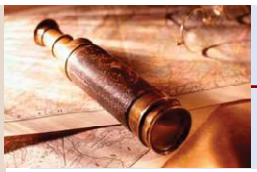

Office of the State Actuary

"Securing tomorrow's pensions today."

August 26, 2009

Mr. Steve Nelsen, Executive Director
Law Enforcement Officers' and Fire Fighters' Plan 2 Retirement Board
PO Box 40918
Olympia, Washington 98504-0918

RE: ADMINISTRATIVE FACTORS UPDATE

Dear Steve:

We have completed our update of several administrative factors for use in the Washington Administrative Code (WAC). During the project to update these factors, we amended them to include changes to the underlying assumptions as part of the Office of the State Actuary's (OSA) 2001-2006 demographic experience study. We also incorporated changes based on policy decisions made by the Law Enforcement Officers' and Firefighters' (LEOFF) Plan 2 Retirement Board (the Board). We have included a list of these policy decisions in this cover letter.

Please find attached the following actuarial tables for the Board's approval:

- Early retirement factors for WAC 415-02-320.
- Monthly benefit per $1.00 of accumulation for WAC 415-02-340.
- Joint and survivor option factors for WAC 415-02-380.

Administrative factors should be reviewed and, if necessary, updated anytime the underlying demographic or economic assumptions for the plan change. The tables will be updated again after our 2007-2012 demographic experience study. They could also change with new member options or benefit changes in the future.

The attached appendices contain supporting information for each factor we developed. Appendix A supplies general information about data, assumptions, and methods used to develop all of the factors. Appendices B through D provide more detailed information about each of the individual factors. All of the appendices should be used together with this cover letter to form a complete actuarial communication.

We developed the administrative factors based on our understanding of how the Department of Retirement Systems (DRS) applies them and according to policy decisions made by the Board. We intend this communication to be used by the Board and DRS only. If a party other than the Board or DRS reads this communication, they

PO Box 40914
Olympia, Washington, 98504-0914
http://osa.leg.wa.gov

Phone: 360.786.6140
Fax: 360.586.8135
TDD: 800.635.9993

should address questions to the Board or DRS and seek professional guidance with the content and interpretation of this communication.

All of the data, assumptions, and methods we used in developing the administrative factors are reasonable and appropriate for this project. The use of another set of assumptions and methods, however, could also be reasonable and could produce materially different results.

As a reminder, the Board considered several policy decisions as part of this project. They included:

- Should OSA incorporate disabled mortality in the administrative factors?
  - Board answer: Yes. Blend healthy and disabled mortality rates together for administrative factors where appropriate.
- Should OSA incorporate mortality improvement trends into the administrative factors?
  - Board answer: Yes. Use the RP-2007 mortality rates developed in the 2001-2006 OSA Experience Study Report, projecting mortality improvement trends to the year 2026.
- Should OSA change the Early Retirement Factors (ERF) development method?
  - Board answer: Yes. The new method improves actuarial equivalence at the plan level.

We have not included the service credit restoration factors for WAC 415-02-370 in this communication. These factors will follow in a separate communication.

Please let me know if you have any questions concerning these administrative factors or the assumptions and methods used to develop them. We enjoyed working with the Board and your staff on this project and appreciated their support throughout.

Sincerely,

Matthew M. Smith, MAAA, FCA, EA
State Actuary

cc: Kelly Fox,
LEOFF 2 Board
Lisa Won, ASA, MAAA
Office of the State Actuary

APPENDIX A – GENERAL DATA, ASSUMPTIONS, AND METHODS

Purpose

Unless otherwise noted, the information contained in this appendix applies to all factors developed in this project. When this information differs or needs to be more specific for individual factors, the details can be found in the appendices designated for those factors.

Data

We relied on the 2007 Actuarial Valuation Report (AVR) data whenever necessary to develop the administrative factors. For example, we used information about recent LEOFF 2 retirees to develop the percent male assumption and expected retirement ages for the joint and survivor option factors (see the Assumptions section in Appendix D).

Assumptions

We relied on the following key assumptions to develop the administrative factors:

- **Economic Assumptions**: We used the following economic assumptions.

