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Report to the Governor and the General Assembly of Virginia

VRS Oversight Report

DECEMBER 2018

JLARC
JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION

Joint Legislative Audit and Review Commission

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Overview

The Virginia Retirement System (VRS) administers retirement plans for employees of state and local governments. The two largest plans are the Teachers Plan and the State Employees Plan (Figure 1). Other pension plans include the individual retirement plans for 593 local political subdivisions and plans for state police officers (SPORS), other Virginia state law officers (VaLORS), and judges (JRS). VRS also administers several defined contribution retirement plans. In addition to retirement plans, VRS administers post-employment benefit programs. These include life insurance, sickness and disability, long-term care, and the retiree health insurance credit program. VRS also conducts eligibility determinations and fund administration for Virginia's Line of Duty Act.

VRS serves approximately 709,000 members, retirees, and beneficiaries. Active members include current state and local employees and teachers in Virginia's public school divisions. Others served by VRS include retirees, their designated beneficiaries, and "deferred" members, who are not actively employed and are not collecting benefits.

The financial assets used to pay VRS benefits are pooled in the VRS trust fund, which held $80.2 billion in assets as of September 30, 2018. Ranked by value of assets, VRS is the nation's 19th largest public or private pension fund. In FY18, VRS paid $4.8 billion in retirement benefits and $0.4 billion in other post-employment benefits, not including benefits paid through the defined contribution plans.

VRS receives funds from three main sources: employer contributions, member contributions, and investment income. In FY18, VRS received $4.1 billion in net additions to the trust fund (accounting for expenses and benefits paid out).

Investment income is critical to the health of the VRS trust fund, accounting for over half of total additions in FY18. VRS investments generated a return of 6.9 percent for the one-year period ending September 30, 2018. The total annualized return over the 10-year period was 7.5 percent, which is above the 7.0 percent long-term (30+ year) rate of return that has been assumed by VRS for its investments.

FIGURE 1
VRS pension plans by assets

SOURCE: VRS 2018 valuation report.
NOTE: Figures show total actuarial value of assets attributable to each retirement plan as of June 30, 2018. Trust fund assets attributable to other benefit programs are not shown. Figure for local plans is the aggregate of assets for political subdivisions that participate in VRS. Local plans hold more assets than the State Employees plan because they have typically been fully funded by local employer contributions, whereas the State Employees plan has not been fully funded in the past. The State Employees plan is larger than the local plans as measured by pension obligation.

FIGURE 2
VRS fast facts

MEMBERSHIP as of September 30, 2018

346,120	Actively employed members[a]
210,764	Retired members & beneficiaries
152,219	Inactive members
709,103	Total

NET ADDITIONS for fiscal year ending June 30, 2018[b]

$2.8 billion	Employer contributions
$1.1 billion	Member contributions
$5.5 billion	Net investment income
–$5.4 billion	Benefits paid and other expenses[c]
$4.1 billion	Net additions[d]

ASSETS as of September 30, 2018

$$$

$80.2 billion
Total VRS trust fund assets

INVESTMENT PERFORMANCE as of September 30, 2018

	1 year	3 years	5 years	10 years
Total return	6.9%	9.1%	7.9%	7.5%
Benchmark	6.9%	8.9%	7.5%	7.0%
Excess return	0.0%	+0.2%	+0.4%	+0.5%

SOURCE: VRS 2018 annual report and 2018 membership and investment department data.
[a] Active membership included 149,770 teachers, 108,330 local government and political subdivision employees, and 88,020 state employees, state police, law enforcement officers, and judges. Within the retirement plans are three different benefit groups. Active membership by benefit group included 169,469 in Plan 1, 86,768 in Plan 2, and 89,883 in the hybrid plan. [b] Includes all additions and deductions to the trust fund for VRS retirement plans and other benefits programs. [c] Includes $4.8 billion in retirement benefit payments, $416 million in other benefits, $123 million in refunds, and $60 million in administrative and other expenses. [d] Does not sum due to rounding.

1. Trust fund investments

Management of the trust fund investments is one of the core responsibilities of VRS. The VRS Board of Trustees sets investment policies for managing the trust fund, including the desired asset allocation for the fund. The investment department manages investment programs within the guidelines set by the board. The investment department manages approximately one-third of the assets in-house and contracts with external managers to manage other assets.

Investment performance and asset allocation

The VRS trust fund held $80.2 billion in assets as of September 30, 2018, an increase of $4.2 billion from a year ago. Approximately $27.1 billion of the trust fund was managed in-house, including all fixed income and some public equities, real assets, and cash. The remaining $53.1 billion was managed by external managers under VRS supervision.

The VRS board adopts a **long-term return assumption** based on the advice of the Investment Advisory Committee, VRS investment staff and plan actuary, and surveys from investment managers and consultants. This is the rate of return expected over the next 30+ years, based on projections of future market performance.

The long-term return assumption is one of the key assumptions used to determine the plan's funded status and employer contribution rates. The current long-term return assumption is 7%.

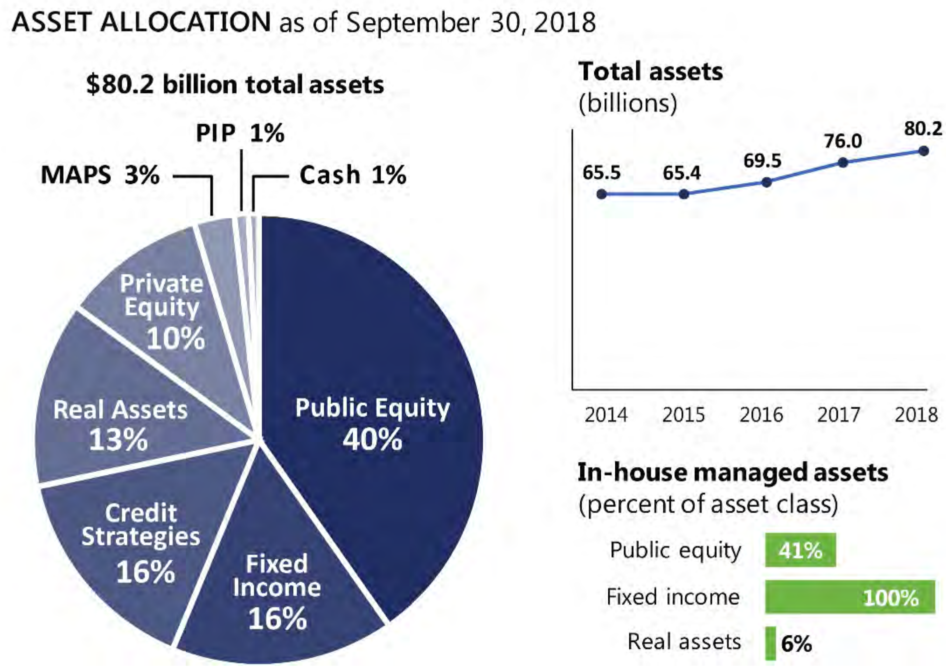
The trust fund's investment returns were mixed relative to the long-term return assumption, but the fund has outperformed its benchmarks. For the one-year period ending September 30, the trust fund's investments achieved a return of 6.9 percent. This was slightly below the 7.0 percent long-term (30+ year) rate of return that has been assumed by VRS for its investments. The fund's three-year, five-year, and 10-year returns have exceeded the long-term rate of return. The total fund met or outperformed its benchmark for all periods, short and long term (Figure 3).

The trust fund holds two new portfolios—the multi-asset public strategies portfolio and the private investment partnership portfolio—as of July 1, 2018. The investments in these asset classes were previously part of the strategic opportunities portfolio, which no longer exists. The VRS board created the two portfolios and established a target asset allocation for each portfolio to allow for easier management of the trust fund's overall asset allocation. The previous strategic opportunities portfolio did not have a target asset allocation.

Public equity. The public equity program continues to be the largest VRS asset class, with $32.3 billion in assets. The program consists of stocks and other equity securities for publicly traded companies in the U.S. and globally. Public equity investments are typically higher-risk than bonds and are expected to provide long-term capital growth and inflation protection. Forty-one percent of the program's assets are managed in-house. The program outperformed its benchmarks for the five-year and 10-year periods, but it did not meet its benchmarks for the fiscal year to date (first quarter of FY19), one-year, or three-year periods. The underperformance was mainly due to equity hedge funds underperforming compared to the benchmark, and underperformance in value and low-volatility exposures, according to VRS staff.

