OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM
277 EAST TOWN STREET, COLUMBUS, OH 43215-4642
1-800-222-PERS (7377)
www.opers.org

MEMORANDUM

DATE: January 5, 2007

TO: OPERS Retirement Board Members

FROM: Julie Reneau, Benefits Director

RE: **IV. Action Items:**
B. Actuarial Benefit Factors

Actions requested: **Benefit Factor Changes -** Adopt the actuarial factor changes that are recommended by Gabriel Roeder Smith and Company as a result of the *5-Year Experience Study (January 1, 2001 through December 31, 2005)* as follows:

1. Use a 72%/28% unisex mortality table for option elections.
2. Use a 50% unisex assumption for conversion of lump sums.
3. Convert all factors to mortality tables adopted in the experience study.
4. Use an 8% interest assumption in building all factors, including those that apply to the Combined Plan and the Member-Directed Plan.
5. Use recommended factors for survivor options for additional annuity and money purchase (reemployed retiree) calculations.
6. Use recommended factors for recomputations following retirement.
7. All recommendations to take effect for benefits effective on or after July 1,2007.

If the Board determines that a change is required to the current policy (established in 2002) of grandfathering the factors used to convert lump sums to monthly annuities for members whose initial deposit in the Additional Annuity program was made on or before January 1, 2003, then the following action is recommended. If no change is required to the policy as established in 2002, no action is necessary.

Additional Annuity Program - Adopt a policy change that maintains additional annuity account balances as of July 1, 2007, and apply factors without the COLA costs to these amounts and apply new factors incorporating the COLA cost to all future contributions and interest.

Background – **Benefit Factor Changes** –In December, the Board reviewed the actuary's recommendations for benefit factor changes that are used to calculate the monies paid to members (See Attachment 1). The recommendations of the actuary are to determine factors that are based on the same tables and assumptions as those used for valuation purposes.

As a reminder, in October 2006, Brian Murphy presented the results of *the 5-Year Experience Study (January 1, 2001 through December 31, 2005)*. The purpose of the study was to update the actuarial assumptions used in valuing the actuarial liabilities of the system.

The Board took action at that time to adopt the demographic assumption changes as recommended by the actuary. Demographic assumptions changes include rates of expected retirements for normal (unreduced) and early (reduced) retirements, and mortality among active and retiree members. The most significant change was to the mortality table, which now assumes longer lifetimes for average members.

The Board also adopted the economic assumptions of an 8% investment return and 4% wage inflation.

Additional Annuity Program Review – In December, the Board also heard a presentation on the current policy (established in 2002) of grandfathering the factors used to convert lump sums to monthly annuities for members whose initial deposit in the Additional Annuity program was made on or before January 1, 2003 (See Attachment 2). This was brought before the Board as the factors used to convert lump sums are recommended for change by the actuary and staff has identified that the grandfathering has the effect of system subsidization of these voluntary supplemental accounts. The Board can choose to leave the current policy in place, or to change it if they deem appropriate.

The Board had requested further actuarial clarification on two items:

1) **GRS to review whether factor changes have any negative effect on the survivor benefit paid to beneficiaries of deceased disability benefit recipients.** Upon review, there is no impact on the survivor benefit, as the factors apply to the original member benefit.

2) **GRS to review the total dollar value of the ongoing subsidization of the retirement system for the pre-2003 accounts**. It is impossible to predict future subsidy of the current pre-2003 accounts. This is because we do not know how many members will exercise the right to rollover and we cannot predict the amounts of any rollovers. However, GRS provided a chart (See Attachment 3) showing that with the current account values only ($0 rollover), the estimated total subsidization (in 2007 dollars) is approximately $5.5 million, or a 23% subsidy as a percent of the current balance. If there are rollovers of any amount, the subsidization increases accordingly. If 72% of the current pre-2003 members would roll over $60,500 (averages of accounts that had rollovers at retirement), then the subsidization would be $17.7 million dollars, representing a 74.2% subsidy as a percent of the current balance. Finally, if 72% of the current pre-2003 members would rollover $100,000, the subsidization would be $25.6 million, representing a 107.5% subsidy as a percent of the current balance.

<u>Rationale for Action</u> – Benefit Factor Changes - The actuary would be determining the factors used to calculate benefit payouts are based on the same tables and assumptions as those used for valuation purposes.

Additional Annuity Program - This option limits the system's ongoing subsidization to account values as of July 1, 2007, since it preserves the use of no-COLA cost factors on balances prior to the change. This is similar to action taken on limits placed on Money Purchase plan participants, where the pre-change balances are treated differently.

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<u>MEMORANDUM</u>

DATE: December 11, 2006

TO: OPERS Retirement Board Members

FROM: Julie Reneau – Director, Benefits Administration

RE: **V. Discussion Item:**
A. Actuarial Benefit Factors

<u>Purpose</u> – Today's discussion will cover two specific areas with regard to actuarial factor changes. First, the discussion will cover the proposed actuarial factor changes that are recommended by Gabriel Roeder Smith and Company (See Attachment 1) as a result of the *5-Year Experience Study (January 1, 2001 through December 31, 2005)*. The Board will be asked to take action on these recommendations in the January 2007 meeting.

Secondly, the Board will also review the current policy (established in 2002) of grandfathering the factors used to convert lump sums to monthly annuities for members whose initial deposit in the Additional Annuity program was made on or before January 1, 2003. This is being brought before the Board at this time as the factors used to convert lump sums are recommended for change by the actuary and staff has identified that the grandfathering has the effect of system subsidization of these voluntary supplemental accounts. The Board can choose to leave the current policy in place, or to change it if they deem appropriate.

