



CalPERS Actuarial Information/Valuations 101 Julian Robinson, FSA, EA, MAAA Senior Actuary

Background Public Agency Plans

Public Agency Plans

- **Non-Pooled Plans**

- More than 100 active members
- 2 Types
 - Miscellaneous
 - Safety
- Combined normal cost rate for all tiers in one report
- Gains/losses determined for each non-pooled plan separately

- **Pooled Plans**

- Less than 100 active members
- 2 Risk Pools
 - Miscellaneous
 - Safety
- Separate normal cost rate and report for each tier
- Gains/Losses shared across all pooled plans

Annual Valuation Reports

Non-pooled

STANDALONE REPORT

*Find on
myCalPERS*

Pooled

SECTION

1

Plan-specific info

*Find on
myCalPERS*

+

SECTION

2

Pool-wide info
Assumptions
Plan provisions

*Find on
CalPERS website*

Miscellaneous Pool – Section 2

Risk Pool's Required Employer Contribution

	Fiscal Year 2022-23	Fiscal Year 2023-24
Contribution in Projected Dollars		
a) Risk Pool's Normal Cost	\$487,946,279	\$532,074,722
b) Employee Contribution	<u>202,581,785</u>	<u>217,682,980</u>
c) Risk Pool's Gross Employer Normal Cost [(a) - (b)]	\$285,364,494	\$314,391,742
d) Payment on Risk Pool's Amortization Bases	<u>385,689,552</u>	<u>319,167,468</u>
e) Total Required Employer Contribution* [(c) + (d)]	\$671,054,046	\$633,559,210

* Total may not add up due to rounding

Risk Pool's Normal Cost by Benefit Formula

Normal Cost Contribution as Percentage of Projected Payroll for Fiscal Year 2023-24	Benefit Formula					
	2% at 62	2% at 60	2% at 55	2.5% at 55	2.7% at 55	3% at 60
1) Total Normal Cost Contribution	15.43%	17.03%	18.76%	21.30%	23.13%	24.25%
2) Expected Employee Contribution	<u>7.75%</u>	<u>6.93%</u>	<u>6.92%</u>	<u>7.96%</u>	<u>7.96%</u>	<u>7.81%</u>
3) Total Employer Normal Cost Base Benefit [(1)-(2)]	7.68%	10.10%	11.84%	13.34%	15.17%	16.44%

Class 1 benefits as provided in Appendix C-1 are in addition to these costs.

Funded Status of the Risk Pool

	June 30, 2020	June 30, 2021
1. Present Value of Projected Benefits	\$23,057,820,336	\$25,080,186,044
2. Entry Age Accrued Liability	\$19,437,975,961	\$20,794,529,023
3. Market Value of Assets (MVA)	<u>\$14,709,505,985</u>	<u>\$18,063,262,515</u>
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	\$4,728,469,976	\$2,731,266,508
5. Funded Ratio [(3) / (2)]	75.7%	86.9%

Safety Pool – Section 2

Risk Pool's Required Employer Contribution

	Fiscal Year 2022-23	Fiscal Year 2023-24
Contribution in Projected Dollars		
a) Risk Pool's Normal Cost	\$546,766,575	\$593,439,226
b) Employee Contribution	<u>184,059,173</u>	<u>194,526,757</u>
c) Risk Pool's Gross Employer Normal Cost [(a) - (b)]	\$362,707,402	\$398,912,469
d) Payment on Risk Pool's Amortization Bases	<u>584,619,045</u>	<u>481,790,724</u>
e) Total Required Employer Contribution* [(c) + (d)]	\$947,326,447	\$880,703,193

* Total may not add up due to rounding

Risk Pool's Normal Cost by Benefit Formula

Normal Cost Contribution as Percentage of Projected Payroll for Fiscal Year 2023-24	Benefit Formula						
	2% at 57	2.5% at 57	2.7% at 57	2% at 55	2% at 50	3% at 55	3% at 50
1) Total Normal Cost Contribution	21.85%	26.04%	27.29%	23.43%	28.91%	31.82%	34.64%
2) Expected Employee Contribution	11.00%	13.00%	13.75%	6.98%	8.96%	8.99%	8.99%
3) Total Employer Normal Cost Base Benefit [1 -2]	10.85%	13.04%	13.54%	16.45%	19.95%	22.83%	25.65%

Class 1 benefits as provided in Appendix C-1 are in addition to these costs.

Funded Status of the Risk Pool

	June 30, 2020	June 30, 2021
1. Present Value of Projected Benefits	\$30,337,435,539	\$32,570,231,891
2. Entry Age Accrued Liability	\$25,696,424,194	\$27,398,042,131
3. Market Value of Assets (MVA)	<u>\$18,365,305,590</u>	<u>\$22,698,429,636</u>
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	\$7,331,118,604	\$4,699,612,495
5. Funded Ratio [(3) / (2)]	71.5%	82.8%

Actuarial Report Highlights

Common questions

- Is the plan in good shape?
- What are the required contributions?
- Why did the required contributions change?
- Where are the required contributions headed?
- How can I manage my UAL?
- Where are the PEPRA members?
- What additional information is available in the reports?

Is the plan in good shape?

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Plan's Funded Status

	June 30, 2020	June 30, 2021
1. Present Value of Projected Benefits	\$423,676,708	\$456,243,642
2. Entry Age Accrued Liability	373,699,332	395,480,130
3. Market Value of Assets (MVA)	254,170,783	311,589,337
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	\$119,528,549	\$83,890,793
5. Funded Ratio [(3) / (2)]	68.0%	78.8%

- Unfunded Liability = UAL = Unfunded Accrued Liability
- Funded Ratio is one indicator of the plan's health

Is the plan in good shape?

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Plan's Funded Status

	June 30, 2020	June 30, 2021
1. Present Value of Projected Benefits (PVB)	\$246,779,347	\$259,979,467
2. Entry Age Accrued Liability (AL)	223,432,549	237,354,070
3. Plan's Market Value of Assets (MVA)	157,550,287	253,540,450
4. Unfunded Accrued Liability (UAL) [(2) - (3)]	65,882,262	(16,186,380)
5. Funded Ratio [(3) / (2)]	70.5%	106.8%

- Funded Target Ratio is 100%

Is the plan in good shape?

Funded Ratio target is 100%

- As of June 30, 2021 Funded Ratio greater than 100% for many plans
- Result of FY20-21 investment earnings of 21.3%
- Many Tier Two Plans & PEPRA Plans
- Plans that made large Additional Discretionary Payments (ADPs) or Pension Obligation Bonds (POBs)

Is the plan in good shape?

Funded Ratio target is 100%

- As of June 30, 2021 Funded Ratio greater than 100% for many plans
- Impact on contributions:
 - Wipes out existing UAL bases
 - No UAL amortization payment

What are the required contributions?

Employer Contribution comprised of 2 components

- Normal Cost Rate (% of Payroll)
 - Normal Cost Rate must be paid regularly throughout the year
- Unfunded Accrued Liability Amortization Payment (Dollar Payment)
 - Can be paid monthly or
 - Annual UAL Prepayment Option
 - Discount of a half year of interest
 - Avoid overpaying

What are the required contributions?

