MONTANA PUBLIC EMPLOYEES' RETIREMENT BOARD

TITLE: ACTUARIAL VALUATION ASSUMPTIONS AND METHODS

POLICY: BOARD Admin 09 EFFECTIVE DATE: October ~~13, 2011~~08, 2014

I. POLICY AND OBJECTIVES. The objective of this policy is to adopt appropriate actuarial assumptions and methods for the actuarial valuations of the various defined benefit retirement systems the Board administers.

II. APPLICABILITY. This policy applies to all defined benefit retirement systems administered by the Board.

III. UNIVERSAL ASSUMPTIONS FOR ACTUARIAL VALUATIONS. Based on the 2009 experience study, the Board adopts the following actuarial assumptions and methods for all defined benefit retirement systems it administers:

A. Net investment earnings assumption – 7.75%;

B. General wage increase assumption – 4.00%;

C. Actuarial cost method – entry age cost;

D. Asset valuation method – 4-year smoothed market;

E. Probability of marriage assumption – 100% of all non-retired members are assumed to be married. Male spouses are assumed to be three years older than female spouses for all systems except JRS. Male spouses are assumed to be four years older than female spouses in the JRS.

F. Mortality assumption among contributing members, terminated vested members, service retired members and beneficiaries: RP-2000 Combined Healthy Male and Female Mortality Tables projected to 2015 with scale AA. Mortality assumption among disabled members: RP-2000 Combined Healthy Male and Female Mortality tables with no projections.

IV. SYSTEM-SPECIFIC ACTUARIAL VALUATION ASSUMPTIONS. The Board adopts the following system-specific actuarial valuation assumptions:

A. **Public Employees' Retirement System**

1. Assumed interest on member contributions – 3.5%;

2. Merit salary increase assumptions:

Years of Service	Annual Increase
1	6.00%
2	4.90
3	3.90
4	3.10
5	2.40
6	1.80
7	1.40
8	1.00
9	0.70
10	0.50
11-15	0.30
16-20	0.10
21 and over	0.00

3. Annual retirement rate assumptions:

Age	30+ Years Service and Age 60 with 25 Years	Other Retirements
<50	10%	0%
50-54	10	3
55	15	3
56	15	4
57	15	5
58	15	5
59	15	6
60	15	8
61	15	15
62	25	25
63	15	15
64	15	15
65	30	30
66	30	30
67	25	25
68	25	25
69	25	25
70+	100	100

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	0.01%
32	0.01
37	0.04
42	0.10
47	0.13
52	0.25
57	0.36
62	0.00

5. Annual rate of other employment termination assumptions:

Service	Rate
0	25%
1	20
2	15
3	10
4	10
5-9	5
10-14	5
15+	2

No terminations are assumed after age 50 with 5 years of service for either male or female.

6. Probability of electing a refund of member contributions upon termination assumptions:

Age at Termination	Non-vested	Vested
Under 35	100%	60%
35-39	100	50
40-44	100	45
45-49	100	35
50+	100	30

B. **Judges' Retirement System**

1. Assumed interest on member contributions – 3.5%;

2. Merit salary increase assumptions – 0% for all years of service;

3. Annual retirement rate assumptions:

Age	Rate
60	15%
61-64	5
65	15
66-69	5
70+	100%

All vested terminated members are assumed to retire when first eligible for an unreduced benefit;

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	-
32	0.01%
37	0.04
42	0.10
47	0.13
52	0.25
57	0.36
62	0.00

All disabilities are assumed to be non-duty related.

5. Annual rate of other employment terminations assumptions for all members – 0% for all years of service;

6. Probability of electing a refund of member contributions upon termination assumptions – 0%;

C. **Highway Patrol Officers' Retirement System**

1. Assumed interest on member contributions – 3.5%;

2. Merit salary increase assumptions:

Years of Service	Annual Increase
1	7.3%
2	5.6
3	4.4
4	3.5
5	2.8
6	2.2
7	1.7
8	1.3
9	1.0
10	0.7
11-15	0.4
16-20	0.2
21 and over	0.0

3. Annual retirement rate assumptions:

Age	With 20 Years of Service
<50	12%
50-54	16
55-59	20
60+	100

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	0.10%
32	0.10
37	0.10
42	0.40
47	0.40
52	0.40
57	0.40
62	0.00

Seventy-five percent of all disabilities are assumed to be duty-related.

5. Annual rate of other employment terminations assumptions for all members:

Service	Rate
0	12%
1-5	7.5
5-9	5
10-14	3
15+	1

6. Probability of electing a refund of member contributions upon termination assumptions:

Age at Termination	Non-vested	Vested
Under 35	100%	40%
35-39	100	40
40-44	100	40
45-49	100	30
50+	100	-

7. Seventy percent of deaths are assumed to be duty related.

D. **Sheriffs' Retirement System**

1. Assumed interest on member contributions – 3.5%;

2. Merit salary increase assumptions:

Years of Service	Annual Increase
1	7.3%
2	5.6
3	4.4
4	3.5
5	2.8
6	2.2
7	1.7
8	1.3
9	1.0
10	0.7
11-15	0.4
16-20	0.2
21 and over	0.0

3. Annual retirement rate assumptions:

Age	With 20 Years of Service
<50	10%
50-54	10
55-59	15
60-64	20
65+	100

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	0.10%
32	0.10
37	0.10
42	0.40
47	0.40
52	0.40
57	0.40
62	0.00

Seventy-five percent of all disabilities are assumed to be duty related.

