Classic Values, Innovative Advice

San Diego City Employees' Retirement System

San Diego County Regional Airport Authority

Actuarial Valuation Report as of June 30, 2020

Produced by Cheiron

December 2020

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Classic Values, Innovative Advice

December 23, 2020

Board of Administration
San Diego City Employees' Retirement System
401 West A Street, Suite 400
San Diego, California 92101

Re: San Diego County Regional Airport Authority June 30, 2020 Actuarial Valuation

Dear Members of the Board:

We are pleased to submit the June 30, 2020 Actuarial Valuation Report for the San Diego County Regional Airport Authority (Airport Authority, the "Plan") of the San Diego City Employees' Retirement System (SDCERS).

The purpose of this report is to present the annual actuarial valuation of the SDCERS-Airport Authority Defined Benefit Plan. This report is for the use of the SDCERS Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

In preparing our report, we relied on information (some oral and some written) supplied by SDCERS' staff. This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

Future results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

This actuarial valuation report was prepared for the San Diego City Employees' Retirement System for the purposes described herein and for the use by the plan auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

Sincerely,
Cheiron

Gene Kalwarski, FSA, FCA, MAAA, EA
Principal Consulting Actuary

Alice Alsberghe, ASA, MAAA, EA
Consulting Actuary

SECTION I – BOARD SUMMARY

The primary purpose of the SDCERS-Airport Authority actuarial valuation is to disclose and comment on, as of the valuation date, on the following:

- The financial condition of the SDCERS-Airport Authority Defined Benefit Plan,
- Past and expected trends in the financial condition of SDCERS-Airport Authority,
- Disclosures related to the Plan's risks of SDCERS-Airport Authority,
- The Airport Authority's Actuarially Determined Contribution (ADC) for Fiscal Year 2022,
- PEPRA Member contribution rates as required under California Government Code section 7522.30, and
- Information required for the Comprehensive Annual Financial Report (CAFR).

In this section, we present a summary of the principal valuation results. This summary includes the basis upon which the June 30, 2020 valuation was completed and an examination of the current financial condition of SDCERS-Airport Authority. In addition, we present a review of the key historical trends followed by the projected financial outlook for SDCERS-Airport Authority.

A. Valuation Basis

In July 2020, the SDCERS Board voted to adopt the results of a comprehensive experience study covering the period July 1, 2015 through June 30, 2019. The detailed findings of that study can be found in Cheiron's report dated August 2020, Actuarial Experience Study for July 1, 2015 to June 30, 2019. The revised assumptions have been reflected in this valuation and can be found in Appendix B of this report.

The most notable change to the demographic assumptions was a further update to the base mortality bases, as well as an update to the mortality improvement scale to anticipate future improvements in members' lifespans. While the experience study covered a review of both economic and demographic assumptions, there were no recommended changes to the economic assumptions.

The results of this valuation include a recalculation of the employee contribution rates for "New Members" under PEPRA. Under the provisions of PEPRA, if the aggregate normal cost rate changes by more than 1% of payroll since the time the prior rates were established, then a recalculation of employee contribution rates is required. The aggregate normal cost rate for the PEPRA membership group increased by more than 1% of payroll; therefore, the employee contribution rates were recalculated. The employee contribution rates can be found in Appendix C of this report.

Numbers in the tables of this report may not always add exactly to the dollar due to rounding.

B. Experience between June 30, 2019 and June 30, 2020

The following discussion summarizes the key results of the June 30, 2020 valuation and how they compare to the results from the June 30, 2019 valuation.

1. SDCERS-Airport Authority Assets, Liabilities and Contributions

Table I-1 presents a comparison between the June 30, 2020 and June 30, 2019 SDCERS-Airport Authority assets, liabilities, unfunded actuarial liability, funding ratios and contributions.

The key results shown in Table I-1 show that the funding ratio, measured using an actuarial smoothing method, decreased from 90.8% as of June 30, 2019 to 89.6% as of June 30, 2020. This was due to the fact that assets grew by 7.8% which was less than the liability growth of 9.2%. Measured on a market value of assets basis, the June 30, 2020 funding ratio decreased to 86.7% compared to 92.4% in the prior year. Investment return on a market value basis earned 0.24%, and on an actuarial value basis earned 5.65%. Both measured returns were less than the Plan's 6.50% assumed rate of return. Section III of this report provides additional detail on SDCERS' assets, including an explanation of the development of the actuarial value of assets. More details on the liability growth is presented in item 2 of this section, and in Section IV of this report.

With respect to the Airport's Actuarially Determined Contribution (ADC), there was an increase from $6,124,720 to $6,579,609. The components of change are shown in Table I-3. These figures assume payment at the beginning of the year. Contribution amounts assuming payment throughout the year may be found in Table V-1.

Table I-1
SDCERS - Airport Authority - Assets, Liabilities and Contributions

	June 30, 2020	June 30, 2019	% Change
Actuarial Liability	$ 239,759,071	$ 219,658,264	9.2%
Actuarial Value Assets	$ 214,923,124	$ 199,385,847	7.8%
Unfunded Actuarial Liability-Actuarial Value	$ 24,835,947	$ 20,272,417	22.5%
Funding Ratio-Actuarial Value	89.6%	90.8%	-1.2%
Market Value Assets	$ 207,910,613	$ 202,887,982	2.5%
Unfunded Actuarial Liability-Market Value	$ 31,848,459	$ 16,770,282	89.9%
Funding Ratio-Market Value	86.7%	92.4%	-5.7%
Actuarially Determined Contribution (ADC)	$ 6,569,609	$ 6,124,720	7.3%

2. Components of UAL Change between June 30, 2019 and June 30, 2020

The unfunded actuarial liability (UAL) for SDCERS-Airport Authority increased by $4.6 million; from $20.3 million to $24.8 million. Table I-2 below presents the specific components of this change in the UAL.

The Plan's UAL was expected to decrease by approximately $1.5 million, assuming no assumption changes and all assumptions were met. The significant increase in the UAL was driven by the changes in demographic assumptions (approximately $7.0 million), with the largest increase coming from changes in the mortality assumption. The Plan experienced a liability gain of $2.0 million, due to actual demographic experience – rates of retirement, death, disability, and termination, as well as salary increases – deviating from the underlying baseline assumptions. The liability experience gain was largely due to salary increases below those assumed. Finally, net asset experience was unfavorable, increasing the UAL by $1.0 million. There were however significant contributions paid by the Airport Authority in excess of the actuarially determined contribution, which partially offset some of the investment loss.

Table I-2
SDCERS - Airport Authority-Change in UAL

1.	**UAL at June 30, 2019**	**$**	**20,272,417**
2.	Expected change in UAL		(1,505,079)
3.	Asset experience		
	a. Anticipated investment loss/(gain)		(999,233)
	b. Actual investment loss/(gain)[1]		2,330,141
	c. Employer and Member contributions paid greater than expected		(2,252,310)
	d. Net asset experience (b - a + c)		1,077,064
4.	Liability experience gain[1]		(1,975,594)
5.	Changes in demographic assumptions		6,967,138
6.	Other miscellaneous		0
7.	Total change in UAL: 2 + 3d + sum of 4 through 6		4,563,530
8.	**UAL at June 30, 2020: 1 + 7**	**$**	**24,835,947**

[1] *Net impact of asset and liability experience is an actuarial loss of $354,547 ($2,330,141 actual investment loss less $1,975,594 actual liability experience gain).*

SECTION I – BOARD SUMMARY

3. SDCERS-Airport Authority Change in Contributions

The Airport Authority's actuarially determined contribution (ADC) for FY 2022 increased by approximately $0.45 million, from $6.12 million to $6.57 million. The ADC would have been expected to decrease by $0.04 million, assuming continued phase-in of investment experience from prior years and no changes in assumptions.

There were however, as mentioned earlier, significant changes in the demographic assumptions which were the leading cause of the increase to the ADC, approximately $0.45 million. Additionally, the net asset experience increased the ADC by $0.1 million, whereas the liability experience gain decreased the ADC by $0.06 million.

Table I-3 below presents the specific components of the change in the ADC. We provide more detail on the development of this contribution in Section V.

Table I-3
SDCERS - Airport Authority-Change in ADC

1.	**ADC at June 30, 2019**	**$**	**6,124,720**
2.	Expected change in ADC		(42,376)
3.	Asset experience		
	a. Anticipated investment loss/(gain)		(88,440)
	b. Actual investment loss/(gain)		206,236
	c. Employer and Member contributions paid greater than expected		(199,348)
	d. Net asset experience (b - a + c)		95,329
4.	Liability experience gain		(55,698)
5.	Changes in demographic assumptions		447,634
6.	Other miscellaneous		(0)
7.	Total change in ADC: 2 + 3d + sum of 4 through 6		444,889
8.	**ADC at June 30, 2020: 1 + 7**	**$**	**6,569,609**

SECTION I – BOARD SUMMARY

4. SDCERS-Airport Authority Membership

Table I-4 shows that total membership in SDCERS-Airport Authority increased by 4.2% from 2019 to 2020. There was membership growth in all statuses with the exception of disabled members, whose membership count did not change. The payroll figures shown below are the expected amounts for the fiscal year beginning July 1, 2020. Expected total payroll for active members increased by 1.5%; with the average pay per active member decreasing by 0.04%. The total benefits in pay status and average benefit increased by 13.9% and 2.3%, respectively.

Table I-4
SDCERS - Airport Authority - Membership Total

Valuation as of:	June 30, 2020	June 30, 2019	% Change
Active Counts	389	383	1.6%
Terminated Vested	149	143	4.2%
Disabled	3	3	0.0%
Retirees	146	131	11.5%
Beneficiaries	8	7	14.3%
Total Airport Authority Members	695	667	4.2%
Active Member Payroll	$ 33,328,788	$ 32,828,449	1.5%
Average Pay per Active Member	$ 85,678	$ 85,714	-0.04%
Benefits in Pay Status	$ 7,361,817	$ 6,462,264	13.9%
Average Benefit	$ 46,891	$ 45,832	2.3%

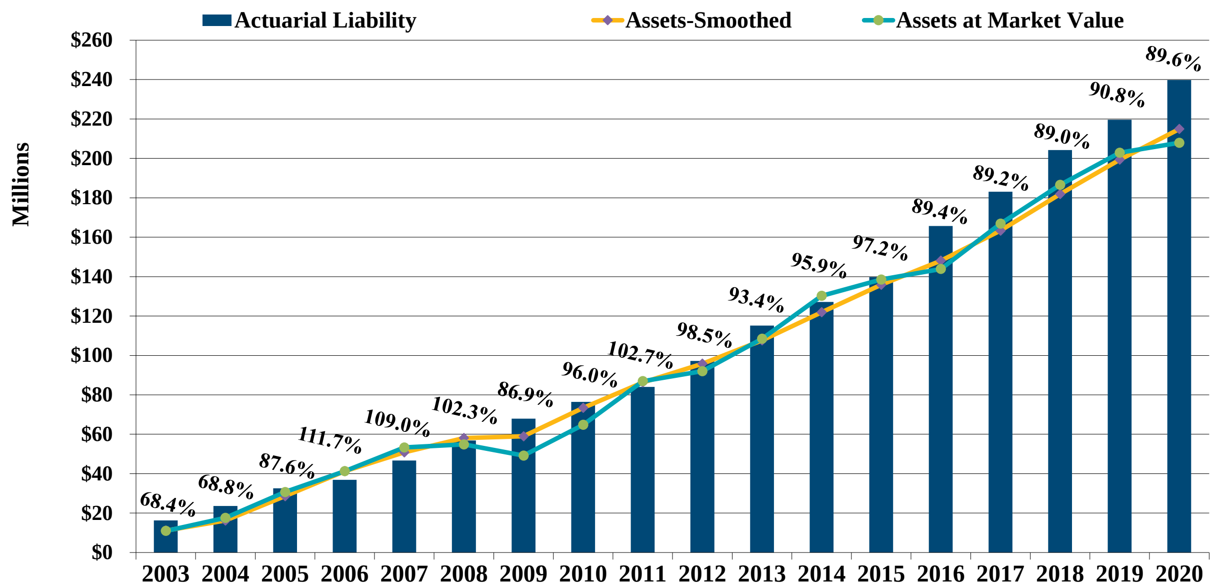
SECTION I – BOARD SUMMARY

C. Historical Trends SDCERS-Airport Authority

Despite the primary focus given each year on the most recently computed unfunded actuarial liability (UAL), funding ratio, and Airport Authority's contribution (ADC), it is important to remember that each valuation is merely a snapshot of the long-term progress of a pension plan. It is more important to judge a current year's valuation results relative to historical trends, and trends expected into the future.

In the chart below, we present the historical trends for both the market value and smoothed assets compared to actuarial liabilities, with SDCERS-Airport Authority funding ratios since 2003.

SDCERS-Airport Authority Assets and Liabilities 2003 – 2020



The chart shows that in 2003 and 2004, the funding ratio was slightly more than 68% of the actuarial value of assets. In 2005 and 2006, the funding ratio significantly increased due to excess contributions and strong investment performance. In 2009, the funding ratio declined significantly to 86.9% due to investment losses from the great recession; however, in 2010 there was a considerable increase in the funding ratio, to 96.0%, due to excess contributions.

