

Georgia Statewide Transportation Improvement Program System Performance Report Template

Background

Pursuant to the Moving Ahead for Progress in the 21st Century Act (MAP-21) Act enacted in 2012 and the Fixing America's Surface Transportation Act (FAST Act) enacted in 2015, state Departments of Transportation (DOT) and Metropolitan Planning Organizations (MPO) must apply a transportation performance management approach in carrying out their federally-required transportation planning and programming activities. The process requires the establishment and use of a coordinated performance-based approach to transportation decision-making to support national goals for the federal-aid highway and public transportation programs.

On May 27, 2016, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued the Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule (The Planning Rule).¹ This regulation implements the transportation planning and transportation performance management provisions of MAP-21 and the FAST Act.

In accordance with The Planning Rule and the Georgia Performance Management Agreement between the Georgia DOT (GDOT) and the Georgia Association of Metropolitan Planning Organizations (GAMPO), GDOT and each Georgia MPO must publish a System Performance Report for applicable performance measures in their respective statewide and metropolitan transportation plans and programs. The System Performance Report presents the condition and performance of the transportation system with respect to required performance measures, documents performance targets and progress achieved in meeting the targets in comparison with previous reports. This is required for the following:

- In any statewide or metropolitan transportation plan or program amended or adopted after May 27, 2018, for Highway Safety/PM1 measures;
- In any statewide or metropolitan transportation plan or program amended or adopted after October 1, 2018, for transit asset measures;
- In any statewide or metropolitan transportation plan or program amended or adopted after May 20, 2019, for Pavement and Bridge Condition/PM2 and System Performance, Freight, and Congestion Mitigation and Air Quality/PM3 measures; and
- In any statewide or metropolitan transportation plan or program amended or adopted after July 20, 2021, for transit safety measures.

The GDOT Fiscal Year (FY) 2018-2021 Statewide Transportation Improvement Program (STIP) was amended on July 25, 2018. Per the Planning Rule and the Georgia Performance Management Agreement, the System Performance Report for the GDOT FY 2018-2021 STIP is included, herein, for the required Highway Safety/PM1, Pavement and Bridge Condition/PM2, and System Performance, Freight, and Congestion Mitigation and Air Quality/PM3 measures.

¹ 23 CFR 450.314

Highway Safety/PM1

Effective April 14, 2016, the FHWA established the highway safety performance measures² to carry out the Highway Safety Improvement Program (HSIP). These performance measures are:

1. Number of fatalities;
2. Rate of fatalities per 100 million vehicle miles traveled;
3. Number of serious injuries;
4. Rate of serious injuries per 100 million vehicle miles traveled; and
5. Number of combined non-motorized fatalities and non-motorized serious injuries.

Safety performance targets are provided annually by the States to FHWA for each safety performance measure. Current safety targets address calendar year 2019 and are based on an anticipated five-year rolling average (2015-2019). Georgia statewide safety performance targets for 2019 are included in Table 1, along with statewide safety performance for the two most recent reporting periods³.

The latest safety conditions will be updated annually on a rolling 5-year window and reflected within each subsequent System Performance Report, to track performance over time in relation to baseline conditions and established targets.

Table 1. Highway Safety/PM1, System Conditions and Performance

Performance Measures	Georgia Statewide Performance (Five-Year Rolling Average 2012-2016)	Georgia Statewide Performance (Five-Year Rolling Average 2013-2017)	2019 Georgia Statewide Performance Target (Five-Year Rolling Average 2015-2019)
Number of Fatalities	1,305.2	1376.6	1,655.0
Rate of Fatalities per 100 Million Vehicle Miles Traveled	1.148	1.172	1.310
Number of Serious Injuries	17,404.6	23,126.8	24,324.0
Rate of Serious Injuries per 100 Million Vehicle Miles Traveled	15.348	19.756	18.900
Number of Combined Non-Motorized Fatalities and Non-Motorized Serious Injuries	1,138.0	978.4	1,126.0

The Georgia Department of Transportation recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the FY 2018-2021 STIP planning process directly reflects the goals, objectives, performance measures, and targets as they are available and described in other State and public transportation plans and processes; specifically, the Georgia Strategic Highway Safety Plan

² 23 CFR Part 490, Subpart B

³ https://safety.fhwa.dot.gov/hsip/spm/state_safety_targets/

(SHSP), the Georgia Highway Safety Improvement Program (HSIP), and the current 2040 Georgia Statewide Transportation Plan (SWTP).

