



MAP-21 Target-Setting Exercise

Background Resources

Document Overview

This document is designed to support the AASHTO SCOPM MAP-21 Target-Setting exercise. It includes material specific to the Safety performance area. It presents targeted excerpts from documents that have already been developed through previous Task Force activities. This documents also contains selected information from research conducted through NCHRP 20-24(37) Comparative Performance Measurement series. The appendix contains a brief Safety Performance Measure Factsheet produced through a previous effort of the SCOPM Task Force.

This document is organized into three sections:

1. General Target-Setting Recommendations

SCOPM Task Force Findings on MAP-21 Performance Measure Target-Setting (3/13)

2. Safety Performance Area Recommendations

SCOPM Task Force Findings on MAP-21 Performance Measure Target-Setting (3/13)

SCOPM Task Force Findings on National-Level Performance Measures (11/12)

SCOPM Task Force Workshop on National Performance Measures Background Paper (9/12)

3. Appendix

Performance Measure Factsheet

Additional information is available at the Target-Setting Exercise website:

<http://sites.spypondpartners.com/targetsetting/safety/>

1. General Target-Setting Recommendations

1.1. 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.

1.2. 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.

1.2.1. 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.

1.2.2. 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:

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

1.2.3. 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.

2. Safety — Performance Area Recommendations

2.1. 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.

2.2. Targets

- AASHTO supports state flexibility in the setting of targets; as provided in MAP-21.
- In terms of assessing 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.

2.3. Methodology

To be consistent with the information reported in HSPs, data on fatalities, serious injuries, and traffic volumes for mileage-based rates reported for the HSIP should be defined in the same way and should be from the same data sources as for the HSPs.

2.3.1. Data Sources

- **Fatalities**—Fatal Accident Reporting System (FARS) from NHTSA
 - The significant lag in the availability of FARS data should be addressed. Though fatality data from state crash files are not consistent among the states, these data do have the advantage of being available sooner. It is recommended that:
 - Federal agencies explore and implement methods for improving the timeliness of fatality and VMT data to improve the use of FARS data for national-level performance measures.
 - Incentives to encourage states to submit crash and VMT data sooner are explored.
- **Serious Injuries**—Individual State crash data files
 - Since there is no uniform definition for serious injuries, states should report the same way that they currently do for their Highway Safety Plans. This should be an interim approach until a more uniform manner for reporting serious injuries is possible (i.e., when NCHRP 17-57 is complete and the results are implemented). With this interim approach, there will likely be issues developing a national-level measure, since the definitions across states are not consistent.

- **VMT**—FHWA Highway Performance Monitoring System (HPMS)

2.4. MAP-21 Performance Measurement Requirements

- **Secretary to Establish State Safety Performance Measures for HSIP** [§1203(c); 23 USC 150(c)(4)]
The Secretary will establish measures for States to use to assess serious injuries and fatalities per vehicle mile traveled and the number of serious injuries and fatalities.
- **States to Set Performance Targets** [§1203; 23 USC 150(d)] States have 12 months from final rulemaking to set targets reflecting the established measures, with the option of setting different targets for rural and urbanized areas.
- **States to Submit Biennial Performance Reports** [§1203; 23 USC 150(e)] States have four years from the enactment of MAP–21 to submit a first biennial performance report addressing progress in achieving performance targets.
- **Special Rules for High Risk Rural Roads and Older Drivers** [§1112; 23 USC 148(g)] Consequences are established for fatality rate increases within two targeted categories: high-risk rural roads and drivers and pedestrians over age 65.
- **Consequences for Lack of Progress in Meeting Safety Performance Targets** [§1112; 23 USC 148(i)] Failing to make adequate progress towards meeting safety performance targets will result in reduced flexibility in use of funds, and requirements for annual implementation plans.
- **Highway Safety Plan Reporting Requirements** [§31102; 23 USC 402(k)] Plans must document current performance and establish targets; initial measures limited to the 14 GHSA-recommended measures.

3. Appendix

MAP-21 National-Level Performance Measure Factsheet

Safety

AASHTO SCOPM Communications Workshop

Why It's Important

- The safety of the travelling public is fundamental to the mission of state transportation agencies.
- Traffic fatalities are established as a performance measure of concern to states. Fatalities are the focus of state and national performance improvement efforts, such as State Strategic Highway Safety Plans.
- Because fatalities are relatively rare, serious injuries are also tracked to provide a more complete picture of traffic safety.
- Understanding the distribution, causes, and conditions related to fatal crashes and serious injuries is an important step in limiting the frequency and severity of traffic incidents.

Key Concepts

Vehicle Miles Traveled (VMT) is a common way to express the amount of travel by all vehicles, in miles, for a part of the road network – such as an Interstate corridor, a geographic area – such as a state, or a population – such as elderly drivers.

- Because a state's annual numbers of fatalities and serious injuries will vary greatly with the total amount of travel, safety performance measures may also be calculated as per-VMT rates that control for the total amount of travel.