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Member Rate
2023-24	10.94%	\$10,674,281	7.00%
<i>Projected Results</i>			
2024-25	10.6%	\$10,644,000	TBD

- Rates do not reflect any cost sharing information
- FY 2023-24 rates reflect:
 - FY 2020-22 investment return of 21.3%
 - Change of discount rate
 - Changes in demographic assumptions from the Experience Study

What are the required contributions?

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Member Rate
2023-24	10.94%	\$10,674,281	7.00%
<i>Projected Results</i>			
2024-25	10.6%	\$10,644,000	TBD

- Rates do not reflect any cost sharing information
- FY 2024-25 rates do not reflect:
 - FY 2021-22 investment return of -7.5%

What are the required contributions?

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Required Contributions

	Fiscal Year
Required Employer Contributions	2023-24
Employer Normal Cost Rate	10.94%
<i>Plus</i>	
Required Payment on Amortization Bases	\$10,674,281
<i>Paid either as</i>	
1) Monthly Payment	\$889,523
<i>Or</i>	
2) Annual Prepayment Option*	\$10,328,875
Required PEPPRA Member Contribution Rate	7.00%
<i>The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll and paid as payroll is reported) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly (1) or prepaid annually (2) in dollars).</i>	
<i>* Only the UAL portion of the employer contribution can be prepaid (which must be received in full no later than July 31).</i>	
<i>For additional detail regarding the determination of the required contribution for PEPPRA members, see "PEPPRA Member Contribution Rates" in the "Liabilities and Contributions" section. Required member contributions for Classic members can be found in Appendix B.</i>	

What are the required contributions?

UAL Invoice July 1, 2022

Description	Amount				
<p>Annual Unfunded Accrued Liability as of the June 30, 2020 Actuarial Valuation for Rate Plan Identifier 3.</p> <p>The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll) plus the Employer Unfunded Accrued Liability Contribution Amount.</p> <p>Your agency's monthly amount due toward the Unfunded Accrued Liability is:</p> <table> <tr> <td>Amount</td><td>Due Date</td></tr> <tr> <td>\$928,791.00</td><td>July 31, 2022</td></tr> </table> <p>If you would like to prepay the entire Annual Payment toward your Plan's Unfunded Accrued Liability, you can submit the Annual Lump Sum Prepayment amount of \$10,774,754.00 to the invoice number above by July 31, 2022 instead of the monthly amount listed.</p> <p>Please refer to the June 30, 2020 Actuarial Valuation report for the details of this calculation. Reports are available at CalPERS On-Line or by visiting www.mycalpers.ca.gov</p> <p>Unfunded Accrued Liability contributions are to be paid in full by the payment due date each month. Payments that are not received in full on or before this date will be assessed interest on the total outstanding balance due (Public Employees' Retirement Law § 20572 (b)). Please note that this monthly statement is a demand for payment in accordance with Public Employees' Retirement Law § 20572 (a).</p> <p>For questions concerning your invoice, please call our CalPERS Customer Contact Center at 888 CalPERS (or 888-225-7377) and ask to be referred to the Financial Office.</p>	Amount	Due Date	\$928,791.00	July 31, 2022	
Amount	Due Date				
\$928,791.00	July 31, 2022				
Total Due	\$928,791.00				

Why did the required contributions change?

Page 15 – Non-Pooled

(Gain)/Loss Analysis 6/30/20 – 6/30/21

1. Total (Gain)/Loss for the Year	
a) Unfunded Accrued Liability (UAL) as of 6/30/20	\$119,528,549
b) Expected Payment on the UAL during 2020-21	9,520,371
c) Interest through 6/30/21 $[(.07 \times (1a)) - ((1.07)^{1/2} - 1) \times (1b)]$	8,039,420
d) Expected UAL before all other changes $[(1a) - (1b) + (1c)]$	118,047,598
e) Change due to plan changes	0
f) Change due to AL Significant Increase	0
g) Change due to assumption change	404,584
h) Change due to method change	0
i) Change due to Funding Risk Mitigation	9,246,766
j) Expected UAL after all other changes $[(1d) + (1e) + (1f) + (1g) + (1h) + (1i)]$	127,698,948
k) Actual UAL as of 6/30/21	83,890,793
l) Total (Gain)/Loss for 2020-21 $[(1k) - (1j)]$	(\$43,808,155)
2. Investment (Gain)/Loss for the Year	
j) Investment (Gain)/Loss $[(2h) - (2i)]$	(\$40,396,953)
3. Non-Investment (Gain)/Loss for the Year	
a) Total (Gain)/Loss (1l)	(\$43,808,155)
b) Investment (Gain)/Loss (2j)	(40,396,953)
c) Non-Investment (Gain)/Loss $[(3a) - (3b)]$	(\$3,411,202)

- Expected liability and asset values compared with actual values
- Explains changes to the UAL amount

Why did the required contributions change?

Section 2 Report – Pooled Plans

Gain/Loss Analysis

- Gain/Loss Analysis performed for entire pool
- Share of Gain/Loss allocated to each plan in the pool
- Appears in Section 2 Reports
 - Available on CalPERS website
<http://www.calpers.ca.gov/> Forms & Publications



Section 2

**Actuarial Valuation
as of June 30, 2021**

for CalPERS

Miscellaneous Risk Pool

**Required Contributions
for Fiscal Year
July 1, 2023 – June 30, 2024**

Why did the required contributions change?

Normal Cost Rates

Normal Cost

- Value of benefits accruing in the current year for active members
- Determined as % of payroll
- Based on the economic and demographic assumptions
 - Discount rate
 - Inflation rate
- Funded Status has no direct impact on Normal Cost rates

Where are the projected contributions?

- Page 6

	Required Contribution	Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2021-22 and Beyond)				
Fiscal Year	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Normal Cost %	10.94%	10.6%	10.4%	10.1%	9.8%	9.6%
UAL Payment	\$10,674,281	\$10,644,000	\$9,417,000	\$7,333,000	\$6,858,000	\$7,140,000
Total as a % of Payroll*	35.98%	34.9%	31.3%	25.9%	24.2%	24.2%
Projected Payroll	\$42,626,987	\$43,820,542	\$45,047,518	\$46,308,848	\$47,605,495	\$48,938,450

*Illustrative only and based on the projected payroll shown.

- Does not reflect FY 2021-22 investment loss
- Does not reflect any potential change in discount rate
- No demographic gains or losses after 6/30/21 included

Where are the projected contributions?

