

SECTOR PROFILE

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Local government - US

Pensions remain the dominant liability for most of the largest local governments

Adjusted net pension liabilities (ANPLs) dropped for 37 of the 50 largest local governments (ranked by debt outstanding) in fiscal 2018,¹ a trend that will continue for many of them in fiscal 2019, before ANPLs increase again in fiscal 2020. A decade into economic expansion, pension risks are limited for some of the largest local governments, while weak pension and retiree healthcare (other post-employment benefits, or OPEB) funding leaves the credit quality of others more vulnerable to market volatility.

- » **Unfunded pensions are the most substantial long-term liability for most of the largest local governments.** ANPLs amounted to \$450 billion for the 50 largest local governments in aggregate, compared with \$238 billion in debt and \$167 billion in adjusted net OPEB liabilities (adjusted NOLs). Individually, ANPLs accounted for the largest long-term liability for 29 of the 50 in fiscal 2018, while debt led for 20 and OPEBs for one, [Nassau County, New York](#) (A2 stable).
- » **Falling interest rates will drive ANPL increases for many local governments in fiscal 2020 following consecutive declines.** For many governments with pension measurements that lag their own financial reporting, [2020 ANPLs will rise significantly](#) because of a steep decline in the FTSE Pension Liability Index (PLI) in 2019. However, recently [strong revenue growth](#) will prevent affordability ratios from soaring.
- » **OPEB liabilities are generally lower than pensions, but are large for some.** Five of the 50 largest have adjusted NOLs that exceed 100% of revenues. Most governments have few assets set aside to pre-fund future OPEB benefits, but some, such as [Honolulu](#) (Aa1 stable), are incurring higher near-term costs to more rapidly build OPEB assets.
- » **Most of the largest local governments fail to contribute enough toward pensions to tread water.** Pension contributions relative to revenues ranged from roughly 1% to 17% among the 50 largest local governments in fiscal 2018. Despite 7% or higher discount rate assumptions by most, 34 had tread water gaps in fiscal 2018. All else being equal, higher discount rates tend to lower tread water thresholds.
- » **Pension investment volatility is a credit risk.** Governments at higher risk of material new unfunded liabilities have pension assets that are large relative to their own budgets, with return targets that require heavy allocations to volatile investment classes. The governments with very underfunded pension systems with weak non-investment cash flow (NICF) have little flexibility to reduce their annual contributions without risk of severe pension asset deterioration.

Exhibit 1
















Long-term liabilities and fixed costs of 50 largest local governments (cities) \$ billions, fiscal 2018

City	State	Rating	Debt	ANPL	Adj. NOL	Long-term liabilities, % of revenues	Contributions, % of revenues			Tread water gap, % of revenues	Fixed costs, % of revenues	
							Debt service	Pension	OPEB			
Chicago	IL	Ba1	\$10.8	\$39.8	\$0.7	<div><div></div><div></div></div>	735%	13%	16%	1%	13%	44%
Honolulu	HI	Aa1	\$3.3	\$4.4	\$2.9	<div><div></div><div></div><div></div></div>	648%	16%	8%	8%	4%	36%
Houston	TX	Aa3	\$4.3	\$8.8	\$2.0	<div><div></div><div></div><div></div></div>	608%	26%	14%	1%	2%	43%
Columbus	OH	Aaa	\$1.7	\$4.0	\$1.0	<div><div></div><div></div><div></div></div>	593%	18%	9%	0%	0%	28%
Dallas	TX	A1	\$2.1	\$6.4	\$0.4	<div><div></div><div></div><div></div></div>	588%	17%	12%	1%	2%	33%
Jacksonville	FL	A2	\$2.0	\$5.6	\$0.2	<div><div></div><div></div><div></div></div>	504%	12%	11%	0%	5%	28%
Phoenix	AZ	Aa1	\$2.0	\$7.9	\$0.2	<div><div></div><div></div><div></div></div>	485%	11%	17%	1%	1%	29%
Los Angeles	CA	Aa2	\$2.5	\$25.6	\$5.5	<div><div></div><div></div><div></div></div>	479%	6%	12%	4%	-1%	21%
Detroit	MI	Ba3	\$1.7	\$3.6	\$0.0	<div><div></div><div></div><div></div></div>	468%	14%	8%	0%	3%	25%
Metro Nashville	TN	Aa2	\$3.4	\$2.4	\$3.2	<div><div></div><div></div><div></div></div>	432%	13%	6%	5%	-3%	21%
San Antonio	TX	Aaa	\$2.8	\$3.7	\$1.5	<div><div></div><div></div><div></div></div>	394%	14%	6%	2%	0%	21%
Kansas City	MO	Aa2	\$1.5	\$2.2	\$0.1	<div><div></div><div></div><div></div></div>	377%	16%	7%	1%	2%	25%
Memphis	TN	Aa2	\$1.6	\$1.3	\$0.3	<div><div></div><div></div><div></div></div>	361%	18%	6%	2%	0%	27%
San Francisco	CA	Aaa	\$3.9	\$11.7	\$3.3	<div><div></div><div></div><div></div></div>	335%	7%	6%	4%	0%	17%
Philadelphia	PA	A2	\$3.9	\$9.4	\$1.6	<div><div></div><div></div><div></div></div>	328%	6%	15%	2%	-4%	19%
New York	NY	Aa1	\$76.0	\$118.9	\$79.5	<div><div></div><div></div><div></div></div>	312%	5%	11%	3%	-2%	16%
Denver	CO	Aaa	\$1.9	\$3.4	\$0.2	<div><div></div><div></div><div></div></div>	253%	10%	5%	1%	-2%	13%
District of Columbia	DC	Aaa	\$10.2	\$3.1	\$0.6	<div><div></div><div></div><div></div></div>	160%	9%	2%	1%	-1%	10%

Source: Moody's Investors Service

Exhibit 2

Long-term liabilities and fixed costs of 50 largest local governments (counties) \$ billions, fiscal 2018

County	State	Rating	Debt	ANPL	Adj. NOL		Long-term liabilities, % of revenues	Contributions, % of revenues			Tread water gap, % of revenues	Fixed costs, % of revenues
								Debt service	Pension	OPEB		
Cook	IL	A2	\$3.5	\$10.9	\$1.4		603%	12%	14%	1%	1%	29%
Bexar	TX	Aaa	\$1.7	\$1.1	\$0.2		524%	20%	6%	1%	-1%	26%
Nassau	NY	A2	\$3.5	\$2.9	\$6.2		415%	13%	5%	7%	-1%	24%
Baltimore	MD	Aaa	\$3.8	\$2.9	\$1.1		399%	7%	6%	0%	2%	15%
Fairfax	VA	Aaa	\$3.6	\$13.9	\$1.0		377%	8%	12%	2%	0%	21%
Harris	TX	Aaa	\$2.4	\$4.5	\$1.7		361%	14%	6%	2%	-2%	21%
LA County	CA	Aa1	\$1.7	\$37.5	\$24.4		356%	1%	7%	3%	0%	10%
Prince George's	MD	Aaa	\$2.3	\$3.1	\$1.5		335%	9%	5%	2%	3%	19%
Miami-Dade	FL	Aa2	\$4.8	\$7.7	\$0.3		327%	8%	5%	0%	2%	16%
Santa Clara	CA	Aa1	\$2.0	\$7.7	\$1.6		319%	3%	7%	3%	2%	15%
Clark County	NV	Aa1	\$1.4	\$6.6	\$0.6		291%	6%	5%	1%	1%	12%
Anne Arundel	MD	Aa1	\$1.9	\$1.7	\$0.7		284%	10%	4%	4%	0%	18%
Montgomery	MD	Aaa	\$4.0	\$2.2	\$2.3		247%	12%	3%	2%	-1%	16%
Wake	NC	Aaa	\$2.2	\$0.5	\$0.4		238%	22%	1%	1%	0%	23%

