SEPTA Service Standards and Process

Southeastern Pennsylvania
Transportation Authority

Service Planning Department

SEPTA

Revised 2019

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Executive Summary

This update to SEPTA's Service Standards and Process, originally adopted in 1995, makes significant changes to the policies and practices that have guided the Service Planning Department for over two decades. This document is the result of an intensive peer-review process of nearly a dozen transit agencies in North America and a department-wide desire to make transparent, data-driven decisions that engage our partner agencies, and the general public in a meaningful dialogue about SEPTA services and how they can operate at their best.

The document is divided into three sections. **Network, Route, and Stop Design Standards** includes a route classification system, which groups SEPTA's Surface Transportation services together in logical categories so routes can be compared against those with similar operating characteristics. This chapter also introduces network design standards, which deal with matters such as route duplication, deviations, and patterns. Bus stop standards have been updated to reflect a context-sensitive approach to spacing, and introduces a stop rebalancing process that will allow staff to evaluate and make recommendations in regards to eliminating, relocating, or improving stops.

The **Quality of Service Standards** section establishes metrics and parameters for service delivery, including SEPTA's standards for coverage and access, span of service, frequency, on-time performance, and loading standards.

The Service Development Process outlines how SEPTA's Service Planning Department and Regional Rail Planning Department evaluate and implement service changes, including information about the data inputs critical to the department, stakeholder and public outreach, and the methods and types of analysis used to make service-related decisions. The Regional Rail Standards and station economic performance process have been reviewed and modified.

The overarching goals of this update, and of the Service Planning Department going forward are:

- To ensure a transparent and accountable process to customers, stakeholders and funding partners;
- To actively engage customers and stakeholders in the planning process in a way that is welcoming and easy to understand;
- To develop a data-driven and performance-based planning process that ties route performance to service development; and
- To ensure that service changes are consistent with industry-recognized network design standards.

Introduction

Service standards are the criteria used to develop, monitor, and adjust transit service to ensure consistency with the agency's overarching goals. Service development is the process through which service changes are identified, communicated, and implemented. This document acts as a guidebook for SEPTA by publically outlining how the agency develops routing, scheduling, and network changes. The document also establishes a framework for evaluating fixed-route transit based on productivity and cost effectiveness to ensure the agency is providing service in a manner that is responsible to both customers and taxpayers. It also establishes an expectation for the customer experience and maps out how the agency engages with stakeholders and the community when making changes to service.

History of Service Standards at SEPTA

While SEPTA has long had informal service standards for both Surface Transportation and Regional Rail, the authority formalized its City Transit standards in 1995, working cooperatively with the City of Philadelphia. A Service Standards Committee was tasked with developing criteria and an evaluation process for City Transit Division routes. The Committee consisted of two SEPTA representatives, one each from the Mayor's Office and City Council, and one independent industry representative from the Toronto Transit Commission (TTC). The TTC was chosen because they had successfully adopted service standards and an evaluation process.

The committee conducted a comparative review of processes and metrics from peer agencies. It ultimately decided to use operating ratio as the single performance evaluation metric for all city bus routes. Both SEPTA and the City were familiar with operating ratio as it was a performance measure required by the Commonwealth of Pennsylvania.

SEPTA's Board approved and formally adopted the proposed service standards in 1996. The first Annual Service Plan was conducted that same year. The Annual Service Planning process mirrored the service planning review used at the TTC at the time. The Annual Service Plan was generally lauded for its proactive public engagement in soliciting projects and for the accountability and transparency provided through the evaluation process. In retrospect, the development of the service standards and the planning process was similarly inclusive from the onset.

In 2000, SEPTA convened a similar committee with suburban stakeholders and used the same process to adopt service standards for Regional Rail and Suburban Surface Transportation. Subsequently, service standards were adjusted to comply with the requirements of FTA's Title VI Program to reflect route performance guidelines, and loading standards were adjusted to reflect fleet changes. In all instances, the proposed changes were reviewed publically through the Annual Service Plan process and were adopted by the SEPTA Board. This document serves as an update to the 2016 version of SEPTA's Service Standards and Process.

Benefits of Service Standards

In place for over twenty years, SEPTA's Service Standards and Annual Service Plan have helped the agency to stay accountable to customers and taxpayers. SEPTA has and continues to experience the following benefits from having service standards:

- Justification of expenditures that will benefit customers and the ability to decline costly or unreasonable requests;
- Justification of operational changes on a short-term basis or between schedule periods, such as adding a trip to an overcrowded route, schedule changes, or accommodating a bus stop request;
- Demonstration of success, justification of new funding sources and support of partnerships with coordinating agencies; and
- Expectation for how SEPTA coordinates with stakeholders and the public, in particular by defining how customers can participate in the service development process.

Service Standards Goals

Service standards are the measures through which the agency balances what can be provided from an operational perspective and what riders can and should expect from a customer perspective. The goals of SEPTA's Service Standards act as guiding principles for this document and for how SEPTA communicates with stakeholders and the general public as part of the service development process. The goals described here reflect many of SEPTA's overarching goals established in the agency's *Strategic Business Plan*. They are as follows:

- Ensure a **transparent** and **accountable** process to our customers, stakeholders, and funding partners;
- **Actively engage** our customers and stakeholders in the planning process in a way that is welcoming and easy to understand;
- Develop a **data-driven** and **performance-based** planning process that ties route performance to service development; and
- Ensure that service changes are consistent with industry-recognized **network design** standards.

Performance Evaluation

In addition to updating the service standards and metrics used by SEPTA Service Planning, this update introduces network design standards that will govern the planning and management of the SEPTA bus network.

There are several benefits to adopting network design standards.

- For *existing routes*, network design standards will allow staff to implement a classification system so routes with similar characteristics can be compared to each other, rather than viewing all routes through the same lens. This will help identify when a bus route is underperforming compared to similar routes, and determine when some type of intervention may be needed.

- For *evaluating new routes and potential route changes*, adopting network design standards will enable Service Planning staff the ability to evaluate service proposals through a series of industry-accepted analyses to ensure that they fit into the overall goals and structure of SEPTA's bus network. The design standards will provide a way to filter out suggested service changes that have the most potential for further analysis and possible implementation.

Route Classification

SEPTA Surface Transportation is divided into three operating divisions; City Transit, Suburban Transit, and Contract Operations. These three operating divisions are further broken down into route classifications as different routes serve different purposes, and should be judged by different standards. Route classifications are mutually exclusive of operating divisions as route performance varies between city and suburban land use and demographics. For example, a short route that customers use to transfer to either the Broad Street Line (BSL) or Market Frankford Line (MFL) would be expected to have a different set of performance characteristics than a long route that uses I-76 to get into Center City, or a 200-Series route scheduled to meet Regional Rail riders for reverse commute service.

Each SEPTA surface route will be placed into one of several categories, defined by the route's operating context:

City Routes

Routes operating primarily on local city streets, serving a variety of different functions from local trips, to connections to high speed services.

City/Suburban Arterial Routes

Routes that travel (for the most part) on heavily-trafficked, multi-lane arterials in either the city or suburbs. These routes typically have multiple destinations and a strong reverse-commute constituency, usually terminating at a major transportation center.

Expressway Routes

Routes that travel on an interstate, such as I-76, I-476, or I-95 for portions of their routing.

Suburban Routes

Suburban routes operating in lower-density areas providing access to specific destinations such as malls, shopping centers, office parks, and industrial parks.

Fixed and High Speed Routes

SEPTA Trolley and Trackless Trolley Routes, as well as the Norristown High Speed Line.

Special Purpose Routes

Routes administered by SEPTA but operated by outside vendors or routes specifically defined to provide last mile connections from Regional Rail stations and limited service routes that are designed to meet specific markets.

Table 1 lists all current SEPTA routes by their classification category:

Table 1 | SEPTA Route Categories

| City			Suburban	Arterial	Expressway	Fixed	Special Purpose
2	33	68	90	1	9	10	35
3	37	70	92	14	27	11	62
4	38	73	93	22	44	13	78
5	39	79	94	55	123	15	80
6	40	84	95	104	124	34	91
7	42	88	96	105	125	36	133
8	43	89	97	109		59	150
12	45	108	98	110		66	201
16	46	G	99	111		75	204
17	47	H	103	112		101	205
18	48	J	106	113		102	206
19	50	K	107	114		NHSL	310
20	52	L	115	117			311
21	53	R	118	120			47M
23	54	XH	119	Boulevard Direct			LUCY
24	56		126				
25	57		127				
26	58		128				
28	60		129				
29	61		130				
30	64		131				
31	65		132				
32	67		139				

In addition to the route classification for surface lines, SEPTA classifies routes by weekday frequency, as a public communication tool. Surface lines are classified as either 15-minute routes (operate every 15 minutes or less), 30-minute routes (operate every 30 minutes or less), or 60-minute routes (operate every 60 minutes or less). This classification system is referred to as 15-15-5 to highlight the class of routes that operate every 15 minutes, 15 hours per day (6am to 9pm), 5 days per week. Currently, routes that are classified by frequency, correspond to patterns and not necessarily the entire the route. Therefore, this classification is not taken into account in the analysis of route performance.

