s investment activities to unnecessary and avoidable “governance risk.” Governance risk refers to the risk that staff (or the board or agents of a public pension fund) will, either intentionally or unintentionally, through their management actions or lack thereof, cause the assets of the pension fund to under perform expectations²⁰. New staff must be trained to become well-versed in the processes, policies and procedures used by TRS. During this learning period, a new employee’s (even a highly qualified one) lack of knowledge places the pension fund at risk. Further, it distracts the employees who must provide the training from their normal functions, which subjects the pension fund’s operations to further risk.

¹⁷ Number represents investment professionals rather than total staff.

¹⁸ OPERS loses employees to OSTRS (Teachers) in the same city due to better pay available there.

¹⁹ Includes quantitative analysts and property managers.

²⁰ Public Pension Systems Statements of Key Risks and Common Practices to Address Those Risks, July 2000. Endorsed by the Association of Public Pension Fund Auditors (APPFA), the National Association of State Retirement Administrators (NASRA), and the National Council on Teacher Retirement (NCTR).



As a practical matter, one way TRS has dealt with the risk of turnover is to structure an investment program with very tightly constrained forms of active investment management. While not invested according to purely passive management strategies, TRS assets are subject to very narrow risk constraints and highly quantitative controls. Thus, if a key portfolio manager leaves, the replacement – who may well be substantially less experienced – is still subject to very tight controls.

In some segments of the more efficient portions of the financial markets – such as large capitalization domestic stocks – such tightly constrained investment disciplines may be the approach the Board would choose even if it had greater authority over the number and compensation of investment staff. However, in other portions of the markets, the Board might choose at least some measure of more active and flexible approaches, prudently designed to exploit market inefficiencies, provided TRS was not unduly at risk from portfolio manager turnover.

In short, in our opinion, constraints on the Board’s budgetary authority (specifically with respect to personnel) probably have constrained the TRS investment program.

5. Viable options to stem turnover
 - a. Insure a Superior Work Environment

Recognizing that compensation is not the sole attraction and retention factor, TRS should endeavor to insure that its investment professionals have a favorable work environment, that employees are motivated, and that they have the necessary resources to accomplish their duties.



Additionally, new HR management tools are available which have been effective in decreasing turnover (e.g., job congruence systems²¹).

b. Use of Incentive Compensation

Asset management requires highly specialized skills. Because of the current legal constraints, TRS must manage virtually all of its investment assets internally. TRS realizes economies of scale though internal management only insofar as the organization can attract and retain sufficiently qualified individuals to provide high quality asset management. Individuals who possess these necessary skills are in great demand. To obtain competent investment staff, TRS must compete not only with other public pension funds, but also with private institutional investors, such as local and regional investment management firms, private pension funds, banks and insurance companies. TRS recognizes that they must be competitive in order to attract and retain qualified, high caliber, skilled individuals. To accomplish this goal, TRS is currently evaluating a “total compensation” strategy that includes an incentive compensation component.

The ability of TRS to institute an incentive compensation program is constrained in light of the uncertainty surrounding the application and interpretation of Sections 825.208 and 210. Section 825.210 provides that “*except for an interest in the retirement assets as a member of the retirement system... [an] employee of the board of trustees may not have a direct or indirect interest in the gains from the system’s assets and may not receive any compensation for service other than designated salary and authorized expenses.*” We have been advised that whether these provisions prohibit incentive compensation is not entirely free from doubt. Thus, there is a cloud concerning TRS’s ability to implement an incentive compensation plan.

The TRS Compensation Committee appears to be aware of this possible impediment and has sought the advice of the General Counsel’s Office. (Parenthetically, we note that in another

²¹ The Job Congruence System focuses on motivational characteristics of employees as opposed to traditional assessment of knowledge, skills and abilities. See, “An Innovative Approach for Cost-effective Turnover Reduction,” by John Binning, Ph.D., and Anthony J. Adorno, M.S.



jurisdiction (California) with a large statewide fund with significant internal asset management (CalPERS), the board instituted incentive compensation for the investment staff, and the state treasurer has since filed suit, challenging the board's authority to grant such compensation).

Defining compensation for service as having a contingent portion (defined as a percent of base salary) may not violate this statute because the entitlement is predicated on achieving a performance objective relative to a defined objective, not on achieving a gain in the portfolio. Performance over the benchmark earns the contingent compensation, even if the absolute return is negative.

Another constraint on the prospect of incentive compensation for the investment staff arises not through the general body of statutory law, but through the annual appropriation process. Thus, while certain specified compensation is available each given year (once the appropriations bill has passed), the amount available in subsequent years is not. This means that even if incentive compensation of some form were clearly legally permissible, TRS could not install a payment structure based on multiple year cycles, because of the uncertainty of whether money would be available at the end of the cycle, even if it were earned. (Many incentive compensation structures are based on investment performance over multiple years to avoid a "whipsaw" effect.)

For example, assume investment performance for a given account within the TRS portfolio is strong over the first two years and incentive compensation is paid based on yearly performance. Assume further, that performance is extremely substandard in year three – so much so that for the full three-year period it is substandard – and that the employee in charge of that investment account leaves TRS after that third year. In that case, TRS would have paid incentive compensation for the early years for substandard performance over the longer period. On the other hand, if performance in the first year was poor, but in later years was very strong, and



favorable for the full cycle, the employee would earn an incentive payment for the full cycle. However, TRS could not in good faith institute such a multi-year program if there was a material risk the Legislature might not appropriate the needed funds in future fiscal years.



Summary of Current Recommendations

Set forth below are summaries of all recommendations from the preceding report, together with the page on which each recommendation begins. The recommendations are listed in the order they appear in the report. The general subject matter of each recommendation or related series of recommendations is set forth for ease of reference.

Part II: Key Investment Issues Requiring the Consideration and Judgment of the TRS Board of Trustees

Section 1: Adequacy of Investment Policy, Asset Allocation and Monitoring Processes

A. Review of Investment Policy Statement (“IPS”)

RECOMMENDATION Part II, Section 1-A-1: The Board may also want to specify the time period over which the portfolios are to be judged, (e.g., over a market cycle, or 3-5 years) the method for calculating the rate of return (e.g., total rate of return, that is, investment income plus realized and unrealized capital gains and losses) as well as how performance is calculated, (e.g., on a time-weighted basis by linking dollar-weighted monthly rates of return). The separate performance standards referenced in the IPS are not clear with respect to time measurement criteria. We note, however, that quarterly, one, three and five year returns are reported to the Board on a quarterly basis. *Page 47*

RECOMMENDATION Part II, Section 1-A-2: We recommend that Wellington or its successor discuss with the Board of Trustees and staff whether and why the sector weightings in the Fixed Income portion of the IPS should materially differ from those in the applicable performance benchmark. *Page 48*

RECOMMENDATION Part II, Section 1-A-3: There should be a formal statement in the IPS regarding the process for the periodic (e.g., annual) review of the document. *Page 49*

RECOMMENDATION Part II, Section 1-A-4: The IPS should indicate who has responsibility for voting proxies and the process for monitoring those votes and related matters. (This is not to say we find the actual proxy voting process insufficient, but rather that additional Board clarification of proxy voting responsibilities in the IPS may be helpful.) Monitoring may be procedural (i.e., assuring that all votes that could be cast were in fact cast) and/or substantive (i.e., assuring that all votes were consistent with general policy). The IPS should also require periodic reporting of proxy voting (no less than annually), and it should indicate whether or not abstentions are permitted or whether votes should be either “for” or “against.” *Page 50*

RECOMMENDATION Part II, Section 1-A-5: The Board should also measure performance against an “Asset Allocation Index” whose asset class weights would change as the



actual asset allocation drifts away from the long-term normal weightings in order to show excess or under-performance solely attributable to the underlying portfolio manager. This would be in addition to the Composite (or “Policy”) Index to which performance is already being compared. *Page 50*

RECOMMENDATION Part II, Section 1-A-6: The Board should also consider its position regarding the following additional potential objectives as part of the IPS:

- Seeking to maintain a certain minimum funded ratio (e.g., above 100%). (According to the Actuarial Valuation as of August 31, 2000, the TRS was at that point fully funded (107.4%).) This is not to say that the Board is in a position to control benefit levels or contribution levels; however, as a matter of policy, the Board may wish the structure and risk of the investment portfolio to take into account the structure and value of the liabilities, for instance, in an effort to control to some degree the volatility of the funded ratio.
- Seeking to achieve investment results that would provide the Legislature with the means to enhance future benefit levels.
- Seeking to minimize the risk of negative returns over some number of years. *Page 50*

C. Assessment of the Process

RECOMMENDATION Part II, Section 1-C-1: For the next asset allocation study, consider modeling broader asset classes, rather than using subsets of these classes, (e.g., Domestic Equity, Domestic Fixed Income, International Equity, International Fixed Income, Alternatives, Real Estate) and using statistical data and judgment to make educated allocations to asset sub-classes as policy decisions. *Page 62*

RECOMMENDATION Part II, Section 1-C-2: We recommend that the CIO, Wellington and Watson Wyatt discuss with the Board the pros and cons of the approach Watson Wyatt used compared to this broader approach, and how ultimately, the Board is responsible for making judgments on asset allocation. *Page 62*

RECOMMENDATION Part II, Section 1-C-3: The Board should permit the next asset allocation study to include real estate equity as a permissible asset class. At the least, seeing the effect of including and excluding real estate will assist the Board and staff in determining whether pursuing the issue has a beneficial investment argument to support it. *Page 64*



E. Adequacy of Monitoring Processes

RECOMMENDATION Part II, Section 1-E-1: The Investment Objective should state more clearly under what circumstances which benchmark for international equities should be used. The benchmarks for the Alternatives class will be discussed below. *Page 71*

RECOMMENDATION Part II, Section 1-E-2: If a decision is made to invest in non-US Dollar fixed income securities on an ongoing strategic basis (rather than merely opportunistically), consider treating this portion of the portfolio as a distinct portion of the portfolio structure with an appropriate benchmark depending upon the strategy employed. *Page 75*

Section 2: Adequacy of Alternative Assets Program and Practices

C. Sufficiency of Selection and Monitoring Procedures

RECOMMENDATION Part II, Section 2-C-1: The Board should explore with GPs their corporate governance/proxy policies, including review of how GPs vote proxies each year. *Page 89*

