



The Philadelphia Transit Plan

A Vision for 2045





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LETTER FROM THE MAYOR

Fellow Philadelphians,

A City Connected by Transit is central to Philadelphia and the region's economy and an equitable recovery from the impacts of COVID-19.

The coronavirus pandemic has taken a devastating human and financial toll on our city, including impacts on our transit system, workforce, ridership, and funding. The Philadelphia Transit Plan is an opportunity for the City to support ongoing efforts to improve transit. The plan will also set a vision for how transit fits into the renewal, recovery, and reimagining of Philadelphia in the years ahead. The pandemic and its economic challenges make transit planning more important than ever.

While use of transit is down today, a recovered and reimagined Philadelphia needs a functional transit system to:

1. Address the systemic racial disparities among our residents.
2. Make real progress in reducing greenhouse gas emissions.
3. Keep Philadelphians moving to jobs and schools in an inclusive manner as we recover from the current economic crisis.

By focusing on a policy platform, bus corridors, and high capacity transit, this plan sets out a vision of: A CITY CONNECTED BY TRANSIT. This is a bold, transformational roadmap that provides long-term solutions while addressing immediate and relevant needs through policy and infrastructure recommendations we can start to put in place now, despite the state of our economy and budget. This work will be critical for communities of color and households in poverty, who disproportionately use the bus network in their daily lives.

We are ready to partner with the Biden-Harris Administration, the state legislature, City Council, our regional partners, and SEPTA. This plan provides the vision, ambition, and clear roadmap to improve opportunity and access for all residents.

Sincerely,

Mayor Jim Kenney



LETTER FROM THE GENERAL MANAGER

Dear Philadelphians and SEPTA Riders,

There are many reasons to be excited about the future of transit in Philadelphia. It is our mission to develop a unified transit network that supports equity and enhances quality of life by connecting people with opportunity, catalyzing the economy, and sustaining the environment. The Philadelphia Transit Plan charts a strong path for how we can get there. We are dedicated to continuing our partnership, studying and building upon many of these ideas with robust analysis and comprehensive public engagement. I am happy to report that some of these initiatives are already underway here at SEPTA.

If we've learned anything from a very trying year, it's that SEPTA is a powerful force for bolstering equity and improving quality of life. During the COVID-19 pandemic, we continued to operate for our region's essential workers who stocked grocery stores, staffed hospitals, and kept our region running. As we look forward, transit will enable us to take on more challenges, like fighting climate change, protecting our environment, and building livable, accessible, and healthy communities where all people can participate.

In 2021, we will begin to implement a "lifestyle" transit network – one which supports all types of riders, commutes, and leisure trips, not just the typical 9-to-5. We're kicking off a redesign of our bus network, a multi-year effort with extensive stakeholder and public outreach that will transform our system, to help us better meet the changing needs of our region. SEPTA will also be making its trolley network accessible through Trolley Modernization and exploring new possibilities for our Regional Rail network. With our Wayfinding Master Plan, SEPTA is committed to making our system easier to use for all, regardless of language, ability, or level of familiarity.

SEPTA can't do it alone – like all infrastructure, great transit requires cooperation, support, and advocacy from government and the public alike – from policy, to funding, to land use and zoning. With this plan, we know the City of Philadelphia will be a strong partner.

Sincerely,

General Manager Leslie Richards



EXECUTIVE SUMMARY

The Philadelphia Transit Plan is the City's guide for improving public transit. Philadelphia needs public transit – it connects residents to opportunity, supports our economy, and is critical to fighting climate change.

While our city has one of the most robust transit systems in the country, we need new policies, planning approaches, and investment.

We cannot fully address the systemic racial disparities among our residents, recover from the current economic and health crises, and fight the climate crisis without investing in public transportation.

By focusing on a **Policy Platform, Bus Corridors, and High Capacity Transit**, this plan sets out **a vision of:**

A CITY CONNECTED BY TRANSIT

This vision describes where we want to go, and the mission drives the policy and investment that gets us there. To achieve the vision, it must be **our mission to:**

CREATE A MORE EQUITABLE, SAFE, ACCESSIBLE, COMFORTABLE, AFFORDABLE, AND SUSTAINABLE TRANSIT SYSTEM TO CONNECT A RECOVERED, REIMAGINED PHILADELPHIA

GOALS & STRATEGIES

1

TRANSIT FOR SAFETY, RELIABILITY, AND CLEANLINESS

- Prioritize buses on our streets by adding bus lanes and other features to speed up service and eliminate delay.
- Enhance cleanliness and safety on transit vehicles, at transit stops, and at transit stations, building on progress made during the COVID-19 pandemic.
- Improve bus stop infrastructure, such as shelters and lighting.

2

TRANSIT FOR THE ENVIRONMENT

- Shift trips from driving to public transit, and make living without a car easier for Philadelphia residents.
- Adopt battery electric buses as the technology allows.
- Shift toward clean energy to power our trains, buses, and trolleys.

3

TRANSIT FOR AN EQUITABLE & JUST PHILADELPHIA

- Reform the fare structure, including adding a low-income pass program and instituting fare capping.
- Expand frequent weekend service.
- Ensure an equitable approach to the SEPTA bus network redesign.
- Achieve full accessibility on the MFL, BSL, and trolley network.

4

TRANSIT FOR TODAY'S CHALLENGES

- Implement trolley modernization and the bus priority network.
- Partner with SEPTA on its bus network redesign to ensure the network better addresses the needs of the city's diverse residents.
- Support post-pandemic economic recovery with transit investments.
- Ensure every step of the transit riding process is built around the user's needs.

5

TRANSIT FOR THE FUTURE

- Reimagine our Regional Rail system as a frequent, metro-style service that is integrated with the entire transit network.
- Work with regional partners to establish a stable source of transit funding.
- Expand the high capacity transit network to respond to changing needs of the city and region.
- Coordinate land use planning and transit investment to ensure they both support one another.



WHY TRANSIT MATTERS

Transit Improves Equity

- Investing in better transit service is an important tool for the City to bridge the opportunity gap between residents. Residents of color spend an average of 12 minutes per day longer than White residents getting to and from work – 50 hours over the course of a year for someone working five days per week.¹
- Inequities in health outcomes challenge Philadelphia and exacerbate other issues. Transit is a tool in addressing this. Transit riders are less likely to become obese and get more activity than people driving.^{2, 3} Reducing reliance on cars also allows for more space for healthier infrastructure such as bike-share, parklets and outdoor dining, and green-stormwater infrastructure.

Transit Makes Philadelphia Competitive and Will Help Us Recover

- Philadelphia benefits from one of the largest transit networks in the country. A robust transit network is key to the city's competitiveness in attracting and retaining people and investment.
- Investing in public transit has been proven to create jobs, reduce congestion, and attract companies and jobs to the city and region.

Transit Is Critical to Tackling Climate Change

- To rise to the challenge of our climate crisis, every possible trip in the city must shift to public transit, walking, or biking. Public transit emits significantly less carbon than private vehicles, and SEPTA is working towards fully electrifying its fleet and sustainably sourcing its electricity.

¹ Average travel time to work (minutes) by race/ethnicity, all modes; National Equity Atlas (2017)

² She, et. al. "Is promoting public transit an effective intervention for obesity?: A longitudinal study of the relation between public transit usage and obesity." Transportation Research (2019)

³ Mayor of London, "Mayor's Transport Strategy" (March 2018)



HIGHLIGHTS OF THE PLAN

POLICY PLATFORM



New policies and strategies that will make transit more convenient, comfortable, and intuitive include:

- Partnering with SEPTA on its Comprehensive Bus Network Redesign
- Developing a low-income fare program
- Achieving full accessibility of the MFL, BSL, and trolley network
- Expanding and strengthening the frequent bus network, including on weekends

BUS CORRIDORS



Buses are the workhorse of Philadelphia's transit system. Investments in bus infrastructure that will make the network faster and more reliable include:

- Prioritizing streets for bus improvements
- Developing a toolkit of potential interventions in the street
- Sketching ideas for priority corridors to jump start implementation

HIGH CAPACITY TRANSIT



Investments in the high capacity transit infrastructure that will prepare the region to meet the challenges of the 21st century

- Modernizing the trolley system for greater capacity, better reliability, and full accessibility
- Reimagining Regional Rail as frequent transit that comes every fifteen minutes, all-day
- Visioning for the expansion of high capacity transit network, such as trolley, BRT, and subway extensions

CHAPTER 1

FRAMEWORK FOR TRANSIT



CHAPTER SUMMARY

Philadelphia faces multiple crises: COVID-19, poverty, education, slow and inequitable growth, and climate change. This chapter makes the case of why improving transit not only rises to the same level of importance as these other issues, but is a key element in addressing them. This chapter also summarizes the long history of transit in Philadelphia and today's context.

The last part of this chapter, the State of Transit in Philadelphia, provides an overview of the strengths, challenges, and opportunities on which the recommendations that follow will seek to build, solve, and leverage.





Map of transit recommendations from the 1960 Comprehensive Plan

1.1 INTRODUCTION

WHAT IS THE PHILADELPHIA TRANSIT PLAN?

The Philadelphia Transit Plan provides a road map for the City to improve public transit and achieve our vision, for a City Connected by Transit.

The Philadelphia Transit Plan was developed by the City of Philadelphia in close collaboration with local transit operators and a variety of resident stakeholders (see page 18-19 for more details). The plan identifies the current and future transit needs across the city and establishes several strategies for improving our public transit network.

The plan has three focal points:

1. Policy Platform – a set of policies intended to systematically improve transit.
2. Bus Corridors – a short-term plan for bus priority corridors.
3. High Capacity Transit – a long-term plan for transformative rail service.



39% of Philadelphians below poverty indicated that **transportation** is a **serious barrier to finding or keeping a job.**

Source: City of Philadelphia, Mayor's Office of Community Engagement and Opportunity, Community Needs Assessment (2016)

WHY DEVELOP A TRANSIT PLAN?

Philadelphia is both built around and sustained by public transportation. The city's economic vibrancy, density, and walkable scale are made possible by a robust transit system that serves hundreds of thousands of people each day. Cities across the country are investing billions of dollars in new bus, rail, and trolley service to create the type of transit networks Philadelphia has had for a century.

But over the last 35 years, Philadelphia's transit systems have remained stagnant. This stands in contrast to the major changes the city has seen in recent decades. A growing population, changing land uses, shifting travel demand, competing services such as Uber and Lyft, COVID-19, and growing congestion are just a few of the factors driving change in how people get around.

The CONNECT Strategic Transportation Plan, released by the City in 2018, calls for a transportation system that benefits everyone regardless of race, income, or ability. Quality public transit is essential to meet that objective.

Public transit is a vehicle for inclusive growth by connecting residents to economic opportunities, such as jobs and education.

Many Philadelphians rely exclusively on public transportation to get around – particularly low-income households and people of color.

Our survey of residents found that 61 percent of Philadelphians ride transit at least once a month. The freedom to move around without a car requires transit that reliably gets Philadelphians where they need to go, when they need to get there.

The City holds many of the keys to transit's success – traffic enforcement, right-of-way infrastructure, passenger amenities, transit funding, and land use regulation. The City must continue to support transit to ensure Philadelphia realizes its goals for a more inclusive, sustainable, and economically resilient future.



PLANNING CONTEXT

This plan comes at a critical time for transit in Philadelphia. While the city has had a rich history of innovation and leadership in public transportation that goes back nearly 200 years (see timeline on pages 16-17), over the last three decades, investment in transit has focused largely on maintaining and replacing aging infrastructure. There are several initiatives underway, such as Direct Bus, the Trolley Modernization Program, and Comprehensive Bus Network Redesign (CBNR) that promise to reshape the status-quo of transit.

Building on Past Plans

This plan builds on nearly a decade of planning by the City of Philadelphia.

Philadelphia2035, the City's comprehensive plan, was released in 2011. The plan outlines several visionary improvements to the city's transit network while calling for more transit-oriented development. In 2018, the CONNECT Strategic Transportation Plan recommended the City create a transit plan, and the City's Vision Zero Action Plan 2025 (November 2020) identifies transit as a complementary strategy to save lives.

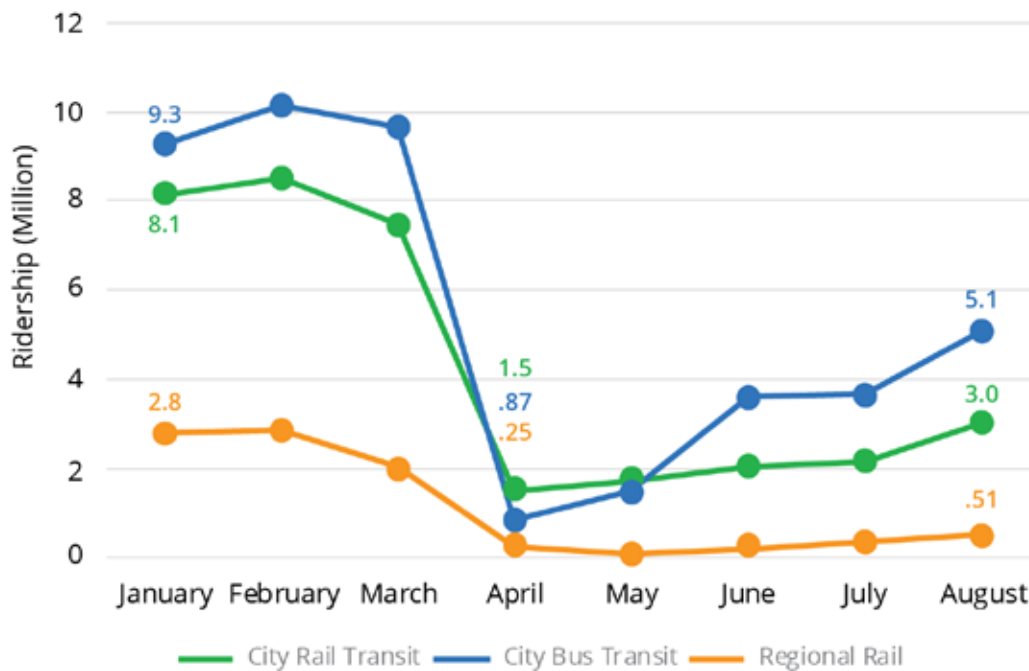
SEPTA's recent *Philadelphia Bus Network Choice Report* (2018) identified the need for a comprehensive reevaluation of the city's bus network and recommended that the City pursue planning efforts to prioritize buses on its streets.

Finally, this plan expands on a history of inter-agency cooperation to improve transit service, most notably the City and SEPTA's Transit First initiative. Transit First was launched in 1989 and focuses on ways to improve the efficiency and speed of surface transit. Recent work such as Direct Bus, the Hub of Hope, and operational improvements to bus lanes, show this relationship has the ability to produce lasting benefits.

Focusing on Intra-City Transit

This report focuses on travel within the City of Philadelphia and around the Philadelphia region. In doing so, it provides recommendations for the City, SEPTA, and other transit providers operating here. Intercity services – such as Amtrak, air carriers, and intercity bus carriers – are important but are not covered in this plan. The City will continue to support their long-term planning efforts to connect Philadelphians to destinations beyond the region.

IMPACT OF COVID-19 On 2020 City Transit Ridership



Source: SEPTA, Revenue & Ridership Reports (2020)

Responding to COVID-19

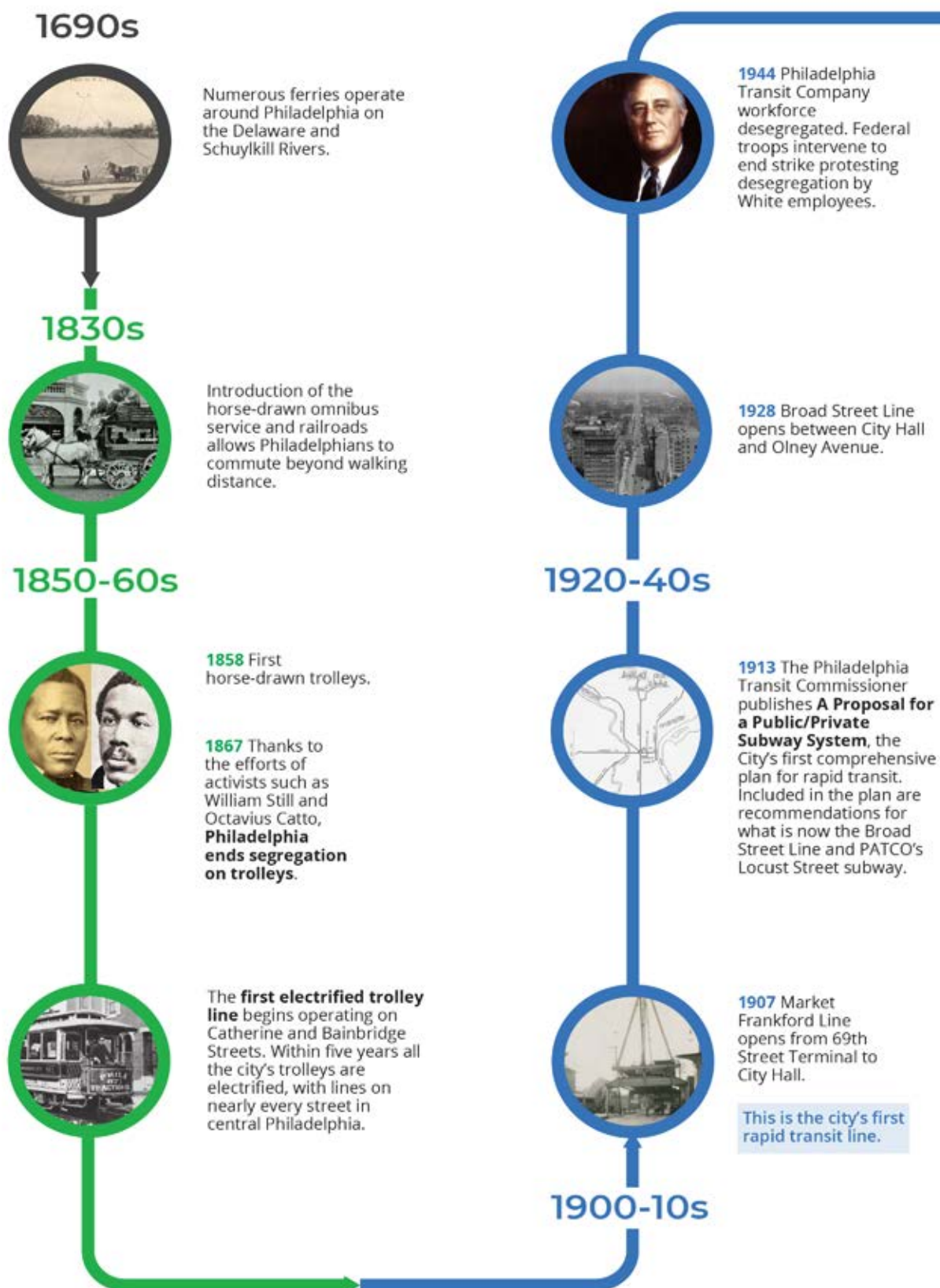
The COVID-19 pandemic has had unprecedented impacts on our transit system, workforce, ridership, and funding. **This plan is an opportunity for the City to support ongoing efforts to improve transit, while also setting a vision for what the renewal and recovery of transit looks like post-pandemic.**

The pandemic and its economic fallout make planning for transit more critical than ever. Philadelphia's transit system saw unprecedented declines in ridership in March and April of 2020 which in turn have led to revenue shortfalls and investment delays. While ridership has recovered moderately on transit in the city, there is a concern that people will not be comfortable returning to transit. Possible shifts to work from home will also challenge transit in the long-term, particularly Regional Rail. If people do not return to riding

transit, congestion will worsen and Philadelphia will be at a competitive disadvantage to more auto-oriented locations. The modes recovering the fastest are those that provide frequent, all-day transit service, and do not exclusively serve traditional nine-to-five commuters. With telework this may continue. Things are changing fast right now, but this is a trend that makes this plan all the more important.

Every crisis poses an opportunity. In the short-term, lower travel demand reduces the disruption from maintenance and construction, which many agencies are seizing. In the long-term, trends towards more urban living, sustainability, and a recovered and reimagined economy provide hope that transit will weather this storm and come out stronger. **Doing this will take a public commitment to planning, funding, and supporting public transit and the city.**

Timeline of Public Transportation in Philadelphia



1960s



1956 The Market Street Elevated structure is fully buried between 46th and 32nd Streets. Construction of the tunnel and the Urban Renewal redevelopment that follow displaced over 2,000 residents of Black Bottom, primarily African American renters.

1960 A new comprehensive plan for Philadelphia outlines expansion of the rapid transit and rail system. Recommendations including the **Center City Commuter Connection** tunnel and **Broad Street Line extension** to Pattison Avenue are completed over the next two decades.

SEPTA is formed in 1963 to coordinate subsidies to private transit and railroad companies throughout Southeastern PA.

1969 PATCO Speedline begins operations between New Jersey and Center City Philadelphia.

1980-90s



1984 The Center City Commuter Connection tunnel is completed, **linking the former Reading and Pennsylvania commuter rail networks**. Philadelphia is the only large US regional rail system where most trains run through downtown without terminating.

The City of Philadelphia and SEPTA launch the Transit First initiative in 1989.

1992 The last surface trolley lines outside of West Philadelphia are discontinued.

2000-10s



2005 SEPTA re-introduces the Route 15 trolley.

2009 SEPTA completes reconstruction of the elevated portions of the Market-Frankford Line.



2021 The City releases this **Transit Master Plan**.

2021 SEPTA begins its **Comprehensive Bus Network Redesign (CBNR)**

2020 COVID-19 Pandemic forces unprecedented changes in travel behavior and transit service reductions.

2018 DVRPC releases the **Modern Trolley Station Design Guide**.

2018 The City publishes **CONNECT**, guiding transportation strategies through 2025.

2018 SEPTA's **Philadelphia Bus Network Choices Report** is released.



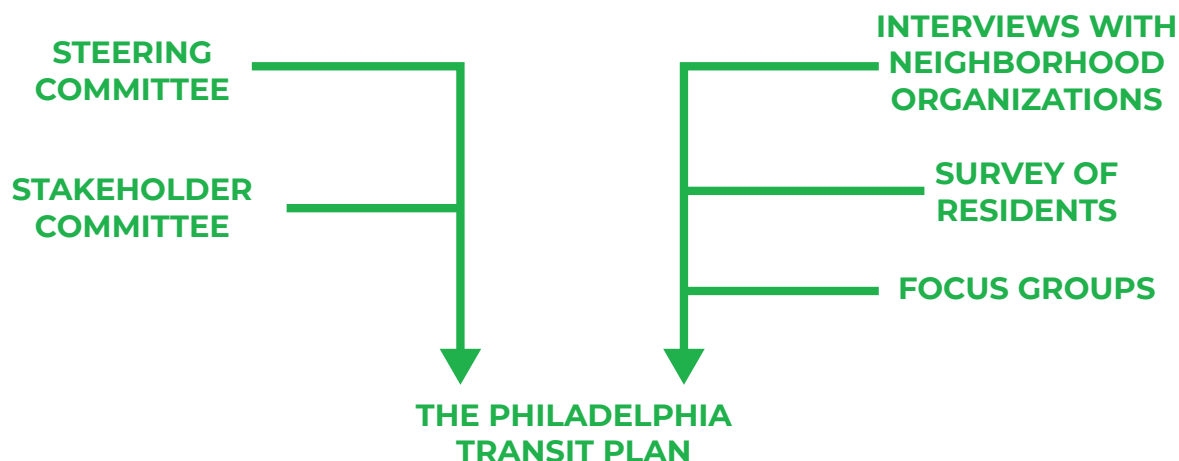
2017 The City releases its **Vision Zero plan**, that lays out steps to eliminate traffic-related deaths.

2017 SEPTA launches **Direct Bus service from Frankford to Neshaminy Mall** along Roosevelt Boulevard.



2011 The Philadelphia City Planning Commission Releases **Philadelphia2035**, the City's first comprehensive plan since 1960.

DEVELOPMENT OF THE PHILADELPHIA TRANSIT PLAN



Engaging Philadelphians

The Transit Plan is the result of nineteen months of work and was created in close collaboration between the City of Philadelphia and its partners at the Delaware Valley Regional Planning Commission (DVRPC), SEPTA, PennDOT, New Jersey Transit, and PATCO. The City of Philadelphia Office of Transportation, Infrastructure, and Sustainability (OTIS) led the development of this plan.

The City used a variety of engagement resources to inform and test the ideas in this plan, shown in the figure above. The plan was led by a steering group and stakeholder group (see Acknowledgments at the end of the document). It also utilized a series of focus groups with members of the public (both transit riders and non-riders), as well as a survey of 600 residents done in cooperation with the National Resources Defense Council (NRDC) through the American Cities Climate Challenge.

Developing a Base Understanding

The study started out identifying the strengths and weaknesses of Philadelphia's transit system, along with identifying opportunities for how transit can be improved. Recently completed plans and studies provided the team a wealth of background information. The study team analyzed land use, transit operations, survey, and socio-economic data to better understand how transit performs today across Philadelphia. Chapter 1.3 - State of Transit in Philadelphia presents the findings from the analysis and engagement.

Engagement and Outreach Summary

Each section of this plan features these green callout boxes that describe the relevant engagement results for that section. The engagement for this plan is ongoing and living. Every one of the recommendations that follow will need to be developed with public conversation and outreach.

While specific insights are throughout the plan, here are the most common responses we heard:

1. Accessibility

- Lack of elevator access at BSL and MFL stations
- Crowding or lack of dedicated space on buses
- No ADA access to trolleys

2. Affordability

- Transfer penalty
- Cost of group travel
- Weekly transpass not effective

3. Communications

- SEPTA Key confusion
- Updates on service changes
- Reaching those without cellphones

4. Reliability

- Missing a transfer, a slow ride, etc. means missing work

5. Safety and Cleanliness

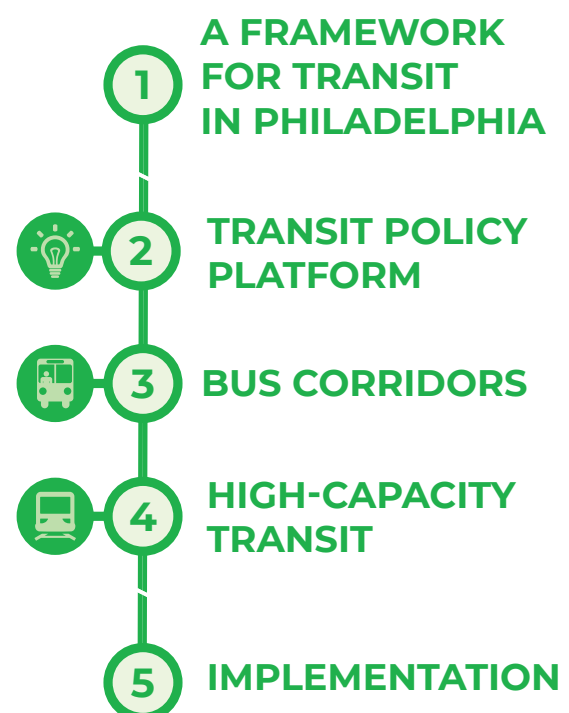
- People feel unsafe at some stops - bus shelters and lighting help
- Facility cleaning is critical to passenger comfort

Organizing the Plan

The Transit Plan is divided into five chapters. This chapter, **A Framework for Transit In Philadelphia**, provides background on the plan, including its purpose, the state of transit in Philadelphia today, and the plan's guiding vision and goals.

The recommendations of the transit plan are grouped into three chapters. The **Transit Policy Program** describes specific policies and strategies for improving transit service in Philadelphia. The **Bus Priority Program** outlines the City's vision for speeding up bus service on our streets. Finally, the **High Capacity Transit Program** details long-term investments in rail, trolley, and bus rapid transit.

The transit plan concludes with the **Implementation** chapter, which explores topics like funding, phasing of recommendations, and points of responsibility.





1.2 WHY WE NEED TRANSIT

SECTION SUMMARY

This section discusses an important underlying assumption for this plan – Philadelphia needs public transit. In summary:

- Transit improves equity and is a critical tool in our toolbox to address systemic racial and economic inequity and injustice
- Transit makes Philadelphia more competitive and will help the city recover from the economic and social crisis
- Transit improves the quality of life for Philadelphia residents by reducing reliance on cars and making it easy to get around the city
- Transit is one of our primary ways of reducing our emissions and addressing the climate crisis

Transit Has the Power to Improve Equity

Investing in better transit service is an important tool for the City to bridge the opportunity gap between residents. People of color spend an average of 12 minutes per day more than White residents getting to and from work – 50 hours over the course of a year for someone working five days per week.¹ Even among just transit riders, residents of color have longer average transit commutes than White residents.

Access to public transportation is the key to economic opportunity for many Philadelphians. Among low-income residents, 39 percent say that access to reliable transportation is their biggest barrier to finding and keeping a job.² Conversations with communities have shown that long bus rides on unreliable routes with multiple transfers can make getting to work unpredictable, making employment tenuous. Bus service is also often infrequent or non-existent for workers arriving or leaving in the early morning and late night hours and on the weekend. **Improvements to the speed and reliability of transit service in Philadelphia can make a difference in the fight to alleviate inequities in the city's transportation system.**

SEPTA serves diverse riders



57 percent

Of riders are persons of color and/or Hispanic



47 percent

Of riders make less than \$37,000 per year



61 percent

Of riders are female

Source: SEPTA 2018 Customer Satisfaction Survey

¹ National Equity Atlas, 2015 – nationalequityatlas.org

² 2016 Community Needs Assessment



ANDREW HARNIK / AP

Transit Makes Philadelphia More Competitive

Philadelphia benefits from one of the most expansive transit networks in the country, and a **robust transit network is a key to the city's competitiveness in attracting and retaining people and investment.** Philadelphia's transit infrastructure and position on the Northeast Corridor is a key competitive advantage to attracting investment and talent.

Transit Will Help Us Recover

The effects of COVID-19 on public transit has been dramatic. However, in the face of these challenges, public transit will also be critical to our recovery. For Philadelphia to work, public transit has to work. Transit is the lifeblood of urban economies by sustaining the densities needed to drive innovation and collaboration.

Investing in public transit will put Philadelphians to work and attract the investment needed to grow the economic opportunity available to our residents.

Good transit access helps cities ATTRACT AND RETAIN PEOPLE

91% of millennials think that investing in transit is important for **job and economic growth**

Source: 2014 Rockefeller Foundation and Transportation for American Millennial Travel Survey

54% of millennials would **consider moving to a new city** if it offered better transportation options

Source: 2014 Rockefeller Foundation and Transportation for American Millennial Travel Survey

66% of **home buyers value walkability** to amenities and businesses

Source: NAR 2017 Community and Transportation Preferences Survey

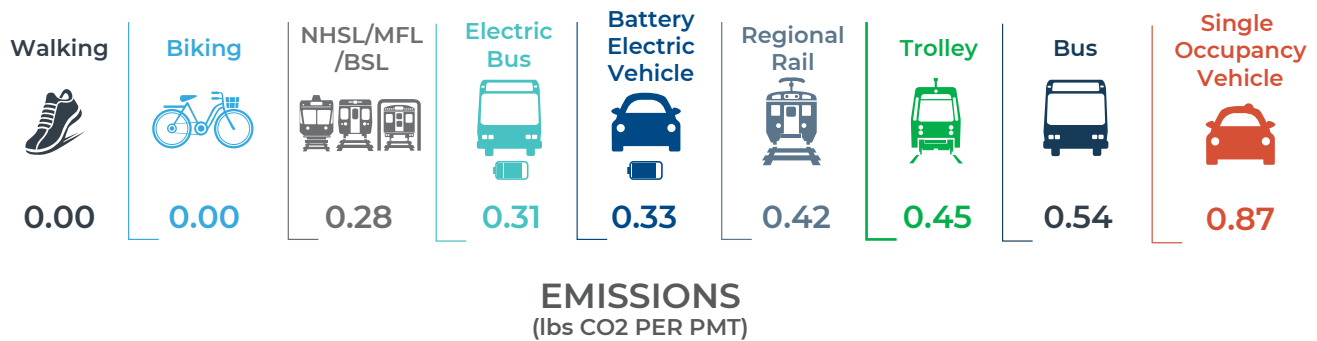
70% of home buyers would **prefer a home with public transit nearby**

Source: NAR 2017 Community and Transportation Preferences Survey

52% of adults would prefer to live in a community where they **do not need to drive often**

Source: ULI 2015 Commute Survey

Transit, Walking, and Biking Reduce Our Carbon Emissions³



Transit Improves Quality of Life

The ability to live comfortably in a city the size of Philadelphia is largely made possible by a great transit system. Philadelphia's parking problems, a major complaint among many residents, would be much worse if SEPTA didn't give households the option to fully function in the life of our city while owning fewer automobiles. Fewer cars trips on our streets means cleaner air and quieter streets. Allowing people to travel who can no longer drive, or are too young to drive, promotes personal independence. The ability to check an email, read a book, or just look out the window of the bus during a trip improves all of our lives.

Transit Reduces Emissions

A trip taken on transit produces fewer carbon emissions than travel by private automobile. Travel by bus produces 38 percent less carbon emissions than travel by automobile, and travel on one of SEPTA's electric rail modes is even cleaner – between 48 to 68 percent over travel by private auto. In addition, transit will be easier to electrify over the coming decades than the private auto fleet and will produce fewer emissions. Travel by electric bus produces 6 percent fewer emissions than travel by an electric car.³ The transit carbon emissions will continue to decrease as SEPTA and other agencies increase the percentages of renewable energy in their overall power-mix. Travel by transit also has fewer criteria pollutants from the tailpipe such as NOx and CO, and fewer particulate emissions from tire wear and brake wear.

Transit also makes our environment better because of its strong connection to land use: it enables dense settle patterns. Density reduces consumption of farmland and forests, and reduces storm water runoff from large parking lots.

³ Originally published in "CONNECT: Philadelphia's Strategic Transportation Plan" (2018). US Department Energy, Alternative Fuels Data Center (2017); SEPTA, "SEP-TAINABLE: The Route to Regional Sustainability Annual Report" (2018)



1.3 STATE OF TRANSIT IN PHILADELPHIA

OVERVIEW OF TRANSIT TODAY

This section provides an overview of transit in Philadelphia today – its strengths, challenges, and opportunities. Philadelphia has an impressive legacy transit system heavily used by residents, especially residents who identify as low-income, female, and non-white. Transit drives the economy and is part of the solution to climate change, but it is also chronically underfunded. Opportunities for improvement include increasing funding, universal accessibility, and faster buses.

Who Runs Public Transportation in Philadelphia?

Transit service in the city is provided by a complex network of bus, rapid transit, regional rail, trolley, and trackless trolley service. The Philadelphia region is served by the sixth largest transit network in the country and the fourth longest rail network.

Three public transit agencies operate within Philadelphia: the Southeastern Pennsylvania Transportation Authority (SEPTA), the Port Authority Transit Company (PATCO), and New Jersey Transit (NJ Transit). SEPTA operates the vast majority of local transit within the city and in the Pennsylvania suburbs, while PATCO and NJ Transit connect the city to New Jersey. These networks are complimented by several privately operated services such as the Navy Yard shuttle and Riverlink Ferry.



SEPTA is the area's largest transit provider, operating within the city and four Pennsylvania suburban counties. The agency was formed in 1963 to consolidate privately owned transit operations and provide a unified transit system in the city and region. SEPTA carried an average of 1 million passengers per weekday across four operating divisions in 2018, with buses carrying the majority of passengers.¹

SEPTA operates several modes including bus, trackless trolley, trolley, subway/elevated, regional rail, and paratransit. Most of the service within the city is part of SEPTA's **City Transit Division**, which operates 78 bus lines, two subway/elevated lines, six trolley lines, and three trackless trolley lines.



The Delaware River Port Authority owns and operates PATCO, which connects Philadelphia to Camden County across the Delaware River. PATCO runs from Lindenwold, NJ to Center City via the Benjamin Franklin Bridge, carrying an average of 38,000 passengers per weekday.²



NJ Transit also operates a handful of commuter bus lines that directly connect New Jersey to Center City, along with the Atlantic City Rail Line, which connects Atlantic City and southern New Jersey to 30th Street Station. The River Line is a light rail line on the New Jersey side of the Delaware River between Trenton and Camden that links Philadelphia to New Jersey via connections on the PATCO Speedline and Atlantic City Rail Line.

¹ Federal Transit Administration, National Transit Database (2018)

² Ibid.

Who Rides Public Transit in Philadelphia?

On an average day before COVID-19, people in the Philadelphia region made over a million trips on public transit to access jobs, shopping, medical appointments, school, and many other destinations.

Public transportation is especially important for low-income residents and people of color in Philadelphia, who are more likely than their higher-income and White counterparts to rely on transit.

- More than half of SEPTA riders live in households making less than \$50,000 per year, and two out of five SEPTA riders have no other means of transportation.³
- 36 percent of the city's employed Black residents commute by public transportation, versus only 18 percent of employed White residents.⁴
- People of color account for 57 percent of SEPTA's ridership.⁵
- One third of the city's households do not have access to a private vehicle, a rate that jumps to two fifths among non-White households.⁶

Philadelphia's public transportation network is vital to ensuring all Philadelphians have access to opportunities, and transit will be an important part of a recovered, re-imagined Philadelphia.

3/4

Of Philadelphia's residents and jobs are within a quarter mile of a frequent transit route.⁷

1/4

Of Philadelphians take public transit to their jobs – one of the highest rates in the country.

40%

Of workers in Center City use transit to get to work.

44%

Of adults report using public transportation at least once a week.

61%

Of residents use public transportation at least once per month.⁸

³ DVRPC, "Philadelphia Regional On-Board Transit Survey" (2015)

⁴ U.S. Census Bureau; American Community Survey, 2014-18 American Community Survey 5-Year Estimates, Table S0802

⁵ SEPTA, "2018 SEPTA Customer Satisfaction Survey Final Report" (2018)

⁶ See footnote 4.

⁷ A frequent transit route is one that runs every 15 minutes, throughout the day. See SEPTA, "Philadelphia Bus Network Choices Report" (2018).

