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PERS
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**Report on Thirty Year
Projections of the Mississippi
Retirement Systems**

Prepared as of June 30, 2011





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

December 2, 2011

Board of Trustees
Public Employees' Retirement System of Mississippi
429 Mississippi Street
Jackson, MS 39201-1005

Gentlemen:

Presented in this report are the results of 30 year projections of the Public Employees' Retirement System of Mississippi, the Highway Safety Patrol Retirement System and the Supplemental Legislative Retirement Plan. The purpose of the projections is to develop a picture of the Systems' funding progress over time and to demonstrate the impact recent plan provisions changes for new members have on the Systems' financial status.

The starting point for the projections was the June 30, 2011 valuation of PERS. Membership was projected over a 30 year period from that date and actuarial valuations were performed annually for each of the 30 years to measure the Systems' funding progress.

The Executive Summary provides a synopsis of the main projection results. We certify that we are members of the American Academy of Actuaries and that we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Respectfully submitted,

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TJC/EJK:kc

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Section I - Executive Summary

The following report is being provided to the Board of Trustees to aid in the discussion of setting a formal Funding Policy. The projection of the Public Employees' Retirement Systems of Mississippi will provide a picture of the funding progress over time and demonstrate the impact recent plan provision changes for new members have on the financial status. We have produced 30 year projections for the PERS, HSPRS and SLRP plans, which are shown in the next 3 sections of the report.

Regular actuarial valuations measure PERS' present financial position and contribution adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding future changes in the makeup of the covered group or the amounts of benefits to be paid or investment income to be received – actuarial projections do.

Whereas valuations provide a snapshot of PERS as of a given date, projections provide a moving picture. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, and the addition of new members. Projected information regarding the retired life group leads to assumed future benefit payouts. Performing actuarial valuations every year during the projection period generates expected contribution rates and unfunded accrued liability (UAL) amortization periods. Combining future benefit payments with assumed contributions based on periodic valuations of the projected membership and expected investment earnings produces the net cash flow of the System each year, and thus end of year asset levels. Finally, the valuation results permit the development of the funding ratio trend line for the entire projection period.

Projections are used for many purposes. Among them are (i) developing cash flow patterns for investment policy and asset mix consideration, (ii) exploring the effect of alternative assumptions about future experience, and (iii) analyzing the impact on plan funding progress of changes in the workforce.

Projection results are useful in demonstrating changing relationships among key elements affecting plan financial activity (e.g., how benefits payable and plan assets will grow in future decades). Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence), but understanding the changed relationship between future benefit payout and future investment income can be very useful.

The projection of System finances over 30 years requires an assumption regarding future new entrants to the Systems as well as the regular valuation assumptions used to estimate the timing of future events for existing members. As members are assumed to terminate service for any reason, they are replaced with a sufficient number of new entrants to keep the active population constant in number. Valuations are then performed on the projected active and retired membership for each of the thirty years of the study.

The main results from the study (details can be found in the following sections of this report) are noted on the following pages.



Section I - Executive Summary

For PERS:

- The impact of the new tier for PERS can be seen in the projection results by the downward trend of the projected normal cost rates. The normal cost is the annual cost assigned to accruing benefits for active members. A portion of the total normal cost is paid by the employees. For example, PERS active members are contributing 9.00% of their salary each year. The current employer normal cost rate for PERS in the valuation as of June 30, 2011 was 2.31% of payroll. As can be seen in the projection results, the ultimate employer normal cost rate is around 1.18% when 99% of active members are in Tier 4. So ultimately, the new tier will save the System over 1.00% of payroll.
- The Annual Required Contribution (ARC) rate is projected to increase over the next few years for PERS due to the continued recognition of the accumulated asset losses that occurred in 2008 and 2009. This has been greatly helped by the good returns of 2010 and 2011, however not enough to offset the recognition of those two bad years.
- By continuing the use of an open amortization period methodology in the Funding Policy, PERS will accrue larger Unfunded Accrued Liabilities and funding ratios will remain at relatively low levels, around 67%. However, if the ARC is kept at 14.26% and the amortization period methodology is kept open, the Funding Ratio does improve and the System is 83.5% funded in 2041 with only 7 years remaining on the amortization period.
- Using a closed amortization period methodology, larger Annual Required Contribution Rates are expected over the projection period, but once PERS System gets to 100% funded in 2041, the ARC will be significantly less. PERS' ARC would decrease from 16.95% of payroll in 2040 to 1.18% of payroll in 2041, a decrease of over 90%.

For HSPRS:

- The Annual Required Contribution (ARC) rate is projected to increase over the next few years for HSPRS due to the continued recognition of the accumulated asset losses that occurred in 2008 and 2009. This has been greatly helped by the good returns of 2010 and 2011, however not enough to offset the recognition of those two bad years.
- By continuing the use of an open amortization period methodology in the Funding Policy, HSPRS will accrue larger Unfunded Accrued Liabilities and funding ratios will remain at relatively low levels, around 75%. However, if the ARC is kept at 37.00% and the amortization period methodology is kept open, the Funding Ratio does improve and the System is 88.9% funded in 2041 with only 4 years remaining on the amortization period.
- Using a closed amortization period methodology, larger Annual Required Contribution Rates are expected over the projection period, but once HSPRS System gets to 100% funded in 2041, the ARC will be significantly less. HSPRS' ARC would decrease from 43.73% of payroll in 2040 to 15.77% of payroll in 2041, a decrease of over 60%.



Section I - Executive Summary

For SLRP:

- The Annual Required Contribution (ARC) rate is projected to increase over the next few years for SLRP due to the continued recognition of the accumulated asset losses that occurred in 2008 and 2009. This has been greatly helped by the good returns of 2010 and 2011, however not enough to offset the recognition of those two bad years.
- By continuing the use of an open amortization period methodology (assuming 22 years that is used in the June 30, 2011 valuation) in the Funding Policy, SLRP will accrue larger Unfunded Accrued Liabilities and funding ratios will remain relatively constant, around 82%. However, if the ARC is kept at 7.40% and the amortization period methodology is kept open, the Funding Ratio does improve and the System will be 100% funded in 2032.
- Using a closed amortization period methodology, larger Annual Required Contribution Rates are expected over the projection period, but once SLRP System gets to 100% funded in 2033, the ARC will be significantly less. SLRP's ARC would decrease from 5.63% of payroll in 2032 to 2.36% of payroll in 2033, a decrease of nearly 60%.

It must be kept in mind that projections do not purport to show exact numerical results over the entire period under study. They do however provide a good basis for drawing conclusions about the likely position of the Systems and the relative impact changes over the years will have on System finances.



Section II – PERS Projection Results

SPECIAL ASSUMPTIONS

In addition to the regular valuation assumptions used in performing the annual actuarial valuations of PERS (all assumptions utilized in the projection study are outlined in Appendix A), additional assumptions must be made that are unique to projections. The first of these is what, if any, change in the overall active membership will be anticipated. For this projection study it was assumed that the number of active members would remain static over the 30 year projection period.

But since we assume active members will leave the system through termination, death, disability or retirement, we need to make some assumptions as to the composition of new hires that will replace departing members in order to maintain the membership at a constant number. The new entrant profile we developed was based on the new hires over the 3 year period prior to the projection start date of June 30, 2011. That profile is summarized in the table on the following page.