Route Performance

On an annual basis, a report will be issued evaluating routes in each of the above categories based on productivity of the route (measured in passengers per revenue hour), and cost effectiveness (measured by cost per passenger). A scatterplot chart will be created plotting these two factors against each other. Figure 1 displays an example of such a scatterplot.

Routes that fall in the bottom **15th percentile** for both productivity and cost effectiveness for that category will be identified as candidates for possible evaluation and intervention. In addition, strong-performing routes will be monitored to determine if there are ways to further improve service and increase operating efficiency. It should be noted that this input is just one way SEPTA Service Planning will identify routes that may be evaluated, and that just because a route is underperforming does not mean change is imminent or warranted. Charts depicting how the routes in each category compare with each other will be on display at Service Planning Open Houses.

Figure 1 | Scatter Plot Example
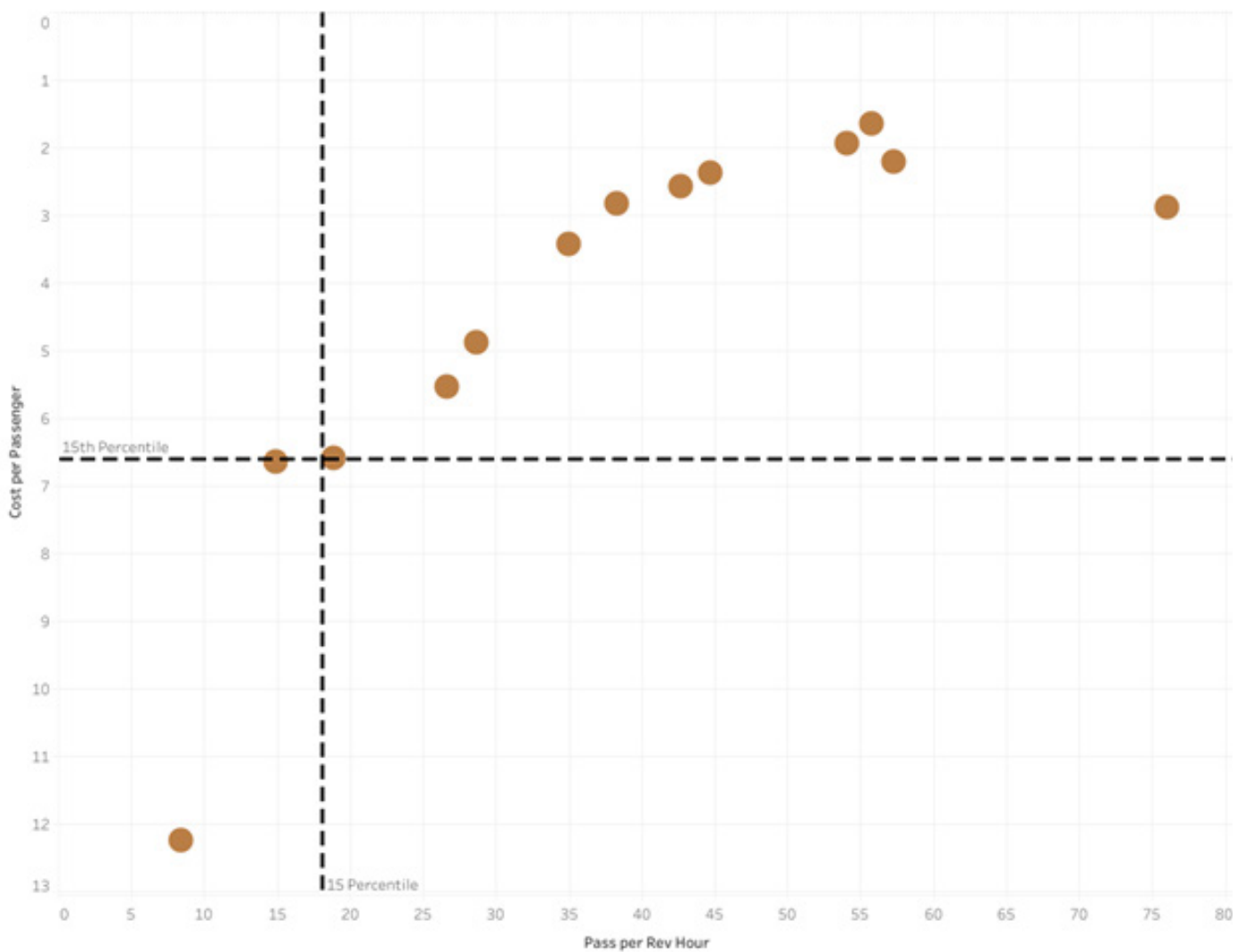
Station Economic Performance

Surface Transportation

Prior to Fiscal Year 2016, no standards existed for City and Suburban Transit high speed or trolley lines to measure the economic performance of a station or trolley stop. Applying the Regional Rail boarding standards cannot present a fair comparison, as the scheduled service for Regional Rail does not equate well with the service offered on these other, more frequent modes. A fair methodology to determine a high speed line and trolley station's economic ranking is to calculate station use based on total weekday ridership and scheduled trips. The formula is noted below:

$$\text{Economic Ranking} = (\text{Boards} + \text{Alights}) / \text{Scheduled Trips}$$

Using the rationalization that one person per scheduled trip would be the baseline standard for a high-speed station, a trolley stop on private right of way or at a street intersection, any value meeting or exceeding 1.00 would be considered acceptable. Stations with values ranging between 0.50 and 0.99 should be examined to determine if any potential opportunities exist to improve the score through service adjustments, or through working with external stakeholders regarding future land use development that could spur increased transit usage. Values under 0.50 would be considered a weak station. Similar to the Regional Rail Station Service Standard, any station under 0.50 will be targeted for evaluation as part of a future Annual Service Plan.

The outcome of an evaluation will include recommendations for service adjustments or targeted marketing to address station performance prior to proposing the discontinuance of any station. A performance ranking of High Speed and Trolley line stations and car stops will be documented as part of each Annual Service Plan. A proposal to discontinue any station will follow the applicable internal and regulatory processes.

Regional Rail

The minimum economic performance standard for a station is 75 daily boarding or alighting passengers. A station failing to meet this minimum standard will be targeted for evaluation as part of a future Annual Service Plan. The evaluation will consider the station(s) which have not met the minimum economic performance standard in context of the station's line, adjacent stations, available amenities including parking, nearby Regional Rail lines, other local SEPTA transit options, physical infrastructure constraints or opportunities for service, driving and non-driving access to the station and nearby stations, trip-time impacts to the overall line, and planned or recent investments and the costs associated with those investments. The evaluation will consider alternatives that will balance the needs of the Authority in economic costs, local impacts, impacts to the line, and the potential of the station(s) in the future.

The outcome of the evalutation may include recommendations for consolidation, service adjustments, subsidies, changes to connecting transit, station upgrades, and/or targeted marketing. The recommendation of an evaluation may relate directly to the station(s) failing to meet the minimum economic standard or maybe for other stations on the same line, or nearby

Regional Rail lines, or nearby SEPTA alternatives options. A proposal to discontinue any station will follow the applicable internal and legal processes.

There are several situations that merit special consideration which will be incorporated into any evaluation for an Annual Service Plan. In the following situations the Authority may determine through an evaluation process that an exception may be granted for any particular station which fails to meet the minimum economic standards:

- Adjacent Stations: Where adjacent stations fall below Standard, the stations will be considered jointly in an evaluation as part of a future Annual Service Plan. The evaluation will consider the impacts of changes to both stations together.

- External Funding: If an outside source of funding can be secured to offset the costs of operating a station, the station may be exempted from the Standard as long as the outside funding source covers a reasonable (minimum 50 percent) portion of the cost necessary to operate the facility.

- Capital Improvements: Stations may be exempted from the Standard if significant capital improvements have been made to the station or parking facilities.

- Station Spacing: Stations may be exempted from the Standard if their discontinuance would result in an unreasonable distance between remaining stations. This distance will be determined on a case by case basis taking into account area land use, geographic barriers like waterways, and accessibility of the station and adjacent stations by various modes.

