

# CHAPTER 9

## PERFORMANCE MONITORING PLAN



**PERFORMANCE MONITORING PLAN**

The goals and objectives identified in Chapter 2 are directly linked to the performance measures found within this chapter. The transportation system performance monitoring and assessment process includes tracking of transportation system performance on an ongoing basis and forecasting how the system should perform in the future. The tracking element emphasizes collection of data and development of comparative statistics that reveal trends in system performance over time. Performance measures and the LRTP goals they are intended to address are identified in Table 9-1.

**Table 9-1: Performance Measures with Corresponding Goals Addressed**

Performance Measures	Plan Goals Addressed
Volume-to-capacity ratio (A Measure of Congestion)	Support Economic Vitality
	Increase Safety & Security
	Increase Mobility
	Promote Efficient System Management
Crash rate	Increase Safety & Security
	Promote Efficient System Management
	Increase Mobility
% of federal aid eligible roadways with pavement conditions rated “fair” or better	Support Economic Vitality
	Increase Safety & Security
	Increase Mobility
	Promote Efficient System Management
Federal aid obligation ratio	Maximize Federal Funds Programmed
	Support Economic Vitality
Average utilization of park and ride lots	Promote Efficient System Management
	Protect the Environment
	Promote System Preservation
% of bridges with condition rating of 5.0 or higher	Promote System Preservation
	Support Economic Vitality
	Preserve Connectivity
	Increase Safety & Security
Transit fare box recovery ratio	Increase Mobility
	Promote Efficient System Management
	Improve Connectivity
	Support Economic Vitality
Rate of multiuse trail miles developed	Increase Mobility
	Improve Connectivity
	Support Economic Vitality
Daily vehicle miles traveled	Increase Mobility
	Support Economic Vitality
	Protect the Environment
Public Opinion Survey	All Goals



The optimum combination of accuracy and detail for performance measurement is based on real time and observed data sources. This data provides the information to assess the principal operating characteristics of the current transportation system and to establish a historical record that tracks performance trends over time. The specific parameters observed vary by the transportation mode and must take into consideration the practicality and expense of collecting data on a continuing basis. The latter factor is particularly important if a historical record is to be established that allows effective analysis of performance trends. The following performance measures were selected due to the availability of the data, the data's relatively low cost, and applicability to the overall transportation setting.

### **Volume-To-Capacity Ratio**

Volume-to-Capacity (V/C) Ratio is the ratio of demand flow rate to capacity for a traffic facility. V/C ratio compares roadway demand (vehicle volumes) with roadway supply (carrying capacity). Volume refers to the number of vehicles using a roadway at peak commute times, while capacity is its ability to support that volume based on its design and number of lanes. The V/C ratio is one way to measure congestion and is the primary determinant of congestion used for the Mid Hudson Valley TMA's Congestion Management Process (CMP). According to the Ulster County V/C ratio map in Chapter 4 (Figure 4-5), a number of corridor segments are severely congested with V/C ratios in excess of 1.0. V/C ratio data is forecasted using the UCTC's travel demand forecasting tool. V/C ratio data is based on U.S. Census 2000 data for population, employment, housing and land use and forecasted by staff within the Ulster County Planning Department. V/C ratio data will be analyzed at least once every LRTP update cycle. The Plan's goal is to limit the number of system miles with a V/C ratio greater than 1.0 to 19.9 miles by 2035.

### **Crash Rate**

Crash (accident) rate data are classified as either reportable or non-reportable. All accidents involving either a death, personal injury, or if the reported property damage to any single motor vehicle meets a threshold of at least one thousand dollars, will be considered a reportable accident. Reportable accidents always have event, vehicle and contributing factor information. Non-reportable accidents usually have only a limited amount of event information coded by the State Department of Motor Vehicles (DMV). Crash data is collected from New York State Department of Transportation (NYSDOT) and the DMV. Crash rate data available for this LRTP update includes the years of 2006-2008. Crash rate data will be analyzed at least once for every LRTP update cycle. The injury and fatality crash rate goals are targeted to decrease 40% and 52%, respectively, by 2035.

