

PENNSYLVANIA COMPENSATION RATING BUREAU

Indicated Change in Loss Costs

Page 1 presents the overall indicated change in loss costs.

For this filing, loss costs resulting from PCRB Filing No. C-377 were used to calculate expected losses on Page 1 and actual loss ratios on Page 2.

Derivation of the indemnity and medical trend factors and trended loss ratios shown on Page 1 is presented on Page 2. Severity ratios, defined 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 4/1/22 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 -6.3%. 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 2016 Ratio of Loss to Expected Loss | 0.5585           | 0.5902         | 1.1487                  |
| (2) Policy Year 2017 Ratio of Loss to Expected Loss | 0.5526           | 0.5911         | 1.1437                  |
| (3) Policy Year 2018 Ratio of Loss to Expected Loss | 0.5553           | 0.6322         | 1.1875                  |
| (4) Average (Midpoint = 1/1/2018)                   | 0.5555           | 0.6045         | 1.1600                  |
| (5) Policy Year 2016 Ratio Trended to 4/1/2022 +    | 0.4362           | 0.4830         | 0.9192                  |
| (6) Policy Year 2017 Ratio Trended to 4/1/2022 +    | 0.4525           | 0.5026         | 0.9551                  |
| (7) Policy Year 2018 Ratio Trended to 4/1/2022 +    | 0.4766           | 0.5584         | 1.0350                  |
| (8) Average at 4/1/2022                             | 0.4551           | 0.5147         | 0.9698                  |
| (9) Indicated Change in Loss Costs                  | 0.4551           | 0.5147         | 0.9698<br><b>-3.02%</b> |

### 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                                      | 1.0427      | 1.1287       | 0.9928       |              |
| (11) Anticipated Collectible Premium Ratio                                  | 1.0426      | 1.1272       | 0.9955       |              |
| (12) Final Indicated Change in Manual Loss Cost Level<br>(9T) * (11) / (10) | 0.9697      | 0.9685       | 0.9724       | 0.9710       |

+ Refer to pages 1.2 and 1.3

**DETERMINATION OF TREND**

**INDEMNITY**

| Policy Year          | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| Actual Loss Ratio    | 0.7001 | 0.6927 | 0.6621 | 0.5996 | 0.5585 | 0.5526 | 0.5553 |
| Normalized Frequency | 0.8396 | 0.8224 | 0.7513 | 0.6936 | 0.6491 | 0.6139 | 0.5863 |
| Severity Loss Ratio  | 0.8338 | 0.8423 | 0.8812 | 0.8645 | 0.8604 | 0.9001 | 0.9471 |
| <b>x</b>             | 1      | 2      | 3      | 4      | 5      | 6      | 7      |
| <b>y</b>             | 0.8338 | 0.8423 | 0.8812 | 0.8645 | 0.8604 | 0.9001 | 0.9471 |

**7 Point Exponential Regression:  $y = 0.815637 * 1.017693 ^ x$**

**Selected Annual Severity Trend Factor =**

**1.77%**

| Policy Year | Annual Severity Trend Factor (1) | Trend Period # of Years to 4/1/22 (2) | Severity Trend Factor (3) = (1) ^ (2) | Frequency Trend Factor (4) # |
|-------------|----------------------------------|---------------------------------------|---------------------------------------|------------------------------|
| 2016        | 1.0177                           | 5.2500                                | 1.0965                                | 0.7124                       |
| 2017        | 1.0177                           | 4.2500                                | 1.0774                                | 0.7600                       |
| 2018        | 1.0177                           | 3.2500                                | 1.0587                                | 0.8107                       |

**Trended Loss Ratio**

| Policy Year | Actual Loss Ratio (5) | Combined Trend Factor (6) = (3) * (4) | Trended Loss Ratio (7) = (5) * (6) |
|-------------|-----------------------|---------------------------------------|------------------------------------|
| 2016        | 0.5585                | 0.7811                                | 0.4362                             |
| 2017        | 0.5526                | 0.8188                                | 0.4525                             |
| 2018        | 0.5553                | 0.8583                                | 0.4766                             |

