



Financial Statements and Actuarial Reports

Key Takeaways for Governing Bodies

MSGIA OVERVIEW

- Founded in 1989
- Workers' compensation coverage for 400 schools
- Property and liability coverage for 191 schools

AGENDA

- Definitions and basics
- Intro to key actuarial data points
- Operational insights hiding in plain sight (i.e., in your actuarial reports)
- Key financial links between your actuarial reports and your financial statements
- Striving to do more

What's the
purpose of
actuarial
reports?



DEFINITIONS AND BASICS

■ **Outstanding Liabilities**

- Money needed to close all claims incurred but not yet paid
- Largest liability category on your books
- Used in balance sheet preparation

■ **Projected Funding**

- Ultimate cost of claims that will occur next policy year
- Used in income statement development

■ **Cash Flows**

- Cost of claims to be paid during the next fiscal year

DEFINITIONS AND BASICS (CONT.)

■ **Loss**

- Payments, settlements and judgments

■ **IBNR**

- Incurred but not reported
- Additional losses to come

■ **ALAE**

- Allocated loss adjustment expenses
- Expenses traced to a specific claim

■ **ULAE**

- Unallocated loss adjustment expenses
- General claims administration

DEFINITIONS AND BASICS (STILL MORE)

■ Paid Losses

- Money already paid by pool

■ Case Reserves

- Amount expected but as yet unpaid on individual claims (set by claims adjuster)

■ IBNR Reserves

- Amount made up (i.e., calculated) by your actuary

■ Incurred Losses

- Total of paid losses and unpaid case reserves
- Also called reported losses

■ Ultimate Losses

- Total of paid losses, case reserves and IBNR reserves

ACTUARIAL BASICS: OUTSTANDING LIABILITIES (1)

Post Client - Workers' Compensation
Funding Guidelines for Outstanding Liabilities at
June 30, 2019

(A) Estimated Ultimate Losses Incurred Through 6/30/19: (From Appendix G)	\$18,357,000				
(B) Estimated Paid Losses Through 6/30/19: (From Appendix G)	14,845,000				
(C) Estimated Liability for Claims Outstanding at 6/30/19: (From Appendix G)	<u>\$3,512,000</u>				
(D) Estimated Liability for Outstanding Claims Administration Fees at 6/30/19: (From Appendix F)	372,000				
(E) Total Outstanding Liability for Claims at 6/30/19: (C) + (D)	<u>\$4,184,000</u>				
(F) Reserve Discount Factor (Based on a Discount Rate of 1.0%) (Appendix I, Page 1, (4))	0.945				
(G) Discounted Outstanding Liability for Claims at 6/30/19: (E) x (F)	<u>\$3,947,000</u>				
Confidence Level of Adequacy		Marginaly Acceptable		Recommended	Conservative
		75%	80%	85%	90%
(H) Confidence Level Factor: (From Appendix J)	1.117	1.228	1.287	1.381	1.547
(I) Margin for Adverse Experience: (G) x [(H) - 1]	482,000	668,800	1,172,000	1,543,800	2,158,800
(J) Total Required Assets at 6/30/19: (G) + (I)	<u>\$4,429,000</u>	<u>\$5,104,300</u>	<u>\$5,110,000</u>	<u>\$5,455,500</u>	<u>\$6,104,300</u>

ACTUARIAL BASICS: OUTSTANDING LIABILITIES (2)

Pool Client – Workers' Compensation | Funding Guidelines for Outstanding Liabilities at June 30, 2018

Estimated Ultimate Losses Incurred	\$18,357,000	Confidence Level of Adequacy	Marginally Acceptable 70%	80%	Recommended 85%	90%	Conservative 95%
Estimated Paid Losses	\$14,545,000	Confidence Level Factor	1.117	1.225	1.297	1.391	1.547
Estimated Liability for Claims Outstanding	\$3,812,000						
Estimated Liability for Outstanding Claims Administration Fees	\$372,000	Margin for Adverse Experience	462,000	888,000	1,172,000	1,543,000	2,158,000
Total Outstanding Liability for Claims	\$4,184,000						
Reserve Discount Factor (Based on Discount Rate of 1.0%)	0.943	Total Required Assets	\$4,408,000	\$4,834,000	\$5,118,000	\$5,489,000	\$6,104,000
Discounted Outstanding Liability for Claims	\$3,946,000						

ACTUARIAL BASICS: PROJECTED FUNDING (1)

