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**COMMISSION ON GOVERNMENT FORECASTING
AND ACCOUNTABILITY**

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To Members of the Commission on Government Forecasting and Accountability

P.A. 94-1495 required the Commission on Government Forecasting and Accountability to conduct a study on the feasibility of creating a statewide investment pool for Suburban and Downstate Police and Fire pension funds. The Commission contracted with Marquette Associates of Chicago to perform the study, a copy of which is attached with this letter for your review. As you will see in the report, Marquette analyzed the feasibility of police and fire asset consolidation by considering factors such as current asset levels, asset allocation models, fee savings, and transition costs. The assumptions used in this report were developed by Marquette in consultation with CGFA staff, and the data for the report was derived mostly from the annual police and fire pension fund reports that are on file with the Illinois Department of Insurance. In cases where Marquette believed that data obtained from the pension funds understated expenses associated with certain types of investment vehicles – namely mutual funds – Marquette applied what it believed to be a more accurate industry standard based upon their own experience serving clients in the Illinois police and fire pension community.

This report generally concludes that smaller police and fire pension funds (those with assets under \$10 million) would benefit the most from a consolidation, and that the “payback period” – the period during which transition costs would be incurred before annual savings would appear – would be the shortest for smaller pension funds. Marquette also concluded that a “discretionary model,” wherein pension funds would be mandated to invest in state-created commingled funds – would never achieve a cost savings over a 30-year period.

The issue of police and fire pension fund consolidation has been discussed in varying degrees over the years, and to our knowledge, this is the first in-depth study of the issue of investment consolidation for local police and fire pension funds. We would caution that this study is not meant to be the “final word” on this topic, but merely a starting point in the discussion of how best to manage police and fire pension fund assets. It should always be kept in mind when discussing any topic in the pension arena that any projections of costs and/or savings are highly dependent upon the assumptions that are used, and that a wide range of assumptions can be utilized which both reasonable lay people and experienced pension fund professionals would consider to be “reasonable.” One example of this from the study is investment authority; Marquette acknowledges that potential changes to the investment authority of a consolidated pool with respect to the allowable percentages in bonds, stocks, and alternative investments could have an impact beyond what is contemplated in this study. Although this study presents a thorough and comprehensive look at investment consolidation, some of the topics covered in the report may require further study.

We hope this report contributes to a meaningful dialogue on how best to manage police and fire pension fund assets, and we look forward to assisting the General Assembly as these issues are discussed in the coming weeks and months.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dan R. Long", written over a large, stylized blue scribble.

Dan R. Long
Executive Director



CGFA

Commission on Government Forecasting and Accountability

Analysis of Fee Savings and Transaction Costs
due to the Potential Consolidation of the
Downstate Police and Firefighters' Pension
Funds

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PROJECT OVERVIEW & SCOPE

The Commission on Government Forecasting and Accountability (“the Commission”) has retained Marquette Associates, Inc. (“Marquette”) to conduct a study that examines the projected costs and potential fee savings associated with a potential consolidation of the independently-invested downstate police and firefighters’ pension funds (“the Downstate Pension Funds”) into a single, unified investment pool.

In accordance with the request of the Commission and the scope of the project Marquette has proceeded under the assumption that all downstate pension funds would relinquish investment authority to a newly-created investment pool or an existing statewide investment pool, with all investment assets of the downstate pension funds to be commingled into a unified investment pool at the earliest plausible future date.

The goal of the study is to observe the various investment expenses associated with the creation of the unified investment pool, such as investment management fees, custodial fees, legal fees, investment consulting fees, and other functions impacted by the creation of an investment pool. Also included is an analysis of the anticipated transition costs of liquidating and merging all of the downstate pension fund assets into a unified investment pool. To the extent possible, Marquette provided a projection of cost savings in each fiscal year for a statistically representative sample of municipalities during which transition costs and other related costs are expected to be incurred, as well as a projection of long-term costs/savings (30-40 years), both statewide and also for the sampled municipalities. As part of the analysis, Marquette has observed examples of statewide investment pools from Illinois and other states as a template for projecting the incremental costs and savings associated with the creation of a statewide investment pool for the downstate pension funds in Illinois.

EXECUTIVE SUMMARY

Marquette has performed a cost analysis and fee savings study associated with a potential consolidation of the assets of the downstate police and firefighters' pension funds under newly-created, unified investment pool. The following is a summary of the findings:

- There are three primary sources of ongoing management costs associated with the downstate pension funds: trustee-related, operational, and investment-related. According to the Illinois Department of Insurance, investment-related expenses are the largest cost to the downstate pension funds; representing 61.6% of all expenses which is low compared to an average of comparable consolidated funds (65%-70%) of all expenses. Costs associated with investment-related professionals vary based on the pension fund's size, asset allocation, and use of retail or institutional investments. A potential consolidation could provide economies of scale and potential cost savings to the underlying municipalities. However, executing a potential consolidation of assets entails initial transition costs which while not ongoing, are highly impactful in nature.
- In reviewing the structure of retirement systems with consolidated investment pools, Marquette identified three structures for which the analysis was performed: full consolidation, partial consolidation, and discretionary consolidation.
- Based solely on the data provided to the Illinois Department of Insurance by the individual downstate pension funds, the total expenses of the downstate funds are in-line with other retirement systems. However, upon further review, Marquette believes that certain investment-related costs (i.e. management fees for mutual funds and mortality/risk fees for separate accounts of life insurance companies) may not be accurately reflected in the Illinois Department of Insurance data based on the knowledge that certain investment-related costs are netted out of investment performance rather than physically invoiced.
- Based on the estimation of expenses, savings from a consolidation, transition costs, and investment performance a full or discretionary consolidation were suboptimal.
- Marquette's analysis indicates that a partial consolidation of the downstate pension funds with assets under \$10 million would be the optimal consolidation structure that harvests a cost savings relative to transition costs. Under this consolidation structure the most likely present value of net savings over 30 years would be approximately \$210.6 million. The potential payback period of savings

versus costs could be one year. In the partial consolidation, it is unlikely not to realize a long-term savings, however, based on the unknown and potentially high cost structure of the transition which depends almost entirely on market volatility; there is no guarantee (See Appendix 4). Nevertheless, there is clearly a lower and more predictable payback period relative to the other consolidation options. Furthermore, the resulting investment pool would also significantly benefit from the increased investment authority resulting in more savings to the underlying municipalities for participating in the partial consolidation.

TYPES OF COSTS FOR DOWNSTATE PENSION FUNDS

According to the Department of Insurance, in 2009, there were 638 separate downstate pension funds, consisting of 288 firefighter pension funds and 350 police pension funds. The downstate pension funds range in size from as small as \$6,000 to as large as \$130 million. As of 2009, the combined assets of the downstate pension funds totaled \$8.0 billion with \$3.4 billion in fire pension funds and \$4.6 billion in the police pension funds. There are three primary sources for ongoing costs associated with these pension funds: Trustee-related, operational, and investment-related.

Trustee-related – Each downstate pension fund has a Board of Trustees established to oversee the operation of the Plan as mandated under the provisions of the Illinois Pension Code (40 ILCS 5/3 128 and 5/4 121). Of the three aforementioned primary expenses, Trustee-related expenses are generally the smallest. In general, the largest Trustee-related expense involves education for the Board of Trustees. Trustees are required to participate in a minimum of 16 hours of continuing education each year after the first year that the Trustee is elected or appointed (40 ILCS 5/1-109.3 (b)). The costs associated with this education typically covers travel, hotel, meals, conference fees, educational materials, and association dues. Beyond expenses generated from mandatory educational expenses, reimbursements for other costs of performing more general duties as a Trustee are also typical.

Operational – Each Board of Trustees is free to retain professionals (i.e. administrators, auditors, actuaries, attorneys, etc.) to assist the Trustees in fulfilling their fiduciary responsibilities for the smooth operation of the pension fund. The scope of the services rendered by these professionals is often dictated by Illinois Pension Code, and the cost of performing certain functions may vary across retirement systems beholden to different statutory requirements. For instance, the cost of granting a disability pension for a participant of a downstate police and fire fund may be different from another retirement system based solely on the statutory differences for granting and, if applicable, monitoring such a benefit. On average, operational costs comprise the second largest type of costs for the downstate pension funds. However, many downstate pension funds, particularly the smaller funds, elect not to retain these types of professionals to control costs, and they often perform these functions internally or utilize the assistance of municipal staff.

Investment-related – The individual board of trustees are free and sometimes required by the Illinois Pension Code to retain investment professionals (i.e. investment consultants, custodians, broker/dealers, investment managers, etc.) to assist the Trustees in fulfilling their fiduciary responsibility of prudently managing a pension fund's assets. On average, investment-related costs account for 61.7% of all downstate pension fund expenses and, therefore, represent the largest expense. Costs associated with

investment-related professionals vary based on a pension fund's size, asset allocation, the philosophy of the Board of Trustees, as well as the use of retail or institutional investments. Again, many Boards of Trustees elect not to retain some of these types of professionals to control costs, and they perform these functions internally or utilize the assistance of municipal staff to perform these functions.

However, some professionals such as custodians and investment managers (i.e. investment advisors) are required to be retained to perform certain functions. The fees for these services are typically charged on the fund's or account's asset size. Therefore, while pension funds with larger account sizes for a given asset type may incur higher total investment-related fees, they generally have the ability to pay a lower percentage of total assets relative to fees. This is resultant from the willingness of many investment professionals to offer more competitive pricing for big accounts.

