

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY

TABLE 9

The determination of the accrued liability requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability that results from the differences between actual experience and the actuarial assumptions.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions due to changing conditions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

Examples of risk that may reasonably be anticipated to significantly affect the plan's future financial condition include:

1. Investment risk – actual investment returns may differ from the expected returns;
2. Asset/Liability mismatch – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets and consequently altering the funded status and contribution requirements;
3. Contribution risk – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan's funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
4. Longevity risk – members may live longer or shorter than expected and receive pensions for a period of time other than assumed;
5. Other demographic risks – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

RISKS ASSOCIATED WITH MEASURING THE ACCRUED LIABILITY (CONTINUED)

Plan Maturity Measures

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

	<u>January 1, 2019</u>	<u>January 1, 2017</u>
Ratio of actives to retirees and beneficiaries	0.1	0.2
Ratio of net cash flows to market value of assets	4%	7%
Duration of the actuarial accrued liability	13.6	13.9

Ratio of Net Cash Flow to Market Value of Assets

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

Duration of Actuarial Accrued Liability

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

Additional Risk Assessment

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

**COMPARISON OF ACTUARIAL RESULTS BASED ON
PROPOSED BENEFIT LEVELS
TABLE 10**

	<u>Current Plan</u>	<u>Proposed Plan A</u>	<u>Proposed Plan B</u>
1. Normal Retirement Benefit	\$ 1,200.00	\$ 1,300.00	\$ 1,400.00
2. Normal Cost	25,944	28,103	30,268
3. Present Value of Future Benefits	8,351,441	9,047,394	9,743,351
4. Actuarial Accrued Liability	8,194,715	8,877,622	9,560,500
5. Unfunded Accrued Liability / (Surplus)	1,919,136	2,602,043	3,284,921
6. Total Annual Calculated Contribution	217,405	273,042	328,682
7. Assumed Contribution	1,137,742	1,137,742	1,137,742
8. Funding Period Based on Assumed Contribution	2 years	3 years	4 years
9. Funded Ratio	76.6%	70.7%	65.6%

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ACTUARIAL VALUATION INFORMATION CHECKLIST

PROPOSED BENEFIT LEVELS

TABLE 11

	Current Plan	Proposed Plan A	Proposed Plan B	Maximum Per State Statute
1. Normal Retirement Benefit (monthly):				
c. Regular	\$1,200.00	\$1,300.00	\$1,400.00	None
d. Extended Service				5% of Regular, for 10
Amount Per Year of Service	\$60.00	\$65.00	\$70.00	Additional years
2. Vested Retirement Benefit (monthly):				
d. With 20 or More Years of Service				
not yet age 50, but payable at age 50	\$1,200.00	\$1,300.00	\$1,400.00	None
e. With 10 to 20 Years of Service				Pro rata Share of
Amount Per Year of Service	\$60.00	\$65.00	\$70.00	Regular
f. Minimum Vesting Years	10	10	10	20 Years
3. Disability Retirement Benefit (monthly)				
c. Short Term Disability				
Amount payable for not more than 1				
year	\$0.00	\$0.00	\$0.00	½ of Regular or \$225,
d. Long Term Disability				whichever greater
Lifetime Benefit	\$0.00	\$0.00	\$0.00	Regular or \$450,
				whichever is greater
4. Survivor Benefits (monthly):				
h. Following Death before Retirement				
Due to death in line of duty as a				
volunteer firefighter	\$600.00	\$650.00	\$700.00	½ of Regular or \$225,
i. Optional Survivor Benefit				whichever greater
Following Death before Retirement				
Due to death in line of duty as a				
volunteer firefighter	\$0.00	\$0.00	\$0.00	Up to 100% of
j. Following Death after Normal Retirement	\$600.00	\$650.00	\$700.00	Regular
k. Following Death after Normal Retirement				Up to 50% of Regular
with Extended Service				
Amount Per Year of Service	\$30.00	\$32.50	\$35.00	50% of Extended
l. Following Death after Vested Retirement				
with 20 or More Years of Service	\$600.00	\$650.00	\$700.00	50% of Vested
m. Following Death after Vested Retirement				
with 10 to 20 Years of Service				
Amount Per Year of Service	\$30.00	\$32.50	\$35.00	50% of Vested
n. Following Death after Disability Retirement	\$0.00	\$0.00	\$0.00	50% of Disability
5. Funeral Benefits (Required Benefit):				
b. Funeral Benefit Lump Sum, one time only	\$2,400.00	\$2,600.00	\$2,800.00	2 * Regular; Not less than \$100

SECTION C

GLOSSARY OF TERMS

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Glossary of Terms

Actuarial Accrued Liability	Computed differently under different actuarial cost methods. Generally actuarial accrued liability represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued as of the valuation date.
Actuarial Cost Method	A method for determining the actuarial present value of future benefits and allocating such value to time periods in the form of a normal cost and an actuarial accrued liability.
Actuarial Gain or Loss	From one valuation to the next, if the experience of the plan differs from that anticipated by the actuarial assumptions, an actuarial gain or loss occurs. For example, an actuarial gain would occur if the assets in the trust had a yield of 12% based on actuarial value, while the assumed yield on the actuarial value of assets was 7.5%.
Actuarial Value of Assets	The value of cash, investments, and other property belonging to the Plan, as valued by the actuary for purposes of the actuarial valuation.
Entry Age Actuarial Cost Method	A method under which a participant's actuarial present value of future benefits is allocated on a level basis over the earnings of the participant between his/her entry into the Plan and his/her assumed exit.
Normal Cost	Computed differently under different actuarial cost methods, the normal cost generally represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued during a year.
Present Value of Future Benefits	This is computed by projecting the total future benefit cash flow from the Plan, using actuarial assumptions, and then discounting the cash flow to the valuation date.
Unfunded Actuarial Accrued Liability	The difference between total actuarial present value of future benefits over the sum of the tangible assets of the Plan and the actuarial present value of the members' future normal costs. The Plan is underfunded if the difference is positive and overfunded if the difference is negative.