# AASHTO AUTHORIZATION POLICY
## Freight/Economic Development Task Force
## Lead: Minnesota Department of Transportation—Tom Sorel

## -DRAFT-
## Status Report 5-11-09

**Nine states and groups have been invited to participate: Minnesota, Washington, Maryland, I-95 Coalition, Kansas, Indiana, Alaska, California and Vermont. Task force members have been asked to review the freight section of the white paper, "Factors Influencing the Effectiveness of Performance Measures Aligned with National Goals," and to make recommendations regarding freight measures. Following are current recommendations based upon responses received, which don't necessarily reflect consensus. Additional discussion among task members may likely yield additional refinements. Other important freight measures that capture access to major freight generating locations (ports, intermodal yards, etc.) and throughput at such locations, need further development. There are no recommendations yet regarding targets for the recommended measures.**

1. ***Truck travel time, speed and reliability on urban, Interstate and National Highway System corridors***

**Comments**

This measure reflects a national goal of improving economic competitiveness by improving truck freight mobility. Travel time, average speeds and reliability are relevant for both long distance hauls on major trucking corridors and for urban freight delivery; truck travel on congested urban corridors is a particularly significant issue. Unreliability on the road system is the biggest cost driver in the delivery system. Improved reliability of the freight system would improve our industries' comparative advantage and lower the price of consumer goods for our citizens. FHWA and other states are currently collecting and analyzing commercially available truck GPS data to track end-to-end travel times, measure reliability, and quantify delay in specific locations on the highway/road network. While trends can be monitored, care should be taken in comparing corridors and states. A variety of factors may come into play including differential speed limits that may exist for trucks, industry efforts to lower speeds for fuel conservation, speed governors on trucks, construction activity, weather events, etc. The economic cost of truck delays can be estimated by applying standard hourly truck costs to estimates of annual delay.

2. ***Average time to cross borders***

**Comments**

This measure reflects the goal of improving international trade by reducing border crossing delays. Delays at border crossings are affected by the transportation network, border processing time and operational constraints. This measure is relevant to high truck volume crossing points along the U.S border with Canada and Mexico, such as Laredo, TX and Detroit-Windsor, which have nationwide implications for goods movement. Currently, the U.S. Customs and Border Protection (and Canadian Border Services Agency) report real-time delays for commercial vehicles at all ports of entry. There are several program and technology tests and deployments underway that support improved information about truck and container flows across the borders, including the FAST program. This measure should also be expanded to capture cross border rail freight movements, which are subject to customs inspections. Data availability for rail crossing delays is unknown at this time.

3. ***a. Number and percent of bridges and tunnels allowing clearance for double stack containers on designated corridors***
   ***b. Percent of track capable of 286,000 pound railcar operation***

**Comments**

Measure "a" reflects the ability of the rail system to transport double-stacked intermodal containers, greatly improving the productivity of the nation's rail system. Both highway and rail bridges/tunnels may pose clearance constraints and should be included. One bottleneck location can prevent double stack operation along an entire corridor. Approximately 15% of the nation's rail lines have clearance for double-stacking. However, this measure is only relevant to certain corridors, primarily certain Class 1 lines, where there is demand for the service. Clearance issues are more prevalent in the eastern United State. Railroads have knowledge of double-stack restrictions, however, a comprehensive inventory of accurate measurements at each clearance structure may not always be readily available (note: rail track maintenance can change this dimension). Measure "b" reflects the need for primarily shortline railroads (although not all Class 1 track is not "286") to carry industry-standard railcars, thus facilitating interchange with other railroads. Shortline track (and sufficient bridges) rated for 286 lbs. generally allows for 25 mph operation (FRA class 2 standards) vs restricted speeds and train lengths for lighter rail/inferior infrastructure; this can significantly reduce operating costs and improve operating ratios. Shortlines provide critical connections and feeder services, particularly for rural and exurban shippers and receivers, providing access to the national rail system. Data is readily available either through states or railroads and their associations.

## Developing a Congestion Performance Measure

Building on several research reports, position papers and conference proceedings, the following principles and possible approaches are offered for discussion related to a Congestion Performance Measure by the AASHTO Standing Committee on Performance Measurement.

