

Columbus-Phenix City Transportation Study Metropolitan Planning Organization Transportation Improvement Program System Performance Report

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 Columbus-Phenix City Transportation Study MPO Fiscal Year (FY) 2018-2021 Transportation Improvement Program (TIP) was adopted on October 24, 2017. Per the Planning Rule and the Georgia Performance Management Agreement, the System Performance Report for the Columbus-Phenix City Transportation Study MPO's FY 2018-2021 TIP is included, herein,

¹ 23 CFR 450.314

for the required Highway Safety/PM1, Bridge and Pavement Condition/PM2, and System Performance, and Freight.

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 statewide 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 Columbus-Phenix City Transportation Study MPO adopted/approved the Georgia statewide safety performance targets on January 15, 2019.

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 Columbus-Phenix City Transportation Study MPO 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

² 23 CFR Part 490, Subpart B

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

performance targets. As such, the FY 2018-2021 TIP 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 (SHSP), the Georgia Highway Safety Improvement Program (HSIP), the current 2040 Georgia Statewide Transportation Plan (SWTP), and the current Columbus-Phenix City Transportation Study 2040 Metropolitan Transportation Plan (MTP).

- 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.
- The Columbus-Phenix City Transportation Study (MPO) 2040 MTP increases the safety of the transportation system for motorized and non-motorized users as required by the Planning Rule. The RTP identifies safety needs within the metropolitan planning area and provides funding for targeted safety improvements.

To support progress towards approved highway safety targets, the FY 2018-2021 TIP includes a number of key safety investments. A total of \$10,234,701.00 has been programmed in the FY 2018-2021 TIP to improve highway safety; averaging approximately \$4,123,823.75 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.

MPOs establish four-year targets for each measure by either agreeing to program projects that will support the statewide targets, or setting quantifiable targets for the MPO's planning area that differ from the state targets.

GDOT established current statewide two-year and four-year PM2 targets on May 16, 2018. The Columbus-Phenix City Transportation Study MPO adopted/approved the Georgia statewide PM2 targets on June 19, 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 and the Columbus-Phenix City Transportation Study MPO 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% |

The Columbus-Phenix City Transportation Study MPO 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 TIP 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, the current 2040 Georgia Statewide Transportation Plan (SWTP), and the Columbus-Phenix City Transportation Study (MPO) 2040 Metropolitan Transportation Plan (MTP).

- MAP-21 requires GDOT to develop a TAMP for all NHS pavements and bridges within the state. GDOT’s TAMP must include 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.
- The Columbus-Phenix City Transportation Study (MPO) 2040 MTP addresses infrastructure preservation and identifies pavement and bridge infrastructure needs within the metropolitan planning area, and allocates funding for targeted infrastructure improvements.

To support progress towards GDOT’s statewide PM2 targets, the FY 2018-2021 TIP includes a number of investments that will maintain pavement and bridge condition performance. 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 \$7,615,776 for bridges has been programmed in the FY 2018-2021 TIP to improve conditions; averaging approximately \$1,903,944. A total of \$882,645,530 for NHS maintenance for pavement statewide; averaging approximately \$220,631,383 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).

The CMAQ performance measures apply to states and MPOs with projects financed with CMAQ funds whose boundary contains any part of a nonattainment or maintenance area for ozone, carbon monoxide or particulate matter. The Columbus-Phenix City Transportation Study MPO meets air quality standards, therefore, the CMAQ measures do not apply and are not reflected in the System Performance Report.

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 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

⁶ 23 CFR Part 490, Subpart E

⁷ 23 CFR Part 490, Subpart F

⁸ 23 CFR Part 490, Subparts G and H

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.

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.

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. 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, 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.

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.

MPOs establish four-year targets for the System Performance and Freight Movement. MPOs establish targets by either agreeing to program projects that will support the statewide targets, or setting quantifiable targets for the MPO's planning area that differ from the state targets.

GDOT established statewide PM3 targets on May 16, 2018. The Columbus-Phenix City Transportation Study (MPO) adopted/approved the Georgia statewide PM3 targets on June 19, 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 and the Columbus-Phenix City Transportation Study (MPO) will have the opportunity at that time to revisit the four-year PM3 targets.

The Columbus-Phenix City Transportation Study (MPO) 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 TIP 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, the current 2040 Georgia Statewide Transportation Plan (SWTP), and the Columbus-Phenix City Transportation Study (MPO) 2040 Metropolitan Transportation Plan (MTP).

- 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.
- The Columbus-Phenix City Transportation Study (MPO) 2040 MTP addresses reliability, freight movement, congestion, [and emissions], identifies needs for each of these issues within the metropolitan planning area, and allocates funding for targeted improvements. The Columbus-Phenix City Transportation Study (MPO) is in the process of reviewing RFP's to hire a consultant to perform a corridor study on the J.R. Allen Parkway / US 80 Highway. This study will address freight movement, congestion and reliability. The study can be located in the 2019/2020 Unified Planning Work Program (UPWP).

To support progress towards GDOT's statewide PM3 targets, the FY 2018-2021 TIP 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 \$0 has been programmed in the FY 2018-2021 TIP to address system performance; averaging approximately \$0 per year.

A total of \$0 has been programmed in the FY 2018-2021 TIP to address truck travel time reliability; averaging approximately \$0 per year.