

**The Water and Power Employees'
Retirement Plan of the
City of Los Angeles
Governmental Accounting Standards (GAS) 67
Actuarial Valuation as of June 30, 2018**



This report has been prepared at the request of the Board of Administration to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Administration and may only be provided to other parties in its entirety, unless expressly authorized by Segal. The measurements shown in this actuarial valuation may not be applicable for other purposes.



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September 13, 2018

*Board of Administration
The Water and Power Employees' Retirement Plan of the City of Los Angeles
111 North Hope Street, Room 357
Los Angeles, CA 90012*

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards (GAS) 67 Actuarial Valuation as of June 30, 2018. It contains various information that will need to be disclosed in order to comply with GAS 67.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement Plan. The census and financial information on which our calculations were based was prepared by the Retirement Office. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The actuarial calculations were completed under the supervision of John Monroe, ASA, MAAA, Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and expectations for the Plan.


We look forward to reviewing this report with you and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: 

*Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary*



*John Monroe, ASA, MAAA, EA
Vice President and Actuary*

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SECTION 1: Valuation Summary for The Water and Power Employees' Retirement Plan of the City of Los Angeles

Purpose

This report has been prepared by Segal Consulting to present certain disclosure information required by Governmental Accounting Standards (GAS) 67 as of June 30, 2018. This valuation is based on:

- The benefit provisions of the Retirement Plan, as administered by the Board;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of March 31, 2018, provided by the Retirement Office;
- The assets of the Plan as of June 30, 2018, provided by the Retirement Office;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

General Observations on GAS 67 Actuarial Valuation

The following points should be considered when reviewing this GASB 67 report:

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans can still develop and adopt funding policies under current practices.
- When measuring pension liability GASB uses the same actuarial cost method (Entry Age method) and the same type of discount rate (expected return on assets) as WRERP uses for funding. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on the same basis as WPERP's Actuarial Accrued Liability (AAL) measure for funding. We note that the same is generally true for the Normal Cost component of the annual plan cost for funding and financial reporting.
- The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis. The NPL reflects all investment gains and losses as of the measurement date.

SECTION 1: Valuation Summary for The Water and Power Employees' Retirement Plan of the City of Los Angeles

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

- The NPLs measured as of June 30, 2018 and 2017 have been determined from the actuarial valuations as of July 1, 2018 and July 1, 2017, respectively.
- The results of this valuation reflect changes in Plan provisions that were adopted by the Board. The interest crediting rate on employee, Additional Annuity and Department matching contributions was decreased from 7.50% to 7.25% per annum, consistent with the rate used in the actuarial valuation. The interest rate and mortality table used to calculate the Money Purchase Annuity and certain other optional benefit amounts were changed to 7.25% per annum and a unisex version of mortality tables consistent with those used in the valuation. The vesting requirement for Tier 2 members was amended to include a reduction in the minimum vesting requirement for Tier 2 members to 5 years. These Plan provision changes decreased the Total Pension Liability by \$59 million.
- The NPL decreased from \$1,343.2 million as of June 30, 2017 to \$910.5 million as of June 30, 2018 primarily due to the 8.84% return on the market value of assets during 2017/18 (that was more than the assumed return of 7.25%) and the Plan provision changes. Changes in these values during the last two fiscal years ending June 30, 2018 and June 30, 2017 can be found in Exhibit 3.
- The discount rate used to determine the TPL and NPL as of June 30, 2018 and 2017 was 7.25%, following the same assumptions used by the Plan in the pension funding valuations as of July 1, 2018 and July 1, 2017. Details on the derivation of the discount rate as of June 30, 2018 can be found in Exhibit 5 of Section 2. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 4 in Section 2.