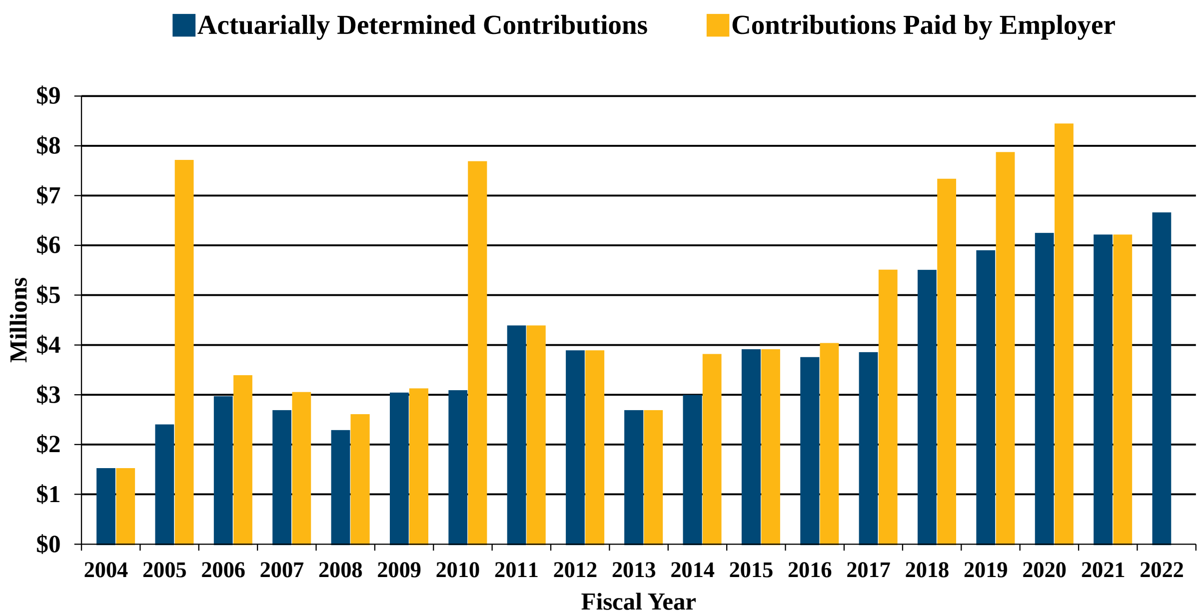
The funding ratio remained above 90% until 2016, dipping to 89.4% primarily due to changes in both demographic and economic assumptions. The funding ratio remained below 90% in 2017 and 2018 given a reduction in the discount rate assumption in both years. In 2020, the drop in the funding ratio from 90.8% to 89.6% was driven by changes in the demographic assumptions.

As mentioned earlier, the funding ratios represent the ratio of the smoothed (actuarial) assets over the actuarial liabilities. If the market value of assets were used instead, the funding ratio as of June 30, 2020 would be 86.7%.

SECTION I – BOARD SUMMARY

In the next chart below, we present the historical trends for the SDCERS-Airport Authority contributions: actual contributions paid by the Airport Authority and the actuarially determined contributions (ADC).

SDCERS-Airport Authority Contributions FY 2004-2022

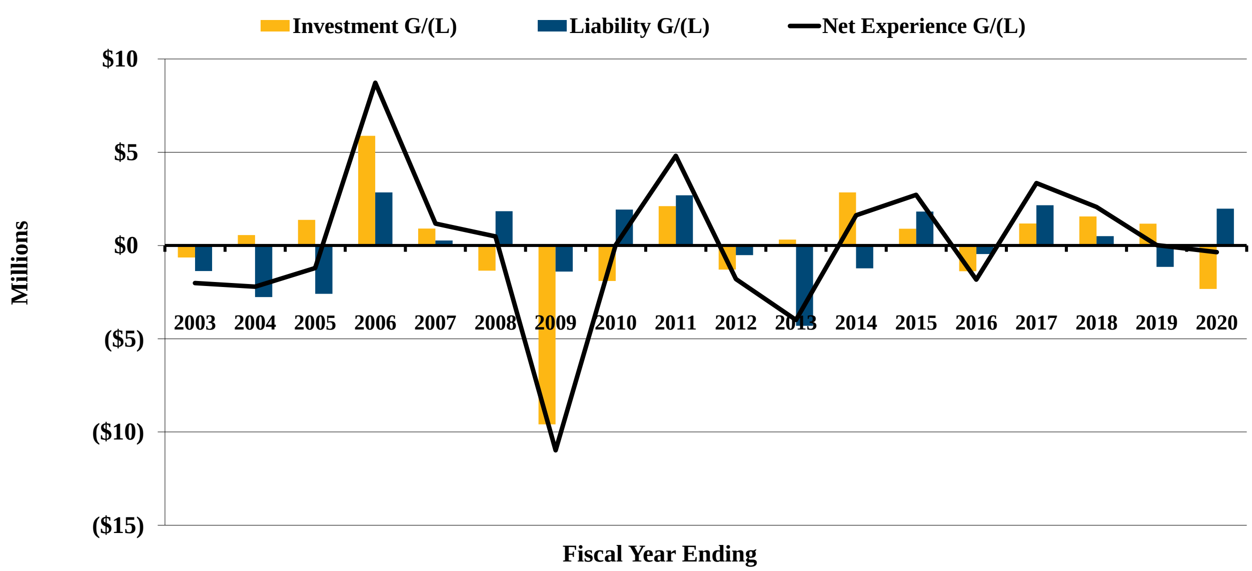


This chart compares the actual contributions made by the Airport Authority to the actuarially determined contributions (ADC). The contributions paid by the Airport Authority are based on the Board's adopted funding practice of Normal Cost plus amortization of the various UAL components, including the requirement beginning in FY 2009 that there is no negative amortization and the requirement beginning with FY 2016 to fund the expected administrative expenses. The chart indicates that the Airport Authority has been consistently paying at or above the ADC since FY 2004, with significant excess contribution amounts in many of the fiscal years shown.

SECTION I – BOARD SUMMARY

The chart below for SDCERS-Airport Authority presents the pattern of annual experience gains and losses, broken into the investment and liability components. The chart does not include any changes in SDCERS' assets and liabilities attributable to changes in actuarial methods, procedures, or assumptions, or to changes in plan benefits.

SDCERS-Airport Authority Historical Gain/(Loss) 2003-2020



In 2004 through 2007 the System experienced investment gains (gold bars), depicted on an actuarial value of assets basis, which were more than offset by investment losses of 2008 through 2010. The investment loss in 2009 was by far the most significant gain or loss during the period shown. There was an asset experience loss in FY 2020 which led to the net experience loss for the fiscal year.

Liability experience gains and losses are attributed to actual demographic experience – rates of retirement, death, disability, and termination, as well as salary increases – deviating from the underlying assumptions. Over the period shown, liability experience has fluctuated between gains and losses, which have generally been small relative to the total liability of the Plan. The 2013 liability loss, which was the most notable, was driven by salary increases greater than expected. The liability experience gain in FY 2020 was largely due to salary increases that were less than expected. The liability experience gain in FY 2020 was approximately 0.9% of the total liability.

SECTION I – BOARD SUMMARY

D. Projected Financial Trends

Our analysis of SDCERS-Airport Authority projected financial trends is a very important part of this valuation. These projections based on the June 30, 2020 valuation results are presented in terms of benefit security (assets over liabilities) and the Airport Authority's expected cost progression.

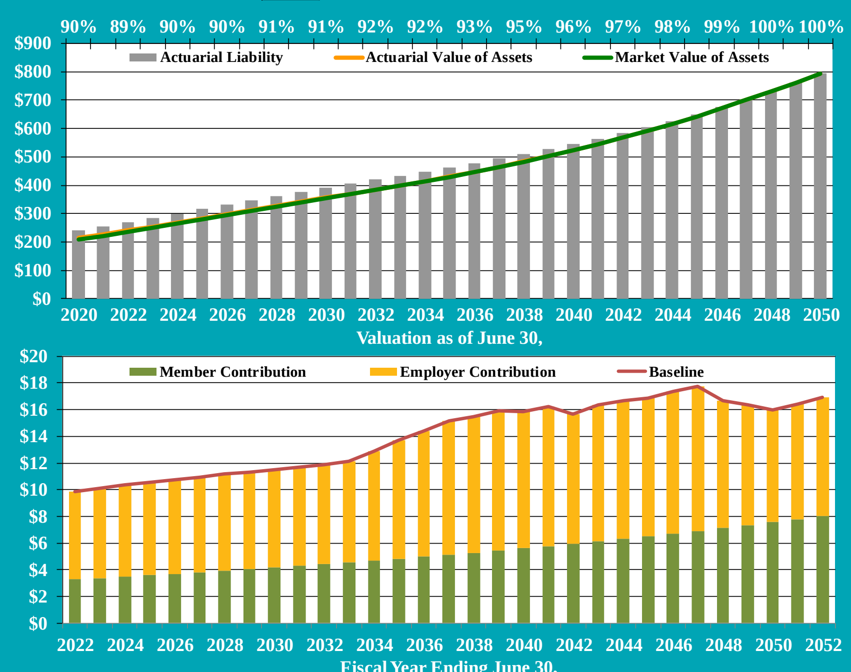
In the chart that follows, we project the SDCERS-Airport Authority assets and liabilities and the Airport Authority's contributions. The upper chart compares the assets (green and yellow lines) and liabilities (gray bars) and the lower chart shows contributions in dollars (employer contributions in yellow bars and member contributions in green bars). The left side of the exhibit shows the returns assumed each year followed by the annual ADC and UAL in dollar amounts.

These projections assume a 6.50% investment return and discount rate, constant active plan membership with payroll growing at the assumed payroll growth of 3.05%, as well as all experience conforming to the Plan's assumptions.

SDCERS-Airport Authority Projections FY 2021-2052 (earnings as assumed)

FYE	Return	Liab (G)/L	(mil) ADC	(mil) UAL	Disc Rate
2021	6.50%	0.0%	$ 6.1	$ 20.27	6.50%
2022	6.50%	0.0%	$ 6.6	$ 24.84	6.50%
2023	6.50%	0.0%	$ 6.7	$ 27.47	6.50%
2024	6.50%	0.0%	$ 6.9	$ 29.12	6.50%
2025	6.50%	0.0%	$ 7.0	$ 30.41	6.50%
2026	6.50%	0.0%	$ 7.0	$ 31.43	6.50%
2027	6.50%	0.0%	$ 7.1	$ 32.26	6.50%
2028	6.50%	0.0%	$ 7.2	$ 32.91	6.50%
2029	6.50%	0.0%	$ 7.3	$ 33.44	6.50%
2030	6.50%	0.0%	$ 7.3	$ 33.80	6.50%
2031	6.50%	0.0%	$ 7.4	$ 34.13	6.50%
2032	6.50%	0.0%	$ 7.5	$ 34.40	6.50%
2033	6.50%	0.0%	$ 7.6	$ 34.61	6.50%
2034	6.50%	0.0%	$ 8.2	$ 34.78	6.50%
2035	6.50%	0.0%	$ 8.9	$ 34.92	6.50%
2036	6.50%	0.0%	$ 9.4	$ 34.46	6.50%
2037	6.50%	0.0%	$ 10.0	$ 33.30	6.50%
2038	6.50%	0.0%	$ 10.2	$ 31.59	6.50%
2039	6.50%	0.0%	$ 10.5	$ 29.25	6.50%
2040	6.50%	0.0%	$ 10.2	$ 26.73	6.50%
2041	6.50%	0.0%	$ 10.4	$ 23.89	6.50%
2042	6.50%	0.0%	$ 9.7	$ 21.28	6.50%
2043	6.50%	0.0%	$ 10.2	$ 18.45	6.50%
2044	6.50%	0.0%	$ 10.3	$ 16.36	6.50%
2045	6.50%	0.0%	$ 10.4	$ 13.81	6.50%
2046	6.50%	0.0%	$ 10.7	$ 11.19	6.50%
2047	6.50%	0.0%	$ 10.8	$ 8.58	6.50%
2048	6.50%	0.0%	$ 9.5	$ 5.70	6.50%
2049	6.50%	0.0%	$ 9.0	$ 2.67	6.50%
2050	6.50%	0.0%	$ 8.4	$ 1.10	6.50%
2051	6.50%	0.0%	$ 8.6	$ 0.23	6.50%
2052	6.50%	0.0%	$ 8.9	$ 0.18	6.50%
N	6.50%	= average return			

Investment Returns	Plan					
BASELINE	A	UAL Payment Floor	$ -	Assumps | G/(L)	20	15
HISTORICAL	1930					



SECTION I – BOARD SUMMARY

Based on the assumed earnings, the Airport Authority's funded status (percentages at the top of the upper graph) is projected to reach 100% before the end of the projection period (30 years). The Airport Authority's ADC is projected to increase gradually during the period shown. The ADC is projected to peak in FY 2047 before it declines towards the end of the period as the Plan reaches full funding.

However, it is very important to note that these projections, while valid as baseline projections, **are not going to occur** as experience never conforms exactly to assumptions from year to year. As a result, in Section II of this report, *Disclosures Related to Risk*, we present a stress testing projection based on assuming varying returns in the future, which are 6.50% on average.

SECTION II – DISCLOSURES RELATED TO RISK

Actuarial Standard of Practice (ASOP) No. 51 was published by the Actuarial Standards Board to provide guidance to actuaries on the assessment and disclosure of risks related to the possibility that future pension plan experience will deviate from assumptions. This standard does not introduce new concepts to actuarial work; it simply attempts to provide some codification of the practice. Our reports have routinely included stress testing of the valuation results showing the impact of future experience deviating from the underlying assumptions.

The pension plan's actuarial valuation results are dependent on assumptions about future economic and demographic experience. Based on actuarial standards of practice, the assumptions represent a reasonable estimate for future experience. However, actual experience will never conform exactly to the assumptions and may differ significantly from the assumptions. This deviation is the risk that pension plan sponsors undertake in relying on a pension plan's actuarial valuation results.

This section of this report is intended to identify the primary drivers of these risks, provide background information and assessments about these identified risks and communicate the significance of these risks to this plan.

A. Identification of Risks

For pension plans, the three primary valuation results that can significantly differ from those expected are in the assets, liabilities, and employer contributions. While there are several factors that could lead to these results being different, we believe the primary risks to this plan are:

- Investment risk,
- Longevity and other demographic risks,
- Plan change risk,
- Contribution risk, and
- Assumption change risk.