Pool Client - Workers' Compensation					
Funding Options for Program Year 2018-2019 (SFR = \$250,000) One-Year Funding Plan					
	Dollar Amount		Payroll Rate		
(A) Estimated Ultimate Losses Incurred in Accident Year 2018-2019: (From Appendix G)	\$1,117,000		\$1.958		
(B) Estimated Claims Administration Fees Incurred in Accident Year 2018-2019: (From Exhibit 5, Page 1, Item 6.)	197,000		0.347		
(C) Total Claims Costs Incurred in Accident Year 2018-2019: (A) + (B)	\$1,314,000		\$2.315		
(D) Loss Discount Factor (Based on a Discount Rate of 1.0%) (Appendix I, Page 2, (F))	0.954				
(E) Discounted Total Claims Costs Incurred in Accident Year 2018-2019: (C) x (D)	\$1,253,000		\$2.208		
(F) Confidence Level Factor: (From Appendix J)	Marginaly Acceptable 70%	00%	Recommended 85%	90%	Conservative 95%
(G) Margin for Adverse Experience: (E) x (F) - 1)	1.176	1.355	1.474	1.638	1.902
(H) Recommended Funding in 2018-2019 for Claims Costs and Other Expenses: (E) + (G)	\$1,474,000	\$1,698,000	\$1,847,000	\$2,050,000	\$2,383,000
(I) Rate per \$100 of Payroll: (H) / \$567,488)	\$2.597	\$2.992	\$3.255	\$3.612	\$4.199

ACTUARIAL BASICS: PROJECTED FUNDING (2)

Pool Client – Workers' Compensation | Funding Options for Program Year 2018-19 (SIR = \$250,000) One-Year Funding Plan

	Dollar Amount		Confidence Level of Adequacy	Marginally Acceptable 70%	80%	Recommended 85%	90%	Conservative 95%
Estimated Ultimate Losses Incurred	\$1,117,000	\$1.968 Payroll rate	Confidence Level Factor	1.176	1.355	1.474	1.636	1.902
Estimated Claims Administration Fees Incurred	\$197,000	0.347	Margin for Adverse Experience	221,000	445,000	594,000	797,000	1,130,000
Total Claims Costs Incurred	\$1,314,000	\$2.315 Payroll rate	Recommended Funding for Claims Costs, Other Expenses	\$1,474,000	\$1,698,000	\$1,847,000	\$2,050,000	\$2,383,000
Loss Discount Factor (Based on Discount Rate of 1.0%)	0.954		Rate per \$100 of Payroll	\$2.597	\$2.992	\$3.255	\$3.612	\$4.199
Discounted Total Claims Costs Incurred	\$1,253,000	\$2.208 Payroll rate						