5. Annual rate of other employment termination assumptions for all members:

Service	Rate
0	20%
1	15
2	12
3	10
4	10
5-9	5
10-14	3
15+	2

6. Probability of electing a refund of member contributions upon termination assumptions:

Age at Termination	Non-vested	Vested
Under 35	100%	70%
35-39	100	60
40-44	100	50
45-49	100	40
50+	100	-

7. Ten percent of all member deaths are assumed to be duty-related.

E. **Game Wardens' and Peace Officers' Retirement System**

1. Assumed interest on member contributions – 3.5%;

2. Merit salary increase assumptions:

Years of Service	Annual Increase
1	7.3%
2	5.6
3	4.4
4	3.5
5	2.8
6	2.2
7	1.7
8	1.3
9	1.0
10	0.7
11-15	0.4
16-20	0.2
21 and over	0.0

3. Annual retirement rate assumptions:

Age	Age 55 with 5 Years of Service	With 20 Years of Service
<50		0%
50-54		15
55	15%	25
56-59	5	25
60-61		15
62		40
62-64		15
65+		100

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	0.10%
32	0.10
37	0.10
42	0.40
47	0.40
52	0.40
57	0.40
62	0.00

Seventy-five percent of all disabilities are assumed to be duty-related.

5. Annual rate of other employment termination assumptions for all members:

Service	Rate
0	25%
1	20
2	15
3	12
4	10
5-9	6
10-14	3
15+	2

6. Probability of electing a refund of member contributions upon termination assumptions:

Age at Termination	Non-vested	Vested
Under 35	100%	70%
35-39	100	60
40-44	100	50
45-49	100	40
50+	100	-

7. Ten percent of all member deaths are assumed to be duty-related.

F. **Municipal Police Officers' Retirement System**

1. Assumed interest on member contributions – 3.5%;
2. Merit salary increase assumptions:

Years of Service	Annual Increase
1	7.3%
2	5.6
3	4.4
4	3.5
5	2.8
6	2.2
7	1.7
8	1.3
9	1.0
10	0.7
11-15	0.4
16-20	0.2
21 and over	0.0

3. Annual retirement rate assumptions:

Age	With 20 Years of Service
<50	12%
50-54	15
55-61	20
62+	100

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	0.25%
32	0.25
37	0.25
42	0.50
47	0.50
52	0.50
57	0.50
62	0.00

5. Annual rate of other employment termination assumptions for all members:

Service	Rate
0	15%
1	10
2	10
3	10
4	10
5-9	5
10-14	2
15+	1

6. Probability of electing a refund of member contributions upon termination assumptions:

Age at Termination	Non-vested	Vested
Under 35	100%	60%
35-39	100	10
40-44	100	10
45-49	100	10
50+	100	-

7. DROP account assumptions: DROP accounts are assumed to earn the actuarial rate of return. 15% of all active members are assumed to elect to enter the DROP for each of the first six years following DROP eligibility. These members are assumed to elect to participate in the DROP plan for five years. Members who have elected to participate in the DROP are assumed to remain in the DROP until the end of the DROP period elected, unless they die or become disabled while in the DROP.

G. **Firefighters' Unified Retirement System**

1. Assumed interest on member contributions – 3.5%;

2. Merit salary increase assumptions:

Years of Service	Annual Increase
1	7.3%
2	5.6
3	4.4
4	3.5
5	2.8
6	2.2
7	1.7
8	1.3
9	1.0
10	0.7
11-15	0.4
16-20	0.2
21 and over	0.0

3. Annual retirement rate assumptions:

Age	With 20 Years of Service
<50	5%
50-54	10
55-59	25
60-62	50
63+	100

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

4. Annual rate of disablement assumptions:

Age	Rate
22	-
27	0.10%
32	0.10
37	0.10
42	0.50
47	0.50
52	0.50
57	0.50
62	0.00

5. Annual rate of other employment termination assumptions for all members:

Service	Rate
0	4%
1	4
2	2
3	2
4	2
5-9	2
10-14	2
15+	1

6. Probability of electing a refund of member contributions upon termination assumptions:

Age at Termination	Non-vested	Vested
Under 35	100%	50%
35-39	100	20
40-44	100	20
45-49	100	20
50+	100	-

H. **Volunteer Firefighters' Compensation Act**

1. Annual retirement rate assumptions:

Age	10-19 Years Service	20 Years service
<55	0%	0%
55-59	0	40
60-69	20	40
70+	100	100

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

2. Annual rate of other employment termination assumptions:

Service	Rate
<4	20%
4-9	15
10+	10

V. SYSTEM-SPECIFIC ACTUARIALLY EQUIVALENT EARLY RETIREMENT FACTORS.

Early Retirement Factors are used to calculate a specific reduction to a members benefit. Multiple factors will be used to calculate the appropriate reduction based on the members exact age.

