State of Tennessee

Tennessee Consolidated Retirement System (TCRS) Reform Options

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Prepared for:

Tennessee Treasury Department
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Executive Summary

The Tennessee State Treasurer engaged Public Financial Management, Inc. (PFM) to assist in developing and analyzing potential retirement benefit reform options for newly hired state employees and teachers participating in the Tennessee Consolidated Retirement System (TCRS). This evaluation has been initiated in the context of a continuing multi-year low earnings environment in sectors of the investment markets, escalating pension costs, growing unfunded liabilities, new regulatory and accounting requirements, and widespread retirement reform across the nation.

In an effort to address these challenges for Tennessee, the State Treasurer sought to explore potential benefit redesign options that would continue to provide future state employees and teachers with sufficient and secure income in retirement while helping to control growth in employer retirement benefit costs and unfunded liabilities on a sustainable basis. **Since the new benefit plan provisions would only apply to state employees and teachers who are hired after a specified future date, employees currently on the payroll and retirees would not be affected.**

Current TCRS Structure and Condition

The following points highlight key findings from PFM's review of the current structure and condition of the TCRS (for further discussion, see pages 10 to 15).

1. All state employees, K-12 public school teachers, and most higher education employees must participate in the defined benefit (DB) pension plan administered by TCRS. Higher education employees who are exempt from the provisions of the Fair Labor Standards Act (generally supervisory or instructional personnel) are now the only employee group given the option of participating in either a pure defined contribution (DC) plan, or the DB pension.

2. Tennessee's blended funding ratio of the state and teacher plans combined per the July 1, 2011 actuarial valuation of 92.1% is substantially ahead of the 75.8% average among the largest public retirement systems nationally, reflecting the State's historically conservative practices, and the fact that every Governor and General Assembly since 1972 have fully funded the annual Actuarial Required Contribution (ARC).

3. Nonetheless, as of July 1, 2011, the State's unfunded actuarial accrued liability (UAAL) was approximately $1.55 billion for state employees and approximately $1.03 billion for teachers for a total UAAL of approximately $2.58 billion. On a fair market value basis, the unfunded accrued liability was approximately $2.52 billion for the state employee plan and approximately $2.55 billion for the teacher plan as of July 1, 2011 for a total market value unfunded liability of approximately $5.07 billion.

4. The Plan continues to be negatively impacted by annual earnings below the actuarial assumed return of 7.5% on a 15 year rolling average basis since 2008 to the present. This trend continued for the fiscal year ended June 30, 2012 with an annual investment return of 5.6%. The 2012 return added an estimated additional $203 million for state employees and $320 million for teachers – $523 million in total – to the actuarial unfunded liabilities of the Plan.

5. Improved life expectancy has also contributed to increasing unfunded actuarial liabilities, as most pension systems nationally, including the TCRS, are paying benefits for more years than projected in past actuarial valuations. From 1970 to 2011, U.S. life expectancy at birth increased by nearly eight (8) years, and life expectancy at age 65 increased by more than four (4) years (to 84.2 years).

6. Overall, for the ten year period from FY2003 through FY2012, employer contributions to the TCRS nearly tripled, increasing from $264.3 million to $731.4 million for state employees, teachers, and higher education employees.

7. In June 2012, the Governmental Accounting Standards Board (GASB) adopted two statements, GASB 67 and GASB 68, intended to improve the accounting and financial reporting of state and local government pension plans. The effect of these changes is that beginning in Fiscal Year 2015, Tennessee is required to include its net pension liability as a balance sheet liability in the State's Consolidated Annual Financial Report (CAFR). Applying that standard to the actuarial valuation as of July 1, 2011, the state's net pension liability recorded in the CAFR would have been an estimated $1.74 billion. Since this standard also applies to local governments beginning in Fiscal Year 2015, the aggregate estimated amount local governments would have recorded was $800 million for general employees plus an additional $1.42 billion for teachers of Local Education Agencies.

8. Currently, Tennessee's General Obligation debt is rated Aaa (highest rating available) with a stable outlook by Moody's, AAA (highest rating available) with a stable outlook by Fitch, and AA+ with a positive outlook by Standard and Poor's. Maintaining these strong ratings is important in order to ensure continued access to the capital markets at the lowest possible interest costs. Also, credit rating agencies have stated that unfunded pension liabilities will be a specific consideration in evaluating the credit rating of states.

State Retirement System Comparisons

The following are general findings from PFM's comparison of TCRS with other state pension plans (for further discussion, see pages 17 to 22):

1. From 2009 through 2012, 45 of 50 states enacted significant pension reforms for broad groups of state employees in an effort to address long-term funding pressures.

2. Most states, like Tennessee, continue to offer a DB plan as their primary option. As of July 1, 2012, 42 of the 51 systems (including the District of Columbia) surveyed by PFM provided a DB plan as a primary retirement option for state employees.

3. Among such DB plans, Tennessee is the only state that requires no employee contribution for newly hired state employees (teachers in Tennessee contribute 5% of payroll).

4. Even among existing employee groups hired prior to the recent wave of pension reforms, it is typical for state employees to contribute toward their retirement benefit. PFM's review identified Tennessee as one of only six state retirement systems with a large group of employees that do not require employee contributions.

5. The TCRS normal retirement eligibility criteria are also somewhat more generous than other state retirement systems. Tennessee currently allows state employees to retire at age 60 with 5 years of service or at any age with 30 years of service. Many jurisdictions have increased retirement ages to more closely align with Social Security Normal Retirement Age. It is common to see ages 62, 65, 67, or "Rule of" requirements in other states.

6. Of the 35 systems that participate in Social Security with a DB pension (excluding Tennessee), 17 have benefit multipliers of 2% or greater for state employees, while 18 have multipliers that are less than 2%, but greater than Tennessee's 1.575% rate.

Options for TCRS Reform and Recommended Approach

PFM was tasked with assessing and analyzing a range of pension reform options for Tennessee, including: modifying key provisions of the current defined benefit (DB) pension plan; creating a pure defined contribution (DC) plan; or establishing a hybrid DB-DC or a cash balance plan. The team was guided by several key goals and objectives identified by the State Treasurer and staff, including:

1. The new plan provisions would apply to new hires only after a specified future date, and would not affect retirees. Thus, state employees and teachers currently on the payroll and those already retired would not be affected;

2. The new plan should provide state employees and teachers a sufficient and sustainable benefit for a dignified retirement through a combination of TCRS benefits (both DB and DC plans), social security, and personal savings;

3. Long-term solvency of the retirement system must be ensured so that current retirees and future retirees can rely on secure retirement benefits;

4. The new benefit should be established to control costs and reduce the employer's exposure to risk and unfunded liabilities, in order to sustain TCRS employer contributions at affordable levels for the State and its taxpayers; and,

5. Comprehensive pension reform for future hires for the large classes of employees (state employees, higher education employees, and teachers) should be paralleled with comparable reforms for smaller classes of employees, including state judges, law enforcement, and elected members of the General Assembly.

PFM recommends a hybrid retirement plan as best meeting the State's goals and objectives, balancing the range of factors evaluated. A suggested structure for this new plan is summarized below (see page 32 for further discussion).

DB Component

1. The pension benefit multiplier would be reduced to 1.0% per year of service from the current 1.575% per year of service (1.8375% above the Social Security Integration Level) – ensuring a base level of guaranteed retirement income, while reducing the State's exposure to market and actuarial risk.

2. A cap would be established on the defined benefit pension benefits (recommended at $80,000 annually, indexed to CPI).

3. The unreduced normal retirement eligibility requirement would be increased to age 65 with 5 years of service or the rule of 90 (when age plus years of service equal or exceed the sum of 90) to better align with national retirement system reforms and increasing longevity.

4. If the employer's contribution exceeds 4% of payroll or if unfunded liabilities exceed an established target level, then specified cost controls would be implemented prospectively (and

not affect previous accruals) until the target contribution level and target level of unfunded liabilities are achieved. Cost controls, in the order of their implementation, would include: transferring funds from a Contribution Fluctuation Reserve established in the DB plan; reducing cost of living increases; shifting a portion of employer contributions into the DB plan instead of planned allocation to the DC plan; increasing employee contributions by 1%; reducing the annual benefit accrual to active members; and, if necessary, freezing future accrual of service credit.

5. All state employees and teachers would be required to contribute 5% of payroll to the DB component consistent with national trends, creating more balanced cost-sharing. The State's projected contribution to this DB component would be targeted at 4% of payroll, with additional employer contributions planned for the DC component as outlined below.

DC Component

1. Employees would be automatically enrolled in the DC plan with an employee contribution of 2% of salary to encourage greater individual retirement savings, although employees would have the ability to "opt out" of making contributions.

2. The State would contribute an additional target employer contribution of 5% to the DC account. These employer contributions would vest immediately.

3. All or a part of the employer DC contribution could be diverted prospectively to the DB plan if the actuarial employer contribution for the DB plan grows in excess of a targeted 4% of payroll, with a maximum employer contribution set at 9%, thereby limiting cost risk for the taxpayers.

Through the adoption of such changes, Tennessee can maintain its strong position of managing one of the healthiest retirement systems in the nation, continue to provide a competitive and dignified benefit for career public employees, and manage its exposure to market risk, actuarial risk and unfunded liabilities.

TCRS Overview

The Tennessee Consolidated Retirement System (TCRS) consists of state employees, K-12 teachers and most higher education employees. The TCRS also includes employees of 488 political subdivisions and instrumentalities that have elected to participate in the consolidated system. As of June 30, 2012 there were 210,493 active members participating in the TCRS – comprised of 73,449 teachers, 58,864 state employees and judges, and 78,180 members enrolled through participating political subdivisions.[1]

In addition to these active members, as of June 30, 2012, the system had 122,499 beneficiaries on the retirement rolls.[2] The annual retired payroll as of that date was $1.76 billion. It is estimated that approximately 92% of the retired payroll or approximately $1.63 billion is paid to Tennessee residents. A table showing the retired payroll amount by county is included in Appendix F.

For most TCRS participants – including state employees and teachers – the plan provides a defined benefit (DB) pension at retirement when eligibility criteria are met. Under such a DB structure, retirement systems will typically set aside assets to provide for future payments, funding the plan on an actuarial basis determined to be sound for ensuring long-term sustainability. Higher education employees are eligible to elect to participate in either the defined benefit pension plan or in an alternate 401(a) defined contribution plan, known as the Optional Retirement Program (ORP).

As of the most recent TCRS actuarial valuation on July 1, 2011, the state employee and teacher plans were 92.1% funded in the aggregate. Across its different employee groups, TCRS was 88.3% funded for state employees, 94.7% funded for teachers, and 89.2% funded across participating political subdivisions. Compared to many pension systems nationally, this represents a relatively sound position. Although such comparisons are somewhat imprecise given differences in actuarial methods and assumptions, Tennessee's 92.1% funded ratio is substantially ahead of the 75.8%[3] average ratio among the largest public retirement systems nationally. The Pew Center on the States, which has conducted several evaluations of state pension systems, recently ranked Tennessee as a "solid performer" with respect to its current pension funding practices, a distinction received by only 10 other states.[4]

This comparatively healthy funding ratio relative to other state retirement systems largely reflects Tennessee's conservative financial practices and prudent funding policies evidenced by the fact that every Governor and General Assembly since 1972 have fully funded the annual Actuarial Required Contribution (ARC). Nonetheless, the severe and prolonged deterioration of U.S. and international markets in the 2000's, the continuing low earnings environment in sectors of the investment markets, combined with the pressures of an aging population and retirement of the "baby boomer" generation, have created a significant, underfunded TCRS obligation:

On an actuarial basis:

1. As of 2011, the State's unfunded actuarial accrued liability (UAAL) was approximately $1.55 billion for state employees.
2. The UAAL for teachers would add an additional $1.03 billion in unfunded obligations.
3. The UAAL for political subdivisions adds $799.1 million in unfunded obligations.[5]

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[1] TCRS, Comprehensive Annual Financial Report, June 30, 2012.
[2] *Ibid.*
[3] The Public Fund Survey, Summary of Findings for FY 2011, November 2012.
[4] The Pew Center on the States, The Widening Gap Update, June 2012.
[5] TCRS, Actuarial Valuation Report, July 1, 2011.

On an actuarial basis, total TCRS unfunded liabilities as of July 1, 2011 are $3.38 billion for the entire plan.

On a market value basis:

1. As of 2011, the State's unfunded actuarial accrued liability (UAAL) was approximately $2.52 billion for state employees.

2. The UAAL for teachers was $2.55 billion in unfunded obligations

3. The UAAL for political subdivisions adds $1.34 billion in unfunded obligations.[6]

On a market value basis, total TCRS unfunded liabilities as of July 1, 2011 are $6.41 billion for the entire plan.

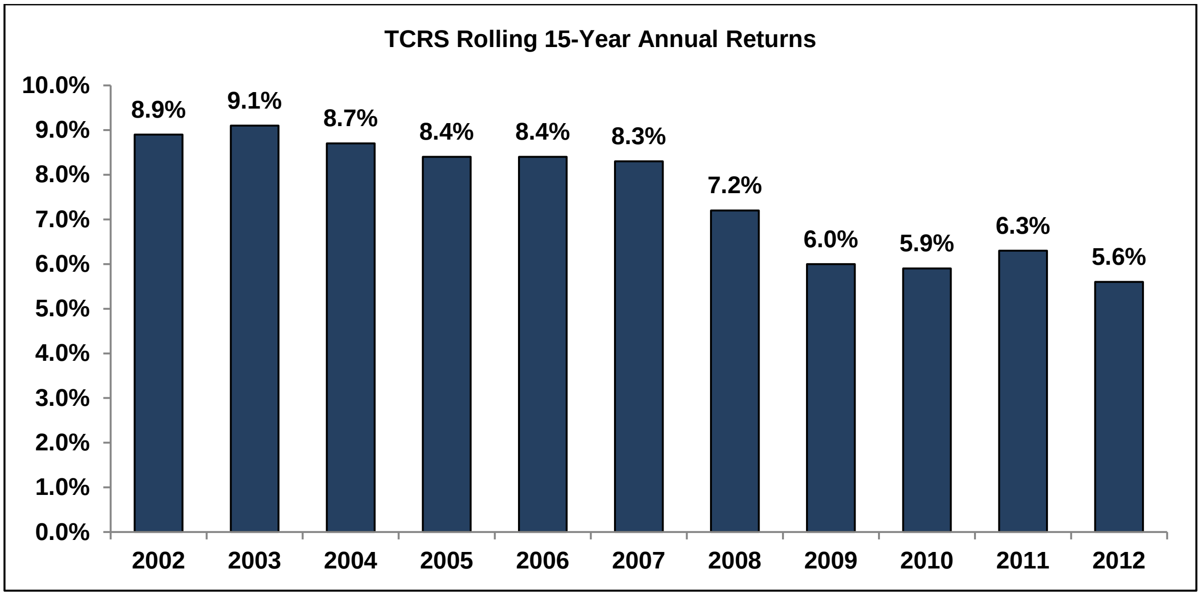
Relative to a total state operating budget of $32.3 billion[7] in FY2013 (comprised of approximately $14.2 billion in state tax revenue, $13.1 billion in federal funds, and $5.0 billion from other sources), the magnitude of these unfunded TCRS pension liabilities clearly merits concern and attention.

Over the ten year period measured from FY2003 through FY2012, addressing these funding challenges has required rapidly growing public employer contributions. Over this ten year period, employer contributions to the TCRS nearly tripled, increasing from $264.3 million to $731.4 million for state employees, teachers, and higher education employees.[8]

The State's contributions as a percent of payroll follow a similar trajectory measured over this same ten year time period. From FY2003 to FY2012, the State's contributions increased from 7.3% of payroll in FY2003 to 15.03% in FY2012 for state and higher education employees. For teachers, the total employer cost as a percentage of payroll also increased substantially, rising from 3.4% in FY2003 to 8.88% in FY2012.[9]

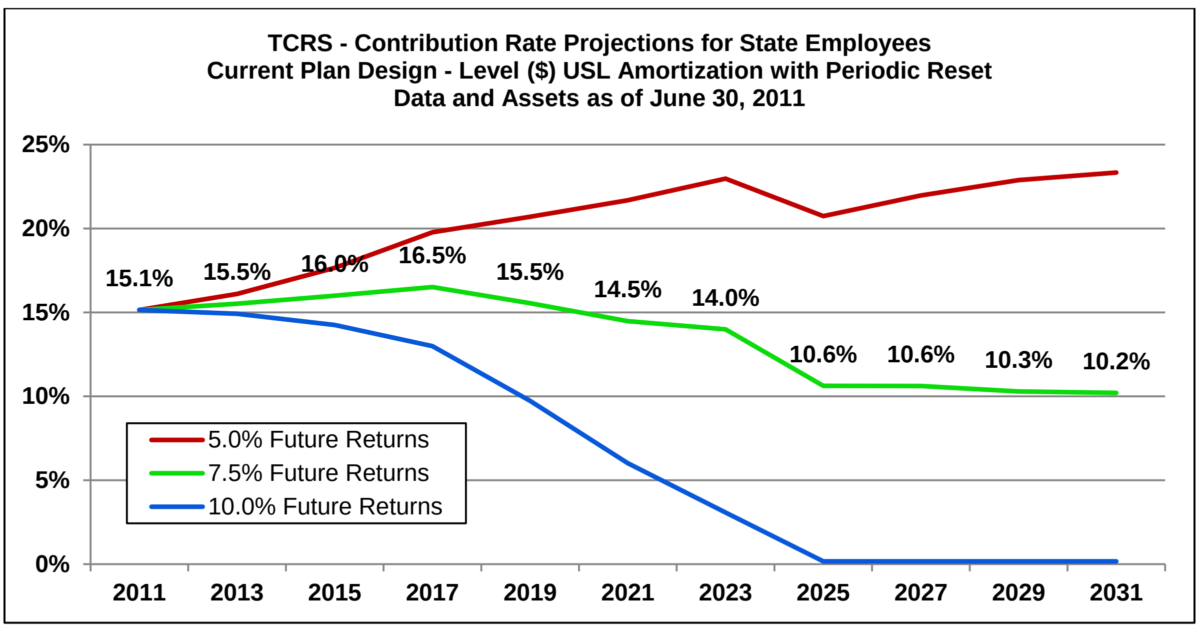
The increase in employer contributions can be largely attributed to the low earnings environment occurring this century, with fixed income earnings at historical lows and two significant declines in the equities market. During 2009, domestic stocks lost nearly 30% of their value and international stocks lost more than 40%. The TCRS continues to be negatively impacted by annual earnings below the actuarial assumed return of 7.5% on a 15 year rolling average basis since 2008. This trend continued for the fiscal year ended June 30, 2012 with an annual investment return of 5.6% as shown in the following table. The 2012 return added an estimated additional $203 million for state employees and $320 million for teachers – $523 million in total – to the actuarial unfunded liabilities of the Plan.

