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February 3, 2010

Ms. Monica Butler
Retirement System Director
Tacoma Employees' Retirement System
3628 South 35th Street
Tacoma, WA 98409

Re: Updated Early Warning Projections for the Tacoma Employees' Retirement System

Dear Monica:

The enclosed projections update the results provided in the January 1, 2009 Actuarial Valuation with the best estimates of the preliminary asset and salary information as of December 31, 2009. The purpose of this letter is to provide rough estimates of how experience could impact the funded status of the System. In particular, investment experience has a large impact on the System's funding. The following 20-year projections are enclosed:

- Projection 1: January 1, 2010 Best Estimate with no further contribution increases
- Projection 2: Continued contribution increases to amortize unfunded liability
- Projection 3: Downside – Repeat of Returns from 2000 – 2002 (3.9%, -2.9%, -8.9%)
- Projection 4: Upside – Repeat of Returns from 2003 – 2005 (29.4%, 15.5%, 8.7%)

These projections rely on the member data provided for the January 1, 2009 actuarial valuation and preliminary asset and salary information through December 31, 2009. The assumptions used in these projections are the same as was used in the January 1, 2009 valuation. The increase of the total contribution rate from 16.00% to 18.00% in 2010 is reflected in the model. For Projection 1, the total contribution rate is kept at 18.00% for all future years. For Projections 2-4, the total contribution rate is increased in increments of 2.00% if additional contribution increases are needed to amortize the Unfunded Actuarial Accrued Liability (UAAL). Net 2009 investment return is estimated to be 27.61% since this produces the \$957.4 million end of year market value of assets provided by the System. This investment return may differ from the investment return provided by Wilshire. The 2010 general wage increase of 7.35% for the majority of members is substantially higher than the 4.25% assumption.

Observations

- Based on the rebound in the market in 2009, the System's funding has improved, but additional contribution increases are still required to amortize the Unfunded Actuarial Accrued Liability (UAAL) within 30 years. The Funding and Benefits Policy states,

This work product was prepared solely for Tacoma Employee's Retirement System for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.

“Contribution increases should consider amortizing any UAAL over a period of 30 years or less.”

- At January 1, 2013 when all current investment gains and losses will be fully recognized the model projects a contribution rate of 20.46% is needed to pay off the UAAL in 30 years if the System earns 7.75% in the future (See Projection 2).
- We estimate the System’s Funded Ratio which is based on actuarial assets has declined from 109.5% at January 1, 2009 to 99.8% at January 1, 2010. This decline is due to the continued recognition of the substantial 2008 asset loss. It will take two more years before the 2008 asset loss will be fully recognized. If market assets are used we estimate the Funded Ratio has improved from 76.2% at January 1, 2009 to 88.4% at January 1, 2010.

Comments on Projections 1 - 4

Projections 1 to 4 are consistent with the January 1, 2009 actuarial valuation. Projection 1 assumes investment returns of 7.75% in all years after 2009 and no further contribution increases. Projection 2 shows graded contribution rate increases until the amortization of the UAAL is within 30 years. Projections 3 and 4 demonstrate the potential downside and upside impact of investment volatility based on the actual returns the System experienced in two recent three year periods.

Graphs and Output

Each projection shows four graphs:

1. **Funded Ratio = AVA / AAL.** This is the funded ratio based on the Actuarial Value of Assets divided by the Actuarial Accrued Liability. The Actuarial Value of Assets recognizes market value gains and losses in four even pieces starting at the valuation date. Therefore, if there had been a \$4 million market value gain or loss in the year ended December 31, 2009, it would have been recognized in four even \$1 million installments at January 1, of 2010, 2011, 2012 and 2013. Gains and losses for this purpose are based on whether the investments did better or worse than the 7.75% anticipated by the actuarial assumption. Therefore, a return of 3.75% would be treated as a 4.0% loss because it was 4.0% less than the 7.75% anticipated by the actuarial assumptions. The actuarial value of assets is estimated to be 113% of the market value of assets January 1, 2010.
2. **Funded Ratio = MVA / AAL.** This is the funded ratio based on the Market Value of Assets divided by the Actuarial Accrued Liability. It will differ from AVA / AAL to the extent some of the market value gains and losses have not yet been recognized in the Actuarial Value of Assets.