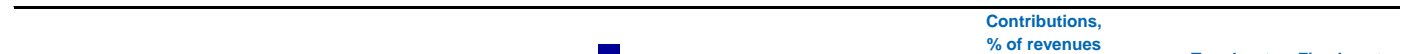
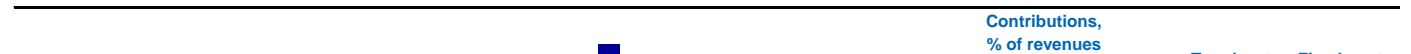
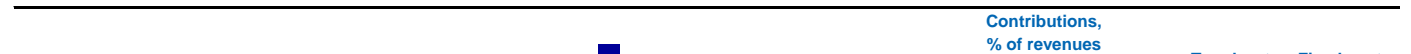
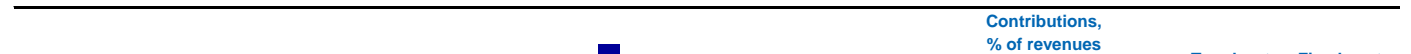
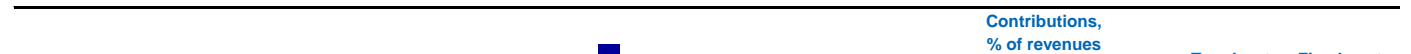
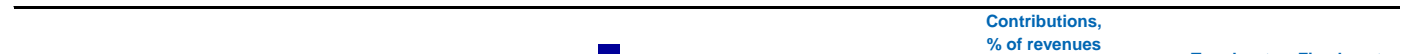
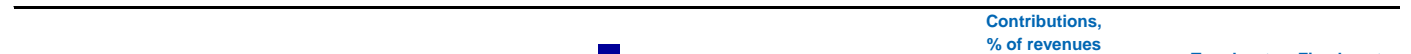
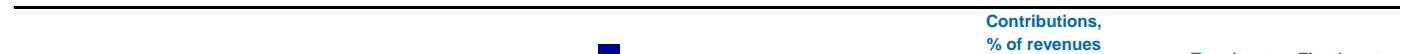
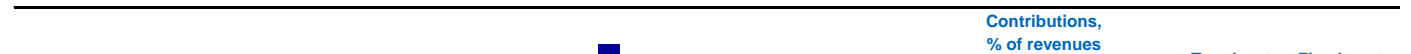
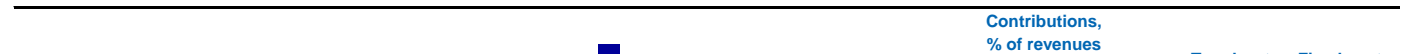
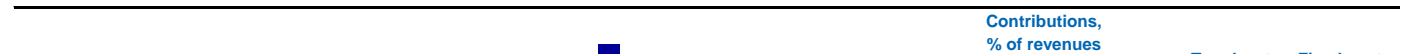
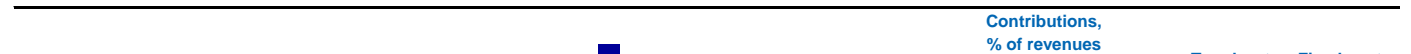
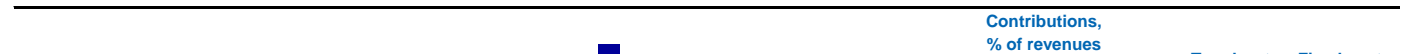
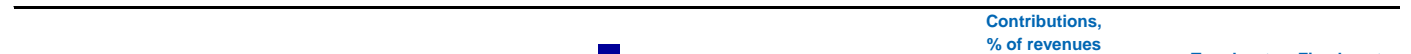
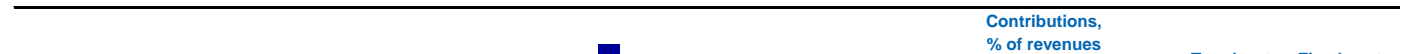
Source: Moody's Investors Service

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Exhibit 3

Long-term liabilities and fixed costs of 50 largest local governments (school districts)

\$ billions, fiscal 2018

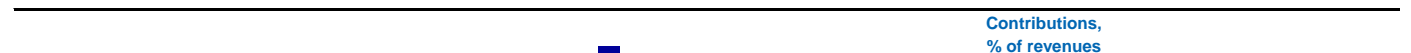
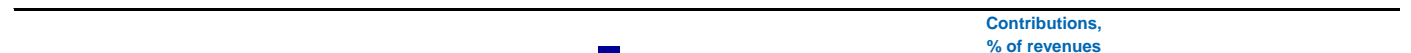
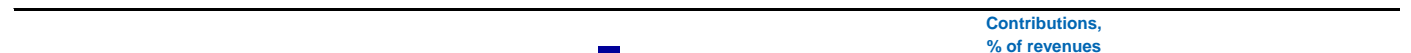
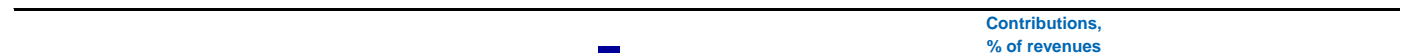
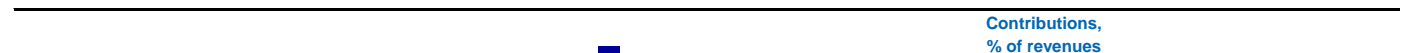
School District	State	Rating	Debt	ANPL	Adj. NOL		Long-term liabilities, % of revenues	Contributions, % of revenues			Tread water gap, % of revenues	Fixed costs, % of revenues
								Debt service	Pension	OPEB		
Los Angeles Unified	CA	Aa3	\$10.8	\$19.5	\$14.2		545%	13%	7%	5%	3%	28%
Chicago Board of Ed	IL	B1	\$8.8	\$22.7	\$2.2		523%	10%	9%	1%	3%	23%
San Diego Unified	CA	Aa2	\$3.8	\$4.3	\$0.1		521%	20%	7%	0%	3%	31%
Denver County 1	CO	Aa1	\$2.8	\$2.7	\$0.1		459%	17%	2%	1%	3%	23%
Clark County SD	NV	A1	\$2.5	\$10.3	\$0.2		399%	13%	7%	0%	1%	22%
Frisco Independent	TX	Aa1	\$2.0	\$0.5	\$0.1		385%	20%	2%	0%	0%	22%
Cypress-Fairbanks	TX	Aa1	\$2.5	\$1.0	\$0.3		342%	18%	2%	1%	0%	20%
Northside Independent	TX	Aa1	\$2.2	\$0.9	\$0.3		315%	15%	2%	1%	0%	18%
Katy Independent	TX	Aa1	\$1.7	\$0.6	\$0.2		297%	18%	2%	0%	0%	20%
Dallas Independent	TX	Aa1	\$2.8	\$1.7	\$0.6		290%	14%	2%	1%	0%	17%
Houston Independent	TX	Aaa	\$3.3	\$2.1	\$0.6		261%	15%	2%	0%	0%	18%
Miami-Dade County	FL	Aa2	\$3.4	\$5.4	\$0.2		237%	9%	4%	0%	1%	14%
Philadelphia	PA	Baa3	\$3.1	\$3.1	\$0.1		220%	10%	11%	0%	0%	21%
Broward County	FL	Aa2	\$1.6	\$3.9	\$0.2		207%	6%	4%	0%	1%	12%

Source: Moody's Investors Service

Exhibit 4

Long-term liabilities and fixed costs of 50 largest local governments (other special districts)