Measures: Fatalities (specified in MAP-21)

What FHWA May Measure

Number of Fatalities

Simply Put: The number of people killed in vehicle-related incidents on your state's roads each year.

Technically Speaking: A five-year moving average of the annual number of vehicle-related deaths on all public roads in your state.

Fatality Rate

Simply Put: The number of traffic deaths per 100 million miles of vehicle travel on your state's roads each year.

Technically Speaking: A five-year moving average of the annual number of vehicle-related deaths divided by a measure of the total annual number of miles traveled by vehicles in your state (VMT).

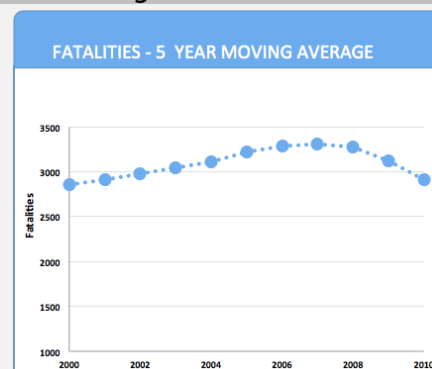
Language of the Measure

These measures can be expressed in plain language. At the highest level, each can be expressed as a single large number:

- "The average number of traffic fatalities in our state fell to 1,386 in 2013"
- "In 2013, the average number of fatalities per 100 million miles driven rose to 1.40."

But these aggregate numbers only tell part of the story. To better characterize safety trends, states may choose to emphasize progress in a specific area where a DOT's engineering countermeasures may have the greatest impact, such as fatalities due to roadway departures.

Visualizing it



National Reporting Issues

A state's annual traffic fatalities and injuries are correlated with numerous factors, including broad demographic and travel characteristics that make cross-state comparisons difficult. For example:

- **Population:** Larger states tend to have higher numbers of fatalities due to their higher populations and greater annual vehicle miles of travel.
- **Urban vs. Rural:** Overall, fatality rates are higher for rural roads than for urban roads due to multiple factors including rural roads' higher travel speeds, greater average distance to medical services, and greater prevalence and incidence of alcohol use. As a result, more urbanized states will tend to have lower fatality rates.

Measures: Serious Injuries (specified in MAP-21)

What FHWA May Measure

Number of Serious Injuries

Simply Put: The number of people seriously injured in vehicle-related incidents on your state's roads each year.

Technically Speaking: A five-year moving average of the annual number of vehicle-related serious injuries on all public roads in your state.

Serious Injury Rate

Simply Put: The number of serious injuries per 100 million miles of vehicle travel on your state's roads each year.

Technically Speaking: A five-year moving average of the annual number of vehicle-related serious injuries on your state's roads divided by a measure of the total annual number of miles traveled by vehicles in your state (VMT).

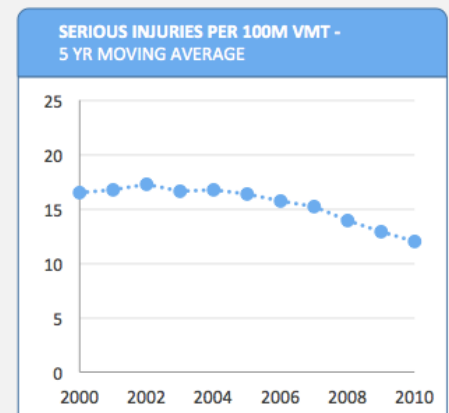
Language of the Measure

These measures can be simply expressed in plain language. At the highest level, each can be expressed as a single large number:

- "The average number of serious traffic injuries in our state declined to 12,620 in 2013"
- "In 2013, the average number of serious traffic injuries per 100 million miles driven rose to just over 13"

It is worth noting that the counts and rates expressed by both the fatality and serious injury measures are *five-year moving averages*. This may make communicating the measure a bit more challenging, but it's an important detail. A moving average is a statistical technique that helps to minimize the impact of short-term fluctuations that can obscure long-term trends. While safety measures are reported each calendar year, rather than report raw numbers observed for a given year, all four likely measures call for your state to report average performance over a five year period: a *five-year moving average*.

Visualizing it



National Reporting Issues

In addition to the issues pertaining to fatalities measures, there are some national reporting issues specific to serious injuries. These primarily concern data availability and reliability:

- **Accuracy.** Definitions of serious injuries differ between states, resulting in a lack of consistency in how serious injuries are reported at the state level.
- **Availability.** Until a standard national definition is established, states will likely report serious injuries using the approach they employ for their Highway Safety Plan.

Safety Performance Communication Issues

Ownership. Fatalities are influenced by State DOT policies and practices, but depend upon a range of other factors – many outside of an agency's control. Effective strategies to reduce fatalities involve the "4 E's" – engineering, enforcement, education, emergency response and close collaboration with stakeholders responsible for public safety and public health. In communicating issues of safety, states may choose to emphasize progress in a specific area, such as fatalities due to roadway departures, where a DOT has greatest influence on results.

Special Rules. A special rule for rural roads is based on rural fatality rates – likely VMT-based rates. Additional rules are defined for elderly drivers and pedestrian fatalities.