SECTION 1: Valuation Summary for The Water and Power Employees' Retirement Plan of the City of Los Angeles

Summary of Key Valuation Results

	2018	2017
Disclosure elements for fiscal year ending June 30:		
Service Cost ⁽¹⁾	\$228,621,066	\$217,276,778
Total Pension Liability	13,187,542,730	12,657,101,266
Plan's Fiduciary Net Position ⁽²⁾	12,277,085,263	11,313,899,335
Net Pension Liability	910,457,467	1,343,201,931
Schedule of contributions for fiscal year ending June 30:		
Actuarially determined contributions ⁽³⁾	\$425,512,236	\$403,780,319
Actual contributions	433,412,569	391,717,359
Contribution deficiency (excess)	-7,900,333	12,062,960
Demographic data for plan year ending June 30:		
Number of retired members and beneficiaries	9,165	9,272
Number of vested terminated members ⁽⁴⁾	1,728	1,648
Number of active members	10,114	9,806
Key assumptions as of June 30:		
Investment rate of return	7.25%	7.25%
Inflation rate	3.00%	3.00%
Projected salary increases ⁽⁵⁾	4.50% to 10.00%, varying by service, including inflation	4.50% to 10.00%, varying by service, including inflation

⁽¹⁾ The service cost is always based on the previous year's assumptions, meaning both the 2018 and 2017 values are based on the assumptions shown as of July 1, 2017.

⁽²⁾ Based on preliminary unaudited financial statements as of June 30, 2018.

⁽³⁾ Based on actual covered payroll reported by the Retirement Office. For the year ended June 30, 2017, reflects the effect of the phase-in over two years of the contribution rate impact of new actuarial assumptions adopted by the Board effective with the July 1, 2016 valuation.

⁽⁴⁾ Includes terminated members due a refund of member contributions and members receiving PTD benefits.

⁽⁵⁾ Includes inflation at 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotional increases as of June 30, 2018 and 2017 respectively.

SECTION 1: Valuation Summary for The Water and Power Employees' Retirement Plan of the City of Los Angeles

Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare an actuarial valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the Retirement Office. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** This valuation is based on the market value of assets as of the valuation date, as provided by the Retirement Office.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

The user of Segal’s actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The valuation is prepared at the request of the Board to assist the Plan in preparing their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.

SECTION 1: Valuation Summary for The Water and Power Employees' Retirement Plan of the City of Los Angeles

- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If WPERP is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The WPERP should look to their other advisors for expertise in these areas.

As Segal Consulting has no discretionary authority with respect to the management or assets of WPERP, it is not a fiduciary in its capacity as actuaries and consultants with respect to WPERP or LADWP.

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

EXHIBIT 1

General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Single-Employer Pension Plan

Plan Description

Plan administration. The Water and Power Employees' Retirement Plan of the City of Los Angeles (WPERP) was established by the Los Angeles Department of Water and Power in 1938. WPERP is a single employer public employee retirement system whose main function is to provide retirement benefits to employees of the Los Angeles Department of Water and Power.

Under the provisions of the City Charter, the Board of Administration (the "Board") has the responsibility and authority to administer the Plan and to invest its assets. The Board members serve as trustees and must act in the exclusive interest of the Plan's members and beneficiaries. The Board has seven members: one member of the Board of Water and Power Commissioners, the General Manager, the Chief Accounting Employee, three employee members who are elected for three-year terms by active members of the Plan, and one retiree who is appointed by the Board of Water and Power Commissioners for a three-year term.

Plan membership. At June 30, 2018, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	9,165
Vested terminated members entitled to, but not yet receiving benefits ⁽¹⁾	1,728
Active members	<u>10,114</u>
Total	21,007

⁽¹⁾ Includes terminated members due a refund of member contributions and members receiving PTD benefits.

Benefits provided. WPERP provides service retirement, disability, death and survivor benefits to eligible employees. Most employees of the LADWP become members of WPERP effective on the first day of biweekly payroll following employment. Members employed prior to January 1, 2014 are designated as Tier 1 and those hired on or after January 1, 2014 are designated as Tier 2 (unless a specific exemption applies to employee providing a right to Tier 1 status).

