



CYCLING

**IMPROVED
OPERATIONS**

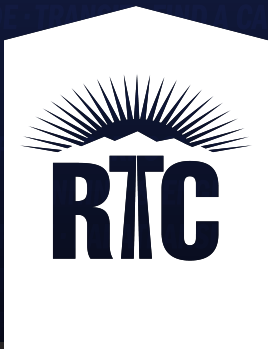
ROADS

TRANSIT

**PLANNING &
ENGINEERING**

CONGESTION MITIGATION AND AIR QUALITY

Performance Plan



October 2018

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Background and Overview

The Moving Ahead for Progress in the 21st Century Act (MAP-21, Pub. L. 112-141) signed into law on July 6, 2012, transformed the policy and programmatic framework for making investments that guide the growth and development of the Nation’s surface transportation program and created a performance-based surface transportation program. The Fixing America’s Surface Transportation Act (FAST Act, Pub. L. 114-94) signed into law on December 4, 2015, continued and refined these efforts. To examine the effectiveness of the Federal-aid Highway Program as a means to address surface transportation performance at a national level, the United States Department of Transportation (USDOT) established a set of national measures on which state DOTs must report performance (23 U.S.C. 134, 135, and 150).

For the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, MAP-21 required USDOT to establish measures for state DOTs to use to assess traffic congestion and on-road mobile source emissions (23 U.S.C. 150(c)(5)). To meet this requirement, FHWA finalized three CMAQ performance measures (two congestion measures and one on- road mobile source emission reduction measure), listed in Table 1.

Table 1. Performance Measures for the CMAQ Program

Measure	Description
Traffic Congestion	PHED: Annual hours of peak hour excessive delay (PHED) per capita
	Non-SOV: Percent of non-single occupancy vehicle (SOV) travel
On-Road Mobile Source Emissions	Total Emissions Reduction: 2-year and 4- year total emissions reductions for each applicable criteria pollutant and precursor for all projects funded with CMAQ funds (kg/day)
Source: 82 Fed. Reg. 5970 (Jan. 18, 2017) (codified at 23 CFR Part 490), available at https://www.gpo.gov/fdsys/pkg/FR-2017-01-18/pdf/2017-00681.pdf	

The two traffic congestion performance measures are the PHED measure and the percent of non-SOV travel measure. The PHED measure is the annual hours of peak hour excessive delay per capita that occurs within an applicable urbanized area. The percent of non-SOV travel measure is the percentage of non-SOV trips within an applicable urbanized area. The traffic congestion measures apply to the Las Vegas--Henderson, NV urbanized area because it includes National Highway System (NHS) mileage and has a population over 1 million people (23 CFR 490.703). The on-road mobile source emissions performance measure is the total emissions reduction measure.

The total emissions reduction measure is the estimated emission reductions, for all CMAQ funded projects, of particulate matter (PM10), carbon monoxide (CO) and volatile organic compounds (VOC) and oxides of nitrogen (NOx) because these are the applicable criteria pollutants and precursors for which Southern Nevada is designated nonattainment or maintenance (23 CFR 490.807). The RTCSNV is one of two MPOs within Nevada with air quality designations where CMAQ funding must be spent.