Plan	Interest	Annual COLA
LEOFF 2	8%	3%

- **Mortality Assumptions**: We used the RP-2007 mortality assumptions developed in our 2001-2006 Experience Study Report (ESR) for the underlying mortality assumptions. At the Board's request, we included mortality improvement trends projected to the year 2026. See the Methods section below for a description of the development of projected mortality assumptions.
- **Mortality Blending**: We used the retirement, disability, and mortality rates disclosed in the AVR to blend projected mortality assumptions (see the Methods section below for a description of this process).
- **Percent Male/Female**: We assumed percent male/female for primary members as shown in the table below. These percentages match those in the ESR.

Plan	Percent Male	Percent Female
LEOFF 2	90%	10%

Methods

Development of Underlying Mortality Assumptions

At the Board's request, we incorporated mortality improvements projected to the year 2026 as follows:

- We used the retirement and disability assumptions from the AVR to develop an average expected retirement age of 55 for all LEOFF 2 members.
- At the Board's direction, we determined that we should project mortality improvements to the year 2026, based on the plan's expected retirement age rather than the plan's average member age, to improve actuarial equivalence.
- We incorporated expected mortality improvements using 50 percent of Scale AA, as developed in the ESR and applied in the AVR.
- We projected both healthy and disabled mortality rates using this method.

We blended healthy and disabled mortality assumptions using the following method:

- We multiplied the projected healthy mortality rates by the probability that benefit commencement is from a healthy cause. Healthy causes include service retirement and the death of an active member.
- We multiplied the projected disabled mortality rates by the probability a member will take a disability benefit.
- We added the weighted rates above to come up with male and female blended mortality assumptions by age.

Development of Administrative Factors

Please see Appendices B through D for factor development details.

APPENDIX B – EARLY RETIREMENT FACTORS (ERFs)

Purpose

DRS uses ERFs to reduce an annuitant's lifetime benefit for early commencement.

We have provided actuarially equivalent ERFs for LEOFF 2. We intend these ERFs to be used for benefits that receive actuarially equivalent reductions for early commencement. Members who have reached specific age and service combinations qualify for "alternate" ERFs, such as 3 percent ERFs, as mandated in statute. The ERFs developed here do not apply to those benefits.

Data

We used the AVR data as described in Appendix A.

Assumptions

We relied on the following key assumptions:

- We used the economic assumptions shown in Appendix A.
- We used the projected mortality assumptions and blending described in Appendix A.
- We assumed percent male/female as shown in Appendix A.
- We assumed a normal retirement age (NRA) of 53 for LEOFF 2.

Methods

Development of ERFs

We first found exact ERFs for the plan. We divided immediate annuity factors by annuity factors deferred to NRA for each age level. The ratio of these two factors is the ERF that solves the actuarial equivalence relation:

PV(accrued benefits deferred to NRA) = ERF x PV(benefits started immediately)

Where "PV" denotes present value and includes the annuity factors produced for this project. "Benefits" means the sum of all expected lifetime benefits.

The next table displays detailed information about the annuity factors we used to develop the exact ERFs.

Annuity Factor Details		
	Immediate Annuity	**Deferred Annuity**
Annuity Type	Single-Life	Single-Life
Payment Commencement	Immediate	Deferred to 53
Payment Frequency	Monthly	Monthly
Payment Timing	End of Period	End of Period
Certain Period (Years)	None	None
COLA Percent	3%	3%
COLA Increase Frequency	Annual	Annual

We rounded the exact ERFs to three decimal places (one-tenth of a percent). This new development method was approved by the Board at their July 2009 meeting.

At DRS' request, we provide ERFs by month. Using the factors from each whole age, we use linear interpolation to find the monthly factors. That is, we move from one whole age factor to the next in twelve straight-line increments.

We considered whether to include the LEOFF 2 pre-retirement COLAs in the development of the ERFs, but we determined that they should not be included. These increases are referenced in RCW 41.26.530(2). The law states that the retirement benefit, *already reduced for early retirement* if appropriate, should be increased by 0.25 percent for each month between termination and retirement.