Age	Average Pay	Percent Male	Weight
19	\$20,000	52%	2.0%
23	22,300	38%	21.0%
27	25,500	37%	20.0%
32	25,500	35%	13.0%
38	25,600	35%	11.0%
42	24,800	37%	9.0%
47	24,800	39%	8.0%
52	25,000	40%	7.0%
57	25,000	43%	5.0%
62	25,100	53%	2.0%
69	22,000	59%	1.0%

For the projection results presented in this section of the report, it was further assumed that the benefit structure as it exists on June 30, 2011 would remain in place for the following 30 years, and that the PERS assets (with the exception of the gains and losses already scheduled to be recognized in the next 4 years) would earn the assumed return of 8% annually, thus generating no further gains or losses over the projection period.

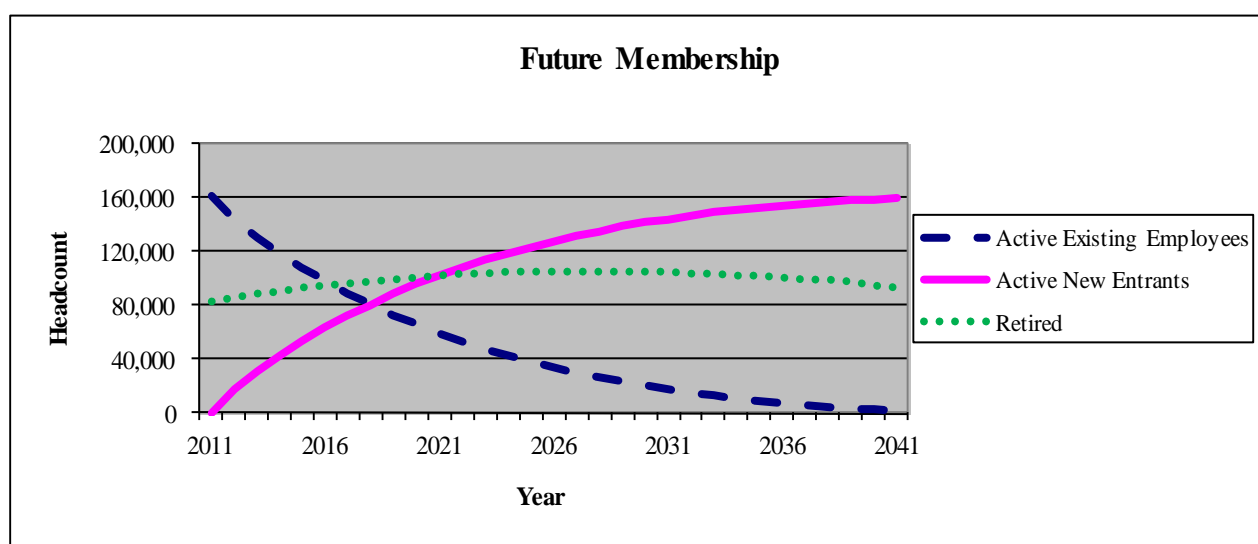
FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2011 and those who are hired after June 30, 2011. Since the membership at PERS has been fluctuating up and down over the past few years, we have assumed the active membership will continue at its current population of 161,676 active members over the projected period. By the end of the projection period we estimate that about 99% of those active employees will have been hired after June 30, 2011 and be included in the Tier 4 benefit structure.



Section II – PERS Projection Results

Member	2011	2016	2021	2031	2041
Active – Existing Employees	161,676	99,288	60,241	18,006	2,267
Active – New Entrants	0	62,388	101,435	143,670	159,409
Retired	83,115	94,356	101,968	104,657	93,886
Total	244,791	256,032	263,644	266,333	255,562



UAL AMORTIZATION PERIOD

One of the main objectives in a Funding Policy is the method to utilize in amortizing the UAL. The first goal listed in the current Funding Policy is to maintain a stable or increasing ratio of system assets to accrued liabilities and eventually reach a 100% funding ratio. This goal was achievable when the Annual Required Contribution (ARC) was stable and the amortization period was fluctuating each year. However, for the past few years, the ARC has been increasing and the amortization period has been kept at the maximum allowable 30 years as required by the Governmental Accounting Standards Board (GASB). This methodology will never attain the objective of the current Funding Policy.

A closed amortization methodology means that there is a one year drop in the amortization period each year until it reaches zero and the System is 100% funded. This is similar to what happens on the typical home mortgage. An open amortization methodology means the amortization period fluctuates up or down or stays the same from year to year. This can be equated to refinancing the mortgage each year.

As presented to the Board at the October, 2011 Board meeting, if the amortization period is set using an Open Period Methodology (30 years in this case), the Unfunded Accrued Liability will never reach zero and the Plan will never reach a 100% funding ratio. Therefore, in the next section we have projected the results using both amortization methodologies, Open and Closed. We have also reviewed the results if the ARC is kept constant and the amortization period is on an Open Period Methodology.



Section II – PERS Projection Results

RESULTS

The projection of payroll, UAL, normal cost rates, UAL Rate, ARC and Funding Ratios follows for each of the amortization period methodologies.

Open Amortization Methodology (Rolling 30 Years) (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$5,684,624	\$6,631,486	\$7,956,971	\$11,838,270	\$17,984,613
UAL	\$12,339,300	\$14,308,839	\$16,456,147	\$21,523,475	\$27,441,997
Normal Cost Rate	2.31%	1.88%	1.57%	1.28%	1.18%
UAL Rate	11.95%	11.87%	11.38%	10.01%	8.40%
ARC	14.26%	13.75%	12.95%	11.29%	9.58%
Funding Ratio	62.2%	64.7%	65.9%	66.6%	67.6%

Open Amortization Methodology (Fixed ARC Rate) (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$5,684,624	\$6,631,486	\$7,956,971	\$11,838,270	\$17,984,613
UAL	\$12,339,300	\$14,515,824	\$16,470,951	\$18,865,807	\$14,008,467
Normal Cost Rate	2.31%	1.88%	1.57%	1.28%	1.18%
UAL Rate	11.95%	12.38%	12.69%	12.98%	13.08%
ARC	14.26%	14.26%	14.26%	14.26%	14.26%
Funding Ratio	62.2%	64.1%	65.9%	70.7%	83.5%
Amortization Period	30 Years	29 Years	25 Years	16 Years	7 Years