⁸ Survey produced for this plan and sponsored by NRDC, "The Public Transit Experience in Philadelphia" (2020).

“Public transit will be an important part of a recovered, re-imagined Philadelphia”

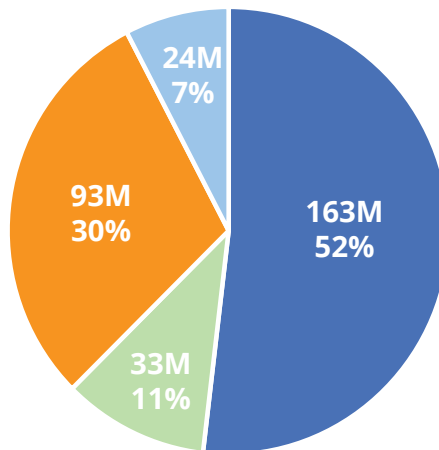
Importance of Buses in Philadelphia

Investing in better bus service is the fastest, most cost-effective way to improve the mobility of all City residents, especially lower-income Philadelphians, who disproportionately depend on buses.

Over half of all trips on SEPTA occur by bus, and buses carry a larger share of transit riders in Philadelphia than many peer regions such as New York (26%), Boston (33%) and Chicago (47%).

Low-income residents are much more dependent on buses than other modes of transit. The lowest earning 20% of Philadelphians rely on buses and trolleys 17x more than Regional Rail.

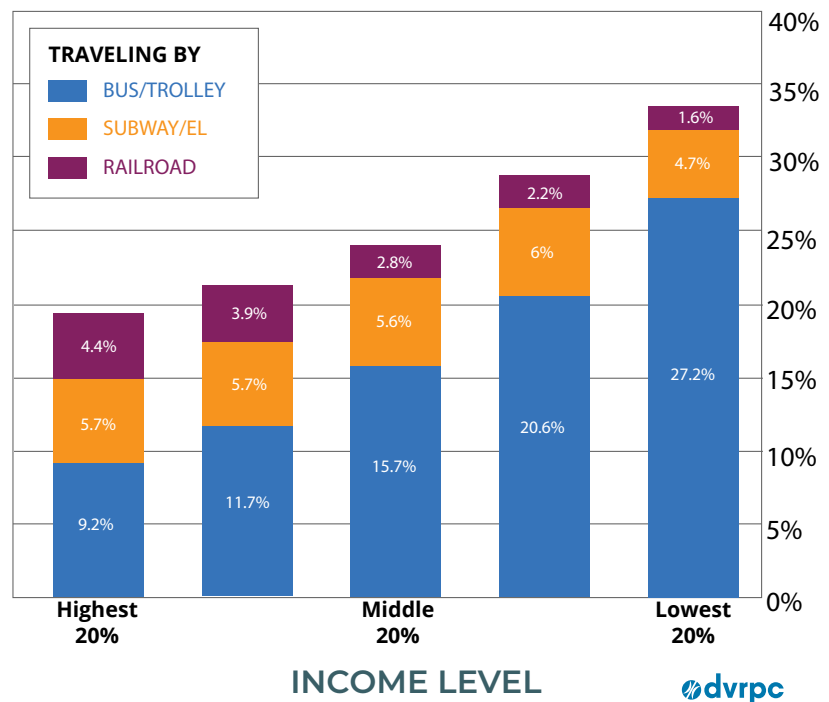
Buses are the lifeblood of Philadelphia transit, and this was reflected in our community engagement efforts, where the reliability of buses was a major theme.



TRANSIT RIDERSHIP by mode in 2018

- Bus
- MFL/BSL/PATCO
- Regional Rail
- Trolley

Low-income residents have the highest transit commute mode share among all income groups in Philadelphia.





The City's Role in Public Transportation

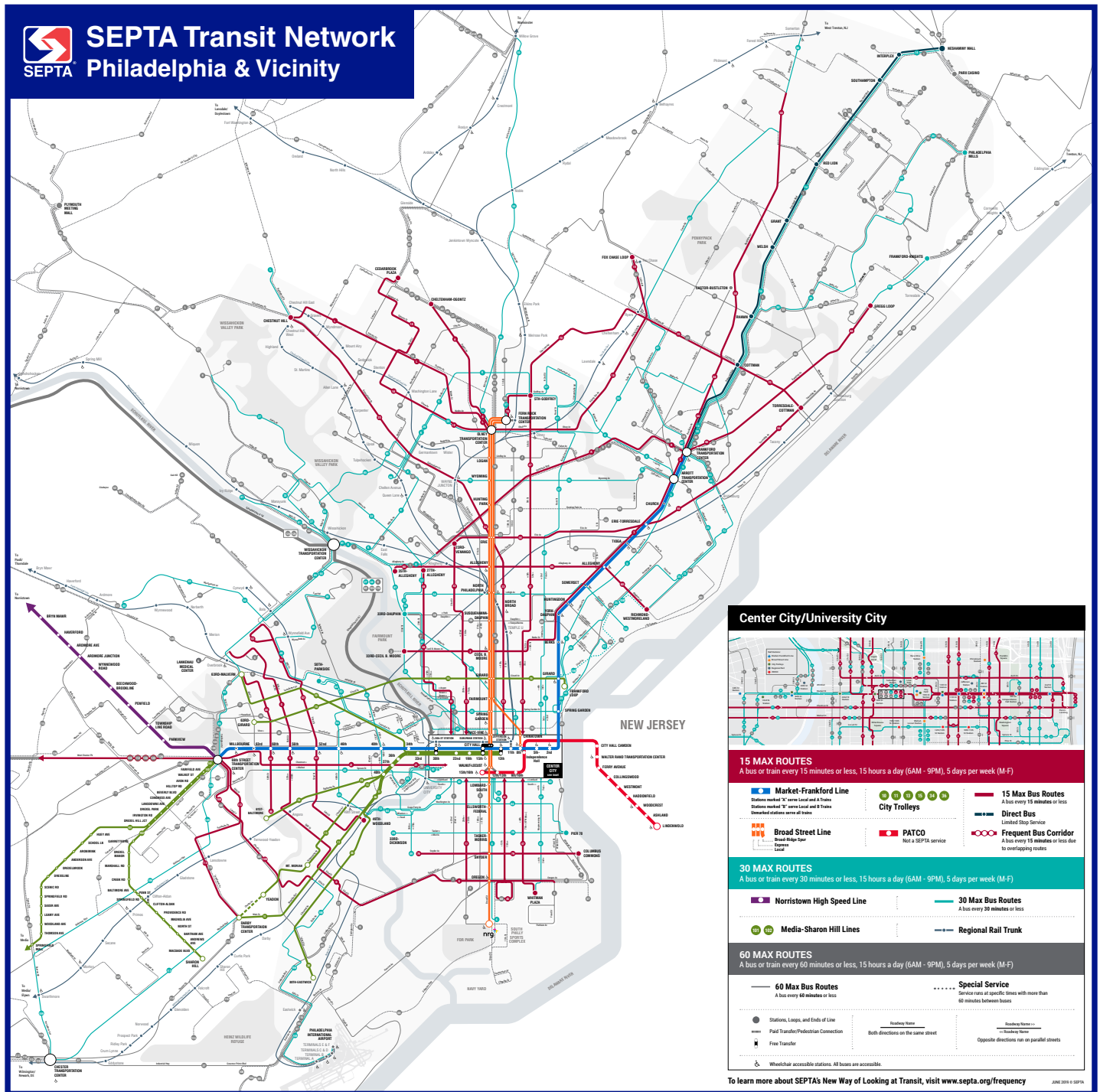
Though the City of Philadelphia does not have operational control of any public transit, it plays an active role in the planning, funding, and provision of transit services. The City contributes to SEPTA's operating and capital budgets, and two representatives of the City sit on the agency's board. City transportation and planning staff coordinate closely with SEPTA to ensure that planning goals are aligned through collaborative initiatives such as Transit First.

The City is responsible for bus shelters through a contract with a third-party provider. The City also owns different parts of the system's infrastructure, such as the Broad Street Line, Locust Street Tunnel, Airport Line, and several concourses which are leased to SEPTA and PATCO on a long-term basis for operations.

The City of Philadelphia maintains many of the streets that surface transit runs on and plays the lead role in prioritizing multimodal improvements for projects in the right-of-way, including transit.

The SEPTA governing board structure is determined by state law. Five members are appointed via the Commonwealth, while each member county has two members. Although the majority of ridership and local funding is from Philadelphia, the City has the same representation as the other counties in the region.

SEPTA Network Map of Transit Service in Philadelphia





STRENGTHS OF THE TRANSIT SYSTEM

Philadelphia is fortunate to have one of the largest and most utilized transit systems in the country. The city's transit services are already a powerful tool for connecting Philadelphians of all background and incomes to opportunities. The existing public transportation network has many strengths which this transit plan can build upon:

- Philadelphia's transit legacy is a large system capable of moving the region
- Philadelphia developed around the transit system
- Philadelphia's transit is productive – the density of people and jobs means transit is cheaper to provide on a per-trip basis
- Philadelphians rely on public transportation

Legacy of Transit Investment

Philadelphia benefits from transit infrastructure that was largely built over 70 years ago. The region has the fourth largest network of fixed-guideway (i.e. rail, bus rapid transit, and ferry) transit in the nation.

Philadelphia's transit network has several unique attributes. SEPTA's Regional Rail is the only large commuter rail network in the country to be fully electrified, and the Center City Commuter Connection tunnel enables trains to run from suburb to suburb via Center City instead of terminating downtown, serving multiple large job centers at the region's core. The city has an extensive trolley network that benefits from a tunnel that separates trolleys from traffic through University City and Center City. SEPTA's Broad Street line is one of the few rapid transit lines in the country with express tracks that allow trains to bypass certain stations.

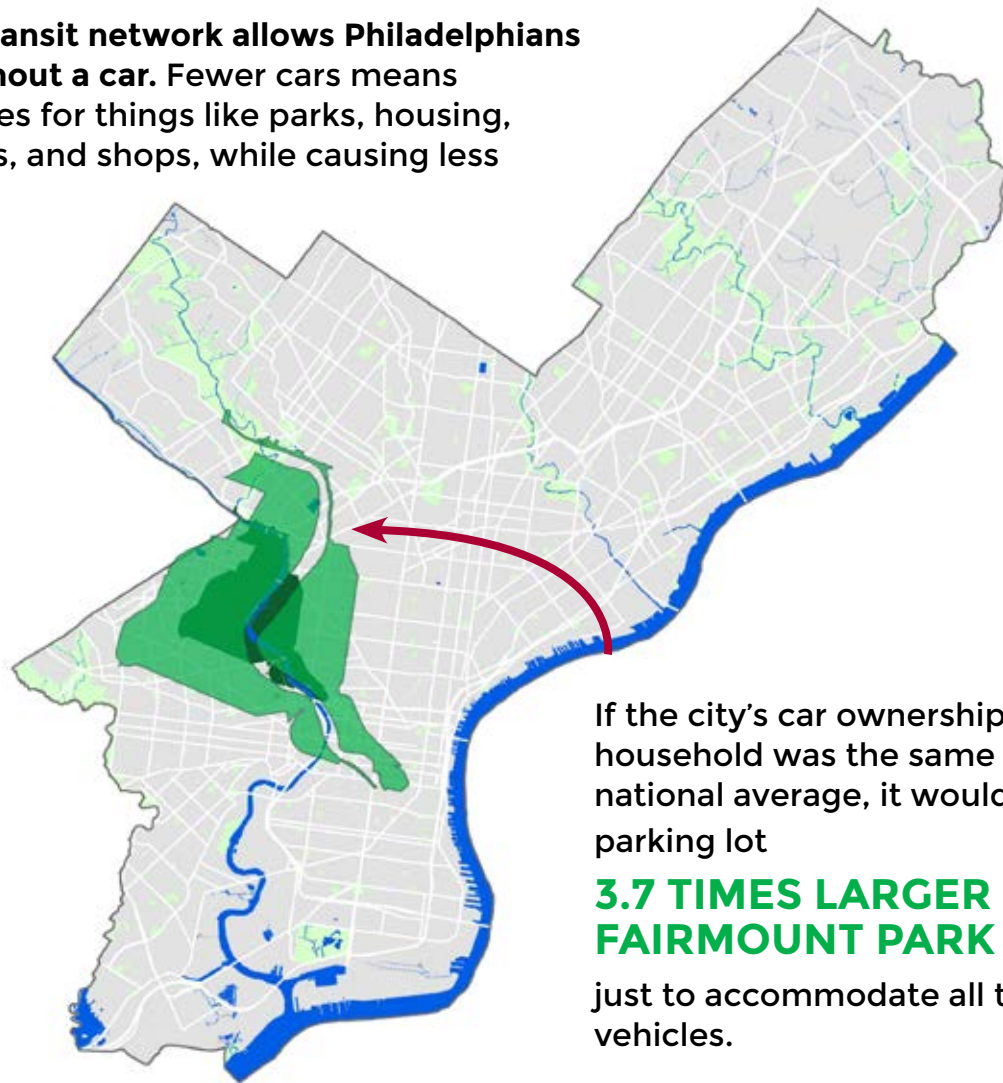
Replicating Philadelphia's transit system today would require mammoth investments. Regions across the country are spending billions to create transit networks that are a fraction the size of Philadelphia's. **This legacy of investment in Philadelphia's transit must be kept in a state of good repair and modernized for the 21st century in order to retain this competitive advantage.**



Sound Transit's East Link Extension cost \$264 million per mile to build.

At that cost, SEATTLE WOULD HAVE TO SPEND \$73.7 BILLION TO CREATE A RAIL NETWORK THE SAME LENGTH AS SEPTA'S REGIONAL RAIL.

A robust transit network allows Philadelphians to live without a car. Fewer cars means more spaces for things like parks, housing, restaurants, and shops, while causing less emissions.



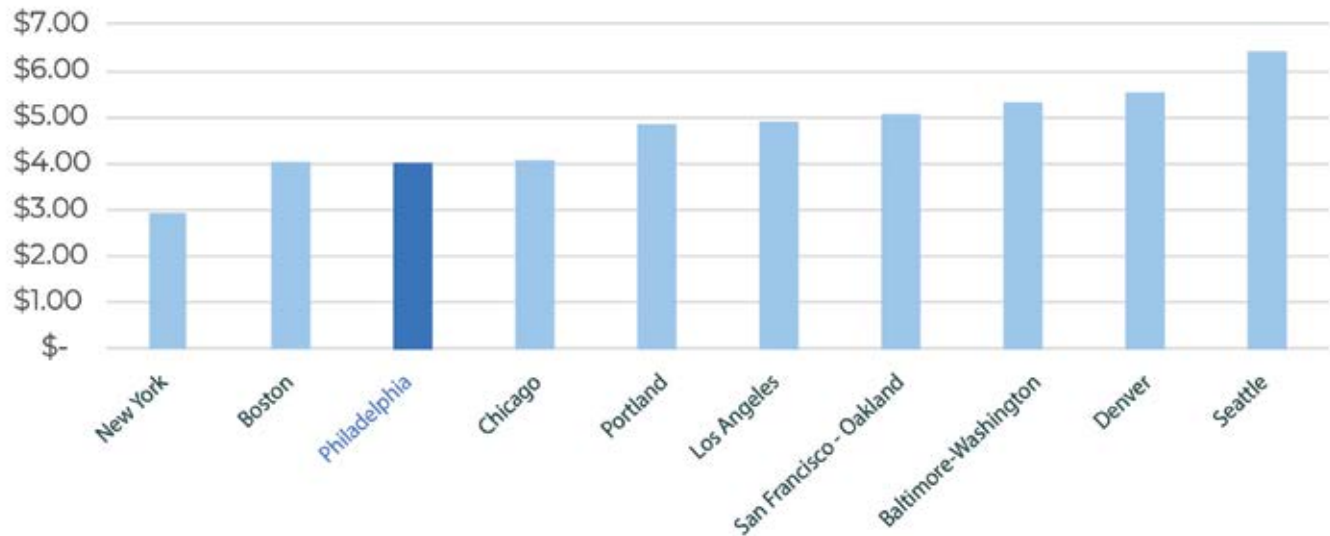
Dense Urban Fabric

Philadelphia doesn't work without transit, and transit doesn't work without density. Among cities with over 500,000 residents, Philadelphia is the fifth densest city in the country. The city is home to over 11,000 people per square mile, though much of Center City, the River Wards, and South Philadelphia have more than 30,000 people per square mile.

This density reduces green house gas emissions, decreases travel time, allows sharing of urban amenities, and encourages the random encounters that are the lifeblood of our economic and social life.

With jobs that are concentrated in compact employment centers like Center City and University City, Philadelphia cannot function without high-quality transit access. Conversely, these job centers help drive transit demand and support the strong system we have. Ultimately, Philadelphia lacks the space for both roadway expansion and parking to accommodate greater car dependence.

The Philadelphia region has **ONE OF THE LOWEST OPERATING COSTS PER TRANSIT TRIP** among metro areas with large transit networks



Source: National Transit Database, 2018; all regional transit providers included for each city.

Productive Service

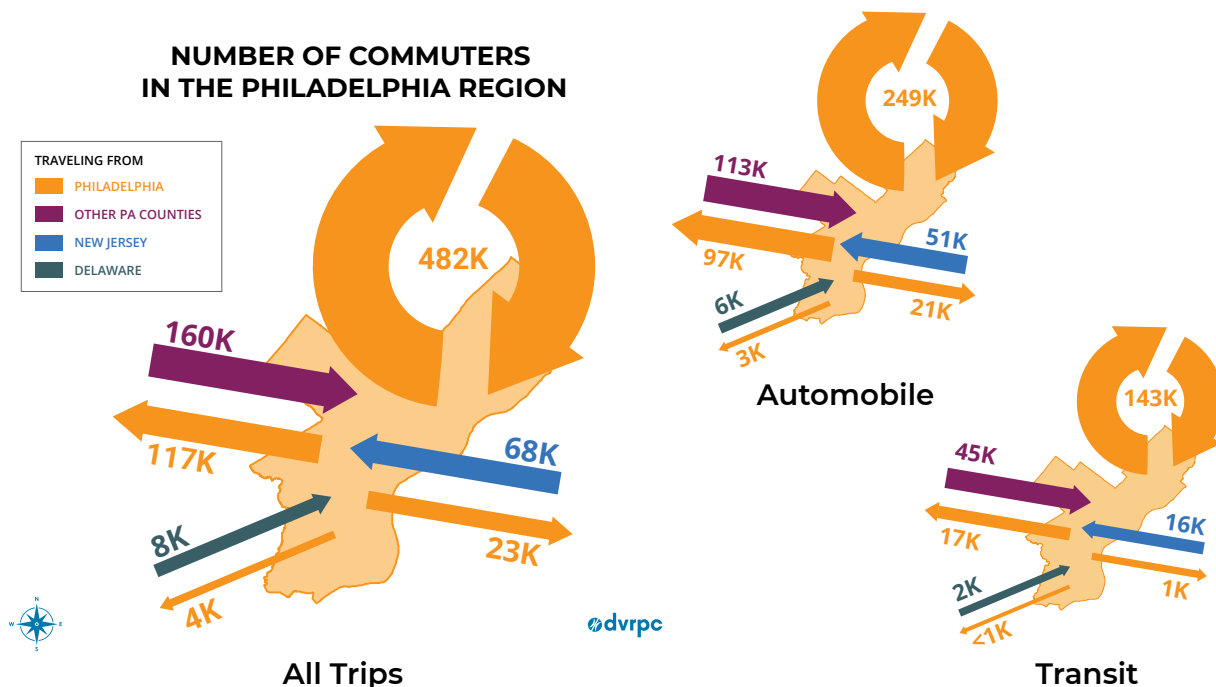
Philadelphia's transit system is one of the most productive in the nation across a variety of metrics. Transit productivity measures the number of passenger trips served per hour of service, and the cost of providing that hour of service or trip. High productivity is largely reflective of Philadelphia's dense, transit-oriented built environment as illustrated by the difference between suburban and city SEPTA service.

Transit in the City is particularly productive: city routes carry more passengers per revenue hour at a lower operating cost per passenger than their suburban counterparts. In 2019, SEPTA's city routes carried an average of 43 passengers per revenue hour, while SEPTA's suburban routes carried 15 passengers per revenue hour, 65 percent fewer passengers per hour. Similarly, the average operating cost per passenger is \$3.02 for city routes and \$7.31 for suburban routes.⁹

⁹ SEPTA, "Route Performance Evaluation Report" (2020)

Philadelphia is the **POPULATION AND JOB CENTER OF THE REGION**

The vast majority of work trips, by all modes, in Philadelphia are by **city residents to city jobs**.



61%

Of residents use public transportation at least once per month.

81%

Of SEPTA ridership occurred within Philadelphia in 2018.

143,000

Daily transit trips by city residents to city jobs

Existing Reliance on Transit

While reverse commuting is important for many city residents, **the majority of transit trips in the metropolitan region occur both in Philadelphia and by Philadelphia residents.**^{10, 11}

Better transit in Philadelphia will improve the 143,000 daily transit commutes by city residents to city jobs and attract ridership from the 249,000 daily car commutes by city residents to city jobs. **The 482,000 daily commutes by city residents to city jobs far outpaces the 144,000 commute trips by city residents to the suburbs.**

Beyond commuting, city residents also rely on transit to shop, go to the doctor, and go to school throughout the city. These trips are also heavily reliant on transit and should be a focus of improvement.

¹⁰ DVRPC analysis of Longitudinal Employer Household Dynamics data (2019)

¹¹ Economy League of Greater Philadelphia. "Greater Philadelphia's Declining Transit Ridership" (March 2020)

Examples from Other Cities



Seattle RapidRide C-Line by S.S. Sol Duc / CC BY 3.0



Seattle, Washington

Investing in Transit, Increasing Ridership

Through a combination of increased investment, bus priority improvements, transit-supportive land use strategies, and travel demand management, Seattle has managed to buck the national trend of declining transit ridership in recent years.

Seattle has committed to making transit a priority on its roadways in support of King County Metro's RapidRide program. Seattle has created dedicated transit lanes on many of the city's busiest corridors, such Third Avenue, which carries more than 2,500 buses and 100,000 passengers daily and is restricted to transit traffic throughout much of the day.¹ Transit signal priority, off-board fare payment, and stop consolidation have further increased travel speeds and reliability.

Though the City of Seattle does not operate transit service directly, it plays a major role in funding service. The Seattle Transportation Benefit District (STBD), **funded by a \$60 fee on car registrations and a 0.1 percent sales tax increase approved by voters in 2014**, directs almost \$50 million annually to support additional transit service. The percentage of Seattle residents living within a 10-minute walk of a transit route that arrives at least once every 10 minutes increased from 25 percent before the additional STBD funding was approved to 67 percent as of 2019.²

The success of transit in Seattle has helped to build political support for even more transit improvement. Seattle region voters approved a massive \$54 billion tax levy in 2016 ensuring funding for continued growth of the city's light rail system for the next two decades.

- 1 King County, "Third Avenue Improvements," (Accessed September 2020) <https://kingcounty.gov/depts/transportation/metro/programs-projects/transit-corridors-parking-and-facilities/third-ave-improvements.aspx>
- 2 Fesler, "Looking Back on Three Years of Transit Investment in Seattle," The Urbanist (January 24, 2019)

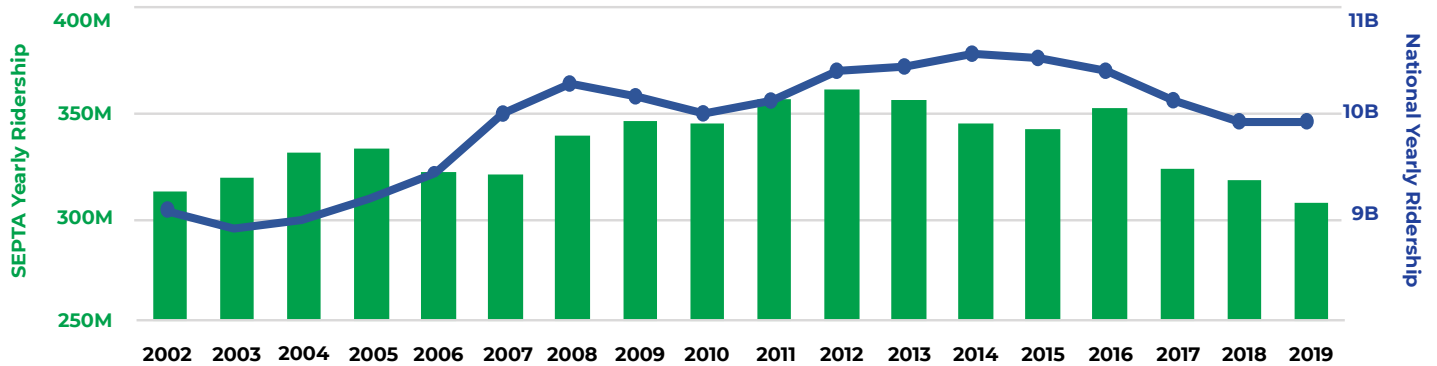


CHALLENGES FACING THE TRANSIT SYSTEM

While Philadelphia's transit system has many key strengths, the City recognizes that the system faces challenges that need to be addressed:

- The travel needs of Philadelphians are constantly evolving, yet the transit system has been slow to respond to these changes.
- Congestion and inadequate infrastructure make public transit less convenient by slowing it down or making it unreliable.
- Since 2013, public transit ridership in Philadelphia has declined even as the city's population has grown.
- The public has voiced concerns about safety, accessibility, and ease of use.
- SEPTA has not received the necessary funding to reach a state of good repair, let alone expand its systems.
- COVID-19 is an existential threat to transit agencies.

Since its peak in 2013, SEPTA's
RIDERSHIP HAS DECLINED BY OVER 10 PERCENT
 Outpacing the falling national ridership trend



Source: National Transit Database, 2019

Declining Ridership

Over the last decade, SEPTA has experienced a decrease in ridership, despite having gained significant ridership between 2009 and 2013. **On a national scale, transit ridership has decreased as well, but the effects have been greater in Philadelphia compared to comparable cities.**¹² Between 2015 and 2018, all four of SEPTA's transit modes saw a decrease in ridership, with overall ridership declining by ten percent.

A person's propensity to use transit is heavily influenced by the society they inhabit, and car culture is a large part of American life, including in Philadelphia. Cars are often seen as a status symbol for people. **While most Philadelphians do use transit, we need to change the perception of transit as to something everyone in the city uses, regardless of their socio-economic background.**

While transit's ridership decline is due to many factors, there are a few key reasons why fewer people are using transit in recent years, particularly in Philadelphia:

- Congestion
- Rideshare¹³
- Cheap gas
- Reduced cost of vehicle financing

Additionally, the COVID-19 pandemic has driven transit ridership to historically low levels both in Philadelphia and across the world.

¹² Bliss, "Behind the Gains in U.S. Public Transit Ridership," Bloomberg CityLab (January 13, 2020)

¹³ Dong & Guerra, "A Philadelphia ride-share story: An investigation of ride-share's impact on transit," Cooperative Mobility for Competitive Megaregions (September 2020)

Congested Streets

One side effect of Philadelphia's growing population and vibrancy is congestion, especially in Center City. While COVID-19 has reduced traffic, congestion is likely to be worse during and after the recovery. **Over the last five years, average bus speeds in Philadelphia have decreased across all times of day. Buses now travel at an average speed of less than 9.9 miles per hour.**

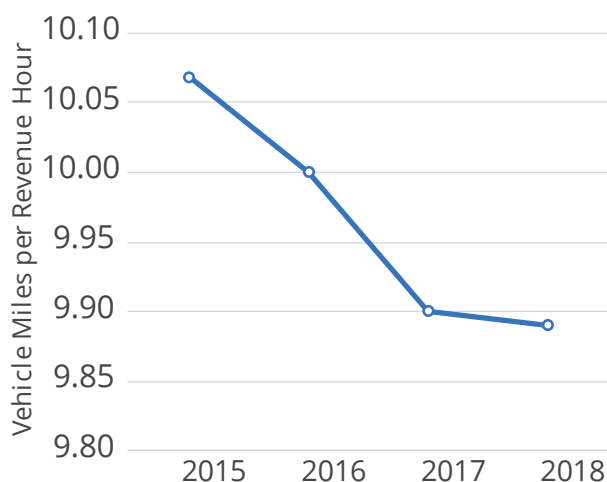
A 2019 study by Econsult Solutions found that congestion has an even greater impact on bus travel time compared to car travel time. During the workday (9:00 a.m. to 5:00 p.m. Monday to Friday), buses traveling in Center City experience a 77 percent increase in travel time compared to what would have been experienced in free-flow conditions. **On average, a Center City bus passenger experiences 31 hours of delays per year.**

Congestion forces SEPTA to operate 149,000 additional hours of bus service annually and provide 30 more vehicles during the peak period to continue serving riders. In total, congestion increases SEPTA's operating costs by an estimated \$15.4 million annually.¹⁴

In addition to time and financial impacts, congestion also has longer-term impacts on transit in Philadelphia. SEPTA ridership has declined most on routes where speeds have declined. Some of these displaced bus trips are taken by private car or rideshare which increases the number of daily car trips by approximately 8,000 per weekday, further exacerbating congestion.¹⁵

Existing infrastructure can also slow down transit. The stop spacing of most SEPTA routes is 500 feet, meaning the bus stops every block, which significantly increases operating time. Finally, a dense city grid means buses are stopping frequently at signalized or signed intersections.

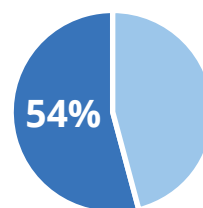
SEPTA's average bus speeds HAVE SLOWED DOWN by over 10 percent since 2015



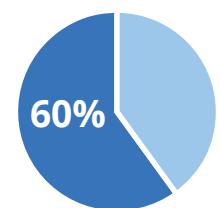
Source: National Transit Database, 2018

NRDC survey found that a majority of Philadelphians agree that transit is SLOW AND UNRELIABLE

transit is unreliable



transit is slow



■ Somewhat or strongly agree
■ Somewhat or strongly disagree

¹⁴ Econsult Solutions, "Limiting Our Potential: How Center City Congestion Impacts All Philadelphians," (June 2019)

¹⁵ Ibid.

Limited Frequent Network

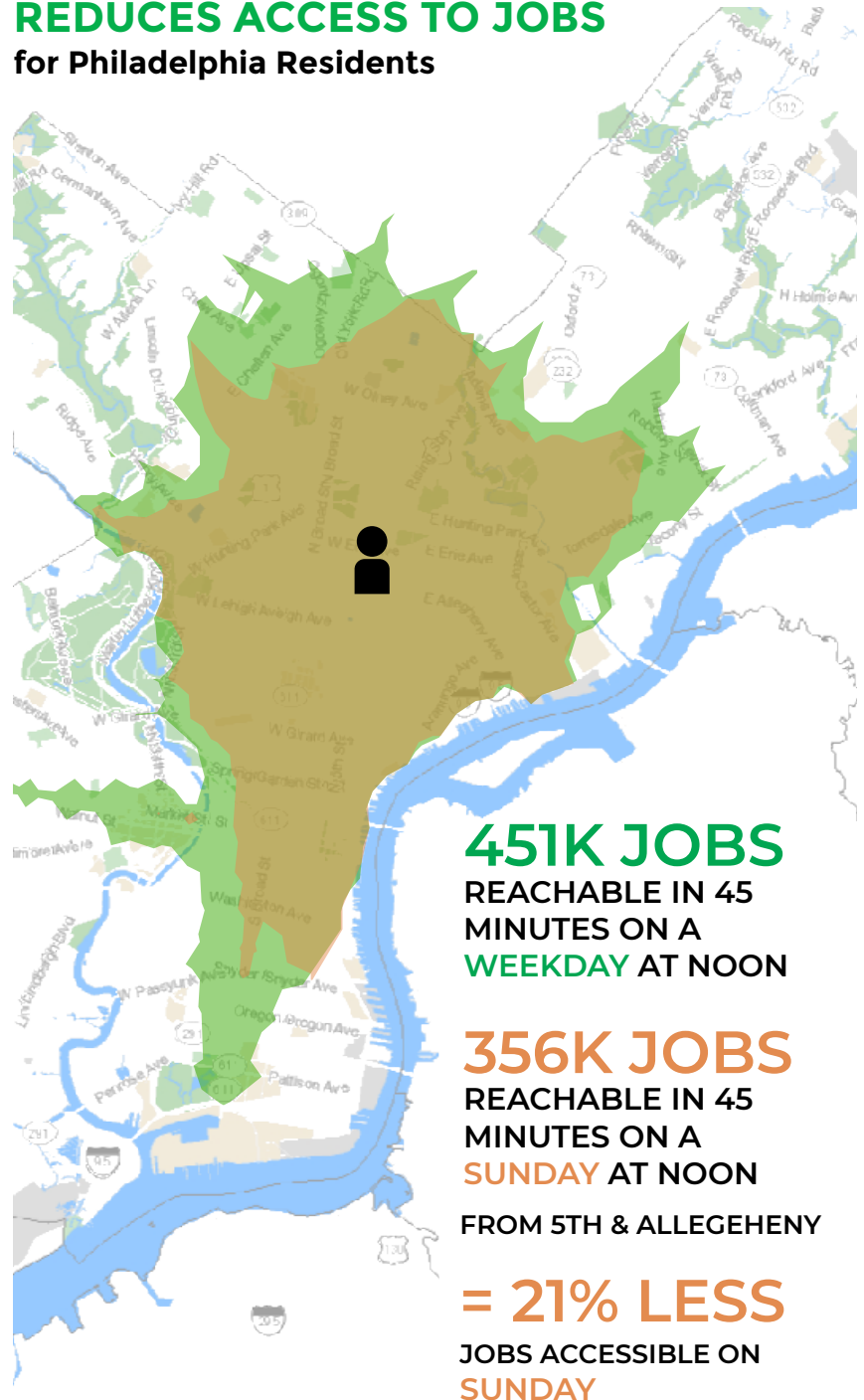
To be useful, transit must be available to passengers at the time they need it. More frequent service makes for shorter average wait times and makes transferring faster and more reliable. However, many bus routes in Philadelphia operate infrequently, particularly outside of peak periods.

SEPTA took its first steps to address this through its 2019 High Frequency Network project, which used schedule adjustments to implement a frequent network that was rolled out with a new branding scheme. This work codified the “frequent network” as routes with service running every fifteen minutes, for fifteen hours a day, five days per week. However, this network still leaves some parts of the city without any frequent bus or trolley service. A map of this network can be seen on page 29.

Lack of Weekend Service

Infrequent weekend service is an equity issue as it severely limits job opportunities for Philadelphians who work Saturdays and Sundays. While the frequent network does cover much of the city from 6 a.m. to 9 p.m. on weekdays, many routes are not frequent beyond that time or on the weekends. Adding weekend service is not free, however, and will require reallocating service hours from existing routes or additional operating funds from regional, state, or federal sources.

The Lack of Frequent Weekend Service **REDUCES ACCESS TO JOBS** for Philadelphia Residents



Private jobs accessible on the average weekday and Sunday in the fall of 2020, using SEPTA's full network, and calculated using Remix.

SEPTA stations have multiple generations of mismatched signage



Difficult to Understand and Navigate

While SEPTA's new frequent network and the map that accompanied it (page 29) was a step forward, there are still aspects of the transit network that make it hard to use. **Engagement for this plan showed a range of areas where the transit network was particularly difficult to understand and navigate:**

- In a survey of Philadelphia residents, along with focus groups and community outreach conducted by the City, fares continue to be a point of confusion. One fifth of NRDC respondents expressed confusion around fares and payment. Specifically, riders expressed confusion regarding how transfers work and how much they cost.¹⁶
- Focus groups of infrequent SEPTA riders showed that not owning a SEPTA Key was a major barrier to impromptu trips.
- SEPTA stations and vehicles often lack clear and consistent signage which leads to rider confusion.
- SEPTA's Bus Network Choices report highlighted how overlapping patterns of service and high numbers of route variations add to customer confusion and a lack of system legibility.

¹⁶ "The Public Transit Experience in Philadelphia" (2020)

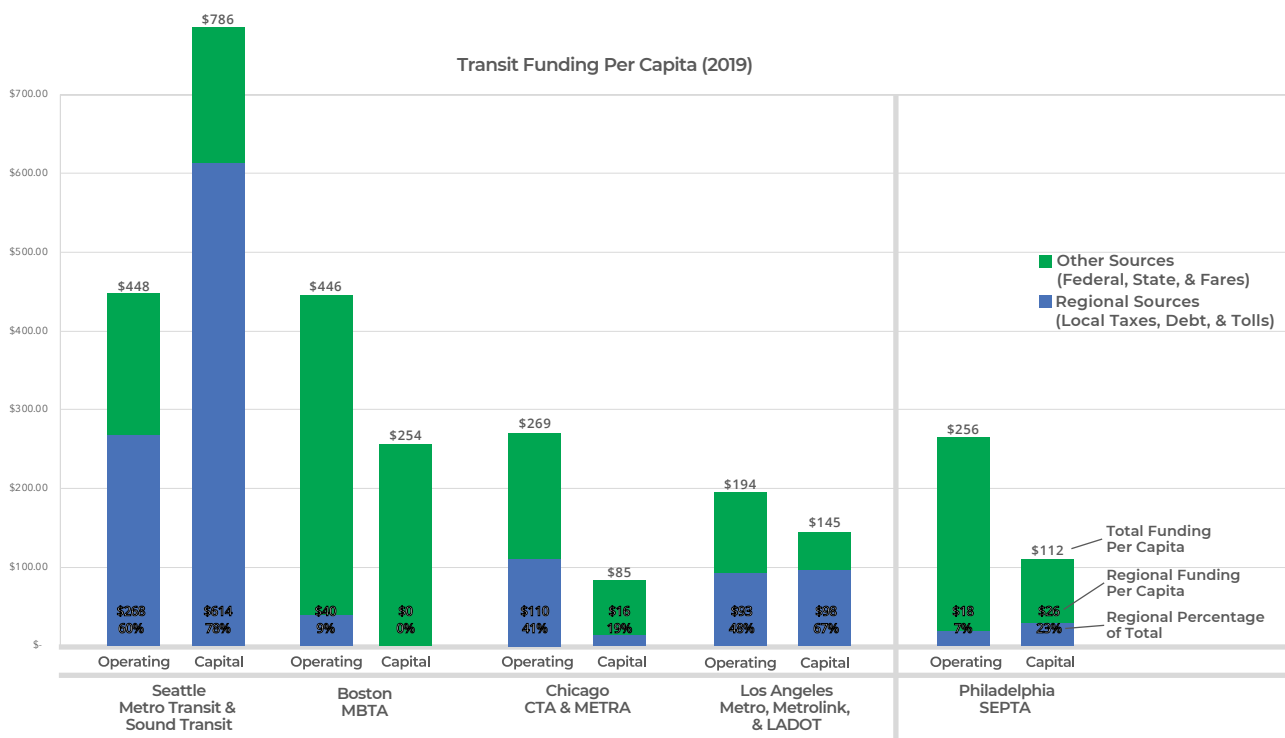
Underfunded Compared to Peers

The way transit is funded in Philadelphia and Pennsylvania has resulted in repeated funding crises for SEPTA throughout its history. At nearly 50 percent of its revenue, state funding is the largest share of SEPTA's operating budget while regional funding represents only nine percent of SEPTA's revenue, a smaller share than most of SEPTA's peer regions. Boston is the only peer transit system with a similar reliance on state funding; however, the political dynamics are different, as the Boston region accounts for over half of Massachusetts's population.¹⁷

Reliance on state funding brings inherent instability to SEPTA, as transit funding is closely tied to politics in Harrisburg. Most large transit systems rely on a regionally generated dedicated funding source for revenue that provides a level of predictability and control.

