

5.0. PERFORMANCE REPORTING AND OUTREACH

This section discusses how to report ramp metering performance and to whom it should be reported. Reporting is the bridge from monitoring performance and using that information to improve strategies and refine goals and objectives. Reporting is also key to building support for ramp metering by showing the benefits of those systems.

Due to the wide range of reporting formats and audiences, the needs of the reporting phase of the evaluation should receive substantial consideration early in the evaluation effort. The format of the eventual report and the intended audience should be factors guiding the selection of performance measures, the development of data collection plans, and the identification of analysis techniques and tools.

Performance reporting and outreach seeks to build understanding of ramp metering benefits. Agencies responsible for the implementation of ramp meters should actively market the benefits of ramp meters. Agencies should seek to inform the public, local agencies and the media at various points during the operation of ramp meters to keep these groups abreast of project progress and the benefits observed to date. Agencies should also undertake internal efforts to inform personnel at various levels within their organization of the benefits ramp metering provides and the proposed timeline for their implementation. In-reach also provides a beneficial mechanism to promote ramp management and disseminate information about ramp management to outside groups.

Monitoring and managing initial operation also includes documenting the software and hardware that has been installed and the control parameter settings used to control ramp meters. Documentation should include system errors, how they were resolved, and any system updates that were incorporated to prevent the errors from occurring in the future. In the initial phases of a ramp metering program, documentation will help keep an up-to-date record of activities that may be used to address future hardware and software problems. Documentation should be carried beyond the initial operation of ramp meters and should be viewed as a life cycle activity that needs to be continually conducted in operating and maintaining these systems.

5.1. Monitoring and Reporting Frequency

After ramp meters are deployed, tested and initially operated, they should be monitored and managed to determine if and how the strategies should be adjusted for optimal performance. System operation should be analyzed on a continual basis and more formal evaluations should be conducted and reported several times within the first year, and at least annually thereafter.

System operation should be observed in the field and confirmed in the operations center. If problems are observed or reported, adjustments, maintenance or other responsive action should be performed. Likewise, problems reported via other agencies and the public needs to be investigated, addressed and corrected.

5.1.1. Initial Observations and Monitoring

During the first weeks that meters are operational, operations staff should monitor conditions to determine if and how the new metering operations should be adjusted to improve traffic flow. Any improvements that need to be made should be performed as soon as they can be implemented. Staff should also monitor how well drivers are responding to the new meters. Often times reminders to drivers (usually through the media) on how to react to meters can be effective at improving driver response.

All calls and letters from the public concerning the new ramp meters should be investigated and corrective action taken if appropriate. If it is not possible to make changes to address public

concerns, the respondent should be contacted and the situation should be explained. The objective is to make all contacts positive and informative. Each citizen that is able to talk in a better informed manner is likely to pass on accurate information to their family, friends, and neighbors with a positive attitude.

5.1.2. 3 Months After Initial Operation

Three months after initial operation, ramp meters should be formally evaluated to determine if meters are performing as expected. The results of this evaluation should be recorded, documented, and reported to those responsible for making adjustments to the systems, decision makers, and the public. Any resulting adjustments that need to be made should be done as soon as possible.

5.1.3. 1 Year After Initial Operation

One year after initial operation and every year thereafter, ramp meter operations should be evaluated to determine if these systems are providing expected benefits. Data should be collected on an annual basis and compared against the data that were collected before metering began. As the ramp meter system becomes more mature, data collected for the current year can be compared to the data collected in previous years to determine if system adjustments made from year-to-year have been beneficial and to determine trends in traffic conditions and traffic patterns.

NDOT and RTC should formally document and report ramp meter performance on an annual basis.

5.2. Target Audiences

NDOT/RTC should report ramp meter performance results to local leaders, motorists, the media, and external agencies to strengthen support for the expansion of the ramp metering program. Continual support from these groups will help successfully implement ramp metering systems now and in the future. Information on ramp meter performance should be tailored to the specific needs and concerns of each group.

Interest exists in the results of these evaluations among not only those within the transportation community, but also among decision makers, special interest groups, and the general public. The challenge to transportation professionals is to conduct accurate and objective evaluations of ramp meters that focus on key criteria, so that the results are meaningful and understood by all groups.

5.2.1. The Public

Public support and understanding of ramp metering programs is critical to ensure that these programs can successfully meet their objectives. Public opposition to the implementation of ramp meters poses a challenge that can significantly delay or eliminate meter implementation or operation. To reduce the possibility of misunderstandings leading to public opposition, practitioners should take all the steps necessary to educate the public of the benefits of metering before and after meters are turned on.

Reporting on the performance of ramp meters can help offset some drivers' initial impression that ramp meters do not provide sufficient benefit. Initially, some motorists may fail to visualize the benefits of metering, and instead may focus on the few, but more noticeable negative impacts such as ramp queues. By actively publicizing the benefits of ramp metering observed through performance monitoring and evaluation, NDOT and RTC staff can mitigate adverse public opinion that may exist regarding ramp metering. NDOT and RTC should frequently disseminate information on the benefits of ramp meters, using various techniques that enhance

public understanding. For example, public service announcements, leaflets, and radio spots are all acceptable techniques. Each of these can be prepared/conducted in English and Spanish.