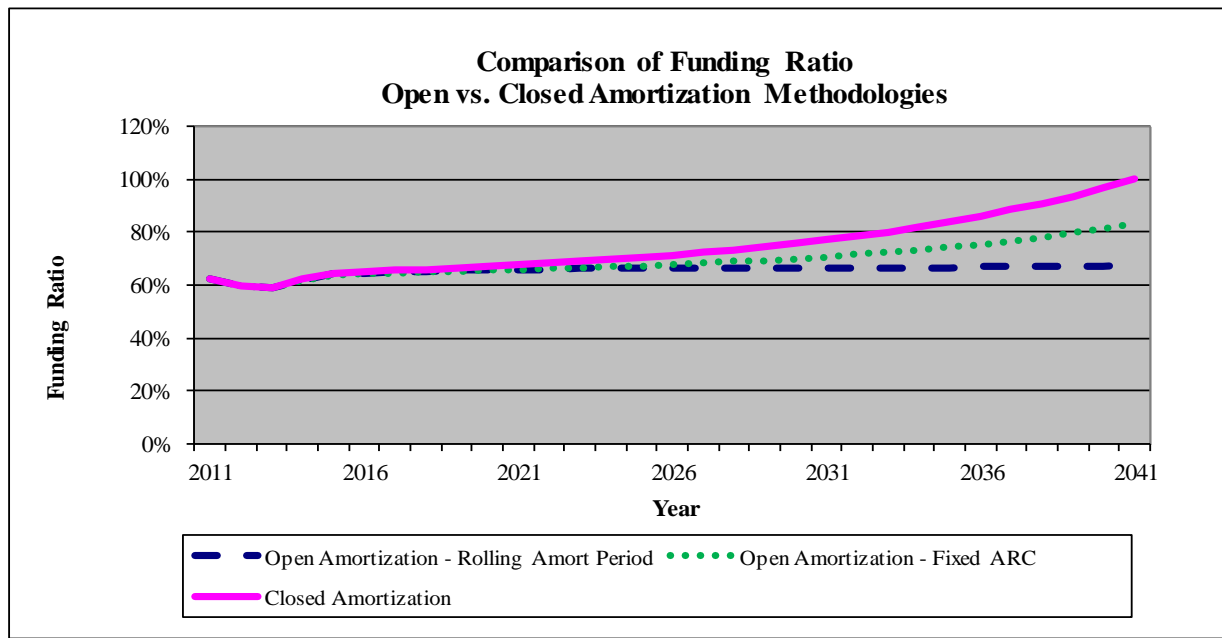


Section II – PERS Projection Results

**Closed Amortization Methodology
(\$000's)**

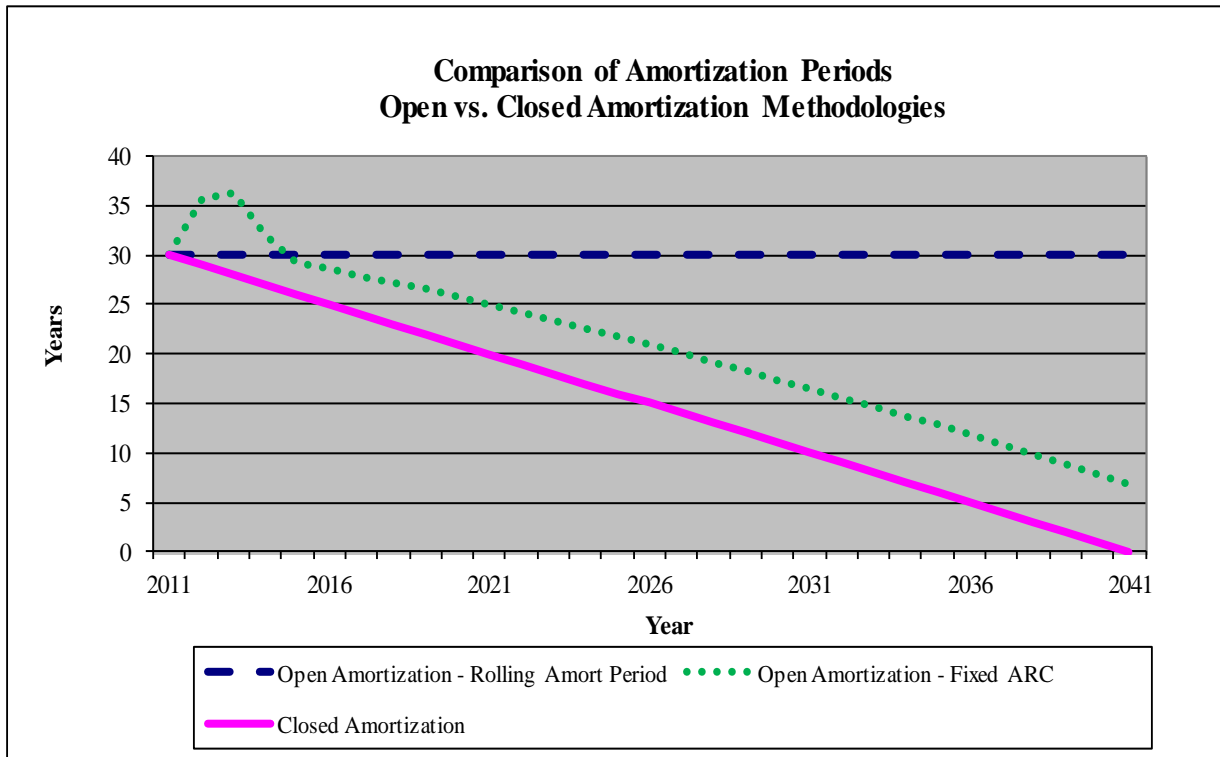
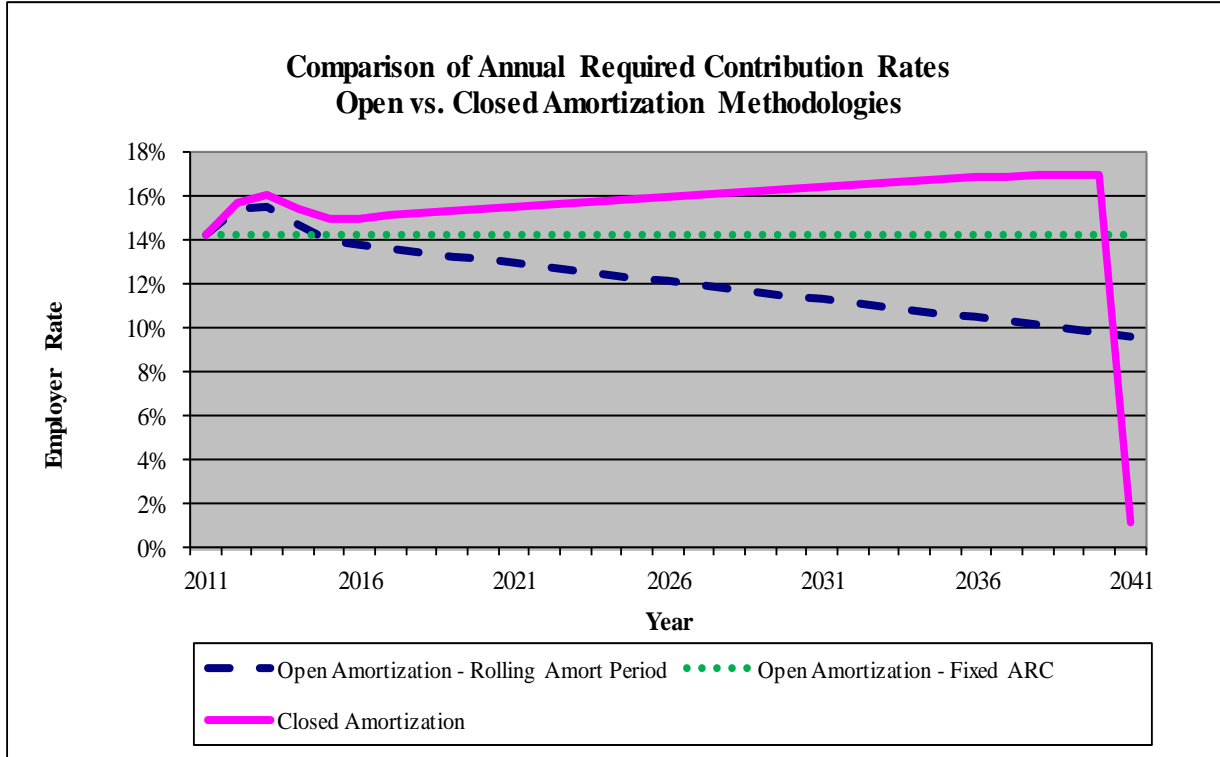
	2011	2016	2021	2031	2041
Total Payroll	\$5,684,624	\$6,631,486	\$7,956,971	\$11,838,270	\$17,984,613
UAL	\$12,339,300	\$14,197,357	\$15,622,190	\$14,797,510	\$0
Normal Cost Rate	2.31%	1.88%	1.57%	1.28%	1.18%
UAL Rate	11.95%	13.13%	13.94%	15.10%	0.00%
ARC	14.26%	15.01%	15.51%	16.38%	1.18%
Funding Ratio	62.2%	64.9%	67.6%	77.1%	100.0%

The following graphs show the trend in funding ratio, annual required contribution rates and amortization periods under the three amortization scenarios.