RECOMMENDATION Part II, Section 2-C-2: We recommend the staff and Committee develop and document acceptable and unacceptable types of risk for the STS program. For example, certain strategies within the STS program will likely utilize futures and options. The staff and Committee should develop and document criteria regarding use of futures, including leverage, acceptable types of futures contracts, and stop losses. Regarding options, the staff and Committee should develop and document criteria regarding time until expiration, how deeply “in” or “out of the money” options may be purchased, use of “covered” vs. “naked” options and related matters. This sort of documentation should also assist the ISD in developing appropriate criteria to monitor and procedures to monitor them. *Page 90*

RECOMMENDATION Part II, Section 2-C-3: We recommend that before further investing in the STS program the staff prepare at least an advanced draft listing the various risks associated with each strategy in which investments are expected in the near term as well as the “underwriting procedures” designed to identify and control such risks, the process and criteria for selecting STS vehicles (including the involvement of the Alternatives Committee in the selection process), required reporting (see below) and other relevant matters. *Page 91*

RECOMMENDATION Part II, Section 2-C-4: We recommend that the Alternative Assets Committee adopt a policy not to increase the amount of a limited partnership investment, and not to reduce the amount (except by fully rejecting the proposed investment) recommended by staff and Pathway, unless the Committee has clearly determined, after further analysis from staff and Pathway, that the latter have underestimated the allocation availability and the risk. *Page 93*



RECOMMENDATION Part II, Section 2-C-5: We recommend that the Committee consider obtaining additional consulting advice regarding the STS program, independent of and in addition to the input of staff, Pathway and fiduciary counsel. This could be achieved either by retaining as additional consultants individuals comparable to Mr. Hester and Dr. Brown or by retaining a consulting firm with expertise in this niche. (Insofar as TRS incurs additional consulting fees, however, and continues to work within the limitations of appropriated budgets, pressures could increase to pay consulting fees through more soft dollar trades, as is already the case with Pathway. As discussed in Part I, soft dollar expenditures may be unduly costly.) *Page 93*

D. Other Areas for Enhancement Regarding Private Equity

RECOMMENDATION Part II, Section 2-D-1: We recommend amending the Ethics Policy to require any general partner or comparable manager of an investment entity in which TRS invests to disclose any political contributions it made to State governmental officials with a material degree of influence over the TRS investment program. *Page 101*

RECOMMENDATION Part II, Section 2-D-2: Require a contractual representation from each general partner (whose LP is selected for investment by TRS) whether, when and to whom in the State government it has made any political contributions within the relevant past and a contractual warranty that it will immediately notify the Board in writing if and when it makes any such contribution. *Page 102*

Section 3: Sufficiency of Information Provided to Trustees to Support Their Consideration of Investment Issues

A. Information Routinely Provided to TRS Board Members

RECOMMENDATION Part II, Section 3-A-1: Negotiate with Northern Trust (or include as a requirement in the upcoming custodian RFP) and/or request Wellington (or its upcoming replacement) to provide reports on the areas where additional information would be useful to the Board, including:

- Enhanced performance measurement and analysis;
- Attribution analysis;
- Independent analysis of investment performance;
- Peer data;
- Execution monitoring; and
- Risk-adjusted return information. *Page 107*



B. Information Typically Provided to Public Pension Funds Boards to Facilitate Their Consideration of Investment Issues (Common and “Best Practices” Regarding Information)

RECOMMENDATION Part II, Section 3-B-1: One further step the Board might take to address this issue is to reinforce its desire for a direct relationship with Wellington, i.e., for direct contact with either the Chairman of the Board or designated others – independent of staff – who act on behalf of the Board, such as Mr. Hester and Dr. Brown. This might be linked with the recommendation below, for the Board to fortify the advice it receives regarding evaluation of investment performance. We do understand that informal direct contact currently takes place between individual Board members and Wellington and Board members feel comfortable asking Wellington questions via e-mail, etc. *Page 114*

RECOMMENDATION Part II, Section 3-B-2: We recommend that the replacement firm have the necessary depth and expertise to provide the types of “big picture” and policy matters where experience and judgment are essential, e.g., asset allocation analysis. *Page 114*

RECOMMENDATION Part II, Section 3-B-3: We recommend that TRS consider the benefit of having the replacement firm perform the function of independently (i.e., independently of staff) calculating and evaluating the System’s investment performance, as recommended in this report on pages 112 and 116). *Page 114*

RECOMMENDATION Part II, Section 3-B-4: We recommend that the TRS consider the benefit of having the replacement firm provide the additional advice we recommend elsewhere regarding the STS program (see above Section 2 of this Part II, C.2(a) of page 93). *Page 115*

RECOMMENDATION Part II, Section 3-B-5: We recommend that the Trustees maintain the current configuration, where the firm reports primarily to the Board, not the staff, so the Board retains access to “reference points” independent of – and in addition to – the staff. *Page 115*

C. Assessment of Whether Sufficient, Independent, Investment Information is Available to Trustees to Support their Oversight Function

RECOMMENDATION Part II, Section 3-C-1: On a more immediate level – and without wading into the question of whether the Board should be more autonomous in budgetary authority recommended earlier in the Report – we recommend authorizing the hiring of additional legal staff to assist with the investment program. *Page 115*

RECOMMENDATION Part II, Section 3-C-2: For this reason, in our view, the Alternative Investment Committee would benefit from hiring one or two individuals with private



equity investment expertise, to advise the Committee in a manner analogous to the roles played by Dr. Brown and Mr. Hester regarding publicly-traded securities, as discussed above. *Page 116*

RECOMMENDATION Part II, Section 3-C-3: We recommend that the Board retain an investment performance evaluation consultant to present and interpret quarterly investment performance reports. This might be accomplished by retaining a qualified personal consultant from Northern or by engaging Wellington's replacement or by obtaining performance measurement and evaluation services from an entirely separate investment consultant. *Page 117*

D. Miscellaneous Board Issues

RECOMMENDATION Part II, Section 3-D-1: We recommend that, pending legislative action, the Board amend its criteria for the Approved Universe in order to expand the universe of "automatically" approved securities. *Page 118*

RECOMMENDATION Part II, Section 3-D-2: We recommend that the Board eliminate the incumbency statement requirement, as well as any other purely perfunctory reporting requirements as they come to light. *Page 119*

Section 4: Consideration of Board Organization and Process

B. Appropriateness of Board's Investment Decisionmaking Practices

RECOMMENDATION Part II, Section 4-B-1: We recommend that the TRS Board consider establishing, in its By-Laws, the use of committee work plans. *Page 123*

RECOMMENDATION Part II, Section 4-B-2: After expansion of responsibility is known, the Board may want to establish a special committee to evaluate committee size, time requirements, and the time demands on Trustees. *Page 123*

Section 5: Review of Historically Underutilized Businesses ("HUB") Requirements

C. HUB Brokerage Program

RECOMMENDATION Part II, Section 5-C-1: We recommend that TRS supplement its evaluation and screening of broker dealers (HUBs and non-HUBs) that seek brokerage business with TRS, before approving qualified firms, by using a transaction cost analysis firm to evaluate their capability to provide quality execution. This approach is designed to apply an objective, largely quantitative, standard policy and procedure to selection of qualified brokers, regardless of whether they are HUBs or not. This approach presumes that TRS would pay for such analysis and that broker candidates would provide TRS sufficient data to permit the analysis. *Page 130*



E. Assessment of the TRS's HUB Program

RECOMMENDATION Part II, Section 5-E-1: We recommend that TRS continue its attempt to report State-mandated goals for HUB activity with State-defined HUBs and internally develop goals to utilize MWOBs nationwide, without compromising investment and prudence standards. One specific process that should help in this regard is enhanced measurement and evaluation of the quality of trade execution by HUB and MWOB firms (after they have completed trades for TRS), compared to other firms. This should become possible with the implementation of expected upgrades to BTOMS (see Management Section, Part III, page 157). *Page 137*

RECOMMENDATION Part II, Section 5-E-2: We also suggest that TRS enhance its selection and evaluation process – including its evaluation of HUBs and IBs – by utilizing the data that should become available once the new BTOMS is fully installed. With that data, the TRS (with assistance from a transaction cost analysis firm) should be able to assess, control and establish benchmarks regarding the reasonableness of commissions paid and execution quality achieved for various types of trades (e.g., execution only vs. full service, easy trades vs. more difficult ones), involving various types of brokers (HUBs, IBs, discount brokers and full service brokers). *Page 137*

Section 6: Review of Soft Dollar Policies

B. Assessment of Effectiveness and Impact of TRS Soft Dollar Practices

RECOMMENDATION Part II, Section 6-B-1: We recommend revising and updating the analysis of soft dollar trading costs to support efforts to convince the legislature to provide TRS Trustees with greater budgetary authority, allowing them to meet the entire budget with hard dollar spending. In the meanwhile, whether or not such legislation is ever passed, updating the soft dollar analysis should also put the Trustees in a better position to reach a fiduciary finding to justify direct hard dollar expenditures beyond those legislatively appropriated. As noted in Part I, on page 23, the Trustees are understandably reluctant to use the mechanism of a fiduciary finding and therefore, we do not view that route as a long term solution to the need for directly providing the Trustees broader budgetary authority. *Page 145*

Section 7: Incentive Compensation Program

RECOMMENDATION Part II, Section 7-1: We recommend that the Board seek legislative authority allowing TRS to establish a well-designed incentive compensation program for its investment staff and to pay such compensation from excess investment returns, outside of the legislative appropriations process. *Page 149*



Part III - Key Issues Within the Purview of TRS Executive Management

Section 1: Assessment of Trade Order Management System Implementation and Utilization

A. Selection and Implementation of the System

RECOMMENDATION Part III, Section 1-A-1: We recommend that TRS consider appointing a “Project Manager” or “Administrator” with the available time to coordinate the remaining implementation within the BTOMS. On a more general basis, we recommend that large, cross-departmental projects be regularly coordinated by a person who is not a major user of the system. *Page 158*

C. Implementation Consistency with Procedures and Controls

RECOMMENDATION Part III, Section 1-C-1: We recommend that the Compliance Officer continue to develop and document a two-pronged approach for monitoring portfolio compliance, utilizing a combination of the BTOMS and Northern Trust (and possibly PAM). Documentation might include a matrix of all portfolio criteria and the source of checks for each. *Page 162*

Section 2: Evaluation of the Investment Services Department (ISD)

