

March 22, 2013

SCOPM Task Force Findings on MAP-21 Performance Measure Target-Setting*

AASHTO Standing Committee on Performance Management
Task Force on Performance Measure
Development, Coordination and Reporting

Chair: Paul Degges, Chief Engineer, Tennessee

Vice –Chair: Bernie Arseneau, Deputy Commissioner, Minnesota

Members

- Judith Corley-Lay, Pavement Analysis Engineer, North Carolina
- Mara Campbell, Customer Relations Director, Missouri
- Grant Levi, Deputy Director for Engineering, North Dakota
- John Barton, Deputy Executive Director/Chief Engineer, Texas
- Rick Land, Acting Chief Deputy Director, California
- Lynn Zanto, Administrator, Rail, Transit, and Planning, Montana
- Daniela Bremmer, Director of Strategic Assessment, Washington State
- Tim Gatz, Director, Capital Programs, Oklahoma
- Tim Henkel, Division Director, Modal Planning and Program Management, Minnesota
- Mark Van Port Fleet, Engineer of Development, Michigan
- John Selmer, Director of Statewide Operations, Iowa
- Nile Easton, Communications Director, Utah
- Lori Richter, Performance Measure Manager, Wisconsin
- Christopher Xenophontos, Assistant Director of Administration, Rhode Island
- Tom Cole, Chief Engineer, Idaho
- Gregg Fredrick, Assistant Chief Engineer, Wyoming

*The *SCOPM Findings on Map-21 Performance Target-Setting* was led by a subgroup of the task force. The subgroup was headed by Daniela Bremmer with support from Tom Cole, Judith Corley-Lay, Tim Gatz, Tim Henkel, and Lynn Zanto.

Table of Contents

- Introduction..... 3
- Target Setting Overview..... 5
- Target Setting Findings and Recommendations 6
 - General Findings 6
 - Specific Recommendations 6
- Determining “Significant Progress” 11
- Recommendations for Specific Performance Measure Areas 13
 - Safety..... 13
 - Pavement Condition 15
 - Bridges..... 16
 - Freight 17
 - System Performance..... 19
 - Congestion Mitigation and Air Quality (CMAQ) 22

Introduction

The AASHTO Standing Committee on Performance Management (SCOPM) Task Force on Performance Measure Development, Coordination and Reporting is charged to “assist SCOPM and AASHTO to develop a limited number of national performance measures and help prepare AASHTO members to meet new Federal performance management requirements.” The Task Force includes representatives from each performance management area and other leaders within the AASHTO organization and is chaired by Paul Degges, Chief Engineer of Tennessee DOT. The purpose of this task force is to serve as a single clearinghouse for the recommended national-level performance measures identified by those AASHTO committees with in-depth knowledge of the technical aspects of the individual performance measure areas.

In November, 2012 the SCOPM Task Force submitted a set of recommendations to FHWA on implementing MAP-21 provisions related to establishment of national performance measures. The Task Force was guided by six overarching principles on how national-level performance measures should be developed and implemented. These six National-Level Guiding Principles are as follows:

1. **There is a Difference**—National-level performance measures are not necessarily the same performance measures State DOTs will use for planning and programming of transportation projects and funding.
2. **Specificity and Simplicity**—National-level performance measures should follow the SMART and KISS principles:
 - SMART—Specific, Measurable, Attainable, Realistic, Timely
 - KISS—Keep it Short and Simple
3. **Possession is 9/10ths of the Law**—National-level performance measures should focus on areas and assets that States DOTs have control over.
4. **Reduce and Re-use**—The initial set of national-level performance measures should build upon existing performance measures, management practices, data sets and reporting processes.
5. **Ever Forward**—National-level measures should be forward thinking to allow continued improvement over time.
6. **Communicate, Communicate, Communicate**—Messaging the impact and meaning of the national-level measures to the public and other audiences is vital to the success of this initiative.

Since the submittal of the SCOPM Task Force Findings on National-Level Performance Measures, the Task Force identified the need for additional guidance on the specific topic of target setting related to national-level performance measures. Through a series of meetings, a subgroup of the SCOPM Task Force met to develop findings with regard to MAP-21 Performance Target-Setting. This document represents those findings. First, an overview of

target setting from the perspective of the State DOTs is presented. Second, the findings and recommendations of the Task Force on target setting to inform FHWA's rulemaking activities are provided. Finally, this document updates the earlier recommendations presented in the SCOPM Task Force Findings on National-Level Performance Measures regarding target setting for each performance measure.