Fixed income. The fixed income program is the second-largest VRS asset class, with $12.8 billion in assets. The program consists of U.S. dollar-denominated securities, such as bonds and money market instruments, that pay a specific interest rate. Fixed income investments are typically lower risk relative to most other asset classes and are expected

FIGURE 3
Asset allocation and trust fund investment performance



TRUST FUND INVESTMENT PERFORMANCE
for the period ending September 30, 2018

	FY to date	1 year	3 years	5 years	10 years
Total fund	2.5%	6.9%	9.1%	7.9%	7.5%
VRS custom benchmark	2.3	6.9	8.9	7.5	7.0
Public equity	3.6	8.8	11.8	9.2	9.0
Benchmark	3.7	9.9	12.2	8.9	8.4
Fixed income	0.2	−0.9	2.0	2.7	4.8
Benchmark	0.0	−1.2	1.3	2.2	3.8
Credit strategies	2.0	4.9	7.3	5.7	7.8
Benchmark	2.1	3.7	6.8	5.3	6.8
Real assets	1.7	9.2	10.5	11.3	7.2
Benchmark	1.5	7.3	8.2	9.2	6.4
Private equity	4.3	16.0	14.3	14.9	10.8
Benchmark	2.4	14.6	12.0	13.3	11.3
Multi-asset public strategies	1.1	n/a	n/a	n/a	n/a
Benchmark	1.4	n/a	n/a	n/a	n/a
Private investment partnerships	2.0	7.5	7.0	n/a	n/a
Benchmark	2.0	7.7	7.0	n/a	n/a

SOURCE: VRS investment department data.
NOTE: Asset allocations do not sum to 100 percent due to rounding. MAPS = multi-asset public strategies. PIP = private investment partnerships.

to generate steady returns even in down equity markets. All fixed income assets are managed in-house. The program outperformed its benchmarks for all periods.

Credit strategies. The credit strategies program is the third-largest VRS asset class, with $12.4 billion in assets. The program includes investments in emerging market debt, high yield bonds, convertible bonds, bank loans, and direct lending. Credit strategies investments are intended to provide higher income than traditional stock and bond investments and risk-adjusted returns. All of the program's assets are managed externally. The program outperformed its benchmarks for all periods except for the fiscal year to date (first quarter of FY19). The recent underperformance was due to higher levels of volatility across segments within the program resulting in a net underperformance, according to VRS staff.

Real assets. The real assets program is the fourth-largest VRS asset class, with $10.7 billion in assets.* The program includes investments in real estate, infrastructure, and natural resources such as timber. Real assets investments are expected to reduce volatility of the total fund by offering returns that do not have a high statistical correlation to the public equity market. Most VRS real assets are managed externally. The program outperformed its benchmarks for all periods.

Private equity. The private equity program is the smallest of the five major asset classes, with $8.3 billion in assets.* Private equity is an alternative to traditional public equity and generally consists of ownership in companies that are not listed on public exchanges. Private equity investments are "opportunistic" investments that are intended to outperform public equity markets over the long term and enhance total fund returns. All private equity assets are managed externally. The program outperformed its benchmarks in the fiscal year to date (first quarter of FY19), one-year, three-year, and five-year periods, but underperformed in the 10-year period. The program achieved its intended purpose—to earn higher returns than the public equity program—in all periods.

Multi-asset public strategies. The multi-asset public strategies program is a new, relatively small exposure, with $2.3 billion in assets. The portfolio includes dynamic strategies, which are opportunistic multi-asset allocation approaches. The portfolio also includes risk-based investments, which are uncorrelated and diversifying strategies relative to the rest of the assets in the fund. The portfolio is managed externally and has underperformed its benchmark for the fiscal year to date (first quarter of FY19). The portfolio is too new to have performance or benchmarks for additional periods.

Private investment partnerships. The private investment partnerships portfolio is another new, relatively small exposure, with $800 million in assets. The portfolio is comprised of multi-asset private investments and is managed externally. The portfolio

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*Performance figures for the real assets and private equity programs, as well as the private investment partnerships portfolio, do not reflect managers' actual valuations of these investments as of September 30, 2018 because valuations of private assets have a timing lag behind other assets. Instead, performance figures are based on valuations as of June 30, 2018, adjusted for cash flows during the quarter that ended September 30, 2018.

met its benchmark for the fiscal year to date (first quarter of FY19) and three-year period, but underperformed its benchmark for the one-year period. The portfolio is too new to have performance or benchmarks for five-year and 10-year periods.

Investment policies and programs

The VRS board sets investment policies, and the professionals in the investment department implement programs to fulfill those policies. The board has not made any significant changes to investment policies, benchmarks, or asset allocation since July 2018. However, the board has continued working with a consultant to review the compensation plan for investment professionals.

VRS investment expenses increased as the trust fund increased, but expenses remained lower than peers

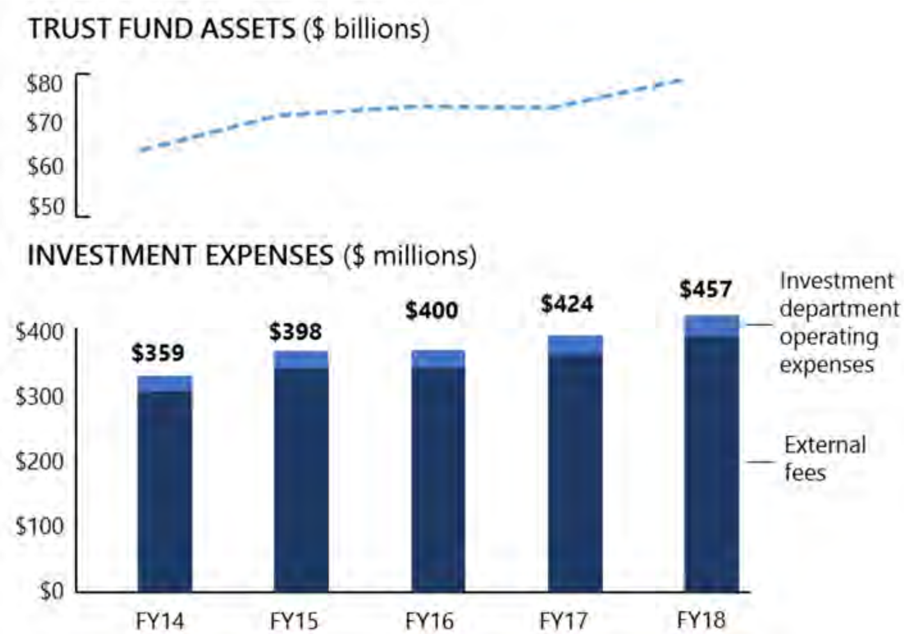
VRS investment expenses include external fees, paid mostly to outside investment managers, and the VRS investment department's operating expenses. External fees account for over 90 percent of investment expenses.

VRS investment expenses have increased over time, but this is mostly a function of the growing value of assets held in the VRS trust fund (Figure 4). Investment expenses increased by an average of 6.3 percent per year, for a total increase of $99 million since FY14. This growth was driven by the trust fund, which also grew by an average of 4.5 percent per year over the same five-year period. VRS investment expenses as a percentage of total trust fund investments were between 0.54 and 0.59 percent during this time. Most of VRS's investment expenses are fees paid to external managers based on the value of the assets they hold. As the trust fund grew, so did the value of assets held by external managers and, correspondingly, the total fees they were paid.

VRS investment department expenses represent a small but growing part of overall investment expenses. These expenses grew from $26 million in FY14 to $34 million in FY18, an increase of 34 percent. The main drivers of growth were staffing and IT expenses. VRS added and filled full-time positions in the investment department over this time period and purchased new software systems, data feeds, and licenses. A substantial portion of these expense and staff increases were attributable to the expansion of the in-house asset management group. VRS also hired staff to further help oversee its external managers and added new risk management and research capabilities.

