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March 1, 2017

Ms. Emily Ward
Director of Administrative Services
South Dakota Dept. of Labor & Regulation
700 Governor's Drive
Pierre, SD 57501-2291

Subject: Assumption for the July 1, 2016 South Dakota Department of Labor Retirement Plan Actuarial Valuation

Dear Emily:

As part of the actuarial valuation of the retirement plan, the actuarial assumptions should be reviewed for possible changes. Assumption changes are generally adopted when emerging plan experience over several years has been consistently different than assumed, when an experience study has been completed, or when a plan or environmental change causes the expected behavior of the population to shift.

To provide documentation for our records please change or review and initial each item on the following pages and sign and date the last page.

Actuarial Standard of Practice No. 27 makes the following comments on the selection of economic assumptions for measuring pension obligations:

> "The actuary should follow the general process set forth below for selecting each economic assumption for a specific measurement: a. identify components, if any, of the assumption; b. evaluate relevant data; c. consider factors specific to the measurement; d. consider other general factors; and e. select a reasonable assumption. After completing these steps for each economic assumption, the actuary should review the set of economic assumptions for consistency and make appropriate adjustments if necessary."

Actuarial Standard of Practice No. 35 makes the following comments on the selection of demographic and other noneconomic assumptions for measuring pension obligations:

> "The actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement."

Sincerely,

Michael de Leon, FCA, ASA, EA, MAAA
Specialist Leader

Enclosure

cc: Derek Gustafson – South Dakota Department of Labor
Jeannie Chen – Deloitte Consulting

South Dakota Department of Labor Retirement Plan
Assumption for the July 1, 2016 Actuarial Valuation

1. Investment Return:

Proposed July 1, 2016 Assumption: 4.75% until July 1, 2027 and 4.00% thereafter. Please see appendix for details on the development of the discount rate assumption.

July 1, 2015 Assumption: 6.50% until July 1, 2027 and 5.00% thereafter.

Correction (if required): ____ Initial ______

2. Inflation:

Proposed July 1, 2016 Assumption: 2.00%.

The revised assumption is based on Principal's forward looking capital market assumptions as of December 2016[1] (1.95%), and the Congressional Budget Office's economic outlook from 2016 through 2026[2] (2.00%).

July 1, 2015 Assumption: 3.00%.

Correction (if required): ____ Initial ______

3. Mortality improvement scale:

Proposed July 1, 2016 Assumption: Generational mortality improvements using Scale MP-2016.

The revised assumption is based on the annual update of expected mortality improvements by the Retirement Plans Experience Committee of the Society of Actuaries published October, 2016.

July 1, 2015 Assumption: Generational mortality improvements using Scale MP-2015.

Correction (if required): ____ Initial ______

Signature___________________________ Date ___________

[1] Source: Wilshire Associates' January 31, 2017 publication, *2017 Asset Allocation Return and Risk Assumptions*
[2] Source: Congress of the United States Congressional Budget Office, *The Budget and Economic Outlook: 2016 to 2026*

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Appendix – Development of Discount Rate Assumption

An approach often used to develop the estimated long-term investment yield on investments is referred to as a "building-block" method, as outlined in the Actuarial Standards of Practice (ASOP) for "Selection of Economic Assumptions for Measuring Pension Obligations" (No. 27).

Under the building-block method, the expected future investment return of the fund’s portfolio is estimated using the following information and estimates:

1. Expected long-term inflation assumption
2. Expected long-term risk premium for each asset class
3. Less expected investment expenses

The expected future return of each asset class is then the sum of (1) through (3) above, and the expected future portfolio return is the weighted average of the asset class returns.

We relied on capital market assumption reports made available by Principal Financial Advisors (“Principal”) as of December 2015 and December 2016 to determine item (2) above, the expected long-term risk premium of each asset class.

The plan is expected to be settled by July 1, 2027. Based on consideration of the above, we recommend a long-term expected investment return of the fund for the actuarial valuation prior to the Plan’s target settlement year.

We also estimated a long-term settlement rate based on historical settlement rate spread against inflation and 10-year Treasury rates to recommend a settlement rate for the actuarial valuation after the Plan’s target settlement year.

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Fund Expected Investment Return

The following provides an estimate for the fund's expected return based on information provided by Principal:

1. The asset classes and proportions targeted in the fund as of July 1, 2016:

U.S. Equity	39%
International Equity	13%
Private Real Estate	6%
Real Asset	2%
Core Bonds	36%
High-Yield Bonds	4%

2. Based on forward looking capital market assumptions as of December 2015[3] and December 2016[1], each asset's **long-term return** are as follows:

	2015	2016
U.S. Equity	6.50%	6.50%
International Equity	6.50%	6.50%
Private Real Estate	5.80%	6.00%
Real Asset	6.40%	6.30%
Core Bonds	3.50%	3.65%
High-Yield Bonds	6.35%	5.35%
Inflation	1.55%	1.95%

3. The overall **fund's long-term risk premium** (net of long-term inflation but prior to investment expenses) are **3.82%** based on 2015 returns and **3.44%** based on 2016 returns.

4. Each asset's **investment expenses** are as follows[4]:

U.S. Equity	0.70%
International Equity	1.26%
Private Real Estate	1.15%
Real Asset	1.04%
Core Bonds	0.52%
High-Yield Bonds	0.81%

5. The overall **fund investment expenses** are **0.74%**.

After adjusting for investment expenses of 0.74%, the long-term risk premium and assumed inflation of 2%, the fund's expected return are **5.08%** based on 2015 returns and **4.70%** based on 2016 returns. We propose using an assumption of 4.75% to be on the conservative end of that range.

[3] Source: Wilshire Associates' January 31, 2017 publication, *2017 Asset Allocation Return and Risk Assumptions*
[4] http://dlr.sd.gov/erb/meeting_documents/erbagenda100616_deloitte_handout_063016_investment_report.pdf

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Settlement Rate

The following provides an estimate for future settlement rate based on information provided by the Congressional Budget Office ("CBO") on inflation and 10-year Treasury rates:

1. Based on historical information[5], the spread between settlement rates and inflation and 10-year Treasury rates are as follows:

Historic Settlement Rates in Excess of:	Low	High
Inflation	1.5%	1.7%
10-year Treasury	0.6%	0.9%

2. Based on the CBO's economic outlook from 2016 through 2026[6], inflation is projected to average 2.0% per year and 10-year Treasury rates are projected to average 4.1% per year.

3. The projected settlement rate considering historical spread and projected inflation and 10-year Treasury rates would then range from:

Projected Settlement Rates Based on:	Low	High
Inflation	3.5%	3.7%
10-year Treasury	4.7%	5.0%

4. We propose using a projected settlement rate of 4.0% to be on the conservative end of these ranges.

[5] Source: Pre-2012 data (Brentwood) and post 2012 data (Aon)
[6] Source: Congress of the United States Congressional Budget Office, *The Budget and Economic Outlook: 2016 to 2026*