3. **Amortization Period.** This is how long it will take for the excess of the Contribution Rate (currently 18.00% of pay) over the Normal Cost Rate (17.16%) to pay off the UAAL.
4. **Calculated Total Contribution Rate.** If there is an Unfunded Actuarial Accrued Liability (Actuarial Assets are less than Actuarial Accrued Liabilities) this is the rate required to pay for the Unfunded Actuarial Accrued Liability over 30 years consistent with the Funding and Benefits Policy.

Numbers: We have attached a numerical summary to each projection showing the underlying numbers for the “current” bars.

Exhibit 1 - Funding and Benefits Policy

Exhibit 1 is the Board’s Funding and Benefits Policy. The Funding and Benefits Policy is designed by the Board to provide guidance as to when adjustments to the Retirement System’s contributions and benefits should be considered. The Funding & Benefits Policy is meant to assist in establishing a contribution rate which is relatively stable over the long term while the System provides its members superior retirement income. The policy was last revised in July 2009.

Data, Methods and Assumptions

The estimates in this letter are based on the member data and plan provisions used in the January 1, 2009 actuarial valuation. The December 31, 2009 asset information and the general wage increase for most members at January 1, 2010 were provided by the System. These estimates do not include any other gains or losses from liability or asset experience. We have not made any adjustments to anticipate incremental increases in the Normal Cost Rate since the last actuarial valuation due to new members born in later years living longer. More sophisticated projection work would be required to reflect this. The January 1, 2011 actuarial valuation will include any incremental increases in the Normal Cost Rate over the preceding two years. The assumptions and methods were adopted by the Retirement Board. The most recent changes in assumptions adopted at the July 10, 2008 Retirement Board meeting and used in the January 1, 2009 actuarial valuation are used in all projections.

Certification

Milliman's work product was prepared exclusively for the use or benefit of the Tacoma Employees' Retirement System for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning the System's operations, and uses the System's data which Milliman has not audited. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs. Any distribution of this report must be in its entirety, unless prior written consent from Milliman is obtained.

These estimates are subject to the uncertainties of a regular actuarial valuation; they are inexact because they are based on assumptions that are themselves necessarily inexact, even though we consider them reasonable. Thus, the emerging costs may vary from those presented in this letter to the extent actual experience differs from that projected by the actuarial assumptions.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

Summary

We have projected the results of the January 1, 2009 actuarial valuation forward to January 1, 2010 using updated asset and wage increase information provided by the System. The estimated Funding Ratio based on actuarial assets at January 1, 2010 is 99.8%. The estimated Funding Ratio based on market assets at January 1, 2010 is 88.4%.

The projections illustrate the need for the City to consider further contribution increases to make sure that an adequate level of assets is maintained to pay future benefits.

These early warning calculations only provide the Board with a rough barometer of the System's experience over the last year. The results of the January 1, 2011 actuarial valuation could be materially different.

If you have any questions, please call.

Sincerely,

A handwritten signature in black ink that reads 'Mark C. Olleman'.

Mark C. Olleman, FSA, EA, MAAA
Consulting Actuary
MCO/JACD/cdc

Enclosures

A handwritten signature in black ink that reads 'Joshua A. C. Davis'.

Joshua A. C. Davis, FSA, EA, MAAA
Consulting Actuary

Tacoma City Employees' Retirement System

Funding & Benefits Policy

Objective

This policy is intended to provide guidance as to when adjustments to the Retirement System's contributions and benefits should be considered. The Funding & Benefits Policy is meant to assist in establishing a contribution rate which is relatively stable over the long term while the System provides its members superior retirement income.

Policy

When the Funding Ratio is:

- (a) Above 120% - The potential for benefit improvements will be reviewed providing the Retirement System's funding status is expected to be stable and remain stable after the improvements.
- (b) Between 95% and 120% - There will be no action, provided that either:
 - 1. The Contribution Rate is greater than or equal to the Normal Cost Rate, or
 - 2. There is a Funding Reserve which is projected to be amortized over not less than 20 years.

If neither of these conditions is met, then the Retirement Board will consider an increase in the contribution rates.

- (c) Between 80% and 95% - The Retirement Board will consider an increase in the contribution rates.
- (d) Under 80% - The funding and benefits policy will be reviewed and reevaluated.

Additional Guidelines

- (a) There is a long-term goal of achieving a Contribution Rate greater than or equal to the Normal Cost Rate so that if the Funding Reserve is lost due to adverse experience, there will not be a sudden increase in the calculated required contribution.
- (b) Increases in the contribution rate may be made in small increments.
- (c) Requests for increases in the contribution rate should be made at least one-year prior to the beginning of the financial biennium.
- (d) Contribution increases should consider amortizing any Unfunded Actuarial Accrued Liability over a period of 30 years or less.
- (e) Calculations based on the Market Value of Assets will also be considered.
- (f) Long-term funding projections will also be considered.

