

PENNSYLVANIA COMPENSATION RATING BUREAU

Indicated Change in Loss Costs

Page 1 presents the overall indicated change in loss costs.

Derivation of the indemnity and medical trend factors and trended loss ratios shown on page 1 is presented on page 2. Severity ratios, defined herein as loss ratios adjusted by dividing out the frequency component, for both indemnity and medical, have been fitted using a seven point exponential curve. Severity trend factors are calculated by fitting severity ratios to curves using a least squares regression analysis and comparing the fitted values at 4/1/16 to the fitted values at the midpoints of the latest three available policy years. Frequency trend factors are derived on page 3. The resulting severity and frequency trend factors are then applied to the latest three available policy year loss ratios to generate projected ultimate trended loss ratios.

As described in Exhibit 8, staff has selected an annual frequency trend of -5.0%. Page 3 shows the derivation of overall frequency trend factors for each of the latest three available policy years.

**INDICATED CHANGE IN LOSS COSTS**

	<u>Indemnity</u>	<u>Medical</u>	<u>Total</u>
(1) Policy Year 2010 Ratio of Loss to Expected Loss	0.5049	0.5545	1.0594
(2) Policy Year 2011 Ratio of Loss to Expected Loss	0.4842	0.5463	1.0305
(3) Policy Year 2012 Ratio of Loss to Expected Loss	0.4609	0.5221	0.9830
(4) Average (Midpoint = 1/1/2012)	0.4833	0.5410	1.0243
(5) Policy Year 2010 Ratio Trended to 4/1/2016 +	0.4313	0.5293	0.9606
(6) Policy Year 2011 Ratio Trended to 4/1/2016 +	0.4263	0.5261	0.9524
(7) Policy Year 2012 Ratio Trended to 4/1/2016 +	0.4181	0.5073	0.9254
(8) Average at 4/1/2016	0.4252	0.5209	0.9461
(9) House Bill 1846 Adjustment	1.0000	0.9884	
(10) Indicated Change in Loss Costs	0.4252	0.5149	0.9401

**CHANGES IN MANUAL LOSS COST LEVEL BY INDUSTRY GROUP**

	<u>Mfg.</u>	<u>Cont.</u>	<u>Other</u>	<u>Total</u>
(10) Current Collectible Premium Ratio	1.0391	1.0935	1.0089	
(11) Anticipated Collectible Premium Ratio	1.0389	1.1002	0.9995	
(12) Final Indicated Change in Manual Loss Cost Level (9T) * (11) / (10)	0.9399	0.9459	0.9313	0.9360

+ Refer to pages 12.2 and 12.3

**DETERMINATION OF TREND**

**INDEMNITY**

Policy Year	2006	2007	2008	2009	2010	2011	2012
Actual Loss Ratio	0.5456	0.5545	0.5343	0.5121	0.5049	0.4842	0.4609
Normalized Frequency	0.7485	0.7046	0.6500	0.6275	0.6183	0.5770	0.5399
Severity Loss Ratio	0.7289	0.7870	0.8220	0.8161	0.8166	0.8392	0.8537
<b>x</b>	1	2	3	4	5	6	7
<b>y</b>	0.7289	0.7870	0.8220	0.8161	0.8166	0.8392	0.8537

7 Point Exponential Regression:  $y = 0.742190 * 1.021513 ^ x$

Policy Year	Severity Trend Factor (1)	# of years to 4/1/16 (2)	Severity Trend to 4/1/16 (3) = (1) ^ (2)	Frequency Trend Factor (4) #
2010	1.0215	5.2500	1.1182	0.7640
2011	1.0215	4.2500	1.0946	0.8042
2012	1.0215	3.2500	1.0716	0.8465

**Trended Loss Ratio**

Policy Year	Actual Loss Ratio (5)	Combined Trend Factor (6) = (3) * (4)	Trended Loss Ratio (7) = (5) * (6)
2010	0.5049	0.8543	0.4313
2011	0.4842	0.8803	0.4263
2012	0.4609	0.9071	0.4181

**MEDICAL**

Policy Year	2006	2007	2008	2009	2010	2011	2012
Actual Loss Ratio	0.5489	0.5784	0.5423	0.5311	0.5545	0.5463	0.5221
Normalized Frequency	0.7485	0.7046	0.6500	0.6275	0.6183	0.5770	0.5399
Severity Loss Ratio	0.7333	0.8209	0.8343	0.8464	0.8968	0.9468	0.9670
<b>x</b>	1	2	3	4	5	6	7
<b>y</b>	0.7333	0.8209	0.8343	0.8464	0.8968	0.9468	0.9670

7 Point Exponential Regression:  $y = 0.726131 * 1.043325 ^ x$

Policy Year	Severity Trend Factor (1)	# of years to 4/1/16 (2)	Severity Trend to 4/1/16 (3) = (1) ^ (2)	Frequency Trend Factor (4) #
2010	1.0433	5.2500	1.2492	0.7640
2011	1.0433	4.2500	1.1974	0.8042
2012	1.0433	3.2500	1.1477	0.8465

**Trended Loss Ratio**

Policy Year	Actual Loss Ratio (5)	Combined Trend Factor (6) = (3) * (4)	Trended Loss Ratio (7) = (5) * (6)
2010	0.5545	0.9544	0.5293
2011	0.5463	0.9629	0.5261
2012	0.5221	0.9715	0.5073

## DETERMINATION OF TREND

### Claim Frequency

Policy Year Frequency per \$1 million of Expected Losses  
{1 = PY 2001, 12 = PY 2012}

Policy Year	Claim Frequency	Normalized Frequency
2001	26.17	1.0000
2002	25.12	0.9599
2003	23.04	0.8804
2004	21.84	0.8345
2005	20.28	0.7749
2006	19.59	0.7485
2007	18.44	0.7046
2008	17.01	0.6500
2009	16.42	0.6275
2010	16.18	0.6183
2011	15.10	0.5770
2012	14.13	0.5399

Policy Year	2006	2007	2008	2009	2010	2011	2012
<b>x</b>	1	2	3	4	5	6	7
<b>y</b>	0.7485	0.7046	0.6500	0.6275	0.6183	0.5770	0.5399

7 Point Exponential Regression:  $y = 0.778352 * 0.950223 ^ x$

### SELECTED FREQUENCY TREND FACTOR

**-5.0%**

Policy Year	Frequency Trend Factor (1)	# of years to 4/1/16 (2)	Frequency Trend to 4/1/16 (3) = (1)^(2)
2010	0.9500	5.2500	0.7640
2011	0.9500	4.2500	0.8042
2012	0.9500	3.2500	0.8465