\$ billions, fiscal 2018

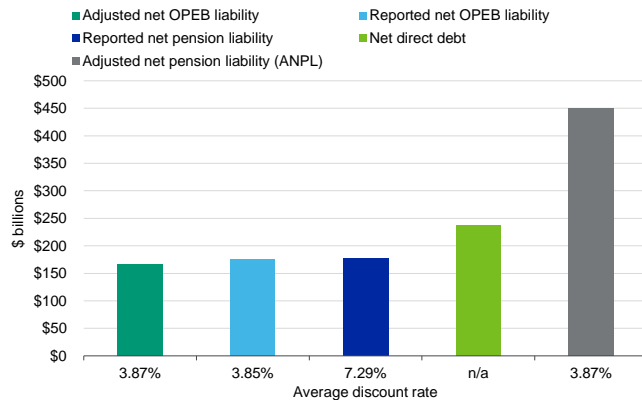
Special district	State	Rating	Debt	ANPL	Adj. NOL		Long-term liabilities, % of revenues	Contributions, % of revenues			Tread water gap, % of revenues	Fixed costs, % of revenues
								Debt service	Pension	OPEB		
Las Vegas Valley Water District	NV	Aa1	\$3.1	\$0.5	\$0.0		981%	34%	10%	1%	-1%	43%
Metro Water Reclamation District of Chicago	IL	Aa2	\$3.0	\$2.3	\$0.3		746%	35%	12%	2%	0%	49%
Los Angeles Community College District	CA	Aaa	\$4.2	\$2.1	\$0.8		552%	22%	5%	2%	2%	31%
Metropolitan Council of the Twin Cities Area	MN	Aaa	\$1.6	\$0.9	\$0.3		254%	4%	2%	1%	5%	12%

Source: Moody's Investors Service

Unfunded pensions are the most substantial long-term liability for most of the largest local governments

Exhibit 5

ANPLs are greater than debt and unfunded OPEBs combined
Long-term liabilities for the 50 largest local governments in aggregate



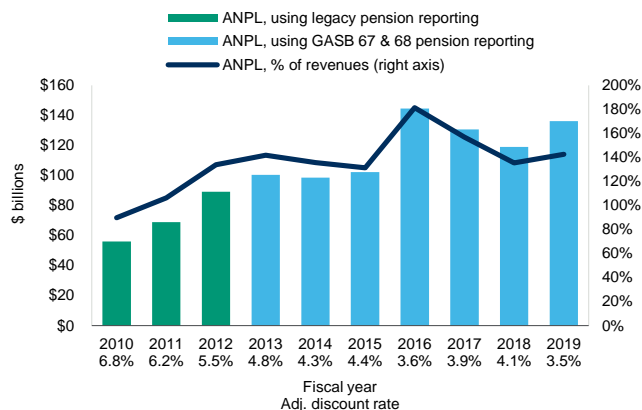
Source: Moody's Investors Service

- » ANPLs for the 50 largest local governments as of fiscal 2018 financial reporting amounted to \$450 billion in aggregate, compared with \$238 billion of net direct debt and \$167 billion of adjusted NOLs (see Exhibit 5).
- » ANPLs accounted for the largest long-term liability for 29 of the 50 largest in fiscal 2018, while bonded debt amounted to the most substantial for 20 others. Unfunded OPEBs amounted to the most significant liability for Nassau County, New York.
- » While ANPLs topped reported NPLs for all 50 governments and more than doubled the aggregate amount, adjusted NOLs trailed reported NOLs for 30 of the 50 largest in fiscal 2018 and came in nearly equivalent in aggregate value.

Falling interest rates will drive ANPL increases for many local governments in fiscal 2020 following consecutive declines

Exhibit 6

ANPLs will generally spike again because of interest rate declines, exemplified by New York City
New York City ANPLs, fiscal 2010-19



Source: Moody's Investors Service

- » Favorable investment returns and moderate increases in market interest rates caused ANPLs to fall in 2017 and 2018 pension measurements, particularly for pension systems with June fiscal year-ends. Interest rate declines drove up the market value of accrued liabilities in 2019, causing ANPLs to return to near 2016 peaks.
- » Many governments report pensions with up to a one-year lag, meaning their ANPLs will decline in 2019 results and then spike in 2020.
- » New York City (Aa1 stable) illustrates this trend a year earlier than most, because it uses pension measurement dates that align with its own fiscal year-end. The city's 2019 ANPL increased to \$136 billion in 2019, up from \$119 billion in 2018. With 9% revenue growth in fiscal 2019, New York City's 2019 ANPL amounts to 143% of revenues, a modest increase from 135% in fiscal 2018 (see Exhibit 6).

OPEB liabilities are generally lower than for pensions, but are large for some

- » Of the 50 largest local governments, 49 have reported on OPEB obligations following new accounting requirements, enabling us to perform standard discount rate adjustments. With an April fiscal year-end, Kansas City, Missouri (Aa2 stable) will report under the new standards for the first time in its fiscal 2019 audit. We have estimated the city's adjusted NOL using legacy accounting for the purpose of this report.
- » In fiscal 2018, adjusted net OPEB liabilities (adjusted NOLs) amounted to more than 100% of revenues for five of the 50 largest. OPEB contributions were most significant for Honolulu and Nassau County, amounting to 8% and 7% of revenues, respectively (see Exhibit 7).
- » Unlike pensions, many governments have not materially pre-funded OPEB obligations, and instead pay the cost of the benefits as they come due (an approach called "pay-as-you-go" or pay-go). Of the five local governments out of the largest 50 with adjusted NOLs of more than 100% of revenues in fiscal 2018, only Honolulu had OPEB asset / benefit coverage greater than two years. Asset / benefit coverage is a point-in-time funding measure that reflects the numbers of years of benefit payments that retirement benefit assets can cover, assuming no further contributions or investment income, nor growth in benefit outflows.
- » Since 2015, the State of Hawaii (Aa1 stable) and its local governments are funding OPEBs well above the pay-go cost in an effort to build substantial assets. Under Hawaii's funding plan and related assumptions, government contributions well above pay-go levels for roughly the next 20 years will enable the state and local governments to only fund normal costs for OPEBs by the mid-2040s (Exhibit 8).

Exhibit 7

Five of the 50 largest local governments had adjusted NOLs greater than 100% of revenues in fiscal 2018, with generally little pre-funding

Government	Adj. NOL, % of revenues	OPEB Contribution, % of revenues	Asset / Benefit Coverage (OPEBs)
Nassau County	203%	7%	0.0
Honolulu	176%	8%	3.8
LA Unified	174%	5%	0.8
Metro Nashville	156%	5%	0.0
LA County	136%	3%	1.5

Sources: Government comprehensive annual financial reports, OPEB valuations and retirement system financial reports

Exhibit 8

Hawaii and its local governments, including Honolulu, are more aggressively pre-funding their OPEB obligations
Projected OPEB contributions, benefits and assets as % of payroll, for Hawaii's retiree healthcare plan

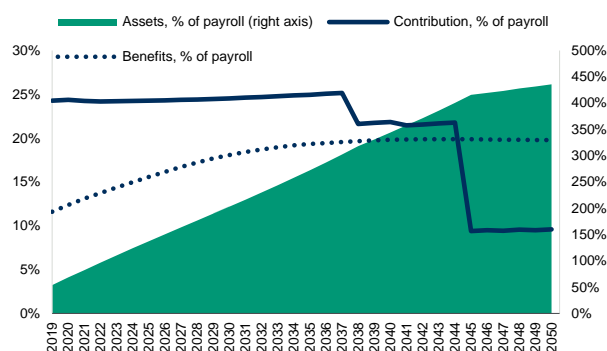
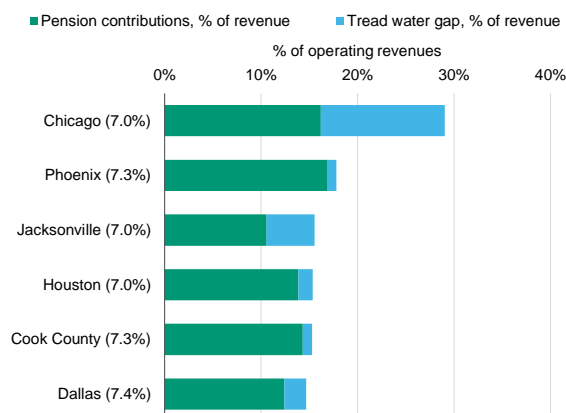


