Comments on National Performance Management Measures: Assessing Pavement Conditions and Bridge Conditions for the National Highway Performance Program

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Inertial profiles can be collected and IRI values calculated and reported on 0.10 mile intervals on roadway segments in which the collection vehicle can maintain a constant speed. In these cases valid IRI data can be generated for nearly every 0.10 mile traveled. However, there are no commercially available inertial road profilers that can collect valid profiles in stop and go situations. All of these profilers have some lower end threshold speed at which they are no longer able to collect valid profiles. So on roadways with lower posted speeds and numerous traffic control devices such as stop signs or signalized intersections it is impossible to collect valid profiles on the entire roadway. This situation occurs quite frequently on lower functional class urban sections. Collection of valid data is further impaired by higher traffic volumes and congestion. For these lower speed roadways we cannot get valid inertial profiles and thus cannot get valid IRI values for every 0.10 mile interval. It would be better if we would be allowed to report only intervals where we have valid data and not be penalized for intervals where we cannot get valid data. FHWA is proposing that any section missing IRI data will be considered as being in poor condition. This is unfair given the fact that the technology does not currently exist to collect such in a reasonable manner.

The IRI is calculated on collected inertial road profiles using a simulation speed of 50 mph. IRI works well as a cradle to grave statistic for roadways with travel speeds from about 35 or 40 mph to 70 mph or perhaps even higher. For low speed and low speed urban roadways where travel speeds are stop and go between zero and 25 mph or zero and 35 mph the IRI is not a good cradle to grave statistic. Road roughness experienced in a vehicle depends on the travel speed of the vehicle. Certain events in the road profile may not feel at all rough or may not cause a vehicle suspension to move much at all if they are traversed at low speeds. When they are traveled at higher speeds the same events in the profile can feel extremely rough and cause tremendous movement in a vehicle's suspension. For our low speed stop and go network of roadways, the current rule making requiring the reporting of IRI will make those portions of the network appear to be in much poorer condition than they really are. It does not make sense to require reporting IRI on roadway segments that meet the lower speed and stop and go conditions. Reporting IRI on these segments should not be required. Rutting, faulting, and cracking would be sufficient. A ride quality metric should not be required on these sections until reliable technology exists to collect the inertial road profiles in these areas and an appropriate ride metric is established which fairly accounts for the road roughness experienced at lower speeds.

The proposed rulemaking has different thresholds for IRI ranges of good, fair, and poor based on population. This does not make sense. The IRI thresholds should be the same for an urban or a rural roadway segment with the same travel speed. Ride quality metrics have everything to do with travel speed and nothing to do with population.

The proposed rulemaking states that, "…proposed thresholds are based on documented research. As an example, the proposed pavement rutting thresholds have been correlated to thresholds that minimize the risk of vehicle hydroplaning." This is likely appropriate when reporting rutting in 0.10 mile segments in which the rutting is rather uniform. This is not so appropriate for 0.10 mile intervals that contain high stress areas. For example, it is common to have higher localized rutting entering a signalized intersection. The rest of the 0.10 mile interval may have little to no rutting so the localized higher value of rutting gets averaged down over the entire interval. This prevents one from identifying shorter high stress areas that have a legitimate higher hydroplaning risk. AASHTO R 69-14 section 7.1 states that the reporting interval for network rutting shall be 33 feet or 10 meters. This is significantly shorter than 0.1 mile. If the goal is to identify areas of greater hydroplaning potential, then the reporting interval should be 33 feet for rutting.

The proposed rulemaking has a data metric of Faulting for Jointed Portland Cement Concrete Pavements (JPCCP). The data standard for this to analyze the collected inertial road profiles using AASHTO Standard R 36-13. This standard requires the use of the Automated Faulting Module (AFM) within ProVAL software. This standard requires independent faulting analysis for each JPCCP pavement section within the profile. Each section must be identified and sectioned out of the larger profile then analyzed using AFM to calculate the faulting metric. This is a highly time consuming process to do all of the manual sectioning and analysis. One must know or identify the joint spacing for proper analysis. There is no automation within ProVAL to do all of this. Further there is no batch processing capability within ProVAL to calculate the faulting metric in a reasonable manner for the network. It is unreasonable to require such a time and resource consuming level of effort for this metric. It should be removed as a requirement until such time that a fully automated method exists to calculate faulting appropriately at the network level.