A. Mission and Objectives of the ISD

RECOMMENDATION Part III, Section 2-A-1: TRS management should make the ISD and its mission and objective more defined, formalized and stronger. Several parties should be involved in redesigning the operational aspects of the ISD, including the Executive Director, the Deputy Director, the Chief Investment Officer, Internal Audit, Investment Accounting and IT, so that the ISD serves as an effective point of coordination, support and cross-verification among them all. Redefining the ISD and clarifying its mission should include refining the functional lines of responsibility of the department, management and staffing and the specific responsibilities of each individual assigned to the “middle office.” *Page 166*

C. Appropriateness and Clarity of the Duties and Responsibilities of the ISD

RECOMMENDATION Part III, Section 2-C-1: These areas are the responsibility of the Board of Trustees. The ISD’s involvement should be limited to monitoring the strategies to make sure they follow the policies set by the Board. *Page 169*

RECOMMENDATION Part III, Section 2-C-2: The ISD should not be a key part of the policy-making group, although it may be uniquely able to provide advice to policy-setting



committees on specific aspects of a policy under development. Its primary involvement should be to monitor compliance with rules and procedures set by the Board. *Page 170*

RECOMMENDATION Part III, Section 2-C-3: The ISD should monitor these reports for accuracy and refine quarterly reporting to the Board by ensuring that performance presentation meets AIMR standards for industry best practices. *Page 171*

RECOMMENDATION Part III, Section 2-C-4: TRS should discuss with the new investment consultant, to be hired to replace Wellington (who has notified TRS it will not renew its current contract), how best to use attribution analysis to manage both the investing process and management's understanding of the sources of performance results. *Page 172*

RECOMMENDATION Part III, Section 2-C-5: The ISD, with proper staffing, should be charged with this responsibility to include:

- Refining and documenting procedures for the compliance function;
- Monitoring compliance with the TRS Investment Policy Statement on a continuing basis;
- Updating the BTOMS with regard to compliance module rules and watch lists;
- Working with Northern Trust to develop a risk measurement program for the entire fund; and
- Developing plans to train additional staff in the ISD to handle various areas of risk management. The extent of the ISD's responsibility will depend on staffing level and appropriate knowledge of the respective risk assessment areas. *Page 172*

RECOMMENDATION Part III, Section 2-C-6: If TRS Management retains the basic objectives of the ISD, the ISD should be given clear responsibility for monitoring compliance with securities lending policies and measuring performance. *Page 173*

RECOMMENDATION Part III, Section 2-C-7: The soft-dollar program clearly fits within the ISD's share of responsibilities. We recommend that, with adequate staffing, the ISD continue to oversee this program. Additionally, the ISD is an appropriate venue to assess the cost of soft-dollar generation (trading costs). *Page 174*

RECOMMENDATION Part III, Section 2-C-8: Proxy voting should continue to be a function of the ISD. *Page 175*

RECOMMENDATION Part III, Section 2-C-9: Separate from the investment management and trading functions, the ISD can continue to play a valuable role with HUB/MWOB brokers, helping to assess the quality of securities execution TRS obtains across all aspects of its brokerage program. *Page 176*



RECOMMENDATION Part III, Section 2-C-10: The ISD should be involved in this activity to the extent it has the time and knowledgeable staff available. *Page 176*

RECOMMENDATION Part III, Section 2-C-11: The ISD should continue to be involved in this activity to the extent it has the time and knowledgeable staff available. *Page 176*

RECOMMENDATION Part III, Section 2-C-12: TRS should reassess the ISD's staffing, and review the ISD's responsibilities for operating guidelines, procedures, controls and reports. These responsibilities should be assigned to a department with appropriate staffing and knowledge. Such a change would be consistent with the overall philosophy of using the ISD as the focal point for policy compliance and using other departments for policy development. *Page 177*

RECOMMENDATION Part III, Section 2-C-13: The ISD should be represented on the internal staff Ethics Committee. However, to preserve separation of functions, we believe the ISD representative should participate as an observer and commentator, but not a decision-maker, arbiter or interpreter, regarding ethics policies or statutes. *Page 178*

RECOMMENDATION Part III, Section 2-C-14: We also conclude that the ISD is an appropriate unit for monitoring compliance by TRS personnel (other than themselves) with the Ethics Policy. However, this does not mean the ISD is necessarily the only appropriate unit. This subject requires TRS upper management to delineate the respective aspects of the monitoring function among the ISD, the Legal Department, and Internal Audit. *Page 178*

RECOMMENDATION Part III, Section 2-C-15: Assuming management accepts our view of the basic role and functions of the ISD, we believe it is reasonable to house these administrative duties within the ISD. *Page 178*

D. Role Regarding T+1 Implementation

RECOMMENDATION Part III, Section 2-D-1: We recommend that the ISD be charged with responsibility for coordinating TRS's preparation for T+1 and that the ISD begin promptly to organize the process to manage TRS's internal and external T+1 effort. *Page 180*

E. Compliance Reporting Structure within TRS

RECOMMENDATION Part III, Section 2-E-1: We recommend that the Executive Director recommend to the Audit Committee how best to provide the CO independent reporting authority outside the Investment Division. *Page 183*

RECOMMENDATION Part III, Section 2-E-2: We recommend that TRS's executive office direct the ISD and Legal Counsel to itemize in writing the functions they each believe



someone should perform regarding investment and ethical compliance (including personal trading, receipt of gifts, travel, personal financial interests in TRS investments, reporting and related matters) and the functions they each believe they perform. In addition, Internal Audit should work with the CO in defining the lines of jurisdiction between the two groups. *Page 183*

RECOMMENDATION Part III, Section 2-E-3: TRS management should recommend a more clearly defined CO role and place within the organization for consideration by the appropriate Board committees. *Page 185*

F. Examination of the Role of the Investment Program Coordinator

RECOMMENDATION Part III, Section 2-F-1: TRS management should review the functions of the Investment Program Coordinator and the number of staff members needed to perform them under ordinary circumstances and make appropriate recommendations to the Board. *Page 186*

G. Effectiveness of the ISD's Investment Compliance Monitoring

RECOMMENDATION Part III, Section 2-G-1: We recommend the ISD and the Alternative Assets program coordinate to develop a suitable compliance monitoring process. *Page 187*



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Independent Fiduciary Services, Inc. Firm Overview

Introduction page

Independent Fiduciary Services, Inc. provides clients extensive, combined expertise and experience regarding:

- Structuring, monitoring and analyzing pension fund investment portfolios and activities, including asset allocation, investment policies and procedures, controlling investment risk and expense, measuring and evaluating absolute, relative and risk-adjusted returns
- Fiduciary responsibility in investment decisionmaking

From its incorporation in 1987 until October 1, 1996, IFS was a wholly-owned subsidiary of The Bear Stearns Companies Inc. – the New York Stock Exchange listed holding company – and an affiliate of Bear, Stearns & Co. Inc., the broker-dealer and investment bank. On that date ownership transferred to officers of the firm and the name changed to Independent Fiduciary Services, Inc. All employees and clients then continued with the re-named firm. IFS continues on occasion to work with Bear Stearns, as well as other major investment firms, on an arms-length basis. However, our firm is not owned by or affiliated with any other company; we truly are independent.

IFS has acted as an investment consultant/adviser or independent fiduciary/decisionmaker in connection with many complex institutional portfolios and financial transactions. An SEC registered investment adviser, IFS is experienced with a variety of roles, including retainer investment consultant, independent or named fiduciary, investment manager and adviser.

This Overview explains our “Operational Review” service and also sets forth our firm’s:

- Distinctive features
- Representative assignments and experience
- Personnel

Further detail is provided at our website, www.IndependentFiduciary.com.



Distinctive Features

What distinguishes Independent Fiduciary Services from other firms is that we specialize in evaluating complex investment programs with dual expertise in portfolio management and fiduciary responsibility. As detailed below, our staff includes investment professionals experienced in structuring and overseeing investment portfolios as well as ERISA experts sensitive to the standards of prudence and loyalty that apply to pension investment decisionmaking. With offices in Washington, D.C. and New York, we have deployed and coordinated a wide variety of specialized professionals on numerous projects, involving equity and fixed income research and analytics, asset management, portfolio risk, transactions costs, futures, commodities and options, private placements, real estate and related matters.

Our specific distinguishing features are as follows:

1. *Combined Expertise in Investment Management and Fiduciary Responsibility*

Independent Fiduciary Services grows out of an investment firm, not a benefits consulting, actuarial or auditing firm. The firm's investment professionals include senior staff experienced in pension investment consulting, internal and external asset management and portfolio monitoring for large pension funds. Moreover, we have access to and draw on the resources and expertise of the Bear Stearns organization, one of the nation's ten largest investment banking, securities and financial services firms.

Senior personnel of Independent Fiduciary Services also are experienced in the legal and fiduciary standards involved in pension investment decisionmaking. These individuals have worked together on other similar evaluations of the investment practices and portfolios of large public and private pension funds. The combined perspective of these investment and fiduciary experts provides unparalleled expertise for addressing a wide range of investment, procedural and fiduciary subjects.

2. *Unique Perspective of an Adviser and Fiduciary Decisionmaker*

There is an old saying in the pension industry: "Those who can, do; those who cannot, consult." Independent Fiduciary Services regularly acts as a fiduciary, responsible for prudent and proper investment decisionmaking, as well as an adviser to others. Even in the latter role, we frequently accept fiduciary responsibility for our advice which our clients adopt. This, we believe, clearly separates Independent Fiduciary Services from the average consulting firm, which often dispenses advice but doesn't "go on the line" as a fiduciary, with responsibility for actually making decisions. As discussed below, we are often responsible as an independent fiduciary for structuring and overseeing pension fund portfolios, including asset allocation,



multiple investment accounts, investment policies and procedures, hiring and monitoring consultants, work-outs, risk controls, controls over expense and related matters.

This combined perspective as fiduciary and adviser guides us when undertaking detailed analyses and making recommendations regarding the sufficiency and prudence (or imprudence) of particular investment practices. Knowing how, in the real world, to apply prudent investment practices ourselves, when we are a fiduciary, adds credibility and insight to our analysis and advice to others. This is especially true where – and as is often the case in our assignments – we operate in a visible, public forum.

3. *Independence and Objectivity*

Independent Fiduciary Services is independent and objective. We do not have any affiliated broker-dealer, asset manager or consultant. We do not accept soft dollar payments and do not sell products or services to asset managers. Our sole business is investment advice.