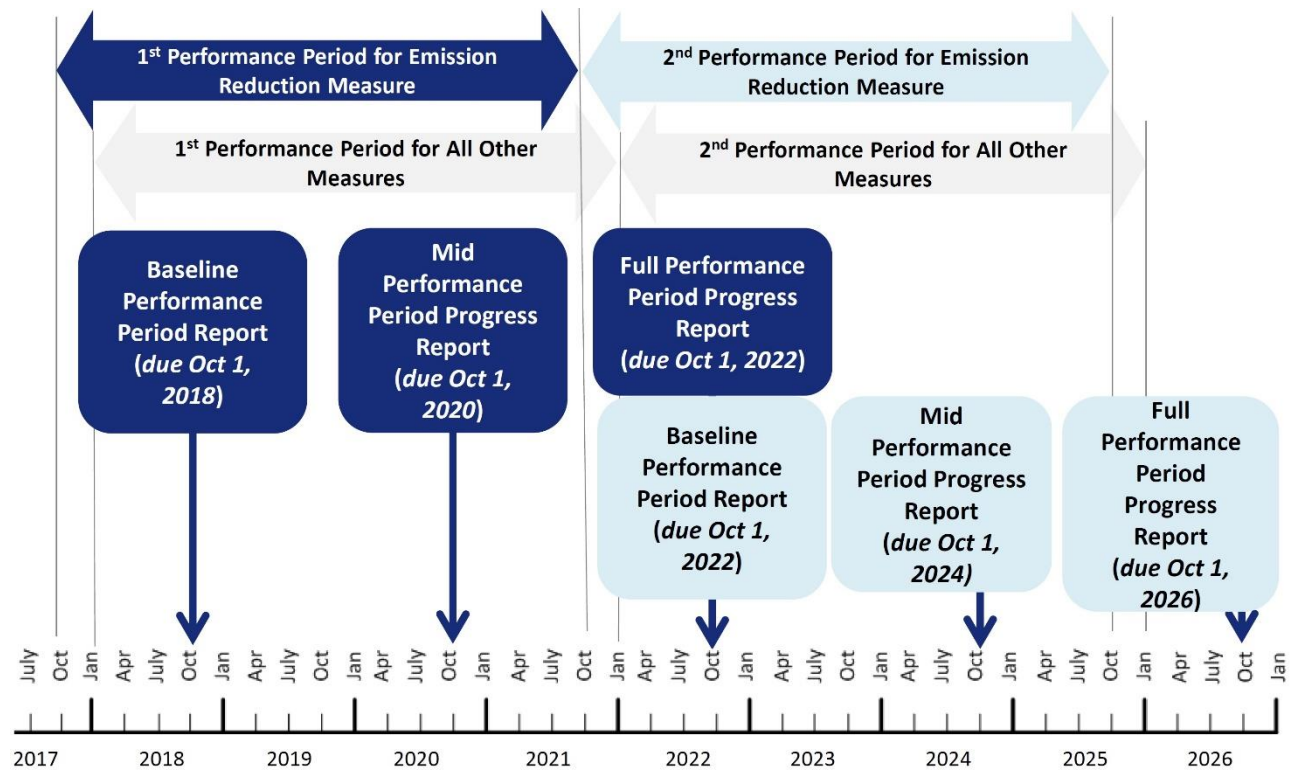
The target reporting deadline for all measures for the 1st performance period is October 1, 2018 (23 CFR 490.107(b)(1)(i)). In establishing targets, Regional Transportation Commission of Southern Nevada (RTCSNV) staff coordinated with the Nevada Department of Transportation (NDOT) to ensure consistency to the maximum extent practicable.

In addition to the target reporting required by the regulation, 23 United States Code (U.S.C.) 149(l) requires each MPO serving a Transportation Management Area (TMA) with a population over 1,000,000 that includes a nonattainment or maintenance area to develop a CMAQ Performance

Plan to support the implementation of the CMAQ measures (23 CFR 490.107(c)(3)). In the CMAQ Performance Plan and its biennial updates, RTCSNV will report 2 and 4 year targets, describe how we plan to meet the targets, and detail our progress toward achieving the targets over the course of the performance period. The performance periods and reporting timeline for CMAQ measures are indicated in Figure 1 below.

This document summarizes requirements, data sources and methodology for each CMAQ performance measure and outlines the baseline performance, targets, and a general description of projects receiving CMAQ funding that will contribute toward achieving the targets.

Figure 1. Performance Periods for CMAQ Measures and Reporting Timeline



Source: FHWA CMAQ Performance Plan Guidebook for MPOs

Data Requirements and Sources

RTCSNV is required to use certain data sources to calculate condition and performance for the traffic congestion and on-road mobile source emissions measures, described in the tables that follow.

Peak Hour Excessive Delay (PHED)

PHED is defined as the extra amount of time spent in congested conditions defined by speed thresholds that are lower than a normal delay threshold. NDOT and RTCSNV are required to use the same travel time data set for calculating the PHED measure and must establish and report single, unified targets for the Las Vegas--Henderson, NV urbanized area (23 CFR 490.103(e) and 23 CFR 490.105(f)(5)(iii)(B)). The datasets used to calculate the PHED were processed by RTCSNV staff and the NPMRDS (National Performance Management Research Data Set) Analytics Tool.

Table 2. Data Sources for PHED Measure

Data	Data Source
Urbanized Area Boundary	U.S. Decennial Census; FHWA’s Highway Performance Monitoring System Filed Manual
Urbanized Area Population	5-year annual estimates of the total population of the urbanized area from the American Community Survey (Table DP05)
Reporting Segments	National Performance Management Research Data Set (NPMRDS)
Travel Times in 15- minute Intervals	National Performance Management Research Data Set (NPMRDS)
Hourly Traffic Volume	National Performance Management Research Data Set (NPMRDS) via Highway Performance Monitoring System (HPMS). Hourly volume estimates follows the method described in “MAP-21 Proposed Measures for Congestion, Reliability, and Freight: Step-by-Step Calculations Procedures” (https://www.apta.com/gap/fedreg/Documents/MAP-21_Proposed_Measures_for_Congestion,_Reliability,_and_Freight.pdf)
Annual Vehicle Classification for Buses, Trucks, and Cars	National Performance Management Research Data Set (NPMRDS) via HPMS.
Annual Vehicle Occupancy for Buses, Trucks, and Cars	Values recommended by FHWA. https://www.fhwa.dot.gov/tpm/guidance/avo_factors.pdf
Speed Limits	Highway Information System (IHIS)