Asset allocation is a significant driver to the investment-related expenses as it impacts investment management fees. Typically, asset classes such as fixed income have lower investment management expense ratios than U.S. or non-U.S. equities. The Illinois Pension Code designates four different levels of the investment authority for the downstate police and fire pension funds based on the net asset size that can impact a pension fund's asset allocation. The primary differentiator in the investment authority at each level is the allowable level of exposure to equities. Funds meeting minimum asset sizes are permitted greater exposure to equities.

- All downstate pension funds are permitted to invest in a defined set of fixed income and money market instruments (40 ILCS 5/1-113.2). Additionally, all downstate pension funds are permitted to invest up to 10% of the pension fund's assets in equities through separate accounts managed by life insurance companies and qualified mutual funds (40 ILCS 5/1-113.2 (13)).
- Downstate pension funds with over \$2.5 million in assets are permitted to invest up to 35% of the pension fund's assets in equities through separate accounts managed by life insurance companies and qualified mutual funds (40 ILCS 5/1-113.3).
- Downstate pension funds with over \$5.0 million in assets are permitted to retain an investment advisor to invest up to up to 35% of the pension fund's assets in qualified equities in a separately managed account (40 ILCS 5/1-113.4).
- Downstate pension funds with over \$10.0 million in assets, they may invest up to 50% effective July 1, 2011 and up to 55% effective July 1, 2012 of the pension fund's assets in equities through separate accounts managed by life insurance companies, mutual funds, and separately managed accounts utilizing an investment advisor (40 ILCS 5/1-113.4a).

Because of these distinctions in investment authority, larger downstate pension funds typically allocate more of their investment costs to more expensive asset classes (i.e. equities or publicly-traded real estate investment trusts) in an effort to enhance returns. Such allocation decisions are also dependent on the philosophies of the individual Board of Trustees as well as the actuarial return targets of the pension funds. Some Trustees may also exhibit a higher tolerance for incurring higher investment-related fees if they believe it is likely to result in greater investment performance. In addition, Pension funds with higher actuarial return targets will generally seek higher returns through increased allocations to higher cost asset classes.

The costs associated with retail investments such as retail share classes of mutual funds or separate accounts managed by insurance companies are higher than their institutional counterparts. Institutional investments typically have higher account size minimums or tiered fee schedules making them impractical or difficult for smaller pension funds to gain access and cheaper for larger pension funds.

PEER COMPARISONS

According to publicly available data, there are 1,511 public pension plans in the United States. With 657 public pension plans, Illinois has the largest number of public pension funds in the country. The next largest is Pennsylvania with 137. These figures are a reflection of the local level structure in Illinois. There are 14 states that have adopted segregated statewide police and fire plans, combined statewide police and fire plans, or defined contribution/rollup plans.

In reviewing the structure of retirement systems with consolidated investment pools, Marquette identified three feasible structures for which the analysis was performed: full consolidation, partial consolidation, and discretionary consolidation.

- **Full Consolidation¹** – Under this structure, all of the investments of the downstate pension funds would be consolidated into a single investment pool. Due to the size of the resulting investment pool, fund professionals and staff would need to be established (i.e. Executive Director, CFO, CIO, investment analysts, etc.) The liabilities associated could be pooled or segregated so each underlying municipality would be responsible for funding its own police pension and firefighter pension obligations. There would be one Board of Trustees. Existing plans using this structure typically split equally the Board representation between trustees representing police or firefighters. For statewide plans commingling assets of non-police or firefighter assets typically allot less representation to those groups (ex. Only 1-3 trustees from these trades) and maintain segregated liabilities. At the local level, authority to control the actuarial return target is usually conceded. Examples of full consolidation include Illinois Municipal Retirement Fund, Illinois State Board of Investment, and Wisconsin Board of Investments.
- **Partial Consolidation¹** – Under this structure, a portion of the downstate pension funds would be consolidated into a single investment pool while others continued to operate independently. There would be one Board of Trustees for the consolidated pool. Similar to the Full Consolidation structure, there would need to be the establishment of fund professional staff. The liabilities associated could be pooled or segregated so each underlying municipality was responsible to funding its own police and fire obligations. Participation in the consolidated asset pool under this structure could allow each downstate pension fund the discretion to opt in, relinquishing investment authority or opt out, retaining investment authority. Alternatively to this opt-in model, pension funds could be forced or prohibited to enter the consolidated pools based on relevant factors such as asset size or funded status. For the purpose of this study, Marquette chose to analyze the Partial Consolidation structure, because the smaller downstate pension funds may benefit more from the economies of scale and

lifting of statutory restrictions on investments than larger pension funds. To test this hypothesis, Marquette considered the Partial Consolidation structure for all downstate funds with \$10 million in assets or less. Examples of partial consolidation include the municipal retirement systems for the State of Michigan and the Commonwealth of Pennsylvania, the Police and Fire retirement systems of Missouri.

- **Discretionary Consolidation** - Under this structure, assets of the downstate pension funds would be mandated to invest in state-created commingled funds. The Boards of Trustees would have the autonomy to determine their own asset allocations, and each pension fund would be responsible for their own liabilities. Each of the downstate pension funds would retain its individual Board of Trustees. The discretionary consolidation structure and the establishment of large commingled accounts at the state level could create savings of the investment-related costs that could be passed down to the local level. Trustee-related and operational costs would be largely unchanged as the Boards of each downstate pension fund would continue operating independently. Participation in the discretionary consolidation structure could be either voluntary or mandated by law. The structure could also allow pension funds to invest all or a portion of assets to the state-created commingled funds. For the purpose of this analysis, Marquette considered a mandated consolidation of all downstate pension funds. Examples of discretionary consolidation include Massachusetts Public Retirement Investment Trust and a number of private religious organizations.

¹ For the purposes of this analysis, Marquette assumed that the full consolidation pool would be considered to be a downstate pension fund with assets over \$10 million; hence, the pool would have the same investment restrictions as that of an individual fund.

ESTIMATION OF SAVINGS OF TRUSTEE-RELATED AND OPERATIONAL EXPENSES

To estimate the savings of the trustee-related and operational expenses, Marquette compared the expenses associated with the downstate pension funds in their current structure with the expenses associated with each of the three structures.

Full and Partial Consolidation Structures - Marquette assumed that a single Board of Trustees would administer the consolidated investment pool which would eliminate the trustee-related expenses of the participating current downstate pension funds. Additionally, Marquette assumed that the consolidation would result in redundancies in other professionals (i.e. administrators, auditors, actuaries, attorneys, etc.) assisting in the pension funds' operations. Under partial consolidation, all funds over \$10 million in size were assumed to be non-participants in the consolidated pool, continuing to incur the same levels of trustee-related and operational expenses. Eliminating these redundancies and their associated costs reduce these existing expenses.

However, like other large pension funds, the consolidated structures would require larger staffs, dedicated space, office supplies, phones, and other miscellaneous items that would offset some of the trustee-related and operational savings. Under a full consolidation, a merger with the Illinois Municipal Retirement Fund could be a potential option, in which case, current efficiencies are already in place, but would require additional resources to those efficiencies (i.e. more investment staff, trustees, administration).

Discretionary Consolidation Structure - Marquette assumed that there would be no savings of trustee-related and operational expenses under this model, because the downstate pension funds would continue to operate separately without eliminating their individual Boards of Trustees or operational service providers.

Furthermore, this structure would impose added operational costs and potentially trustee-related costs associated with the creation and management of the statewide commingled funds. Similar to larger public pension funds, the statewide commingled funds would require staff, dedicated space, office supplies, phones, and other miscellaneous items. Under this structure, staff at the statewide level would not be responsible for paying benefits and retirement counseling. However, the average staff salary under the Discretionary Consolidated structure would be higher, and there would need to be staff dedicated to providing services and data to the participating Boards of Trustees at the local level.

ESTIMATION OF SAVINGS OF INVESTMENT-RELATED EXPENSES

Investment-related fee savings represent the greatest potential for savings in a consolidation. For investment management fees, the larger asset base could create economies of scale and greater access to institutional pricing but also allow a higher proportion of assets to be allocated to expensive asset classes. For other investment-related professionals, Marquette assumed that the consolidation would result in the elimination of some redundancies (i.e. custodial services, investment consulting expenses, broker/dealers, etc.) to realize cost savings. Therefore, Marquette attempted to determine the level of expenses of the current structure and contrast that to estimated levels of expenses for each of the three consolidation structures.

Current Structure's Investment-Related Expenses - To estimate the investment-related expenses associated with the downstate pension funds in their current structure, Marquette evaluated of the data from the Illinois Department of Insurance annual report.

The data provided by the downstate pension funds to the Illinois Department of Insurance posed an additional challenge to this cost analysis. Based on industry experience and review of the data, Marquette hypothesized that the data may not fully reflect all of the investment-related expenses of the downstate pension funds. Marquette suspected that some investment-related expenses, such as management fees for mutual funds and separate accounts of life insurance companies, may not be fully captured in the data being reported to the Illinois Department of Insurance. Our theory is based on the knowledge that certain investment-related costs are netted out of investment performance rather than physically invoiced.

To test this hypothesis, Marquette estimated an expected range of investment-related expenses by applying investment and quality specific industry average fee schedules to the assets of the downstate pension funds, taking into account asset classes, number of accounts, sizes of accounts, and other factors. This exercise supported the hypothesis that the reported investment-related expenses were understated.

To further test the hypothesis, Marquette attempted to survey a sample of downstate pension funds. Consequently, Marquette utilized the data captured from the surveys and the FOIA requests to affirm the 2009 Department of Insurance data. Further analysis was conducted on five randomly selected downstate pension funds. Marquette observed that the investment-related expenses reported to the Illinois Department of Insurance for the five downstate pension funds were understated. Marquette did not obtain a statistically significant number of data points to make any definitive conclusion as to the size of the understatement on all of the downstate pension funds.