(continued)

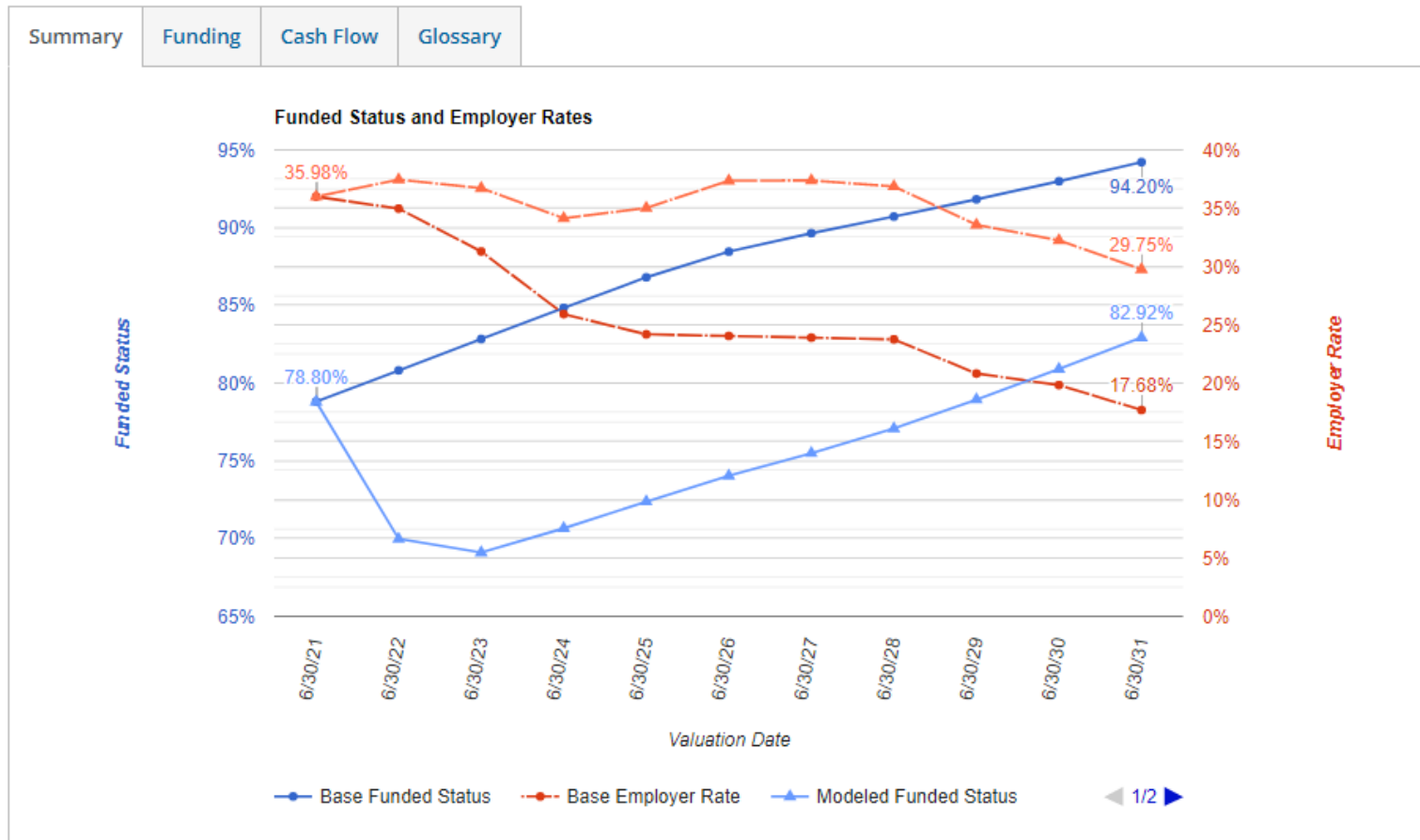
- Page 6

	Required Contribution	Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2021-22 and Beyond)				
Fiscal Year	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Normal Cost %	10.94%	10.6%	10.4%	10.1%	9.8%	9.6%
UAL Payment	\$10,674,281	\$10,644,000	\$9,417,000	\$7,333,000	\$6,858,000	\$7,140,000
<i>Total as a % of Payroll*</i>	<i>35.98%</i>	<i>34.9%</i>	<i>31.3%</i>	<i>25.9%</i>	<i>24.2%</i>	<i>24.2%</i>
<i>Projected Payroll</i>	<i>\$42,626,987</i>	<i>\$43,820,542</i>	<i>\$45,047,518</i>	<i>\$46,308,848</i>	<i>\$47,605,495</i>	<i>\$48,938,450</i>

*Illustrative only and based on the projected payroll shown.

- For non-pooled plans, Normal Cost % reflects increasing PEPRA membership
- Total as % of Payroll for illustration purposes only
 - only for Non-Pooled Plans

Revised Projection – Pension Outlook



Revised Projections – Pension Outlook

Modeling Assumptions

Years to Project

☒ 10
☐ 20
☐ 30

Discount Rate % (required)

6.800

PEPRA

☒ Yes
☐ No

PEPRA Transition Years

☐ 10
☒ 15
☐ 20

Additional Discretionary Payment

☐ Yes
☒ No

Random Investment Scenario

☐ Yes
☒ No

Rate % (required)	Number of Years (required)
-7.5	1
3	1
6.800	1
6.800	7
6.800	0

Submit

Reset Modeling Criteria

UAL Amortization and Alternatives

- Amortization Schedule and Alternatives
- Schedule of Required UAL Amortization Payments
- Two sample Fresh Start Alternatives
 - Pay off UAL more rapidly
 - Other alternatives available
- Additional Discretionary Payments (ADP)

UAL Amortization Schedule

Non-Pooled – Pages 16-17, Pooled – Pages 12-13

Schedule of Amortization Bases

Reason for Base	Date Est.	Ramp Level 2023-24	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/21	Expected Payment 2021-22	Balance 6/30/22	Expected Payment 2022-23	Balance 6/30/23	Minimum Required Payment 2023-24
Assets Change	6/30/03	No Ramp		2.80%	2	(62,801)	(17,241)	(49,254)	(17,715)	(34,296)	(18,060)
Assumption Change	6/30/03	No Ramp		2.80%	2	3,429,556	1,052,923	2,574,632	920,973	1,797,936	946,760
Method Change	6/30/04	No Ramp		2.80%	3	(282,238)	(63,216)	(236,100)	(64,955)	(185,028)	(66,186)
Benefit Change	6/30/05	No Ramp		2.80%	3	7,334,732	1,642,846	6,135,710	1,688,024	4,808,465	1,720,038
Assumption Change	6/30/09	No Ramp		2.80%	8	9,224,320	1,137,356	8,676,184	1,168,633	8,058,451	1,185,252
Special (Gain)/Loss	6/30/09	No Ramp		2.80%	18	2,043,247	151,149	2,025,984	155,306	2,003,251	156,020
Special (Gain)/Loss	6/30/10	No Ramp		2.80%	1	186,233	192,460	0	0	0	0
Assumption Change	6/30/11	No Ramp		2.80%	10	4,425,857	472,146	4,238,880	485,130	4,025,771	491,054
Special (Gain)/Loss	6/30/11	No Ramp		2.80%	20	(2,970,977)	(206,883)	(2,959,202)	(212,573)	(2,940,746)	(213,175)
(Gain)/Loss	6/30/12	No Ramp		2.80%	21	9,057,967	613,809	9,039,573	630,689	9,002,484	631,931
(Gain)/Loss	6/30/13	100%	Up/Down	2.80%	22	35,300,074	2,460,925	35,157,259	2,528,600	34,934,794	2,535,648
(Gain)/Loss	6/30/14	100%	Up/Down	2.80%	23	(23,236,356)	(1,576,284)	(23,187,432)	(1,619,632)	(23,090,383)	(1,622,759)
Assumption Change	6/30/14	100%	Up/Down	2.80%	13	17,028,355	1,712,304	16,416,718	1,759,392	15,714,827	1,778,888

