FDOT

Florida Department of Transportation

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August 16, 2016

Gregory G. Nadeau
Administrator, Federal Highway Administration
U.S. Department of Transportation
1200 New Jersey Avenue S.E.
Washington, DC 20590

Re: Docket No. FHWA-2013-0054

Dear Administrator Nadeau:

The Florida Department of Transportation (FDOT) is pleased to comment on the Federal Highway Administration's (FHWA) "National Performance Management Measures; Assessing the Performance of the National Highway System, Freight Movement on the Interstate System, and Congestion Mitigation and Air Quality Improvement Program; Proposed Rule" published in the Federal Register on April 29, 2016. Our comments are based on a thorough review of the Notice of Proposed Rulemaking (NPRM) and our active participation in the development of comments from the American Association of State Highway and Transportation Officials (AASHTO). FDOT supports the AASHTO comments and offers additional perspectives in this document.

FDOT also collaborated closely with the Florida Metropolitan Planning Organization Advisory Council (MPOAC). The MPOAC is a statewide planning and policy organization created by the Florida Legislature 30 years ago. We recommend that the MPOAC comments on this rulemaking be given careful consideration.

Governance – Ensuring a Strong Foundation for Effective Rulemaking

The foundation for rulemaking (and for any other federal-state-local policy or program) must be an understanding of federalism principles to ensure that our intergovernmental relationship is as effective and efficient as possible. For example, Executive Order 13132 on Federalism contains key principles such as the following:

- National action limiting the policymaking discretion of the States shall be taken only where there is constitutional and statutory authority for the action and the national activity is appropriate in light of the presence of a problem of national significance.
- With respect to Federal statutes and regulations administered by the States, the national government shall grant the States the maximum administrative discretion possible. Intrusive Federal oversight of State administration is neither necessary nor desirable.

- Where possible, defer to the States to establish standards.

The national transportation program has flourished by keeping with the statutory vision of being "a federally supported state program." It is the state DOTs that deliver transportation improvement projects and that own, operate and maintain large portions of the transportation system. Good governance dictates that those directly responsible for transportation system assets and performance (state DOTs) should likewise be responsible for and accountable for establishing those performance measures and targets that best align with their unique requirements and needs. FDOT strongly recommends that the final rules align with established federalism principles.

FDOT Performance Reporting Overview

FDOT has provided four annual MAP-21 Performance Reports to our Congressional Delegation, USDOT and others covering all areas of federal performance reporting. We will continue to do so believing that an annual summary performance report to our Congressional Delegation is the best way to communicate how federal investment translates into Florida transportation system performance.

Our 2015 Performance Report (available at FDOTperforms.org) extends well beyond the federal performance measure requirements. Federal performance reporting is limited by law and should not extend beyond those limits. Our MAP-21 Performance Report can also be accessed at this website.

Collaboration with Florida MPOs

FDOT's performance collaboration with Florida's 27 MPOs is strong and expanding. An initial Florida Performance Measurement Workshop was held in April 2014 in Jacksonville. FHWA and FTA representatives, FDOT Central Office and district staff, and staff from all Florida MPOs attended. The Workshop resulted in a rich dialogue with numerous ideas and opinions conveyed through discussion and in writing. A second workshop was held in April 2015 in Orlando that built upon the first one.

In October 2015, FDOT held mobility performance workshops in our seven district offices involving all Florida MPOs. Discussion items included sharing of mobility performance data, preparing for federal requirements and potential roles and responsibilities.

A pilot effort is now well underway with four Florida MPOs to share safety, bridge, pavement, and mobility performance data and collaborate on Florida's implementation of the federal performance reporting requirements. The results of this pilot effort will be shared with all Florida MPOs at our third Statewide Performance Measurement Workshop in September.

FDOT Specific NPRM Comments

The following are FDOT comments not specifically appearing in the AASHTO principal comments.

1. FDOT Approach to Mobility (System, Freight and Congestion) Performance Measures

   Although seven mobility performance measures are presented in the NPRM, essentially five are travel time variability measures presented in different forms. As proposed, national "system performance" would be solely dependent on this one measure, to the exclusion of all others. FDOT believes travel time variability is a good measure, especially for freeways in large urbanized areas, but it is widely recognized multiple measures are needed to adequately reflect overall system performance. Evaluation of system performance would preferably involve the four dimensions of mobility: quantity, quality, accessibility and utilization. Although certainly with limitations by themselves, vehicle miles traveled (a quantity measure), delay (another quality measure), and percent of miles severely congested (a utilization measure), together with a travel time variability measure, would help ensure the most efficient investment in federal transportation funds compared to travel time variability alone. As presently drafted, the operation of nation's most significant highways would now only be evaluated in terms of the single dimension of travel time variability.

