State and Local Government Credit Forum
Atlanta, GA
November 3rd, 2017

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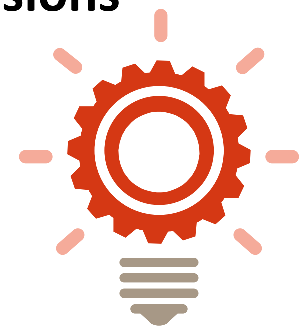
S&P Global
Ratings

Agenda – Pensions

Analytical Framework for Pensions



- How are pensions factored into the rating process at S&P
- How OPEB factored into the rating process

Pension Fund Performance

- 50 State Pension Fund Survey
- 50 State OPEB Survey
- Pension and OPEB trends we are seeing

Q&A

- Q&A

State Pensions and OPEB

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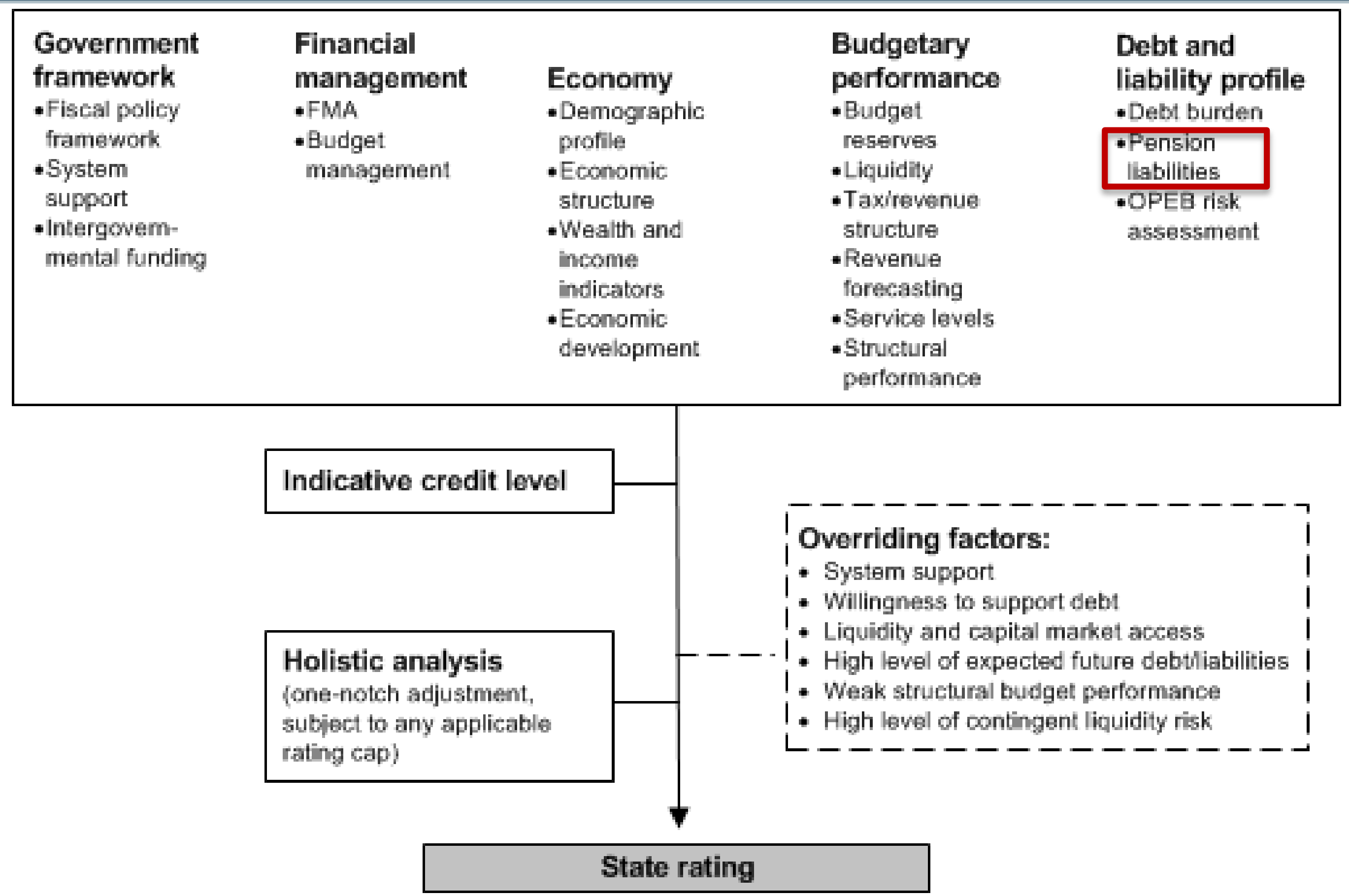
S&P State Ratings Overall Analytical Framework