Non-SOV Travel

Mode Share is a calculation of the percent of Non-SOV Travel within the urbanized area. Non-SOV Travel, defined by the FHWA, applies to travel occurring on modes other than driving alone in a motorized vehicle and includes travel that is avoided by telecommuting, it is a measure of the percentage of all surface transportation occurring in the urbanized area.

For the Las Vegas--Henderson, NV urbanized area, NDOT and RTCSNV agreed upon a data source and method to calculate the Non-SOV travel measure.

Table 3. Data Sources for Non-SOV Travel Measure

Data	Data Source
Mode of Commuting to Work	5-year estimate for “Commuting to Work” totaled by mode from the U.S. Census Bureau’s American Community Survey dataset table B08141.

Total Emissions Reduction

Emissions reduction is defined as the total on-road mobile source total emission reductions for each applicable criteria pollutant and precursor for a nonattainment area. This performance measure applies to projects that receive or are programmed for CMAQ funding.

FHWA's CMAQ Public Access System is the required data source for calculating the Total Emissions Reduction measure (23 CFR 490.809(a)). RTCSNV is responsible for submitting project information to the CMAQ Project Tracking System by March 1 of each federal fiscal year (FFY) for all projects obligated in the previous FFY.

Table 4. Data Sources for Total Emissions Reduction Measure

Data	Data Source
Emissions reduction estimated for each CMAQ funded project by pollutant and applicable precursor in kilograms per day (KG/day).	NDOT extracted data from the CMAQ Public Access System found at: https://fhwaapps.fhwa.dot.gov/cmaq_pub/

Performance Plan

As this document is the CMAQ Performance Plan for the beginning of the performance period, RTCSNV must first report the baseline performance for each CMAQ measure. For the biennial updates to the plan, submitted at the midpoint and end of the performance period, RTCSNV will report performance during the both the two and four-year periods. For the PHED and Non-SOV measures, baseline performance is reported for calendar year 2017. For the Total Emissions Reduction measure, baseline performance is reported for the applicable pollutants associated with CMAQ funded projects obligated in federal fiscal years 2014 through 2017.

Peak Hour Excessive Delay (PHED)

PHED is based on the calculation of all segments of the NHS. This measure is calculated using data from the FHWA's National Performance Management Research Data Set (NPMRDS). The NPMRDS provides travel time by road segment for the NHS in 15-minute intervals. Travel times are provided for passenger, freight, and combined values. Along with the travel time information, a geographic file of the road segments is provided through the NPMRDS.

The geographic file includes information for each road segment including length in miles, average annual daily traffic, functional classification, and other roadway attributes. A conflation process was used to assign a speed limit information to the NPMRDS data. The 3:00 p.m. – 7:00 p.m. afternoon peak period is used and has been selected in coordination with NDOT.

The PHED is calculated for each 15-minute interval in the peak periods for all segments in the Las Vegas--Henderson, NV urban area. The 15 minute interval PHED is calculated in the following steps:

The total PHED is divided by the urbanized area population to calculate the peak hour excessive delay per capita. FHWA provided access to the NPMRDS Analytics Tool with the historical data that was used to calculate this measure.

Table 5. Baseline Performance Period PHED

CY 2017 Performance
11 hours

Non-SOV Travel

The baseline for the Non-SOV Travel is calculated using the most recent table B08141 from five- year estimated of the U.S. Census Bureau's American Community Survey (ACS) dataset. 2016 is the most recent five-year data available. The percentage of commuters that predominantly do not commute by driving along in a car, van or truck is used.

Table 6. Baseline Performance Period Non-SOV Travel

CY 2017 Performance
21.6% (2016)

Total Emissions Reduction

Applicable criteria pollutants for the RTCSNV maintenance areas include ozone, particulate matter 10 microns (PM10), and carbon monoxide as reported in Environmental Protection Agency’s Green Book (<https://www.epa.gov/green-book>). Primary precursors for ozone are volatile organic compounds (VOC) and nitrogen oxides (NOx).