The Board adopts the following appended tables:

A. A. **Public Employees' Retirement System**

1. TABLE A: Actuarially Equivalent Early Retirement Factors for PERS members hired prior to July 1, 2007; and

2. TABLE B: Actuarially Equivalent Early Retirement Factors for PERS members hired after July 1, 2007 (includes factors for members hired after July 1, 2011).

B. **Judge's Retirement System**

1. TABLE C: Actuarially Equivalent Factors for JRS members involuntarily removed from service after completing 5 years of membership service but before reaching normal retirement age.

The Board adopts the following appended tables effective October 1, 2011:

1. : Actuarially Equivalent Early Retirement Factors for PERS members hired prior to July 1, 2007; and

2. : Actuarially Equivalent Early Retirement Factors for PERS members hired between July 1, 2007 and July 1, 2011; and

3. TABLE C: Actuarially Equivalent Early Retirement Factors for PERS members hired on or after July 1, 2011.

A.C. B. **Highway Patrol Officers' Retirement System**

1. TABLE D: Actuarially Equivalent Factors For HPORS members hired prior to 7/1/2013

2 TABLE E: Actuarially Equivalent Factors for HPORS members hired on or after July 1, 2013

1. Effective February 1, 2012, the Board adopts appended TABLE D: Actuarially Equivalent Early Retirement Factors for HPORS members.

Comment [CV03071]: ALL TABLES INCLUDE A HYPERLINK TO THE ACTUAL TABLE.

D ~~C.~~ **Sheriffs' Retirement System**

1. TABLE F: ~~Effective February 1, 2012, the Board adopts appended TABLE E:~~ Actuarially Equivalent Early Retirement Factors for SRS members hired before July 1, 2007.

~~1.~~2. TABLE G: Actuarially Equivalent Early Retirement Factors for SRS members hired on or after July, 1, 2007.

VI. CROSS REFERENCE GUIDE

The following laws, rules or policies may contain provisions that pertain to the actuarial valuation assumptions relied on by the Board. The list should not be considered exhaustive - other policies may apply.

Article VIII, § 15, Montana Constitution
§ 19-2-403, MCA

VII. HISTORY

Board Admin 09 Actuarial Assumptions and Methods
Originally Approved February 14, 2008
Amended June 10, 2010
Amended October 13, 2011
Amended October 8, 2014

~~TABLE A~~

~~AE ERF Factors~~
~~EFFECTIVE 10/1/2011~~ ~~For PERS members hired prior to 7/1/2007 apply the better of age or years of service~~
~~Montana PERS~~

~~Actuarially Equivalent Early Retirement Factors 3% GABA (Deferred to 60)~~

~~Age~~	~~Months: 0~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~	~~Years of service~~
~~50~~	~~0.387186~~	~~0.390229~~	~~0.393272~~	~~0.396315~~	~~0.399358~~	~~0.402401~~	~~0.405444~~	~~0.408487~~	~~0.411530~~	~~0.414573~~	~~0.417616~~	~~0.420659~~	~~20~~
~~51~~	~~0.423707~~	~~0.427071~~	~~0.430435~~	~~0.433799~~	~~0.437163~~	~~0.440527~~	~~0.443891~~	~~0.447255~~	~~0.450619~~	~~0.453983~~	~~0.457347~~	~~0.460711~~	~~21~~
~~52~~	~~0.464080~~	~~0.467805~~	~~0.471530~~	~~0.475255~~	~~0.478980~~	~~0.482705~~	~~0.486430~~	~~0.490155~~	~~0.493880~~	~~0.497605~~	~~0.501330~~	~~0.505055~~	~~22~~
~~53~~	~~0.508775~~	~~0.512905~~	~~0.517035~~	~~0.521165~~	~~0.525295~~	~~0.529425~~	~~0.533555~~	~~0.537685~~	~~0.541815~~	~~0.545945~~	~~0.550075~~	~~0.554205~~	~~23~~
~~54~~	~~0.558333~~	~~0.562920~~	~~0.567507~~	~~0.572094~~	~~0.576681~~	~~0.581268~~	~~0.585855~~	~~0.590442~~	~~0.595029~~	~~0.599616~~	~~0.604203~~	~~0.608790~~	~~24~~
~~55~~	~~0.613375~~	~~0.618478~~	~~0.623581~~	~~0.628684~~	~~0.633787~~	~~0.638890~~	~~0.643993~~	~~0.649096~~	~~0.654199~~	~~0.659302~~	~~0.664405~~	~~0.669508~~	~~25~~
~~56~~	~~0.674612~~	~~0.680300~~	~~0.685988~~	~~0.691676~~	~~0.697364~~	~~0.703052~~	~~0.708740~~	~~0.714428~~	~~0.720116~~	~~0.725804~~	~~0.731492~~	~~0.737180~~	~~26~~
~~57~~	~~0.742864~~	~~0.749215~~	~~0.755566~~	~~0.761917~~	~~0.768268~~	~~0.774619~~	~~0.780970~~	~~0.787321~~	~~0.793672~~	~~0.800023~~	~~0.806374~~	~~0.812725~~	~~27~~
~~58~~	~~0.819080~~	~~0.826187~~	~~0.833294~~	~~0.840401~~	~~0.847508~~	~~0.854615~~	~~0.861722~~	~~0.868829~~	~~0.875936~~	~~0.883043~~	~~0.890150~~	~~0.897257~~	~~28~~
~~59~~	~~0.904363~~	~~0.912333~~	~~0.920303~~	~~0.928273~~	~~0.936243~~	~~0.944213~~	~~0.952183~~	~~0.960153~~	~~0.968123~~	~~0.976093~~	~~0.984063~~	~~0.992033~~	~~29~~
~~60~~	~~1.000000~~												