Section II – PERS Projection Results





Section III – HSPRS Projection Results

SPECIAL ASSUMPTIONS

In addition to the regular valuation assumptions used in performing the annual actuarial valuations of HSPRS (all assumptions utilized in the projection study are outlined in Appendix B), additional assumptions must be made that are unique to projections. The first of these is what, if any, change in the overall active membership will be anticipated. For this projection study it was assumed that the number of active members would remain static over the 30 year projection period.

But since we assume active members will leave the system through termination, death, disability or retirement, we need to make some assumptions as to the composition of new hires that will replace departing members in order to maintain the membership at a constant number. The new entrant profile we developed was based on the new hires over the 3 year period prior to the projection start date of June 30, 2011. That profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
23	38,500	98%	23.0%
27	38,500	98%	33.0%
32	38,500	98%	30.0%
38	38,500	98%	9.0%
42	38,500	98%	5.0%

For the projection results presented in this section of the report, it was further assumed that the benefit structure as it exists on June 30, 2011 would remain in place for the following 30 years, and that the HSRPS assets (with the exception of the gains and losses already scheduled to be recognized in the next 4 years) would earn the assumed return of 8% annually, thus generating no further gains or losses over the projection period.

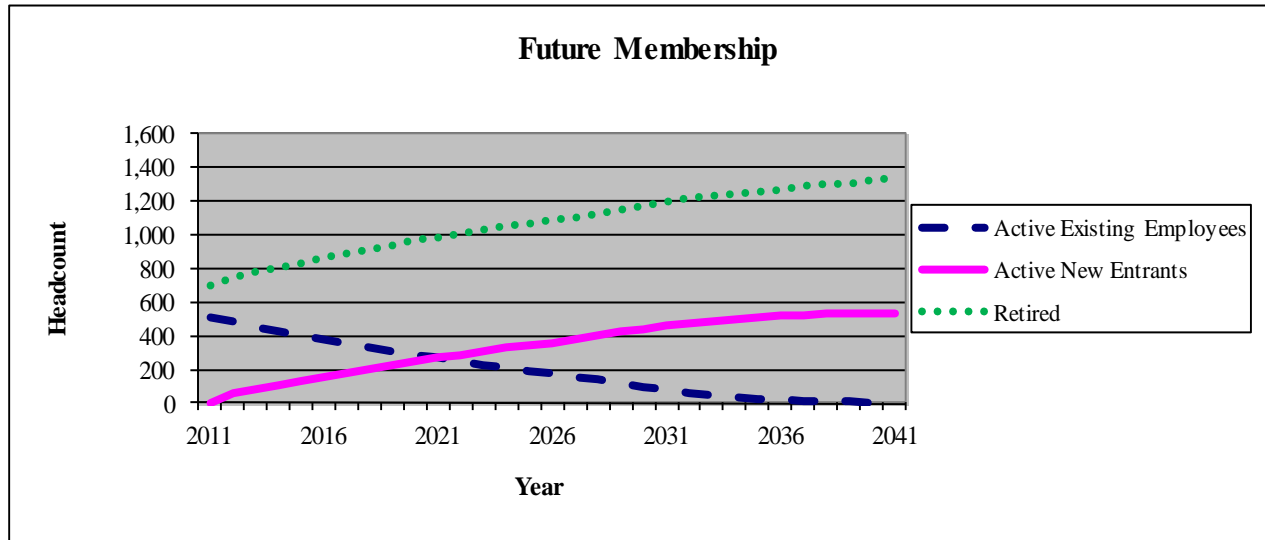
FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2011 and those who are hired after June 30, 2011. After discussion with the HSPRS Administrative Board, we have assumed for 2012 that a new class of approximately 50 Patrol Officers will be joining the active membership. We have built this increase into our projections and after 2012, we have assumed the active membership will continue at that current population of 536 active members over the projected period.

Member	2011	2016	2021	2031	2041
Active – Existing Employees	515	378	269	78	2
Active – New Entrants	0	158	267	458	534
Retired	704	864	987	1,198	1,336
Total	1,219	1,400	1,523	1,734	1,872



Section III – HSPRS Projection Results



RESULTS

The projection of payroll, UAL, normal cost rates, UAL Rate, ARC and Funding Ratios follows for each of the amortization period methodologies. Please note that contributions from SB 2659 are assumed to continue to provide an additional \$3,500,000 annually throughout the projection period under all scenarios. These dollars are in addition to the employer contributions as a percent of payroll shown below.

**Open Amortization Methodology (Rolling 30 Years)
(\$000's)**

	2011	2016	2021	2031	2041
Total Payroll	\$24,872	\$30,415	\$36,910	\$56,219	\$86,576
UAL	\$136,167	\$146,505	\$163,286	\$203,198	\$252,870
Normal Cost Rate	16.55%	16.18%	16.03%	15.84%	15.77%
UAL Rate	20.45%	18.59%	17.82%	15.61%	13.29%
ARC	37.00%	34.77%	33.85%	31.45%	29.06%
Funding Ratio	67.1%	69.6%	70.6%	72.5%	75.0%



Section III – HSPRS Projection Results

Open Amortization Methodology (Fixed ARC Rate) (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$24,872	\$30,415	\$36,910	\$56,219	\$86,576
UAL	\$136,167	\$147,716	\$160,197	\$169,490	\$112,186
Normal Cost Rate	16.55%	16.18%	16.03%	15.84%	15.77%
UAL Rate	20.45%	20.82%	20.97%	21.16%	21.23%
ARC	37.00%	37.00%	37.00%	37.00%	37.00%
Funding Ratio	67.1%	69.3%	71.2%	77.1%	88.9%
Amortization Period	30 Years	25 Years	22 Years	14 Years	4 Years