Terminology

- (a) The Funding Ratio is calculated by dividing the System's Actuarial Value of Assets by the Actuarial Accrued Liability.
- (b) The Funding Reserve is the dollar amount by which the System's Actuarial Value of Assets exceeds the Actuarial Accrued Liability.
- (c) Unfunded Actuarial Accrued Liability is the dollar amount by which the System's Actuarial Accrued Liability exceeds the Actuarial Value of Assets.

Tacoma Employees' Retirement System
Numerical Summary of Results
Deterministic Projection
(Dollar Amounts in \$Millions)
2010 Best Estimate

Year	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio = AVA / AAL	Market Value of Assets	Funded Ratio = MVA / AAL	Normal Cost Rate	Contribution Rate Minus Normal Cost Rate	Amortization Period	Greater of Current Rate or 20/30 Year Amort Rate
2009	1,002.3	1,097.3	109.5%	763.6	76.2%	17.16%	-1.16%	Rsrv Grows	16.00%
2010	1,082.8	1,080.7	99.8%	957.4	88.4%	17.16%	0.84%	1.3	18.00%
2011	1,151.9	1,056.1	91.7%	1,018.5	88.4%	17.16%	2.49%	UAAL Grows	19.65%
2012	1,223.7	1,044.2	85.3%	1,081.8	88.4%	17.16%	4.49%	UAAL Grows	21.65%
2013	1,298.1	1,147.0	88.4%	1,147.0	88.4%	17.16%	3.62%	UAAL Grows	20.78%
2014	1,374.9	1,214.1	88.3%	1,214.1	88.3%	17.16%	3.70%	UAAL Grows	20.86%
2015	1,454.3	1,283.1	88.2%	1,283.1	88.2%	17.16%	3.77%	UAAL Grows	20.93%
2016	1,536.3	1,353.9	88.1%	1,353.9	88.1%	17.16%	3.86%	UAAL Grows	21.02%
2017	1,621.0	1,426.7	88.0%	1,426.7	88.0%	17.16%	3.94%	UAAL Grows	21.10%
2018	1,708.5	1,501.4	87.9%	1,501.4	87.9%	17.16%	4.03%	UAAL Grows	21.19%
2019	1,798.8	1,578.2	87.7%	1,578.2	87.7%	17.16%	4.13%	UAAL Grows	21.29%
2020	1,892.5	1,657.3	87.6%	1,657.3	87.6%	17.16%	4.22%	UAAL Grows	21.38%
2021	1,989.5	1,738.6	87.4%	1,738.6	87.4%	17.16%	4.31%	UAAL Grows	21.47%
2022	2,090.1	1,822.5	87.2%	1,822.5	87.2%	17.16%	4.41%	UAAL Grows	21.57%
2023	2,194.8	1,909.3	87.0%	1,909.3	87.0%	17.16%	4.52%	UAAL Grows	21.68%
2024	2,304.0	1,999.4	86.8%	1,999.4	86.8%	17.16%	4.62%	UAAL Grows	21.78%
2025	2,418.2	2,093.1	86.6%	2,093.1	86.6%	17.16%	4.73%	UAAL Grows	21.89%
2026	2,537.9	2,190.8	86.3%	2,190.8	86.3%	17.16%	4.85%	UAAL Grows	22.01%
2027	2,663.7	2,293.1	86.1%	2,293.1	86.1%	17.16%	4.96%	UAAL Grows	22.12%
2028	2,796.5	2,400.7	85.8%	2,400.7	85.8%	17.16%	5.09%	UAAL Grows	22.25%
2029	2,937.4	2,514.5	85.6%	2,514.5	85.6%	17.16%	5.21%	UAAL Grows	22.37%

Tacoma Employees' Retirement System
Numerical Summary of Results
Deterministic Projection
(Dollar Amounts in \$Millions)
Future Contribution Increases