- The Georgia SHSP is intended to reduce the number of fatalities and serious injuries resulting from motor vehicle crashes on public roads in Georgia. Existing highway safety plans are aligned and coordinated with the SHSP, including (but not limited to) the Georgia HSIP, MPO and local agencies' safety plans. The SHSP guides GDOT, the Georgia MPOs, and other safety partners in addressing safety and defines a framework for implementation activities to be carried out across Georgia.
- The GDOT HSIP annual report provide for a continuous and systematic process that identifies and reviews traffic safety issues around the state to identify locations with potential for improvement. The ultimate goal of the HSIP process is to reduce the number of crashes, injuries and fatalities by eliminating certain predominant types of crashes through the implementation of engineering solutions.
- The GDOT SWTP summarizes transportation deficiencies across the state and defines an investment portfolio across highway and transit capacity, highway preservation, highway safety, and highway operations over the 25-year plan horizon. Investment priorities reflect optimal performance impacts across each investment program given anticipated transportation revenues.

To support progress towards approved statewide highway safety targets, the FY 2018-2021 STIP includes a number of key safety investments. A total of \$762,500,500 has been programmed in the FY 2018-2021 STIP to improve highway safety; averaging approximately \$190,625,125 per year.

Pavement and Bridge Condition/PM2

Effective May 20, 2017, FHWA established performance measures to assess pavement condition⁴ and bridge condition⁵ for the National Highway Performance Program. This second FHWA performance measure rule (PM2) established six performance measures:

1. Percent of Interstate pavements in good condition;
2. Percent of Interstate pavements in poor condition;
3. Percent of non-Interstate National Highway System (NHS) pavements in good condition;
4. Percent of non-Interstate NHS pavements in poor condition;
5. Percent of NHS bridges by deck area classified as in good condition; and
6. Percent of NHS bridges by deck area classified as in poor condition.

Pavement Condition Measures

The pavement condition measures represent the percentage of lane-miles on the Interstate or non-Interstate NHS that are in good condition or poor condition. FHWA established five metrics to assess pavement condition: International Roughness Index (IRI); cracking percent; rutting; faulting; and Present Serviceability Rating (PSR). For each metric, a threshold is used to establish good, fair, or poor condition.

Pavement condition is assessed using these metrics and thresholds. A pavement section in good condition if three metric ratings are good, and in poor condition if two or more metric ratings are poor. Pavement sections that are not good or poor are considered fair.

The pavement condition measures are expressed as a percentage of all applicable roads in good or poor condition. Pavement in good condition suggests that no major investment is needed. Pavement in poor condition suggests major reconstruction investment is needed due to either ride quality or a structural deficiency.

Bridge Condition Measures

The bridge condition measures represent the percentage of bridges, by deck area, on the NHS that are in good condition or poor condition. The condition of each bridge is evaluated by assessing four bridge components: deck, superstructure, substructure, and culverts. FHWA created a metric rating threshold for each component to establish good, fair, or poor condition. Every bridge on the NHS is evaluated using these component ratings. If the lowest rating of the four metrics is greater than or equal to seven, the structure is classified as good. If the lowest rating is less than or equal to four, the structure is classified as poor. If the lowest rating is five or six, it is classified as fair.

To determine the percent of bridges in good or in poor condition, the sum of total deck area of good or poor NHS bridges is divided by the total deck area of bridges carrying the NHS. Deck area is computed using structure length and either deck width or approach roadway width. Good condition suggests that no major investment is needed. Bridges in poor condition are safe to drive on; however, they are nearing a point where substantial reconstruction or replacement is needed.

⁴ 23 CFR Part 490, Subpart C

⁵ 23 CFR Part 490, Subpart D

Pavement and Bridge Targets

Pavement and bridge condition performance is assessed and reported over a four-year performance period. The first performance period began on January 1, 2018 and runs through December 31, 2021. GDOT reported baseline PM2 performance and targets to FHWA on October 1, 2018, and will report updated performance information at the midpoint and end of the performance period. The second four-year performance period will cover January 1, 2022, to December 31, 2025, with additional performance periods following every four years.

The PM2 rule requires states and MPOs to establish two-year and/or four-year performance targets for each PM2 measure. Current two-year targets represent expected pavement and bridge condition at the end of calendar year 2019, while the current four-year targets represent expected condition at the end of calendar year 2021.

States establish targets as follows:

- Percent of Interstate pavements in good and poor condition – four-year targets;
- Percent of non-Interstate NHS pavements in good and poor condition – two-year and four-year targets; and
- Percent of NHS bridges by deck area in good and poor condition – two-year and four-year targets.

GDOT established current statewide two-year and four-year PM2 targets on May 16, 2018. Table 5 presents statewide baseline performance for each PM2 measure as well as the current two-year and four-year statewide targets established by GDOT.