Chart 1
Standard & Poor's Analytic Framework For Rating U.S. States



S&P State Ratings Pension Approach

Funding History

Actuarial Basis

FUNDING DISCIPLINE

Plan Contributions

Funding Progress

- Assumed rate of return vs. actual performance
- Amortization method
- Ratio of actives to beneficiaries
- Frequency of updates to experience studies
- Cash flow assumptions underlying GASB plan asset depletion projections

S&P State Ratings Pension Approach

3-Year Average Pension Funded Ratio

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Pension Funding Discipline

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Initial Pension Assessment

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Positive Adjustments

- Unfunded pension liability per capita at or below $500, or
- Unfunded pension liability as % of income at or below 2%.

Negative Adjustments

- Unfunded pension liability per capita at or above $3500, or
- Unfunded pension liability as % of income at or above 7%.

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Final Pension Liabilities Assessment

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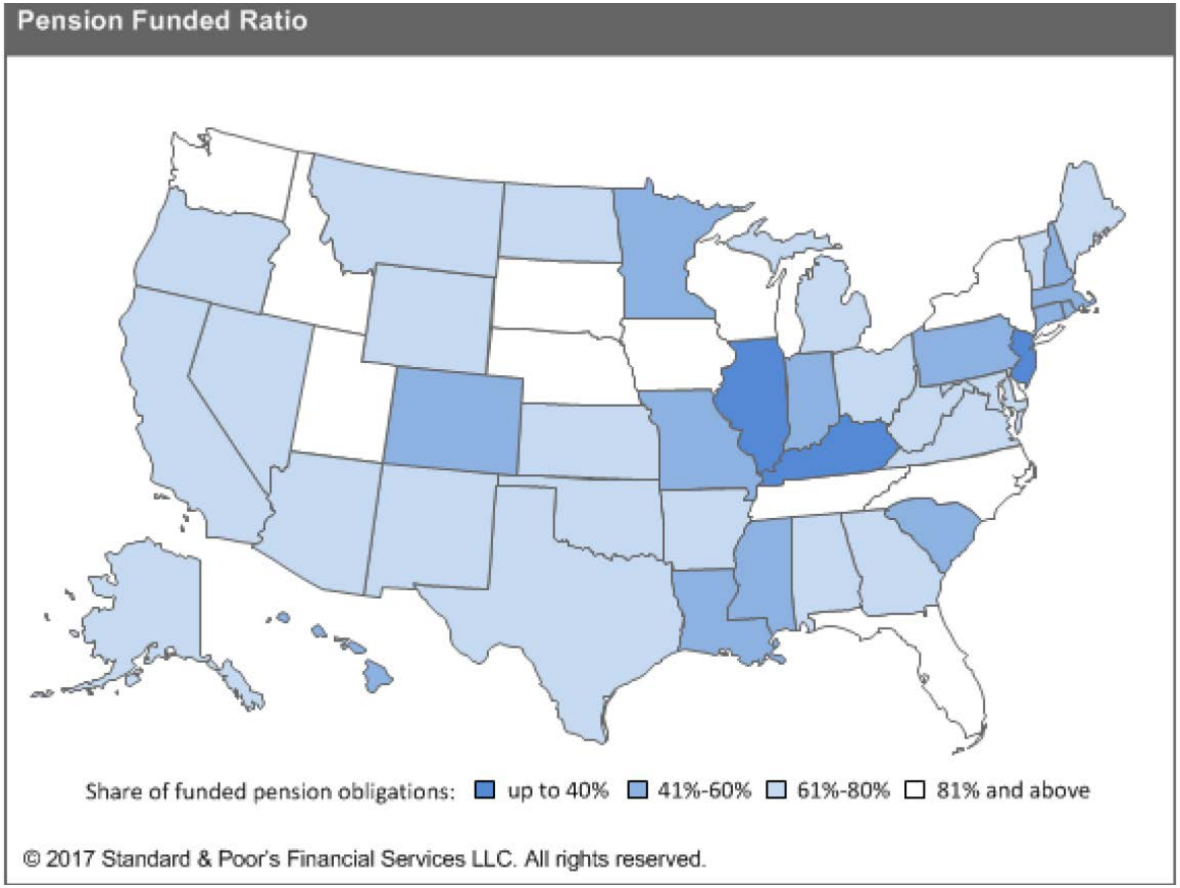
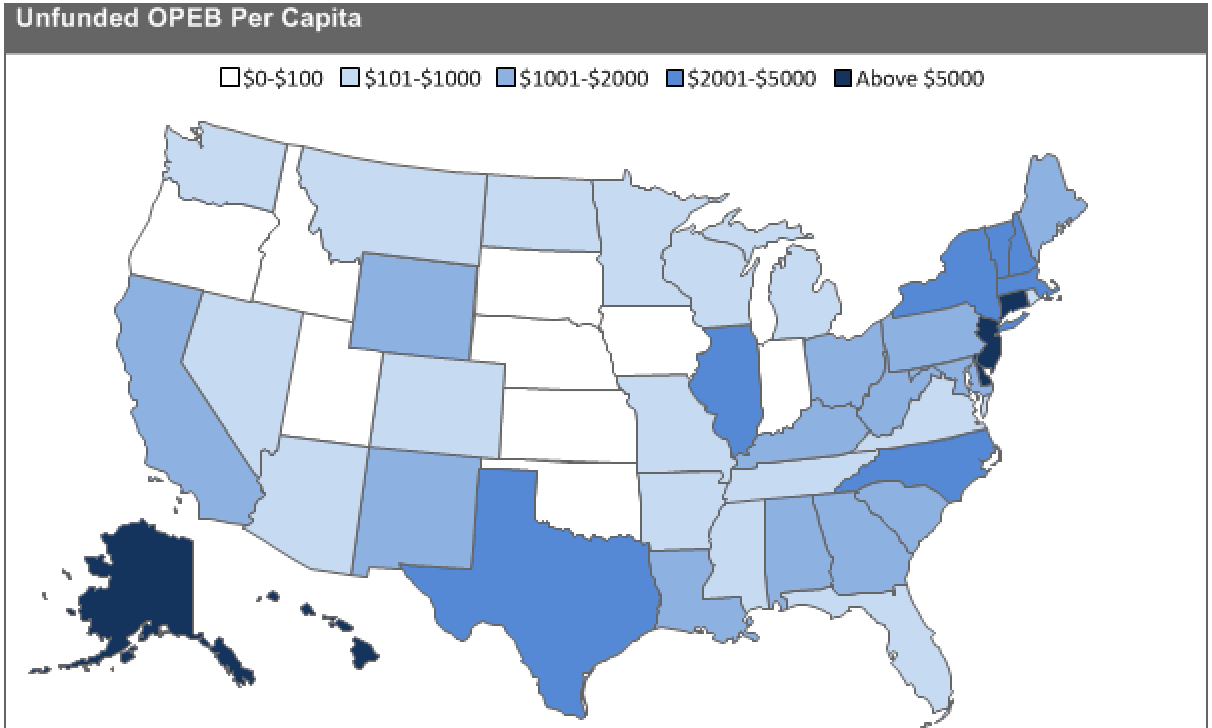
State Pension Survey Funded Ratios



Source: S&P Global Ratings U.S. State Pensions: Funded Ratios Declined Again in 2016, October 18, 2017

OPEB Survey Unfunded Liability Per Capita



Note: Oklahoma does not report implicit subsidy of its retirement plan death and disability benefits. Nebraska and South Dakota do not offer OPEB. Unfunded liabilities calculated based on most recent actuarial study available.