Schedule of Amortization Bases (continued)

Reason for Base	Date Est.	Ramp Level 2023-24	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/21	Expected Payment 2021-22	Balance 6/30/22	Expected Payment 2022-23	Balance 6/30/23	Minimum Required Payment 2023-24
(Gain)/Loss	6/30/18	80%	Up/Down	2.80%	27	(4,023,054)	(106,939)	(4,186,107)	(164,821)	(4,300,430)	(219,422)
Investment (Gain)/Loss	6/30/19	60%	Up Only	0.00%	18	1,243,742	203,488	1,118,024	50,277	1,142,091	68,670
Non-Investment (Gain)/Loss	6/30/19	No Ramp		0.00%	18	(623,759)	(56,920)	(607,351)	(56,920)	(589,827)	(55,923)
Investment (Gain)/Loss	6/30/20	40%	Up Only	0.00%	19	6,367,786	0	6,800,795	148,971	7,109,296	292,243
Non-Investment (Gain)/Loss	6/30/20	No Ramp		0.00%	1	320,859	331,588	0	0	0	0
Assumption Change	6/30/21	No Ramp		0.00%	20	404,584	(302,524)	744,736	(310,995)	1,116,773	100,424
Net Investment (Gain)	6/30/21	20%	Up Only	0.00%	20	(30,537,382)	0	(32,613,924)	0	(34,831,671)	(748,696)
Non-Investment (Gain)/Loss	6/30/21	No Ramp		0.00%	20	(3,411,202)	0	(3,643,164)	0	(3,890,899)	(349,883)
Risk Mitigation	6/30/21	No Ramp		0.00%	1	9,246,766	(322,692)	10,209,029	(331,727)	11,246,063	11,622,141
Risk Mitigation Offset	6/30/21	No Ramp		0.00%	1	(9,859,571)	0	(10,530,022)	0	(11,246,063)	(11,622,141)
Total						83,890,793	10,332,682	78,917,148	10,502,770	73,429,521	10,674,281

UAL Amortization Schedule

Non-Pooled – Pages 16-17, Pooled – Pages 12-13

Schedule of Amortization Bases (continued)

Reason for Base	Date Est.	Ramp Level 2023-24	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/21	Expected Payment 2021-22	Balance 6/30/22	Expected Payment 2022-23	Balance 6/30/23	Minimum Required Payment 2023-24
(Gain)/Loss	6/30/18	80%	Up/Down	2.80%	27	(4,023,054)	(106,939)	(4,186,107)	(164,821)	(4,300,430)	(219,422)
Investment (Gain)/Loss	6/30/19	60%	Up Only	0.00%	18	1,243,742	203,488	1,118,024	50,277	1,142,091	68,670
Non-Investment (Gain)/Loss	6/30/19	No Ramp		0.00%	18	(623,759)	(56,920)	(607,351)	(56,920)	(589,827)	(55,923)
Investment (Gain)/Loss	6/30/20	40%	Up Only	0.00%	19	6,367,786	0	6,800,795	148,971	7,109,296	292,243
Non-Investment (Gain)/Loss	6/30/20	No Ramp		0.00%	1	320,859	331,588	0	0	0	0
Assumption Change	6/30/21	No Ramp		0.00%	20	404,584	(302,524)	744,736	(310,995)	1,116,773	100,424
Net Investment (Gain)	6/30/21	20%	Up Only	0.00%	20	(30,537,382)	0	(32,613,924)	0	(34,831,671)	(748,696)
Non-Investment (Gain)/Loss	6/30/21	No Ramp		0.00%	20	(3,411,202)	0	(3,643,164)	0	(3,890,899)	(349,883)
Risk Mitigation	6/30/21	No Ramp		0.00%	1	9,246,766	(322,692)	10,209,029	(331,727)	11,246,063	11,622,141
Risk Mitigation Offset	6/30/21	No Ramp		0.00%	1	(9,859,571)	0	(10,530,022)	0	(11,246,063)	(11,622,141)
Total						83,890,793	10,332,682	78,917,148	10,502,770	73,429,521	10,674,281

Assumption Change

Net Investment (Gain)

Non-Investment (Gain)/Loss

Risk Mitigation Base

- Risk Mitigation Policy

Assumption Change

Experience Study

- Presented to Board in November 2021
- Demographic Assumptions
 - Adoption of generational mortality
 - Review of early retirement rates, disability, withdrawal
- Economic Assumptions
 - Price Inflation Rate adjusted from 2.5% to 2.3%
 - Payroll Growth adjusted from 2.75% to 2.8%
 - Discount rate reduced from 7.0% to 6.8%
 - Lower discount rates result in higher accrued liabilities and normal costs

Risk Mitigation Event

- Funding Risk Mitigation Policy Event triggered
 - FY 2020-21 investment return of 21.3%
 - Discount rate reduced from 7.0% to 6.8%
 - Lower discount rates result in higher accrued liabilities and normal costs

Amortization Schedule and Alternatives

Date	<u>Current Amortization Schedule</u>		<u>Alternative Schedules</u>			
	Balance	Payment	10 Year Amortization		5 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2023	73,429,521	10,674,281	73,429,521	10,023,087	73,429,521	17,236,574
6/30/2024	67,391,489	10,644,027	68,064,461	10,023,087	60,609,749	17,236,574
6/30/2025	60,974,136	9,416,582	62,334,577	10,023,087	46,918,232	17,236,574
6/30/2026	55,388,898	7,332,843	56,215,061	10,023,087	32,295,692	17,236,574
6/30/2027	51,577,284	6,858,206	49,679,418	10,023,087	16,678,819	17,236,573
6/30/2028	47,996,989	7,139,944	42,699,351	10,023,088		
6/30/2029	43,882,074	7,429,573	35,244,638	10,023,087		
6/30/2030	39,188,031	7,727,303	27,283,006	10,023,088		
6/30/2031	33,867,107	6,555,098	18,779,982	10,023,087		
6/30/2032	29,395,763	6,372,187	9,698,753	10,023,088		
6/30/2033	24,809,397	5,524,153				
6/30/2034	20,787,552	5,130,490				
6/30/2035	16,899,046	4,536,312				
6/30/2036	13,360,169	3,501,819				
6/30/2037	10,649,736	2,927,030				
6/30/2038	8,349,003	2,314,793				
6/30/2039	6,524,534	1,842,556				
6/30/2040	5,064,029	1,536,571				
6/30/2041	3,820,426	520,624				
6/30/2042	3,542,180	3,660,634				
Total		111,645,026		100,230,873		86,182,869
Interest Paid		38,215,505		26,801,352		12,753,348
Estimated Savings				11,414,153		25,462,157

Additional Discretionary Payments (ADP)

Page 5

Minimum Required Employer Contribution for Fiscal Year 2023-24

Estimated Normal Cost	Minimum UAL Payment	ADP	Total UAL Contribution	Estimated Total Contribution
\$4,663,393	\$10,674,281	\$0	\$10,674,281	\$15,337,674

Alternative Fiscal Year 2023-24 Employer Contributions for Greater UAL Reduction

Funding Target	Estimated Normal Cost	Minimum UAL Payment	ADP ¹	Total UAL Contribution	Estimated Total Contribution
5 years	\$4,663,393	\$10,674,281	\$6,562,293	\$17,236,574	\$21,899,967

ADPs assumed to be paid in the middle of the year

Where are the PEPRA members?