Target Setting Overview

The findings on of the SCOPM Task Force with regard to MAP-21 target setting requirements included in this document are based on the following interpretation of the related MAP-21 target setting requirements:

- A set of standard, consistent national performance measures will be established, but states will have flexibility to establish the target values of those measures. Thus, the term “consistent” applies to the performance measures, data methodologies (collection, processing and analysis), and performance reporting processes. There is no presumption that targets will be consistent across states – rather they will be specific to local conditions and needs and at set at the discretion of DOTs and MPOs.
- States must submit biennial reports on progress toward target achievement for each national measure.
- For the Highway Safety Improvement Program, states that have not made significant progress towards meeting established targets face reductions in funding flexibility and additional reporting requirements.
- For the National Highway Performance Program (NHPP), states that do not make significant progress towards meeting their established targets for asset condition or performance must report actions that they will undertake to achieve the targets.

Target Setting Findings and Recommendations

The findings of the SCOPM Task Force with regard to target setting center around three general findings and eleven recommendations.

General Findings

First, State DOTs request maximum flexibility when setting performance targets. Every state and municipality faces different constraints and opportunities affecting their transportation system. Funding levels and sources vary, as do environmental conditions, population growth trends, and legislative and gubernatorial mandates and priorities. Flexibility in target setting allows states and municipalities to face the realities of their unique situations. Furthermore, accountability should be based on what states can accomplish with their shares of federal funding.

Second, consistent with the National-Level Guiding Principle #2 (see page 3), *Specificity and Simplicity*, MAP-21 rulemaking should encourage States DOTs to adopt performance targets that are attainable and realistic. These targets should be periodically reevaluated and adjusted to reflect risks, revenue expectations, and strategic priorities. In addition, the State DOTs agree that consistent data collection and analysis methods are essential to ensure that national-level measures and reporting use comparable data.

Third, in keeping with National-Level Guiding Principle #3 (see page 3), *Possession is 9/10ths of the Law*, the establishment of performance targets can provide a focal point for action and a basis for accountability. However, it is important to recognize that for several of the national-level performance measures, State DOTs have relatively limited control over outcomes. There are many externalities that could affect a State DOT attaining certain performance targets from economic to social forces. For example, the effect of background changes in traffic related to economic conditions can overwhelm any deliberate actions on the part of a state to improve safety or reduce traffic delay. Generally speaking, State DOTs have more control over achieving targets related to asset condition and less control over performance measures associated with safety and system performance.

Specific Recommendations

The following are specific recommendations of the SCOPM Task Force that should be considered in drafting specific rules for implementation of the target setting provisions of MAP-21:

1. Provide maximum flexibility

- Regional, local, or other targets are to be established by states or MPOs as appropriate when necessary. Baseline conditions may vary significantly state-to-state and region-to-region.
- Many factors, such as population growth and environmental conditions affect performance outcomes for metrics like congestion and pavement. Therefore, maximum flexibility is required for target setting.

2. Focus on what matters – the right outcome

- Target setting should not focus on a single target value for a performance measure but on achieving improved performance over time.
- States and MPOs often have to make priority decisions based on customer and stakeholder requirements. Each state and MPO must consider these requirements – which will vary from state to state – within its target setting process.
- The value of performance management is found in better decision-making, not target achievement. DOTs support the idea of allowing states to establish ranges of acceptable performance outcomes. Use of ranges can provide DOTs with a more nuanced way of discussing performance outcomes across multiple competing objectives.

3. Align targets with system ownership and funding levels

- Targets set for federal performance measures should be aligned with federal funding levels as state DOTs and local partners may or may not have multiple funding sources in addition to federal funds.
- Diverting state funds to meet federal requirements may not be an option. State funding is typically used to match federal funds and allocated to meet state obligations and priorities set by state government such as non-federal-aid eligible maintenance activities.

4. Base target setting on longer term trend data

- Targets cannot be set in isolation of solid baseline and reliable, quality, multi-year trend data.
- The expansion of the NHS in MAP-21 has provided challenges as baseline and multi-year data may not be available for the full NHS system.
- Long term viewpoints and multi-year efforts should be considered in target setting; one data point should not be used to evaluate a program.