- Alternative Transit for predominantly non-parking accessed stations: Stations that have a predominance of non-parking riders as demonstrated by a station access study and lack another transit alternative may be excepted unless a reasonable transit alternative is provided.

- Operational Efficiency: The physical constraints of the railroad infrastructure, such as switches and single track sections, place certain limitations on the operation of the railroad, which will be taken into account during a station evaluation.

- Potential Station Area Development Opportunities: If the station area holds the realistic potential for dense residential or employment infill development or for large transit oriented development (TOD) the station may be exempt from the standard if there is reason to believe that the station area has the potential to generate significant ridership in the future.

Transfers

Surface Transportation

Connections from bus to bus or bus-to-high speed are necessary in an efficient transit network, and while transferring between vehicles can be an inconvenience, it is the most effective way to move through the system. Much of SEPTA's City Transit services operate in a grid system of "crosstown" bus and trackless trolley routes which connect to the MFL and BSL. In this manner, most customers are provided with a faster ride to their final destination by connecting to the rail lines. SEPTA City Transit also has several Transportation Centers at the outermost rail stations where connections can be easily made between routes and modes.

Many suburban services are oriented to making connections at Transportation Centers or other

major activity centers such as regional shopping malls. This enables connectivity between routes and increases the coverage area available to customers seeking to make trips for various reasons. Whenever evaluating services where transfers become necessary, first consideration should be given to facilitate those transfers either on SEPTA-owned property or property in the public right-of-way. This should be addressed on a case-by-case basis, evaluating all relevant factors. If transfers are best suited on private property, SEPTA should obtain a legal agreement with the property owner.

When evaluating new service proposals, an analysis will be done to determine the impact that the proposal has on overall access to SEPTA customers. A considerable number of proposals recommend replacing a trip that can currently be made using a connection with a similar trip using a one-seat ride. For such a proposal to be considered for further investigation, it must increase the range of overall access to SEPTA customers. If it does not positively impact access, it will not be prioritized for further analysis.

During periods of wide headways, surface vehicle schedules on major routes are coordinated with High Speed Lines at major stations, terminals, and transportation centers. Surface operators are instructed to await passengers from High Speed vehicles at stations where "blue lights" or other forms of notification indicate train arrivals. Timed surface-to-surface transfers are scheduled on major routes during off-peak periods as determined by established travel patterns.

Surface transportation and Regional Rail schedules are coordinated at several locations with an ongoing effort underway to identify additional opportunities for coordination.

Regional Rail

Due to the unique nature of scheduling trains through the Center City Commuter Tunnel, the operational challenges posed by through-running, scheduling single-track portions of track, and accounting for the need to schedule around Amtrak trains on the Northeast Corridor (Chestnut Hill West, Trenton, and Wilmington/Newark Lines) and the Harrisburg Line (Cynwyd and Paoli/Thorndale Lines), it is operationally not possible to create dedicated transfers between Regional Rail lines at key junction points. Occasions may arise when unintentional connections are made with Regional Rail lines.

SEPTA collaborates with New Jersey Transit (NJT) to coordinate schedules between the Trenton Line and Northeast Corridor Line at Trenton Transit Center where possible.

Coincidental connections are made with intersecting City Transit, Suburban Transit and Contract Operations routes. Dedicated connections are made only with "200 Series" bus routes. If and where connections with City Transit, Suburban Transit, and Contract Operations are desirable these connections should be considered a matter of transit headways, frequency, and/or timing rather than Railroad schedule timed connections.

Network, Route, and Stop Design Standards

Bus Route Design Standards

Route Spacing/Duplicative Services

All Routes should have a defined corridor in which they operate, and be spaced to minimize duplication. When evaluating a new route or potential routing change, the following guidelines will be used:

- Proposals within ¼ mile of an existing route will be considered duplicative of existing service.
- Proposals between ¼ and ½ mile of existing service will be evaluated to determine if the proposed service change positively increases overall access to SEPTA customers. If access to jobs and other attractions is increased, the proposal may be further analyzed for implementation.
- Proposals greater than ½ mile from existing service – A detailed analysis of the potential market area; including demographics and employment center, may be conducted.

There are situations, however, where some duplication is unavoidable. Such examples are:

- The routes that travel over Market Street or the Chestnut/Walnut Street pair, because of the demand to get to/from Center City from various points outside of Center City;
- The routes that use certain streets (such as Bridge Street approaching Frankford Transportation Center), where options to access that facility are limited;
- Bus routes paralleling SEPTA Regional Rail lines. Due to fare issues and the different markets the services serve, these routes are not considered duplicative; and
- Routes that parallel high speed services where there is a lack of accessible stations.

Route Directness

Whenever possible, routes will take the straightest and most direct approach, avoiding complicated turns and deviations. When evaluating proposed routings, a field analysis will be done in conjunction with SEPTA Surface Transportation to ensure that SEPTA vehicles can safely make the proposed turning movements.

When evaluating proposed mid- route deviations, an analysis will be done to determine the deviation's impact on existing riders by estimating how much excess time it will cost them versus how many new potential riders the deviation could generate. Ridership is estimated based on developments on routes with similar levels of service; employer-based surveys and/or projections; and industry-supported elasticities.

The following equation will be used to evaluate the impact of a specific deviation and determine whether a proposed service deviation is reasonable.[1] **The additional travel time for all through passengers should not exceed 8 passenger-minutes per each rider boarding or alighting along the proposed deviation.**

Riders traveling through x Minutes of deviation New boards and alights along deviation	$\leq$	8 passenger minutes

As an example:

A routing change is being considered that would deviate a route from its primary street into a new shopping center. APC data indicates that the number of customers riding through the deviation over the course of a given weekday is 500. The proposed deviation is estimated to take three minutes. It is estimated that the new shopping center would generate 125 new riders per weekday.

500 Riders traveling through x 3 Minutes of deviation 125 new boards/alights along deviation	=	12 passenger minutes

Absent other variables or conditions, the proposed route change exceeds the acceptable number of passenger minutes and would not be recommended for implementation.

Promotional/Special Service

If, for any reason, SEPTA does implement a route change that does not meet the above standard, that change will be considered a "special service," and SEPTA may choose, as per existing regulations,[2] to seek reimbursement for part of or all of the costs incurred by the proposed deviation.

Additionally, all route proposals that require SEPTA to extend the span of service to accommodate a single employer or trip generator are subject to the special service provision to seek reimbursement for cost incurred. All special services are available to all SEPTA customers.

Route Patterns

At times it is necessary for a route to have different patterns to serve distinct markets. Generally, patterns come in three different forms:

- Mid-route patterns, where a route deviates from its trunk in the middle before returning to it after serving a specific location or set of destinations
- Short-turn patterns, where routes end and recover at a point earlier than its usual end-of-line location
- Patterns or trips for load management

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1 A similar method of evaluating route deviations is used by King County Metro in Seattle and by the Regional Transportation District in Denver.
2 As documented in Article 3.02 of the Set of Regulations that Southeastern Pennsylvania Transportation Authority must follow in connection with tariffs, Emergency Services, Special Services, Promotions, and Public Hearings.

Mid-route patterns will be evaluated as deviations (see Page 15), by determining how the proposed deviation (in this case, a pattern) impacts through-riding customers. If the time-impacts on through-riding customers is greater than the perceived benefit of those passengers using the pattern, then the proposed pattern will not be implemented.

Short turn patterns may be adopted to facilitate faster cycling of vehicles back into service, or because space limitations exist at a specific end-of-line location. When evaluating potential short-turns, the following will be considered:

- Efficiency gains
- Whether or not new end-of-line locations must be established
- If a new end-of-line must be established, the amenities present at the locations
- Impact on riders
- Other impacts on schedules

Because of their impact on existing customers and the added complications that may arise in schedule development, existing patterns will be reviewed on a regular basis to determine their value to the overall network. The introduction of new patterns will be scrutinized heavily.

Route Symmetry

Routes travelling on two-way streets should be able to use the street in both directions. For routes that use the one-way pairs typical of the densest parts of Philadelphia (such as 11th and 12th Streets in South Philadelphia and Center City), the route should similarly follow a symmetrical path on both streets. This symmetry should extend to bus stops, allowing for stops to be placed in roughly equivalent locations in both directions. Stops that do not have a match will be a particular focus of Stop Rebalancing Plans (see the section on Bus Stop Standards for more information).