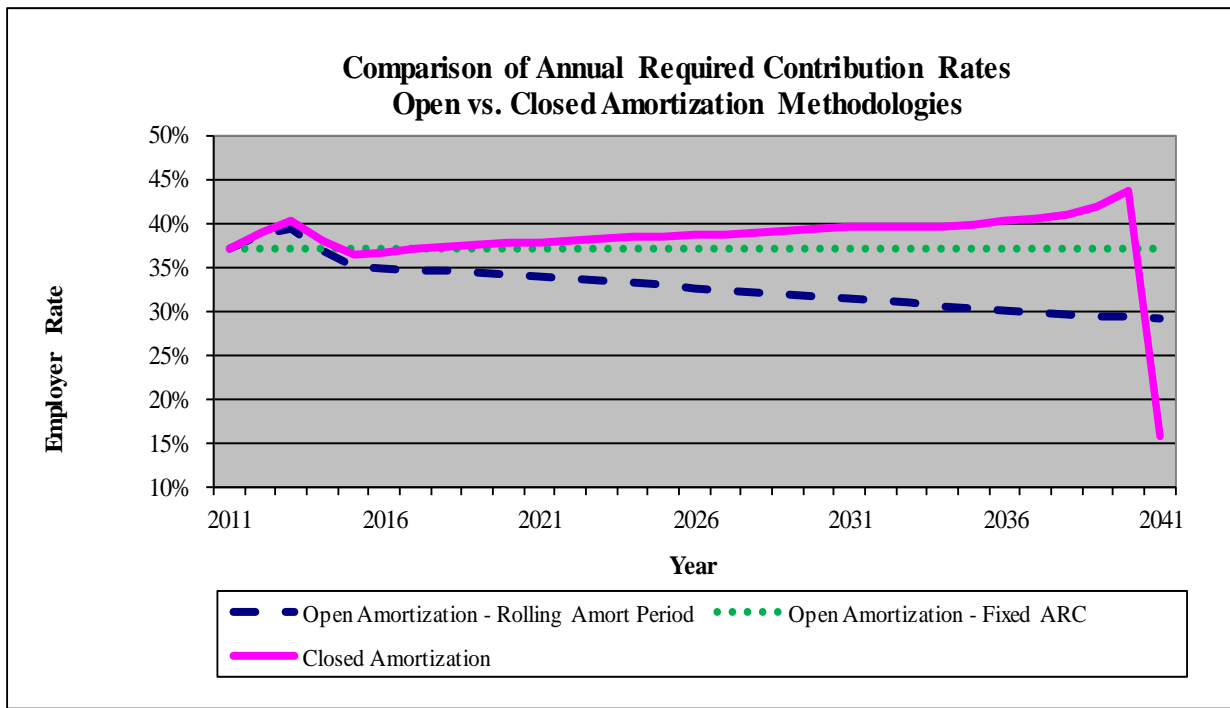
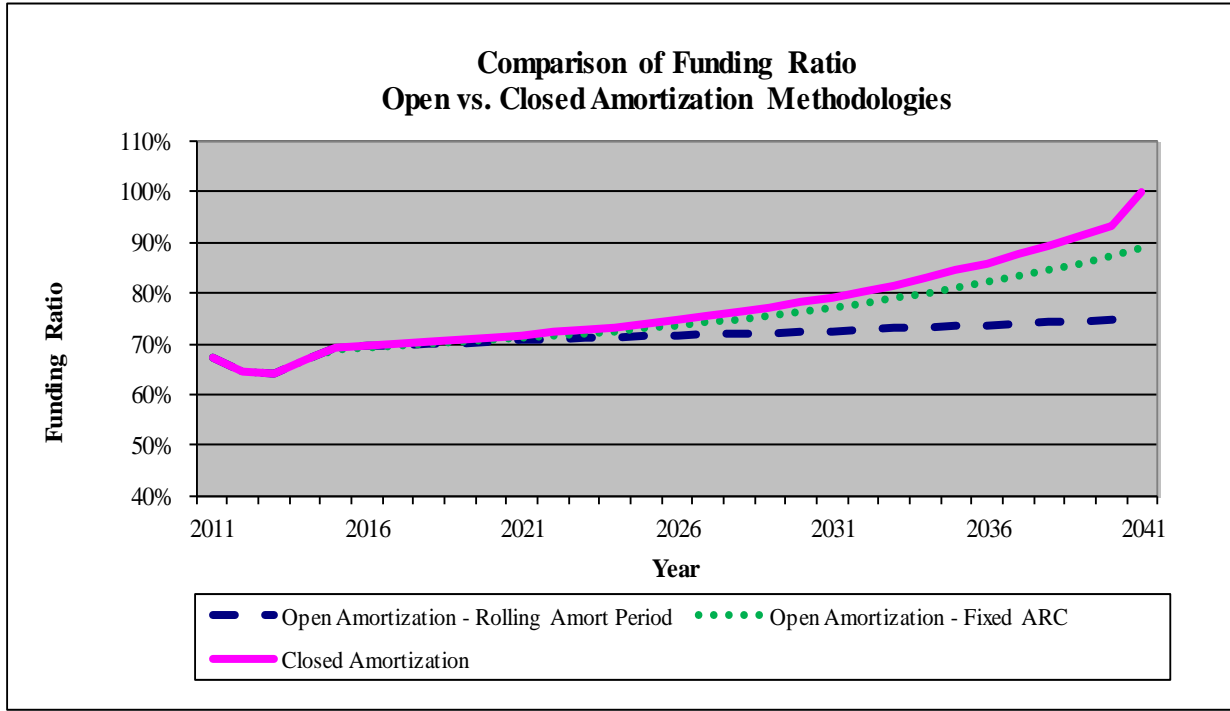
Closed Amortization Methodology (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$24,872	\$30,415	\$36,910	\$56,219	\$86,576
UAL	\$136,167	\$145,653	\$157,201	\$153,795	\$0
Normal Cost Rate	16.55%	16.18%	16.03%	15.84%	15.77%
UAL Rate	20.45%	20.54%	21.82%	23.65%	0.00%
ARC	37.00%	36.72%	37.85%	39.49%	15.77%
Funding Ratio	67.1%	69.7%	71.7%	79.2%	100.0%

The following graphs show the trend in funding ratio, annual required contribution rates and amortization periods under the three amortization scenarios.

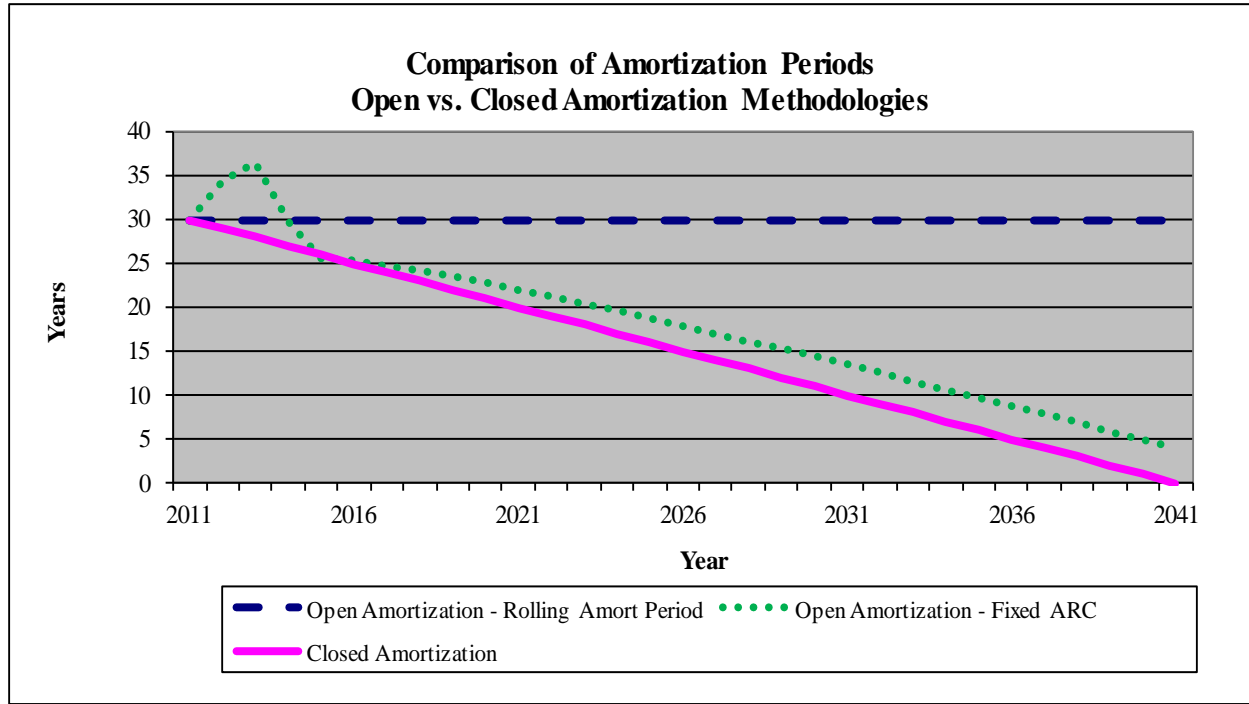


Section III – HSPRS Projection Results





Section III – HSPRS Projection Results





Section IV – SLRP Projection Results

SPECIAL ASSUMPTIONS

In addition to the regular valuation assumptions used in performing the annual actuarial valuations of SLRP (all assumptions utilized in the projection study are outlined in Appendix C), additional assumptions must be made that are unique to projections. The first of these is what, if any, change in the overall active membership will be anticipated. For this projection study it was assumed that the number of active members would remain static over the 30 year projection period.