~~TABLE B~~

~~AE ERF Factors~~
~~EFFECTIVE 10/1/2011~~ ~~For PERS members hired after 7/1/2007 apply the better of age or years of service~~
~~Montana - PERS~~

~~Actuarially Equivalent Early Retirement Factors~~ ~~1.5% GABA (Deferred to 60)~~

	~~Months:~~												
~~Age~~	~~0~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~	~~Years of service~~
~~50~~	~~0.399697~~	~~0.402730~~	~~0.405763~~	~~0.408796~~	~~0.411829~~	~~0.414862~~	~~0.417895~~	~~0.420928~~	~~0.423961~~	~~0.426994~~	~~0.430027~~	~~0.433060~~	~~20~~
~~51~~	~~0.436097~~	~~0.439440~~	~~0.442783~~	~~0.446126~~	~~0.449469~~	~~0.452812~~	~~0.456155~~	~~0.459498~~	~~0.462841~~	~~0.466184~~	~~0.469527~~	~~0.472870~~	~~21~~
~~52~~	~~0.476207~~	~~0.479895~~	~~0.483583~~	~~0.487271~~	~~0.490959~~	~~0.494647~~	~~0.498335~~	~~0.502023~~	~~0.505711~~	~~0.509399~~	~~0.513087~~	~~0.516775~~	~~22~~
~~53~~	~~0.520467~~	~~0.524543~~	~~0.528619~~	~~0.532695~~	~~0.536771~~	~~0.540847~~	~~0.544923~~	~~0.548999~~	~~0.553075~~	~~0.557151~~	~~0.561227~~	~~0.565303~~	~~23~~
~~54~~	~~0.569383~~	~~0.573896~~	~~0.578409~~	~~0.582922~~	~~0.587435~~	~~0.591948~~	~~0.596461~~	~~0.600974~~	~~0.605487~~	~~0.610000~~	~~0.614513~~	~~0.619026~~	~~24~~
~~55~~	~~0.623536~~	~~0.628541~~	~~0.633546~~	~~0.638551~~	~~0.643556~~	~~0.648561~~	~~0.653566~~	~~0.658571~~	~~0.663576~~	~~0.668581~~	~~0.673586~~	~~0.678591~~	~~25~~
~~56~~	~~0.683590~~	~~0.689150~~	~~0.694710~~	~~0.700270~~	~~0.705830~~	~~0.711390~~	~~0.716950~~	~~0.722510~~	~~0.728070~~	~~0.733630~~	~~0.739190~~	~~0.744750~~	~~26~~
~~57~~	~~0.750310~~	~~0.756499~~	~~0.762688~~	~~0.768877~~	~~0.775066~~	~~0.781255~~	~~0.787444~~	~~0.793633~~	~~0.799822~~	~~0.806011~~	~~0.812200~~	~~0.818389~~	~~27~~
~~58~~	~~0.824574~~	~~0.831477~~	~~0.838380~~	~~0.845283~~	~~0.852186~~	~~0.859089~~	~~0.865992~~	~~0.872895~~	~~0.879798~~	~~0.886701~~	~~0.893604~~	~~0.900507~~	~~28~~
~~59~~	~~0.907406~~	~~0.915122~~	~~0.922838~~	~~0.930554~~	~~0.938270~~	~~0.945986~~	~~0.953702~~	~~0.961418~~	~~0.969134~~	~~0.976850~~	~~0.984566~~	~~0.992282~~	~~29~~
~~60~~	~~1.000000~~												

~~TABLE C~~

~~AE ERF Factors~~
~~EFFECTIVE 10/1/2011 For PERS members hired on or after 7/1/2011 ERF is calculated only on age~~
~~Montana PERS~~
~~Actuarially Equivalent Early Retirement Factors 1.5% GABA (Deferred to 65)~~