Exhibit reflects aggregate of state and other participating governments' accounts.
Source: Hawaii Employer-Union Health Benefits Trust Fund actuarial valuation

Most of the largest local governments fail to contribute enough toward pensions to tread water

Exhibit 9

The large local governments with the highest annual pension funding costs all had tread water gaps in fiscal 2018



Source: Moody's Investors Service

- » Despite the use of 7% discount rates, or higher, by most of the largest local governments, 34 had tread water gaps in fiscal 2018, including those with the highest tread water indicators relative to their revenues (see Exhibit 9). Higher reported discount rates tend to produce lower tread water indicators, all else being equal. The tread water indicator is the contribution required to prevent unfunded liabilities from growing under reported assumptions.
- » Some governments, such as the [District of Columbia](#) (Aaa stable), stand out very favorably for contributions that exceed their tread water indicators at comparatively low reported discount rates (6.5% in fiscal 2018).
- » [Phoenix](#) (Aa1 negative) significantly increased its pension contributions in fiscal 2018, lowering its tread water gap to 1% of revenues from nearly 5% of revenues in fiscal 2017.

Shift in responsibility for underfunded teacher pensions is a risk for both states and local governments

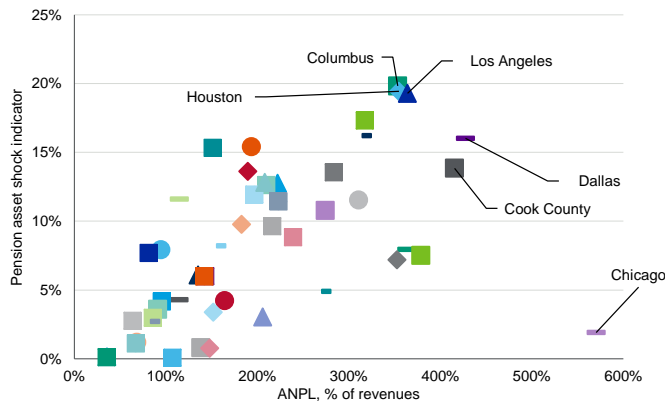
Given heavy state government responsibility for K-12 education, the risk of pension cost-shifting is higher for K-12 school districts than cities or other types of local governments.

- » Some states have historically assumed direct responsibility for all or a portion of teacher retirement funding. Shifting teacher pension costs down to K-12 districts is a potential budget-balancing tool. States such as [Connecticut](#) (A1 stable) and [Illinois](#) (Baa3 stable) have considered, but not acted upon, such legislation. Illinois has actually taken the opposite approach for the [Chicago Board of Education's](#) (B1 positive) pension funding challenge and now covers the district's share of pension normal costs.
- » In other cases, states have reacted to teacher pension underfunding by taking on more responsibility. The [State of Colorado](#) (Aa1 stable) has started to directly contribute toward underfunded teacher pensions. We project a 35% ANPL decline for [Denver County School District 1](#) (Aa1 stable) in 2019, in part because of a shift in a portion of the district's unfunded pension liability to the state.
- » California school districts, such as [Los Angeles Unified](#) (Aa3 stable) and [San Diego Unified](#) (Aa2 stable), had tread water gaps in fiscal 2018 stemming from their participation in the [California State Teachers' Retirement System](#) (CalSTRS, Aa3) and the California Public Employees' Retirement System (CalPERS). Favorably, school districts in California will benefit from [the state's allocation of more than \\$3 billion toward CalSTRS funding on their behalf in its fiscal 2020 budget](#).

Pension investment volatility is a credit risk

Exhibit 10

Some of the largest local governments face probability of pension investment losses that would compound high ANPLs



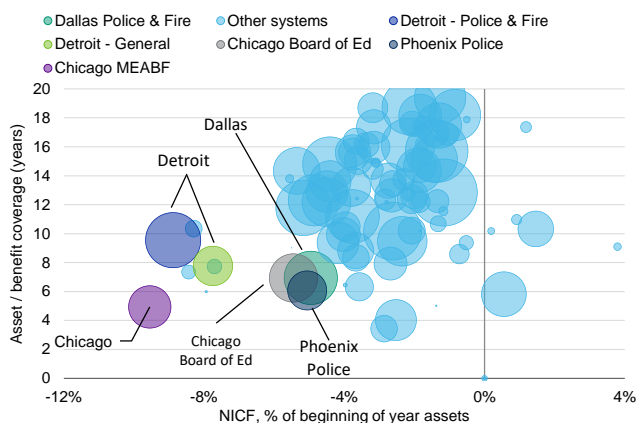
Source: Moody's Investors Service

- » Columbus, Ohio (Aaa stable), Houston (Aa3 stable) and Los Angeles (Aa2 positive) each have pension asset shock indicators of nearly 20%, reflecting a large scale of pension assets carrying high expected return volatility relative to their revenues (see Exhibit 10). The pension asset shock indicator is the estimated probability that a government loses pension assets amounting to 25%, or more of its revenues.
- » Governments such as Cook County, Illinois (A2 stable) and Dallas (A1 stable) already have ANPLs above 400% of revenues, while respective pension asset shock indicators of 14% and 16% signal material probability of new unfunded liabilities materializing.
- » With a very low level of pension assets, Chicago (Ba1 stable) has little chance of losing pension assets that are very material relative to its budget, which already faces very high pension funding costs stemming from its unfunded liabilities.

Exhibit 11

Several of the largest US local governments have a combination of very weak funding and negative NICF

Size of circles is proportionate to each pension system's adjusted total liability relative to the sponsoring government's revenues



Asset/benefit coverage reflects pension assets divided by benefit and expense outflows. NICF reflects contributions less benefits and expenses.

Source: Moody's Investors Service

- » The past decade suggests that governments prefer to slowly incorporate unanticipated pension cost increases into their budgets, and thus tolerate growing unfunded liabilities on their balance sheets because of tread water gaps.
- » Those with large pension systems that are already very underfunded and have negative NICF have less flexibility to reduce their annual pension funding in response to unforeseen challenges without risk of severe pension asset deterioration.
- » Chicago, the Chicago Board of Education, Detroit (Ba3 stable), Dallas and Phoenix each have large pension systems with less than 10 years of asset/benefit coverage and negative NICF worse than -4% of assets (see Exhibit 11).

Explanation of analytical adjustments, measurement date alignment and key pension metrics

GASB 67 and 68 (pensions) and GASB 74 and 75 (OPEBs) enable analytical refinements

GASB 67 and 68 introduced significant changes in reporting of pension liabilities beginning in fiscal reporting year 2015, which increased transparency. GASB 74 and 75, which took effect for most governments' fiscal reporting year 2018, brought OPEB reporting in line with pensions. Our standard discount rate adjustments are based on governments' retirement liability reporting under these recently updated accounting rules.

Tread water indicator forms contributions benchmark

The tread water indicator is the amount that would cover interest on beginning-of-year net pension liability (NPL), plus the employer portion of service cost accruals during the year, based on reported assumptions. If all plan assumptions are met, a contribution equal to the tread water indicator would result in a year-end NPL equal to its beginning-of-year value.

Pension and OPEB measurement dates often misaligned with government reporting years

GASB 68 allows governments to report net pension liabilities measured up to one year prior to their own fiscal year-end. Our balance sheet metrics such as the ANPL and adjusted NOL reflect pension liabilities as of the pension measurement date(s) reported in the government's financial statements.