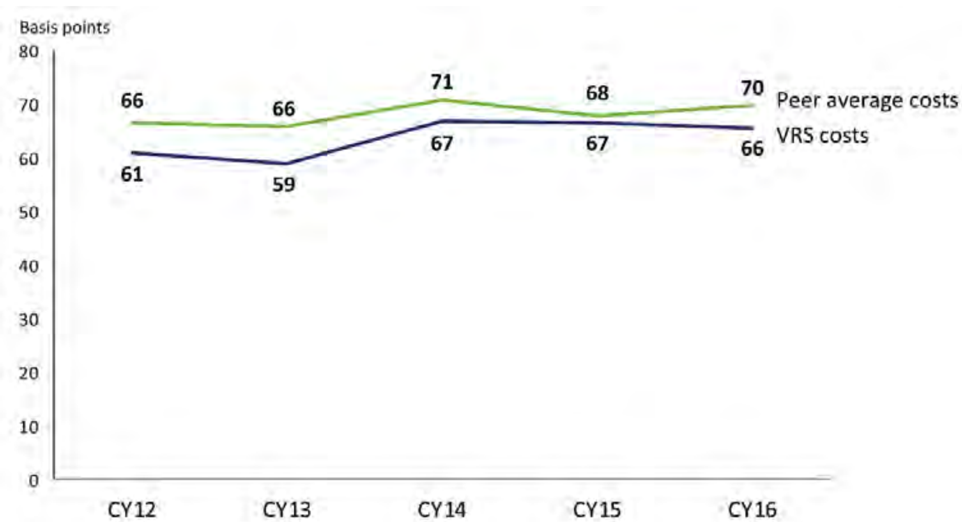
Although VRS investment expenses have increased overall, they remain lower than the investment expenses of peer retirement systems. VRS has hired an investment benchmarking consultant, CEM Benchmarking, to annually review its investment expenses and compare them to peers. CEM looked at VRS expenses as a percentage of the trust fund, measured in basis points. CEM reported that VRS investment expenses increased from 61 to 66 basis points from 2012 to 2016. However, VRS expenses were one to seven basis points lower than the peer average over the same time period, adjusted for fund size and asset mix (Figure 5). (CEM's reported investment expenses are different than those reported by VRS because CEM makes adjustment to expenses and the assets they are measured against so that they are comparable to peers.) The difference in basis points between VRS and its peer average was the equivalent of $7 million to $41 million in lower total investment expenses in a given year.

FIGURE 4
Trend in VRS investment expenses compared to trust fund assets



SOURCE: VRS annual reports and investment department data.
NOTE: External fees include management and performance fees paid to third parties that invest VRS assets. They also include fees paid to the bank that serves as the trust fund's custodian and legal fees. Investment department operating expenses include all staff, IT, facility, and contract services fees (other than those captured in external fees) related to the investment department's routine operations.

FIGURE 5
VRS investment expenses compared to peers



SOURCE: CEM investment benchmarking reports to the VRS board.
NOTE: In conducting its analysis, CEM makes adjustments to VRS expenses and the assets they are measured against so that they are comparable to peers. Benchmark comparisons for 2017 and 2018 are not yet available.

In-house asset management reduced fees paid to external investment managers

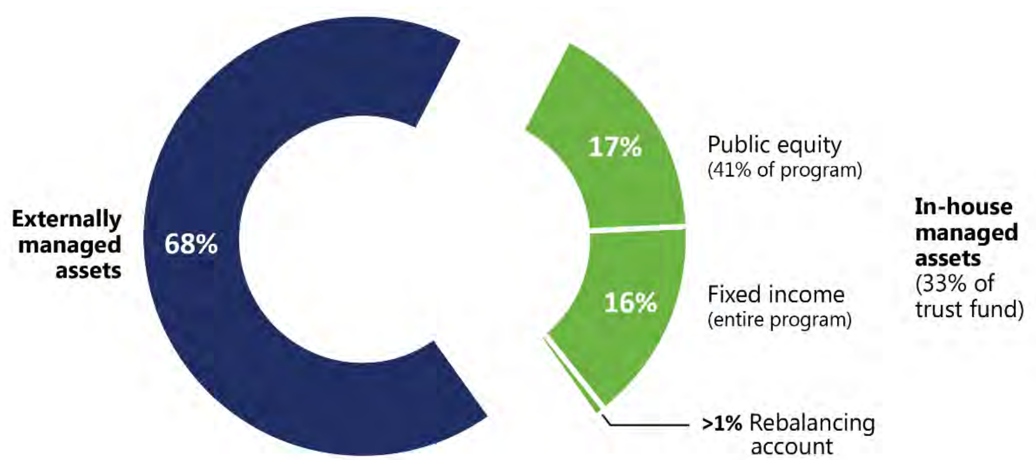
VRS manages a portion of the trust fund's assets in-house, with the goal of reducing costs while maintaining a high return on investments. At the end of FY18, 33 percent of the trust fund was managed in-house (Figure 6). In-house managed assets included the entire fixed income program and over 40 percent of the public equity program.

VRS staff indicated that in-house management of assets has resulted in substantial cost savings while providing a high return relative to benchmarks. According to a VRS consultant, approximately $45 million is saved annually by managing assets in-house instead of paying fees to outside managers. These annual savings remain in the fund to be reinvested, which compounds the savings over time.

In-house managed public equity assets met or outperformed their benchmarks for the one-, five-, and 10-year periods ending June 30, 2018. These assets generated an annualized return of 9.5 percent over the 10-year period, 120 basis points above the 10-year benchmark.

In-house managed fixed income assets outperformed their benchmarks for all periods ending June 30, 2018. The assets outperformed the 10-year benchmark by 50 basis points and generated an annualized return of 4.6 percent over that period.

FIGURE 6
VRS in-house and externally managed assets (as of June 30, 2018)



SOURCE: VRS investment department data, 2018.
NOTE: The rebalancing account may include fixed income, equity, and cash exposure. In-house managed real assets are grouped into the public equity program for reporting purposes. Does not sum due to rounding.

Incentive awards for investment professionals were lower this year commensurate with investment performance

As part of its compensation plan for investment professionals, VRS provides incentive awards to encourage strong investment performance. Incentive awards for investment staff are not uncommon among large public funds. The VRS incentive awards are mostly based on how investments performed relative to benchmarks over the 3-year and 5-year periods.

The board approved $1.3 million less in total incentive awards for VRS investment staff in 2018 than in 2017 ($5.5 million in 2018 compared to $6.8 million in 2017). Total incentive awards were lower in 2018 because FY18 investment performance was generally lower compared to FY17. The VRS public equity and internal equity asset classes underperformed their benchmarks in FY18 for the 3-year period. Other investments exceeded their benchmarks for the 3-year and 5-year periods but by a lesser amount than in FY17. In addition, the total fund performance, which is also factored into incentive awards, was lower in FY18 than in FY17.

VRS board changed policy for calculating incentive awards for investment staff

The board adopted a change to the incentive award policy at its November meeting following a review of the overall investment pay plan by VRS's compensation consultant, McLagan. The review was prompted, in part, by JLARC members' ongoing concern over the compensation of VRS investment professionals. McLagan's findings are consistent with a 2016 JLARC staff review of the investment pay plan. McLagan found that VRS's investment pay plan is competitive and appropriate, and its design features are generally mainstream. However, similar to JLARC, McLagan found that the use of an absolute return adjustment is not common among public funds.

VRS's absolute return adjustment increases or decreases investment staff incentive awards based on the most recent one-year total fund return. The board implemented the policy in 2013, following the losses experienced by the fund in FY08 and FY09, as a mechanism to reduce award amounts in years when the fund has a negative total return. For example, a $100,000 year-end incentive award would be adjusted to $95,000 to reflect a negative 5.0 percent total fund return for that year, or adjusted to $107,000 to reflect a positive 7.0 percent total fund return. In practice, the absolute return adjustment has generally increased incentive awards because the fund typically has a positive one-year return.