SEPTA's funding uncertainties have made it challenging for the agency to make major transit investments, notably big capital improvements that depend on stable, bondable funds.¹⁸ The passage of Act 89 in 2013 provided SEPTA with some funding stability, although still significantly below necessary levels. Funding is further stressed by the sunset of funds from the PA Turnpike. COVID-19 highlights the agency's susceptibility to external budgetary shocks as budget shortfalls at the State level coupled with declining toll revenue will impact SEPTA's operating and capital budgets.

The Philadelphia Region Raises FEWER REGIONAL DOLLARS FOR TRANSIT Than Peer Metro Areas



17 Federal Transit Administration, "National Transit Database" (2019); Peer regions were used as opposed to peer systems, as SEPTA is a regional transit system that operates both in Philadelphia and the surrounding suburbs.

18 Pennsylvania General Assembly Act 89, 2013



Maintenance Backlog

SEPTA benefits from an extensive network of transit infrastructure, some of which dates back over 100 years. State of good repair investments are the single largest portion of SEPTA's capital budget. A state of good repair will exist when an asset (e.g. a bridge or section of track) functions as designed within the useful service life, meets expectations for reliability, and is not functionally obsolete.

Today, SEPTA's state of good repair backlog totals \$4.6 billion. Without adequate and consistent funding, the transit network in Philadelphia will degrade. Expansion of the city's transit system is only possible if the existing network is in a state of good repair. **While investing in state of good repair projects, it is important to ensure that those investments meet the functional need of the system for the future.**

“SEPTA's state of good repair backlog totals \$4.6 billion”

Limited Accessibility

Transit plays a critical role in providing the public, including persons with disabilities, mobility and independence. Much of Philadelphia's transit infrastructure was built before the Americans with Disabilities Act (ADA) and local transit providers like SEPTA and PATCO, are making significant investments to reconfigure their systems to be barrier-free. Today, SEPTA has over 100 fully accessible rail stations and has a 100 percent low-floor bus fleet.

Even though progress has been made, a significant proportion of the city's transit system does not meet ADA standards. Over 70 percent of SEPTA subway and elevated stations are ADA compliant. By 2035 SEPTA plans for the MFL and BSL to be fully compliant, but SEPTA's capital funding crisis threatens this timeline (page 148). PATCO will be fully compliant by 2022. By contrast, only 25 percent of NYC subway stations are accessible. With the exception of the Route 15, none of SEPTA's trolley service is ADA compliant. While all Regional Rail vehicles are accessible, only 43 percent of stations are accessible. All SEPTA and NJT buses are accessible.

During public engagement on this plan, residents repeatedly expressed that poor accessibility negatively impacted mobility. Philadelphians, particularly seniors and people with disabilities, rely on transit to get around the city. Paratransit, the primary alternative, is expensive to operate and will consume a growing share of transit operating budgets unless more of the network is made fully accessible.

Full station accessibility on these core routes is costly, but it is a worthwhile investment. At an estimated \$15 million per station, this will require roughly \$180 million in funding for the 14 stations other than City Hall, which is an additional \$150 million project.

SEPTA plans to make the MFL and BSL FULLY ACCESSIBLE by 2035 but will need sufficient funding to make it happen







OPPORTUNITIES TO IMPROVE THE TRANSIT SYSTEM

The strengths and challenges facing transit in Philadelphia point to several opportunities that the City can leverage to improve our transit network:

- Comprehensive Bus Network Redesign will allow SEPTA to improve bus service by reorganizing the network.
- The wide range of legacy infrastructure creates an opportunity to integrate between bus, trolley, subway, and regional rail.
- The Philadelphia region has a strong and growing support for public transit with some clear public priorities for change.

REGIONAL RAIL VS. BUS

Many parts of the city are accessible by both Regional Rail and bus. Riders face a trade-off between cost, speed, comfort, and frequency when deciding which mode to take.

		
Mode	Bus	Regional Rail
Route	23	Lansdale/Doylestown, Warminster, Chestnut Hill East, Glenside, Airport
Origin	11th and Market Street	Jefferson Station
Destination	Wayne Junction	Wayne Junction
Travel Time	40 minutes	15 minutes
SEPTA Key Fare	\$2.00	\$4.00
Cash Fare	\$2.50	\$6.00

Comprehensive Bus Network Redesign

To improve the effectiveness of its bus system, SEPTA is undertaking a comprehensive bus network redesign (CBNR). **CBNR will be a blank slate approach to planning the SEPTA bus network.** This will provide SEPTA the opportunity to rethink the bus network in order to better serve today's needs and future trends in the Philadelphia region. SEPTA is embarking on CBNR in early 2021, with the full process taking up to 3 years, including planning, engagement, and implementation. The recommendations of CBNR will help guide the implementation of the City Transit Plan and vice-versa.

Integration of Transit Service Across Modes

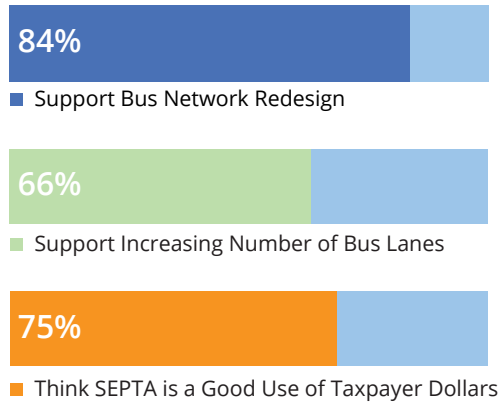
Philadelphia already has one of the most integrated transit systems in the nation. The introduction of SEPTA Key and the Travel Wallet feature has made riding different SEPTA modes seamless, and the elimination of some transfer penalties has reduced the penalty riders face when switching between bus and subway.

However, Philadelphia has a ways to go before its transit is fully “integrated” – meaning that we view all public transit as **a single system with convenient connections between modes and routes, a single regional fare instrument, and better fare equity.**

Better integration will create a more seamless travel experience and is an opportunity to improve equity by allowing riders to make choices based on time and convenience, not cost or accessibility. Integration will also allow full realization of the potential of SEPTA Key.

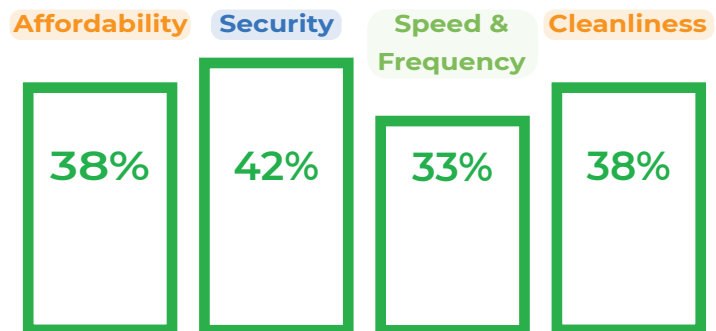
SUPPORT FOR TRANSIT INVESTMENT

NRDC survey found that Philadelphians:



PRIORITIES FOR IMPROVEMENT

NRDC survey results show that riders want improvements in these areas:



*Percentage of Top 2 Responses

Consistent Public Priorities

Our public engagement has shown **consistent public priorities for investing in transit**. Survey respondents most highly ranked security, cleanliness, affordability, and faster more frequent service as improvements they would like to see. Conversations with community groups and focus groups highlighted many of the same findings, like improvements to reliability and travel speeds, a desire to see transfer penalties eliminated, improvements to public safety, and better communication between SEPTA and its riders.

Engagement also highlighted a desire for transit to be more responsive to the needs of its riders through things like improved station and stop accessibility, fare structures that are more conducive to family travel, and investments that make riders feel safer.

Growing Coalition Supporting Transit

Philadelphia is fortunate to have a broad coalition of support for transit, starting most importantly with the public. In our survey, 75 percent of Philadelphians thought transit is a good use of taxpayer money, 84 percent supported a bus network redesign, and 66 percent supported more bus only lanes. **91 percent of respondents felt that SEPTA was an important part of Philadelphia.**

In recent years, organizations and coalitions have formed across sectors to advocate for improved public transit in Philadelphia. Some examples include Transit Forward Philly, the Economy League's 2020 GPLEX Leadership Exchange Challenge track on equitable mobility solutions for Black and Brown Philadelphians, the Philadelphia Transit Rider's Union, and the AARP 2020 Livable Communities Action Plan and Assessment Report.

Examples from Other Cities



Denver Union Station by David Wilson / CC BY 2.0



Denver, Colorado

Better Transit, Affordable Housing

The FasTracks program in the Denver region is an excellent example of how coordination to fund transit and incentivize transit-oriented development on a regional level, along with buy-in from residents and businesses, can make transformative investments possible.

FasTracks got underway in 2004 as voters in the eight counties approved a ballot initiative that levied an additional 0.4% sales tax in the region to fund transit projects. When FasTracks funding faltered following the 2008 financial crisis, Regional Transit District (RTD), the area's public transit operator, turned to innovative solutions. The agency developed a first-of-its-kind public-private partnership to turn construction of the rail network over to a group of private construction and investment companies. RTD has added 58.5 miles of light rail track and 40 miles of commuter rail track, launched a bus rapid transit service connecting Denver to its northwestern suburbs, and built a major intermodal hub at Union Station in downtown Denver.

Transit-oriented development has been a key factor in the region's multi-pronged approach to growing transit. Following the approval of FasTracks funding, the

City of Denver prepared a *Transit Oriented Development Strategic Plan* (published in 2006, updated in 2014) to guide land use strategies around the city's burgeoning transit network and identify improvements to promote transit use. In 2010, the City and County of Denver launched the Denver Transit-Oriented Development Fund, in partnership with community development non-profits and private banks to offer low-interest loans to incentivize the construction of affordable housing around planned transit stations.

Citizen advocates have also made major contributions to the success of the FasTracks program. The Transit Alliance was formed in 1999 to advocate for better transit in the Denver region following the failure of an earlier transit funding ballot initiative, and created the Citizens Academy program to educate citizens on transportation, housing, and civic engagement strategies. The sustained effort built a network of knowledgeable advocates to lobby politicians and business leaders in support of expanding the transit system. Other regions have taken notice of Transit Alliance's success in driving the conversation around transit, and its model for citizen advocacy can now be found throughout the country.



1.4 LOOKING FORWARD

CHANCE TO SET A DIRECTION FOR PHILADELPHIA'S TRANSIT FUTURE

This plan seeks to meet the needs Philadelphia faces in the 21st century. The challenges we face are stark – transit ridership was declining even before COVID-19 shut down the world, and Philadelphia transit faces serious funding and state-of-good-repair issues.

We must leverage our strengths, including our widespread reliance on public transit, a legacy of investment, and a dense urban fabric that supports high transit usage. The City and SEPTA will work together to delivery transformative changes to Philadelphia's transportation system.



The remainder of the plan explores how to take advantage of the opportunities discussed in this chapter to transform our public transportation system.

Through our vision – **A City Connected by Transit** – the policies, strategies, and investments in the next three chapters will improve equity, support our economic recovery, and meet our climate obligations.

- 1 A FRAMEWORK FOR TRANSIT IN PHILADELPHIA
- 2 TRANSIT POLICY PLATFORM
- 3 BUS CORRIDORS
- 4 HIGH-CAPACITY TRANSIT
- 5 IMPLEMENTATION

CHAPTER 2

POLICY PLATFORM



CHAPTER SUMMARY

This chapter presents a platform of policy changes that will work towards our vision of a City Connected by Transit. This policy platform is critical to shaping the environment in which transit exists, whether it the user experience, fare policy, or land use and development regulations. By setting a strong foundation for public transit, this work compliments the infrastructure recommendations presented in Chapters 3 and 4.





2.1 UNIVERSAL DESIGN AND USER EXPERIENCE

SECTION SUMMARY

Universal design is a design philosophy that attempts to create an environment that can be easily used by everyone, regardless of language, age, or ability. Embracing universal design can improve transit in Philadelphia, but it requires changing the way agencies and cities approach their riders and citizens. By placing the user experience first and reorienting service and investment around improving that experience, universal design will make transit more competitive with other transportation options while also improving accessibility for people with limited mobility or other unique needs.

This section ranges in topic, from the user experience, to safety and cleanliness, to bus shelters and station access. Bridging across these topics, however, is the idea that by focusing on universal design every user's experience on the public transit system will be improved.

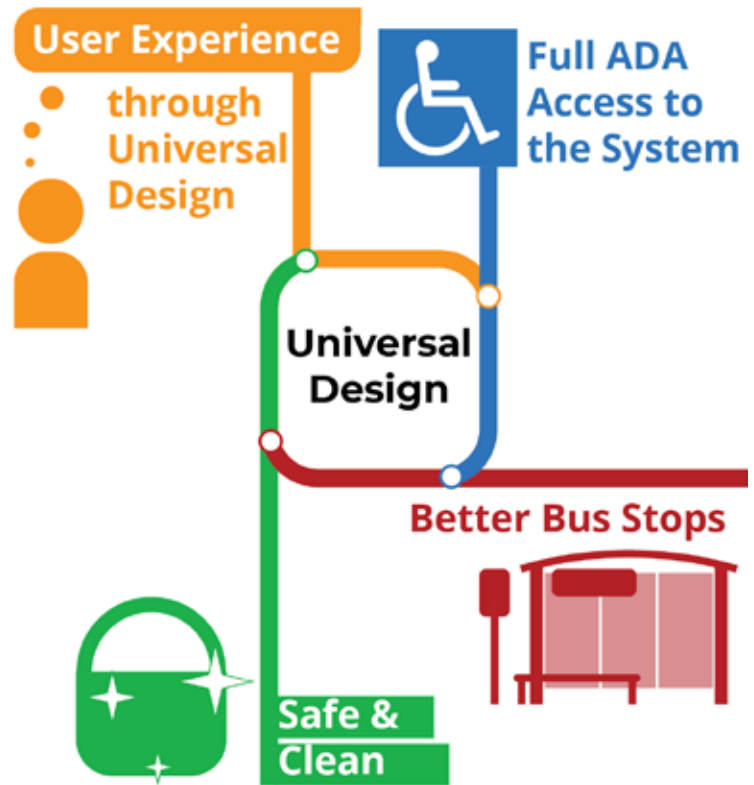
Key recommendations from this section include improving wayfinding at transit stations; accelerating the timeline for full ADA accessibility of the MFL, BSL, and PATCO; continuing to expand the City's bus shelter inventory; and elevating the needs of women and families in the SEPTA Comprehensive Bus Network Redesign.

Universal Design and Transit

Universal Design has emerged over the last fifty years as a leading theory of design for disciplines ranging from architecture to product design. In the realm of urban planning, this is expressed in a variety of important laws and movements, including the Americans with Disability Act (ADA), “Eight to Eighty” design for cities, and “all ages and abilities” bike facilities.

To adapt infrastructure that predates ADA law, transit agencies across the U.S. have been installing elevators, procuring vehicles with “stairless” entry, and providing paratransit services for people who are unable to use the transit system. **However, Universal Design goes beyond just elevators and vehicles for public transit and includes wayfinding, safety, and data.**

A key tenet of Universal Design is that by providing inclusive infrastructure, every person can fully access the city in which they live, regardless of language, age, or ability.



What Did Philadelphians Have to Say?

- **Residents of the Philadelphia region voiced widespread concern over the cleanliness and safety of the transit system.** The COVID-19 crisis has only amplified these concerns.
- **Residents and community groups highlighted the difficulty of navigating the city as a person with limited mobility.** This was primarily due to the lack of elevators at many rail stations and the overall inaccessibility of the trolley system. Residents also noted the difficulty for people in wheelchairs and parents with strollers to navigate stations and vehicles, particularly when crowded.
- The recently published report by AARP, “Philadelphia: An Age-Friendly, Livable City for All” highlights Universal Design principles as valuable additions to SEPTA’s ADA program and prioritizes full accessibility of the transit network as a way to ensure Philadelphians can age in the city and maintain access to all it has to offer.
- Engagement highlighted inadequate communication between transit providers and the public, including around SEPTA Key and detours or other service disruptions.

USER EXPERIENCE THROUGH UNIVERSAL DESIGN

Transit service branding and user design have become more important than ever. As many brands and services have emerged in the digital age, potential transit customers now expect a seamless, consistent, and engaging experience throughout their trip. In recent years, the standard in the transportation industry has been raised through rideshare companies, who offer an intuitive and simple digital interface, abundant information, and an easy payment process.

With more users seeking a better and seamless service experience, transit agencies need to find ways to stay competitive among other alternative modes while still being inclusive of all their diverse user needs. **Transit agencies must shift towards user-centered design to provide an improved user experience. In doing so, they should draw on principles of universal design to ensure that all of their customers are included.**

User-Centered Design is Universal

Creating user-centered design for a transit agency requires the application of consistent and easy-to-use communications, including signage, a website, a mobile app, service branding, service alerts and disruption information, and on-platform and in-vehicle announcements.

However, user-centered design goes beyond just communication. Many transit users often experience diminished user experience due to complicated service patterns, schedules, fare policies, and wayfinding. **Transit agencies must prioritize the user experience as a central component in service design from fare policies to station and vehicle design.**



A Vision for a Universal User Experience

A transit system built around the user should include:

- **Fare Payment:** the fare payment structure of the transit system should be intuitive, easy to remember, approachable for a new rider or tourist, and require as little planning and foresight as possible for the user.
- **Schedule and Service Design:** the transit network should be easy to understand, with maps and signage providing clear direction and connections between modes and major destinations; the service is provided frequently and reliably so that any customer can take transit without planning their trip well in advance or having to consult a schedule.
- **Stations and Vehicles:** the transit facilities should be clean, safe, and easy to navigate across modes and parts of the city.
- **Universal:** all aspects of the transit system should be accessible for every Philadelphian, regardless of their physical ability, native language, or any other factor that currently limits their ability to move through the city.

User Experience Recommendations

The City recommends that SEPTA:

- Create a Branding and Wayfinding Master Plan to apply new branding consistently across all of its assets, both digital and physical.
- Develop regular focus groups (including seniors, families, and students) to beta test design decisions.
- Formalize user design in the project development and review process throughout SEPTA's engineering, service development, vehicle procurement, and other related functions.
- Provide real-time arrival information at all rail stations and provide a public API for real-time arrival information for all modes, including buses and trolleys.
- Apply universal design principles in the design of future vehicles to better consider needs of all user groups, especially people in wheelchairs, people with strollers, people with limited vision, and families with children.
- Implement fare policy reforms with a goal of improving user experience. See page 73 for details.

A SAFE AND CLEAN USER EXPERIENCE

The surveys, focus groups, and stakeholder engagement done for this plan showed that **personal safety and cleanliness were major concerns of Philadelphians and that addressing these issues is critical to achieving the vision of a City Connected by Transit.**

The COVID-19 crisis has further highlighted that cleanliness is a critical element of the public transit user experience, and recent protests and societal conversations about policing and over-policing point to the need for new and different solutions to address public safety concerns.

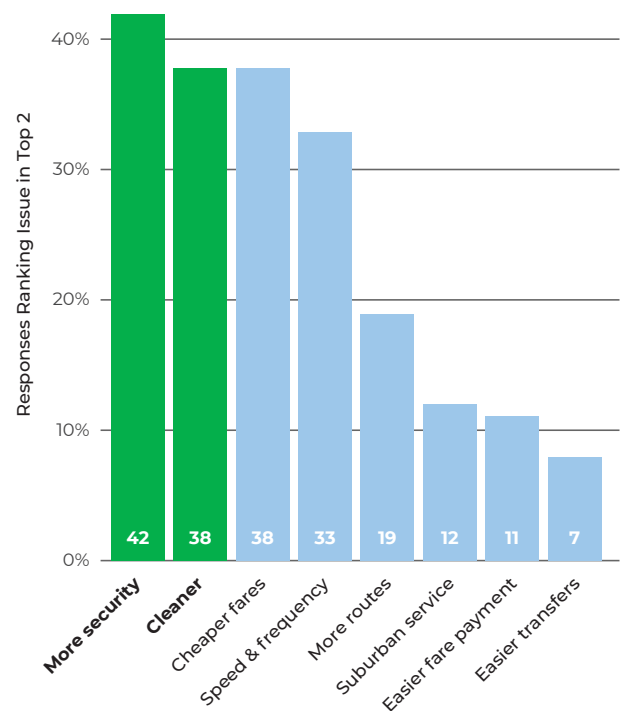
Dissatisfaction of cleanliness and safety affect the likelihood of riding transit. Only about half of respondents describe SEPTA as “relaxing.” **This may not sound important, but “relaxing” is a competitive advantage transit has over driving.** Stakeholders noted specific concerns in interviews related to cleanliness and safety, including:

- Interactions among teenagers after school
- Long wait times for buses and trains late at night
- Cleanliness of stations and vehicles, particularly the Market Frankford Line

To combat the COVID-19 crisis, SEPTA has implemented an enhanced cleaning program for its facilities and vehicles. As the crisis subsides, maintaining the cleanliness of stations, especially at stations outside of Center City, will be critical to assuring a relaxing environment for all users.

While transit vehicles and rail stations are the responsibility of SEPTA, the City has responsibility for cleanliness of bus shelters, which are cleaned by the City’s contractor at least once per week.

Survey found that **IMPROVED SECURITY & CLEANLINESS** were among the public’s top priorities for SEPTA



How to Improve Personal Security and Perceptions of Safety

Riding transit is a safe way to get around the city. Nationally, transit riders are safer than drivers. Transit riders are less likely to be involved in a fatal crash and have a lower likelihood of theft.¹ Of course, not everyone feels safe riding transit or walking to their transit stop in Philadelphia, and this plan takes concerns from residents seriously to make both their communities and their commutes feel safer.

The recommendations set out in Chapter 2.3 of this report set ambitious standards to run more frequent transit service across all of Philadelphia. These improvements increase the range of places, such as jobs and other opportunities that they can access. **These service improvements also contribute to better safety by reducing wait times and attracting more people to transit, particularly in the evening and on weekends, when emptier stations often feel less safe.**

Creating a safer and more just Philadelphia is a pillar of the Kenney Administration. Through violence reduction and better infrastructure, the City has a key role in improving people's perception of personal safety on transit, particularly when people are waiting for the bus.² Lighting is one way to improve safety at bus stops. A well lit bus stop feels safer at night than waiting in the dark and is being addressed by the City both through lighting and bus shelter upgrades.

SEPTA is also making significant investments in passenger security. Social service specialists are engaging with vulnerable communities and facilitating placement in housing and treatment. SEPTA has also installed more than 25,000 cameras throughout its system.

¹ Litman, "A New Transit Safety Narrative," Journal of Public Transportation (2014)

² City of Philadelphia, "Equity and Opportunity for All: Priorities for Mayor Kenney's Second Term," (January 2020)

Safety and Cleanliness Recommendations

The City and SEPTA should:

- Build on progress made to cleaning and maintaining transit facilities, including City-owned bus shelters, during the COVID-19 pandemic to continue to provide the cleanest, safest experience possible for transit passengers. The City will continue to raise the issue of cleanliness around stations, especially those in outlying areas and communities of color.
- Build on the Hub of Hope to provide more humane interaction with people experiencing homelessness.
- Implement aspects of the Service Quality and other chapters of this plan that will provide more frequent and reliable service across transit modes.
- Upgrade all of Philadelphia's streetlights to LEDs, creating a safer experience for nearly all bus stops in the city.

FULL ADA ACCESS TO THE SYSTEM

SEPTA and PATCO Subway/Elevated Stations by Expected ADA Compliance Year (Based on 2020 SEPTA/PATCO Capital Programs)



MFL, BSL, and PATCO Accessibility

A critical aspect of Universal Design is full accessibility, regardless of physical ability. On public transit, this primarily concerns access for wheelchair users and other people protected under the Americans with Disabilities Act (ADA). In this context, accessibility means building elevators and stair-free pathways from the sidewalk to the vehicle that meet the requirements of ADA laws.

After advocacy from the City over recent years, SEPTA's latest 12-Year Capital Program includes full accessibility of the Market Frankford Line (MFL) and Broad Street Line (BSL).

Based on the most updated capital programs, PATCO is on track to achieve full accessibility in 2023, but the MFL and BSL are not scheduled to be completely accessible until 2035. The inclusion of all stations on the program is a significant step towards eliminating barriers for the tens of thousands of Philadelphians with physical disabilities.

Building on this recent progress we're now setting out an even more ambitious goal that all MFL, BSL, and PATCO stations should be made ADA accessible by 2030, five years ahead of the current goal. This accelerated timeline will be a challenge, particularly given SEPTA's budget constraints. However, full accessibility of these two core routes is critical to achieving our vision.

Regional Rail and Trolley Accessibility

While the path is clear for ADA access on the subway routes, achieving full accessibility on the Regional Rail and trolley networks is significantly harder. Philadelphia's trolley system is an accessibility challenge that many peer agencies do not face. Currently, the trolleys are not ADA compliant and require users to climb stairs to board and access underground stations. In addition, on Regional Rail, there are 116 stations in need of platform and accessibility upgrades.

The capital cost for fully accessible trolley and regional rail systems is over \$3 billion.

Achieving full accessibility will require trade-offs to achieve in a reasonable timeline, and it will be crucial for the different stakeholders throughout the region to make difficult choices regarding accessibility, parking, and other potential capital improvements.

ADA Recommendations

The City recommends that SEPTA and its partners:

- Create an Subway/Elevated Accessibility Program to highlight and expedite the capital program's plan for full accessibility on the subways by 2030
- Continue to advance Trolley Modernization to close the accessibility gap for hundreds of thousands of West and Southwest Philadelphians (Chapter 4.1)
- Prioritize Regional Rail station accessibility upgrades, pursuant with the vision for Frequent Regional Rail (Chapter 4.2)

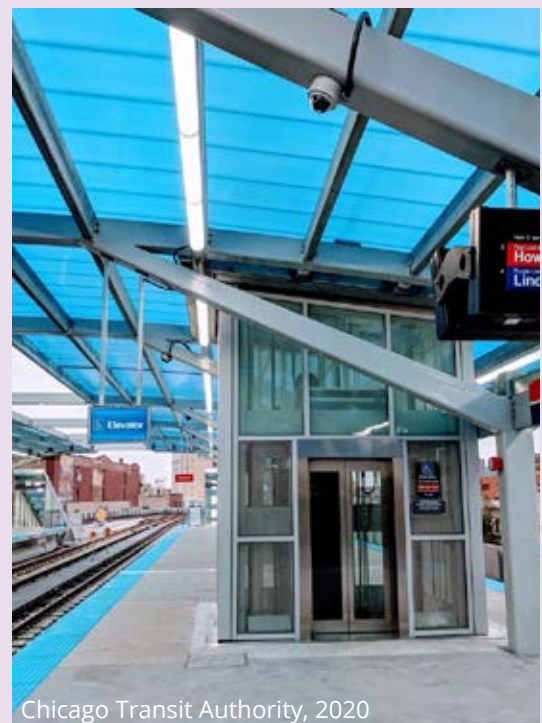
Examples from Other Cities



Chicago, Illinois

Targeting Full System Accessibility

On the 25th anniversary of the passage of the American with Disabilities Act (ADA), the Chicago Transit Authority (CTA) announced a new initiative to make all stations in the CTA's system accessible over the next 20 years. This initiative, the All Stations Accessibility Program (ASAP), goes beyond standard ADA requirements. It aims to retrofit or rebuild 42 inaccessible rail stations, as well as repairing or replacing 162 elevators throughout the rail system. The ASAP plan includes station concepts, cost estimates, and a phased implementation strategy for both adding new elevators/accessibility features while also maintaining the existing stock. **CTA's ASAP program offers inspiration for Philadelphia with its strategic approach to full accessibility on a legacy rail system.**



Chicago Transit Authority, 2020

Old Philadelphia Bus Shelter



New Philadelphia Bus Shelter



BUS STOPS AND PASSENGER AMENITIES

Bus Shelter Program

The City of Philadelphia administers the bus shelter program, a critical aspect of the bus rider's experience. With the ongoing rollout of its modern bus shelters, the City is installing safe, accessible, and high-quality bus stops all over the city.

In 2014, the City announced its goal to modernize its 300 existing bus shelters and install an additional 300 in new locations.

To date, the City has replaced 122 old shelters and installed 150 at new locations. COVID-19's effect on outdoor advertising has negatively impacted the capital funding for the bus shelter program. However, the City's goal is still to have this infrastructure installed by 2025. As outlined in the 2018 CONNECT Plan, a critical target of expanding shelter access is increasing the share of boardings served by a shelter.

The shelter program is managed by the City in partnership with a private company, which manages the construction, maintenance, and advertising on the shelters. The "new" shelter design has been on Philadelphia sidewalks since 2016.

Through the design of the shelters, the City focuses on the transit user experience and the safety of the passenger:

- All shelters are lit throughout the night and feature seating for passengers
- All shelters are ADA accessible
- Shelter advertising generates revenue for the City and provides space for public service announcements

Further information on bus stop design can be found in the SEPTA Bus Stop Design Guidelines document.³

The City's goal for the shelter rollout is to maximize the number of riders served by bus shelters and respond to community needs. Bus stops are prioritized by:

- Ridership (boardings)
- Geographic and social equity
- Community requests
- Proximity to grocers, senior housing, and healthcare facilities

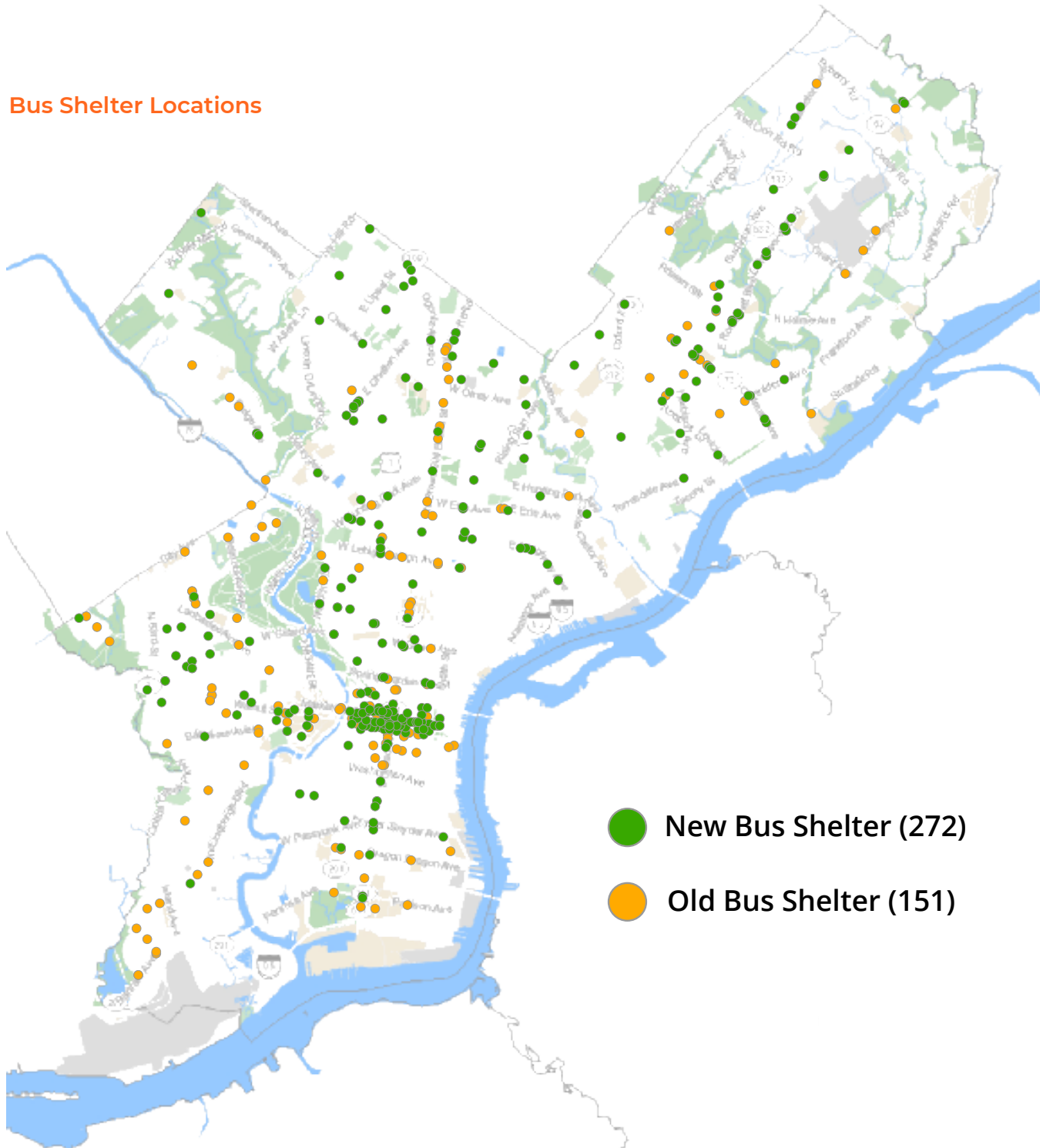
³ DVRPC, "SEPTA Bus Stop Design Guidelines," Second Edition, (2019)



CONNECT: Philadelphia's Strategic Transportation Plan has a goal to **INCREASE THE NUMBER OF RIDERS SERVED BY BUS SHELTERS FROM 32% TO 40%**

While also replacing all old-style bus shelters and growing the total to **600 BUS SHELTERS**

Bus Shelter Locations



Innovating for the Future

Solar Bus Shelters

The City of Philadelphia has begun installing solar powered bus shelters as they not only use a cleaner alternative energy to power the shelter lights, but the solar power also eliminates the need for electrical lines, allowing for shelters to be placed in a greater variety of locations and, in some cases, reducing the capital cost.

The City began a solar bus shelter pilot in 2018. While the pilot was successful, there are limitations to consider for future implementation. Solar panels can be blocked by especially tall buildings or snow, so the City will work with its bus shelter concessionaire to ensure that solar panels remain functional year-round.

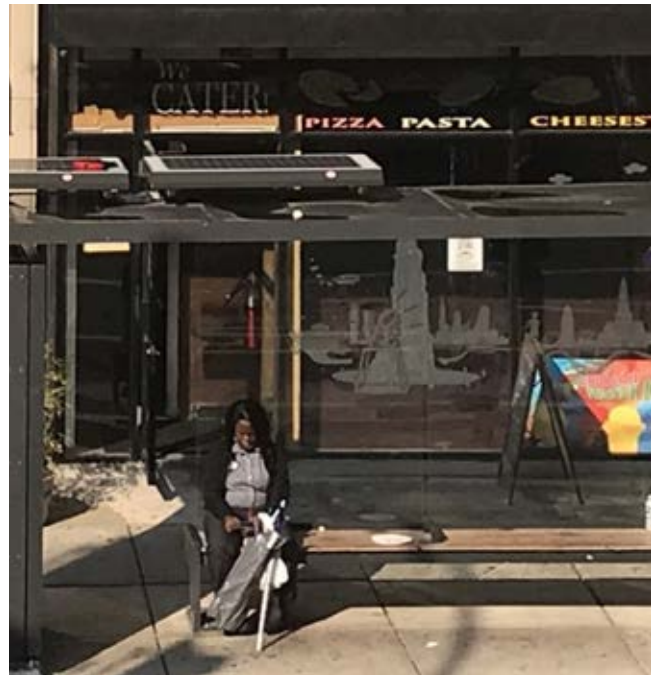
Narrow Bus Shelter Design

Not all Philadelphia sidewalks are wide enough to allow the installation of a standard shelter and still be ADA compliant. The City is working with its bus shelter concessionaire to design and implement a narrow bus shelter design, targeted for 2022. This new design will allow for ADA compliant shelters to be installed at more space-constrained locations.

Bikes and Transit

Both SEPTA and PATCO have added bike parking to major stations. These small investments greatly increase access to high quality high capacity transit. Continued deployment of bike parking near rail stations, transportation centers, and major bus stops will help to connect Philadelphia by transit. The development of the City's High Quality Bike Network has also prioritized connections to transit centers, and Indego locations continue to be located near major transit hubs to create better connections. During the COVID-19 pandemic when travel was limited to essential trips, Indego ridership remained highest near subway/elevated stations.