[6] TCRS, Actuarial Valuation Report, July 1, 2011.
[7] State of Tennessee, FY2012-2013 Annual Budget, January 2012.
[8] TCRS, Comprehensive Annual Financial Report, June 30, 2012.
[9] *Ibid.*



Source: Tennessee Treasury Department (Data through June 30, 2012)

If the recent low earnings environment continues for a number of years, the impact on future employer contribution rate is reflected in the following chart:



Source: TCRS Actuary, Bryan, Pendleton, Swats & McAllister, LLC

The Tennessee Treasury Department has attempted to mitigate the impact of the low earnings environment in the financial markets by diversifying the TCRS portfolio into higher yielding asset classes such as international emerging markets, expansion of the real estate portfolio, expanding private equity investments, and beginning a securities lending program.

The employer contribution rates in TCRS are determined using a 7.5% actuarial earnings assumption. Lowering the earnings assumption from 7.5% to 7.25% will substantially increase both employer costs and plan liabilities. In recent years, some pension systems nationally have lowered assumed earnings rates in recognition of the low earnings environment. Prior to making such adjustments, many of these plans historically used less conservative, higher investment return assumptions than already in place with the TCRS.

Improvements in life expectancy beyond past actuarial assumptions have also contributed to growth in unfunded actuarial liabilities in many pension systems nationally. While such increasing longevity is a positive development overall, it does lead to more years of benefit payments – with significantly higher long-term costs – than historically projected. From 1970 to 2011, U.S. life expectancy at birth increased by nearly eight (8) years from 70.8 to 78.7, and life expectancy at age 65 increased by more than four (4) years from 80.2 to 84.2 years.[10]

The TCRS funding challenges currently faced by the State will soon be brought into sharper focus by recent actions of the Governmental Accounting Standards Board (GASB). In June 2012, GASB adopted two statements, GASB 67 and GASB 68, intended to improve the accounting and financial reporting of state and local government pension plans.[11] According to GASB, these new standards were designed to increase the transparency and comparability of pension reporting data across jurisdictions, resulting in a more complete representation of the full magnitude of pension liabilities.

As a result of these changes, beginning in Fiscal Year 2015, Tennessee will be required to include the State's net pension liability as an entry in the liabilities section of the state's Consolidated Annual Financial Report (CAFR). Current accounting standards require that governments only report their unfunded liabilities as footnotes in financial statements. Based on the TCRS actuarial valuation as of July 1, 2011, had the new GASB standards already been in effect, the State's net pension liability would have added an estimated $1.74 billion to Tennessee's reported CAFR liabilities. As of July 1, 2011, the aggregate State general obligation bond/commercial paper liabilities without the net pension liability were $1.89 billion. Accordingly, the GASB requirement to include net pension liability on the balance sheet, if applied at July 1, 2011, would have nearly doubled the long term liabilities of Tennessee shown on its balance sheet – with an increase of 92%.

It is anticipated that GASB will require unfunded Other Post Employment Benefit (OPEB) liabilities, primarily associated with retiree healthcare, to be recorded in a similar manner as pension unfunded liabilities in the future, although no formal, new OPEB standards have yet been released.

The new GASB standards will also apply to local governments beginning in Fiscal Year 2015. As of July 1, 2011, the aggregate estimated amount TCRS participants would record was approximately $800 million for local government plans and an additional $1.42 billion for Local Education Agency portions of the teacher plan.

Credit rating agencies, including both Moody's Investors Service and Standard & Poor's, have also taken steps to standardize pension reporting across jurisdictions in response to the increasing pressure placed on state and local government finances due to growing retiree benefit costs. In July 2012, for example, Moody's issued a request for comment regarding a proposed change to their pension evaluation methodology entitled *Adjustment to US State and Local Government Reported Pension Data*. The proposed adjustments included, among multiple modifications, that pension liabilities would be compared based on the market value of assets rather than the actuarial value of assets, and that

[10] Centers for Disease Control and Prevention, National Center for Health Statistics, Preliminary Data for 2011, October 2012.
[11] GASB 67 and 68, "Financial Reporting for Pension Plans" and "Accounting and Financial Reporting for Pensions", June 2012.

liabilities would be calculated using a high-grade long-term corporate bond index discount rate rather than the pension plan's long-term investment assumption. The result would be that Moody's would determine and report pension liabilities at a level that would be significantly greater than reflected in most pension plan actuarial reports and financial statements.

While the impacts of these changes are not expected to result in widespread downgrades across the state and local government sector, they likely will lead to added pressures from the investment community and the general public.

Currently, Tennessee's General Obligation debt is rated Aaa (highest rating available) with a stable outlook by Moody's, AAA by Fitch, and AA+ by Standard and Poor's.[12] Maintaining these strong ratings is important in order to ensure continued access to the capital markets at affordable rates. The importance for the State to address pension funding pressures over the long-term is enhanced by the added focus that credit rating agencies will be placing on pension obligations.

The major features of the TCRS retirement plans for current state employees and teachers are summarized in the table below. It should be noted that TCRS members also participate in the federal Social Security program, such that these benefits are in addition to those afforded under Social Security.

	State employees and Teachers (Group I)	Law Enforcement (Group I)	Judges (Group IV)	Higher Education (ORP)
Employee Contribution*	State employees: 0% Teachers: 5%	0%	0.5% up to SSWB 2% above SSWB	0%
Vesting	5 years	5 years	8 years	Immediate
Normal Retirement Eligibility	Age 60 w/ 5 YOS or 30 Years of Service (YOS) at any age	Age 55 w/ 25 YOS or age 60	Age 60 w/ 8 YOS or age 55 with 24 YOS	Not applicable as the ORP is a defined contribution plan
Average Final Compensation (AFC)	5 highest consecutive years	5 highest consecutive years	5 highest consecutive years	Not applicable
Benefit Formula*	1.575% of AFC up to the SSIL x YOS plus 1.8375% of AFC in excess of the SSIL x YOS	1.575% of AFC up to the SSIL x YOS plus 1.8375% of AFC in excess of the SSIL x YOS In addition, a bridge benefit of 0.75% of AFC x YOS as Public Safety Officer until reaching age 62	2.5% of AFC x YOS	Final account balance depends on investment performance Employer contributes 10% up to SSWB; 11% above the SSWB

**SSWB = Social Security Wage Base ($110,100 in 2012)*
**SSIL = Social Security Integration Level ($61,800 in 2012)*

In addition to a TCRS pension, employees of the State of Tennessee are eligible to participate on a voluntary basis in two tax-deferred retirement plans, specifically a 457 and a 401(k) plan. These investment vehicles allow state employees to accumulate personal savings on a tax-deferred basis up to the annual limitations established by the Internal Revenue Code as a supplement to their defined benefit. Tennessee provides a matching contribution up to $50 per month ($600 annually) for those

12 Most recent ratings available by Moody's Investor Services, Standard & Poor's Rating Services, and Fitch Ratings.

employees who enroll in the optional 401(k). Both the 457 and 401(k) provide employees access to a number of managed and index-based investment funds including target retirement date funds and a Self-Directed Brokerage Account (SDBA).

The State of Tennessee, through the Department of Finance and Administration, also offers retirees other post-employment benefits (OPEB), including a subsidized retiree medical program.

In an effort to address ongoing pension funding challenges, Tennessee adopted substantial reforms in 2012 for TCRS participating political subdivisions. These non-compulsory reforms provided local governments the flexibility to craft a retirement plan that was affordable, sustainable, and provided retirees with a sufficient income in retirement. These reforms did not apply to state employees, K-12 teachers, or higher education employees.

Under the law, local governments were allowed to remain in their current plan or to select from two new plan options that include some element of a DB plan. All of these plans also include provisions to retain the authority to modify benefits, employee contributions, and other plan terms on a prospective basis for employees hired after July 1, 2012. In addition, local governments were provided the alternative to elect to participate in the defined contribution plans of the State under legislation that was adopted in 2010. Thus, the four options available for local governments include:

1. **Contributory Defined Benefit (original plan):** Local governments were given the option of requiring new hires to contribute 0%, 2.5%, or 5.0% of pay to the plan. In addition, local governments were able to select a plan with and without a post-retirement cost-of-living adjustment (COLA).

2. **Modified Defined Benefit Option:** In addition to the features included in the contributory option above, local governments were able to reduce the benefit multiplier from 1.575% to 1.4%, increase the normal retirement eligibility from age 60 or 30 years of service to age 65 or the rule of 90 (achieved when age + YOS equal 90), and cap the annual pension benefit at $80,000 per year.

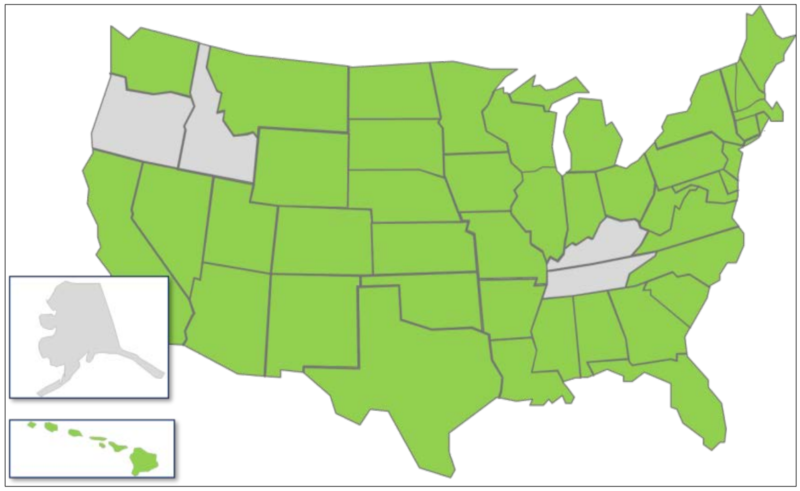
3. **Hybrid Defined Benefit/Defined Contribution Option:** Local governments were also given the ability to offer new hires a hybrid plan that combined elements of a defined benefit plan with a lower benefit multiplier (1%) plus a defined contribution account. Local governments were given the option of using the State's 401(k) plan or procuring a DC plan from other third party sources of their choice. Employers were limited to making a 7% contribution to the DC account.

4. **Defined Contribution Option:** Under this option, local governments were given the ability to provide their employees with a defined contribution plan as a primary retirement vehicle. This plan granted local governments the flexibility to design any benefit and contribution level they deemed appropriate (subject to IRS limitations).Local governments may participate in the state's DC plan or use a plan from a third party.

As the next step in ensuring the stability and affordability of the TCRS, this report focuses on options for benefit reform for state employees.

National Trends and Benchmarks

According to data published by the National Conference of State Legislatures (NCSL), 45 of 50 states enacted significant pension reforms for broad groups of state employees in an effort to address long-term funding pressures from 2009 through 2012 alone, and many of these states made changes to pension plans in more than one year. See the illustration on this page. **Tennessee is one of only 5 states that did not enact significant pension reforms for state employees and/or teachers during this period.**



While Tennessee did not implement pension reform during this time period for state employees, it did enact substantial optional reforms for participating political subdivisions as outlined earlier in this report. Other states, such as Alaska and Kentucky, enacted pension reforms in years prior to those tabulated by the NCSL. Alaska, for example, established a defined contribution plan for its employees in 2005, while Kentucky made changes to its COLA provision in 2004 and benefit multipliers for new hires in 2008.[13]

In the wake of the Great Recession many states enacted the practical pension reforms that were easiest to achieve and provided the greatest short-term budgetary relief**. One of the most common changes among state systems was to increase employee contributions.** A report issued by the National Association of State Retirement Administrators (NASRA) found that a majority of states increased the required employee contribution from 2009 through 2012. Data published by NASRA found that almost all state employees today are required to share in the cost of their defined benefit pension plan[14], a statistic that is highly consistent with the findings derived from PFM's Survey of State Retirement Systems**. Other common changes include eliminating post-retirement COLAs, reducing benefit multipliers, and increasing retirement eligibility requirements for new hires.** From 2009 through 2012:

1. 30 states increased employee contributions;
2. 31 states increased the age and/or service requirements for normal retirement;
3. 21 states made changes to post-retirement cost-of-living adjustments; and,
4. 15 states reduced benefit multipliers.[15]

<u>Current Employees</u>

Even among historical benefit tiers, it is common for state employees to contribute toward their retirement benefit. Based on PFM's review of state retirement systems, only five (5) states were

[13] Pew Center on the States, Kentucky's Pension Challenge: Opportunities for Real Reform, August 2012.
[14] NASRA Issue Brief, Employee Contributions to Public Pension Funds, January 2013
[15] Data compiled by PFM from various sources published by the National Conference of State Legislatures for state civilian employees and teachers. [http://www.ncsl.org]

identified as having a large group of current state employees (likely to still be in active employment) hired into still-existing tiers that do not require employee contributions.

- **Arkansas**: Employees hired prior to 6/30/2005 are not required to contribute toward their defined benefit pension.
- **Missouri**: Employees hired prior to 1/1/2011 are not required to contribute toward their defined benefit pension.
- **New York**: Tier III and IV employees (hired 7/1976 – 12/2009) are required to contribute 3% for 10 years, then 0% thereafter.
- **Oregon**: Employees hired prior 8/28/2003 enrolled in the Tier 1/Tier 2 defined benefit plan are not required to contribute toward their pension.
- **Utah**: Employees hired prior to 7/1/2011 participate in the State's closed defined benefit plan (Tier 1), and are not required to contribute.

Many states have enacted reforms to increase or require for the first time employees to contribute toward the cost of their benefit. Of the 30 states identified as increasing or establishing employee contributions for state civilian employees and teachers in recent years, 23 states applied the increase to current employees as well as new hires. The remaining seven (7) states increased contributions for new hires only, effectively creating a separate contributory tier.

Several states in recent years have moved toward providing a hybrid retirement plan, which combines elements of a reduced pension with a defined contribution account. **As of July 1, 2012, there were a total of nine states offering a hybrid DB-DC plan (mandatory or optional) to broad groups of public employees**, including Georgia, Michigan (teachers), Rhode Island, Utah, and Virginia (prospectively).[16] In 2012, both Kansas and Louisiana adopted legislation to move new hires into cash balance plans (with future effective dates), a unique type of hybrid further detailed later within this report.

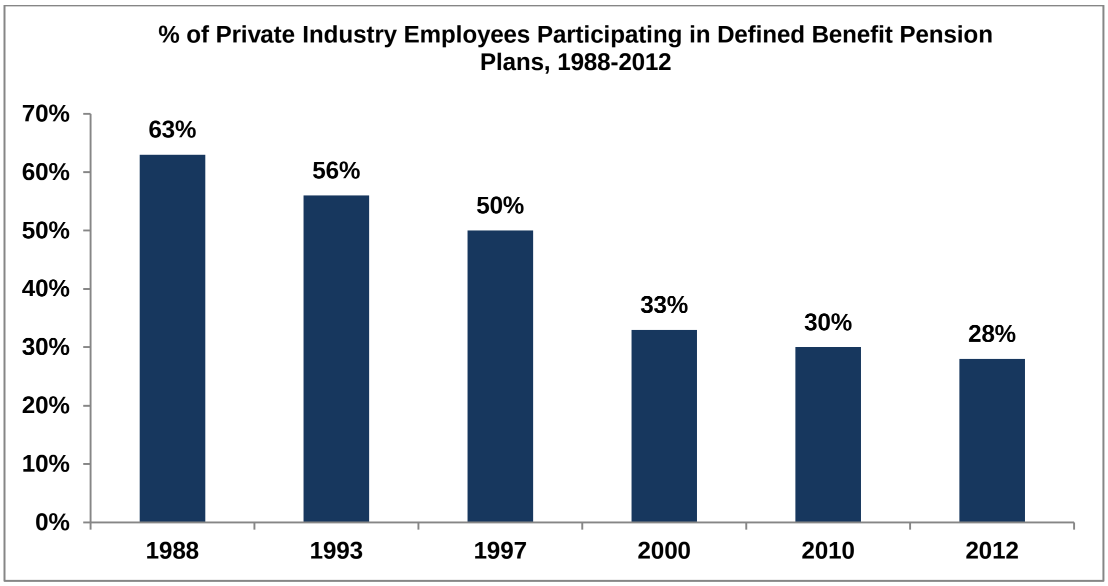
This trend of reform is expected to continue into 2013 and beyond as governments contend with retiree cost benefit pressures. For example, the neighboring State of Kentucky is actively considering a comprehensive mix of reforms, and state legislators in Illinois recently introduced HB 6258 to be considered in 2013 that would make substantial reforms to the Teachers' Retirement System.

[16] Virginia's hybrid DB-DC plan is effective for employees hired after 1/1/2014 (included in total).

Benchmark Findings

As part of assessing the potential for TCRS reform, Public Financial Management compared the current major plan design features of the 50 state retirement systems and the District of Columbia. All data captured was as of July 1, 2012, unless otherwise noted.

In the U.S. private industry, according to the Bureau of Labor Statistics, the percentage of full-time workers in medium and large private establishments participating in traditional defined benefit pensions has decreased steadily over the past quarter century from 63% in 1988 to 28% in 2012 as shown in the chart below. Many of those employees with continued coverage are now in frozen DB plans.[17]



A 2012 report by Towers Watson found that a majority of Fortune 100 companies offer their employees a defined contribution plan only, and that 19 of the Fortune 100 companies offer a hybrid plan (typically, cash balance). From 1985 through today, the number of Fortune 100 companies offering their employees a traditional defined benefit pension plan decreased from 89 to 11.[18]

The following summary, along with more detailed information included in the Appendices, was derived primarily from documents published on retirement system websites. PFM gathered and reviewed key pension plan documents, such as comprehensive annual financial reports, actuarial valuation reports, statutes, and employee handbooks. Where information was unavailable or unclear, PFM sought clarification from state retirement system administrators and staff via telephone and/or e-mail.

Many of the retirement systems included in the analysis have multiple benefit tiers based on an employee's date of hire. Where multiple tiers are present, PFM captured the plan design offered to new hires. As such, the data may not reflect the retirement plan available to the largest group of employees at the time of this report, but it does reflect any recent reforms and each state's current approach going forward. Highlights of recent state-level retirement system reforms are included in Appendix E for reference.

[17] U.S. Bureau of Labor Statistics, Employee Benefits Survey, 1988-2012.
[18] Towers Watson, Retirement Plan Types of Fortune 100 Companies in 2012, October 2012.

At a high level, the following are key findings from this benchmarking research:

1. Most states, like Tennessee, continue to offer a DB plan as their primary option for state employees. As of July 1, 2012, 42 of the 51 systems (including Tennessee) surveyed provided a DB plan as a primary retirement option for state employees.
2. Among such DB plans, the TCRS is the only plan that requires no employee contribution for newly hired participating state employees (teachers participating in TCRS already contribute 5%).
3. The TCRS normal retirement eligibility criteria are also somewhat more generous than other state retirement systems. Tennessee currently allows state employees to retire at age 60 with 5 years of service or at any age with 30 years of service. Many jurisdictions have increased retirement ages to closer align with Social Security Normal Retirement Age. It is common to see ages 62, 65, 67, or “Rule of” requirements in other states.
4. Tennessee does have a more conservative, lower benefit multiplier. Of the 35 systems that participate in Social Security (excluding Tennessee), 17 have benefit multipliers of 2% or greater for state employees, while 18 have multipliers that are less than 2% assuming the normal retirement criteria is met, but greater than Tennessee’s 1.575% rate.
5. The TCRS vesting period, basis for average final compensation, and cost-of-living adjustment provisions are generally aligned with the benefits offered in other state retirement systems, although practices vary widely.

