**Proposed Method for Economic Impact Analysis for Class III Scales**

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Scales are tested at many test loads, whereas each meter is typically tested at only two flow rates. Class III scales are available in many capacities and are used in many applications. The tolerance for Class III scales are based upon the size of the scale division, so to effectively use the scale errors contained in databases, it is necessary to know the size of the scale division for the errors recorded. In order to use scale errors in an estimate of economic impact, it is necessary to group the test results for Class III scales by division size and application. For example, the deli scales and POS scales used in supermarkets typically have capacities of 30 lb x 0.1 lb or 15 lb x 0.005 lb. If a database has other types of small capacity scales in the same category as these deli and POS scales, it is necessary to separate out the different scales into similar applications so that the errors associated with a particular application can be calculated for only that application.

The situation is more complicated if one considers medium capacity Class III scales. Medium capacity scales are used in a wide variety of commercial applications. Unless scales used in similar applications can be grouped together logically for analysis, then the inspection results should be separated out for each application for the economic impact analysis.

Large capacity Class III scales may have limited commercial applications that are subject to weights and measures inspections. One should review the types of scales and weighing applications that may be grouped together in a database to determine whether the applications are sufficiently similar that the entire group can be analyzed together or if subgroups are needed for analysis.

The scale errors found during inspections are recommended for use in the economic impact analysis, similar to what was proposed for vehicle scales. The appropriate scale errors to be used depends upon the distribution of loads that are typically weighed on particular types of scales.

Consider the case of Class III deli and POS scales in supermarkets. Most of the loads weighed on these scales are less than 5 lb, which is the largest load in the first tolerance step applicable to a scale with a capacity of 30 lb x 0.01 lb. There will be some loads weighed in the range from 5 lb to 20 lb, but the percentage of loads are probably much less than in loads below 5 lb. One must look at (a) the percentage of scales that may be 15 x 0.01 lb that are used in these applications and (b) the percentage of these scales that are out of tolerance to decide whether to simply group these scales in the analysis with the 30 lb x 0.01 lb scales. Obviously, it is easier to group these scales together for the analysis of economic impact.

Consequently, for the analysis of economic impact for Class III deli and POS scales, it may be reasonable to use the percentage of scales that are out of tolerance in the first tolerance step (or the first two tolerance steps) and to use the averages of the plus and minus errors at either the 5‑lb test load or the 15‑lb test load in the calculation of economic impact. I don’t have sufficient data to assess which average errors would be best to use in this case. Once this decision is made, then the economic impact for these scales can be calculated similar to what has been suggested for meters and vehicle scales. This approach can be used for all types of Class III scales used in different applications, provided that the scales used in each application are properly sorted out the value of the scale division.

The proposed approach to estimate the W&M impact of testing on each category of Class III scales is to:

1. Use the percentages of scales that were out of tolerance for scale accuracy determined separately for scales with minus errors and scales with plus errors for the test loads that appropriately represent the distribution of loads weighed on the scales.;
2. Use the largest plus or minus error in the scale for the test loads that were applied;
3. Calculate the average minus and average plus errors for the scales that were out of tolerance (but excluding outliers so that the averages are not unduly skewed);
4. Use the amount of sales in dollars that pass over all of the scales in one year to calculate the value of the weighing errors in dollars for the out-of-tolerance scale errors; and
5. Compare the inspection results to any other reference point (benchmark) that the jurisdiction would like to use.