5. Coordinate target setting through a continuing, cooperative, and comprehensive process

- The development of state, MPO and transit provider targets should be coordinated through a 3C (continuing, cooperative and comprehensive) planning process. This process should result in MPO targets that are attainable given the level of investment a DOT plans to make in a metropolitan planning area (MPA) over a particular time-horizon. Whenever possible, DOTs and MPOs should use consistent (i.e. equivalent) targets to assess the condition and performance of state highways within an MPA.
- Only hold state DOTs and MPOs accountable for what they manage and control. Those who set targets should be those who manage and fund the system and are held responsible for compliance.
- Agencies should not be penalized for not meeting targets due to circumstances beyond their control.

6. Tell the story: performance is more than just a number

- Analysis and reporting on achieving targets should be both qualitative and quantitative:
 - Target setting should reflect a good faith effort and provide qualitative and quantitative reasoning, as appropriate, to support the results of failing to meet specific targets. For example, states and MPO should be given the opportunity to explain how available resources and other factors such as population dynamics and environmental factors influenced the failure to meet specific targets.
 - State DOTs are under increasing pressure and scrutiny from the public regarding investments of public funds and the quality of services provided. While defining measures, setting targets, and aligning strategies to achieve the targets can all positively affect the performance of the state DOTs, these actions will do little to increase the credibility of DOTs unless there is a reliable, transparent, and understandable method of reporting the progress in achieving the performance targets.

7. Avoid unachievable targets or the “one size target fits all approach”

- Funding constraints should be factored into the process for determining what values to use for targets. DOTs and local partners work within resource constraints, and cannot be expected to perform to a uniform level (target value) on all measures.
- Targets should reflect realistic expectation about what can be achieved through transportation investments.

8. Allow for appropriate timelines for target achievement

- Allow for appropriate timelines for achieving targets as a measurable change or progress toward targets may take many years to be noticeable. These may vary by performance area and measure.
- In addition, time horizon (short vs. long-term) for targets should be allowed to vary depending on the measure and at the discretion of each state. For example, safety measures could use the 5 year projection of the 5-year moving average to set targets; annual reports would demonstrate progress using these projections.
- At each DOT's discretion, targets should be regularly reevaluated and adjusted to reflect evolving risks (e.g. new revenue expectations, changing strategic priorities, etc.)
- At each DOT'S discretion, targets should be reviewed and revised periodically to confirm the selected target is still suitable for achieving the required results.

9. Guard against unintended consequences

- Consider how targets set for one measure could have unintended consequences for the performance of another measure due to resources shifting to other priorities.
- Targets could drive a "worst first" prioritization approach, risking neglect of long-term system needs. A sustainable, efficient transportation system must place a high priority on system maintenance, preservation, and maximizing asset life while minimizing overall life cycle costs.
- Worst first prioritization can lead to unintended consequences in the system. For example, International Roughness Index (IRI) targets could lead to smooth pavements with deteriorating structural conditions. The IRI target could also prompt states to address the wrong problems, and inadvertently shorten pavement life, instead of lengthening it.

10. Complement flexibility in target setting with transparency and accountability

- Setting targets should be accompanied by a rationale for selecting the specific target value.
- When states and MPOs do not meet performance targets, they should describe what they have done to improve performance, how those actions impacted the performance, and why they have not met the target.

11. Allow flexibility for DOTs and MPOs to use a risk based target setting approach

- Risk-based targets do not reflect optimal outcomes within a particular investment area; rather, risk-based targets represent strategic objectives within a plan to manage agency risks.

- Risk-based targets are meaningful in that they can be realistically achieved under existing revenue expectations. Unlike aspirational targets, risk-based targets can be managed.
- Risk-based targets are derived from risk assessments and revenue expectations at a point in time; Targets should be continuously reevaluated as risks and revenue expectations evolve.

Determining “Significant Progress”

The following guidelines are offered for approaches to rulemaking with respect to determination of “significant progress” for the HSIP and NHPP program areas.

