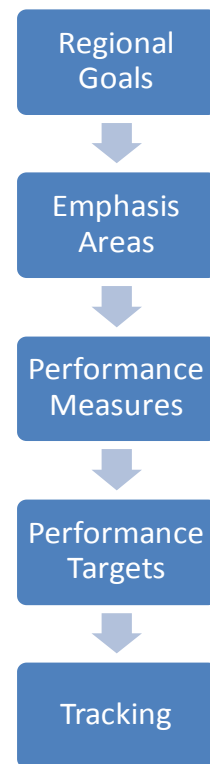


# CHAPTER 12

## REGIONAL PERFORMANCE MEASURES

MAP-21 requires a performance based planning methodology to improve decision-making through better informed planning and programming. As part of this process, each state and MPO develops goals and objectives to track the performance of key areas of the transportation system. Performance measures are tracked over time to determine the progress in meeting these goals. This tracking occurs through ongoing data collection and planning activities already performed by the PVPC. The development and tracking of performance measures allows the region to identify the areas in which they would like to place additional emphasis through transportation improvement projects that may be necessary to ensure a safe and dependable regional transportation system for all modes of travel.



### A. DEVELOPMENT

The MPO designated the Pioneer Valley Joint Transportation Committee (JTC) as the advisory committee to assist in the development of regional performance measures. The JTC meets on a monthly basis and discussed the development of regional performance measures on a regular basis. The first step was the identification on existing performance measures that are utilized as part of ongoing transportation planning activities. This information is summarized in Table 12-1.

**Table 12-1 – Existing Performance Based Planning Activities in the Pioneer Valley**

Planning Activity	Performance Measures Used
Regional Pavement Management	Roadway overall condition index (OCI) for use in evaluating transportation improvement projects
Regional Congestion Management Process	Regional Travel Time Index, Travel Time Delay, and Congestion Ratio for identification of congestion severity and regional bottlenecks.
Top 100 High Crash Intersections Report	Equivalent Property Damage Only (EPDO) totals for high crash intersections.
Transit Route Surveys	Collection of ridership data, on-time performance, passengers per trip, and passengers per revenue hour to track the performance of fixed-route services.
CMAQ and Greenhouse Gas Analysis	Overall reduction in pollutant levels of CO <sub>2</sub> , VOC, NO <sub>x</sub> and CO for CMAQ project selection and GreenDOT analysis.

Based on the existing performance based planning activities and ongoing statewide planning activities, the JTC identified the existing performance measures that could best advance the seven national goals of MAP-21, the eight planning factors of SAFETEA-LU and the goals of the RTP. These performance measures were grouped into seven different planning areas and linked to the appropriate RTP goals and emphasis areas. This information is summarized in Table 12-2.

**Table 12-2 – Regional Performance Measures for the Pioneer Valley MPO**

<b>Planning Area</b>	<b>Regional Performance Measures</b>
Operations and Maintenance	<ul style="list-style-type: none"> <li>• Structurally Deficient Bridges</li> <li>• Overall Condition Index</li> </ul>
Safety	<ul style="list-style-type: none"> <li>• Equivalent Property Damage Only (EPDO)</li> <li>• Fatality Rate</li> <li>• Top 100 High Crash Intersections</li> </ul>
Congestion	<ul style="list-style-type: none"> <li>• Travel Time Index</li> <li>• Regional Bottlenecks</li> <li>• Bicycle Condition Index</li> <li>• Passengers per Revenue Hour</li> <li>• Passengers per Trip</li> </ul>
Green House Gas/Air Quality	<ul style="list-style-type: none"> <li>• Transportation Related Green House Gas Levels</li> <li>• CMAQ Projects</li> </ul>
Freight	<ul style="list-style-type: none"> <li>• Restricted and Closed Bridges and Overpasses</li> </ul>
Intermodal	<ul style="list-style-type: none"> <li>• Park and Ride Occupancy</li> <li>• Bike Path Use Volumes</li> </ul>
Multimodal	<ul style="list-style-type: none"> <li>• Fixed Route Transit Ridership</li> <li>• Miles of Multi-use Paths, On-road Bike Facilities and Sidewalks.</li> </ul>

