

VI - 11. MONITORING PERFORMANCE

Monitoring performance measures success while offering feedback to recalibrate strategies to increase effectiveness.

APPROACHES TO MEASURING PERFORMANCE

MTS program performance must be monitored to ensure successful implementation to achieve the MTS vision. MTS programs can be monitored in several different ways. There are three dynamics to MTS performance measurement: scale, measurement, and tools. Scale refers to the level at which the measurement is performed. Measurement is the yardstick by which performance will be monitored. Tools refer to how data is collected to perform the measurement.

Table 1 presents these concepts in tabular format. A more extensive discussion of each concept then follows. This section concludes with a table showing how the three dynamics relate to each other.

Table 1: MTS Performance Measurement Dynamics

DYNAMIC	OPTIONS
Scale	<ul style="list-style-type: none"> ● Program-Level ● Site-Level ● Intersection-Level ● Neighborhood-Level ● Community-Level
Measurement	<ul style="list-style-type: none"> ● Mode Split ● Drive Alone Rate or Alternative Mode Usage ● Average Vehicle Ridership (AVR) or Vehicle Employee Ratio (VER) ● Vehicle Trip Generation ● Participants/Riders ● Intersection LOS/Traffic Volumes/Cars ● Vehicle Miles Traveled
Tools	<ul style="list-style-type: none"> ● Survey ● Travel Diaries ● Traffic Counts ● Cordon Counts ● Alternative Mode Counts ● Participant Counts ● Parking Lot Counts

SCALE

The level at which the MTS impact is measured will depend on the goals of the MTS strategy. If the MTS strategy were designed to reduce employee commute traffic, then measurements conducted at employer sites would be appropriate. If the goal of the MTS strategy is to reduce vehicle trips throughout the city, then a macro-level measurement must be taken. Macro-level measurements, however, will be influenced by external factors affecting traffic conditions that cannot be attributed to the MTS program. These external factors may include economic conditions, weather, events, etc. Macro-level measurements can be conducted citywide, within certain areas of the city, or in key neighborhoods.

MEASUREMENTS

The measurement used to monitor MTS performance will also depend on the MTS program goals. MTS programs seek to better use the existing transportation network by:

1. Encouraging a shift from driving alone to riding the bus, carpooling, walking, or bicycling;
2. Encouraging a shift in the time of day travel takes place; or
3. Eliminating vehicle travel all together.

In some cases, the goal includes reducing vehicle traffic on the streets. It may also include reducing traffic at specific locations or at specific times. In other cases, the goal includes reducing potential traffic volume increases associated with growth. Finally, the goal may focus solely on increasing usage of alternative modes and may not include a vehicle trip reduction or avoidance component. The nuances of the goal will drive the measurement that is used. These measurements include:

Mode Split

Mode split is simply dividing the pie of all travelers into the segment that drove alone, carpoled or van poled, rode transit, walked, or bicycled to get to their destinations. Mode split can be measured for a specific day or week at a specific location and may include categories for "telecommute", "vacation", etc. It can also be measured in terms of people's "general" travel patterns, although this is a less accurate measure. Finally, mode split can be measured by trip purpose.

Mode split can be used as a measurement by tracking the change in mode split over time.

Table2: Example Mode Split

TRAVEL MODE	MODE SPLIT
Drive Alone	50%
Carpool / Vanpool	20%
Bicycle	9%
Transit	15%
Walk	6%
TOTAL	100%

Drive Alone Rate (DAR)/ Alternative Mode Usage (AMU) and Average Vehicle Ridership (AVR)/ Vehicle Employee Ratio (VER)

These four measurements present the mode split into one number that can be used to measure change over time or that can be compared to a benchmark.

Drive Alone Rate (DAR) and Alternative Mode Usage (AMU)

In Table 2, the DAR is 50%. If vehicle trip reduction is a primary goal, or if increasing transit ridership is the primary goal, then DAR is not a good measure. DAR does not provide any information about the modes used by non-drive alones and does not provide detailed information about vehicle trip generation. Since those not driving alone could be carpooling or walking, etc. the vehicle trip generation rates of different DARs can vary significantly.

Alternative Mode Usage (AMU) is simply the complement of the DAR- the percentage of people not driving alone. For example, in Table 2, the AMU is 50%. This measurement has the same disadvantages as the DAR.

Average Vehicle Ridership (AVR) and Vehicle Employee Ratio (VER)

AVR is calculated as: total number of people arriving at a location in a specific time frame divided by the total number of vehicles arriving at the same location in the same time frame.

AVR includes carpool vehicles and vanpool vehicles in the denominator, so it is a more accurate measure of vehicle trip generation. The disadvantage of AVR is that information must be known about the size of each carpool or vanpool. VER is the inverse of AVR. It is the number of cars per 100 people arriving at a specific location or crossing a specific line.

Vehicle Trip Generation (Individual/Household or Site)

This measure elucidates the change in community dependence on the automobile by tracking the change in average vehicle trips made per household. On a site level, the vehicle trip generation rate can be used as a measure by comparing the site with other nearby or similar land-uses, or with standard national or regional trip generation rates.

