SEPTA Bus Revolution
State of the Bus System and Market Analysis
Executive Summary

January 2022
PART I

Setting the Stage
Setting the Stage provides an overview of this SEPTA Bus Revolution effort, the SEPTA bus system today, and the communities we serve.
What is the Bus Revolution?

SEPTA Forward: Bus Revolution aims to make riding the bus an easier, faster, more reliable and more competitive option for more people. Launched in 2021, it is our first ever comprehensive redesign of the SEPTA bus network. This effort builds on the direction and momentum established by our strategic plan, SEPTA Forward: A Vision for a Stronger Future.

Through the Bus Revolution process, we are evaluating the strengths and weaknesses of the bus network by doing a blank slate, top-to-bottom review.

- **Bus Revolution is a three-year process.** The first two years are dedicated to technical work and community engagement; the third year will focus on implementation.

- **Extensive and detailed technical analysis** of transit markets, ridership patterns, and service productivity are pointing us to what’s working well today and revealing opportunities for system improvement.

- **Ongoing conversations with stakeholders, riders, and bus operators** about what they want and need are crucial to the plan. We’ve already talked with over 10,000 riders, residents, and community stakeholders. We will keep these conversations going throughout the project.

- **Bus Revolution is about equity.** Improving SEPTA’s bus network will increase opportunities for people with low incomes and people of color, who rely on public transportation to meet their needs more than the population at large.

- **Bus Revolution will work within SEPTA’s available resources.** Any recommended changes to the bus network will have to work within SEPTA’s resources—this includes budgets, but also resources like staff and vehicles. So, while the number of routes or the frequency of service on some routes may change, the amount of service will not.

Why is SEPTA important?

Before the pandemic, over half a million riders used SEPTA bus services every weekday—to get to and from work, to shop, for medical appointments, to see friends, and to do all the other things that are important to our lives. Many riders use SEPTA because it is the travel option that works best for them. For others, SEPTA provides a lifeline that connects them to daily needs that otherwise would be difficult to reach.
How is transit changing in Southeast Pennsylvania?

While SEPTA’s ridership ranks the agency as the 5th largest transit agency in the U.S., ridership has been in decline even before the pandemic. In 2014, SEPTA buses carried over 177 million passenger trips. By 2019, annual ridership had dropped by 13% to 154 million passenger trips. This means that our buses carried 23 million fewer passenger trips in 2019.

Why has bus ridership been declining?

- As many parts of our region grow, some neighborhoods and activity centers are quickly emerging as new destinations that need service.
- Increasing congestion has been making buses slower and less reliable over time.
- Uber and Lyft provided people with a new travel choice that, while more expensive than SEPTA, was faster and more convenient.
- Bike ridership has been increasing rapidly over the past decades, as expanded bike lanes make biking a safer and more attractive option.

We have made some changes to our bus network, but this has not kept pace with changes in the region or technological advances, making other travel options more attractive. A key goal of the Bus Revolution is to bring riders back to the network.

Ridership fell sharply due to the pandemic, but riders are starting to return.

Like many transit systems, ridership on SEPTA services dropped dramatically due to the pandemic; by September 2020, monthly ridership was down by 58% from pre-pandemic levels. Ridership has slowly risen over the past year, but as the pandemic continues to arrive in waves, it has remained low. By October 2021, monthly ridership was still down by 41% relative to January 2020.

Future trends are still emerging, but travel patterns are not expected to return to exactly what they were before the pandemic. SEPTA’s bus network will need to adapt to serve a permanently changed economy and evolving travel needs.

Making transit work better

Like many transit agencies across the United States, SEPTA’s ridership was declining even before the pandemic. However, some transit systems have reversed or avoided ridership losses by making transit more competitive and attractive. Before the pandemic, transit agencies in Seattle, Pittsburgh, Austin, San Antonio, and Las Vegas made changes to their services to increase ridership.

Over time, these systems grew ridership by investing in a variety of strategies, such as redesigning their networks, creating networks of frequent bus routes, expanding service to new areas, and upgrading high ridership routes to premium services like Bus Rapid Transit and Rapid Bus.
Bus Service Today

Buses are the lifeblood of the SEPTA system. They carry nearly half of all SEPTA riders, and make up the majority of “service hours”. The share of riders who took the bus—relative to rail—increased during the pandemic and, looking forward, our models suggest this percentage will increase in the future.