<u>Background</u> – Factor Changes - In October 2006, Brian Murphy from the Board's actuarial firm, Gabriel Roeder Smith & Company, presented the results of *the 5-Year Experience Study (January 1, 2001 through December 31, 2005)*. The purpose of the study was to update the actuarial assumptions used in valuing the actuarial liabilities of the system.

The Board took action at that time to adopt the demographic assumption changes as recommended by the actuary. Demographic assumptions changes include rates of expected retirements for normal (unreduced) and early (reduced) retirements, and mortality among active and retiree members. The most significant change was to the mortality table, which now assumes longer lifetimes for average members.

The Board also adopted the economic assumptions of an 8% investment return and 4% wage inflation.

Why factors would change- As benefits are computed, factors are used to calculate the monies paid to members. It is common practice for factors to be based on the same tables and assumptions as those used for valuation purposes. This would mean that the Board would want to consider approving actuarially recommended changes to benefit factors, based on the results from the recent *5-Year Experience Study*.

Longer lifetimes affect the factors used to calculate actuarial equivalent benefits for members (between the single life benefit and the joint and survivor options). The mortality changes will generally increase the monthly benefit to members. Factors are also used to convert member contribution balances to monthly amounts. The mortality table changes will cause these factors to slightly decrease monthly benefits to members.

Within this review, the actuary looked at factor development and application of the factors between programs. All of the recommendations provide actuarially sound benefit payments and some of the recommendations provide factor methodology consistency between programs.

Below are the factor-related situations that the Board will be asked to take action on in the January Board meeting.

Traditional Plan Factors

Traditional Plan (Defined Benefit) benefits when computed using a formula have factors applied to adjust the amounts paid when survivor protection is added. This provides that benefit levels will be guaranteed for two lifetimes. The Traditional Plan also provides a guarantee that the benefit will not be lower than twice the member's account balance. This balance is then converted to a monthly annuity using a factor provided by the actuary.

Money Purchase Annuity Factors – Reemployed Retirees

Reemployed retirees have money purchase accounts. When all employment is terminated, retirees can take the benefit as a lump sum or a monthly life-benefit amount. There is a guarantee that the member will receive at least the account balance back in the form of annuity payments. This guarantee comes with a cost that is built into the factors. Also, special factors are used if survivor options are elected. These are different and more complex than those applied to the Traditional Plan annuities. COLAs (cost of living adjustment) are not paid on these monthly benefits.

Recomputation of Benefits After Retirement
A recomputation of benefits occur following retirement when a member adds a beneficiary that was not there when the benefit was originally calculated. For example, a member marries after retirement and adds the spouse as a survivor beneficiary. This calculation of factors is complicated because the COLA is not 3% of the current benefit. It is 3% of the base benefit which will be a different percentage, depending on the number of years elapsed since retirement.

Combined Plan (Member Portion) and Member Directed Plan
These benefits are similar to additional annuities and would generally receive the same mathematical treatment. However, it has not yet been determined what interest rate to use in building relevant factors. The staff recommends that the 8% interest rate be used for the Combined Plan and the Member-Directed Plan annuitizations. The resulting gains and losses can be pooled with the forfeiture account gains and losses. GRS supports this approach as reasonable. Appropriate administrative rules would be drafted once this recommendation is approved by the Board.

Unisex Tables
Benefit amounts are not permitted to depend on the sex of the member or beneficiary. Consequently, a unisex mortality table is used. Different unisex tables are used for different calculations. Present practice is to use a mix of 75% male and 25% female for optional benefit calculations. A 50% male and 50% female mix is used for converting lump sum amounts to monthly annuities. Actual experience shows that the average split over the last five years for those electing optional payments is 69% male and 31% female. GRS is recommending a change to 72%/28% unisex mortality table for option elections. This is halfway between the former assumption (75%/25%), and the current experience (69%/31%). The recommendation is to leave unisex mix of 50%/50% for converting lump sum amounts unchanged.

Additional Annuities
When these supplemental savings and accumulated interest balances are annuitized, there is a guarantee that the member will receive the account balance back in the form of annuity payments. This guarantee has a cost that must be built into the factors. Special factors must be used if survivor benefits are elected. These factors are different and more complex than those used for the Traditional Plan. Factors related to members who had balances as of January 1, 2003 are affected by a grandfathering provision adopted by the Board in 2002, where these individuals do not pay for the cost of the COLA in the factors used to convert their annuities. (See discussion on page 4)

Actuary's Recommendations

1. Use a 72%/28% unisex mortality table for option elections. This is half way between the former assumption (75% /25%), and the current experience (69%/31%).
2. Use a 50% unisex assumption for conversion of lump sums.
3. Convert all factors to mortality tables adopted in the experience study.
4. Recognize the subsidized treatment of pre-2003 additional annuity conversions.
5. Use an 8% interest assumption in building all factors, including those that apply to the Combined Plan and the Member-Directed Plan.
6. Use recommended factors for survivor options for additional annuity and money purchase (reemployed retiree) calculations.
7. Use recommended factors for recomputations following retirement.
8. All recommendations to take effect for benefits effective on or after July 1, 2007.

Issues- Additional Annuity Conversion Factors
On October 16, 2002, the Board in conjunction with our actuary and staff created a new structure for the additional annuity program (See Attachment 2). The additional annuity program is a supplemental savings plan authorized under the Ohio Revised Code, Section 145.23(C), that members can participate in while actively employed. Upon termination members can take the deposits, plus interest out as a total lump sum distribution, a PLOP, or convert to a monthly annuity. Members can rollover lump sums from other qualified plans and then convert to a monthly annuity.