4. The “*Operational Review*”

One unique service we have developed is our “Operational Review” – the financial equivalent of a complete physical examination for a pension fund's investment program, including its organizational structure, portfolio, procedures and controls. In the Operational Review we diagnose and evaluate in writing the broad range of investment subjects. As detailed below, we have performed Operational Reviews for numerous public retirement systems, other types of public funds and numerous ERISA-covered funds, covering subjects such as organizational structure, asset allocation, the sufficiency of risk controls, the cost and sufficiency of the fund's general and specialty investment consultants, investment policies and procedures, investment guidelines, the prudence of unconventional investment strategies, real estate and related matters.

Relevant Experience; Specific Prior and Current Engagements

Independent Fiduciary Services is unusually experienced in evaluating the whole range of pension fund investment practices, as reflected by the following list of representative current and prior engagements.

- ***Michigan Bureau of Investments***

In 2001, the Treasurer of Michigan, as sole Trustee of the State of Michigan Retirement System, hired IFS to evaluate the System's investment organization, program and practices. Within the Treasury Department, the Michigan Bureau of Investments is responsible for internally managing nearly all of the System's \$45 billion in assets.



The Treasurer/Trustee and Bureau initiated the investment evaluation in order to objectively evaluate the Bureau's investment organization and program and plan affirmatively for the future. Past investment results had been favorable, but the Trustee and Bureau Director wanted to identify any matters that warranted upgrading, to better position the System for the future.

We evaluated numerous aspects of the Bureau, compared to "best practices" among other public pension systems across the nation, including:

- Organizational structure
- Adequacy of compensation paid to Bureau investment personnel
- Investment policy
- Asset allocation methodology and results
- Investment reporting and benchmarks
- Due diligence for publicly-traded securities, real estate, private equity and OTC swaps
- Investment costs
- Brokerage practices
- Trust and custody
- Investment accounting, trade order management and disaster recovery systems.

Among the major recommendations of the 158 page study are:

- Provide the Trustee and Bureau greater autonomy regarding compensation levels for investment personnel, budget and procurement, consistent with prevailing practices among other statewide boards of investment across the country.
- Upgrade criteria and controls governing portfolio structure and risk for both publicly-traded securities and private market assets.
- Promptly upgrade the Bureau's investment accounting and trade order management systems, particularly in light of the approach of T+1 stock settlement rules and the need for straight through processing.
- Refine the asset allocation methodology.

- ***Ohio Public Employees Retirement System***

In 2000, the \$55 billion Ohio Public Employees Retirement System ("OPERS") hired IFS to evaluate and make concrete recommendations for improvement regarding three components of an overall "Comprehensive Investment Review:"

- Investment operations and investment accounting



- Employee staffing and structure
- Incentive compensation program for investment staff

The study grew out of the desire of the System’s new executive director and chief investment officer – with the support of the System’s Board of Trustees – to upgrade the organization and its investment practices. Virtually all OPERS assets were internally managed at the time of our work, and thus, the Board and upper management recognized the importance of developing state of the art risk management and portfolio management systems, operational efficiencies and organizational and personnel practices.

Working closely with the staff and other consultants, we recommended concrete steps to:

- Upgrade many aspects of internal policies and procedures, including controls over investment risk and expense, information technology and investment accounting (especially in anticipation of T+1 and need for straight through processing), “middle office” functions, in-house securities trading and related matters
- Enhance employee training, performance evaluation and specification of job functions and qualifications
- Overhaul the existing incentive compensation program

- ***Iowa Public Employees Retirement System***

The Governor’s Task Force on the Structure and Governance of the Iowa Public Employees Retirement System hired IFS in 2000 to assist in evaluating the System’s current design and to recommend suitable changes to enhance its effectiveness, efficiency and responsiveness to participants and beneficiaries.

IFS was responsible for: researching the structure and governance of other public funds across the nation and compiling a detailed survey; advising the Task Force during its deliberations, including explaining and analyzing various fiduciary, organizational and administrative concepts and alternatives; and preparing and presenting a detailed written report on its research, analysis and recommendations.

The final report evaluated a wide range of interrelated subjects regarding structure and governance, including the nature and powers of the decisionmaking body (such as a board of trustees, sole trustee or other authority), that body’s composition and qualifications, the degree of independence between the retirement system and the sponsoring government, distinctions among various types of authority over investments vs. benefits vs. general administration, applicable fiduciary standards and liabilities, oversight responsibilities, staff structure and more. Our final report – submitted in November 2000 – also included detailed empirical data on all the preceding subjects.



- ***Florida Board of Administration***

In the spring of 1999, this \$100 billion fund concluded that an in-house investment professional had manipulated its directed brokerage program to her personal benefit. Thereafter, the Board promptly decided to dismantle that program, and to reassemble its commission recapture operations, with enhanced controls, procedures and documentation.

The Board hired IFS in mid-1999 to recommend such enhancements on an expedited basis. We prepared revised policy and procedure documents, advised the Board's Chief Financial Officer and newly-appointed Compliance Officer and recommended numerous additional policies, procedures and controls.

More recently, the Board retained us to evaluate the organizational structure, investment policies and practices and internal controls of its \$3 billion internally-managed real estate program. We submitted our report – with numerous specific recommendations for improvements – in June 2000.

- ***San Jose Federated System***

In May 1999, the Board of Administration of the \$1 billion Federated City Employees Retirement System of the City of San Jose, California selected IFS to perform a dual-phase comprehensive review and evaluation. Phase I entailed an independent, objective assessment of the Federated System's operational integrity, resources and efficiency in order to provide a "baseline" of the Federated System as currently structured and as it currently operates. The scope of work for Phase I included an evaluation of current job descriptions and performance criteria, staff compensation, reporting lines of authority and accountability, and the vendor payment process. Given this "baseline," the purpose of Phase II was to evaluate and make recommendations to the Board regarding whether and how to transition from the current conjoined organizational structure to either (a) one department with two divisions, and/or (b) complete separation of the Federated System from the San Jose Police and Fire System.

- ***Teachers' Retirement System of Illinois***

In May 1998, the then \$19 billion Teachers' Retirement System of the State of Illinois hired IFS to comprehensively evaluate the System's investment program and practices. The purpose of the evaluation was to determine whether the System's investment performance and practices met industry standards, applicable to public retirement systems. The scope of work for the project included evaluating the System's: organizational structure and resources; internal controls; investment consultant responsibilities; legal roles and responsibilities; asset allocation; due diligence procedures; investment policies; investment performance; performance



benchmarks; transaction and consulting costs; investment structure; trust and custody; and other investment related programs and practices.

Our final extensive written narrative report (140 pages plus detailed exhibits) was presented to the Board of Trustees on December 9, 1998. The report set forth 122 specific recommendations, largely clustered around three themes: (1) upgrading the organization's lines of authority and resources, (2) enhancing internal controls and risk management and (3) redesigning or reconsidering several aspects of the portfolio's structure.

- ***Employees Provident Fund of Sri Lanka***

The Employees Provident Fund is the national retirement system managed by the Monetary Board of the Central Bank of Sri Lanka (formerly Ceylon) and is the country's largest single investor. As of June 30, 1999, Fund assets amounted to approximately \$2.5 billion and equaled approximately 15% of the nation's Gross Domestic Product.

Through financing provided by the World Bank, the Monetary Board sought technical assistance on how to restructure and upgrade the Fund's investment program, practices and long-term performance, including its organizational structure and resources, the legal and regulatory framework, its management information systems, internal controls and reporting, portfolio structure, investment strategies, processes for selecting and monitoring investment managers and training for staff. In a world-wide competition, IFS was selected to advise the Central Bank on all those subjects, in association with International Science and Technology Institute of Virginia. While ISTI provided on-site training to the Fund's staff, IFS also arranged for the staff a study tour of major U.S. public pension funds, including several that IFS had previously evaluated (including the Texas Teacher Retirement System, the Public Employee Retirement System of Idaho and the Virginia Retirement System).

The project was particularly challenging – and worthwhile for the Sri Lankan Government – because the country's capital markets, regulatory framework and risk management practices are still at a formative stage.

- ***National People's Congress Of The People's Republic Of China***

In late 2000, the National People's Congress of the People's Republic of China invited IFS to Beijing to advise it on developing a civil law of trusts for a range of Chinese investment vehicles and transactions, including public and private pension funds. In coordination with the Asian Development Bank, the Legislative Affairs Committee of the Congress presented IFS and four other representatives from around the world (one Japanese, one British, one Canadian and one other American) with a second draft of proposed trust legislation and requested written analysis and face to face discussions. The Congress was anxious to proceed with refining and



developing the law in connection with restructuring its economy and financial markets for entry into the World Trade Organization.

The legislative bill reflected several core concepts which we believed would facilitate market-based transactions and long-term investment. However, we suggested revising and adding numerous other provisions to strengthen fiduciary responsibilities, promote concepts of investment risk and return and prepare the pension system for growth in the size and sophistication of the country's capital markets. We also advised on a variety of practical and operational problems with pension fund investing that the Congress should consider addressing in future legislation.

- ***Washington State Investment Board***

In April 1997, we completed and presented our evaluation of the \$35 billion investment program of the WSIB. Including assets of several retirement systems, workers compensation funds and miscellaneous “permanent and other” funds, the WSIB portfolio is invested in domestic and international assets, including publicly-traded and private equity, fixed income securities and real estate, as well as various types of derivatives. Hired by the State Auditor to conduct a “comprehensive performance audit,” we examined the following aspects of the WSIB:

- Organizational and management structure
- Impact of statutory provisions on the Board
- Delegation and lines of authority
- Selection, evaluation and termination of investment managers and other professionals
- Internal controls
- Personnel, training and development systems
- Disaster recovery
- Systems and technology
- Investment performance and fees
- Portfolio structure

Our final work product was a 200 page narrative report, plus statistical support.

- ***Texas Teacher Retirement System***

In November 1996, Independent Fiduciary Services submitted a 250-page report regarding the investment program and practices of the \$50 billion Texas Teacher Retirement System. Our client was the Texas Legislative Audit Committee, acting through the State Auditor. Our report analyzed the TRS' internal asset management function (which manages the System's entire portfolio), controls for monitoring outside service providers (including consultants), risk control, asset-liability structure, active vs. passive management, performance



benchmarks, brokerage and trading practices, investment measurement and accounting systems, reporting to the legislature, trust and custody, organizational structure and staffing, state fiduciary standards, the real estate program (debt and equity), fees and expenses and related matters.