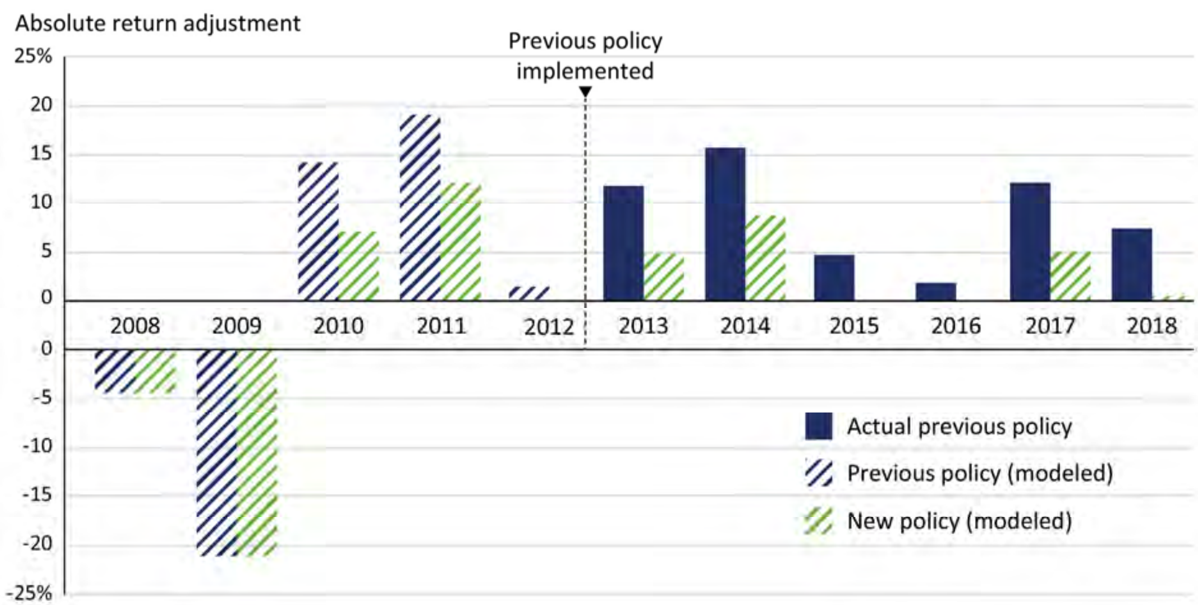
McLagan provided a range of alternatives for the board to consider regarding the absolute return adjustment, including eliminating the adjustment and adopting guidelines that could be used to determine whether incentive payments should be deferred or reduced in negative absolute return years. According to McLagan, the use of a guideline would be consistent with the approach used by most public funds, which only adjust returns for negative performance.

The board instead decided to maintain the absolute return adjustment but modify it to be less generous in years of positive total fund returns. The board determined that a formula, rather than a guideline, would provide more clarity to future boards, investment staff, and stakeholders on how incentive pay would be adjusted in down markets. The new policy is identical to one proposed in a budget amendment introduced by Delegate Landes during the 2018 General Assembly session. Under the new policy:

- For years in which the fund experiences a negative total return, the absolute return adjustment will be based on the negative return, which was the previous policy.
- For years in which the fund experiences a positive total return between 0 and the assumed long-term rate of return for the fund (currently 7.0 percent), no absolute return adjustment will be applied.
- For years in which the fund experiences a positive total return above the assumed long-term rate of return, the absolute return adjustment will be based on the percentage of return in excess of the assumed long-term rate.

The new policy will result in fewer years of absolute return adjustments and lower positive adjustments during years of positive returns. For example, had the new policy been in place over the current market cycle, it would have resulted in an increase to incentive pay in six of those years, with an average adjustment of 1.2 percent (Figure 7). Had the previous policy been in place over the entire market cycle, it would have resulted in an increase in incentive pay in nine of those years, with an average adjustment of 5.7 percent. If the new policy had been in place at VRS since the use of an absolute return adjustment began in 2013, cumulative incentive pay for VRS investment staff would have been reduced by an average of nearly $300,000 per year.

FIGURE 7
Previous and new absolute return adjustment policies over a market cycle (modeled)



SOURCE: VRS annual reports.
NOTE: Based on total fund returns for the one-year period ending June 30. VRS absolute return adjustment has only been in place since 2013; 2008 to 2012 are included to illustrate effects of the new policy compared to the previous policy over an entire market cycle. In 2009, the board did not approve any incentive awards for investment staff.

2. Defined contribution plans

VRS manages several defined contribution plans for its members. All state employees and many local VRS members may be eligible to participate in one or more of the plans (Table 1). Participants in these plans have their own accounts, and individual participants determine how their money is invested. The defined contribution plans are similar in structure to private sector 401(k) plans and personally owned individual retirement accounts (IRAs).

TABLE 1
VRS defined contribution plans (as of September 30, 2018)

Plan	Description	Assets ($M)
Deferred compensation and cash match	State employees, and some local VRS members, can choose to make voluntary contributions to their Commonwealth 457 deferred compensation plan to supplement their retirement income. Most state employees receive a modest cash match from employers in their Virginia 401(a) cash match plan. [a]	$3,278
Optional plan for higher education [b]	Faculty at public colleges and universities may make an irrevocable one-time decision to participate in this defined contribution plan instead of the State Employees Plan. Employers are required to make contributions to participant accounts, and employees hired after July 1, 2010, are also required to contribute.	$1,068
Hybrid	State and local members of the hybrid plan are required to contribute to their Hybrid 401(a) plan and can choose to make voluntary contributions to their Hybrid 457 plan. Employers make mandatory contributions to participant accounts and match a portion of voluntary contributions made by members. Members are also enrolled in the hybrid plan's defined benefit component.	$370
Other [c]	Optional retirement plans can be offered as alternatives for political appointees (in place of the VRS State Employee plan) and school superintendents (in place of the VRS Teachers plan).	$16

SOURCE: VRS administration and investment department data.
[a] Most political subdivisions do not have a cash match plan. [b] The following higher education institutions administer their own optional plans: George Mason University, Virginia Commonwealth University, the University of Virginia, Virginia Tech, and the College of William and Mary. Faculty at these institutions are not eligible to participate in the VRS optional plan for higher education. [c] The amounts held in the other plans are as follows: Optional Retirement Plan for Political Appointees, $16.0 million; Optional Retirement Plan for School Superintendents, $0.2 million; and Virginia Supplemental Retirement Plan for certain educators, $0.1 million.

Some of the VRS defined contribution plans are intended to provide primary retirement benefits, whereas others are intended to supplement pension benefits. The aggregate value of participant accounts held in the VRS-managed defined contribution plans was $4.7 billion as of September 30, 2018.

Plan performance

Participants in the VRS defined contribution plans may choose from 21 different investment options available through the defined contribution plans (DCP) lineup. These options include (1) diversified target-date portfolios, (2) individual investment options, and (3) self-directed brokerage accounts. Participants pay a flat administrative fee every year and additional investment fees according to the options they select. Participants in the Optional Retirement Plan for Higher Education may choose to invest in options available through VRS's DCP lineup or in options available under two other providers, TIAA and Fidelity. Participants pay investment, administrative, and other fees based on the provider they choose and the investment options they select.

Defined contribution plans (DCP)

Target-date portfolios. Participants may select a diversified investment portfolio in accordance with their target retirement date. These portfolios include a broad spectrum of investments, such as different types of stock, bond, and real estate funds. The mix of investments is automatically adjusted over time to become more conservative as the participant approaches retirement age. The target-date portfolios, which hold $1.2 billion in assets, met or exceeded all of their performance benchmarks (Table 2).

Individual options. Participants may select from one or more individual options to build a customized investment portfolio based on their personal preferences. The options include different types of stock, bond, money market, and real estate funds, and a fund that reflects the investments held by the VRS trust fund. The individual options, which hold $2.4 billion in assets, met or exceeded all of their performance benchmarks (Table 2).

Self-directed brokerage accounts. The brokerage accounts allow participants to select from thousands of publicly traded mutual funds, exchange-traded funds, and individual securities. Participants who use brokerage accounts have full control over their investments, down to the individual securities held in their portfolio. The brokerage accounts hold $49 million in assets. Because all investment decisions are made by the account holders, no performance benchmarks for the brokerage accounts are used.

