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Policies and Procedures

No. 42

Board Approval: 9/15/16

SUBJECT:

TRANSIT SERVICE EVALUATION AND ADJUSTMENT

PURPOSE:

To establish:

- (1) a process for evaluating and adjusting existing transit services to improve performance; and
- (2) procedures for implementing service changes.

BACKGROUND:

On June 23, 2005, the MTS Board of Directors approved the following vision for MTS services.

A Vision for MTS Services

- Develop a **Customer-Focused** System: Provide services that reflect the travel needs and priorities of our customers.
- Develop a **Competitive** System: Provide services that are competitive with other travel options by meeting market segment expectations.
- Develop an **Integrated** System: Develop transit services as part of an integrated network rather than a collection of individual routes.
- Develop a **Sustainable** System: Provide appropriate types and levels of service that are consistent with market demands and are maintainable under current financial conditions.



This policy establishes a process for evaluating existing transit services based on these vision statements. In addition, the policy outlines procedures for implementing minor and major service adjustments.

POLICY:

42.1 Categories of Transit Service

To ensure that transit services are evaluated against other similar services, routes are designated into eight service categories based on route characteristics. These categories include: Premium Express, Express, Light Rail, Urban Frequent, Urban Standard, Circulator, Rural, and Demand-Responsive, as defined below. These categories also ensure that fares are consistent with the type and characteristics of the service. Attachment A specifies the services within each category.

Fixed-Route Services

Premium Express – High-speed, point-to-point service geared towards commute markets. Service provided during weekday peak periods only and scheduled to meet primary work shift times. May use over-the-road coaches for maximum comfort and highway operations.

Express – High-speed service geared toward linking major subregional residential, employment, and activity centers. Service is generally provided throughout the weekday and possibly on weekends. Operates primarily on highways and major arterials.

Light Rail – High-frequency service (15 minutes or better during the base weekday) operating on exclusive railroad right-of-way. Serves multiple trip purposes and generally experiences high turnover along the line.

Rapid – High-frequency bus service (15 minutes or better during the base weekday) operating in a combination of HOV lanes, mixed-traffic lanes, and/or exclusive right-of-way. Serves multiple trip purposes and generally experiences high turnover along the line. Offers Traffic Signal Priority, enhanced station stops, and “Rapid” or other distinct branding. Service is subsidized by TransNet.

Urban Frequent – High-frequency service (15 minutes or better during the base weekday) primarily operated along major arterials in denser urban areas. Serves multiple trip purposes and generally experiences high turnover along the route. May be operated as regular (all stops) or limited (stopping only at major transfer points and activity centers).

Urban Standard – Basic transit service with base weekday frequencies generally between 30 and 60 minutes. Operates in less dense urban and suburban areas. Serves multiple trip purposes and provides access to all stops.

Circulator – Neighborhood feeder/distributor to transfer stations or shuttle service to local destinations. Operates on arterials and local streets to provide access to residences, businesses, activity, and transfer centers.

**Figure 1
Characteristics of Fixed-Route Services**

	Trip Distance	Speed	Stop Spacing	Streamlined Routing	Fares
	<i>Longer</i>	<i>Faster</i>	<i>Greater</i>	<i>More</i>	<i>Higher</i>
Premium Express Express Light Rail Rapid Bus Urban Frequent Urban Standard Circulator	↑ ↓	↑ ↓	↑ ↓	↑ ↓	↑ ↓
	<i>Shorter</i>	<i>Slower</i>	<i>Lesser</i>	<i>Less</i>	<i>Lower</i>

Specialized Services

Rural – Lifeline service that provides a link between rural communities and the San Diego urban core. Very limited service levels; generally a few round-trips operating a few days per week given limited demand.

Demand-Responsive - Paratransit services that complement fixed-route services in accordance with the Americans with Disabilities Act (ADA), as well as services that provide transit access to areas difficult to serve by conventional fixed-routes (e.g., due to terrain, discontinuous street patterns, and extremely low densities).

42.2 Performance Indicators

The following performance indicators, summarized in Figure 2, ensure that the service evaluation is consistent with the vision statements established for MTS services.