Route Terminus Standards (end-of-lines)

Any analysis of a route proposal where a new end-of-line location needs to be established will include identifying potential terminal points for the proposal. End-of-line locations may include SEPTA property, such as loops or Transportation Centers; public right-of-way, typically on-street locations, which may require municipal approval; or private property, such as shopping centers or parking lots, which may require a legal agreement. Service Planning and Surface Transportation will evaluation potential end-of-line locations based on the following criteria:

- The location of the proposed route deviation
- The presence of other SEPTA services
- The market potential of the new route
- The miles and hours requirement
- The impact on the main route, particularly the impact on vehicle requirements

When evaluating non-SEPTA locations as potential terminal points, SEPTA will work with the appropriate parties (local officials, landowners) to obtain the correct authorization. Some factors in evaluating locations are as follows:

- Adequate space for recovery and maneuverability for SEPTA vehicles
- Lighting and other safety measures
- The presence of restrooms that SEPTA operators can easily access from the recovery location
- Any special accommodations or arrangements

Roadway/Turning Movement Standards

While SEPTA does not control the roadways on which it operates, their condition and geometry are crucial to providing safe, reliable service. When evaluating service proposals, the following roadway-related criteria will be considered:

- Roadway width and condition
- Roadway grade
- The geometry of any turning movements
- Signals and signal timing
- Sidewalks and access to safe pedestrian conditions

When analyzing route proposals, SEPTA Service Planning will work with SEPTA Surface Transportation, SEPTA System Safety, PennDOT, and local officials to evaluate roadway conditions and determine whether or not a routing proposal is feasible.

During roadway construction or improvement projects, SEPTA will work with local officials to evaluate conditions impacting pedestrian infrastructure and transit access and operations, and develop recommendations to improve accessibility for transit users to existing services when practical.

Bus Stop Standards

The *SEPTA Bus Stop Design Guidelines* is the appropriate document for information about SEPTA bus stop design. Please refer to that document for specific information about stop placement and design.

The following standards deal more generally with bus-stop related issues.

Stop Access and Supportive Infrastructure

When evaluating stop locations, a number of factors will be considered. These include:

- Adequate landing pad for ADA ramp
- Access to and from the stop meeting ADA standards
- Lighting in and around the stop and along the access way
- Whether or not a stop is at a controlled crossing location
- The presence of crosswalks
- The condition and type of traffic signals present

Stops on private property will be evaluated similarly, ensuring that customers have safe access to the stop location and can wait in a well-lit area.

Stop Spacing

The distance between bus stops should, in part, be determined by the physical characteristics of the area in which the route serves. In areas where there is strong pedestrian infrastructure (good sidewalks, crosswalks, and traffic control devices), stops can be placed further apart because there are fewer barriers to pedestrian access and mobility. For parts of the region less hospitable to pedestrians, stops should be placed wherever practical for ease of access, with the safety of customers and bus operation serving as the most important inputs.

There are other factors that may contribute to stop spacing along a specific route, such as a high number of stop signs or the need to provide access to specific destinations, but in general, stops will be spaced at a <u>minimum of 500</u> feet apart from each other, with the preference being to locate them at controlled locations with crosswalks whenever possible.

Stop Rebalancing

As part of our ongoing schedule reliability evaluations, SEPTA Service Planning staff may review the stops on a specific route or set of routes. The elimination of bus stops may be deemed appropriate based on a number of factors, including:

- Proximity to other stops
- ADA access
- Ridership (customer boards and alights)
- The safety of and access to the stop (sidewalks, crosswalks, traffic control devices, lighting)

If for any of the above reasons it is determined that a stop or stops should be eliminated, SEPTA Service Planning will develop a *Stop Rebalancing Plan* in conjunction with SEPTA Surface Transportation and work with local officials on the appropriate steps to take to consider customer feedback and alternative measures, if appropriate. Stop rebalancing is a key component in improving reliability and improving travel speeds.

New Stop Requests

Requests greater than 1,000 feet from the closest existing stop will be evaluated, with the final determination made by SEPTA Surface Transportation. Any request within 500 feet of an existing stop will not be considered, unless it meets one of the following criteria:

- It is a better alternative to the closest stop
- Roadway configuration or other changes necessitate moving or installing a new stop
- A new development warrants an additional stop

Regional Rail Station Spacing Standards

It may be necessary, on occassion, for SEPTA to evaluate station spacing, such as when a station does not meet minimum economic criteria (see Station Economic Performance, above) or when there is a change in physical infrastructure, operating agreements, local roadways, station-area developments, or when other local characteristics impact the Railroad's operation or passenger access. Station spacing may generally be closer in areas with higher residential or employment density or in locations where a greater number or share of riders are accessing the station via non-car modes. A guideline for maximum station density given the station area's population density is provided in Table 2.

Table 2 | Regional Rail Station Spacing

Station Spacing	Population per Square Mile
0.5 mile	>10,000
1 mile	1,000 - 10,000
2 miles	<1,000

Quality of Service Standards

Quality of Service Standards are metrics and parameters for service delivery, which include standards for coverage and access, span of service, frequency, on-time performance, and loading standards. Quality of Service Standards provide a balance between what SEPTA can provide from an operational standpoint and the level of service that customers can expect from the agency.

Coverage and Access

Surface Transportation

An area is considered "well-served" if a stop is no more than ¼ mile (approximately 1,320 feet) from a passenger's origin point; approximately five minutes walking time and a minimum service frequency of 30 minutes is provided.

An area is considered "served" if a stop is no more than ½ mile (approximately 2,640 feet) from a passenger's origin point; approximately 10 minutes walking time and a service frequency of at least 30 minutes is provided (60 minutes for Suburban Transit and Contract Operations routes).

SEPTA uses the standard for coverage and access to evaluate requests for new bus stops and route extensions. If an area is already considered "served" under the standard, then an additional bus stop or route extension would normally not be considered.

Regional Rail

The area within a half mile of a station is considered accessible for walk-up access. The area within five miles of a station is considered accessible for driving and drop-off access. A station will be considered accessible for transit access if there is a station within a ¼ mile (approximately 1,320 feet) of the platform. The geography, roadway network, and residential density around a station will impact how easily accessible a station is within the half-mile and five-mile radii. The service coverage area is considered all areas within five miles of a station.

Span of Service

Surface Transportation

Span of service establishes a minimum period of time during which service operates. This standard provides customers with reasonable parameters for how early and late they can expect transit to be available. Span varies by type of service and by day of the week.

The span of service on any given route is determined based on a number of factors including:

- Ridership demand;
- Available resources (operators, vehicles, and operating budget);
- Transfers and connections to other services; and

- Hours of operation and shift times of major employment or activity centers served by that route.

Note, some routes may not operate on Saturdays and/or Sundays, in which case, the minimum span for those days would not apply. Table 3 describes the minimum span of service by their classification category and day of the week for Surface Transportation.

Table 3 | Span of Service for Surface Transportation by Service Type and Day of the Week

Service Type	Weekday Span	Saturday Span	Sunday Span
City Routes	6am – 8pm	8am – 6pm	10am – 6pm
Arterial Routes	6am – 6pm	8am – 6pm	10am – 6pm
Expressway Routes	6am – 8pm	8am – 6pm	10am – 6pm
Suburban Routes	6am – 6pm	8am – 6pm	10am – 6pm
Special Purpose Routes	N/A	N/A	N/A
Fixed Routes			
MFL/BSL	5am – 1am[3]	1am – 1am	1am – 1am
Trolley	5am – 1am	5am – 12am	5am – 12am
Trackless	5am – 1am	6am – 12am	6am – 12am
NHSL	5am – 2am	5am – 2am	5am – 2am

Regional Rail

Service will begin no earlier and end no later than the time indicated in Table 4.

Note, all routes may not be scheduled to operate seven days per week. If a route is scheduled to operate on Saturday and/or Sunday, then the span of service should meet the minimum standard set in Table 4.

Table 4 | Span of Service for Regional Rail by Day of the Week

Suburban Station	Weekdays	Saturdays	Sundays
First Arrival	7:00am	8:00am	9:00am
Last Departure	11:00pm	10:00pm	9:00pm
First Departure	7:00am	8:00am	9:00am
Last Arrival	11:00pm	10:00pm	9:00pm

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3   Buses replace high speed service on the MFL/BSL between 1am and 5am on weekdays.

Frequency

Surface Transportation

Service frequency establishes a minimum acceptable frequency by time period and by type of service. The standard sets a policy frequency, meaning it functions to provide customers with a reasonable expectation of how long they can expect to wait between trips. Policy headways set the lower bounds for frequency; however, service may be *more* frequent based on ridership demand. Table 5 summarizes the policy frequencies by service type for weekdays and Table 5 summarizes the policy frequencies by service type for weekends. Last mile bus service, which connects Regional Rail customers to their final destination, is exempt from policy frequencies because service is designed to connect to Regional Rail schedules or shift times for large employers, which cannot be scheduled at consistent 30 or 60 minute intervals. Service frequencies for the Fixed Route category are broken out by mode due to variation across modes.