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to deviate from what is expected. When actual investment returns are lower than the investment assumption used in the actuarial valuation, the unfunded liability will increase and the period of time over which the unfunded liability is expected to be paid will increase. But, when actual returns exceed the assumption, the resulting unfunded liability measurements and resulting amortization period will be lower than anticipated.

Longevity and Other Demographic Risk is the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time as the actual experience deviates from expected. In addition, the extensive number of assumptions related to longevity and demographic experience often result in offsetting factors contributing to the System's overall liability experience. As such, these risks are often dwarfed by other risks, particularly those due to the investment returns. The historical gain loss charts on page 8 shows that this has been true for this System, with the magnitude of the gains and losses from liability experience significantly smaller than those from investment experience, assumption changes, and plan changes.

Plan Change Risk is the potential for the provisions of the System to be changed such that the funding or benefits are changed materially. In addition to the actual payments to and from the System being changed, future valuation measurements can also be impacted, with plan changes leading to deviations between actual future measurements and those expected by the current valuation.

Contribution Risk is the potential for actual future contributions to deviate from expected future contributions, or that the anticipated contributions will be inadequate to fund the plan benefits. There are different sources of contribution risk ranging from the sponsor choosing to not make contributions in accordance with the funding policy to material changes in the contribution base (e.g., covered employees, covered payroll, sponsor revenue) that affect the amount of contributions the plan can collect.

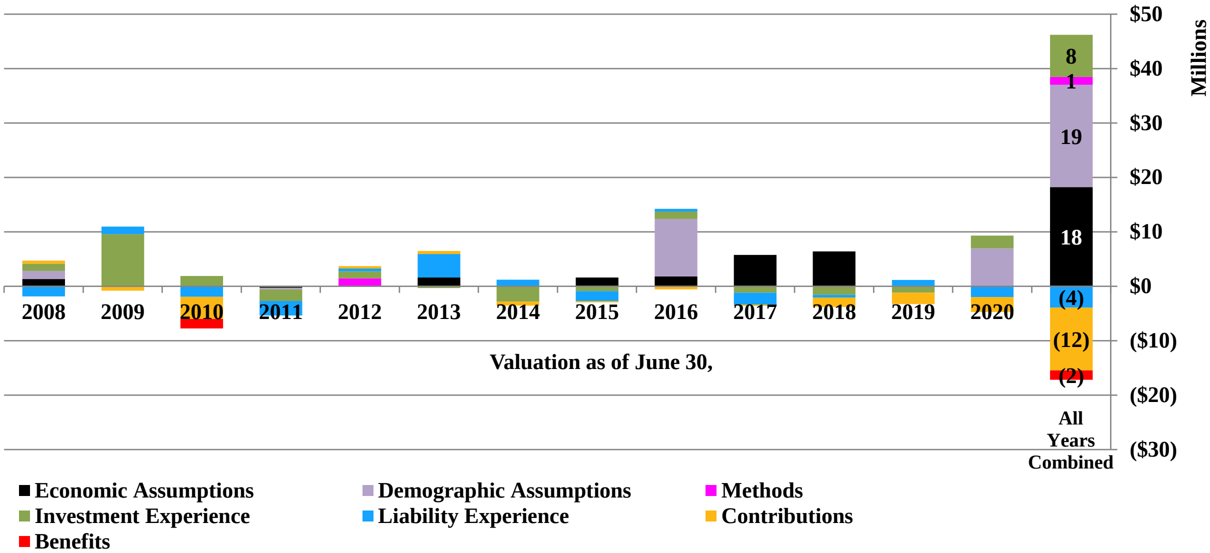
Assumption Change Risk is the potential for the environment to change such that future valuation assumptions are adjusted to be different than the current assumptions. For example, declines in interest rates over time may result in a change in the assumed rates of return used in the valuation. A healthier workforce may result in changes in employee behavior such that retirement rates are adjusted to reflect employees working longer. Assumption change risk is an extension of the risks previously identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in the environment when the current assumption is no longer reasonable.

B. Historical Review

In understanding the impact of some of these risks, it is useful to look at what factors contributed to the Airport Authority's Unfunded Actuarial Liability (UAL). These factors consist of annual actuarial experience gains and losses, assumption changes, plan changes, and contribution shortfalls or excesses. The following chart shows how these factors have contributed, at each valuation date, to the Airport Authority's UAL growth since 2008.

SECTION II – DISCLOSURES RELATED TO RISK

Factors Contributing to UAL Changes since 2008



As is evident in this chart, assumption changes have been by far the most significant factors contributing to the Plan's UAL.

Over this period, net investment losses increased the UAL by $8 million, and economic and demographic assumption changes increased the UAL by $37 million. All other sources of change served to decrease the UAL by $18 million.

C. Plan Maturity Measures

As pension plans become more mature, the identified risks become of more significant concern. As a result, it has become increasingly important to examine measures that indicate a pension plan's maturity level.

The balance of this section discloses and examines three maturity measures: the asset leverage ratio, the support ratio, and the net cash flow ratio.

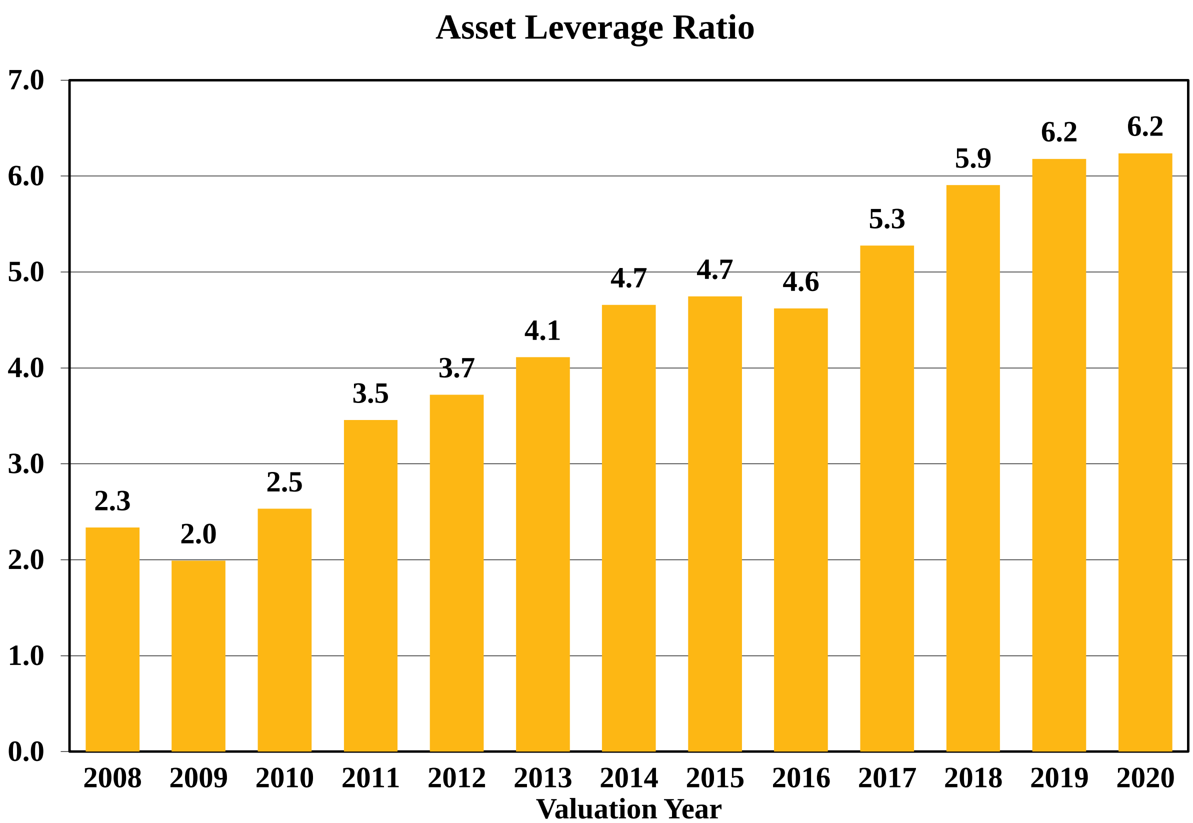
Asset Leverage Ratio

Typically, one of the most important pension plan maturity measures is the asset leverage ratio — the Market Value of Assets divided by the Plan's payroll. The greater the plan's assets are relative to payroll, the more vulnerable the plan is to investment volatility. The following example demonstrates this.

SECTION II – DISCLOSURES RELATED TO RISK

($ in millions)	Plan A	Plan B
Plan Assets	$ 5,000	$ 5,000
Payroll	$ 500	$ 1,000
Asset Leverage Ratio	10.0	5.0
10% Investment Loss	$ 500	$ 500

This example shows two plans that both experience a 10% investment loss equaling $500 million. Although their assets are the same, because of the size of payroll for Plan A is half of that of Plan B, its asset leverage ratio is 10 and Plan B's ratio is 5. This means that the Plan A has to make up (i.e. amortize) that loss over a payroll that is half as large as Plan B's.

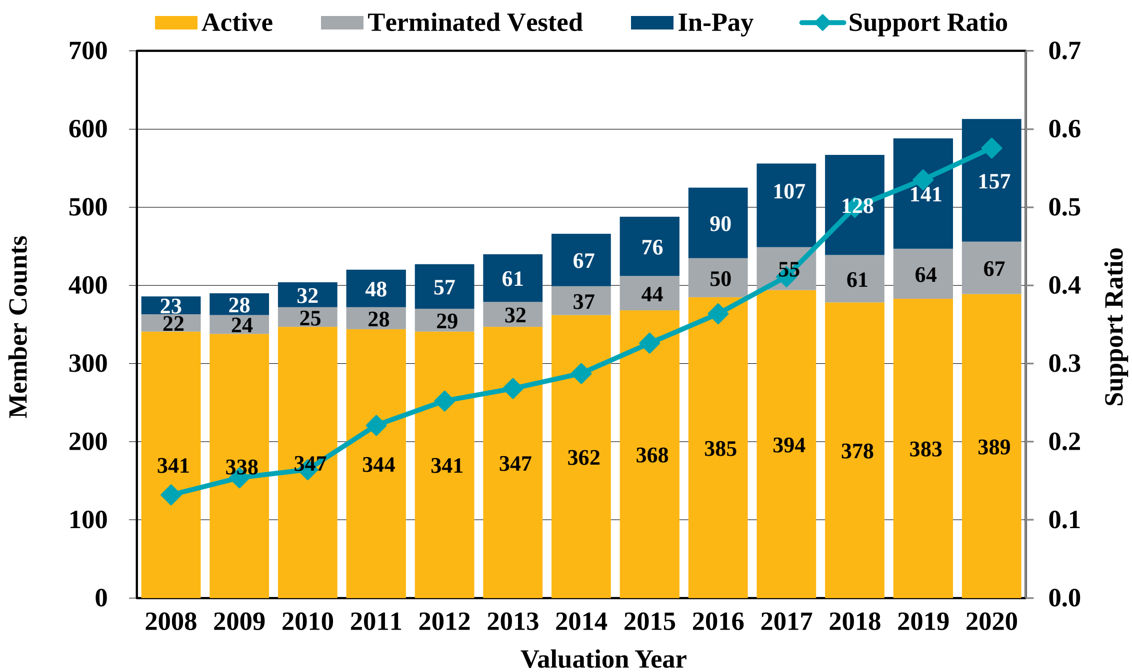


The chart above shows that the Airport Authority's asset leverage ratio has grown from 2.3 to 6.2. This means that if we have a market downturn similar to the Great Recession of 2008/2009 the impact of the Airport Authority's contribution would be nearly three times greater than it was then.

SECTION II – DISCLOSURES RELATED TO RISK

Support Ratio

A commonly used measure of plan maturity is the Support Ratio, the ratio of retired and inactive members or those receiving benefits or entitled to a deferred benefit to the number of active members or those currently accruing benefits in a plan. The greater this ratio, the more likely that the plan will develop negative cash flow.

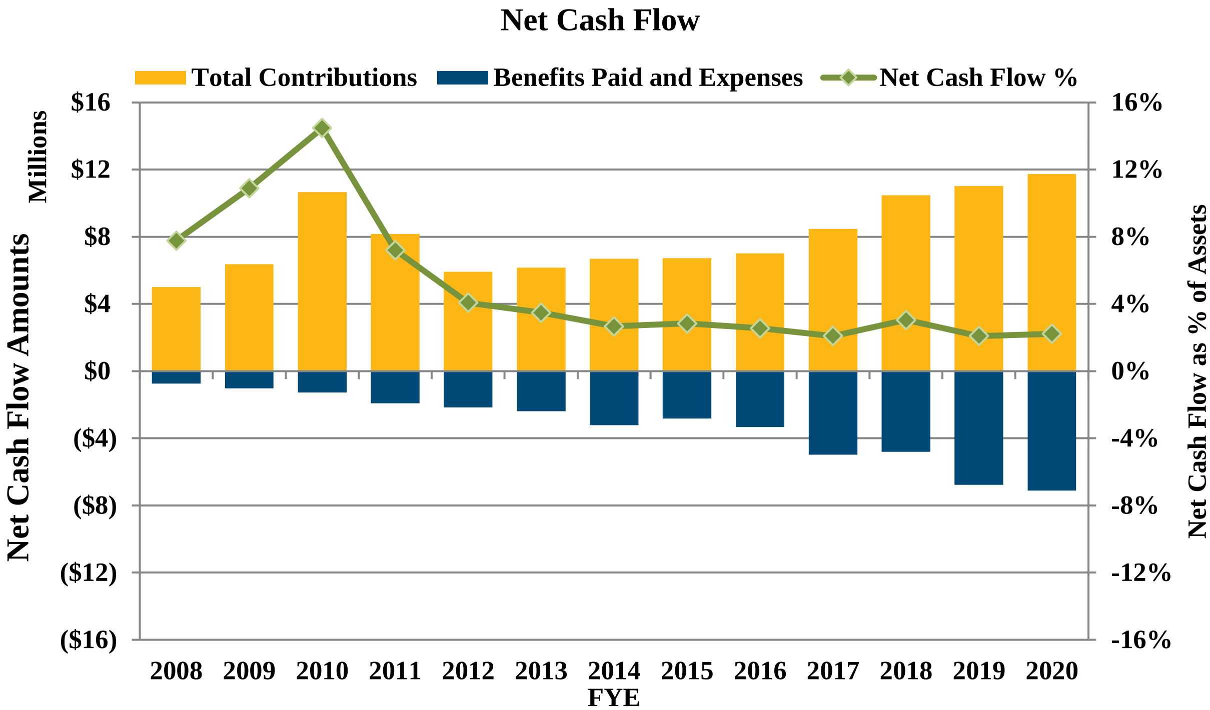


The light blue line in the chart above shows the historical support ratio for the Airport Authority has grown over the years, but there have always been more active participants than inactive participants. Growth in this ratio overtime is to be expected as the Plan matures.