Consolidated Structures' Investment-Related Expenses - To estimate the investment-related expenses associated with each of the three consolidated structures; Marquette performed a review of the Annual Reports of existing consolidated public retirement systems and estimated an expected range of investment-related fees using the asset allocation of the downstate pension funds and applied asset class, size, and investment- and quality-specific industry average fee schedules.

ESTIMATION OF TRANSITION COSTS

Transition costs are the implicit and explicit costs associated with consolidating the assets into a single investment pool with an organized investment program. Transition costs are the single largest material factor that could offset or outweigh any fee savings from a consolidation. **One important concept to remember is that any transition costs would be incurred immediately whereas as any savings of consolidation would be realized in the future.**

To estimate the transition costs of moving the relevant assets of the downstate pension funds into a consolidated, institutional-quality investment pool, Marquette used an implementation shortfall analysis. Implementation shortfall analysis attempts to measure of the full cost of the transition process, incorporating both explicit fixed costs (i.e. commissions, taxes) and implicit variable costs (i.e. unknown market impact). The explicit costs are driven primarily by commissions which are the fixed charges for buying and selling securities. The implicit costs or market impact is resultant from the unknown price movement of the investment securities during the transition which represents the largest risk in total cost variance. Market impact can affect the value of the assets either positively or negatively and can be large or small, though negative impacts are considerably more probable than positive. Therefore, implicit cost represents a major, unknown risk and probable cost of consolidation.

In performing the implementation shortfall analysis, Marquette made the following assumptions to establish reasonable estimates for the cost to transition the downstate pension fund assets to each of the structures:

- There would be no change to the current investment authority.
- All assets of participating downstate pension funds would be unified in a single transition comprised of an institutionally designed portfolio consistent with the current Illinois Pension Code.
- The target portfolio of the consolidated structures will have the maximum equity exposure currently allowed by law. Since the Full and Partial Consolidation structures will have assets in excess of \$10 million, there maximum equity exposure will be 55%. Under the Discretionary structure, each fund will maintain their own assets and will have maximum equity exposures that commensurate with their respective sizes.
- The fixed income portion of the consolidated investment pool will consist of a core bond portfolio. The equity portion of the consolidated investment pool will be 75% U.S. equity and 25% non-U.S. equity.

- Per the current Illinois Pension Code, non-U.S. equity would be accessed through mutual funds.
- All existing mutual funds would be liquidated to cash and the cash would be used in the purchase different assets.
- CD's (certificate of deposits) and Annuity contracts (general and separate) would be transferred in-kind, and therefore, be excluded from the transition, because of their inherent illiquidity and potentially high exit costs.
- Portions of the liquid asset pool would be transferred in-kind as well, thereby incurring no transition costs: For this analysis Marquette assumed 30% of the U.S. Equities would be transferred in-kind, 50% of the government/agency fixed income securities would be transferred in-kind, and 50% of the agency mortgage-backed fixed income securities would be transferred in-kind.

IMPACT OF ASSET ALLOCATION

For the purpose of this study, Marquette assumed that there would be no changes in investment authority for the downstate pension funds and the consolidated pools would be invested in the maximum equity allocation allowed by law. Even without any change to the investment authority, the three potential consolidation structures all present opportunity for the participating pension funds to increase their expected return. This increase in the downstate pension funds' expected return could potentially translate to additional savings associated with the consolidated structures, but would expose the consolidated funds to greater market volatility. To investigate the impact of the additional potential savings, Marquette conducted an asset allocation study comparing the expected risk/return profile of current aggregate downstate pension fund asset allocation to those possible under various consolidated structures. Savings from increased expected returns would not be guaranteed and increased allocations to more expensive assets classes could increase the average investment management expenses. For the purposes of the asset allocation study, Marquette assumed that illiquid assets such as CD's, General Accounts of Insurance Companies and the Separate Accounts of Life Insurance Companies would take several years to unwind before they could be invested in other investment security types.

OTHER FACTORS IMPACTING POTENTIAL SAVINGS

Marquette believes the following elements could impact the analysis of the potential savings created from consolidation:

- Potential changes to the investment authority with respect to increasing or decreasing the allowable percentages in bonds and stocks, as well as, including additional permissible investments (i.e. alternative investments).
- Opportunity costs – There is opportunity costs associated with the long-term transition to a consolidated model. This relates to the unknown maturity of the illiquid assets such as CD's and Annuity Contracts which would delay the consolidated pool from fully implementing a strategic asset allocation.
- Start-up costs - These are relatively minor costs that only impact the payback period marginally. Marquette anticipates start-up would most likely involve retaining an investment consultant(s), investment managers, custodian, actuary, staff, attorney(s), and auditing services.

FINDINGS

Marquette evaluated the full range of possible, long-term (i.e. 30 years) future cost savings levels associated with the each of the consolidated structures and compared that estimated range of transition costs associated with consolidation. Cost savings include any operational, trustee-related, or investment-related fees savings. Additionally, cost savings include any additional expected return associated with increasing equity exposure. The effects of compounding interest were modeled and the future cash flows were discounted using the expected rate of return of the downstate pension fund assets. This is a vital exercise in accurately comparing short-term transition costs against long-term savings.

The tables that follow reveal Marquette's main cost projections. The low estimates assume that the current fees of the downstate pension funds are the low end of Marquette's estimates and under a consolidated structure would be at the high end of our estimates for a consolidated structure (see Table 8). The high estimate assumes the assets would move from the highest estimated level of current expenses to the lowest estimated of expenses for a consolidated structure. Note: that the low and high estimates represent extremely unlikely outcomes, but Marquette wanted to illustrate the entire range of possibilities. The middle estimates below assume both Marquette's best estimates for current expense levels and potential expense levels and are, therefore, the most relevant data here.

To summarize the middle estimates, Marquette projects in the event of full consolidation without problems, it would take 11 years to break even and begin realizing any cost savings in excess of transition costs. Under the partial consolidation structure, the estimated breakeven point is approximately one year. Under the discretionary consolidation structure, Marquette projects that cost savings would never surpass transition costs over a 30 year period, making that structure completely unviable as indicated by the "N/A".

Estimated 30-Year Aggregate Savings with Full Consolidation (\$000,000)

	All Downstate Pension Funds ↓ Full Consolidation		
	Low Est.	Middle Est.	High Est.
30 Yr. PV of Saved Expenses	-\$228.6	\$156.7	\$542.2
Est. Transition-Related Costs	\$149.4	\$108.8	\$68.3
Total Present Value of Net Savings	-\$378.0	\$47.9	\$473.9
# of Years for Expense Savings to Offset Transition Costs	N/A	11	2

Estimated 30-Year Aggregate Savings with Partial Consolidation (\$000,000)

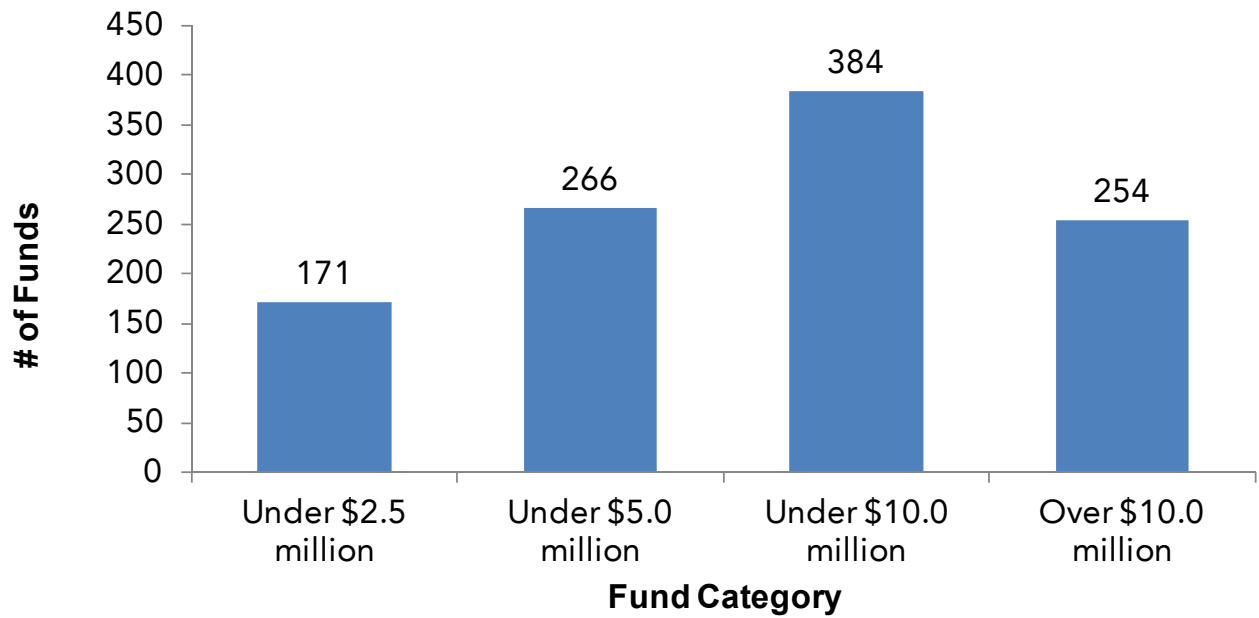
	All Downstate Pension Funds Under ↓ Partial Consolidation		
	Low Est.	Middle Est.	High Est.
30 Yr. PV of Saved Expenses	-\$208.1	\$232.6	\$554.6
Est. Transition-Related Costs	\$32.6	\$22.0	\$11.3
Total Present Value of Net Savings	-\$240.8	\$210.6	\$543.3
# of Years for Expense Savings to Offset Transition Costs	N/A	1	1