As part of the new structure, the Board's action in 2002, members who had made initial deposits on or before January 1, 2003, have conversion factors applied which do not account for the cost of the COLA. The retirement system, through payments from the employer reserve is subsidizing the ongoing cost of this unfunded benefit to these members. The Board may want to discuss continuing this policy or consider other options.

Options for Discussion:

1. **Continue the subsidy of those accounts as originally decided in 2002.**
   Pros: Maintains status quo. Board was aware of the subsidy when the decision was made.
   Cons: Subsidization of a voluntary, supplemental savings plan would continue for 1,204 members. Members can roll-in large amounts from other qualified plans at retirement and take advantage of the subsidy.

2. **Maintain additional annuity account balances as of July 1, 2007, and apply factors without the COLA costs to these amounts and apply**

new factors incorporating the COLA cost to future contributions and interest. Any contributions and all interest applied after July 1, 2007, would have conversion factors applied that account for the cost of the COLA. The two would be added together for benefit purposes.
Pros: Preserves use of no-COLA cost factors on balances prior to change. Similar to action taken on limits placed on Money Purchase plan participants, where the pre-change balances are treated differently.
Cons: Subsidization of pre-change date values continues.

3. **Discontinue subsidy of the pre-2003 accounts with the implementation of the new factors on July 1, 2007.**
   Pros: All additional annuity accounts are treated equally. The cost of the COLA is accounted for in the factors.
   Cons: Some pre-2003 account members may view as unfair.

There are currently 1,216 members who had initial deposits on or before January 1, 2003, and 559 members whose first deposit was after January 1, 2003. Below are charts showing membership and average deposits.

Additional Contribution Balances

Pre-2003

Balance	Total $	Members	Average $ Balance
$0 - $5,000	$776,188.15	512	$1,515.99
$5,000.01 - $10,000	$1,117,259.16	158	$7,071.26
$10,000.01 - $25,000	$4,451,804.81	278	$16,013.69
$25,000.01 - $50,000	$5,703,532.32	159	$35,871.27
$50,000.01 - $100,000	$4,734,814.76	66	$71,739.62
$100,000.01 - $250,000	$5,919,477.65	40	$147,986.94
$250,000.01 - $500,000	$591,061.27	2	$295,530.64
$500,000+	$567,953.57	1	$567,953.57
	$23,862,091.69	**1216**	**$19,623.43**

Data as of 11/27/06

Additional Contribution Balances
Post – 2002

Balance	Total $	Members	Average $ Balance
$0 - $5,000	$385,547.13	346	$1,114.30
$5,000.01 - $10,000	$436,192.27	61	$7,150.69
$10,000.01 - $25,000	$1,240,793.09	78	$15,907.60
$25,000.01 - $50,000	$1,800,057.37	49	$36,735.86
$50,000.01 - $100,000	$1,213,045.00	16	$75,815.31
$100,000.01 - $250,000	$1,047,892.22	8	$130,986.53
$250,000.01 - $500,000	$300,100.00	1	$300,100.00
$500,000+	$0.00	0	$0.00
	$6,423,627.08	**559**	**$11,491.29**

Data as of 11/27/2006

Next Steps - The Board will be asked to take action on the option factor changes as recommended by the actuary in January 2007. If the Board chooses to change the policy on conversion factors as they relate to lump sum conversions on additional annuities, action would also be required. If no change is deemed necessary to the additional annuities, no action is required on this issue. Finally, working with Legal staff, administrative rules would be drafted to codify the interest assumption used for the Combined Plan and the Member-Directed Plan annuitizations.

Option Conversion and Other Factors as a Result of the January 1, 2001 – December 31, 2005 Experience Study

December 18, 2006

GRS
Gabriel Roeder Smith & Company

Table of Contents

Section 1
Background

OPERS

2001 – 2005 Experience Study

- In October the Board approved a change in the mortality table.
- The table assumes longer lifetimes for average members.
- Longer lifetimes affect factors used to calculate actuarial equivalent benefits for members.

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2001 – 2005 Experience Study

- It is a common practice to use the same mortality basis for benefit calculations and for valuation purposes.

- OPERS uses the same mortality table for valuation and for benefit calculations. We see no reason to change the practice.

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Uses of Factors

- Factors are used to provide actuarial equivalent conversions between the single life benefit and the joint & survivor options provided by OPERS. The mortality table changes will generally cause these factors to become more favorable for members.

- Factors are also used to convert member contribution balances into a monthly amount. The mortality table changes will generally cause these factors to become less favorable for members.

Different Situations

- Traditional Plan
  - Traditional defined benefit annuities
  - Additional annuities
  - Money purchase annuities (Reemployed retirees)
  - Recomputations following retirement
- Combined Plan (Member portion)
- Member-Directed Plan

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Traditional Defined Benefit Annuities

- In most cases, benefits are defined by a formula. When survivor protection is added, “option factors” are used to adjust the amounts paid.

- Some benefits are defined by 145.33(A)(2) as the amount of benefit that can be “purchased” by twice the member’s account balance. The purchase factors do not contain a reflection of the COLA.

Additional Annuities

- When amounts are annuitized, there is a guarantee that the member will receive the account balance back in the form of annuity payments.

- The guarantee has a cost that must be built into any factors. Special factors must be used if survivor options are elected. These factors are not the same as factors for traditional defined benefit annuities and are complex calculations.

Additional Annuities

- Factors related to pre-2003 accounts are affected by a grandfathering provision that the Board adopted in 2002.
- Alternatives related to these factors are presented in Appendix 2.

