Regional Transit Standards and Performance Measures

Phase III Executive Summary

MAY 2016
Executive Summary

Valley Metro’s Transit Standards and Performance Measures (TSPM) process was initiated for multiple purposes, including the necessity of developing a performance-based public transportation system consistent with federal and state (including Transit Life Cycle Program) requirements. The Fixing America’s Surface Transportation (FAST) Act furthers several important goals, including safety, state of good repair, performance and program efficiency. The act establishes performance-based planning requirements that align federal funding with key goals and tracks progress towards these goals. From the state perspective, the application of performance-based planning and programming was emphasized in the Arizona Auditor General’s 2011 performance audit. The auditor’s recommendation stated that “it does not appear that performance data is considered nor is a methodical, disciplined approach using set criteria in place to guide project priority decisions and changes to projects.”

In coordination with representatives from member agencies, Valley Metro initiated a process to establish agency transit service and capital standards and performance measures. In addition to the collaborative participation of member cities, Valley Metro also received input from a panel of peer agencies with experience in the formation and implementation of transit service standards and performance measures.

The scope of Valley Metro’s transit service standards and performance measures effort required the completion of the process through multiple phases. The initial phase, adopted by the Valley Metro Regional Public Transportation Authority (RPTA) Board of Directors and Valley Metro Rail Board of Directors in November 2013, considered elements critical to the establishment of transit service standards including the identification of service provision goals, service types (including minimum operating standards for each), preliminary performance measures and the process for evaluating and recommending service changes. The second phase, adopted by the RTPA and Valley Metro Board of Directors in December 2014, focused on the development of transit service performance measures, transit service thresholds, application principles and implementation standards for new service. The third phase, which is documented in this summary, focused on defining the process for the development of performance thresholds, the establishment of service design standards, and the development of a regional fleet prioritization process for existing and expansion fleet needs.

Adopted Service Provision Goals

Valley Metro adopted five service provision goals in 2013 as the first step in developing regional transit service standards and performance measures. The goals, outlined below, also
serve as a means to guide the operation and development of Valley Metro-funded and operated public transportation services.

1. Implement services identified in the RTP in consideration of a performance-based system.
2. Give high priority to services that focus on the transit-dependent population.
3. Provide transit service that is desirable as an alternate mode to automobile travel.
4. Improve Valley Metro’s overall performance and promote the long-term financial stability of the agency.
5. Promote expansion that builds existing services to meet standards and focuses new services in key areas, including the following:
   - Higher population density
   - Limited auto availability
   - Low income
   - Major activity centers

Performance Thresholds

Transit service thresholds serve as a tool for comparing and measuring the relative performance of individual services/operations by transit service type. In Phase II of Valley Metro’s TSPM efforts, a methodology was developed where routes were numerically ranked for each performance measure (by service type) and quartile breakpoints were established to identify the top 25% and bottom 25% performers. As a part of Phase III, Valley Metro conducted research to determine whether performance targets should be established to replace the performance thresholds. After a comprehensive peer city analysis and through discussions with the TSPM Technical Advisory Group (TAG), it was determined that the current performance threshold methodology was most appropriate for Valley Metro services and would therefore be retained. Figure ES-1 illustrates the quartile-based performance threshold concept that was adopted in Phase II of Valley Metro’s TSPM efforts.
Service Design Standards

Service design standards have been developed for regionally funded or operated routes to establish the maximum number and length of deviations from the primary operating corridor of a route, minimize route duplications, and provide routing parameters for revenue service end-of-line vehicle turnarounds. The proposed service standards are discussed below.

Route Deviation Standards

Route deviations typically occur between a route’s termini using one of the following methods: 1) depart from and return to the primary corridor at the same location or 2) depart from and return to the primary corridor at a different location (Figure ES-2). To maintain the integrity of the regional transit system’s grid architecture and optimize route and system-level performance, new deviations on any existing regionally funded route or any new regionally funded route (local, key local, limited stop peak, and limited stop all-day) shall be avoided; however, a route deviation may be warranted if it is no greater than 1-mile or 5-minutes one-way (2-mile or 10-minutes round trip), results in no more than a total of two deviations per route, does not require additional fleet (unless additional fleet has been prioritized for the service), and one or more of the following conditions are met:

- connects to a light rail station;
- connects to a regional transit center;
- connects to an inter-modal transportation facility (i.e. passenger airport, greyhound terminal, etc.);
- connects to another transit service at the route’s end-of-line location;
- projected performance of deviation does not negatively impact the overall performance of the route under consideration.
Additional considerations for route deviations are discussed in detail in the Valley Metro TSPM Phase III Final Report.