OPERATIONAL INSIGHTS WITHIN ACTUARIAL REPORTS

- Frequency trends
- Severity trends
- Future events, developments, directions

OPERATIONAL INSIGHTS: FREQUENCY

Pod Client - Workers' Compensation

Frequency and Severity Method
Projection of Ultimate Claims

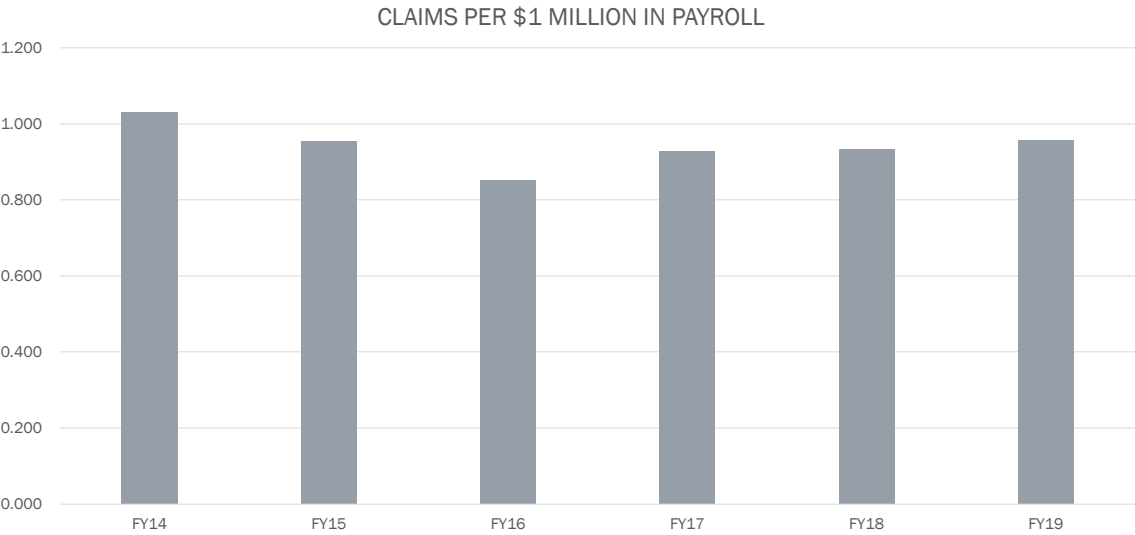
Accident Year	Reported Claim Development (A)	Closed Claim Development (B)	Selected Ultimate Claims (C)	Trended Payroll (\$100,000) (D)	Claim Frequency (E)	Trend Factor (F)	Trended Claim Frequency (G)
1987-1990	782	262	763	0		1.016	
1991-1994	61	61	61	32	1.917	0.984	1.808
1995-1998	45	47	48	31	1.538	0.970	1.494
1999-2000	50	58	56	33	1.803	0.946	1.708
2001-2003	77	18	17	34	2.344	0.923	2.171
2004-2005	111	111	111	39	2.811	0.981	2.820
2006-2007	112	113	112	39	2.898	0.970	2.848
2008-2009	185	103	103	40	2.558	0.885	2.271
2010-2011	180	86	108	42	2.357	0.897	1.873
2012-2013	190	93	108	46	2.352	0.917	1.864
2014-2015	84	84	84	48	1.745	0.787	1.307
2016-2017	84	85	84	50	1.685	0.776	1.457
2018-2019	84	84	84	53	1.753	0.787	1.421
2020-2021	77	79	77	55	1.408	0.616	1.153
2022-2023	80	80	80	55	1.747	0.636	1.454
2024-2025	62	63	62	54	1.344	0.680	1.004
2026-2027	60	78	66	53	1.227	0.681	1.000
2028-2029	80	84	82	52	1.501	0.684	1.402
2030-2031	77	80	77	53	1.444	0.627	1.338
2032-2033	89	94	80	55	1.802	0.680	1.278
2034-2035	82	85	84	57	1.449	0.670	1.004
2036-2037	83	82	88	58	1.581	0.690	1.381
Total	2,518	2,828	2,944	978,284			1.808
(H) Selected 2017-2019 Frequency Prior							1.553
							1.808
Program Year:				2017-2018	2018-2019		
(I) Trend Factor:				1.000	0.978		
(J) Selected Frequency:				1.550	1.513		
(K) Estimated Payroll (\$100,000):				957	952		
(L) Ultimate Claims:				89	88		

Notes:

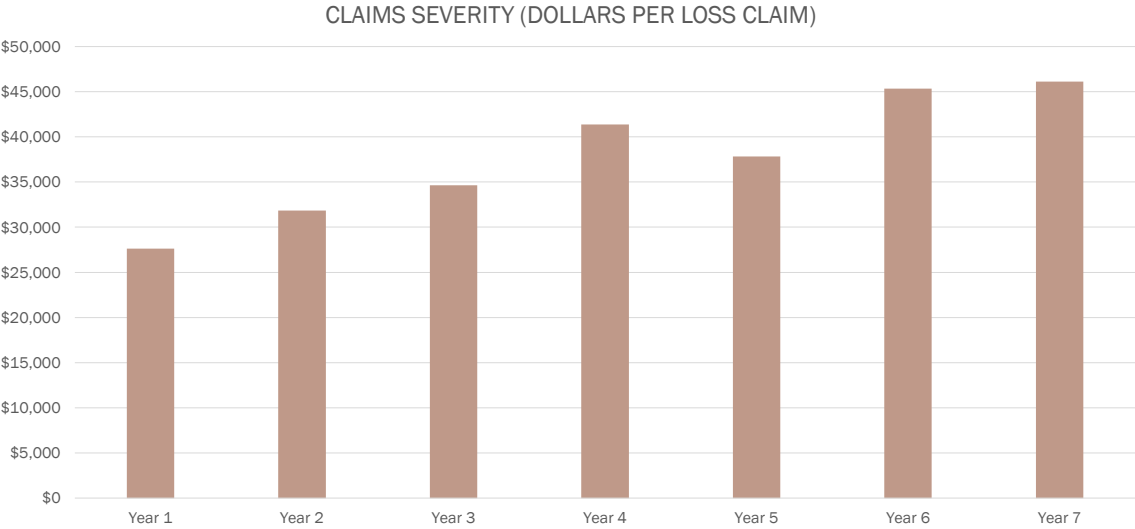
- (A) From Appendix D, Page 4, (C).
 (B) From Appendix D, Page 5, (C).
 (C) Selected from (A) and (B).
 (D) From Appendix M, Column (C) divided by 10,000.
 (E) (C) ÷ (D).
 (F) From Appendix E.
 (G) (E) × (F).
 (H) The selected frequency of 1.553 is based on (G).
 (I) From Appendix E.
 (J) (H) × (I).
 (K) From Appendix M, Column (C) divided by 10,000.
 (L) (J) × (K).