Solar Bus Shelter



Narrow Bus Shelter Rendering



Examples from Other Cities



San Francisco, California

Implementing All-Door Boarding

San Francisco (SFMTA) implemented all-door boarding and proof-of-payment fare control on its Muni system in 2012 and has seen dramatic improvements in bus speed, reliability, and fare compliance. Dwell time per passenger dropped by 38 percent, and overall bus speeds increased by two percent. The fare evasion rate fell by eight percent, offsetting the costs of increased fare compliance enforcement. All-door boarding also resulted in an increase of customers using non-cash methods that are faster and require less interaction with the driver.

All Door Boarding

Dwell time, the time it takes for a bus to load or unload passengers, can constitute a significant amount of bus travel time. SEPTA Key has made bus boarding easier, and maintaining access for cash-paying customers has been a key equity consideration. However, high dwell time means slower buses, and these impacts are felt the most on high ridership routes where speed and reliability are essential.

All-door boarding can dramatically improve system speed and reduce dwell time by allowing customers to enter and pay at all entrances of buses and trolleys. This could involve adding a SEPTA Key reader to the rear bus door, or SEPTA staff could scan key cards at the back doors of high-use stops during peak periods. Typically, all-door boarding is also implemented with in-person fare enforcement, so it is important to consider the equity trade-offs of the enforcement dynamic and ensure an approach that maintains and prioritizes racial equity.

Real-Time Information Displays

The display of real-time arrival data is critical for the user experience. Riders perceive wait times as two to three times more onerous than in-vehicle time.⁴ Real-time arrival data reduces the psychological burden of not knowing when the bus, trolley, or train is coming. Unfortunately, the arrival data has not always been accurate and relatively few places on the system have displays visible from the station or stop waiting area. **Real-time arrival information available via smart phone app is an important feature but is not a substitute for displays at stations.**

SEPTA has begun modernizing its real-time infrastructure and acquiring software to make stop-level predictions easily accessible. This software is the “brains” behind real-time displays and will provide accurate predictions for future arrivals at every bus and rail stop in the network. Real-time arrival information is already available through the SEPTA App and third party apps like Transit, Google Maps, and others. SEPTA is currently rolling out arrival information at subways stations to match the existing infrastructure available on Regional Rail.

Bus Stops and Amenities Recommendations

The City will work with partners to:

- Continue expanding its bus shelter inventory to 600 shelters by 2025
- Meet the CONNECT goal of 40 percent of passenger boards to happen at a bus shelter
- Add solar-powered bus shelters where appropriate
- Roll out a narrow bus shelter design in 2022
- Pilot real-time arrival screens, starting with Boulevard Direct Stations, and expanding to other high-ridership locations

The City recommends that SEPTA:

- Pilot all-door boarding and study the impact on fare compliance and passenger boarding times
- Acquire software for real-time arrival predictions
- Fully implement real-time information at all MFL, BSL, and underground trolley stations

4 Arhin et. al. “Patron Survey of Acceptable Wait Times at Transit Bus Stops in the District of Columbia,” Open Journal of Civil Engineering (October 2019)



Chicago Transit Authority, 2013

Women and Children on Transit



With 60 percent of SEPTA riders being women, it is critical to elevate their needs and plan a transit system that connects everyone.⁵ Involving women and caregivers in all stages of the transit planning process, collecting specific data on female and youth ridership, and implementing design and service standards that are women-and-child friendly will help build towards our vision of a City Connected by Transit. Common barriers to using transportation cited by women include difficulty navigating transit with strollers, personal safety, cost, a lack of public restrooms, and adequate seating.

Historically, the focus of transportation planning and public transit service has been on facilitating the nine-to-five downtown commute trip. By focusing on this limited number of trips, transportation planning and policymaking practices have historically ignored the needs of women, children, and caregivers who use transit. Research has shown women and men travel differently on public transit, largely due to the additional caretaking responsibilities performed by

women, often requiring them to “trip-chain” or make multiple stops on a single journey. These travel pattern characteristics result in women traveling more during off-peak hours and to a greater variety of destinations that are outside of high-employment areas. **Because of these travel patterns, the elimination of transfer penalties and increased off-peak and weekend frequencies will have positive gender equity effects.**

Recommendations

The City will work with partners to:

- Include analysis of gender and age effects in equitable and open fare policy efforts
- Develop ridership data that includes age, gender identity, and non-work-based trips
- Elevate the needs of women and families in Comprehensive Bus Network Redesign
- Investigate how aspects of Universal Design and User Experience can improve the experience of women, youth, and caretakers traveling with children

⁵ SEPTA, “2018 SEPTA Customer Satisfaction Survey Final Report” (2018)



2.2 OPEN AND EQUITABLE FARES

SECTION SUMMARY

The City of Philadelphia is committed to working with SEPTA and funding partners, including the region and the State, to improve equity within SEPTA's fare structure. In 2020, SEPTA took a major step forward by reforming its fare system to eliminate the transfer penalty and children's fares on all transit. However, additional work is needed to achieve true fare equity in Philadelphia.

Any reduction in fare revenue negatively affects SEPTA's ability to deliver frequent and reliable service. Transit agencies grapple with creating a fare policy that generates sufficient revenue for operations while remaining affordable to users. Prior to COVID-19, passenger fares paid for approximately 31 percent of the operating cost for SEPTA, a value of \$467.7 million in SEPTA's FY20 budget. A reduction in fare revenue could lead directly to a reduction in transit service, potentially undermining the goals of reducing the fares.

This section discusses how SEPTA can continue to create a more fair and equitable fare structure while still generating fare revenue needed to run service. The City recommends that SEPTA and partners evolve SEPTA Key into an open fare payment system and develop an equity-focused fare restructuring plan that explores innovations such as a low-income fare program, fare capping, and passes for local college students.

WHAT ARE OPEN AND EQUITABLE FARES?

An open and equitable fare policy builds on the premise set out in the Universal Design section and works to provide economic access to all Philadelphians. Public transit is a critical public good to facilitate the efficient functioning of cities. It is difficult to provide a high-quality transit system that keeps fares affordable while competing with venture capital funded private transportation network companies, navigating constrained public budgets, and now dealing with the consequences of the COVID-19 pandemic.

A fair, open, and flexible fare policy will allow Philadelphia and the region to meet future challenges without leaving anyone behind. It is good for users and is good for the transit provider. **However, these goals are not easy to achieve, and at times they will conflict with one another.**

An equitable fare policy is:

- Progressive – low-income riders will have a lower average per-trip cost than higher-income riders
- Sustaining – sufficient revenues are raised to support quality service
- Fair – the cost paid by the rider is roughly proportional to the cost of providing the service

An open fare policy is:

- Transparent – a rider understands how much they're paying for their trip
- Non-proprietary – a rider can make the transaction using any means of payment (cash, credit, smart-phone app, etc.)
- Inclusive – the user experience is intuitive, drawing on Universal Design principles to be easy to navigate regardless of language, age, ability, or familiarity with the system

What did Philadelphians Have to Say?

Engagement, including the survey and discussions with community groups, highlighted insights related to SEPTA's fare policy and SEPTA Key, including:

- **The majority viewed SEPTA as affordable rather than expensive**
- Many, including frequent riders, were confused about SEPTA Key, transfers, and even the base fare
- **Infrequent riders were particularly confused** about SEPTA Key, including where to purchase a Key Card
- The structure of **the SEPTA weekly pass**, which is based on the days of the week, was seen as inequitable because it is difficult to utilize for many workers who need it

SEPTA's fare policy was a common topic throughout this plan's engagement efforts. While many understood how SEPTA worked, three of the top four causes of confusion were regarding fares. **SEPTA's most recent fare restructuring addresses some of the concerns the public expressed, most notably, the elimination of the transfer penalty.**

The information from the engagement effort provides a framework for understanding the elements of SEPTA's fare policy that provide confusion and/or frustration. This information highlights the importance of changes to the fare policy that the City and transit advocates have pushed for in recent years.

A MORE EQUITABLE FARE STRUCTURE

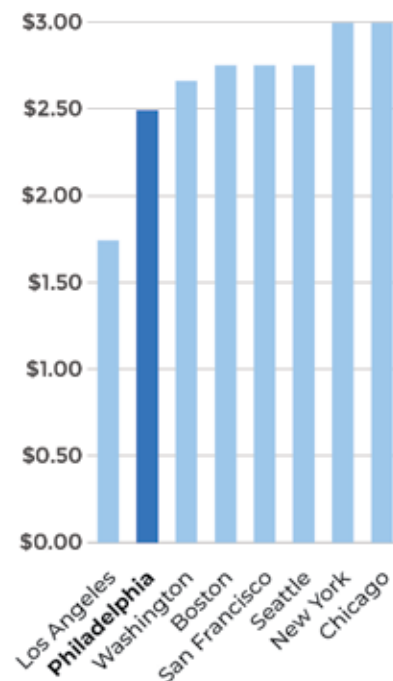
SEPTA's Fare Restructure Plan, which went into effect on July 1, 2020, addresses many of the issues raised by transit users and advocates. **The City believes this is a step towards providing a more equitable and affordable public transit service in Philadelphia.**

The SEPTA Fare Restructuring Plan brought several changes to the SEPTA fare structure:

- Increase in the Travel Wallet base fare from \$2.00 to \$2.50
- Elimination of the \$1.00 transfer penalty for the first transfer within two hours
- Elimination of fares for children 12 and under when riding with a fare-paying adult on all SEPTA modes
- Increase in the cost of weekly and monthly passes by 3-4 percent
- Introduction of a new three-day pass for \$18.00 (for non-Regional Rail modes)

While this effort did raise the base fare from \$2 to \$2.50, the elimination of the transfer penalty and elimination of children's fares is a major step toward a more equitable fare policy. Due to the COVID-19 pandemic, SEPTA chose to indefinitely postpone all fare increases and only implemented changes that reduced fares.

Philadelphia has the
**2ND LOWEST
CASH FARE**
among major transit
commuting cities.



Source: The Pew Charitable Trusts, The Cost of Commuting for Philadelphians, 2019

LEADING PRACTICES IN EQUITABLE FARES

Low-Income Reduced Fare Program

In 2019, the Pew Charitable Trusts studied the cost that Philadelphians pay for public transit. That report showed that Philadelphians oftentimes pay more of their income towards transportation than peers in other cities.¹ However, the reasons are complex. A major limiting factor in making SEPTA affordable to many Philadelphians is the level of poverty in the city. About 359,000 Philadelphians were living below the poverty line in 2019, according to the Census. At 23.3 percent of the population this was the lowest rate in over a decade, but still unacceptably high. The pandemic has likely reversed the successes of the last five years in reducing the poverty rate.

Given these poverty figures in the city and the region, it is not possible to reduce the base SEPTA fare for every passenger low enough to both make transit universally affordable while also sustaining enough revenue. **A “free-fares” for all policy would lead to severe service cuts and inequitable outcomes.**

Inspiration for an equitable approach to fare policy and poverty can be found in a range of other public services that have income-sensitive user fees. One example is the Philadelphia Water Department (PWD), which began a Tiered Assistance Program (TAP) in 2017. For low-income customers and those experiencing hardship, PWD’s TAP program provides savings by offering a consistent monthly bill based on a customer’s income. The Indego Bike Share system offers Indego Access Passes that provide discounted monthly and annual passes for any Pennsylvania ACCESS card holder. **For both programs, the lost income is made up by a higher base rate for non-low-income households and individuals.**

A growing number of transit agencies in the U.S. provide tiered fares for low-income passengers. Los Angeles has a low-income pass program for adults and K-12 students. Seattle’s low-income pass program, ORCA LIFT, provides a 50 percent discount for households with incomes of less than 200 percent of the Federal Poverty Level and is funded by a special tax. Boston and New York City are currently running pilot programs to offer heavily discounted single and monthly fares for low-income households.

While Philadelphia does not have a low-income fare program, it is a national leader in providing affordable transportation for seniors through the State of Pennsylvania’s Senior Fare Program. Sponsored by the Pennsylvania Lottery, seniors throughout the Commonwealth are eligible for free public transit. This program has been successful in providing access to healthcare, recreation, and opportunity for older Philadelphians. Additionally, these subsidized fares relieve pressure on senior’s fixed incomes and give them the ability to age-in-place, benefiting every resident and creating stronger communities.

Given SEPTA’s funding levels and structure, a low-income reduced fare program would be a collaborative effort between SEPTA, Southeastern Pennsylvania counties, and the Commonwealth of Pennsylvania.

¹ The Pew Charitable Trusts, “The Cost of Commuting for Philadelphians” (July 2019)

Examples from Other Cities



TRIMET



Portland, Oregon Enacting Fare Capping

Portland is the first major American city to enact a fare capping policy. TriMet riders with a Hop transit smart card get daily capping and monthly capping. The program is fairly straightforward and made possible by the “Hop” Card, their equivalent of the SEPTA Key.

Once a rider takes \$5 worth of rides in a day (i.e. two rides), the rest of their rides are free. The same applies to a month – once one spends \$100 in a month, the rest of their rides are free. This program allows all of their riders to get discounted pass-level fares, without needing the cash at the start of the month.

Fare Capping

Historically, weekly or monthly fare passes were introduced as fare policies to attract more customers and reward frequent riders. These programs tend to favor those with a regular commuting and work schedule, typically white-collar nine-to-five workers, rather than those with an irregular schedule, such as tourists or shift workers. In addition, individuals who do not have the disposable income to purchase a weekly or monthly pass upfront are unable to take advantage of the discounts these passes provide.

“Fare Capping” is a policy that helps transit agencies avoid this inequitable outcome. By capping single fares paid by riders when they reach the price of a daily, weekly, or monthly pass, the system can provide free rides until the end of the specific time period.

Fare capping provides greater equity because it enables riders to gradually pay the full cost of a pass and delivers equal fares to everyone, regardless of if they have enough cash at the beginning of the week to buy a pass.

Agencies in U.S. and around the world have introduced different variations of the fare capping policy to ensure that the discounted cost of a weekly pass is available to all riders.

A step towards fare capping is to reform the existing SEPTA pass structure, most notably the weekly pass. Engagement work showed that many riders need a pass that is good for a week but not necessarily a week starting on Sunday. An early pass reform would be to make passes “floating” for seven or 30-day periods, instead of passes only being sold on the basis of calendar weeks or months.

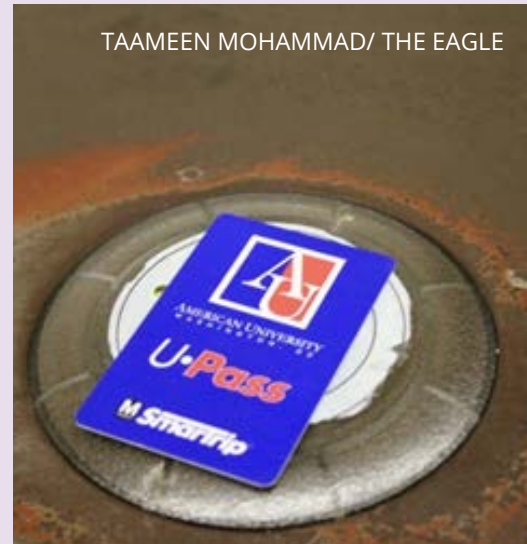
The recent introduction of the three-day pass shows that this type of policy is easier to implement due to SEPTA Key. Because some transit agencies generate significant revenue through passes that are not fully used, fare capping has to be looked at in relation to all of the revenue the agency receives to ensure the financial health of the system.

Examples from Other Cities



Washington, D.C. Attracting Student Riders

Washington D.C.'s WMATA piloted a university pass program, U-Pass, with American University that has generated both increased ridership and revenue for WMATA. During the pilot program from August 2016 to March 2018, 2.2 million Metrorail and Metrobus trips were generated by the participating students and \$5.4 million cumulative revenue was earned during the period. Perhaps most importantly, over 60 percent of U-Pass ridership has occurred during non-peak periods (compared to 40 percent for average users) when capacity on Metrobus and Metrorail is generally available.



TAAMEEN MOHAMMAD/ THE EAGLE

University Transit Programs

People tend to settle into routines in their transportation choices, rarely seeking an alternative until something drastic changes in their life, such as a move, a new job, a change in health or ability, or a global pandemic. The choices someone makes in their formative years in high school and college have a profound impact on the way they experience the world thereafter, and tens of thousands of students come to Philadelphia and its suburbs each year to study at the many universities in the area. This presents an opportunity to create lifelong transit riders by encouraging these students to use public transit when they first arrive. Student trips are less likely to occur during peak travel hours, meaning that they often take up capacity that might otherwise go unused. Since much of transit agency costs are driven by peak service requirements, non-peak trips are less expensive to provide and may have a lower marginal cost.

Many transit agencies have implemented university transit passes in an attempt to increase ridership among college students.

The current SEPTA university pass program provides a 10 percent discount on monthly and semester-based passes for the eight participating universities in the region, including the University of Pennsylvania, Temple University, and Drexel University. Under the current program, students can opt-in to purchase the discounted pass through the school. **Because the adoption rate is very low, the current SEPTA program does not effectively transform students into lifelong riders.**

Transit agencies from other U.S. cities with high student populations, such as Washington D.C., Boston, Los Angeles, Chicago, and Minneapolis, offer heavily discounted university programs, generally 60 to 75 percent below the regular cost. Some programs, in Pittsburgh, provide a pass to all university students paid for out of student fees. These passes can be less expensive because the cost is spread across all students, not just those who use transit the most.

IMPLEMENTING OPEN FARES

Open fare payment for SEPTA, PATCO, and NJT will help to bring back occasional riders after the COVID-19 pandemic by making it easier to ride transit and integrate fares throughout the region. Survey data shows that most Philadelphia residents understand how to use the SEPTA Key, but 20 percent of residents continue to encounter confusion about SEPTA fares, including the cost and mechanism of transfers and the Key card. The four-plus-year rollout of SEPTA Key has not always been a smooth and customer-centric user experience.

Key 2.0 – Embracing Open

While SEPTA Key is currently implemented using a proprietary and branded card, the original design intent was for an open payment system. Opening the system to third-party fare payment, however, has been repeatedly delayed. **Shifting SEPTA Key to an open payment technology will allow riding the system without a Key card, making it much easier for infrequent riders and tourists.**

Our engagement efforts showed that the lack of a SEPTA Key is a major limiting factor in a person's ability to make an impromptu trip on transit. Open payment technology has emerged as a leading practice for transit agencies trying to improve the ease of purchasing tickets and riding their systems. In London, for example, transit users can use any bank card with contactless payment capability or mobile payments like Apple Pay or Google Pay or the transit agency's Oyster Cards. **By making payment easier, transit agencies can not only provide quality experience for transit users but reduce their fare collection expense.**

Open is Integrated

Beyond making transit easier to ride, open payment technology provides the simplest path to integration between providers. With the SEPTA Key rollout on the Regional Rail system, Philadelphians can easily transfer between subway, bus, and regional rails. Continuing to develop open payment technology will make the further integration of fares in the region possible, without requiring each agency to build costly, proprietary links between one another. Open payment platforms also allow third-party applications to “bundle” tickets between agencies, creating a seamless user experience while traveling across the region.



Fare Policy Recommendations

The City recommends that SEPTA develop a plan for a more equitable fare policy that includes:

- Low-income transit pass program in coordination with state and regional funding partners
- Restructured weekly pass that lasts seven days from activation and a similarly structured monthly pass, and investigate a fare capping program
- University pass program in coordination with local universities

The City recommends that SEPTA, PATCO, and NJT work towards an open fare collection system that includes:

- Accepting contactless payment technology
- Allowing third-party vendors to sell fares via mobile apps
- Increasing the number of physical third-party vendors throughout the region
- Incorporating universal design principles at SEPTA Key readers, e.g. showing the remaining balance when paying fare
- Improving the SEPTA Key by reevaluating the need for a debit card feature in order to eliminate the need for the card to expire



2.3 FREQUENT AND CONNECTED SERVICE

SECTION SUMMARY

The City of Philadelphia has identified expanded access to frequent service, particularly frequent weekend bus service, as critical to achieve the vision and goals of this plan. A frequent bus is a bus that comes at least every fifteen minutes, meaning that you can rely on it to show up not long after you get to the stop. In addition to expanded frequency, cities and transit agencies can work together to speed up buses through policies such as stop spacing, right-of-way management, and traffic law enforcement.

This section outlines a broad vision for citywide transit service standards, as well as specific standards and strategies the City can employ to better support transit operations. Higher frequencies on weekends can improve access for low-income workers especially. Policies, such as moderate increases in bus stop spacing, can lead to significant mobility improvements, especially for communities of color. **As SEPTA pursues a redesign of the bus network, the City wants to be an active partner in creating a bus network that truly meets the needs of our residents and make Philadelphia a City Connected by Transit.**

What Did Philadelphians Have to Say?

Residents voiced a desire for more frequent service. For transit dependent riders, access to reliable, frequent, all-day transit service is a critical lifeline to jobs and services. In addition:

- **Residents expressed a desire for faster bus service.** Philadelphia has among the lowest average bus speeds in the country. Slow bus and trolley speeds reinforces inequality within the City.
- SEPTA described **the lack of layover space for buses as a major constraint** when exploring the implementation of new routes, redesigning services, and increasing the frequency of existing routes.
- Special events and construction lead to significant delays for passengers due to bus detours and make it difficult for transit operators to provide reliable service.

EXPANDING ACCESS TO FREQUENT TRANSIT SERVICE

During off-peak periods and notably on weekends, transit is less reliable and convenient due to factors like longer wait times, less convenient transfers, or the complete absence of some transit services. The existing system is oriented toward the weekday rush-hour, despite the fact that a large and growing segment of Philadelphians work non-traditional hours when transit is less frequent. In addition, these off-peak riders, many of whom are essential workers, have continued to rely on transit during the COVID-19 pandemic.

There is an opportunity to shift some bus service hours from the peak period to off-peak periods without causing crowding. In 2018, more than half of SEPTA routes operating in Philadelphia had more boardings per revenue hour during midday periods than peak periods.⁶

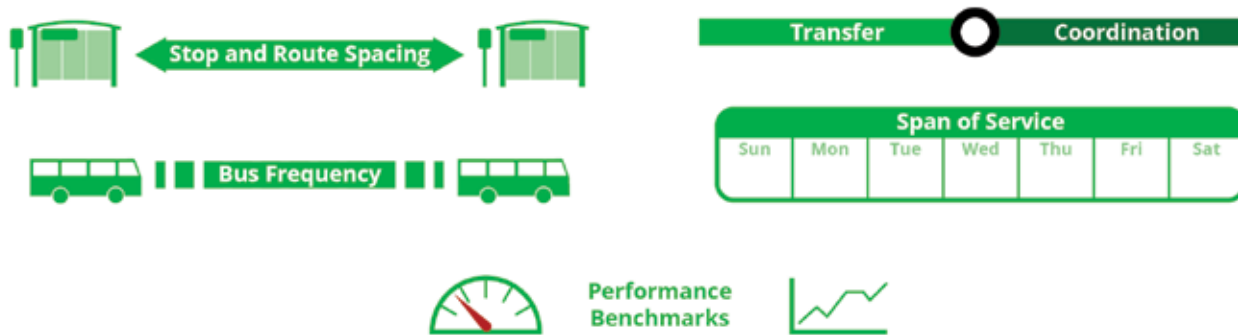
In 2019, SEPTA created its High Frequency Network (HFN), a subset of routes that operate at least every 15 minutes, for 15 hours a day from Monday to Friday (15/15/5), but **only 37 percent of frequent routes also operate frequent service on Sundays.** This stands in contrast to similarly sized North American systems in Seattle, Montreal, and Houston which operate a robust high frequency network seven days a week. Discussed further in Chapter 4.3, high capacity transit is made most useful by its high passenger capacity and very frequent service. The higher function of the Market Frankford Line and Broad Street Line warrants a more ambitious service standard than 15 minute headways, particularly on evenings and weekends.

Expanding the frequent network and having it span the weekends would benefit the large number of Philadelphians who travel to jobs outside the typical weekday morning and evening peak travel periods by reducing transfer times and creating a more reliable and convenient network. Additionally, this supports the Universal Design approach discussed in Section 2.1 by simplifying the system and making transfers much easier.

⁶ SEPTA, "Philadelphia Bus Network Choices Report" (2018)

SERVICE STANDARDS

Shape the Transit System



BALANCING TRANSIT STOPS

Having buses stop less often will save people time and make transit more attractive to more people. In Philadelphia, buses typically stop every block (~500 feet). Stopping less often, such as every other block (~1,000 feet), would significantly benefit transit riders. Spreading the typical stop spacing from every block to every other block would only increase the walking time to the bus stop by one minute on average. However, by prioritizing higher ridership stops, the majority of riders would likely not be impacted.

SEPTA's current standard is to have bus stops spaced at a minimum of 500 feet apart for existing routes, which is closer than standards used by peer cities like Washington, D.C., New York, and San Francisco. While having close-together bus stops means that riders have to walk a shorter distance to access transit, it also slows the bus down.

Every time a bus stops, time is lost due to acceleration and deceleration. Stopping may result in a bus missing a green light or getting delayed as it tries to merge back with traffic. **This delay is a matter of equity. Low-income people and people of color take disproportionately longer transit rides and would benefit the most from stop consolidation.**

Additionally, every bus stop represents an asset that needs to be maintained, from ensuring signage at stops is up-to-date, to making sure that stops and shelters are in a state of good repair and clean. Fewer stops mean that SEPTA and the City can focus their resources at fewer locations, enabling the stops that do remain to have better upkeep and amenities.

Conceptual Bus Stop Rebalancing



As SEPTA embarks on CBNR, the City supports efforts to work with riders and communities to rebalance bus stops to ensure stop placement maximizes mobility for the rider. Past experience in Philadelphia and nationwide shows that stop spacing is highly context sensitive, and future bus stop optimization should work with riders and communities to consider the following:

- **Travel Time Savings:** Would the time savings of fewer stops outweigh any additional time needed to access a bus stop along a particular corridor or route? Would existing traffic patterns and intersection treatments require buses to stop at intersections anyway?
- **Asset Management:** Could stop consolidation enable SEPTA and the City to improve signage and bus stop amenities due to the smaller overall bus stop portfolio?
- **Accessibility:** How would reducing the number of stops along a corridor impact rider accessibility? Is there a concentration of people nearby with mobility limitations who would be disproportionately impacted by the elimination of a bus stop?
- **Demand:** Are existing stops located to best serve rider demand?
- **Security:** Would eliminating or moving a bus stop compromise the safety of transit riders?



LEVERAGING CBNR TO MEET THE CITY'S TRANSIT GOALS

SEPTA'S Comprehensive Bus Network Redesign (CBNR) represents a once-in-a-generation opportunity to re-imagine the bus network to better serve Philadelphia. Redesigning the bus system will require SEPTA to weigh various competing priorities, such as: coverage (geographic area served by transit) vs. frequency (concentrating bus service where demand is highest); and route and stop spacing vs. proximity to nearby transit. **A successful system redesign is guided by a set of design standards that account for these and other trade-offs.**

The City's goals for CBNR include:

- **Increase transit ridership by 10 percent relative to the national trend.**
- **Increase the number of residents living within a quarter-mile of frequent transit by 10 percent:** In a fiscally constrained environment, increasing coverage will mean SEPTA will have to find savings by eliminating duplicative service and making the routing of lines more direct.
- **Increase the number of jobs accessible by transit within 30 minutes at noon by the average resident by 10 percent and by non-white residents by 15 percent:** Meeting this goal will require striking a balance between both coverage and frequency. A strong core of frequent routes will help to reduce travel times and facilitate transfers across the systems.



REINFORCING EQUITY THROUGH SERVICE STANDARDS

Achieving true equity means focusing transit resources to address historical inequity and structural racism across the city. Doing so will require making equity an explicit goal. Achieving equity goals will not happen without process equity, meaning that communities are included in the decision-making process.

The City will work with SEPTA to integrate equity into the CBNR process. This will include:

- Bringing communities across the city into the planning of the network
- Developing data that is inclusive of all users and trip types
- Setting regional metrics, inspired by the City's goals for CBNR (see previous page)

It should be noted that transit agencies like SEPTA are already committed to addressing inequality in their operations and planning. Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, ethnicity, or language in public services, including public transit. SEPTA, along with PATCO and NJ Transit, maintain Title VI programs that outline how the agency will ensure that any changes to service or fares and the allocation of transit amenities do not pose a disproportionately negative impact to protected groups, such as racial minorities or people with limited English proficiency.

HOW THE CITY INFLUENCES TRANSIT SERVICE

In addition to installing bus shelters and building bus priority treatments, the city also influences transit service quality by working with SEPTA on layover spaces, communicating about street closures due to construction and special events, and enforcing bus lanes and bus stops. The City can help agencies like SEPTA meet its standards by aligning our own policies and processes to better facilitate transit service.

Enforcing Traffic Laws

The City works with internal and external organizations such as the Philadelphia Police Department, SEPTA Police, and the Philadelphia Parking Authority to enforce traffic laws, including those that affect transit. Improved enforcement of existing traffic laws must be part of any effort to improve bus service. Enforcement must also take equity into consideration and ensure that specific communities, particularly people of color, are not overly burdened by enforcement activities.

Recent enforcement blitzes in Center City on Market and Chestnut Streets have shown that PPD, PPA, and SEPTA do not have all the available tools to adequately enforce traffic laws. While additional enforcement personnel, such as the proposed new class of public safety enforcement officers, are likely to help with improving bus flow, additional enforcement tools are needed to have a more equitable and effective approach.

The use of camera based enforcement significantly reduces concerns of racial bias in traffic stops and the potential escalation of the interaction. Automated enforcement also allows continual enforcement of a problem without a 24/7 in-person presence. Continuing to shift to automated enforcement of traffic violations is a Vision Zero priority to both reduce traffic crashes and racialized policing. Camera-based automated enforcement has been an effective and fair method for enforcing traffic laws since it was first implemented in Pennsylvania in 2005, with the Automated Red Light Enforcement and Roosevelt Boulevard Automated Speed Enforcement.

Automated enforcement can be used to ticket vehicles that illegally block bus lanes or otherwise obstruct traffic. In New York City, the MTA installed cameras on multiple bus routes and saw an increase in bus speeds on the routes, leading to a larger rollout that is ongoing.⁷ An automated enforcement system for Philadelphia transit would require collaboration between the City, SEPTA, and PPA, and the State Legislature.

⁷ Mass Transit Magazine, "MTA, NYCDOT announce expansion of bus lane camera enforcement" (August 7, 2020)

Planning Space for Transit

As part of Philadelphia's management of its streets and curb space, City government can help SEPTA and other transit operators identify new or expanded layover locations.

In a dense city like Philadelphia, dedicating space for transit operations is difficult, but the lack of layover space near the end of routes is a major constraint to the introduction of new or expanded bus service. Buses need a place to wait between trips, preferably in proximity to a restroom that operators can safely access.

Allocating public space for transit centers or coordinating space with private development is another way the City can help improve transit. Lastly, layover space planning is a critical component of fleet electrification, discussed further in the following section.

Regulating the Street

Another key way the City influences the quality of transit service is through the regulation of the public right-of-way. Through the management of curbside uses, permitting of street closures, and the enforcement of traffic rules, there are many opportunities for the City to prioritize transit operations. **The key to this is to ensure there is ample and consistent communication between the City and SEPTA on any right-of-way issues that may impact transit operations.**

Recommendations for Frequent and Connected Service

The City will work with SEPTA through the CBNR process to:

- Expand SEPTA's frequent bus network to seven days a week and increase weekend and evening frequency on the MFL, BSL, and Trolleys
- Ensure that the new bus network design meets the City's goals for public transit (listed on page 78)
- Develop a bus stop spacing policy and program with robust community engagement

The City will:

- Ensure that investments in transit priority infrastructure further SEPTA's network design goals
- Ensure that equity is a key factor in all City-led efforts to improve public transit
- Ensure that investment in transit helps to achieve equity by improving transit accessibility for historically disadvantaged neighborhoods
- Identify and implement updated standard operating procedures for effectively communicating with SEPTA far ahead of time on planned street closures, and better notifications of emergency work



2.4 TRANSIT FOR THE ENVIRONMENT

SECTION SUMMARY

The Mayor of Philadelphia is committed to cutting carbon emissions in line with the Paris Climate Agreement, and the City of Philadelphia's top strategy for reducing transportation carbon emissions in Philadelphia is to shift trips from cars to transit, walking, and biking.

Transit trips, whether electrically powered or hybrid, are significantly better for the environment than single occupancy vehicle (SOV) trips. In 2019, about half of rides on SEPTA were made on an electric vehicle, as SEPTA trolleys and trackless trolleys, Regional Rail, Subway/Elevated, and PATCO are all electric. SEPTA has recently taken steps to make sure that electrically powered vehicles also produce zero source emissions through the use of a green power purchase agreement.

This section discusses how to reduce carbon emissions from the remaining trips, which are on buses. While shifting trips from cars to transit is the City's top strategy, transit trips should be as green and clean as possible. **The City recommends that SEPTA electrify its bus fleet, primarily through the adoption of battery-electric buses (BEBs).** This is difficult – BEB technology is not ready for full-scale adoption today, and it will take significant resources to build the charging infrastructure. We recommend that SEPTA complete a master plan to increase levels of electrification over the next decades as the technology develops, culminating with full electrification by 2050. This would match the City's 2050 carbon emission goals.

What Did Philadelphians Have to Say?

- **The climate crisis is existential, and we must reduce emissions everywhere, including from transit.**
- Some environmental advocates are frustrated by the slow rollout of battery electric buses.
- Residents who have a trolley-bus love the technology and do not want them converted to other technologies.

STATE OF THE BATTERY-ELECTRIC BUS (BEB) INDUSTRY

Transitioning to an all BEB fleet will reduce greenhouse gas (GHG) emissions that are harmful on a global scale, as well as pollutants that are harmful to neighborhoods. While emissions of GHG and criteria pollutants in Philadelphia from private automobile traffic far outweigh emissions from transit trips, transit must also reduce its emissions. SEPTA has also taken steps to improve the environmental performance of its bus fleet. **More than 90 percent of SEPTA's bus fleet is hybrid-electric, which has reduced greenhouse gas emissions by approximately 30 percent on a per-mile basis compared to standard diesel counterparts.**

BEBs can be a transformational technology for zero-emission transit, and many agencies have investigated the opportunities associated with them. However, despite considerable interest, few U.S. transit agencies have successfully integrated BEBs into their fleets. Of those that have deployed the technology, the number of BEBs represents only a small portion of their total bus fleet. **SEPTA has the largest BEB fleet on the east coast of the U.S. and the fourth largest overall, with 25 buses located in the Southern District in South Philadelphia.**

Key drivers for implementing BEB technology include:

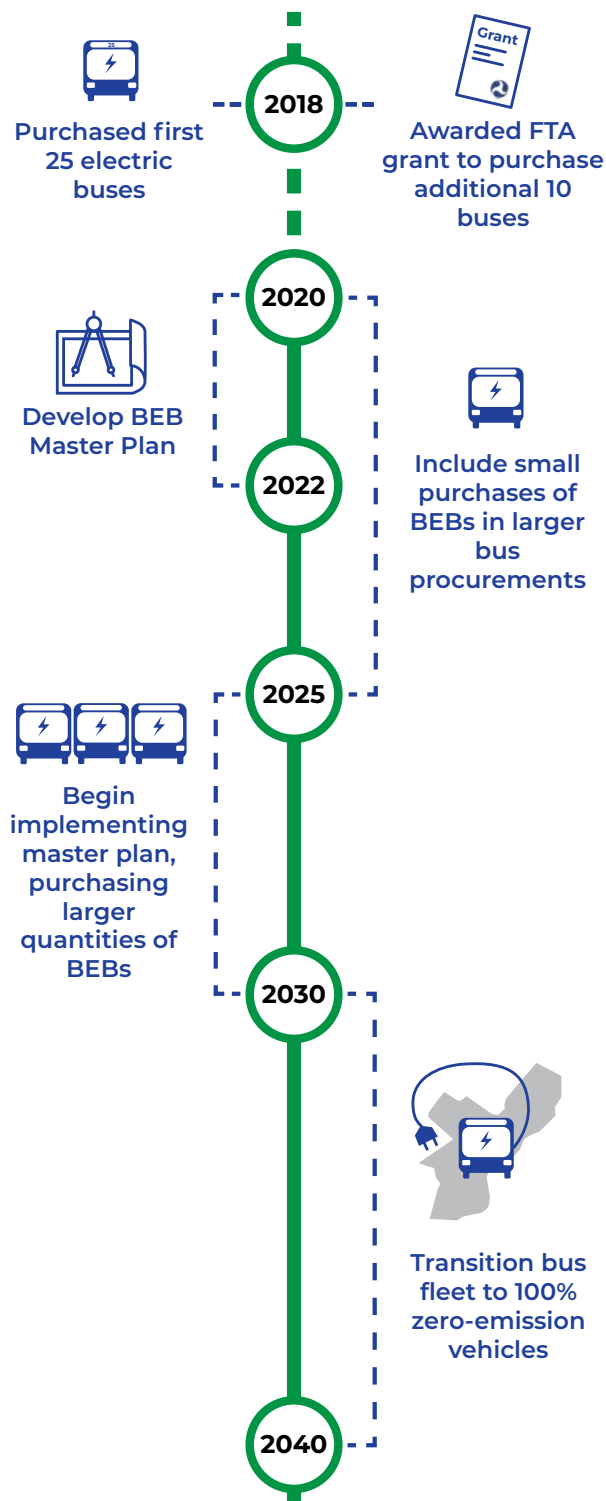
- Policies and mandates promoting electrification
- Potential for lower operating and maintenance costs
- Lower GHG emissions compared to conventionally fueled vehicles
- Public health benefits from reduced vehicle emissions
- Availability of grant funding

Key barriers to implementation include:

- High upfront capital cost and lack of financing options, affecting both charging and vehicles
- Lack of space and land for charging stations – both on street and off street
- Lack of standards and regulations for charging equipment
- Power and range limitations of vehicles
- Shorter vehicle life

SEPTA has gained valuable experience operating its first 25 BEBs. Issues have arisen related to the range and reliability of the electric buses that must be addressed for the successful expansion of the fleet. The City recognizes that the zero-emission bus industry is still evolving and pledges to work with SEPTA as it builds a plan for more widespread deployment.