Net Cash Flow Ratio

Another and more important measure of plan maturity is the ratio of the net cash flow out of the plan benefits and expenses less contributions, divided by the market value of plans assets. With shrinking workforces, aging Baby Boomers, and retirees living longer, plans pay out more in benefits than they receive in contributions, leading to negative net cash flows, excluding investment income.

When plans with negative net cash flows suffer investment losses, they need to liquidate enough assets to pay for benefits in excess of contributions. That means these plans will need to earn higher returns to rebuild their assets to the previous levels. Plans with significant negative cash flows are more vulnerable to market declines. However, negative cash flows are expected with maturing plans and a plan's asset allocation may be adjusted to minimize sensitivity to investment risk.



The Airport Authority's net cash flow as a percentage of assets has largely trended downward, however it has remained positive throughout the period. Ultimately, we expect this ratio will become negative, and as with the support ratio, that is to be expected as the Plan matures.

D. Assessment of Future Risks

Stress Testing the Plan's Funded Status and Contribution Levels

The fundamental risk to the Plan is that contributions will not adequately fund plan benefits. In assessing this risk, we performed stress tests on the Plan's funded status and contribution level assuming varying returns in the future which over the entire projection period average 6.5%.

With varying annual earnings, the chart that follows shows the volatility in the plan's funded status (top graph) and in the Airport Authority's contributions (bottom chart). Note that this chart reflects an illustrative scenario and is not intended to reflect future expectations.

What these charts show is that whether the Plan is fully funded or poorly funded, subsequent returns can quickly alter the financial position of the Plan dramatically. It is impossible to judge the financial soundness of a Plan with a single year point measurement. What is more important to consider is the Plan's level of conservatism in funding the Plan, and the discipline and ability of the plan sponsor to consistently contribute the ADC as determined by the plan actuary. In SDCERS' case, the Plan has been conservative relative to most other public pension funds, and since 2005 the Airport Authority has contributed at least as much as the ADC, if not more.

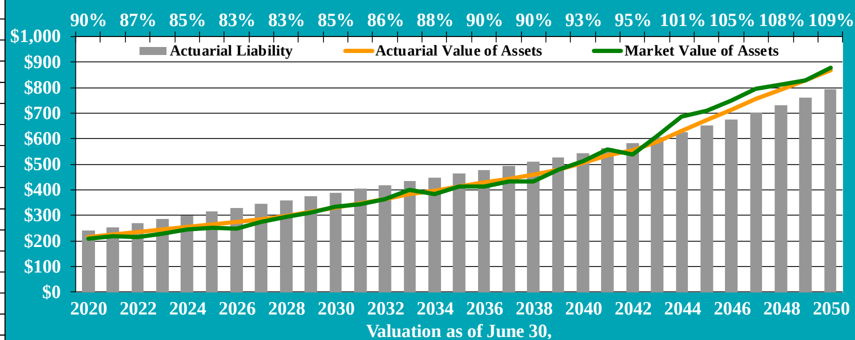
SECTION II – DISCLOSURES RELATED TO RISK

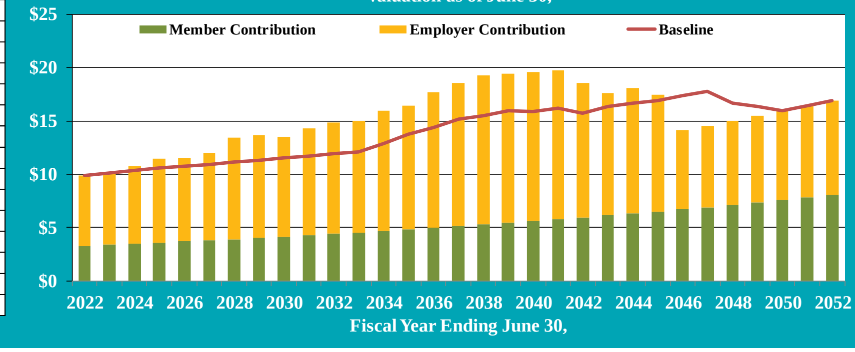
SDCERS-Airport Authority Projections FY 2021-2052 (earnings which vary by year)

CHEIRON

FYE	Return	Liab (G)/L	(mil) ADC	(mil) UAL	Disc Rate
2021	4.93%	0.0%	$ 6.1	$ 20.27	6.50%
2022	-1.90%	0.0%	$ 6.6	$ 24.84	6.50%
2023	6.46%	0.0%	$ 6.8	$ 28.30	6.50%
2024	8.23%	0.0%	$ 7.3	$ 35.31	6.50%
2025	3.65%	0.0%	$ 7.8	$ 41.21	6.50%
2026	-0.09%	0.0%	$ 7.9	$ 44.93	6.50%
2027	11.74%	0.0%	$ 8.2	$ 49.40	6.50%
2028	7.75%	0.0%	$ 9.5	$ 57.46	6.50%
2029	6.93%	0.0%	$ 9.6	$ 60.82	6.50%
2030	9.53%	0.0%	$ 9.3	$ 61.58	6.50%
2031	4.63%	0.0%	$ 10.0	$ 61.75	6.50%
2032	7.08%	0.0%	$ 10.4	$ 59.72	6.50%
2033	11.99%	0.0%	$ 10.5	$ 58.87	6.50%
2034	-2.54%	0.0%	$ 11.3	$ 57.02	6.50%
2035	10.07%	0.0%	$ 11.6	$ 50.11	6.50%
2036	2.25%	0.0%	$ 12.7	$ 52.09	6.50%
2037	6.35%	0.0%	$ 13.4	$ 49.52	6.50%
2038	1.98%	0.0%	$ 14.0	$ 50.11	6.50%
2039	12.51%	0.0%	$ 14.0	$ 49.30	6.50%
2040	8.08%	0.0%	$ 14.0	$ 52.11	6.50%
2041	10.99%	0.0%	$ 13.9	$ 47.05	6.50%
2042	-1.75%	0.0%	$ 12.6	$ 39.94	6.50%
2043	15.99%	0.0%	$ 11.5	$ 27.24	6.50%
2044	14.12%	0.0%	$ 11.7	$ 28.31	6.50%
2045	5.41%	0.0%	$ 10.9	$ 16.92	6.50%
2046	7.86%	0.0%	$ 7.4	$ (5.27)	6.50%
2047	8.42%	0.0%	$ 7.6	$(22.28)	6.50%
2048	4.22%	0.0%	$ 7.9	$(36.29)	6.50%
2049	3.98%	0.0%	$ 8.1	$(52.27)	6.50%
2050	8.11%	0.0%	$ 8.3	$(62.03)	6.50%
2051	5.03%	0.0%	$ 8.6	$(66.04)	6.50%
2052	6.00%	0.0%	$ 8.9	$(73.64)	6.50%
N	6.50%	= average return			

Investment Returns	Plan				
BASELINE	A	UAL Payment Floor	$ -	Assumps | G/(L)	20 | 15
HISTORICAL	1930				





SECTION III – ASSETS

Like most other public pension plans, SDCERS uses two different asset measurements that are presented in this section: the market value and the actuarial value of assets. The market value of assets represents, as of the valuation date, the value of the assets if they were liquidated on that date. The actuarial value of assets is a value that smooths annual investment performance over multiple years to reduce the impact of annual investment volatility on employer contributions. The actuarial value of assets is used in determining SDCERS' contributions for the three participating employer plans.

Each employer receives a separate actuarial valuation report and cost determination. However, the assets of all employer plans are pooled for investment purposes. The apportionment of the assets among the employer plans directly impacts each employer's costs. Therefore, in the interest of ensuring transparency, this section discloses information on the total assets of SDCERS-All Employers. In addition, a brief explanation of how those assets are apportioned to the City of San Diego, the San Diego Unified Port District, and the San Diego County Regional Airport Authority is included.

On the following pages, detailed information is presented on SDCERS-All Employers assets, including:

A. Disclosure of the June 30, 2020 total SDCERS market value of assets, by asset class;
B. Market value of assets by Plan Sponsor;
C. Development of the actuarial value of assets; and
D. Disclosure of the investment performance for the year.

SECTION III – ASSETS

A. Disclosure of Market Value of Assets

The market value of assets represents a "snap-shot" value as of June 30, 2020, the last day of the fiscal year, which provides the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with swings in the investment markets. Because these fluctuations would cause volatility in employer contributions, an actuarial value of assets is developed. Table III-1 below discloses the market value by asset class of SDCERS – All Employers' gross assets on June 30, 2020.

Table III-1
SDCERS – All Employers
Summary of Reported Market Value of Total Defined Benefit Plan Assets

Cash	$	423,521,379
US Stocks		1,564,465,836
International Stocks		1,871,623,238
Private Equity		1,157,178,204
Bonds		2,482,941,938
Real Estate		991,913,761
Receivables		240,108,749
Miscellaneous		131,657,827
Accounts Payable		(546,036,607)
Market Value of Assets – June 30, 2020	**$**	**8,317,374,326**

B. Market Value of Assets by Plan Sponsor

As of July 1, 2007, the City, Unified Port District, and Airport Authority plans were separated into independent, qualified, single employer, governmental defined benefit plans and trusts. The assets of the three separate plans and trusts are pooled in the SDCERS Group Trust, which was established as of July 1, 2007. SDCERS invests and administers the Group Trust as a common investment fund and accounts separately for the proportional interest of each plan and trust that participates in the Group Trust. Cash flow activity for each plan is recorded directly to that plan, with investment activity and other cash flow activity not specific to any one plan being allocated based upon each plan's respective share of the Group Trust's total assets, with time-weighted adjustments for the plan-specific cash flows. Administrative expenses are allocated based on the proportion of participants of a participating trust to the number of total participants of all participating trusts on the first day of the plan year. Table III-2 below discloses the market value and actuarial value of assets by plan.

Table III-2
Summary of Market and Actuarial Assets for Each Employer Group as of June 30, 2020

	Actuarial Value Total Assets June 30, 2020	Market Value Total Net Assets June 30, 2020	Market Value Total Net Assets June 30, 2019
City of San Diego	$ 7,870,672,157	$ 7,648,734,761	$ 7,779,225,644
Unified Port District	473,327,531	460,728,951	465,667,070
Airport Authority	214,923,124	207,910,613	202,887,982
Total-SDCERS	***$ 8,558,922,812***	***$ 8,317,374,326***	***$ 8,447,780,696***

SECTION III – ASSETS

C. Actuarial Value of Assets

To determine on-going funding requirements, most pension plans utilize an actuarial value of assets. Unlike the market value of assets, the actuarial value of assets represents an asset value based on averaging or smoothing year-to-year market value returns for purposes of reducing the resulting volatility on contributions.

The actuarial value of assets is equal to 100% of the expected actuarial value of assets as of June 30, 2020 plus 25% of the difference between the current actual market value of assets and the expected actuarial value of assets. (See Appendix B, Section B-2 for further explanation of the asset valuation method.) In no event will the actuarial value of assets ever be less than 80% of the market value of assets or greater than 120% of the market value of assets.

Table III-3
SDCERS - Airport Authority
Development of Actuarial Value of Assets at June 30, 2020
Expected Value of Assets Method

1. Actuarial Value of Assets at June 30, 2019	$	199,385,847
2. Amount in (1) with interest at 6.50% to June 30, 2020		212,345,927
3. Employer and Member contributions for the Plan Year ended June 30, 2020		11,746,495
4. Disbursements from Trust excluding investment expenses, June 30, 2019 through June 30, 2020		7,113,877
5. Interest on cash flows to June 30, 2020 at 6.50% per year		282,083
6. Expected Actuarial Value of Assets at June 30, 2020 = (2) + (3) – (4) + (5)		217,260,628
7. Actual Market Value of Assets at June 30, 2020		207,910,613
8. Excess of (7) over (6)		(9,350,015)
9. Preliminary Actuarial Value of Assets at June 30, 2020 = (6) + 25% of (8)	$	214,923,124
10. 80% Minimum Corridor on the Actuarial Value of Assets = 80% of (7)		166,328,490
11. 120% Maximum Corridor on the Actuarial Value of Assets = 120% of (7)		249,492,735
12. Final Actuarial Value of Assets at June 30, 2020 = (9), but no less than (10) and no more than (11)	$	214,923,124

D. Investment Performance

The return on the market value of assets, as reported by SDCERS' investment consultant Aon Hewitt Investment Consulting, was 0.5%. The reported return for FY 2019 was 7.0%.

On an actuarial (smoothed) value of assets basis, the return for FY 2020 was 5.65%. This return produced for SDCERS-All Employers an overall investment loss of $81.6 million for the year ending June 30, 2020. This reported loss is different than the investment loss of $2.3 million reported in Table I-2 in this report. The $2.3 million is the loss only for SDCERS-Airport Authority.