## 1. Regional Performance Targets

A series of regional performance targets were developed based on the regional performance measures. Performance targets were developed to serve as indicators on how well the MPO is doing in advancing planning activities and projects to advance the goals of the RTP. Each performance target is based off of a baseline level and identifies a specific outcome over a defined timeframe. In some cases, the regional target is identical to established MassDOT targets when it was felt the state target was appropriate to advance the goals of the RTP, or that MassDOT typically plays the lead role in the advancement of projects and programs that can meet the performance target. One example is the advancement of bridge improvement projects through the TIP which is based off information received from MassDOT. The regional performance targets are summarized in Table 12-3. Tables 12-4 – 12-10 link each of the performance targets to RTP goals, emphasis areas, and state performance measures and targets.

**Table 12-3 – Regional Performance Targets for the Pioneer Valley MPO**

Reduce the number of structurally deficient bridges below 2014 levels.
Increase the average Overall Condition Index (OCI) for federal aid eligible roadways by 5% by 2025.
Reduce motor vehicle fatalities by 20% over five years.
Reduce the number of roadway fatalities and serious injuries by 50% by 2030.
Complete at least one safety study per year as part of the UPWP.
Reduce the average regional travel time index to less than 1.5 by 2025.
Fund at least one congestion improvement project through the TIP every 5 years.
Complete one planning study to reduce congestion per year as part of the UPWP.
Increase the total mileage of on road bicycle facilities by 10% by 2025.
Meet the minimum number of Passengers per Trip and Passengers per Revenue Hour for fixed route transit service consistent with PVTA's established tiers of service.
Reduce green house gas from the transportation sector by 25% by 2020 and 80% by 2050.
Fund at least one air quality improvement project through the TIP each year.
Minimize the impact of weight restricted, height restricted, and closed bridges.
Increase average park and ride lot use by 5% by 2025.
Demonstrate an overall annual increase in the use of regional bike paths.
Demonstrate an overall annual increase in PVTA and FRTA ridership.
Increase the total mileage of all bicycle and pedestrian infrastructure by 10% by 2025.

**Table 12-4 – Operations and Maintenance Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To provide a transportation system that is dependable and adequately serves users of all modes. To give priority to the repair of existing streets, roads, and bridges.	The Movement of People, The Movement of Goods, Sustainability	Invest in projects that preserve the existing transportation infrastructure, while enhancing the experience for all users	# Statewide Structurally Deficient Bridges	< 461 Structurally Deficient Bridges	MassDOT Bridge Inventory	% Structurally Deficient	Reduce the number of structurally deficient bridges below 2014 levels in the PV Region	MassDOT Bridge Inventory	Prioritize funding for projects that will reduce the number of structurally deficient bridges in the Pioneer Valley. Bridge projects should continue to be funded outside of the regional target. <b>Tracking Mechanism = Structurally Deficient and Functionally Obsolete Bridges in Region</b>
			Bridge Health Index	Bridge health Index > 82		% Functionally Obsolete			MassDOT Bridge Inventory
			MassDOT Pavement Condition	65% of all pavement is in good or excellent condition	Pavement Condition Data	Overall Condition Index (OCI)	Increase the average OCI for the federal aid eligible roadways by 5% by 2025	PVPC Pavement Management Data	Prioritize funding for projects that will increase the OCI for roadways in the pioneer Valley (Included in TEC). This is contingent upon the availability of additional federal and state aid that increases incrementally over time. <b>Tracking Mechanism = Regional OCI by functional Classification</b>