Timeline for Battery Electric Bus Implementation



Alternatives to BEBs Lacking

There are two main zero-emissions technological alternatives to BEBs for transit: hydrogen fuel cell buses and trackless trolleys. Both alternatives have issues.

While a promising idea, hydrogen fuel cell technology is not developed enough nor sourced in a way that would meet the goal of zero-emissions transit. Several fuel cell bus demonstration projects have been completed or are ongoing in collaborations involving transit agencies, the National Renewable Energy Laboratory (NREL), and the Federal Transit Administration. The on-board vehicle technology for fuel cell power has advanced significantly in the last 20 years. However, the complete fuel-cell bus ecosystem is less technologically mature than the complete system for BEBs, and nearly all the hydrogen used is derived from natural gas. While the vehicle has zero tailpipe emissions, significant carbon emissions are connected to the trip. Until an economically sustainable and zero-carbon source of hydrogen is identified, fuel cell electric buses will not achieve sustainability goals.

Trackless trolleys, unlike BEBs or hydrogen fuel cell buses, are a mature technology that have operated in Philadelphia for almost 100 years. Today, three SEPTA routes (75, 59, and 66) currently operate as trackless trolleys. **The most significant issue with trolley buses is the capital cost of installing the power infrastructure and its ongoing maintenance costs.** While this is partially offset by lower fuel costs, the lifecycle costs are still higher. A 2015 evaluation of routes 29 and 79 by DVRPC found that restoring trolley bus service to these routes would require a capital investment of \$20 million and ultimately result in lifecycle costs 44 percent higher than either BEB or conventional diesel buses.¹ **SEPTA should continue to maintain and operate the existing trackless trolley fleet, but, given their budget constraints, a large-scale trackless trolley expansion is not feasible.**

¹ DVRPC, "Vehicle Technology Analysis for SEPTA Routes 29 and 79" (2015)

DEVELOPING A MASTER PLAN

While BEBs have been identified as the top strategy for making bus fleets zero emissions, this is not an easy task. This plan presents a vision for this transition, roughly over the next 20 years. However, there are many variables – including cost, fleet replacement timing, policy mandates, facility and workforce preparedness, technology standards, and technology maturity – that will affect the feasibility of this timeline.

To move towards a zero-emissions fleet, SEPTA should develop a comprehensive master plan to take a coordinated approach to fleet electrification and address the complexities that lie ahead with more widespread BEB fleet expansion.

SEPTA has collected and analyzed bus performance data generated during BEB operations to better understand battery range limitations under various temperature and load conditions. SEPTA is also conducting an electrical infrastructure assessment at all

bus facilities to plan for the additional power demands of battery charging operations. The results of both studies will inform the content of the master plan. Other data to consider include an equitable distribution of the benefits of BEBs. Prioritizing deployment based on neighborhood asthma rates would ensure equitable deployment.²

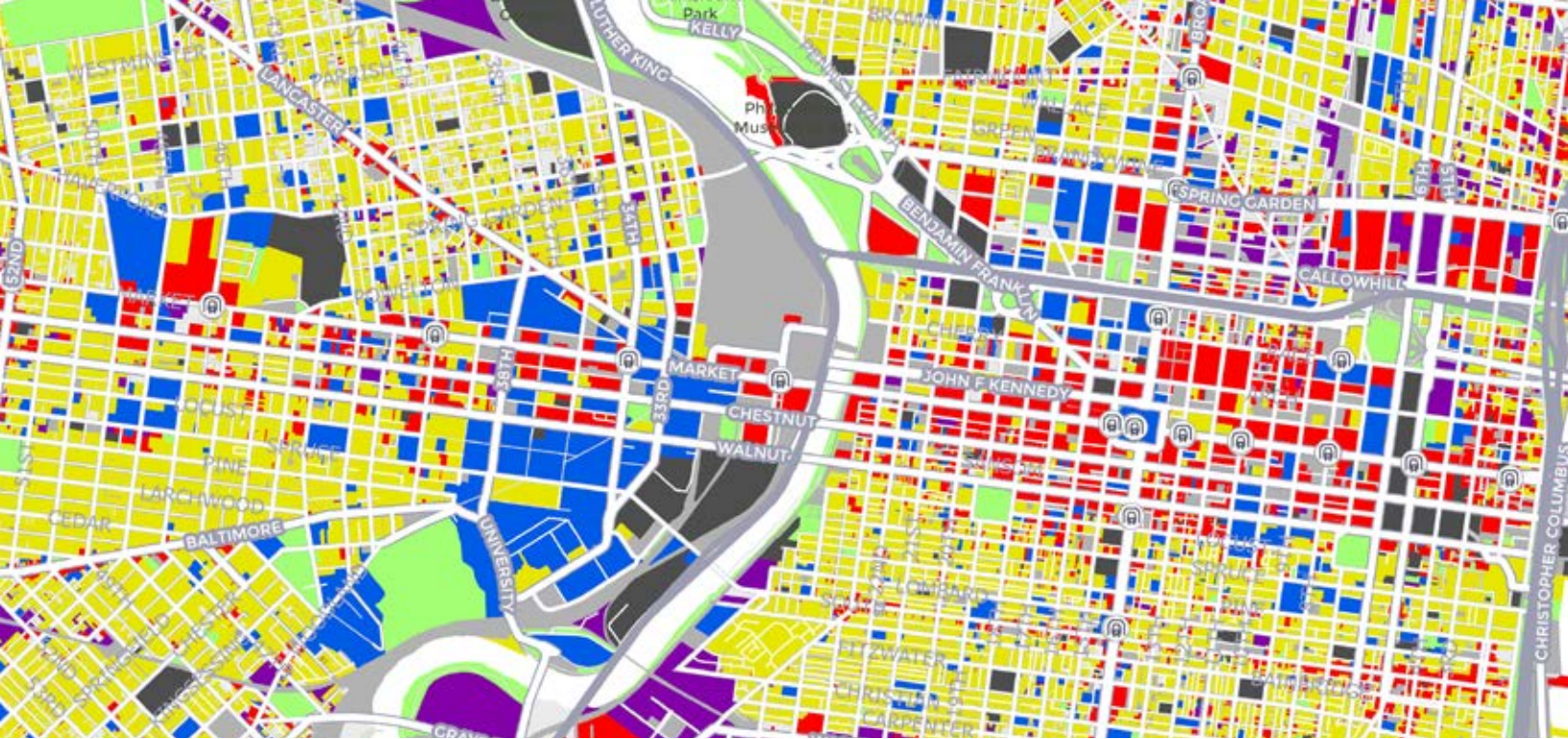
While full electrification is not possible today, SEPTA is beginning the process. As an early action, SEPTA is beginning to electrify Midvale Bus District by leveraging existing electrical infrastructure to power electric buses by connecting Midvale Depot to the Broad Street Line Subway traction power system at Butler Substation. Pilot deployments such as these are critical learning opportunities as SEPTA pursues larger scale electrification. Because this technology is evolving rapidly, this plan will need to evolve as well.

² Philadelphia Department of Health, “Health of the City” (2020)

Recommendations for Transit for the Environment

The City recommends that SEPTA and other transit providers:

- Complete a master plan for full electrification that is flexible to changing and maturing technology
- Continue to include small purchases of BEB in all procurements to continue to gain experience with the evolving technology
- Continue to develop power infrastructure to support a large-scale BEB fleet
- Retire the remainder of its diesel fleet in favor of hybrid-electric buses until BEB technology matures to the point of providing reliable and economical transit service
- Reduce the timeframe of the next bus procurement from the standard five years to just two years, allowing for greater flexibility to transition to BEB procurement sooner as the technology matures and as the master plan is implemented
- Continue to operate and maintain the existing trackless trolley routes
- Work towards procuring 100 percent renewable electricity



2.5 INTEGRATED TRANSIT AND LAND USE PLANNING

SECTION SUMMARY

Most of Philadelphia's historic growth has been around public transit. Philadelphia's dense settlement pattern would not work without transit, and transit would not work without density. This section reinforces the transit-supportive land use policies laid out in *Philadelphia2035*, and proposes additional ways that land use and development policy can continue to support transit.

Philadelphia's transportation and land use dynamics are a product of its history, but the dynamics are not static. As Philadelphia has rebounded in population and economic growth in the early 21st century, new development has clustered around the main transit lines. Skyscrapers now define the Center City and University City skylines, and infill development is becoming increasingly common, particularly along the Market-Frankford and Broad Street Lines. However, the dispersal of employment centers outside of Center City and Philadelphia-at-large that began in the post-war era creates access problems for the many Philadelphia households without cars. Often the transit access to suburban employment centers is inadequate and the design of the centers themselves make transit difficult or impossible to provide.

What Did Philadelphians Have to Say?

The City's *Philadelphia2035* plan engaged with thousands of residents about land use, public transit, and other important issues in their community, and that plan is a direct product of those thousands of conversations. When talking to people about public transit, land use is not often directly spoken about. **However, how we build our cities influences every aspect of public transit.** Based on the public engagement completed for *Philadelphia2035*, as well as that completed for this plan, the following areas stood out:

- **Reliability and Affordability** – to provide affordable and frequent transit, there must be enough people and jobs, i.e., density, located around that transit to support the service.
- **Accessibility** – creating accessible, universally designed transit stations is an important public priority; however, providing additional parking at stations, particularly on Regional Rail, is often given priority over expanding accessibility.
- **Safety** – personal safety is complex and individual, however, all things considered, if there are more people on the train, waiting on the bus, or walking home from the station, the safer that experience will feel, and as discussed above, transit ridership is predicated on a supportive level of density.
- **Parking** - nearly every conversation about transportation in Philadelphia involves discussion of parking. Concerns about parking constrains housing production by creating opposition to new development in all parts of the city.

Land Use in *Philadelphia2035*

To plan for Philadelphia's role in the 21st century, the City's official comprehensive plan, *Philadelphia2035*, lays out broad recommendations to better integrate transit and land use planning in the city. The plan calls for future land uses and zoning that support the existing transit infrastructure and help promote ridership. **In the Citywide Vision as well as its 18 district plans, *Philadelphia2035* recognized transit as the key link between residents and jobs, recreation, and commercial amenities.**

To determine the land use recommendations, the staff of the Philadelphia City Planning Commission (PCPC) evaluated various factors, including street widths; existing housing typologies; adjacency to commercial corridors, educational, and other institutions; historic designations; and transit infrastructure. These recommendations were also vetted by the public through multiple community meetings.

Key strategies that emerged in *Philadelphia2035* regarding the transit system include:

- Coordinating land use decisions with existing and planned transit assets
- Promoting density along transit corridors
- Expanding Transit Oriented Development (TOD) overlay around rail stations
- Fostering safe, active streetscapes at transit nodes with infrastructure, such as sidewalks, trees, seating, and shelters
- Enhancing traffic safety around transit stations by limiting curb-cuts and minimizing vehicular speeds
- Encouraging the clustering of community-serving facilities near transit nodes



AFFECTING CHANGE IN LAND USE

Changing a city's land use patterns can be a lengthier and more complex task than expanding infrastructure like public transit. Land use decisions are made by residents and developers over time, and the City's main way of influencing these decisions is through zoning. To write new or amend zoning regulations, communities work with the Planning Commission and City Council to create a vision of how the neighborhood should develop over time and how this development impacts other things, like parking and public transit. Once zoning is put into place, it can take years or decades to see the changes develop at scale.

Land use change happens over time, and once done, is hard to reverse. It is critically important to coordinate land use decisions and infrastructure choices to ensure that we meet the vision of a City Connected by Transit. Zoning must also be accompanied by programs that aim to keep long term and low-income residents in their communities so that development happens without displacement. Fortunately, the City of Philadelphia has more of these types of programs than any other large US city.

LINKING TRANSIT AND DEVELOPMENT

Philadelphia2035 provides a strong foundation for transit supportive land use policies. This section proposes three strategies that build upon this foundation.

Grow with Transit

Beyond the comprehensive plan and zoning, there are two additional mechanisms in the City Code to shape growth and leverage development for transit – the TOD overlay and the Floor Area Ratio (FAR) bonus for transit investments. The FAR bonus for transit improvements allows a developer to build a larger building by improving a transit facility, such as a new or upgraded station entrance.⁸ To date, the FAR bonus has not been used.

The Transit-Oriented Development (TOD) Overlay District encourages higher density land use around transit stations.⁹ The overlay exists currently at four Market Frankford Line stations: 46th, Erie-Torresdale, Allegheny, and Spring Garden. More information about the overlay can be found on page 91.

To encourage growth around transit, the FAR and TOD overlay policies should be improved and expanded.

Support Workers While Maintaining Productive Transit

A focus of the City's land use efforts through *Philadelphia2035* has been to preserve industrial land in the city for industrial uses in order to maintain access to these jobs for city residents. Light industry, like warehousing and distribution, creates jobs that are often shift-based and located on large parcels with ample parking and are difficult to access by walking. This makes the industrial sections of the city difficult to serve with productive transit. Philadelphia benefits, however, from the central

location of much of its industrial zoning, which lines residential areas and the banks of the Delaware and Schuylkill Rivers.

As many of the city's centrally located urban industrial zones are seeing redevelopment, developers can build transit-friendly sites, schedules shifts with transit in mind, and work with the City and SEPTA to build end-of-line facilities for bus recoveries.

Without these things, it is very difficult to provide frequent and reliable transit without reallocating service from an already productive place.

Reframing Parking and Mobility

One of the most contentious issues in Philadelphia is neighborhood parking. Some Philadelphia neighborhoods have more cars than they have parking spaces, and for those who need to drive every day, finding a place to park is often a challenge. **However, instead of limiting growth, public transit and other mobility tools can provide mobility without furthering our dependence on cars.** This also allows curbside space to be reallocated to street trees, restaurant seating, delivery and loading, and stormwater infrastructure, making the city more resilient to pressing challenges like climate change and the urban heat island effect.

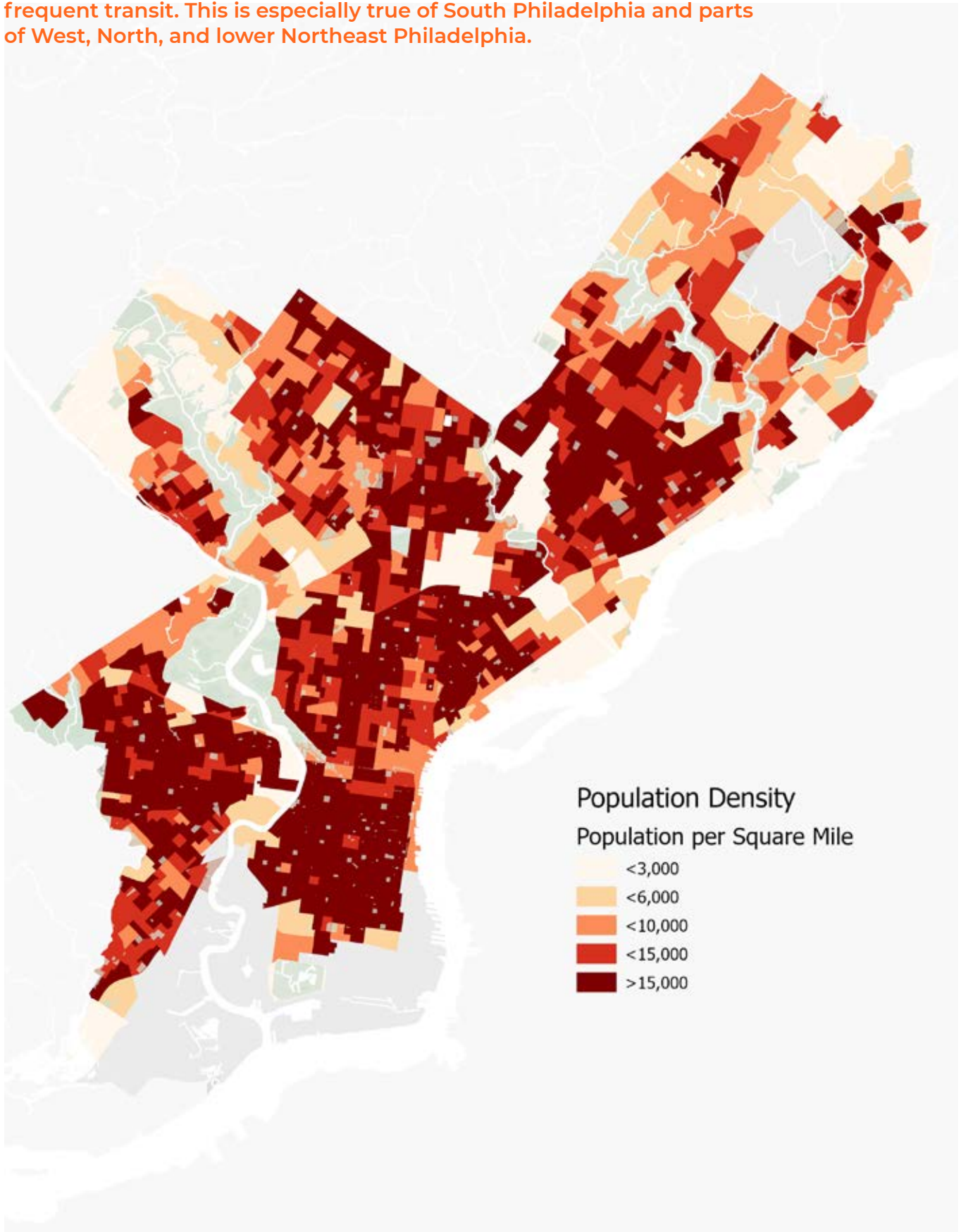
Future planning efforts must focus on delivering access to the city through investments in public transit and other multimodal infrastructure in order to reduce the need for car ownership for as many Philadelphians as possible.

⁸ Philadelphia Code 14-702(8)

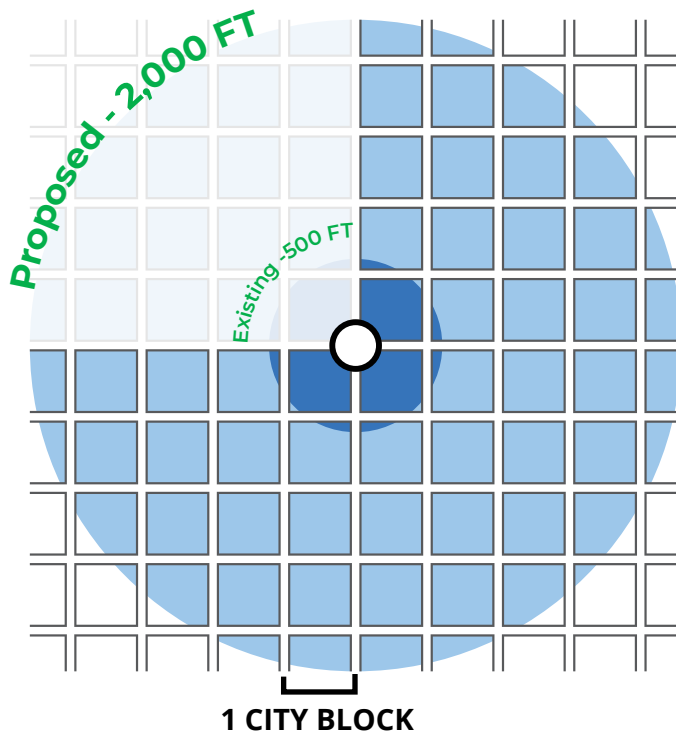
⁹ Philadelphia Code 14-513

2.5 Integrated Transit and Land Use Planning

Most of Philadelphia has residential densities high enough to support frequent transit. This is especially true of South Philadelphia and parts of West, North, and lower Northeast Philadelphia.



Expanding the TOD Overlay to more stations and a larger radius will allow Philadelphia to grow with transit.



Today, the TOD overlay extends 500 feet from any entrance or exit of a designated station and features a few key aspects, including:

- Required ground floor retail or commercial usage
- Prohibition of vehicle sales and service uses, surface parking, and drive-throughs
- Dwelling unit bonus of 50% in CMX1, CMX2, CMX-2.5, and RM-1
- Reduction of parking minimums and parking maximum of one space per two units for residential uses

Integrated Transit and Land Use Recommendations

The City will work with Council and other partners to:

- Pursue parking reform in dense neighborhoods, including expanded permit parking, corner clearances for safer bus stops, and dynamic pricing
- Improve the Transit-Oriented Development overlay, including:
 - Increased overlay radius to 2,000 feet around the station and designate every rail station with high-frequency service for the overlay
 - Expanded eligibility to modernized trolley stations and bus rapid transit stations, and designate locations as part of those planning processes
- Better market the FAR bonus to developers and include transit improvements as part of traffic mitigation work asked of developers of major projects
- Advance land use policies set out in the Roosevelt Boulevard Route for Change plan to encourage walkable urban centers around Direct Bus and future BRT stations
- Pursue transit-oriented development partners for land surrounding transit stations that is owned by the City or transit agency

CHAPTER 3

BUS CORRIDORS



CHAPTER SUMMARY

Improving bus service is the cheapest, fastest, most equitable way to improve transit in Philadelphia. Good bus-transit requires both good service and good streets working together. Policies to improve bus service are presented in Chapter 2, the most significant idea being the Comprehensive Bus Network Redesign. This chapter is about how to improve the streets for bus service.

This chapter presents a data-driven method for identifying the bus corridors most in need of priority improvements in the City of Philadelphia. With SEPTA embarking on the Comprehensive Bus Network Redesign, the routes that run on these corridors may change, but the corridors themselves are likely to remain important, regardless of the changes in the network redesign.

The chapter then presents a toolkit of solutions for how we can speed up bus service on these streets and other corridors. Appendix II includes profiles of our top tier corridors, illustrating specific issues and early ideas for improvements.

STOP ID #
8

Boulevard
Direct

Intersection 229-288-4073

BOULEVARD
DIRECT



DIRECT
BUS

YOUR DIRECT WAY
TO CONNECT



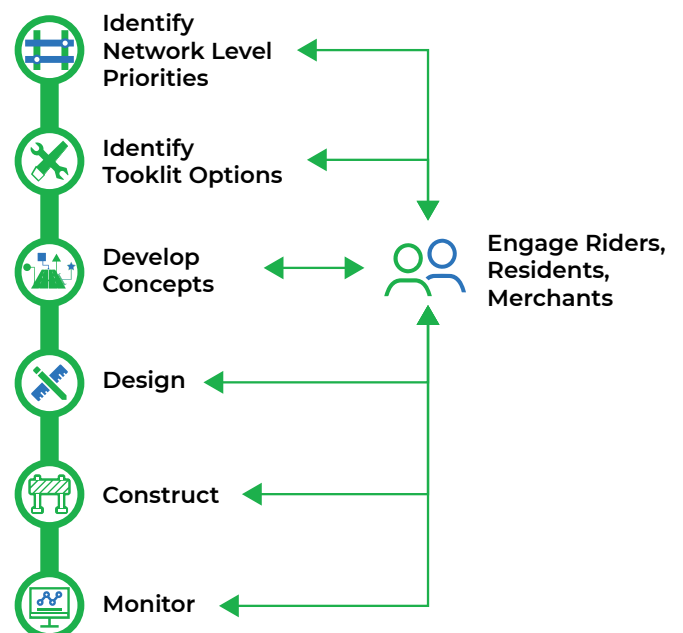
3.1 IDENTIFYING CORRIDORS

SECTION SUMMARY

This section describes the technical method for identifying which streets in Philadelphia should be prioritized for bus service. Two tiers of priority corridors are presented.

Corridor identification is the first step in advancing a street for a transit priority treatment. The flowchart on the right shows how these priority corridors will advance into planning and implementation after this plan is released.

How a Transit Corridor Gets a Priority Treatment



METHODOLOGY

To realize the vision of this plan – a City Connected by Transit – bus infrastructure needs to be implemented quickly and where it is needed most. There are more corridors that warrant bus priority treatments than the City has capacity to deliver in the next five years. This section presents a method to prioritize those improvements on the streets most in need.

Corridors were coded and first screened using quantitative data and then refined using qualitative considerations to produce a Tier 1 and Tier 2 list of improvements. See Appendix II for conceptual design improvements applied to a selection of Tier 1 corridors. We intend to advance Tier 1 corridor projects over the next five years. The Tier 2 corridors are for longer term development, or if new opportunities emerge.

Corridor Development

We identified 353 bus corridors in Philadelphia. To create the corridors, we coded all the streets in the City with buses running on them to create approximately 1-mile corridors. Corridors were coded for consistent width and layouts, as well as similar transit usage characteristics.

Data Sources

In coordination with SEPTA and NJT, OTIS and DVRPC utilized a combination of automated passenger counter (APC) and SEPTA Key data to develop segment-level performance and benefits measures.¹ This data was collected in Spring 2019 by SEPTA and Fall 2019 by NJT. The data was analyzed at the trip-stop-level, meaning that every trip and stop in the SEPTA and NJT systems were involved in the analysis. This amounted to over 1 million observations.

To quantify equity, the City worked with SEPTA and Econsult to estimate the share of low-income riders for each route. This route level data was then used to weight corridor level ridership and estimate the number of low-income riders on each corridor.²

Quantitative Metrics

To distill the data and identify priorities, we developed a formula using the measures and weights in the chart on the next page. To calculate the final score, raw values were divided by the 95th percentile value with any value greater than one set equal to one. These values were then multiplied by 10 to create a 10-point scale for evaluating distributions. Final scores were a simple summation of the five component scores, with each component score multiplied by its weighting to retain a 10-point scale.

- 1 APC data was the primary source of data for this work. APC data is collected by sensors installed on a portion of SEPTA and NJT buses that count how many people board and alight at each stop, thus providing stop-level data that was manipulated into corridor-level data.
- 2 A minor limitation of this data analysis led to there not being data available for trackless trolley routes 66, 75, and 59 at the time this analysis was done. Adjacent bus routes that served similar neighborhoods were used to substitute the percent of low-income passengers for these routes. Ridership data for these routes was not affected. This limitation did not affect the results.

3.1 Identifying Corridors

Quantitative Metrics used in Corridor Ranking

Measure	Formula	Weight	Summary
Riders per Mile	(Bus load entering corridor + boards along corridor) / corridor length	0.25	Ridership fully accounts for all riders who directly benefit from potential improvements.
Low Income Riders per Mile	Estimated percent of route-level low-income riders x riders per mile	0.25	Low-income riders are functionally double counted because they are more likely to be transit-dependent and benefit more due to having less access to personal automobiles.
Service Hours per Mile	Total running time for all buses on segment / corridor length	0.25	Service hours is the total aggregated running time of buses on the corridor and increases as more service is provided or as speeds are reduced. Reducing service hours allows the same number of buses to run more trips.
Average Speed	Bus trip running time on corridor / corridor length	0.125	Average speed, which includes dwell times, shows where buses are slow.
Coefficient of Variance of Average Speed	Standard deviation of average speed / average speed	0.125	Reliability is measured by the variance of bus speed. Poor reliability means transit is unpredictable and requires riders to allot extra time.

Qualitative Metrics

After the high scoring corridors were identified, corridors were filtered and prioritized based on the following qualitative metrics:

- The ability to leverage other investments
- Geographic equity
- Connections to high capacity transit stations (MFL and BSL)
- Propensity for corridor to remain or become more important through CBNR
- Ability for near-term collaboration with another agency's capital project

Final Corridor List

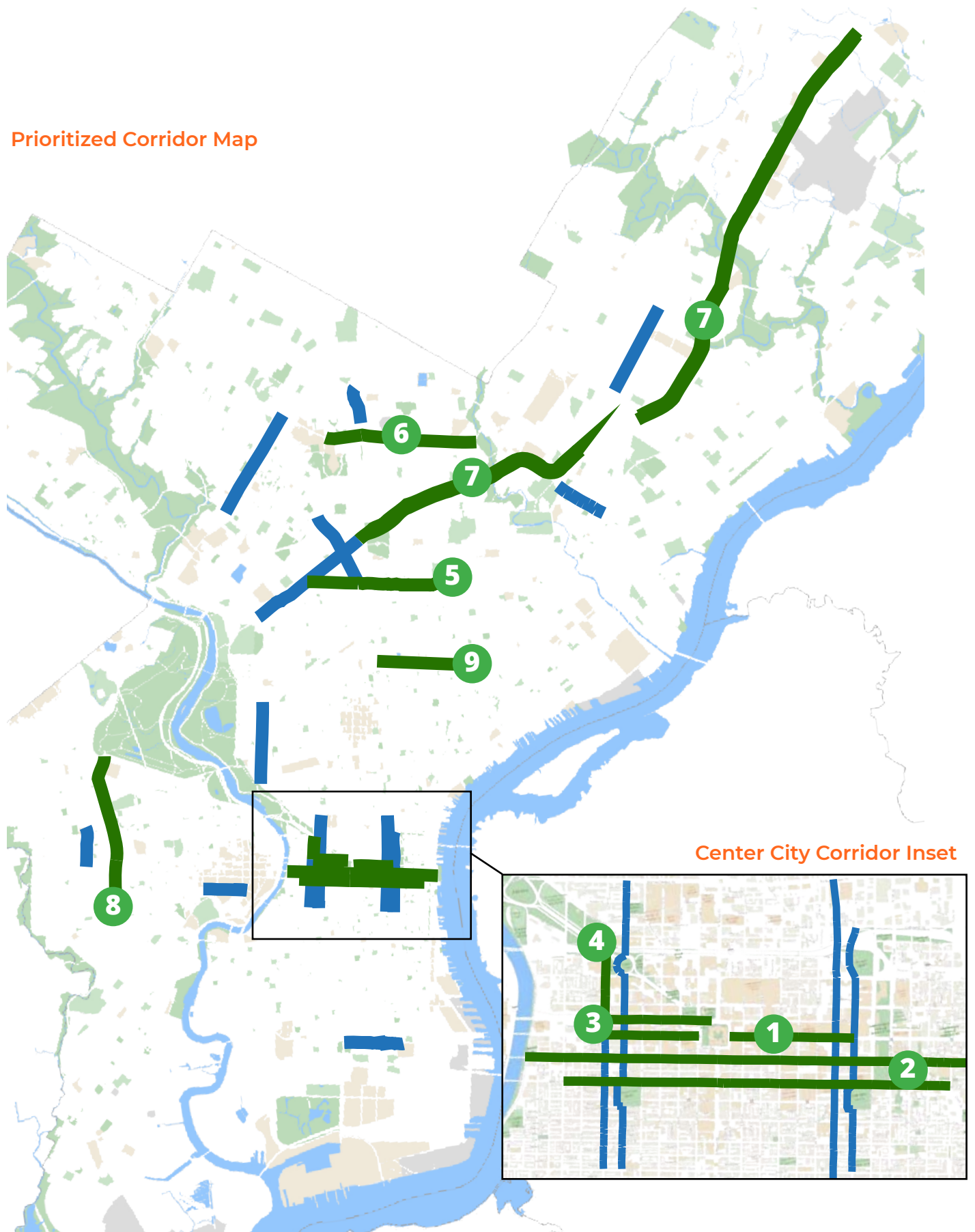
Tier 1 corridors for near-term implementation:

1. East Market Street
2. Chestnut St / Walnut St
3. Market Street & JFK Boulevard
4. 20th Street
5. Erie Avenue
6. Olney Avenue
7. Roosevelt Boulevard
8. 52nd Street
9. Lehigh Avenue

Tier 2 corridors for longer-term implementation:

10. 19th Street
11. 7th/8th Street
12. Spruce Street (40th - 33rd)
13. 56th Street
14. 29th Street
15. Germantown Avenue
16. Cheltenham Avenue
17. Arrott Street
18. Old York Road
19. Oregon Avenue
20. Castor Avenue
21. Hunting Park Avenue

Prioritized Corridor Map





3.2 BUS PRIORITY TOOLKIT

SECTION SUMMARY

This toolkit provides design strategies that can be used to adapt streets for bus priority, including both quick-build design techniques to redesign streets now and ideas for transformative capital projects. Based on a national scan of best practices and drawing lessons from Philadelphia's peer cities, the toolkit will help the City, SEPTA, and partner agencies identify problems, weigh trade-offs, and select design treatments that improve bus service.

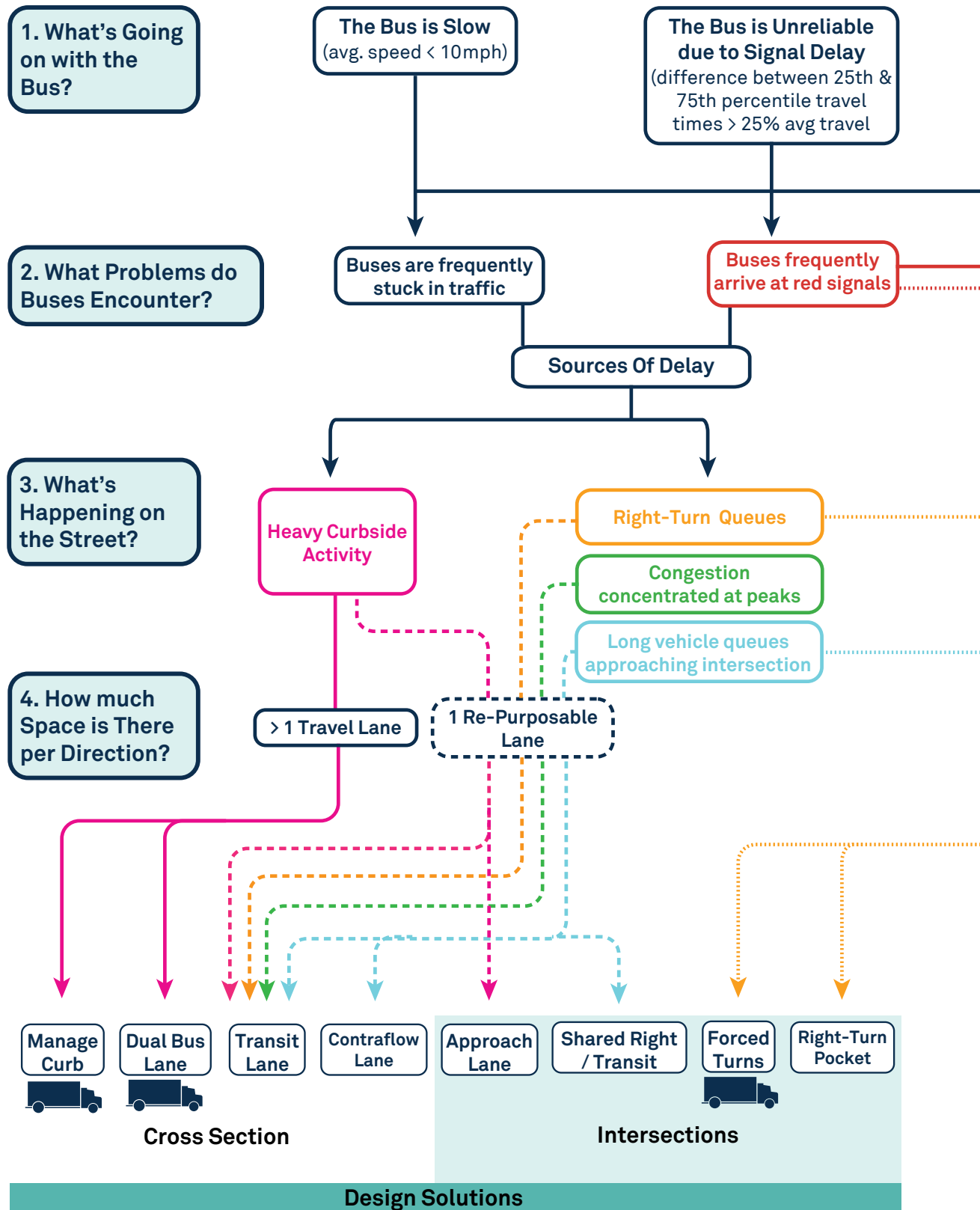
APPROACHING DESIGN

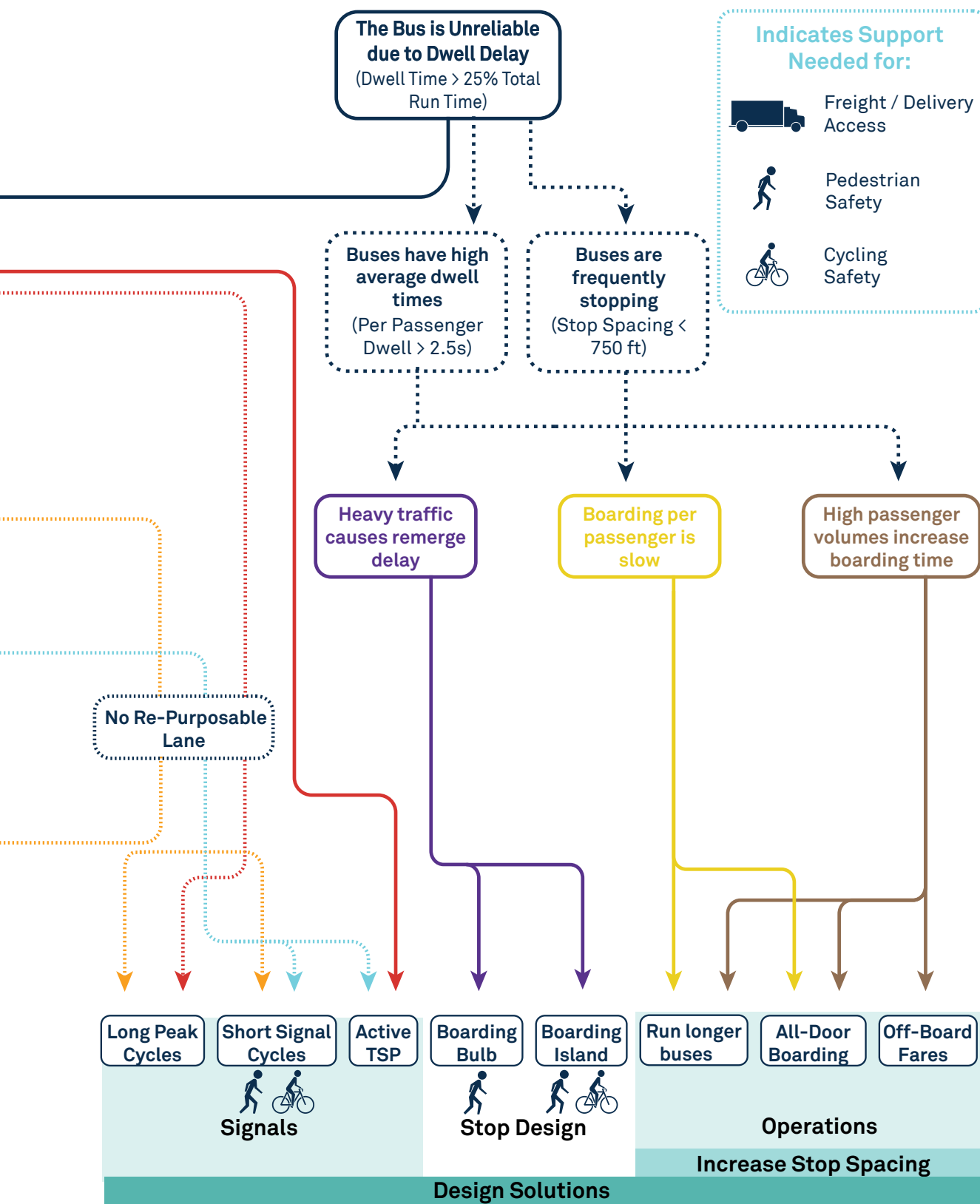
Selecting a design to improve bus service starts by diagnosing the problems faced by bus service. The basic approach to transit street design is as follows.