Finally, it should be noted that rates of investment returns disclosed in this actuarial report will often differ slightly from those reported by SDCERS as well as SDCERS' investment consultant. This is because the returns disclosed in this report are dollar weighted returns, whereas returns reported by SDCERS and its consultant are usually time weighted returns.

SECTION IV – LIABILITIES

In this section, we present detailed information on System liabilities for SDCERS-Airport Authority including:

- Disclosure of liabilities at June 30, 2019 and June 30, 2020, and
- Statement of changes in the unfunded actuarial liabilities during the year.

A. Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the purpose for which the figures are ultimately used. Note that these liabilities are not applicable for settlement purposes, including the purchase of annuities and the payment of lump sums.

- **Present Value of Future Benefits:** Used for measuring all future SDCERS-Airport Authority obligations, represents the amount of money needed today to fully fund all benefits of SDCERS-Airport Authority both earned as of the valuation date and those to be earned in the future by current plan members, under the current plan provisions.

- **Actuarial Liability-Entry Age Normal (EAN):** Used for determining employer contributions. This liability is calculated taking the present value of all future benefits and subtracting the present value of future Member contributions and future employer normal costs as determined under the EAN actuarial funding method. It represents the portion of the present value of future benefits attributed to service prior to the valuation date by the Entry Age Normal method.

- **Present Value of Accrued Benefits:** This liability represents the present value of future benefits payable to all plan participants as of the valuation date, if future accruals and contributions stopped.

Table IV-1, on the following page, discloses the first two of these liabilities for the current and prior year valuations. Table IV-2 breaks down these liabilities by tier. Subtracting the actuarial value of assets from the actuarial liability results in a net surplus or an unfunded actuarial liability (UAL). Table IV-3 discloses the third of these liabilities, present value of accrued benefits, for the current and prior year valuations.

SECTION IV – LIABILITIES

Table IV-1 SDCERS - Airport Authority - Total				
Valuation as of:		**June 30, 2020**		**June 30, 2019**
Present Value of Future Benefits				
Actives	$	168,218,902	$	165,208,956
Terminated Vested		15,177,359		12,298,476
Disabled		1,132,543		1,106,509
Retirees		101,675,821		88,693,951
Beneficiaries		2,016,178		1,370,688
Total Airport Authority	**$**	**288,220,803**	**$**	**268,678,580**
Actuarial Liability - EAN				
Total Present Value of Future Benefits	$	288,220,803	$	268,678,580
Present Value of Future Normal Costs				
Employer Portion		29,046,863		28,805,366
Employee Portion		19,414,869		20,214,950
Actuarial Liability - EAN	**$**	**239,759,071**	**$**	**219,658,264**
Actuarial Value of Assets	$	214,923,124	$	199,385,847
Unfunded EAN Actuarial Liability	**$**	**24,835,947**	**$**	**20,272,417**

Table IV-2 shows actuarial liability as of June 30, 2020 for General, PEPRA and Executive Members of SDCERS-Airport Authority

Table IV-2 SDCERS - Airport Authority as of June 30, 2020								
		Total		**General**		**PEPRA**		**Executives**
Present Value of Future Benefits								
Actives	$	168,218,902	$	135,241,607	$	25,954,635	$	7,022,661
Terminated Vested		15,177,359		14,545,739		631,620		0
Disabled		1,132,543		1,132,543		0		0
Retirees		101,675,821		89,401,637		161,251		12,112,933
Beneficiaries		2,016,178		1,991,465		24,713		0
Total Airport Authority	**$**	**288,220,803**	**$**	**242,312,991**	**$**	**26,772,219**	**$**	**19,135,594**
Actuarial Liability - EAN								
Actives	$	119,757,170	$	106,142,924	$	8,186,812	$	5,427,435
Terminated Vested		15,177,359		14,545,739		631,620		0
Disabled		1,132,543		1,132,543		0		0
Retirees		101,675,821		89,401,637		161,251		12,112,933
Beneficiaries		2,016,178		1,991,465		24,713		0
Total Airport Authority	**$**	**239,759,071**	**$**	**213,214,308**	**$**	**9,004,396**	**$**	**17,540,368**

SECTION IV – LIABILITIES

Table IV-3 shows the present value of accrued benefits as of June 30, 2020 for all Members of SDCERS-Airport Authority.

Table IV-3
SDCERS - Airport Authority - Present Value of Accrued Benefits

Valuation as of:	June 30, 2020	June 30, 2019	% Change
1. Present Value of Accrued Benefits			
a. Members Currently Receiving Payments	$ 104,824,542	$ 91,171,148	15.0%
b. Vested Terminated and Inactive Members	15,177,359	12,298,476	23.4%
c. Active Members	89,050,469	85,935,050	3.6%
d. Total PVAB	$ 209,052,371	$ 189,404,674	10.4%
2. Assets at Market Value	$ 207,910,613	$ 202,887,982	2.5%
3. Unfunded Present Value of Accrued Benefits, But Not Less Than Zero	$ 1,141,758	$ 0	
4. Ratio of Assets to Value of Benefits (2)/(1)(d)	99.45%	107.12%	-7.6%

B. Changes in Unfunded Actuarial Liabilities

The UAL of any retirement plan is expected to change at each subsequent valuation for a variety of reasons. In each valuation, we report on those elements of change in the UAL that have particular significance or could potentially affect the long-term financial outlook of a retirement plan. Below, we present key changes in liabilities since the last valuation.

Table IV-4
Development of 2020 Experience Gain/(Loss) SDCERS - Airport Authority
(In Thousands)

1.	Unfunded Actuarial Liability at June 30, 2019		$ 20,272.4
2.	Beginning of year Unfunded Actuarial Liability payment		(1,712.3)
3.	Interest accrued ((1+2) x 6.50%)		1,206.4
4.	Expected Unfunded Actuarial Liability at June 30, 2020 (1+2+3)		19,766.6
5.	Actual Unfunded Liability at June 30, 2020		24,835.9
6.	Difference: (4 - 5)		(5,069.4)
7.	Portion of difference (6) due to actuarial assumption or method changes		(6,967.1)
8.	Portion of difference (6) due to plan changes		0
9.	Portion of difference (6) due to contributions greater than expected		2,252.3
10.	Portion of difference (6) due to net experience Gain/(Loss)		(354.5)
	a) portion of (10) due to investment experience	*$ (2,330.1)*	
	b) portion of (10) due to liability experience	*$ 1,975.6*	
	c) portion of (10) due to service purchases	*$ 0*	

SECTION IV – LIABILITIES

Table IV-5 shows the history of past experience gains and losses.

Table IV-5 Experience Gain/(Loss) - Historical SDCERS - Airport Authority			
Valuation Date	**Gain/(Loss)**	**Beginning-of-Year Actuarial Liabilities**	**Gain/(Loss) % of Liability**
6/30/2003	$ (2,013,702)	$ 11,526,293	-17.5%
6/30/2004	(2,204,850)	16,278,613	-13.5%
6/30/2005	(1,207,448)	23,578,460	-5.1%
6/30/2006	8,732,864	32,602,898	26.8%
6/30/2007	1,176,387	36,905,216	3.2%
6/30/2008	492,707	46,636,555	1.1%
6/30/2009	(10,976,099)	56,807,663	-19.3%
6/30/2010	27,790	67,870,945	0.0%
6/30/2011	4,808,814	76,447,473	6.3%
6/30/2012	(1,801,741)	84,042,425	-2.1%
6/30/2013	(3,923,241)	97,224,854	-4.0%
6/30/2014	1,621,374	115,200,048	1.4%
6/30/2015	2,722,867	127,174,087	2.1%
6/30/2016	(1,829,250)	139,786,634	-1.3%
6/30/2017	3,347,379	165,666,873	2.0%
6/30/2018	2,071,874	183,077,245	1.1%
6/30/2019	22,457	204,269,851	0.0%
6/30/2020	(354,547)	219,658,264	-0.2%

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to achieve and maintain an appropriate funded status of a plan. Typically, the actuarial process will use an actuarial funding method that attempts to create a pattern of contributions that is both stable and predictable.

The actuarial funding methodology employed is the Entry Age Normal (EAN) actuarial funding method. Under the funding method, there are three components to the total contribution: the normal cost, an amortization payment on the unfunded actuarial liability, and the expected administrative expenses. The normal cost for an individual employee is the ratio of their present value of future benefits to present value of future salaries at entry age, multiplied by their valuation salary. The gross normal cost rate for each sub-group is determined by dividing the sum of the individual normal costs by the total valuation salary for that sub-group. The gross normal cost rate is then reduced by the average employee contribution rate to determine the employer normal cost rate. Finally, the employer normal cost rate for each sub-group is multiplied by that group's projected FY 2022 payroll to determine the normal cost component of the FY 2022 ADC.

The EAN actuarial liability is the Plan's total present value of future benefits minus the total present value of future normal costs. The actuarial value of assets is allocated to each sub-group based on the proportion of the EAN actuarial liability for that sub-group. The difference between the EAN actuarial liability and the actuarial value of assets is the unfunded actuarial liability. The UAL for FY 2022 is to be amortized over several different periods. Table V-2 shows the outstanding balance, the FY 2022 payment and the remaining amortization period for each of these components. There is an additional UAL cost component to ensure that there is no negative amortization in aggregate in any year.

In January 2015, the Board voted to account for expected administrative expenses explicitly in the actuarially determined contribution (ADC). The administrative expense component is $370,000 for FY 2022 (assuming payment at the beginning of the year). This amount is assumed to increase by 2.5% per year.

Table V-1 on the following page shows how the Airport Authority's contribution rate for SDCERS for FY 2022 is developed.

SECTION V – CONTRIBUTIONS

Table V-1
SDCERS - Airport Authority
Development of the Airport's Contribution as of June 30, 2020 for FY 2022
(dollars in millions)

		WEIGHTED TOTAL AIRPORT	General	PEPRA	Executives
1.	Total Normal Cost Rate as of June 30, 2020	**23.92%**	27.32%	19.06%	30.85%
2.	Member Contribution Rate as of June 30, 2020	**9.43%**	9.51%	9.36%	9.19%
3.	Employer Normal Cost Rate as of June 30, 2020 (1-2)	**14.49%**	17.81%	9.70%	21.66%
4.	Actuarial Liability	**$ 239.8**	$ 213.2	$ 9.0	$ 17.5
5.	Actuarial Assets	**$ 214.9**	$ 191.1	$ 8.1	$ 15.7
6.	Total Unfunded Actuarial Liability (UAL) (4-5) [1]	**$ 24.8**	$ 22.1	$ 0.9	$ 1.8
7.	Preliminary FY22 UAL amortization [1]	**$ 0.1**	$ 0.1	$ 0.0	$ 0.0
8.	Negative Amortization Test for FY22				
	a. Total UAL on 6/30/20 less FY21 UAL payment	**$ 23.6**	$ 21.0	$ 0.9	$ 1.7
	b. Interest on 8a. To 6/30/21	**$ 1.5**	$ 1.4	$ 0.1	$ 0.1
	c. Preliminary FY22 UAL amortization (line 7)	**$ 0.1**	$ 0.1	$ 0.0	$ 0.0
	d. Negative interest (8b - 8c, not less than zero)	**$ 1.5**	$ 1.3	$ 0.1	$ 0.1
9.	Total FY22 UAL payment on 7/01/21 (8c + 8d)	**$ 1.5**	$ 1.4	$ 0.1	$ 0.1
10.	Total FY22 UAL payment throughout year	**$ 1.6**	$ 1.4	$ 0.1	$ 0.1
11.	Total Expected Payroll for FY22	**$ 34.9**	$ 16.1	$ 17.7	$ 1.0
12.	FY22 Normal Cost paid throughout the year	**$ 4.8**	$ 2.9	$ 1.7	$ 0.2
13.	FY22 Normal Cost paid at start of year	**$ 4.7**	$ 2.8	$ 1.7	$ 0.2
14.	Administrative Expenses paid throughout the year	**$ 0.4**	$ 0.3	$ 0.1	$ 0.0
15.	Determination of FY22 ADC %				
	a. Employer Normal Cost Rate (12 divided by 11)	**13.81%**	17.81%	9.70%	21.66%
	b. UAL Rate (line 10 divided by line 11)	**4.54%**	8.73%	0.34%	11.29%
	c. Admin Expense Rate (line 14 divided by line 11)	**1.10%**	1.58%	0.60%	1.97%
	d. Total employer ADC % (15a + 15b + 15c)	**19.45%**	28.12%	10.64%	34.92%
16.	Determination of FY22 ADC dollars				
	a. FY22 ADC if paid throughout year	**$ 6.8**	$ 4.5	$ 1.9	$ 0.4
	b. FY22 ADC if paid at beginning of year	**$ 6.6**	$ 4.4	$ 1.8	$ 0.3

[1] *See Table V-2 for components of these amounts.*
Note: Numbers may not add due to rounding.

SECTION V – CONTRIBUTIONS

Table V-2 shows information on each layer of the June 30, 2020 UAL.