Table 5 | Weekday Service Frequency Standard (in minutes)[4]

Service Type	Pre-AM 4 am – 5:59 am	AM Peak 6 am – 8:59 am	Base 9 am – 2:59 pm	PM Peak 3 pm – 5:59 pm	Evening 6 pm – 9:59 pm	Late Night 10 pm – 11:59pm	Owl 12 am – 3:59 am
City Routes	30	20	30	20	30	30	30
Arterial Routes	N/A	30	60	30	60	60	60
Expressway Routes	N/A	30	60	30	90	90	90
Suburban Routes	N/A	60	60	60	90	90	N/A
Special Purpose Routes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fixed Routes							
MFL/BSL	15	5	8	5	10	15	15
Trolley	30	15	20	15	20	30	30
Trackless	30	20	30	20	30	30	30
NHSL	90	15	20	15	20	30	90

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4   Some routes and lines operate limited weekday or weekend service. These routes are exempt from the Service Frequency Standard.

Table 6 | Weekend Service Frequency Standard (in minutes)[5]

Service Type	Saturday 8 am – 6 pm	Saturday 6 pm – 8am	Sunday All Day
City Routes	30	30	30
Arterial Routes	60	90	90
Expressway Routes	60	60	60
Suburban Routes	60	90	90
Special Purpose Routes	N/A	N/A	N/A
Fixed Routes			
MFL/BSL	10	15	15
City Trolley	20	30	30
Suburban Trolley	30	60	60
Trackless	30	30	30
NHSL	20	30	30

Regional Rail

Regional Rail operates at a minimum of every 30 minutes in the peak and every 60 minutes in the off-peak; every 60 minutes on Saturdays and every 90 minutes on Sundays. Peak is defined by trains scheduled to arrive in Center City before 9:30am or scheduled to leave Center City between 4:00pm and 6:30pm. Table 7 summarizes the minimum frequencies for Regional Rail.

Table 7 | Regional Rail Service Frequency Standard (in minutes)

Service Type	Weekday	Saturday	Sunday
Peak	30	60	90
Off-Peak	60	60	90

24-Hour Service/Owl Network

SEPTA has a separate standard for frequency for the network of routes that provides service 24-hours a day and 7 days a week. This network is commonly referred to as "Owl" Service

The minimum acceptable frequency interval between trips on the Owl Network is 30 minutes for both City and Fixed Routes. For City/Suburban Arterial service the minimum frequency is 90 minutes. Within the City of Philadelphia, the Owl Network is designed to assure mobility across the city at all times. Within the suburban jurisdictions, the Owl Network is based on routes that provide the following characteristics and functions:

5   Some routes may not operate on Saturdays and/or Sundays. If a route does operate on Saturdays and/or Sundays then minimum policy headways would govern the frequency offered.

- Connect dense residential and commercial activity centers that have a high propensity of transit usage;
- Ridership proves to be historically strong (exceeding 3,500 weekday passenger trips per day);
- Spans of scheduled service generally exceed the established minimum standards;
- Service is established through either resource reallocation or through external funding sources.

Table 8 identifies the 24 transit routes that constitute the Owl Network as of 2019.

Table 8 | Owl Network Frequencies

Route Number	Route Name	Service Type	Frequency (min)
BSL/BSO	NRG to Fern Rock Transportation Center	Fixed Route	
	Bus operation Sundays through Thursday		15
	Rail operation on Fridays and Saturdays		20
MFL/MFO	FTC to 69th Street Transportation Center	Fixed Route	
	Bus operation Sundays through Thursdays		15
	Rail operation on Fridays and Saturdays		20
G	Food Center to 59th - Columbia	City Route	35
R	WTC to FTC	City Route	30
6	Cheltenham-Ogontz to Olney Transportation Center	City Route	60
10	15th-Market to 63rd-Malvern	Fixed Route	30
13	15th –Market to Yeadon	Fixed Route	35
14	Neshaminy Mall to Frankford Transportation Center	City/Suburban Arterial	60
15	63rd – Girard to Richmond-Westmoreland	Fixed Route	30
17	Front-Market to 20th & Johnston	City Routes	30

Route Number	Route Name	Service Type	Frequency (min)
20	Parx Casino or Knights-Mechanicsville to Frankford Transportation Center	City Routes	60
23	Germantown-Ontario to Chestnut Hill	City Routes	30
33	Front-Market to 23rd –Venango	City Routes	35
36	15th –Market to 73rd & Elmwood	Fixed Route	30
42	5th-Walnut or 10th – Walnut to Wycombe or 61st – Pine	City Route	35
47	Whitman Plaza to 5th-Godfrey	City Route	45
52	49th-Woodland to 54th-City	City Route	30
56	23rd-Venango to Torresdale-Cottman	City Route	60
60	35th-Allegheny to Richmond-Westmoreland	City Route	30
66	Frankford-Knights to FTC	Fixed Route	30
73	Richmond-Westmoreland to FTC	City Route	60
79	Columbus Commons to 29th-Snyder	City Route	60
108	UPS to Airport to 69th Street Transportation Center	City/Suburban Arterial	60
109	Chester Transportation Center to 69th Street Transportation Center	City/Suburban Arterial	90

On-time Performance

Surface Transportation and Regional Rail

On-time performance measures the ability of a route to adhere to its scheduled time. Consistent reliability is a critical measure of passenger comfort and convenience and often determines whether or not transit is a first choice mode for a given trip.

On-time is measured as the percentage of time points that are no more than two minutes early and no more than six minutes late. On Surface Transportation, SEPTA measures on-time performance through automated vehicle locators (AVL). Manual methods such as traffic checking and supervisory reports complement the automated methods. SEPTA's Control Center aggregates this information by route and produces monthly reports. On Regional Rail, on-time performance is measured at end point locations using an Automated Train Dispatching System

(ATDS), which is signal-based. Regional Rail trains operating in Amtrak territory use SEPTA's Real Time Vehicle Locators (RTVL), which is a GPS-based system, or communication between SEPTA train dispatcher and Amtrak dispatchers.

Table 9 summarizes the agency's goals for on-time performance by mode. Regional Rail has two exceptions to its on-time performance goal of 90 percent. First, Regional Rail trains marked with the letter **"D"** at a particular station stop in the public timetable may depart the station ahead of schedule. Second, express transit trips or routes with limited stops may arrive ahead of schedule at the final destination.

Table 9 | On-Time Performance Goals

Service Type	On-Time Performance Goal
Surface Transportation (bus, trolley, and track-less trolley)	80%
High Speed Lines (MFL, BSL, NHSL)	95%
Regional Rail	90%

While SEPTA actively manages on-time performance on all modes, there are a number of factors that impact the measure specifically for vehicles running in mixed traffic (e.g. bus, trolley, and trackless trolley). Buses are subject to traffic congestion, accidents, and in the city, delays caused by curbside delivery services and garbage collection which block travel lanes. SEPTA makes every effort within the agency's ability to reach its on-time performance goals.

Load

Surface Transportation

Vehicle loading, both in terms of volume and duration, is a measure of passenger comfort. Establishing standards for the maximum number of passengers per vehicle, and the duration in which vehicles are "full" improves customer experience while still ensuring efficient use of operational resources. During peak travel periods, **SEPTA cannot guarantee a seat to every passenger**; however, the agency does set load standards to identify what number of standees is safe for passengers during peak periods. If a trip consistently runs with a load that exceeds the service standard, the headway or vehicle type should be adjusted to reduce crowding. Table 10 identifies the maximum peak load at any point based on the vehicles in SEPTA's bus fleet and Table 10 identifies the maximum peak load based on SEPTA's rail fleet.

Table 10 | Load Standards for Bus Fleet

Vehicle Type	Available Seats	Maximum Peak Load	Percentage of Maximum Capacity to Seats on Vehicle
New Flyer 30' Diesel Buses	24	36	150%
New Flyer 40' Low Floor Diesel Buses	39	59	150%
New Flyer 40' Low Floor Hybrid Buses	39	59	150%
New Flyer 40' Low Floor Trackless Trolley	39	59	150%
New Flyer 40' Hybrid	38	57	150%
Nova Bus 40' Hybrid	37	56	150%
Nova Bus 60' Hybrid Articulated	59	89	150%
Proterra 40' Battery/Electric	40	55	137%

SEPTA defers to PennDOT's load standard on lines that operate on limited-access highway. Pennsylvania motor code limits passenger capacity to 125 percent of the seats on a vehicle. This impacts routes classified as Expressway Routes, which include 9, 27, 44, 123, 124, and 125. The same standard applies to routes not classified as Expressway Routes but that still operate on limited-access highway, such as Routes 78 and 150. For reference see: Pennsylvania Motor Vehicle Code, Title 75, Chapter 49, Subchapter C, Section 4948.