On or before October 1, 2020, GDOT will provide FHWA a detailed report of pavement and bridge condition performance covering the period of January 1, 2018, to December 31, 2019. GDOT will have the opportunity at that time to revisit the four-year PM2 targets.

Table 5. Pavement and Bridge Condition/PM2 Performance and Targets

Performance Measures	Georgia Performance (Baseline)	Georgia 2-year Target (2019)	Georgia 4-year Target (2021)
Percent of Interstate pavements in good condition	60%	N/A	≥50%
Percent of Interstate pavements in poor condition	4%	N/A	≤5%
Percent of non-Interstate NHS pavements in good condition	44%	≥40%	≥40%
Percent of non-Interstate NHS pavements in poor condition	10%	≤12%	≤12%
Percent of NHS bridges (by deck area) in good condition	49.1%	≥60%	≥60%
Percent of NHS bridges (by deck area) in poor condition	1.35%	≤10%	≤10%

During GDOT's PM2 target setting process, the Department reviewed historical pavement and bridge condition data to predict current performance trends and set the targets in Table 5 based on that data. GDOT adopted the federal minimum condition level of Interstate pavements in Poor condition at 5% or less as a target for the Interstate pavement condition measure. Similarly,

Georgia's bridges currently meet the federal requirement of no more than 10% of total NHS bridge deck area in poor condition. GDOT established the federal minimum bridge condition level as the statewide target for bridges in poor condition.

The Georgia Department of Transportation recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the FY 2018-2021 STIP planning process directly reflects the goals, objectives, performance measures, and targets as they are available and described in other State and public transportation plans and processes; specifically, Georgia's Transportation Asset Management Plan (TAMP), the Georgia Interstate Preservation Plan, and the current 2040 Georgia Statewide Transportation Plan (SWTP).

- MAP-21 required GDOT to develop a TAMP for all NHS pavements and bridges within the state. GDOT's TAMP includes investment strategies leading to a program of projects that would make progress toward achievement of GDOT's statewide pavement and bridge condition targets.
- The Georgia Interstate Preservation Plan applied a risk profile to identify and communicate Interstate preservation priorities; this process leveraged a combination of asset management techniques with risk management concepts to prioritize specific investment strategies for the Interstate system in Georgia.
- The GDOT SWTP summarizes transportation deficiencies across the state and defines an investment portfolio across highway and transit capacity, highway preservation, highway safety, and highway operations over the 25-year plan horizon. Investment priorities reflect optimal performance impacts across each investment program given anticipated transportation revenues.

To support progress towards GDOT's statewide PM2 targets, the FY 2018-2021 STIP devotes a significant amount of resources to projects that will maintain pavement and bridge conditions. Investments in pavement and bridge condition include pavement replacement and reconstruction, bridge replacement and reconstruction, new bridge and pavement capacity, and system resiliency projects that improve NHS bridge components (e.g., upgrading culverts).

A total of \$430,015,245 for bridges has been programmed in the FY 2021-2024 STIP to improve conditions; averaging approximately \$107,503,811 per year. A total of \$882,645,530 is available for NHS maintenance for pavement statewide; averaging approximately \$220,661,383 per year.

System Performance, Freight, and Congestion Mitigation & Air Quality Improvement Program (PM3)

Effective May 20, 2017, FHWA established measures to assess performance of the National Highway System⁶, freight movement on the Interstate system⁷, and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program⁸. This third FHWA performance measure rule (PM3) established six performance measures, described below.

National Highway System Performance:

1. Percent of person-miles on the Interstate system that are reliable;
2. Percent of person-miles on the non-Interstate NHS that are reliable;

Freight Movement on the Interstate:

3. Truck Travel Time Reliability Index (TTTR);

Congestion Mitigation and Air Quality Improvement (CMAQ) Program:

4. Annual hours of peak hour excessive delay per capita (PHED);
5. Percent of non-single occupant vehicle travel (Non-SOV); and
6. Cumulative two-year and four-year reduction of on-road mobile source emissions for CMAQ funded projects (CMAQ Emission Reduction).

System Performance Measures

The two System Performance measures assess the reliability of travel times on the Interstate or non-Interstate NHS system. The performance metric used to calculate reliability is the Level of Travel Time Reliability (LOTTR). LOTTR is defined as the ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) over all applicable roads during four time periods (AM peak, Mid-day, PM peak, and weekends) that cover the hours of 6 AM to 8 PM each day.

The LOTTR ratio is calculated for each segment of applicable roadway, essentially comparing the segment with itself. A segment is deemed to be reliable if its LOTTR is less than 1.5 during all four time periods. If one or more time periods has a LOTTR of 1.5 or above, that segment is unreliable.