5.2.2. Upper Management

The results of ramp meter performance monitoring and evaluations can be valuable in conveying to upper management the importance and benefits of ramp metering. Similar to the public, upper management support and understanding is needed for metering programs to be successful. Without upper management support, ramp metering programs may not receive the funding or resources needed to continue operation or implement planned and needed expansion. Upper management can use performance information to develop agency directives that support ramp metering programs and to allocate funding to implement them. Ramp meter performance information can help upper management visualize the need for continuous improvements and can help secure funding for maintaining and expanding the existing network of ramp meters. Performance results need to demonstrate how well ramp metering contributes to the goals and objectives of the agency, the region, and the overall freeway management program.

5.2.3. Local leaders and Elected Officials

Local leaders (elected and appointed officials especially) can be valuable advocates or powerful opponents of ramp metering. It is important that staff determine if local leaders are predisposed to either advocacy or opposition to metering. Based on these findings, staff should develop an outreach program that targets both the advocates and the opponents.

Staff should reach out to advocates to mobilize their support for current and proposed ramp metering efforts. It is equally important that staff reach out to opponents or potential opponents to understand their concerns. Some of these concerns may be ones that can be addressed in the design or operation of the ramp meters. Others may be the product of misconception that can be lessened by providing accurate information that addresses those concerns.

Staff should also reach out to local leaders to determine if there are any issues with metering. If there are none, no significant follow through with local leaders would be necessary and resources could be expended on other aspects of the outreach efforts or other aspects of strategy implementation.

5.2.4. NDOT and RTC Staff

NDOT and RTC staff and managers need ramp performance information to identify where improvements to ramp metering can be made. With this information these individuals can more easily identify and assess problems associated with the operation of ramp meters, and are able to fix these problems more quickly and easily. NDOT and RTC staff may also use this information to make more informed decisions regarding other elements of their ITS program. For instance, through performance monitoring, NDOT staff may find that ramp metering is more effective than other ITS strategies and, consequently, propose that ramp metering is implemented more widely or more quickly.

5.2.5. Media

The media can be a valuable player in widely disseminating information on the benefits of ramp meters to the public. For this reason alone it is critical that NDOT and RTC develop a good relationship with the media. This may pave the way for the media to act as the advocate for the ramp metering program.

Information released to the public, local agencies and the media should be truthful and accurate to reduce the chance that the voracity of released information will be called into question at a

later date. This also reduces the potential “surprise factor” that, when left unchecked, can lead to public frustration and contempt for proposed strategies.

5.3. Reporting Methods and Techniques

The most important consideration in reporting the evaluation results is ensuring that the findings are presented in a manner appropriate to their intended audience. Results reported to non-technical decision-makers or the public should not be presented using technical jargon or assume any prerequisite knowledge of operational concepts. Instead, reports to non-technical audiences should present the findings as clearly and concisely as possible, focusing on those performance measures of greatest importance to the target audience. Conversely, reporting evaluation findings to a more technical audience should provide sufficient detail on the evaluation methodology and empirical evidence to support the findings. Evaluators may want to consider developing more than one evaluation report to meet the needs of diverse audiences.

The eventual format of the evaluation report can be extremely varied based on the particular needs of the evaluation. It may be a formal document intended to be widely distributed, or an informal report intended for internal agency use only. The evaluation findings may not even be disseminated with a traditional document, but instead may be communicated through use of presentations, web sites, press releases, or other media.

5.3.1. Formal Reports

Of the various reporting methods discussed in this plan, formal reports are the most comprehensive, often providing the most detail regarding a system evaluation. Therefore, formal reports are typically used to report system performance to a technical audience that require as much detail as is available. This audience may include the following individuals:

- ▶ Upper management and agency decision makers
- ▶ Transportation management system operators
- ▶ Educators
- ▶ Researchers

Although reports are the most comprehensive and detailed reporting method, they should report findings in an easy to understand fashion, similar to other reporting methods discussed below. Therefore, it is beneficial to use tables, charts and illustrations so findings can be understood quickly.

At a minimum, ramp meter performance reports should contain discussions of the following;

- ▶ Purpose of the report
- ▶ Systems that were evaluated or geographic scope
- ▶ Data collection methods
- ▶ Performance measures
- ▶ Aspects of the system(s) that were evaluated
- ▶ Findings

5.3.2. Fact Sheets, Summaries and Other Documents

Similar to reports, information contained in facts sheets and summaries should report system performance findings in a manner where information can be understood quickly. Unlike, reports, however, fact sheets and summaries are useful for reporting findings to non-technical

audiences such as local-elected officials, and the general public. Fact sheets and summaries should focus on the impacts of ramp meters, without going into great detail on how the impacts were derived. Any discussion on the details on how the evaluation was conducted is likely to either confuse readers or be ignored altogether.

5.3.3. Media Releases

The media can provide practitioners a means to gain positive support for ramp metering from motorists and local leaders. Media releases, in either electronic or hardcopy format, can be used to express the benefits of ramp meters prior to and during construction. The local media should be notified of program goals, objectives, and benefits well in advance of when meters are expected to be turned on. This will help form a working relationship with the media that will be needed to publicize the benefits of ramp meters later on.



Although the media can aid in acquiring public support, the media can also be obstructive if not handled properly. If the benefits of ramp metering are oversold and unrealistic, credibility of the implementing agency can be questioned.

6.0. SPECIFIC MONITORING RECOMMENDATIONS FOR US 95 RAMP METERING

This section contains specific recommendations for monitoring the operation of the ramp meters on US 95. Metering began on March 29, 2005.

6.1. Objectives for Metering US 95

The objectives of ramp metering on US 95 are as follows:

- ▶ Reduce crash rate in the metered section of freeway.
- ▶ Increase mainline speeds in metered freeway sections.