Year	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio = AVA / AAL	Market Value of Assets	Funded Ratio = MVA / AAL	Normal Cost Rate	Contribution Rate Minus Normal Cost Rate	Amortization Period	Greater of Current Rate or 20/30 Year Amort Rate
2009	1,002.3	1,097.3	109.5%	763.6	76.2%	17.16%	-1.16%	Rsrv Grows	16.00%
2010	1,082.8	1,080.7	99.8%	957.4	88.4%	17.16%	0.84%	1.3	18.00%
2011	1,151.9	1,056.1	91.7%	1,018.5	88.4%	17.16%	2.39%	23.0	19.55%
2012	1,223.8	1,048.8	85.7%	1,086.4	88.8%	17.16%	4.24%	48.8	21.40%
2013	1,298.5	1,158.0	89.2%	1,158.0	89.2%	17.16%	3.30%	29.0	20.46%
2014	1,375.5	1,232.1	89.6%	1,232.1	89.6%	17.16%	3.30%	28.0	20.46%
2015	1,455.1	1,308.9	90.0%	1,308.9	90.0%	17.16%	3.30%	27.0	20.46%
2016	1,537.4	1,388.5	90.3%	1,388.5	90.3%	17.16%	3.30%	26.0	20.46%
2017	1,622.4	1,471.1	90.7%	1,471.1	90.7%	17.16%	3.30%	25.0	20.46%
2018	1,710.2	1,556.6	91.0%	1,556.6	91.0%	17.16%	3.30%	24.0	20.46%
2019	1,801.0	1,645.2	91.4%	1,645.2	91.4%	17.16%	3.30%	23.0	20.46%
2020	1,895.1	1,737.5	91.7%	1,737.5	91.7%	17.16%	3.30%	22.0	20.46%
2021	1,992.5	1,833.4	92.0%	1,833.4	92.0%	17.16%	3.30%	21.0	20.46%
2022	2,093.6	1,933.2	92.3%	1,933.2	92.3%	17.16%	3.30%	20.0	20.46%
2023	2,198.9	2,037.7	92.7%	2,037.7	92.7%	17.16%	3.30%	19.0	20.46%
2024	2,308.7	2,147.1	93.0%	2,147.1	93.0%	17.16%	3.30%	18.0	20.46%
2025	2,423.7	2,262.1	93.3%	2,262.1	93.3%	17.16%	3.31%	17.0	20.47%
2026	2,544.0	2,383.1	93.7%	2,383.1	93.7%	17.16%	3.31%	16.0	20.47%
2027	2,670.7	2,511.0	94.0%	2,511.0	94.0%	17.16%	3.31%	15.0	20.47%
2028	2,804.4	2,646.6	94.4%	2,646.6	94.4%	17.16%	3.31%	14.0	20.47%
2029	2,946.2	2,791.1	94.7%	2,791.1	94.7%	17.16%	3.31%	13.0	20.47%

Tacoma Employees' Retirement System
Numerical Summary of Results
Deterministic Projection
(Dollar Amounts in \$Millions)
Downside - Repeat of Returns from 2000-2002

Year	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio = AVA / AAL	Market Value of Assets	Funded Ratio = MVA / AAL	Normal Cost Rate	Contribution Rate Minus Normal Cost Rate	Amortization Period	Greater of Current Rate or 20/30 Year Amort Rate
2009	1,002.3	1,097.3	109.5%	763.6	76.2%	17.16%	-1.16%	Rsrv Grows	16.00%
2010	1,082.8	1,080.7	99.8%	957.4	88.4%	17.16%	0.84%	1.3	18.00%
2011	1,151.9	1,047.0	90.9%	981.9	85.2%	17.16%	2.63%	26.5	19.79%
2012	1,223.8	1,001.7	81.8%	942.9	77.0%	17.16%	5.34%	35.5	22.50%
2013	1,298.6	1,029.2	79.3%	850.9	65.5%	17.16%	6.14%	25.3	23.30%
2014	1,375.9	1,014.2	73.7%	910.1	66.1%	17.16%	7.90%	25.2	25.06%
2015	1,456.0	1,015.6	69.8%	976.5	67.1%	17.16%	9.23%	26.1	26.39%
2016	1,539.0	1,049.0	68.2%	1,049.0	68.2%	17.16%	10.09%	29.0	27.25%
2017	1,624.7	1,124.6	69.2%	1,124.6	69.2%	17.16%	10.09%	28.0	27.25%
2018	1,713.4	1,203.5	70.2%	1,203.5	70.2%	17.16%	10.09%	27.0	27.25%
2019	1,805.1	1,285.9	71.2%	1,285.9	71.2%	17.16%	10.09%	26.0	27.25%
2020	1,900.2	1,372.4	72.2%	1,372.4	72.2%	17.16%	10.09%	25.0	27.25%
2021	1,998.8	1,462.9	73.2%	1,462.9	73.2%	17.16%	10.09%	24.0	27.25%
2022	2,101.1	1,557.9	74.1%	1,557.9	74.1%	17.16%	10.09%	23.0	27.25%
2023	2,207.7	1,658.2	75.1%	1,658.2	75.1%	17.16%	10.09%	22.0	27.25%
2024	2,319.1	1,764.2	76.1%	1,764.2	76.1%	17.16%	10.09%	21.0	27.25%
2025	2,435.7	1,876.6	77.0%	1,876.6	77.0%	17.16%	10.09%	20.0	27.25%
2026	2,557.9	1,996.0	78.0%	1,996.0	78.0%	17.16%	10.09%	19.0	27.25%
2027	2,686.6	2,123.3	79.0%	2,123.3	79.0%	17.16%	10.09%	18.0	27.25%
2028	2,822.5	2,259.5	80.1%	2,259.5	80.1%	17.16%	10.10%	17.0	27.26%
2029	2,966.8	2,406.0	81.1%	2,406.0	81.1%	17.16%	10.10%	16.0	27.26%