Optional Retirement Plan for Higher Education

Participants in the Optional Retirement Plan for Higher Education (ORPHE) can choose to invest with TIAA, Fidelity, or in the VRS DCP lineup. Under TIAA, participants may select a diversified portfolio option or build a custom portfolio from different types of stock, bond, money market, and real estate funds. Under Fidelity, participants may select a target-date portfolio or build a portfolio from a choice of investment options. Both also offer self-directed brokerage accounts. The TIAA and Fidelity programs hold just over $1 billion in assets. The investment options under TIAA and Fidelity underperformed many of their benchmarks (Table 2).

An additional $53 million is held with private providers that VRS no longer partners with under the higher education retirement plan. VRS does not track investment performance for these deselected providers because participants can no longer contribute to them through the plan.

TABLE 2
Investment performance of VRS defined contribution plans

for the period ending September 30, 2018

	1 year	3 years	5 years	10 years
Options available for all plans				
Target date portfolios				
Met or exceeded benchmark	10	10	9	9
Total number of options	10	10	9	9
Individual options				
Met or exceeded benchmark	10	10	10	10
Total number of options	10	10	10	10
Additional options under the higher education plan				
TIAA				
Met or exceeded benchmark	4	3	3	4
Total number of options	10	10	10	10
Fidelity				
Met or exceeded benchmark	5	12	9	11
Total number of options	23	23	22	21

SOURCE: VRS investment department data.
NOTE: (1) Options at top are available to all plan participants. (2) Total number of investment options reported for a given period can change because longer-term performance data is not available for newer options. (3) Performance of target-date and individual options is reported net of investment fees but not administrative fees. Performance of the additional options under the higher education plan is reported net of investment and embedded record-keeping and plan administration fees, where applicable. (4) Some funds are passively managed. Passively managed investment options are expected to trail their benchmarks by the expense ratio (fees) charged by the investment managers. Actively managed options are expected to outperform the market and were measured against the benchmark net of investment fund fees. Capital preservation investment options, such as stable value and money market funds, are expected to generate returns at or above zero and were assessed relative to that benchmark. (5) Fidelity did not provide VRS with sufficient linked performance data for the "Fidelity Inflation-Protected Bond Index Fund" at the time of the compilation of this report; this fund, therefore, is not included.

3. Trust fund rates and funding

Employer contributions, paid by the state and local political subdivisions through contribution rates, are one of the main sources of funding for VRS retirement plans. Every two years, the VRS board certifies the employer contribution rates that are needed to pay and fully fund the plans, as determined and recommended by its actuary. Employer contribution rates for the Teachers Plan, State Employees Plan, and other state-supported plans must be enacted each biennium in the Appropriation Act. Also, the Code of Virginia requires employers in the 593 local plans to pay the rates certified by the VRS board, with some limited exceptions.

The VRS actuary performs valuations annually, which provides an update on the funded status of the retirement plans. Funded status is a key indicator of the financial health of the plans.

Employer contribution rates continue to decrease

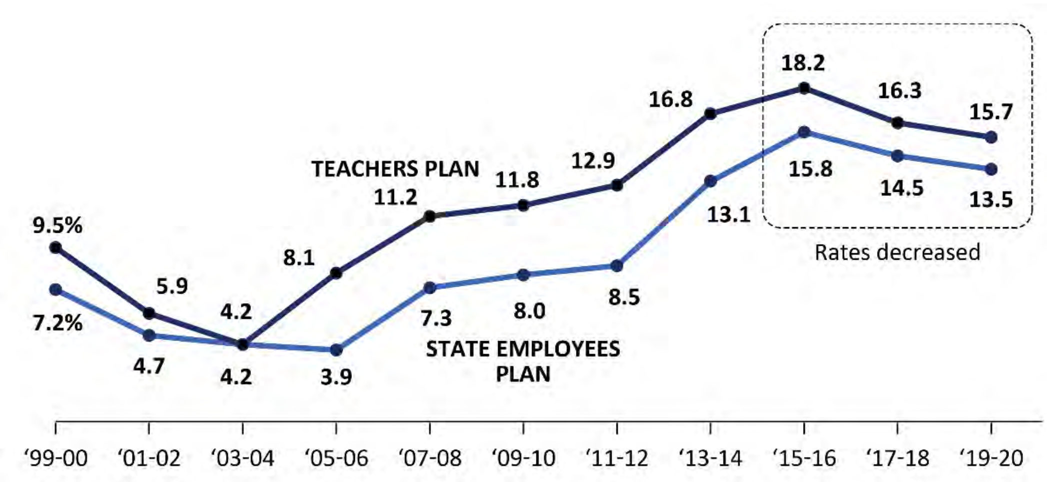
Employer contribution rates for the FY19-FY20 budget were certified by the VRS board last year. The board-certified rates decreased from the preceding biennium for all plans, including the Teachers and State Employees plans. This is the second consecutive biennium in which board-certified rates have decreased (Figure 8). Board-certified rates decreased due to strong performance by VRS investments, the state's commitment to fully funding the plans, the ongoing impact of 2010 and 2012 legislative reforms of the retirement system, and special one-time payments approved by the General Assembly in recent years. Lower rates make the plans more affordable for the state and for local political subdivisions.

Virginia's statutory schedule for fully funding rates requires the state to pay 100% of the board-certified employer contribution rates by FY19. The schedule, which was enacted in 2012, gradually increased the portion of funding required for each plan in each biennium.

Virginia statute requires the state to fully fund the board-certified contribution rates starting in FY19. The General Assembly chose to fully fund the board-certified rates ahead of the statutory funding schedule; by FY18, the state was paying 100 percent of board certified rates for all plans. Although fully funded, the rates funded by the General Assembly for the state employee plan were lower than the board-certified rates for FY17-FY18 reflecting the 2016 appropriation act repayment of deferred contributions from the 2010-2012 biennium. The FY19-FY20 rates represent a slight increase to the actual rates paid by employers for the State Employee plan (from 13.49 to 13.52 percent) and VaLORS plan (from 21.05 to 21.61 percent) compared to the FY17-FY18 biennium (Table 3). This is because the amount of payroll covered for these populations increased less than anticipated, so a higher employer contribution was required to cover anticipated liabilities.

Even though this is not a rate-setting year for budgeting, the VRS actuary calculated rates as of June 30, 2018 for informational purposes. The informational rates calculated for the Teachers (15.23 percent), State Employees (13.36 percent), and other plans were all slightly lower than those that were enacted in the 2018 Appropriation Act. Rates are expected to stay close to their current levels for the foreseeable future, assuming investments meet the assumed 7.0 percent rate of return. Rates are not forecast to drop significantly until after 2044, when the state and school divisions finish paying off the legacy unfunded liabilities.

FIGURE 8
Board-certified employer contribution rates for Teachers and State Employees plans



SOURCE: VRS annual reports and historical actuarial data.
NOTE: Board-certified rates reflect the percentage of payroll that each VRS-participating employer would need to contribute to VRS to pay off each plan or program's liabilities, as calculated by the VRS actuary. Rates must be enacted by the governor and General Assembly in the annual Appropriation Act. Prior to the 2017-2018 biennium the governor and the General Assembly did not fully fund the rate, so the rates enacted in the Appropriation Act may not match board-certified rates for all past years.

TABLE 3
Employer contribution rates enacted by the General Assembly [a]

	FY17 [b]	FY18 [b]	FY19	FY20
Teachers	14.66%	16.32%	15.68%	15.68%
State Employees	13.49	13.49	13.52	13.52
VaLORS	21.05	21.05	21.61	21.61
SPORS	28.54	28.54	24.88	24.88
JRS	41.97	41.97	34.39	34.39

SOURCE: Appropriation Acts, 2016-2018 and VRS letter to the governor and General Assembly.
[a] The rate required by statute is equal to 100 percent of the contribution rates certified by the board for all fiscal years beginning with FY19 (§ 51.1-145). [b] 2016 Appropriation Act increased FY17 and FY18 employer contribution rates for State Employees, VaLORS, SPORS, and JRS plans to 100% of actuarially recommended rate, after taking into account repayment of deferred contributions from the 2010-2012 biennium. Rate for the Teachers Plan set at statutory minimum 89.84% of actuarially recommended rate in FY17 and 100% in FY18.