To compare the plan features on a consistent basis with the TCRS, the benchmarking summary that follows focuses on comparisons to other state systems that provide a defined benefit pension plan as a primary retirement vehicle (either optional or mandatory). For states that offer a hybrid DB-DC, cash balance, or a defined contribution plan as a primary benefit, summaries of the major plan features are included in Appendices B, C, and D respectively.

In this section of the report, the findings shown reflect the plan available for state employees. In some cases, as in Tennessee, plans for teachers covered under state retirement systems may vary somewhat in structure – and benefits for law enforcement and the judiciary are typically also distinct, given the unique characteristics of such careers. General summaries and detailed comparison charts for teacher, law enforcement, and judicial plans may be found in Appendix A.

While the benchmarking data to follow allows one to compare the individual features of defined benefit plans across jurisdictions, one must also consider the interplay of these features and the overall resulting benefit. For Tennessee, the total retirement benefit also includes a voluntary defined contribution plan with limited employer match. The diversity of the defined benefit plan designs offered by state retirement systems and the number of retirement formulas adds to the complexity of these comparisons.

Of the 42 states found to offer their own state employees a defined benefit pension plan on an optional or mandatory basis, Tennessee was the only state without a requirement for new employees to contribute toward the cost of their benefit. The average employee contribution was 6.1% of payroll among other defined benefit plans for employees that participate in Social Security, such as Tennessee state and higher education employees and K-12 teachers (employee contributions averaged 9.5% of payroll among those without Social Security).

Across other major provisions, the benefits provided by TCRS are generally consistent with state systems nationally, although other systems have tended to increase retirement ages in recent years, while the TCRS has not yet taken this step. Comparing benefit multipliers can be imprecise as there may be several components to the actual calculation. Tennessee, for example, uses a dual-multiplier for earnings above and below the Social Security Integration Level. Many other states also use more than one multiplier to determine the benefit level at retirement.

	Tennessee	Benchmarking Results (excluding TN)
Employee Contributions	0%	6.1% average (w/Social Security) 9.5% average (w/o Social Security)
Vesting	5 years	<5 years: 3 of 41 systems (7.1%) 5 years: 19 of 41 systems (46.3%) >5 years: 19 of 41 systems (46.3%)
Normal Retirement Eligibility (Age/YOS)	60/5; any/30	Given multiple and diverse retirement eligibility criteria averaging is imprecise. In recent years, many jurisdictions have increased retirement ages to closer align with Social Security Normal Retirement Age. It is common to see ages 62, 65, or 67 or "Rule of" requirements in other systems.
Benefit Formula	1.575% of AFC up to the SSIL x YOS + 1.8375% of AFC in excess of the SSIL x YOS	Given multiple and diverse benefit formulas averaging is imprecise. Of the 35 systems that participate in Social Security, 17 have benefit multipliers of 2% or greater for state employees, while 18 have multipliers that are less than 2%.
Average Final Compensation (AFC)	5 years	<5 years: 21 of 42 systems (51.2%) 5 years: 18 of 42 systems (43.9%) >5 years: 2 of 42 systems (4.9%)
COLA Provision	Linked to CPI; 3% maximum	23 of 41 systems provide automatic COLAs, many that are linked to CPI and/or capped. Others provide COLAs on an ad hoc basis. Some systems in recent years have suspended COLAs until attainment of a target funding level.

As noted previously, PFM excluded states for the preceding summary that do not offer a defined benefit pension as a primary retirement vehicle from these general benchmarking summaries, as variations in plan design structures would have skewed the results. Highlights of these alternative plan designs, however, are summarized in the Appendix.

At the same time, PFM's analysis did include those plans that have an optional defined benefit plan – even if employees may elect to participate in some other plan type altogether. Public employees generally elect to participate in a defined benefit retirement plan when more than one plan type is available, as shown in the table below for general state employees.

	Optional Plans - New Hire Elections in CY2010[19]		
	DB Plan	DC Plan	Hybrid
Colorado PERA	88%	12%	--
Florida RS	75%	25%	--
Montana PERA	97%	3%	--
North Dakota PERS	98%	2%	--
Ohio PERS	95%	4%	1%
South Carolina RS	82%	18%	--

Accordingly, employers should consider the extent to which the availability of a defined benefit plan contributes to a potential hire's interest in a career in public service, and whether or not elimination of that benefit will hinder recruitment efforts. Of note, the answer to this question may vary across different occupational categories (e.g., law enforcement vs. general government, for which the prevailing practices among competing employers may vary) and also across generational cohorts, as further outlined in the subsequent section of this report.

[19] Olleman, Mark and Ilana Boivie. Decisions, Decisions: Retirement Plan Choices for Public Employees and Employers, National Institute on Retirement Security/Milliman, Inc., September 2011

TCRS Reform Options

PFM participated in a series of working sessions with State Treasurer David Lillard and senior staff in 2012 in an effort to redesign the retirement benefits available through the TCRS for new employees in Tennessee. The primary discussions focused on those reform options that could be introduced for new employees only.

In evaluating reform options, the team was guided by several key goals and objectives identified by the State Treasurer and staff. These goals included:

1. The new plan benefit provisions would apply to new hires only after a specified future date, and would not affect retirees. Thus, state employees and teachers currently on the payroll and those already retired would not be affected;

2. The plan should provide state employees and teachers a sufficient and sustainable benefit for a dignified retirement through a combination of TCRS benefits (both DB and DC plans), social security, and personal savings;

3. Long-term solvency of the retirement system must be ensured so that current retirees and future retirees can rely on secure retirement benefits; and,

4. The new benefit should control costs and reduce the employer's exposure to risk and unfunded liabilities, in order to sustain TCRS employer contributions at affordable levels for the State and its taxpayers.

In the context of these goals, PFM was tasked with helping to assess and analyze a number of alternative approaches to the redesign of the benefit provisions offered state employees through the TCRS. Within this process, PFM identified a range of options for the State of Tennessee's consideration, analyzed the pros and cons of plan design alternatives, and assessed the potential that each would have on the overall goals and objectives outlined above. The major reform approaches considered included:

1. Modifying key provisions of the current defined benefit pension plan;
2. Creating a pure defined contribution plan; or,
3. Creating a hybrid DB-DC plan.

For each of these reform options, short-term savings are projected to be nominal, as the impact of plan redesign will in the initial years apply to relatively few newly hired employees. Savings will emerge incrementally, however, as more employees are hired into new plan designs that are structured to have lower employer costs. While a meaningful reduction in the State's unfunded pension liabilities will take time to achieve, reform of future retirement benefits is critical for ensuring the system's long-range sustainability for retirees and the State.

Modified Defined Benefit Pension

Under this reform option, the State would modify the current defined benefit pension plan for new employees. Potential reforms under this approach could include, but would not be limited to increasing employee contributions, raising retirement eligibility ages, reducing benefit multipliers, suspending or eliminating post-retirement COLAs, and other modifications as deemed necessary for new hires.

There would be minimal transition issues with establishing a modified defined benefit pension plan for new employees**.** In general, the system would add an additional benefit tier, one for current employees and another for employees hired after the effective date of the enabling legislation.

While this approach would help to reduce the State's normal cost for new hires, the State would maintain substantial exposure to investment and other actuarial risks. With a modified defined benefit plan, the potential exists for the system to develop unfunded liabilities notwithstanding the benefit modifications. In turn, these unfunded liabilities could add to the State's long-term burdens from both a credit rating and balance sheet perspective.

Positive Factors:

1. Establishment of a cost share for non-contributory state employees as part of DB modifications would improve the overall affordability of the pension benefit and give employees a "stake" in the system.
2. Defined benefit pension plans may contribute to favorable recruitment and retention of employees, particularly when the State is competing against other public employers with similar plans.
3. There would be minimal administrative burdens on the State if reform is limited to adjusting the existing defined benefit plan, and the overall complexity of the benefit plan for employees would also remain consistent with the status quo.

Negative Factors:

1. Investment and actuarial risk stays entirely with the employer.
2. Unfunded liabilities, which GASB will require to be included as a liability on the State's balance sheet by Fiscal Year 2015, will likely remain at elevated levels.
3. Even with employee contributions and modified benefits, continued reliance on a DB plan will risk further growth in long-term employer costs and the potential for unfunded liabilities, with inherent volatility in funding requirements.

Defined Contribution Plan

Only three of the surveyed jurisdictions – Alaska, Michigan, and Washington, DC – require state civilian employees to participate in a defined contribution plan. Several other states offer an optional defined contribution plan (Colorado, Florida, Montana, North Dakota, Ohio, South Carolina, and Utah), although they tend to have lower take-up rates. Two states, Nebraska and West Virginia, actually moved away from providing a defined contribution plan in recent years to state employees and teachers respectively (see "Case Study" for additional detail on this shift away from DC retirement plans).

Positive Factors:

1. A defined contribution plan would stabilize the State's cost for new hires as a fixed percentage of salary with the potential for slight variations based on how the employer matching contributions are structured, if any.

2. A defined contribution plan will eliminate all investment risk for the employer, shifting the entire burden to employees. A pure defined contribution plan, by definition, eliminates the accrual of unfunded liabilities for new hires, although the State would still face sizable liabilities associated with its closed defined benefit plan.

3. The portability feature of defined contribution plans may enhance the attractiveness of a career in state service for some potential employees, although the impact of this feature is likely to vary across different employee groups. For Millennial workers who may have non-traditional employment patterns (i.e., shorter-tenures across more employers), this benefit may be particularly attractive at the time of recruitment. Another area where a defined contribution or hybrid plan may be beneficial is with the recruiting of mid-career professionals with specific skill sets. In some situations, a defined contribution or hybrid plan may also be attractive to recruits with specialized skills who are recruited to public service, but do not anticipate devoting the balance of their career to this endeavor.

4. Administrative burdens on the State to administer a pure DC plan would likely be manageable, as the voluntary DC plan and record-keeper are already in place.

Negative Factors:

1. While the portability of a DC plan may be attractive for some employees during recruitment, this same characteristic may also weaken the incentive for retention relative to a traditional DB plan. In a 2012 report on Retirement Plan Changes and Employer Motivations, Towers Watson found that 42.1% of companies that continue to offer defined benefit plans cite that such plans are "beneficial for retention of valuable current employees" as a top reason for offering such a benefit, the most frequent rationale cited.

2. A defined contribution plan has a finite, yet unknown time horizon for each plan participant. As a result, timing and investment environment will drive decisions good or bad. These decisions may have an impact on the predictability of the benefit available for employees in retirement.

   It has been the experience of the optional Tennessee Deferred Compensation Plan that most participants do not generally change their investment options nor do they actively manage their investment accounts.

3. Members in a DC plan, many of whom have little experience in the market, will be faced with the challenging task of directing their own investments. In simple terms, a defined contribution plan participant's benefit is determined by the level of contributions made (employee and employer) and the rate of return on investments. The rate of return is a factor of overall market performance and the employee's selected asset allocation and investment strategy. Multiple studies indicate that employees directing their own investments often earn lower rates of return than professionally managed defined benefit plans.

   a. An April 2011 report by Towers Watson found that the asset-weighted median rates of return in defined benefit plans outperformed defined contribution plans by an average of 1.03% as measured from 1995 through 2008.

   b. Larger defined benefit plans outperformed 401(k) counterparts by an even greater amount – 1.27% as measured from 1995 through 2008.

c. In 2008 (the most recent single year available), although both defined benefit and defined contribution plans experienced significant declines in total assets, defined benefit plans outperformed defined contribution plans by 2.68%, highlighting the ability of defined benefit plans to better withstand a bear market.[20]

d. While the State can structure a defined contribution plan to partially insulate members from the impact of poor investment decisions (e.g., by limiting the number of investment options, restricting the amount of assets that may be deposited into a self-directed brokerage account, and/or by monitoring the costs and fees associated with investment options), the State will nonetheless need to commit more resources to educational programs to ensure an appropriate level of member understanding.

4. Losses in individual accounts, as experienced during the most recent recession, may substantially reduce the benefit available for employees nearing retirement and/or alter normal retirement patterns – creating individual hardships and, in some cases, creating pressure on the employer to provide relief.

5. Mutual funds and other investment options commonly found in 401(k) plans assess fees that can vary by the type of investment and whether or not the accounts are actively managed or index based. Professionally managed assets in a defined benefit plan are pooled and, as such, tend to have lower administrative and investment costs, resulting in higher net returns.[21] The cost of investment management of the TCRS defined benefit plan is less than 10 basis points[22] which is extremely favorable relative to the cost of typical mutual fund investment expense.

Case Study: Nebraska and West Virginia Shift Away From Defined Contribution Plans

Two states, Nebraska and West Virginia, have moved away from offering defined contribution plans in recent years. Both states cited the investment performance of its members as a key factor in making the switch.

- In 2003, the State of Nebraska moved all state civilian employees from a defined contribution retirement plan into a cash balance hybrid after studies conducted by the retirement system's actuary determined that the defined contribution plan did not on average provide a sufficient income replacement ratio in retirement.

- Teachers in West Virginia hired from 1991 to 2005 were only eligible for a defined contribution plan. In 2005, the State re-opened the defined benefit plan to new hires and closed the defined contribution plan. At various times over the years, the State has given West Virginia teachers in the defined contribution plan the option of moving back into the defined benefit plan. As of July 1, 2011, just 11% of active teachers continue to participate in the defined contribution plan.

[20] Towers Watson, Defined Benefit vs. 401(k) Investment Returns: The 2006-2008 Update, December 2009
[21] NASRA Issue Brief: State Hybrid Retirement Plans. November 2011
[22] Tennessee Treasury Department

Hybrid Retirement Plan

Several states in recent years have moved toward providing a hybrid retirement plan, a shift away from the traditional defined benefit pension that has been the historical norm. Under this alternative approach, the retirement benefit combines elements of a reduced defined benefit (DB) pension with an individually directed defined contribution account.

As of July 1, 2012, there were a total of nine states offering a hybrid DB-DC plan (mandatory or optional) to broad groups of public employees, including Georgia, Michigan (teachers), Rhode Island, Utah, and Virginia (prospectively).[23] Federal government employees also have access to a hybrid type retirement benefit. Under the federal model, employees are eligible for a pension with a benefit multiplier ranging from 1.0% to 1.1% (varying by years of service) and are automatically enrolled in the Thrift Savings Plan, a type of defined contribution account with an employer match. As part of the 2012 optional reforms for local governments in Tennessee, the TCRS also now offers participating political subdivisions a hybrid retirement plan. This plan, which closely mirrors those available to employees in other states with hybrid DB-DC plans, provides a 1.0% benefit multiplier and gives the employer flexibility to craft a defined contribution component tailored to their needs.

Additional plan design details for each of the surveyed systems with a hybrid DB-DC plan are included in Appendix B.

One of the greatest strengths of a hybrid plan is simply that it balances the inherent advantages and weaknesses of pure DB and DC plans. With a hybrid plan, an employer is able to combine the favorable elements of each plan design, manage to an acceptable level of cost uncertainty, and rebalance the distribution of investment risk.

Positive Factors:

1. The DB component gives the employer the ability to invest a portion of total funds over a longer horizon (greater than any one individual can invest in a DC account), taking advantage of more investment options, increased buying power, and potential for greater returns, while continuing to provide a base level of income in retirement that is guaranteed and less susceptible to market conditions.
2. The DC component incudes the employee in sharing investment risk, while providing individuals with the option to control their asset portfolio according to their own risk appetite and investment preferences.
3. With less reliance on the defined benefit component, the magnitude of the potential for growth in unfunded pension liabilities would be substantially curtailed.
4. The defined benefit component may be a key contributor to favorable recruitment and retention of some employees. At the same time, the portability feature of the defined contribution component may be seen as a positive factor for some other employees (again, varying by employee).
5. While there would be some additional administrative burdens on the State to manage both the defined benefit plan and the modified 401(k) or 401(a) plan, the level of added complexity for

[23] Virginia's hybrid DB-DC plan is effective for employees hired after 1/1/2014 (included in total).

the employer would be manageable given the current capabilities of TCRS staff and the availability of similar retirement plans already in place with outsourced administration.

Negative Factors:

1. A portion of the investment and other actuarial risk remains with the employer (less than would be present in a pure DB plan, but more risk than found in a DC plan).
2. As a result, even with a reduced defined benefit component, the potential exists (albeit mitigated) for unfunded liabilities relative to a pure DC approach. The recommendation for a modified hybrid plan for Tennessee state and higher education employees and teachers would not have a significant risk of unfunded liabilities because of cost control provisions more fully discussed on page 35 of this report.
3. There would be an additional layer of complexity for members in understanding the hybrid benefit structure and in making favorable investment decisions. The State would likely be called on to invest in enhanced, ongoing educational programs to help ensure the quality of investment decisions by individual members.

As an alternative "hybrid" approach to address ongoing pension funding pressures, several jurisdictions have turned to cash balance plans. In 2012, both Kansas and Louisiana[24] adopted legislation to move new hires into these types of plans (with future effective dates). Nebraska was the only other state identified as of July 1, 2012, to already provide state employees with this type of retirement plan.

Cash balance plans are a unique type of hybrid that combines elements of a defined contribution and defined benefit pension plan, although they differ significantly from a standard hybrid DB-DC model. Under the cash balance approach, all contributions (employee and employer) are credited and tracked on an individual basis. Each year, or as frequently provided by the plan, the contributions to the account are credited with some level of guaranteed interest. Nebraska currently credits contributions with the greater of 5% or the federal mid-term rate plus 1.5%. Louisiana, once the plan is effective, will provide individual accounts with an annual interest rate equal to 1% less than the actuarially determined rate of return.

The investment risk mostly remains with the employer in a cash balance plan. Although contributions are tracked on an individual basis, the assets are invested by the system in aggregate. Employees do not decide how to invest the assets in their account. In the event of investment loss, cash balance plans still require that an employee be credited with the guaranteed interest rate. While Louisiana has mitigated its investment risk exposure by linking its guaranteed rate to the actuarial rate of return, it would not debit individual accounts should the system as a whole post a loss in any given year.

On retirement, members are eligible to select from several payout options based on the final value of their cash balance account inclusive of all employee and employer contributions and the compounded annual guaranteed interest credits. These options can include lump sum distributions or annuity payments with various optional enhancements (survivor benefits, COLAs, etc.).

[24] A Louisiana district court overturned the cash balance plan as unconstitutional in January 2013 on grounds that it did not meet the constitutionally required two-thirds majority vote in the State Legislature. An appeal is pending.