Money Purchase Annuities (Reemployed Retirees)

- When annuitized, there is a guarantee that the member will receive at least the account balance back in the form of annuity payments. The guarantee has a cost that must be built into any factors. Special factors must be used if survivor options are elected. These factors are not the same as factors for traditional defined benefit annuities and are complex calculations.

Money Purchase Annuities (Reemployed Retirees)

- COLAs are not paid on these accounts. Consequently, the factors will be different from the factors applied to additional annuities.

Recomputations After Retirement

- Recomputations can occur following retirement when a member adds a beneficiary that was not there previously. For example, a member marries after retirement and adds the spouse as a survivor beneficiary.
- The calculation is complicated because the COLA is not 3% of the current benefit. It is 3% of the base benefit which will be a different percentage, depending on the number of years elapsed since retirement.

Combined Plan (Member Portion) and Member Directed Plan

- These benefits are similar to additional annuities and should generally receive the same mathematical treatment.

- It is not obvious what interest rate to use in building the relevant factors. 8% is used in the additional annuity factors. Since additional annuities are part of the Traditional Plan, related gains and losses can be pooled.

- Staff recommends that the same interest rate be used for the Combined and Member Directed Plan annuitizations. Resulting gains and losses can be pooled with forfeiture account gains and losses. GRS supports this approach as reasonable.

Unisex Tables

- Benefit amounts are not permitted to depend upon the sex of the retiree or the beneficiary.
- Consequently, for all purposes related to benefit calculations, a "Unisex" Mortality table is used. Different unisex tables are used for different calculations.
- Present practice is to use a mix of 75% males and 25% females for optional benefit calculations, and 50%-50% for converting lump sums to annuities.

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Optional Benefit Plan
Election by Sex

% Electing Optional Payment Plans*
(Weighted by Monthly Amount)

Year	Male	Female	Total
2005	68%	32%	100%
2004	68%	32%	100%
2003	68%	32%	100%
2002	70%	30%	100%
2001	72%	28%	100%
Average	**69%**	**31%**	**100%**

* *Plans A, C, & E*

Section 2
Recommendations

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Recommendations

1. **Use a 72%/28% unisex mortality table for option elections.** This is half way between the former assumption (75%/25%), and the current experience (69%/31%).

2. **Use a 50% unisex assumption for conversion of lump sums.** It is reasonable to assume that males and females are equally likely to have lump sums to convert or to be affected by the provision of 145.33(A)(2) which provides that the employer portion of the benefit shall be at least as great as the member portion.

Recommendations (Cont'd)

3. **Convert** all factors to mortality tables adopted in conjunction with the experience study.

4. **Recognize** the subsidized treatment of pre-2003 additional annuity conversions. OPERS staff will address this matter.

5. **Use an 8% interest assumption** in building all factors including those that apply to the Combined and Member-Directed Plans.

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Recommendations (Cont'd)

6. **Use recommended factors** for survivor options for additional annuity and money purchase (reemployed retiree) calculations.

7. **Use recommended factors** for recomputations following retirement.

8. **All recommendations to take effect** for benefits effective on or after July 1, 2007.

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Effects

These recommendations will:

- Slightly increase optional forms of benefits.
- Decrease 145.33(A)(2) “floor” benefits.
- Decrease benefits that are the result of additional annuities.
- Decrease benefits resulting from annuitization of balances applicable to money purchase benefits (reemployed retirees.)

Section 3

Illustrations of Commonly Used Factors

Optional Benefit Forms

- Life Annuity with 10% to 100% to Survivor (Plans A, C, D, F)
- Life Annuity with Period Certain (Plan E)
- Recomputations After Retirement, including Plan F recomputations

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100% to Beneficiary
145.46(B)(2)(c) "Plan D"

	100% Option Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
Age	Present	Proposed	Present	Proposed	Change
55	0.85481	0.88955	$ 854.81	$ 889.55	$ 34.74
60	0.82086	0.85674	$ 820.86	$ 856.74	$ 35.88
65	0.78114	0.81888	$ 781.14	$ 818.88	$ 37.74

The example factors assume that the beneficiary is the same age as the retiree. In that case, for example, a 55 year old retiree who is eligible for a $1,000 monthly benefit may instead accept a $854.81 monthly benefit along with the guarantee that all of that amount will continue to the beneficiary after the member's death. If the beneficiary dies first, the monthly amount "pops up" to the original $1,000.

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50% to Spouse Conversion (145.46(B)(1) "Plan A"

	50% Option Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
Age	Present	Proposed	Present	Proposed	Change
55	0.92172	0.94155	$ 921.72	$ 941.55	$ 19.83
60	0.90162	0.92284	$ 901.62	$ 922.84	$ 21.22
65	0.87712	0.90042	$ 877.12	$ 900.42	$ 23.30

The example factors assume that the beneficiary is the same age as the retiree. In that case, for example, a 55 year old retiree who is eligible for a $1,000 monthly benefit may instead accept a $921.72 monthly benefit along with the guarantee that half of that amount (or $460.86) will continue to the beneficiary after the member's death. If the beneficiary dies first, the monthly amount "pops up" to the original $1,000.

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Selected % Conversion (e.g. 10%) 145.46(B)(2)(b) "Plan C"

	10% Option Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
Age	Present	Proposed	Present	Proposed	Change
55	0.98330	0.98774	$ 983.30	$ 987.74	$ 4.44
60	0.97864	0.98355	$ 978.64	$ 983.55	$ 4.91
65	0.97275	0.97836	$ 972.75	$ 978.36	$ 5.61

The % continuation under Plan C is chosen by the retiree (between 10% and 100%).