Non-Pooled Page 22/23

- Non pooled plans include PEPRA members
- Non pooled plans require the same employer rate for all members in the plan
- Non pooled plans require differing employee rates
 - Classic member rate is set by statute
 - PEPRA member rate can be found on page 22/23

Rate Plan Identifier	Benefit Group Name	Basis for Current Rate		Rates Effective July 1, 2023			
		Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
26001	Miscellaneous PEPRA Level	12.591%	6.25%	14.00%	1.409%	Yes	7.00%

Normal Cost by Group

Non-Pooled Page 21/22

Rate Plan Identifier	Benefit Group Name	Total Normal Cost FY 2023-24	Number of Actives	Payroll on 6/30/2021
9991	Miscellaneous First Level	21.59%	185	\$19,643,864
9992	Miscellaneous PEPRA Level	14.00%	156	\$13,771,270
9993	Miscellaneous Second Level	18.54%	42	\$5,822,724
	Plan Total	18.43%	383	\$39,237,858

Where are the PEPRA members?

Pooled Plans

- Separate report for PEPRA members
- Separate contributions for pooled PEPRA members

Actuarial Report Additional Information

Real Rate of Return Sensitivity

Non-Pooled – Page 25/26, Pooled – Page 17/18

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2021	1% Lower Real Return Rate	Current Assumptions	1% Higher Real Return Rate
Discount Rate	5.8%	6.8%	7.8%
Price Inflation	2.3%	2.3%	2.3%
Real Rate of Return	3.5%	4.5%	5.5%
a) Total Normal Cost	23.52%	18.43%	14.60%
b) Accrued Liability	\$448,477,938	\$395,480,130	\$351,737,571
c) Market Value of Assets	\$311,589,337	\$311,589,337	\$311,589,337
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$136,888,601	\$83,890,793	\$40,148,234
e) Funded Ratio	69.5%	78.8%	88.6%

Price Inflation Sensitivity

Non-Pooled – Page 25/26, Pooled – Page 17/18

Sensitivity to the Price Inflation Assumption

As of June 30, 2021	1% Lower Inflation Rate	Current Assumptions	1% Higher Inflation Rate
Discount Rate	5.8%	6.8%	7.8%
Price Inflation	1.3%	2.3%	3.3%
Real Rate of Return	4.5%	4.5%	4.5%
a) Total Normal Cost	19.43%	18.43%	16.71%
b) Accrued Liability	\$408,751,786	\$395,480,130	\$364,223,358
c) Market Value of Assets	\$311,589,337	\$311,589,337	\$311,589,337
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$97,162,449	\$83,890,793	\$52,634,021
e) Funded Ratio	76.2%	78.8%	85.5%

Mortality Rate Sensitivity

Non-Pooled – Page 25/26, Pooled – Page 17/18

As of June 30, 2021	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	18.74%	18.43%	18.14%
b) Accrued Liability	\$403,815,186	\$395,480,130	\$387,819,838
c) Market Value of Assets	\$311,589,337	\$311,589,337	\$311,589,337
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$92,225,849	\$83,890,793	\$76,230,501
e) Funded Ratio	77.2%	78.8%	80.3%

Impacts to Changes in Different Assumptions

Real Rate of Return Sensitivity

	-1% Change	+1% Change
AL Change	+\$52.99 million (+13.4%)	-\$43.7 million (-11.%)
NC% Change in Payroll	+5.09%	-3.831%

Inflation Sensitivity

	-1% Change	+1% Change
AL Change	+\$13.3 million (+3.4%)	-\$31.3 million (-7.9%)
NC% Change in Payroll	+1.00%	-1.72%

Mortality Sensitivity

	-10% Change	+10% Change
AL Change	+\$8.3 million (+2.1%)	-\$7.7 million (-1.9%)
NC% Change in Payroll	+0.31%	-0.29%

Hypothetical Termination Liability

Non-Pooled – Page 28/29, Pooled – Page 20/21

Market Value of Assets (MVA)	Hypothetical Termination Liability ^{1,2} at 1.00%	Funded Ratio	Unfunded Termination Liability at 1.00%	Hypothetical Termination Liability ^{1,2} at 2.25%	Funded Ratio	Unfunded Termination Liability at 2.25%
\$311,589,337	\$879,879,397	35.4%	\$568,290,060	\$724,983,484	43.0%	\$413,394,147

- 2 discount rate scenarios
 - Prevailing Treasury Bond rates
- Unfunded Term Liability = Hypothetical Term Liability less Market Value of Assets
- Highly sensitive to the discount rate

Other information

- Actuarial Assumptions
 - Appendix A
- Benefit Provisions
 - Non-Pooled plans Appendix B
 - Pooled plans – page 23/24
- Participant Data
 - Non-Pooled plans – Appendix C
 - Pooled plans – page 22/23

Contacting Your Actuary

Call the Customer Support Center

- **888 CalPERS (1-888-225-7377)**

Plan actuary's name appears
on page 1 of the annual report

Actuarial Certification

To the best of our knowledge, this report is complete and accurate, and we disclose, fully and fairly, the funded condition of the Miscellaneous Retirement Fund. The valuation is based on the member and financial data as of July 1, 2010, and the benefits under this plan with CalPERS as of July 1, 2010. We have the opinion that the valuation has been performed in accordance with standards of practice prescribed by the actuary, and the assumptions and methods are internally consistent and reasonable. This certification is made to the CalPERS Board of Administration according to provisions of the California Retirement Law.

The undersigned is an actuary for CalPERS, a member of the Society of Actuaries and meets the Qualification Standards of the Society of Actuaries for the actuarial opinions contained herein.

John Doe

JOHN DOE, FSA, EA, MAAA
Senior Pension Actuary, CalPERS

Additional Topics

Pension Tool

- Managing Employer Contributions
- Pension Outlook

Managing Employer Contributions

How much savings will Additional Discretionary Payments (ADP) generate?

- Excel tool developed to estimate savings for ADPs and Fresh Starts
- Contact your actuary if you are interested in this tool

Managing Employer Contributions

Paydown Scenarios

Three Choices of Paydown Options:

1. "Longest to Shortest". Select from drop down menu (cell B7) and click "Run Scenario" button.
2. "Shortest to Longest". Select from drop down menu (cell B7) and click "Run Scenario" button.
3. Customized order of payoff. Enter a unique number for each base. **DO NOT** click "Run Scenario" button.