Tier 1 members are eligible to retire once they attain the age of 60 with 5 or more years of Department service or at age 55 with 10 or more years of Department service acquired in the last 12 years prior to retirement. A Tier 1 member with 30 years of Department service is eligible to retire regardless of age. Tier 2 members are eligible to retire once they attain the

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age of 60 with 5 years of continuous Department service with the Plan immediately prior to reaching eligibility or age 60 with 10 or more years of Qualifying service or at any age with 30 years of Qualifying service. For both tiers, combined years of service between WPERP and LACERS is used to determine retirement eligibility and at least 5 years must be actual employment at DWP or City. The one exception is the age 60 with 5 years of continuous Department Service for Tier 2 where only service with DWP can be counted. For both tiers, members receiving Permanent Total Disability benefits may retire regardless of age. For Tier 1, to be eligible for a Formula Pension, the employee must have worked or been paid disability four of the last five years immediately preceding eligibility to retire, or while eligible to retire.

The Formula Pension benefit the member will receive is based upon age at retirement, monthly average salary base and years of retirement service credit.

The Tier 1 Formula Pension is equal to 2.1% times years of service credit times monthly average salary base. In addition, members retiring after attaining age 55 with 30 years of service credit, receive an increase in the benefit factor from 2.1% to 2.3%. A reduced early retirement benefit is paid for those members attaining age 55 with 10 years of service or any age (under 55) with 30 years of service. The reduction is 1.5% for each year of retirement age between 60 and 55 and 3.0% for each year of retirement before age 55.

Under Tier 2, there are various benefit factors that apply as shown below:

- 1.5% at age 60 with 5 years of continuous Department Service (or 10 years of Qualifying Service)
- 2.0% at age 60 with 30 years of Qualifying Service
- 2.0% at age 55 with 30 years of Service Credit
- 2.0% at age 63 with 5 years of continuous Department Service (or 10 years of Qualifying Service)
- 2.1% at age 63 with 30 years of Qualifying Service

The reduced early retirement benefits for Tier 2 are the same as Tier 1. These are applied to the age 60 benefit for members (with 2.0% formula) who retire before age 60 with less than 30 years of service credit. Service Credit with the Department and with LACERS is combined for satisfying this requirement.

For Tier 1 members, the maximum monthly retirement allowance is 100% of monthly average salary base. For Tier 2 members, the maximum monthly retirement allowance is 80% of monthly average salary base.

Under Tier 1, pension benefits are calculated based on the highest average salary earned during a 12-month period. Under Tier 2, pension benefits are calculated based on the average salary earned during a 36-month period.

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For both tiers, the member may elect the Full Allowance, or choose an optional retirement allowance. The Full Allowance provides the highest monthly benefit and up to a 50% continuance to an eligible surviving spouse or domestic partner. There are five optional retirement allowances the member may choose. Each of the optional retirement allowances requires a reduction in the Full Allowance in order to allow the member the ability to provide various benefits to a surviving spouse, domestic partner, or named beneficiary.

WPERP provides annual cost-of-living adjustments (COLAs) to retirees that are not considered vested retirement. The cost-of-living adjustments are made each July 1 based on the percentage change in the average of the Consumer Price Index for the Los Angeles-Riverside-Orange County Area--All Items For All Urban Consumers. It is capped at 3.0% for Tier 1 and 2.0% for Tier 2. Tier 2 members may purchase additional 1% COLA protection at full actuarial cost.

The LADWP contributes to the retirement plan based upon actuarially determined contribution rates adopted by the Board of Administration. Employer contribution rates are adopted annually based upon recommendations received from WPERP's actuary after the completion of the annual actuarial valuation. The average employer contribution rate as of June 30, 2018 (based on the July 1, 2017 valuation) was 44.62% of compensation.

All members are required to make contributions to WPERP regardless of the retirement plan or tier in which they are included. The average member contribution rate as of June 30, 2018 (based on the July 1, 2017 valuation) was 7.10% of compensation. Most Tier 1 members contribute at 6% of compensation and all Tier 2 members contribute at 10% of compensation.