The Total Emissions Reduction measure for each of the criteria pollutants or applicable precursors for all projects reported to FHWA’s CMAQ Public Access System are calculated to the nearest one thousandth by using the daily kilograms of emission reductions. RTCSNV staff and project sponsors calculate the daily kilograms of emission reductions as part of the project evaluation and selection process and enters that information into the CMAQ Public Access System.

Table 7. Baseline Performance Period Total Emissions Reduction

Criteria Pollutants and Applicable Precursors	FFYs 2014-2017 Performance (kg/day)
Volatile Organic Compounds (VOC)	1,082
Nitrogen Oxides (NOx)	749
Carbon Monoxide (CO)	3,449
Particulate Matter (PM10)	4

Targets

MPOs are required to establish their performance targets in coordination with their state partners and these targets should be data-driven and realistic. The target setting methodology utilizes a combined approach of historic trends and an understanding of the anticipated benefit of CMAQ projects programmed over the next four years. The targets were established using historic trends, averaging emission reductions from FFY 2014-2017 CMAQ projects, and the known benefits of the FFY 2018-2021 programmed CMAQ projects. RTCSNV must establish both 2-year and 4-year targets for the metropolitan planning area for each CMAQ performance measure.

Peak Hour Excessive Delay (PHED)

Applicable State DOTs and MPOs collectively establish a single target for each applicable urbanized area for the first performance period by May 20, 2018. As part of a phased implementation approach, only four-year targets will be reported in the State’s baseline performance period report due by October 1, 2018. There is no requirement for States to report two-year targets or baseline condition for this specific measure in the report for the first performance period. With the first mid performance period progress report, due October 1,

2020, four-year targets may be adjusted, and two-year condition/performance will be reported as baselines.

The 2017 baseline PHED of 11 hours was used to help inform the setting of the 4-year 2021 target. This target was set in coordination with RTCSNV and NDOT staff. Trend data and other factors were considered in setting the target including construction and agency policies and goals of increasing transit ridership, transit supportive land uses, and improving traffic operations.

Table 8. PHED Performance Targets

2-year Target	4-year Target
Not Required	10 hours

Non-SOV Travel

Applicable State DOTs and MPOs must collectively establish a single, unified two-year and four-year target for each applicable urbanized area for the first performance period. A baseline report for the first performance period is due October 1, 2018 and must include two and four-year targets and a description of the data collection method used.

The targets were set in coordination between RTCSNV and NDOT staff based upon ACS trends between 2012 and 2016 and the anticipated effects this would have on the non-SOV travel in the urbanized area.

Table 9. Non-SOV Travel Performance Targets

2-year Target	4-year Target
21.5%	21.6%

Total Emissions Reduction

MPOs are required to establish their two and four-year performance targets for all nonattainment and maintenance areas in coordination with their state partners. The targets set should be data-driven and realistic.

The targets were established using historic trends, averaging emission reductions from the previously funded FFY 2014-2017 CMAQ projects, and an understanding of the combined emissions benefits of the FFY 2018-2021 programmed CMAQ projects. The targets reflect the anticipated cumulative emission reductions to be reported in the CMAQ Public Access System.

Table 10. Total Emissions Reduction Performance Targets

CMAQ On-Road Mobile Source Emissions Target: Maintain Average Annual Reduction		
	2-Year Target	4-Year Target
Carbon Monoxide (KG/Day)	1,725	3,449
PM 10 (KG/Day)	2	4
Nitrous Oxide (KG/Day)	375	749
VOCs (KG/Day)	541	1,082

Description of Projects

Included in the table below are the project type categories identified for funding in RTCSNV's FFY 2018-2021 CMAQ program (Program current as of September 27, 2018) and an identification if they are anticipated to contribute to achieving the 2- year and 4-year targets for the traffic congestion and on-road mobile source emissions reduction measures.

Table 11. Description of Projects in FFY 2018-2021 CMAQ Program

Project Category	Number of Projects	VOC Benefit	NOx Benefit	CO Benefit	PM10 Benefit	PHED Benefit	Non-SOV Travel Benefit
Bicycle & Pedestrian	14	Yes	Yes	Yes	Yes	No	Yes
High Occupancy Vehicles	1	Yes	Yes	Yes	Yes	Yes	Yes
Street Sweepers	2	No	No	No	Yes	No	No
Intersection Improvement	9	Yes	Yes	Yes	No	Yes	No
Signal Interconnect and ITS	6	Yes	Yes	Yes	No	Yes	No
Electric Vehicles	2	Yes	Yes	Yes	No	No	No
Bus Turnouts	5	Yes	Yes	Yes	No	Yes	No
Transit Fleet	1	Yes	Yes	Yes	Yes	No	Yes
Transportation Demand Management	1	Yes	Yes	Yes	Yes	Yes	Yes