Longest to Shortest

					Total Payments \$ 111,645,026		\$ 5,000,000		Total Payments \$ 105,737,913		\$ (5,907,112)		Funded Ratio 2021 val:											
Run Scenario					Interest Paid \$ 38,215,505		22 - 23 Payment Date		Interest Paid \$ 32,308,392				78.8%											
							9/15/2022		Total Savings \$ 5,907,112															
Order of			Balance as of		Remaining		Original Schedule		Total ADP		Schedule with ADP		Contribution		Projected Funded									
Payoff			Base Name and FULL/PARTIAL Payoff		June 30, 2023		Period		Balance		Payment		(Valued Mid-year)		Balance		Payment		Contribution Difference		Ratio End of Year			
18			Risk Mitigation 2021		#####		1		2021-22		\$ 83,890,793		\$ 10,332,682		\$ 83,890,793		\$ 10,332,682		\$		80.8%			
5			Assumption Change 2021		1,116,773		20		2022-23		\$ 78,917,148		\$ 10,502,770		\$ 78,917,148		\$ 10,502,770		\$ 5,000,000		84.1%			
19			Non-Investment (Gain)/Loss 2020 FU		-		1		2023-24		\$ 73,429,521		\$ 10,674,281		\$ -		\$ 68,163,309		\$ 10,325,114		\$ (349,167)		86.1%	
6			Investment (Gain)/Loss 2020		7,109,296		19		2024-25		\$ 67,391,489		\$ 10,644,027		\$ -		\$ 62,128,019		\$ 10,285,086		\$ (358,941)		88.1%	
7			Investment (Gain)/Loss 2019		1,142,091		18		2025-26		\$ 60,974,136		\$ 9,416,582		\$ -		\$ 55,723,696		\$ 9,047,588		\$ (368,994)		89.7%	
9			Method Change 2018		3,318,096		17		2026-27		\$ 55,388,898		\$ 7,332,843		\$ -		\$ 50,162,760		\$ 6,953,518		\$ (379,325)		90.9%	
10			Assumption Change 2018		12,132,788		17		2027-28		\$ 51,577,284		\$ 6,858,206		\$ -		\$ 46,387,778		\$ 6,468,261		\$ (389,945)		91.9%	
11			Assumption Change 2017		6,575,766		16		2028-29		\$ 47,996,989		\$ 7,139,944		\$ -		\$ 42,857,582		\$ 6,739,078		\$ (400,866)		93.0%	
12			Assumption Change 2016		5,804,376		15		2029-30		\$ 43,882,074		\$ 7,429,573		\$ -		\$ 38,807,459		\$ 7,017,484		\$ (412,089)		94.1%	
1			(Gain)/Loss 2016 PARTIAL		12,794,238		25		2030-31		\$ 39,188,031		\$ 7,727,303		\$ -		\$ 34,194,212		\$ 7,303,676		\$ (423,627)		95.2%	
2			(Gain)/Loss 2015		15,780,715		24		2031-32		\$ 33,867,107		\$ 6,555,098		\$ -		\$ 28,971,501		\$ 6,119,609		\$ (435,489)		96.1%	
13			Assumption Change 2014		15,714,827		13		2032-33		\$ 29,395,763		\$ 6,372,187		\$ -		\$ 24,617,309		\$ 5,924,504		\$ (447,683)		97.0%	
3			(Gain)/Loss 2013		34,934,794		22		2033-34		\$ 24,809,397		\$ 5,524,153		\$ -		\$ 20,168,661		\$ 5,063,936		\$ (460,217)		97.7%	
4			(Gain)/Loss 2012		9,002,484		21		2034-35		\$ 20,787,552		\$ 5,130,490		\$ -		\$ 16,306,852		\$ 4,657,386		\$ (473,104)		98.3%	
14			Assumption Change 2011		4,025,771		10		2035-36		\$ 16,899,046		\$ 4,536,312		\$ -		\$ 12,602,585		\$ 4,049,958		\$ (486,354)		98.8%	
20			Special (Gain)/Loss 2010 FULL		-		1		2036-37		\$ 13,360,169		\$ 3,501,819		\$ -		\$ 9,274,169		\$ 3,001,850		\$ (499,969)		99.2%	
8			Special (Gain)/Loss 2009		2,003,251		18		2037-38		\$ 10,649,736		\$ 2,927,030		\$ -		\$ 6,802,578		\$ 2,413,062		\$ (513,968)		99.4%	
15			Assumption Change 2009		8,058,451		8		2038-39		\$ 8,349,003		\$ 2,314,793		\$ -		\$ 4,771,397		\$ 1,786,436		\$ (528,357)		99.6%	
16			Benefit Change 2005		4,808,465		3		2039-40		\$ 6,524,534		\$ 1,842,556		\$ -		\$ 3,249,676		\$ 1,299,403		\$ (543,153)		99.8%	
17			Assumption Change 2003		1,797,936		2		2040-41		\$ 5,064,029		\$ 1,536,571		\$ -		\$ 2,127,798		\$ 978,210		\$ (558,361)		99.9%	
									2041-42		\$ 3,820,426		\$ 520,624		\$ -		\$ 1,261,566		\$ 1,303,754		\$ 783,130		100.0%	
									2042-43		\$ 3,542,180		\$ 3,660,634		\$ -		\$ -		\$ -		\$ (3,660,634)		100.0%	
									2043-44		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2044-45		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2045-46		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2046-47		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2047-48		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2048-49		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2049-50		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2050-51		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2051-52		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	
									2052-53		\$ -		\$ -		\$ -		\$ -		\$ -		\$ -		100.0%	

Managing Employer Contributions

Projection of FY 2022-23 Investment Return

Back to Instructions

Agency

Rate Plan

MVA 6/30/2021: \$ 311,589,337

Fiscal Year: 2021 - 2022* 2022 - 2023

Investment Return*: -6.1% 6.8%

Discount Rate: 6.80% 6.80%

Three Choices of Paydown Options:

1. "Longest to Shortest". Select from drop down menu (cell B7) and click "Run Scenario" button.

2. "Shortest to Longest". Select from drop down menu (cell B7) and click "Run Scenario" button.