   The NPRM did not include the other more traditional view of "reliability", probability of non-failure or "on-time" arrival. Defining travel time reliability in terms of variability is fine, but the other concept of travel time reliability should be referenced. It is the "on-time" arrival approach which best matches the desire to implement and operate express lane facilities (generally considered a crucial project type to improve travel time reliability).

   To provide a more robust set of system performance, freight and congestion measures FDOT includes other measures as part of our mobility performance measures:

   - Vehicle miles traveled and combination truck miles traveled
   - Vehicle hours of delay and combination truck hours of delay
   - Percent miles severely congested

   The vehicles and combination truck miles traveled measures can easily be calculated in HPMS or from HPMS data. Delay and percent miles severely congested measures can be readily calculated from probe data and HPMS data. FDOT has been calculating and reporting these measures for at least four years at a cost less than that presented in the NPRM.

   We believe our metrics and calculation techniques are superior to those proposed in the NPRM. The final rule should acknowledge and encourage the use and further development of other measures to report on mobility performance.

2. The Final Rule Should Be More Explicit on Key Terms

- Congestion Definition

Congestion is perceived in many ways by different people. Congestion is primarily related to "crowdedness" or "stuffiness". Speed is frequently used as a proxy for congestion, but it is more of a symptom or a result of congestion than a measure per se. Further, it is not always a good measure of congestion. For example, on freeways in rural areas if 90% of the capacity is used up, travelers would perceive its operations as "congested", yet speeds would still likely be above 55 mph.

According to the Highway Capacity Manual (HCM) freeways are under forced flow conditions and have lower capacities when operating below 45 mph. They usually do not break down when operating at 55 mph. It is generally assumed that travelers will seek alternate routes when speeds drop below 20 mph.

Florida has found it useful to describe freeway levels of congestion by both capacity utilization and speed:

- "Mild congestion" – freeway speeds in the range of 55-59 mph
- "Moderate congestion" - freeway speeds in the range of 45-54 mph
- "Heavy congestion" freeway speeds in the range of 20-44 mph
- "Severe congestion" freeway speeds below 20 mph

FDOT recommends the final rule should define congestion and probably use one or more adjectives to describe the level of congestion being presented. If a freight congestion measure is kept, rather than using the term "uncongested" it would be better to describe the condition as not "heavily congested".

Since the operation of freeways can generally be considered to have broken down and experience lower capacity levels when operating at less than 45 mph, that speed appears to be a better criterion than 35 mph for determining "excess delay". There is merit to picking the 45 mph speed as opposed to an arbitrary 35 mph, particularly in light of the demanding mobility and logistical requirements of business and industry.

- Delay Definitions and Freight Thresholds

Like "congestion", "delay" has different meanings to people it should be clearly defined in the final rule. The two primary definitions relate to "total delay" (any delay which occurs below free flow speed) and "threshold delay" (delay below some accepted norm). Both of these definitions are recognized in the 6th Edition of the HCM. As used in the NPRM, "excess delay" represents a type of "threshold delay". FHWA does not provide technical justification for the selection of 35 mph for freeways and 15 mph other NHS roadways.

For its threshold delay calculations and reporting, FDOT uses criteria based on the HCM (the nation's leading technical resource on multimodal highway capacity and quality of service). As noted above, 45 mph can be technically justified as the speed at which "excessive delay" occurs on freeways.

For calculating delay, FDOT categorizes signalized arterials in two categories, those posted 40+ mph and those posted 35- mph. Using HCM criteria for level of service D, the lowest speed thresholds become 18 and 13 mph, respectively, roughly comparable to FHWA's overall "other NHS roadways" proposed 15 mph. It is unclear (ambiguity in the NPRM) what the "excessive delay" thresholds are for generally uninterrupted flow on "other NHS roadways" which are neither freeways nor signalized arterials.