**Table 12-5 – Safety Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To provide and maintain a transportation system that is safe for all modes of travel users and their property.	The Movement of People, The Movement of Goods, Safety and Security, Sustainability	Reduce the number and severity of crashes for all users	The Equivalent Property Damage Only (EPDO) index for auto, truck, bicycle, and pedestrian crashes in the Pioneer Valley Region	Reduce motor vehicle fatalities by 20% over five years (short term)	MassDOT Registry of Motor Vehicles Crash Data	EPDO	Reduce motor vehicle fatalities by 20% over five years (short term)	Top 100 High Crash Intersections Report	Prioritize projects with high crash locations and/or major safety components that are anticipated to improve safety along a corridor (Included in TEC) <b>Tracking Mechanism = Top 100 High Crash Intersection List updated every 3 years</b>
				Halve the number of fatalities and serious injuries on roadway (long term)	MassDOT Crash Portal	Fatality Rate	Halve the number of fatalities and serious injuries on roadways by 2030 (long term)	Municipal Crash Reports	Implement intersection safety studies for the top crash locations (Included in TEC) <b>Tracking Mechanism = Number of safety studies completed per UPWP cycle</b>
			HSIP Clusters for all modes (High Crash Locations Based on EPDO Index)	MassDOT Top Crash Locations Report	Top 100 High Crash Locations	Complete 1 Safety study a year for locations identified in the Top 100 High Crash locations report	PVPC Top 100 High Crash Locations Report	Implement intersection safety studies for the top crash locations (Included in TEC) <b>Tracking Mechanism = Roadway Safety Audits in PVPC Region, safety recommendations advanced through TIP</b>	

**Table 12-6 – Congestion Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To provide and maintain a transportation system that enhances quality of life and improves the social and economic climate of the region.	Safety and Security, The Movement of People, The Movement of Goods, Sustainability	Reduce Delay for all modes	Vehicle Hours of Delay (daily, annual), Speed Index, Travel Time Index, Volume to Capacity Ratio, Project vehicle hours of delay (daily, annual),	Maintain average driver delay at or below 4.8 hours of delay/1,000 Vehicle Miles Travelled (VMT)	Regional Transportation Model, INRIX data, Congestion Management Process (CMP)	Congestion Severity Ranking (CMP) Travel Time Index	Reduce the average regional travel time index to less than 1.5 by 2025	CMP Data collection, UPWP, FDR	Prioritize projects studied as part of the CMP, and UPWP (Included in TEC) <b>Tracking Mechanism = CMP Listing updated every 4 years</b>
		Expand the on/off Road bicycle and pedestrian network	New Miles of sidewalk, New miles of bicycle facilities (lanes, five-foot shoulders, paths)			Top Regional Bottleneck	Fund 1 congestion improvement project through the TIP every 5 years. Complete 1 congestion study per year for locations identified in the CMP / Top Bottleneck Report		Prioritize projects studied as part of the Top Bottlenecks Report, and UPWP (Included in TEC) <b>Tracking Mechanism = Top Bottlenecks Report updated every 4 years</b>
						Bicycle Condition Index (BCI)	Increase the total mileage of on road facilities by 10% by 2025	BCI analysis, Roadway inventory	Prioritize projects that include bicycle accommodations (Included in TEC) <b>Tracking Mechanism = on and off road bicycle and pedestrian network mileage</b>
		Improve the efficiency of the Public Transportation System	Vehicle peak load points by line, Vehicle loads by key bus routes			Passengers per Revenue Hour and Passengers per Trip	Meet the minimum number of Passengers per Trip and Passengers per Revenue Hour for fixed route transit service consistent with PVRTA's established tiers of service.	PVRTA/PVPC system analysis	Prioritize projects that include transit amenities <b>Tracking Mechanism = Number of new transit amenities implemented through the TIP</b>

**Table 12-7 – Greenhouse Gas/Air Quality Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To minimize the transportation related adverse impacts to air, land, and water quality and strive to improve environmental conditions at every opportunity	Safety and Security, The Movement of People, The Movement of Goods, The Movement of Information, Sustainability	Reduce GHG's resulting from the transportation system	GHG, VOC, NOX, CO, PM	Reduce GHG from the transportation sector 25% by 2020 and 80% by 2050	CMAQ Analysis/ Model	GHG tracking off model and with Picarro Analyzer	Reduce GHG from the transportation sector 25% by 2020 and 80% by 2050	Local GHG Data Collection	Prioritize projects with components that could improve air quality (Included in TEC) <b>Tracking Mechanism = Net GHG reduction per TIP year</b>
						CMAQ Analysis	Fund at least 1 AQ improvement project through the TIP each year	CMAQ Analysis / FDR	Prioritize projects with components that could improve air quality (Included in TEC) <b>Tracking Mechanism = CMAQ project completed through TIP</b>