This exhibit summarizes the estimated numbers of claims and shows the estimated frequencies per \$1,000,000 of trended payroll.

FREQUENCY: EFFECTIVENESS OF LOSS CONTROL EFFORTS



SEVERITY: WHAT DRIVES IT?



EXPECTED VS. ACTUAL (A WINDOW TO THE FUTURE)

Accident Year	Expected Incurred Development	Actual Incurred Development	Actual Minus Expected
2009-10	\$186,000	\$45,000	(\$141,000)
2010-11	\$233,000	\$208,000	(\$25,000)
2011-12	\$231,000	\$71,000	(\$160,000)
2012-13	\$242,000	\$172,000	(\$70,000)
2013-14	\$278,000	\$0	(\$278,000)
2014-15	\$416,000	\$165,000	(\$251,000)
2015-16	\$770,000	(\$28,000)	(\$798,000)
2016-17	\$638,000	\$1,238,000	\$600,000
Total	\$2,994,000	\$1,871,000	(\$1,123,000)

Can actuarial
science decrease
my chances of
dying in an
avalanche?



APPENDIX G: FUTURE CASH FLOWS

<u>Accident Year</u>	<u>As of</u> <u>12/31/2017</u>	<u>1/1/2018</u> <u>to</u> <u>6/30/2018</u>	<u>7/1/2018</u> <u>to</u> <u>6/30/2019</u>	<u>Accident Year</u>	<u>As of</u> <u>12/31/2017</u>	<u>1/1/2018</u> <u>to</u> <u>6/30/2018</u>	<u>7/1/2018</u> <u>to</u> <u>6/30/2019</u>
2014-2015				2017-2018			
Ultimate Loss	\$854,000	\$854,000	\$854,000	Ultimate Loss	\$558,000	\$1,111,000	\$1,111,000
Paid in Calendar Period	-	47,241	87,412	Paid in Calendar Period	-	128,351	229,370
Paid to Date	329,098	376,339	463,751	Paid to Date	50,251	178,602	407,972
Outstanding Liability	524,902	477,861	390,249	Outstanding Liability	505,749	932,398	703,028
2015-2016				2018-2019			
Ultimate Loss	\$1,236,000	\$1,236,000	\$1,236,000	Ultimate Loss	-	-	\$1,117,000
Paid in Calendar Period	-	75,245	116,968	Paid in Calendar Period	-	-	174,252
Paid to Date	619,237	694,482	811,450	Paid to Date	-	-	174,252
Outstanding Liability	616,763	541,518	424,550	Outstanding Liability	-	-	942,748
2016-2017				Totals			
Ultimate Loss	\$1,343,000	\$1,343,000	\$1,343,000	Ultimate Loss	\$17,801,794	\$18,356,794	\$19,473,794
Paid in Calendar Period	-	102,649	178,198	Paid in Calendar Period	-	439,285	945,710
Paid to Date	521,812	624,461	802,659	Paid to Date	14,105,989	14,545,264	15,490,994
Outstanding Liability	821,188	718,539	540,341	Outstanding Liability	3,695,805	3,811,510	3,982,800
				Total Outstanding ULAE	351,000	372,019	408,807
				Outstanding Liability plus ULAE	4,046,805	4,183,529	4,391,607

Can actuarial
science help me
increase my
fish count?