Tacoma Employees' Retirement System
Numerical Summary of Results
Deterministic Projection
(Dollar Amounts in \$Millions)
Upside - Repeat of Returns from 2003-2005

Year	Actuarial Accrued Liability	Actuarial Value of Assets	Funded Ratio = AVA / AAL	Market Value of Assets	Funded Ratio = MVA / AAL	Normal Cost Rate	Contribution Rate Minus Normal Cost Rate	Amortization Period	Greater of Current Rate or 20/30 Year Amort Rate
2009	1,002.3	1,097.3	109.5%	763.6	76.2%	17.16%	-1.16%	Rsrv Grows	16.00%
2010	1,082.8	1,080.7	99.8%	957.4	88.4%	17.16%	0.84%	1.3	18.00%
2011	1,151.9	1,107.6	96.2%	1,224.5	106.3%	17.16%	1.15%	58.6	18.31%
2012	1,223.7	1,186.8	97.0%	1,398.1	114.3%	17.16%	0.91%	35.0	18.07%
2013	1,298.1	1,392.5	107.3%	1,501.1	115.6%	17.16%	0.84%	Rsrv Grows	18.00%
2014	1,374.9	1,565.4	113.9%	1,595.6	116.1%	17.16%	0.84%	Rsrv Grows	18.00%
2015	1,454.3	1,690.8	116.3%	1,694.1	116.5%	17.16%	0.84%	Rsrv Grows	18.00%
2016	1,536.3	1,796.8	117.0%	1,796.8	117.0%	17.16%	0.84%	Rsrv Grows	18.00%
2017	1,621.0	1,903.9	117.5%	1,903.9	117.5%	17.16%	0.84%	Rsrv Grows	18.00%
2018	1,708.5	2,015.7	118.0%	2,015.7	118.0%	17.16%	0.84%	Rsrv Grows	18.00%
2019	1,798.8	2,132.3	118.5%	2,132.3	118.5%	17.16%	0.84%	Rsrv Grows	18.00%
2020	1,892.5	2,254.3	119.1%	2,254.3	119.1%	17.16%	0.84%	Rsrv Grows	18.00%
2021	1,989.5	2,381.9	119.7%	2,381.9	119.7%	17.16%	0.84%	Rsrv Grows	18.00%
2022	2,090.1	2,515.6	120.4%	2,515.6	120.4%	17.16%	0.84%	Rsrv Grows	18.00%
2023	2,194.8	2,656.2	121.0%	2,656.2	121.0%	17.16%	0.84%	Rsrv Grows	18.00%
2024	2,304.0	2,804.1	121.7%	2,804.1	121.7%	17.16%	0.84%	Rsrv Grows	18.00%
2025	2,418.2	2,960.2	122.4%	2,960.2	122.4%	17.16%	0.84%	Rsrv Grows	18.00%
2026	2,537.9	3,125.1	123.1%	3,125.1	123.1%	17.16%	0.84%	Rsrv Grows	18.00%
2027	2,663.7	3,299.8	123.9%	3,299.8	123.9%	17.16%	0.84%	Rsrv Grows	18.00%
2028	2,796.5	3,485.4	124.6%	3,485.4	124.6%	17.16%	0.84%	Rsrv Grows	18.00%
2029	2,937.4	3,683.3	125.4%	3,683.3	125.4%	17.16%	0.84%	Rsrv Grows	18.00%