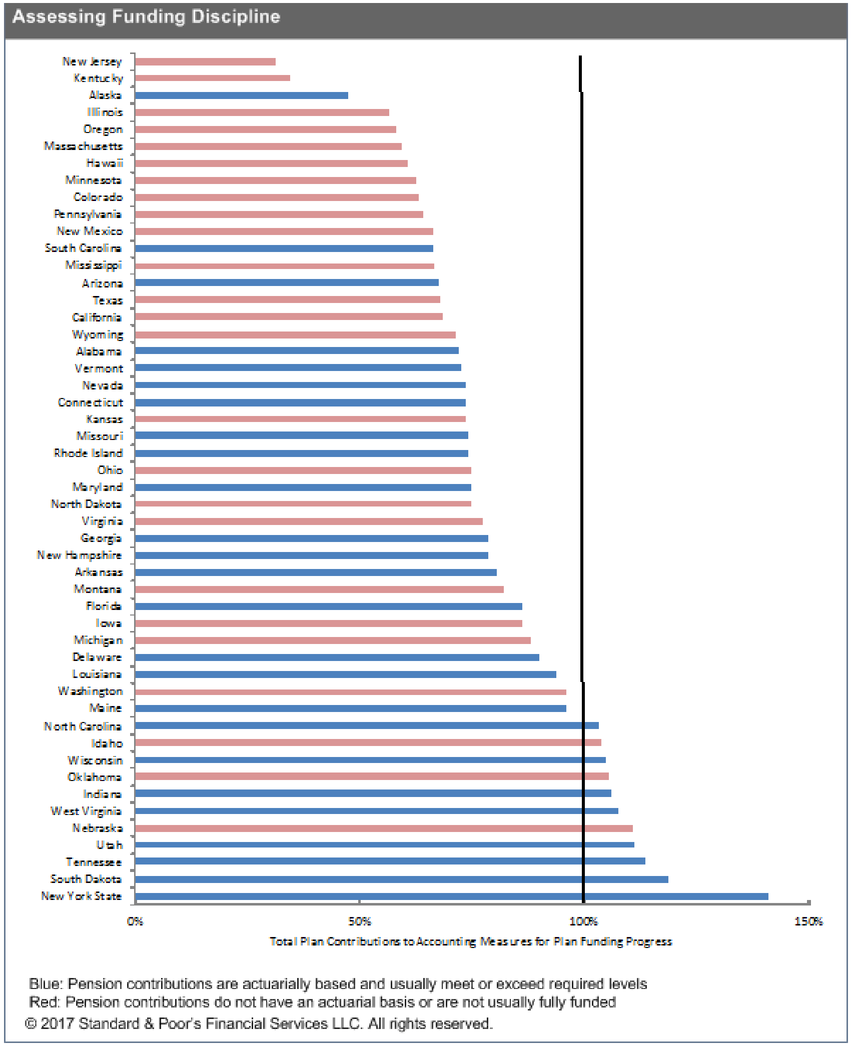
Source: S&P Global Ratings U.S. State Retiree Medical And OPEB Liabilities Keep Rising As States Prioritize Other Obligations, October 18, 2017

Weak Market Returns And Lower Assumed Return Targets Suggest Contributions Will Rise

More plans are moving to gradually lower assumed rates of return, although many remain around 7.5%.

California PERS	7.50%	7.0%
California STRS	7.50%	7.0%
Connecticut SERS	8.0%	6.9%
Hawaii ERS	7.65%	7.0%
Oregon's PERS	7.75%	7.2%
Illinois TRS	7.50%	7.0%
New York ERS	7.50%	7.0%
New Jersey TPAF	7.90%	7.65%

U.S. State Pension Funding Discipline



In our view, states that consistently fund full required contributions on an actuarial basis and use conservative assumptions and methods are more likely to effectively manage their pension liabilities and the associated long-term budgetary costs than states that do not.