**Figure 2
Transit Service Performance Indicators**

CUSTOMER FOCUSED / COMPETITIVE					INTEGRATED			SUSTAINABLE											
PRODUCTIVITY			QUALITY		CONNECTIVITY			RESOURCES		EFFICIENCY									
Total Passengers	Average Weekday Passengers	Passengers/Revenue Hour	Passengers/In Service Hour	Passenger Load Factor	On-Time Performance	Mean Distance between Failures	Accidents/100,000 Miles	Comments/100,000 Passengers	Route Headway	Span of Service Consistency	Service Availability	In-Service Miles	In-Service Hours	Peak Vehicle Requirement	In-Service Speeds	In-Service/Total Miles	In-Service/Total Hours	Farebox Recovery Ratio	Subsidy/Passenger

Bold – Key indicators used for ranking route performance.

Total Passengers – Total number of unlinked boardings.

Average Weekday Passengers – Average of weekday unlinked boardings excluding abnormal weekday boardings due to unusual circumstances, such as inclement weather, special events, and other unusual impacts to daily ridership levels.

Passengers per Revenue Hour – Total number of unlinked boardings divided by the sum of in-service and layover (including recovery) hours. Does not include pull and deadhead hours. Consistent with National Transit Database (NTD) definitions, this indicator is generally used to compare the productivity of MTS services with other agencies.

Passengers per In Service Hour – Total number of unlinked boardings divided by in-service hours. Does not include layover, recovery, pull, and deadhead hours. This indicator is a more accurate measure of service performance because it only includes scheduled hours available for loading, unloading, and transporting passengers.

Passenger Load Factor – Percent of trips exceeding the passenger load target.

On-Time Performance – Percent of service that is within zero minutes zero seconds (00m:00s) early and four minutes fifty nine seconds (04m:59s) late.

Mean Distance between Failures – Average distance (measured in total miles) between major mechanical failures.

Accidents per 100,000 Miles – Average number of collision accidents (preventable and nonpreventable) for every 100,000 miles operated (measured in total miles).

Comments per 100,000 Passengers – Average number of passenger comments for every 100,000 unlinked boardings.

Route Headway – Base weekday frequency of route.

Span of Service Consistency – Indication of consistency in service span for route groups that experience high levels of transfers between the services.

Service Availability – A general measure of the geographic distribution of service within the MTS service area.

In Service Miles – Scheduled miles of service available for loading, unloading, and transporting passengers (measured as scheduled miles between departure from the first stop and arrival to the last stop of a trip).

In-Service Hours – Scheduled hours of service available for loading, unloading, and transporting passengers (measured as scheduled hours between departure from the first stop and arrival to the last stop of a trip).

Peak Vehicle Requirement – Maximum number of vehicles available to provide scheduled service during the heaviest service period of the week.

In-Service Speed – Average scheduled speed of transit service between departure from the first stop and arrival to the last stop of a trip.

In-Service Miles/Total Miles – Percent of total miles operated that are attributed to service available for loading, unloading, and transporting passengers.

In-Service Hours/Total Hours – Percent of total hours operated that are attributed to service available for loading, unloading, and transporting passengers.

Farebox Recovery Ratio – Percent of total operating cost recovered through fare revenue.

Subsidy/Passenger – The amount of public subsidy required to provide service for each unlinked boarding (measured as total operating cost minus fare revenue divided by total passengers).

42.3 Performance Targets

Performance targets represent aggressive yet realistic service expectations based on service design, route characteristics, and operating environments. In addition to setting service expectations, targets are also used to flag and evaluate negative impacts that may occur when balancing an improvement in one aspect of performance at the expense of another aspect. Therefore, using targets ensures that service is designed to achieve the overall goals of the system through a balanced approach.

To ensure that targets are stable, yet reflect changes to market and operating conditions, they will be reviewed and adjusted, if needed, on a three-year basis. In addition to evaluating performance indicators against their targets, tracking the performance trend of each indicator will help ensure that no aspect of performance is unduly impacted over time as a result of overemphasizing other performance priorities. Attachment B presents the performance targets for each indicator.