	~~Months:~~											
~~Age~~	~~0~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~
~~55~~	~~0.373968~~	~~0.376970~~	~~0.379972~~	~~0.382974~~	~~0.385976~~	~~0.388978~~	~~0.391980~~	~~0.394982~~	~~0.397984~~	~~0.400986~~	~~0.403988~~	~~0.406990~~
~~56~~	~~0.409986~~	~~0.413321~~	~~0.416656~~	~~0.419991~~	~~0.423326~~	~~0.426661~~	~~0.429996~~	~~0.433331~~	~~0.436666~~	~~0.440001~~	~~0.443336~~	~~0.446671~~
~~57~~	~~0.450001~~	~~0.453713~~	~~0.457425~~	~~0.461137~~	~~0.464849~~	~~0.468561~~	~~0.472273~~	~~0.475985~~	~~0.479697~~	~~0.483409~~	~~0.487121~~	~~0.490833~~
~~58~~	~~0.494541~~	~~0.498681~~	~~0.502821~~	~~0.506961~~	~~0.511101~~	~~0.515241~~	~~0.519381~~	~~0.523521~~	~~0.527661~~	~~0.531801~~	~~0.535941~~	~~0.540081~~
~~59~~	~~0.544220~~	~~0.548848~~	~~0.553476~~	~~0.558104~~	~~0.562732~~	~~0.567360~~	~~0.571988~~	~~0.576616~~	~~0.581244~~	~~0.585872~~	~~0.590500~~	~~0.595128~~
~~60~~	~~0.599754~~	~~0.604939~~	~~0.610124~~	~~0.615309~~	~~0.620494~~	~~0.625679~~	~~0.630864~~	~~0.636049~~	~~0.641234~~	~~0.646419~~	~~0.651604~~	~~0.656789~~
~~61~~	~~0.661976~~	~~0.667800~~	~~0.673624~~	~~0.679448~~	~~0.685272~~	~~0.691096~~	~~0.696920~~	~~0.702744~~	~~0.708568~~	~~0.714392~~	~~0.720216~~	~~0.726040~~
~~62~~	~~0.731863~~	~~0.738421~~	~~0.744979~~	~~0.751537~~	~~0.758095~~	~~0.764653~~	~~0.771211~~	~~0.777769~~	~~0.784327~~	~~0.790885~~	~~0.797443~~	~~0.804001~~
~~63~~	~~0.810557~~	~~0.817961~~	~~0.825365~~	~~0.832769~~	~~0.840173~~	~~0.847577~~	~~0.854981~~	~~0.862385~~	~~0.869789~~	~~0.877193~~	~~0.884597~~	~~0.892001~~
~~64~~	~~0.899405~~	~~0.907788~~	~~0.916171~~	~~0.924554~~	~~0.932937~~	~~0.941320~~	~~0.949703~~	~~0.958086~~	~~0.966469~~	~~0.974852~~	~~0.983235~~	~~0.991618~~
~~65~~	~~1.000000~~											

~~TABLE D~~

~~AE ERF Factors~~ ~~Actuarially Equivalent Early Retirement Factors~~ ~~3% GABA (Deferred to 60)~~

