

1.0. INTRODUCTION

This plan presents guidance on how to effectively monitor, evaluate and report the performance of ramp meters deployed in the greater Las Vegas, Nevada region and throughout the State of Nevada. Technical staff and decision makers within the Nevada Department of Transportation (NDOT) and the Regional Transportation Commission (RTC) may use this plan, and the guidance contained in it, to develop an approach to effectively monitor their metering systems so that they can be operated more effectively. NDOT and RTC can address strengths and weaknesses identified through monitoring to report metering impacts and make changes to ramp metering operations to improve freeway, ramp, and arterial conditions while generating greater public acceptance of ramp meters and improving public perception of NDOT and RTC. Monitoring can also improve intra- and inter-agency support and funding for these investments by establishing the benefits of ramp metering and by establishing the basis for operational improvements.

1.1. Background

Ramp meters have been deployed alongside freeway entrance ramps within Las Vegas in an effort to improve mobility and safety. Without metering, entering vehicles may be very closely spaced when merging onto freeways, making it difficult for each vehicle to find a gap in traffic. This phenomenon, known as “platooning”, causes drivers on the freeway to slow down to let the merging vehicles enter, and these slower speeds can contribute to time-consuming mainline freeway backups as well as dangerous sideswipe, lane change, and rear-end collisions. Ramp meters help vehicles enter the freeway in a spaced, controlled manner, allowing drivers to merge more safely and with less disruption to other freeway traffic. The purpose of ramp meters in Nevada is to balance the short wait at a ramp meter with the potential benefits that these systems provide, such as increase average travel speeds, and reduce travel times.

To date, seven freeway entrance ramps have been equipped with ramp metering systems. Four metering systems have been deployed within the I-515 corridor, and the remaining three have been deployed within the US 95 corridor. On March 29, 2005, the three systems deployed on entrance ramps to southbound US 95 were activated. The activation of these ramp meters represented the first public exposure to ramp metering within Las Vegas. The activation of meters on I-515 will follow the activation of the meters on US 95, but no timeframe has been finalized for I-515 metering.

The seven ramp meters deployed thus far represent just the initial deployment of ramp meters in Las Vegas. Plans are to deploy additional ramp meters, if the initial implementation is successful. No time frame has yet been established for expanding metering operations beyond US 95 and I-515. Currently, a study has been proposed to assess ramp metering needs for the length of the I-515 corridor to where it meets I-215.



1.2. Purpose

The primary purpose of this Plan is to improve the operation of freeways, their associated ramps, and adjacent arterials by providing guidance on how to effectively monitor the operation of ramp meters. Although this Plan has been initially developed for the Southern Nevada region, practitioners all across the state of Nevada may benefit from the guidance contained in this handbook, and may use it to ensure that ramp meters are operated consistently on a state-wide basis. This document is part of a project that will develop procedures and policies to ensure that ramp meters are deployed, operated, and monitored in an effective and consistent fashion. Use of this plan will help technical and operational staff identify the impacts of ramp meters including their effects on traffic patterns and flow. This plan will also help decision makers within NDOT and RTC make effective decisions regarding the current use and expansion of ramp meters by helping to understand and describe the past, present, and future operation of ramp meters within the Las Vegas region.

Performance monitoring provides the following.

Better Visibility of Benefits. Performance monitoring, evaluation and reporting will provide a clearer picture of freeway performance, and whether or not ramp meters are helping to satisfy program objectives. By publicizing the results of ramp meter performance monitoring and evaluation, the benefits of these systems can become more widely known. This helps develop public acceptance and support for these systems.

Better Allocation of Resources. Performance monitoring can also help NDOT and RTC make decisions on resource allocation. For instance, if ramp metering systems are providing greater benefits than another freeway management or traffic management program, decision makers may want to allocate more resources to expanding ramp metering. Or, if metering is not as effective as expected to be because there are not sufficient staff resources available, the monitoring program can point out the deficiencies and provide information to help justify increased staffing.

Improved Operations. One of the primary goals of performance monitoring, evaluation and reporting is to obtain feedback on how successful ramp meters have been in meeting previously determined goals and objectives, and to use this knowledge to make necessary improvements. Performance monitoring helps practitioners identify the extent and precise location of traffic and safety problems so operational improvements can be made. Performance monitoring may also help identify hardware or software failures, helping to resolve problems more quickly and minimize down time.