**Figure ES-2: Example of Typical Route Deviations**

**Route Duplication Standards**

Route duplication is defined as the operation of two or more routes or services along the same street segment or on closely parallel streets (within one-quarter mile of each other) (Figure ES-3). Regionally funded transit services shall avoid route duplication; however, under the following conditions, route duplication may be warranted:

- availability of a designated transit corridor (high occupancy vehicle [HOV] lane, bus and right-turn only [BAT] lane, transit guideway, etc.);
- access and egress to park-and-ride facilities, transit centers, rail stations, or inter-modal transportation facility;
- if duplicative routes provide enhanced frequency in a corridor or corridor segment where the performance of the individual routes can be maintained at a performing level; and
if duplicative routes have different stop spacing characteristics (for example, local bus and light rail operating within the same corridor provide access and egress at different intervals, which may be necessary to conveniently transport passengers to and from their desired origin/destination).

Figure ES-3: Route Duplication

Revenue Service End-of-Line Vehicle Turnaround Standards

Revenue-service vehicle turnarounds should avoid excessive circulation to maintain the transit system’s grid architecture and minimize operating costs. However, without a facility to accommodate turnarounds at a route’s terminus, excessive circulation may be necessary to maneuver vehicles into the proper position/location for return trips (Figure ES-4). The following considerations are applied for the design of revenue-service end-of-line vehicle turnarounds on new regionally funded transit services or existing regionally funded transit services where the end-of-line location is being modified:

- If there is a dedicated transit facility (e.g. park-and-ride or transit center) within one mile of the designated route terminus that can accommodate off-street transit vehicle circulation and has the capacity to stage the quantity of vehicles being planned for the new service or service modification, the route shall be extended to the transit facility.
- If no dedicated transit facility exists to accommodate the end-of-line layover, the following considerations should be utilized to define a route’s revenue-service end-of-line turnaround(s).
- operate on arterial and collector streets with sufficient lane width to accommodate a full-size transit bus travelling in each direction at the posted speed;
- avoid circulating through areas with potentially non-compatible land uses such as single-family residential areas;
- avoid circulating through private property unless other options are inefficient (excess circulation) or undesirable (incompatible land uses);
- avoid left turns at un-signalized intersections; and
- consider routing that provides opportunities to accommodate interlining between transit routes where possible to reduce non-revenue miles (and turnaround segments).

Figure ES-4: End-of-Line Turnaround
Regional Bus Fleet Prioritization Process

Given the finite quantity of vehicles available in the region and the length of time required to procure expansion vehicles, not all service adjustments or expansion needs submitted through the Short Range Transit Program (SRTP) may be accommodated with available fleet in a particular year. Thus, separate processes have been developed for prioritizing existing and expansion fleet should requests for vehicles exceed the quantity available. The proposed fleet prioritization process is based on the following key elements:

- The process will be administered through the SRTP for bus mode fleet needs within the short-range planning horizon (present to 5 years);
- The process only applies to fleet that is regionally funded (capital match or operating) and/or operated by Valley Metro;
- Service adjustments in the production years (1-2) of the SRTP will be ranked using the 12-level fleet prioritization process. The process is only applied if fleet requests exceed available vehicles; and
- Service adjustments in the development years (3-5) of the SRTP that require expansion fleet will be ranked using the expansion fleet prioritization process. The rankings will be submitted to the Valley Metro Board of Directors for final review and potential recommendation to MAG for consideration as part of the regional federal funds programming process.

Figure ES-5 summarizes the need and applicability of the fleet prioritization process. The process for identifying and prioritizing service adjustments and associated fleet requirements through the SRTP is depicted in Figure ES-6. For additional details on the prioritization processes described herein, refer to the Valley Metro TSPM Phase III Final Report.
Figure ES-5: Fleet Prioritization Need and Applicability

Why do we need fleet prioritization?
- Support regional partners' needs
- Support short-range transit planning process
- Defined process for allocating existing and programmed fleet for new service implementation, expansion, and deficiencies

What fleet would process be applied to?
- Regionally funded fleet (capital match or operating) and/or operated by Valley Metro
- Bus transit modes only

How would process work with existing fleet procurement processes?
- Process will integrate with existing regional fleet programming and procurement processes

Figure ES-6: SRTP Fleet Prioritization Process
Existing Fleet Prioritization Process

For service adjustments in the production years of the SRTP, a fleet prioritization process (referred to as the 12-level existing fleet prioritization process) has been developed. The 12-levels, which serve as a ranking mechanism, were developed by applying priorities to elements such as funding source, type of service adjustment and purpose of the service adjustment. If multiple service requests receive the same rank level in the same planning year, the transit propensity tool that was developed during Phase II is used as a tiebreaker. The proposed 12-level existing fleet prioritization process is summarized in Figure ES-7.