Table 11 | Load Standards for Rail Fleet

Vehicle Type	Available Seats	Maximum Peak Load	Percentage of Maximum Capacity to Seats on Vehicle
LRV Trolley Cars (single-ended)	51	85	167%
LRV Trolley Cars (double-ended)	50	84	167%
PCC II Trolley Cars	46	70	152%
Broad Street Line (B-IV)	65	135	208%
Market-Frankford Line (M-IV)	49	105	214%
Norristown High Speed Line (N-V)	60	100	167%

Regional Rail

SEPTA will schedule train consists to provide each prospective passenger with a seat. *This standard will not prohibit standees.* If a train consist is short or if passenger travel is unusually heavy, standees will be permitted inside passenger compartments but not in the end vestibules in Silverliner IV or Push-Pull units because of personal safety concerns. Table 12 summarizes the load standard for Regional Rail by vehicle type.

Table 12 | Load Standard for Regional Rail

Vehicle Type	Available Seats	Maximum Peak Load	Percentage of Maximum Capacity to Seats on Vehicle
Silverliner IV	120	120	100%
Silverliner V	107-109	107-109	100%
Push-Pull Commuter	118-131	118-131	100%

Title VI Standards and Policies

SEPTA acts in accordance with the Federal Transit Administration (FTA) Circular 4702.1B, which outlines requirements and guidelines for federal transit agencies in compliance with Title VI of the 1964 Civil Rights Act. SEPTA is required to identify routes that have majority minority and/ or low-income riders. The FTA defines a minority route as one in which at least one-third of the revenue miles are located in a Census Block Group where the percentage minority population exceeds the percentage minority population in the service area. These route designations are used to conduct a Service Equity Analysis to ensure any route changes do not disproportionally impact low-income or minority riders.

The agency must take minority and low-income route designation into account when making service planning decisions and ensure service changes are not disproportionately impacting minority and low-income riders. A Service Equity Analysis must be conducted prior to the implementation of any major service change.

Major Service Change

SEPTA defines the following circumstances as a major service change that requires a Public Hearing and Title VI impact analysis, as stipulated by the Tariff & Public Hearing Regulations adopted by the SEPTA Board on February 25, 2010.

- Discontinuance of all service on a route on an entire day of the week;
- Decreasing the span of service on a route by one and one-half hours at the beginning or end of a route's service day;
- Discontinuance of more than 15 percent of the trips over a two-year period on a route's base routing as defined in the route's operating tariff, on any day of the week. If it is proposed to discontinue more than 15 percent of the trips operating between these two points, the SEPTA tariff and public hearing process would be initiated;[6]
- The discontinuance of more than 15 percent of rail service over a two-year period to a rail station as listed in the route's operating tariff;
- The addition of a new rail station; or
- Any permanent change in the rates of fare charged.

Service Equity Analysis

A Title VI analysis would be conducted for major service changes on transit routes as defined in the above criteria. Additionally, a disparate-impact analysis and a disproportionate-burden analysis would be conducted when there is a difference in adverse impacts to minority and low-income populations of 20 percent, as measured by the amount of service on routes defined as either minority or non-minority and low income or non-low income. A service equity analysis ensures that any major service change does not disproportionally impact minority or low-income customers.

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6   A public hearing is not required for "Limited Service Routes" or for the discontinuance of service in the event that a person, entity or government that entered into a reimbursement agreement with SEPTA for service, ceases to fund that service.

The analysis is conducted as part of the service development review process and results will be discussed as part of the SEPTA Service Development Committee that decides which projects should be included in the Annual Service Planning Process. The findings of the Service Equity Analysis are provided in SEPTA's Title VI Program, which is updated every three years and submitted to the FTA for approval.

Bus Fleet Assignment

SEPTA assigns buses with the goal of maintaining an approximately equivalent fleet age at each operating District. The following exceptions apply[7]:

- Thirty-foot buses are assigned to Contact Operations or contracted to a private vendor. This assignment reflects both contractual obligations as well as ridership demand and land-use density; and
- Sixty-foot buses are used for routes with consistently heavy loads and are assigned to Districts that have special maintenance capabilities for those vehicles.

Passenger Amenities

Surface Transportation

SEPTA shall provide the following passenger amenities at all Transportation Centers, Loops, and Stations, which are owned and maintained by SEPTA.

- Identification Signage;
- Lighting;
- Trash Receptacle; and
- Recycling Bins.

SEPTA shall provide passenger amenities at Transportation Centers, loops, and stations, which are owned and maintained by SEPTA and have 500 or more boarding and alighting passengers. In the case of Rail Stations (Transit or Regional Rail), the 500 or more boarding or alighting passengers per weekday. These amenities are as follows:

- Sheltered waiting area;
- Bench;
- Customer Information which may include maps and schedule information. Digital information is provided at the major transportation center; and
- Escalators and/or elevators are provided at the major Transportation Centers.

Island streetcar platforms are exempted from this standard due to their narrow configuration. For any location which does not meet this standard, a program will be instituted to bring the location up to standard given available financial resources. This standard DOES NOT apply to locations which are not owned by SEPTA.

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7   Two additional exceptions to SEPTA's bus vehicle assignment policy have been added since the adoption of the FY18 Title VI Program. Vehicles branded for Boulevard Direct are assigned to that specific route. Battery electric buses are assigned to two specific routes based on the operating characteristics of the route and the charging equipment available at the District.

Regional Rail

SEPTA shall provide the following passenger amenities at Regional Rail stations that are owned and operated by SEPTA and that have 500 or more boarding or alighting passengers per weekday in the prevailing direction of travel:

- Sheltered waiting area;
- Bench;
- Customer information which may include maps and schedule information. Digital information is provided at the major Transportation Centers; and
- Escalators and/or elevators are provided at major Transportation Centers.

Fare-Sales Coverage

Surface Transportation

An area is considered "well-served" if a sales location is no more than ¼ mile (approximately 1,320 feet) from a bus stop within a commercial area; approximately five minutes walking time. An area is considered "served" if a sales location is no more than ½ mile (approximately 2,640 feet) from a bus stop within a commercial area; approximately 10 minutes walking time.

Regional Rail

SEPTA shall provide ticket offices at stations which are owned and maintained by SEPTA and have 500 or more boarding or alighting passengers. The 500 or more boarding and alighting passengers per weekday applies to platforms in the prevailing direction of travel.

Note: SEPTA may revise this standard with the full implementation of the SEPTA Key system.

Service Development Process

SEPTA Service Planning develops transit service through a process that reflects the overarching goals of the department. These goals are:

- Using the best available data to make decisions that benefit our customers and use agency resources as efficiently as possible;
- Collaboration and coordination with other SEPTA departments and agency partners; and
- Robust and transparent public outreach.

Each of these components plays a distinct part in the service planning process. Figure 2, located at the end of this report, describes this process, beginning with the origination of proposals and showing their path to implementation.

Data and Software Resources

SEPTA Service Planning supports the agency's wider goals of making transparent decisions based on accurate data. There are several key data inputs and software products that are crucial to the service planning process, which are described in the following section. SEPTA stays apprised of new data sources and technologies and will adopt them as appropriate.

Data Resources

Automatic Passenger Count (APC) Data

SEPTA Service Planning uses APC data to evaluate ridership on the trip level, stop level, and by time-of-day. APC also allows for detailed run-time analyses and load analyses. APC is the core data set that SEPTA relies upon for both planning and scheduling. SEPTA is committed to increasing the share of its vehicles equipped with APC units. Moving forward, coverage will be increased through vehicle procurement. SEPTA Service Planning also employs staff who manually validate the APC data with census counts.

Automatic Vehicle Location (AVL) Data

On-time performance for SEPTA services is calculated using AVL data through the Control Center's CARD system. This data enables various agency departments to track vehicles in real-time. AVL is used to generate on-time performance information and feeds into SEPTA's Mobile Application for customer-facing real-time arrival information.

General Transit Feed Specification (GTFS)

GTFS defines a common format for transit lines and schedules and is the data that populates transit information on Google Maps and other platforms. GTFS provides an interoperable format from Trapeze schedule information and customer-facing applications. In addition, it provides the basis for the department's work in Remix (see the resources section) and enables third-party developers to create mobile applications and other transit resources.