- ***Virginia Retirement System***

In 1993, our firm comprehensively evaluated the \$16 billion Virginia Retirement System (“VRS”) for the Joint Legislative Audit and Review Commission (“JLARC”) of the Virginia General Assembly. JLARC had requested an independent, expert review of the VRS’ investment program, including the sufficiency of the System’s asset allocation, diversification of risk, net investment performance, “alternative” investment program, fees paid to consultants and investment managers, use of derivatives, the real estate portfolio, organizational structure, investment decisionmaking procedures, investment guidelines, state statutory fiduciary standards, transactions costs and related matters. The purpose of the review was to inform the State’s legislature of the current condition of the VRS’ investment portfolio and practices and to suggest ways of reducing risk, trimming expenses and enhancing net returns.

Our final product was an extensive, written narrative report combined with financial analyses, charts and statistical tables. We also testified publicly and made a slide presentation of our findings and recommendations to JLARC at a legislative hearing on December 13, 1993. Many of our recommendations were immediately implemented and others were implemented later in 1994.

- ***North Slope Borough of Alaska***

The North Slope Borough covers the northernmost segment of Alaska – a 90,000 square-mile tract above the Arctic Circle. The Borough’s investment program includes Operating Funds totalling approximately \$700 million plus a “rainy day” fund (called the “Permanent Fund”) of approximately \$400 million. The mayor’s office hired us in early 1997 to evaluate the structure, operations, expenses and risk controls associated with both funds and to recommend specific improvements. Our analysis covered each fund’s asset allocation, management of municipal bond proceeds, the Borough’s relationship with its regular investment consultant, performance evaluation reports, investment fees, use of specialized short-term fixed income strategies (especially flexible repurchase agreements), securities lending and other subjects.

Our work included interviewing representatives of the mayor’s office, the Investment Advisory Committee, the Borough’s director of finance and chief investment officer, the regular investment consultant and others. Since submitting our final report in April 1997, the Borough has begun implementing many of our specific recommendations.



- ***West Virginia Board of Investments***

In December 1994, we completed our evaluation of the \$4.6 billion investment program managed by the West Virginia Board of Investments. At that time, all assets of the West Virginia Board were managed internally. Our evaluation addressed the Board's asset allocation; selection, monitoring and termination of investment advisers (who provide advice, but do not have discretionary authority over the assets); cash management practices, including use of repurchase agreements and reverse repurchase agreements; in-house fixed income trading; use of pooled investment vehicles; statutory fiduciary standards; investment fees and expenses; staffing and organization; and other matters. Our final work product was a 116-page report, plus exhibits, and we personally presented our findings and recommendations to the Board.

- ***Nevada Public Employees' Retirement System***

In 1995 we evaluated the investment program and practices of this \$6 billion fund. Our analysis and report addressed a broad range of subjects, including the adequacy of the investment policy statement, taking into account the System's actuarial condition, funding mechanism, cash flow requirements, investment horizon and related factors; the reasonableness of its asset allocation, including the inputs and methodologies its consultant used in conducting an asset allocation study, the expected risk and return of the current portfolio and alternative asset mixes geared to increasing returns with equal or lower risk; the System's methods of monitoring the investment program, including its investment guidelines, performance benchmarks (including market indices) and performance objectives; monitoring and managing transaction costs, including use of soft dollars and directed brokerage; and the structure of – and vehicles used in – the System's real estate program. Throughout this project, we coordinated closely with the staff and Board. Our final report was submitted in August 1995, when we personally presented it to the Board at a public hearing.

- ***Public Employee Retirement System of Idaho***

This \$3 billion fund hired us to assist the Board and Chief Investment Officer in enhancing its investment program over the coming years. Rather than seeking to analyze prior investment performance, our function was to diagnose any aspects of the current investment program which, in our judgment, should be upgraded and to evaluate the pros and cons of various ways of accomplishing those improvements.

This project encompassed a wide range of subjects, including

- the structure of the Board, including the statutory framework, ethics policies, procedures regarding travel and education, staffing, and the relationship between the Board and the State of Idaho.



- the System's investment policy statement, including provisions concerning the role of the Board, investment objectives, permissible and impermissible asset classes and instruments and policy issues concerning these and related subjects.
- the investment guidelines for each particular investment manager, including guidelines for various types of domestic and international equity and fixed income managers, managing both securities and derivatives. We proposed model investment guidelines for each type of manager.
- the System's process for selecting investment managers, the current roster of managers and the process for termination.
- the methods for monitoring investment managers and the investment consultant, including monitoring: transaction costs, commission recapture and soft dollar practices; risk; and proxy voting practices.
- contractual matters regarding the investment managers and consultant, including possible provisions for incentive compensation, a model investment management agreement and the consultant's contractual scope of duties.
- asset allocation, including the adequacy of the consultant's methodology and capital market assumptions, alternative methodologies and assumptions and additional types of assets, strategies and instruments the Board might wish to consider.
- the System's banking relationships, including master trust and custody. This included an analysis of custody services and fees, as well as cash management practices.

After approximately 5 months work with the Board and CIO, we personally presented our final report in October 1995.

- ***District of Columbia Retirement Board***

This \$2.8 billion fund hired Independent Fiduciary Services to evaluate nearly all aspects of its investment program and practices. Our analysis and report addressed a broad range of subjects including the structure, ethical rules, travel policies and other operating policies of the Board of Trustees; the sufficiency of the fund's investment objectives and asset allocation; the adequacy of its procedures for selecting, monitoring and terminating investment managers, including the manager search process, investment manager guidelines, use of soft dollars and directed brokerage, "watch list" and "farm team;" the fees paid to outside investment managers and the number of such managers; and the fund's past investment performance, in terms of



absolute, risk-adjusted and comparative returns, by asset class, for the fund as a whole and over select time periods. Shortly after finalizing our report in April 1995, the Board submitted it to the U.S. Congress for review and possible legislative action.

- ***Mason Tenders District Council Pension, Annuity and Welfare Funds***

In 1994, the Mason Tenders District Council in New York City and its associated employee benefit funds, went through three major developments. First, the value of an investment portfolio of mortgage backed derivative securities was severely impaired by adverse fixed income markets. Second, the U.S. Department of Justice and Department of Labor filed a joint RICO and ERISA suit involving union officials and certain trustees of – and service providers to – the funds. Finally, the Laborers International Union of North America imposed a trusteeship on the Mason Tenders District Council, pursuant to the Labor Management Reporting & Disclosure Act. Shortly thereafter, the trustee agreed to settle the RICO and ERISA claims filed by the Government.

The newly-constituted Board of Trustees of the Pension, Annuity and Welfare Funds hired our predecessor, Bear Stearns Fiduciary Services, in December 1994 to perform a two-step process. Our first step was an Operational Review of the investment programs and practices of all three funds, including written findings and recommendations regarding the troubled mortgage backed derivatives portfolio, overall investment policies, asset allocation, selection of investment managers, cash management, trust and custody, brokerage costs, investment manager guidelines, risk controls and related matters. The second step – which is now complete – is to assist the Board in implementing our many recommendations for change, as well as to assist in the ongoing monitoring of all three investment programs. We have contractually accepted fiduciary responsibility for all of our recommendations that the Board adopts.

- ***Masters, Mates & Pilots Pension Plan and Individual Retirement Account Plan***

In 1992, the United States District Court for the Southern District of New York appointed Independent Fiduciary Services as the Independent Fiduciary with respect to the entire portfolio of the Masters, Mates & Pilots Pension Plan and Individual Retirement Account Plan, two multiemployer plans with total assets approaching \$750 million in value. In this capacity, we are responsible for supervising and submitting written recommendations to the Plans' Board of Trustees regarding all of the Plans' investment activities. These recommendations are binding on the Trustees absent a court order to the contrary.

Our ongoing role as Independent Fiduciary to the MM&P Plans is of special relevance, for several reasons. First is the subject matter. As Independent Fiduciary, we are responsible for analyzing, reporting on and making written recommendations regarding a similar range of matters as would be involved with this project, including asset allocation, practices for selecting and monitoring multiple investment advisers and consultants, controls over investment risk and



expense, evaluating and monitoring the bank custodian and measuring and evaluating risk-adjusted performance. Second, our role with the MM&P Plans emphasizes prudent investment practices. Two appendices to the court decree governing our role as Independent Fiduciary specify particular criteria for, first, prudent selection of investment managers for the Plans and second, prudent monitoring of those managers. We were instrumental in assisting the Plans with developing these criteria and now are duty-bound as a fiduciary, prudently to observe them. A third relevant aspect of the MM&P situation is that our function is carried out in a very public setting. In the MM&P matter, we have been subject to ongoing review of the U.S. District Court, the federal pension regulatory agency and the Trustees. As Independent Fiduciary to the MM&P Plans, we also submit periodic written recommendations and reports regarding the Plans' investment programs to all these parties.

With the approval of the U.S. Department of Labor, Independent Fiduciary Services was also appointed by the U.S. District Court as ERISA Named Fiduciary for a portion (the “Special Assets”) of the investment portfolios of these two Plans. The Special Assets consisted of private placements, thinly-traded public securities and troubled real estate. As Named Fiduciary since late 1990, Independent Fiduciary Services effectively replaced the Plans' Board of Trustees regarding the Special Assets. Thus, we have been responsible for evaluating investment managers, if necessary, selecting replacement managers, reporting on a quarterly basis to the Plans' Board of Trustees, coordinating with the Plans' custodian bank, auditors and staff, and regularly communicating in regard to our investment-related duties with the U.S. Department of Labor, which enforces the fiduciary responsibility provisions of ERISA.

- ***IBEW Eighth District Pension Fund***

The Board of Trustees of this Electrical Workers Fund retained us to help them identify and better control known (and unknown) risks and expenses associated with the \$325 million investment program. Our study evaluated the Fund's investment policy statement, asset allocation methodology and structure, the costs and risks of its real estate program and collateralized note program, brokerage practices, custody costs and services, the risk and return of the securities lending program, the functions of – and problems with – the regular investment consultant, and other matters. The goal of our report was to empower the Board with greater understanding of and control over their professional advisers.

After accepting our report in October 1997, the Board retained us to assist them in implementing many of our 84 specific recommendations.



- ***New York State Insurance Fund***

We performed an Operational Review in 1991 of this \$4.2 billion public worker's compensation fund in conjunction with the Fixed-Income Analytics and Structured Transactions Group at Bear Stearns. The fund's portfolio consisted entirely of fixed income securities and was managed exclusively by an in-house staff.