- **Good Faith Effort:** In determining “significant progress achieved”, FHWA should consider the demonstration of a state’s or MPO’s “Good Faith Effort” towards meeting targets. This information should be documented and provided by states and MPOs to a reasonable level of detail.
- **Programmatic Approach:** The “significant progress” determination should be made based on a programmatic approach rather than based on separate evaluations for individual target areas. This approach would support states and MPOs in making balanced and sound investment decisions rather than trying to meet one target at the expense of another.
- **Defining Significant Progress and Progress Agreements:** Consistent with current practice, states and their local FHWA Division offices should continue to work together and be empowered to consensually develop and determine what constitutes significant program – at the program or performance measure level. Progress determination could be based on mutually agreed on templates and criteria. Periodic meetings during the performance period can be held to review, discuss and adjust progress determinations as needed.

Progress determination teams could work together to cooperatively understand and document specific circumstances that may impact a state’s ability to achieve progress towards the established performance targets. These teams would consider unforeseen circumstances that may require adjusting and or resetting performance targets while considering progress.

- **Negative Trends:** Even though the value of a performance measure is not moving towards its target, this doesn’t necessarily mean that “Significant Progress” is not being made. For example, if pavement is deteriorating at a slower rate than before implementing MAP-21; or if congestion is increasing at a slower rate than population growth, progress is still being made. These are examples of how a negative or deteriorating trend direction could still meet the “significant progress” definition.
- **Self-evaluation:** States and MPOs should be allowed to self-evaluate in determining whether “significant progress” has been made. This assessment should be based on quantitative and, if needed, qualitative data. In addition, determination of “significant progress” should be supported by narrative information if specific performance targets are not achieved. In this case, states and MPOs should provide narrative information and data to document the circumstances and assessment determination.

- **Significant Progress prior to MAP-21:** States that have already made significant progress in recent years (prior to MAP-21) should not be penalized if they do not continue to make significant progress at the rate of other states that are starting with a poor/fair level of performance. In other words, states that have already made significant progress over past (pre MAP-21) years, based on trend data, should be given credit for these improvements. In these circumstances, the failure to meet targets, especially if aggressive targets are pursued (i.e Target Zero), should not be considered a lack of progress.
- **Significant Progress Time Frame Constraints:** States and MPOs generally have 4 to 6 year STIP/TIPs. These are viewed as commitments to constituents. Even if resources are available and policy priorities can be shifted, “significant progress” may not be realized until the 4th or 6th year of a program since it may take time to redirect funds to a different priority.
- **Allow for Target Range Considerations:** When setting targets, states and MPOs may consider setting a target range (opposed to a single number). When making “significant progress” determinations during self–assessment (or FHWA assessment), states and MPOs can consider the full range of the performances measure target area.

Recommendations for Specific Performance Measure Areas

These recommendations update the target setting sections of the *SCOPM Task Force Findings on National-Level Performance Measures* document dated November 9, 2012.

Safety

Measures

- **Number of Fatalities**—Five-year moving average of the count of the number of fatalities on all public roads for a calendar year.
- **Fatality Rate**—Five-year moving average of the Number of Fatalities divided by the Vehicle Miles Traveled (VMT) for a calendar year.
- **Number of Serious Injuries**—Five-year moving average of the count of the number of serious injuries on all public roads for a calendar year.
- **Serious Injury Rate**—Five-year moving average of the Number of Serious Injuries divided by the Vehicle Miles Traveled (VMT) for a calendar year.

Targets

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21.
- In terms of assessing making progress towards targets established by the states, it is recommended that state-set targets be based on a 3- to 5-year projection of the five-year moving average data. Annual reports would demonstrate progress using these projections. Targets should be evaluated every two years. For example, in 2015 a 3-year (or 5-year) target is set for 2018 (or 2020). In 2017, FHWA assesses whether progress has been made toward the 2018 (or 2020) target based on what the five-year moving average is in 2017.
- Further, it is recommended that any USDOT progress assessments take into account unique characteristics of a state's situation that would affect their ability to meet some targets and not others. For example, dramatic changes in VMT may affect a state's ability to meet both of the rate-based measures, but not the count-based measures (and vice-versa). Therefore, USDOT needs to consider these situations when assessing progress towards targets. After considering these unique situations, for a state to be penalized it should fail to meet at least two of its targets. For example, if a state misses one target, such as serious injuries per VMT, it should not have the same effect as if all four targets had not been met. Similarly, if a state has been a historically high performer, it should not be penalized for failing to meet an aggressive target this first time.

