Buck

South Dakota Retirement System

Valuation Limited Scope Review
As of June 30, 2018

October 2018

Buck

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October 19, 2018

Board of Trustees
South Dakota Retirement System
Post Office Box 1098
Pierre, SD 57501-1098

Re: Valuation Limited Scope Review – June 30, 2018

Dear Trustees:

We have performed a limited scope review of the June 30, 2018, actuarial valuation for the South Dakota Retirement System ("SDRS"). This review is limited to the following:

1) Examination of the internal actuary's methods and assumptions for reasonableness and internal consistency with the previous year's actuarial report, and
2) Review the internal actuary's actuarial report.

This review is intended to meet the Board of Trustees' requirements for an independent review of the reasonableness of the results of the annual Actuarial Valuation performed by the SDRS internal actuary and is not intended to be a validation of the internal actuary's valuation calculations or results.

The undersigned are members of the American Academy of Actuaries and the Society of Actuaries, meet the Academy's Qualification Standards to issue this Statement of Actuarial Opinion, and are available to answer questions regarding this report.

If you have any questions, please feel free to call me at (972) 366-2011.

Sincerely,

Michael Ribble, FSA, EA, MAAA

Principal

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Section 1:
Methods and Assumptions

Actuarial Methods

SDRS is funded by fixed, statutory Member and Employer Contributions that total 12.419% of considered compensation. Stated purposes of the valuation are (1) to determine the 2019 COLA for SDRS, (2) to measure the funded status of SDRS as of June 30, 2018, (3) to confirm that such fixed, statutory contributions are the Actuarially Determined Contributions (ADC), (4) to determine if corrective actions must be recommended, and (5) to provide accounting information under GASB 67 and 68.

The annual valuation provides the basis for making such determinations based on the actuarial methods described in the report. Normal Cost and Actuarial Accrued Liabilities were calculated using the Entry Age Actuarial Cost Method. On this basis, the 2018 Actuarial Valuation of SDRS determines a restricted 2019 COLA of no greater than 2.03%, results in a Fair Value Funded Ratio of 100.0%, confirms that the statutory rates of contribution are the ADC and that no corrective actions recommendations are required.

Actuarial Methods - Review

No changes to the actuarial methods have been made since the June 30, 2017, actuarial valuation. The actuarial cost method satisfies the requirements of Actuarial Standard of Practice (ASOP) No. 4 and is an appropriate method to use for the calculation of System's Actuarial Accrued Liability and Normal Costs. Furthermore:

- Normal Cost is calculated as a level percentage of each member's pay over the member's career.
- The majority of public plans use such cost method for funding.
- GASB Statement Nos. 67 and 68 require the use of such cost method for financial accounting and disclosure.
- Use of the same cost method for funding enhances consistency between funding and accounting valuations.
- The Conference of Consulting Actuaries Public Plans Community (CCA PPC) White Paper entitled "Actuarial Funding Policies and Practices for Public Pension Plans" (dated October 2014) categorizes such cost method as the model actuarial cost method.

Effective June 30, 2017, the Actuarial Value of Assets is set equal to the Fair Value of Assets. The SDRS asset valuation method is compliant with ASOP No. 44.

One change to actuarial procedures was noted in the report to have occurred since the June 30, 2017, actuarial valuation. An estimate of compensation for rehired retirees has been added to the projected covered payroll for purposes of determining the denominator in the calculation of the projected Actuarially Determined Contribution (ADC) Rate. In prior years, such compensation was not included in the beginning of year estimates of the ADC Rate. Where shown, valuation results as of June 30, 2017, have appropriately been restated to reflect this change in procedure.

It should also be noted that the valuation now includes a new benefit structure for members who joined SDRS after June 30, 2017 (Generational Members). In addition to different formula benefits, Generational Members are credited with Variable Retirement Contributions initially set at 1.5% of compensation. The valuation includes a Normal Cost for these Variable Retirement Contributions equal to the current contribution rate of 1.5% of pay times the projected payroll of active Generational Members. This methodology appears reasonable and appropriate.

Actuarial Assumptions

Discount rate/investment return	6.50%, net of investment expenses
Inflation	2.25%
Wage inflation	3.00%
Salary merit/seniority	Service based, decreasing from 3.4% to 0.0% over 25 years
Retirement	Age 55 to 80 for non-Public Safety Age 45 to 65 for Public Safety Rates are generally lower for reduced retirement
Disability	None for Judicial members Rates for non-Judicial members shown through age 65 and vary by class and employment type
Mortality	
Healthy	97% of RP-2014 Mortality Table, white collar table for females, total dataset table for males, adjusted to 2006 and projected generationally with MP-2016
Disabled	RP-2014 Disabled Mortality Table, adjusted to 2006 and projected generationally with MP-2016
Termination	Five-year select and ultimate for non-Judicial members None for Judicial members Rates for non-Judicial members shown through age 55 and vary by employment type
Marital Status	80% of non-retired members assumed to be married with male members three years older than spouses and female members two years younger than spouses
Future Social Security Increases	Future Social Security COLA adjustments assumed to be 2.25% per year; future social security taxable wage base increases assumed to be 3% per year
Interest on member contributions	2.50%
Administrative Expenses	2% of projected annual member and employer contributions
Election of Portable Retirement Option Benefits	Percentage of election based on credited service at termination
Terminated vested member Benefit Commencement	Three years prior to Normal Retirement Age for all except Class A Members with 20 or more years of Credited Service at termination

