

$$\int x^2 \sqrt{x^2 \pm a^2} dx = \frac{x}{8} (2x^2 \pm a^2) \sqrt{x^2 \pm a^2} - \frac{a^2}{8} \ln|x + \sqrt{x^2 \pm a^2}| + C$$

Retiring Early in the Washington State Retirement Plans

The background features a collage of mathematical content. On the left, several integral formulas are listed, including $\int \frac{\sqrt{x^2 - a^2}}{x} dx = \sqrt{x^2 - a^2} - a \sec^{-1} \frac{x}{a} + C$, $\int \frac{x^2}{\sqrt{x^2 \pm a^2}} dx = \frac{x}{2} \sqrt{x^2 \pm a^2} + \frac{a^2}{2} \ln|x + \sqrt{x^2 \pm a^2}| + C$, $\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \frac{\sqrt{x^2 \pm a^2}}{x} + \ln|x + \sqrt{x^2 \pm a^2}| + C$, $\int \frac{dx}{x^2 \sqrt{x^2 \pm a^2}} = -\frac{1}{a^2} \sqrt{x^2 \pm a^2} + C$, $\int \frac{dx}{(x^2 \pm a^2)^{3/2}} = \frac{x}{a^2 \sqrt{x^2 \pm a^2}} + C$, and $\int (x^2 \pm a^2)^{3/2} dx = \frac{x}{8} (2x^2 \pm 5a^2) \sqrt{x^2 \pm a^2} + \frac{5a^4}{8} \ln|x + \sqrt{x^2 \pm a^2}| + C$. On the right, there are trigonometric equations: $x = p \cos \phi$, $y = p \sin \phi$, $|s| = p$, $-1 \leq x^2 + y^2 \leq -C_1$, $-4 + v \leq p - b \sin \phi$, $2r = -6 \sin \phi$, $|s| = \frac{1}{2} \sqrt{4r^2 - 4sv}$, $r dp = \dots$, $\sqrt{4r^2 + b^2} = h$, and $4r^2 + b^2 = 60$. In the center, there is a 3D geometric diagram of a cube with vertices labeled A through H and various lines connecting them.



What Is Early Retirement?

- Starting retirement and receiving pension payments prior to your pension plan's Normal Retirement Age (NRA)

Normal Retirement Eligibility				
Age/Service				
PERS/TRS/SERS		PSERS	LEOFF	WSPRS
Plan 2	Plan 3	Plan 2	Plan 2	Plan 2
65/5	65/10 or vested	65/5 Total Service; 60/10 PSERS service	53/5	Age 55; Any Age/25; Mandatory at 65

Note: For active members in open plans.

- See our [Summary of Plan Provisions](#) for details

How Early Can a Member Retire?

- Requires meeting age and service eligibility

Early Retirement Eligibility			
Age/Service			
PERS/TRS/SERS		PSERS	LEOFF
Plan 2	Plan 3	Plan 2	Plan 2
55/20	55/10	53/20 Service	50/5

Note: For active members in open plans. No early retirement options in WSPRS 2.

- See the plan details on the [DRS website](#) for more information

Retiring before NRA Has a Cost

- Additional pension payments are made when retirement starts sooner
- Less time to earn investment returns since pension payments are paid from the pension trust fund sooner
- Cost is offset, in full or in part, by applying an Early Retirement Reduction Factor (ERF)
- Amount of ERF varies by
 - The number of months a member retires before NRA
 - Age and service requirements

Actuarial Equivalent ERFs

- Member pays the full expected cost of retiring early
- Actuarial Equivalent (AE) ERFs are calculated by actuaries to equalize the expected present value of all benefit payments under Early Retirement (ER) compared to Normal Retirement (NR)

$$PV(NR)^* = ERF \times PV(ER)**$$

Note: "PV" is the Present Value (or today's value) of all expected lifetime benefits based on the payment amount earned (or "accrued") at the time the member leaves active service.

**Accrued benefit starting at NRA.*

***Accrued benefit starting immediately.*

Table of AE ERFs

Actuarial Equivalent ERFs			
Years Retired Early	Percent Reduction*		
	PERS/TRS/SERS Plans 2/3	PSERS Plan 2	LEOFF Plan 2
1	9%	9%	8%
2	17%	17%	15%
3	25%	24%	22%
4	31%	30%	28%
5	37%	36%	34%
6	42%	41%	39%
7	47%	46%	43%
8	52%	50%	48%
9	56%	54%	52%
10	59%	58%	55%

*Rounded.

Subsidized ERFs

- Member pays part of the expected cost of retiring early
 - Remaining portion of the cost is “subsidized” by the plan
- Reduction is less than the actuarial equivalent ERF
- Member must have at least 20 or 30 years of service at time of retirement, depending on the retirement plan
- Subsidized ERFs vary depending on plan, and may vary depending on when the member was hired

Table of Subsidized ERFs

Subsidized ERFs				
Eligibility	PERS/TRS/SERS		PSERS	LEOFF
	2008 ERFs	2012 ERFs		
Min. Years of Service	30	30	20	20
Hired Before 2013	✓		✓	✓
Hired After 2013		✓	✓	✓
Retire-Rehire Restriction	✓			
Years Retired Early	Plans 2/3		Plan 2	Plan 2
1	0%	5%	3%	3%
2	0%	10%	6%	6%
3	0%	15%	9%	9%
4	2%	20%	12%	
5	5%	25%	15%	
6	8%	30%	18%	
7	11%	35%	21%	
8	14%	40%		
9	17%	45%		
10	20%	50%		

Early Retirement Examples

- PERS 2 member retires at age 60 with an accrued monthly benefit of \$2,500
 - If the member has 25 years of service, they will have an AE ERF that reduces their benefit by 37%
 - If the member has 30 years of service, they qualify for a subsidized ERF* that reduces their benefit by 5%

Early Retirement Monthly Benefit PERS 2 Example			
Retirement Age/Service	NRA Benefit	ERF	
		AE	Subsidized
60/25	\$2,500	\$1,575	N/A
60/30	\$2,500	N/A	\$2,375

*Assuming the member was hired before 2013, they qualify for the 2008 ERFs.

Who Pays for Costs of Early Retirement?

- Member pays full expected cost with an AE ERF
 - Requires assumptions about how long members will receive benefits (life spans) and how much interest will be earned on their contributions
 - Assumptions can be wrong, and unexpected costs/savings may arise
- Member pays partial cost with subsidized ERF
 - Remaining costs paid by plan members and employers through socialization of all plan costs, paid via contribution rates

Summary

- Early retirement options available to members meeting age and service requirements
- Requirements vary by plan and system
- Plan service, age, and hire date determine available ERFs when eligibility requirements are met
- ERFs applied to retirement benefits offset the cost of early retirement and reduce the size of monthly benefits
 - Full cost offset: Actuarial equivalent factors (larger reduction)
 - Partial cost offset: Subsidized factors (smaller reduction)

Questions? Please Contact: The Office of the State Actuary
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Thank You



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"Supporting financial security for generations."

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