Since we assume active members will leave the system through termination, death, disability or retirement, we need to make some assumptions as to the composition of new hires that will replace departing members in order to maintain the membership at a constant number. The new entrant profile we developed was based on the new hires over the 4 year period prior to the projection start date of June 30, 2011. That profile is summarized in the table below.

Age	Average Pay	Percent Male	Weight
32	\$39,000	85.0%	22.0%
38	\$39,000	85.0%	26.0%
42	\$39,000	85.0%	19.0%
47	\$39,000	85.0%	15.0%
52	\$39,000	85.0%	10.0%
58	\$39,000	85.0%	8.0%

For the projection results presented in this section of the report, it was further assumed that the benefit structure as it exists on June 30, 2011 would remain in place for the following 30 years, and that the SLRP assets (with the exception of the gains and losses already scheduled to be recognized in the next 4 years) would earn the assumed return of 8% annually, thus generating no further gains or losses over the projection period.

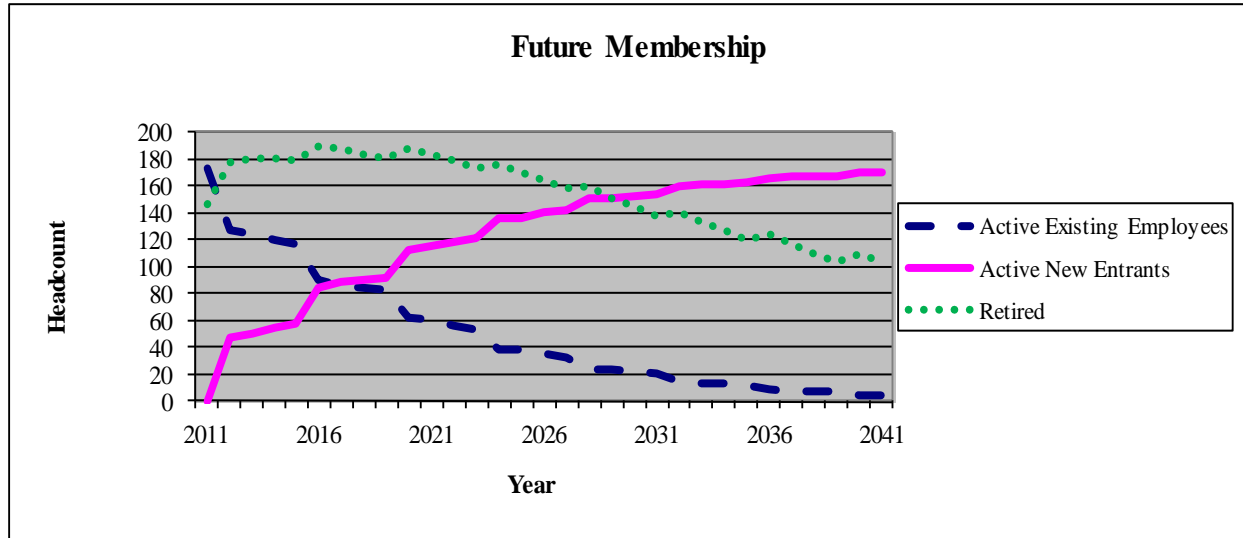
FUTURE MEMBERSHIP

The following chart and graph show the headcounts of active participants and retired members over the projection period. The actives are broken down into those existing as of June 30, 2011 and those who are hired after June 30, 2011. We have assumed the active membership will continue at the current maximum population of 175 active members over the projected period.

Member	2011	2016	2021	2031	2041
Active – Existing Employees	174	90	60	21	5
Active – New Entrants	0	85	115	154	170
Retired	147	190	183	138	104
Total	321	365	358	313	279



Section IV – SLRP Projection Results



RESULTS

The projection of payroll, UAL, normal cost rates, UAL Rate, ARC and Funding Ratios follows for each of the amortization period methodologies.

Open Amortization Methodology (Rolling 22 Years) (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$6,810	\$8,455	\$10,446	\$15,970	\$24,298
UAL	\$4,999	\$4,367	\$4,870	\$5,943	\$7,123
Normal Cost Rate	2.56%	2.45%	2.41%	2.38%	2.25%
UAL Rate	4.84%	3.44%	3.10%	2.48%	1.95%
ARC	7.40%	5.89%	5.51%	4.86%	4.20%
Funding Ratio	73.1%	79.6%	80.1%	80.6%	82.7%



Section IV – SLRP Projection Results

Open Amortization Methodology (Fixed ARC Rate) (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$6,810	\$8,455	\$10,446	\$15,970	\$24,298
UAL	\$4,999	\$4,663	\$4,407	\$1,045	\$0
Normal Cost Rate	2.56%	2.45%	2.41%	2.38%	2.25%
UAL Rate	4.84%	4.95%	4.99%	5.02%	0.00%
ARC	7.40%	7.40%	7.40%	7.40%	2.25%
Funding Ratio	73.1%	78.5%	82.4%	96.8%	100.0%
Amortization Period	22 Years	14 Years	10 Years	1 Year	0 Years