Measurement date misalignment with government fiscal years complicates income statement metrics. Pension contributions are reported based on the government fiscal year. However, the elements of the tread water indicator may not be. We try to align income statement metrics such as the tread water indicator with governments' fiscal years where possible.

Pension asset shock indicator measures balance sheet risk for asset volatility

The pension asset shock indicator estimates the probability of a pension investment loss amounting to 25%, or more, of a government's revenues. The indicator is a function of the size of pension assets relative to government revenues and estimated annual volatility of the asset portfolio. We use standard capital market assumptions to estimate the volatility for each pension plan based on its assumed investment rate of return. Higher assumed rates of return increase the probability of losses.

Negative non-investment cash flow, investment volatility hinder pension asset accumulation

Non-investment cash flow is the contributions from governments and employees to a pension system in a given year, less benefits and expenses. Many US public pension systems are maturing as their proportion of retirees to active members rises, meaning that their annual benefit outflows often exceed contributions - a situation known as negative non-investment cash flow (NICF). This cash flow dynamic exacerbates the risk of investment allocations that are weighted heavily toward classes with high return expectations but also high volatility risk. Should investment losses occur, NICF will worsen in comparison to system assets, in turn making it more difficult for systems to accumulate assets and improve funding without higher government contributions.

Appendix

Exhibit 12

Reported and adjusted net pension liabilities \$ millions

Government	State	Sector	Reported net pension liability	Weighted discount rate	Moody's adjusted net pension liability	Weighted discount rate
New York	NY	City	\$47,760	7.00%	\$118,914	4.14%
Chicago	IL	City	\$26,762	7.01%	\$39,823	4.22%
LA County	CA	County	\$8,879	7.38%	\$37,482	3.87%
Los Angeles	CA	City	\$6,161	7.25%	\$25,559	3.87%
Chicago Board of Ed	IL	School District	\$12,382	7.07%	\$22,706	3.87%
Los Angeles Unified	CA	School District	\$6,972	7.11%	\$19,541	3.87%
Fairfax	VA	County	\$4,738	7.14%	\$13,932	3.87%
San Francisco	CA	City	\$2,977	7.45%	\$11,673	3.87%
Cook	IL	County	\$8,565	4.47%	\$10,909	3.60%
Clark County SD	NV	School District	\$3,201	7.50%	\$10,297	3.87%
Philadelphia	PA	City	\$5,378	7.60%	\$9,381	4.14%
Houston	TX	City	\$3,441	7.08%	\$8,816	4.14%
Phoenix	AZ	City	\$4,036	7.34%	\$7,947	3.97%
Miami-Dade	FL	County	\$2,511	6.86%	\$7,741	4.14%
Santa Clara	CA	County	\$2,797	7.15%	\$7,714	3.87%
Clark County	NV	County	\$2,053	7.50%	\$6,604	3.87%
Dallas	TX	City	\$2,857	7.43%	\$6,440	3.60%
Jacksonville	FL	City	\$2,636	7.06%	\$5,614	3.83%
Miami-Dade County	FL	School District	\$1,783	6.84%	\$5,392	3.87%
Harris	TX	County	\$882	8.10%	\$4,544	4.22%
Honolulu	HI	City	\$2,107	7.00%	\$4,422	3.87%
San Diego Unified	CA	School District	\$1,540	7.12%	\$4,313	3.87%
Columbus	OH	City	\$1,178	7.82%	\$3,999	3.60%
Broward County	FL	School District	\$1,303	6.83%	\$3,906	3.87%
San Antonio	TX	City	\$693	7.10%	\$3,724	3.60%
Detroit	MI	City	\$1,474	7.08%	\$3,612	3.87%
Denver	CO	City	\$1,071	7.48%	\$3,368	3.60%
Prince George's	MD	County	\$1,464	7.37%	\$3,118	4.11%
Philadelphia SD	PA	School District	\$1,642	7.25%	\$3,099	3.87%
District of Columbia	DC	City	-\$672	6.50%	\$3,089	4.17%
Baltimore	MD	County	\$1,519	6.35%	\$2,871	3.87%
Nassau	NY	County	\$374	7.00%	\$2,862	3.96%
Denver County 1	CO	School District	\$792	7.25%	\$2,731	3.60%
Metro Gov't of Nashville-Davidson	TN	City	\$193	7.35%	\$2,384	4.03%
Metro Water Reclamation District of Chicago	IL	Other Special District	\$985	7.50%	\$2,295	3.60%
Kansas City	MO	City	\$733	7.44%	\$2,210	4.04%
Montgomery	MD	County	\$365	7.46%	\$2,165	3.87%
Houston Independent	TX	School District	\$465	8.00%	\$2,108	3.77%
Los Angeles Community College District	CA	CCD	\$745	7.12%	\$2,088	3.87%
Anne Arundel	MD	County	\$444	7.46%	\$1,703	3.60%
Dallas Independent	TX	School District	\$371	8.00%	\$1,684	3.77%
Memphis	TN	City	\$282	7.50%	\$1,315	4.14%
Bexar	TX	County	\$102	8.10%	\$1,092	3.60%
Cypress-Fairbanks	TX	School District	\$211	8.00%	\$956	3.77%
Northside Independent	TX	School District	\$202	8.00%	\$918	3.77%
Metropolitan Council of the Twin Cities Area	MN	Other Special District	\$142	7.50%	\$857	4.14%
Katy Independent	TX	School District	\$129	8.00%	\$587	3.77%
Las Vegas Valley Water District	NV	Other Special District	\$206	6.75%	\$522	4.14%
Frisco Independent	TX	School District	\$100	8.00%	\$455	3.77%
Wake	NC	County	\$66	7.11%	\$451	3.87%