DETERMINING REINSURANCE PROGRAM EFFECTIVENESS (1)

Accident Year (A)	Unlimited Incurred (B)	Additions to Losses (C)	Subtractions from Losses (D)	Adjusted Incurred (E)	Incurred Over S&R (F)	Incurred Over \$100,000 (G)	Incurred Capped at \$100,000 (H)	Incurred to S&R Layer (I)	Incurred Capped at S&R (J)	Incurred Capped at S&R & Aggregate (K)
1987-1997	\$2,963,319	\$0	\$212,422	\$2,750,897	\$3,138	\$415,716	\$2,335,181	\$412,579	\$2,747,760	\$2,747,760
1997-1998	335,792	0	18,643	317,149	0	8,346	308,803	8,346	317,149	317,149
1998-1999	364,295	0	879	363,416	0	0	363,416	0	363,416	363,416
1999-2000	473,815	0	311	473,504	0	0	473,504	0	473,504	473,504
2000-2001	837,055	0	108,795	728,259	113,564	263,564	464,696	150,000	614,696	614,696
2001-2002	440,944	0	34,125	406,819	0	58,357	348,462	58,357	406,819	406,819
2002-2003	733,254	0	6,448	726,806	0	157,377	569,429	157,377	726,806	726,806
2003-2004	388,242	0	11,334	376,909	0	0	376,909	0	376,909	376,909
2004-2005	1,281,478	0	430,294	851,184	100,593	251,066	600,118	150,473	750,591	750,591
2005-2006	417,131	0	4,292	412,839	0	31,818	381,021	31,818	412,839	412,839
2006-2007	1,245,872	0	155,951	1,089,921	249,938	498,917	591,004	248,979	839,983	839,983
2007-2008	1,688,669	0	63,120	1,625,550	250,501	785,547	840,002	535,046	1,375,048	1,375,048
2008-2009	1,511,064	0	241,526	1,269,538	388,677	629,563	639,973	240,886	880,859	880,859
2009-2010	398,512	0	16,983	381,529	0	0	381,529	0	381,529	381,529
2010-2011	1,032,345	0	29,246	1,003,099	0	127,133	875,966	127,133	1,003,099	1,003,099
2011-2012	434,233	0	9,545	424,687	0	14,464	410,224	14,464	424,687	424,687
2012-2013	495,447	0	3,240	492,207	0	34,498	457,708	34,498	492,207	492,207
2013-2014	753,324	0	0	753,324	64,766	214,766	538,558	150,000	688,558	688,558
2014-2015	829,421	0	1,477	827,944	104,526	380,813	447,130	276,287	723,417	723,417
2015-2016	1,094,186	0	31,989	1,062,197	0	332,422	729,775	332,422	1,062,197	1,062,197
2016-2017	1,035,454	0	434	1,035,021	49,263	211,036	823,984	161,773	985,757	985,757
2017-2018	229,115	0	0	229,115	0	0	229,115	0	229,115	229,115
Total	\$18,982,967	\$0	\$1,381,055	\$17,601,911	\$1,324,966	\$4,415,404	\$13,186,508	\$3,090,438	\$16,276,945	\$16,276,945

DETERMINING REINSURANCE PROGRAM EFFECTIVENESS (2)

Accident Year (A)	Unlimited Paid (B)	Additions to Losses (C)	Subtractions from Losses (D)	Adjusted Paid (E)	Paid Over SIR (F)	Paid Over \$100,000 (G)	Paid Capped at \$100,000 (H)	Paid \$100,000 to SIR Layer (I)	Paid Capped at SIR (J)	Paid Capped at SIR & Aggregate (K)
1987-1997	\$2,952,631	\$0	\$212,422	\$2,740,209	\$3,138	\$415,716	\$2,324,493	\$412,579	\$2,737,071	\$2,737,071
1997-1998	335,792	0	18,643	317,149	0	8,346	308,803	8,346	317,149	317,149
1998-1999	352,821	0	879	351,942	0	0	351,942	0	351,942	351,942
1999-2000	448,324	0	311	448,013	0	0	448,013	0	448,013	448,013
2000-2001	718,652	0	108,795	609,857	18,321	168,321	441,536	150,000	591,536	591,536
2001-2002	406,944	0	34,125	372,819	0	58,357	314,462	58,357	372,819	372,819
2002-2003	733,254	0	6,448	726,806	0	157,377	569,429	157,377	726,806	726,806
2003-2004	371,758	0	11,334	360,424	0	0	360,424	0	360,424	360,424
2004-2005	1,218,613	0	430,294	788,318	100,593	251,066	537,253	150,473	687,726	687,726
2005-2006	417,131	0	4,292	412,839	0	31,818	381,021	31,818	412,839	412,839
2006-2007	1,229,141	0	155,951	1,073,189	249,938	482,186	591,004	232,248	823,251	823,251
2007-2008	1,646,234	0	63,120	1,583,114	250,501	743,112	840,002	492,611	1,332,613	1,332,613
2008-2009	1,262,747	0	241,528	1,021,220	250,053	404,246	616,973	154,193	771,167	771,167
2009-2010	383,428	0	16,983	366,445	0	0	366,445	0	366,445	366,445
2010-2011	843,345	0	29,246	814,099	0	56,145	757,954	56,145	814,099	814,099
2011-2012	371,515	0	9,545	361,970	0	0	361,970	0	361,970	361,970
2012-2013	495,447	0	3,240	492,207	0	34,498	457,708	34,498	492,207	492,207
2013-2014	617,514	0	0	617,514	0	128,706	488,808	128,706	617,514	617,514
2014-2015	330,575	0	1,477	329,098	0	4,955	324,143	4,955	329,098	329,098
2015-2016	651,226	0	31,989	619,237	0	57,595	561,643	57,595	619,237	619,237
2016-2017	522,246	0	434	521,812	0	39,247	482,565	39,247	521,812	521,812
2017-2018	50,251	0	0	50,251	0	0	50,251	0	50,251	50,251
Total	\$16,359,588	\$0	\$1,381,055	\$14,978,533	\$872,543	\$3,041,690	\$11,936,843	\$2,169,147	\$14,105,990	\$14,105,990