**Table 12-8 – Freight Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To maintain a transportation system that promotes and supports economic stability and expansion.	Safety and Security, The Movement of People, The Movement of Goods, Sustainability	Improve the efficiency of the freight network	Average weekday average truck hours of delay, Number of weight restricted or closed bridges, # of projects that improve intermodal facilities		MassDOT bridge list	Minimize the impact of weight restricted, height restricted, and closed bridges.	Use State Target	MassDOT bridge list	Prioritize projects that improve efficiency of the freight network. Bridge projects should continue to be funded outside of the regional target. <b>Tracking Mechanism = Number of weight restricted bridges in region per TIP year</b>

**Table 12-9 – Intermodal Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To provide access between travel modes for people and goods while maintaining quality and affordability of service.	Safety and Security, The Movement of People, The Movement of Goods, The Movement of Information, Sustainability	Increase the availability of bicycle and automobile parking near transit facilities				Park and Ride Occupancy	Increase average park and ride lot use by 5% by 2025	Park and Ride Data Collection	<b>Tracking Mechanism = Monthly occupancy tracking at park and ride lots</b>
		Reduce single occupancy automobile usage in Pioneer Valley				Bike Path use volume	Demonstrate an overall annual increase in the use of regional bike paths	Bike Path count program	Prioritize projects that reduce dependency on single occupancy automobiles <b>Tracking Mechanism = Annual Bicycle and Pedestrian counts</b>

**Table 12-10 – Multimodal Performance Measures**

RTP Goal	Emphasis Areas	Objective	Statewide Performance Measures	State Target	Data Source	Regional Performance Measure	Regional Target	Data Source	MPO Action / Tracking Mechanism
To provide a complete choice of adequate travel options that are accessible to all residents, visitors and businesses.	Safety and Security, The Movement of People, The Movement of Goods, The Movement of Information, Sustainability	Reduce single occupancy automobile usage in Pioneer Valley	Mode Share, Transit Ridership			PVTA and FRTA Ridership	Demonstrate an overall annual increase in PVTA and FRTA ridership	FRTA/PVTA/PVPC system analysis	Prioritize projects that close gaps between modes of transportation <b>Tracking Mechanism = Map known gaps in regional transportation system to promote connectivity</b>
		Increase Access to multi use paths	Access points and miles of shared use paths			New miles of multi use paths, on-road bike facilities, and sidewalks	Increase the total mileage of all bicycle and pedestrian infrastructure by 10% by 2025 (No more than 5% off road paths)	RTP, UPWP, TEC, TIP	Prioritize projects that enhance access for bicycles and pedestrians via on-road improvements, new sidewalks, and new multi use paths <b>Tracking Mechanism = Map access points, monitor and track usage</b>



## **B. TRANSPORTATION EVALUATION CRITERIA**

The Transportation Evaluation Criteria (TEC) is the system utilized by the MPO to determine the regional impact of Federal Aid eligible transportation improvement projects. Projects are funded in part based on their TEC score, design readiness, and available funding for the current Federal Fiscal year. The current TEC was adopted by the MPO in February, 2015. This new criteria was developed as part of a comprehensive regional process to integrate performance based planning into the project selection process to assist in advancing projects that advance regional performance measures and goals. A summary of the TEC scoring is shown in Table 12-11.

The new TEC was developed in close consultation with the Pioneer Valley JTC and MPO. An online survey was developed to collect information on the types of transportation improvement projects that were important to residents in the region. Over 600 responses were received to the survey. This data was used to assist in the prioritization of each transportation scoring criteria to reflect the needs of the existing transportation infrastructure and advance projects that promote quality of life.