3. Customized order of payoff. Enter a unique number for each base. **DO NOT** click "Run Scenario" button.

Longest to Shortest

Run Projection

				Total Payments \$ 200,596,281		22-23 ADP Amount \$ 5,000,000		Total Payments \$ 194,634,056		Funded Ratio 2021 v 78.8%	
				Interest Paid \$ 84,279,281		22 - 23 Payment Date 9/30/2022		Interest Paid \$ 78,317,056			
						Total Savings \$ 5,962,225					
Order of Payoff	Base Name and FULL/PARTIAL Payoff	Balance as of June 30, 2023	Remaining Period	FY	Original Schedule Balance	Original Schedule Payment	Total ADP (Valued Mid-year)	Schedule with ADP Balance	Schedule with ADP Payment	Contribution Difference	Projected Funded Ratio End of Year
4	Investment (Gain)/Loss 2022	\$ 42,887,000	21	2021-22	\$ 83,890,793	\$ 10,332,682		\$ 83,890,793	\$ 10,332,682		71.1%
23	Investment (Gain)/Loss 2023	-	0	2022-23	\$ 119,074,000	\$ 10,502,770	\$ 5,082,056	\$ 119,074,000	\$ 10,502,770	\$ 5,000,000	74.1%
23	Risk Mitigation 2021	\$ 11,246,063	1	2023-24	\$ 116,317,000	\$ 10,674,281	\$ -	\$ 111,065,000	\$ 10,326,056	\$ (348,225)	75.9%
6	Assumption Change 2021	1,116,773	20	2024-25	\$ 113,195,000	\$ 11,629,000	\$ -	\$ 107,946,000	\$ 11,271,000	\$ (358,000)	77.8%
20	Non-Investment (Gain)/Loss 2020 FULL	-	1	2025-26	\$ 108,875,000	\$ 11,386,000	\$ -	\$ 103,639,000	\$ 11,018,000	\$ (368,000)	79.6%
7	Investment (Gain)/Loss 2020	7,109,296	19	2026-27	\$ 104,512,000	\$ 10,286,000	\$ -	\$ 99,300,000	\$ 9,908,000	\$ (378,000)	81.2%
8	Investment (Gain)/Loss 2019	1,142,091	18	2027-28	\$ 100,988,000	\$ 10,796,000	\$ -	\$ 95,813,000	\$ 10,407,000	\$ (389,000)	82.8%
10	Method Change 2018	3,318,096	17	2028-29	\$ 96,698,000	\$ 12,063,000	\$ -	\$ 91,573,000	\$ 11,663,000	\$ (400,000)	84.6%
11	Assumption Change 2018	12,132,788	17	2029-30	\$ 90,808,000	\$ 12,352,000	\$ -	\$ 85,747,000	\$ 11,941,000	\$ (411,000)	86.4%
12	Assumption Change 2017	6,575,766	16	2030-31	\$ 84,217,000	\$ 12,650,000	\$ -	\$ 79,237,000	\$ 12,227,000	\$ (423,000)	88.2%
13	Assumption Change 2016	5,804,376	15	2031-32	\$ 76,871,000	\$ 11,478,000	\$ -	\$ 71,989,000	\$ 11,043,000	\$ (435,000)	89.7%
24	(Gain)/Loss 2016 PARTIAL	12,808,447	25	2032-33	\$ 70,237,000	\$ 11,295,000	\$ -	\$ 65,471,000	\$ 10,848,000	\$ (447,000)	91.2%
2	(Gain)/Loss 2015	15,780,715	24	2033-34	\$ 63,340,000	\$ 10,447,000	\$ -	\$ 58,712,000	\$ 9,988,000	\$ (459,000)	92.5%
14	Assumption Change 2014	15,714,827	13	2034-35	\$ 56,851,000	\$ 10,053,000	\$ -	\$ 52,383,000	\$ 9,581,000	\$ (472,000)	93.7%
3	(Gain)/Loss 2013	34,934,794	22	2035-36	\$ 50,328,000	\$ 9,459,000	\$ -	\$ 46,043,000	\$ 8,974,000	\$ (485,000)	94.8%
5	(Gain)/Loss 2012	9,002,484	21	2036-37	\$ 43,975,000	\$ 8,424,000	\$ -	\$ 39,900,000	\$ 7,926,000	\$ (498,000)	95.7%
15	Assumption Change 2011	4,025,771	10	2037-38	\$ 38,259,000	\$ 7,850,000	\$ -	\$ 34,422,000	\$ 7,337,000	\$ (513,000)	96.6%
21	Special (Gain)/Loss 2010 FULL	-	1	2038-39	\$ 32,748,000	\$ 7,237,000	\$ -	\$ 29,180,000	\$ 6,711,000	\$ (526,000)	97.3%
9	Special (Gain)/Loss 2009	2,003,251	18	2039-40	\$ 27,496,000	\$ 6,765,000	\$ -	\$ 24,230,000	\$ 6,224,000	\$ (541,000)	97.9%
16	Assumption Change 2009	8,058,451	8	2040-41	\$ 22,374,000	\$ 6,459,000	\$ -	\$ 19,446,000	\$ 5,902,000	\$ (557,000)	98.5%
17	Benefit Change 2005	4,808,465	3	2041-42	\$ 17,220,000	\$ 5,443,000	\$ -	\$ 14,668,000	\$ 4,871,000	\$ (572,000)	99.0%
18	Assumption Change 2003	1,797,936	2	2042-43	\$ 12,766,000	\$ 4,510,000	\$ -	\$ 10,632,000	\$ 3,922,000	\$ (588,000)	99.3%
				2043-44	\$ 8,973,000	\$ 8,282,000	\$ -	\$ 7,302,000	\$ 7,546,000	\$ (736,000)	100.0%
				2044-45	\$ 1,024,000	\$ 1,058,000	\$ -	\$ -	\$ -	\$ (1,058,000)	100.0%
				2045-46	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2046-47	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2047-48	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2048-49	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2049-50	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2050-51	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2051-52	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%
				2052-53	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	100.0%