**SEPTA’s bus network is extensive and well connected.**

Our transit system truly functions as a network, and connections between routes and services allow riders to reach destinations across the service area.

In Center City, North Philadelphia, and South Philadelphia, bus services operate as a grid. Outside of the urban core, the road network is more radial and bus services are focused around nine transportation centers.

Among trips with a transfer …

- 30% Bus-Bus
- 38% Bus-Broad St Line or Market-Frankford Line
- 7% Bus-Trolley
- 2% Bus-Regional Rail or Norristown High Speed Line
- 23% Didn’t involve a bus

37% of SEPTA weekday trips involved a transfer

In the fall of 2019, SEPTA bus services carried on average:

- **600,000** passengers per weekday
- **245,000** passengers per Saturday, or 54% of weekday ridership
- **200,000** passengers per Sunday, or 39% of weekday ridership

**SEPTA runs one of the largest transit systems in the U.S.**

- 125 bus routes
- 3 trackless trolley routes
- 2 rapid transit lines (Broad Street and Market-Frankford lines)
- 8 rail trolley lines that provide a combination of surface and subway service
- 1 interurban heavy rail line (Norristown High Speed Line)
- 13 Regional Rail lines
- Complementary ADA Paratransit (CCT)
SEPTA’s bus routes provide high levels of service.

A large share of SEPTA’s bus routes operate frequent service and run for long hours. Nearly a quarter provide all-day frequent service, with buses scheduled at least every 15 minutes from at least 6 AM to 9 PM. Many routes also operate almost-frequent service, falling just short of the 15-minute threshold.

53% of riders are within a 15-minute (1/2-mile) walk of all-day frequent service.

49% of riders are within a 10-minute (1/4-mile) walk of all-day frequent service.

Most SEPTA services operate for long hours from early morning until late night.

A core set of SEPTA bus routes provide a 24-hour network for riders that covers a significant share of the city of Philadelphia and extends to other parts of our service area.

62% of the bus network runs for at least 20 hours a day on weekdays.

18% of the bus network runs 24 hours a day.

On weekends, 85% of bus routes run on Saturdays and 78% of routes run on Sundays.

Weekday Span of Service

Span of Service
- 24 hour service
- At least 20 hours of service
- Less than 20 hours of service

* Select route segments may have shorter spans of service than shown (due to patterns with limited service)
Where is the Demand for Transit?

Transit exists to get people where they want to go, such as home, work, school, a friend’s house, or an appointment. In other words, there must be a market for transit to serve.

The Bus Revolution aims to make bus service faster, more reliable, easier to use, and more competitive relative to other transportation options. To do this, we need to understand the current and potential demand for transit in our region.

Transit demand is strongly related to six factors:

- **Population and Population Density:** Transit relies on having more people in close proximity to service. Higher population density makes it possible to provide higher levels of transit service.

- **Socioeconomic Characteristics:** People may be more or less likely to use transit based on socioeconomic characteristics. For example, households with one or no cars are much more likely to use transit than households with several cars.

- **Jobs and Job Density:** Traveling to and from work often accounts for the most frequent type of transit trip. As a result, the location and density of jobs is a strong indicator of transit demand and the level of transit service that is possible.

- **Land Use Patterns:** In all cities, there is a strong correlation between land use patterns and transit ridership. In areas with denser development, mixed-use development, and a good pedestrian environment, transit can be very convenient for more people.

- **Major Activity Centers:** Large employers, universities, tourism destinations, and other high-activity areas attract large volumes of people and can generate a large number of transit trips.

- **Travel Flows:** People use transit to get from one place to another. Major transit lines such as rapid transit services or high frequency bus routes are designed to serve trips or corridors with high volumes of travel.
Of these six factors, **population and job density** are the most important when it comes to demand for transit and how much service is feasible to provide.

This is because:

- The reach of bus transit is generally limited to one-quarter mile of a bus stop.
- As a result, the size of the transit market depends on how many people or jobs are within that area. Higher densities near a transit stop mean that there are more people or jobs within that area, which means that there is a larger market for transit service.
- Larger markets support more frequent service, while smaller markets with fewer people or jobs can support only less frequent service.