The focus of the Review was the investment procedures, strategies and opportunities of the fund. The subject matter of our Review included the fund's investment policy, its internal investment practices and risk controls, asset allocation (including portfolio structure and asset-liability matching), process for buying and selling securities, cash management, performance measurement and evaluation, expense controls and custody. Our final work product was an extensive report of findings and recommendations presented to the Fund's Board of Commissioners.

- ***Retainer Consulting Advice***

Our firm provides ongoing, retainer investment consulting services to a number funds subject to ERISA as well as other institutional investors. On many of these accounts, we accept fiduciary responsibility for our recommendations. However, to preserve our objectivity on Operational Review projects, we do not provide retainer consulting services to public pension funds.

Personnel

- ***Francis X. Lilly, President and Chairman of the Board***

Francis X. Lilly is President and Chairman of the Board of Independent Fiduciary Services Inc., and a member of the board of directors of Custodial Trust Company (wholly owned by The Bear Stearns Companies Inc.). As President, Mr. Lilly is either directly involved or involved on a supervisory level regarding nearly every client of the firm. He is active across a wide range of subjects including developing investment policy, selecting investment managers and working closely with boards of trustees on matters of special concern.

Mr. Lilly brings a broad expertise with analysis and regulation of investment activity by pension funds. Prior to forming Bear Stearns Fiduciary Services in 1985, Mr. Lilly was the Solicitor of Labor (General Counsel) at the United States Department of Labor, appointed by the President in 1983. In this position, Mr. Lilly was responsible for all legal activity of the Department, including its enforcement of the fiduciary provisions of ERISA. Prior to his confirmation as Solicitor by the U.S. Senate, Mr. Lilly served as Deputy Solicitor of Labor in 1982 and as Acting Associate Counsel to the President, The White House, in 1981. Before his public service, Mr. Lilly practiced law in Washington.



Mr. Lilly received his undergraduate degree from Duke University and his law degree from the Columbus School of Law, Catholic University of America.

- **Samuel W. Halpern, Executive Vice President, General Counsel and Board Member**

Mr. Halpern has specialized in the financial and fiduciary aspects of pension fund investing for over 20 years. As Executive Vice President and General Counsel, Mr. Halpern assists clients with a wide variety of investment-related activities including asset allocation, selecting and supervising investment managers, controlling risk and expenses, special fiduciary transactions, Operational Reviews and related matters.

Prior to joining the firm in 1986, Mr. Halpern was a partner in a Washington, D.C. labor law firm, where he specialized in investment matters subject to the fiduciary responsibility provisions of ERISA. He represented pension and welfare funds, trustees, labor unions and participants in litigation and administrative matters involving the U.S. Department of Labor. Before private practice, Mr. Halpern litigated fiduciary responsibility cases under ERISA for five years at the U.S. Department of Labor, where he helped develop legal standards for pension fund investing. These cases involved the "prudent man" rule, valuation and decisionmaking regarding investing in real estate and closely-held employer securities, diversification of investments, appropriate investment procedures, selection and compensation of service providers and other matters.

Mr. Halpern graduated magna cum laude and Phi Beta Kappa from Brown University, attending the London School of Economics and received his law degree with honors from the George Washington National Law Center in Washington, D.C.

- **Richard F. Schmidt, Senior Vice President & CFO**

Mr. Schmidt has over 25 years experience in structuring investment portfolios, monitoring investment performance, controlling cash flows and operational processes. His responsibilities include development of asset allocations, selection and monitoring of managers, investment controls and guidelines, performance evaluation, custodial issues and systems and technology. In addition he manages the company's internal finance, administration and accounting.

Based in New York, Mr. Schmidt has been with the company a total of seven years, first from 1987 to 1990 and then rejoining in January, 1996. His other experience includes managing the treasury department and employee benefits of the U.S. subsidiary of a worldwide manufacturing corporation. As Chief Investment Officer of that company's billion dollar



defined benefit and 401(k) funds, he was responsible for managing twenty outside managers and a master custodial relationship for twelve separate plans.

Mr. Schmidt graduated summa cum laude from Pace University with a degree in finance and earned an MBA with distinction from Fairleigh Dickinson University.

- **Jack E. Johnson, Senior Vice President**

Mr. Johnson is responsible for asset allocation, manager search, developing prudent practices for investment monitoring, evaluating risk and return, controlling investment fees and expenses, trust and custody activities and related matters.

Prior to joining the firm in its Washington office in 1997, Mr. Johnson was Director of Finance-Chief Investment Officer and Assistant Administrative Manager of the \$4.5 billion International Union of Operating Engineers Central Pension Fund, in Washington, D.C. Mr. Johnson's twenty-seven year career with the Central Pension Fund spanned all aspects of pension fund finance, administration and policy. During his tenure, the Fund grew from \$55 million to \$4.5 billion in assets.

Mr. Johnson is a frequent speaker at finance industry colloquiums, conferences and seminars, where he has addressed matters such as equity style allocation, indexing and proxy voting. He received his BS in Economics from Purdue University. He has participated in several professional organizations and served on the Board of Directors of the Council of Institutional Investors.

- **L. Gerald Carlisle, Senior Vice President**

Mr. Carlisle joined the firm in April 2000, working out of the Washington office with a number of IFS' Taft-Hartley plan clients and benefit plan professionals. For the previous three years Mr. Carlisle worked with IFS on a number of Taft-Hartley accounts through his firm, Trustee Perspectives, LLC. Widely experienced in the employee benefit area, Mr. Carlisle has concentrated on improving the investment performance and efficiencies of Taft-Hartley funds through IFS' Operational Reviews and ongoing consulting services.

Prior to his work with IFS, Mr. Carlisle worked thirty six years as an elected officer or staff member at the local, regional and international levels of the International Union of Bricklayers & Allied Craftworkers. During those years, he served as a trustee at all levels of the Union on pension, welfare and apprentice training trust funds. In his elected positions of Executive Vice President and Secretary-Treasurer of the International, Mr. Carlisle had principal officer responsibility for the day to day administration and oversight of the Union's entire benefits program.



Mr. Carlisle has served on numerous committees, as a speaker, and as a voting director on the Board of Directors for the International Foundation of Employee Benefit Plans. Mr. Carlisle attended Oregon State University, Tacoma Community College and completed the Harvard University Trade Union Program.

- **Jeanna M. Cullins, Senior Vice President and Deputy General Counsel**

Ms. Cullins has over 13 years of pension fund experience across a wide range of fiduciary, investment, administrative, policy and operational matters. Her current responsibilities center on evaluating the investment portfolios, practices and policies of institutional investors, especially in connection with Operational Reviews of public retirement systems.

Ms. Cullins joined the firm's Washington office early in 1998. Prior to joining Independent Fiduciary Services, Ms. Cullins came from the \$4.5 billion D.C. Retirement Funds where she served as Executive Director from June 1993 until October 1997, and as General Counsel for the preceding seven years. As Executive Director, Ms. Cullins was responsible for developing, recommending and implementing all fiduciary, investment and operational policies and procedures established by the Board, as well as managing the Funds' day-to-day operations. This included oversight of over 35 investment managers, the master custodian, actuary, auditor and all other professional service providers retained by the Board.

Ms. Cullins graduated cum laude from Brooklyn College and received her law degree from Georgetown University Law Center. She is an active member of the National Association of Public Pension Attorneys and a frequent speaker at pension industry conferences.

- **Monte Tarbox, Vice President & Director of Consulting Operations**

Mr. Tarbox has spent over ten years as an investment professional serving multiemployer pension funds in the United States and Australia. He joined IFS in 2001 to fill a newly created position as director of consulting operations, and also to provide fund clients investment advice on a retainer basis. He also assists in the Operational Reviews.

Mr. Tarbox joined IFS from the AFL-CIO Center for Working Capital in Washington, D.C., where he served for two years as Executive Director. The Center is a non-profit educational organization that assists pension and welfare fund trustees in fulfilling their fiduciary duties regarding investment-related activities, including developing investment policies, evaluating investment vehicles, proxy voting and related matters. As the first Executive Director, Mr. Tarbox established the organization by recruiting staff, organizing conferences for trustees, conducting original research into issues of capital stewardship, publishing a newsletter and developing trustee training curriculum.



Prior to his appointment at the Center for Working Capital, he spent three years in Australia as a Senior Investment Consultant with Industry Fund Services in Melbourne, Australia. Over that period, he advised funds across a variety of industries and served as IFS' specialist on brokerage issues, international manager selection, fixed interest management and strategies and member investment choice within defined contribution settings.

In the United States, Mr. Tarbox worked as an investment consultant at another major consulting firm from 1990 to 1996. He served Taft-Hartley defined benefit, defined contribution and medical insurance funds. His consulting duties included asset allocation, performance evaluation, manager search, custody review, proxy voting and defined contribution plan services.

Mr. Tarbox obtained the Certified Employee Benefit Specialist designation from the International Foundation of Employee Benefit Plans and he held a broker's license from the National Association of Securities Dealers.

In the five years before he entered asset consulting, Mr. Tarbox served as the Director of Governmental Affairs for the Illinois Citizens Utility Board (CUB), a consumer group created by the Illinois state legislature to intervene in utility rate cases on behalf of consumers. He developed and implemented CUB's state and federal legislative agenda and managed telephone rate cases before the Illinois Commerce Commission. He also served as an administrative aide to a Chicago City Council member and legislative aide to an Illinois member of the U.S. House of Representatives.

Mr. Tarbox holds a B.A. degree from Carleton College and an M.B.A. degree in finance from the University of Chicago Graduate School of Business. He undertook post-graduate work at the London Business School.

- **Steven M. Harding, CPA, CFSA, Vice President**

Mr. Harding has more than seventeen years of risk management experience in financial services and is a nationally recognized expert regarding risk controls over public pension funds. Prior to joining the firm in 1999, Mr. Harding was Principal Internal Auditor for the New York State Employees' Retirement System from 1990 through 1998. He was responsible for financial, compliance and operational audits of the \$100 billion New York Common Retirement Fund.

At IFS, he is heavily involved in Operational Reviews (fiduciary audits), fiduciary transactions and internal quality control.