Estimated 30-Year Aggregate Savings with Discretionary Consolidation (\$000,000)

	All Downstate Pension Funds ↓ Discretionary Consolidation		
	Low Est.	Middle Est.	High Est.
30 Yr. PV of Saved Expenses	-\$225.8	\$45.5	\$532.6
Est. Transition-Related Costs	\$133.9	\$118.5	\$15.5
Total Present Value of Net Savings	-\$359.7	-\$73.0	\$517.1
# of Years for Expense Savings to Offset Transition Costs	N/A	N/A	1

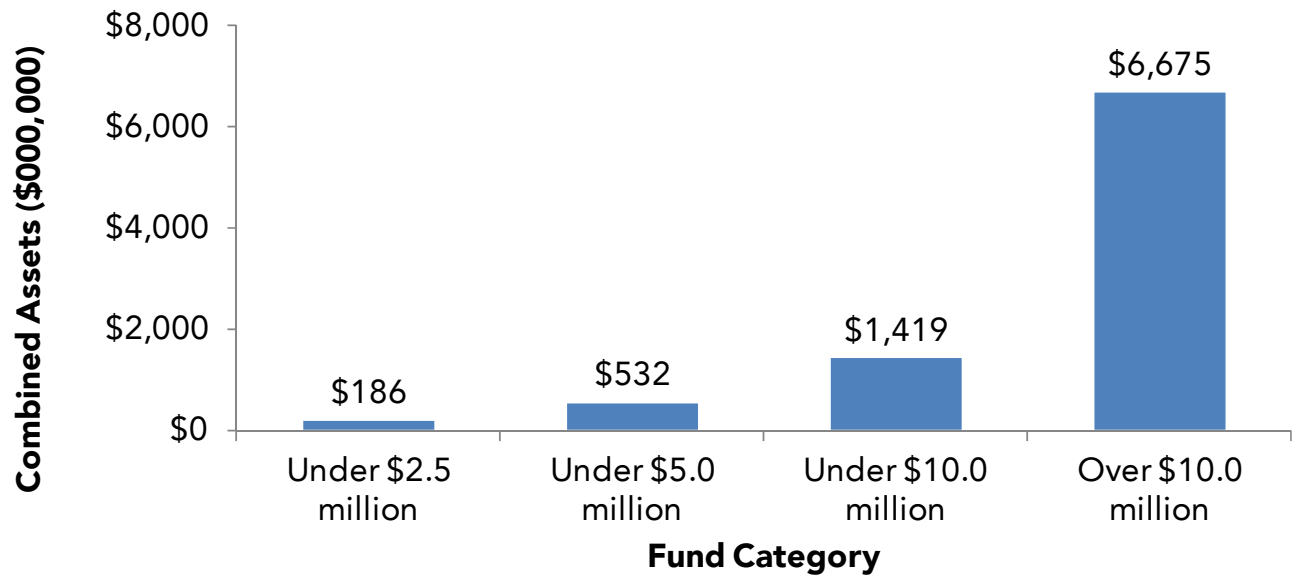
APPENDIX

CHART 1: NUMBER OF DOWNSTATE PENSION FUNDS BY SIZE¹



¹ Source Department of Insurance

CHART 2: ASSETS OF DOWNSTATE PENSION FUNDS BY SIZE¹



¹ Source Department of Insurance

CHART 3: FULL CONSOLIDATION MODEL

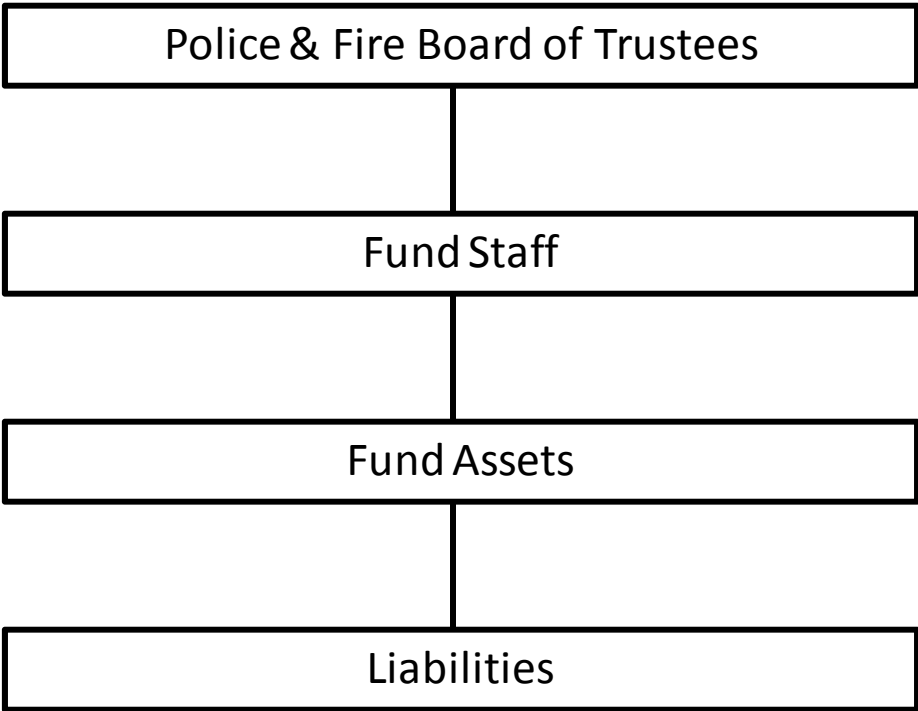


CHART 4: PARTIAL CONSOLIDATION MODEL

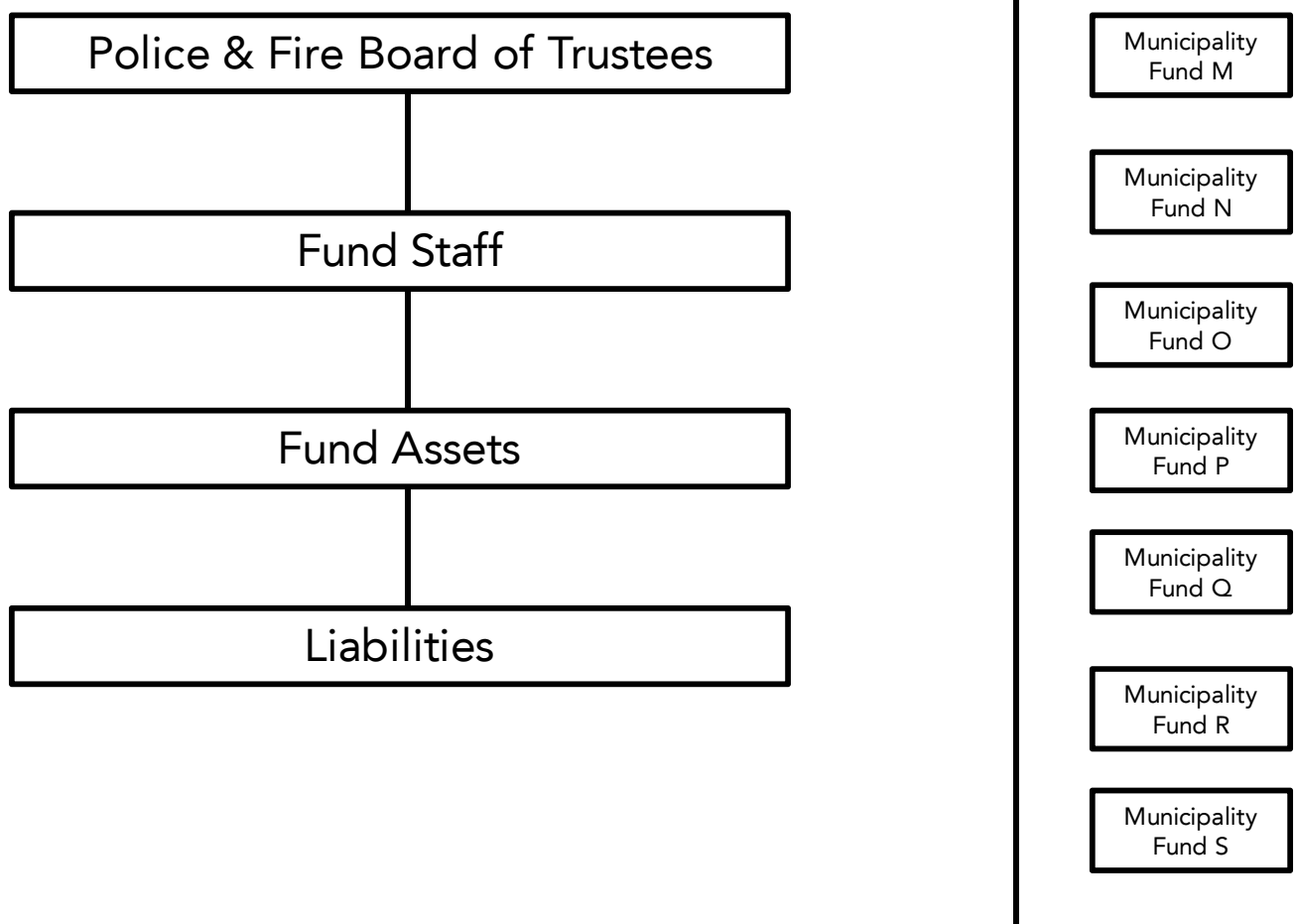


CHART 5: DISCRETIONARY CONSOLIDATION MODEL

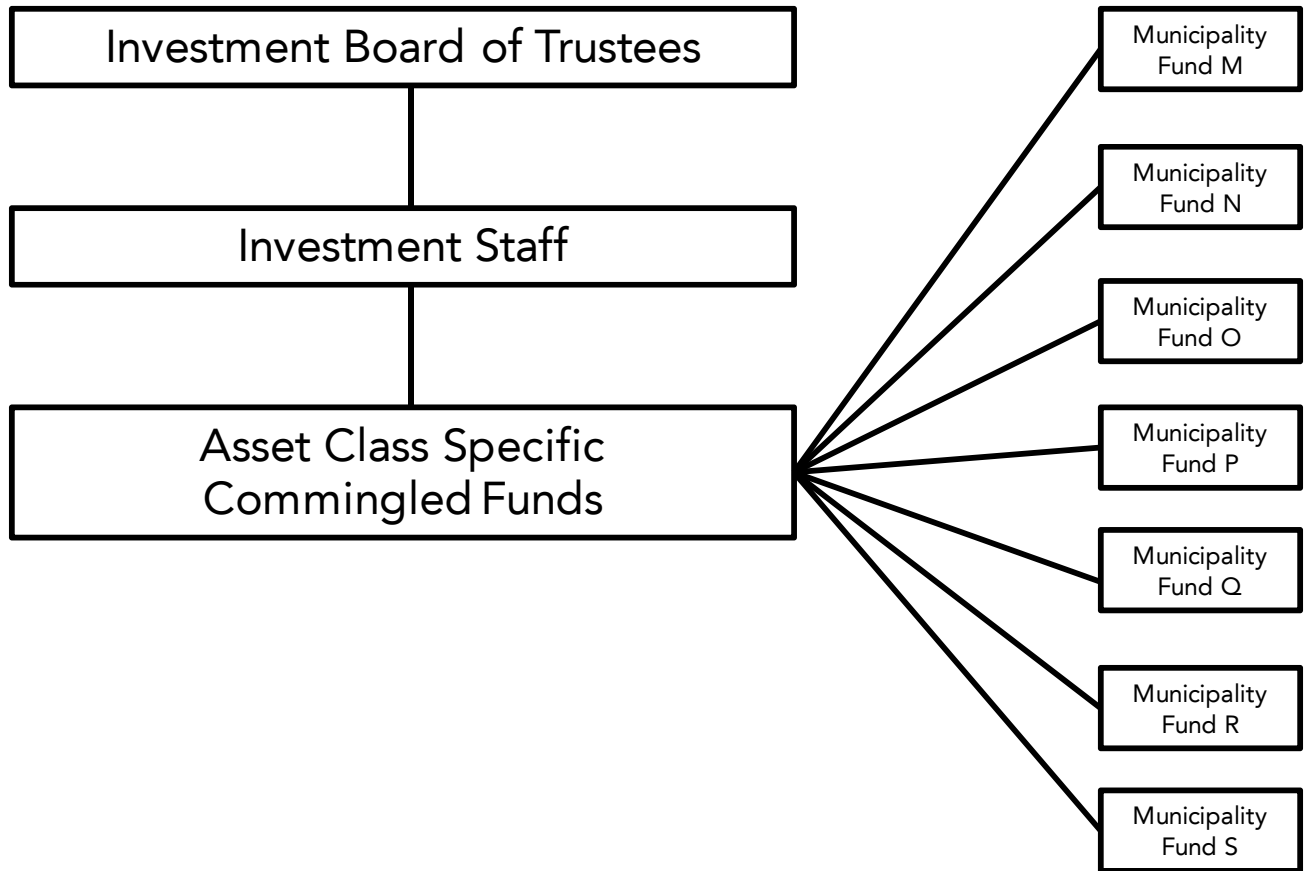


TABLE 1: DOWNSTATE PENSION FUNDS ASSETS – FY09¹

	# of Funds	Aggregate Market Value of Assets (\$000,000)
Fire Pension Funds		
Under \$2.5 Million	100	\$87.7
\$2.5 Million - \$5.0 Million	32	\$116.0
\$5.0 Million - \$10.0 Million	55	\$418.6
Over \$10.0 Million	101	\$2,786.1
Total Fire Pension Funds	288	\$3,408.4
Police Pension Funds		
Under \$2.5 Million	71	\$98.2
\$2.5 Million - \$5.0 Million	63	\$229.8
\$5.0 Million - \$10.0 Million	63	\$468.3
Over \$10.0 Million	153	\$3,888.9
Total Police Pension Funds	350	\$4,685.2
Total Downstate Pension Funds	638	\$8,093.6

¹ Source Department of Insurance

TABLE 2: BREAKDOWN OF DOWNSTATE PENSION FUNDS UNIVERSE BY ASSET SIZE – FY09¹

	Universe of Fire Pension Funds	Universe of Police Pension Funds	Universe of Police & Fire Pension Funds
Smallest	\$6,049	\$64,000	\$6,049
75th Percentile	\$1,328,924	\$2,982,645	\$2,283,432
Median	\$6,499,750	\$8,202,502	\$7,254,698
25th Percentile	\$15,012,342	\$16,074,312	\$15,996,087
Largest	\$132,897,990	\$147,021,113	\$147,021,113

¹ Source Department of Insurance

TABLE 3: ALLOCATION OF DOWNSTATE PENSION FUNDS – FY09¹

	Cash	CD's & General Acct. of Insurance Co.	Govt. & Municipal Bonds	Commingled Funds	Separate Accts. Of Life Insurance Co.	Common & Preferred Stocks	Mutual Funds
Under \$2.5 Million	\$30,374,339	\$78,317,313	\$59,288,562	\$937,528	\$5,404,325	\$1,120,373	\$10,419,611
\$2.5 Million - \$5.0 Million	\$35,912,432	\$93,695,968	\$132,892,576	\$840,328	\$7,552,104	\$4,007,388	\$70,925,317
\$5.0 Million - \$10.0 Million	\$71,131,518	\$106,217,498	\$411,997,454	\$2,637,393	\$38,380,627	\$53,895,026	\$202,663,050