FDOT recommends the final rule should define "delay" and refine "excessive delay". Because of technical justification for the operations of freeways being generally considered to have broken down at lower capacity regimes, operation at less than 45 mph appears to be a better criterion than 35 mph for determining "excess delay". For signalized arterials FHWA should consider using FDOT's approach of setting speed thresholds; alternatively, thresholds could be set based on percent of free flow speed or posted speed limits. Thresholds for generally uninterrupted flow highways should also be set and should differ from those used for freeways and signalized arterials.

- Clarification of "Freight" and "Truck" Definitions

The NPRM refers to freight and trucks as those vehicles which are considered as trucks by the NMPRDS dataset. However, there is uncertainty about what exact mix of vehicles is in the NPMRDS and how it could change over time.

FDOT recommends FHWA determine exactly what type of vehicle classes should be classified as freight or trucks. This could be heavy vehicles (FHWA classes 4-13), trucks (FHWA classes 5-13), or combination trucks (FHWA classes 8-13). FHWA should then require the NPMRDS dataset include only those freight or truck vehicles that fit that definition.

FDOT recommends FHWA define freight in terms of combination trucks (FHWA classes 8-13), as that group of vehicles most representative of significant freight activity along the Interstate System.

- Segment Definition

Essential to the calculation of performance measures is the term "segment". It is an important concept for NPMRDS, HPMS, and more traditional and accepted transportation analysis techniques. These lengths and attributes for determining termini vary by use and therefore, become important to analysts. FHWA does define "travel time segment", but does not relate it to "HPMS segments" or other analytical segments used in transportation analysis.

FDOT recommends that "segment" should be formally defined and the way in which segments are determined should also be presented in the final rule. "Section", "link", "facility" and "corridor" lengths are other terms FHWA may wish to consider in defining "segment".

3. Use of Comparable Performance Measures

FDOT has reported on travel time reliability for over 10 years. We believe other metrics and calculation techniques are superior to those proposed in the NPRM. The final rule should acknowledge and encourage the use and further development of other measures to report on system performance.

4. Hourly Volumes

Given present technologies, obtaining hourly volumes for all NHS facilities is not yet possible. FDOT as well as other state DOTs have procedures for calculating annual average daily traffic (AADT), but congestion (i.e., delay, level of service) is not a daily analysis, rather it involves hourly or less than hourly analyses. No nationally accepted approach exists to obtain these hourly/less than hourly volumes. For Florida's mobility performance measures program to address the topic, FDOT analyzed volumes from its continuous traffic count stations and developed default values for eight facility/area types and three day of week categories:

Facility/area types (all state roadways can fit in one of those categories):

- Freeways leading into urbanized area core areas
- Freeways in other urbanized areas
- Freeways in transitioning areas
- Freeways in rural areas
- Interrupted flow arterials in urbanized areas
- Interrupted flow arterials outside urbanized areas
- Two-lane highways in rural areas
- Multi-lane highways in rural areas

Day of week factors were developed for

- Weekdays
- Saturdays
- Sundays

With this information FDOT calculates the following important mobility measures at a useful and practical planning level:

- Hours of delay
- Percent of travel at various levels of service
- Percent of travel severely congested

We offer this pragmatic FDOT approach for consideration by FHWA.

Selected AASHTO Comments for Further Comment by FDOT

The following recommendations from the AASHTO "Principal Comments" are of particular interest to FDOT. We offer further comment on each.

2. *Calculation methods and data requirements are overly complex, burdensome and costly, do not provide meaningful benefit and do not align with nationally accepted practices*

   - *Basic unit of time*

   The NPRM indicates that travel time data needs to be in five-minute intervals. FDOT believes travel time intervals should be longer for the following reasons: (1) there would be more consistency with other reporting and analytical analysis (e.g., 15-minute periods are consistent with the Highway Capacity Manual and 1-hour periods are consistent with most planning studies); (2) the data would be more manageable; (3) longer time intervals would help overcome the extreme variability of travel time for arterials that have long cycle lengths; (4) the inaccuracies caused by replacing missing data with proxies would be significantly reduced if travel time is aggregated in greater time intervals; and, (5) for the congestion measures that do require volume, the fact that the volume is not granular (e.g., hourly values based on AADT) would strongly suggest that the travel time data set be aggregated to greater time intervals in order to better match the volume data.