In May of 1991, Mr. Harding formed the Association of Public Pension Fund Auditors, Inc. ("APPFA"). From 1991 to 1994, he presided over APPFA's Board, which includes audit



directors from the largest public pension funds in the U.S. and Canada. More than 45 public pension funds have since joined APPFA representing over \$1 trillion in assets.

Mr. Harding spent more than six years in public accounting with Coopers & Lybrand and with a regional firm. At both firms, he audited securities broker-dealers. He also worked in the securities industry as internal auditor for a publicly held broker-dealer. He earned the Series 7 and 63 licenses to sell securities and was Chairman of the New York State Society of CPAs Stockbrokerage Committee.

From 1987 to 1999, Mr. Harding was an adjunct professor of graduate accounting at the University at Albany, giving up teaching only recently upon joining IFS. He has taught continuously at the college level 15 years. A member of the American Institute of Certified Public Accountants, the Institute of Internal Auditors, and the National Association of Financial Services Auditors, Mr. Harding is the author of “Auditing External Real Estate Advisers: 101 Best Practices,” published in the June 1999 issue of the professional journal, *Internal Auditing*.

- **Edward D. Patchett, Jr., CFA, Vice President**

Mr. Patchett joined Independent Fiduciary Services’ Washington office in 1997. A Chartered Financial Analyst, Mr. Patchett assists in all major aspects of the firm’s work. His analytical background is broad, extending from securities regulation to investment consulting to investment banking.

Previously with Wilshire Associates, Mr. Patchett was primarily responsible for conducting manager searches, analyzing equity and fixed-income investment strategies and performing investment manager due diligence for the firm’s clients, including the \$15 billion investment program of the federal Pension Benefit Guaranty Corporation. Prior to joining Wilshire, Mr. Patchett was an Investment Banking Associate with a regional investment banking firm where he analyzed IPOs, mergers and acquisitions and fairness opinions for the firm’s banking and thrift industry clients. He also has several years of experience as a securities industry regulator with the National Association of Securities Dealers.

Mr. Patchett graduated from Ferris State University with a Bachelor of Science degree in Business and earned his Master of Science degree in Business-Finance from The Johns Hopkins University. He has been awarded the Chartered Financial Analyst (CFA) designation by The Association for Investment Management and Research and is a member of The Washington Society of Investment Analysts.

- **Kathleen O. Schroeder, Vice President**

Based in IFS’ Washington office, Ms. Schroeder assists in the preparation, evaluation and production of investment performance reports for the firm’s clients, as well as a broad range



of other financial analyses. She has been involved with performance measurement for eight years and has passed the level one exam in the Chartered Financial Analyst program. Prior to joining our firm in 1995, Ms. Schroeder performed similar functions at Union Labor Life Insurance Company in Washington, D.C. and Evaluation Associates Inc. in Norwalk, Connecticut.

Ms. Schroeder graduated from Fairfield University with a Bachelor's Degree in Management.

- **Leslie E. Billet, Vice President**

Ms. Billet joined IFS in 1997 to assist in all major aspect of the firm's work, especially retainer consulting and Operational Reviews. Ms. Billet is internal manager for eight retainer relationships, involving her in all aspects of client relationships. These include developing investment policy, conducting manager searches, preparing manager investment guidelines, evaluating and managing custody and manager transactions, monitoring risk and return, and assisting with some of the operational aspects of well-functioning investment programs. She has also assisted helping clients with developing and installing 401(k), participant directed programs. Here, she has conducted searches for full service providers, helped Trustees select investment options, and reviewed recordkeeping and administrative services and education programs.

Previously, at Brown Brothers, Harriman, Ms. Billet was an Investment Officer, where she helped to build for helping to build the firm's investment management business in fixed income and equity products. From 1983 to 1991, Ms. Billet was employed by the New York Stock Exchange, where she helped to build an electronic exchange for fixed income trading, by marketing services to the NYSE's corporate constituents.

Ms. Billet graduated *magna cum laude* from Boston University with a Bachelor degree in political science, and earned her MBA in finance from Baruch College of City University of New York.

- **John J. McNulty III, Vice President**

Mr. McNulty has more than 30 years experience in financial services across both the public and private sectors. His experience spans a national accounting firm, two bank holding companies, a regional securities broker-dealer and state and local government.

At IFS, Mr. McNulty concentrates on Operational Reviews regarding major institutional investors. His special focus is on investment operations and investment accounting, including internal controls, financial systems, cash management, securities processing and related matters.



Mr. McNulty's bank holding company experience included managing staffs responsible for financial reporting, budgeting, forecasting, tax planning/reporting and merger and acquisition analysis. He was also responsible for financial reporting to shareholders and regulatory authorities. Subsequently, as Executive Vice President & Chief Financial Officer of a regional broker-dealer, he was responsible for Administration, Finance, Operations, Compliance and Human Resources. During his tenure at the broker-dealer he earned the NASD Series 24, 27 and 62 registrations.

Mr. McNulty's experience with state government centered around special projects in the Office of the New York State Comptroller. These concerned management of major systems conversions and new systems implementation.

Mr. McNulty graduated from the College of Santa Fe with a Bachelor of Business Administration Degree in Accounting.

- **Barbra A. Byington, CFA, Assistant Vice President**

Ms. Byington joined IFS' Washington office in July 2000 to assist in all major aspects of the firm's work. Her experience in the financial services sector has been varied, with 10 years of experience on both the public and private sides of the industry.

Immediately prior to joining the firm, Ms. Byington was a financial analyst in the Treasury Division of the Pension Benefit Guaranty Corporation. Her primary responsibilities included ongoing monitoring and evaluation of external investment managers of the \$18.6 billion investment program, as well as manager searches and manager due diligence. She was also involved in the day-to-day operations of the investment program and worked with the agency's investment consultant on various issues, such as equity structure reviews. Earlier at the PBGC, Ms. Byington performed financial analyses of plan sponsors and developed recommendations as to whether they met termination criteria under ERISA.

Prior to her role at the PBGC, Ms. Byington worked as a corporate financial analyst for Lehman Brothers in New York in the Merchant Banking and High Yield Finance groups of Lehman's Investment Banking Department.

Ms. Byington graduated summa cum laude and Phi Beta Kappa from Washington and Lee University with a Bachelors degree with honors in economics and French. After graduation, she studied international economics at the Graduate Institute of International Studies as a Fulbright Scholar in Geneva, Switzerland. She earned the designation Chartered Financial Analyst and is a member of the Association for Investment Management and Research and the Washington Society of Investment Analysts.



- **Marc E. Morlock, Analyst**

Mr. Morlock joined the firm's Washington office in 1996 to assist in the evaluation, analysis and reporting of investment performance to institutional clients, as well as manager due diligence, asset allocation and other financial analysis. He also is actively involved with ongoing investment consulting to several Taft-Hartley funds and has been central to a number of the firm's fiduciary transactions, including real estate-based projects.

Mr. Morlock graduated from Pennsylvania State University with a Bachelor's Degree in Finance and International Business.

- **Michael W. Johnson, CFA, Analyst**

Based in Washington, D.C., Mr. Johnson is responsible primarily for working with the firm's retainer investment consulting clients on such matters as investment manager due diligence, manager searches and performance analysis and attribution.

Prior to joining IFS in January 2000, Mr. Johnson was with Wilshire Associates where he worked with a major Wilshire client, the Pension Benefit Guaranty Corporation in Washington, D.C. Prior to joining Wilshire, Mr. Johnson was a Registered Associate with a major retail securities firm where he assisted with developing investment strategies. His background in the investment industry is broad based, having worked on both the retail and institutional sides of the investment consulting industry.

Mr. Johnson graduated from the University of Maryland with a BS in Business and received his MBA, with finance and accounting concentrations, from The Owen Graduate School of Management at Vanderbilt University. He earned the designation Chartered Financial Analyst.

- **Adam H. Marks, CFA, Analyst**

Mr. Marks joined the firm's Washington, D.C. office in June 2000 to assist in computing and reporting of investment performance, manager search, asset allocation and other financial research and analysis.

Prior to joining IFS, Mr. Marks served as a performance analyst at State Street Bank and as an investment software consultant for Thomson Financial, both located in Boston. Mr. Marks graduated from the George Washington University with a BA in economics and is currently a CFA Level III candidate.



- **Mark H. Shankroff, CFA, Analyst**

Based in Washington, D.C., Mr. Shankroff joined the firm in 1999 and assists in measurement and evaluation of investment performance, asset allocation, and other financial research and analysis. He joined IFS after several years at Cambridge Associates, where he prepared performance analysis reports for the firm's endowment and foundation clients.

Mr. Shankroff graduated from the Pennsylvania State University with a Bachelor of Science degree in Finance, and earned an MBA from the William E. Simon Graduate School of Business Administration at the University of Rochester. He earned the designation Chartered Financial Analyst and is a member of the Association for Investment Management and Research and the Washington Society of Investment Analysts.



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Section 3.4 – Detailed Plan of Work

The proposal must include a plan of work that describes in detail the methodology to be employed by the offeror to perform the Review of Key Investment Issues for the Teacher Retirement System (System) proposed by the offeror. The detailed plan of work should follow the outline below and separately address each Task Area and subheading {e.g., Task Area 1(A), 1(B), etc.}. The plan of work is broken into two parts. Since Part I represents core deliverables, proposals should include all the costs for Part I tasks as one package. Part II represents other areas of interest that may be added to the final contracted plan of work based on the merits of the offeror's proposed plan of work and cost. Each item in Part II should be addressed and priced individually (i.e. a la carte).

PART I

TASK AREA 1: ADDRESS THE STATUS OF KEY RECOMMENDATIONS MADE IN THE OCTOBER 1996 REPORT

A. Summarize the key findings of the 1996 report;

In consultation with the State Auditor's Office (SAO) and the System's management (Management) the offeror should determine which findings represent key findings. Key findings are those which potentially require Board or legislative [rather than Management] action or which address significant fiscal, investment, or control issues. The SAO and Management have preliminarily identified 24 potentially key issues from the 1996 report, subject to the successful offeror's concurrence. (see Appendix). 1996 recommendations should be updated based on changing circumstances or new information, as warranted.

B. Report on the status of TRS consideration and implementation efforts relating to key findings;

C. Identify key findings that merit continued TRS effort or legislative consideration;

D. Review the System's follow-up of non-key 1996 report recommendations;

The offeror may rely upon the Internal Audit Department's follow-up work on the non-key 1996 recommendations. Unaddressed or inadequately addressed issues should be commented upon, if warranted.