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Period Certain Conversion 145.46(B)(2)(d) "Plan E"

	15-Year Period Certain Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
Age	Present	Proposed	Present	Proposed	Change
55	0.95724	0.97444	$ 957.24	$ 974.44	$ 17.20
60	0.92714	0.95026	$ 927.14	$ 950.26	$ 23.12
65	0.87606	0.90916	$ 876.06	$ 909.16	$ 33.10

Plan E provides that if the retiree dies before the end of a stated "certain" period, benefits continue to the end of the period. A retiree whose only beneficiary is a dependent child might choose Plan E. Different choices for the certain period are available.

Period Certain Conversion 145.46(B)(2)(d) "Plan E"

	5-Year Period Certain Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
Age	Present	Proposed	Present	Proposed	Change
55	0.99501	0.99759	$ 995.01	$ 997.59	$ 2.58
60	0.99129	0.99478	$ 991.29	$ 994.78	$ 3.49
65	0.98380	0.98890	$ 983.80	$ 988.90	$ 5.10

Plan E provides that if the retiree dies before the end of a stated "certain" period, benefits continue to the end of the period. A retiree whose only beneficiary is a dependent child might choose Plan E. Different choices for the certain period are available.

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Money Purchase – Reemployed Retiree Single Life Conversion 145.384(B)(2)

	Single Life Annuity Factor		Monthly Benefit Resulting from a $10,000 Contribution Account		
Age	Present	Proposed	Present	Proposed	Change
65	0.00865	0.00847	$ 86.50	$ 84.70	$ (1.80)
70	0.00945	0.00926	$ 94.50	$ 92.60	$ (1.90)
75	0.01050	0.01038	$ 105.00	$ 103.80	$ (1.20)

These factors affect reemployed retirees and apply to cases where no other benefit option is elected. Upon subsequent retirement, they receive an additional benefit based upon their account balance and these factors. The factors include the cost of a guarantee that they will receive at least their account balance back in annuity payments. COLA is not paid on these benefits.

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Additional Annuity Conversions (Post- 2003 Accounts) Plan B

	Single Life Annuity Factor		Monthly Benefit Resulting from a $10,000 Contribution Account		
Age	Present	Proposed	Present	Proposed	Change
55	0.00620	0.00589	$ 62.00	$ 58.90	$ (3.10)
60	0.00678	0.00633	$ 67.80	$ 63.30	$ (4.50)
65	0.00761	0.00693	$ 76.10	$ 69.30	$ (6.80)

When additional accounts are annuitized the benefits are paid with COLA, and the annuitization factors include a charge for the COLA. The factors also include a charge for a guarantee that the individual will always receive in annuity payments an amount at least equal to the account balance that was annuitized.

Recomputation After Retirement

Age	Recomputation 10 Years after Retirement 100% Option factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
	Present	Proposed	Present	Proposed	Change
65	0.78114	0.82526	$ 781.14	$ 825.26	$ 44.12
70	0.73781	0.78448	$ 737.81	$ 784.48	$ 46.67
75	0.69616	0.73685	$ 696.16	$ 736.85	$ 40.69

The example factors assume that the beneficiary is the same age as the retiree. The proposed factors are a linear combination of factors with and without COLA, weighted in accordance with the number of COLAs that have occurred since initial retirement (in this case, 10 years). These factors would also apply to Plan F, when beneficiaries are added following retirement.

Recomputation After Retirement

Age	Recomputation 5 Years after Retirement 100% Option Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
	Present	Proposed	Present	Proposed	Change
65	0.78114	0.82249	$ 781.14	$ 822.49	$ 41.35
70	0.73781	0.78164	$ 737.81	$ 781.64	$ 43.83
75	0.69616	0.73406	$ 696.16	$ 734.06	$ 37.90

The example factors assume that the beneficiary is the same age as the retiree. The proposed factors are a linear combination of factors with and without COLA, weighted in accordance with the number of COLAs that have occurred since initial retirement (in this case, 5 years). These factors would also apply to Plan F, when beneficiaries are added following retirement.

Recomputation After Retirement

	Recomputation 5 Years after Retirement 50% Option Factor		Optional Monthly Benefit resulting from a $1,000 Formula Benefit		
Age	Present	Proposed	Present	Proposed	Change
65	0.87712	0.90257	$ 877.12	$ 902.57	$ 25.45
70	0.84912	0.87741	$ 849.12	$ 877.41	$ 28.29
75	0.82087	0.84661	$ 820.87	$ 846.61	$ 25.74

The example factors assume that the beneficiary is the same age as the retiree. The proposed factors are a linear combination of factors with and without COLA, weighted in accordance with the number of COLAs that have occurred since initial retirement (in this case, 5 years). These factors would also apply to Plan F, when beneficiaries are added following retirement.

Appendix 1

Less Commonly used Factors

OPERS

Single Life Conversions 145.33 (A)(2) "Plan B"

	Annuity Factor		Minimum Benefit Resulting from a $10,000 Contribution Account		
Age	Present	Proposed	Present	Proposed	Change
55	0.00780	0.00761	$ 78.00	$ 76.10	$ (1.90)
60	0.00837	0.00815	$ 83.70	$ 81.50	$ (2.20)
65	0.00920	0.00892	$ 92.00	$ 89.20	$ (2.80)

These factors mostly affect deferred vested people. Such people are guaranteed to get the formula benefit, but no less than would be produced by the above factors applied to twice their contribution balance. Neither the present nor the proposed factors take into account the COLA.