42.4 Performance-Monitoring Process

Annual Service Evaluation - The MTS operating budget is adopted annually by the Board of Directors prior to the start of the fiscal year (July 1). This budget is developed around initial assumptions of service levels to be provided in the upcoming year, including anticipated service changes as well as expected performance in achieving the vision for MTS services.

The annual service evaluation will be conducted at the conclusion of each fiscal year to compare actual performance of the system with the targets outlined in Attachment B and to identify opportunities for adjustments and improvements based on this analysis.

Key indicators for flagging low-performing routes are passengers per revenue hour and subsidy per passenger. Routes on the bottom quartile of each route group for both of these indicators will be identified for further analysis on a segment basis (temporal and geographic) as well as closer look at other aspects of the route's performance.

Service Change Evaluation – The triannual service evaluation will be conducted at the conclusion of each regularly scheduled service change period. This evaluation will present initial results of service changes and provide an early indication of significant trends. The analysis also provides a basis for tracking the progress of performance throughout the year.

Attachment B identifies the key performance indicators that will be used for analysis during the triannual and annual service evaluations.

42.5 Service Changes

Changes to MTS bus and trolley services are implemented three times a year in the fall, winter, and summer. These regularly scheduled service changes provide an opportunity to: (1) improve the routing, operation, and schedules of the transit system consistent with service evaluation and customer comments, (2) implement changes as a result of service plans, including the implementation of new services, (3) optimize service according to the MTS service vision, and (4) adjust service levels according to budget constraints. Service changes can be classified into minor and major changes.

42.5a Minor Service Changes. Minor service changes generally include schedule adjustments for routes that are chronically late or to improve scheduling efficiencies or trip-level adjustments to address overcrowding and productivity improvements. Minor service changes can also include slight routing adjustments to serve a new trip generator, eliminate unproductive segments, or to streamline and optimize service.

Since minor service changes address service maintenance issues, it is important that they are implemented expeditiously. To streamline the process, these changes should not result in a significant impact to ridership. To ensure that impacts are minimized, minor service changes will not represent more than a 25 percent change in a route's weekly in-service miles or hours. Therefore, no action will be required of the MTS Board for approval and implementation of these changes, unless a Title VI report requires Board action as specified in Section 42.6.

42.5b Major Service Changes. Major service changes represent a change that is greater than 25 percent of a route's weekly in-service miles or hours. These changes are generally a result of in-depth research and analyses to address a significant change in a route's demand, operating environment, or performance. Changes may include significant route realignment, changes in scheduled headways, or subarea restructuring.

Although these changes are strategically designed to maximize public benefit and minimize negative impacts, they often result in tradeoffs or reduction in benefits for some riders. Due to the significance and potential negative impacts, approval of these changes is contingent on a properly noticed public hearing.

42.5c New Service Implementation. All new services will be implemented on a trial basis for one year. New service can include new routes, increased frequency during a significant part of the service day, new days of operation, or a significant route extension. These services should perform to equal or better than the system average for passenger per revenue hour and subsidy per passenger within the first year of operation. For a new service to be continued beyond 12 months, a Title VI analysis must be completed and presented to the MTS Board of Directors, which must take action to approve the new service as regular service.

42.6 Title VI

MTS is committed to ensuring that no person is excluded from participation in, or denied the benefits of its services on the basis of race, color, or national origin as protected by Title VI of the Civil Rights Act of 1964, as amended. This includes the planning and scheduling of routes and services.

42.6a Analysis: Except as provided in Section 42.5c, any of the following changes would require that a Title VI analysis be presented to the MTS Board of Directors before a final implementation decision is made:

- A change that is greater than 25 percent of a route's weekly in-service miles or hours.
- An increase or reduction in the average weekly span-of service of more than 25 percent.
- The implementation of a new route or the discontinuation of an existing route.
- A routing change that affects more than 25% of a route's Directional Route Miles and more than 25% of the route's bus stops.

42.6b Disparate Impacts and Disproportionate Burdens: MTS' Title VI analysis for a Major Service Change will include a determination of whether or not disparate impacts to minority populations or disproportionate burdens to low-income populations would result from the change.