The JTC utilized the new TEC for the first time in March 2015 to assist in the development of the FY2016 – 2019 TIP. Overall, the new TEC was found to be an improvement to the previous criteria as it clearly identified how many points a specific project was eligible for under each category. The JTC will continue to track the new TEC and its impact on advancing projects that assist in meeting regional performance targets. More information on the TEC is available on the PVPC website: <http://www.pvpc.org/projects/transportation-evaluation-criteria-information-center>.

**Table 12-11 – TEC Scoring Summary**

System Preservation, Modernization and Efficiency	Livability	Mobility	Smart Growth and Economic Development	Safety and Security	Environment and Climate Change	Quality of Life	Environmental Justice
Improves Substandard Pavement 8	Design is consistent with Complete Streets policies 3	Improves efficiency, reliability and attractiveness of public transit 4	Encourages development around existing infrastructure 2	Reduces number and severity of collisions 7	Preserves floodplains and wetlands 1	Enhances or preserves greenways and blueways 1	Reduces and limits disproportionate impacts on an EJ community 1
Improves Intersection Operations 6	Provides multi-modal access to a downtown, village center, or employment center 2	Improves existing peak hour LOS 6	Prioritizes transportation investments that support land use and economic development goals 1	Promotes safe and accessible pedestrian and bike environment 5	Promotes green infrastructure and low impact development to reduce stormwater impacts 2	Improves access to parks, open lands and open space 1	Improves transit for EJ populations 2
In a Congestion Management Process Area 5	Reduces auto-dependency 2	Reduces traffic congestion 7	Provides services to a TOD, TND or cluster 0.5	Improves emergency response 4	Reduced impervious surfaces 0.5	Improves access to jobs 2	Creates an EJ Burden -5
	Project serves a targeted development site 2		Supports mixed-use downtowns and village centers 0.5		Protects or enhances environmental assets 0.5	Preserves historical and cultural resources 0.5	
	Completes off-road bike and ped network 3		Improves Intermodal Connections 4		Supports Brownfield redevelopment 0.5	Preserves prime agricultural land 0.5	
		Reduces congestion on freight routes 2	Improves air quality 1		Provides safe and reliable access to education 0.5		
			Reduces CO2 emissions 1		Supports designated scenic byways 0.5		
			Promotes mode shift 1		Implements ITS Strategies 2		
			Improves fish and wildlife passage 1		Improves Network Wayfinding 1		
			Supports Green Communities 0.5		Health Impact Assessment 1		
			Improves storm resilience 3				
<b>Maximum Score</b>							
<b>19</b>	<b>12</b>	<b>17</b>	<b>10</b>	<b>16</b>	<b>12</b>	<b>10</b>	<b>3</b>

### C. SYSTEM PERFORMANCE REPORT

A system performance report was developed to assist in identifying the status of the transportation system prior to the implementation of the regional performance measures and targets. Historic information on each of the regional performance measures was used to identify current status of each regional performance target. Each performance target was assessed an evaluation ranking of excellent, good, or needs improvement based on its current status. The definition of each of the three evaluation rankings are summarized below:

- **Excellent** – The performance measure currently meets or exceeds its performance target.
- **Good** – The performance measure is on track to meet its performance target by the established deadline.
- **Needs Improvement** – The performance measure is not on track to meet its performance target by the established deadline, or the data is not yet available for the performance measure.

#### a) Structurally Deficient Bridges

Performance Target = Reduce the number of structurally deficient bridges below 2014 levels.

**Table 12-12 – Structurally Deficient Bridges in the Pioneer Valley Since 2009**

	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2014</b>
Structurally Deficient Bridges	75	69	63	65	53
Total Bridges	674	674	669	676	678

While the MassDOT Bridge data does show improvement over the last few years, the performance target cannot be accurately assessed until the 2015 bridge data is reported.

RTP Assessment: **Needs Improvement**

**b) Overall Condition Index**

Performance Target = Increase the average Overall Condition Index (OCI) for federal aid eligible roadways by 5% by 2025.