Money Purchase – Reemployed Retiree Joint Life Conversions 145.384(B)(2)

Age	Single Life Annuity Factor: Present	Single Life Annuity Factor: Proposed	Monthly Benefit Resulting from a $10,000 Contribution Account: Present	Proposed	Change
65	0.00920	0.00892	$ 92.00	$ 89.20	$ (2.80)
70	0.01040	0.01003	$ 104.00	$ 100.30	$ (3.70)
75	0.01210	0.01170	$ 121.00	$ 117.00	$ (4.00)

These factors affect reemployed retirees and apply to cases where another benefit option is elected. Following application of these factors, factors shown on the following slides are then applied, depending on the option elected.

OPERS

Money Purchase - Reemployed Retiree 145.384(B)(2)(b)(ii) 100% Conversions

Age	100% Option Factor Present	100% Option Factor Proposed	Optional Benefit Resulting from a $1,000 Annuity Benefit Present	Proposed	Change
65	0.81201	0.83835	$ 812.01	$ 838.35	$ 26.34
70	0.76837	0.79400	$ 768.37	$ 794.00	$ 25.63
75	0.72529	0.74023	$ 725.29	$ 740.23	$ 14.94

The present factors involve an approximation that tends to pay slightly more than a true equivalent. The proposed factors also approximate true factors. They are easier to calculate than true factors and are a closer approximation than the present factors in most cases.

Money Purchase - Reemployed Retiree 145.384(B)(2)(a) 50% Conversions

	50% Option Factor		Optional Benefit Resulting from a $1,000 Annuity Benefit		
Age	Present	Proposed	Present	Proposed	Change
65	0.89625	0.90514	$ 896.25	$ 905.14	$ 8.89
70	0.86901	0.87513	$ 869.01	$ 875.13	$ 6.12
75	0.84078	0.83659	$ 840.78	$ 836.59	$ (4.19)

The present factors involve an approximation that tends to pay slightly more than a true equivalent. The proposed factors also approximate true factors. They are easier to calculate than true factors and are a closer approximation than the present factors in most cases.

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Money Purchase - Reemployed Retiree 145.384(B)(2)(b)(ii) 10% Conversions

	10% Option Factor		Optional Benefit Resulting from a $1,000 Annuity Benefit		
Age	Present	Proposed	Present	Proposed	Change
65	0.97737	0.95922	$ 977.37	$ 959.22	$ (18.15)
70	0.97074	0.94210	$ 970.74	$ 942.10	$ (28.64)
75	0.96351	0.91838	$ 963.51	$ 918.38	$ (45.13)

The present factors involve an approximation that tends to pay slightly more than a true equivalent. The proposed factors also approximate true factors. They are easier to calculate than true factors and are a closer approximation than the present factors in most cases.

Additional Annuity 145.23(C) Post-2003 Conversions

Age	Single Life Annuity Factor: Present	Single Life Annuity Factor: Proposed	Monthly Benefit Resulting from a $10,000 Contribution Account: Present	Proposed	Change
55	0.00620	0.00602	$ 62.00	$ 60.20	$ (1.80)
60	0.00678	0.00657	$ 67.80	$ 65.70	$ (2.10)
65	0.00761	0.00735	$ 76.10	$ 73.50	$ (2.60)

These factors apply to cases where another benefit option is elected. Following application of these factors, factors shown on the following slides are then applied, depending on the option elected. Different factors may be applicable to pre-2003 accounts depending on whether or not changes are made to the grandfathering procedure inherent in the pre-2003 calculations.

Additional Annuity
145.23C 100% Post-2003 Conversions

Age	100% Option Factor Present	100% Option Factor Proposed	Optional Monthly Benefit Resulting from a $100 Annuity Benefit Present	Proposed	Change
55	0.85481	0.88812	$85.48	$88.81	$3.33
60	0.82086	0.85425	$82.09	$85.42	$3.33
65	0.78114	0.81488	$78.11	$81.49	$3.38

The present factors involve an approximation that tends to pay slightly more than a true equivalent. The proposed factors also approximate true factors but are easier to calculate than true factors. They are a closer approximation than the present factors in most cases.

OPERS

Additional Annuity
145.23C 50% Post-2003 Conversions

	50% Option Factor		Optional Monthly Benefit Resulting from a $100 Annuity Benefit		
Age	Present	Proposed	Present	Proposed	Change
55	0.92172	0.93971	$ 92.17	$ 93.97	$ 1.80
60	0.90162	0.91964	$ 90.16	$ 91.96	$ 1.80
65	0.87712	0.89528	$ 87.71	$ 89.53	$ 1.82

The present factors involve an approximation that tends to pay slightly more than a true equivalent. The proposed factors also approximate true factors but are easier to calculate than true factors. They are a closer approximation than the present factors in most cases.

Additional Annuity
145.23C 10% Post-2003 Conversions

Age	10% Option Factor Present	10% Option Factor Recom.	Optional Monthly Benefit Resulting from a $100 Annuity Benefit Present	Proposed	Change
55	0.98330	0.98385	$ 98.33	$ 98.38	$ 0.05
60	0.97864	0.97679	$ 97.86	$ 97.68	$ (0.18)
65	0.97275	0.96750	$ 97.28	$ 96.75	$ (0.52)

The present factors involve an approximation that tends to pay slightly more than a true equivalent. The proposed factors also approximate true factors but are easier to calculate than true factors. They are a closer approximation than the present factors in most cases.