**Summary**

The key elements of the Congestion Performance Measure are outlined below. These are related to the desired outcomes and to other performance measure topics. Key elements for AASHTO discussion include:

- Approach – The community should develop the measures and targets that best reflect their vision. National measures, if used, should apply to the national system, be focused on issues of national importance (e.g., freight) and recognize that improvements must also work in, and be consistent with, the desires of the local community.
- Targets – A set of performance targets will be necessary, but the regional average congestion level target will undoubtedly be the primary metric used in public functions.
- National target – The role for a national target congestion value may be limited to routes that serve an important national interest. Important freight travel routes, border crossings, key freight connections and urban corridors during off-peak hours are examples, but evacuation routes, national defense mobilization corridors and other network elements may also qualify.
- Measures – A set of a few performance measures appears appropriate at the summary level with at least one "average congestion" measure and one "travel time reliability" measure. A single measure may be used to discuss the problems, but focused action requires several measures.
    - Travel delay per commuter is a good regional average measure; it is easily understood and directly affected by all solutions.
    - Travel Time Index is useful at several levels of geography and could be used to compare both regional and sub-regional targets.
    - Buffer Index is an easily understood and useful measure of the variation in travel time; it is affected by a range of operations improvements.
- Peak and off-peak measures are needed – Commuter conditions are important, but the midday period is when freight moves and it is perhaps more important to maintain a reliable, smooth flowing transportation network during this time.
- Average and reliability measures – Regular congestion problems are typically included in performance reporting, but the variation in travel time is caused by different issues and have a different set of solutions than the typical "too many cars on too little road" type of problem.
- Accountability and Transparency – Will be provided in several ways. The targets will be developed by the communities (not imposed from the outside). Each area should be responsible for identifying their progress toward targets they developed and, if no progress, the reason why they are not making progress. The development of an open process and visible and measurable targets will provide a connection between annual project lists and ultimate goals of the chosen set of projects.
- Project priorities – Should be chosen (at least in part) according to their role in alleviating the problems identified in the performance measures. The measures should illustrate the effect of all types of strategies being used to address congestion problems – added capacity, operational improvements, demand management and land use development patterns.

## THE CONCEPT & FRAMEWORK

**What are we trying to measure?**
The problem of congestion and the effect of all possible solutions. These solutions include both transportation and land use approaches. The effect of the entire range of possible solutions should be shown including, for example, adding lanes, bus routes and rail lines, improved traffic signal operations, rapid removal of crashed or stalled vehicles, access management treatments, flexible work hours, commute travel options, telecommuting, bicycle travel, pedestrian treatments and land use development patterns that reduce vehicle travel.
*If its being offered as a solution, it should show up in the measure.*

**What are we trying to compare?**
As described in the AASHTO position paper, the measure will be used to identify a region's trend and compare current and projected levels against targets for that region. The measure should also be appropriate for use at corridor and subregional levels.
*Trends and targets.*

**Why are we trying to compare?**
The value of the congestion measure is to ensure that investment decisions aggressively target congestion problems. Changes in the amount of investment and the project and program decisions may be needed to better address critical congestion problems.
*If you don't measure it, it won't get done.*

**Who should set the congestion goal?**
Each region is in the best position to decide its congestion goal given the community desires, the long-range growth plans, economic status and other competing funding priorities.

- DISCUSSION POINT – National congestion level >> The federal government has a legitimate and compelling interest in maintaining the service quality on the National Highway System. Congestion that hinders national and international travel and trade is not in the national interest. A national congestion goal that focuses on the time periods of the day when commuting travel is not a substantial portion of trips (for example, outside of 6 to 9 a.m. and 4 to 7 p.m.) is appropriate. Such a goal should recognize the importance of the midday period to the freight movement and manufacturing industries.

*We see a use for locally developed goals and national goals to ensure economic competitiveness and national security.*

**Are we trying to develop a "top ten list" of most congested regions?**
No. The value of a national top 10 list pales in comparison to a congestion target that is supported by the community. Since each region prioritizes congestion relief differently, and will choose to attack each congestion problem differently, the value is in developing a congestion target and a measurement approach, rather than crafting a national standard congestion target. A "one size of congestion fits all" regional target will invariably be an easy accomplishment for small regions or those that are not seeing population and employment growth, and an impossible target for the regions that are creating jobs at rapid rates. Top 10 lists are good for publicity about transportation solutions and benefits, but they are not good decision-making tools.
*We seek consistent "measuring spoons" not "cookie-cutter" policy decisions.*
**Who is the Audience?**