- As part of a NHTSA initiative, many local and statewide law enforcement agencies are adopting the use of e-citation and e-crash reporting. This change is increasing the data reporting which is helpful when making law enforcement decisions to be data driven. However an unintended consequence will impact states/territories when it comes to the Special Rules under the MAP-21's language for the Strategic Highway Safety Plan (page 55). With added data, the current number of serious injury crashes has increased (and will increase for other jurisdictions converting to e-crash reporting). The MAP-21 expectation is to reduce serious injury crashes yet the baseline data in many states/territories will be rising. The program guidance should be built to allow states/territories the ability to explain how or if a movement to e-reporting has influenced their crash data file. This does not impact the FARS system, as that data base already contains all of the data on fatal crashes.
- Since the determination of whether states are meeting requirements of the special rules [for older drivers, pedestrians and rural roads] could occur before evaluation of whether states are making significant progress toward their general safety targets, the special rules test should be deferred until the overall targets are evaluated.
- The requirements and penalties for these special rules should be based on progress a state is making toward its required targets for the four performance measures.
 - For example, if a state is making significant progress toward its performance targets, then the state should not be subject to the considerations mandated in law if the older road user fatality and serious injury rate per capita increases in a two-year period.
 - Also states meeting their overall targets, but not experiencing a decrease in the rural fatality rates, should not be required to obligate the FY2009 amount of high risk rural road program funds for rural high risk roads.

Pavement Condition

Measures

- **Interstate Pavement in Good, Fair and Poor Condition based on the International Roughness Index (IRI)**—Percentage of 0.1 mile segments of Interstate pavement mileage in good, fair and poor condition based on the following criteria: good if IRI<95, fair if IRI is between 95 and 170, and poor if IRI is greater than 170.
- **Non-Interstate NHS Pavement in Good, Fair and Poor Condition based on the International Roughness Index (IRI)**—Percentage of .1 mile segments of non- Interstate NHS pavement mileage in good, fair and poor condition based on the following criteria: good if IRI<95, fair if IRI is between 95 and 170, and poor if IRI is greater than 170.
- **Pavement Structural Health Index**—Percentage of pavement which meet minimum criteria for pavement faulting, rutting and cracking.

Targets

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. Because IRI testing is not appropriate at low traffic speeds and may be adversely impacted by utilities, we do not recommend establishing targets for urban environments without further study.
- We recommend that a state set targets to increase the % of rural road segments rated good and limit % of rural road segments rated poor. For example, a state may set a goal to increase the % good by 1%, while not allowing the % poor for rural roadways to exceed 20%. If a state has a very low percentage of road sections rated as poor, then a target maintaining current IRI should be acceptable.
- Progress towards meeting state-established targets should be assessed based on analysis of HPMS or state-reported data for the target year.
- Given that MAP-21 requires establishment of a national minimum condition level for Interstates, we recommend that this level be established only for rural interstate segments given the above referenced issues with urban IRI measurement. We recommend that a minimum condition level for rural interstate segments be set at less than or equal to 20% of segments rated poor based on IRI. Based on current HPMS reports, only three reporting agencies will struggle with the percentage poor requirement: Washington, DC, Puerto Rico, and New Jersey. When urban roadways are removed, New Jersey should fall under the 20% poor threshold. Many state agencies have less than 10% of segments rated poor.

Bridges

Measures

- **Percent of Deck Area on Structurally Deficient Bridges**—NHS bridge deck area on structurally deficient bridges as a percentage of total NHS bridge deck area.
- **NHS Bridges in Good, Fair and Poor Condition based on Deck Area**—Percentage of National Highway System bridges in good, fair and poor condition, weighted by deck area.

Targets

- AASHTO supports state flexibility in the setting of targets as long as the Percent of Deck Area on Structurally Deficient Bridges does not exceed 10%; as provided in MAP-21. National performance measurement targets should not be adopted. USDOT and professional organizations should provide guidance to states that need assistance to adopt various recommended national performance measures, and leading states should be able to continue their performance management path. Every state should be allowed to set their individual targets. Individual states should determine whether to set separate targets for bridges on urban vs. rural roads.
- For the second measure, given that the recommended performance measure includes three values to be reported (percent good, fair and poor), the Task Force to be convened will consider selection of single measure for target setting (e.g. percent good or percent poor) or use of multiple measures (e.g. targets for both percent good and percent poor) – balancing the desire to support an asset management approach yet minimize complexity.
- Progress towards meeting state-established targets should be assessed based on analysis of state NBI data for the target year.