Source: Moody's Investors Service

Exhibit 13

Reported and adjusted net OPEB liabilities
\$ millions

Government	State	Sector	Reported net OPEB liability	Weighted discount rate	Moody's adjusted net OPEB liability	Weighted discount rate
New York	NY	City	\$98,496	3.01%	\$79,499	4.14%
LA County	CA	County	\$20,881	4.65%	\$24,369	3.87%
Los Angeles Unified	CA	School District	\$14,969	3.60%	\$14,181	3.87%
Nassau	NY	County	\$6,318	3.44%	\$6,152	3.60%
Los Angeles	CA	City	\$2,157	7.25%	\$5,525	3.87%
San Francisco	CA	City	\$1,989	7.50%	\$3,262	3.87%
Metro Gov't of Nashville-Davidson	TN	City	\$3,889	2.98%	\$3,232	4.14%
Honolulu	HI	City	\$1,669	7.00%	\$2,867	3.87%
Montgomery	MD	County	\$1,486	5.88%	\$2,266	3.87%
Chicago Board of Ed	IL	School District	\$2,271	3.56%	\$2,160	3.87%
Houston	TX	City	\$2,173	3.58%	\$1,972	4.14%
Harris	TX	County	\$1,832	3.75%	\$1,730	4.11%
Santa Clara	CA	County	\$861	7.00%	\$1,633	3.87%
Philadelphia	PA	City	\$1,657	3.58%	\$1,621	3.87%
San Antonio	TX	City	\$838	6.64%	\$1,485	3.68%
Prince George's	MD	County	\$1,558	3.87%	\$1,469	4.14%
Cook	IL	County	\$1,506	3.16%	\$1,395	3.60%
Baltimore	MD	County	\$717	6.38%	\$1,072	3.87%
Fairfax	VA	County	\$506	7.00%	\$1,022	3.94%
Columbus	OH	City	\$1,031	3.42%	\$975	3.60%
Los Angeles Community College District	CA	CCD	\$592	5.30%	\$766	3.87%
Chicago	IL	City	\$685	4.10%	\$681	4.22%
Anne Arundel	MD	County	\$501	6.38%	\$659	3.87%
Houston Independent	TX	School District	\$653	3.42%	\$615	3.77%
Clark County	NV	County	\$602	3.94%	\$599	3.90%
Dallas Independent	TX	School District	\$629	3.42%	\$592	3.77%
District of Columbia	DC	City	-\$71	6.50%	\$584	4.17%
Wake	NC	County	\$396	3.56%	\$372	3.87%
Dallas	TX	City	\$379	3.83%	\$358	4.17%
Cypress-Fairbanks	TX	School District	\$354	3.42%	\$333	3.77%
Miami-Dade	FL	County	\$328	4.24%	\$330	4.17%
Northside Independent	TX	School District	\$332	3.42%	\$313	3.77%
Metropolitan Council of the Twin Cities Area	MN	Other Special District	\$275	4.10%	\$271	4.22%
Memphis	TN	City	\$334	2.98%	\$259	4.14%
Metro Water Reclamation District of Chicago	IL	Other Special District	\$114	6.50%	\$257	3.60%
Denver	CO	City	\$187	5.68%	\$242	3.60%
Phoenix	AZ	City	\$100	7.07%	\$225	4.14%
Katy Independent	TX	School District	\$235	3.42%	\$221	3.77%
Clark County SD	NV	School District	\$221	3.58%	\$216	3.87%
Miami-Dade County	FL	School District	\$212	3.58%	\$210	3.87%
Jacksonville	FL	City	\$188	4.18%	\$188	4.17%
Bexar	TX	County	\$191	3.50%	\$179	3.83%
Broward County	FL	School District	\$174	3.56%	\$167	3.87%
Frisco Independent	TX	School District	\$158	3.42%	\$149	3.77%
Philadelphia SD	PA	School District	\$161	3.17%	\$147	3.87%
San Diego Unified	CA	School District	\$127	3.58%	\$126	3.87%
Kansas City	MO	City	\$112	4.50%	\$121	3.83%
Denver County 1	CO	School District	\$71	5.87%	\$95	3.75%
Las Vegas Valley Water District	NV	Other Special District	\$46	3.87%	\$44	4.14%
Detroit	MI	City	\$0	7.00%	\$2	4.14%

Source: Moody's Investors Service

Exhibit 14

Multiyear ANPLs and 2019 ANPL projections, if available

\$ millions

Government	State	Sector	3-year average ANPL (2018)	2017 ANPL	2018 ANPL	Projected 2019 ANPL (if available)
New York	NY	City	\$131,354	\$130,672	\$118,914	\$136,205
Chicago	IL	City	\$39,806	\$41,725	\$39,823	n/a
LA County	CA	County	\$34,152	\$37,690	\$37,482	\$35,507
Los Angeles	CA	City	\$25,201	\$28,360	\$25,559	\$24,825
Chicago Board of Ed	IL	School District	\$22,541	\$24,699	\$22,706	\$22,848
Los Angeles Unified	CA	School District	\$18,585	\$20,253	\$19,541	\$18,111
Fairfax	VA	County	\$13,571	\$14,698	\$13,932	\$12,700
San Francisco	CA	City	\$10,283	\$12,368	\$11,673	n/a
Cook	IL	County	\$10,609	\$11,008	\$10,909	\$9,853
Clark County SD	NV	School District	\$10,255	\$11,640	\$10,297	\$9,959
Philadelphia	PA	City	\$9,740	\$9,715	\$9,381	n/a
Houston	TX	City	\$10,588	\$8,816	\$8,816	n/a
Phoenix	AZ	City	\$7,449	\$7,808	\$7,947	\$8,321
Miami-Dade	FL	County	\$8,119	\$8,137	\$7,741	n/a
Santa Clara	CA	County	\$6,845	\$7,338	\$7,714	\$7,673
Clark County	NV	County	\$6,635	\$7,464	\$6,604	\$6,453
Dallas	TX	City	\$7,600	\$8,105	\$6,440	\$6,281
Jacksonville	FL	City	\$5,108	\$5,336	\$5,614	\$5,395
Miami-Dade County	FL	School District	\$5,246	\$5,856	\$5,392	\$5,015
Harris	TX	County	\$4,411	\$4,633	\$4,544	n/a
Honolulu	HI	City	\$4,054	\$4,861	\$4,422	\$4,344
San Diego Unified	CA	School District	\$3,556	\$4,367	\$4,313	\$4,111
Columbus	OH	City	\$3,378	\$3,243	\$3,999	\$4,105
Broward County	FL	School District	\$3,546	\$3,642	\$3,906	\$3,649
San Antonio	TX	City	\$3,414	\$3,350	\$3,724	\$3,725
Detroit	MI	City	\$3,516	\$3,992	\$3,612	\$3,399
Denver	CO	City	\$3,033	\$3,040	\$3,368	n/a
Prince George's	MD	County	\$3,087	\$3,377	\$3,118	n/a
Philadelphia SD	PA	School District	\$2,109	\$1,735	\$3,099	\$2,926
District of Columbia	DC	City	\$3,556	\$3,551	\$3,089	n/a
Baltimore	MD	County	\$2,829	\$3,209	\$2,871	\$2,794
Nassau	NY	County	\$2,986	\$2,914	\$2,862	\$3,444
Denver County 1	CO	School District	\$2,506	\$2,570	\$2,731	\$1,788
Metro Gov't of Nashville-Davidson	TN	City	\$2,465	\$2,404	\$2,384	n/a
Metro Water Reclamation District of Chicago	IL	Other Special District	\$2,173	\$2,162	\$2,295	\$2,247
Kansas City	MO	City	\$2,147	\$2,286	\$2,210	\$2,215
Montgomery	MD	County	\$2,088	\$2,559	\$2,165	\$1,843
Houston Independent	TX	School District	\$1,892	\$2,602	\$2,108	\$2,121
Los Angeles Community College District	CA	CCD	\$1,643	\$2,089	\$2,088	\$2,008
Anne Arundel	MD	County	\$1,573	\$1,553	\$1,703	\$1,719
Dallas Independent	TX	School District	\$1,671	\$1,876	\$1,684	\$1,694
Memphis	TN	City	\$1,555	\$1,592	\$1,315	n/a
Bexar	TX	County	\$958	\$933	\$1,092	n/a
Cypress-Fairbanks	TX	School District	\$926	\$1,043	\$956	\$962
Northside Independent	TX	School District	\$892	\$971	\$918	\$927
Metropolitan Council of the Twin Cities Area	MN	Other Special District	\$1,128	\$1,222	\$857	n/a
Katy Independent	TX	School District	\$557	\$604	\$587	\$591
Las Vegas Valley Water District	NV	Other Special District	\$561	\$568	\$522	\$670
Frisco Independent	TX	School District	\$417	\$449	\$455	\$458
Wake	NC	County	\$405	\$480	\$451	\$456

New York City's projected 2019 ANPL reflects its 2019 pension measurement date, which drives its fiscal 2019 financial reporting.