There are many audiences, but in general there are two groups. There are many public, decision-makers, policy experts and stakeholders that form an external and diverse audience of information consumers. There are also many internal consumers of congestion information within an agency including leaders, planners, designers and operators.
*If you aren't sure who you are talking to, how can you know you're using the right language?*

DISCUSSION POINT – **What if there is no progress toward the region's self-defined congestion goal?**
There are a number of reasons a region may not be making progress. These reasons include combinations of poor priority setting, much more growth than anticipated or underfunding of transportation. In these situations, agencies should undertake an analysis of:

1) agency spending in a few broad categories to determine if one topic area is receiving "more than its share" of the funding,
2) the mobility-related funding to determine if the set of projects that are being selected are not moving the region toward their goals, and
3) the type of projects to ensure that proper investigation of all project and program options (large and small) have been considered.

*Use carrots, not sticks. Encourage agencies to invest in projects that are consistent with the goals they set.*

**How should the differences in urban and rural congestion be handled?**
Different targets are appropriate for urban and rural areas. There are different expectations for congestion in every region. Comparisons to irrelevant conditions (i.e., comparing rural and big city traffic problems) are not helpful and do not provide citizens with a sense their funds are being spent wisely. Most states and many large MPOs have some sort of "fair share" arrangement for returning funding to areas in relation to the taxes that were paid from that area. In most cases, therefore, rural added capacity projects do not compete for funding with metro region projects.
*Each region should decide how much congestion they wish to tolerate.*

## MEASUREMENT SPECS

**Some of the congestion measures should work at several different levels of geography.**
Providing a congestion measure that can be used at the project and corridor level will improve the chances that the measure will be adopted as a part of regular decision-making practice. It is not necessary that all of the measures satisfy the criteria. The relevant geographies include project, corridor, subregion and region.
*Providing measures that are "useful" for a variety of purposes will accelerate their implementation.*

**The measures should provide mode-neutral comparisons.**
Travel time and person volume related quantities allow for cross-modal and multi-modal comparisons.
*A broad and level "playing field" is needed so all modes can be compared.*

**The measures should include attributes that are important to freight shippers.**
Travel time and travel time reliability are important elements in freight mode and route decisions. A measure of the cost of travel delay that recognizes the higher value of an hour of freight delay than an hour of commuter delay enhances the usefulness of the measures and connects to the concerns of shippers, manufacturers and travelers alike.
*The movement of goods is critical to a healthy economy and should be reflected in the measures.*

**The measures should monitor congestion from the full range of congestion causes** (i.e., unusual demand, incidents, work zones, special events, operating system failures, weather and inadequate capacity). Some of these are more difficult to monitor or estimate than others, but the cause of the problem(s) must be diagnosed before a solution can be identified.
*If you don't know the real problems, you can't develop solutions.*

## DESCRIBING THE MEASURES

The effect of the broad principles is that a range of measures will be needed to address the key questions. Regions may choose to highlight different measures, but a robust performance measure system should have all of the following attributes.

<u>The congestion measure should be separate from the congestion target.</u> Bundling the measure and target into one metric (e.g., creating an index comparing the growth in congestion to the growth in jobs) will be difficult to explain. Two simple metrics will be easier to use and explain – a congestion measure that can be easily explained and a target that includes a component of population, job or economic growth.
*Don't confuse people with the measure when you want them to focus on what to do with the measure. Use a simple measure, a simple target and explain both.*

- The alternative is bundling the measure and the target in a way that normalizes all the determining factors. As an example, one could produce a measure of congestion that would change according to job growth; the target might be "keep the measure value the same from year to year." In this case, congestion is really growing every year, but it would be growing at the same rate as the job market. (Historically, delay per peak period traveler has grown at about triple the rate of population growth). This approach is hard to describe, unnecessarily complicates the message and risks appearing as though "games are being played".

<u>A set of congestion measures should be used</u> to describe problems and the effect of solutions including Travel Time Index, travel delay, total travel time, the buffer index and the cost of congestion.