Total Funds Below \$10 Million	\$137,418,289	\$278,230,779	\$604,178,592	\$4,415,249	\$51,337,057	\$59,022,788	\$284,007,979
Over \$10.0 Million	\$498,755,790	\$269,959,320	\$3,168,479,975	\$226,374,819	\$135,224,949	\$780,400,315	\$1,595,775,693
Total Downstate Pension Funds	\$636,174,079	\$548,190,099	\$3,772,658,566	\$230,790,068	\$186,562,007	\$839,423,102	\$1,879,783,671

	Cash	CD's & General Acct. of Insurance Co.	Govt. & Municipal Bonds	Commingled Funds	Separate Accts. Of Life Insurance Co.	Common & Preferred Stocks	Mutual Funds
Under \$2.5 Million	16.3%	42.1%	31.9%	0.5%	2.9%	0.6%	5.6%
\$2.5 Million - \$5.0 Million	10.4%	27.1%	38.4%	0.2%	2.2%	1.2%	20.5%
\$5.0 Million - \$10.0 Million	8.0%	12.0%	46.5%	0.3%	4.3%	6.1%	22.9%
Total Funds Below \$10 Million	9.7%	19.6%	42.6%	0.3%	3.6%	4.2%	20.0%
Over \$10.0 Million	7.5%	4.0%	47.5%	3.4%	2.0%	11.7%	23.9%
Total Downstate Pension Funds	7.9%	6.8%	46.6%	2.9%	2.3%	10.4%	23.2%

¹ Source Department of Insurance

TABLE 4: ANNUAL COSTS FOR DOWNSTATE PENSION FUNDS – FY09¹

	Trustee- Related & Operational Expenses (\$)	Investment- Related Expenses (\$)	Total Expenses (\$)
Under \$2.5 Million	\$931,899	\$226,409	\$1,158,308
\$2.5 Million - \$5.0 Million	\$734,832	\$744,693	\$1,479,526
\$5.0 Million - \$10.0 Million	\$2,266,291	\$2,848,011	\$5,114,301
Total Funds Below \$10 Million	\$3,933,022	\$3,819,113	\$7,752,135
Over \$10.0 Million	\$10,792,844	\$19,758,385	\$30,551,230
Total Downstate Pension Funds	\$14,725,866	\$23,577,498	\$38,303,364

	Trustee- Related & Operational Expenses Ratio (%)	Investment- Related Expenses Ratio (%)	Total Expenses Ratio (%)
Under \$2.5 Million	0.50%	0.12%	0.62%
\$2.5 Million - \$5.0 Million	0.21%	0.22%	0.43%
\$5.0 Million - \$10.0 Million	0.26%	0.32%	0.58%
Total Funds Below \$10 Million	0.28%	0.27%	0.55%
Over \$10.0 Million	0.16%	0.30%	0.46%
Total Downstate Pension Funds	0.18%	0.29%	0.47%

¹ Source Department of Insurance

TABLE 5: INDUSTRY AVERAGE INVESTMENT MANAGEMENT FEES¹

	Investment Mgt. Expenses Ratio (%)
Cash	0.30%
Fixed Income (\$1 Million Account)	0.55%
Fixed Income (\$5 Million Account)	0.40%
Fixed Income (\$15 Million Account)	0.30%
Annuity Contract	2.25%
Equity (\$1 Million Account)	0.85%
Equity (\$5 Million Account)	0.78%
Equity (\$15 Million Account)	0.65%
Mutual Fund (Retail - Equity)	1.00%
Mutual Fund (Institutional - Equity)	0.77%
Mutual Fund (Retail - Index)	0.50%
Mutual Fund (Institutional - Index)	0.27%

¹ Source: Morningstar and eVestment Alliance databases.