### **Pavement Condition Rating**

The NYSDOT annually conducts a survey of State highway pavement surface ratings that provides a consistent source of pavement data for New York's highway network. The



survey results are a primary input for NYSDOT's Pavement Management System as well as to the development of the pavement portion of NYSDOT's Capital and Maintenance Programs. The Ulster County Department of Public Works and City of Kingston also perform pavement condition assessments, but on a less frequent and less formal manner. Pavement conditions for this LRTP update include data for the year 2009. Pavement conditions data will be analyzed at least once every LRTP update cycle. Overall federal aid system pavement conditions rated "fair" or better is targeted to increase approximately 2% by 2035.

### **Federal Aid Obligation Ratio**

The Federal Aid Obligation Ratio (FAOR) measures the progress of project implementation and the utilization of federal aid programmed. Often, federal funding for projects programmed goes unobligated for various reasons. Unobligated federal funding does not carry over into the next Federal Fiscal Year (FFY), rather, it expires at the end FFY if unclaimed by the project sponsor. Unobligated federal funds represents a an opportunity cost for other Ulster County municipalities that may be waiting to receive federal aid for a project. This performance measure enables the UCTC to monitor the rate of federal aid obligations to ensure federal funding is maximized. Federal aid obligation data is collected from NYSDOT and the FHWA. FAOR will be monitored on an annual basis and included as part of the Annual Federal Aid Obligation Report. The annual federal aid obligation goal for local and State projects is 100% each by 2035.

### **Park and Ride Lot Utilization**

Park and ride lot parking facilities in Ulster County have been observed as being heavily utilized and often severely congested. Park and ride lot facilities promote carpooling and the use of public transit which helps to reduce congestion on the Region's roadways. Monitoring the occupancy of parking facilities enables the UCTC to evaluate congestion and capacity needs. Once capacity constraints and needs have been identified, Federal funds can be programmed on the Transportation Improvement Program (TIP) to address needs through facility expansion and/or the improvement of existing facilities. Nearly half of the identified parking facilities in Ulster County experience moderate to severe congestion on a daily basis. Parking capacity and needs data are collected on an annual basis and a final report is prepared. The average system wide park and ride lot utilization goal is 100% by 2035.

### **Bridge Condition Rating**

Bridge condition ratings are developed and inventoried by NYSDOT. On a scale between 1.0 and 10.0, bridges with a bridge condition rating of 5.0 or higher are in better condition than those with a bridge condition rating below 5.0. Bridge condition ratings enable planners and engineers to assess needs and schedule repairs. Bridge conditions for this LRTP update include Year 2009 data. Bridge condition ratings data will be analyzed at least once every LRTP update cycle. The percent of State and local bridges with condition rating goal of 5.0 or higher is targeted to increase by 88% and 43%,



respectively, by 2035. While the State system has fewer bridges, the proportion of those State bridges identified as deficient is greater than the proportion of deficient local system bridges (see Table 4-5).

### **Transit Fare Box Recovery Ratio**

The fare box recovery ratio of a passenger transportation system is the proportion of the amount of revenue generated through fares by its paying customers as a fraction of the cost of its total operating expenses. Most transit systems aren't self-supporting, so advertising revenue and government subsidies are usually required to cover costs. The fare box recovery ratio will help the UCTC better understand transit performance for transit agencies receiving federal funding. Fare box recovery ratio data is collected from NYSDOT Section 17A Reports and will be presented to the UCTC at least annually. Ulster County Area Transit and Kingston Citibus fare box recovery ratio goals are targeted to increase to 15% for both operators by 2035.