**Figure ES-7: 12-Level Existing Fleet Prioritization Process**

<table>
<thead>
<tr>
<th>Service Adjustment</th>
<th>Purpose</th>
<th>Rank Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement TLCP-programmed service as scheduled</td>
<td>Implement TLCP-programmed service</td>
<td>1</td>
</tr>
<tr>
<td>Early implementation of programmed service as scheduled in TLCP</td>
<td>Addresses performance-based fleet need (high ridership or running-time adjustment)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Will enhance regional transit connectivity (connect one or more routes)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Will reach potential ridership generator</td>
<td>4</td>
</tr>
<tr>
<td>Implement TLCP-planned service</td>
<td>Implement TLCP-planned service</td>
<td>5</td>
</tr>
<tr>
<td>Locally funded expansion of an existing route funded through the TLCP</td>
<td>Existing service with performance-based fleet need (high ridership or insufficient schedule)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Will reach potential ridership generator</td>
<td>7</td>
</tr>
<tr>
<td>Implementation of service adjustment on existing locally funded service</td>
<td>Addresses performance-based fleet need (e.g. running-time adjustment)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Will enhance regional transit connectivity (connect one or more routes)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Will reach potential ridership generator</td>
<td>10</td>
</tr>
<tr>
<td>Implementation of new locally funded service</td>
<td>Will enhance regional transit connectivity (connect one or more routes)</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Will reach potential ridership generator</td>
<td>12</td>
</tr>
</tbody>
</table>

Note: If multiple adjustment requests have same rank, the Transit Propensity Tool is applied. The service adjustment with the highest Transit Propensity Index will receive priority.

Expansion Fleet Prioritization Process

For service adjustments in the development years of the SRTP with expansion fleet requirements, a process has been developed that evaluates the service adjustments and assigns points based on their funding characteristics, compliance with established TSPM standards, and regional connectivity. The more points a service earns, the higher it is prioritized in the list of fleet requests submitted to the Board for their consideration and
possible recommendation to MAG. The proposed expansion fleet prioritization process is summarized in Figure ES-8.

**Figure ES-8. Expansion Fleet Prioritization Process**

<table>
<thead>
<tr>
<th>Category</th>
<th>Metric</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Funding Characteristics</strong></td>
<td>Is there between 2 and 3 years of funding committed for the service improvement?</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is there more than 3 years of funding committed for the service improvement?</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Is the service improvement a TLCP-planned service?</td>
<td>1</td>
</tr>
<tr>
<td><strong>TSPM Compliance</strong></td>
<td>Does the service improvement meet weekday service standards?</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Does the service improvement meet Saturday service standards?</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Does the service improvement meet Sunday service standards?</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Does the service improvement meet the current transit propensity threshold? (Note: only applicable to local/key local service improvements greater than 1 mile)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Does the service improvement remove/modify an under-performing route deviation, thereby requiring at least one less vehicle for operation?</td>
<td>1</td>
</tr>
<tr>
<td><strong>Regional Connectivity</strong></td>
<td>Does the service improvement serve multiple jurisdictions?</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Does the service improvement connect to other transit route alignments?</td>
<td>0.25 per connection (2 points maximum)</td>
</tr>
</tbody>
</table>

In the event of a tie, each service improvement is further evaluated using the metrics summarized in Figure ES-9. If the service improvements remain tied after the tie breaker assessment has been completed and the available funds for the number of vehicles required does not allow for implementation of both, Valley Metro will work with affected member cities to mutually determine if other options, such as advancing or delaying one or more of the services or adjusting the service characteristics may allow for the affected service requests to be advanced for implementation.
Conclusion

The process for developing Valley Metro’s Regional Transit Service Standards and Performance Measures was divided into multiple phases. Board approval of the elements discussed and recommended in this executive summary and the Phase III Final Report will conclude the third and final phase of the process. The transit service standards and performance measures will be reviewed every two years and updated regularly as appropriate to ensure they are consistent with Valley Metro’s evolving goals.