~~Montana HPORS~~

	~~Months:~~											
~~Age~~	~~0~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~
~~25~~	~~0.047797~~	~~0.048126~~	~~0.048455~~	~~0.048784~~	~~0.049113~~	~~0.049442~~	~~0.049771~~	~~0.050100~~	~~0.050429~~	~~0.050758~~	~~0.051087~~	~~0.051416~~
~~26~~	~~0.051740~~	~~0.052097~~	~~0.052454~~	~~0.052811~~	~~0.053168~~	~~0.053525~~	~~0.053882~~	~~0.054239~~	~~0.054596~~	~~0.054953~~	~~0.055310~~	~~0.055667~~
~~27~~	~~0.056021~~	~~0.056408~~	~~0.056795~~	~~0.057182~~	~~0.057569~~	~~0.057956~~	~~0.058343~~	~~0.058730~~	~~0.059117~~	~~0.059504~~	~~0.059891~~	~~0.060278~~
~~28~~	~~0.060670~~	~~0.061091~~	~~0.061512~~	~~0.061933~~	~~0.062354~~	~~0.062775~~	~~0.063196~~	~~0.063617~~	~~0.064038~~	~~0.064459~~	~~0.064880~~	~~0.065301~~
~~29~~	~~0.065721~~	~~0.066179~~	~~0.066637~~	~~0.067095~~	~~0.067553~~	~~0.068011~~	~~0.068469~~	~~0.068927~~	~~0.069385~~	~~0.069843~~	~~0.070301~~	~~0.070759~~
~~30~~	~~0.071211~~	~~0.071709~~	~~0.072207~~	~~0.072705~~	~~0.073203~~	~~0.073701~~	~~0.074199~~	~~0.074697~~	~~0.075195~~	~~0.075693~~	~~0.076191~~	~~0.076689~~
~~31~~	~~0.077181~~	~~0.077722~~	~~0.078263~~	~~0.078804~~	~~0.079345~~	~~0.079886~~	~~0.080427~~	~~0.080968~~	~~0.081509~~	~~0.082050~~	~~0.082591~~	~~0.083132~~
~~32~~	~~0.083675~~	~~0.084264~~	~~0.084853~~	~~0.085442~~	~~0.086031~~	~~0.086620~~	~~0.087209~~	~~0.087798~~	~~0.088387~~	~~0.088976~~	~~0.089565~~	~~0.090154~~
~~33~~	~~0.090742~~	~~0.091383~~	~~0.092024~~	~~0.092665~~	~~0.093306~~	~~0.093947~~	~~0.094588~~	~~0.095229~~	~~0.095870~~	~~0.096511~~	~~0.097152~~	~~0.097793~~
~~34~~	~~0.098438~~	~~0.099137~~	~~0.099836~~	~~0.100535~~	~~0.101234~~	~~0.101933~~	~~0.102632~~	~~0.103331~~	~~0.104030~~	~~0.104729~~	~~0.105428~~	~~0.106127~~
~~35~~	~~0.106822~~	~~0.107584~~	~~0.108346~~	~~0.109108~~	~~0.109870~~	~~0.110632~~	~~0.111394~~	~~0.112156~~	~~0.112918~~	~~0.113680~~	~~0.114442~~	~~0.115204~~
~~36~~	~~0.115960~~	~~0.116790~~	~~0.117620~~	~~0.118450~~	~~0.119280~~	~~0.120110~~	~~0.120940~~	~~0.121770~~	~~0.122600~~	~~0.123430~~	~~0.124260~~	~~0.125090~~
~~37~~	~~0.125925~~	~~0.126831~~	~~0.127737~~	~~0.128643~~	~~0.129549~~	~~0.130455~~	~~0.131361~~	~~0.132267~~	~~0.133173~~	~~0.134079~~	~~0.134985~~	~~0.135891~~
~~38~~	~~0.136800~~	~~0.137790~~	~~0.138780~~	~~0.139770~~	~~0.140760~~	~~0.141750~~	~~0.142740~~	~~0.143730~~	~~0.144720~~	~~0.145710~~	~~0.146700~~	~~0.147690~~
~~39~~	~~0.148675~~	~~0.149756~~	~~0.150837~~	~~0.151918~~	~~0.152999~~	~~0.154080~~	~~0.155161~~	~~0.156242~~	~~0.157323~~	~~0.158404~~	~~0.159485~~	~~0.160566~~
~~40~~	~~0.161650~~	~~0.162832~~	~~0.164014~~	~~0.165196~~	~~0.166378~~	~~0.167560~~	~~0.168742~~	~~0.169924~~	~~0.171106~~	~~0.172288~~	~~0.173470~~	~~0.174652~~
~~41~~	~~0.175837~~	~~0.177131~~	~~0.178425~~	~~0.179719~~	~~0.181013~~	~~0.182307~~	~~0.183601~~	~~0.184895~~	~~0.186189~~	~~0.187483~~	~~0.188777~~	~~0.190071~~