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

EXHIBIT 2

Net Pension Liability

The components of the Net Pension Liability are as follows:

	June 30, 2018	June 30, 2017
Total Pension Liability	\$13,187,542,730	\$12,657,101,266
Plan's Fiduciary Net Position	<u>(12,277,085,263)</u>	<u>(11,313,899,335)</u>
Net Pension Liability	\$910,457,467	\$1,343,201,931
Plan's Fiduciary Net Position as a Percentage of the Total Pension Liability	93.10%	89.39%

The Net Pension Liability (NPL) for the Plan was measured as of June 30, 2018 and 2017. The Plan's Fiduciary Net Position (plan assets) and Total Pension Liability (TPL) were valued as of the measurement date and are from actuarial valuations as of July 1, 2018 and 2017, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL are the same as those used in the WPERP actuarial valuations as of July 1, 2018 and 2017, respectively.

Actuarial assumptions. The TPL as of June 30, 2018 and 2017 was determined by an actuarial valuation as of July 1, 2018 and 2017, respectively. The actuarial assumptions used in the June 30, 2018 and 2017 measurements were based on the results of an experience study for the period from July 1, 2012 through June 30, 2015. For the actuarial valuation as of July 1, 2018, the employee contribution, Additional Annuity and matching account crediting rate was changed from 7.50% to 7.25% based on a Plan amendment. The service used to determine the proportion of Tier 2 terminating members assumed to be ordinary withdrawals changed to 5 years (from 15 years) based on vesting eligibility changes to Tier 2 plan. These assumptions are the same as the assumptions used in the July 1, 2018 funding actuarial valuation for the WPERP. The assumptions used in the funding valuation are outlined on page 9 of this report. In particular, the following assumptions were applied to all periods included in the June 30, 2018 and 2017 measurements:

Inflation	3.00%
Salary increases	4.50% to 10.00%, varying by service, including inflation
Investment rate of return	7.25%, net of pension plan investment expense, including inflation
Other Assumptions	Same as those used in the July 1, 2018 funding valuation

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

The long-term expected rate of return on pension plan investments was determined in 2016 using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, used in the derivation of the long-term expected investment rate of return assumption as of June 30, 2018 and 2017 are summarized in the following table. This information will change every three years based on the actuarial experience study.

Asset Class	Target Allocation	Long-Term Expected Arithmetic Real Rate of Return
Domestic Equity	29%	5.76%
International Equity	19%	7.25%
Custom Fixed Income	25%	1.74%
Real Estate	8%	4.37%
Real Return	5%	2.39%
Private Equity	8%	7.75%
Hedge Funds	5%	3.50%
Cash and Cash Equivalents	<u>1%</u>	-0.46%
Total	100%	

Discount rate: The discount rate used to measure the TPL was 7.25% as of June 30, 2018 and June 30, 2017, respectively. The projection of cash flows used to determine the discount rate assumed member contributions will be made at the current contribution rates and that employer contributions will be made at rates equal to the required contribution rates. For this purpose, only employee and employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both June 30, 2018 and June 30, 2017.

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

Sensitivity of the net pension liability to changes in the discount rate. The following presents the NPL of the WPERP as of June 30, 2018, calculated using the discount rate of 7.25%, as well as what the WPERP NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25%) or 1-percentage-point higher (8.25%) than the current rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Net Pension Liability as of June 30, 2018	\$2,690,242,890	\$910,457,467	\$(561,253,021)