Participants/Riders

MTS program success can also be monitored based on the number of participants in each program. What is actually measured, or counted, will vary based on the MTS programs included in the overall MTS strategy. These measures can include:

- Change in bus ridership;
- Change in people who register for programs such as transit subsidies, guaranteed ride home, carpool database, etc.;
- Comparison of bicycle/pedestrian counts at certain intersections or at points on the bike and pedestrian network over time; and
- Change in the parking occupancy data.

For each of these measurements, the change in population over the same time frame must be "netted out" or "normalized" to show the real change in program participation.

Intersection Level of Service (LOS)

Depending on the scale of the MTS effort, intersection LOS may be an appropriate performance measure for MTS programs. If the MTS program involves significant improvements in public transit, land-use strategies, parking pricing strategies and/or policies to dissuade vehicle trips, a noticeable change at the intersection LOS may be possible. Generally, however, this is not a good measurement for MTS programs, because latent demand or population increases will simply back-fill any progress made by MTS programs.

Vehicle Miles Traveled (VMT)

The change in community-wide per capita VMT compared to what was projected, accounting for anticipated population and land-use changes, can also be a way to measure the impact of MTS programs. Like intersection LOS and other macro-scale measurements, there is a risk that external factors, such as the economy, will influence this measurement. In addition, land use patterns greatly influence this measure. The more compact and dense land use patterns become, the lower the VMT at the local scale. This measurement is probably most effective when the MTS strategy involves large-scale land use redevelopment.

TOOLS

The tools used to measure performance will depend upon what is being measured and the scale on which it is being measured. Certain measurements can only be gathered through survey techniques, while others can only be gathered through field observations. For example, Average Vehicle Ridership cannot be measured with simple automatic traffic counts, but must be observed at site driveways or determined through employee surveys. Possible measurement tools are listed below. Each tool is then related to measurements and scale in Table 3.

- Hard copy or electronic surveys.
- Community-based telephone surveys.
- Travel diaries. These diaries provide detailed information about trip-making behavior to a statistically significant sampling of the population. While complex and expensive to administer, they arguably provide the most accurate and detailed data.
- Traffic counts. These counts can be conducted at key intersections, along specific corridors, or at major generators.
- Cordon counts. These counts are one of the most effective tools for neighborhood or site-wide MTS program impact. Cordon counts are complex, counting all vehicles, passengers per vehicles, buses, pedestrians, and bicyclists that cross a particular boundary. Depending on the site, cordon counts may also have to subtract through traffic and record the type of vehicle (e.g., commercial).
- On-board bus passenger counts or vanpool/carpool passenger counts.
- Participant counts of people who register for a specific MTS program or service.
- Parking lot occupancy and turnover field surveys.

MEASURING PERFORMANCE

Table 3 illustrates which measurements can be used with which tools to monitor performance at different scales. In all cases, performance is measured by tracking changes in the measurement over time or by setting a goal that the measurement needs to reach.

The City Transportation Commission shall be responsible a bi-annual report to the Council on the progress of the MTS.

Table 3

MEASUREMENT	SCALE	TOOL
Mode Split¹	<ul style="list-style-type: none"> ● Employment site² 	<ul style="list-style-type: none"> ● Paper/electronic survey ● Cordon count
	<ul style="list-style-type: none"> ● Commercial site ● Mixed-use development ● Neighborhood ● Campus 	<ul style="list-style-type: none"> ● Cordon count
	<ul style="list-style-type: none"> ● Community-wide 	<ul style="list-style-type: none"> ● Cordon counts through designated intersections ● Telephone survey ● Travel diary survey
Vehicle Trip Generation	<ul style="list-style-type: none"> ● Commercial site ● Mixed-use development ● Neighborhood ● Campus 	<ul style="list-style-type: none"> ● Driveway or cordon count (must have information about site population or sq. feet)
	<ul style="list-style-type: none"> ● Community-wide ● Household 	<ul style="list-style-type: none"> ● Telephone survey that asks detailed questions about trip-making behavior ● Travel diary survey
Participants/ Riders	<p><i>Varies by program:</i></p> <ul style="list-style-type: none"> ● Financial incentives ● Bicycle improvements ● Transit improvements ● Parking pricing ● Support programs ● Marketing 	<ul style="list-style-type: none"> ● Program registrants ● Bicycle counts ● On-board ridership counts ● Parking utilization ● Program registrants ● Event participants
Intersection LOS/ Vehicle Trip Reduction	<ul style="list-style-type: none"> ● Community-wide 	<ul style="list-style-type: none"> ● Traffic counts
Vehicle Miles Traveled	<ul style="list-style-type: none"> ● Community-wide 	<ul style="list-style-type: none"> ● Travel diary survey

¹DAR, AMU, AVR and VER can all be determined once mode split has been measured. The latter two require that the survey or cordon count collects specific information about passengers per carpools and vanpools.

²Measures commute trip mode split only.