   The use of 5-minute data increments misses the broader concept of "keeping the end in mind". It has the appearance of data driving what should be calculated and how it should be calculated, rather than starting with the stated purpose of assessing the performance of the NHS and then determining what data is actually needed and how to use the data.

   FDOT recommends that time intervals should not be less than 15 minutes. They could be 15-minutes, 30-minutes, hourly, or peak-period travel times, used in a consistent manner.

   - *Travel time reliability measure*

   The proposed "level of travel time reliability" (LOTTR) metric, with its 1.5 threshold to define acceptable or non-acceptable, is rather unusual and has not been previously discussed in SHRP 2 or other analyses or discussions in the transportation field. Since both the numerator and denominator can change, the same LOTTR number can reflect different situations on the ground. FDOT disagrees with the decision to measure and report travel time reliability this way.

   FDOT proposes that travel time reliability be measured with either: (1) the 95th percentile travel time index (TTI_{95} / "Planning Time Index"); or (2) an on-time arrival metric, such as percent of travel above 45 mph for urbanized areas over 1 million and percent of travel within 5 mph of the posted speed limit for other urbanized areas and non-urbanized areas.

3. *Take a straightforward approach to implementation of the performance measures*

- *Mitigate the effects of weather events*

There are situations (i.e. heavy snowfall in many states) in which portions of the Interstate System are closed and no travel occurs. Under those circumstances the missing speed data approach proposed in the NPRM would be to assume speeds at the posted speed limit and, subsequently, all travel would be "reliable". Travelers cannot rely on those facilities under those adverse conditions.

FDOT recommends the final rule readdress these types of situations such that under those time periods travel is not considered reliable.

6. *The proposed rule rests on a foundation that greatly overestimates its benefits and greatly understates its costs*

- *FHWA calculation of measures*

Noting that this NPRM includes specific metrics, analytical techniques, and data sources, FDOT believes that it would be most efficient for FHWA to be the entity that calculates these measures. Doing so would have multiple benefits: (1) it would remove the financial burden upon states to calculate these measures; (2) it would ensure greater consistency across the states, with consistent data sets and computational processes; and, (3) it would enable states who may have superior performance measures than those proposed in the NPRM to continue developing and using them in a manner that best fits their own contexts.

FDOT recommends that FHWA calculate all the required measures. The NPRM should specifically recognize that some states will use other measures for performance based planning and programing.

- *Conflation Issue*

Conflation of the NPMRDS to conduct the analyses necessary for meeting the requirements of the rule can be an onerous task for agencies. FDOT is pleased to see that FHWA recognizes the difficulty of that effort and proposes to conduct the conflation. FHWA could greatly ease the burden on agencies by requiring that the next generation of the NPMRDS be conflated to each state's linear referencing system, and as appropriate, the HPMS. It would also aid additional analyses undertaken by agencies, thereby promoting use and familiarity with the NPMRDS. Conflation with states' linear referencing system / HPMS would provide the following items from the "full extent" portion of HPMS: functional classification, NHS designation, urban area designation and average annual daily traffic (AADT). Speed limit is available for HPMS sample sections, so currently not all TMCs would be covered. Other than the states' and MPOs' designated "desired peak period travel times" for the PHTTR metric, conflation with states' linear referencing systems would provide all the data required to

develop the proposed rule's system performance, freight and congestion performance measures.

FDOT recommends FHWA take responsibility for conflating the next NPMRDS to states' linear referencing systems. In doing so FHWA or its contractor must coordinate with and receive concurrence from the state that the conflation effort matches correctly.

The TMC configuration file should contain:

- **The type of facility being represented by the TMC. At a minimum, categories for freeways should be: general purpose lane, separated managed lane, separated collector/distributor, and ramp.**
- **An indicator of the linear sequencing of TMCs on a given route within a state. Although this indicator can be easily derived from the latitude or longitude for roadways that run in a uniform direction, this is often not the case, particularly for circumferential highways and ring roads. An additional sequencing data element for each route within a county is also preferred.**
- **Although not strictly related to the rule, each record in the NPMRDS (5-minute bins) should indicate how many vehicles (measurements) were used to derive the travel times. This would provide valuable information for other types of analyses conducted with the NPMRDS.**
- **FHWA should ensure that TMC definitions and attributes are the same for the NPMRDS as they are for their other data products.**

As part of the update to HPMS field manual, FHWA should specify that posted speed limit be a "full extent" element for NHS facilities.