Other Information

We formatted the ERF tables in a way consistent with their current format in WAC 415-02-320 at DRS' request. Please see the attached tables for the resulting ERF tables.

Early Retirement Factor Tables

LEOFF 2

Years	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month	Month
Early	0	1	2	3	4	5	6	7	8	9	10	11
0	1.0000	0.9925	0.9850	0.9775	0.9700	0.9625	0.9550	0.9475	0.9400	0.9325	0.9250	0.9175
1	0.9100	0.9033	0.8966	0.8899	0.8832	0.8765	0.8698	0.8631	0.8564	0.8497	0.8430	0.8363
2	0.8300	0.8239	0.8178	0.8117	0.8056	0.7995	0.7934	0.7873	0.7812	0.7751	0.7690	0.7629
3	0.7570	0.7515	0.7460	0.7405	0.7350	0.7295	0.7240	0.7185	0.7130	0.7075	0.7020	0.6965
4	0.6910	0.6860	0.6810	0.6760	0.6710	0.6660	0.6610	0.6560	0.6510	0.6460	0.6410	0.6360
5	0.6310	0.6265	0.6220	0.6175	0.6130	0.6085	0.6040	0.5995	0.5950	0.5905	0.5860	0.5815
6	0.5770	0.5728	0.5686	0.5644	0.5602	0.5560	0.5518	0.5476	0.5434	0.5392	0.5350	0.5308
7	0.5270	0.5233	0.5196	0.5159	0.5122	0.5085	0.5048	0.5011	0.4974	0.4937	0.4900	0.4863
8	0.4830	0.4796	0.4762	0.4728	0.4694	0.4660	0.4626	0.4592	0.4558	0.4524	0.4490	0.4456
9	0.4420	0.4389	0.4358	0.4327	0.4296	0.4265	0.4234	0.4203	0.4172	0.4141	0.4110	0.4079
10	0.4050	0.4022	0.3994	0.3966	0.3938	0.3910	0.3882	0.3854	0.3826	0.3798	0.3770	0.3742
11	0.3710	0.3685	0.3660	0.3635	0.3610	0.3585	0.3560	0.3535	0.3510	0.3485	0.3460	0.3435
12	0.3410	0.3387	0.3364	0.3341	0.3318	0.3295	0.3272	0.3249	0.3226	0.3203	0.3180	0.3157
13	0.3130	0.3108	0.3086	0.3064	0.3042	0.3020	0.2998	0.2976	0.2954	0.2932	0.2910	0.2888
14	0.2870	0.2851	0.2832	0.2813	0.2794	0.2775	0.2756	0.2737	0.2718	0.2699	0.2680	0.2661
15	0.2640	0.2622	0.2604	0.2586	0.2568	0.2550	0.2532	0.2514	0.2496	0.2478	0.2460	0.2442
16	0.2420	0.2404	0.2388	0.2372	0.2356	0.2340	0.2324	0.2308	0.2292	0.2276	0.2260	0.2244
17	0.2230	0.2215	0.2200	0.2185	0.2170	0.2155	0.2140	0.2125	0.2110	0.2095	0.2080	0.2065
18	0.2050	0.2036	0.2022	0.2008	0.1994	0.1980	0.1966	0.1952	0.1938	0.1924	0.1910	0.1896
19	0.1880	0.1868	0.1856	0.1844	0.1832	0.1820	0.1808	0.1796	0.1784	0.1772	0.1760	0.1748
20	0.1730	0.1718	0.1706	0.1694	0.1682	0.1670	0.1658	0.1646	0.1634	0.1622	0.1610	0.1598
21	0.1590	0.1580	0.1570	0.1560	0.1550	0.1540	0.1530	0.1520	0.1510	0.1500	0.1490	0.1480
22	0.1470	0.1460	0.1450	0.1440	0.1430	0.1420	0.1410	0.1400	0.1390	0.1380	0.1370	0.1360
23	0.1350	0.1342	0.1334	0.1326	0.1318	0.1310	0.1302	0.1294	0.1286	0.1278	0.1270	0.1262
24	0.1250	0.1242	0.1234	0.1226	0.1218	0.1210	0.1202	0.1194	0.1186	0.1178	0.1170	0.1162
25	0.1150	0.1143	0.1136	0.1129	0.1122	0.1115	0.1108	0.1101	0.1094	0.1087	0.1080	0.1073
26	0.1060	0.1055	0.1050	0.1045	0.1040	0.1035	0.1030	0.1025	0.1020	0.1015	0.1010	0.1005
27	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
28	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
29	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
30+	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000