Table V-2
SDCERS - Airport Authority
Schedule of Amortization Bases as of July 1, 2020
Used in Development of the Airport Authority's Contribution for FY 2022

Type of Base	Date Established	Initial Amount	Initial Amortization Years	July 1, 2020 Outstanding Balance	FY 2022 Outstanding Balance (BOY) [1]	Remaining Amortization Years	FY 2022 Amortization Payment (BOY)
1. June 30, 2007 UAL	7/1/2007	$ (4,175,587)	14	$ (2,399,413)	$ (1,256,652)	1	$ (1,256,652)
2. Assumption Change	7/1/2008	2,808,340	30	3,272,543	3,242,511	18	234,884
3. Experience Gain	7/1/2008	(1,356,123)	15	(677,103)	(531,836)	3	(183,147)
4. Experience Loss	7/1/2009	9,892,984	15	5,835,199	4,888,413	4	1,283,116
5. Experience Gain	7/1/2010	(5,002,725)	15	(3,346,758)	(2,920,291)	5	(623,144)
6. Experience Gain [2]	7/1/2010	(1,750,000)	15	(1,170,727)	(1,021,545)	5	(217,982)
7. Experience Gain	7/1/2011	(4,235,009)	15	(3,124,441)	(2,803,945)	6	(506,624)
8. Assumption Change	7/1/2011	(574,045)	30	(657,049)	(655,777)	21	(42,555)
9. Experience Loss	7/1/2012	2,533,950	15	2,024,590	1,854,598	7	291,820
10. Method Change	7/1/2012	1,443,033	30	1,638,845	1,638,915	22	103,006
11. Experience Loss	7/1/2013	4,086,907	15	3,481,456	3,239,470	8	453,110
12. Assumption Change	7/1/2013	1,620,447	30	1,822,756	1,826,126	23	111,380
13. Experience Gain	7/1/2014	(2,736,843)	15	(2,463,910)	(2,321,100)	9	(293,149)
14. Experience Gain	7/1/2015	(2,751,012)	15	(2,591,565)	(2,465,795)	10	(284,691)
15. Assumption Change	7/1/2015	1,620,846	30	1,793,260	1,802,268	25	104,069
16. Experience Loss	7/1/2016	1,348,266	15	1,319,788	1,266,089	11	134,967
17. Assumption Change	7/1/2016	12,382,535	30	13,574,277	13,661,488	26	769,359
18. Experience Gain	7/1/2017	(4,573,974)	15	(4,626,194)	(4,468,599)	12	(443,452)
19. Assumption Change	7/1/2017	5,776,349	30	6,273,920	6,322,352	27	347,731
20. Experience Gain	7/1/2018	(3,877,943)	15	(4,032,920)	(3,918,372)	13	(364,486)
21. Assumption Change	7/1/2018	6,399,124	30	6,883,443	6,944,838	28	373,524
22. Experience Gain	7/1/2019	(2,337,296)	15	(2,489,220)	(2,430,703)	14	(213,179)
23. Experience Gain	7/1/2020	(2,471,967)	14	(2,471,967)	(2,632,645)	14	(218,789)
24. Assumption Change	7/1/2020	6,967,138	20	6,967,138	7,420,002	20	498,239
TOTAL				**$ 24,835,947**	**$ 26,679,813**		**$ 57,356**

[1] *July 1, 2020 outstanding balance adjusted to the FY2022 beginning of year (BOY), July 1, 2021.*
[2] *Reduction in UAL from anticipated impact of PSC correction as of the June 30, 2010 valuation.*

SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL REPORT INFORMATION

Tables VI-1 and VI-2 are exhibits required for the System's Comprehensive Annual Financial Report (CAFR). The Government Finance Officers Association (GFOA) recommends showing at least six years of experience in each of these exhibits in the CAFR. Table VI-1 presents an analysis of financial experience for the valuation year, and Table VI-2 presents the Schedule of Funded Liabilities by Type which shows the portion of actuarial liability covered by assets.

The disclosures needed to satisfy the requirements of Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68 are contained in our separate GASB 67/68 report as of June 30, 2020, issued on October 19, 2020.

Table VI-1
SDCERS - Airport Authority
ANALYSIS OF FINANCIAL EXPERIENCE
Gain and Loss in Actuarial Liability During Years Ended June 30
Resulting from Differences Between Assumed Experience and Actual Experience

Type of Activity	Gain (or Loss) for Year ending June 30, 2020
Investment Income	$ (2,330,141)
Combined Liability Experience	1,975,594
Gain (or Loss) During Year from Financial Experience	$ (354,547)
Non-Recurring Gain (or Loss) Items (e.g., Contributions, Assumption Changes)	(4,714,828)
Composite Gain (or Loss) During Year	$ (5,069,375)

SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL REPORT INFORMATION

Table VI-2
SDCERS - Airport Authority

Schedule of Funded Liabilities by Type
($ in thousands)

Valuation Date June 30,	(A) Active Member Contributions	(B) Retirees And Beneficiaries	(C) Remaining Active Members' Liabilities	Reported Assets [1]	Portion of Actuarial Liabilities Covered by Reported Assets (A)	(B)	(C)
2020 [5]	$ 16,376	$ 104,825	$ 118,558	$ 214,923	100%	100%	79.05%
2019 [5]	15,896	91,171	112,591	199,386	100	100	81.99
2018 [5]	14,815	81,926	107,529	181,890	100	100	79.19
2017 [5]	14,393	65,368	103,316	163,316	100	100	80.87
2016 [5]	14,073	50,999	100,595	148,084	100	100	82.52
2015 [5]	14,033	39,380	86,373	135,859	100	100	95.45
2014	12,949	34,430	79,795	121,918	100	100	93.41
2013 [5]	13,384	26,779	75,037	107,616	100	100	89.89
2012	11,371	22,438	63,416	95,793	100	100	97.74
2011 [5]	11,132	16,133	56,778	86,309	100	100	103.99
2010	10,611	11,832	54,004	73,401	100	100	94.36
2009	9,120	9,924	48,827	58,981	100	100	81.79
2008 [5]	7,335	6,341	43,131	58,096	100	100	102.99
2007 [4]	6,681	4,288	35,668	50,812	100	100	111.71
2006 [3]	5,402	2,783	28,720	41,222	100	100	115.03
2005	4,255	2,713	25,635	28,551	100	100	84.19
2004	2,935 [2]	795	19,848	16,225	100	100	62.95

[1] *Actuarial Value of Assets.*
[2] *Estimated.*
[3] *Reflects contingent liabilities (Annual Supplemental Benefit), DROP reserves, and IRC Section 415 limits.*
[4] *The actuarial liability on June 30, 2007 and after is based on the entry age actuarial funding method. All prior years are based on the projected unit credit actuarial funding method.*
[5] *Reflects revised actuarial and economic assumptions.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Reconciliation of Member Data
Airport Authority

	Active	Terminated Vested	Terminated Non-Vested	Disabled	Retired	Beneficiaries	DROP	Totals
Participants as of 7/1/2019	**383**	**64**	**79**	**3**	**107**	**7**	**24**	**667**
New Entrants	36	0	2	0	0	0	0	38
Returned to Work	1	(1)	0	0	0	0	0	0
Vested Terminations	(7)	7	0	0	0	0	0	0
Non-Vested Terminations	(7)	0	7	0	0	0	0	0
Retirements	(6)	(1)	0	0	13	0	(6)	0
DROP	(8)	0	0	0	0	0	8	0
Disabilities	0	0	0	0	0	0	0	0
New Continuants	0	0	0	0	0	1	0	1
New Dissolutions [1]	0	0	0	0	0	0	0	0
Benefits Ceased [2]	0	0	0	0	0	0	(1)	(1)
Lump Sum Cashout	(2)	(2)	(6)	0	0	0	0	(10)
Transferred Out	(1)	0	0	0	0	0	0	(1)
Miscellaneous Adjustments	0	0	0	0	1	0	0	1
Participants as of 7/1/2020	**389**	**67**	**82**	**3**	**121**	**8**	**25**	**695**

[1] *Includes participants who may have previously had a frozen benefit and retired from a different plan.*

[2] *Includes deaths and benefits that were terminated or suspended.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
SDCERS - Airport Authority
Active Member Data

	June 30, 2020	June 30, 2019	% Change
Count	389	383	1.6%
Average Current Age	46.8	46.8	0.0%
Average Service	9.2	9.3	-1.1%
Average Pensionable Earnings	$ 85,678	$ 85,714	0.0%
Annual Pensionable Earnings	$ 33,328,788	$ 32,828,449	1.5%
Average Valuation Compensation[1]	$ 85,678	$ 85,714	0.0%
Annual Valuation Compensation[1]	$ 33,328,788	$ 32,828,449	1.5%
Average Service Without Purchased Service	9.0	9.1	-1.1%
Members with Paid Purchased Service	22	27	-18.5%
Members with Any Purchased Service	22	27	-18.5%
Years of Paid Purchased Service	60	80	-25.9%
Years of Total Purchased Service	60	80	-25.9%

[1] *The definition of valuation compensation differs from pensionable earnings due to IRS 401(a).*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
SDCERS - Airport Authority
Non-Active Participant Data

	Count			Average Age		
	June 30, 2020	June 30, 2019	%Change	June 30, 2020	June 30, 2019	%Change
Retired [1]	146	131	11.5%	67.0	66.6	0.6%
Disabled	3	3	0.0%	57.0	56.0	1.8%
Beneficiaries	8	7	14.3%	69.2	68.8	0.6%
Payee Total	157	141	11.3%	66.9	66.4	0.8%
DROP Participants	26	24	8.3%	62.5	62.3	0.3%
Deferred Vested [2]	149	143	4.2%	46.2	45.7	1.1%
Vested < 5 yrs svc	82	79	3.8%			

[1] *Includes DROP participants.*

[2] *Includes all participants having a contribution balance still on account with SDCERS.*

Table A-4
SDCERS - Airport Authority
Non-Active Participant Data

	Total Annual Benefit			Average Annual Benefit		
	June 30, 2020	June 30, 2019	%Change	June 30, 2020	June 30, 2019	%Change
Retired [1]	$ 7,137,423	$ 6,284,827	13.6%	$ 48,886	$ 47,976	1.9%
Disabled	68,886	67,556	2.0%	22,962	22,519	2.0%
Beneficiaries	155,508	109,881	41.5%	19,438	15,697	23.8%
Payee Total	$ 7,361,817	$ 6,462,264	13.9%	$ 46,891	$ 45,832	2.3%
DROP Participants	$ 1,465,136	$ 1,309,638	11.9%	$ 56,351	$ 54,568	3.3%
Deferred Vested [2]	$ 3,622,273	$ 3,153,559	14.9%	$ 24,311	$ 22,053	10.2%

[1] *Includes DROP participants.*

[2] *Includes all participants having a contribution balance still on account with SDCERS. Annual benefit for deferred vested participants is the total contribution balance in account as of the valuation date.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-5
SDCERS - Airport Authority
Distribution of Active Members (Excludes DROP Participants) as of June 30, 2020
Total Airport Authority

	Years of Service										Total	Average
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Count	Salary
Under 25	1	2	-	-	-	-	-	-	-	-	3	$ 47,403
25 to 29	6	22	-	-	-	-	-	-	-	-	28	59,314
30 to 34	9	22	8	1	-	-	-	-	-	-	40	65,303
35 to 39	4	19	17	3	1	-	-	-	-	-	44	74,933
40 to 44	4	19	12	9	7	1	-	-	-	-	52	90,154
45 to 49	2	12	8	15	20	3	-	-	-	-	60	99,902
50 to 54	5	9	14	10	12	4	4	1	-	-	59	96,071
55 to 59	4	6	9	12	15	5	4	1	-	-	56	95,208
60 to 64	1	4	9	9	8	4	-	1	-	-	36	90,389
65 to 69	-	1	1	1	3	1	-	-	-	-	7	103,372
70 and up	-	-	1	3	-	-	-	-	-	-	4	95,368
Tot Count	36	116	79	63	66	18	8	3	-	-	389	
Avg. Salary	$ 70,339	$ 80,306	$ 85,661	$ 89,207	$ 97,703	$ 105,597	$ 110,996	$ 93,723	$ -	$ -		$ 86,769

APPENDIX A – MEMBERSHIP INFORMATION

Table A-6
SDCERS - Airport Authority
Retirees (Includes DROP Participants), Disabled, and Beneficiaries Tabulated by Attained Age/Benefit Effective Date
Total Airport Authority

	Age										
Plan Year	Under 50	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 and up	Total
pre-2010	-	-	1	-	7	8	9	2	-	-	27
2011	-	-	-	-	2	6	1	-	-	-	9
2012	-	-	-	1	4	3	-	-	-	-	8
2013	-	-	-	3	3	1	-	-	-	-	7
2014	-	-	-	5	5	3	-	-	-	-	13
2015	-	-	-	1	6	2	-	-	-	-	9
2016	-	-	4	1	7	2	1	-	-	-	15
2017	-	-	4	5	11	-	-	-	-	-	20
2018	-	-	3	5	8	1	-	-	-	-	17
2019	1	-	2	9	2	1	1	-	-	-	16
2020	-	-	4	9	2	1	-	-	-	-	16
Total	1	-	18	39	57	28	12	2	-	-	157

Average Age at Retirement/Disability	61.2
Average Current Age	66.9
Average Annual Pension	$ 46,891

APPENDIX A – MEMBERSHIP INFORMATION

Data Assumptions and Practices

In preparing our data, we relied on information supplied by the SDCERS staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. Terms in quotations below are column headings in the data provided by SDCERS. Our methodology for obtaining the data used for the valuation is based upon the following assumptions and practices:

- Benefit service for Actives and Inactives was calculated using "SDCERS Srv Credit." An adjusted date of hire is retroactively calculated from the valuation date based on benefit service. Purchased Service that has been paid for is already included in the "SDCERS Srv Credit" field. Purchased Service that has been contracted for, but not paid as of the valuation date is assumed to be paid in full and this service will be reflected in the projected benefit.

- Valuation Salary will be the maximum of the projected FY 2020 Annual Comp as provided in the supplemental file "SDCRAA FY20 Projected Compensation.xlsx" and "Current Fiscal Year Pensionable Salary" or an annualized last pay period "Pensionable Salary," carried forward with assumed salary increases. Historical salaries,"1 Yr Prior Fiscal Year Pensionable Salary," "2 Yr Prior Fiscal Year Pensionable Salary," "3 Yr Prior Fiscal Year Pensionable Salary," and "4 Yr Prior Fiscal Year Pensionable Salary," are considered in the calculation of projected benefit.

- "Contrib Rate" was updated to reflect the new contribution rates for active PEPRA employees. If the "Contrib Rate" was not provided, the prior year contribution for the member was used to update and reflect the new rate.