SEPTA Key Data

SEPTA Key Data (or farebox data) provides aggregated, anonymized route and stop data.

Route Operating Ratio (ROR) Report

SEPTA's Operating Budget Department produces an annual Route Operating Ratio (ROR) report for each operating division (City Transit, Frontier, Victory, and Regional Rail). The report matches passenger revenue against fully allocated expenses – on a route by route basis within each operating division. For the system's fully allocated expense, the ROR uses an FTA recommended three-variable cost model (vehicle hours, miles, and peak vehicles). Total expenses under the three-variable cost model match SEPTA's Financial Reports. ROR data are used for the agency's official route-level ridership and operating cost information. This information is released to stakeholders and to the public in the Annual Service Plan.

Software Resources

ArcGIS

ArcGIS is a mapping and database management software. SEPTA Service Planning maintains records of route, stop and facility data using this software. ArcGIS allows for demographic analysis and geographic display of ridership information across the system. Route and stop data is publically available via SEPTA's website and is updated each schedule change.

Trapeze

SEPTA Service Planning uses Trapeze software to build schedules and manage manpower resources, amongst other things. Bus Stop Manager, a Trapeze product, is used to inventory and maintain bus stop information.

As of FY19, SEPTA is in the process of building and developing a new software package with Trapeze for the Regional Rail Service Planning division. The new Trapeze software package will provide functionality in timetable planning and crew and equipment scheduling. SEPTA will be retiring the existing train service planning software when the transition is complete.

Remix

Remix is route planning software that enables quick sketching and costing of routing concepts. Remix also is able to provide information to estimate how routing proposals impact mobility and accessibility.

SEPTA Service Monitoring and Evaluation

Surface Transportation

As part of SEPTA's service development process, Service Planning will conduct an Annual Route Performance Evaluation Report of all Surface Transportation lines, as referenced under the Route Performance subsection (Page 11). Routes will be evaluated by route classification according

to productivity (passengers per revenue hour) and cost-efficiency (cost per passenger). For each category, a scatterplot chart will be created to illustrate the relationship between the two factors.

Any routes performing below the 15th percentile threshold will be identified in the Performance Evaluation Report with a brief description of why each route is underperforming compared to its peers and the actions, whether routing or scheduling, that will be taken to address the route's performance. Along with the scatterplots, the Route Operating Ratio data will be included in the Performance Evaluation Report. This annual report provides information on hours, miles, operating cost, total cost, and ridership at the route-level. Route Performance Evaluation results are shared at SEPTA Open Houses and will be posted on a Service Planning webpage within www.septa.org.

Regional Rail

The minimum economic performance standard for a station is 75 daily boarding or alighting passengers per weekday.

If a station fails to meet this minimum standard will trigger an evaluation as part of a future Annual Service Plan. The evaluation will consider the station(s) which have not met the minimum economic performance standard in context of the station's line, adjacent stations, available amenities including parking, nearby Regional Rail lines, other local SEPTA transit options, physical infrastructure constraints or opportunities for service, driving and non-driving access to the station and nearby stations, trip-time impacts to the overall line, and planned or recent investments and the costs associated with those investments. The evaluation will consider alternatives that will balance the needs of the Authority in economic costs, local impacts, impacts to the line, and the potential of the station(s) in the future. The outcome of the evaluation will be a set of recommendations which may include but not be limited to consolidation, service adjustments, subsidies, changes to connecting transit, station upgrades, and/or targeted marketing. The recommendations of an evaluation may relate directly to the station(s) failing to meet the minimum economic standard or may be for other stations on the same line, or nearby Regional Rail lines, or nearby SEPTA alternatives options. A proposal to discontinue any station will follow the applicable internal and legal processes.

State and Federal Service Monitoring

In addition to the Annual Route Performance Evaluation Report, the Pennsylvania Department of Transportation (PennDOT) reviews SEPTA's performance and compares it to the performance of peer agencies every five years. SEPTA is also required to maintain a Title VI Program, which includes monitoring and evaluation of service standards and policies, and is subject to a triennial review by the FTA. Any transit agency applying for federal funds must develop a program that shows how service is provided equitably.

PennDOT Performance Review

The General Assembly approved Act 44 in 2007 to expand the mandate of the Pennsylvania Turnpike Commission to include the state's broad transportation needs, including transit capital, operating, multi-modal, and other non-highway programs. Act 44 was amended by Act 89 in 2013 to define the Turnpike Commission's funding obligations to PennDOT through the

year 2057. Act 44 requires regular performance reviews of multimodal transportation agencies receiving funds from the Turnpike Commission. In July 2016, PennDOT completed its first performance review of SEPTA.

Act 44 established performance criteria for each of SEPTA's four modes (fixed-route bus, streetcar/light rail, heavy rail and commuter/Regional Rail) and a framework for a longitudinal and peer analysis in evaluating system performance. PennDOT produces a performance report and action plan every five years. PennDOT evaluated each of SEPTA's four modes based on established performance criteria and compared SEPTA's performance to the performance of peer agencies. It should be noted that the Performance Report is conducted at the modal level using data from the National Transit Database, not at the level of route or line. Table 13 lists each of the PennDOT performance criteria by category.

Table 13 | PennDOT Performance Metrics

Cost-efficiency	Cost-effectiveness	Productivity
• Operating cost per revenue vehicle hour	• Operating cost per passenger	• Passengers per revenue vehicle hour • Operating revenue per revenue vehicle hour

These metrics are incorporated into both the service monitoring and route evaluation process. SEPTA Service Planning evaluates route performance based on passengers per revenue hour and operating costs per passenger. Operating costs per revenue hour and operating revenue per revenue hour are tracked internally.

FTA Title VI Requirements

The Federal Transit Administration (FTA) requires transit providers that operate 50 or more fixed route vehicles in peak service within an Urbanized Area (UZA) of 200,000 or more in population submit additional requirements in their Title VI Program. These requirements include the submission of service standards and policies that guide service development and evaluation. Metrics required by the FTA under Title VI are listed in Table 14.

Table 14 | FTA Title VI Required Metrics

Perceived Service Quality	Service Delivery	Service Policies
• On-time Performance	• Vehicle Load • Vehicle Headway • Service Availability	• Transit Amenities • Vehicle Assignment

Annual Service Planning Process

The Annual Service Planning Process ties the results of service monitoring and evaluation to customer and stakeholder engagement and ultimately, to the service development process. The Annual Service Plan uses a planning process that represents SEPTA's continued commitment to transparency and accountability in how the agency makes changes to the transit network. Figure 2, located at the end of this section, describes the full service development process from project inception through implementation.

The Annual Service Plan begins with a list of proposed projects that are sent to SEPTA's Service Development Committee. This list is formulated through three key processes; ongoing internal performance monitoring and evaluation, as described in the preceding section, and proactive collaboration and coordination with agency partners and robust public outreach. While the route monitoring and station economic performance component was described previously, the following section describes new outreach strategies the Service Planning Department will incorporate into the service development process.

Partner Coordination

SEPTA Service Planning routinely works with partner agencies through a variety of committees and project groups. Introducing an Annual Stakeholder Meeting will codify these relationships and the crucial role these partners play. The meeting will offer a venue to provide updates on Service Planning projects, determine priorities at the local and regional level, and discuss opportunities to collaborate.

Public Outreach

Veritas

Veritas is SEPTA's complaint and commendation system, and is used by Customer Service Representatives to record and maintain customer communications. By incorporating complaints submitted through Veritas, Service Planning will be able to incorporate the day-to-day experiences of SEPTA customers into policies and decisions. In addition, the Veritas platform will be adapted to enable customers to suggest route changes or other types of service enhancements. Service Planning will have the ability to query these suggestions at the route level, when evaluating service changes for further study and potential implementation.

Open Houses

External Open Houses will be a new component of SEPTA's Annual Service Plan. The Open Houses are designed to make service planning outreach more accessible to our customers by going to where they ride. The goal of the Open Houses is to gather rider input on specific services. Open Houses will be held in the fall at SEPTA Transportation Centers or other facilities.

Exact locations, dates, and outreach activities may vary based on the previous year's outcomes and the service changes being proposed. Language accommodations will be made in accordance with SEPTA's Language Access Plan.

Proposed Project List and Prioritization

At the start of each fall, SEPTA Service Planning will compile and present a list of potential service change projects generated through internal data monitoring and external outreach over the course of the previous year. Specifically, Service Planning compiles a list from the following sources:

- Chronically underperforming routes identified through the route monitoring and station economic performance process;
- Customer requests submitted through Veritas;
- Customer suggestions and requests submitted through Open Houses at Transportation Centers;
- Stakeholder suggestions submitted through the Annual Stakeholder Meeting; and
- Suggestions submitted through internal SEPTA departments, particularly through coordination between Service Planning and with Surface Transportation.