APPENDIX C - MONTHLY BENEFIT PER DOLLAR OF ACCUMULATION (ANNUITY) FACTORS

Description

DRS uses annuity factors in several ways. When the factors are multiplied by a lump sum dollar value, an equivalent monthly lifetime benefit amount may be obtained. Conversely, DRS may divide a monthly benefit amount by a factor in these tables to determine an equivalent single lump sum payment.

Data

We used the AVR data as described in Appendix A.

Assumptions

We relied on the following key assumptions:

- We used the economic assumptions shown in Appendix A.
- We used the projected mortality assumptions and blending described in Appendix A.
- We assumed percent male/female as shown in Appendix A.

Methods

Development of Monthly Benefit per $1.00 of Accumulation Tables

The factors at each age equal one divided by an immediate life annuity factor divided by twelve.

The next table displays additional information we used to develop these factors.

Annuity Factor Details	
Annuity Type	Single-Life
Payment Commencement	Immediate
Payment Frequency	Monthly
Payment Timing	End of Period
Certain Period (Years)	None
COLA Percent	3%
COLA Increase Frequency	Annual

Other Information

We formatted the annuity factor tables in a way consistent with their current format in WAC 415-02-340 at DRS' request. Please see the attached tables for the resulting annuity factors.

Monthly Benefit per $1.00 of Accumulation Tables

Age	LEOFF 2	Age	LEOFF 2
20	0.0042990	61	0.0064002
21	0.0043125	62	0.0065513
22	0.0043266	63	0.0067129
23	0.0043414	64	0.0068853
24	0.0043571	65	0.0070694
25	0.0043735	66	0.0072670
26	0.0043908	67	0.0074781
27	0.0044091	68	0.0077043
28	0.0044283	69	0.0079491
29	0.0044486	70	0.0082138
30	0.0044701	71	0.0085025
31	0.0044927	72	0.0088151
32	0.0045166	73	0.0091561
33	0.0045416	74	0.0095288
34	0.0045679	75	0.0099363
35	0.0045956	76	0.0103798
36	0.0046246	77	0.0108658
37	0.0046552	78	0.0113957
38	0.0046874	79	0.0119743
39	0.0047214	80	0.0126071
40	0.0047574	81	0.0132991
41	0.0047956	82	0.0140556
42	0.0048361	83	0.0148749
43	0.0048791	84	0.0157725
44	0.0049248	85	0.0167437
45	0.0049733	86	0.0178057
46	0.0050249	87	0.0189719
47	0.0050797	88	0.0202253
48	0.0051382	89	0.0215551
49	0.0052005	90	0.0229787
50	0.0052671	91	0.0244483
51	0.0053389	92	0.0259752
52	0.0054158	93	0.0275207
53	0.0054978	94	0.0291108
54	0.0055858	95	0.0307651
55	0.0056802	96	0.0323798
56	0.0057814	97	0.0340193
57	0.0058893	98	0.0357060
58	0.0060042	99	0.0373073
59	0.0061272		
60	0.0062589		

APPENDIX D – JOINT AND SURVIVOR (J&S) OPTION FACTORS

Description

Members of LEOFF 2 may elect a reduced monthly benefit amount to provide an ongoing survivor benefit for their designated survivor beneficiary. DRS currently offers three J&S choices for these members:

- Survivor receives 100 percent of the member's benefit (Option 2).
- Survivor receives 50 percent of the member's benefit (Option 3).
- Survivor receives 66 2/3 percent of the member's benefit (Option 4).

The J&S option factors are multiplied by a member's earned monthly benefit amount to find the member's reduced monthly benefit if they select one of these options.

Data

We used the AVR data as described in Appendix A.