- For accounts having duplicate records in the Actives and Inactives by Social Security Number, the information from the latest payroll date is regarded as most up to date. The other record is treated as out of date and invalid.

- Records on the provided "Member" file are considered to be Active if they have no "Death Date," no "Separation Date," do not have a retiree record and they received pay in the last pay period (Last Pay Period = 26 or 27) of the current FY.

- Records on the "Member" file are considered to be Inactive if they do not have a "Death Date," do not have a retiree record and either have a "Separation Date" or have a "Last Pay Period" earlier than the last pay period of the current FY. Inactive non-vested members without an account balance are excluded from the valuation.

- For Inactives, the "Final Average Salary" as provided in the Member file was used for calculating projected benefits as applicable. If this field was missing a value, the "Highest Pensionable Salary" as provided in the supplemental file was used. If an amount was not available in either of these, the maximum of the annualized pay over the prior year and the last four fiscal years' pensionable salaries was used.

APPENDIX A – MEMBERSHIP INFORMATION

- We assume that any active member found in the inactive data last year has returned to work and should be valued as active.

- Records on the "Payee" file are considered in pay status if their benefit is not suspended.

- For duplicate records (based on SSN and Benefit Type) in the payee file, records having the same plan and same benefit type but different benefit amounts, we have added those benefit amounts together.

- Pension Benefit for retirees for each plan was calculated by summing "Monthly Pension," "Monthly Annuity," "COLA Annuity," "Surv Spouse Annuity," and "COLA Pension" and subtracting "DRO Reduction Amt." The "DRO Reduction Amt" field is mainly for Qualified Domestic Relation Order purposes. The "13th Check Supplement Amount" field is added as an annual benefit. It is assumed the payment is annual for retirees already in pay status prior to this valuation.

- Members retiring since the prior valuation date and not having a "13th Check Supplement Amount" will have their projected "13th Check Supplement Amount" calculated assuming $30 multiplied by the "13th Check Supplement Years," provided they are eligible based on "13th Check Supplement Years."

- Payees' "COLA Pension" and "Star COLA Pension" include COLA effective July 1, 2020.

- Members may retire and receive benefits from multiple plans (e.g., an Airport Authority Member could have also worked for the Unified Port District); we will value each Member's blended benefit individually. This will result in the counts being slightly higher than actual counts due to people having more than one benefit payable from multiple plans.

- We assume any retiree found in last year's "Payee" file and not in this year's file has died without a beneficiary and should be removed from the valuation data.

- We assume all deceased retirees with payments continuing to a beneficiary have already been accounted for in the "Payee" file.

- We exclude any payee receiving $0.00 from a blended benefit plan.

- The Final 415 Regulations were used to calculate the present value of Member benefits over the Internal Revenue Service Code 415 Benefit Limits.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

The SDCERS Board has the authority to select economic and demographic assumptions for the Plan. The assumptions used in this report reflect the results of an experience study performed by Cheiron covering the period July 1, 2015 through June 30, 2019 and adopted by the SDCERS Board in July 2020.

1. Investment Return

SDCERS' assets are assumed to earn 6.50% annually net of investment expenses.

2. Inflation Rate

An inflation assumption of 3.05% compounded annually is used for projecting the total annual payroll growth for amortization of the UAL.

This assumption of 3.05% is also used for increasing the compensation limit that applied to PEPRA Members.

3. Administrative Expense

Administrative expenses are assumed to be $370,000 for FY 2022 (assuming payment at the beginning of the year), increasing by 2.50% annually.

4. Interest Credited to Member Contributions

6.50%, compounded annually.

5. Cost-of-Living Increase in Benefits

Assumed to be 1.9% per annum, compounded.

6. COL Annuity Benefit

For both active and terminated vested Members, the actuarial liability for the COL annuity benefit is valued by adding one-sixth of accumulated member contribution accounts. For active Members, a 2.5% load is applied on the normal cost for future member contributions. For PEPRA Members, the normal cost of the COL annuity benefit is equal to one-sixth of the employee contribution rate.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

7. Member Refunds

All or part of the employee contribution rate is subject to potential "offset" by the employer. That "offset" and the related accumulated interest are not to be refunded to employees at termination. However, such offsets are not directly reflected in either the employee contributions or related refund calculations.

100% of non-vested and 0% of vested deferred Members are assumed to elect a refund of Member contributions at termination.

8. Salary Increase Rate

Salary inflation and merit increases are compounded rather than additive.

Inflation component: 3.05%

The additional merit component:

Table B-1

Years of Service at Valuation Date	General
0	5.00%
1	4.00%
2	3.00%
3	2.00%
4	1.00%
5+	0.50%

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

9. Rates of Termination

Table B-2
SDCERS - Airport Authority

Rates of Termination

Service	General
0	16.00%
1	14.00
2	10.00
3	9.00
4	8.00
5	7.00
6	6.00
7	5.00
8	5.00
9	5.00
10	4.50
11	4.50
12	4.50
13	3.00
14	3.00
15+	2.00

10% of terminating employees, with 5+ years of service at termination, are assumed to subsequently work for a reciprocal employer and receive 3.05% salary inflation increases per year.

No terminations are assumed once retirement eligible.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

10. Rates of Disability

Table B-3
SDCERS - Airport Authority
Rates of Disability at Selected Ages

Age	General
20	0.01%
25	0.02
30	0.03
35	0.04
40	0.05
45	0.08
50	0.10
55	0.20
60	0.20

75% of the disabilities are assumed to be industrial disability retirements. Non-industrial disability retirement is subject to a service requirement.

11. Rates of Mortality for Active Lives

Mortality rates for active members are based on the sex distinct 2010 SOA Public General Employees Amount-Weighted Mortality Table, without adjustment, with generational mortality improvements projected from 2010 using a variation of Projection Scale MP-2019.

Projection Scale MP-2019 was modified using the Society of Actuaries' model improvement tool with rates converging in 2035 to an ultimate rate of improvement of 0.68% up to age 95, instead of 1.00% up to age 85 and 0.85% at age 95.

All active Member deaths are assumed to be non-industrial.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Rates of Mortality for Retired Healthy Lives & Terminated Vested Members

Mortality rates for healthy annuitants are based on the sex distinct 2010 SOA Public General Healthy Retirees Amount-Weighted Mortality Table, without adjustment, with generational mortality improvements projected from 2010 using a variation of Projection Scale MP-2019.

Projection Scale MP-2019 was modified using the Society of Actuaries' model improvement tool with rates converging in 2035 to an ultimate rate of improvement of 0.68% up to age 95, instead of 1.00% up to age 85 and 0.85% at age 95.

13. Rates of Mortality for Retired Disabled Lives

Mortality rates for disabled annuitants are based on the sex distinct CalPERS Industrial Related Disability Retirees Mortality Table from the CalPERS December 2017 experience study, without adjustment, with generational mortality improvements projected from 2013 using a variation of Projection Scale MP-2019.

Projection Scale MP-2019 was modified using the Society of Actuaries' model improvement tool with rates converging in 2035 to an ultimate rate of improvement of 0.68% up to age 95, instead of 1.00% up to age 85 and 0.85% at age 95.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

14. Rates of Retirement

Rates of Retirement are shown in the table below. Retirement rates include both service retirements and entry into DROP.

Table B-4
SDCERS - Airport Authority
Rates of Retirement by Age and Service

Age	Service < 20	Service 20+
52	25.0%	50.0%
53	25.0	50.0
54	25.0	50.0
55	25.0	50.0
56	7.5	15.0
57	7.5	15.0
58	7.5	15.0
59	10.0	20.0
60	12.5	25.0
61	17.5	35.0
62	25.0	40.0
63	25.0	45.0
64	30.0	50.0
65	30.0	100.0
66	30.0	100.0
67	25.0	100.0
68	25.0	100.0
69	25.0	100.0
70+	100.0	100.0

For terminated vested members, we assume that retirement will occur provided they have at least five years of service on the later of attained age or:

General Members: Earlier of age 62 or age 55 and 20+ years of service.

PEPRA Members: Age 52

If the inactive participant is not vested, the liability is the participant's contributions with interest.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

15. Family Composition

80% of men and 55% of women were assumed married at retirement. A female spouse is assumed to be three years younger than her male spouse.

16. Member Contributions for Spousal Continuance

All active Members contribute towards a 50% survivor continuance. However, Members who are unmarried at retirement may either be refunded that specific part of their contributions, or they may leave such contributions on account and receive an incremental benefit that is the actuarial equivalent of such contributions.

17. Deferred Member Benefit

The benefit was estimated based on information provided by SDCERS staff. The data used to value the estimated deferred benefit were date of birth, date of hire, date of termination, and last pay. Based on the data provided, service credit, highest average salary, and deferred retirement age were estimated. The estimates were used to compute the retirement benefit, upon which the liabilities are based. For those participants without sufficient data or service, accumulated participant contribution balances, with interest, were used as the actuarial liability.

18. DROP Account Balances

For DROP participants still working, the liability for the account balances in the asset information received from SDCERS staff was adjusted to assume average commencement in 2½ years and an interest crediting rate of 1.0%. Thereafter, it was assumed the account balance would be converted to an annuity at an interest rate of 2.1% over an average period of 10 years. The 10-year period was selected to average among the available DROP payment elections, including a lump sum, life expectancy, and 20 years. The liability for pre-2006 DROP account balances still left on account was valued assuming they would be paid out until age 72, with an interest crediting rate of 1.0%. The liability for the remaining account balances was adjusted based on the DROP annuity rate in effect at the Member's benefit effective date.

These adjustments are applied to the DROP account balance values provided in the financial statements. The account balance liability is allocated to each individual Tier (e.g., General) based on the total amount of the DROP account balances for that Tier in the valuation data.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

19. Other

The contribution requirements and benefit values of a plan are calculated by applying actuarial assumptions to the benefit provisions and Member information furnished, using the actuarial funding methods described in this report.

Actual experience of SDCERS will not coincide exactly with assumed experiences, regardless of the choice of the assumptions, the skill of the actuary, or the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments to the computed contribution rate. From time to time it becomes appropriate to modify one or more of the assumptions to reflect experience trends, but not random year-to-year fluctuations.

20. Changes Since Last Valuation

The demographic assumptions outlined in this section have been updated to reflect the adopted changes following the recent experience study. For a complete listing of all prior and current demographic assumption changes, please refer to the Cheiron's report dated August 2020, Actuarial Experience Study for July 1, 2015 to June 30, 2019.

Additionally, effective January 1, 2021, the DROP interest crediting rate used to value the liability for account balances is decreased from 2.5% to 1.0%, and the DROP annuity rate is decreased from 3.1% to 2.1%, to reflect the Board's adoption of these rates at its November 2020 meeting.

B. Actuarial Methods

1. Actuarial Funding Method

The Entry Age Normal funding method was used for active employees, whereby the normal cost rate is computed as the average level annual percent of pay required to fund the retirement benefits for all Members between their dates of hire and assumed dates of retirement. The EAN actuarial liability is the difference between the Plan's total present value of future benefits and the present value of future normal costs, calculated for each sub-group (e.g., General). The unfunded actuarial liability is the difference between the actuarial liability and the actuarial value of assets, and is allocated to each sub-group based on its liability.

The unfunded actuarial liability is amortized by annual payments. The payments are determined so that they will be a level percentage of pay, assuming payroll increases of 3.05% per year. The UAL is amortized over different closed periods depending on

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

the source of the loss. The entire UAL as of June 30, 2007 is amortized over 14 years. Subsequent gains and losses are amortized over 15 years. Changes in assumptions and methods were being amortized over 30 years and are being amortized over 20 years as of June 30, 2019. Changes in benefits are amortized over 20 years (or period over which benefit changes are paid, if shorter). Funding surplus, if any, is amortized over 30 years. Finally, if necessary, there is an additional UAL cost component to ensure that there is no negative amortization in any year.

Expected administrative expenses are included in the actuarially determined contribution (ADC). The administrative expense component is $370,000 for FY 2022 (assuming payment at the beginning of the year). This amount is assumed to increase by 2.5% per year.

2. Asset Valuation Method

For the purposes of determining the Airport Authority's actuarially determined contribution to SDCERS, we use a smoothed actuarial value of assets. The asset smoothing method dampens the volatility in asset values that could occur because of the fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process. Assets are assumed to be used exclusively for the use of retirement benefits and expenses.

The actuarial value of assets each year is equal to 100% of the *expected actuarial value of assets** plus 25% of the difference between the current market value of assets and the expected actuarial value of assets. In no event will the actuarial value of assets ever be less than 80% of the market value of assets nor greater than 120% of the market value of assets.

3. ASOP 56 - Modeling

Cheiron utilizes ProVal actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this valuation.

Deterministic projections in this valuation report were developed using P-scan, a proprietary tool used to illustrate the impact of changes in assumptions, methods, plan provisions, or actual experience (particularly investment experience) on the future financial status of the Plan. P-scan uses standard roll-forward techniques that

* *The expected actuarial value of assets is equal to the prior year's actuarial value of assets increased with actual contributions made, decreased with actual disbursements made, all items (prior assets, contributions and disbursements) further adjusted with expected investment returns for the year.*

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

implicitly assume a stable active population. Because P-scan does not automatically capture how changes in one variable affect all other variables, some scenarios may not be consistent.

4. Changes Since Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

The Airport Authority was spun off from the Unified Port District effective January 1, 2003. Existing liabilities and assets were transferred to the new plan based on an interim valuation dated December 31, 2002. The Airport Authority Plan is created pursuant to San Diego City Charter section 149, which became effective on April 24, 2002, and San Diego Municipal Code Chapter 2, Article 4, section 24.0912 and Division 18. This Plan is effective on January 1, 2003, and nothing in this Plan should be constructed to affect any rights or benefits Airport Authority employees have earned in this Retirement System as of that date.

1. Membership Requirement

Membership is mandatory upon first day of employment for all full-time Airport employees (§0103).*

Classic Participant means any Member who is not a PEPRA Participant (§0102).