Appendix 2

Pre-2003 Additional Annuities

Pre-2003 Additional Annuities

- COLAs are paid on additional annuities. Historically, factors did not recognize the COLA, because the COLA was not guaranteed.
- In 2002, the Board adopted factors for Additional Annuities that did recognize the value of the COLA, but elected to grandfather in persons whose accounts were opened prior to 2003. This continued a subsidy to those accounts that had existed since inception.
- At this time 1,216 accounts out of a total of 1,775 are affected by the grandfathering.
- In the event that the Board wants to reconsider the grandfathering decision, this appendix provides factors for additional annuities with and without the COLA recognition.

OPERS

145.23(C) "Additional Annuity" Conversions (Pre 2003 Accounts) Plan B

	Single Life Annuity Factor			Monthly Benefit Resulting from a $10,000 Contribution Account				
Age	Present	Prop 1.	Prop. 2	Present	Prop 1.	Prop 2	Change Prop 1	Change Prop 2
55	0.00780	0.00747	0.00589	$78.00	$74.70	$58.90	$ (3.30)	$ (19.10)
60	0.00837	0.00789	0.00633	$83.70	$78.90	$63.30	$ (4.80)	$ (20.40)
65	0.00920	0.00847	0.00693	$92.00	$84.70	$69.30	$ (7.30)	$ (22.70)

Factors for the pre 2003 group have been explicitly subsidized because they do not include a charge for the COLA. The Prop. 1 factors are a continuation of this practice. The Prop. 2 factors are true equivalent factors that include a charge for the COLA. If the Board does not take specific action to the contrary, Proposed Factor Set 1 would be applied.

ADDITIONAL ANNUITY PROGRAM
Revision Effective 01/01/03

Background:

On October 16, 2002 the Retirement Board, with input from our Actuary and staff, adopted a new structure for the Additional Annuity Program. The changes modify the existing plan in several ways, which are outlined below. Changes to the program will occur in two phases; the first occurring on January 1, 2003 and the second when legislation is enacted allowing us to further modify the plan.

Summary of Changes:

Beginning January 1, 2003 and until legislative changes are enacted:

- Deposits made in 2002 begin accruing interest on January 1, 2003 and will receive interest on a 5% annualized rate.
- Deposits made prior to 2002 will receive 7.75% interest on December 31, 2002. Beginning December 31, 2002, all funds on deposit will receive interest on a 5% annualized rate.
- Funds received after December 31, 2002 will not be ~~invested~~ ~~and will not be~~ eligible for gains and losses until the day after the effective date of the law change (targeted for 01/01/04).

Post-legislative changes:

- OPERS will accept additional annuity deposits by payroll deduction.
- Funds will be available for investment on the first day following the deposit (i.e.: Deposits received November 7, 2003 will be invested and eligible for gains and losses beginning November 8, 2003).
- Additional annuity deposits will be invested in (purchase shares of) the Ohio PERS Stable Value Fund and will reflect gains and losses from that fund's performance (There will no longer be a stated interest rate).

Features	Existing Program	Modified Program
Deposits	Rollovers; personal check	Rollovers, personal check; payroll deduction
Interest Rate	7.75% annual rate, compounded daily	5.00% annualized rate until law change; then total return will be based on OPERS Stable Value Fund performance.
Annuity Factor*	Does not reflect 3% COLA	Reflects 3% COLA

*The COLA will be reflected in new annuity factors that will apply to members who make their initial contribution after 01/01/2003. The rate of annuitization remains at 8%.

Administration:

Contribution Receipts

Contribution Receipts will post member contributions daily. On the day following the contribution, the aggregate dollar amount of contributions will be invested in the OPERS Stable Value Fund. All contributions posted will receive gains/losses as calculated from the daily return of the OPERS Stable Value Fund.

Benefits

Upon age & service retirement, if a member elects to annualize their Additional Annuity account, Benefits Administration will calculate monthly payments. Benefits will also maintain beneficiary designations.

An annual 3% fixed cost-of-living adjustment (COLA) will continue to be provided to members who choose to annuitize their Additional Annuity Account. (The annuitization rate remains at 8%). The COLA will be reflected in new annuity factors that will apply to members who make their initial contribution after 01/01/2003.

OPERS Stable Value Fund: The OPERS Stable Value Fund seeks to preserve principal, offer attractive yields during all interest rate environments, and maintain sufficient liquidity for shareholder cash flows. Over complete market cycles, the fund should provide the yield of intermediate-term, high-quality bond funds and the stability of money market funds. (For example, the yield at September 30 for the past 5 years was '02: 5.14%, '01: 6.37%, '00: 6.72%, '99: 6.04%, '98: 6.48%.*) The fund invests in a combination of high-quality fixed income securities and investment contracts from banks and insurance companies. The fixed income securities can provide attractive yields and the investment contracts can preserve principal by spreading gains and losses over several years. Ohio PERS has contracted with Invesco, a subsidiary of Amvescap PLC, to manage the fund's investments. Invesco has managed stable value investments since 1985 and is the second largest stable value manager with over $32 billion in assets.

* The OPERS Stable Value Fund will not begin operations until 12/27/02 and the yields quoted assume that OPERS had invested Additional Annuity Funds exclusively in the Stable Value Trust during the quoted periods.