**Table 12-13 – Regional OCI By RTP Year**

	<b>2012</b>	<b>2016</b>
Overall Condition Index	77.6	71.1

The average OCI has decreased by 6.5 since the 2012 RTP. While the average pavement condition is still considered to be in “good” condition, it does not come close to meeting the established performance target.

RTP Assessment: **Needs Improvement**

**c) Motor Vehicle Fatalities**

Performance Target = Reduce motor vehicle fatalities by 20% over five years.

**Table 12-14 – Fatal Crashes in the Pioneer Valley 2008 - 2012**

<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
35	41	37	34	44

While a downward trend in fatal crashes occurred from 2009 to 2011, a large increase in fatal crashes occurred in 2012.

RTP Assessment: **Needs Improvement**

**d) Roadway Fatalities and Serious Injuries**

Performance Target = Reduce the number of roadway fatalities and serious injuries by 50% by 2030.

**Table 12-15 – Fatal and Serious Injury Crashes in the Pioneer Valley 2008 - 2012**

<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
277	249	269	514	486

The spike in the number of fatal and serious injury crashes from 2010 to 2011 are a result of improvements in crash data reporting by local communities and more accurate data on the severity of the injury. The number of fatal and serious crashes decreased by nearly 6% from 2011 to 2012, however more data is necessary to determine if this trend can be expected to continue over time.

RTP Assessment: **Needs Improvement**

**e) Safety Studies**

Performance Target = Complete at least one safety study per year as part of the UPWP.

**Table 12-16 – Safety Studies Completed Over the Past 3 Years**

2012	2013	2014
4	1	2

Currently, the region is exceeding the target to complete at least one safety study as part of the UPWP.

RTP Assessment: **Excellent**

**f) Average Driver Delay**

Performance Target = Reduce the average regional travel time index to less than 1.5 by 2025.

**Table 12-17 – Average Regional Travel Time Index by CMP Analysis Year**

2010	2015
1.56	1.71

The average regional travel time index has increased from 2010 to 2015. This is due in part to the expansion of the CMP network after 2010 to include more roadway miles. It will be important to continue to track the travel time index on regional CMP routes.

RTP Assessment: **Needs Improvement**

**g) Congestion Improvement Projects**

Performance Target = Fund at least one congestion improvement project through the TIP every 5 years.

**Table 12-18 – Congestion Improvement Projects Completed Over the Past 5 Years**

2011	2012	2013	2014	2015
1	1	1	2	2

Historically, the Pioneer Valley region has completed at least one congestion improvement project through the TIP over the last five years.

RTP Assessment: **Excellent**

**h) Congestion-related Planning Studies**

Performance Target = Complete one planning study to reduce congestion per year as part of the UPWP.

**Table 12-19 – Congestion-related Planning Studies Completed Over the Past 3 Years**

2012	2013	2014
1	0	2

A total of three congestion-related planning studies were completed as part of the UPWP over the last three years, however, the study included as part of the 2013 UPWP was actually finished in 2014.

RTP Assessment: **Good**

**i) On road Bicycle Facility Mileage**

Performance Target = Increase the total mileage of on-road bicycle facilities by 10% by 2025.

**Table 12-20 – On-road Bicycle Facility Mileage in the Pioneer Valley**

2000	2005	2010	2015
4.50	7.25	8.95	17.95

As can be seen from the table, the region has experienced a dramatic increase in on-road bicycle facilities over the last 15 years. We are currently meeting this performance target.

RTP Assessment: **Excellent**

**j) Passengers per Trip and Passengers per Revenue Hour**

Performance Target = Meet the minimum number of Passengers per Trip and Passengers per Revenue Hour for fixed route transit service consistent with PVTA's established tiers of service.

**Table 12-21 – PVTA Routes That Meet Passengers per Trip and Passengers per Revenue Hour Standards**

	<b>September/2014 – April/2015</b>
Number of Routes that Meet Minimum Performance Standards	34
Total PVTA Routes	47

PVTA began reviewing routes to determine if the minimum number of Passengers per Trip and Passengers per Revenue Hour for fixed route transit service is consistent with the minimum performance standards based on PVTA's established tiers of service. Currently 72% of all routes are meeting the minimum performance standards on the average weekday.