- **Begin by evaluating the role of the street in the transit network:** Evaluate total person throughput by mode, the relative balance of local access versus through-travel, the volume of buses per hour, and the peak versus off-peak operations of the street. The importance of the corridor in the network helps inform the design approach.
- **Next, itemize the problems that slow down bus service or make it less useful on a corridor.** For instance, what are the characteristics of delay and unreliability for the operator? How much width is available to re-purpose for exclusive transit use? What kinds of signal hardware are already in place?
- **Finally, consider other multi-modal commitments on the street.** Safety should be the top priority of any project, particularly for streets on the Vision Zero High-Injury Network. Other considerations include the role of the street in moving general traffic, curbside needs, and the high quality bike network.

The following decision tree was developed to guide a project through these questions and develop a list of potential design treatments to improve safety conditions, and bus speed and reliability.

APPLYING THE TOOLKIT





MAKING THE DESIGN WORK

Good transit street design needs to provide solutions for **the street cross-section, the intersection, and the bus stop.**

Developing a Cross-Section

The starting point for a bus priority project is the cross-section. Not all streets in Philadelphia can dedicate a lane to transit, but bus passengers receive enormous benefits where this trade-off is possible.

Many cities have found that enhancing the bus lane demarcations through red paint and clearer markings improves driver compliance and transit performance. In San Francisco, New York City, and Chicago, project evaluation data shows that red-colored transit lanes have reduced vehicle intrusions by 48 - 55 percent, 55 percent, and 60 percent respectively.

Cross-Section Design Options Include:

- **Striped Bus Lanes (curbside or offset)** provide an exclusive operating space for buses. Dedicated lanes can be warranted wherever bus priority is the goal.
- **Separated Bus Lanes** are physical barriers that reduce vehicle intrusions into the bus lane. Barrier options range from tactical or quick-build tools like quick-curb, hardened lane lines, and traffic cones, to harder means of separation that can create fully separated side- or center-running busways, such as jersey barriers, doweled concrete, or pre-cast curbs. These are not appropriate for locations with curbside activity.
- **Wide or Dual Bus Lanes** expand operating space in places where high bus volumes test the capacity of a single lane, or where multiple simultaneous buses are regularly expected.



Curbside Lane | 79th ST, New York



Offset Lane | 125th ST, New York

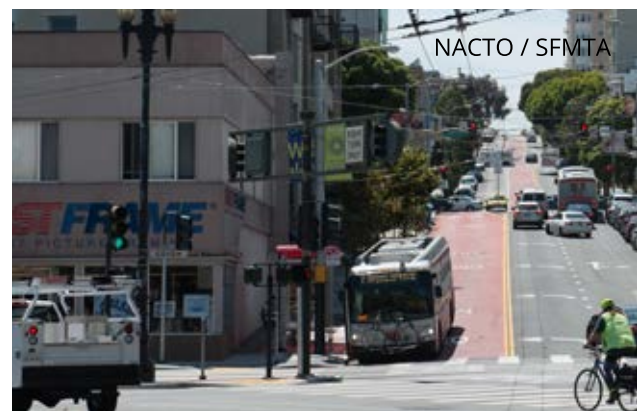


Separated Bus Lane | 23rd ST, New York

- **Contraflow Bus Lanes** expand the functional capacity of a bus lane by completely restricting vehicle access in the bus travel direction, creating a clear and predictable operating space.
- **Painted Bus Lanes** use red paint to highlight their exclusive nature. Epoxy-based paints are cheaper, but have lifespans of 6-36 months. Thermoplastic lasts 4-8 years, while MMA (methyl methacrylate) lasts 4-7 years and can have superior friction characteristics. These lifespans assume application on new pavement; application on weathered pavements result in much decreased lifespans. Cost estimates in 2020 set MMA red paint at about \$600k per mile. The most costly but longest lasting option is to incorporate color into the concrete or asphalt pavement mixture.



Dual Bus Lane | 5th AVE, New York



**Contraflow Bus Lane |
Haight ST, San Francisco**

Cross-Section Design Evaluation Chart

Cross-Section Facility	Combined Transit Volume	Peak-Hour Transit Person Through-put	Curb Use / Demand	Cost to Implement (per mile)	Potential Benefit
Curbside Bus Lane	Peak: 10+ buses per hour	Transit Throughput ≥ 50% of Adjacent Travel Lane	Low demand, or high management	Less than \$100k	~15 - 30% travel time decrease.
Offset Bus Lane	Off-peak: 6+ buses per hour		Regular demand (parking & loading access)		
Red-Colored Transit Lane	Peak: 10+ buses per hour	Transit ≥ 80% of Adjacent Lane	Regular demand for either parking / loading or traffic	\$500- 900k (MMA)	~50 - 60% reduction in violations
Separated Bus Lane	Off-peak: 6+ buses per hour	Transit ≥ 100% of Adjacent Lane		\$500k - \$1m	
Wide Curbside / Dual Bus Lanes	15+ buses per hour or mix of stopping patterns			\$500 - 900k	
Contraflow Bus Lane	Peak: 10+ buses per hour Off-peak: 6+ buses per hour		Restricted in the transit travel direction	\$500k - \$1m	

Designing Intersections for Reliability & Efficiency

There are a variety of geometric and signalization options to mitigate conflicts at the intersection and give buses priority over other vehicles. Geometric design tools physically control where buses can go versus other vehicles and can be used to enforce policy-level decisions about the street network, such as transit-only streets. Geometric design can be enhanced by signal tools, covered further in the next section.

Geometric Intersection Design Options Include:

- **Shared Right/Bus Lanes** allow right-turning vehicles to share the bus lane on approach to the intersection – buses proceed straight through, while vehicles turn right. As vehicle turn volumes increase, transit efficiency decreases.
- **Right-Turn Pockets** separate the bus movement through the intersection from turning vehicles. This can be combined with other tools, such as queue jumps, farside, stops, and signal priority.
- **Queue Jump & Transit Approach Lanes** provide priority for buses on street where there is insufficient width for a full bus lane but bus delay is acute. The lane should be sized, when feasible, to match the longest regularly occurring queue to enable buses to predictably reach the front of the line. The transit approach lane may be paired with transit signal priority for further results
- **Forced Turns** at regular intervals (e.g. every block or at strategic locations) force all general vehicle traffic to turn off the transit street. Forced turns allow local access to continue, prioritizing freight and passenger loading activities, while prohibiting through-travel, reducing congestion volume and creating a more comfortable operating space for transit, bikes, and pedestrians. Forced rights should be paired with a right-turn pocket or lane, and signal separation for pedestrians and banned rights-on-red should be considered at busier locations.

Case Study: Forced Turns, 14th St., New York City



In anticipation of the L train shutdown, NYC reconfigured 14th Street's traffic pattern to allow buses and bicyclists as the only through-users, with trucks and taxis allowed to drive for one block on 14th Street before being required to turn right at every block. As a result, buses are traveling 30-40% faster and side-street traffic has not appreciably changed.

Source: NY Daily News, New York 14th Street Busway Traffic Impact 2019



Protected Transit Approach Lane | Westlake AVE, Seattle

Geometric Intersection Design Evaluation Chart

Transit / Turn Lane	Combined Transit Volume	Vehicle Turns per Hour	Curb Use / Demand	Signal Tools	Cost to Implement
Shared Right / Bus Lane	Ineffective with greater than 20 buses per hour	Less than 60 - 90 turns / hour	Any	Shared phase	< \$10k per approach
Right Turn Pocket	Peak: 6+ buses per hour	Greater than 50 turns/ hour	Size approach to longest regularly occurring queue	Shared phase, leading / lagging interval, or exclusive phase	
Transit Approach / Queue Jump Lane	Off-peak: 6+ buses per hour	Any			
Forced Turns	Peak: 20+ buses per hour Off-peak: 10+ buses per hour		Local access may be permitted	< \$30k per approach	

Signalization Options for Intersections Include:

- **Active Transit Signal Priority (TSP)** provides a green light to buses as they approach a signal. TSP can be granted conditionally (e.g., only to late-running trips) or unconditionally (all transit trips receive signal priority). TSP technology also provides priority to emergency vehicles. Limitations of TSP include:
 - Need for headways roughly between six and 15 minutes to give signals time to “reset.”
 - Declining effectiveness where multiple frequent transit corridors continually intersect, such as in Center City.
 - Requirement for longer stop spacing, as TSP is more effective at intersections without a stop or with farside stops.
- **Transit-Friendly Signal Progression** provides transit priority both where transit is very frequent and where signal infrastructure has not been modernized to accommodate Active TSP. When buses arrive so frequently that the corridor signal progression cannot be restored in three signal cycles, a comprehensive timing plan that integrates average transit speeds and dwell times can improve overall operations and throughput.

Intersection Signal Design Evaluation Chart

Signal Priority	Combined Transit Volume	Complementary Geometric Treatments	Signal Tools	Potential Benefit
Active TSP, conditional	Any	Bus Lane, Approach Lane, Pull-Out Stop	Shared phase or leading / lagging	3-7% travel time & reliability improvement
Active TSP, unconditional	<10 buses per hour	Bus Lane, Approach Lane, Pull-Out Stop, Mixed Traffic		
Passive TSP (low-speed progression)	> 8 - 15 buses per hour		Shared phase	3-7% travel time decrease; reduce high-end speeding

Supporting Riders Getting On and Off the Bus

The minimum bus stop requirements in Philadelphia include having a sign and an “x-box” marking on the pavement. This serves two purposes: Clear curb space allows riders to disembark and access the curb without being blocked by parked cars. It also allows buses to pull to the curb and deploy the wheelchair ramp for riders with mobility needs. However, buses do not pull to the curb at every stop as a matter of practice because “curbing” would require the bus to merge back into traffic. Beyond the minimum sign and x-box, much more can be done to make waiting as comfortable as possible while also ensuring efficient bus operations. Further information on bus stop design can be found in the *SEPTA Bus Stop Design Guidelines*.

Bus Stop Placement Options Include:

- **Far-Side Stop Placement** can provide operational and safety benefits. Operationally, far-side placement can reduce signal delay and allow for optimized TSP and allow buses to not wait on right-turning vehicles to make their stop. Far-side stops reduce conflicts between buses and pedestrians, due to the crosswalk being behind the bus. Far-side stops also give the bus additional maneuvering space through the intersection allowing the bus to better dock at the curb. A downside of far-side bus stops is that traffic can queue behind the bus, blocking the intersection, if there is not room to pass or if a red light is not triggered after the bus.
- **Rebalancing Stop Spacing** can have a major impact in Philadelphia, where buses stop on every 500-foot block. See page 77 for more information.

Bus Stop Amenities Include:

- **Lighting, Seating, and Shelters** improve the user experience of waiting for transit.
- **Real-Time Arrival Information** helps riders make travel decisions and reduces the perceived wait time as much as 30%.
- **All-Door Boarding** reduces per-passenger boarding time, more evenly distributes on-board loading, reduces overall dwell time, and supports operational efficiency.
- **Off-Board Fare Collection and All-Door Boarding** speeds up passenger boarding and reduces dwell time. With the use of SEPTA Key, all-door boarding can be implemented with Key card readers installed at the back door of the bus. Off-board fare collection requires infrastructure installed in the sidewalk, which is likely costlier and more difficult.



Bus Shelter |
Cecil B. Moore Avenue, Philadelphia

Transit priority projects offer an opportunity to upgrade passenger infrastructure while also speeding up the bus. A larger discussion of stop amenities and the City’s goals and recommendations for them can be found in Chapter 3.1.

Bus Stop Design Options Include:

There are two basic types of bus stops: in-lane and pull-out stops. In-lane stops can take a variety of forms to accommodate conditions and other modes. In-lane stops can be co-implemented with passive TSP as a comprehensive speed management strategy. Pull-out stops require the bus to leave the travel lane, which can cause delay, but may be preferred when passenger volumes are high enough that the bus would block traffic for an extended period of time.

- **Boarding Bulbs** are in-lane bus stops that reduce delay by allowing the bus to dock directly at the curb, thereby eliminating pull-out movements and traffic merges. Boarding bulbs can create additional room for shelters, seating, and landscaping.
- **Transit Boarding Islands** are in-lane bus stops used for median-running transit or to mitigate conflicts with a bike lane. Boarding islands are often an ideal treatment for streets with bike lanes.
- **Tiered Bus Stops** are bus stops where different routes stop at different stops on the same block, such as the SEPTA and NJT stops on East Market Street. This allows for many routes to operate simultaneously while reducing dwell time, particularly for routes that have different patterns of service or average boarding times. This can be less convenient for passengers if stops are separated for routes serving similar destinations.
- **Shared Cycle-Transit Stop** create a shared-zone between pedestrians and cyclists at the bus stop. They are widely used in some cities such as Copenhagen and Toronto. Cyclists are required to yield to transit passengers, which can be less comfortable. Shared cycle-transit stops should be used where ridership and bicycle volumes are both low-to-moderate but may be used at busier stops when necessary. By ramping bicycles up to curb height, cyclists are prompted to yield and bus riders can board easier.

NACTO / NYC DOT



Boarding Bulb | 34th ST, New York City



NACTO / Green Lanes Project

**Transit Boarding Island |
Dexter AVE, Seattle**



NACTO / Payton Chung)

**Shared Cycle-Transit Stop |
Sherbourne ST, Toronto**

Bus Stop Design Evaluation Chart

Stop Design	Stop Placement	Ridership	Curb Use	Cost to Implement	Potential Benefit	Other Notes
Boarding Bulb	Context Dependent	50+ Boards and Alights per Day	Parking and Loading	\$30k – 100k	Eliminate Re-merge Delay: Approximately 12 seconds per 1,000 vehicles per hour per stop	For farside stops: extend stop length to match maximum number of simultaneous buses dwelling at the stop.
Tiered Stop	Context Dependent	8+ Routes Serving Stop and/or Multiple Transit Providers				
Transit Boarding Island	Nearside on single-lane ROW; either side on multi-lane ROW	Any when combined with median-running transit or bike lane	Bike Lane (typically protected or grade-separated)	\$10k - 30k (bike lane at-grade) Up to \$100k (raised bikeway)		
Shared Cycle Track Stop	Context Dependent	< 100 boardings and alightings per day and/ or low bicycle volumes				



Direct Bus Station |
Roosevelt BLVD, Philadelphia

Direct Bus: An Upgraded Mode

In the fall of 2017, the City and SEPTA launched Boulevard Direct, the first route operating under a new SEPTA mode called Direct Bus. The first Direct Bus route runs on Roosevelt Boulevard, making limited-stop service at new, upgraded station plazas. The service saves riders time and complements the existing high-ridership local bus service on the corridor.

The City and SEPTA are currently working to design and construct stations for Boulevard Direct Phase B, serving the lower portion of the Boulevard and running to the new Wissahickon Transportation Center, stopping at upgraded station plazas along the way. See Appendix II for more information on Roosevelt Boulevard and Boulevard Direct.

SEPTA and DVRPC are currently working to study the potential of future Direct Bus corridors, and Direct Bus expansion will be further explored as part of the Comprehensive Bus Network Redesign.

NEXT STEPS FOR PRIORITY CORRIDORS

The coming work on these corridors will follow the processes and techniques set out in this chapter. The public, including those who live along a corridor and ride transit on the corridor, will be involved throughout the process.

This toolkit will be instrumental in getting transit moving on Philadelphia's streets, and it will give residents, planners and engineers, and the city's transit agencies the tools needed to improve bus service.

Priority Bus Corridor Recommendations

The City will work with partners, including SEPTA and PennDOT, to advance the priority corridors set out in this chapter.

Planning, engagement, and design is underway for the following corridors:

- Roosevelt Boulevard
- Market Street and JFK Boulevard (15th to 20th Streets)
- Castor Avenue
- 20th and 19th Streets (Market to Spring Garden Streets)

Planning, engagement, and design will begin for the following corridors will begin in 2021:

- Chestnut and Walnut Streets
- Lehigh Avenue (funded via PennDOT Connects grant)
- Olney Avenue (funded via TCDI grant)

CHAPTER 4

HIGH CAPACITY TRANSIT



CHAPTER SUMMARY

This chapter presents key improvements and ideas for expanding Philadelphia's high capacity transit system – our trolleys, Regional Rail, and subway/elevated lines. Modernizing the trolley network is the City's top major transit infrastructure priority. We also present a reimagined approach to Regional Rail as a frequent, regional transit system that runs more like a metro than a commuter railroad. Lastly, we present a vision for expanding the high capacity transit network.





4.1 MODERNIZED TROLLEY NETWORK

SECTION SUMMARY

Trolley Modernization is the City's top priority for large transit infrastructure spending.

The existing trolley fleet needs to be replaced due to its age, which creates an opportunity for SEPTA to transition to a fully accessible, more spacious, and comfortable trolley fleet. Infrastructure improvements such as ADA accessible stops, updated signals, and transit priority treatments will make the network safer, more reliable, and faster. However, state and regional funding participation is needed to take advantage of available federal funds. This program is currently in the planning and preliminary engineering phase.

What Did Philadelphians Have to Say?

Philadelphians voiced a desire for modernization of the trolley system:

- Trolleys are an important part of Philadelphia's transit history, and many Philadelphians want to see trolleys play an important part of our future.
- **Residents love their trolleys, but they see the lack of accessibility as a barrier for many people to utilize the system.** People who use wheelchairs, cannot climb stairs, or are pushing strollers find trolleys difficult or impossible to use, meaning that they have to either take longer trips on multiple other modes of transit or buy a car.
- The perceived increasing frequency of breakdowns, particularly in the trolley tunnel, shows that trolleys are aging and in need of replacement.

WHAT IS TROLLEY MODERNIZATION?

Trolley Modernization refers to the overhaul of the trolley (light rail) network serving Philadelphia and Delaware County. The Philadelphia region has one of the most efficient and largest legacy trolley systems in North America. SEPTA must modernize this network, as the vehicles are almost 40 years old and are nearing the end of their useful life. Modernizing the trolley fleet and upgrading infrastructure will allow the system to become fully ADA accessible.

Project Status

Planning and engineering for the Trolley Modernization program is underway, however funding remains the primary obstacle to full implementation over the next 10 years. The program is estimated to cost \$1.85 billion when accounting for new vehicles, accessible stations, and an expanded maintenance/storage facility. Various federal funding sources can be used to support vehicle acquisition, tunnel improvements, and a new maintenance facility but will require local matching funds. As SEPTA moves forward with making the project ready for implementation, the City will continue to lead on a variety of fronts to support funding and the technical needs of the project.

Timeline of Trolley Modernization Program



Why This Needs to Happen

Trolleys are nearing the end of their useful life. SEPTA's Kawasaki trolley fleets are exceptionally well built and maintained, but at nearly 40 years old, the fleet must be replaced in the coming years. As the fleet continues to age, vehicle breakdowns will become more common. This is particularly an issue for trolleys because a breakdown in the Center City-University City trolley tunnel can shut down the network and cause cascading delays during a busy period.

Accessibility requires new vehicles, on-street stations, and elevators.

With the replacement of the fleet, the new trolleys must be ADA accessible. As discussed in the Universal Design and Use Experience section, improved accessibility is a major priority for city residents. Together with the new trolleys, in-street stations will be built with elevated platforms, offering stepless access. This will benefit passengers with impaired mobility as well as passengers with strollers or heavy bags.

Upgraded stations will be safer and more comfortable places to wait.

Platforms will have more customer amenities and be safer than current stop locations as customers will not need to step into the street to enter or exit the trolley. The stations, along with other operational improvements, will allow for more efficient, faster service with all-door, level boarding and proof of payment fare collection.

The trolley system is strained. The routes using the tunnel from University City to Center City are some of the most productive transit routes in the entire SEPTA system. Crowding was a serious issue at peak periods, and due to the needed frequency of service to meet demand, vehicles often “bunched,” meaning that they arrive and depart in clumps, leaving gaps between trolleys and cars either full or empty. The new trolleys will not only be accessible, but have higher capacity with longer, articulated cars. Other improvements to the system, including changes to street operation, will improve travel times, reliability, and capacity. While service and ridership has declined due to COVID-19, we expect capacity and reliability issues to return.

This project benefits the city and the region. The trolley network is critical to connecting Philadelphians to jobs centers and thus is critical for our economic recovery. A recent SEPTA study determined that keeping the trolley system is critical to keeping the entire SEPTA network operating. The study found that modernizing the trolley system will generate 38,000 new jobs in the region.¹

This is a matter of equity and racial justice. SEPTA's trolley network service area is 59% people of color and connects these neighborhoods to opportunities in Center City and University City. The suburban 101 and 102 routes connect a diverse range of Delaware County communities to 69th Street Transportation Center, as well as Center City and University City.

Investing in trolley infrastructure is critical to realizing our vision of a City Connected by Transit.

¹ Econsult Solutions, “SEPTA Projects of Significance Economic and Fiscal Impacts” (2019)

The Trolley Modernization Program will increase trolley capacity **167%** by:



Procuring new larger vehicles



Constructing a new maintenance facility to store and service new vehicles



Improving tunnel communications and signals



Improving tunnel stations and platforms

KEY STEPS TO IMPLEMENTATION

Vehicle Procurement

New vehicles are the single largest expense for the Trolley Modernization Program. SEPTA is currently developing a vehicle specification for the new fleet of trolleys, utilizing a “performance-based” approach, which will allow them to seek out innovative designs from vehicle vendors. A rail car procurement on this scale could take five or more years. This specification will allow procurement to begin as soon as a funding source for the vehicles is identified.

Maintenance Facility

SEPTA is in the process of developing a consolidated maintenance facility for the new trolley fleet. This facility will be built to the specifications of the new fleet and allow the new longer fleet to be delivered, tested, and eventually operated without impacting the current fleet’s operations and maintenance at the three existing trolley facilities in the city. **Identifying funding for site design and development of this facility is critical to moving Trolley Modernization forward.**

Trolley Modernization Funding Needs

\$1 billion

To acquire state-of-the-art vehicles, which feature more than twice the existing vehicle capacity and an expected 40-year lifespan¹



\$430 million

For system-wide ADA infrastructure improvements, including elevators in stations and on-street platforms



\$420 million

For new maintenance facility to accommodate new vehicles²

\$1.85 billion

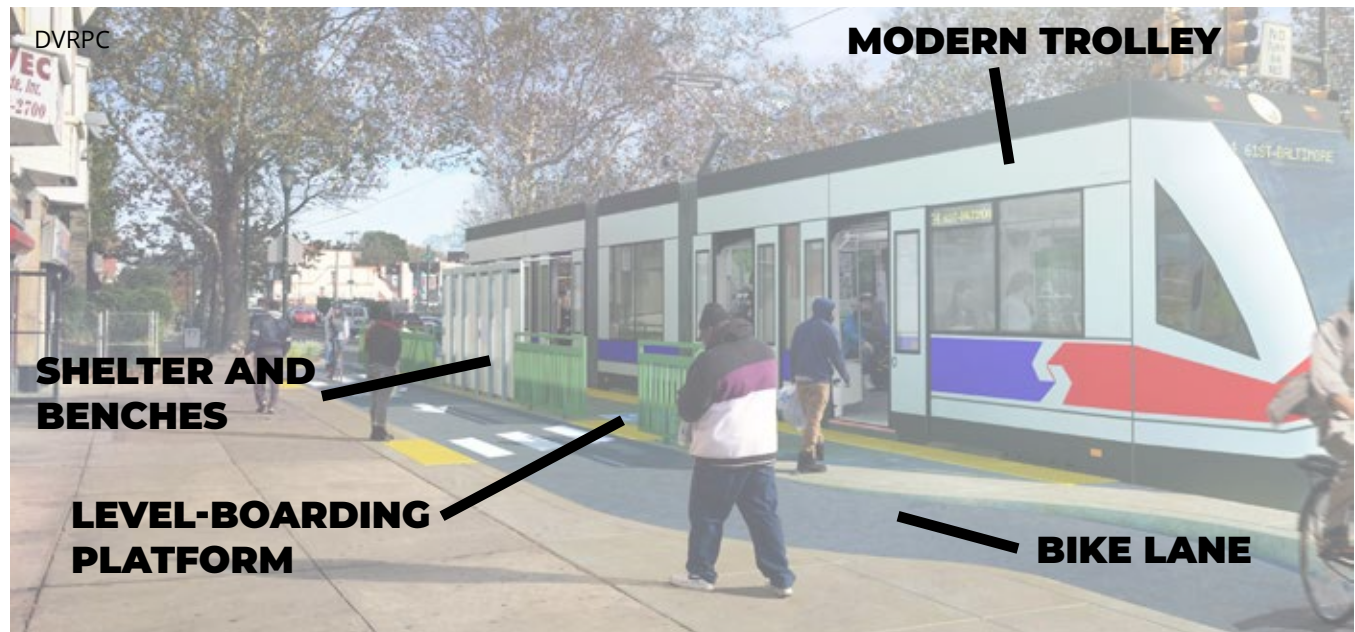
or \$1.90 per trip

over the project’s expected 40-year lifespan²

¹ All estimates reflect 2020 dollars.

² Based on annualized 2020 dollar estimate and 2019 ridership.

Rendering of Modern Trolley Station (DVRPC Modern Trolley Station Design Guide)



Station Planning, Design, and Engineering

Building modern on-street trolley stations will require significant coordination between SEPTA, the City of Philadelphia, PennDOT, and multiple utilities. SEPTA has begun evaluating the constructibility of station locations with input from stakeholders, including the City, and will be in a position to start community engagement on these locations over the next few years. Additional planning and site design is needed before construction commences.

The Delaware Valley Regional Planning Commission has conducted several studies on trolley station design (see rendering above) and potential trolley extensions. Extensions can help the trolley network better connect with other modes and expand ridership (see Chapter 4.3 for discussion of trolley extensions). Conceptual design is now underway for route end-of-line facilities.

Only the 30th and 15th Street Stations on the trolley line have elevators, while 37th, 36th, 33rd, 22nd, and 19th street stations will need elevators to complement ADA accessible trolleys. SEPTA has begun conceptual design in order to have these stations ADA compliant by the time the new fleet is in service.

SEPTA, the City, and PennDOT have begun collaborating to build on-street pilot trolley stations. **This includes Island Avenue, where the City and SEPTA are building modern trolley stations as part of City-led construction on the roadway. Additional locations are being evaluated.**

Beyond modern trolley stations, this project also involves a range of other important engineering aspects. This will include a conversion of the power supply of the trolleys, from poles to pantographs, which will improve the reliability of the power supply system with only a slight change in the overhead wire configuration. Signals and switches throughout the network will need to be upgraded. The tunnel will continue to be improved, and some bridges may need to be upgraded. **All of these improvements will contribute to a more reliable, productive trolley system that will serve Philadelphia and Delaware County for the next 50 years.**

The Role of the City in Trolley Modernization

SEPTA will lead and execute the implementation of Trolley Modernization, however, the City of Philadelphia plays an important role in ensuring the program goes from idea to reality.

The City will champion the Trolley Modernization project. As has been made clear in CONNECT and in this plan, Trolley Modernization is the City's top priority for major transit infrastructure going forward. This program is critical to ensuring we meet the needs of the coming decades and achieve our vision of a City Connected by Transit. The City will continue to strongly support SEPTA in securing funding for the program, engaging the public, and developing legislation and regulations.

The City is also the primary coordinator of infrastructure. In addition to program champion, the City manages the street right-of-way, and unlike many SEPTA projects, much of this work will take place on City or PennDOT owned streets. To make this program flow smoothly, the City and SEPTA meet on a regular basis to coordinate Trolley Modernization

needs, and as the program advances to engineering and construction, City staff will be heavily involved in design, permitting, coordination, enforcement, and more. This will range from stormwater management to elevator permits to traffic signal coordination. The City will work to ensure that this program advances with full support and attention from all City departments involved.

The City has a toolkit to improve our streets for transit. This plan has set out a range of tools that will be applied to transit corridors in Chapter 3.2. While we've presented these tools for bus corridors, most of these tools can also be applied to trolleys where they run on streets. The DVRPC Trolley Modernization Design Guide has also begun developing concepts for modern trolley prioritization. The City will be a leader to help implement these improvements where possible.

Trolley Modernization Recommendations

The City will work with SEPTA to:

- Advance the planning, design, and location of modernized trolley stations
- Develop regional, State, and Federal funding requests to prioritize Trolley Modernization
- Protect right-of-way from intrusions that would prevent the placement of ADA accessible stations, such as curb-cuts
- Apply the transit priority toolkit, presented in Chapter 3.2, to the trolley system in order to improve service quality on city streets.



4.2 FREQUENT REGIONAL RAIL

SECTION SUMMARY

This section reimagines Regional Rail with a new model of operations. Frequent, all-day service will attract more people traveling for a wider variety of purposes. This model departs from the heavily peaked service focused on the suburb to downtown work trip that has characterized commuter rail for over a century. This section discusses how a metro-style service will better connect the City and region. A three phase vision, starting with a proposal for a new “Silver Line” is discussed, as well as an overview of the significant barriers to frequent, all-day service.

The defining features of “metro-style” **Frequent Regional Rail** include:

- Frequent service throughout the day and on weekends
- Fast and reliable high capacity electric vehicles with easy boarding and alighting
- Dedicated right-of-way, with little freight interference, and through-running downtown service

What Did Philadelphians Have to Say?

- Regional Rail had the highest favorability rating of any transit mode, though lower than SEPTA as a whole.
- Regional Rail is generally seen positively as a high quality, high comfort service. Some called it “business class” during a focus group.
- Infrequent service requires adjusting your life to the train schedule - it’s hard to “show up and ride.”

THE PHILADELPHIA CONTEXT

Philadelphia has one of the most robust Regional Rail systems in North America. In fiscal year 2019, SEPTA Regional Rail reported approximately 34 million passenger trips across 280 route miles and 155 stations. Despite this, **Philadelphia’s Regional Rail system under-performs its potential.**

Regional Rail is oriented around peak-hour, white-collar commuters traveling from the suburbs into Center City. **However, the future of Regional Rail lies in providing compelling service for travel at a variety of times, purposes, and locations.** The key to this pivot is in how frequent the train arrives – customers should be able to arrive at a station confident a train will arrive shortly throughout the day on weekdays and weekends, instead of referring to a schedule. This improvement in train frequency will be made possible by interconnected improvements in operating policy, infrastructure, and vehicles. Frequent Regional Rail service is also key to multimodal integration, one of the prime opportunities we identified in Chapter 1.

Best Practices

Frequent Regional Rail is not a new idea. The concept of a frequent Regional Rail service was first presented for Philadelphia in the 1980s by University of Pennsylvania professor Vukan Vuchic, who developed an operational plan to make use of the new Center City tunnel with frequent trains and line pairings that would facilitate trips throughout the region. More recently, both *Philadelphia2035* and Montgomery County’s comprehensive plan have called for increased frequencies on Regional Rail.

In addition, many European cities with regional rail systems operate frequent rail service on numerous lines utilizing downtown tunnels with great success. Both Munich and Copenhagen operate highly frequent systems with ridership tenfold the level of Philadelphia in regions of similar or lower size. Here in North America, Toronto has recently unveiled an ambitious plan to transform its system with frequent, all-day service. In our own region, the PATCO line serves a mainly suburban market, but provides convenient service throughout the day. Elsewhere, BART (Bay Area), WMATA (D.C.), and MARTA (Atlanta) have operating elements similar to Frequent Regional Rail. What all these systems have in common is regional rail that acts more like a metro and less like 19th century commuter rail. With our robust rail infrastructure as a foundation, Philadelphia has an opportunity to turn our system into a **Frequent Regional Rail** – a service to connect a globally competitive region and the city.

A City and Region Connected by Regional Rail



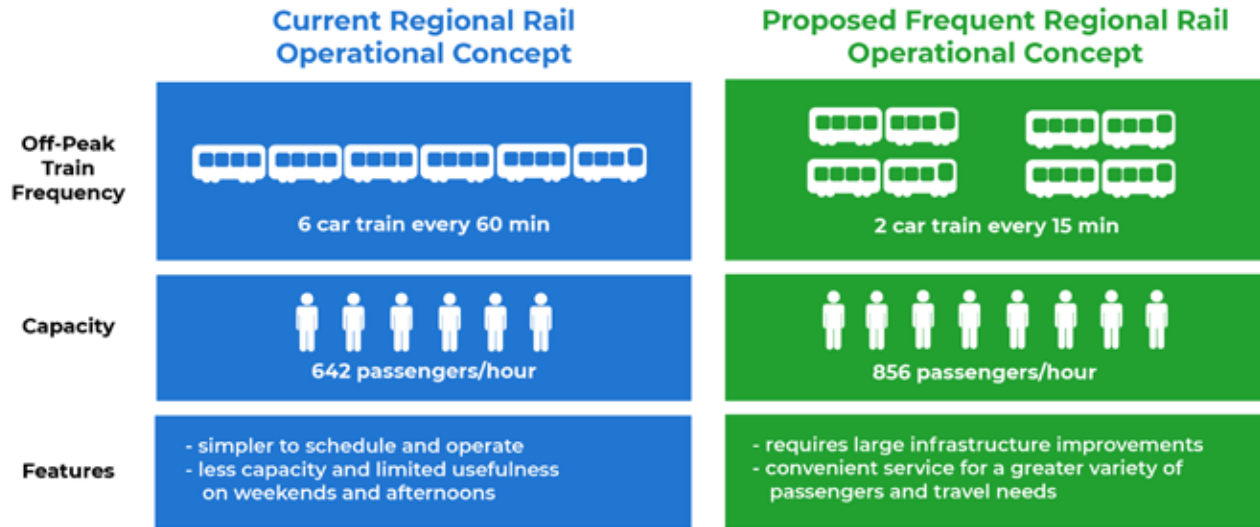
The Vision

Our vision is to reimagine Regional Rail as a better connected service by providing all-day frequency across the network.

To achieve Frequent Regional Rail with service operating every 15 minutes, 15 hours a day, seven days a week, the system will require significant upgrades including modern multi-door rail cars, stations with high-level platforms, off-board fare collection, track and signal upgrades, and maximization of train throughput in the Center City commuter tunnel. This is a significant effort. It will take time and money to bring this century-old railroad into the 21st century.

As a city and region we have already completed the hardest part of this vision by building the Center City commuter tunnel and fully electrifying the system. Now the opportunity is ripe to leverage these investments and fully connect the Philadelphia region with a fast and convenient Frequent Regional Rail. Because of these large organizational and infrastructure needs, this vision cannot be implemented all at once. A plan will need to be developed and implemented incrementally over the next 20 or more years.

As the region begins to recover from the impacts of the COVID-19 pandemic and address the concerns of inequity, this vision will reimagine one of our most untapped assets and build towards a better future. This is the perfect time to start the process for planning and implementation of the vision. While this will require substantial investments, it will improve job access, reduce carbon emissions, and better connect the city and suburbs as a unified region.



Reimagining for Equity

A reimagined Frequent Regional Rail will advance our equity goals and be a major step towards racial and environmental justice. The system largely serves suburban, mostly white commuters traveling into and out of Center City, which creates an inherent inequity. Higher fares, inconsistent schedules off peak, and shuttered stations all discourage city residents, who are more likely to be people of color or lower income, from riding Regional Rail. **Shifting service to facilitate more diverse travel needs is a step towards a more equitable system.**

These dynamics were reflected in our engagement, where a major theme emerged that Regional Rail is the transit equivalent of “business class,” as one participant said in a focus group. In providing a “luxury” service with a price premium, we have excluded residents of Philadelphia and its suburbs who cannot afford it. Of course, riders appreciate a clean and comfortable service, but this quality can be maintained while also letting everyone on board.

Fixing this is not as simple as lowering the fare. Regional Rail service costs significantly more to provide per trip than subway or bus service, particularly those coming from more distant suburban destinations. Based on the equitable fare principals on page 67, Regional Rail may always have a higher fare than subway or bus service. Lowering fares would require a high operating subsidy and may have unintended, inequitable outcomes. **However, our proposals such as a low income fare program would address inequities and open the system to more low-income riders.**

A common theme in conversations about transit in Philadelphia is the reverse commute of Philadelphia residents to jobs in the suburbs. While the largest untapped potential is to better connect city residents to jobs within the city, there is also a need to connect to suburban job centers, many of which are served by Regional Rail. **However, the system as it operates today does not meet the needs of reverse commuters. All-day frequency, better weekend service, and more equitable fares will better connect these reverse commuters to suburban job centers.**

PHASING THE VISION

Implementing Frequent Regional Rail with 15-minute headway service throughout the day will be a large undertaking, and these challenges are covered in the second half of this chapter. To achieve this vision over the coming decades, we've broadly defined three phases of implementation.