TASK AREA 2: EFFECTIVENESS OF THE BOARD OF TRUSTEE’S OVERSIGHT OF THE SYSTEM’S INVESTMENTS

Assess the effectiveness of the Board’s oversight of the System’s **investments** and make recommendations for improvement, where warranted. [Note: Issues related to the performance of the System’s investments will be addressed separately as part of the State Auditor’s Comparative Investment Review.] The assessment should include, but not be limited to, the following:

A. Determine if the Board has the necessary authority required to manage the System’s investments optimally;

ability to invest its portfolio optimally. Recommend alternative governing statute or constitutional language based on best industry practices. This analysis should quantify the potential benefits, in terms of higher returns and/or reduced volatility, if any, available from greater investment authority. Potential incremental risks should also be addressed. This section should include, but not be limited to, the following considerations:

- i.) Constraints on TRS’ ability to delegate investment authority and an assessment of the relative suitability of different asset classes (large cap growth, small cap, emerging market, venture capital, high yield bonds, etc.) for internal/external management;
- ii.) Limitations on certain types of investments that do not meet the required definition of a “security” (real estate, futures, etc.);
- iii.) Compensation issues as regards investment management personnel.
- iv.) The statutory/constitutional prudence standards that govern the System’s Board of Trustees as regards the Board’s management of the investment portfolio, including whether existing standards are consistent with best industry practices and if the present standards are potentially contradictory or vague in any material regards.

B. Determine if the Board receives sufficient information from staff and experts to support its consideration of investment issues;

C. Determine if sufficient independent [of management] resources, such as legal, portfolio performance, and investment advice, are available to the Board to support its oversight responsibility;



- D. Determine if the organization and assignment of responsibilities between the full Board and its committees is optimal;**
- E. Determine the sufficiency of the amount of time, detail, and discussion devoted to investment issues by the Board;**
- F. Assess the frequency and timing of Board and committee meetings regarding investment issues and whether the investment decision making process is sufficiently responsive (timely);**
- G. Determine the appropriateness of the types of investment decisions being made by the Full Board as opposed to by a Board committee or Management;**
- H. Determine if the Board has a sufficient number of members with investment knowledge and experience;**

A comparison with other large, non-Texas public pension funds should be made. An analysis of this question must acknowledge the Board's responsibilities in other, non-investment areas.

TASK AREA 3: REVIEW THE ASSET ALLOCATION PROCESS OF THE SYSTEM'S PENSION TRUST FUND

- A. Determine if an appropriate process is used to determine the pension trust fund's asset allocation;**
- B. Determine if the present asset allocation is reasonable and suited to the purposes of the pension trust fund;**
- C. Determine if the Board's investment policy reasonably reflects the Board's approved investment strategy and accountability;**
- D. Determine if provisions for policy compliance and avoidance of ethical infractions or conflicts of interest are reasonably addressed by the Board;**
- E. Determine the adequacy of the benchmarks used by the System to assess its investment performance;**
- F. Determine the adequacy of the process established to evaluate and consider alternative assets;**



Assess selection and monitoring procedures for the System's present, pending, and potential investments in alternative assets. The discussion should include, but not be limited to, the following:

- i.) Special selection/monitoring processes (at both the Board and Management levels) that may be required for alternative assets compared to stock or fixed income investments;
- ii.) Additional ethical or compliance policy considerations;
- iii.) Prerequisite staff experience and qualifications or information resources required to properly supervise various forms of internally or externally managed alternative assets;
- iv.) Whether special training of Board members, or the System's internal audit staff, on issues related to the supervision of alternative assets is warranted, and if so, how much and in what form.

As a part of the discussion of alternative assets, the offeror should define alternative assets. This definition should include the types of investments typically considered to be alternative assets. The offeror should also provide an explanation of alternative assets including but not limited to: what they are; how they work; who typically invests, how, and in what amount; an estimated size of each class' market and liquidity; typical alternative asset timeframes; and historical returns.

TASK AREA 4: INVESTMENT RELATED HUB CONSIDERATIONS

The offeror should address the use of qualified HUB firms in investment contracting and brokerage. The current use and the potential for additional HUB contracting in the area of investment consulting and brokerage should be assessed in light of the Board's fiduciary need to ensure the efficient conduct of the System's investments.



PART II

Offerors should provide separate proposals (i.e. a plan of work and cost) for each of the following components of Part II:

- A. Review the System’s soft dollar policies and compliance with best industry practices;**
- B. Review of the current procedures uses by the System to assess trade execution and market impact;**
- C. Review the System’s implementation and utilization of the Bloomberg Trade Order Management System;**

Evaluate the current implementation process and plans and determine if proper procedures and controls are being followed. For implemented modules, determine if the Bloomberg system is operating as intended and is providing appropriate controls over trades. Verify that the System is fully utilizing all appropriate features of the Bloomberg system to monitor, test compliance, account for, and report investment trades. Provide recommendations, if any, for other features that should be implemented.

- D. Assess the effectiveness of the investment services department;**

Assess the effectiveness of the Investment Services Department and make recommendations for improvements, where warranted. [Note: The contractor must coordinate work in this task area with the System’s Internal Audit Department, which plans to conduct a similar assessment of the Investment Services Department.] The assessment should include, but not be limited to, the following:

- i.) Compare the operations of Investment Services Department to best practices and industry standards of ‘middle office’ operations;
- ii.) Organizational structure including independence, reporting to appropriate executives, and assignment of staff;
- iii.) The effectiveness of investment compliance monitoring;
- iv.) Quality, timeliness, and comprehensiveness of information and systems used by the Investment Services Department, including recommendations (if known) of other systems, which might help to more effectively monitor investments.



APPENDIX

Proposed Key Issues from the 1996 Report to be addressed:

1A2; 1A3; 1A5; 1A6; 1A8; 1A9; 1A11; 1A14; 1A16; 1A17;

1B1; 1B2; 1B3; 1B5; 1B6; 1B12; 1B13

IIA1; IIA3; IIA4;

IIB1

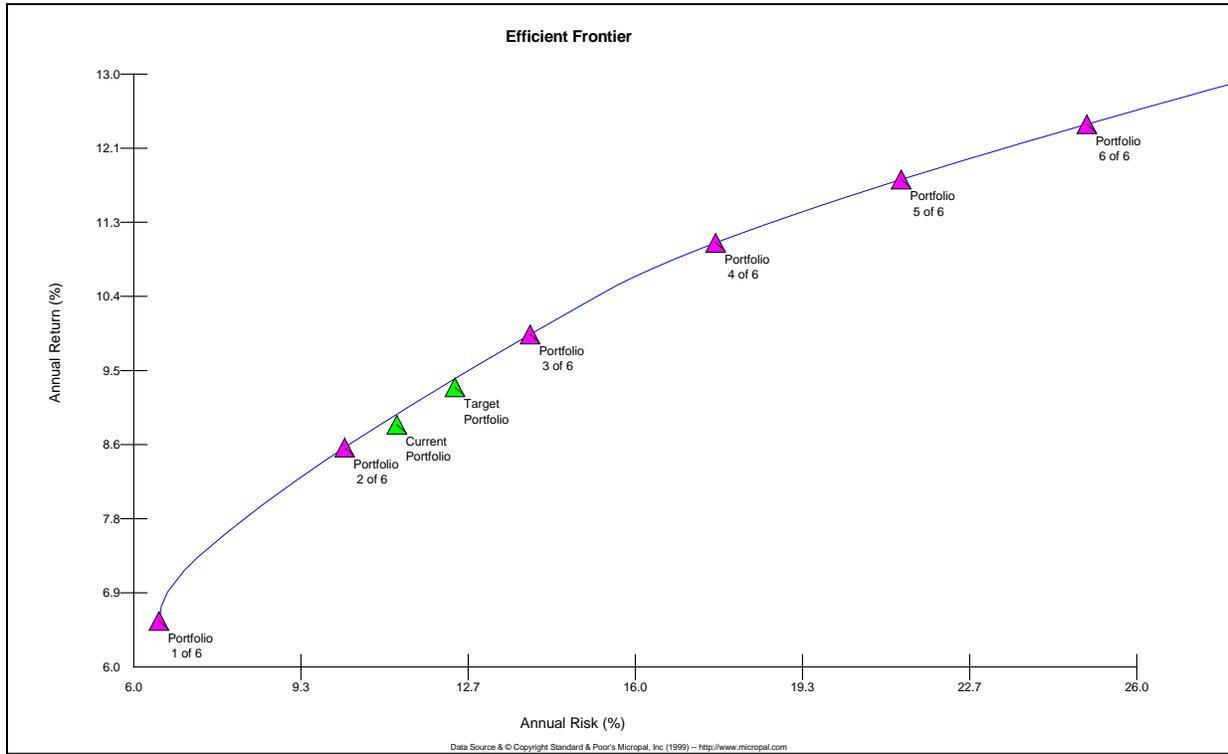
IIC1

IID1

IIE3



Efficient Frontier Analysis



	Portfolio 1	Portfolio 2	Current Portfolio	Target Portfolio	Portfolio 3	Portfolio 4	Portfolio 5	Portfolio 6
Portfolio Ann. Return	6.54	8.59	8.86	9.30	9.93	11.01	11.75	12.41
Portfolio Ann. Risk	6.50	10.20	11.24	12.40	13.90	17.60	21.30	25.00
U.S. Stocks	0	28	51	53	49	50	40	31
Non U.S. Stocks	0	24	11	13	38	35	24	14
U.S. Bonds	88	44	36	29	13	0	0	0
Real Estate	5	0	1	0	0	0	0	0
Private Equity	6	3	1	4	0	15	36	54
Cash	1	1	1	1	0	0	0	0
Probability of a Negative Return								
1 Year	16	20	22	23	24	27	29	31
3 Year	4	7	9	10	11	14	17	19

Asset Class	Correlation		Asset Min	Asset Max	U.S. Stocks	Non US Stocks	U.S. Bonds	Real Estate	Priv Equity	Cash
	Return	Risk								
U.S. Stocks	10.5	17	0	100	1.00					
Non U.S. Stocks	10.5	18	0	100	.60	1.00				
U.S. Bonds	6	7	0	100	.30	.20	1.00			
Real Estate	8	14	0	100	.60	.60	.30	1.00		
Private Equity	14	35	0	100	.70	.70	-.15	.25	1.00	
Cash	5	1	0	1	-.05	-.05	.15	.05	-.20	1.00