The table below shows how different land uses correspond to different frequency levels:

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Frequency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>45–90 residents/acre</td>
<td>&lt;10 min</td>
</tr>
<tr>
<td>25–50 jobs/acre</td>
<td></td>
</tr>
<tr>
<td>30–45 residents/acre</td>
<td>10–20 min</td>
</tr>
<tr>
<td>15–25 jobs/acre</td>
<td></td>
</tr>
<tr>
<td>15–30 residents/acre</td>
<td>30 min</td>
</tr>
<tr>
<td>15–25 jobs/acre</td>
<td></td>
</tr>
<tr>
<td>10–15 residents/acre</td>
<td>60 min</td>
</tr>
<tr>
<td>5–10 jobs/acre</td>
<td></td>
</tr>
</tbody>
</table>
Greater Philadelphia is one of the best markets for transit in the United States.

The City of Philadelphia has a high proportion of transit critical populations, dense housing and job centers, and activity centers that make it one of the most transit-supportive areas in the country. As a result, the city has high transit demand, and many areas can support transit running as often as every 15 minutes or more frequently throughout the entire day.

Select suburban areas surrounding Philadelphia also have strong transit markets. These areas need more focused, frequent services that are tailored to underlying demand.

Underlying transit demand is strong across the SEPTA service area, but where and when people want to travel is also important.

While many places with high demand are served by transit, this service doesn't always match actual travel patterns or get people where they need to go. Service quality is high for trips to and from Center City, but crosstown trips are underserved.

Despite having a high demand for transit, neighborhoods outside of Center City such as North Philadelphia and Lower Northeast Philadelphia have relatively low transit mode splits. This is because connections between neighborhoods are not as well served, with low service frequencies, indirect routes, and more transfers needed to make those trips.
Peak-period service is strong, but many riders rely on off-peak and weekend service.

Nearly two thirds of workers in SEPTA's service area travel to work during AM peak hours, and SEPTA provides its most frequent service during peak periods. However, 36% of workers commute at other times of day, when bus service is less frequent. Workers who commute outside of peak periods are more likely to have lower incomes and are also more likely to have works shifts that change day-to-day or week-to-week.

Many people who are more likely to use transit are also more likely to rely on service outside of traditional peak hours:

- Residents with no or limited access to a vehicle rely on transit for most types of trips, not just work trips.
- Low-wage, Black, and Hispanic workers are more likely to have varying schedules, less likely to work from home, and less likely to adhere to a "9 to 5" work schedule.
- Women, especially those with children or other dependents, make more trips in general, are more likely to chain multiple trips together, and are more likely to work multiple jobs.

### Non-Traditional Commuters

**Share of commuters leaving for work outside the A.M. peak (before 6 a.m. or after 9 a.m.)**

Regional mean: 34%

**Off-peak commuters proportion**

- 0% - 14%
- 14% - 29%
- 29% - 43%
- 43% - 57%
- 57% - 70%

**Transit Routes**

- SEPTA Rail
- SEPTA Bus
- SEPTA Trolley
- Market-Frankford Line
- Broad Street Line
- Norristown High Speed Line

Data Sources: American Community Survey 2019 5-year estimates
PART II

Opportunities
This section presents four key opportunities to improve the SEPTA bus system. For each opportunity, we explain why it’s important, what it means for riders, and how we can get it done.
Make Service Faster and More Reliable

Faster, more reliable service is important because it helps people get places quickly and on time. This is underscored by community input: The most common complaint we get about SEPTA bus service is that it is slow and unreliable. Our data bear this out:

Among the 13 busiest bus routes (10,000+ daily boardings) ...

<table>
<thead>
<tr>
<th>Route Description</th>
<th>Average Weekday Ridership</th>
<th>On-Time Performance</th>
<th>Average Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitman Plaza to 5th-Godfrey</td>
<td>17,768</td>
<td>66%</td>
<td>9.2</td>
</tr>
<tr>
<td>G Overbrook to Columbus Commons or Food Distribution Center</td>
<td>17,063</td>
<td>74%</td>
<td>11.3</td>
</tr>
<tr>
<td>23 Center City to Chestnut Hill</td>
<td>15,637</td>
<td>68%</td>
<td>9.6</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>14,627</td>
<td>71%</td>
<td>11.0</td>
</tr>
<tr>
<td>52 49th-Woodland to 54th-City or 50th-Parkside</td>
<td>14,066</td>
<td>71%</td>
<td>9.4</td>
</tr>
<tr>
<td>23 Center City to Chestnut Hill</td>
<td>11,983</td>
<td>70%</td>
<td>10.9</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>11,306</td>
<td>75%</td>
<td>7.8</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>11,051</td>
<td>73%</td>
<td>10.3</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>10,770</td>
<td>80%</td>
<td>12.0</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>10,673</td>
<td>68%</td>
<td>10.4</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>10,184</td>
<td>68%</td>
<td>8.5</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>10,154</td>
<td>67%</td>
<td>9.4</td>
</tr>
<tr>
<td>18 Fox Chase to Cedarbrook Plaza</td>
<td>10,146</td>
<td>68%</td>
<td>12.0</td>
</tr>
</tbody>
</table>

... only 1 passes our reliability target ... 7 ... and only 7 have an average speed greater than 10 mph.