~~42~~	~~0.191363~~	~~0.192780~~	~~0.194197~~	~~0.195614~~	~~0.197031~~	~~0.198448~~	~~0.199865~~	~~0.201282~~	~~0.202699~~	~~0.204116~~	~~0.205533~~	~~0.206950~~
~~43~~	~~0.208366~~	~~0.209919~~	~~0.211472~~	~~0.213025~~	~~0.214578~~	~~0.216131~~	~~0.217684~~	~~0.219237~~	~~0.220790~~	~~0.222343~~	~~0.223896~~	~~0.225449~~
~~44~~	~~0.227003~~	~~0.228707~~	~~0.230411~~	~~0.232115~~	~~0.233819~~	~~0.235523~~	~~0.237227~~	~~0.238931~~	~~0.240635~~	~~0.242339~~	~~0.244043~~	~~0.245747~~
~~45~~	~~0.247450~~	~~0.249321~~	~~0.251192~~	~~0.253063~~	~~0.254934~~	~~0.256805~~	~~0.258676~~	~~0.260547~~	~~0.262418~~	~~0.264289~~	~~0.266160~~	~~0.268031~~
~~46~~	~~0.269905~~	~~0.271962~~	~~0.274019~~	~~0.276076~~	~~0.278133~~	~~0.280190~~	~~0.282247~~	~~0.284304~~	~~0.286361~~	~~0.288418~~	~~0.290475~~	~~0.292532~~
~~47~~	~~0.294589~~	~~0.296853~~	~~0.299117~~	~~0.301381~~	~~0.303645~~	~~0.305909~~	~~0.308173~~	~~0.310437~~	~~0.312701~~	~~0.314965~~	~~0.317229~~	~~0.319493~~
~~48~~	~~0.321756~~	~~0.324250~~	~~0.326744~~	~~0.329238~~	~~0.331732~~	~~0.334226~~	~~0.336720~~	~~0.339214~~	~~0.341708~~	~~0.344202~~	~~0.346696~~	~~0.349190~~
~~49~~	~~0.351689~~	~~0.354441~~	~~0.357193~~	~~0.359945~~	~~0.362697~~	~~0.365449~~	~~0.368201~~	~~0.370953~~	~~0.373705~~	~~0.376457~~	~~0.379209~~	~~0.381961~~
~~50~~	~~0.384711~~	~~0.387751~~	~~0.390791~~	~~0.393831~~	~~0.396871~~	~~0.399911~~	~~0.402951~~	~~0.405991~~	~~0.409031~~	~~0.412071~~	~~0.415111~~	~~0.418151~~
~~51~~	~~0.421192~~	~~0.424555~~	~~0.427918~~	~~0.431281~~	~~0.434644~~	~~0.438007~~	~~0.441370~~	~~0.444733~~	~~0.448096~~	~~0.451459~~	~~0.454822~~	~~0.458185~~
~~52~~	~~0.461551~~	~~0.465277~~	~~0.469003~~	~~0.472729~~	~~0.476455~~	~~0.480181~~	~~0.483907~~	~~0.487633~~	~~0.491359~~	~~0.495085~~	~~0.498811~~	~~0.502537~~
~~53~~	~~0.506267~~	~~0.510402~~	~~0.514537~~	~~0.518672~~	~~0.522807~~	~~0.526942~~	~~0.531077~~	~~0.535212~~	~~0.539347~~	~~0.543482~~	~~0.547617~~	~~0.551752~~
~~54~~	~~0.555891~~	~~0.560488~~	~~0.565085~~	~~0.569682~~	~~0.574279~~	~~0.578876~~	~~0.583473~~	~~0.588070~~	~~0.592667~~	~~0.597264~~	~~0.601861~~	~~0.606458~~
~~55~~	~~0.611058~~	~~0.616178~~	~~0.621298~~	~~0.626418~~	~~0.631538~~	~~0.636658~~	~~0.641778~~	~~0.646898~~	~~0.652018~~	~~0.657138~~	~~0.662258~~	~~0.667378~~
~~56~~	~~0.672498~~	~~0.678211~~	~~0.683924~~	~~0.689637~~	~~0.695350~~	~~0.701063~~	~~0.706776~~	~~0.712489~~	~~0.718202~~	~~0.723915~~	~~0.729628~~	~~0.735341~~
~~57~~	~~0.741052~~	~~0.747439~~	~~0.753826~~	~~0.760213~~	~~0.766600~~	~~0.772987~~	~~0.779374~~	~~0.785761~~	~~0.792148~~	~~0.798535~~	~~0.804922~~	~~0.811309~~
~~58~~	~~0.817697~~	~~0.824853~~	~~0.832009~~	~~0.839165~~	~~0.846321~~	~~0.853477~~	~~0.860633~~	~~0.867789~~	~~0.874945~~	~~0.882101~~	~~0.889257~~	~~0.896413~~
~~59~~	~~0.903569~~	~~0.911605~~	~~0.919641~~	~~0.927677~~	~~0.935713~~	~~0.943749~~	~~0.951785~~	~~0.959821~~	~~0.967857~~	~~0.975893~~	~~0.983929~~	~~0.991965~~
~~60~~	~~1.000000~~											