TABLE 6: MODELLED PRODUCT EXPOSURE FOR DOWNSTATE PENSION FUNDS

	Under \$2.5 Million	\$2.5 Million - \$5.0 Million	\$5.0 Million - \$10.0 Million	Under \$10.0 Million	Over \$10.0 Million	All Funds
Cash	16.3%	10.4%	8.0%	9.7%	2.4%	3.8%
Fixed Income (\$1 Million Account)	32.4%	38.7%	0.0%	13.7%	0.0%	2.5%
Fixed Income (\$5 Million Account)	0.0%	0.0%	46.8%	29.3%	0.0%	5.4%
Fixed Income (\$15 Million Account)	0.0%	0.0%	0.0%	0.0%	53.8%	43.9%
Annuity Contract	2.9%	2.2%	4.3%	3.6%	2.1%	2.4%
Equity (\$1 Million Account)	0.6%	1.2%	0.0%	0.4%	0.0%	0.1%
Equity (\$5 Million Account)	0.0%	0.0%	6.1%	3.8%	0.0%	0.7%
Equity (\$15 Million Account)	0.0%	0.0%	0.0%	0.0%	12.4%	10.1%
Mutual Fund (Retail - Equity)	5.6%	15.5%	12.8%	12.5%	0.0%	2.3%
Mutual Fund (Institutional - Equity)	0.0%	0.0%	0.0%	0.0%	15.3%	12.5%
Mutual Fund (Retail - Index)	0.0%	5.0%	10.0%	7.5%	0.0%	1.4%
Mutual Fund (Institutional - Index)	0.0%	0.0%	0.0%	0.0%	10.0%	8.2%
Other Asset	42.1%	27.1%	12.0%	19.6%	4.0%	6.9%
Total Portfolio	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

TABLE 7: ESTIMATED COSTS FOR DOWNSTATE PENSION FUNDS AND CONSOLIDATED STRUCTURES

	Est. Investment Management Expenses Ratio (%)	Est. Other Investment Expenses Ratio (%)	Trustee- Related & Operational Expenses Ratio (%)	Est. Expenses Ratio (%)
Under \$2.5 Million	0.35%	0.15%	0.50%	1.01%
\$2.5 Million - \$5.0 Million	0.48%	0.15%	0.21%	0.85%
\$5.0 Million - \$10.0 Million	0.53%	0.10%	0.26%	0.89%
Total Funds Below \$10 Million	0.50%	0.11%	0.28%	0.89%
Over \$10.0 Million	0.44%	0.06%	0.16%	0.66%
Total Downstate Pension Funds	0.45%	0.07%	0.18%	0.70%
Full Consolidated Structure	0.36%	0.02%	0.13%	0.51%
Partial Consolidated Structure	0.39%	0.02%	0.13%	0.54%
Discretionary Consolidated Structure	0.35%	0.03%	0.28%	0.66%

TABLE 8: RANGE OF SAVINGS OF EXPENSES ASSOCIATED WITH CONSOLIDATIONS

	All Downstate Pension Funds ↓ Full Consolidation		
	Low Est.	Middle Est.	High Est.
Total Range of Expense Ratios for All Downstate Pension Funds	0.47%	0.59%	0.70%
Total Range of Expenses for Full Consolidation	0.33%	0.42%	0.51%
Total Range of Savings for Expense Ratio for Transition	-0.04%	0.17%	0.37%

	All Downstate Pension Funds Under \$10 Million ↓ Partial Consolidation		
	Low Est.	Middle Est.	High Est.
Total Range of Expense Ratios for All Downstate Pension Funds Under \$10 Million	0.55%	0.72%	0.89%
Total Range of Expenses for Partial Consolidation	0.33%	0.42%	0.51%
Total Range of Savings for Expense Ratio for Transition	0.04%	0.30%	0.56%

	All Downstate Pension Funds ↓ Discretionary Consolidation		
	Low Est.	Middle Est.	High Est.
Total Range of Expense Ratios for All Downstate Pension Funds	0.47%	0.59%	0.70%
Total Range of Expenses for Discretionary Consolidation	0.44%	0.48%	0.51%
Total Range of Savings for Expense Ratio for Transition	-0.04%	0.11%	0.26%

TABLE 9: EXPENSE DATA FOR LARGE PUBLIC PENSION FUNDS

Fund Name	Fund Size (\$000,000)	Operating Expense Ratio	Investment- Related Expense	Total Expense Ratio
1 ISBI	\$11,528	0.04%	0.29%	0.33%
2 PMRS	\$1,500	0.21%	0.38%	0.60%
3 IMRF	\$25,547	0.10%	0.23%	0.33%
4 Illinois Teachers	\$37,471	0.12%	0.51%	0.63%
5 Illinois SURS	\$12,122	0.13%	0.42%	0.55%
6 Missouri State Empl	\$7,867	0.11%	1.23%	1.34%
7 Mich. State Police	\$1,004	0.16%	0.33%	0.49%
8 Mich. State Employ	\$9,040	0.17%	0.32%	0.49%
9 Mich. Public School Empl	\$36,855	0.18%	0.32%	0.50%
10 Penn Pub. School Employee	\$51,433	0.14%	0.97%	1.11%
11 Wisc Board of Investments	\$76,726	0.05%	0.27%	0.32%
12 Indiana PRS	\$13,894	0.21%	0.53%	0.74%
13 PRIT	\$50,200	0.02%	0.50%	0.52%
14 Tennessee CRS	\$33,663	0.04%	0.07%	0.12%
15 Alaska PERS	\$6,265	0.02%	0.63%	0.65%
16 Arizona PSPRS	\$5,089	0.21%	0.28%	0.49%
17 New Hampshire NHRS	\$5,820	0.17%	0.30%	0.47%
18 South Carolina PORS	\$23,871	0.12%	0.29%	0.41%
19 Maine PERS	\$10,739	0.11%	0.18%	0.29%
Average Expense Ratio		0.12%	0.42%	0.55%

TABLE 10: ESTIMATE TRANSITION COSTS PER ASSET CLASS (IN BPS)

Below is an estimation of transition cost per asset class in basis points.

Asset Class	Commission	Taxes	Bid/Ask	Market Impact	Total
U.S. Equity	3	0	2	16	21
non-U.S. Equity (mutual funds)	0	0	0	16	16
Government Bonds	1	0	2	1	4
Municipal Bonds	6	0	50	5	61
Agency Mortgage Backed	5	0	20	5	30

TABLE 11: ASSET ALLOCATION FOR CONSOLIDATION STRUCTURES

Asset Class	Target Portfolio		
	Full Consolidation	Partial Consolidation	Discretionary Consolidation
Cash	7%	20%	7%
Fixed Income	38%	25%	43%
U.S. Equity	42%	41%	37%
non-U.S. Equity	13%	14%	13%
Total	100%	100%	100%

APPENDIX 1: DESCRIPTION OF IMPLEMENTATION SHORTFALL ANALYSIS

Implementation shortfall is, in trading terms, the difference between the prevailing price or value when a buy or sell decision is made with regard to a security and the final execution price or value after taking into consideration all commissions, fees and taxes. As such, implementation shortfall is the sum of execution costs and the opportunity cost incurred in case of adverse market movement between the time of the trading decision and order execution. Below are the components of the transition using implementation shortfall.

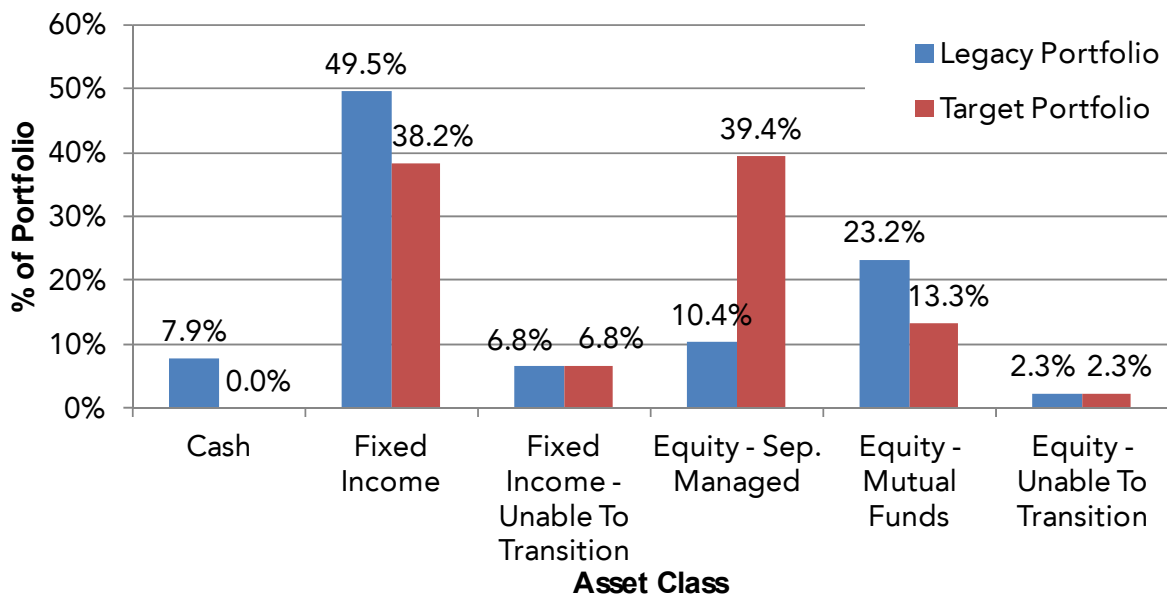
- **Legacy Portfolio:** is the current allocation of the asset being considered for transition.
- **Target Portfolio:** is the desired allocation of the asset being considered for transition.
- **Assumed In-Kind Transfer:** portion of the legacy portfolio that will be transferred to the target portfolio “in-kind” or without being sold or crossed.
- **Assumed Total Trade:** the sell plus the buy from legacy portfolio, minus in-kind transfers, to the target portfolio.
- **Assumed Explicit Cost:** fixed costs (i.e. commission, taxes)
- **Assumed Implicit Cost:** determined by finding the weighted volatility using the difference in variance and covariance of the indices mirroring the assets classes in the transition then factoring the number of trading days for each piece of the transition by the number of trading days in the year (260).
- **Assumed Trading Days:** the number of trading days for each asset class is applied into the implicit costs by factoring the weighted volatility by the number of trading days per asset class.
- **Estimated Total Transition Cost:** the explicit plus the implicit expressed in a range of estimates during a low and high volatile market.