Highest Ridership Routes (10,000+ Average Weekday Boardings)

- 47 Whitman Plaza to 5th-Godfrey
- G Overbrook to Columbus Commons or Food Distribution Center
- 23 Center City to Chestnut Hill
- 18 Fox Chase to Cedarbrook Plaza
- 52 49th-Woodland to 54th-City or 50th-Parkside
- 56 23rd-Venango and Bakers Centre to Torresdale-Cottman
- 33 Penn’s Landing to 23rd-Venango
- 26 Chelten Av Station to Frankford Transportation Center
- 66 Trackless Trolley/Frankford-Knights to Frankford TC
- 57 Whitman Plaza to Rising Sun-Olney or Fern Rock TC
- 21 Penn’s Landing to 69th Street TC
- 60 35th-Allegheny to Richmond-Westmoreland
- R Henry-Midvale and Wissahickon TC to Frankford TC

What does slow and unreliable service mean for riders?

- If the bus is going to be stuck in traffic I might as well just drive.
- If I don’t make my transfer, I won’t make it to my doctor’s appointment.
- The bus is stopping so often that I might’ve been better off walking.
What makes buses slow and unreliable?

1. FREQUENT STOPS
SEPTA bus stops are spaced very close together relative to other transit agencies. This close spacing leads to slower, less reliable service.

<table>
<thead>
<tr>
<th>City</th>
<th>Mean Bus Stop Spacing (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Las Vegas (RTC)</td>
<td>1,581</td>
</tr>
<tr>
<td>Jacksonville (JTA)</td>
<td>1,476</td>
</tr>
<tr>
<td>Phoenix (Valley Metro)</td>
<td>1,463</td>
</tr>
<tr>
<td>Denver (RTD)</td>
<td>1,339</td>
</tr>
<tr>
<td>Los Angeles (LAMTA)</td>
<td>1,319</td>
</tr>
<tr>
<td>Orlando (Lynx)</td>
<td>1,316</td>
</tr>
<tr>
<td>Charlotte (CATS)</td>
<td>1,289</td>
</tr>
<tr>
<td>Salt Lake City (UTA)</td>
<td>1,227</td>
</tr>
<tr>
<td>Kansas City (RideKC)</td>
<td>1,165</td>
</tr>
<tr>
<td>Miami (Miami-Dade Transit)</td>
<td>1,145</td>
</tr>
<tr>
<td>Oakland (AC Transit)</td>
<td>1,129</td>
</tr>
<tr>
<td>New York (MTA)</td>
<td>1,076</td>
</tr>
<tr>
<td>Portland (TriMet)</td>
<td>1,030</td>
</tr>
<tr>
<td>Houston (MTA)</td>
<td>1,004</td>
</tr>
<tr>
<td>Dallas (DART)</td>
<td>984</td>
</tr>
<tr>
<td>Minneapolis (Metro Transit)</td>
<td>915</td>
</tr>
<tr>
<td>Pittsburgh (Port Authority)</td>
<td>879</td>
</tr>
<tr>
<td>Detroit (DDOT)</td>
<td>846</td>
</tr>
<tr>
<td>Chicago (CTA)</td>
<td>732</td>
</tr>
<tr>
<td>Philadelphia (SEPTA)</td>
<td>702</td>
</tr>
</tbody>
</table>

2. STREETS AND TRAFFIC
Many SEPTA bus routes run on congested, narrow streets with frequent stops, particularly in Philadelphia.

PM Peak Corridor Speeds
Average weighted speed on corridor during Weekday PM Peak hour of 5pm

Corridor Speed (mph)
- < 8
- 8 - 10
- 10 - 12
- 12 - 15
- > 15

Data Sources: SEPTA, Swiftly
OPPORTUNITY 1: MAKE SERVICE FASTER AND MORE RELIABLE

How Could We Get it Done?