Input

Instructions

Original Bases

Fresh Start

Goal Setting

Paydown Scenario

Projection

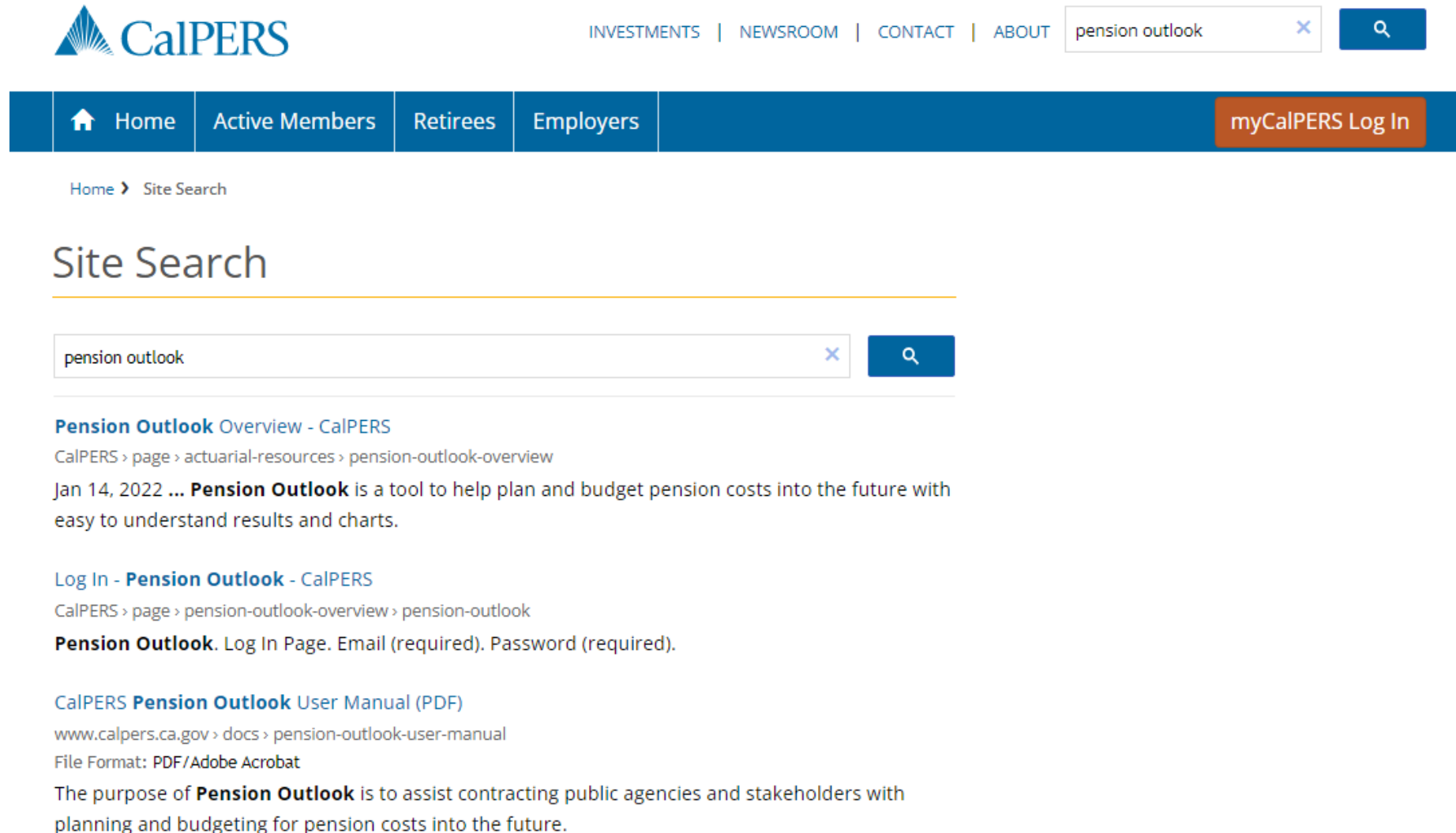
Projected Total ER Cost

Graphs

Pension Outlook

- Models Funded Status, Employer Rates and Total Costs under Investment Scenarios chosen by User
- Impact of Potential Discount Rate Changes
- Impact of ADP's
- Impact of PEPRA on future costs
- Budgeting schedule available
- Available to all stakeholders/interested parties at <https://www.calpers.ca.gov/page/employers/actuarial-resources/pension-outlook-overview>

Pension Outlook – CalPERS website



The screenshot shows the CalPERS website header with the logo and navigation links: INVESTMENTS | NEWSROOM | CONTACT | ABOUT. A search bar in the top right contains the text "pension outlook" and a magnifying glass icon. Below the header is a blue navigation bar with links: Home (with a house icon), Active Members, Retirees, Employers, and a myCalPERS Log In button. Below the navigation bar, the breadcrumb "Home > Site Search" is displayed. The main heading "Site Search" is followed by a search bar containing "pension outlook" and a magnifying glass icon. The search results are as follows:

Pension Outlook Overview - CalPERS
CalPERS > page > actuarial-resources > pension-outlook-overview
Jan 14, 2022 ... **Pension Outlook** is a tool to help plan and budget pension costs into the future with easy to understand results and charts.

Log In - **Pension Outlook** - CalPERS
CalPERS > page > pension-outlook-overview > pension-outlook
Pension Outlook. Log In Page. Email (required). Password (required).

CalPERS **Pension Outlook** User Manual (PDF)
www.calpers.ca.gov > docs > pension-outlook-user-manual
File Format: PDF/Adobe Acrobat
The purpose of **Pension Outlook** is to assist contracting public agencies and stakeholders with planning and budgeting for pension costs into the future.

30 Year Budget

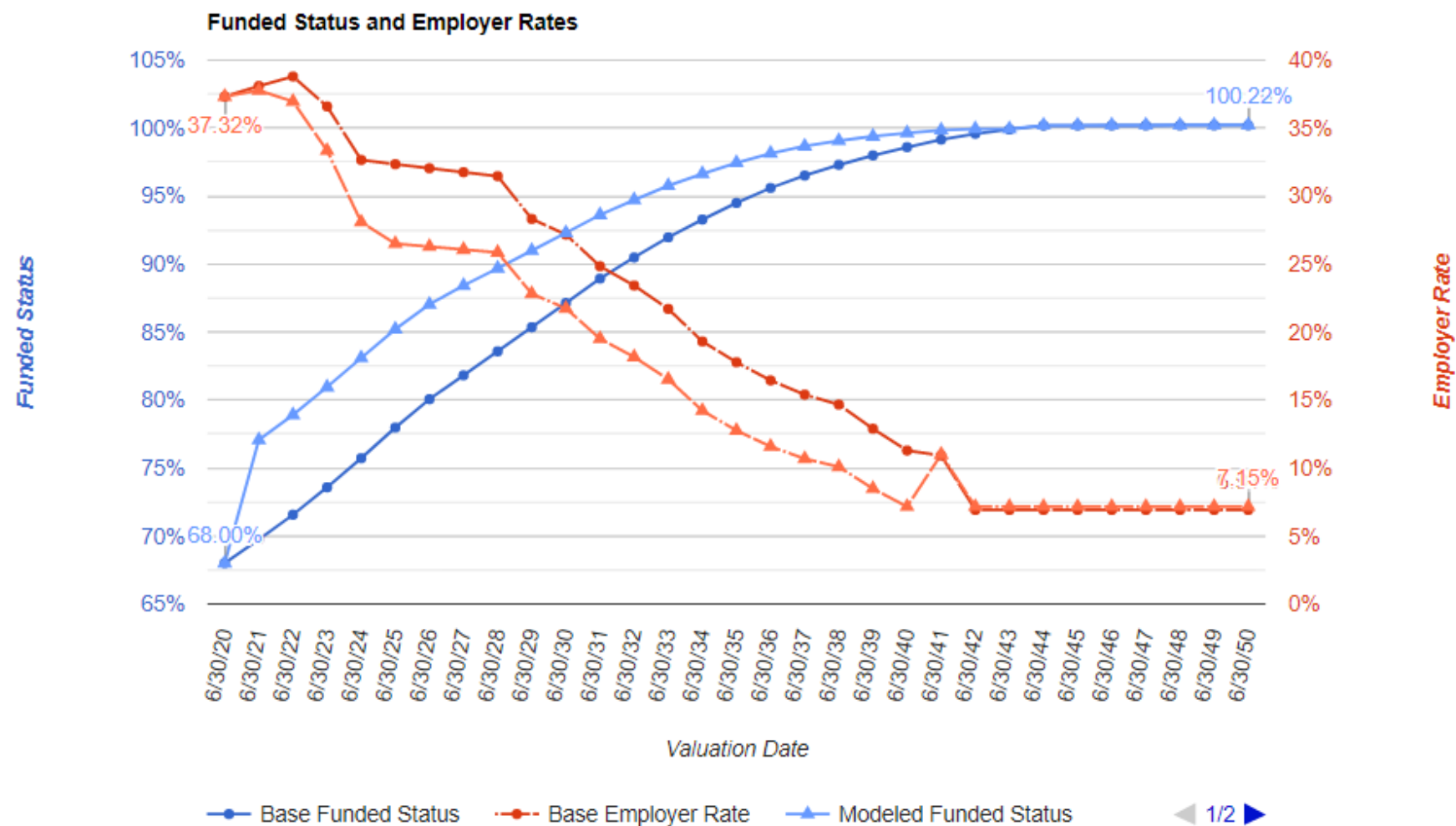
Download the [Fiscal Year Cost and Annual Relative Increase in Cost \(XLSX\)](#).

Summary

Funding

Cash Flow

Glossary



Use of this model is subject to acceptance of CalPERS' Terms and Conditions of Use. All projections are hypothetical and may differ significantly from actual experience.