Employer contributions are also paid by local governments and political subdivisions in support of the 593 local plans. The VRS actuary calculates a unique rate for each local plan, and rates are certified by the VRS board. Local employers have historically been required to pay the full board-certified rate for their individual plans, with a few exceptions in recent years. The average of the board-certified employer contribution rates for local plans decreased from 8.15 percent for FY17-FY18 to 7.6 percent for FY19-FY20. The average rate is much lower than the rates for the state plans because local plans generally have smaller unfunded liabilities. The average rate for local plans has steadily decreased over the past five years. However, trends for individual local plans vary depending on the unique experience of each employer.

Funded status of VRS plans continued to improve

The health of a pension plan is commonly measured by its funded status, which is the ratio of plan assets to liabilities. The funded status of the State Employees and Teachers plans improved in FY18 for the fifth year in a row (Figure 9). This upward trend reverses the steady decline in funded status that the plans experienced during and after the 2008-2009 economic recession. The funded status of the State Employees and Teachers plans is expected to continue to increase at a slow rate over the next five years, assuming investments meet the assumed 7.0 percent rate of return. The funded status of other state-supported plans, including VaLORS and JRS, also increased for the fifth year in a row. The funded status of the state-supported SPORS plan decreased slightly since FY17 because SPORS recipients received a larger than anticipated salary increase.

The average funded status of the local plans, adjusted to account for size differences across plans, increased for the sixth year in a row, from 92 percent in FY17 to 93 percent in FY18. Local plans have maintained a higher average funded status than the Teachers plan or the state-supported plans mainly because local employers have generally been required to fully fund their plan contribution rates. However, the funded status of any individual local plan may be higher or lower than the group average.

The funded status of the VRS plans has improved in recent years, in part because of strong investment performance. VRS recognizes the investment gains and losses on the market value of its assets over a five-year period to determine a "smoothed" actuarial value of its assets. This actuarial smoothing minimizes the effects of market volatility and provides greater stability in the contribution rates for employers. The trust fund earned an 8.3 percent return on an actuarial value of assets basis for the fiscal year ending June 30 2018, which exceeded the assumed 7.0 percent annual rate of return. The funded status of the plans will continue to improve if returns stay at or above the assumed rate. The funded status will level off or decline if returns are lower.

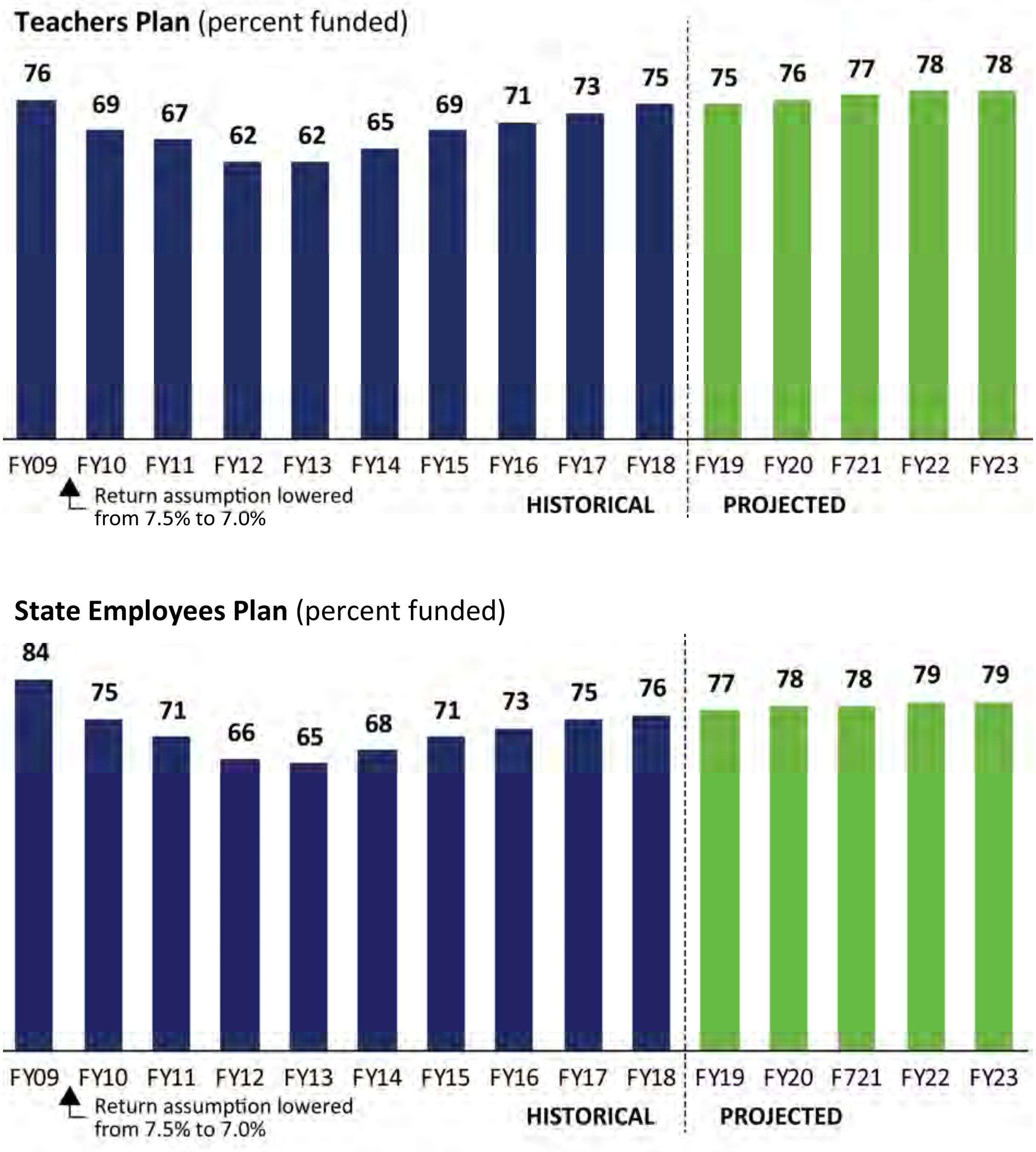
The funded status of the VRS plans has also been improved through the General Assembly's ongoing commitment to fully funding the rates, which helps to reduce unfunded liabilities and prevents the accrual of new unfunded liabilities.

Independent actuarial audit validated VRS funded status and actuarial assumptions

JLARC retains an actuary to perform an independent audit of VRS and its consulting actuary every four years, as required under the Code of Virginia. The purpose of the audit is to independently verify that the results prepared by the VRS actuary, Cavanagh Macdonald Consulting (CMC), are technically sound and conform to the appropriate Actuarial Standards of Practice.

JLARC's independent actuary, Gabriel, Roeder, Smith and Company (GRS), conducted an audit of VRS in early 2018. GRS reviewed the 2017 actuarial valuations of the VRS statewide plans, selected local government plans, and three other post-employment benefit plans administered by VRS.

FIGURE 9
Funded status of Teachers and State Employees plans



SOURCE: VRS actuarial valuation report, 2018, and historical actuarial data.
NOTE: Funded status shown is based on actuarial value of assets, using a five-year smoothing period. Projections assume 7.0% rate of return on investment and 2.5% inflation. The Government Accounting Standards Board requires that the funded status of the plans be reported using the market value of assets, which is how they are reported in VRS financial statements.

GRS found that VRS is actuarially sound and that the actuarial assumptions used for all plans, including the 7.0 percent investment return assumption, were generally reasonable. GRS also confirmed that the funding ratios of all VRS plans are generally improving and moving toward a 100 percent funded ratio goal. Further, GRS found that the actuarial valuation reports prepared by the VRS actuary are reasonable and generally comply with Actuarial Standards of Practice.

The purpose of an **experience study** is to evaluate the continued appropriateness of the actuarial assumptions used in the annual actuarial valuation by comparing actual experience to expected experience.

GRS made a number of minor recommendations regarding the assumptions used and information provided in the actuarial valuations. The VRS actuary, CMC, incorporated several of the recommendations in the recently completed 2018 valuations, with a negligible impact on the fund. CMC indicated that it intends to address other recommendations in the next experience study, which is scheduled for 2021.