	Age 58 for Class A Members with 20 or more years of Credited Service at termination
COLA	2.25% (baseline)
	2.03% (restricted maximum based of June 30, 2018, valuation)

Actuarial Assumptions - Review

No significant changes in actuarial assumptions have been made since the June 30, 2017, actuarial valuation. Actuarial assumptions used in the valuation are based on an experience study covering the time period from July 1, 2011 through June 30, 2016. In general, we believe there are no inherent conflicts in the assumptions now in use with the requirements imposed by applicable ASOP.

With respect to the most critical assumptions used in this valuation, we have the following comments:

Discount rate/investment return	ASOP No. 27 has altered the methodology for determining the investment return assumption for measurement periods on or after September 30, 2014. Generally, the selection of a rate within a reasonable range is replaced with the selection of a reasonable assumption that may include consideration of a margin for “adverse deviation”. While we note the rate of 6.50% is below the average of the rates used by most public-sector pension plans and lower than historical plan experience shown in Table 5.3 on page 23 of the 2018 Actuarial Report, we also note that selection of this rate should place more weight on future capital market assumptions than historical experience. The discount rate is a long-term assumption and is used to measure liabilities over the lifetimes of all participants. We believe this rate is reasonable.
Inflation	We believe the inflation assumption is reasonable and in line with the levels of inflation assumed by other public-sector pension plans. Additionally, it is consistent with Buck’s current capital-market assumptions.
Wage inflation	We believe the wage inflation assumption is reasonable and in line with other public-sector pension plans. The wage inflation assumption of 3.00% is 75 basis points higher than the inflation assumption of 2.25%. We recommend noting this difference.
Salary merit/seniority	The salary increase assumption is separated into wage inflation and merit/seniority increase assumptions. We note that assumed merit/seniority increases are reduced for longer-service employees, and our experience is that salary increases are typically closely correlated with service. We agree with this methodology, and the merit/seniority rates appear reasonable when compared to those now in use by other pension plans.
Retirement	We concur with separating of the retirement rate assumptions by occupational categories, and the rates themselves appear to be in line with those used by other public sector pension plans. Also, we agree with the assumption of lower rates for those who are eligible for reduced retirement benefits. Normal retirement age is 65 with three years of service for non-Public Safety members, yet the

highest pre-NRA rate is 30% and rates extend for 15 years after presumed unreduced benefit eligibility. For Public Safety, normal retirement age is 55 with three years of service, yet the highest pre-NRA rate is 15% and rates extend for 10 years after presumed unreduced benefit eligibility.

These assumptions appear to be reasonable, though we recommend ongoing, thorough annual review of retirement gains and losses to be sure liabilities are being measured appropriately.

Disability

We agree with the cut-off of assumed disability rates at age 65, since the disability benefit is converted to a Normal Retirement benefit. The assumed disability rates appear to be in line with those used by other public-sector pension plans in our experience.

Mortality

In our opinion, the recommended and adopted mortality assumptions for healthy and disabled members are reasonable and meet the requirements of ASOP No. 35 in that they account for future mortality improvement. We note that The Society of Actuaries has decided to publish new mortality improvement tables each fall. The Society is also in the process of developing mortality tables specifically for public-sector retirement systems. An exposure draft of these mortality tables was released in August 2018 with a final report expected in early 2019.

Termination

We agree with the application of assumed termination rates by years of service in the first years of employment and by both service and by age for members in later years. The rates incorporated in the valuation appear to be in line with those used by other public-sector plans from our experience.

Interest on member contributions

Interest is credited at a rate less than or equal to the minimum of 90% of the average 91-day US Treasury rate for the preceding calendar year and the assumed rate of investment return. In our opinion, the contribution interest assumption is reasonable and conservative.

Terminated member commencement

The reduction for early retirement is 3% per year for Foundation Members and 5% per year for Generational Members, which appears to reflect a degree of subsidization by the plan. We agree members may likely elect a benefit prior to Normal Retirement eligibility given this subsidy. In our opinion, the stated assumptions are reasonable.

COLA

The COLA is defined in levels based on the SDRS Fair Value Funded Ratio (FVFR):

1) FVFR at least 100% when future COLAs are equal to the baseline COLA assumption:
    - % increase in most recent 3rd calendar quarter CPI-W over the prior year (min 0.5%, max 3.5%)
2) FVFR less than 100% when future COLAs are equal to the baseline COLA assumption:

- Same as above, but restricted maximum COLA is based on a future COLA assumption that results in a FVFR of at least 100%

The baseline assumption is that COLAs will be granted at the assumed inflation rate of 2.25% per year, which is reasonable.