**MEDICAL**

| Policy Year          | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| Actual Loss Ratio    | 0.7318 | 0.7356 | 0.7157 | 0.6199 | 0.5902 | 0.5911 | 0.6322 |
| Normalized Frequency | 0.8396 | 0.8224 | 0.7513 | 0.6936 | 0.6491 | 0.6139 | 0.5863 |
| Severity Loss Ratio  | 0.8716 | 0.8945 | 0.9526 | 0.8938 | 0.9093 | 0.9628 | 1.0783 |
| <b>x</b>             | 1      | 2      | 3      | 4      | 5      | 6      | 7      |
| <b>y</b>             | 0.8716 | 0.8945 | 0.9526 | 0.8938 | 0.9093 | 0.9628 | 1.0783 |

**7 Point Exponential Regression:  $y = 0.841687 * 1.026747 ^ x$**

**Selected Annual Severity Trend Factor =**

**2.67%**

| Policy Year | Annual Severity Trend Factor (1) | Trend Period # of Years to 4/1/22 (2) | Severity Trend Factor (3) = (1) ^ (2) | Frequency Trend Factor (4) # |
|-------------|----------------------------------|---------------------------------------|---------------------------------------|------------------------------|
| 2016        | 1.0267                           | 5.2500                                | 1.1486                                | 0.7124                       |
| 2017        | 1.0267                           | 4.2500                                | 1.1187                                | 0.7600                       |
| 2018        | 1.0267                           | 3.2500                                | 1.0896                                | 0.8107                       |

**Trended Loss Ratio**

| Policy Year | Actual Loss Ratio (5) | Combined Trend Factor (6) = (3) * (4) | Trended Loss Ratio (7) = (5) * (6) |
|-------------|-----------------------|---------------------------------------|------------------------------------|
| 2016        | 0.5902                | 0.8183                                | 0.4830                             |
| 2017        | 0.5911                | 0.8502                                | 0.5026                             |
| 2018        | 0.6322                | 0.8833                                | 0.5584                             |

**DETERMINATION OF TREND**

**CLAIM FREQUENCY**

Policy Year Frequency per \$1 million of Expected Losses  
{1 = PY 2008, 12 = PY 2018}

| Policy Year | Claim Frequency | Normalized Frequency |
|-------------|-----------------|----------------------|
| 2008        | 27.87           | 1.0000               |
| 2009        | 27.18           | 0.9752               |
| 2010        | 26.66           | 0.9566               |
| 2011        | 24.97           | 0.8959               |
| 2012        | 23.40           | 0.8396               |
| 2013        | 22.92           | 0.8224               |
| 2014        | 20.94           | 0.7513               |
| 2015        | 19.33           | 0.6936               |
| 2016        | 18.09           | 0.6491               |
| 2017        | 17.11           | 0.6139               |
| 2018        | 16.34           | 0.5863               |

| Policy Year | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   |
|-------------|--------|--------|--------|--------|--------|--------|--------|
| <b>x</b>    | 1      | 2      | 3      | 4      | 5      | 6      | 7      |
| <b>y</b>    | 0.8396 | 0.8224 | 0.7513 | 0.6936 | 0.6491 | 0.6139 | 0.5863 |

**7 Point Exponential Regression:  $y = 0.909010 * 0.937457 ^ x$**

**Selected Annual Frequency Trend Factor =**

|              |
|--------------|
| <b>-6.3%</b> |
|--------------|

| Policy Year | Annual Frequency Trend Factor (1) | Trend Period # of Years to 4/1/22 (2) | Frequency Trend Factor (3) = (1) ^ (2) |
|-------------|-----------------------------------|---------------------------------------|--|
| 2016        | 0.9375                            | 5.2500                                | 0.7124                                 |
| 2017        | 0.9375                            | 4.2500                                | 0.7600                                 |
| 2018        | 0.9375                            | 3.2500                                | 0.8107                                 |