Phase 1: The Silver Line

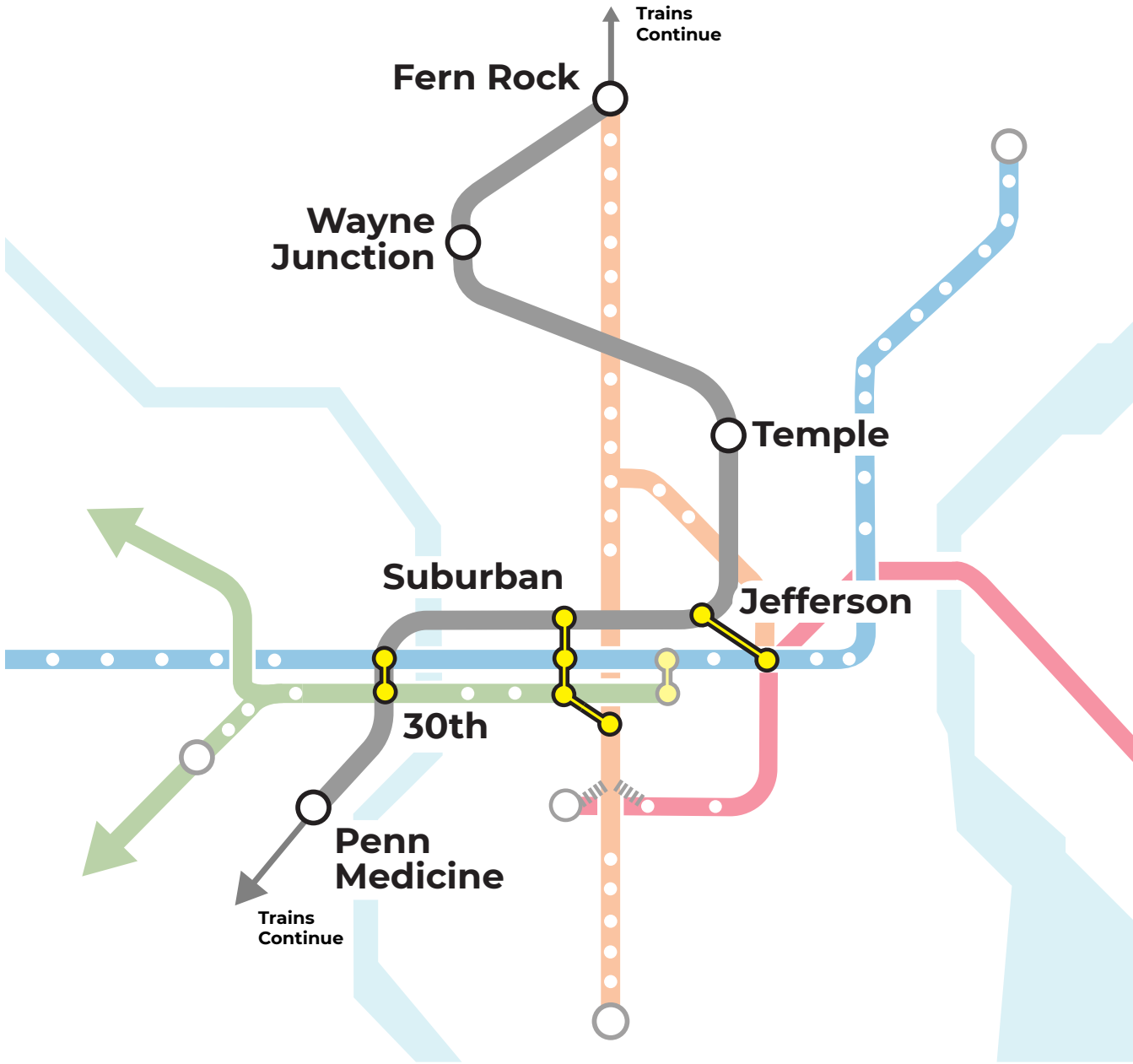
The first proposed phase of implementation of this vision is what we are calling the "Silver Line" – a potential name that pays homage to the "Silverliner" rail vehicles that SEPTA runs on Regional Rail. This invokes service that is more like the "blue line" (Market Frankford Line) and "orange line" (Broad Street Line) metros – frequent and for everyone.

The Silver Line would be a branded corridor of Regional Rail lines running from Fern Rock to Penn Medicine (formerly University City) Station. This "trunk" corridor nearly meets the 15-minute, all-day frequency goal of our vision under pre-COVID schedules. This offers an opportunity to test future aspects of a reimagined Frequent Regional Rail service without the need for capital investments. **By operating at 15-minute headways over this portion of the inner core, the Silver Line would provide a metro-style, direct service to customers traveling between North Philadelphia, Center City, and University City.**

Key aspects of Phase 1:

- Brand the Regional Rail trunk corridor through Philadelphia as a high capacity, frequent transit route, potentially known as the "Silver Line."
- As Regional Rail service is restored after COVID-19, ensure that the Silver Line corridor has the same frequency standard as the bus network – initially 15-minute headways for 15 hours per day, five days/week.
- Market all-day, 15-minute service through the core of the network to potential riders.
- Equalize fares between stations on the Silver Line to that of transit with a free transfer to or from other transit modes (e.g., bus, trolley, and subway).

Silver Line Concept Map Overlaid on the High Capacity Transit Network



Phase 2: Upgrade Priority Lines

The second phase of the vision for higher frequency service will require significant capital expenditures. A set of priority lines should be determined based on ease of implementation and multimodal transportation goals.

While further study should be done to prioritize lines, our initial priority list is, in order: Norristown, Airport, and Chestnut Hill East, and Jenkintown. These lines are shown in blue on the concept map to the right.

Key Aspects of Phase 2:

- Branding and marketing scheme that builds on the Silver Line to market an upgraded Frequent Regional Rail service on the other incorporated routes or portions of routes as they meet the high frequency standard
- Silverliner V procurement for metro-style vehicles to serve these routes

Critical infrastructure upgrades anticipated for Phase 2:

- High level accessible platforms at North Broad Station to allow for inclusion into Silverline service
- 23 stations made accessible and upgraded to high-level platforms
- Upgraded signals at Roberts Yard, south of Wayne Junction
- Storage and facility improvements needed for Silverliner V vehicles

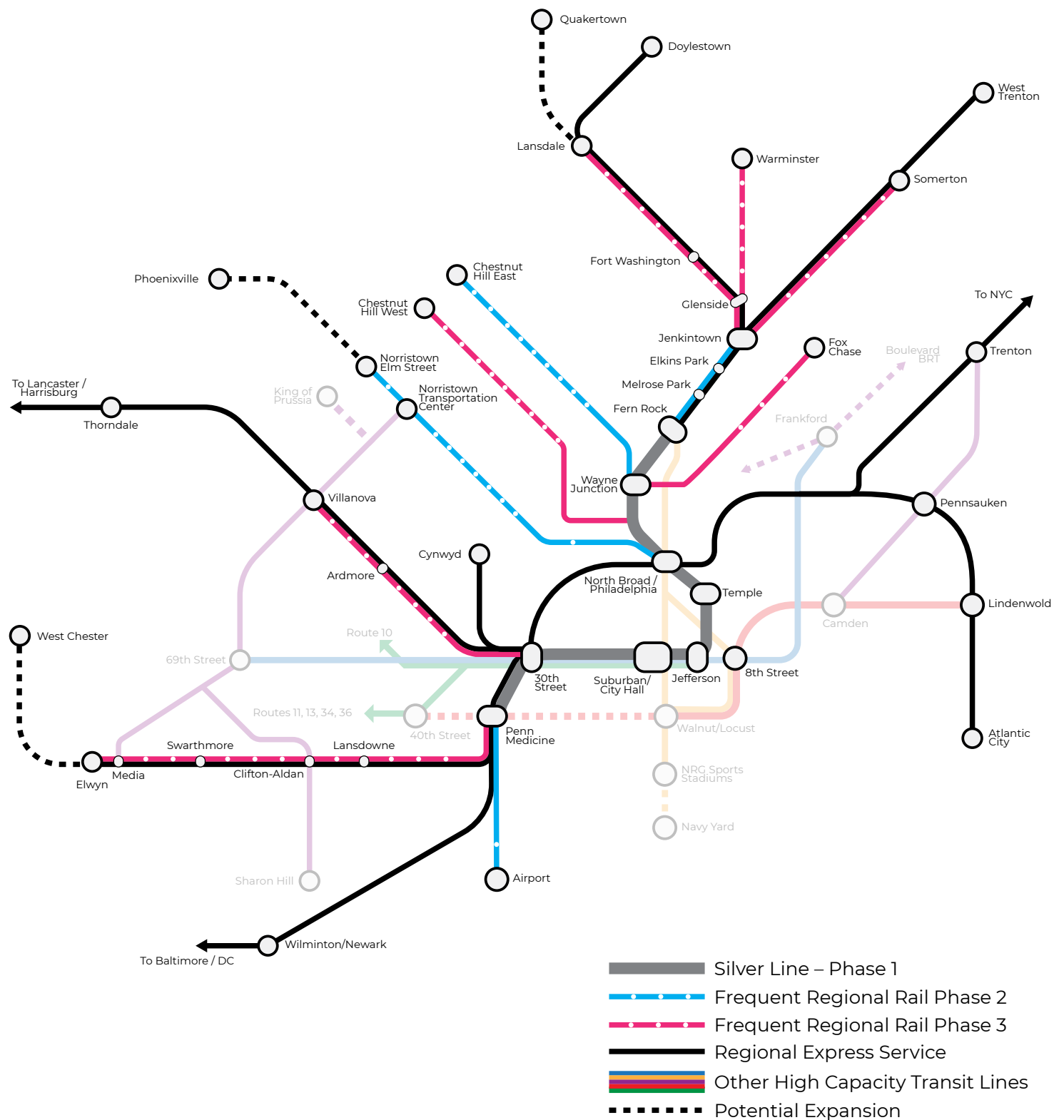
Phase 3: Fully Implement Frequent Regional Rail Vision

The full vision of Frequent Regional Rail for the Philadelphia region will take decades to implement. The final phase of this work will be to rollout the Frequent Regional Rail vision to additional lines, upgrading infrastructure as necessary, evolving the Frequent Regional Rail brand, and fully transitioning the rail fleet to meet the specifications of this new rail network.

Key aspects of Phase 3:

- **Fully implementing Frequent Regional Rail** on a large portion of the “inner” Regional Rail network – e.g., Norristown, Chestnut Hill, Fox Chase, Media/Elwyn, and inner portions of the Paoli Line, Doylestown, Warminster, and West Trenton Lines.
- Branded in two service typologies:
 - Frequent Regional Rail – frequent service making local stops with metro-style trains on routes and portions of routes that serve the city and inner-ring suburbs
 - Regional Express Service – longer-haul, commuter-focused service to destinations like Doylestown, Paoli, Wilmington, and Trenton lines with commuter-style vehicles and the potential to run express when overlapping with frequent local service

Frequent Regional Rail Concept Map



HOW TO ACHIEVE THIS VISION

The barriers to implementing a reimagined **Frequent Regional Rail** system as envisioned in Phase 2 and Phase 3 are significant. The changes needed are more like an interconnected puzzle than a linear to-do list. We have grouped them into three categories: operating policy, vehicles, and infrastructure.

Operating Policy

To reimagine Regional Rail, SEPTA will have to address organizational limitations internally and between itself and key partners like Amtrak. Key organizational constraints include track ownership between SEPTA and Amtrak, fare policy, and labor rules.

Track Ownership

While the region and SEPTA are fortunate to be in the position of owning and controlling the majority of the Regional Rail system, significant portions of the system are owned and controlled by Amtrak. Track ownership determines scheduling and dispatching – when trains can run and who gets priority when there is a disruption. Amtrak high-speed and regional services constrain the capacity available for SEPTA on the Northeast Corridor and Keystone Line. Further investment in Amtrak's right-of-way will be needed for both parties to provide improved rail service. The difficulties with Amtrak ownership and control are one reason the Phase II priorities are only on SEPTA owned track, and Phase III does not include frequent service on the Northeast Corridor.

Fares

Frequent Regional Rail will require a different approach to pricing than the commuter railroad fare structure of today. Regional rail costs significantly more to operate - for example, in 2019 SEPTA's operating cost per trip was \$8.98 for Regional Rail versus \$4.22 for buses.¹ The revenue raised from fares is critical to providing the service. The use of fare zones will always make sense for Regional Rail and is an equitable way to price long, costly trips to farther out suburbs, but Regional Rail should be priced competitively with other transit options in the City and dense suburbs where both are an option and rail trips are shorter. **A starting point would be to treat trips within the same fare zone identical to trips on a bus, trolley, or subway, which would also reduce the fare within the "CC" zone that covers the proposed Silver Line.**

¹ Federal Transit Administration, "National Transit Database" (2019)

Low-Platform Commuter Rail vs. Metro-Style Level Boarding



Credit: Delco Times



Credit: Munich Airport

Trains Sizes and Crews

Frequent Regional Rail operations will likely require a similar number of staff members, just utilized differently. Operating smaller trains more frequently will make the service more attractive to passengers while also making the service more affordable to operate for the region.

One-person crews are best-practice on other systems that operate like Frequent Regional Rail. A Regional Rail train today requires an engineer to operate the train and 1-3 conductors to sell tickets, check Key Cards, and lower the “traps” at stations without level-boarding platforms. This is in contrast to the Broad Street Line and Market Frankford Line, both of which carry hundreds of people on a single train with only one operator.

Because of the need to raise and lower traps between high- and low-level platforms, conversion to all high-level platforms along a line is needed to operate higher-frequency service. Future vehicle design, discussed on the following page, should focus on making single-operator service with smaller trainsets feasible.

Crew sizes are also a matter of union rules and are also subject to Federal Railroad Administration (FRA) jurisdiction. Any agreement on crew sizes will need to be negotiated with the unions. As described in a recent Federal Register note, the FRA does not plan on regulating minimum crew sizes.² Future Federal administrations may choose to revisit this issue.

² Federal Railroad Administration, “Train Crew Staffing,” Federal Register Proposed Rule 84 FR 24735 (May 2019)

Infrastructure Needed

The two most expensive pieces of infrastructure needed to run Frequent Regional Rail have already been built: the Center City tunnel and the full electrification of the system. However, there are still areas where large scale infrastructure projects will be needed to implement this vision, which will likely add up to billions of dollars over the coming decades. The key will be to plan today for a higher level-of-service and then invest dollars accordingly.

Level Boarding Platforms and Station Accessibility

Frequent Regional Rail will require transitioning from low-level platforms to high-level platforms on all lines with frequent service, as high-level platforms allow for greater frequency, more efficient staffing, and full ADA accessibility. Regional Rail is currently served by a mixture of high- and low-level platforms. High-level platforms allow for safer, faster boarding and are ADA accessible, an important part of the Universal Design approach to transit (see page 58). This also impacts the ability to run single-operator trains.

This will be expensive – SEPTA has already allocated a significant portion of its capital budget dedicated to station improvements. Both the 1984 Regional Rail concept of operations study and the 1993 SEPTA Metrorail study contemplated station improvements that would change all station platforms to high level, but the cost of these improvements was underestimated, and capital funding over the last 25+ years for SEPTA has been one-third to one-half of peer systems (see page 43). Station accessibility improvements amount to approximately \$550 million over the next 12 years.³ An additional \$200 million, approximately, is dedicated to parking improvements. Full high-level platform upgrades would likely cost over \$2 billion, based on recent costs.

Because of the high cost of these upgrades, prioritization will be key. Prioritization of station upgrades should follow the prioritization of Frequent Regional Rail lines. Phase 1 does not require upgrades to implement immediately, though North Broad Station should be upgraded with island platforms to facilitate Silver Line service. Phase 2 will require high level platform and accessibility upgrades at 23 additional stations. Phase 3 will require an additional 49 station upgrades. Eventually, upgrades will need to be made at the remaining 43 Regional Rail stations, which are proposed for Regional Express Service.

Today, most SEPTA Regional Rail station projects modernize all aspects of the station – passenger amenities, parking facilities, and accessibility. Going forward, we should prioritize investments in level-boarding and ADA requirements, with other elements to follow later. Costs and timelines could be further reduced through design-build contracts, temporary closures of lines or portions of lines for multiple station modernization projects, or public-private partnerships.

³ SEPTA, “Fiscal Year 2021 Capital Budget and 2021 - 2031 Capital Program” (June 2020)

Signals & Interlockings

Frequent Regional Rail will also require improved interlockings and signaling systems. Signals, which govern movement on the railroad, have seen an upgrade with the rollout of Positive Train Control (PTC) but will need continued improvements. Certain interlockings, which allow trains to switch and cross-over tracks, will need to be upgraded; in other locations new interlockings will have to be installed. These investments can be phased in but will need to be prioritized as critical safety improvements, as they prevent conflicting train movements. Based on conversations with experts at SEPTA, interlockings that should be studied for upgrade include:

- The River and Kalb interlockings on the Norristown Line
- The 16th Street interlocking, potentially including an upstream link of the Chestnut Hill West line with the SEPTA Main line Reading trunk and separating the outbound Norristown Line movement
- The Arsenal, Hunt, Phil (Amtrak owned), Newtown Junction, and Jenkintown interlockings that serve multiple lines

Center City Tunnel

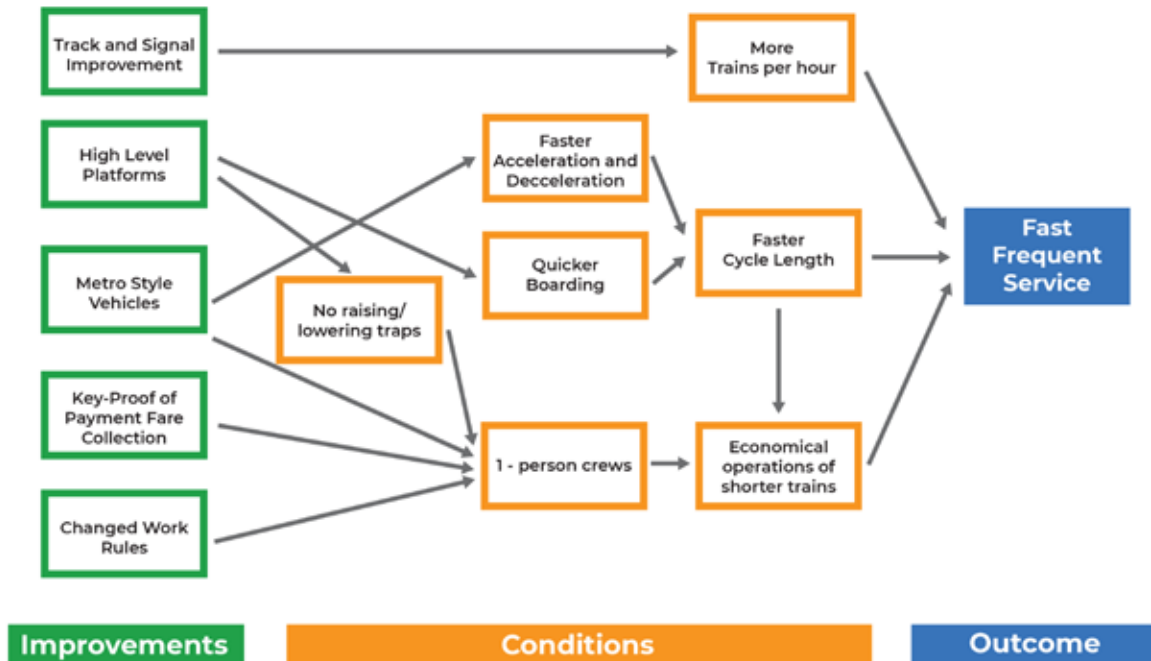
One of the keys to this vision will be operating additional trains through the Center City commuter tunnel. The tunnel is now near or at capacity at the peak hour, given current infrastructure and operating practices. Before the pandemic and schedule reductions, the tunnel moved 25 trains per-hour on four through-tracks. However, a review of similar systems showed the possibility to achieve more throughput. The Munich system, for example, moves 30 trains per hour using only two through-tracks. A study should be conducted on how to improve capacity and operations through the tunnel, tackling issues such as signaling, interlocking, passenger movements, and crew changes.

Single Track Sections

Currently the Regional Rail system operates on portions of single track in some locations, particularly at the end of some lines. On these sections, trains take turns traveling in each direction, creating operational disadvantages and safety concerns. Therefore, this situation significantly restricts the ability to operate at 15-minute headways. Ultimately it should be the goal to invest and build additional track so that there are no single-track segments throughout the system, phasing these sections of track based on the phasing of the vision. Segments that should be studied for upgrade include the Airport Line between Arsenal Interlocking and 60th Street and the Fox Chase Line.

4.2 Frequent Regional Rail

Frequent Regional Rail – Improvements, Conditions, and Outcome



London Overground Train (Exterior)



By Sunil060902 - Own work, CC BY-SA 4.0

London Overground Train (Interior)



By Fraselpanz at en.wikipedia, CC BY 3.0

Vehicles and Rail Yards

SEPTA is set to begin a major Regional Rail vehicle procurement with the Silverliner VI cars in the coming decade. This procurement is a key opportunity to begin transitioning the Regional Rail fleet to metro-style vehicles than can meet the vision for Frequent Regional Rail.

Frequent Regional Rail generally requires more equipment to operate; however, the need for additional equipment can be mitigated by operating smaller trainsets. Recent changes in the Federal regulations have opened the opportunity to operate metro-style vehicles, which are common in Europe.⁴ These modern rail cars reduce the dwell time at stations, improve the speed of the service, and potentially reduce operating costs. **In most cases, high-level platforms are required to operate these cars.**

A new vehicle fleet will require modifications at the yards where these rail cars are stored and maintained, largely to storage buildings, maintenance equipment, and the rail car wash facilities. Some yards, particularly Roberts Yard, will require track upgrades to eliminate choke points and increase frequency.

⁴ Federal Railroad Administration, Rule 83 FR 59182

Frequent Regional Rail Recommendations

The City will work with SEPTA and other regional, State, and Federal partners to implement the “Silver Line” service, including:

- Develop branding identity for the service
- Schedule trains to ensure 15-minute all-day headways on the Silver Line, including the weekend if possible
- Expand CC fare zone to North Broad and Fern Rock and reduce CC fare to equal the base transit fare
- Begin conversations with the public, regional elected officials, and other partners about what a reimagined Frequent Regional Rail system could look like and how it should take shape

The City will support SEPTA in developing a master plan that meets the spirit of this vision, including:

- Re-structuring fare plan with a commitment to the fare policy priorities outlined on page 67
- Analyze the capacity constraints of the Center City tunnel and necessary improvements
- Study feasibility of introducing metro-style rail cars and, if feasible, developing a capital funding plan
- Analyze the infrastructure needed to increase capacity through bottlenecks identified in this chapter
- Further study separation of freight traffic on the Airport line
- Update line pairings and create clear communications scheme for pairings
- Prioritize lines based on ease of implementation and multimodal transportation goals

The City will work with SEPTA and other regional, State, and Federal partners to implement the master plan and vision for Frequent Regional Rail, including:

- Upgrading critical track and signal infrastructure and bottlenecks
- Procure metro-style vehicles
- Upgrade of priority stations with ADA-compliant high-level platforms



4.3 EXPANDED HIGH CAPACITY TRANSIT

SECTION SUMMARY

The Philadelphia of today was shaped by its high capacity transit lines. For the purpose of this plan, we classify high capacity transit as the fixed-guideway modes capable of moving large quantities of people rapidly through the city. These include the Market Frankford Line (MFL), Broad Street Line (BSL), Norristown High Speed Line (NHSL), Regional Rail, and Trolleys. Chapter 4.1 focuses on the most pressing need for trolleys – the modernization of the system. Chapter 4.2 lays out a new vision for Frequent Regional Rail. This chapter presents a vision of the expansion of these networks, focusing on projects within the city. We start with a highlight of existing expansion proposals, identify key gaps that warrant further study, and end with a goals for future expansion and a priority list of projects for advancement.

HIGH CAPACITY TRANSIT IMPROVEMENTS

Why Improve and Expand

While Philadelphia has an extensive high capacity transit system, it is actually significantly smaller than the original proposals that date back to the early 1900s. These plans envisioned not only the MFL, BSL, and PATCO lines, but also subway/elevateds to the southwest, northeast, and other destinations. These lines ultimately went unbuilt, as challenges from the World Wars, the Great Depression, and urban decline limited budgets and refocused attention on highway building in the 1950s. The last major additions to our transit system were in the 1970s and 1980s, with the BSL extension to Pattison Avenue and the building of the Center City Commuter Connection tunnel for Regional Rail.

While bus investments identified in Chapter 3 will result in the greatest improvements over the shortest span of time, investments in high capacity transit will help unlock economic potential, improve mobility for hundreds of thousands of people, and help the city achieve a more sustainable future.

Major improvements in high capacity transit can take decades to realize. Cities like Washington, Portland, and San Francisco, have spent the last 40 years building out light rail and rapid transit networks that today are integral to the functioning of their regions. Philadelphia has an opportunity today to envision how major investments in its urban rail network will shape the city for generations to come.

Ways to Improve

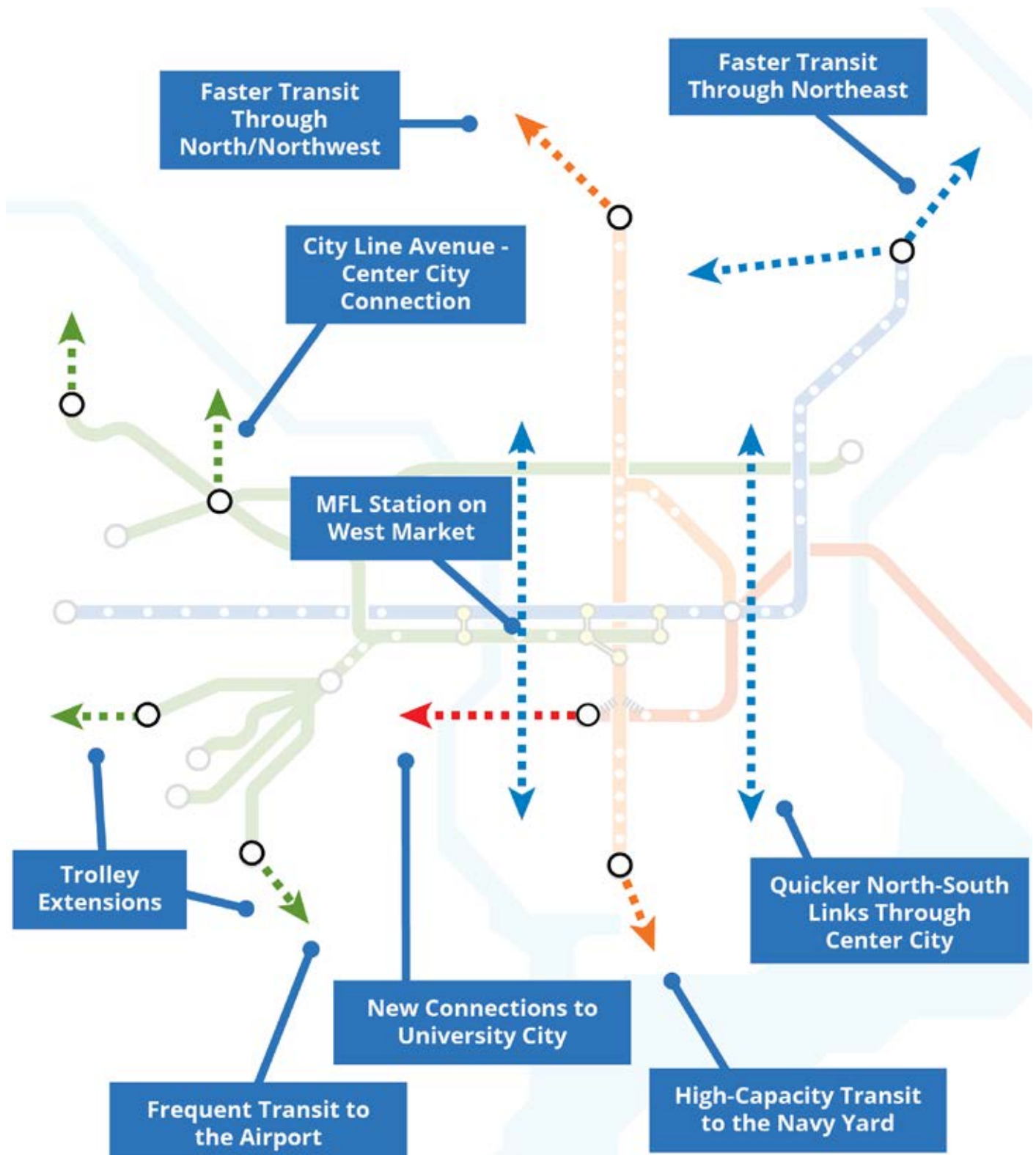
While most of this chapter focuses on expansions to the existing system, there are numerous improvements explored in earlier parts of this plan. These improvement proposals include:

- Better cleaning and security (page 56)
- Full system accessibility (page 58)
- Real-time information displays and wayfinding (page 64)
- Improved frequency standard for MFL/BSL (page 75)
- Modernized Trolley System (Chapter 4.1)
- Reimagined Frequent Regional Rail (Chapter 4.2)

High Capacity Transit Expansion Ideas with Recent Planning Activity



High Capacity Transit Expansion Transit Expansion Mobility Gaps



HIGH CAPACITY TRANSIT EXPANSION IDEAS WITH RECENT PLANNING ACTIVITY

Project	Description	Champion	Status
Franklin Square Station	PATCO's Franklin Square station, at 6th and Race Streets, has been closed since 1979. To provide direct rapid transit access between south Jersey and the east end of Center City Philadelphia, PATCO has initiated a project to upgrade and reopen the station. DRPA was awarded a BUILD grant to partially fund the reopening. The station is expected to be complete by the end of 2022.	DRPA	Design and Engineering
Roosevelt Boulevard Light Rail or Bus Rapid Transit	The multi-agency Route for Change initiative is evaluating potential alternatives to provide enhanced transit service to neighborhoods along the Boulevard. Phase A of the Boulevard Direct Bus service has been implemented. Direct Bus Phase B, which includes more robust bus rapid transit elements (BRT), is expected to be implemented in 2022. In the long term, Route for Change recommends reimagining the Boulevard with dedicated transit space in the center lanes for either BRT or light rail.	City of Philadelphia	Planning underway
Market-Frankford Line Infill Station	On the Market-Frankford Line, the longest gap between stations in Center City is the 15 blocks between 30th Street and 15th Street. Since the 1960s this area has become the heart of the City's central business district. An infill station in this area would not only provide better access to major developments, it would create transfer opportunities with frequent north-south bus routes on 19th and 20th Streets. Initial studies indicate that such a station would be feasible, but difficult and expensive. Costs and benefits are both likely to be quite high.	SEPTA	Proposed
Eastwick Intermodal Center and Trolley Extension	This project would extend the 36 trolley, which currently terminates at 80th Street and Island Avenue, about a half mile to the southwest to a new transit center at the Eastwick Regional Rail station. This extension would provide a more direct linkage between Southwest Philadelphia neighborhoods and the Philadelphia International Airport (PHL). The Delaware Valley Regional Planning Commission's (DVRPC's) Eastwick Intermodal Center Study included this extension as part of a larger suite of improvements such as ADA station upgrades, a bus loop, and a park and ride lot. A consolidated rental car facility could also be considered. Taken together, these improvements would likely result in an increase in ridership and would improve operations for all transit modes. The next step is a cost estimate and consideration of how this initiative could proceed in phases.	SEPTA	On Hold

Project	Description	Champion	Status
Airport People Mover	As part of its Capacity Enhancement Plan, PHL considered a people mover that would connect all airport terminals and the Eastwick Regional Rail station. All transit service to the airport would terminate at Eastwick with transfers to the people mover. The people mover would have synergies between operational and frequency improvements on the Airport Regional Rail line and the 36 Trolley Extension. Studies have not advanced since the Capacity Enhancement Plan was completed.	Airport	On Hold
Broad Street Line Extension to Philadelphia Navy Yard	SEPTA has conducted studies to extend the Broad Street Line from its current terminus at NRG station (at Pattison Avenue) into the Philadelphia Navy Yard to support ongoing redevelopment. Three alignments were considered, all of which are technically feasible, at a price tag of between \$900 million and \$1.6 billion depending on the alignment. It was determined that the alternatives were not likely to score high enough to qualify for Federal funding. The suburban nature of land development at the Navy Yard was one factor that could be enhanced going forward through denser development and the inclusion of residential development. The Navy Yard is beginning complementary studies to determine whether any interim steps can be taken to improve transit service to the area.	PIDC	Concept Study Complete
Centennial District Trolley/ Light Rail Extension	DVRPC prepared the Centennial District Trolley Service Concept Evaluation to determine how to better connect the Centennial District – generally along Parkside Avenue on the south edge of Fairmount Park – to the rest of the City by transit. Extensions of the 10 and 15 trolleys were considered. Although the study recommended enhancements to bus services rather than trolley extensions, SEPTA may consider greater access as part of its trolley modernization program.	None Currently	On Hold
Delaware Avenue Light Rail or Bus Rapid Transit	Several studies by DVRPC and the Delaware River Waterfront Corporation have evaluated the potential for enhanced transit service along the Delaware River waterfront to support ongoing redevelopment. Current recommendations are to consider branded bus service or potentially a trolley in the long term as redevelopment occurs along the waterfront. In the meantime, PennDOT's ongoing improvements to I-95 in the area have been coordinated to ensure that enough room is provided to accommodate a future trolley.	DRWC	Interim improvements proposed until demand on corridor can support a more substantial investment.
Zoo Project	The purpose of this project is to provide direct rail transit service to the Philadelphia Zoo from the 30th Street Station area. A PennDOT study is currently underway; results have not yet been determined.	Zoo	Planning underway

MOBILITY GAPS AND OPPORTUNITIES

As part of this study, we convened a broad group of representatives from the City, SEPTA, DVRPC, PATCO, NJT, and local institutions to discuss the future of high capacity transit in Philadelphia. During an online workshop in September 2020, the group reviewed high capacity transit projects under development and brainstormed potential new investments. This workshop assumed Trolley Modernization and Frequent Regional Rail would be in place or in development as part of these expanded networks.

The workshop helped highlight how many gaps or unmet needs exist in Philadelphia's high capacity transit network. While the recommendations outlined in the Bus Corridors chapter will address some of these gaps, the region should also consider long-term expansion of high capacity transit where it is warranted. Unlike many of our peers, Philadelphia has made few bold and transformative investments in its network over the last 35 years. Ambitious investments like new subway or light rail service start with planning and may take decades to fully realize.

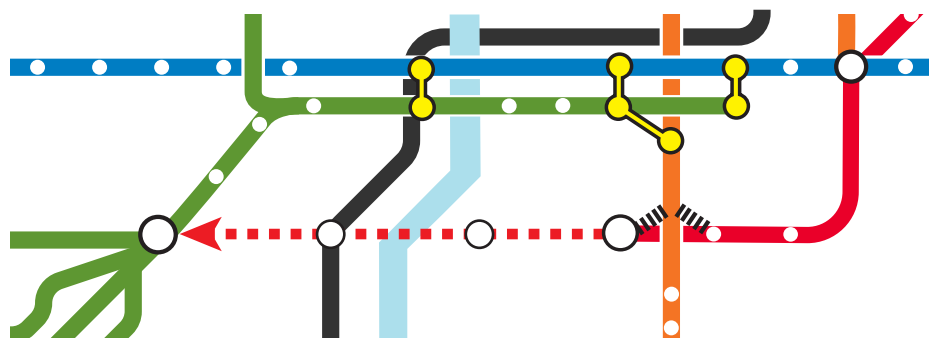
This section discusses potential gaps in the network that are not addressed by existing regional plans or projects. This list is not intended to be an exhaustive inventory of potential future investments. Instead, it is a starting point for ongoing conversations around how we can expand the city's transit network to meet the needs of today and tomorrow.

New Connections to University City

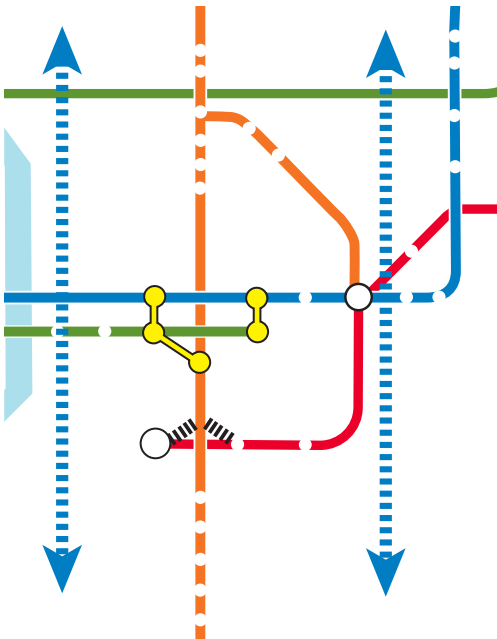
In the early 1900s and again in the 1970s, regional leaders discussed extending the PATCO subway westward to University City. The primary goal of the extension would be to serve the booming hospital campus in University City. A terminus at the current 40th Street Trolley Portal would open up many new connections.

Today the subway under Market Street, carrying the MFL and trolleys, is the primary east-west connection through Philadelphia's two largest activity centers, Center City and University City. Both the MFL/trolley tunnel and the Regional Rail viaduct have capacity constraints. A second parallel corridor south of Market Street could serve as the trunk of a new regional transit service and better tie together areas like South Jersey, Camden, Center City, North Philadelphia, South Philadelphia, and the University City hospitals. This also would offer a transfer for New Jersey riders to the Airport Line.