For several recommendations, CMC indicated it will explore methods to address the concerns identified in the audit. For example, GRS recommended that VRS continue to review the investment return assumption (which is currently 7 percent) giving due consideration to both short-term and long-term investment horizons. GRS found that over 50 percent of the VRS actuarial accrued liability is attributable to benefits for current retired and inactive members, and a large percentage of these benefits are likely payable over the shorter term. Investment returns over the short-term horizon are expected to be less than over the longer term. CMC responded that it will provide additional documentation related to the consideration of the short- and long-term investment horizons, but that its focus will continue to be on the longer term. JLARC staff will continue to report on VRS's continued analysis and consideration of the investment return assumption.

4. Benefits administration and agency management

Administration of member benefits is one of the core responsibilities of VRS. In order to carry out this and other duties, the agency must be effectively managed. One notable issue related to benefits administration and agency management is a growth in agency spending. In addition, voluntary contributions to the state's Hybrid plan may be too low to ensure adequate retirement savings. VRS has made efforts to increase voluntary contribution rates among participants.

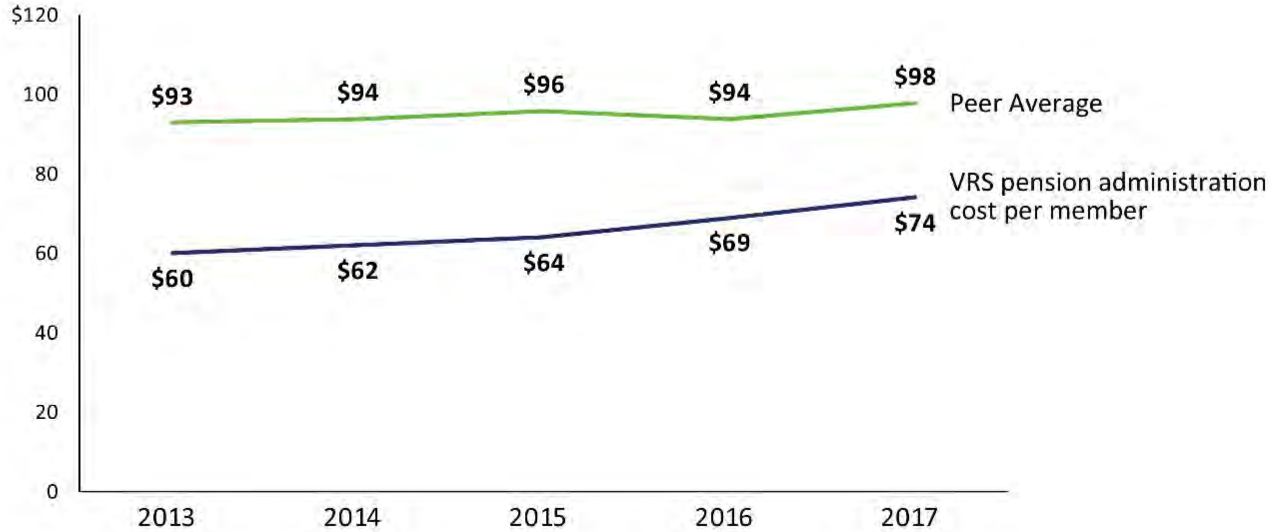
VRS operating expenses increased but remained lower than peers

VRS operating expenses include spending related to benefits administration, agency management, and investment department operations (not including external fees). Agency expenses in FY18 were $94 million. Expenses increased by $25 million in the four-year period from FY14 to FY18, with an average growth rate of 7.9 percent per year.

VRS expense increases were attributable to three primary cost drivers. The first driver was higher IT costs. VRS continues to modernize its IT systems to add new capabilities, such as improving online member services and further strengthening its cybersecurity. IT modernization involves migration away from a legacy mainframe system to a new system and the development of a new platform to disburse monthly retiree and beneficiary payments. The second driver was the expansion of the investment department, including addition of new staff positions and development of new IT capabilities. This expansion was commensurate with the overall growth of the total fund as well as the increase in the proportion of assets managed in-house. The third cost driver was implementation of the new hybrid plan. VRS added several new staff positions to administer the new plan, made system changes to properly account for the plan, and distributed educational and other materials. VRS also incorporated a third-party defined contribution plan administrator to help carry out various plan administrative functions. Other factors contributing to the growth in expenses include the implementation of the Line of Duty Act program and expansion of member counseling services to assist members as benefit offerings expanded and increased in complexity.

Although VRS expenses increased, its administrative costs compare favorably to peer retirement systems. VRS hires a consultant, CEM Benchmarking, to annually review the administration expenses related to its retirement plans and benchmark them to peers. (This comparison excludes investment expenses and costs associated with administering other benefit programs, such as the retiree health insurance credit program.) CEM reported that VRS retirement plan administration costs were $25 to $33 lower per member than its peer average from FY13 to FY17 (Figure 10). This difference was estimated to be $13 million to $17 million less in administrative expenses in a given year. VRS expenses grew at a faster rate than the peer average, likely because of costs associated with implementing major projects such as the hybrid plan and IT projects.

FIGURE 10
VRS retirement plan administration costs compared to peers



SOURCE: CEM retirement plan administration benchmarking reports to the VRS board.
NOTE: Benchmark comparisons for 2018 are not yet available.

Hybrid plan members contribute a total of 5% to 9% of salary toward their retirement benefits.

Members must contribute 4% of salary toward their *defined benefit component*.

Members are required to contribute 1% of salary to their *defined contribution component* and may voluntarily contribute up to an additional 4%.

Employers are required to contribute to a member's defined benefit component at the actuarially determined rate. Employers are required to contribute 1% of salary toward a member's defined contribution component and provide up to an additional 2.5% in matching contributions, based on a member's voluntary contributions.

Hybrid voluntary contribution rates may be too low to ensure adequate retirement savings, but they are reducing state costs

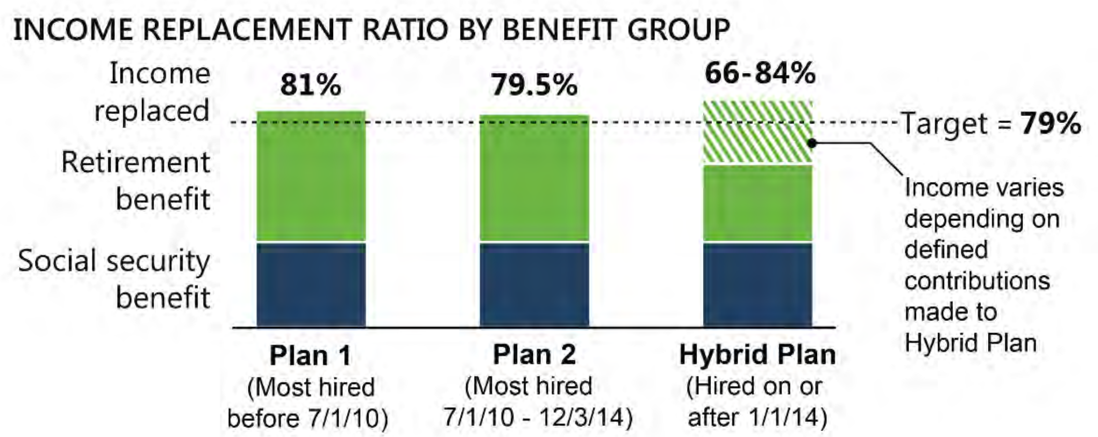
The hybrid plan combines elements of a traditional defined benefit retirement plan with a 401(k)-style defined contribution plan. Hybrid plan members include most state employees, teachers, and local employees hired on or after January 1, 2014, and constitute 26 percent of the total active VRS membership as of September 30, 2018. (State employees in the SPORS and VaLORS plans, and local employees with enhanced hazardous duty benefits, are not part of the hybrid plan.) The hybrid plan has lower costs and liabilities for the state than the defined benefit plans it replaced. Therefore, it is expected to gradually reduce costs for the state and most localities as it grows to cover an increasing proportion of the workforce. The plan also transfers a higher proportion of investment and longevity risk from employers to plan members.

Voluntary contribution rates may be too low to ensure adequate retirement savings

To ensure adequate savings at retirement, members of the hybrid plan should make voluntary contributions to the defined contribution portion of their plan. Hybrid plan members are required to contribute one percent of salary to their defined contribution component. Hybrid plan members may make additional voluntary contributions of up to four percent of their salary and receive an employer match, thereby enhancing their retirement benefits.

