

PENNSYLVANIA COMPENSATION RATING BUREAU

Loss Cost Formulae

The experience used for classification relativities for the April 1, 2017 revision will include all available risks. It is proposed that catastrophes be limited in accordance with the procedure previously employed in other Bureau filings. The experience period will be five (5) years for all classifications regardless of whether a classification might meet the full credibility requirements with less than five years of data. Credibility will be based on reported payrolls for classifications using payroll as the exposure base. For non-payroll classifications, expected losses will be used as the basis for credibility. Thus, two credibility tables will be prepared for use in the April 1, 2017 filing. The values for these respective tables will be established such that the credibilities assigned to a payroll-based classification having the same portion of total statewide expected losses and payrolls attributable to its experience using each table would be equal. All occupational disease losses will be included in the exhibit of classification experience, with the total amount of such losses by type of injury being shown on a separate line on the classification loss cost worksheets.

Most classifications are subject to standard procedures as described below. However, circumstances will sometimes require that some classifications' rating procedure be modified to recognize situations where the normal rating process would not be appropriate. Such classifications, and the manner in which their loss costs have been derived, are separately identified within the filing material.

The calculation of classification loss costs will be made using the following procedure:

- (1) Determine the present pure premiums by category (serious, non-serious, medical only and total) for each classification.
- (2) Adjust the present pure premiums by category (serious, non-serious, medical-only and total) to the April 1, 2017 loss cost level.
- (3) Determine Expected Losses (serious, non-serious, medical-only and total) for each classification by multiplying the exposures from the experience period by the present pure premiums.
- (4) Determine the indicated pure premiums (serious, non-serious, medical-only and total) from the exposures and losses from the experience period.
- (5) Test the indicated total pure premiums by multiplying the exposures of the latest two years for each classification and obtaining the total Actual Losses for all classifications combined.
- (6) Calculate Expected Losses by multiplying the present pure premiums by the exposures from the last two years for each classification and by the overall average loss cost change.
- (7) Obtain correction factors by dividing the Expected Losses derived in (6) by the Actual Losses derived in (5).

Loss Cost Formulae (Continued)

- (8) Multiply the indicated (pre-test) pure premiums from (4) times the correction factors derived in (7) to obtain indicated (post-test) pure premiums.
- (9) Determine “formula” pure premiums from (2) and (8) above for each type of loss (serious, non-serious and medical-only), with credibility for each category of loss corresponding to either the amount of reported payroll (for all classifications in which payroll is the exposure base) or to the amount of Expected Losses (for all “non-payroll” classifications). Credibility weights will be taken from exhibits appearing in the Class Book. The complement of credibility is in each case to be assigned to the present loss costs on April 1, 2017 level for each category of loss.
- (10) Select proposed total pure premiums for each classification, using the middle value from the total pure premiums derived in (2), (8) and (9) above. If the proposed pure premium selected on this basis is different from the formula pure premium derived in (9) above, partial pure premiums are to be allocated between categories (serious, non-serious and medical-only) in the same proportion as the partial pure premiums comprising the formula pure premium.
- (11) Test the proposed total pure premiums selected in (10) by multiplying by the exposures of the two latest years for each classification and obtaining the total Expected Losses for all classifications combined.
- (12) Obtain a correction factor by dividing the Expected Losses derived in (6) above by the Expected Losses derived in (11) above.
- (13) Calculate the “composite pure premium multiplier” as the product of the following items:
  - (a) The pure premium correction factor determined in (12) above.
  - (b) The proposed experience rating plan off-balance factor.
- (14) Apply the composite pure premium multiplier obtained in (13) above to the proposed total pure premiums to obtain classification loss costs.
- (15) Test to assure that the maximum departure of the classification loss costs derived in (14) above from current loss costs are in accordance with the following parameters:

Maximum Change in Loss Cost:  
Upward: The overall average change plus 25% rounded to the nearest 1%.  
Downward: The overall average change minus 25% rounded to the nearest 1%.
- (16) Loss costs are to be rounded to the nearest \$.01.
- (17) Test the limited loss costs derived in (16) above to determine if balance has been achieved within 0.0005 of the indicated change in loss cost level. If such balance has not been achieved, calculate the necessary correction factor to adjust the composite pure premium multipliers derived in (13) above to achieve the necessary balance. Perform steps (14) through (17) iteratively until the desired balance is achieved.