APPENDIX 2: SUMMARY OF FULL CONSOLIDATION TRANSITION ANALYSIS

For this transition, all of the downstate pension funds are consolidated into a single investment pool. The following is a summary of the full consolidation transition:

- The Legacy Portfolio is the current allocation of the combined assets of all downstate pension funds. The Legacy Portfolio consists of 638 downstate pension funds with \$8.1 billion in combined assets.
- The Legacy Portfolio is invested in CD's and General Accounts of Insurance Companies (i.e. Fixed Income – Unable to Transition) and Separate Accounts of Insurance Companies (i.e. Equity – Unable to Transition). For this analysis, these will not be transitioned due to the high costs of selling these assets.
- The Target Portfolio is maximum allowed equity exposure for downstate pension funds with over \$10 million in assets and consists of 45.0% Core Bonds, 41.25% U.S. Equity, and 13.27% non-U.S. Equity. For this analysis, non-U.S. Equity will be represented as Equity – Mutual Funds.

Asset Allocation of Legacy vs. Target Portfolios



To perform the implementation shortfall analysis, the following assumptions were made:

- In-Kind Transfer: 33.9% of the Legacy Portfolio would be transferred in-kind to the Target Portfolio in the following manner:
 - 22.3% Fixed Income – Able to Transition
 - 6.8% Fixed Income – Unable to Transition
 - 2.5% Equity – Able to Transition
 - 2.3% Equity – Unable to Transition

- Total Trade: \$9.662 billion would be traded, bought and sold, and would be broken down the following way:
 - Fixed Income - \$3.253 billion
 - Equity - \$3.457 billion
 - Sell Mutual Funds - \$1.879 billion
 - Buy Mutual Funds (non-U.S. Equity) - \$1.074 billion

- Trading Days:
 - Fixed Income – 5 days
 - Equity can be traded – 2 days
 - Mutual Funds – 1 day

- Trading Costs

	Commissions	Bid/Ask Spread	Market Impact
U.S. Govt. /Agency Bonds	0.01%	0.02%	0.01%
Municipal Bonds	0.06%	0.50%	0.05%
Agency – MBS	0.05%	0.20%	0.05%
Equities	0.03%	0.02%	0.16%
Mutual Funds	0.00%	0.00%	0.16%

The results of the Full Consolidation transition using implementation shortfall analysis are in the below table.

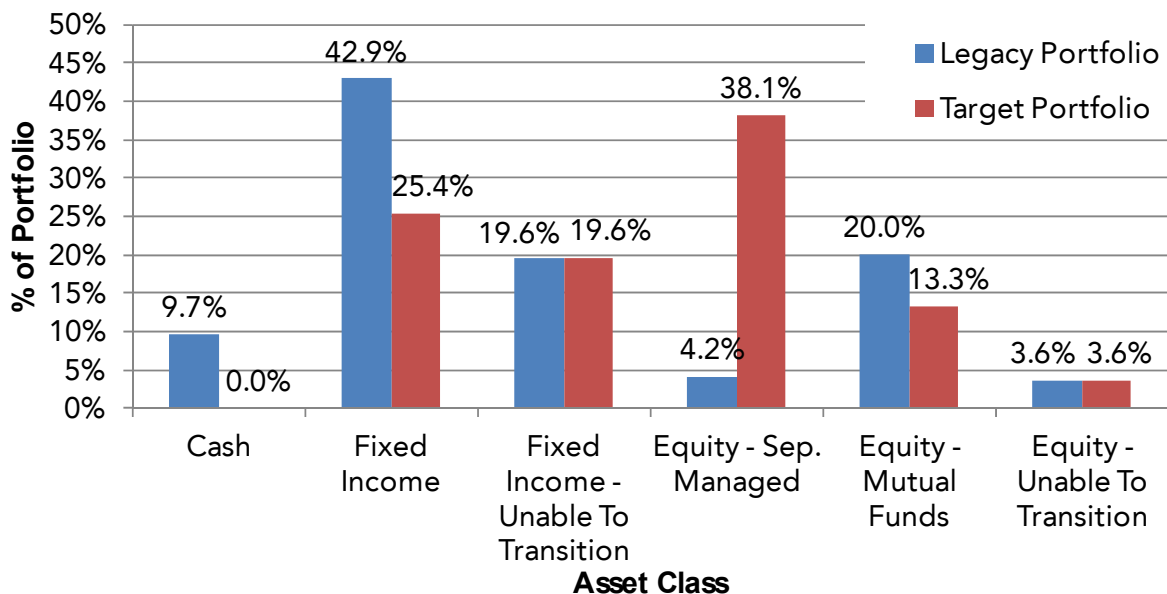
	Lower Volatility Markets		Average Volatility Markets		Higher Volatility Markets	
	Cost (\$000,000)	Cost (% of total Legacy Assets)	Cost (\$000,000)	Cost (% of total Legacy Assets)	Cost (\$000,000)	Cost (% of total Legacy Assets)
Explicit Costs	\$15.2	0.19%	\$15.2	0.19%	\$15.2	0.19%
Implicit Cost	\$53.1	0.66%	\$93.6	1.16%	\$134.2	1.66%
Total Costs	\$68.3	0.84%	\$108.8	1.34%	\$149.4	1.85%

APPENDIX 3: SUMMARY OF PARTIAL CONSOLIDATION TRANSITION ANALYSIS

For this transition, only the downstate pension funds with \$10 million in assets or less are consolidated into a single investment pool. The following is a summary:

- The Legacy Portfolio is the current allocation of the combined assets of the downstate pension funds with \$10 million in assets or less. The Legacy Portfolio consists of 384 downstate pension funds with \$1.4 billion in combined assets.
- The Legacy Portfolio is invested 19.6% in CD's and General Accounts of Insurance Companies (i.e. Fixed Income – Unable to Transition) and 3.6% Separate Accounts of Insurance Companies (i.e. Equity – Unable to Transition). For this analysis, these will be transferred in-kind and used as alternatives for their broad asset classes.
- The Target Portfolio is maximum allowed equity exposure for downstate pension funds with over \$10 million in assets and consists of 45.0% Core Bonds, 41.25% U.S. Equity, and 13.27% Non-US Equity. For this analysis, non-U.S. Equity will be represented as Equity – Mutual Funds.

Asset Allocation of Legacy vs. Target Portfolios



To perform the implementation shortfall analysis, the following assumptions were made:

- In-Kind Transfer: 26.5% of the Legacy Portfolio would be transferred in-kind to the Target Portfolio in the following manner:
 - 3.1% Fixed Income – Able to Transition
 - 19.6% Fixed Income – Unable to Transition
 - 0.2% Equity – Able to Transition
 - 3.6% Equity – Unable to Transition

- Total Trade: \$1.504 billion would be traded, bought and sold, and would be broken down the following way:
 - Fixed Income - \$0.469 billion
 - Equity - \$0.564 billion
 - Sell Mutual Funds - \$0.284 billion
 - Buy Mutual Funds (Non-U.S. Equity) - \$0.187 billion

- Trading Days:
 - Fixed Income – 5 days
 - Equity can be traded – 2 days
 - Mutual Funds – 1 day

- Trading Costs

	Commissions	Bid/Ask Spread	Market Impact
U.S. Govt. /Agency Bonds	0.01%	0.02%	0.01%
Municipal Bonds	0.06%	0.50%	0.05%
Agency – MBS	0.05%	0.20%	0.05%
Equities	0.03%	0.02%	0.16%
Mutual Funds	0.00%	0.00%	0.16%

The results of the Partial Consolidation transition using implementation shortfall analysis are:

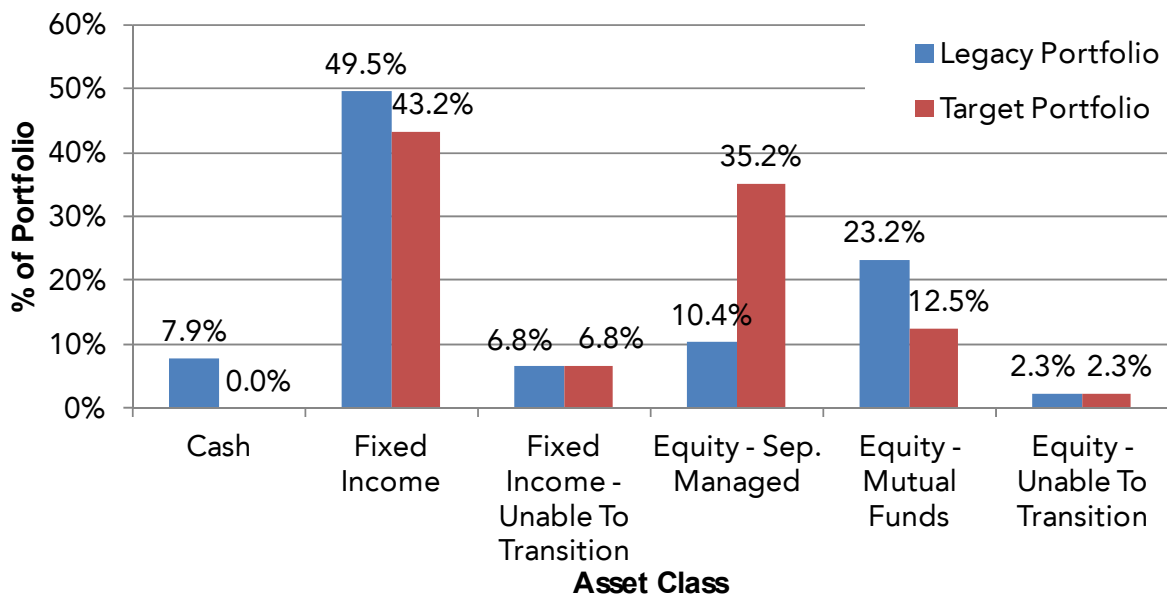
	Lower Volatility Markets		Average Volatility Markets		Higher Volatility Markets	
	Cost (\$000,000)	Cost (% of total Legacy Assets)	Cost (\$000,000)	Cost (% of total Legacy Assets)	Cost (\$000,000)	Cost (% of total Legacy Assets)
Explicit Costs	\$1.9	0.14%	\$1.9	0.14%	\$1.9	0.14%
Implicit Cost	\$9.4	0.66%	\$20.0	1.41%	\$30.7	2.16%
Total Costs	\$11.3	0.80%	\$22.0	1.55%	\$32.6	2.30%

APPENDIX 4: SUMMARY OF DISCRETIONARY CONSOLIDATION TRANSITION ANALYSIS

For this transition, all of the downstate pension funds are consolidated into a discretionary consolidated investment pool. The following is a summary:

- The Legacy Portfolio is the current allocation of the combined assets of all downstate pension funds. The Legacy Portfolio consists of 638 downstate pension funds with \$8.1 billion in combined assets.
- The Legacy Portfolio is invested 6.8% in CD's and General Accounts of Insurance Companies (i.e. Fixed Income – Unable to Transition) and 2.3% Separate Accounts of Insurance Companies (i.e. Equity – Unable to Transition). For this analysis, these will be transferred in-kind and used as alternatives for their broad asset classes.
- The Target Portfolio is a dollar weighted average of the maximum allowed equity exposure for the downstate pension fund and consists of 50.00% Core Bonds, 37.50% U.S. Equity and 12.50% non-U.S. Equity. For this analysis, non-U.S. Equity will be represented as Equity – Mutual Funds.

Asset Allocation of Legacy vs. Target Portfolios



To perform the implementation shortfall analysis, the following assumptions were made:

- In-Kind Transfer: 30.9% of the Legacy Portfolio would be transferred in-kind to the Target Portfolio in the following manner:
 - 19.0% Fixed Income – Able to Transition
 - 6.8% Fixed Income – Unable to Transition
 - 2.8% Equity – Able to Transition
 - 2.3% Equity – Unable to Transition

- Total Trade: \$10.239 billion would be traded, bought and sold, and would be broken down the following way:
 - Fixed Income - \$4.196 billion
 - Equity - \$2.622 billion
 - Sell Mutual Funds - \$1.879 billion
 - Buy Mutual Funds (Non-U.S. Equity) - \$1.011 billion

- Trading Days:
 - Fixed Income – 5 days
 - Equity can be traded – 2 days
 - Mutual Funds – 1 day

- Trading Costs

	Commissions	Bid/Ask Spread	Market Impact
U.S. Govt. /Agency Bonds	0.01%	0.02%	0.01%
Municipal Bonds	0.06%	0.50%	0.05%
Agency – MBS	0.05%	0.20%	0.05%
Equities	0.03%	0.02%	0.16%
Mutual Funds	0.00%	0.00%	0.16%

The results of the Discretionary Consolidation transition using implementation shortfall analysis are:

	Lower Volatility Markets		Average Volatility Markets		Higher Volatility Markets	
	Cost (\$000,000)	Cost (% of total Legacy Assets)	Cost (\$000,000)	Cost (% of total Legacy Assets)	Cost (\$000,000)	Cost (% of total Legacy Assets)
Trading Costs	\$15.5	0.19%	\$15.5	0.19%	\$15.5	0.19%
Volatility Cost (+/-)	\$49.7	0.61%	\$84.1	1.04%	\$118.5	1.46%
Total Costs	\$65.1	0.80%	\$99.5	1.23%	\$133.9	1.65%

APPENDIX 5: ASSET ALLOCATION IMPACT ANALYSIS

Marquette's asset allocation studies are conducted using proprietary software designed to simulate and assess potential risk and return characteristics of total portfolios. The software is based on a Markov-chain Monte Carlo simulation of macroeconomic factors, which are used to model monthly return outcomes of capital markets. The macroeconomic environment is based on two variables which have been shown to reasonably chronicle the movement of capital markets: the BBB spread and the 10-year U.S. Treasury curve yield. Data is simulated on a monthly basis; the simulation is based on historical monthly figures going back to 1919 (BBB spread) and 1926 (10-year U.S. Treasury). The following study was conducted using a sample size of 1,000 and used the following asset allocation weights to model portfolios the projected performance of portfolios re-balanced on a monthly basis. For the purpose of the study, CD's and General Accounts of Insurance Companies were considered to be cash and Separate Accounts of Life Insurance Companies included in U.S. Equity.

Legacy and Target Portfolio's Asset Allocation Weights

Asset Class	Legacy Portfolio		Target Portfolio		
	All Downstate Pension Funds	All Downstate Pension Funds Under \$10 Million	Full Consolidation	Partial Consolidation	Discretionary Consolidation
Cash	15%	30%	7%	20%	7%
Fixed Income	50%	43%	38%	25%	43%
U.S. Equity	26%	20%	42%	41%	37%
Non-U.S. Equity	9%	7%	13%	14%	13%
Total	100%	100%	100%	100%	100%

Using the current 10-year Treasury yield and BBB spread and the above asset allocation weights, the software simulated projected monthly portfolio returns the next 10 years for 1,000 different macroeconomic scenarios. The following table summarizes the 10 year projected annualized returns and volatility for those portfolios.

Legacy and Target Portfolio's 10 Year Projected Annualized Returns and Volatility

	Legacy Portfolio		Target Portfolio		
	All Downstate Pension Funds	All Downstate Pension Funds Under \$10 Million	Full Consolidation	Partial Consolidation	Discretionary Consolidation
Proj. 10 Yr. Ann. Return					
25th Percentile	4.0%	3.4%	4.2%	4.5%	4.5%
Median	5.7%	4.8%	6.9%	6.8%	6.8%
75th Percentile	7.4%	6.1%	9.4%	9.3%	9.3%
Proj. 10 Yr. Ann. Volatility					
Average	7.4%	5.8%	11.3%	11.1%	10.3%

By comparing the return and volatility statistics of the legacy portfolios, Marquette was able to estimate the projected increase in the compounded annualized return and in the annualized volatility associated with moving to the three consolidated structures.

Difference in 10 Year Projected Returns and Volatility Moving From Legacy to Target

	All Downstate Pension Funds ↓ Full Consolidation	All Downstate Pension Funds Under \$10 Million ↓ Partial Consolidation	All Downstate Pension Funds ↓ Discretionary Consolidation
Proj. 10 Yr. Ann. Return			
25th Percentile	0.2%	1.0%	0.5%
Median	1.2%	2.1%	1.2%
75th Percentile	2.1%	3.2%	1.9%
Proj. 10 Yr. Ann. Volatility			
Average	3.9%	5.3%	4.5%

By creating arithmetic averages from the geometric averages, Marquette was able to estimate a range of projected annual additional increase in the market value of the combined assets of the downstate pension funds by moving to the respective consolidated structure due to the anticipated change in asset allocation.

Difference in Average Annual Market Value Increase Over 10 Year Resulting From Moving From Legacy to Target

	All Downstate Pension Funds ↓ Full Consolidation	All Downstate Pension Funds Under \$10 Million ↓ Partial Consolidation	All Downstate Pension Funds ↓ Discretionary Consolidation
25th Percentile	\$2.9	\$12.0	\$5.5
Median	\$16.6	\$27.8	\$16.4
75th Percentile	\$34.7	\$50.2	\$31.9

APPENDIX 6: ECONOMIC IMPACT & TIMEFRAME

- Consideration of the economic impact a merger, in any form, could have on the various not-for-profit organizations and professionals supporting the downstate pension funds (i.e. investment consultants, advisors/managers, attorneys, actuaries, custodians, and auditors).
- A plausible timeframe to complete this consolidation could be anywhere from twenty-four to forty-eight months depending on fund structure and investment authority. Furthermore, if the investment authority is expanded the timeframe would increase given the illiquidity and unknown maturity of certain underlying assets (i.e. annuity contracts and CD's) which have long term structures and high exit costs prior to term maturity.