Freight

Measures

- **Annual Hours of Truck Delay (AHTD)**—Travel time above the congestion threshold in units of vehicle-hours for Trucks on the Interstate Highway System.
- **Truck Reliability Index (RI₈₀)**—The RI is defined as the ratio of the total truck travel time needed to ensure on-time arrival to the agency-determined threshold travel time (e.g., observed travel time or preferred travel time).

Targets - Delay

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. To that end, the AHTD target would be set by individual state DOTs and MPOs expressed in terms of the continuous variable of Annual Hours of Truck Delay. This continuous variable will not be represented through categorical variables of good-fair-poor or similar. Targets could have a negative or positive direction. For example “AHTD should not increase more than 5 percent per year”.
- In addition to urban and rural interstates, other geographic constructs are critical for longer distance freight movements. For example, targets could be set for truck trips on multi-state corridors between major city pairs, and at major international border crossings, using cooperative target-setting between adjacent jurisdictions.

Targets - Reliability

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. To that end, the targets would be set by individual State DOTs and MPOs expressed in terms of the Reliability Index. Targets may vary by facility, by corridor, by region, by rural or urban, by freight versus commute route or other factors such as investment levels, available transit options, remaining capacity and levels of recurrent versus non recurrent congestion levels.
- In addition to urban and rural interstates, other geographic constructs are critical for longer distance freight movements. For example, targets could be set for truck trips on multi-state corridors between major city pairs, and at major international border crossings, using cooperative target-setting between adjacent jurisdictions.

Thresholds - Delay

- Agencies have used a variety of congestion thresholds to meet the analysis and communication needs. For example, California uses 35 mph on freeways as a threshold to identify serious congestion problems. Washington State uses a maximum productivity-based threshold where a value of 85% of the free-flow speed (51 mph) is used to define the point where the maximum vehicle volume per hour per lane occurs; the freeway is not as productive at moving people at speeds above this level. Rural areas, or areas with less congestion, may use the speed limit or free-flow speeds as the basis to identify the size of the congestion problem.

- Delay: An Agency-specified Threshold Setting for truck speed thresholds could be similar to passenger vehicle values, or could be different for purposes of calculating the AHTD measure

Thresholds - Reliability

- This measure uses the Agency-specified Speed Threshold determined by the State DOTs and MPOs to define the comparison standard. The Agency-specified Speed Threshold speed could be based on several factors that the state considers appropriate such as (among others): corridors' characteristics; local conditions; community opinion about the desirability of additional capacity in a corridor; freight movement goals; rural/urban routes; capacity assumptions and/or level of potential investment required to achieve performance levels. Using one condition, the Agency-specified Speed Threshold, for both the reliability and delay measure simplifies the communication of the freight performance measure results (particularly with non-technical audiences) and supports the expectations of the local community as expressed in the threshold.

System Performance

Measures

- **Annual Hours of Delay (AHD)**—Travel time above a congestion threshold (defined by State DOTs and MPOs) in units of vehicle -hours of delay on Interstate and NHS corridors.
- **Reliability Index (RI₈₀)**—The Reliability Index is defined as the ratio of the 80th percentile travel time to the agency-determined threshold travel time.

Targets - Delay

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. To that end, the AHD target would be set by individual state DOTs and MPOs expressed in terms of annual vehicle-hours of delay. Targets may vary by facility, by corridor, by region, by rural or urban, by freight versus commute route or other factors such as investment levels, available transit options, remaining capacity and levels of recurrent versus non recurrent congestion levels.
- Targets could have a negative or positive direction. For example “annual delay should not increase more than 5 percent per year”. Another example of a target could be a comparison of the growth in the delay to the growth in regional economy. The economic recession has played a major role in reducing congestion in recent years, but population and job growth have had a significant role in congestion increases in many regions over the past several decades. Measuring the percent change in delay compared to percent change in gross metropolitan product could provide a more relevant comparison of the role of transportation and land use decisions during periods of rapid growth with periods of slow or no growth. An example target for this measure may state that the percent increase in delay should be no more than the percent increase of the gross metropolitan product.