Upgrade High-Ridership Routes to Bus Rapid Transit and Rapid Bus

Bus Rapid Transit and Rapid Bus are packages of improvements that make buses faster and more reliable, and improve the overall customer experience. They often include capital investments such as station-like stops with real-time information displays, fare machines, and level boarding.

Implement Transit Priority Measures

Transit priority measures help buses move more quickly along streets and through intersections. Along streets, this means dedicated bus lanes. At intersections this means special traffic lights that prioritize transit (“transit signal priority”) and lanes that let buses bypass car traffic (“queue jump lanes”).

Consolidate and Rebalance Stops

Consolidating and rebalancing stops means increasing the space between them—by removing or relocating stops—so buses run faster and don’t have to stop as often. This aligns with public opinion: roughly two-thirds of people who have participated in SEPTA community engagement have said they are willing to walk slightly farther to a faster bus.

Partnerships are Critical

We can’t make bus service faster and more reliable alone. Many of the opportunities to improve speed and reliability require help from the communities where buses operate, such as the City of Philadelphia, and other partners like the Pennsylvania Department of Transportation (PennDOT).

<table>
<thead>
<tr>
<th>Service upgrades to BRT and Rapid Bus</th>
<th>SEPTA</th>
<th>PARTNERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of transit priority</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Stop consolidation</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Bus bulbs/curb extensions</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Intersection improvements</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>More direct alignments</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Scheduling improvements</td>
<td>✔</td>
<td>✔</td>
</tr>
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</table>
# Regular Bus, Rapid Bus, and BRT

What’s the difference between them?

<table>
<thead>
<tr>
<th>Typical features</th>
<th>Other common features</th>
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</thead>
<tbody>
<tr>
<td><img src="#" alt="Regular Bus Icon" /></td>
<td><img src="#" alt="Rapid Bus Icon" /></td>
</tr>
<tr>
<td><img src="#" alt="BRT Icon" /></td>
<td><img src="#" alt="Bus Rapid Transit Icon" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service design</th>
<th>Regular Bus</th>
<th>Rapid Bus</th>
<th>Bus Rapid Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple route design</td>
<td>Varies</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Less frequent stops</td>
<td>Varies</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Frequent service</td>
<td>Varies</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Early morning to late night</td>
<td>Varies</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Branding</th>
<th>Regular Bus</th>
<th>Rapid Bus</th>
<th>Bus Rapid Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special branding</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transit priority</th>
<th>Regular Bus</th>
<th>Rapid Bus</th>
<th>Bus Rapid Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit signal priority</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Queue jump lanes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Exclusive bus lanes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<table>
<thead>
<tr>
<th>Stops</th>
<th>Regular Bus</th>
<th>Rapid Bus</th>
<th>Bus Rapid Transit</th>
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<tr>
<td>Enhanced stops</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Real-time passenger information</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Off-board fare collection</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Level platform boarding</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
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<table>
<thead>
<tr>
<th>Vehicles</th>
<th>Regular Bus</th>
<th>Rapid Bus</th>
<th>Bus Rapid Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique vehicles</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High-capacity buses</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
OPPORTUNITY 1: MAKE SERVICE FASTER AND MORE RELIABLE

Transit Priority Measures

The Philadelphia Transit Plan has identified 21 corridors for bus priority, and this project will likely identify more. Common transit priority measures include dedicated bus lanes, and intersection priority—queue jump lanes and transit signal priority (TSP).

Dedicated Bus Lanes

GRADE-SEPARATED Lanes
Grade-separated lanes are fully separated from other motor vehicle traffic—whether elevated, underground, or on rights-of-way reserved only for buses. They are the most effective form of dedicated lane because of virtually no conflicts with other traffic. Grade-separated lanes are the most difficult to implement.

MEDIAN Lanes
Median lanes are in the center of the roadway. They’re more effective than curbside lanes because there is less conflict with other traffic (e.g., vehicles making right turns). Median lanes are less difficult to implement than grade-separated lanes, but more difficult than curbside and offset lanes.

CURBSIDE Lanes
Curbside lanes are dedicated bus lanes along the curb. They can be full- or part-time. Relative to median lanes, they have more conflicts with car traffic turning right. However, they have fewer conflicts than offset lanes. Curbside lanes are relatively easy to implement.