While these plans have some attractive characteristics, they are more complex than the other options considered. In addition, this type of a plan would substantially increase the administrative burdens placed on the TCRS relative to the long-term employer savings provided and potential for reduction in unfunded liabilities. These plans also leave employers with contingent liabilities that can be difficult for key stakeholders to understand, and offer little more to enhance retirement income security than the hybrid DB-DC structure if implemented with reasonable employer and employee contributions. Further, the recordkeeping for such formulaic hybrids would entail additional costs and efforts for TCRS personnel, as well as considerable additional actuarial expenses. A summary of the features of the three state-level cash balance plan are included in Appendix C for reference.

Recommended Approach

Of the alternatives evaluated, discussed with staff, and considered independently, PFM recommends a hybrid retirement plan as best meeting the State's goals and objectives. A hybrid system effectively balances the income-security benefits of a pension with the flexible cost-sharing and risk-sharing features of a defined contribution plan. PFM has concluded that the TCRS system will be able to service the new approach, and that the State's current 457 and 401(k) plan record-keeper is capable of supporting the new defined contribution elements.

PFM further recommends that any new plan design include statutory language to enable the State to formally reserve the right to modify retirement plan terms on a prospective basis. This approach for new hires would be consistent with federal pension law under the Employee Retirement Income Security Act (ERISA) which protects accrued vested benefits but permits plans to be frozen or modified prospectively. The State of Tennessee took a similar approach when enacting reforms for political subdivisions. Public Chapter 939, Acts of 2012, contained language that would allow political subdivisions to, "freeze, suspend or modify benefits, employee contributions, plan terms and design prospectively" for new hires.[25]

The fundamental goal of a hybrid plan is to require employees and employers to share in the investment risks and costs equitably. A reasonable benefit multiplier in the pension component will assure a base level of guaranteed lifetime income, the remainder of which would be provided by the DC component, Social Security, and other personal savings. It is recommended that the combined employer and employee contribution to the defined contribution account be at least 5% of salary in order to achieve a sufficient level of replacement income. As an additional guiding principle, it is important that the State structure the plan so that no employee is relying on the reduced DB pension component as their sole source of retirement income.

Please refer to Appendix G for an analysis of potential pension replacement income under the recommended hybrid approach.

In addition, it is recommended that the benefit formula for other employee groups be adjusted in a similar manner as the new plan described for state employees and teachers, with these groups also requiring an employee contribution. The employer contribution made to the Optional Retirement Plan (ORP) for higher education employees should be reduced accordingly. The benefit formula for Judges and General Assembly members should also be reduced in a direct proportion to the decrease recommended for the new state and teacher plan. Given the distinct career patterns for these groups, however, it is recommended that the eligibility conditions for retirement not be affected for Judges and General Assembly members. In addition, the benefit formula for public safety employees covered by mandatory retirement should be the same as that for general state employees. Again because of distinct career requirements, eligibility conditions for retirement need not be changed for public safety positions.

[25] State of Tennessee, Senate Bill No. 3216 of 2012.

The following table highlights the major features of the **defined benefit** component of the recommended hybrid plan:

Defined Benefit Component		
	Proposed Plan	**Rationale**
Employee Contribution	5%	• Sharing of cost gives employees a "stake" in the system • Improves overall affordability for the taxpayer
Employer Contribution	9% combined DB + DC contribution. Maximum of 5% contribution to the DC account, based on an actuarial target of 4% for the DB component normal cost	• Establishment of a maximum combined employer contribution across the DB and DC components will allow the State to contain total pension costs
Benefit Formula	1.0% of AFC x YOS	• Multiplier of 1.0% is consistent with other state-level hybrid retirement systems, as well as the TCRS option for local employers • Based on analysis of income replacement ratios, a multiplier of 1.0% helps to ensure DB component provides an appropriate base level of guaranteed income in retirement • Reducing the defined benefit from current levels would lower the State's exposure to investment and actuarial risk
Normal Retirement Age	65 with 5 years of service; Rule of 90 (when age + years of service equal 90)	• An increased retirement age and service requirements is consistent with national state-level trends and demographic/life expectancy changes • Addition of a "Rule of 90" provision will allow those with long tenure to still exit service without a benefit reduction • Increased normal retirement eligibility will directly improve the affordability of pension benefits for the State, and can indirectly reduce OPEB costs/liability
Other	Cap Benefit at $80,000 maximum, indexed to CPI; No major changes recommended to other DB features	• Ensures reasonableness of taxpayer-funded benefits

The following table highlights the major features of the **defined contribution** component of the recommended hybrid plan:

Defined Contribution Component		
	Proposed Plan	**Rationale**
Employee Contribution	Voluntary participation with automatic enrollment with employee "opt out" provision	• Voluntary contributions can improve the overall sufficiency of accumulated benefits by providing an opportunity for plan members to enhance their own retirement savings on a tax-advantaged basis • The portability element of employer and employee contributions with tax advantages may be beneficial with the recruitment and retention of some employees
Employer Contribution	9% combined DB + DC contribution. Maximum of 5% contribution to the DC account, with the DC contribution potentially reduced if the actuarially determined employer contribution to the DB component exceeds the 4% target	• Establishment of a maximum combined employer contribution across the DB and DC components will allow the State to contain total pension costs
Enrollment Provision	Automatic enrollment with employee "opt out" provision	• An automatic enrollment feature for a modest employee contribution (1%-2%) with an "opt out" provision will help to encourage participation toward increased retirement savings
Vesting Schedule	Immediate vesting in employer contributions	• Provides benefit portability for an increasingly mobile workforce
Other	Continue investment and distribution options available under current voluntary 457 and 401(k) plan. State to explore options with selected record-keeper to add educational and investment resources as required	• Investment options available through the State's voluntary 457 and 401(k) plans are sound • With added reliance on a DC component within a hybrid system, the State may wish to enhance its educational services and other investment resources made available to membership

Employer Mechanisms to Control Costs and Unfunded Liabilities

In a further effort to control employer costs and mitigate the potential for growth in unfunded liabilities, PFM recommends that the State establish "symmetry" within the plan's allocation of risk – such that employees would share in any corrective actions required in the event that actuarial projections are not met due to another severe market downturn or other adverse factor(s).

As outlined in the preceding tables, the primary mechanism proposed to help achieve such symmetry would be the establishment of a maximum employer contribution rate for the combined DB and DC components – for example, 9%. Within this overall parameter, the maximum employer DC contribution would be 5%, and the DB contribution would be actuarially set with a target of 4%.

As a further safeguard, the State could explore establishment of an actuarial fluctuation reserve to assist in controlling volatility related to investment earnings, unfunded liabilities, and employer contributions. Within this overall approach, it would also be important to establish and/or codify the general actuarial methodologies and other key assumptions that will be used to determine annual employer costs in order to prevent manipulation from year to year.

In the event that the actuarial valuation requires the employer DB contribution to exceed 4% (for a combined DB plus target DC rate that would potentially exceed 9%), the State would retain the authority to control the employer cost in the following manner:

1. Use the actuarial fluctuation reserve;
2. Reduce or suspend post-retirement cost-of-living adjustments (COLA);
3. Shift some or all of DC employer contributions to DB plan;
4. Increase employee contributions to the DB plan by 1%;
5. Reduce future service accrual multipliers (below 1.0% per year of service);
6. Freeze plan benefits.

With GASB statement 68 requiring unfunded pension liabilities to be recorded as a long-term obligation in the employer's financial statements rather than as an off balance sheet liability, there will be a heightened awareness of a government's unfunded liabilities by such groups as governmental employees, taxpayers, government officials, governmental elected officials, debt rating agencies, and purchasers of governmental bonds/debt. These safeguards outlined above will help to minimize any negative financial impact that an unfunded liability would have on a governmental entity, whether it is the state or a local government.

Given financial market place and economic volatility over time, it would be virtually impossible to design a defined benefit plan where unfunded liabilities will never occur. However, controls, as set out above, can be installed to maintain the unfunded liability at a reasonable and manageable level.

Overall, the hybrid model as outlined would help to mitigate the growth in employer retirement benefit costs, share an acceptable level of investment risk between the State and employees, and continue to provide the opportunity for career Tennessee employees to enjoy a dignified and secure retirement.

Appendix A

Civilian State Employees, Defined Benefit Plans

- **41 of 50** surveyed systems (excluding Tennessee) offered state employees a defined benefit pension plan on an optional or mandatory basis.

- **Summary of Findings:** Of the 42 states found to offer their own state employees a defined benefit pension plan on an optional or mandatory basis, Tennessee was the only state without a requirement for new employees to contribute toward the cost of their benefit. The average employee contribution was 6.1% of payroll among other defined benefit plans for employees that participate in Social Security, such as Tennessee state and higher education employees and K-12 teachers (employee contributions averaged 9.5% of payroll among those without Social Security).

  Across other major provisions, the benefits provided by TCRS are generally consistent with other state systems, though these systems have tended to increase retirement ages in recent years, while the TCRS has not. Comparing benefit multipliers can be imprecise as there may be several components to the actual calculation. Tennessee, for example, uses a dual-multiplier for earnings above and below the Social Security Integration Level. Many other states also use more than one multiplier to determine the benefit level at retirement.

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Normal Retirement Eligibility (Age/YOS)	60/5; any/30	Given multiple and diverse retirement eligibility criteria averaging is imprecise. In recent years, many jurisdictions have increased retirement ages to closer align with Social Security Normal Retirement Age. It is common to see ages 62, 65, or 67 or "Rule of" requirements in other systems.
Benefit Formula	1.575% of AFC up to the SSIL x YOS + 1.8375% of AFC in excess of the SSIL x YOS	Given multiple and diverse benefit formulas averaging is imprecise. Of the 35 systems that participate in Social Security, 17 have benefit multipliers of 2% or greater for state employees, while 18 have multipliers that are less than 2%.
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COLA Provision	Linked to CPI; 3% maximum	23 of 41 systems provide automatic COLAs, many that are linked to CPI and/or capped. Others provide COLAs on an ad hoc basis. Some systems in recent years have suspended COLAs until attainment of a target funding level.

State Employees, Defined Benefit Plan Comparisons

Count	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS)	Benefit Formula	COLA
1	**Tennessee**	**Y**	**0.0%**	**5**	**5**	**60/5; any/30**	**1.575% up to SSIL + 1.8375% above SSIL**	**CPI; 3.0% maximum**
2	Alabama	Y	7.5%	10	3	60/10; any/25	2.01%	Ad hoc basis
3	Arizona	Y	10.9%	5	5	60/25; 55/30; 65/any; 62/10	0 - 19.99 YOS = 2.1% 20 - 24.99 YOS = 2.15% 25 - 29.99 YOS = 2.2% 30+ YOS = 2.3%	Excess earnings
4	Arkansas	Y	5.0%	5	3	65/5; any/28	2% x YOS up to 28 years + 0.5% x YOS above 28 years	3.0%
5	California	Y	10.0% (varies)	5	3	60/10	1.092% to 2.418% x YOS (varies)	CPI; 2.0% maximum
6	Colorado	N	8.0%	5	3	65/5; any/35; R88	2.50%	Lesser of 2.0% or CPI-W
7	Connecticut	Y	2.0%	10	5	65/10; 63/25	1.33% up to $61,600 + 0.5% above $61,600 x YOS up to 35 years + 1.625% x YOS over 35 years	60% of CPI-W; 6.0% maximum
8	Delaware	Y	5.0%	10	3	65/10; 60/20; any/30	1.85%	Ad hoc basis
9	Florida	Y	3.0%	8	8	65/8; any/33	1.60%	Retirement service earned on or after 7/1/2011 not subject to a COLA
10	Hawaii	Y	9.8%	10	5	60/10	1.75%	1.5%
11	Idaho	Y	6.2%	5	3.5	65/5; R90	2.00%	Ad hoc basis; lesser of CPI or 6.0%
12	Illinois	Y	4.0%	10	8	67/10	1.67%	Lesser of 50% of CPI or 3.0%
13	Iowa	Y	5.8%	7	5	62/20; 65/any; R88	2% x YOS up to 30 years + 1% x YOS above 30 years	Excess earnings; 3.0% maximum
14	Kansas	Y	6.0%	5	5	65/5; 60/30	1.75%	2.0%
15	Kentucky	Y	6.0%	5	5	65/5; R87	2% (w/ 30 or more YOS)	1.5%
16	Louisiana	N	8.0%	5	5	60/5	2.50%	Excess earnings; 3.0% maximum
17	Maine	N	7.7%	5	3	65/5; any/25	2.00%	CPI-U; 4.0% maximum
18	Maryland	Y	7.0%	10	5	65/10; R90	1.50%	CPI; 2.5% maximum (if target investment rate is achieved); 1.0% maximum (if target investment rate is not achieved)
19	Massachusetts	N	11.0%	10	5	60/10	2.5% (at age 67)	Ad hoc basis; 3.0% maximum
20	Minnesota	Y	5.0%	5	5	SSNRA/5	1.70%	2.0%

State Employees, Defined Benefit Plan Comparisons (Continued)

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
--	**Tennessee**	**Y**	**0.0%**	**5**	**5**	**60/5; any/30**	**1.575% up to SSIL + 1.8375% above SSIL**	**CPI; 3.0% maximum**
21	Mississippi	Y	9.0%	8	4	60/8; any/30	2% x YOS up to 30 years + 2.5% x YOS above 30 years	3.0%
22	Missouri	Y	4.0%	10	3	67/10; R90 at age 55	1.70%	80% of CPI; 5.0% maximum
23	Montana	Y	7.9%	5	5	65/5; any/30; 70/any	2.0% (w/ 30 YOS or more)	1.5%
24	Nevada	N	12.3%	5	3	65/5; 62/10; any/30	2.50%	Ranges from 2.0% - 5.0% based on years in retirement
25	New Hampshire	Y	7.0%	10	5	65/10	1.67% x YOS (Ages 60-64); 1.51% x YOS (Ages 65 and older)	Ad hoc basis
26	New Jersey	Y	6.5%	10	5	65/any	1.67%	Suspended under Chapter 78, P.L. 2011
27	New Mexico	Y	10.7%	5	3	67/5; any/30; R80	3.00%	3.0%
28	New York	Y	3.0% - 6.0%	10	5	63/20	1.75% x YOS up to 20 years + 2.0% x YOS above 20 years	50% of CPI; 1.0% minimum; 3.0% maximum; Adjustment is limited to first $18,000 of employee's allowance
29	North Carolina	Y	6.0%	10	4	65/10; any/30	1.82%	Ad hoc basis
30	North Dakota	Y	6.0%	3	3	65/any; R85	2.00%	Ad hoc basis
31	Ohio	N	10.0%	5	3	60/5; 65/any; any/30	2.2% x YOS up to 30 years + 2.5% x YOS above 30 years	3.0%
32	Oklahoma	Y	3.5%	8	3	65/6; R90 at age 60	2.00%	Ad hoc basis
33	Pennsylvania	Y	6.3%	10	3	65/3; R92 with 35 YOS	2.00%	Ad hoc basis
34	South Carolina	Y	7.0%	8	5	65/8; R90	1.82%	1.0%; $500 maximum
35	South Dakota	Y	6.0%	3	3	65/3	1.55%	CPI; 2.1% minimum; 3.1% maximum
36	Texas	Y	6.5%	10	4	65/10; R80 at age 60	2.30%	Ad hoc basis
37	Vermont	Y	6.4%	5	3	62/5; any/30	1.67%	50% of CPI; 1.0% minimum; 5.0% maximum
38	Virginia	Y	5.0%	5	5	SSNRA/5	1.70%	2 year average change in CPI; 6.0% maximum
39	Washington	Y	4.6%	5	5	65/5	2.00%	CPI; 3.0% maximum
40	West Virginia	Y	4.5%	5	3	60/5; R80 at age 55	2.00%	None
41	Wisconsin	Y	5.9%	5	3	65/5; 57/30	1.60%	Excess earnings; previously granted adjustments can be revoked if investment income is insufficient to support
42	Wyoming	Y	7.0%	4	5	65/4; R85	2.00%	Ad hoc basis; CPI; 3.0% maximum

Note: The following states are excluded as the primary plan offered to state employees is a hybrid, DC, or cash balance: AK, DC, GA, IN, MI, NE, OR, RI, UT.

Teachers, Defined Benefit Plans

- **44 of 50** surveyed systems (excluding Tennessee) offered teachers a defined benefit pension plan on an optional or mandatory basis.

- **Summary of Findings:** Most states, like Tennessee, offer teachers and state employees a very similar benefit in retirement. In Tennessee, as mentioned previously, the only difference is that teachers contribute 5% of their pay while state employees do not. Even still, the contribution that teachers make in Tennessee is lower than the average among other state systems participating in Social Security (6.7%). In general, K-12 teachers in Tennessee receive a similar benefit relative to teachers in other state retirement systems.

	Tennessee	Benchmarking Results (excluding TN)
Employee Contributions	5%	6.7% average (w/Social Security) 9.2% average (w/o Social Security)
Vesting	5 years	<5 years: 3 of 43 systems (6.8%) 5 years: 24 of 44 systems (54.5%) >5 years: 17 of 44 systems (38.6%)
Normal Retirement Eligibility (Age/YOS)	60/5; any/30	Given multiple and diverse formulas averaging is imprecise. In recent years, many jurisdictions have increased retirement ages to closer align with Social Security Normal Retirement Age. It is common to see ages 62, 65, or 67 or “Rule of” requirements in other systems.
Benefit Formula	1.575% of AFC up to the SSIL x YOS + 1.8375% of AFC in excess of the SSIL x YOS	Given multiple and diverse benefit formulas averaging is imprecise. While Tennessee’s formula is not overly generous, it is among the mainstream of other systems that participate in Social Security. Of the 32 systems that participate in Social Security, 16 have benefit multipliers of 2% or greater for state employees, while 16 have multipliers that are less than 2%.
Average Final Compensation (AFC)	5 years	<5 years: 21 of 44 systems (47.7%) 5 years: 21 of 44 systems (47.7%) >5 years: 2 of 44 systems (4.5%)
COLA Provision	Linked to CPI; 3% maximum	24 of 44 systems provide automatic COLAs, many that are linked to CPI and/or capped. Others provide COLAs on an ad hoc basis. Some systems in recent years have suspended COLAs until attainment of a target funding level.