A conflated NPMRDS / state linear referencing system dataset would optimally be updated annually, tentatively suggested as August 31 of every year.

7. *Confirm state discretion in target setting and reporting*

- *Target Establishment Clarifications*

FDOT recommends the final rule should clearly state that FHWA has no role in or authority over the establishment of targets. States and MPOs should have the clear authority to set their own targets in their respective areas. See Governance section above.

8. *Allow flexibility for the use of fully-populated travel time dataset other than the NPMRDS*

Like AASHTO, FDOT is concerned about the proposed way that missing travel time data should be addressed. (1) There is a lack of consistency in how to approach this problem: while some measures should be replaced with speed-limit-equivalent travel times, other

measures require no action; (2) as the NPMRDS data becomes more complete, the reliability measures will likely degrade because those segments that were formally empty and replaced with free-flow travel time, may later have an observed speed that is lower.

FDOT is also concerned over missing data items in HPMS. Although it may seem straight forward, all states have some difficulty imputing all required data in HPMS submittals. For example, HPMS submittals require data on new roads; however, volume data may not yet have been determined.

FDOT recommends (1) missing data be filled with historic and imputed data, and (2) the basic unit of time be expanded so as to avoid too many time-intervals that have no observations.

9. *Significant challenges remain if the NPMRDS is to be used for national-level reporting*

- See FDOT's comments on AASHTO Principal Comment #6 above *FHWA Calculation of Measures.*

- *Freight Travel Time Data*

FDOT agrees with and supports FHWA's intention to emphasize freight movement and develop freight measures. However, we believe there is little benefit using actual truck speeds for the FHWA proposed performance measures: Under congested conditions (freeway speeds < 50 mph, or interrupted flow facility speeds < 35 mph or 15 mph), truck speeds will essentially be the same as vehicular ones. The freight performance measures would work just as well using general travel time, and doing so would have the benefit of fewer data gaps and greater ease of analysis.

Moreover, freight bottlenecks are typically associated with either the first/last mile of corridors beyond the Interstate System. Since freight movement is limited to "freight on the Interstate System," significant bottlenecks may not be identified.

FDOT recommends that only general travel time observations be used to develop the freight performance measures. Since travel time variability on the Interstate System will already be accounted for in the system performance requirements, that analysis will allow for addressing freight bottlenecks.

10. *HPMS is important to the proposed regulation but was not developed to be a regulatory document*

See FDOT's comments on AASHTO Principal Comment #6 above, *Conflation Issue.*

11. *Ensure consistency in addressing the performance of the NHS, CMAQ congestion and freight movement performance measures*

- *Reliability Percentiles*

FDOT supports the AASHTO position that FHWA should use a single reliability percentile for both the system performance and freight performance measures. Use either the 80th or 95th percentile travel times for system performance and freight to avoid unnecessary confusion and inconsistency. With that said, unlike AASHTO, FDOT recommends the 95th percentile. The difference primarily relates to which is the better user perspective for the performance measure: traveler-based (95th percentile) or agency operator-based (80th percentile). Throughout FDOT's planning processes, FDOT has taken a strong stance that performance measures should be traveler based. FDOT research shows a direct correlation between the 80th and 95th percentiles.

FDOT recommends using a single reliability percentile for both the system performance and freight performance measures. Of the two proposed by FHWA, FDOT recommends the 95th percentile. However, on the latter issue, FDOT regards the consistency in the percentile more important than the percentile itself.

- *Congestion speed threshold*

While the NPRM proposes to use a speed threshold of 50 mph to determine that a given segment is congested for the Average Truck Speed metric, it suggests 35 mph to determine that a segment is congested for the Excessive Delay metric.

FDOT recommends the use of a consistent speed threshold for both "congestion" and "excessive delay". FDOT recommends the use of 45 mph. See FDOT's comment and recommendation above on "congestion definition".

We commend the Federal Highway Administration for its extensive stakeholder engagement and outreach in implementing the performance measure requirements of MAP-21. We appreciate the opportunity to provide these comments and look forward to working with FHWA in the implementation of final rules that are in accord with FDOT and AASHTO recommendations. Please do not hesitate to contact us in regards to any of our comments. Mr. David Lee should be your primary point of contact at (850) 414-4802 or david.lee@dot.state.fl.us

Sincerely,

Jim Boxold
Secretary

JB/dl