OFFSET Lanes
Offset lanes are bus lanes adjacent to curb parking. Relative to curbside lanes, they have more conflicts with cars turning right, as well as cars pulling into and out of parking spaces. Offset lanes are relatively easy to implement.
Intersection Priority

**QUEUE JUMP LANES**
Queue jump lanes are short, bus-only lanes—or right-turn lanes shared with general traffic—that allow buses to bypass general through traffic. Queue jump lanes are often combined with dedicated transit signals, which give buses a head start on green lights.

**TRANSIT SIGNAL PRIORITY**
Transit signal priority extends green time for buses so they can make it through an intersection and continue running. This reduces stop time, and leads to faster and more reliable service.
OPPORTUNITY 2

Improve Service Design

Service design is about determining where buses go—and when they go. Improving service design means making bus routes easier to understand, less circuitous, faster, and ultimately more useful.

What are the main service design challenges today?

1. ALTERNATIVE SERVICE PATTERNS ARE OFTEN CONFUSING
Many bus routes have alternative service patterns. This means they run on different streets depending on the direction of travel, time of day, or day of the week. These sometimes exist for a good reason, e.g., serving a campus only when it is open. However, they make routes and schedules hard to understand.

2. DUPLICATION CAN MEAN MORE OPTIONS, NOT BETTER OPTIONS
Many SEPTA bus routes run very close to one-another or have long overlapping segments. This usually reduces the time to get to stops, but means buses come less often. Duplicative routes can also compete with one-another, and make the network less legible at a glance.
3. CIRCUITOUS ROUTES MAKE TRAVEL TIMES MUCH LONGER

Many bus routes are circuitous: they meander in several directions. This often benefits a small number of passengers by stopping very close to certain destinations. However, circuitous routes make trips much longer and more inconvenient for most passengers.

Getting from Lawrence Park to the 69th Street Transportation Center is roughly 5 miles by car but 17.7 miles by bus—because Route 107 is very circuitous.

4. LONG ROUTES ARE MORE VULNERABLE TO DELAYS

Several bus routes are very long, in part due to a legacy policy requiring riders to pay for transfers, which has since been eliminated. However, long routes make service less reliable because delays at the beginning of a trip can persist for the full length of the route.

At 23.5 miles, Route 99 connects Phoenixville and Norristown Transit Center. Most riders use either the eastern or western half of the route.

Sometimes the bus mysteriously goes somewhere I’m not expecting and I have no idea why.

There’s not a lot of traffic where I am. I wonder why the bus is late so often.

There must be a bus that gets me to the grocery store without zigzagging so much.

What do service design challenges mean for riders?

DOWNTOWN

There must be a bus that gets me to the grocery store without zigzagging so much.
OPPORTUNITY 2: IMPROVE SERVICE DESIGN

How Could We Get it Done?

**Shorten Routes**
Shortening long routes can happen by splitting them into separate routes.
This has two key benefits:
- It reduces the impacts of delays that occur at the beginning of a trip.
- If one half of a long route is much busier than the other half, then splitting the route makes it easier for us to provide more frequent service on the busier half.

**Reduce Duplication**
Reducing duplication means two separate things:
- Reducing the number of routes that provide overlapping service.
- Relying more on transfers, and less on standalone routes that connect small markets directly.
Reducing both types of duplication enables us to provide more frequent service and better target investments in transit priority measures, like bus lanes and signal priority.
If done thoughtfully, duplication can be reduced without significantly affecting access to transit.

**Make Service More Direct**
In general, making service more direct means adjusting bus routes to be straighter and easier to understand. This makes them faster and more useful to most passengers.
However, some existing passengers rely on circuitous routes precisely because they are indirect. Riders like these can be served by alternative transit models, including microtransit.
What Makes a Good Bus Route?

Avoid complicated routing: A simpler route will attract more riders than a complex one.

Avoid alternative patterns: Only use alternative patterns when there is a very sound reason.

Fast is better than slow: Virtually all passengers prefer to get places faster rather than slower.

Be as direct as possible: Avoid deviating from the most direct path unless there is a compelling reason.

Stay on main streets when possible: Keep routes on main streets to make transit service easier to understand and operate.

Better choices, not more choices: Providing better service on fewer routes provides more riders with better options.

Serve well-defined markets: Service configured around clearly defined markets is easier to understand, reduces duplication, and can form the basis for premium services.