Teachers, Defined Benefit Plan Comparisons

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
1	**Tennessee**	**Y**	**5.0%**	**5**	**5**	**60/5; any/30**	**1.575% up to SSIL + 1.8375% above SSIL**	**CPI; 3.0% maximum**
2	Alabama	Y	7.5%	10	3	60/10; any/25	2.01%	Ad hoc basis
3	Arizona	Y	11.1%	5	5	60/25; 55/30; 65/any; 62/10	0 - 19.99 YOS = 2.1% 20 - 24.99 YOS = 2.15% 25 - 29.99 YOS = 2.20% 30+ YOS = 2.30%	Excess earnings
4	Arkansas	Y	6.0%	5	3	65/5; any/28	2.15%	Ad hoc basis
5	California	N	8.0%	5	3	60/5	2.0% at age 60	2.0%
6	Colorado	N	8.0%	5	3	65/5; any/35; R88	2.50%	Lesser of CPI-W or 2.0%
7	Connecticut	N	6.0%	10	3	60/20; any/35	2.00%	Linked to Social Security COLA; 6% maximum; 1.5% maximum if fund returns less than 8.5%
8	Delaware	Y	5.0%	10	3	65/10; 60/20; any/30	1.85%	Ad hoc basis
9	DC	Y	8.0%	5	3	60/20; any/30; 62/5	2.00%	CPI; 3.0% maximum
10	Florida	Y	3.0%	8	8	65/8; any/33	1.60%	Retirement service earned on or after 7/1/2011 not subject to a COLA
11	Georgia	Y	5.5%	10	2	60/10; any/30	2.00%	Ad hoc basis; CPI
12	Hawaii	Y	9.8%	10	5	60/10	1.75%	1.5%
13	Idaho	Y	6.2%	5	3.5	65/5; R90	2.00%	Ad hoc basis; lesser of CPI or 6.0%
14	Illinois	N	9.4%	10	8	67/10	2.20%	Lesser of 50% of CPI or 3.0%
15	Iowa	Y	5.8%	7	5	62/20; 65/any; R88	2.0% x YOS up to 30 years + 1.0% x YOS above 30 years	Excess earnings; 3.0% maximum
16	Kansas	Y	6.0%	5	5	65/5; 60/30	1.75%	2.0%
17	Kentucky	N	9.1%	5	5	60/5; any/27	3.0% with 30+ YOS	1.5%
18	Louisiana	N	8.0%	5	5	60/5; any/20	2.50%	Excess earnings and plan funded level; 3.0% maximum
19	Maine	N	7.7%	5	3	65/5; any/25	2.00%	CPI-U; 4.0% maximum
20	Maryland	Y	7.0%	10	5	65/10; R90	1.50%	CPI; 2.5% maximum (if target investment rate is achieved); 1.0% maximum (if target investment rate is not achieved)
21	Massachusetts	N	11.0%	10	5	60/10	2.5% with 25 YOS	Ad hoc basis; 3.0% maximum
22	Minnesota	Y	6.5%	3	5	Social Security Age/5	1.90%	2.0%; 2.5% when market value of fund reaches 90% funding
23	Mississippi	Y	9.0%	8	4	60/8; any/30	2% x YOS up to 30 years + 2.5% x YOS above 30 years	3.0%

Teachers, Defined Benefit Plan Comparisons (Continued)

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
--	**Tennessee**	**Y**	**5.0%**	**5**	**5**	**60/5; any/30**	**1.575% up to SSIL + 1.8375% above SSIL**	**CPI; 3.0% maximum**
24	Missouri	N	14.5%	5	3	60/5; any/30; R80	2.50%	CPI; 5.0% maximum
25	Montana	Y	7.2%	5	3	60/5; any/25	1.67%	1.5%
26	Nebraska	Y	9.8%	5	3	65/5; R85 at age 55	2.00%	CPI-U; 2.5% maximum
27	Nevada	N	12.3%	5	3	65/5; any/30; 62/10	2.50%	Ranges from 2.0% - 5.0%
28	New Hampshire	Y	7.0%	10	5	65/10	1.67% x YOS (Ages 60-64); 1.51% x YOS (Ages 65 and older)	Ad hoc basis
29	New Jersey	Y	6.5%	10	5	65/any	1.67%	Suspended
30	New Mexico	Y	9.4%	5	5	67/5; any/30; R80	2.35%	CPI; 4.0% maximum
31	New York	Y	3.0% - 6.0%	10	5	63/20	1.75% x YOS (1-20) + 2.0% x YOS (20+)	50% of CPI; 1.0% minimum; 3.0% maximum; Adjustment is limited to first $18,000 of employee's allowance
32	North Carolina	Y	6.0%	10	4	65/10; any/30	1.82%	Ad hoc basis
33	North Dakota	Y	9.8%	5	5	65/any; R85	2.00%	Ad hoc basis
34	Ohio	N	10.0%	5	3	60/5; 55/25; any/30	2.2% x YOS (1-30) + 2.5% (31) + 0.1% each year thereafter	3.0%
35	Oklahoma	Y	7.0%	5	5	65/any; R90 at age 60	2.00%	Ad hoc basis
36	Pennsylvania	Y	7.5%	10	3	65/3, R92 with 35 YOS	2.00%	Ad hoc basis
37	South Carolina	Y	7.0%	8	5	65/8; R90	1.82%	1.0%; $500 maximum
38	South Dakota	Y	6.0%	3	3	65/3	1.55%	CPI; 2.1% minimum; 3.1% maximum
39	Texas	N	6.4%	5	5	65/5; R80	2.30%	Ad hoc basis
40	Vermont	Y	5.0%	5	3	62/5; any/30	1.67%	50% of CPI; 1.0% minimum; 5.0% maximum
41	Virginia	Y	5.0%	5	5	Social Security Age/5	1.70%	2 year average change in CPI; 6.0% maximum
42	Washington	Y	4.7%	5	5	65/5	2.00%	CPI; 3.0% maximum
43	West Virginia	Y	6.0%	5	5	60/5; any/35; 55/30	2.00%	None
44	Wisconsin	Y	5.9%	5	3	65/5; 57/30	1.60%	Excess earnings; previously granted adjustments can be revoked if investment income is insufficient to support
45	Wyoming	Y	7.0%	4	5	65/4; R85	2.00%	Ad hoc basis; CPI; 3.0% maximum

Note: The following states are excluded as the primary plan offered is hybrid, DC, or cash balance: AK, IN, MI, OR, RI, UT

Law Enforcement, Defined Benefit Plans

- **45 of 49** surveyed systems (excluding Tennessee) offered law enforcement or state highway patrol Officers a defined benefit pension plan on an optional or mandatory basis. Hawaii was excluded from the analysis as they were identified to not have an equivalent state law enforcement agency.

- **Summary of Findings**: In general, law enforcement and other public safety positions tend to have lower retirement ages and higher benefit multipliers than state employees due to the nature of the work being performed. In Tennessee, law enforcement are eligible to retire at age 55 with 25 years of service with an enhanced benefit multiplier until attainment of age of 62 (additional 0.75%). Only three of the 45 systems offering law enforcement a defined benefit pension (excluding Tennessee) did not require newly hired law enforcement to contribute toward their pension as of July 1, 2012, including Arkansas, Michigan, and Missouri. Michigan, however, is phasing in a 2% employee contribution for current law enforcement (1% effective October 1, 2012 + 1% effective October 1, 2013) and will require new hires to enroll in a hybrid DB-DC plan with a 4% employee contribution.

	Tennessee	Benchmarking Results (excluding TN)
Employee Contributions	0%	6.1% average (w/Social Security) 9.8% average (w/o Social Security)
Vesting	5 years	<5 years: 2 of 45 systems (7.1%) 5 years: 22 of 45 systems (47.6%) >5 years: 21 of 45 systems (45.2%)
Normal Retirement Eligibility (Age/YOS)	55/25 without an early reduction penalty or 60/5; any/30	Given multiple and diverse formulas averaging is imprecise. It is not uncommon for public safety positions to have a retirement formula that allows for an unreduced retirement with 25 years of service. Tennessee's retirement age is similar to that offered other law enforcement.
Benefit Formula	1.575% of AFC up to the SSIL x YOS + 1.8375% of AFC in excess of the SSIL x YOS Law enforcement also receive a "bridge" benefit of 0.75% of AFC per year of service as a Public Safety Officer until reaching age 62.	Given multiple and diverse benefit formulas averaging is imprecise. PFM identified just three states that have a benefit similar to Tennessee's "bridge" benefit (all participate in Social Security): Arkansas: 2.475% + 0.513% until age 62 Missouri: 1.7% + 0.8% until age 62 Virginia: 1.85% + $1,038 per month until SSNRA 13 of the 14 remaining states that participate in Social Security have a benefit multiplier of 2.0% or more
Average Final Compensation (AFC)	5 years	<5 years: 32 of 45 systems (71.1%) 5 years: 11 of 45 systems (24.4%) >5 years: 2 of 45 systems (4.4%)
COLA Provision	Linked to CPI; 3% maximum	26 of 46 systems provide automatic COLAs, many that are linked to CPI and/or capped. Others provide COLAs on an ad hoc basis. Some systems in recent years have suspended COLAs until attainment of a target funding level.

Law Enforcement, Defined Benefit Plan Comparisons

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
1	**Tennessee**	**Y**	**0.0%**	**5**	**5**	**55/25**	**1.575% up to SSIL + 1.8375%above SSIL + 0.75% until age 62**	**CPI; 3.0% maximum**
2	Alabama	N	10.0%	10	5	56/10; any/25	2.38%	Ad hoc basis
3	Arizona	Y	9.6%	5	5	52.5/25; any/25	2.50%	Excess earnings
4	Arkansas	Y	0.0%	5	4	any/30; 65/5	2.475% + 0.513% until age 62	3.0%
5	California	N	10.0%	10	3	55/5	3.00%	CPI; 2% max
6	Colorado	N	10.0%	5	3	65/any; 55/20; 50/25; any/30	2.50%	Lesser of CPI-W or 2.0%
7	Connecticut	Y	5.0%	10	5	50/20; any/25	2.5% x YOS (1-20) + 2.0% x YOS (20+)	CPI; 7.5% maximum
8	Delaware	N	7.0%	10	3	62/10; any/20; R75	2.5% x YOS (1-20) + 3.5% x YOS (20+)	Ad hoc basis
9	DC	N	8.0%	5	3	any/25	2.50%	CPI; No stated maximum
10	Florida	Y	3.0%	8	8	60/8; any/30	3.00%	Retirement service earned on or after 7/1/2011 not subject to a COLA
11	Idaho	Y	7.7%	5	3.5	50/30; 60/5; R80	2.30%	Ad hoc basis
12	Illinois	N	12.5%	10	8	60/20	3.00%	CPI; Lesser of 1/2 CPI or 3%
13	Indiana	N	6.0%	5	3	any/25	50% of AFC with 25 YOS + Additional benefit for years in excess of 25 (ranging from 5-8%) up to 70% maximum	Ad hoc basis
14	Iowa	N	9.4%	4	3	55/22	2.75%	COLA linked to pay increase for equivalent rank
15	Kansas	N	7.0%	15	3	50/25; 55/20; 60/15	2.50%	None
16	Kentucky	Y	8.0%	5	3	any/20; 55/5;	2.50%	1.5%;
17	Louisiana	N	8.5%	25	3	50/10; any/25	3.33%	Ad hoc basis
18	Maine	N	8.7%	5	3	any/25	2.00%	CPI; 4% max
19	Maryland	N	8.0%	10	5	50/any; any/25	2.55%	CPI; 2.5% maximum (if target investment rate is achieved); 1.0% maximum (if target investment rate is not achieved)
20	Massachusetts	N	12.0%	10	1	any/20; 65/any; 55/10	50% of AFC with 20 YOS + 2.5% per year in excess of 20 YOS	Ad hoc basis; 3.0% maximum
21	Michigan	N	0.0%	10	2	any/25	60% of AFC	2%: $500 maximum
22	Minnesota	N	12.4%	5	5	55/any	3.00%	1.50%
23	Mississippi	Y	7.3%	5	4	55/5; any/25	2.50%	3.00%

Law Enforcement, Defined Benefit Plan Comparisons (Continued)

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
--	**Tennessee**	**Y**	**0.0%**	**5**	**5**	**55/25**	**1.575% up to SSIL + 1.8375%above SSIL + 0.75% until age 62**	**CPI; 3.0% maximum**
24	Missouri	Y	0.0%	5	3	60/5; R80 at age 48	1.7% + 0.8% until age 62	80% of CPI-U; 5% maximum
25	Montana	N	9.1%	5	3	any/20	2.50%	3.00%
26	Nebraska	N	19.0%	10	3	50/25; any/30	3.00%	CPI; 2.5% maximum
27	Nevada	N	20.3%	5	3	65/5; any/30	2.50%	Ranges from 2.0% - 5.0%
28	New Hampshire	N	11.6%	10	3	60/any; any/25	2.50%	None
29	New Jersey	N	9.0%	10	3	any/20	50% of AFC (20-25); 65% of AFC (25+)	Suspended under Chapter 78, P.L. 2011
30	New Mexico	N	10.9%	5	3	any/20	3.00%	3%
31	New York	Y	3.0% - 6.0%	10	5	any/20	2.5% x YOS (1-20) + 1.66% x YOS (20+)	50% of CPI; 1.0% minimum; 3.0% maximum; Adjustment is limited to first $18,000 of employee's allowance
32	North Carolina	Y	6.0%	10	4	55/10; any/30	1.82%	Ad hoc basis
33	North Dakota	N	11.3%	10	3	55/any; R80	3.6% x YOS (1-25) + 1.75% x YOS (25+)	None
34	Ohio	N	11.5%	5	3	62/15; 48/25	2.5% x YOS (1-25) + 2.1% x YOS (25+)	3.00%
35	Oklahoma	N	8.0%	10	2.5	62/10; any/20	2.50%	Ad hoc basis
36	Pennsylvania	N	6.3%	10	1	any/20	50% of AFC (20-25): 75% of AFC (25+)	Ad hoc basis
37	Rhode Island	N	8.8%	5	5	any/25	2.00%	Suspended under RIRSA until 80% funding ratio
38	South Carolina	Y	7.3%	8	5	55/8; any/27	2.14%	1.0%; $500 maximum
39	South Dakota	Y	8.0%	3	3	55/3; R75	2.00%	CPI; 2.1% - 3.1%
40	Texas	Y	7.0%	5	3	50/20; R80	2.80%	None
41	Vermont	Y	8.3%	5	2	55/5; 50/20	2.50%	CPI; 5% maximum
42	Virginia	Y	5.0%	5	5	50/25; 60/5	1.85% x YOS + Hazardous Duty Supplement until Social Security Age	CPI; 6% maximum
43	Washington	N	6.6%	5	5	any/25; 55/any	2.00%	CPI; 3.0% maximum
44	West Virginia	N	13.0%	5	5	50/25; 52/20	2.75%	1.0%
45	Wisconsin	Y	5.9%	5	3	53/25; 54/any	2.00%	None
46	Wyoming	Y	12.6%	6	3	50/6	2.50%	2.0%

Note: The following states are excluded as the primary plan offered is hybrid or DC: AK, UT, GA, OR. Hawaii is excluded as they do not have a State Police agency.

Judges, Defined Benefit

- **48 of 49** surveyed systems (excluding Tennessee) offered judges a defined benefit pension plan on an optional or mandatory basis. Michigan was the only state found to require judges to enroll in a defined contribution plan. The District of Columbia was excluded as the retirement system is federally sponsored, organized under the governance of the U.S. Department of Treasury.

- **Summary of Findings**: Given the diverse structures of the state court systems and the unique nature of employment as a judge, it is not unexpected that retirement benefits are calculated in substantially different methods. As a result of these different structures, it is difficult to make exact comparisons across jurisdictions. However, it is apparent that Tennessee's benefit multiplier for judges is generally lower than most other states. At the same time, the contribution that judges are required to make into the system in Tennessee is also lower than the national average.

	Tennessee	Benchmarking Results (excluding TN)
Employee Contributions	0.5% up to SSWB 2% above SSWB	6.9% average (w/Social Security) 9.2% average (w/o Social Security)
Vesting	8 years	Immediate: 8 of 48 systems (16.7%) 1 - <8 years: 22 of 48 systems (45.8%) 8 years: 5 of 48 systems (10.4%) >8 years: 13 of 48 systems (27.1%)
Normal Retirement Eligibility (Age/YOS)	Age 60 w/ 8 YOS, or Age 55 w/ 24 YOS	Given multiple and diverse formulas averaging is imprecise. In general, Tennessee's eligibility criteria are consistent with the results found in other retirement systems. For judges, who tend to have a unique employment pattern (typically older upon entry), mandatory retirement ages further complicate direct comparisons.
Benefit Formula	2.5% of AFC x YOS	Given multiple and diverse formulas averaging is imprecise. 28 of 48 surveyed systems have a benefit multiplier of 3.0% or more. 13 states do not use a traditional benefit multiplier to calculate the retirement benefit for judges. Instead these states provide a flat benefit, such as 66.67% or 75% of AFC once the judge has met the retirement eligibility criteria.
Average Final Compensation (AFC)	5 years	Final judicial salary: 19 of 48 systems (39.6%) 1 - <5 years: 18 of 48 systems (37.5%) 5 years: 8 of 48 systems (16.7%) >5 years: 3 of 48 systems (6.3%)
COLA Provision	Linked to CPI; 3% maximum	In some states, judges receive COLAs when the salary is raised for active judges. Like other systems, many states provide an automatic COLA linked to CPI and/or capped.