Source: S&P Global Ratings U.S. State Pensions: Funded Ratios Declined Again in 2016, October 18, 2017

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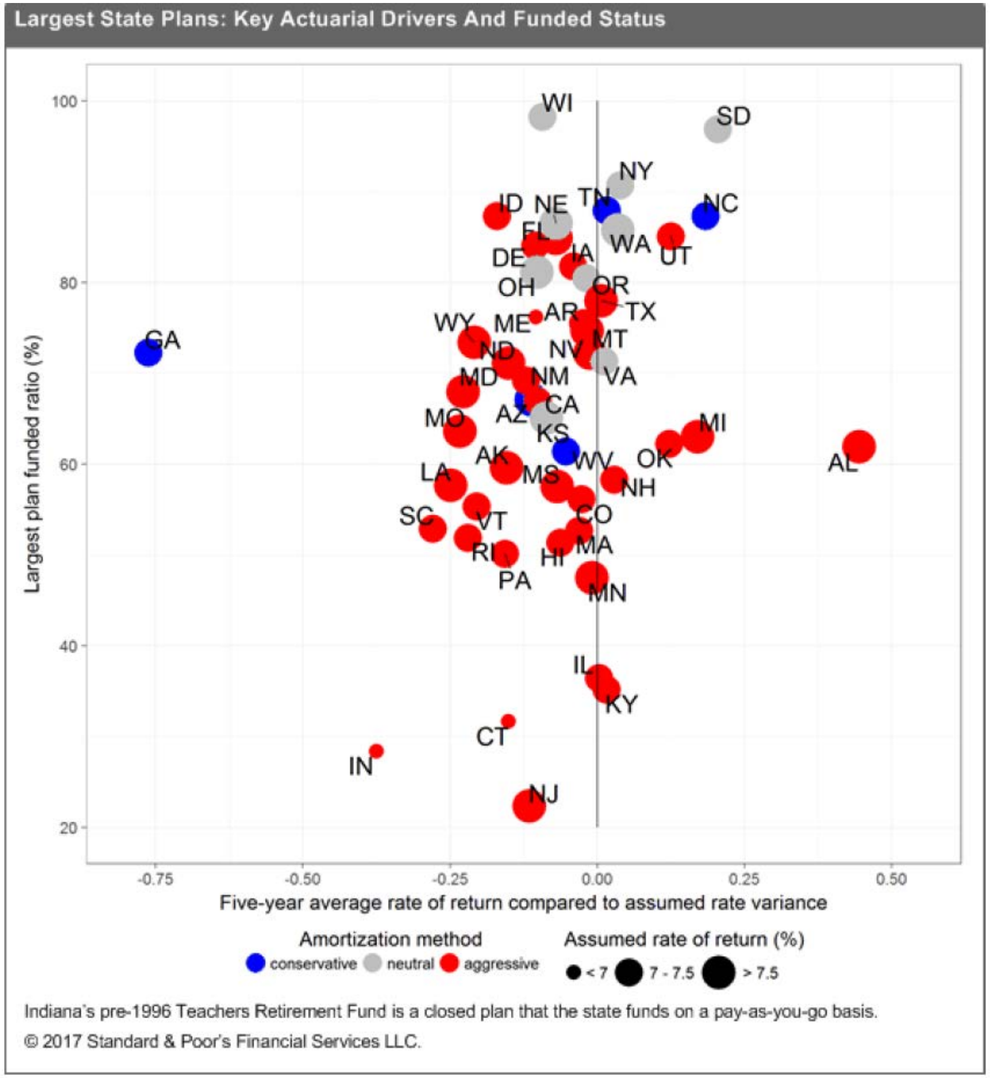
U.S. State Pension Funding Discipline



Rate of return assumptions and amortization methods are among the key actuarial drivers that, if currently misaligned with experience could result in significant growth in future reported pension liabilities and annual costs.

Source: S&P Global Ratings U.S. State Pensions: Funded Ratios Declined Again in 2016, October 18, 2017