Operate to and from strong anchors: Anchor routes with major destinations at one or both ends.
**OPPORTUNITY 3**

**Better Match Service with Demand**

Service should typically match demand: buses should come more frequently on routes that many people use, and less frequently on routes that are less busy. Furthermore, the distinction between different types of service—for example, frequent versus less frequent—should be clear to riders.

**Why is better matching service with demand important?**

**THE BUSIEST 25 BUS ROUTES CARRY HALF OF ALL BUS RIDERS ...**

Out of 125 bus routes, our 25 highest-ridership routes carry 50% of all bus riders. In most cases (but not all) these routes also have the most frequent service.

**... BUT FREQUENT ROUTES AREN’T IDENTIFIED AS SUCH TO RIDERS**

Today, on weekdays between 6 AM and 9 PM, there are 19 routes that continuously provide service every 15 minutes or better. While these frequent routes are mapped, SEPTA has not actively marketed this frequency-based map to riders.

**THIS MAKES IT HARD TO DESCRIBE PRIORITIES TO PARTNERS AND STAKEHOLDERS**

The lack of clear definitions and terms about how service names (or brands) work—like frequent, local, express—makes it difficult for us to communicate our priorities to partners and stakeholders.

**Current transit service categories, such as arterial, city, and suburban, reflect characteristics that may not be important to typical riders.**

20% of bus routes—the busiest 25 out of 125 ...

... account for 50% of overall bus ridership
The lack of clear definitions and terms about how service names (or brands) work – like frequent, local, express – makes it difficult for us to communicate our priorities to partners and stakeholders.

Current transit service categories, such as arterial, city, and suburban, reflect characteristics that may not be important to typical riders.

How many people board the bus on an average weekday?

DEMAND AND SERVICE USUALLY MATCH, BUT NOT ALWAYS

In general, routes that carry the most riders also have the most frequent service. However, some routes are very busy and buses don’t come often. Others are less busy and buses do come often. There may be an opportunity to equitably adjust resources between low- and high-demand routes.

How often do buses come on weekdays during midday?

Each bar represents one SEPTA bus route. Individual route numbers are not shown.

What do these challenges mean for riders?

It’s hard to tell which buses come more often. I’d go out of my way for a bus that comes every few minutes and goes fast.

This bus always feels packed but other routes are often empty.
OPPORTUNITY 3: BETTER MATCH SERVICE WITH DEMAND

How Could We Get it Done?

1. Identify and Market a Core Network of Frequent Transit Routes
SEPTA already provides several frequent transit services, including rapid transit lines, rail trolley lines, and bus routes. However, these are not marketed to the community as a cohesive frequent transit network (FTN). Establishing a formal FTN will require two key steps: (1) set definitions of frequent, and (2) communicating the network to riders. Definitions could be, for example:

- **Frequent**: Service every 15 minutes or better, from 6 AM to 9 PM on weekdays
- **Very frequent**: Service every 10 minutes or better, from 6 AM to 9 PM on weekdays

Communicating the network to riders would include changes to rider information materials such as maps, in addition to promotional efforts to increase awareness.

2. Introduce New Service Types and Develop a Family of Services
A “family of services” is a framework for organizing bus routes and services around characteristics like:

- **Service frequency**: how often the bus comes
- **Speed**: how fast the bus goes
- **Capacity**: how many people the bus can carry

With a family of services in place, riders can more easily understand route features at a glance, such as for example:

- How often the bus typically comes
- Whether service has frequent stops or limited stops
- Whether service is available on weekends
- How late the bus runs at night

It also becomes easier to communicate priorities to partners and stakeholders. For example, it may be easier to justify transit priority measures for a rapid bus route than for a local bus route.
What Might a Family of Services Look Like for SEPTA?

**Metro Service**
Rapid transit lines (BSL, MFL, NHSL), trolley lines, and possibly bus rapid transit (BRT).

- Service every 10 minutes or better for most of the day, running for very long hours, often running 24 hours a day.

**Rapid Bus**
Routes like BRT but without dedicated travel lanes.

- Service typically every 15 minutes or better for most of the day, running for very long hours.

**Frequent (Local) Bus**
Local bus routes with frequent service.

- Service typically every 15 minutes or better for most of the day.

**Local Bus**
Routes that operate less frequently than every 15 minutes.

- This could include subcategories, such as weekday only.

**Microtransit**
Curb-to-curb service using vans or small buses within a specified service area, such as a neighborhood or local boundary.