- A disparate impact is found when there is a difference in adverse effects between minority and non-minority populations such that: the adversely affected population is 10 percent or greater minority by percentage of total population than the total MTS service area average; or, the benefitting population is 10 percent or more non-minority (by percentage of total MTS service area population) than the total MTS service area average. *For example, if the total MTS service area average is 55% minority, then a proposed service change that adversely affects a population that is 65% minority or greater would be defined as a disparate impact.* If MTS chooses to implement a proposed major service change despite a finding of a disparate impact, MTS may only do so if there is a substantial justification for the change, and there are no alternatives that would have a less disparate impact and still accomplish the goals of the change.
- A disproportionate burden is found when there is a difference in adverse effects between low-income and non-low-income populations such that: the adversely affected population is 10 percent or more "low-income" (by percentage of total MTS service area population) than the total MTS service area average; or, the benefitting population is 10 percent or greater "non-low-income" by percentage of total population than the total MTS service area average. *For example, if the total MTS service area average is 20% "low-income," then a proposed service*

change that benefits a population that is 90% or greater “non-low-income” would be defined as a disproportionate burden. If MTS chooses to implement a proposed change despite a finding of disproportionate burden, MTS may only do so if steps are taken to avoid or minimize impacts where practicable, and MTS provides a description of alternatives available to affected low-income populations.

42.6c Complaints: Persons alleging violations of Title VI by MTS would follow the procedures outlined in MTS Policy No. 48.

- Attachments: A. Service Categories
B. FY 2016 – FY 2020 Performance Targets

Original Policy Accepted on 4/8/93.
Policy Revised on 12/8/94.
Policy Repealed and Readopted on 1/13/00.
Policy Revised on 10/26/00.
Policy Revised on 12/14/00.
Policy Revised on 4/25/02.
Policy Revised on 4/29/04.
Policy Revised on 6/14/07.
Policy Revised on 9/20/12.
Policy Revised on 6/20/13.
Policy Revised on 9/15/16.

**Attachment A
Service Categories/Modes & Service Standards**

Category/Mode	Routes (subject to change)	On-Time Performance Standard	Headway Standard (base wkdy)	Vehicle Load Factor (Standard = No more than 20% of trips exceed factor)
Premium Express – High-speed, point-to-point service geared toward commute markets. Service provided during weekday peak periods only and scheduled to meet primary work shift times. May use over-the-road coaches for maximum comfort and highway operations.	280, 290	90%	30 min.	1.0
Express – High-speed service geared toward linking major subregional residential, employment, and activity centers. Service is generally provided throughout the weekday and possibly on weekends. Operates primarily on highways and major arterials.	20, 50, 60, 110, 150, , 870, 950	90%	30 min.	1.5*
Light Rail – High-frequency service operating on exclusive railroad right-of-way. Serves multiple-trip purposes and generally experiences high turnover along the line.	Blue Line, Orange Line, Green Line, Silver Line	90%	15 min.	3.0
Rapid – High-frequency service primarily operated along major arterials in denser urban areas. Serves multiple-trip purposes and generally experiences high turnover along the route. May be operated as regular (all stops) or limited (stopping only at major transfer points and activity centers).	201/202, 204, 215, 235, 237, 225 (future South Bay Rapid 225)	85%	15 min.	1.5*
Urban Frequent – High-frequency service primarily operated along major arterials in denser urban areas. Serves multiple-trip purposes and generally experiences high turnover along the route. May be operated as regular (all stops) or limited (stopping only at major transfer points and activity centers).	1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 13, 30, 41, 44, 120, 701, 709, 712, 901, 906/907, 929, 932, 933/934, 955, 961, 992	85%	15 min.	1.5*
Urban Standard – Basic transit	4, 27, 28, 31, 35,	90%	30 min.	1.5*