~~TABLE E~~

~~AE ERF Factors~~ ~~Actuarially Equivalent Early Retirement Factors~~ ~~3% GABA (Deferred to 60)~~
~~Montana SRS~~

~~Age~~	~~Months: 0~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~
~~50~~	~~0.384711~~	~~0.387751~~	~~0.390791~~	~~0.393831~~	~~0.396871~~	~~0.399911~~	~~0.402951~~	~~0.405991~~	~~0.409031~~	~~0.412071~~	~~0.415111~~	~~0.418151~~
~~51~~	~~0.421192~~	~~0.424555~~	~~0.427918~~	~~0.431281~~	~~0.434644~~	~~0.438007~~	~~0.441370~~	~~0.444733~~	~~0.448096~~	~~0.451459~~	~~0.454822~~	~~0.458185~~
~~52~~	~~0.461551~~	~~0.465277~~	~~0.469003~~	~~0.472729~~	~~0.476455~~	~~0.480181~~	~~0.483907~~	~~0.487633~~	~~0.491359~~	~~0.495085~~	~~0.498811~~	~~0.502537~~
~~53~~	~~0.506267~~	~~0.510402~~	~~0.514537~~	~~0.518672~~	~~0.522807~~	~~0.526942~~	~~0.531077~~	~~0.535212~~	~~0.539347~~	~~0.543482~~	~~0.547617~~	~~0.551752~~
~~54~~	~~0.555891~~	~~0.560488~~	~~0.565085~~	~~0.569682~~	~~0.574279~~	~~0.578876~~	~~0.583473~~	~~0.588070~~	~~0.592667~~	~~0.597264~~	~~0.601861~~	~~0.606458~~
~~55~~	~~0.611058~~	~~0.616178~~	~~0.621298~~	~~0.626418~~	~~0.631538~~	~~0.636658~~	~~0.641778~~	~~0.646898~~	~~0.652018~~	~~0.657138~~	~~0.662258~~	~~0.667378~~
~~56~~	~~0.672498~~	~~0.678211~~	~~0.683924~~	~~0.689637~~	~~0.695350~~	~~0.701063~~	~~0.706776~~	~~0.712489~~	~~0.718202~~	~~0.723915~~	~~0.729628~~	~~0.735341~~
~~57~~	~~0.741052~~	~~0.747439~~	~~0.753826~~	~~0.760213~~	~~0.766600~~	~~0.772987~~	~~0.779374~~	~~0.785761~~	~~0.792148~~	~~0.798535~~	~~0.804922~~	~~0.811309~~
~~58~~	~~0.817697~~	~~0.824853~~	~~0.832009~~	~~0.839165~~	~~0.846321~~	~~0.853477~~	~~0.860633~~	~~0.867789~~	~~0.874945~~	~~0.882101~~	~~0.889257~~	~~0.896413~~
~~59~~	~~0.903569~~	~~0.911605~~	~~0.919641~~	~~0.927677~~	~~0.935713~~	~~0.943749~~	~~0.951785~~	~~0.959821~~	~~0.967857~~	~~0.975893~~	~~0.983929~~	~~0.991965~~
~~60~~	~~1.000000~~											

~~AE ERF Factors~~ ~~Actuarially Equivalent Early Retirement Factors~~ ~~1.5% GABA (Deferred to 60)~~
~~Montana SRS~~

~~Age~~	~~Months: 0~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~	~~9~~	~~10~~	~~11~~
~~50~~	~~0.397347~~	~~0.400378~~	~~0.403409~~	~~0.406440~~	~~0.409471~~	~~0.412502~~	~~0.415533~~	~~0.418564~~	~~0.421595~~	~~0.424626~~	~~0.427657~~	~~0.430688~~
~~51~~	~~0.433713~~	~~0.437055~~	~~0.440397~~	~~0.443739~~	~~0.447081~~	~~0.450423~~	~~0.453765~~	~~0.457107~~	~~0.460449~~	~~0.463791~~	~~0.467133~~	~~0.470475~~
~~52~~	~~0.473812~~	~~0.477502~~	~~0.481192~~	~~0.484882~~	~~0.488572~~	~~0.492262~~	~~0.495952~~	~~0.499642~~	~~0.503332~~	~~0.507022~~	~~0.510712~~	~~0.514402~~
~~53~~	~~0.518093~~	~~0.522175~~	~~0.526257~~	~~0.530339~~	~~0.534421~~	~~0.538503~~	~~0.542585~~	~~0.546667~~	~~0.550749~~	~~0.554831~~	~~0.558913~~	~~0.562995~~
~~54~~	~~0.567074~~	~~0.571597~~	~~0.576120~~	~~0.580643~~	~~0.585166~~	~~0.589689~~	~~0.594212~~	~~0.598735~~	~~0.603258~~	~~0.607781~~	~~0.612304~~	~~0.616827~~
~~55~~	~~0.621348~~	~~0.626369~~	~~0.631390~~	~~0.636411~~	~~0.641432~~	~~0.646453~~	~~0.651474~~	~~0.656495~~	~~0.661516~~	~~0.666537~~	~~0.671558~~	~~0.676579~~
~~56~~	~~0.681596~~	~~0.687180~~	~~0.692764~~	~~0.698348~~	~~0.703932~~	~~0.709516~~	~~0.715100~~	~~0.720684~~	~~0.726268~~	~~0.731852~~	~~0.737436~~	~~0.743020~~
~~57~~	~~0.748602~~	~~0.754824~~	~~0.761046~~	~~0.767268~~	~~0.773490~~	~~0.779712~~	~~0.785934~~	~~0.792156~~	~~0.798378~~	~~0.804600~~	~~0.810822~~	~~0.817044~~
~~58~~	~~0.823271~~	~~0.830220~~	~~0.837169~~	~~0.844118~~	~~0.851067~~	~~0.858016~~	~~0.864965~~	~~0.871914~~	~~0.878863~~	~~0.885812~~	~~0.892761~~	~~0.899710~~
~~59~~	~~0.906659~~	~~0.914437~~	~~0.922215~~	~~0.929993~~	~~0.937771~~	~~0.945549~~	~~0.953327~~	~~0.961105~~	~~0.968883~~	~~0.976661~~	~~0.984439~~	~~0.992217~~
~~60~~	~~1.000000~~											