- On-demand service that operates for designated hours during the day.

**Expressway and Limited Stop Bus**
Routes that operate less frequently than every 15 minutes.

- Service designed around commuter markets with fast, direct service.

**Regional Rail**
Service determined by our Reimagining Regional Rail Study. Visit planning.septa.org for more information.
OPPORTUNITY 4

Provide More Frequent Weekday Off-Peak and Weekend Service

Off-peak refers to times outside of the typical morning and afternoon rush hour—early morning, midday, evening, night, and weekends. More off-peak service accommodates shifting travel patterns and benefits people who depend on transit most.

Why is off-peak service important?

People who identify as women make up 61% of overall SEPTA ridership.

WOMEN ARE MORE LIKELY TO TAKE TRANSIT AND TRAVEL OFF-PEAK
The majority of SEPTA riders are women (61%), and women are more likely to be responsible for a greater share of household errands and childcare. Trips for these purposes often take place during off-peak times like midday, evenings, and weekends. Women are also more likely to chain multiple trips together, and more likely to have more than one job.

Source: 2017 NHTS

CHANGING WORK-FROM-HOME NORMS ARE EXPECTED TO REDUCE DEMAND FOR TRANSIT DURING PEAK HOURS
Transit demand during peak hours dropped during the pandemic. Many people with traditional work hours will continue to have flexible returns-to-work or permanent work-from-home arrangements. As such, peak period demand is expected to be a lower percent of overall ridership, relative to its pre-pandemic level.
OFF-PEAK SERVICE BENEFITS PEOPLE WHO RELY ON TRANSIT

Many people who are more likely to use transit are also more likely to rely on service outside of traditional peak hours:

• Workers who commute outside of peak periods are more likely to have lower incomes.
• Low-wage, Black, and Hispanic workers are more likely to have varying schedules, less likely to work from home, and less likely to adhere to a “9 to 5” work schedule.
• Residents with no or limited access to a vehicle rely on transit for most types of trips, not just work trips.

Source: 2012–2013 DVRPC Regional Household Travel Survey

OFF-PEAK SERVICE BENEFITS CUSTOMERS, CLIENTS, PATIENTS, AND STUDENTS

Jobs that attract customers, clients, patients, and students—which often can’t be done remotely—are 30% more likely to attract transit trips than jobs overall. These jobs may not have regular hours, and the trips made by customers, clients, patients, and students aren’t associated with AM peak or PM peak times.

Source: DVRPC Census Transportation Planning Products

What does this mean for existing and potential riders?

I wish I could hop on the bus more easily for lunch and daytime errands.

I have to take an extra early bus to my evening shift so I can drop my daughter off at childcare.

The only bus that gets me to my second job arrives two hours before my shift starts.
OPPORTUNITY 4: PROVIDE MORE FREQUENT WEEKDAY OFF-PEAK AND WEEKEND SERVICE

How Could We Get it Done?

We can get this done by investing in more service outside of peak times. This can occur in part by shifting resources from peak hour service. In particular, relative to pre-COVID service, we can focus more resources on:

- The “shoulders” of the peaks, i.e., the time immediately before and after peaks
- Midday
- Weekends

The chart to the right shows a SEPTA model transit demand by time of day, where peak demand is expected to be lower than it was before the pandemic.

Increasing off-peak and weekend service will better match anticipated changes in work and travel patterns, and make transit more attractive for a wide variety of people.
What’s Next for SEPTA Bus Revolution?

This summary of the State of the Bus System and Market Analysis—along with detailed profiles of each individual SEPTA route—set the stage for developing Bus Revolution strategies.

Recent Community Engagement
We’ve begun discussing the Bus Revolution with riders, stakeholders, and SEPTA staff including bus drivers—as part of our preliminary community engagement efforts. These initial conversations focused on understanding core community values regarding how bus services should be organized and structured. To date, we’ve interacted with over 2,000 bus riders and received over 7,000 surveys.

Next Steps
We will combine this community input with our technical efforts, to refine our opportunities for improvement. Then we will create options (or “scenarios”) with packages of improvements.

Following additional community input—plus a technical evaluation of the scenarios—we will move forward with recommended strategies and begin implementation in 2023.

Join the Conversation!
We want to hear from you! There are many opportunities to get involved.

Visit septabusrevolution.com for the latest information on the SEPTA Bus Revolution—including ways to get involved.
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