Judges, Defined Benefit Plan Comparisons

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
1	**Tennessee**	**Y**	**.5% <SSWB 2% >SSWB**	**8**	**5**	**60/8; 55/24**	**2.50%**	**CPI; 3.0% Maximum**
2	Alabama	Y	8.5%	10	Judicial salary	70/10; 65/12; 62/15; 61/16; 60/17; any/25	75% of AFC	Ad hoc basis
3	Alaska	N	7.0%	5	Judicial salary	60/5	5.00%	Tied to judicial salary increases
4	Arizona	N	11.5%	Immediate	Judicial salary	65/5; 62/10	3.00%	Excess earnings
5	Arkansas	Y	5.0%	Immediate	Judicial salary	65/8	3.20%	3.0%
6	California	N	8.0%	5	Judicial salary	65/20; 70/5	3.75%	CPI; 3% Maximum
7	Colorado	N	8.0%	5	Judicial salary	65/any	2.50%	Not available
8	Connecticut	N	5.0%	10	Judicial salary	65/any; any/20	66.67% of AFC	CPI; 3% maximum
9	Delaware	Y	3.0%	12	3	62/12; any/22	4.16% x YOS (1-12) + 2.08% x YOS (13-24)	Ad hoc basis
10	Florida	Y	3.0%	8	8	65/8; any/33	3.30%	Retirement service earned on or after 7/1/2011 not subject to a COLA
11	Georgia	Y	7.5%	10	Judicial salary	60/16	66.67% of AFC + 1% for each year of service over 16 years, not to exceed 24 years	Not available
12	Hawaii	Y	9.8%	10	5	55/5	3.50%	1.50%
13	Idaho	Y	7.7%	4	Judicial salary	65/4; any/20	5% x YOS (1-10) + 2.5% x YOS (10+)	CPI; No Maximum
14	Illinois	N	11.0%	Immediate	8	67/8	3.00%	3%
15	Indiana	Y	6.0%	8	Judicial salary	65/8; R85	60% of AFC with 22 YOS or more	Tied to judicial salary increases
16	Iowa	Y	9.4%	4	3	50/20; 65/4	3.25%	Ad hoc basis
17	Kansas	Y	6.0%	Immediate	3	62/10; R85; 65/1	3.50%	None
18	Kentucky	Y	6.0%	8	5	65/any; 60/25	2.75%	1.50%
19	Louisiana	N	13.0%	5	5	60/5	3.50%	Excess earnings and plan funded level
20	Maine	N	7.7%	5	3	any/25; 65/5; 70/any	3.00%	Suspended through 2013
21	Maryland	Y	6.0%	Immediate	Judicial salary	60/any	66.67% of AFC w/ 16 YOS	Tied to judicial salary increases
22	Massachusetts	N	10.0%	10	Judicial salary	65/15	75% of AFC	Not available
23	Minnesota	Y	8.0%	5	5	65/5	3.20%	2.00%
24	Mississippi	Y	9.0%	8	4	60/8; any/30	2% x YOS (1-30) + 2.5% x YOS (30+)	3.00%
25	Missouri	Y	4.0%	Immediate	Judicial salary	62/20; 67/12	50% of AFC	80% of CPI up to 5%
26	Montana	Y	7.0%	5	15	60/5	3.33% x YOS (1-15) + 1.785% x YOS (15+)	3.00%

Judges, Defined Benefit Plan Comparisons (Continued)

	State	Social Security	Employee Contribution	Vesting (Years)	AFC Period (Years)	Normal Retirement Eligibility (Age/YOS; R= "Rule of")	Benefit Formula	COLA
--	**Tennessee**	**Y**	**0.5% <SSWB 2% >SSWB**	**8**	**5**	**60/8; 55/24**	**2.50%**	**CPI; 3.0% Maximum**
27	Nebraska	Y	9.0%	Immediate	3	65/any	3.50%	CPI; 2.5% maximum
28	Nevada	Y	0.0%	5	3	65/5; any/30; 60/10	3.41%	Ranges 2.0% - 5.0%
29	New Hampshire	N	10.0%	Immediate	Judicial salary	60/15; 65/10; 70/7	65/10 = 75% of AFC 70/7 = 45% of AFC + 10% per YOS above 7 60/15 = 70% of AFC + 1% per YOS above 15	Ad hoc basis
30	New Jersey	Y	12.0%	10	Judicial salary	70/10; 65-69/15; 60-64/20	75% of AFC	Suspended
31	New Mexico	Y	9.0%	5	Judicial salary	55/16; 64/5	3.75%	3.00%
32	New York	Y	3.0% - 6.0%	10	5	63/20	1.75% x YOS (1-20) + 2.0% x YOS (20+)	50% of CPI; 1.0% minimum; 3.0% maximum; Adjustment is limited to first $18,000 of employee's allowance
33	North Carolina	Y	6.0%	10	4	65/10; 50/24	3.02%	Ad hoc basis
34	North Dakota	Y	6.0%	5	3	65/5; R85	3.5% x YOS (1-10) + 2.8% x YOS (11-20) + 1.25% (20+ YOS)	Ad hoc basis
35	Ohio	N	10.0%	5	3	60/5; 65/any; any/30	2.2% x YOS up to 30 + 2.5% x YOS above 30	3.00%
36	Oklahoma	Y	8.0%	8	3	60/10; 65/8; R80	4.00%	Not available
37	Oregon	Y	0.0%	5	3	60/5	3.75% x YOS up to 16 + 2% x YOS above 16	2.00%
38	Pennsylvania	Y	6.3%	5	3	60/5; any/35	4% x YOS (1-10) + 3% x YOS (10+)	Ad hoc basis
39	Rhode Island	Y	12.0%	10	5	65/20; 70/15	80% of AFC	Suspended
40	South Carolina	Y	10.0%	10	Judicial salary	70/15; 65/20; any/25	71.3% of AFC + 2.67% x YOS above 25	Tied to judicial salary increases
41	South Dakota	Y	9.0%	3	3	65/3	3.33% x YOS (1-15) + 2.0% x YOS (15+)	CPI and funded status
42	Texas	Y	6.0%	10	Judicial salary	65/12; any/20; 65/10	50% of AFC	Ad hoc basis
43	Utah	Y	0.0%	6	2	62/10; 70/6; any/25	5% x YOS (1-10 years); 2.25% x YOS (10-20 years); 1% x YOS (21+ years)	CPI; 4% maximum
44	Vermont	Y	6.4%	5	Judicial salary	55/5; any/30	3.33% x YOS	CPI; 5% maximum
45	Virginia	Y	5.0%	5	5	60/30; 65/5	1.5% x YOS (if appointed before age 45); 2.0% x YOS (if appointed 45-54); 2.5% x YOS (if appointed 55+)	CPI; 6% maximum
46	Washington	Y	13.6%	5	5	60/5	3.5% x YOS	CPI; 3% maximum
47	West Virginia	Y	10.5%	14	3	65/16; Any/24	75% of AFC	Ad hoc basis
48	Wisconsin	Y	7.1%	5	3	62/5	2% x YOS or 70% of AFC	Not available
49	Wyoming	Y	9.2%	4	3	60/20; 65/4; 70/any	4% x YOS (1-5); 3% x YOS (6-15); 2% x YOS (16-20); 1% x YOS (21+)	CPI; 3% maximum

Note: Michigan was excluded as they offer new judges a DC plan. Washington, DC was excluded as pension benefits are provided through the U.S. Treasury Department.

Appendix B

Hybrid Retirement Plans

State: Georgia
Plan Type: Hybrid DB-DC

Overview	
Plan Name	Georgia State Employees' Pension and Savings Plan (GSEPS)
Eligibility	State employees hired on or after 1/1/2009 (State Police if different)
Social Security Participation	Yes
Mandatory or Optional	Mandatory

Defined Benefit Component	
Employee Contribution	1.25%
Vesting	10 years
Normal Retirement Eligibility (age/YOS)	60/10; any/30 (State Police: 55/10; any/30)
Benefit Formula	1.0% of AFC x YOS (Board may increase multiplier to a maximum of 2.0% if General Assembly appropriates funds for this specific purpose per Chapter 757 of 2008
Average Final Compensation (AFC)	Average of highest 24 consecutive months
COLA	Ad hoc basis
Disability Benefit	At least 15 years of service and be under age 60 to be eligible; 1% of highest average salary x YOS
Symmetry Provision	None

Defined Contribution Component	
Plan Type	401(k)
Employee Contributions	Voluntary
Enrollment Provision	Employee is automatically enrolled at hire with 1% employee contribution
Opt Out Provision	Employee must complete form to opt out of DC plan
Employer Matching Contribution	100% match on first 1% EE contribution; 50% match on next 4% EE contribution
Maximum Employer Contribution	3%
Vesting in ER contribution	Graded vesting schedule
Vesting Detail	20% after 1 year; 40% after 2 years; 60% after 3 years; 80% after 4 years; 100% after 5 years
Investment Options	Employees may invest in Lifecycle Funds (based on target retirement date) that represent 5 asset classes; Automatically rebalanced quarterly to become more conservative as employee approaches retirement At their own option employees may invest in one or more of the state's 12 core investments (index funds and actively managed funds) representing various asset categories. Under this option, employees determine their own asset allocation among the available plans and are responsible for "rebalancing" as they near retirement Employees may also invest in the Self-Directed Brokerage Account that gives employees maximum flexibility and access to most stocks and bonds and more than 8,000 mutual funds. The Self-Directed Brokerage Account is offered through Hewitt Financial Services
DC plan withdrawal options	Rollover, annuity, lump sum, partial lump sum, installments

State: Indiana
Plan Type: Hybrid DB-DC

Overview	
Plan Name	Indiana Public Retirement System (INPRS)
Eligibility	All state employees and teachers since 1955 (invest in equities since 1997)
Social Security Participation	Yes
Mandatory or Optional	Mandatory

Defined Benefit Component	
Employee Contribution	0.00%
Vesting	10 years
Normal Retirement Eligibility (age/YOS)	65/10; 60/15; R85 (at least age 55)
Benefit Formula	1.1% of AFC x YOS
Average Final Compensation (AFC)	Average highest earnings over 20 quarters (5 years). Quarters do not have to be continuous but they must be in groups of 4 consecutive calendar quarters
COLA	Ad hoc basis
Disability Provision	5 or more years of creditable service and qualified for Social Security disability benefits. The disability retirement benefit is the accrued retirement benefit determined as of the disability date and payable commencing the month following disability date without reduction for early commencement.
Symmetry Provision	None

Defined Contribution Component	
Plan Type	Annuity Savings Account (ASA)
Employee Contributions	State law requires that 3% of an employee's gross wages are contributed to the ASA. The state makes the 3% mandatory contribution on behalf of state workers, which are treated as employee contributions. Employees may make voluntary contributions up to an additional 10% to the ASA on a pre-tax or post-tax basis
Enrollment Provision	Mandatory
Opt Out Provision	No opt out provision
Employer Matching Contribution	None (State elects to contribute 3% mandatory contribution on behalf of workers)
Maximum Employer Contribution	N/A
Vesting in ER contribution	N/A
Vesting Detail	N/A
Investment Options	The ASA allows employees to invest in 8 options, including: - Guaranteed Fund (return established by PERF Board; Guaranteed by Fund) - Money Market Fund - Fixed Income Fund - Large Cap Equity Index Fund - Small/Mid Cap Equity Fund - International Equity Fund - Inflation-Linked Fixed Income Fund - Target Date Funds
DC plan withdrawal options	Annuity, rollover, partial lump sum and annuity, deferral until age 70½

State: Michigan
Plan Type: Optional Hybrid DB-DC

Overview	
Plan Name	Michigan Public School Employees Retirement System
Eligibility	Teachers hired after 7/1/2010
Social Security Participation	Yes
Mandatory or Optional	Optional for teachers hired after 9/4/2012 (choice of hybrid or DC only)

Defined Benefit Component	
Employee Contribution	Varies by earnings: $0 - $5,000: 3.0% $5,000.01 - $15,000: 3.6% $15,000.01 and up: 6.4%
Vesting	10 years
Normal Retirement Eligibility (age/YOS)	60/10
Benefit Formula	1.5% of AFC x YOS
Average Final Compensation (AFC)	Average of highest 5 consecutive years
COLA	Automatic 3% increase annually
Disability Provision	A duty disability retirement is calculated by multiplying your years of service times 1.5 percent times your final average compensation. Service credit of at least 10 YOS to calculate a duty disability pension, even if you have not worked for the public school system that long.
Symmetry Provision	None

Defined Contribution Component	
Plan Type	Employee contributions are invested in a 457 plan; Employer contributions in a 401(k)
Employee Contributions	Employee is automatically enrolled at hire with a 2% contribution; Employee may elect to make additional voluntary contributions
Enrollment Provision	Optional
Opt Out Provision	Employee must complete form to opt out of DC plan
Employer Matching Contribution	Employer matches 50% of Employee contributions up to a maximum of 1%
Maximum Employer Contribution	1%
Vesting in ER contribution	Graded
Vesting Detail	After 2 years: 50%; After 3 years: 75%; After 4 years: 100%
Investment Options	Employees may invest in target retirement date funds (automatically rebalanced as employee approaches retirement age), index funds, and actively managed fund options Employees may also invest in a Self-Managed Account (SMA). The SMA is a brokerage account that gives access to most individual stocks, bonds, certificates of deposit (CDs), exchange-traded funds (ETFs), and more than 10,000 different mutual funds (all for an additional fee and at your own risk).
DC plan withdrawal options	Lump sum, consolidation from other plans, direct rollover to an IRA, periodic distribution

Note: Michigan State Police hired after October 2012 will be enrolled in a hybrid retirement plan. Non-law enforcement state employees already participate in a defined contribution plan.

State: Ohio
Plan Type: Optional Hybrid DB-DC; referred to as "Combined Plan"

Overview	
Plan Name	Ohio Public Employees' Retirement System (OPERS)
Eligibility	All state employees and teachers hired since 2003
Social Security Participation	No
Mandatory or Optional	Optional

Defined Benefit Component	
Employee Contribution	0.00%
Vesting	5 years
Normal Retirement Eligibility (age/YOS)	55/25; any/30; 60/5
Benefit Formula	1.0% of AFC x YOS up to 30 years + 1.25% x YOS above 30 years
Average Final Compensation (AFC)	Average of highest 3 years
COLA	Automatic; 3% of original pension amount annually
Disability Provision	Participants in the Combined Plan must have at least 5 years of service credit. Disability allowance is based on the AFC and years of service with OPERS, with no early retirement reductions, but cannot be less than 45% or exceed 60% of AFC. In the revised plan, the disability benefit ends when the employee reaches age 65 (varies by age at time of disability) and converts to service pension (2.2% of AFC x contributing & disability YOS, not to exceed 45%)
Symmetry Provision	None

Defined Contribution Component	
Plan Type	401(a)
Employee Contributions	10% employee contribution (less administrative fee) is deposited into the employees individual defined contribution account
Enrollment Provision	Mandatory (though participation in hybrid plan is optional)
Opt Out Provision	No opt out provision (though participation in hybrid plan is optional)
Employer Matching Contribution	No employer matching contribution
Maximum Employer Contribution	N/A
Vesting in ER contribution	N/A
Vesting Detail	N/A
Investment Options	OPERS offers 10 target date funds that are professionally managed with automatic asset allocations based on expected date of retirement. The target date funds also provide "rebalancing" of the portfolio as the individual approaches retirement OPERS also allows employees to build their own portfolio with 6 core investment funds, ranging from low-risk to growth oriented, higher risk options OPERS also offers a mutual fund-only Self-Directed Brokerage Account (SDBA), through Charles Schwab's Personal Choice Retirement Account. A maximum of 50% of a members portfolio is allowed to be invested through this brokerage, though the plan will not rebalance if investments grow to exceed 50% of a participants total assets
DC plan withdrawal options	Annuity, including partial lump sum option plan; deferral until age 70½

State: Oregon
Plan Type: Hybrid DB-DC

Overview	
Plan Name	Oregon Public Service Retirement Plan
Eligibility	State employees and teachers hired after 8/29/2003 (State Police if different)
Social Security Participation	Yes
Mandatory or Optional	Mandatory

Defined Benefit Component	
Employee Contribution	0.00%
Vesting	5 years
Normal Retirement Eligibility (age/YOS)	65/any; 58/30 (State Police: 60/any; 53/25)
Benefit Formula	1.5% of AFC x YOS (State Police: 1.8% of AFC x YOS)
Average Final Compensation (AFC)	Average of highest 3 consecutive years
COLA	Automatic annual adjustment tied to CPI. An increase or decrease in benefit may not exceed 2% in any year, and benefit can never be less than original pension
Disability Provision	Eligible if disablement occurs after 10 YOS, but prior to normal retirement age. Benefit of 45% of salary during last full month of employment before disability, reduced if the total benefit exceeds 75% of salary. Benefit is payable monthly until normal retirement age. At that point, employee eligible for the same formula as normal retirement benefit, except final average salary is adjusted to reflect cost-of-living increases from date of disability to normal retirement age, and retirement credits continue to accrue from date of disability to normal retirement age.
Symmetry Provision	None

Defined Contribution Component	
Plan Type	Individual Account Program
Employee Contributions	State law requires employees to contribute 6% of their salary into the IAP. The state makes the 6% contribution on behalf of state workers, which are treated as employee contributions
Enrollment Provision	Mandatory
Opt Out Provision	No opt out provision
Employer Matching Contribution	None (State elects to contribute the mandatory 6% employee contribution)
Maximum Employer Contribution	N/A
Vesting in ER contribution	N/A
Vesting Detail	N/A
Investment Options	Oregon Investment Council (consists of the State Treasurer and others) invests the assets of the Oregon Public Service Retirement Plan, including the assets in the Individual Account Program. Employees do not directly allocate or invest their IAP accounts. At least annually, the individual accounts are adjusted based on the investment returns and/or losses
DC plan withdrawal options	Lump sum payment or in installments over a 5, 10, 15, or 20 year period or the EE's anticipated lifespan

State: Rhode Island
Plan Type: Hybrid DB-DC

Overview	
Plan Name	Employees' Retirement System of Rhode Island (ERSRI)
Eligibility	State employees and teachers for service after 7/1/2012
Social Security Participation	Yes
Mandatory or Optional	Mandatory

Defined Benefit Component	
Employee Contribution	3.75%
Vesting	5 years
Normal Retirement Eligibility (age/YOS)	Social Security Normal Retirement Age w/ 5 YOS (not to exceed age 67)
Benefit Formula	1.0% of AFC x YOS
Average Final Compensation (AFC)	Average of highest 5 consecutive years
COLA	COLA is suspended until plan is 80% funded. Once reached the COLA will be calculated as the five-year smoothed investment return rate less 5.5% with a 0% floor and 4% cap, applied to the first $25,000 of benefit
Disability Provision	A member is eligible provided he/she has credit for at least five years of service or if the disability is work-related. Members are not eligible for an ordinary disability benefit if they are eligible for unreduced retirement. Employees receive the benefit payable under the normal retirement formula, using AFC and service at the time of disability, but not less than 10 years of service
Symmetry Provision	None

Defined Contribution Component	
Plan Type	401(a)
Employee Contributions	5.0% mandatory; Legislation authorizes additional voluntary employee contributions
Enrollment Provision	Mandatory
Opt Out Provision	No opt out provision as it is a state mandated plan
Employer Matching Contribution	1% (automatic Employer contribution)
Maximum Employer Contribution	1%
Vesting in ER contribution	Cliff vesting schedule
Vesting Detail	3 years (0% after 1 year; 0% after 2 years; 100% after 3 years)
Investment Options	Employees may invest in funds made available through TIAA-CREF including: - Target retirement date funds - Money market funds - Fixed income funds - Equity funds (actively managed and index funds)
DC plan withdrawal options	One-life annuity, two-life annuity, guaranteed annuity, lump sum, systematic withdrawals

State: Utah
Plan Type: Optional Hybrid DB-DC

Overview	
Plan Name	Utah Retirement Systems
Eligibility	State employees and teachers entering service after 7/1/2011 (State Police if different)
Social Security Participation	Yes
Mandatory or Optional	Optional (Hybrid is default if no election is made)

Defined Benefit Component	
Employee Contribution	0% in FY13 (see "Maximum Employer Contribution" for additional detail)
Vesting	4 years
Normal Retirement Eligibility (age/YOS)	65/4; 62/10; 60/20; any/35 (State Police: any/25)
Benefit Formula	1.5% of AFC x YOS
Average Final Compensation (AFC)	Average of highest 5 years
COLA	Automatic adjustment linked CPI; up to 2.5% maximum
Disability Provision	State workers are eligible for a Long-Term Disability program per Title 49 of the Utah Code. The LTD benefit provides 66.67% income replacement benefit in lieu of disability retirement through the URS (subject to traditional LTD contract provisions). Employees may continue to accrue URS credit while on disability
Symmetry Provision	The Legislature may make changes to the benefits provided to the DB portion of the hybrid plan if the members contribution exceeds 2%: AND 1. The membership council recommends an adjustment to the board and the board makes specific recommendations to the Legislature; OR 2. An actuarial study concludes that there is a likelihood that contribution rates will continue to rise and that participating employers are liable for system costs above the contribution rate If the above conditions are met, the Legislature may adjust the DB benefits accrued or applied for future years of service including: final average salary calculation, YOS required to be eligible to service retirement, benefit multiplier, the COLA, and other provisions of the DB plan