APPENDIX WC-L (REINSURANCE STRUCTURE EFFECTIVENESS)

Fiscal Year	Reinsurance Costs	Reinsurance Recoveries	Difference
2003-04	\$290,769	\$0	(\$290,769)
2004-05	\$315,189	\$100,593	(\$214,596)
2005-06	\$289,863	\$0	(\$289,863)
2006-07	\$312,035	\$249,938	(\$62,097)
2007-08	\$293,705	\$250,501	(\$43,204)
2008-09	\$296,631	\$388,677	\$92,046
2009-10	\$285,104	\$0	(\$285,104)
2010-11	\$292,926	\$0	(\$292,926)
2011-12	\$290,957	\$0	(\$290,957)
2012-13	\$315,072	\$0	(\$315,072)
2013-14	\$392,622	\$64,766	(\$327,856)
2014-15	\$552,445	\$354,526	(\$197,919)
2015-16	\$621,569	\$0	(\$621,569)
2016-17	\$590,225	\$49,263	(\$540,962)
2017-18	\$664,529	\$0	(\$664,529)
Totals	\$5,803,641	\$1,458,264	-\$4,345,377

IS THERE SUCH A THING AS “APPLES TO APPLES”?

Accident Year	Ultimate Limited Losses (A)	Trend Factor (B)	Trended Limited Losses (C)	Trended Payroll (\$00) (D)	Trended Limited Loss Rate (E)
1987-1997	\$0	1.611	\$0	\$0	0.000
1997-1998	308,803	1.366	421,825	318,186	1.326
1998-1999	364,000	1.194	434,616	313,663	1.386
1999-2000	474,000	1.051	498,174	327,199	1.523
2000-2001	465,000	0.965	448,725	343,197	1.307
2001-2002	349,000	0.945	329,805	381,250	0.865
2002-2003	569,429	0.972	553,485	388,787	1.431
2003-2004	377,000	1.174	442,598	397,816	1.113
2004-2005	601,000	1.478	888,278	424,237	2.094
2005-2006	381,021	1.565	596,298	464,464	1.284
2006-2007	591,004	1.446	854,582	481,470	1.775
2007-2008	840,002	1.310	1,100,403	498,699	2.207
2008-2009	844,000	1.224	788,256	527,083	1.496
2009-2010	384,000	1.123	431,232	546,538	0.789
2010-2011	884,000	1.085	959,140	549,379	1.746
2011-2012	415,000	1.098	455,670	541,742	0.841
2012-2013	465,000	1.108	515,220	533,370	0.966
2013-2014	551,000	1.101	606,651	528,590	1.148
2014-2015	476,000	1.069	508,844	533,259	0.954
2015-2016	834,000	1.053	878,202	550,531	1.595
2016-2017	990,000	1.029	1,024,884	587,091	1.807
2017-2018	806,000	1.000	806,000	567,488	1.420
Totals	\$11,775,259		\$13,542,898	\$9,792,039	\$1.384
13/14-16/17	2,857,000		3,018,581	2,179,471	1.385
14/15-16/17	2,306,000		2,411,930	1,650,881	1.461
(F) Selected Limited Rate:					\$1.420
Prior Selected Limited Rate:					1.400

Assets minus
liabilities equals
surplus.

(A recipe for success
is waiting in your
supplemental
financial data!)



FINANCIAL SOURCES NOT TO BE IGNORED

- Notes to the financial statements
- MDA

Strive to climb
higher!