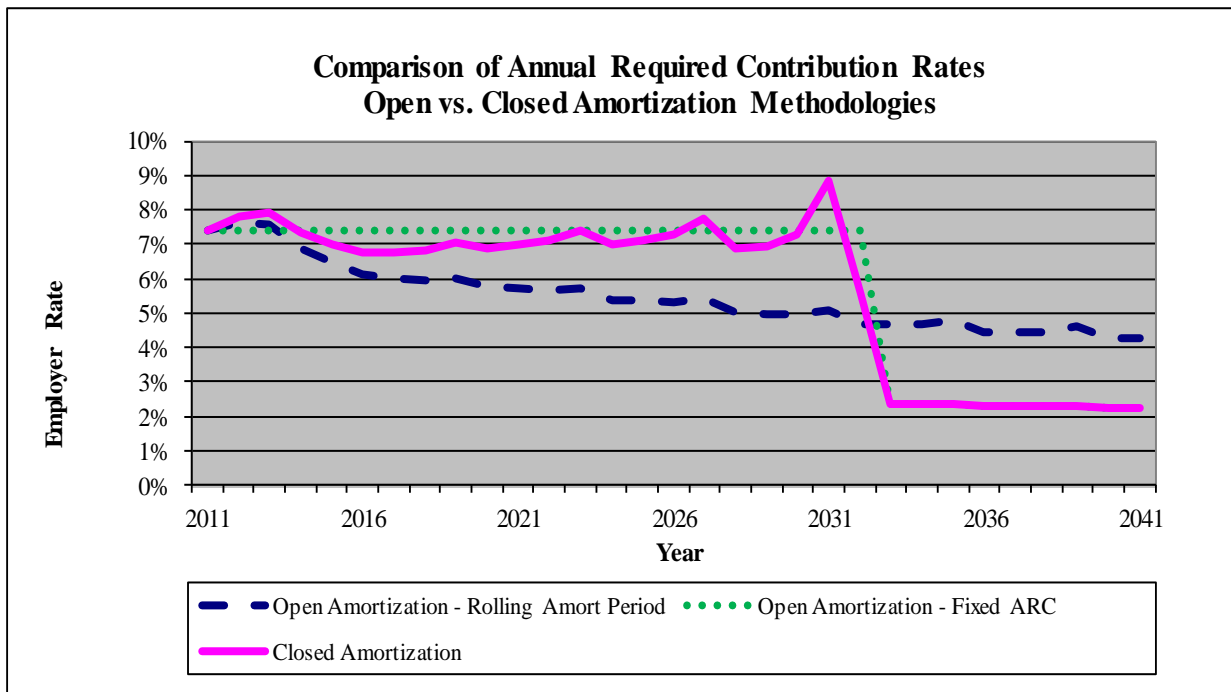
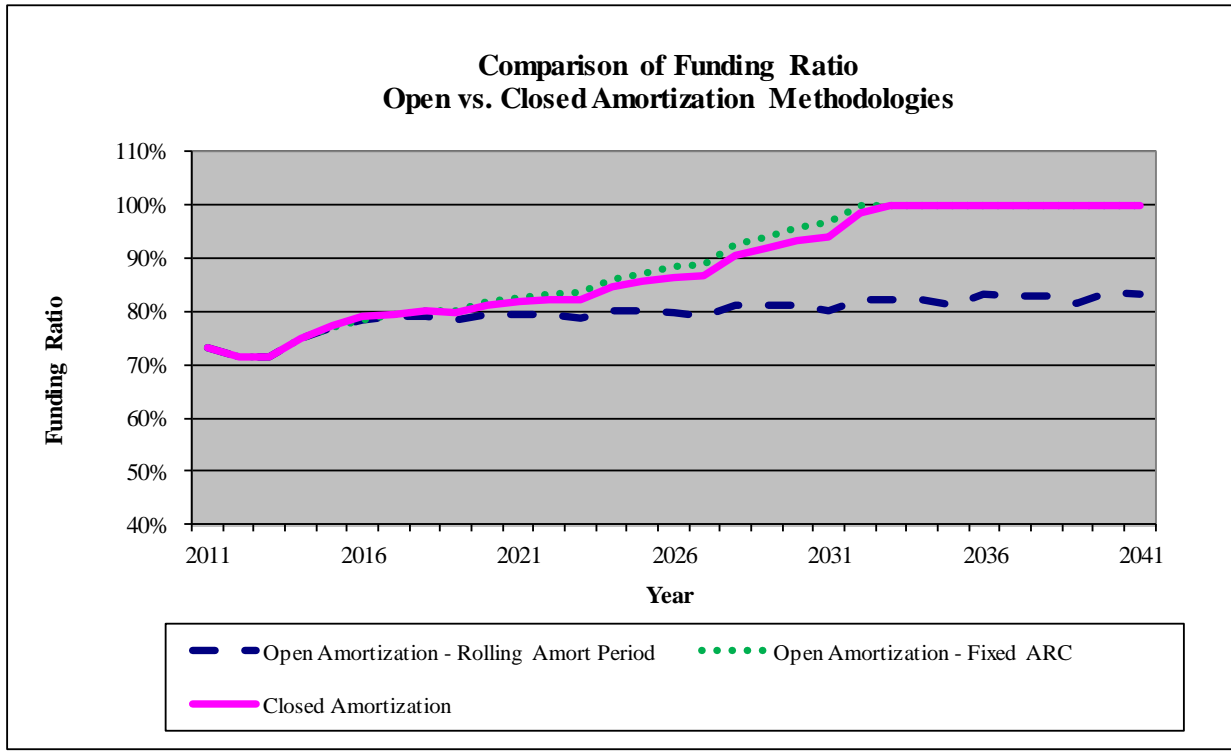
Closed Amortization Methodology (\$000's)

	2011	2016	2021	2031	2041
Total Payroll	\$6,810	\$8,455	\$10,446	\$15,970	\$24,298
UAL	\$4,999	\$4,581	\$4,585	\$1,967	\$0
Normal Cost Rate	2.56%	2.45%	2.41%	2.38%	2.25%
UAL Rate	4.84%	4.32%	4.57%	6.49%	0.00%
ARC	7.40%	6.77%	6.98%	8.87%	2.25%
Funding Ratio	73.1%	79.6%	81.7%	93.9%	100.0%
Amortization Period	22 Years	17 Years	12 Years	2 Years	0 Years

The following graphs show the trend in funding ratio, annual required contribution rates and amortization periods under the three amortization scenarios.

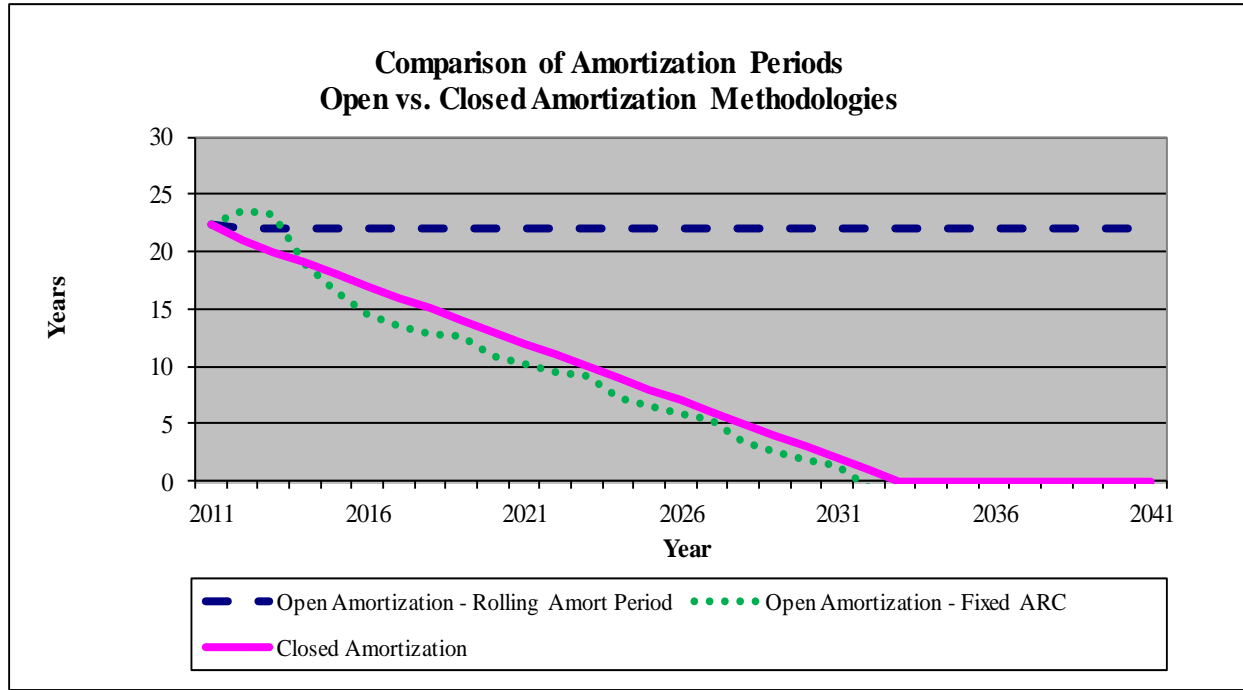


Section IV – SLRP Projection Results





Section IV – SLRP Projection Results





Appendix A – PERS Actuarial Assumptions and Methods

INTEREST RATE: 8.00% per annum, compounded annually (net after investment expenses).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed rates of separation from active service are as follows:

Annual Rates of						
Age	Withdrawal and Vesting*		Death**		Disability**	
	Male	Female	Male	Female	Male	Female
20	22.0%	22.0%	.01%	.00%	.01%	.01%
25	15.0	15.0	.01	.01	.02	.01
30	10.0	10.5	.02	.01	.02	.02
35	8.0	8.0	.03	.01	.05	.02
40	6.0	6.0	.04	.02	.12	.08
45	5.5	5.0	.07	.02	.23	.14
50	5.5	5.0	.14	.04	.29	.21
55	5.5	5.0	.19	.06	.52	.37
60	5.5	5.0	.22	.09	.40	.32
65	5.5	5.0	.40	.16		
70	5.5	5.0	.40	.27		
74	5.5	5.0	.40	.47		

Annual Rates of Service Retirements				
Age	Male		Female	
	Under 25 Years of Service	25 Years of Service and Over	Under 25 Years of Service	25 Years of Service and Over
45		13.0%		11.0%
50		13.0		11.0
55		15.0		18.0
60	11.0%	15.0	13.0%	20.0
62	19.0	30.0	18.0	30.0
65	20.0	28.0	25.0	38.0
70	17.0	20.0	19.0	25.0
75	100.0	100.0	100.0	100.0

* For all ages, rates of 34% for 1st year of employment and 22% for 2nd year.