RTP Assessment: **Good**

**k) Transportation Sector Green House Gas Emissions**

Performance Target = Reduce green house gas from the transportation sector by 25% by 2020 and 80% by 2050.

**Table 12-22 – Green House Gas Emissions (CO2) from the Transportation Sector**

<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
33.6	30.8	30.8	31.0	30.4

Source: Massachusetts Annual Greenhouse Gas Emissions Inventory, July 2014

Based on the latest inventory of green house gas emissions, CO2 production from the transportation sector is down by 10.5% since 2008.

RTP Assessment: **Good**

**l) Air Quality Improvement Projects**

Performance Target = Fund at least one air quality improvement project through the TIP each year.

**Table 12-23 – Air Quality Improvement Projects Completed Over the Past 5 Years**

2011	2012	2013	2014	2015
1	1	1	2	3

The region has successfully programmed air quality improvement projects over the last 5 years as part of the CMAQ program.

RTP Assessment: **Excellent**

**m) Weight Restricted, Height Restricted, and Closed Bridges**

Performance Target = Minimize the impact of weight restricted, height restricted, and closed bridges.

**Table 12-24 – Restricted and Closed Bridges**

	2011	2014
Weight Restricted Bridges	92	63
Bridges with Vertical Clearance Restrictions	73	65
Closed Bridges	14	13

Overall, the region has seen a reduction in the number of restricted and closed bridges. It will be important to continue to track this data to determine the long term impacts on the region.

RTP Assessment: **Good**



**n) Average Park and Ride Lot Use**

Performance Target = Increase average park and ride lot use by 5% by 2025.

**Table 12-25 – Average Park and Ride Lot Occupancy 2011 -2015**

2011	2012	2013	2014	2015
136	138.6	118.3	99.9	76.5

Average Park and Ride Lot usage has been steadily decreasing over the last 3 years. While 2015 data only represents partially data for the year, the average use trend is much lower than in previous year. Part of the decline can be attributed to ongoing construction that impacted a few of the parking lots in 2014 and 2015, however, 2015 data also includes a new park and ride lot at the Veterans Affairs Medical Center in Northampton, MA.

RTP Assessment: **Needs Improvement**

**o) Regional Bike Path Usage**

Performance Target = Demonstrate an overall annual increase in the use of regional bike paths.

**Table 12-26 – Historic Use of the Springfield Riverwalk**

2012	2013	2014
56	100	189

Use of the Springfield Riverwalk has been steadily increasing. In general, bike paths in the Pioneer Valley are popular and well utilized. It will be important to develop an ongoing data collection program to track bike path use for all facilities in the Pioneer Valley region.

RTP Assessment: **Good**

**p) PVTA and FRTA Ridership**

Performance Target = Demonstrate an overall annual increase in PVTA and FRTA ridership.

**Table 12-27 – PVTA and FRTA Total Annual Ridership 2009 - 2013**

	2009	2010	2011	2012	2013	2014
PVTA	9,897,009	9,743,568	10,152,139	10,872,898	11,128,713	11,415,923

Transit ridership has been steadily increasing on the PVTA route system over the last 5 years.

RTP Assessment: **Good**

**q) Bicycle and Pedestrian Infrastructure Mileage**

Performance Target = Increase the total mileage of all bicycle and pedestrian infrastructure by 10% by 2025.

A complete breakdown of existing pedestrian infrastructure mileage is not available for the entire region at this time. Existing efforts will need to be focused to develop an accurate baseline to allow for tracking of this performance target over time.

RTP Assessment: **Needs Improvement**

**1. Overall System Performance Assessment**

Based on the results of the system performance assessment, 10 of the 17 defined regional performance targets are either currently met or on track to be met by established deadlines. Seven of the targets require additional data or are currently not being met. This information is summarized in Table 12-28.

**Table 12-28 – Summary of System Performance Assessment**

Excellent	Good	Needs Improvement
4	6	7