Assumptions

We relied on the following key assumptions:

- We used the economic assumptions shown in Appendix A.
- We used the projected mortality assumptions and blending described in Appendix A.
- We developed a percent male assumption specifically for the J&S factors of 98.86 percent, based on information about service retirees and members with disabilities who have retired in the last five years and who selected J&S benefits at retirement.
- We developed an average assumed retirement age, by gender, based on information about the same service and disability retirees cited above. Those retirement ages appear below.

Retirement Age		
Plan	Males	Females
LEOFF 2	56	53

Methods

Development of J&S Option Factor Tables

J&S option factors reduce members' benefits so that the selection of the option makes the benefits under that option actuarially equivalent to the members' single life benefits:

PV(single-life benefits) = Option Factor x PV(J&S benefits)

Where "PV" denotes present value and includes the annuity factors produced for this project. "Benefits" means the sum of all expected lifetime benefits.

The next table displays additional information we used to develop these factors.

Annuity Factor Details		
	Single-Life Annuity	Joint & 100% Survivor Annuity
Annuity Type	Single Life	Joint Life
Payment Commencement	Immediate	Immediate
Payment Frequency	Monthly	Monthly
Payment Timing	End of Period	End of Period
Certain Period (Years)	None	None
COLA Percent	3%	3%
COLA Increase Frequency	Annual	Annual

We developed the J&S option factors to include the probability that a survivor will pre-decease the member, and the member's benefit will "pop up" to its pre-reduction level.

Other Information

We formatted the J&S option factor tables in a way consistent with their current format in WAC 415-02-340 at DRS' request. Please see the attached tables for the resulting J&S option factors.

J&S Option Factor Tables

Age	Option 2	Option 3	Option 4	Age	Option 2	Option 3	Option 4
Difference	100%	50%	66 ⅔%	Difference	100%	50%	66 ⅔%
-20	0.961	0.980	0.974	11	0.825	0.904	0.876
-19	0.958	0.979	0.972	12	0.820	0.901	0.872
-18	0.955	0.977	0.970	13	0.815	0.898	0.869
-17	0.952	0.976	0.968	14	0.811	0.895	0.865
-16	0.949	0.974	0.966	15	0.806	0.893	0.862
-15	0.946	0.972	0.963	16	0.802	0.890	0.858
-14	0.943	0.971	0.961	17	0.797	0.887	0.855
-13	0.939	0.969	0.959	18	0.793	0.885	0.852
-12	0.936	0.967	0.956	19	0.789	0.882	0.849
-11	0.932	0.965	0.953	20	0.785	0.880	0.846
-10	0.928	0.963	0.951	21	0.782	0.877	0.843
-9	0.924	0.960	0.948	22	0.778	0.875	0.840
-8	0.919	0.958	0.945	23	0.774	0.873	0.837
-7	0.915	0.956	0.942	24	0.771	0.871	0.835
-6	0.911	0.953	0.939	25	0.768	0.869	0.832
-5	0.906	0.951	0.935	26	0.765	0.867	0.830
-4	0.901	0.948	0.932	27	0.762	0.865	0.827
-3	0.896	0.945	0.928	28	0.759	0.863	0.825
-2	0.891	0.943	0.925	29	0.756	0.861	0.823
-1	0.886	0.940	0.921	30	0.753	0.859	0.821
0	0.881	0.937	0.918	31	0.751	0.858	0.819
1	0.876	0.934	0.914	32	0.748	0.856	0.817
2	0.871	0.931	0.910	33	0.746	0.854	0.815
3	0.866	0.928	0.906	34	0.743	0.853	0.813
4	0.861	0.925	0.903	35	0.741	0.851	0.811
5	0.855	0.922	0.899	36	0.739	0.850	0.810
6	0.850	0.919	0.895	37	0.737	0.849	0.808
7	0.845	0.916	0.891	38	0.735	0.848	0.807
8	0.840	0.913	0.887	39	0.734	0.846	0.805
9	0.835	0.910	0.883	40	0.732	0.845	0.804
10	0.830	0.907	0.880				

N:\OSA\Option Factors\2009\LEOFF2_Administrative_Factor_Summary.docx