** 94% are presumed to be non-duty related, and 6% are assumed to be duty related.



Appendix A – PERS Actuarial Assumptions and Methods

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

Service	Annual Rates of		
	Merit & Seniority	Base (Economy)	Increase Next Year
0	15.75%	4.25%	20.00%
1	10.75	4.25	10.00
2	10.75	4.25	7.50
3	2.25	4.25	6.50
4	1.75	4.25	6.00
5	1.25	4.25	5.50
10	0.75	4.25	5.00
15	0.75	4.25	5.00
20	0.75	4.25	5.00
25	0.75	4.25	5.00
30	0.25	4.25	4.50
35	0.25	4.25	4.50

PAYROLL GROWTH: 4.25% per annum, compounded annually.

PRICE INFLATION: 3.50% per annum, compounded annually.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

DEATH AFTER RETIREMENT: The mortality table, for post-retirement mortality, used in evaluating allowances to be paid is the 1994 Group Annuity Mortality Table. The RP-2000 Disabled Mortality Table (set back 2 years for males and set forward 3 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 11% greater than expected under the selected table.

MARRIAGE ASSUMPTION: 85% married with the husband three years older than his wife.

UNUSED SICK LEAVE: 0.50 years at retirement.

MILITARY SERVICE: 0.25 years at retirement.



Appendix A – PERS Actuarial Assumptions and Methods

VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 8.00%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of PERS are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.

The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made for pension benefits to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.

The unfunded accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the PERS. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.



Appendix B – HSPRS Actuarial Assumptions and Methods

INTEREST RATE: 8.00% per annum, compounded annually (net after investment expenses).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of separation from active service are as follows:

Age	Withdrawal and Vesting*	Death	Disability		Service	Service Retirement*
			Non-Duty	Duty		
25	4.0%	.03%	.09%	.01%	5	5%
30	3.5	.04	.12	.02	10	5%
35	2.5	.05	.16	.04	15	5%
40	1.0	.07	.20	.07	20	10%
45	1.0	.11	.30	.06	25	15%
50	0.5	.16	.50	.05	30	25%
55	0.0	.21	.91	.02	35	25%

* The annual rate of service retirement is 100% at age 60.

It is assumed that a member will be granted 1¼ years of service credit for unused leave at termination of employment. In addition, it is assumed that, on average, ¼ year of service credit for peace-time military service will be granted to each member.

SALARY INCREASES: Representative values of the assumed annual rates of salary increases are as follows:

Age	Annual Rates of		
	Merit & Seniority	Base (Economy)	Increase Next Year
25	2.57%	4.25%	6.82%
30	1.75	4.25	6.00
35	1.75	4.25	6.00
40	1.75	4.25	6.00
45	1.25	4.25	5.50
50	0.75	4.25	5.00
55	0.75	4.25	5.00



Appendix B – HSPRS Actuarial Assumptions and Methods

PAYROLL GROWTH: 4.25% per annum, compounded annually.

PRICE INFLATION: 3.50% per annum, compounded annually.

TIMING OF DECREMENT AND PAY INCREASES: Middle of Year.

DEATH AFTER RETIREMENT: The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the 1994 Group Annuity Mortality Table. The RP-2000 Disabled Mortality Table (set back 2 years for males and set forward 3 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 15% greater than expected under the selected table.

MARRIAGE ASSUMPTION: 100% married with the husband three years older than his wife.

VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 8.00%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of HSPRS are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.

The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made for pension benefits to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.

The unfunded accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the HSPRS. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.



Appendix C – SLRP Actuarial Assumptions and Methods

INTEREST RATE: 8.00% per annum, compounded annually (net after all expenses).

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed rates of separation from active service are as follows:

Age	Annual Rate of			Disability*
	Male	Death	Female	
20	.02%		.01%	.04%
25	.03		.02	.05
30	.04		.02	.07
35	.05		.03	.11
40	.08		.04	.17
45	.13		.06	.23
50	.24		.10	.30
55	.39		.15	.35
60	.60		.25	.40
65	.96		.43	
70	1.61		.72	

* 94% are presumed to be non-duty related, and 6% are assumed to be duty related.

WITHDRAWAL AND VESTING: 15% in an election year, none in a non-election year.

SERVICE RETIREMENT: 25% in an election year, none in a non-election year. All members are assumed to retire no later than age 75.

It is assumed that a member will be granted 2.5 years of service credit for unused leave at termination of employment.

PRICE INFLATION: 3.50% per annum, compounded annually.

PAYROLL GROWTH: 4.25% per annum, compounded annually.

TIMING OF DECREMENTS AND PAY INCREASES: Middle of Year.

SALARY INCREASES: 4.50% per annum, for all ages. The merit and seniority component is 0.25% and the wage inflation component is 4.25%.



Appendix C – SLRP Actuarial Assumptions and Methods

DEATH AFTER RETIREMENT: The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the 1994 Group Annuity Mortality Table. The RP-2000 Disabled Mortality Table (set back 2 years for males and set forward 3 years for females) was used for the period after disability retirement. This assumption is used to measure the probabilities of each benefit payment being made after retirement. Mortality improvement is anticipated under this assumption as recent mortality experience shows actual deaths 15% greater than expected under the selected table.

MARRIAGE ASSUMPTION: 85% married with the husband three years older than his wife.

VALUATION METHOD: The valuation is prepared on the projected benefit basis, which is used to determine the present value of each member's expected benefit payable at retirement, disability or death. The calculations are based on the member's age, years of service, sex, compensation, expected future salary increases, and an assumed future interest earnings rate (currently 8.00%). The calculations consider the probability of a member's death or termination of employment prior to becoming eligible for a benefit and the probability of the member terminating with a service, disability, or survivor's benefit. The present value of the expected benefits payable to active members is added to the present value of the expected future payments to current benefit recipients to obtain the present value of all expected benefits payable to the present group of members and survivors.

The employer contributions required to support the benefits of SLRP are determined following a level funding approach, and consist of a normal contribution and an accrued liability contribution.

The normal contribution is determined using the "entry age normal" method. Under this method, a calculation is made for pension benefits to determine the uniform and constant percentage rate of employer contribution which, if applied to the compensation of the average new member during the entire period of his anticipated covered service, would be required in addition to the contributions of the member to meet the cost of all benefits payable on his behalf.

The unfunded accrued liability is determined by subtracting the current assets and the present value of prospective employer normal contributions and member contributions from the present value of expected benefits to be paid from the SLRP. The accrued liability contribution amortizes the balance of the unfunded accrued liability over a period of years from the valuation date.

ASSET VALUATION METHOD: Actuarial value, as developed in Schedule A. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected market value of assets, based on the assumed valuation rate of return. The amount recognized each year is 20% of the difference between market value and expected market value.