

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 4/1/18 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 -4.8%. Page 3 shows the derivation of overall frequency trend factors for each of the latest three available policy years.

Due to the impact of House Bill 1846 of 2014 (HB1846), medical severity trend is separated between pre-HB1846 and post-HB1846 trends. The difference between the two trend rates is a reduction of 0.2 point in medical trend reflecting the evaluation of HB1846's ongoing effect on medical costs after 1/1/2015. (HB1846 became effective on 12/26/2014. The PCRБ used the 1/1/2015 date, for convenience, as an approximation in its evaluation of savings for the law.)

In addition, staff is also taking into account the impact of direct savings attributable to HB1846, which is shown on Page 1 as 0.9908.

### INDICATED CHANGE IN LOSS COSTS

	<u>Indemnity</u>	<u>Medical</u>	<u>Total</u>
(1) Policy Year 2012 Ratio of Loss to Expected Loss	0.4772	0.5262	1.0034
(2) Policy Year 2013 Ratio of Loss to Expected Loss	0.4917	0.5514	1.0431
(3) Policy Year 2014 Ratio of Loss to Expected Loss	0.4742	0.5326	1.0068
(4) Average (Midpoint = 1/1/2014)	0.4810	0.5367	1.0177
(5) Policy Year 2012 Ratio Trended to 4/1/2018 +	0.4097	0.5036	0.9133
(6) Policy Year 2013 Ratio Trended to 4/1/2018 +	0.4346	0.5315	0.9661
(7) Policy Year 2014 Ratio Trended to 4/1/2018 +	0.4315	0.5172	0.9487
(8) Average at 4/1/2018	0.4253	0.5174	0.9427
(9) House Bill 1846 Adjustment	1.0000	0.9908	
(10) Indicated Change in Loss Costs	0.4253	0.5126	0.9379

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

	<u>Mfg.</u>	<u>Cont.</u>	<u>Other</u>	<u>Total</u>
(11) Current Collectible Premium Ratio	1.0357	1.1081	0.9960	
(12) Anticipated Collectible Premium Ratio	1.0362	1.1145	0.9915	
(13) Final Indicated Change in Manual Loss Cost Level (10T) * (12) / (11)	0.9384	0.9433	0.9337	0.9366

+ Refer to pages 1.2 and 1.3

**DETERMINATION OF TREND**

**INDEMNITY**

Policy Year	2008	2009	2010	2011	2012	2013	2014
Actual Loss Ratio	0.5616	0.5409	0.5352	0.5041	0.4772	0.4917	0.4742
Normalized Frequency	0.7403	0.7158	0.7056	0.6602	0.6177	0.6038	0.5494
Severity Loss Ratio	0.7586	0.7557	0.7585	0.7636	0.7725	0.8143	0.8631
<b>x</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>y</b>	0.7586	0.7557	0.7585	0.7636	0.7725	0.8143	0.8631

**7 Point Exponential Regression:  $y = 0.723238 * 1.020013 ^ x$**

**Selected Annual Severity Trend Factor =**

**2.00%**

Policy Year	Annual Severity Trend Factor (1)	Trend Period # of Years to 4/1/18 (2)	Severity Trend Factor (3) = (1) ^ (2)	Frequency Trend Factor (4) #
2012	1.0200	5.2500	1.1096	0.7737
2013	1.0200	4.2500	1.0879	0.8125
2014	1.0200	3.2500	1.0665	0.8532

**Trended Loss Ratio**

Policy Year	Actual Loss Ratio (5)	Combined Trend Factor (6) = (3) * (4)	Trended Loss Ratio (7) = (5) * (6)
2012	0.4772	0.8585	0.4097
2013	0.4917	0.8839	0.4346
2014	0.4742	0.9099	0.4315

**MEDICAL**

Policy Year	2008	2009	2010	2011	2012	2013	2014
Actual Loss Ratio	0.5578	0.5471	0.5698	0.5562	0.5262	0.5514	0.5326
Normalized Frequency	0.7403	0.7158	0.7056	0.6602	0.6177	0.6038	0.5494
Severity Loss Ratio	0.7535	0.7643	0.8075	0.8425	0.8519	0.9132	0.9694
<b>x</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>y</b>	0.7535	0.7643	0.8075	0.8425	0.8519	0.9132	0.9694

**7 Point Exponential Regression:  $y = 0.711309 * 1.042498 ^ x$**

**Selected Annual Severity Trend Factor to 1/1/15 =**

**4.25%**

**HB1846 Adjustment to Annual Severity Trend from 1/1/15 and later =**

**-0.19%**

**Selected Annual Severity Trend Factor from 1/1/15 and later =**

**4.06%**

Policy Year	Annual Severity Trend Factor to 1/1/15 (1)	Trend Period # of Years to 1/1/15 (2)	Severity Trend Factor to 1/1/15 (3) = (1) ^ (2)	Annual Severity Trend Factor from 1/1/15 to 4/1/18 (4)	Trend Period # of Years to 4/1/18 (5)	Severity Trend Factor from 1/1/15 to 4/1/18 (6) = (4) ^ (5)	Frequency Trend Factor (7) #
2012	1.0425	2.0000	1.0868	1.0406	3.2500	1.1381	0.7737
2013	1.0425	1.0000	1.0425	1.0406	3.2500	1.1381	0.8125
2014	1.0425	0.0000	1.0000	1.0406	3.2500	1.1381	0.8532

**Trended Loss Ratio**

Policy Year	Actual Loss Ratio (8)	Combined Trend Factor (9) = (3) * (6) * (7)	Trended Loss Ratio (10) = (8) * (9)
2012	0.5262	0.9570	0.5036
2013	0.5514	0.9640	0.5315
2014	0.5326	0.9710	0.5172

# See page 1.3

**DETERMINATION OF TREND**

**CLAIM FREQUENCY**

Policy Year Frequency per \$1 million of Expected Losses  
{1 = PY 2003, 12 = PY 2014}

Policy Year	Claim Frequency	Normalized Frequency
2003	24.45	1.0000
2004	23.20	0.9489
2005	21.56	0.8818
2006	20.81	0.8511
2007	19.59	0.8012
2008	18.10	0.7403
2009	17.50	0.7158
2010	17.25	0.7056
2011	16.14	0.6602
2012	15.10	0.6177
2013	14.76	0.6038
2014	13.43	0.5494

Policy Year	2008	2009	2010	2011	2012	2013	2014
<b>x</b>	1	2	3	4	5	6	7
<b>y</b>	0.7403	0.7158	0.7056	0.6602	0.6177	0.6038	0.5494

**7 Point Exponential Regression:  $y = 0.793839 * 0.952316 ^ x$**

**Selected Annual Frequency Trend Factor =**

<b>-4.8%</b>
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Policy Year	Annual Frequency Trend Factor (1)	Trend Period # of Years to 4/1/18 (2)	Frequency Trend Factor (3) = (1) ^ (2)
2012	0.9523	5.2500	0.7737
2013	0.9523	4.2500	0.8125
2014	0.9523	3.2500	0.8532