The project list is divided into schedule changes and routing changes. Schedule changes go through the scheduling process and are incorporated during each of SEPTA's three scheduling changes, if and when the Operating Budget can accommodate the change. Routing changes are first screened for consistency with the agency's network design standards. If a project idea duplicates service, provides a circuitous routing, or contradicts any other network design standard, then it will be eliminated from the project list.

Once the project list is screened for consistency with network design standards, the list is submitted to the SEPTA Service Development Committee for feedback and project prioritization. This Committee is designed to engage SEPTA departments early on that will be involved in service development at any point in the process. This approach assumes that the earlier internal stakeholders are involved, the more efficient, inclusive, and customer-conscious a service plan will be. The Committee will consist of representatives from Operations, Finance, Service Planning and Scheduling, Public and Government Affairs, Customer Service and Advocacy, and Equal Employment Opportunity and Affirmative Action. The Committee will help prioritize projects based on the following criteria:

- Potential impact;
- Ease of implementation;
- Readiness for implementation;
- Level of interest (internal/external);
- Feasibility; and
- Capital cost involved.

Project Analysis and Implementation

Once the project list has been vetted by internal stakeholders and the projects have been prioritized, Service Planning will conduct a project analysis including ridership impact and cost estimates. The project analysis will be presented at an Open House held at SEPTA Headquarters, generally held in February. The purpose of the Open House is to receive input from interested parties prior to the initiation of the tariff and public hearing process. The Open House gives

SEPTA the opportunity to address any serious concerns about a service proposal *before* the plan is finalized.

Tariff Preparation and Circulation

SEPTA keeps track of routing changes over time through operating tariffs. This process serves as the agency's legal record management system for surface transportation. Tariffs consist of a turn-by-turn description of a routing and in doing so, gives SEPTA the right to operate on the designated roadways specified.

Once a project proposal is finalized, the Service Planning Department drafts a tariff to circulate in-house for approval. During this time, public hearing dates are tentatively arranged. When concurrences are received, public hearing dates are finalized and public notices are published.

Public Hearings

Public hearings are held at accessible locations and are arranged, advertised and conducted according to SEPTA's Tariff Regulations and enabling legislation. Public hearings are conducted in spring for June Board consideration. Based on the Hearing Examiner's Report and Recommendations, the project proposal and tariff file may be adjusted and revised.

SEPTA Board Approval

Each project submitted for approval and implementation through the Annual Service Planning Process is presented to the SEPTA Board in June of each year. Board approval is required prior to any project implementation.

Implementation

Once a project is approved by the Board and funding is secured, Service Planning staff will aim to implement the project for the fall schedule change; however, timing will vary by project. Major service changes typically require multiple years from conception to implementation and will stretch over more than one Annual Service Plan cycle. Implementation requires coordination with Surface Transportation for all matters regarding staffing, vehicle availability, and training; with Public and Government Affairs for all community and stakeholder outreach; and with Communications and Marketing to prepare information and materials for print and for the website.

Post-Implementation Evaluation

One year after a service change is implemented, the staff planner responsible for the project will conduct a post-implementation evaluation that will evaluate a service change according to the following criteria:

- Ability of change to meet intended goal;
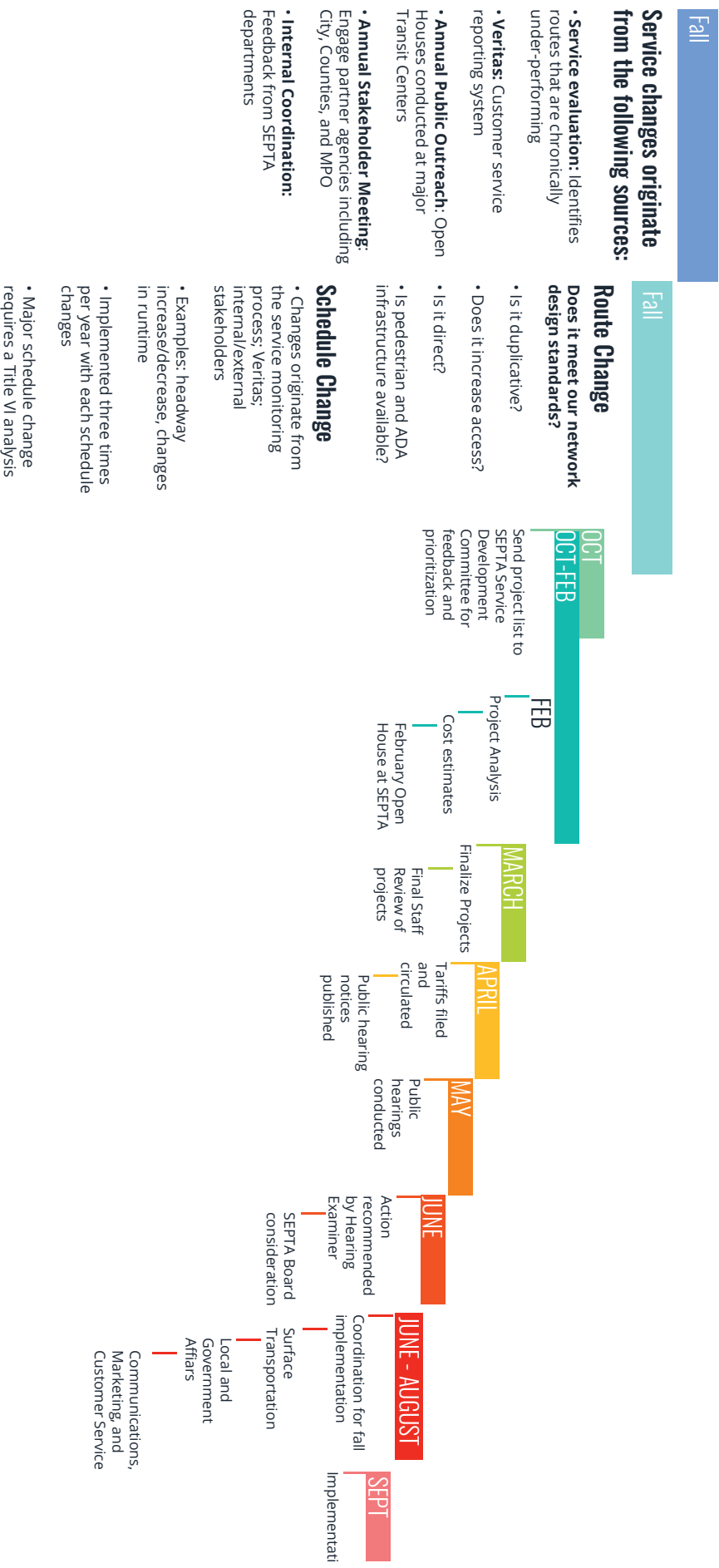- Identify any unintended consequences (scheduling, transfers, Veritas comments);
- Estimated and actual ridership by route and stop, 12 months after implementation (count and percent change);
- Estimated and actual cost of service change, 12 months after implementation; and
- Identify change in route's performance ranking compared to the rest of its classification category.

Figure 2 | Service Change Flow Chart

Service Development Process

Service changes originate from the following sources:

Fall

- **Service evaluation:** Identifies routes that are chronically under-performing

- **Veritas:** Customer service reporting system

- **Annual Public Outreach:** Open Houses conducted at major Transit Centers

- **Annual Stakeholder Meeting:** Engage partner agencies including City, Counties, and MPO

- **Internal Coordination:** Feedback from SEPTA departments

Fall

Route Change

Does it meet our network design standards?

- Is it duplicative?

- Does it increase access?

- Is it direct?

- Is pedestrian and ADA infrastructure available?

Schedule Change

- Changes originate from the service monitoring process; Veritas; internal/external stakeholders

- Examples: headway increase/decrease, changes in runtime

- Implemented three times per year with each schedule changes

- Major schedule change requires a Title VI analysis

OCT

OCT-FEB

Send project list to SEPTA Service Development Committee for feedback and prioritization

FEB

Project Analysis

Cost estimates

February Open House at SEPTA

MARCH

Finalize Projects

Final Staff Review of projects

APRIL

Tariffs filed and circulated

Public hearing notices published

MAY

Public hearings conducted

JUNE

Action recommended by Hearing Examiner

SEPTA Board consideration

JUNE - AUGUST

Coordination for fall implementation

Surface Transportation

Local and Government Affiairs

Communications, Marketing, and Customer Service

SEPT

Implementati