The two measures are expressed as the percent of person-miles traveled on the Interstate or non-Interstate NHS system that are reliable. Person-miles take into account the number of people traveling in buses, cars, and trucks over these roadway segments. To determine total person miles traveled, the vehicle miles traveled (VMT) on each segment is multiplied by average vehicle occupancy. To calculate the percent of person miles traveled that are reliable, the sum of the number of reliable person miles traveled is divided by the sum of total person miles traveled.

⁶ 23 CFR Part 490, Subpart E

⁷ 23 CFR Part 490, Subpart F

⁸ 23 CFR Part 490, Subparts G and H

Freight Movement Performance Measure

The Freight Movement performance measure assesses reliability for trucks traveling on the Interstate. A TTTR ratio is generated by dividing the 95th percentile truck travel time by a normal travel time (50th percentile) for each segment of the Interstate system over five time periods throughout weekdays and weekends (AM peak, Mid-day, PM peak, weekend, and overnight) that cover all hours of the day. For each segment, the highest TTTR value among the five time periods is multiplied by the length of the segment. The sum of all length-weighted segments is then divided by the total length of Interstate to generate the TTTR Index.

CMAQ Performance Measures

The PHED measure assesses the hours of delay resulting from traffic congestion on the NHS during morning and afternoon weekday peak travel times. Peak travel hours are defined as 6 AM to 10 AM on weekday mornings, and either 3 PM to 7 PM or 4 PM to 8 PM on weekday afternoons. The threshold for excessive delay is based on the travel time at 20 miles per hour or 60% of the posted speed limit travel time, whichever is greater, and is measured in 15-minute intervals.

Total excessive delay is weighted by vehicle volumes and occupancy, and is expressed as the annual hours of excessive delay during the peak hours on a per capita basis. Thus, PHED is a measure of person-hours of delay, rather than vehicle-hours.

The Non-SOV measure assesses the percent of vehicle travel that occurs with more than one occupant in the vehicle. This measure is based on person travel within the region and non-SOV travel includes travel via carpool, van, public transportation, commuter rail, walking, or bicycling as well as telecommuting.

The CMAQ Emission Reduction measure assesses performance of the CMAQ Program through measurement of total emission reductions of on-road mobile source emissions. Total emissions reduction is calculated by summing two year and four year totals of emission reductions of applicable pollutants, in kilograms per day, resulting from all CMAQ funded projects.

Applicability of the CMAQ Measures

The PHED and Non-SOV measures apply only within the boundaries of each U.S. Census Bureau-designated urbanized area (UZA) that contains a NHS road, has a population of more than one million, and contains any part of a nonattainment or maintenance area for ozone, carbon monoxide or particulate matter. States and MPOs within an applicable UZA must coordinate to set a single, unified four-year target for the entire UZA for PHED, and single, unified two- and four-year targets for Non-SOV travel.⁹

In Georgia, the PHED and Non-SOV measures currently apply only to the Atlanta, GA UZA. The Atlanta Regional Commission (ARC) and the Cartersville-Bartow MPO (CBMPO) have planning area boundaries that overlap with the UZA, thus GDOT and the two MPOs coordinate to establish single, unified PHED and Non-SOV Travel performance targets.

The CMAQ Emission Reduction measure is applicable to any state and MPO with projects financed with CMAQ funds whose boundary contains any part of a nonattainment or maintenance

⁹ Beginning January 1, 2022, the UZA population threshold for this measure changes from one million to 200,000, and two-year and four-year targets must be set for both measures.

area for ozone, carbon monoxide or particulate matter. In Georgia, the CMAQ Emission reduction measure applies statewide for GDOT as well as individually for ARC and CBMPO.

PM3 Performance Targets

Performance for the PM3 measures is assessed and reported over a four-year performance period. For all PM3 measures except the CMAQ Emission Reduction measure, the first performance period began on January 1, 2018, and will end on December 31, 2021. For the CMAQ Emission Reduction measure, the first performance period began on October 1, 2017, and will end on September 30, 2021. GDOT reported baseline PM3 performance and targets to FHWA on October 1, 2018, and will report updated performance information at the midpoint and end of the performance period. The second four-year performance period will cover January 1, 2022, to December 31, 2025 (October 1, 2021 to September 30, 2025 for the CMAQ Emission Reduction Measure), with additional performance periods following every four years.

The PM3 rule requires state DOTs and MPOs to establish two-year and/or four-year performance targets for each PM3 measure. For all targets except CMAQ Emission Reductions, the current two-year and four-year targets represent expected performance at the end of calendar years 2019 and 2021, respectively. For the CMAQ Emission Reduction measure, the current two-year and four-year targets represent cumulative VOC and NOx emission reductions from CMAQ-funded projects during the periods of October 1, 2017 to September 30, 2019 (for the two-year target) and October 1, 2017 to September 30, 2021 (for the four-year target).