Defined Contribution Component	
Plan Type	401(k)
Employee Contributions	Voluntary
Enrollment Provision	Mandatory
Opt Out Provision	No opt out provision
Employer Matching Contribution	No employer match. FY13 employer contribution to DC of 1.59% (see below for detail on calculation)
Maximum Employer Contribution	Employer contributes a combined maximum of 10% to the hybrid plan. If the actuarial required contribution to the DB is less than 10% (it is 8.41% in FY13) the employer will make a contribution equal to 10% minus the required contribution (10% - 8.41% = 1.59% for FY13) to the DC plan. If the actuarial required contribution to the DB is greater than 10%, then the employee must contribute that amount above 10% to the DB and the employer does not contribute to the DC (State Police: Same provisions, except 12% employer contribution).
Vesting in ER contribution	Cliff vesting schedule
Vesting Detail	4 years (0% after 1 year; 0% after 2 years; 0% after 3 years; 100% after 4 years)
Investment Options	URS offers 12 investment options, consisting of eight core funds, three asset allocation funds (Horizon Funds), and the self-directed brokerage account (Personal Choice Retirement Account offered through Charles Schwab)
DC plan withdrawal options	Lump sum, partial balance, periodic distribution, direct rollover, direct rollover to an IRA

State: Virginia
Plan Type: Hybrid DB-DC

Overview	
Plan Name	Virginia Retirement System
Eligibility	State employees and teachers hired after 1/1/2014
Social Security Participation	Yes
Mandatory or Optional	Mandatory

Defined Benefit Component	
Employee Contribution	4.00%
Vesting	5 years
Normal Retirement Eligibility (age/YOS)	SSNRA/5
Benefit Formula	1.0% of AFC x YOS
Average Final Compensation (AFC)	Average of highest 5 consecutive years
COLA	Automatic annual adjustment tied to CPI; Maximum of 3% COLA calculated as 100% of first 2% CPI growth plus 50% of next 2% CPI growth
Disability Provision	Long-Term Disability provided through the Virginia Sickness and Disability Program. Disabled employees eligible for replacement of 60% of income, during which time they continue to accrue VRS service credit.
Symmetry Provision	None

Defined Contribution Component	
Plan Type	401(a)
Employee Contributions	1.0% mandatory / up to 4.0% voluntary
Enrollment Provision	Mandatory
Opt Out Provision	None
Employer Matching Contribution	The employer matches the 1.0% mandatory employee contribution. In addition, the employer matches the first 1.0% of voluntary employee contributions at 100%, and the next 3.0% of voluntary employee contributions at 50%
Maximum Employer Contribution	4%
Vesting in ER contribution	Graded
Vesting Detail	50% after 2 years; 75% after 3 years; 100% after 4 years
Investment Options	Details on investment options under new hybrid plan not published as of 10/30/2012 (implementation not until 1/1/2014)
DC plan withdrawal options	Details on withdrawal option under new hybrid plan not published as of 10/30/2012 (implementation not until 1/1/2014)

State: Washington
Plan Type: Optional Hybrid DB-DC

Overview	
Plan Name	Washington Department of Retirement Systems
Eligibility	State employees hired after 3/1/2002; Teachers hired after 7/1/2007
Social Security Participation	Yes
Mandatory or Optional	Optional - Hybrid (Plan 3) is default if election is not made within 90 days

Defined Benefit Component	
Employee Contribution	0.00%
Vesting	10 years (5 years and at least 1 year earned after the age of 44)
Normal Retirement Eligibility (age/YOS)	65/vested
Benefit Formula	1.0% of AFC x YOS
Average Final Compensation (AFC)	Average of highest 5 consecutive years
COLA	Automatic adjustment linked to CPI; up to 3.0% maximum
Disability Provision	1.0% of AFC x YOS; The reduction in benefit applies based on your service credit, the date you retire, your age and the early retirement factor used.
Symmetry Provision	None

Defined Contribution Component	
Plan Type	401(a)
Employee Contributions	Employees select from six contribution options. Once selected, employees cannot change their contribution level unless they change PERS-covered employers: 1. 5% (default employee contribution if no selection is made) 2. 7% 3. 10% 4. 15% 5. 5% up to age 35; 6% age 35-44; 7.5% age 45+ 6. 6% up to age 35; 7.5% age 35-44; 8.5% age 45+
Enrollment Provision	Mandatory
Opt Out Provision	No opt out provision
Employer Matching Contribution	None
Maximum Employer Contribution	N/A
Vesting in ER contribution	N/A
Vesting Detail	N/A
Investment Options	Self Directed Investment Option: Employees select their own mix of individual funds and decide how much to invest in each one from a menu of professionally-managed funds. Employees are responsible for monitoring their investments and making changes. Under the Self-Directed option, employees may also investment in target retirement date funds, known as Retirement Strategy Funds. The Retirement Strategy Funds are automatically rebalanced as employees approach retirement Washington State Investment Program: Is a diversified Total Allocation Portfolio (TAP). TAP assets are invested in public equities, fixed income products, private equity funds, real estate, and tangible assets such as timber and infrastructure. Under the direction and oversight of the Washington State Investment Board (WSIB), TAP assets are primarily managed by external investment professionals and partners. The fixed income portfolio for the TAP is internally managed by WSIB staff .
DC plan withdrawal options	Lump sum, direct rollover, scheduled payments, personalized payment schedule, and annuity purchase

State: Federal Government Workers, All Locations
Plan Type: Hybrid DB-DC

Overview	
Plan Name	Federal Employees Retirement System
Eligibility	Federal civilian employees hired on or after 1/1/1987
Social Security Participation	Yes
Mandatory or Optional	Mandatory

Defined Benefit Component	
Employee Contribution	3.10%
Vesting	5 years
Normal Retirement Eligibility (age/YOS)	62/5; 60/20; 57/30 (if born 1970 or later)
Benefit Formula	Under age 62 or Age 62 w/ less than 20 YOS: 1.0% of AFC x YOS Age 62 or older w/ 20 or more YOS: 1.1% of AFC x YOS
Average Final Compensation (AFC)	Average of highest 3 consecutive years
COLA	FERS members: If the increase in the CPI is 2% or less, the COLA is equal to the CPI increase. If the CPI increase is more than 2% but no more than 3%, the COLA is 2%. If the CPI increase is more than 3%, the adjustment is 1% less than the CPI increase
Disability Provision	If under age 62 and not eligible for voluntary immediate retirement, 60% of AFC minus social security benefits for the first 12 months. After 12 months, the benefit reduces to 40% of AFC minus 60% of social security benefit. At age 62, the annuity is recomputed using an amount that essentially represents the annuity the employee would have received had they continued working until eligible for normal retirement.
Symmetry Provision	None

Defined Contribution Component	
Plan Type	Thrift Savings Plan
Employee Contributions	Employees may contribute on a voluntary basis
Enrollment Provision	Mandatory
Opt Out Provision	None
Employer Matching Contribution	1% automatic contribution; 100% match on next 3% employee voluntary contribution; 50% match on next 2% employee voluntary contribution
Maximum Employer Contribution	5%
Vesting in ER contribution	Cliff vesting
Vesting Detail	3 years (0% after 1 year; 0% after 2 years; 100% after 3 years)
Investment Options	The TSP has a selection of individual and lifecycle funds that offer broad market diversification. Employee can choose to have retirement dollars invested in everything from a short-term U.S. Treasury security to index funds comprised of domestic and international stocks.
DC plan withdrawal options	Partial withdrawal, level-amount monthly withdrawals, various guaranteed lifetime annuities

Appendix C

Cash Balance Plans

	Kansas	Louisiana	Nebraska
Applicability	State Employees and Teachers	State Employees and Teachers	State Employees
Mandatory or Optional	Mandatory	Mandatory	Mandatory
Social Security	Y	N	Y
Vesting	5 years	5 years	3 years
Employee Contributions	6.0%	8.0%	4.8%
Employer Contributions	Employer contributions are made on a quarterly basis: < 5 YOS: 3% 5 to < 12 YOS: 4% 12 to < 24 YOS: 5% 24+ YOS: 6%	Each member account will receive an employer contribution of 4% annually, for a total contribution of 12% of pay (employer + employee)	The state matches employee contributions at 156%, for a total state contribution of 7.49%
Guaranteed Interest Credit	Effective January 1, 2015, the interest credits will be 5.25% per year The retirement board may provide an additional interest credit up to 4% if the funding ratio of the system is 80% or greater. To calculate the additional interest credit, the board may provide the lesser of 4% or the system funded ratio multiplied by the systems rate of return in excess of 8% (rate of return must be greater than 10% for additional credit to apply)	Accounts shall earn interest at a rate equal to the system's actuarial rate of return as determined in the system's actuarial valuation, less 1% In no case shall the balance in the employee's account be debited for investment losses	The interest credit rate is defined in state statute as the greater of 5%, or the federal mid-term rate plus 1.5%. If the federal mid-term rate falls below 3.5%, the employee is guaranteed 5% interest per year The federal mid-term rate is based on the average market yield on outstanding obligations of the United States with maturities of at least 3 years, but no more than 9 years

Kansas: Cash balance plan mandatory for employees hired after January 1, 2015 (Chapter 171, Laws of 2012).
Louisiana: Cash balance plan mandatory for employees hired after July 1, 2013 (Chapter 483 Laws of 2012). In January 2013, a Louisiana district court overturned the cash balance plan as unconstitutional. An appeal of this decision is pending.

Appendix D

Defined Contribution Plans

	Alaska	Colorado (optional)	District of Columbia	Florida (optional)	Michigan
Applicability	State Employees, Teachers	State Employees	State Employees	State Employees, Teachers	State Employees, Judges
Social Security Coverage	N	N	Y	Y	Y
Employee Contribution	8% (mandatory)	8% (mandatory)	Employees may not contribute	3% (mandatory)	Employees may voluntarily contribute on a pre-tax and/or Roth after-tax basis
Employer Contribution	5.00%	10.15%	5%	3.30%	4% mandatory contribution + dollar-for-dollar match up to an additional 3%
Vesting	After 2 YOS: 25% After 3 YOS: 50% After 4 YOS: 75% After 5 YOS: 100%	Immediate: 50% After 1 YOS: 60% After 2 YOS: 70% After 3 YOS: 80% After 4 YOS: 90% After 5 YOS: 100%	After 2 YOS: 20% After 3 YOS: 40% After 4 YOS: 60% After 5+: 100%	1 year	After 2 Years: 50% After 3 Years: 75% After 4 Years: 100%
	Montana (optional)	**North Dakota (optional)**	**Ohio (optional)**	**South Carolina (optional)**	**Utah (optional)**
Applicability	State Employees	State Employees	State Employees, Teachers	State Employees, Teachers	State Employees, Teachers, Law Enforcement
Social Security Coverage	Y	Y	N	Y	Y
Employee Contribution	7.9% (mandatory)	6% (mandatory)	10% (mandatory)	7% (mandatory)	Contribution is voluntary
Employer Contribution	7.17%	6.12%	8.73%	5.00%	10.00% (12% for State Police)
Vesting	0-4 Years: 0% 5+ Years: 100%	<2 Years: 0% 2 Years: 50% 3 Years: 75% 4 Years: 100%	1 Year: 20% 2 Year: 40% 3 Year: 60% 4 Year: 80% 5 Year: 100%	Immediate	4 years

Michigan: Teachers hired after September 2012 are eligible for an optional DC or hybrid plan. The optional DC plan will include a 6% employer contribution when the employee contributes 3%.
North Dakota: Optional DC plan only available to exempt employees, including employees in the higher education system.

Appendix E

Highlights of Recent Retirement System Reforms

The following highlights of recent state level retirement reforms, while not exhaustive, provide a broad overview of the widespread actions that have taken place to address long-term pension funding pressures. While each state's unique set of fiscal circumstances and legal and regulatory environment play a role in shaping the type of reform enacted, it is clear that state legislatures across the country recognize retirement benefit costs as a growing area of concern.

California: In September 2012, the California State Legislature adopted A.B. 340 – known as the Public Employees' Pension Reform Act (PEPRA) – to significantly reform the **defined benefit** plans offered through the California Public Employees' Retirement System and the California State Teachers' Retirement System. Under PEPRA, state employees, teachers, and employees of participating local governments hired after January 1, 2013, will be subject to the following key provisions:

- Requires all employees to contribute 50% of the normal cost of their pension benefit.
- Caps the compensation used to calculate the retirement benefit for all new members at the Social Security wage base ($113,700 in 2013). The cap will be adjusted annually based on changes in the Consumer Price Index for all Urban Consumers.
- Requires that the average final compensation be defined for new employees as the highest average compensation over a 3-year period based on regular, recurring pay (up from single highest year for many employees; limited to Social Security wage base as noted above).
- Requires newly hired non-safety state and local government employees and teachers to participate in a new benefit tier with a reduced multiplier and a higher normal retirement age (2% at age 62).
- Requires newly hired safety employees to enroll in one of three new tiers with a reduced multiplier and a higher normal retirement age relative to current employees. PEPRA requires that new safety members be provided with the new formula that is closest to the formula offered to current members of the same classification (2% at age 57; 2.5% at age 57, or 2.7% at age 57).

Georgia: Since January 1, 2009, state employees and public safety employees have been required to participate in the Georgia State Employees' Pension and Savings Plan (SB 328 of 2008), a **hybrid** retirement system that provides employees with a defined benefit pension with a lower benefit multiplier and a defined contribution account. Under the State's hybrid plan:

- Employees contribute 1.25% of salary toward the defined benefit component and receive 1% of final average compensation per year of service with an unreduced retirement.
- Employees are automatically enrolled in the 401(k) account with a 1% employee contribution. Employees may elect to opt out of the defined contribution plan entirely or to increase their contributions per IRS limits. The State provides a matching contribution up to 3% of salary.

Kansas: In 2012 the State of Kansas enacted significant reforms to the Kansas Public Employees' Retirement System (KPERS) for current and future employees (HB 2333).

- Under the reforms adopted, current employees, pending IRS approval, will be permitted to continue their contribution rate of 4% and be subject to a reduced benefit multiplier of 1.4% for future service (down from 1.75%) or increase their contribution to 6% and receive a multiplier of 1.85% per year of service.

- The reforms implemented for future employees are much more significant. The new law will require KPERS to establish a **cash balance** plan, that while considered a defined benefit plan includes elements of a defined contribution as well, for future state employees, teachers, and local government employees hired after January 1, 2015.

Louisiana: In 2012 the State of Louisiana also took action to implement structural changes to the Louisiana State Employees' Retirement System (HB 61). Under the new law state employees and teachers hired after July 1, 2013, will be required to participate in a **cash balance** plan. In January 2013, a Louisiana district court, declared the cash balance plan unconstitutional on grounds that its passage required a two-thirds majority vote (70 total votes in favor) in the State Legislature. An appeal of the decision is pending.

Michigan: In September 2012, the State of Michigan enacted retirement reforms for teachers participating in the Public School Employees' Retirement System (HB 1040).

- Under the law, newly hired teachers will have the option to participate in a **defined contribution** plan or in the **hybrid** plan that has been the primary retirement options for teachers hired since July 1, 2010.

- Employees hired before July 1, 2010, participating in the defined benefit plan, would have the option to increase their contribution in order to maintain a benefit multiplier of 1.5% or continue at their current contribution level and be subject to a reduced multiplier of 1.25%.

- The law also eliminated the current retiree medical program for new employees and replaced it with a defined contribution model with matching employer contributions up to 2%. These funds are deposited into a 401(k) type account to be used to offset the purchase of future retiree medical benefits.

- Also in Michigan, state police officers beginning with the 123rd Trooper Recruit class (graduated in October 2012), will be required to participate in a **hybrid** plan that combines elements of a reduced defined benefit pension with a defined contribution account. Other reforms for new hires agreed to by the Michigan State Police Troopers Association will eliminate the Deferred Retirement Option Program (DROP), eliminate the automatic post-retirement COLA, and replace the current retiree health benefit plan with a 2% employer matching contribution to a 401(k) type account (same reforms as enacted for State Employees).

New York: The State of New York created a new **defined benefit** tier for employees hired after April 1, 2012, known as Tier VI (Chapter 18, Laws of 2012). Under this new tier employee contributions will vary based on an employee's salary, ranging from a low of 3% for employees earning less than $45,000 up to 6% for employees earning $100,000 or more. The new tier also includes the following general plan design changes:

- Increased the normal retirement age to 63 (up from 62 for most employees).

- Increased average final salary calculation from the highest 3 year average to the highest 5 year average.
- Reduced benefit multipliers.

Rhode Island: The Rhode Island Retirement Security Act of 2011 (RIRSA) made significant changes to the retirement benefits for current and newly hired state employees, teachers, and local government workers. For most employees, RIRSA created a **hybrid** retirement plan that combines elements of a reduced pension benefit with a defined contribution account. Judges and state police were able to continue their defined benefit pensions though they were affected by other provisions under RIRSA.

- Under the new hybrid plan, state employees are required to contribute 3.75% of salary toward the DB component and will receive a benefit multiplier of 1% per year of service upon normal retirement.
- State employees are also required to contribute 5% of salary toward the DC component and receive a 1% employer matching contribution.
- For all workers – state, teachers, local government, judges, and state police – the post-retirement COLA provisions were suspended until the system attains a funding ratio of 80%. Once the funding level is achieved, COLAs will be provided on the first $25,000 of pension benefit only, tied to the investment performance of the fund with a 0% floor and a 4% cap.

South Carolina: Act 278 of the Laws of 2012 (HB 4967) enacted the following retirement benefit reforms for state employees in South Carolina participating in the **defined benefit** plan:

- Increased current and new hire contributions from 6.5% to 8.0% of salary in ½ percent increments beginning July 1, 2012 (final increase effective July 1, 2014).
- Increased calculation for average final compensation from the highest 3 year to highest 5 year average.
- Increased normal service retirement eligibility to age 65 with 8 years of service or when age + YOS = 90 and increased the vesting period from 5 to 8 years of service.
- Imposed a $500 cap on post-retirement cost-of-living adjustments.
- It should be noted that state, public school, and higher education employees are eligible to participate in an optional **defined contribution** plan (State Optional Retirement Plan).

Utah: The State Legislature in Utah enacted pension reforms in the 2011 legislative session (SB 308) that applied to state employees. Under the reforms, employees in Utah hired after July 1, 2011, are considered Tier 2 employees and have the option to participate in either a **hybrid** plan or in a **defined contribution** plan. The hybrid plan is the default option for those new hires not making an election within the required enrollment period.