Targets - Reliability

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. To that end, the targets would be set by individual State DOTs and MPOs expressed in terms of the Reliability Index. Targets may vary by facility, by corridor, by region, by rural or urban, by freight versus commute route or other factors such as investment levels, available transit options, remaining capacity and levels of recurrent versus non recurrent congestion levels.

Thresholds - Delay

- The Agency-specified Threshold Speed would be set by DOTs based on established agency practices and defensible factors. These factors could include:
 - corridor characteristics
 - local conditions; operational factors

- community opinion about the desirability of additional capacity in a corridor; existing capacity
 - population growth
 - rural/urban routes
 - level of existing revenues
 - potential investment required to achieve performance levels
- Agencies use speed thresholds to address these types of criteria and investment levels. For example, California uses 35 mph on freeways as a threshold to identify serious congestion problems. Washington State uses a maximum productivity-based threshold where a value of 85% of the free-flow speed (51 mph) is used to define the point where the maximum vehicle volume per hour per lane occurs; the freeway is not as productive at moving people at speeds above this level. Rural areas, or areas with less congestion, may use the speed limit or free-flow speeds as the basis to identify the size of the congestion problem.
 - Any of these threshold approaches can be used for communicating the congestion problems or for analysis of potential solutions. They all can illustrate the effect of a full range of congestion reduction strategies.
 - Using one condition, the agency-determined threshold speed, for both System Performance Measures (Annual Vehicle-Hours of Delay and Reliability Index) simplifies the communication of the performance measure results (particularly with non-technical audiences) and supports the expectations of the local community as expressed in the threshold. It is important to note that selecting a threshold speed only applies to corridors that experience congestion (based on the historic speed data).

Thresholds – Reliability

- The Reliability Index performance measure uses the “base speed thresholds” determined by the State DOTs and MPOs to define the comparison standard for congested corridors. The agency-determined threshold speed for congested corridors could be based on several factors that the state considers appropriate, such as (and among others): corridors’ characteristics; local conditions; community opinion about the desirability of additional capacity in a corridor; freight movement goals; rural/urban routes; capacity assumptions and/or level of potential investment required to achieve performance levels.
- Using one condition, the agency-determined threshold speed, for both System Performance Measures (Annual Vehicle-Hours of Delay and Reliability Index) simplifies the communication of the performance measure results (particularly with non-technical audiences) and supports the expectations of the local community as expressed in the threshold. It is important to note that selecting a threshold speed only applies to corridors that experience congestion (based on the historic speed data). In uncongested corridors the 80th percentile travel time will be equal to the posted speed. For the

purpose of reliability measurements for uncongested corridors posted speed would be used for the base speed threshold.

Congestion Mitigation and Air Quality (CMAQ)

Measures

- **Criteria Pollutant Emissions**—Daily kilograms of on-road, mobile source criteria air pollutants (VOC, NO_x, PM, CO) reduced by the latest annual program of CMAQ projects.
- **Annual Hours of Delay (AHD)**-Travel time above a congestion threshold (defined by State DOTs and MPOs) in units of vehicle -hours of delay reduced by the latest annual program of CMAQ projects.

Targets – Emissions

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. To that end, affected states and MPOs should have flexibility to set their own targets for the national reporting of the CMAQ On-road Mobile Source Emissions performance measure. Affected State DOTs and MPOs should work together to establish targets. Targets should be required only for areas required to report emissions reductions which are those States and MPOs that serve TMAs with populations of over 1 million and that are nonattainment or maintenance areas. This ensures alignment of the MAP-21 measures with CMAQ ‘performance plan’ requirements in MAP-21, which apply only to those MPOs serving TMAs with populations of over 1 million and that are nonattainment or maintenance areas.

Targets – Delay

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21. To that end, affected states and MPOs should have flexibility to set their own targets for the national reporting of the CMAQ traffic congestion performance measure. Affected State DOTs and MPOs should work together to establish targets. Targets should be required only for areas required to report emissions reductions which are those States and MPOs that serve TMAs with populations of over 1 million and that are nonattainment or maintenance areas. This ensures alignment of the MAP-21 measures with CMAQ ‘performance plan’ requirements in MAP-21, which apply only to those MPOs serving TMAs with populations of over 1 million and that are nonattainment or maintenance areas.