### **Rate of Multiuse Trail Development**

There is a need to complete an interconnected, seamless, off road, multiuse trail system in Ulster County. As identified in the UCTC's *Non-motorized Transportation Plan*, the multiuse trail system would be comparable to an 'interstate highway system' for bicyclists and pedestrians countywide and connecting to adjacent counties (see Figure 4-12). Currently, segments of this interconnected trail system exist and are being used by the public (see Figure 4-11). However, there are significant gaps needing construction. This performance measure is designed to help monitor the progress of completing a seamless, multiuse, off road trail system countywide. Data will be collected by UCTC staff. Multiuse trail system data will be analyzed at least once every LRTP update cycle. Approximately 106.7 miles of multiuse trail development is targeted for completion by 2035.

### **Daily Vehicle Miles Traveled**

Daily Vehicle-Miles Traveled (VMT) is defined as the average number of miles a vehicle in Ulster County travels per day. This measure tracks overall personal vehicle use travel trends for the County. Current and projected VMT data helps planners and engineers estimate the need for road and bridge repairs and assess the impacts of transit operations and park and ride lots, among other variables. VMT data is collected from NYSDOT and the Bureau of Transportation Statistics and compared with the UCTC's travel demand forecasting model outputs. VMT data will be analyzed at least once every LRTP update cycle. The VMT goal is 8.6 million miles by 2035, an increase of 32%.

### **Public Opinion Survey**

A public opinion survey is an import and valuable customer-oriented performance measure. A public opinion survey helps to measure the public's opinions and perceptions on roadway conditions, public transit and non-motorized transportation needs. Public



survey data received is compiled, compared and cross checked against other quantitative data to help better understand the extent of a problem or need. Public opinion survey data will be collected and analyzed by UCTC staff at least once every LRTP update cycle. Based on survey feedback received in 2010, approximately 45% of survey respondents were satisfied or somewhat satisfied with the existing transportation system in Ulster County. The same survey indicated that 31% of survey respondents perceived a better transportation system in Ulster County over the past five years. Goals for both overall public satisfaction and perceptions of an improved transportation system are each targeted to increase to 51% by 2035.

Table 9-2 identifies the UCTC’s performance monitoring plan. Performance goals are based on an assessment of needs and assumptions. The UCTC’s travel demand forecasting model provided assistance with VMT and V/C ratio projections.

**Table 9-2: Performance Monitoring Plan**

Performance Measures	Existing 2009	2035 Goal	Change from 2009
Number of system miles with volume-to-capacity (V/C) ratio greater than 1.0	6.1	19.9	226.2%
Crash data (2006-2008 data):			
Total injury crashes over 3 year period	4988	2999	-39.9%
Total fatality crashes over 3 year period	82	39	-52.4%
Percent of system pavement conditions rated "fair" or better			
State and local federal aid system only	96.2%	98.0%	1.9%
Federal aid obligation ratio	53.7%	100.0%	86.2%
Average capacity of park and ride facilities (2008 data)	86.2%	100.0%	16.0%
Percent of bridges with condition rating of 5.0 or higher			
State Bridges	13.3%	25.0%	88.0%
Local Bridges	17.4%	25.0%	43.7%
Transit fare box recovery ratio (2004-2008 data)			
Ulster County Area Transit	9.2%	15.0%	63.0%
Kingston Citibus	11.6%	15.0%	29.3%
Number of multi-use trail miles developed	44.4	151.1	240.3%
Daily vehicle miles traveled (VMT) in millions of miles	6.5	8.6	32.3%
Public survey results (in 2010)			
Overall satisfaction with the existing transportation system	45.7%	51.0%	11.6%
Those perceiving a better transportation system than five years ago	31.0%	51.0%	64.5%



The growth in population and employment, the distribution of that growth, energy prices, and the provision of transportation facilities and services may impact future travel patterns and which mode of travel is used. Ulster County appears headed for a challenging transportation environment in the coming years due to rising energy costs and increased vehicle miles traveled coupled with little or no increases in the amount of federal aid programmed for local and State projects. Rising energy costs will likely increase the cost of asphalt, steel and concrete which may negatively impact the way in which roads and bridges are maintained. Public transit operating costs may continue to climb encouraging transit operators to increase their dependence on federal, State and local funding contributions. Multiuse trail development will likely be more difficult to achieve due to increased competition for federal transportation aid for road and bridge projects.