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

EXHIBIT 3

Schedule of Changes in Net Pension Liability – Last Two Fiscal Years

	2018	2017
Total Pension Liability		
Service Cost	\$228,621,066	\$217,276,778
Interest	913,798,415	887,133,571
Change of benefit terms	(59,019,242)	0
Differences between expected and actual experience	10,253,750	(196,176,749)
Changes of assumptions	0	0
Benefit payments, including refunds of employee contributions	<u>(563,212,525)</u>	<u>(540,361,335)</u>
Net change in Total Pension Liability	\$530,441,464	\$367,872,265
Total Pension Liability – beginning	<u>\$12,657,101,266</u>	<u>\$12,289,229,001</u>
Total Pension Liability – ending (a)	<u>\$13,187,542,730</u>	<u>\$12,657,101,266</u>
Plan's Fiduciary Net Position		
Contributions – employer (including those for administrative expenses)	\$439,298,444	\$ 397,747,778
Contributions – employee	93,659,240	83,239,105
Net investment income	998,777,227	1,280,806,288
Benefit payments, including refunds of employee contributions	(563,212,525)	(540,361,335)
Administrative expense	(5,336,458)	(5,375,229)
Other	<u>0</u>	<u>0</u>
Net change in Plan's Fiduciary Net Position	\$963,185,928	\$1,216,056,607
Plan's Fiduciary Net Position – beginning	<u>\$11,313,899,335</u>	<u>\$10,097,842,728</u>
Plan's Fiduciary Net Position – ending (b)	<u>\$12,277,085,263</u>	<u>\$11,313,899,335</u>
Net Pension Liability – ending (a) – (b)	<u>\$910,457,467</u>	<u>\$1,343,201,931</u>
Plan's Fiduciary Net Position as a percentage of the total pension liability	93.10%	89.39%
Covered payroll	\$953,635,670	\$892,332,196
Plan Net Pension Liability as percentage of covered payroll	95.47%	150.53%

Notes to Schedule:

Benefit changes:

Certain technical amendments related to the administration of Tier 2 provisions were adopted. The vesting requirement for Tier 2 members was amended to include a reduction in the minimum vesting requirement for Tier 2 members to 5 years. The employee contribution, additional annuity and matching account crediting rate was changed from 7.50% to 7.25%.

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

EXHIBIT 4

Schedule of Employer Contributions – Last Ten Fiscal Years

Year Ended June 30	Actuarially Determined Contributions⁽¹⁾⁽²⁾⁽³⁾	Contributions in Relation to the Actuarially Determined Contributions⁽²⁾⁽³⁾	Contribution Deficiency (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2009	\$141,291,588	\$145,941,275	-\$4,649,687	\$696,704,083	20.95%
2010	200,578,728	201,034,807	-456,079	767,912,436	26.18%
2011	304,431,910	286,699,384	17,732,526	791,760,493	36.21%
2012	336,874,865	321,688,919	15,185,946	805,607,436	39.93%
2013	376,667,610	368,426,348	8,241,262	817,421,028	45.07%
2014	387,823,989	384,265,892	3,558,097	819,923,866	46.87%
2015	387,464,759	376,902,022	10,562,737	839,213,254	44.91%
2016	368,599,924	362,359,894	6,240,030	861,818,854	42.05%
2017	403,780,319	391,717,359	12,062,960	892,332,196	43.90%
2018	425,512,236	433,412,569	-7,900,333	953,635,670	45.45%

⁽¹⁾ All "Actuarially Determined Contributions" through June 30, 2014 were determined as the "Annual Required Contribution" under GAS 25 and 27.

⁽²⁾ Based on actual covered payroll reported by the Retirement Office. For the year ended June 30, 2015, reflects the effect of the phase-in over two years of the contribution rate impact of new actuarial assumptions adopted by the Board effective with the July 1, 2014 valuation. For the year ended June 30, 2017, reflects the effect of the phase-in over two years of the contribution rate impact of new actuarial assumptions adopted by the Board effective with the July 1, 2016 valuation.

⁽³⁾ Excludes employer contributions towards administrative expenses.

See accompanying notes to this schedule on next page.

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Notes to Exhibit 4

Methods and assumptions used to establish "actuarially determined contribution" rates:

Valuation date	Actuarially determined contribution rates are calculated as of June 30, one year prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Actuarial Cost Method
Amortization method	Level dollar amortization
Remaining amortization period	The July 1, 2004 Unfunded Actuarial Accrued Liability is amortized over a 15-year period commencing July 1, 2004. Any subsequent changes in Unfunded Actuarial Accrued Liability are amortized over separate 15-year periods effective with that valuation.
Asset valuation method	The market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market returns and the expected returns on a market value basis, and is recognized over a five-year period. As directed by the Retirement Office, the actuarial valuation of assets may be reduced by an amount classified as a non-valuation reserve.