Source: Moody's Investors Service

Exhibit 15

Long-term liabilities relative to operating revenues and full value

Government	State	Net direct debt		Adjusted net pension liability		Adjusted net OPEB liability		Total long-term liabilities	
		% of revenues	% of full value	% of revenues	% of full value	% of revenues	% of full value	% of revenues	% of full value
Las Vegas Valley Water District	NV	831%	1%	138%	0%	12%	0.0%	981%	2%
Metro Water Reclamation District of Chicago	IL	400%	1%	311%	0%	35%	0.0%	746%	1%
Chicago	IL	155%	4%	570%	13%	10%	0.2%	735%	17%
Honolulu	HI	202%	2%	271%	2%	176%	1.4%	648%	5%
Houston	TX	174%	2%	355%	4%	79%	0.9%	608%	7%
Cook	IL	135%	1%	416%	2%	53%	0.2%	603%	3%
Columbus	OH	153%	4%	353%	9%	86%	2.1%	593%	15%
Dallas	TX	137%	2%	427%	5%	24%	0.3%	588%	7%
Los Angeles Community College District	CA	328%	1%	164%	0%	60%	0.1%	552%	1%
Los Angeles Unified	CA	132%	2%	239%	3%	174%	2.2%	545%	7%
Bexar	TX	298%	1%	194%	1%	32%	0.1%	524%	2%
Chicago Board of Ed	IL	137%	3%	353%	7%	34%	0.7%	523%	11%
San Diego Unified	CA	239%	2%	274%	2%	8%	0.1%	521%	5%
Jacksonville	FL	129%	2%	364%	6%	12%	0.2%	504%	9%
Phoenix	AZ	95%	2%	379%	7%	11%	0.2%	485%	8%
Los Angeles	CA	36%	0%	364%	5%	79%	1.0%	479%	6%
Detroit	MI	150%	12%	318%	26%	0%	0.0%	468%	39%
Denver County 1	CO	229%	2%	222%	2%	8%	0.1%	459%	4%
Metro Gov't of Nashville-Davidson	TN	162%	3%	115%	2%	156%	3.2%	432%	9%
Nassau	NY	117%	2%	95%	1%	203%	2.8%	415%	6%
Clark County SD	NV	78%	1%	315%	4%	7%	0.1%	399%	6%
Baltimore	MD	196%	4%	148%	3%	55%	1.3%	399%	9%
San Antonio	TX	138%	3%	183%	4%	73%	1.4%	394%	8%
Frisco Independent	TX	296%	6%	67%	1%	22%	0.4%	385%	7%
Kansas City	MO	150%	5%	215%	7%	12%	0.4%	377%	12%
Fairfax	VA	72%	1%	284%	6%	21%	0.4%	377%	8%
Memphis	TN	180%	4%	151%	3%	30%	0.7%	361%	8%
Harris	TX	99%	1%	190%	1%	72%	0.4%	361%	2%
LA County	CA	10%	0%	210%	3%	136%	1.8%	356%	5%
Cypress-Fairbanks	TX	227%	5%	86%	2%	30%	0.7%	342%	8%
San Francisco	CA	69%	2%	208%	5%	58%	1.4%	335%	8%
Prince George's	MD	111%	2%	152%	3%	72%	1.5%	335%	7%
Philadelphia	PA	87%	3%	206%	7%	36%	1.2%	328%	11%
Miami-Dade	FL	122%	1%	197%	2%	8%	0.1%	327%	3%
Santa Clara	CA	57%	0%	217%	2%	46%	0.4%	319%	3%
Northside Independent	TX	203%	4%	84%	2%	28%	0.6%	315%	7%
New York	NY	87%	7%	135%	10%	91%	6.9%	312%	24%
Katy Independent	TX	203%	5%	68%	2%	26%	0.6%	297%	7%
Clark County	NV	48%	1%	223%	3%	20%	0.3%	291%	4%
Dallas Independent	TX	161%	3%	96%	2%	34%	0.5%	290%	5%
Anne Arundel	MD	126%	2%	114%	2%	44%	0.8%	284%	5%
Houston Independent	TX	143%	2%	91%	1%	27%	0.4%	261%	4%
Metropolitan Council of the Twin Cities Area	MN	147%	0%	81%	0%	26%	0.1%	254%	1%
Denver	CO	86%	1%	156%	2%	11%	0.2%	253%	4%
Montgomery	MD	117%	2%	64%	1%	67%	1.1%	247%	4%
Wake	NC	173%	2%	36%	0%	29%	0.3%	238%	2%
Miami-Dade County	FL	89%	1%	142%	1%	6%	0.1%	237%	2%
Philadelphia SD	PA	108%	6%	107%	6%	5%	0.3%	220%	12%
Broward County	FL	57%	1%	143%	2%	6%	0.1%	207%	2%
District of Columbia	DC	118%	5%	36%	1%	7%	0.3%	160%	7%

Source: Moody's Investors Service

Exhibit 16

Total fixed costs and fixed cost elements

Government	State	Debt service		Pension contributions		OPEB contributions		Tread water gap			Total fixed costs	
		\$ mlns	% of revenue	\$ mlns	% of revenue	\$ mlns	% of revenue	\$ mlns	% of revenue	Discount rate	\$ mlns	% of revenue
Metro Water Reclamation	IL	\$256	35%	\$87	12%	\$18	2.4%	-\$2	-0.3%	7.5%	\$359	49%
Chicago	IL	\$940	13%	\$1,130	16%	\$71	1.0%	\$897	12.8%	7.0%	\$3,038	44%
Las Vegas Valley Water	NV	\$128	34%	\$37	10%	\$2	0.6%	-\$3	-0.8%	7.3%	\$164	43%
Houston	TX	\$649	26%	\$344	14%	\$36	1.5%	\$37	1.5%	7.0%	\$1,067	43%
Honolulu	HI	\$264	16%	\$135	8%	\$128	7.9%	\$62	3.8%	7.0%	\$589	36%
Dallas	TX	\$261	17%	\$187	12%	\$16	1.0%	\$34	2.3%	7.4%	\$498	33%
Los Angeles Community	CA	\$285	22%	\$61	5%	\$26	2.1%	\$23	1.8%	7.1%	\$396	31%
San Diego Unified	CA	\$318	20%	\$117	7%	\$0	0.0%	\$47	3.0%	7.1%	\$483	31%
Phoenix	AZ	\$223	11%	\$355	17%	\$21	1.0%	\$18	0.9%	7.3%	\$618	29%
Cook	IL	\$318	12%	\$376	14%	\$33	1.3%	\$26	1.0%	7.3%	\$753	29%
Jacksonville	FL	\$188	12%	\$163	11%	\$6	0.4%	\$77	5.0%	7.0%	\$434	28%
Los Angeles Unified	CA	\$1,088	13%	\$585	7%	\$396	4.8%	\$210	2.6%	7.1%	\$2,278	28%
Columbus	OH	\$199	18%	\$103	9%	\$6	0.5%	\$5	0.5%	7.9%	\$313	28%
Memphis	TN	\$160	18%	\$56	6%	\$13	1.5%	\$2	0.2%	7.5%	\$231	27%
Bexar	TX	\$114	20%	\$32	6%	\$5	0.8%	-\$4	-0.7%	8.1%	\$147	26%
Kansas City	MO	\$164	16%	\$70	7%	\$7	0.7%	\$16	1.6%	7.4%	\$257	25%
Detroit	MI	\$158	14%	\$96	8%	\$0	0.0%	\$30	2.7%	7.1%	\$284	25%
Nassau	NY	\$383	13%	\$144	5%	\$213	7.0%	-\$24	-0.8%	7.0%	\$715	24%
Wake	NC	\$273	22%	\$17	1%	\$9	0.7%	-\$2	-0.2%	6.9%	\$297	23%
Denver County 1	CO	\$207	17%	\$28	2%	\$10	0.8%	\$35	2.9%	7.3%	\$280	23%
Chicago Board of Ed	IL	\$651	10%	\$551	9%	\$49	0.8%	\$211	3.3%	7.1%	\$1,463	23%
Frisco Independent	TX	\$136	20%	\$11	2%	\$2	0.4%	\$1	0.2%	8.0%	\$151	22%
Clark County SD	NV	\$432	13%	\$224	7%	\$9	0.3%	\$48	1.5%	7.5%	\$712	22%
Philadelphia	PA	\$275	10%	\$326	11%	\$9	0.3%	\$7	0.2%	7.3%	\$616	21%
Metro Gov't of Nashville-	TN	\$273	13%	\$128	6%	\$108	5.2%	-\$65	-3.1%	7.5%	\$444	21%
Los Angeles	CA	\$443	6%	\$829	12%	\$262	3.7%	-\$38	-0.5%	7.3%	\$1,496	21%
San Antonio	TX	\$286	14%	\$114	6%	\$36	1.7%	-\$4	-0.2%	7.0%	\$432	21%
Fairfax	VA	\$369	8%	\$570	12%	\$108	2.2%	-\$8	-0.2%	7.1%	\$1,039	21%
Harris	TX	\$347	14%	\$140	6%	\$53	2.2%	-\$37	-1.6%	8.1%	\$501	21%
Cypress-Fairbanks	TX	\$196	18%	\$23	2%	\$6	0.5%	\$3	0.3%	8.0%	\$228	20%
Katy Independent	TX	\$151	18%	\$15	2%	\$4	0.5%	\$2	0.2%	8.0%	\$171	20%
Philadelphia	PA	\$268	6%	\$682	15%	\$86	1.9%	-\$187	-4.1%	7.7%	\$848	19%
Prince George's	MD	\$175	9%	\$108	5%	\$40	1.9%	\$57	2.8%	7.4%	\$380	19%
Anne Arundel	MD	\$147	10%	\$64	4%	\$55	3.7%	\$7	0.4%	7.4%	\$273	18%
Northside Independent	TX	\$167	15%	\$21	2%	\$6	0.5%	\$3	0.3%	8.0%	\$197	18%
Houston Independent	TX	\$348	15%	\$43	2%	\$11	0.5%	\$7	0.3%	8.0%	\$408	18%
Dallas Independent	TX	\$254	14%	\$38	2%	\$10	0.5%	\$5	0.3%	8.0%	\$307	17%
San Francisco	CA	\$398	7%	\$356	6%	\$204	3.6%	\$17	0.3%	7.1%	\$975	17%
New York	NY	\$3,959	5%	\$9,552	11%	\$2,682	3.1%	-\$2,124	-2.4%	7.0%	\$14,069	16%
Montgomery	MD	\$411	12%	\$88	3%	\$60	1.8%	-\$21	-0.6%	7.3%	\$538	16%
Miami-Dade	FL	\$325	8%	\$214	5%	\$19	0.5%	\$66	1.7%	6.7%	\$623	16%
Baltimore	MD	\$143	7%	\$116	6%	\$0	0.0%	\$38	2.0%	6.4%	\$297	15%
Santa Clara	CA	\$98	3%	\$250	7%	\$114	3.2%	\$63	1.8%	7.2%	\$525	15%
Miami-Dade County	FL	\$329	9%	\$145	4%	\$6	0.2%	\$41	1.1%	6.4%	\$521	14%
Denver	CO	\$217	10%	\$103	5%	\$13	0.6%	-\$43	-2.0%	7.5%	\$290	13%
Clark County	NV	\$170	6%	\$147	5%	\$18	0.6%	\$27	0.9%	7.5%	\$362	12%
Metropolitan Council of	MN	\$47	4%	\$17	2%	\$14	1.4%	\$50	4.7%	5.5%	\$128	12%
LA County	CA	\$160	1%	\$1,200	7%	\$556	3.1%	-\$49	-0.3%	7.4%	\$1,867	10%
District of Columbia	DC	\$778	9%	\$165	2%	\$45	0.5%	-\$89	-1.0%	6.5%	\$898	10%
Broward County	FL	\$171	6%	\$51	2%	\$7	0.3%	\$31	1.1%	6.4%	\$260	10%