- For non-public safety employees electing the defined contribution plan option, the State contributes 10% into the employees DC account. Employees may elect to make additional contribution on a voluntary basis.

- For non-public safety employees choosing the hybrid plan, the State will make a combined contribution of 10% to both the pension and 401(k) account. If the normal cost of the pension benefit is less than 10%, the State will contribute the difference into the 401(k) account. If the normal cost of the pension benefit is greater than 10%, the State requires the employee to contribute the additional required contribution to the pension plan, and the State does not make a contribution to the 401(k) account.

- As part of these reforms the State included statutory language that would allow for future adjustments to the defined benefit component accrued or applied for future years of service, including average final salary calculations, YOS required for normal retirement, benefit multipliers, COLAs, and other provisions when the employee contribution to the pension plan exceeds 2% or when an actuarial study recommends such actions.

Virginia: As part of a pension reform package adopted in 2012 (Chapter 201, Laws of 2012), Virginia now requires all current state and local government employees to contribute 5% of their salary to the Virginia Retirement System (contributions may be phased in over a 5-year period). For state employees, local government workers, and teachers hired after January 1, 2014, the State will also implement a **hybrid** retirement plan that combines a reduced pension benefit with a mandatory defined contribution account. This requirement does not apply to public safety and other hazardous duty positions.

- Under the new hybrid plan, future employees will contribute 4.0% of salary toward the defined benefit component and receive 1% of final average compensation per year of service with an unreduced retirement.

- Further, these employees will be required to enroll in the defined contribution plan with a 1% mandatory employee contribution. Employees may elect increase their contributions by an additional 4%. The State provides matching contributions up to a maximum of 3.5% of salary.

Highlights of States Increasing Employee Contributions for Current Employees[26]

Alabama: The State of Alabama created a new benefit tier for employees hired after 1/1/2013 that has a lower employee contribution (6%) and a reduced benefit plan design (reduced multiplier and increased retirement eligibility criteria). The State increased employee contributions for Tier 1 members (hired prior to 1/1/2013) from 5% to 7.5% effective 10/1/2012.

Florida: On 7/1/2011 all state employees (current and new hires) participating in the Florida Retirement System were required to contribute 3% of their salary towards their pension benefit. Prior to enactment of the reform legislation, state employees were not required to contribute. In a 4-3 decision, the Florida State Supreme Court recently upheld the state law requiring contributions for current employees.

Maryland: As part of a broad package of pension reform for state employees, the State of Maryland increased the employee contribution for current and newly hired state civilian employees and teachers from 5% to 7% of salary effective 7/1/2011.

Michigan: Reforms adopted in Michigan in 2012 will require teachers hired prior to 7/1/2010 (current employees) to contribute 7% of salary, up from a range of 3% - 6.4% depending on salary and hire date. Teachers hired prior to 7/1/2010 may elect to continue their contributions at their current levels but would be subject to a reduced benefit multiplier (1.25% down from 1.5%).

In 2011, Michigan also adopted HB 4701, that required employees hired prior to 3/1/1997 participating in the closed defined benefit pension plan to contribute 4% of pay (up from 0%) or transfer into the defined contribution plan. Employees hired after 3/1/1997 already are required to participate in a defined contribution plan.

New Jersey: In addition to broad pension reforms for state employees, Chapter 78 of 2011 increased the employee pension contribution rate for all employee tiers (current and new hires) from 5.5% to 6.5%. The reform legislation will further increase the contribution rate for all employees by an additional 1% (7.5% total employee contribution) in equal increments through July 1, 2018.

South Carolina: Act 278 of 2012 (HB 4967) will increase employee contributions for both current and new hires from 7.0% to 7.5% on 7/1/2013, and to 8.0% on 7/1/2014. The reform legislation will also grant the retirement board the ability to increase employee and employer contributions in future years based on the actuarial valuation, so long as the increase does not result in a differential between the employer and employee contribution rate in excess of 2.9% (the state will contribute 10.9% by 7/1/2014).

Virginia: As part of a broad package of reform legislation, the Commonwealth of Virginia required employees participating in the Virginia Retirement System hired prior to 7/1/2010 (Plan 1) to contribute 5% of salary effective 7/1/2011, up from 0%. Employees hired after 7/1/2010 participating in VRS Plan 2 were already required to contribute 5% toward their pension benefit.

[26] NASRA Issue Brief: Employee Contributions to Public Pension Funds, January 2013.

State	Employees Covered	Recent change to establish or increase contribution?	Date of change	Employee contribution (%) latest tier	Employee contribution (%) older tiers
Alabama	Civilians	Yes	10/1/2012	Tier II (Hired on or after 1/1/2013): 6%	Tier I (Hired prior to 1/1/2013): 7.5%
Alaska	Civilians, Peace Officers	No	N/A	Defined Contribution Tier IV (Hired on or after 6/30/2006): 8%	Tier I, Tier II, Tier III (Hired before July 1, 2006): 6.75%
Arizona	Civilians, Teachers	Yes	Future implementation date: 7/1/2013	All employees pay the same contribution rate (no tiers): 11.3%	All employees pay the same contribution rate (no tiers): 11.3%
Arkansas	Civilians	No	N/A	Contributory Plan: Employees hired on or after 6/30/2005 contribute 5%	Non Contributory plan: Employees hired between 1/1/1978 and 6/30/2005 contribute 0%.
California	Civilians	Yes	Future implementation date: 7/1/2013	Employees will be required to pay at least 50% of the normal costs of their pension plans. New and current rates vary by bargaining unit.	Employees will be required to pay at least 50% of the normal costs of their pension plans. New and current rates vary by bargaining unit
Colorado	Civilians, Judges, State Troopers, Teachers	Yes (Temporary 2.5% increase in FY2012)	N/A	8% (All Other Groups) 10% (State Troopers)	8% (All Other Groups) 10% (State Troopers)
Connecticut	Civilians	No	N/A	Tier III (Hired Post 7/1/2011): 2%	Tier IIA (hired 7/1/1997 - 7/1/2011): 2%
Delaware	Civilians	Yes	1/1/2012	Post-1/1/2012 hires: 5% of compensation above $6,000	Pre-1/1/2012 hires: 3% of compensation above $6,000
DC	Civilians	No	N/A	Employees hired on or after 10/1/1987 participate in the City's 401(a) Defined Contribution Plan: 0%	Employees hired before 10/1/1987 are covered by the Civil Service Retirement System (U.S. Federal Employee Pension Plan). CSRS covered employees contribute 7, 7 1/2 or 8 percent of pay to CSRS.
Florida	Civilians	Yes	7/1/2011	3%	3%
Georgia	Civilians	No	N/A	1.25% (Hybrid)	Old Plan (prior to 7/1/1982): 1.25% + .25% for GTLI New Plan (7/1/1982 - 1/1/2009): 1.25% + .25% for GTLI
Hawaii	Civilians	Yes	7/1/2012	9.8%	7.8%
Idaho	Civilians, Teachers	No	N/A	Civilians: 6.23% Public Safety: 7.69%	Civilians: 6.23% Public Safety: 7.69%
Illinois	Civilians, Public Safety	No	N/A	Civilians: 4% w/SS; 8% w/o SS Alternative (Public Safety): 8.5% w/SS; 12.5% w/o SS	Civilians: 4% w/SS; 8% w/o SS Alternative (Public Safety): 8.5% w/SS; 12.5% w/o SS
Indiana	Civilians	No	N/A	Hybrid Plan: Defined Benefit amount: 0%, Defined Contribution amount: 3%	Hybrid Plan: Defined Benefit amount: 0%, Defined Contribution amount: 3%
Iowa	Civilians	Yes	7/1/2012	5.78%	5.78%
Kansas	Civilians, Teachers	Yes	Future implementation years: 2014, 2015	Tier 2 (Hired on or after 7/1/2009): 6%	Tier 1 (Hired before 7/1/2009): 4%

State	Employees Covered	Recent change to establish or increase contribution?	Date of change	Employee contribution (%) latest tier	Employee contribution (%) older tiers
Kentucky	Civilians / Hazardous Duty	Yes	9/1/2008	Post 9/1/2008 hires 6% regular 9% hazardous duty	Pre 9/1/2008 hires 5% regular 8% hazardous duty
Louisiana	Civilians, Judges	No	N/A	Hired on or after 7/1/2006: 8%	Hired before 7/1/2006: 7.5%
Maine	Civilians, Teachers, State Police	No	N/A	7.65%	7.65%
Maryland	Civilians	Yes	7/1/2011	7%	7%
Massachusetts	Civilians, Police	No	N/A	Hired on or after 7/1/1996: 9%	Hired before 1/1/1975: 5%; Hired between 1/1/1975 and 12/31/1983: 7%; Hired between 1/1/1984 and 6/30/1996: 8%
Michigan	Civilians	Yes	N/A	Defined Contribution (post-1997 hires): 0%	Defined benefit plan available to pre-1997 hires (contribution rate effective April 1, 2012): 4%
Minnesota	Civilians	Teachers: Yes	7/1/2012	Civilians: 5% Teachers: 6.5%	Civilians: 5% Teachers: 6.5%
Mississippi	Civilians	Yes	7/1/2010	9.0%	9.0%
Missouri	Civilians	Yes	1/1/2011	4%	0%
Montana	Civilians	Yes	1/1/2011	Post-1/1/2011 hires: 7.9%	Pre-1/1/2011 hires: 6.9%
Nebraska	Civilians	Civilians: No Teachers: Yes	7/1/2011	Civilians: 4.80% Teachers: 9.8%	Civilians: 4.80% Teachers: 9.8%
Nevada	Civilians	Yes	7/1/2013	13.25%	13.25%
New Hampshire	Civilians	Yes	7/1/2011	7%	7%
New Jersey	Civilians	Yes	6/28/2011	Tier 5: 6.5% (EE contribution increases to 7.5% by 7/1/2018)	Tier 1 - 4: 6.5% (EE contribution increases to 7.5% by 7/1/2018)
New Mexico	Civilians	Yes	7/1/2009	10.7%	10.7%
New York	Civilians	Yes	4/1/2012	Tier VI (effective 4/1/2013 for employees hired after 4/1/2012) $45,000: 3% $45,000 - $55,000: 3.5% $55,000 - $75,000: 4.5% $75,000 - $100,000: 5.75% $100,000+: 6%	Tier I (Prior to 7/1/1973): 0% Tier II (7/1/1972 - 7/26/1976): 0% Tier III (7/27/1976 - 8/31/1983): 3% (First 10 YOS, then 0%) Tier IV (9/1/1983 - 12/31/2009): 3% (First 10 YOS, then 0%) Tier V (1/1/2010 - 4/1/2012): 3%

State	Employees Covered	Recent change to establish or increase contribution?	Date of change	Employee contribution (%) latest tier	Employee contribution (%) older tiers
North Carolina	Civilians and Teachers	No	N/A	6%	Only 1 Tier; Same Contributions
North Dakota	Civilians	Yes	1/1/2013	6.00%	6.00%
Ohio	Civilians Teachers	Civilians: No Teachers: Yes	Civilians: N/A Teachers: 7/1/2013	Civilians: 10% Teachers: 10%, increasing 1% per year until reaching 14% beginning July 1, 2013	Civilians: 10% Teachers: 10%, increasing 1% per year until reaching 14% beginning July 1, 2014
Oklahoma	Civilians	No	N/A	3.50%	3.50%
Oregon	Civilians	No	N/A	OPSRP (Hybrid): 0% employee contribution (6% employee contribution is paid by the state)	Tier 1 (DB): 0% (6% employee contribution paid by state) Tier 2 (DB): 0% (6% employee contribution paid by state)
Pennsylvania	Civilians and Public Safety	Yes	1/1/2011	Class A-3: 6.25% Class A-4: 9.25%	Class AA: 6.25%
Rhode Island	Civilians	No	N/A	New Hybrid Plan (All employees): 3.75% (civilians & teachers)	Closed DB only plan: 8.75% (civilians)
South Carolina	Civilians	Yes	7/1/2012	7.0% increasing to 8.0% by July 1, 2014 in 0.5% increments	Only 1 Tier; Same Contributions
South Dakota	Civilians	No	N/A	6.00%	6.00%
Tennessee	All state employees	No	N/A	0% civilians, public safety 5% teachers	0% civilians, public safety 5% teachers
Texas	Civilians	No	N/A	6.50%	6.50%
Utah	Civilians only	No	N/A	Tier 2 Hybrid Retirement System or Defined Contribution Plan (Hired on or after 7/1/2011) : 0%	Tier I Defined Benefit Contributory and Non Contributory Plan Members (Hired prior to 7/1/2011): 0%
Vermont	Civilians	Yes	7/1/2011	Group F (hired after 1/1/1991): 6.4%	Group A; 6.4%
Virginia	All state employees	Yes	7/1/2011	Tier 2: 5%	Tier 1 5% (effective July 2011)
Washington	Civilians	No	N/A	Optional DB plan: 4.64%	Only 1 Tier; Same Contributions
West Virginia	Civilians	No	N/A	4.50%	Only 1 Tier; Same Contributions
Wisconsin	Civilians	Yes	6/29/2011	5.90%	Only 1 Tier; Same Contributions
Wyoming	Civilians	Yes	N/A	Tier 2: 7%	Tier 1: 7%

Appendix F

Retiree Payroll by Tennessee County

Retirement benefits play a significant role in the general economy of Tennessee. It is estimated that $1.63 billion of the $1.76 billion annual retiree payroll is paid to Tennessee residents (92% of total).

TN County	Population (2010)	Payments by County	TN County	Population (2010)	Payments by County
Anderson	75,129	$22,840,729	Lawrence	41,869	10,899,687
Bedford	45,058	9,182,063	Lewis	12,161	2,904,411
Benton	16,489	3,949,919	Lincoln	33,361	8,121,594
Bledsoe	12,876	4,415,934	Loudon	48,556	12,891,977
Blount	123,010	40,262,298	Macon	22,248	3,681,990
Bradley	98,963	21,832,270	Madison	98,294	37,860,282
Campbell	40,716	11,065,004	Marion	28,237	3,888,244
Cannon	13,801	3,797,145	Marshall	30,617	7,327,468
Carroll	28,522	8,524,774	Maury	80,956	18,138,841
Carter	57,424	16,792,250	McMinn	52,266	11,882,327
Cheatham	39,105	9,693,279	McNairy	26,075	6,359,913
Chester	17,131	4,470,359	Meigs	11,753	3,848,892
Claiborne	32,213	8,487,907	Monroe	44,519	8,230,417
Clay	7,861	1,468,530	Montgomery	172,331	34,729,003
Cocke	35,662	8,209,034	Moore	6,362	1,091,290
Coffee	52,796	14,804,450	Morgan	21,987	5,644,366
Crockett	14,586	4,363,725	Obion	31,807	9,914,819
Cumberland	56,053	10,538,441	Overton	22,083	5,581,693
Davidson	626,681	143,835,800	Perry	7,915	2,925,244
Decatur	11,757	3,509,294	Pickett	5,077	1,184,787
Dekalb	18,723	3,999,645	Polk	16,825	3,676,518
Dickson	49,666	13,646,229	Putnam	72,321	30,634,409
Dyer	38,335	9,606,577	Rhea	31,809	6,949,757
Fayette	38,413	9,871,146	Roane	54,181	17,895,789
Fentress	17,959	4,740,465	Robertson	66,283	16,111,267
Franklin	41,052	9,305,768	Rutherford	262,604	54,609,766
Gibson	49,683	16,525,946	Scott	22,228	4,994,575
Giles	29,485	6,325,038	Sequatchie	14,112	4,997,396
Grainger	22,657	4,752,945	Sevier	89,889	16,964,700
Greene	68,831	26,919,642	Shelby	927,644	223,618,503
Grundy	13,703	4,041,385	Smith	19,166	4,300,852
Hamblen	62,544	20,053,811	Stewart	13,324	3,166,303
Hamilton	336,463	83,627,046	Sullivan	156,823	51,496,367
Hancock	6,819	1,800,693	Sumner	160,645	37,334,169
Hardeman	27,253	12,116,110	Tipton	61,081	12,054,740
Hardin	26,026	6,855,416	Trousdale	7,870	1,813,238
Hawkins	56,833	12,474,056	Unicoi	18,313	4,958,250
Haywood	18,787	7,367,645	Union	19,109	3,122,923
Henderson	27,769	6,015,251	Van Buren	5,548	1,632,542
Henry	32,330	10,228,008	Warren	39,839	10,930,042
Hickman	24,690	5,605,984	Washington	122,979	48,241,483
Houston	8,426	1,460,470	Wayne	17,021	3,882,074
Humphreys	18,538	4,992,766	Weakley	35,021	12,305,722
Jackson	11,638	1,927,987	White	25,841	6,940,226
Jefferson	51,407	13,512,258	Williamson	183,182	40,783,832
Johnson	18,244	4,046,710	Wilson	113,993	26,835,665
Knox	432,226	113,922,274	**Total In-State**		**$1,626,721,834**
Lake	7,832	2,599,420	**Total Out-of-State**		**$137,335,823**
Lauderdale	27,815	$8,979,584	**Total Payments**		**$1,764,057,657**

Source: Tennessee Treasury Department, Retiree Payments for FY2012.

Appendix G

Retirement Income Replacement Ratios

The following table reflects a hypothetical retirement income replacement ratio under the proposed hybrid plan structure for an individual retiring with a $30,000, $50,000, and $70,000 average final salary. The actual funds available for withdrawal in the defined contribution components (labeled as "DC Annuity") will vary based on employee contributions, asset allocation decisions, and general market performance.

Key Assumptions:

- Gross replacement income based on 35 years of service for state employee retiring at age 65
- DB Formula: 1% of AFC times years of service
- DC Annuity: 5% employer (ER) plus 2% employee (EE) contribution (total of 7% contribution) assuming 4% historical annual salary growth
- DC Annuity: 6% annual earnings assumption
- DC Annuity: 4% discount factor
- Income Replacement Ratio Estimates: Final salary is $32,400 for a $30,000 AFC; $54,000 for a $50,000 AFC, and $75,600 for a $70,000 AFC
- Social Security: Reflects 75% of current formula

	$30,000 AFC		$50,000 AFC		$70,000 AFC	
	Benefit	%	Benefit	%	Benefit	%
DC Annuity @ 5% ER Contribution Level	$6,342	19.6%	$10,569	19.6%	$14,797	19.6%
DC Annuity @ 2% EE Contribution Level	$2,537	7.8%	$4,228	7.8%	$5,919	7.8%
TCRS Defined Benefit Component	$10,500	32.4%	$17,500	32.4%	$24,500	32.4%
Social Security	$10,260	31.7%	$14,562	27.0%	$17,568	23.2%
Total Retirement Income Replacement	**$29,864**	**91.5%**	**$47,327**	**86.8%**	**$62,802**	**83.0%**

Source: Tennessee Treasury Department, Retiree Payments for FY2012.