1   **Information Request PUB-FA-17**: *Please provide detailed statistical rationale for Facility*
2   *Association's decision to move from the 5,410 full credibility standard for TPL used in the 2013 Taxi*
3   *rate filing to the 3,264 full credibility standards for TPL used in the current filing.*

4   **FA Response:**

5   During 2012/2013, Facility Association's rate indication templates and processes were updated and
6   made consistent across all jurisdictions and all rating classes. As part of that exercise, a single set of full
7   credibility standards by coverage were established. The current full credibility standards are listed
8   below:

coverage	full credibilty standard
BI	2164
PD	1082
AccBen	2164
UA	2164
UM	2164
CL	1082
CM	1082
SP	1082

9

10 The standards are derived based on the "classical" credibility model as applied to claim counts, under
11 the assumption that claim counts follow a Poisson process (i.e. the underlying claim count process's
12 average (or "mean") count is equal to the process's variance for the count). Under this assumption, the
13 chance of a sample from the underlying claim count process being within +/- a given percentage (call it
14 "k") of the mean claim count from the underlying claim count process to be at least a given probability
15 (call it "P"), the number of claims required in the sample to satisfy these requirements can calculated as:

16   # claims needed = y^2 / k^2,

17   where "y" is determined from the cumulative standard Normal distribution (presented by the
18   Greek letter phi or "Φ" such that:

19      $\Phi(y) = (1+P) / 2$

20 In the table at the top of the next page, the "full credibility" number of claims needed for various
21 "probability levels" (P's) and "within" ranges (k's), is shown, along with the formula for "y" in excel
22 that would generate the results.

P	(1+P)/2	y = Norm.S.Inv((1+P)/2)	k->	full credibility claim count = y^2 / k^2				
				20.0%	10.0%	5.0%	2.5%	1.0%
80.0%	90.0%	1.2816		41	164	657	2,628	16,424
90.0%	95.0%	1.6449		68	271	1,082	4,329	27,055
95.0%	97.5%	1.9600		96	384	1,537	6,146	38,415
99.0%	99.5%	2.5758		166	663	2,654	10,616	66,349
99.5%	99.8%	2.8070		197	788	3,152	12,607	78,794
99.9%	100.0%	3.2905		271	1,083	4,331	17,324	108,276

In the above table, the full credibility claim count for a 90% probability that the claim count is within +/- 5% of the underlying process average number of claims 1,082. We use this as the standard for short tailed, physical damage / property damage type claims. These types of claims are typically reported and settled relatively quickly. For the longer tailed coverages, we use a multiplier of 2 to adjust the 1,082 standard (to 2,164 as indicated in the table on the preceding page. Where a coverage consists of individual sub-coverages (like TPL-BI and TPL-PD) but we are looking at the experience on a combined basis, we sum the full credibility standards of the underlying sub-coverages (so for NL Taxi, we used 2,164 + 1,082 = 3,246 as the full credibility standard).

As indicated above, the standards selected are consistent across jurisdictions for Facility Association. We note that the current (2011) Newfoundland & Labrador Filing Guidelines match FA's standards for coverages other than bodily injury, uninsured motorist, and underinsured motorist where a 3 times multiplier is implied (i.e. the full credibility standard is 3,246 as opposed to FA's selected 2,164).