Source: Moody's Investors Service

Exhibit 17

Pension asset risk and retirement system cash flow measures

Government	State	Sector	Pension assets, % of revenue	Target return	Pension asset shock indicator	NICF of largest retirement system	Asset / benefit coverage of largest retirement system
Columbus	OH	City	326%	7.80%	20%	-4%	11
Houston	TX	City	476%	7.09%	19%	-5%	12
Los Angeles	CA	City	425%	7.25%	19%	-2%	19
Detroit	MI	City	391%	7.09%	17%	-9%	10
Clark County SD	NV	School District	285%	7.50%	16%	-1%	16
Dallas	TX	City	281%	7.50%	16%	-5%	7
Bexar	TX	County	211%	8.00%	15%	-1%	18
Memphis	TN	City	266%	7.50%	15%	-5%	12
Cook	IL	County	271%	7.25%	14%	-1%	13
Harris	TX	County	216%	8.00%	14%	-1%	19
Fairfax	VA	County	280%	7.14%	14%	-2%	14
San Francisco	CA	City	225%	7.47%	13%	-1%	17
Denver County 1	CO	School District	250%	7.25%	13%	-5%	12
LA County	CA	County	232%	7.38%	13%	-2%	16
Miami-Dade	FL	County	267%	7.00%	12%	-4%	15
Kansas City	MO	City	211%	7.44%	12%	-3%	13
Metro Gov't of Nashville-Davidson	TN	City	219%	7.35%	12%	-3%	17
Metro Water Reclamation District	IL	Other Special District	203%	7.50%	12%	-3%	10
Clark County	NV	County	202%	7.50%	11%	-1%	16
San Diego Unified	CA	School District	231%	7.12%	11%	-2%	14
San Antonio	TX	City	216%	7.11%	10%	-2%	18
Santa Clara	CA	County	178%	7.50%	10%	-1%	15
Los Angeles Unified	CA	School District	201%	7.12%	9%	-2%	14
Denver	CO	City	161%	7.50%	8%	-4%	10
Jacksonville	FL	City	192%	7.08%	8%	-2%	9
Nassau	NY	County	199%	7.00%	8%	-4%	16
Met Council Twin Cities	MN	Other Special District	156%	7.50%	8%	-4%	16
Phoenix	AZ	City	179%	7.16%	8%	-5%	6
Chicago Board of Ed	IL	School District	168%	7.25%	7%	-5%	7
New York	NY	City	172%	7.00%	6%	-4%	8
Broward County	FL	School District	165%	7.09%	6%	-4%	15
Miami-Dade County	FL	School District	164%	7.09%	6%	-4%	15
Honolulu	HI	City	156%	7.00%	5%	-2%	11
Anne Arundel	MD	County	120%	7.50%	4%	-2%	14
Los Angeles Community College	CA	CCD	140%	7.12%	4%	-2%	14
Dallas Independent	TX	School District	97%	8.00%	4%	-3%	14
Houston Independent	TX	School District	92%	8.00%	4%	-3%	14
Prince George's	MD	County	110%	7.50%	3%	-2%	10
Philadelphia	PA	City	102%	7.60%	3%	1%	6
Cypress-Fairbanks	TX	School District	87%	8.00%	3%	-3%	14
Montgomery	MD	County	103%	7.50%	3%	-3%	16
Northside Independent	TX	School District	85%	8.00%	3%	-3%	14
Chicago	IL	City	111%	7.08%	2%	-10%	5
Katy Independent	TX	School District	69%	8.00%	1%	-3%	14
Frisco Independent	TX	School District	69%	8.00%	1%	-3%	14
Las Vegas Valley Water District	NV	Other Special District	105%	6.75%	1%	5%	22
Baltimore	MD	County	125%	6.35%	1%	-4%	9
District of Columbia	DC	City	91%	6.50%	0%	0%	48
Wake	NC	County	65%	7.18%	0%	-2%	18
Philadelphia SD	PA	School District	61%	7.25%	0%	-3%	8

Source: Moody's Investors Service

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Sector In-Depth

- » [Vulnerability to pension investment losses remains high despite slowing costs](#), December 11, 2019
- » [State government medians - Adjusted net pension liabilities decline; OPEB liabilities vary widely](#), September 17, 2019

Endnotes

- ¹ For Harris County, TX, which has a February fiscal year-end, this report reflects fiscal 2019.

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