PEPRA Participant means any Member hired on or after January 1, 2013 who has never been a member of a public retirement system or who had a break in service of more than six months before their Airport hire date (§0102).

2. Monthly Compensation Base for Benefits

Classic Participants:
Highest contiguous 26 bi-weekly pay periods divided by 12 (§0102), subject to a 10% increase for employees who were both a UPD employee on December 31, 2002 and became an Airport employee on or after January 1, 2003 and were employed by the UPD and contributing to SDCERS on January 1, 2002, if the Member elects such increase in lieu of an increased benefit formula.

PEPRA Participants:
Highest 36 consecutive months divided by 36 (§0102). Base Salary cannot exceed 100% of the Social Security contribution and benefit base, indexed to the CPI-U. Compensation is limited to the PEPRA Compensation Limit for members participating in the federal system ($126,291 for 2020) (Gov. Code §7522.32).

3. Service Retirement

<u>Eligibility</u>

Classic Participants:
Age 62 with five years of service (excludes five-year permissible purchased service), or age 55 with 20 years of service (§0300).

PEPRA Participants:
Age 52 with five years of service (§0300).

* All "§" references are to the Airport Authority Plan Document.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Benefit

Classic Participants:
Member choice of: (1) formula in place on December 31, 2001 with 10% increase in Final Average Compensation, (2)"Andrecht" formula effective as of January 1, 2002, or (3) "2.5% at 55" multiplier with a benefit cap of 90% of Final Average Compensation effective April 1, 2004 for Non-Executive General Members. Executive Members receive "3% at 55" multiplier without an increase in Final Average Compensation.

PEPRA Participants:
1% per year of service at age 52, increasing to 2.5% at age 67, not to exceed 90% of Final Compensation (§0300).

For all employees, there is an additional benefit equal to the annuitized Member COL Annuity contributions at retirement date.

In all cases, there is an integration feature which provides for 2/3 of the formula multiplier on the first $400 of monthly Final Average Compensation. The 2/3 equals the Social Security integration factor.

Member Service Retirement Accrual Factors

Table C-1
SDCERS - Airport Authority
Member Service Retirement Accrual Factors

Age	Pre 12/31/2001	Andrecht	Post 4/1/2004	Executive	Post 1/1/2013
52	--	--	--	--	1.00%
53	--	--	--	--	1.10%
54	--	--	--	--	1.20%
55	2.00%	2.25%	2.50%	3.00%	1.30%
56	2.00%	2.25%	2.60%	3.00%	1.40%
57	2.00%	2.25%	2.70%	3.00%	1.50%
58	2.00%	2.25%	2.80%	3.00%	1.60%
59	2.08%	2.25%	2.90%	3.00%	1.70%
60	2.16%	2.30%	3.00%	3.00%	1.80%
61	2.24%	2.35%	3.00%	3.00%	1.90%
62	2.31%	2.40%	3.00%	3.00%	2.00%
63	2.39%	2.45%	3.00%	3.00%	2.10%
64	2.47%	2.50%	3.00%	3.00%	2.20%
65	2.55%	2.55%	3.00%	3.00%	2.30%
66	2.55%	2.55%	3.00%	3.00%	2.40%
67+	2.55%	2.55%	3.00%	3.00%	2.50%

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table C-2 SDCERS - Airport Authority	
For Vested Members who terminated--	**--the accrual factors are--**
December 31, 2002 - Present	Pre 12/31/2001 factors above with 10% increase in Final Average Compensation, Andrecht, Post 4/1/2004 or Executive (if applicable)

Maximum Benefit

Effective April 1, 2004, there is a 90% benefit cap, as a percentage of pay, for non-Executive Members who choose post-4/1/2004 factors. This cap does not apply to the annuitized COL Annuity benefit.

Unmodified Form of Payment

Monthly payments continued for the life of the Member, with 50% continuance to the eligible spouse, domestic partner, or dependent child under 21 years of age upon Member's death. If there is no eligible spouse at time of retirement, the Member may receive either a lump sum payment equal to the accumulated surviving spouse contributions or use those contributions to provide a larger annuity. (§0600)

Note: Airport Authority employees participate in Social Security.

4. Non-Industrial Disability

Eligibility

Ten years of service. (§0502)

Benefit

Greater of 1.5% per year of service multiplied by final compensation, one-third of final compensation, or the earned service retirement benefit, if eligible. (§0503)

5. Industrial Disability

Eligibility

No age or service requirement (§0500).

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Benefit

Greater of one-third of final compensation, or the earned service retirement benefit, if eligible. (§0501)

6. Non-Industrial Death Before Eligible to Retire

Refund of employee contributions with interest plus one month's salary for each completed year of service to a maximum of six months' salary. (§0701)

7. Non-Industrial Death After Eligible to Retire for Service

50% of earned benefit payable to eligible surviving spouse, domestic partner, or dependent child under 21 years of age. (§0703)

8. Industrial Death

50% of the final average compensation preceding death, payable to eligible surviving spouse, domestic partner or dependent child under 21 years of age. (§0704)

9. Death After Retirement

Continuance to surviving beneficiary depending on benefit selection made at retirement.

$2,000 payable in lump sum to the beneficiary or the estate of the retiree. (§0600, 0708)

10. Withdrawal Benefits

Less than five years of service

Refund of accumulated employee contributions with interest, or may keep deposits with SDCERS and earn additional interest, and use service with a reciprocal system to establish eligibility for earned benefits upon concurrent retirement from reciprocal system. (§0205, 0401)

Five or more years of service

If contributions left on deposit, entitled to earned benefits commencing any time after eligible to retire. (§0205)

APPENDIX C – SUMMARY OF PLAN PROVISIONS

11. Post-retirement Cost-of-Living Benefit

Based on changes in Consumer Price Index, to a maximum of 2% per year. (§1301)

12. COL Annuity

Actuarial equivalent of accumulated contributions in cost-of-living annuity account at time of retirement. (§0300)

13. Member Contributions

Vary by age at time of entrance into SDCERS (§0200). While a significant portion of these contributions may be "offset," such offsets are not directly reflected in either the employee contributions or related refund calculations. Rates include cost of providing spouse's continuance, cost of providing COL Annuity, and cost of funding final one-year average in lieu of final three-year average. (§0102, 0200, 0201)

For members hired prior to January 1, 2013, the current contribution rates have been in place since at least the 2004 valuation. For members hired on or after January 1, 2013 under the California Public Employees' Pension Reform Act (PEPRA), the employee contribution rates were recalculated with the June 30, 2020 valuation. These rates will be effective July 1, 2021.

The employee contribution rates for members under PEPRA are determined based on 50/50 cost-sharing of the total normal cost rate (excluding the COL Annuity) at each entry age. In addition, the rates include the full expected cost of the Cost-of-Living (COL) Annuity, which results in PEPRA Members paying more than half of the total normal cost rate. These rates are rounded to the nearest quarter of 1%. The COL Annuity contribution rate is equal to 20% of the sum of other employee contributions, in accordance with the plan document. Under the provisions of PEPRA, if the aggregate normal cost rate changes by more than 1% of payroll since the time the prior rates were established, then a recalculation of employee contribution rates is required. A recalculation was required with the June 30, 2020 valuation since the aggregate normal cost rate had changed by more than 1% of payroll from the time the current employee contribution rates were established, with the June 30, 2017 valuation.

The assumptions used to calculate the employee contribution rates for PEPRA members are the same as reported in this June 30, 2020 actuarial valuation, with the exception of fully generational mortality improvement and any sex distinct assumptions. For the purposes of calculating the PEPRA employee contribution rates, mortality tables were blended 60/40 between male and female members and 40/60 for male and female beneficiaries. In addition, a static mortality improvement projection was used to approximate fully generational mortality improvements. A projection to 2048 using the mortality improvement scale described in Appendix B was used.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table C-3
SDCERS - Airport Authority
Employee Contribution Rates

	Hired Before January 1, 2013 Integrated Members		Hired On or After January 1, 2013 Integrated Members	
Entry Age	First $400/Mo.	Over $400/Mo.	First $400/Mo.	Over $400/Mo.
20	5.52%	8.28%	3.75%	5.50%
21	5.59	8.38	3.75	5.50
22	5.66	8.49	3.75	5.75
23	5.73	8.60	4.00	6.00
24	5.80	8.70	4.00	6.00
25	5.89	8.83	4.00	6.25
26	5.97	8.95	4.25	6.25
27	6.04	9.06	4.25	6.50
28	6.12	9.18	4.50	6.75
29	6.20	9.30	4.50	6.75
30	6.28	9.42	4.75	7.00
31	6.37	9.55	4.75	7.25
32	6.45	9.67	5.00	7.25
33	6.53	9.79	5.00	7.75
34	6.61	9.91	5.25	8.00
35	6.70	10.05	5.50	8.25
36	6.79	10.18	5.75	8.75
37	6.88	10.32	6.00	9.00
38	6.97	10.45	6.25	9.25
39	7.05	10.58	6.25	9.50
40	7.15	10.72	6.50	9.75
41	7.24	10.86	6.75	10.00
42	7.33	10.99	6.75	10.25
43	7.42	11.13	7.00	10.50
44	7.52	11.28	7.25	11.00
45	7.61	11.42	7.50	11.25
46	7.71	11.56	7.75	11.50
47	7.81	11.71	8.00	11.75
48	7.91	11.86	8.25	12.50
49	8.01	12.01	8.75	13.25
50	8.10	12.15	9.25	13.75
51	8.21	12.32	9.50	14.50
52	8.31	12.47	9.75	14.75
53	8.42	12.63	10.00	15.00
54	8.53	12.79	10.25	15.25
55	8.63	12.95	10.25	15.50
56	8.74	13.11	10.50	15.75
57	8.87	13.31	10.75	16.00

APPENDIX C – SUMMARY OF PLAN PROVISIONS

14. Internal Revenue Code Compliance

Benefits provided by SDCERS' Trust Fund are subject to the limitations set forth in Section 415 of the Internal Revenue Code in accordance with the "grandfather" election in Section 415(b)(10) of the Internal Revenue Code.

As of the June 30, 2006 valuation, active participants' benefit payments were limited by Section 415 of the Internal Revenue Code. As of the June 30, 2007 valuation, all benefit payments were limited by Section 415 of the Internal Revenue Code.

15. Deferred Retirement Option Plan

Effective April 1, 1997, a deferred retirement option plan (DROP) was created and offered to Members as an alternative method of benefit accrual (§1200). Members eligible for service retirement are eligible to participate in DROP, but only those hired before October 3, 2006 may enter the program (§1201).

A participant in DROP may leave DROP at any time before the end of his or her designated DROP participation period by voluntarily leaving Airport Authority employment (§1202). The maximum DROP participation period is 60 months (§1201).

A DROP participation account is a nominal account established with the Retirement System, which is credited with the following amounts (§1203):

- The Member's monthly service retirement allowance, credited monthly, calculated at the date of DROP entry and increased each year by a cost-of-living adjustment.
- The Member's Annual Supplemental Benefit, if applicable, credited annually.
- 3.05% of base compensation, payable by the Airport Authority and credited bi-weekly.
- 3.05% of base compensation, payable by the Member and credited bi-weekly.
- Interest credited to the DROP account, at the rate determined by the Board.

When a Member leaves DROP and Airport Authority employment, they begin to collect their monthly service retirement allowance, their Annual Supplemental Benefit (if applicable), and the amounts credited to their DROP participation account, payable as a single lump sum distribution, as a 240-month annuity with equal payments, or any other form approved by the Board and subject to applicable provisions of the Internal Revenue Code (§1206).

DROP is not intended to jeopardize the tax-qualified status of the retirement system under the rules and regulations of the Internal Revenue Service. Benefits provided under this division are subject to the limitations of Section 415 of the Internal Revenue Code relating to the amount of benefits that can be paid (§1207).

APPENDIX C – SUMMARY OF PLAN PROVISIONS

16. Blended Benefit with Participating Agencies

Members may retire and receive benefits from multiple Plans (e.g., an Airport Authority employee could have also worked for the Unified Port District).

17. Changes Since Last Valuation

Employee contribution rates for PEPRA Members were recalculated to reflect the new assumptions.

Note: The summary of major plan provisions is designed to outline principal plan benefits. If the SDCERS staff should find the plan summary not in accordance with the actual provisions, the actuary should immediately be alerted so the proper provisions are valued.

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Liability

The Actuarial Liability is the difference between the present value of all future system benefits and the actuarial value of future normal costs. This is also referred to by some actuaries as "accrued liability" or "actuarial accrued liability."

2. Actuarial Assumptions

Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Actuarial assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

3. Accrued Service

Service credited under the system which was rendered before the date of the actuarial valuation.

4. Actuarial Equivalent

A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

5. Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement system benefit between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

6. Actuarial Gain/(Loss)

The difference between actual experience and actuarial assumption anticipated experience during the period between two actuarial valuation dates.

7. Actuarial Present Value

The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payment.

APPENDIX D – GLOSSARY OF TERMS

8. Actuarially Determined Contribution (ADC)

Contribution determined each year based on the SDCERS Board's adopted funding policy. The term also exists in GASB 67 and 68 as a contribution determined by the actuary in accordance with Actuarial Standards of Practice, but no further guidance is provided.

9. Amortization

Paying off an interest-discounted amount with periodic payments of interest and principal—as opposed to paying off with lump sum payment.

10. Normal Cost

The actuarial present value of retirement system benefits allocated to the current year by the actuarial funding method.

11. Unfunded Actuarial Liability (UAL)

The difference between actuarial liability and the actuarial value of assets.

Most retirement systems have unfunded actuarial liability. They arise each time new benefits are added and each time an actuarial loss is realized.

The existence of unfunded actuarial liability is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial liability does not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liability, and the trend in its amount (after due allowance for devaluation of the dollar).

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