The results of the June 30, 2018 actuarial valuation indicate a 2018 COLA based on the restricted maximum COLA of 2.03%, and the liabilities and normal costs in the valuation are determined on the assumption that future COLAs are equal to 2.03%.

Finally, as growing numbers of Generational Members are included in actuarial valuations with a different level of benefits and subsidies, establishment of a separate set of demographic assumptions for this group should be considered. While enough actual member experience may not be available at the next experience study in 2022, each assumption should be considered based on future expectations. For example, since Generational Members' retirement eligibility criteria differ from those applicable to Foundation Members, the actuary has used professional judgement to adjust the retirement rates of Generational Members pending the accumulation of sufficient experience among Generational Members to serve as a basis for this assumption. We recommend the actuary include these adjusted assumptions for Generational Members in the valuation report.

Section 2:
Actuarial Report

We verified that prior year results quoted in this valuation match those in the prior valuation report, except where noted revisions from the original report were made. In those cases, we found the revisions appropriate, as noted in our review of actuarial methods above.

We note that the Senior Actuary appropriately expanded the statement on page 1 that data is provided by SDRS *internal audit* staff and by indicating that he did not “audit” the data, rather than saying he did not “verify” the data. On this basis, it appears that the collection of data complies with the recently revised ASOP No. 23.

Risk Assessment and Disclosure

ASOP No. 51 provides guidance to actuaries with respect to the assessment and disclosure of risk with respect to future actuarial measurements, which may vary significantly from current measurements. Examples of future measurements noted are pension liabilities, actuarially determined contributions and funded status. The standard applies to actuaries when performing a funding valuation and is effective for any actuarial work product with a measurement date on or after November 1, 2018. The measurement date for this actuarial valuation is June 30, 2018. However, the Senior Actuary has proactively added such a section on funding risks to this actuarial report.

The funding risks added to this actuarial report generally comply with ASOP No. 51. The identification of risk to be assessed appears reasonable and appropriate. The initial risk assessment indicates investment risk is the most significant risk to SDRS funding and benefit levels. Other less significant risks identified were longevity risk, inflation risk, salary increase risk, other demographic risk and covered payroll risk. For each of these less significant risks, scenarios were generally described where departures from expectations would result in a certain general outcome. ASOP No. 51 does not require that the assessment of a risk be based on numerical calculations. The description of these less significant risks appears appropriate and compliant with ASOP No. 51.

The report included further assessment of investment risk. While many methods of risk assessment are allowed, the choice of scenario testing for investment risk appears reasonable and appropriate. The scenario testing appropriately showed the impact on funding results over a five-year period if actual returns were significantly less than or significantly greater than the assumed investment return of 6.5%. The results showed that investment risk most significantly impacts a member’s level of benefits since automatic benefit adjustments are required in low return scenarios and ad hoc benefit increases allowed in high return scenarios. As such, the report includes one-, two- and three-year projections of the amount of investment return needed (and the likelihood of such return) to meet certain objectives such as avoiding corrective action or providing a full COLA. The assessment of investment risk appears appropriate and compliant with ASOP No. 51.

ASOP No. 51 also indicates that the actuary should calculate and disclose certain plan maturity measures that the actuary believes are significant to understanding risks to the plan and provide commentary to help the reader understand the significance of the measurement in the assessment of risk. For this requirement, the actuary included historical ratios of assets and liabilities to active member payroll, historical percentages of retired and terminated member counts to total member counts, historical percentages of retired and terminated member liability to total member liability and historical cash flow measurements as a percentage of assets. The actuary generally described the significance of each plan maturity measurement. In future reports, the actuary should consider describing in more detail the significance of the historical percentages of retired and terminated member counts and liabilities.

With one suggestion noted above, the risk assessment included in this report appears to appropriately identify, analyze and describe the risks, as required for compliance with ASOP No. 51.

Other Suggested Items

While not required for compliance with applicable ASOPs, consideration could also be given to including the following in future reports:

- As this is the second valuation following the most recent experience study, the accumulation of a history of actuarial gains and losses since the study was completed would be helpful to identify trends.

- It may be helpful to readers to add a section to the bottom of Section 8 (Basis of the Valuation), Section 9 (Description of Actuarial Methods and Valuation Procedures) and Section 10 (Summary of Actuarial Assumptions), which provides a summary of all changes since the prior valuation.

Section 3: Conclusions

We do not see any notable issues with respect to compliance with current or pending Actuarial Standards of Practice (ASOPs), regulatory issues, or Buck standard practices that would affect future actuarial valuations.

Non-investment gains and losses are broken down into reasonable subcategories, each of which represents less than 0.5% of the Actuarial Accrued Liability (AAL). This is within reason when compared to other public sector plans and is indicative of well-designed actuarial assumptions. In particular, the unexplained “Miscellaneous” gains and losses represent 0.01% of AAL, which indicates that deviation in liability from expectation is very well explained. A typical threshold for the miscellaneous category for most public sector plans is 1.00%.

In our opinion, the actuarial valuation is based on reasonable assumptions and methods, and the results are consistent with those of the prior valuation when evaluated in light of any changes made in methods and assumptions.