Attachment 2

Additional Annuity Program

December 20, 2006

OPERS

Additional Annuity Program

- Supplemental savings plan available to Traditional Plan members
  - After tax contributions
    - $100 minimum deposit, no more than once per month
    - Subject to IRC 415 (c) annual contribution limits ($44,000 in 2006)
  - Rollovers
    - Rollovers not subject to the IRC 415 (c) contribution limits

Interest

- Interest set by the Board and compounded annually – now at 4%

- Deposits in a calendar year begin earning interest January 1 of the following year

Distributions

- At retirement can choose a lump sum or monthly benefit based on account balance
  - Life annuity options
  - PLOP
- Account balance can be withdrawn at any time

Acceptable Rollovers

- Traditional and SIMPLE Individual Retirement Accounts (IRA)
- Simplified Employee Pensions
- 401 (k) accounts
- 401 (a) accounts
- 403 (b) accounts
- 457 (b) accounts

Law Change

- Allow payroll deduction
- Annuity deposits invested in the Stable Value Fund

Issue

- In 2002, the Board took action to grandfather no-cost COLA factors for converting lump sump Additional Annuity accounts to monthly annuities.

- The no-cost COLA is subsidized by the system

OPERS

Additional Annuity Account Balances

Pre-2003

Balance	**Total $**	Members	Average $ Balance
$0 - $5,000	$776,188.15	512	$1,515.99
$5,000.01 - $10,000	$1,117,259.16	158	$7,071.26
$10,000.01 - $25,000	$4,451,804.81	278	$16,013.69
$25,000.01 - $50,000	$5,703,532.32	159	$35,871.27
$50,000.01 - $100,000	$4,734,814.76	66	$71,739.62
$100,000.01 - $250,000	$5,919,477.65	40	$147,986.94
$250,000.01 - $500,000	$591,061.27	2	$295,530.64
$500,000+	$567,953.57	1	$567,953.57
	$23,862,091.69	**1216**	**$19,623.43**

Data as of 11/27/06

Additional Annuity Account Balances
Post – 2002

Data as of 11/27/2006

Balance	Total $	Members	Average $ Balance
$0 - $5,000	$385,547.13	346	$1,114.30
$5,000.01 - $10,000	$436,192.27	61	$7,150.69
$10,000.01 - $25,000	$1,240,793.09	78	$15,907.60
$25,000.01 - $50,000	$1,800,057.37	49	$36,735.86
$50,000.01 - $100,000	$1,213,045.00	16	$75,815.31
$100,000.01 - $250,000	$1,047,892.22	8	$130,986.53
$250,000.01 - $500,000	$300,100.00	1	$300,100.00
$500,000+	$0.00	0	$0.00
	$6,423,627.08	**559**	**$11,491.29**

Current Benefit Recipients with Additional Annuities

- 303 current active Additional Annuity program accounts on monthly payroll

- 85 of these had no rollover and 218 include rollover monies

Current Additional Annuity Benefits with Rollovers

- 218 Additional Annuities with Rollovers

Balance before rollover	\$ 3,912,673.43	(30%)
Rolled over at retirement	\$ 9,259,807.34	(70%)
	\$13,172,480.77	

Ave. Balance before Rollover:	\$17,948
Ave. Rollover Amount:	\$42,476
Ave. Total Amount to Convert:	\$ 60,424

Effect on Average Monthly Benefit

$ 60,424 Amount to convert
x   .00747 (proposed factor without COLA cost)
$ 451.37 Monthly Benefit

Monthly Difference = $95.47

$ 60,424 Amount to convert
x   .00589 (proposed factor with COLA cost)
$ 355.90 Monthly Benefit

Options

1. Leave as is with no-cost COLA conversion factor for those who had a balance as of January 1, 2003.

– Maintains status quo

Options

2. Maintain Additional Annuity account balances as of July 1, 2007, and apply factors without COLA cost to these amounts. Apply new factors incorporating the COLA cost to future contributions and interest credited on or after July 1, 2007.

- Preserves the use of the no-COLA factors on balances prior to the change.

- Similar to Board action taken on Money Purchase plan.

Options

3. **Discontinue subsidy of the pre-2003 accounts with the implementation of the new factors on July 1, 2007.**

- All Additional Annuity accounts are treated equally and the cost of the COLA is accounted for in the factors.

GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

Memorandum

ATTACHMENT 3

January 3, 2007

To: Julie Reneau

From: Brian B. Murphy

Re: Additional Annuity Subsidy

The following chart presents our analysis of the subsidy in the additional annuity program.

	Assumed average rollover amount at annuitization	**$0**	**$60,500**	**$100,000**
1	Approximate number of affected members	1,216	1,216	1,216
2	Approximate value of current account balances (2007 $'s)	$23,862,092	$23,862,092	$23,862,092
3	% of members who will have a future rollover	72%	72%	72%
4	Estimated future rollover for each affected member (2007 $'s)	$0	$60,500	$100,000
5	Estimated total account to be annuitized (2007 $'s) (2) + (1) x (3) x (4)	$23,862,092	$76,831,052	$111,414,092
6	Average account balance that can be annuitized (2007 $'s) (5) / (1)	$19,623	$63,183	$91,623
7	Average age at annuitization	60	60	60
8	Average monthly annuity Proposal # 1 (COLA Ignored)	$154.83	$498.51	$722.91
9	Average monthly annuity Proposal #2 (COLA Recognized)	$124.21	$399.95	$579.97
10	Average additional value under Proposal #1 (2007 $'s)	$4,521	$14,551	$21,103
11	**Estimated additional total value under proposal #1 (2007 $'s)** (10) x (1)	**$5,497,536**	**$17,694,016**	**$25,661,248**
12	Subsidy as a percent of present balance	23.0%	74.2%	107.5%

The chart assumes that all members will annuitize their additional annuity accounts at retirement, but only 72% of them will rollover other funds into the additional annuity account. The figures are based upon present balances. The dollar amount of the subsidy will grow in the future because of new contributions, and interest that may be credited.