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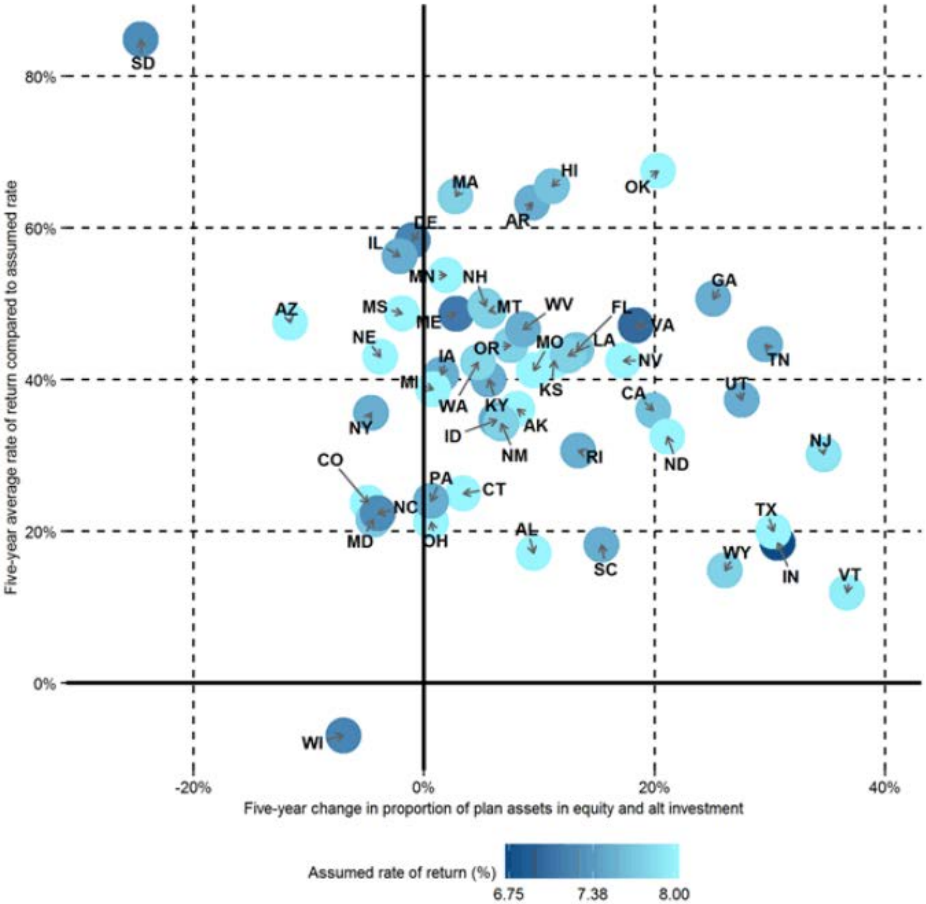
Investment Risk in U.S. State Pension Plans

Plans Increase Riskier Investment Allocation to Meet Return Targets



IN reflects the investment allocation of the consolidated defined benefit assets across INPRS funds. WI reflects the investment allocation for the Wisconsin Retirement Fund reported as of Dec. 31, 2014 compared to Dec. 31, 2009.

We note the proportion of the portfolio allocation among equity and alternative investments for the states' largest pension plan (measured by share of the state's net pension liability) averaged 68% as of 2015 and grew by more than 8% compared to the allocation five years earlier.

Data from reported plan investment allocations between 2010 and 2015 found on the Public Plans Data website maintained by the Center for Retirement Research at Boston College or from plan reports.

S&P: 2017 YTD Pension/OPEB Publications

- "Pension Pressures Will Weigh On 15 Largest U.S. Cities' Budgets" March 8, 2017
- "Dallas And Houston Start To Address Pension Liabilities, But Substantial Work Remains" February 9, 2017
- "California Pension Giants Take the Long-Term View in Preserving Credit Quality" March 15, 2017
- "South Carolina's Proposed Pension Reform Provides Path To Improve Funding, But Challenges Remain" March 14, 2017
- "Dallas Pension Reforms Cemented via State Legislature Vote" June 1, 2017
- "Jacksonville Adopts Pension Reform, But The Ultimate Impact On Credit Quality Remains Uncertain" May 24, 2017
- "Pennsylvania Pension Reform Doesn't Address Near-Term Credit Pressures" June 13, 2017
- "State Steps In To Stabilize Michigan Schools' Pension Liabilities With Reforms, Fiscal 2018 Budget" June 29, 2017
- "Chicago's Alternate Pension Funding Plan Would Stave Off Immediate Credit Pressure But Not Stabilize Liabilities" July 5, 2017
- "Rising OPEB Liabilities For The 15 Largest U.S. Cities Could Strain Budgets And Pose Credit Risks" October 10, 2017
- "U.S. State Pensions: Funded Ratios Declined Again in 2016" October 18, 2017
- "U.S. State Retiree Medical And Other Postemployment Benefit Liabilities Keep Rising As States Prioritize Other Obligations" October 18, 2017

As of October 16, 2017

Thank you

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