service along major arterials throughout the MTS service area. Operates in less dense urban and suburban areas. Serves multiple-trip purposes and provides access to all stops.	105, 115, 703, 704, 705, 707, 815, 816, 832, 833, 834, 848, 854, 855, 856, 864, 871/872, 874/875, 904, 905, 916/917, 921, 923, 928, 936, 944, 945, 962, 963, 967, 968			
Circulator – Neighborhood feeder/distributor to transfer stations or shuttle service to local destinations. Operates on arterials and local streets to provide access to residences, businesses, activity, and transfer centers.	14, 18, 25, 83, 84, 88, 851, 964, 965, 972, 973, 978, 979	90%	60 min.	1.5*
Rural – Lifeline service that provides a link between rural communities and the San Diego urban core. Very limited service levels; generally a few round-trips operating a few days per week given limited demand.	888, 891, 892, 894	No specific goal	No specific goal	No specific goal
Demand-Responsive - Paratransit services that complement fixed-route services in accordance with the Americans with Disabilities Act (ADA) as well as services that provide transit access to areas difficult to serve by conventional fixed-routes (e.g., due to terrain, discontinuous street patterns, and extremely low densities).	MTS Access (ADA Paratransit)	No specific goal	n/a	No specific goal

*Load standard is 1.0 for routes operated with a minibus

**Attachment B
FY 2016 – FY 2020 Performance Targets**

		Performance Indicator	Level of Analysis	Freq	Target
CUSTOMER FOCUSED/COMPETITIVE	PRODUCTIVITY	Total Passengers	Sys , Cat, Rt	A,Q	<ul style="list-style-type: none"> Year-over-year improvement by route, category, and system
		Average Weekday Passengers	Sys , Cat, Rt	A, Q	<ul style="list-style-type: none"> Year-over-year improvement by route, category, and system
		Passengers/Revenue Hour	Sys, Cat , Rt	A, Q	<ul style="list-style-type: none"> Improve route category average
		Passengers/In-Service Hour	Sys, Cat , Rt	A, Q	<ul style="list-style-type: none"> Improve route category average
	QUALITY	Passenger Load Factor	Rt	A	<ul style="list-style-type: none"> No more than 20% of trips exceed vehicle load factor
		On-Time Performance	Sys, Cat , Rt	A, Q	<ul style="list-style-type: none"> 85% for Urban Frequent and Rapid, and 90% for all other route categories
		Mean Distance between Failures	Op	A	<ul style="list-style-type: none"> Improve operator average
		Accidents/100,000 Miles	Op	A	<ul style="list-style-type: none"> Improve operator average
		Comments/100,000 Passengers	Op	A	<ul style="list-style-type: none"> Improve operator average
	INTEGRATED	CONNECTIVITY	Route Headway	Rt	A, Q
Span of Service Consistency			Sys	Q+	<ul style="list-style-type: none"> Improve for routes that share common transfers
Service Availability			Sys	Q+	<ul style="list-style-type: none"> 80% of residents or jobs within ½ mile of a bus stop or rail station in urban areas. 100% of suburban residences within 5 miles of a bus stop or rail station. One return trip at least 2 days/week to destinations from rural villages
SUSTAINABLE	RESOURCES	In-Service Miles	Op	Q, A	<ul style="list-style-type: none"> Not to exceed budget
		In-Service Hours	Op	Q, A	<ul style="list-style-type: none"> Not to exceed budget
		Peak Vehicle Requirement	Op	Q, A	<ul style="list-style-type: none"> Not to exceed budget
	EFFICIENCY	In-Service Speeds	Op	Q, A	<ul style="list-style-type: none"> Improve operator average
		In-Service/Total Miles	Op	Q, A	<ul style="list-style-type: none"> Improve operator average
		In-Service/Total Hours	Op	Q, A	<ul style="list-style-type: none"> Improve operator average
		Farebox Recovery Ratio	Sys, Cat , Rt	A	<ul style="list-style-type: none"> TDA requirement of 31.9 percent system wide for fixed-route (excluding regional routes that have a 20 percent requirement)
		Subsidy/Passenger	Sys, Cat , Rt	A	<ul style="list-style-type: none"> Improve route category average

Level of Analysis: Sys=System, Op=Operator, Cat=Route Category Rt=Route; Frequency: A=Annually, Q=Quarterly/Triannually
+ Staff analysis/Not included in Board report. **BOLD** indicates analysis level for the target.