- Travel Time Index – A measure of the extra time that travelers must allow for an average peak period trip. A value of 1.50 says that a 20 minute off-peak trip takes 30 minutes in the peak period. *This measure is applicable to the broadest range of uses, but is not sufficient by itself.*

- Travel delay – A measure of the total amount of extra time suffered by all travelers in the designated geography. This is very useful for economic and "total congestion effect" reporting. Travel delay per commuter is also a good measure of regional traffic congestion.
- Total travel time – A measure that brings in the effect of transportation improvements and denser land use patterns that may combine to create trips that take less time. This measure (in person-hours) would include vehicle, walk, bike and transit modes in one value.
- Buffer Index – A measure of travel time reliability; the percentage of extra time that should be allowed to make an important trip and arrive on time. The Buffer Index is a ratio of the travel time to accomplish the 19$^{th}$ worst trip out of 20 compared to the average travel time (i.e., the 95$^{th}$ percentile travel time). The Buffer Index is explained as 'one should allow an extra BI percent of time for important trips.'
- Congestion Cost – The value of fuel and travel delay is an important measure for discussions with the public and a component of improvement analyses.
- Economic benefits – The benefits to travelers and the economy represent the reason why solutions are pursued. There are several approaches to creating these estimates; it is important that one approach is chosen and used. If the discussion only includes costs and does not include benefits, it will be difficult to convince the public or decision makers to invest more.

Relating the measures to important aspects for person and freight travel:

- *Extra travel time* is a drain on the economy and leads to increased frustration. Most of the measures have an "extra time" component.
- The *unreliability of travel time* has a particularly onerous effect on freight travel and just-in-time manufacturers. Late deliveries or an inefficient process caused by a poorly functioning transportation system affects competitiveness.
- *Economic measures* are particularly relevant to the general public and the business community. If parents only knew how much college cost, there would be very few students; there is a lot of discussion about the value of education.

<u>The geography used by each region does not have to be the same.</u> Long-range planning models are a good source for the data because they include the effect of transportation and land-use actions. There is, however, no consistency in the area included in the travel demand models used by metropolitan planners across the country. Urbanized area data may also be useful because the area includes only the developed portion of each region, a more consistent and similar comparison than the metropolitan area boundary.

<u>The geography should be the same from year to year</u> to illustrate the effect of the solutions (rather than the effect of boundary changes). If a sliding boundary is used, the capacity additions will appear much larger than they are (because existing roads will be re-designated when the boundary is moved).

<u>The target does not have to be the same in every region, in every region of the same size, or even in all parts of a region.</u> Downtowns may be able to accommodate more road congestion due to the presence of a variety of modal alternatives including transit, bike and walk, and because

destinations (jobs, shops, etc.) are nearby. Suburban areas and rural travelers have different alternative travel options and different congestion expectations. Each community is best positioned to balance the wide variety of interests and expectations.

## OTHER MEASUREMENT ISSUES

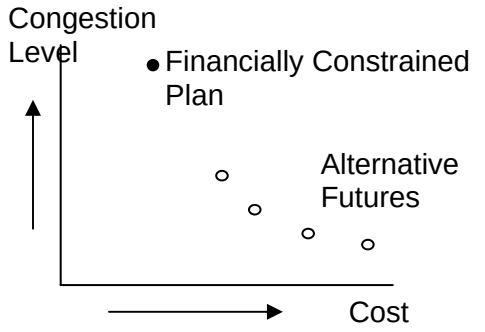
The practical effect of any move toward using performance measures will be that more before-after studies of the effect of projects, programs and policies should be conducted. All projects are evaluated in some level of detail before implementation, but very few are examined afterwards. Many are not even studied in an effort to maximize the return from the investment. In addition, it is difficult to discuss the need for additional funding or more flexibility if there are no evaluations of prior spending programs.

Studies of the effect of additional investments beyond the expected revenue (the financially constrained metropolitan transportation plan) should be developed to identify the funding needs for a range of optional congestion targets, and to identify the benefits from such investments. Scenarios might include:

- Reduce congestion
- Prevent worsening congestion
- Maintain economic competitiveness of the State
- Congestion growth matches population growth

The Exhibit below depicts one outcome of these studies; additional information on the costs and benefits of additional investment in transportation and/or the effect of alternative land use development strategies. These can be created as an extension of current planning activities that focus on producing only a financially constrained plan. Showing the reduction in congestion that comes from additional investment is one component of a program of performance management.

**Displaying the Effect of Additional Investment on Congestion Levels**
**An Example of Performance Measurement Analysis Results**




Additional analysis of several cost scenarios informs a discussion of a variety of alternative transportation investment options.