	<u>July 1, 2018 Valuation Date</u>	<u>July 1, 2017 Valuation Date</u>
Actuarial assumptions:		
Investment rate of return	7.25%, net of investment expenses	7.25%, net of investment expenses
Inflation rate	3.00%	3.00%
Real across-the-board salary increase	0.50%	0.50%
Projected salary increases*	4.50% to 10.00%	4.50% to 10.00%
Cost of living adjustments	3.00% (actual increases are contingent upon CPI increases with a 3.00% maximum for Tier 1, 2.00% maximum for Tier 2)	3.00% (actual increases are contingent upon CPI increases with a 3.00% maximum for Tier 1, 2.00% maximum for Tier 2)
Mortality	Healthy Post-retirement: Head count-weighted RP-2014 Healthy Annuitant Mortality Table with no age adjustment for males and set back one year for females, projected generationally with the two-dimensional MP-2015 projection scale	Healthy Post-retirement: Head count-weighted RP-2014 Healthy Annuitant Mortality Table with no age adjustment for males and set back one year for females, projected generationally with the two-dimensional MP-2015 projection scale
Other assumptions	Same as those used in the July 1, 2018 funding actuarial valuation	Same as those used in the July 1, 2017 funding actuarial valuation

* Includes inflation at 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotional increases as of June 30, 2018 and 2017.

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EXHIBIT 5

Projection of Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of June 30, 2018 (\$ in millions)

Year Beginning July 1,	Projected Beginning Plan's Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Investment Earnings (d)	Projected Ending Plan's Fiduciary Net Position (e) = (a) + (b) - (c) + (d)
2018	\$12,277	\$495	\$624	\$885	\$13,034
2019	13,034	479	659	938	13,792
2020	13,792	444	704	991	14,523
2021	14,523	403	750	1,040	15,217
2022	15,217	393	796	1,089	15,902
2023	15,902	411	841	1,137	16,610
2024	16,610	357	886	1,185	17,266
2025	17,266	258	930	1,227	17,822
2026	17,822	226	973	1,265	18,339
2027	18,339	181	1,015	1,299	18,805
2043	22,532	90	1,701	1,575	22,496
2044	22,496	82	1,729	1,571	22,422
2045	22,422	73	1,758	1,564	22,301
2046	22,301	64	1,786	1,554	22,133
2047	22,133	55	1,812	1,541	21,917
2092	21,368	0	133	1,544	22,779
2093	22,779	0	110	1,647	24,316
2094	24,316	0	90	1,760	25,985
2095	25,985	0	73	1,881	27,794
2096	27,794	0	58	2,013	29,748
2131	319,757	0	0 *	23,182	342,940
2132	342,940				
2132 Discounted Value:	117 **				

* Less than \$1 million, when rounded.

** \$342,940 million when discounted with interest at the rate of 7.25% per annum has a value of \$117 million as of June 30, 2018.

SECTION 2: GAS 67 Information for The Water and Power Employees' Retirement Plan of the City of Los Angeles

EXHIBIT 5

Projection of Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of June 30, 2018 - continued

Notes:

- (1) Amounts may not total exactly due to rounding.
- (2) Years 2028-2042, 2048-2091, and 2097-2130 have been omitted from this table.
- (3) Column (a): Except for the "discounted value" shown for 2132, none of the projected beginning Plan's Fiduciary Net Position amounts shown have been adjusted for the time value of money.
- (4) Column (b): Projected total contributions include employee and employer normal cost rates applied to closed group projected payroll (based on covered active members as of June 30, 2018), plus employer contributions to the unfunded actuarial accrued liability. Contributions are assumed to occur halfway through the year, on average.
- (5) Column (c): Projected benefit payments have been determined in accordance with Paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of June 30, 2018. The projected benefit payments reflect the cost of living increase assumptions used in the July 1, 2018 valuation report. The projected benefit payments are assumed to occur halfway through the year, on average.
- (6) Column (d): Projected investment earnings are based on the assumed investment rate of return of 7.25% per annum.
- (7) Throughout the projection, administrative expenses are not shown as they are expected to be offset by additional employer contributions above those shown in this projection.
- (8) As illustrated in this Exhibit, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.25% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of June 30, 2018 shown earlier in this report, pursuant to Paragraph 44 of GASB Statement No. 67.

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