Hybrid plan members who do not make adequate voluntary contributions will likely not meet their income replacement target. For most employees, this is around 80 percent of their pre-retirement income, although the target varies by income level. For example, a hybrid plan member with an average final compensation of $55,000 and who contributes the minimum required one percent throughout his career would only replace 66 percent of his income at retirement (Figure 11). This level of income replacement is lower than what the member is expected to need in retirement. It is also lower than the income replacement outcomes for comparable Plan 1 and Plan 2 members. In contrast, a member who contributed the maximum voluntary contribution amount would replace 84 percent of his income at retirement.

FIGURE 11
Income replacement ratio by benefit group



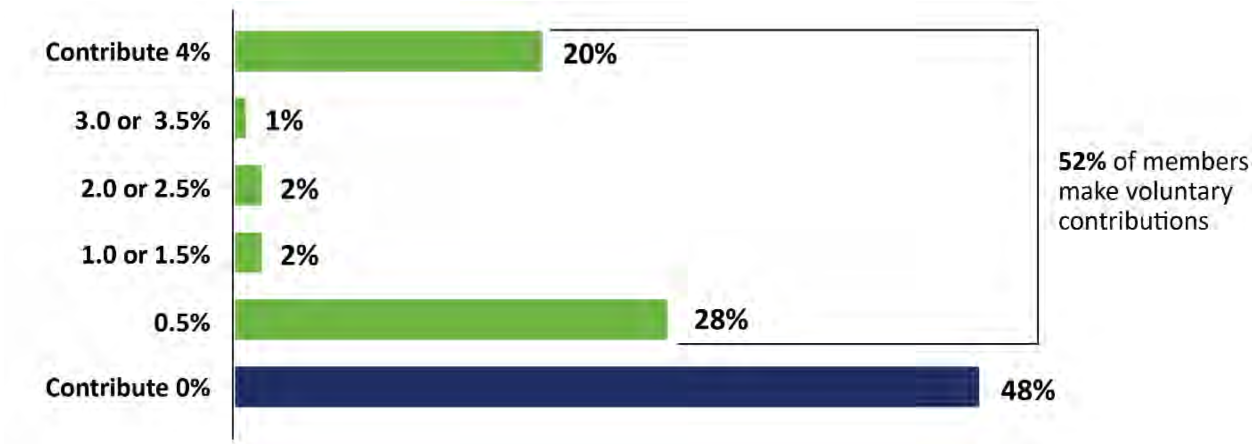
SOURCE: VRS actuarial analysis.
NOTE: Income replacement shown is for State Employees Plan member retiring at age 65 with $55,000 salary and 30 years of service. Social security income replacement ratio is based on final pay. Income replacement levels for hybrid plan members will be affected by investment returns of the defined contribution component of their plan (6% annual return assumed here).

As of September 2018, 52 percent of hybrid plan members were making voluntary contributions to the defined contribution component of their plan (Figure 12). Over half of hybrid plan members who are making voluntary contributions only contribute the 0.5 percent of their salary that was initiated by the statutorily required automatic escalation that occurred on January 2017. For those members who have actively elected to increase their contribution rate, the majority are contributing the maximum amount of 4.0 percent. For members who do not actively elect to increase their contribution rates, it will take 24 years to reach the maximum contribution amount of 4.0 percent, because the 0.5 percent automatic escalation of their voluntary contribution rate occurs just once every three years.

An automatic escalation of 0.5 percent occurs every three years for voluntary member contributions to the defined contribution component of the hybrid plan, as required under statute (§ 51.1-169 C.3). Members can opt not to allow the increase, or they can choose a different increase amount.

The 48 percent of hybrid plan members who are not making voluntary contribution is largely new employees. Most new employees do not initiate a voluntary contribution when they start their employment. As a result, the proportion of members who make voluntary contributions will likely decline as new employees come into the plan until the next automatic escalation takes place in 2020.

FIGURE 12
Percentage of hybrid plan members making voluntary contributions by contribution amount, September 2018



SOURCE: VRS.

VRS has implemented efforts to increase voluntary contribution rates, but further progress would likely require a plan change

VRS has conducted outreach efforts and implemented enhanced tools for increasing the voluntary contribution rates of hybrid plan members. These efforts are increasing voluntary contributions, but they are used by a relatively small number of the nearly 90,000 hybrid plan members. Examples of communication efforts and enhanced tools include:

- **SmartStep** – Launched in October 2017, this program allows members to increase their voluntary contributions at a date of their choosing. As of July 2018, 629 hybrid plan members had signed up for the program. On average, these members elected to increase voluntary contributions by 1.25 percent percentage points annually.
- **Account access messaging** – As of November 2017, hybrid plan members who are not maximizing their voluntary contributions see a notification screen when they log into their online accounts and are prompted to either increase voluntary contributions or actively choose not to do so. As of July 2018, approximately 4,300 members had viewed the screen. Thirty-one percent of members who received the messaging increased their voluntary contributions.
- **GoHybrid** – Launched in June 2018, this program allows newly hired employees to elect a voluntary contribution prior to their enrollment with VRS, which often does not occur until several weeks after they have started employment. Few employees have participated in the program thus far, but VRS expects higher participation as employers become more familiar with the program.

A change to the hybrid plan would likely be required to further increase voluntary contributions given efforts already undertaken, according to VRS staff. New employees could be automatically enrolled at a minimum voluntary contribution rate, or automatic escalation could done more frequently; such changes would be effective in increasing the proportion of members making voluntary contributions and their contribution rates. The state could also increase its employer matching rate to incentivize members to increase their voluntary contributions. Virginia is somewhat unique in providing a graduated matching rate, so there are no good comparisons of matching rates in other states.

Increasing voluntary contribution rates would increase state costs

There would be an increase in state costs if hybrid plan members increase their voluntary contribution rates. Employers match employees' mandatory one percent contribution to their defined contribution plan at 100 percent. For voluntary contributions, employers match the first one percent of contributions at 100 percent and the next three percent of contributions at 50 percent. Higher employee contributions result in higher cash matches from employers. For example, if an employee does not make a voluntary contribution to their defined benefit plan, the only employer match would be the one percent mandatory contribution. For an employee with a $55,000 salary, the match would be $550 annually (Table 4). If this same employee were making the maximum voluntary contribution amount of four percent, the match would be $1,925 annually.

TABLE 4
Illustrative example: Employer match rate and amount for varying hybrid plan member voluntary contribution rates

Employee voluntary contribution rate	Employer match rate	Employer match amount
0%	1%	$550
2%	2.5%	$1,375
4%	3.5%	$1,925

SOURCE: VRS.
NOTE: Assumes employee salary of $55,000. Hybrid plan members are required to contribute 1% of salary to the defined contribution portion of their plan.

The impact on state costs from increased contributions would depend on how much voluntary contributions increase. Accelerating the frequency of automatic escalation to two years and automatically enrolling new employees at a contribution rate of 0.5 percent, both of which have been considered by the General Assembly, could increase costs up to $1 million in the first year of implementation (Table 5). After 20 years (by FY39), the increased voluntary contributions resulting from the plan changes could cost the state an additional $20 million compared to the current plan, assuming no members opt out of the automatic escalation or auto-enrollment. If all hybrid plan members were contributing the maximum of four percent, the additional state costs are estimated to be $18.9 million in the first year and $52.8 million by FY39, compared to current plan experience. This scenario is unlikely but represents an upper bound for state costs.

TABLE 5
Estimated increase in total state costs under different hybrid plan contribution scenarios ($M)

Year	2-year auto-escalation	2-year auto-escalation/ 0.5% auto-enrollment	Maximum (4%) contribution
2020	$0	$1.0	$18.9
2029	2.3	10.2	36.9
2039	8.9	20.2	52.8

SOURCE: VRS.
NOTE: Increases in total state costs are based on the estimated increase in voluntary contribution rates resulting from the scenarios compared to the voluntary contribution rate experience in the current plan. Contribution rates shown include both the mandatory 1% employer matching contribution and any employer matching contributions on employee voluntary contributions. Projections are based on the total payroll of all active members in Plan 1, Plan 2, and the hybrid plan for the specified year.

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