States establish targets as follows:

- Percent of person-miles on the Interstate system that are reliable – two-year and four-year targets;
- Percent of person-miles on the non-Interstate NHS that are reliable – four-year targets;
- Truck Travel Time Reliability – two-year and four-year targets;
- Annual hours of peak hour excessive delay per capita (PHED) – four-year targets;
- Percent of non-single occupant vehicle travel (Non-SOV) – two-year and four-year targets; and
- CMAQ Emission Reductions – two-year and four-year targets.

GDOT established current statewide PM3 targets on May 16, 2018. Table 6 presents statewide baseline performance for each PM3 measure as well as the current two-year and four-year statewide targets established by GDOT.

On or before October 1, 2020, GDOT will provide FHWA a detailed report of PM3 performance covering the period of January 1, 2018, to December 31, 2019. GDOT will also have the opportunity at that time to revisit the four-year PM3 targets.

Table 6. System Performance/Freight Movement/CMAQ (PM3) Performance and Targets

Performance Measure	Georgia Performance (Baseline)	Georgia 2-year Target (2019)	Georgia 4-year Target (2021)
Percent of person-miles on the Interstate system that are reliable	80.4%	73.0%	67.0%
Percent of person-miles on the non-Interstate NHS that are reliable	84.9%	N/A	81.0%
Truck Travel Time Reliability Index	1.44	1.66	1.78
Annual hours of peak hour excessive delay per capita (PHED)	20.4 hours	N/A	24.6 hours
Percent Non-SOV travel	22.1%	22.1%	22.1%
CMAQ VOC Cumulative Emission Reductions	839.000 kg/day	205.700 kg/day	386.600 kg/day
CMAQ NOx Cumulative Emission Reductions	1,594.000 kg/day	563.300 kg/day	1,085.000 kg/day

GDOT considered several factors when establishing PM3 targets. The key trends that will continue to influence PM3 performance in the next two to four years include:

- VMT in Georgia has increased at a rate of 6.2% annually on rural facilities and 2.9% on urban facilities in recent years.
- Economic trends in Georgia have trended upward in recent years. Non-farm employment grew annually at a rate of 2.9%, while the new housing permits issued grew at a 12.6% annual rate.
- Georgia’s population has grown steadily at an annual rate of 1.0% in recent years.

The FY 2018-2021 STIP includes projects on Interstates and non-Interstates that are expected to improve PM3 performance in the near term. Projects that positively impact performance include interchange improvements, intersection improvements, integrated/intelligent technologies, managed lanes, passing lanes, and roadway widening. At the same time, delays in work zones may impact system performance while these projects are under construction. Because of uncertainty about the impacts each of these factors and projects will have on statewide performance, both positively and negatively, GDOT took a conservative approach when establishing PM3 targets, largely relying on performance trends in the recent past to estimate performance over the next two to four years.

The Georgia Department of Transportation recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the FY 2018-2021 STIP planning process directly reflects the goals, objectives, performance measures, and targets as they are available and described in other State and public transportation plans and processes; specifically, the Georgia Statewide Freight and Logistics Action Plan and the current 2040 Georgia Statewide Transportation Plan (SWTP).

- GDOT's Statewide Freight and Logistics Action Plan defines the conditions and performance of the state freight system and identifies the policies and investments that will enhance Georgia's highway freight mobility well into the future. The Plan identifies freight needs and the criteria Georgia will use to determine investments in freight, and prioritizes freight investments across modes.
- The GDOT SWTP summarizes transportation deficiencies across the state and defines an investment portfolio across highway and transit capacity, highway preservation, highway safety, and highway operations over the 25-year plan horizon. Investment priorities reflect optimal performance impacts across each investment program given anticipated transportation revenues.

To support progress towards GDOT's statewide PM3 targets, the FY 2018-2021 STIP devotes a significant amount of resources to projects that will address passenger and highway freight reliability and delay, reduce SOV travel, and reduce emissions.

A total of \$1,295,597,487 has been programmed in the FY 2018-2021 TIP to address system performance; averaging approximately \$323,899,372 per year.

A total of \$1,498,956,891 has been programmed in the FY 2018-2021 TIP to address truck travel time reliability; averaging approximately \$374,739,223 per year.

A total of \$141,972,068 has been programmed in the FY 2018-2021 TIP to address congestion mitigation and air quality; averaging approximately \$35,493,017 per year.