PATCO Westward Expansion



North-South Corridors



North-South Links Through Center City

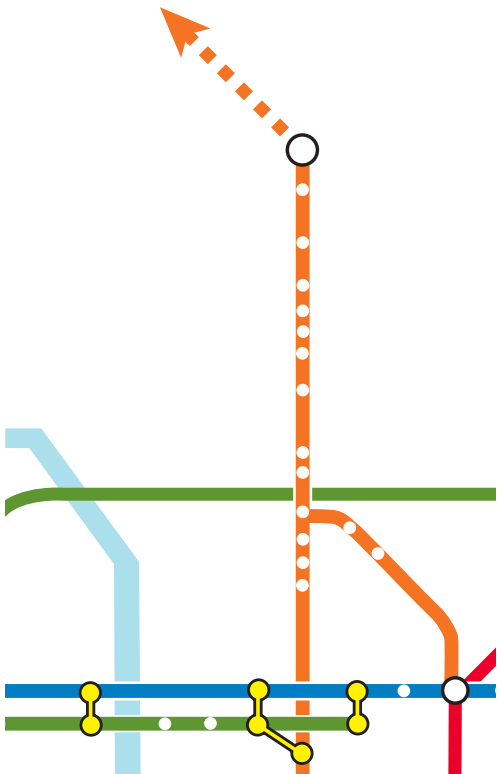
The BSL and eastern Frankford branch of the MFL are the only two corridors in the urban rail network that run north-south from Center City. Large swaths of both South and North Philadelphia are beyond walking distance to rapid transit service. Better east-west bus service is a priority for the bus network redesign and will provide better access to BSL stations for these areas, but there is still likely high demand for faster, higher capacity north-south service.

A high capacity north-south link on either or both sides of Broad Street would connect dense residential neighborhoods and key commercial corridors together. The only north-south corridor studied over the last decade is the Delaware Avenue Light Rail or Bus Rapid Transit, but it would provide limited service to dense neighborhoods. Additional studies are needed to identify whether another fixed-guideway north-south corridor is feasible and if so, what mode would be used and how/where it would operate.

Faster Transit through North/Northwest

Upper North Philadelphia and Northwest Philadelphia stand out as two parts of the city with high transit usage, high population density, and also a lack of subway or trolley service. While residents rely heavily on a robust bus network, with many riders transferring to the Broad Street Line at key hubs like Fern Rock and Olney Transit Center, there are capacity limits to bus corridors. According to the Census, residents of Upper North Philadelphia have among the highest commute times of residents in the City.

While much of this area would be served well by Frequent Regional Rail, new transit corridors between the Broad Street Line and Germantown or West Oak Lane/Cedarbrooke could benefit tens of thousands of residents currently living beyond walking distance to rapid transit. **One potential option is to build a branch or extension to the Broad Street Line, though a lower cost option could be surface transit operating in its own dedicated right-of-way, such as Bus Rapid Transit or Light Rail.**



BSL or BRT Expansion to Northwest

30th Street Intermodal Center



The need for a new intercity bus facility has been on the table for years. Originally proposed for Market East, it has since been incorporated into Amtrak's 30th Street Station District Plan. The most recent plan is for a facility along Arch Street north of 30th Street Station and adjacent to I-76. The project would allow intercity buses to directly connect to Amtrak, the Market-Frankford and Trolley Lines, and Regional Rail. The project is still in the early planning stage, though other aspects of the station plan have begun moving forward.

Source: NEC AMTRAK

Faster Transit Service Through Northeast Philadelphia

Northeast Philadelphia is another part of the City with limited access to the high capacity transit network. Today, the only rapid transit service serving the Northeast is the Market-Frankford Line (MFL), which stops short of Roosevelt Boulevard. **Today the Frankford Transportation Center is one of the busiest transit hubs in the City, connecting bus routes from across the Northeast to the MFL.**

The City through the Route for Change program is planning the incremental implementation of a dedicated transit line along Roosevelt Boulevard, the spine of Northeast Philadelphia. Another potential option is to extend the Market Frankford Line northward to meet the bus rapid transit or light rail on Roosevelt Boulevard.

Trolley Extensions

The primary challenge for our trolleys is bringing them to a state of good repair and accessibility with the trolley modernization program, which is discussed extensively in the Chapter 4.1. While this project is a significant cost and will be difficult, it also offers an opportunity to extend trolley routes as part of modernization to access key locations or to resolve end-of-line issues, including:

- A Route 34 extension into Delaware County, along Baltimore Pike, connecting to Regional Rail and suburban trolley lines.
- A Route 10 extension to Overbrook, providing a direct connection to the Overbrook Regional Rail Station and improving connectivity between West Philadelphia and the Main Line.

City Line - Center City Trolley



City Line Avenue - Center City Corridor

In multiple past planning efforts, there has been interest in better connecting West Fairmount Park and adjacent neighborhoods like Wynnefield and Parkside to the City's high capacity transit system. A new transit service in this area could also connect important regional destinations like City Line Avenue to University City and Center City. The proposed Centennial District Trolley would help improve access to the northern half of West Philadelphia but would still not directly link to City Line Avenue.

There is a great potential for better use of the Cynwyd Line on Regional Rail.

The Cynwyd Line currently runs near Fairmount Park and the City Line Avenue business district but in its current configuration as a Regional Rail line is underutilized, with fewer than 500 riders per weekday. Based on its proximity to the Route 10, it could possibly be converted to a trolley, running via Lancaster Avenue and through the Center City trolley tunnel, or it could be upgraded as part of the Frequent Regional Rail network. Both of these options would run much more frequently and likely attract significantly higher ridership, though trolley service is less expensive to operate over time.



Navy Yard BSL Extension

In addition to the Cynwyd Line, this project could coincide with an infill station at 52nd Street on the Paoli Line – a station that was lost to fire in 1980. This new Parkside Transit Center would provide greater access for West Philadelphia residents to suburban job centers, as well as better suburban access to the Centennial District.

High Capacity Transit to the Navy Yard

There is a significant mobility gap between the end of the Broad Street Line (BSL) at Pattison Avenue and the Navy Yard, one of the largest employment centers in the region.

While an extension of the BSL is the most studied option to fill this disconnect (as discussed on page 137), other less costly and faster options include better bus service through the bus network redesign or an autonomous shuttle from NRG Station. While this last option has technological and legal hurdles to overcome, autonomous shuttles would provide low-cost, high frequency service and potential technology-based jobs at the Navy Yard.



Goals for High Capacity Transit Expansion

Based on the vision for a City Connected by Transit, the previously proposed ideas for expansion, and the identified mobility gaps, **we've highlighted five key goals for any high capacity transit expansion projects.**

Future expansions should:

- Address historic discrimination and transportation/environmental justice issues
- Attract as many additional riders to transit as possible
- Reduce travel times for people currently riding transit
- Catalyze development in the city and the region
- Reduce congestion and emissions

While most of this section proposes large scale system expansion or infill projects, there is much that can be done to improve the existing system. This includes many of the policies in Chapter 2, such as a cleaner and safer system, better customer communications, and accessibility improvements.

Priorities for High Capacity Transit Expansion

From the mobility gaps and existing projects discussed in Chapter 4.3, five have been prioritized for advancement in the near term. The challenges to delivering these projects are significant. Beyond cost, work is needed to refine the concepts and begin a public conversation on each project. However, delivering the rail projects in this list will reap significant climate, equity, and economic benefits for many future generations of Philadelphians.

Project	Rationale	Potential Modes	Next Step
Roosevelt Boulevard Transit	Northeast Philadelphia is primed for better transit. The Route for Change program identified the Boulevard as a prime BRT corridor, with the option to invest in Light Rail as demand warrants.	Bus Rapid Transit (BRT) Light Rail	Implement Direct Bus Phase B and advance Route for Change Program
PATCO Locust Street Tunnel Extension to University City	University City is quickly growing, and the hospital campus lacks sufficient connections to Philadelphia and New Jersey. Congestion and geographic position limits surface transit. Terminating PATCO in Center City is inefficient.	Heavy Rail	Feasibility study including cost estimate of tunnel extension and alignment alternatives
Market-Frankford Line Infill Station	Center City's growth has focused on West Market but is underserved by the region's busiest transit line. A station would support high-density commercial district in the region.	Heavy Rail (MFL)	Feasibility study including cost estimate and location alternatives
Eastwick Trolley Extension and Transit Center	While significantly lower cost than other projects, a short Route 36 extension to a new transit center would greatly increase resident access to airport jobs and allow commercial growth. This would also connect to the Airport Line, a priority Frequent Regional Rail route.	Trolley (Route 36) Regional Rail (Airport Line) Buses	Cost estimate and project phasing/funding plan
Navy Yard Transit	The Navy Yard is expanding quickly, with 15,000 employees today and upwards of 10 million square feet of development at full build-out. Better transit will give Philadelphia residents better access to a large number of jobs, without needing a car.	Heavy Rail (BSL) Bus Rapid Transit Autonomous Shuttle	Further study alternatives to heavy rail or denser development to support transit investment

CHAPTER 5

IMPLEMENTATION



CHAPTER SUMMARY

The largest challenge for implementation will be balancing the ideas in each section of this plan, especially the infrastructure ideas. Even with the new Biden administration's commitment to infrastructure, equity, and climate, this plan will still be implemented in a constrained funding environment.

The City's immediate task is advancing the priority bus corridors – these projects are less expensive, can be implemented faster, and can have the largest equity impacts. Our top priority large transit infrastructure investment is the Trolley Modernization program. The vision for Frequent Regional Rail and high capacity transit will take decades to implement, but early actions have been identified.

The remainder of this plan discusses the partnerships and approaches needed to achieve the vision. This is followed by discussion of the funding environment – both how to prioritize with respect to the current funding environment, and how the City is working with partners to raise more funding for transit infrastructure.



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THE NEXT STOP – IMPLEMENTATION

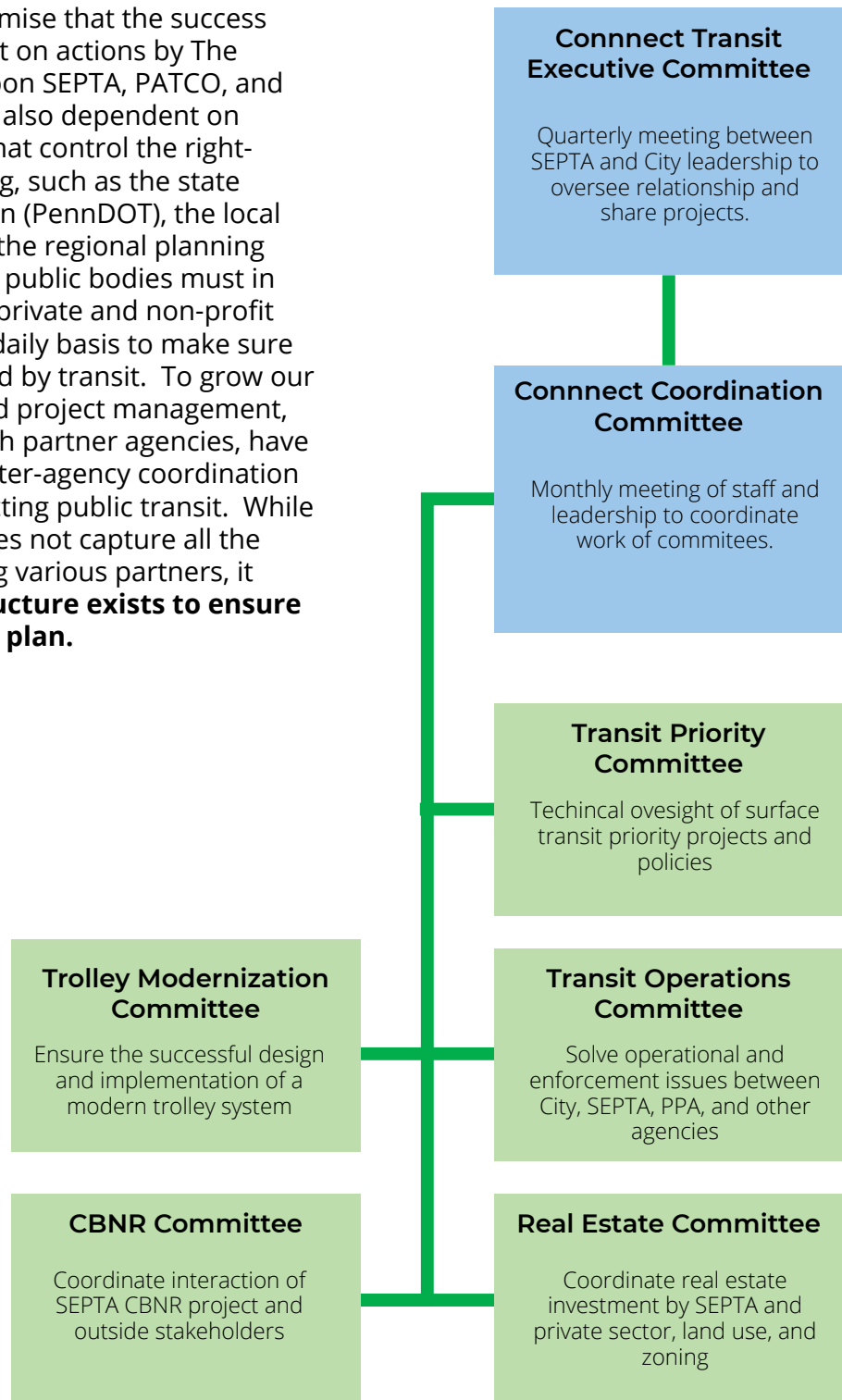
This plan is only the first step towards a City Connected by Transit. Implementation of this plan will require the cooperation of multiple public and private sector organizations, sustained effort over multiple years and administrations, and a commitment to adequate funding.

Moving Forward with Public Conversations

In developing this plan we synthesized hundreds of conversations to lay out a vision, set the baseline for the state of transit in Philadelphia, and created a framework for advancing policies, programs, and projects. However, we should be clear that this is not the end of the conversation. In fact, it's only the beginning. We have to work together to build a transit system that connects Philadelphia.

Moving forward with Our Partners

This plan is based on the premise that the success of transit is just as dependent on actions by The City of Philadelphia as it is upon SEPTA, PATCO, and New Jersey Transit. Transit is also dependent on a variety of public agencies that control the right-of-way and influence planning, such as the state Department of Transportation (PennDOT), the local Parking Authority (PPA), and the regional planning organization (DVRPC). These public bodies must in turn work with hundreds of private and non-profit groups and individuals on a daily basis to make sure that Philadelphia is connected by transit. To grow our capacity for collaboration and project management, the City and SEPTA, along with partner agencies, have established a structure for inter-agency coordination on policies and projects affecting public transit. While the structure shown here does not capture all the collaborative activities among various partners, it does show that **a strong structure exists to ensure the implementation of this plan.**



TRANSIT AGENCY FUNDING

To achieve the vision of this plan – a City Connected by Transit – funding will be a critical challenge to overcome.

Transit Capital Funds

Transit agencies break their funding down into two buckets: capital funds and operating funds. **Capital funding is used for replacing or upgrading infrastructure, purchasing new vehicles, and expanding the system.** Every year, SEPTA publishes a 12-year capital program that plans the next six years worth of spending in detail and the following six years more broadly. Parts of this plan that require transit agency capital funding include all of the high capacity transit projects in Chapter 4, accessibility improvements (Chapter 2.1), and battery electric bus expansion (Chapter 2.4).

Transit capital funding in the Philadelphia region falls behind peers, as shown in the table on page 41. For example, Boston, which is a very comparable region and transit system, has about 50% more capital funding per-person than the Philadelphia region. The consequence is that SEPTA, over its 50 year history, has been forced to make hard decisions just to keep an antiquated system running, as opposed to improving and expanding the system.

While the passage of Act 89 helped meet some state-of-good-repair needs, SEPTA's ongoing lack of sufficient capital funds means it can not meet the goals of this plan, achieve a state of good repair, or expand the system's reach to provide more communities with more access and opportunity.

Today, SEPTA faces another funding crisis. In fiscal year 2022, PA Turnpike funds currently dedicated to transit statewide will stop. This represents about one-third of SEPTA's capital budget. This funding is intended to be replaced by Commonwealth General Fund revenues, which are already stretched to cover other obligations and is further challenged by COVID-related shortfalls. **Without this funding, SEPTA will be unable to meet current maintenance needs, let alone make any improvements.**

Transit Operating Funds

Operating funds are used for day-to-day maintenance, fuel, operators' salaries, and other reoccurring expenses. SEPTA funds its operating budget primarily through State contributions and fare revenue. Much of this plan focuses on improvements that will require stable operating funds. This includes critical goals to expand frequent bus service across the city and on weekends and a low-income fare program.

Path Forward

Solving the funding problem will require solutions at the Federal, State, and regional level.

As Federal funding for transit, and infrastructure in general, has decreased over the last several decades, numerous other urban regions have raised funds to improve their transit systems. By working with regional partners, Philadelphia can stabilize the funding streams that supports SEPTA, continue to bring the system into a state of good repair, and expand access to jobs and other activities. More regional funding could also be used for non-transit needs such as paving, ADA ramps, bike lanes, and the projects in the Vision Zero Capital Plan 2025.

The City recently worked with SEPTA, PennDOT, the PA Turnpike, and numerous other leaders in government, business, and the non-profit sector on the Southeastern PA Partnership for Mobility. This work identified the need for increased funding and a menu of possible sources. The conclusions in the Southeastern PA Partnership for Mobility report are currently being advanced by a DVRPC study. The DVRPC explores options on both the mechanisms and the means to raise and allocate funding for transportation projects and improvements within Southeastern Pennsylvania.

These efforts notwithstanding, the Philadelphia region and the Commonwealth of Pennsylvania cannot and should not go it alone on addressing the transit funding shortfall. Federal leadership on funding public transit is needed. Our priorities include:

- State-of-Good-Repair Section 5337 funding should be the first priority of increased Federal funding as part of a “fix-it-first” strategy and would be useful for Trolley Modernization and improvements to Regional Rail.
- The Federal Capital Investment Grant funding, especially the Core Capacity program, is a prime source of funding for Trolley Modernization and other high capacity transit projects. The total funding should be increased, and the Federal share should be increased to 80%.
- The Federal Transit Capital Investment Grant process should also be streamlined, and the scoring criteria should encourage transformative projects that increase ridership and mobility, such as the bus priority corridors identified in Chapter 3.
- Restoration of Federal funding for transit operations for large agencies, which was cut during the Reagan administration.

FUNDING SCENARIOS

While the City intends to invest in transit priority infrastructure through these corridor projects, the economic disaster resulting from the COVID-19 pandemic has severely reduced available funds for all types of public spending, including investments in transit. There is great uncertainty in City, State, and Federal funding for transit.

These funding scenarios reflect priorities that can be taken on by the City, such as bus shelters and projects in the right-of-way. This does not include SEPTA’s capital program or operating budget, which will be needed to fund policy recommendations such as a low-income transit pass or additional operating costs associated with increased service frequency.

Because of the uncertainty in funding at all levels, we present several scenarios for capital investment in City-owned and sponsored projects:

- A low scenario is based on an extrapolation of the City’s capital budget trends over previous years and the City’s transit shelter contract. These amounts are subject to annual appropriations through the City’s capital budget process.
- A moderate scenario assumes additional State and Federal dollars.
- An aspirational scenario assumes a dramatic increase in funding programs for street improvements that prioritize transit. This would require a sea change in budget and policy at the Federal, State, or regional level.

Potential Six-Year Funding Scenarios

	Low	Moderate	Aspirational
Total Bus Shelters	600 Shelters (335 additional)	600 Shelters (335 additional)	750 Shelters (485 additional)
Priority Corridors	5 corridors	10 corridors	12 corridors
Total	\$45 million	\$75 million	\$95 million

ACHIEVING AND MONITORING THE VISION

Each section in Chapters 2-4 have a set of recommendations for what the City and its partners will do to improve Philadelphia's transit. These metrics measure, to the degree possible, the progress towards our vision - a City Connected by Transit.

While this plan sets goals and strategies for transit over the next 20 years, these metrics are focused on monitoring progress over the next decade.

Achieving the outcome of a City Connected by Transit can't be achieved by the City alone. It will require all of the responsible parties – the City, a wide range of agencies, and everyday residents, all working together. Nor will just one set of recommendations achieve the vision. All of the recommendations, from fare policy reform, to bus priority infrastructure, to many others, will be required for a City Connected by Transit.

Theme	Measure	Timeframe
Increase ridership	Increase transit ridership in Philadelphia by 10% vs. the national trend	2019 to 2025
Access to jobs	Increase the number of jobs accessible by transit within 30 minutes at noon by 10%	
Equitable inclusion	Increase the number of jobs accessible by transit within 30 minutes at noon for the average non-white residents by 15%	
Access to frequent transit	Increase the number of residents living within 0.25 miles of frequent transit by 10%	
Passenger experience	Increase the number of riders in the city served by bus shelters from 32% to 40%.	
Transit speeds	Increase average bus speeds by 10%	
ADA accessibility	Achieve full accessibility on the Market Frankford and Broad Street Lines	2020 to 2030

APPENDIX







APPENDIX I - PRIORITY BUS CORRIDORS

This appendix presents a toolkit for prioritizing bus service and specific ideas on Tier 1 corridors from Section 3.2

PROTOTYPE APPLICATIONS

This section applies toolkit concepts to four Philadelphia streets that typify street conditions prevalent around the city. These prototype designs also show how the transit priority toolkit can align with and advance other CONNECT strategies such as Vision Zero, Safe Routes to School, a High Quality Bike Network, and curbside management.

Each street type is structured in two parts: a discussion of current Challenges & Opportunities, followed by a list of Potential Design Packages and how to apply them.

- Center City One-Way Street
- Neighborhood Two-Way Transit Street
- Two-Way Arterial Transit Street
- Major Transit Thoroughfare

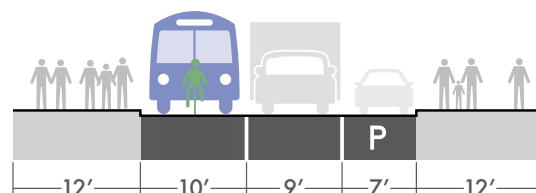
This section also discusses implementation considerations including cost, level of planning intensity, and level of construction intensity.

Cost	Planning Intensity	Construction Intensity
<p>Rough estimate of capital cost per mile, in four buckets:</p> <p>< \$50k per mile</p> <p>\$50 - 500k</p> <p>\$500k - 1m</p> <p>> \$1m</p>	<p>Level of planning and design effort required to successfully implement this approach:</p> <p>Low = no significant reallocation of existing street space or operational changes</p> <p>Moderate = Some realignment required, allocate time and resources for planning & engagement</p> <p>High = likely to require significant community engagement and planning, consider hiring or allocating dedicated project staff</p>	<p>Level of capital construction required to build:</p> <p>Low = Operations & Markings changes only</p> <p>Moderate = may involve paint / posts / concrete, but does not change drainage</p> <p>High = requires major civil engineering or full-depth construction to implement</p>

One-Way 26' Street

One of Philadelphia's greatest strengths is its walkability, largely a product of its small blocks, narrow streets, and dense development. However, these rights-of-way are difficult to operate transit on, particularly when they are clogged with private vehicles and freight traffic throughout most of the day. Examples of this include Chestnut and Walnut in Center City, as well as many of the numbered north/south streets like 7th and 8th.

Existing Cross-Section



Design Approach

Red Painted Curbside Bus Lane

Where buses are often slow and constrained to a busy, narrow street, this design approach mitigates the impacts of heavy street traffic and limited space on bus operations.

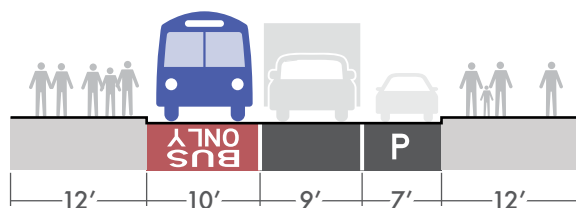
This design consists of:

- Striped Bus Lanes (with Red Color)
- Shared Right / Bus Lanes
- Transit-Friendly Signal Progression

Cost: \$500k - \$1m per mile

Planning Difficulty: Moderate

Construction: Low



Design Approach #1

Design Approach #2

Change the Network Role to Prioritize Buses and Limit Private Vehicles

If the narrow, one way street is a critical thoroughfare for transit, a transformative design would be to limit through-movement of all non-transit or non-emergency vehicles. This would mean those vehicles would have to turn off the corridor at every block or at least at select blocks.

Operationally, this could be challenging to ensure enforcement, but it would be the most effective way to speed up transit on streets that are too narrow to accommodate their demand.

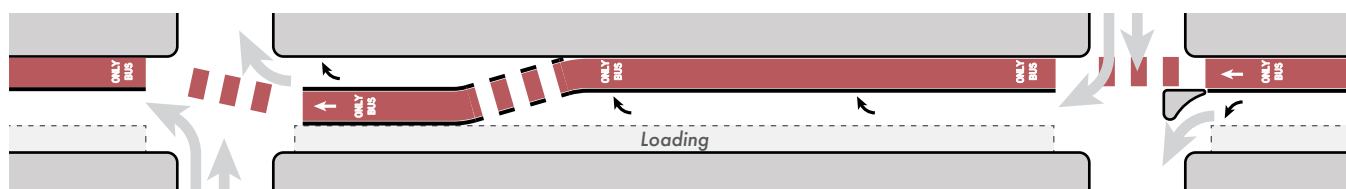
This design consists of:

- Forced Turns
- Right-Turn Pockets
- Low-Speed Signal Progression

Cost: \$500k - 1m per mile

Planning Difficulty: High

Construction: Low to Moderate

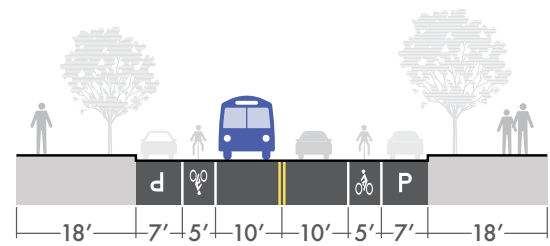


Design Approach #2

Neighborhood Two-Way 44' Transit Street

The narrow cross section and provision of street space for multiple modes—i.e. bike lanes and on-street parking—reflect intense demand for limited space and constraints in lateral lane shifts and boarding platform opportunities. Examples of this cross-section include Spruce Street in West Philadelphia.

Existing Cross Section



Design Approach #1

Time the Corridor for Transit

Operating the corridor at bus speed and allowing the bus to stay in-lane at stops reduces speeding and makes bicycling and bus operations more comfortable. Bus stop design also targets a key conflict between modes.

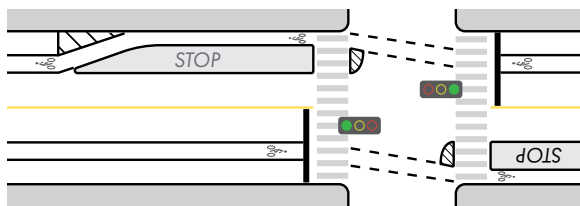
This design consists of:

- Low-Speed Signal Progression
- Bus Boarding Islands

Cost: \$500k - \$1m per mile

Planning Difficulty: Moderate

Construction: Moderate



Design Approach #1

Design Approach #2

Peak-Hour Transit Priority

Bus delay is confined to specific hours of the day, and primarily in the peak direction. Reallocate the parking lane during peak hours to improve transit speed and reliability, while maintaining parking or curb access during other times of day. Use prominent, clear signs and markings, and active enforcement (at least following implementation).

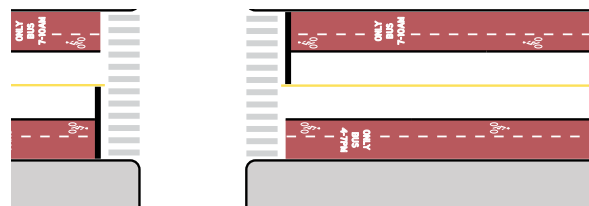
This design consists of:

- Striped Transit Lane (Peak-Only)
- Re-time for Longer Signal Cycles at Peak

Cost: \$500k - \$1m per mile

Planning Difficulty: High

Construction: Moderate



Design Approach #2

Two-Way Arterial 50-60' Street

In Philadelphia, many major bus routes run on moderately-sized arterial streets. These streets are great opportunity for improvements due to their width and existing productive transit. Examples of this cross-section include Allegheny Avenue, Erie Avenue, and Lehigh Avenue in North Philadelphia.

Design Approach #1

Protected Bike Lanes & Queue Jumps

Bus delay is confined to intersections on a few discrete segments. Use short approach lanes to repurpose the parking lane to keep bus service moving with minimal impact on parking. Given the moderate bus frequency, green extension, red truncation, or upstream green truncation can each be implemented to maximize the signal progression. Consider transit signal priority with split phases that lag turn movements and leading bus / bike intervals to provide safe and efficient operations.

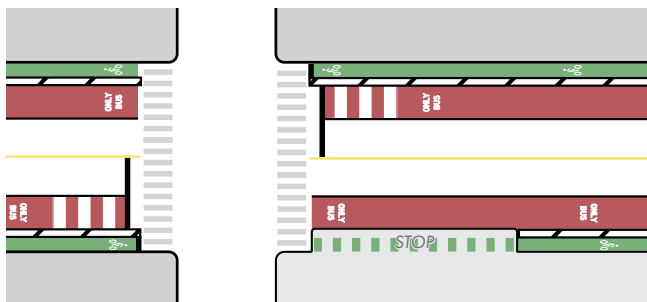
This design consists of:

- Transit Approach Lanes
- Shared Cycle Track Stop
- Boarding Islands
- Active Transit Signal Priority

Cost: \$500k - 1m per mile

Planning Difficulty: High

Construction: Moderate



Design Approach #1

Existing Cross-Section



Design Approach #2

Bus Lanes & Protected Bike Lanes

When the corridor is prioritized for both buses and high-comfort bicycle facilities, repurposing on-street parking for dedicated bus and bike lanes can transform the street for people biking, walking, and riding transit. Given the constrained sidewalk width and lack of parking / flex lane, provide a high comfort bike facility alongside in-lane stops through a shared boarding area.

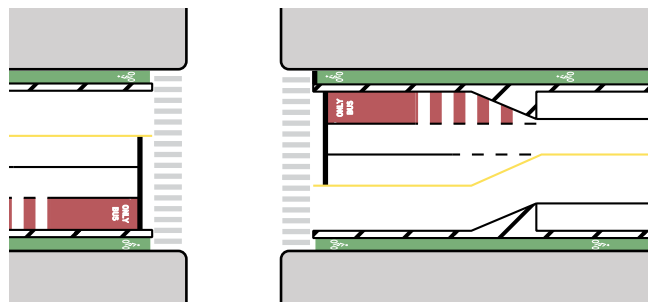
This design consists of:

- Offset Transit Lanes
- Shared Cycle Track Stops
- Shared Right / Transit Lanes (at two-way street crossings)
- Right-Turn Pocket (at one-way street crossings)

Cost: \$500k - 1m per mile

Planning Difficulty: High

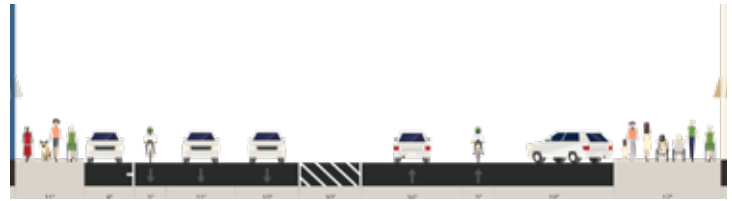
Construction: Moderate



Design Approach #2

Major Transit 70' Thoroughfare

The wide arterial street provides direct connectivity to both regional routes and local destinations. Examples of this cross-section include Oregon Avenue in South Philadelphia.



Existing Cross Section

Design Approach #1

Dedicate Space for Buses and Bicycling

Reallocating space to bus priority maintains curb access while dedicating operating space for buses and enabling in-lane stops. Shorter cycle lengths and small signal blocks (two-three intersections) improve bidirectional coordination while reducing opportunities to speed.

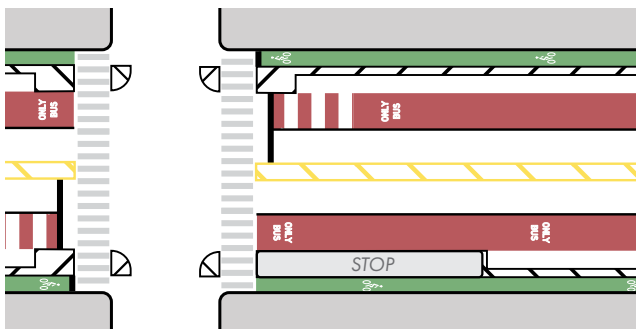
This design consists of:

- Offset Bus Lanes
- Boarding Islands
- Passive Transit Signal Progression & Active Transit Signal Priority

Cost: >\$1m per mile

Planning Difficulty: High

Construction: Quick-Build



Design Approach #1

Design Approach #2

Pedestrian Safety and Bus Lanes

Informal or illegal vehicle parking is common. Rationalizing street space can improve multi-modal safety by making operations more predictable and efficient. Fortifying medians with plantings and shade trees add place-making and can discourage median-parking. To maintain a balance of local vehicle access and through-movement, back-in angled parking can increase vehicle parking capacity and improve visibility as drivers enter and exit on-street parking stalls.

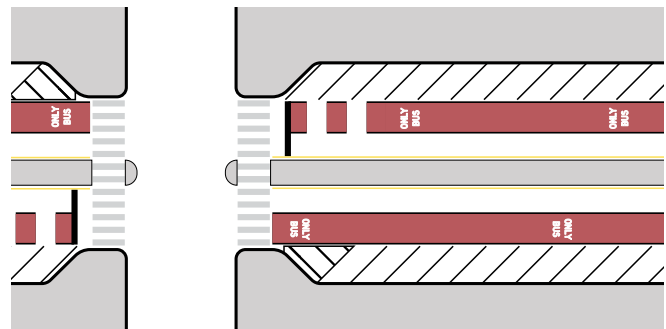
This design consists of:

- Offset Bus Lanes
- Planted Median
- Back-in Angled Parking

Cost: >\$1m per mile

Planning Difficulty: Moderate

Construction: Capital



Design Approach #2

PRIORITY CORRIDOR IDEAS

INTRODUCTION

The following section contains profiles of most of the Tier 1 corridors identified at the beginning of this chapter. The concepts outlined in the bus priority toolkit are applied to each corridor to help illustrate their application in the real world.

The “ideas” presented in each profile are not official recommendations and should not be interpreted as such. Rather, they are different ways to explore how transit priority across the city can impact transit providers and people riding transit. These ideas are just that – ideas. The corridors will next go through the implementation process shown on page 94.

The table below presents each priority corridor and notes its overlap with two other major City transportation initiatives - the Vision Zero High-Injury Network and the High-Quality Bike Network, both of which will influence the design ideas.

Planning, engagement, and design is underway for the following corridors:

- Roosevelt Boulevard
- Market Street and JFK Boulevard (15th to 20th Streets)
- Chestnut and Walnut Streets
- Castor Avenue
- 20th and 19th Streets (Market to Spring Garden Streets)

Planning, engagement, and design will begin for the following corridors will begin in 2021:

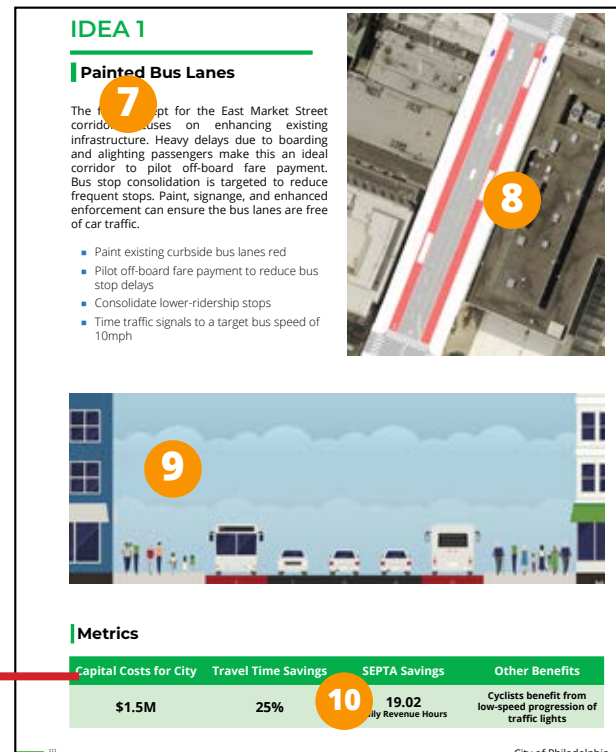
- Lehigh Avenue (funded via PennDOT Connects grant)
- Olney Avenue (funded via TCDI grant)

Priority Corridor	Daily Ridership	Low-Income Riders	Average Peak Hour Bus Speed	High-injury Network Overlap	High-Quality Bike Network Overlap
East Market Street	15,145	4,855	5.3	Y	Y
Chestnut St / Walnut St	6,918 / 9,369	2,124 / 2,896	4.8 / 5.4	Y	N
Market Street / JFK Boulevard	10,924 / 12,444	3,605 / 3,459	4.5 / 5.0	Y	Y
20th Street	5,121	3,582	9.4	N	Y
Erie Avenue	15,100	5,289	9.0	Y	Y
Olney Avenue	18,900	6,238	9.1	Y	Y
52nd Street	12,803	4,996	7.8	Y	Y
Lehigh Avenue	5,690	2,389	7.2	Y	N
Roosevelt Boulevard	28,465	8,619	15.6	Y	Y

ELEMENTS

1. Overall corridor statistics
2. Corridor Benefit Map¹
3. Corridor overview
4. Routes
5. Corridor map
6. Qualitative corridor observations
7. Ideas for corridor improvements
8. Plan view of recommendation
9. Section view of recommendation
10. Estimated impact of recommendation.

- 1 The corridor benefit map shows where buses that would use the improvement go. Improvements in speed and reliability due to the proposed idea won't just benefit the immediate study area, but people living and traveling to the benefit area.



Capital Cost Scale

\$	\$\$	\$\$\$
Under \$1 million	\$1-\$3 million	Over \$3 million

Operating Savings Scale

\$	\$\$	\$\$\$
Under 10 daily revenue hours	10-25 daily revenue hours	25+ daily revenue hours

CORRIDOR IDEA

EAST MARKET STREET

Length

0.6 Miles

Average Stop Spacing

450 Feet

Weekday Ridership

13,170 (SEPTA), 2,175 (NJT)

Low-Income Riders

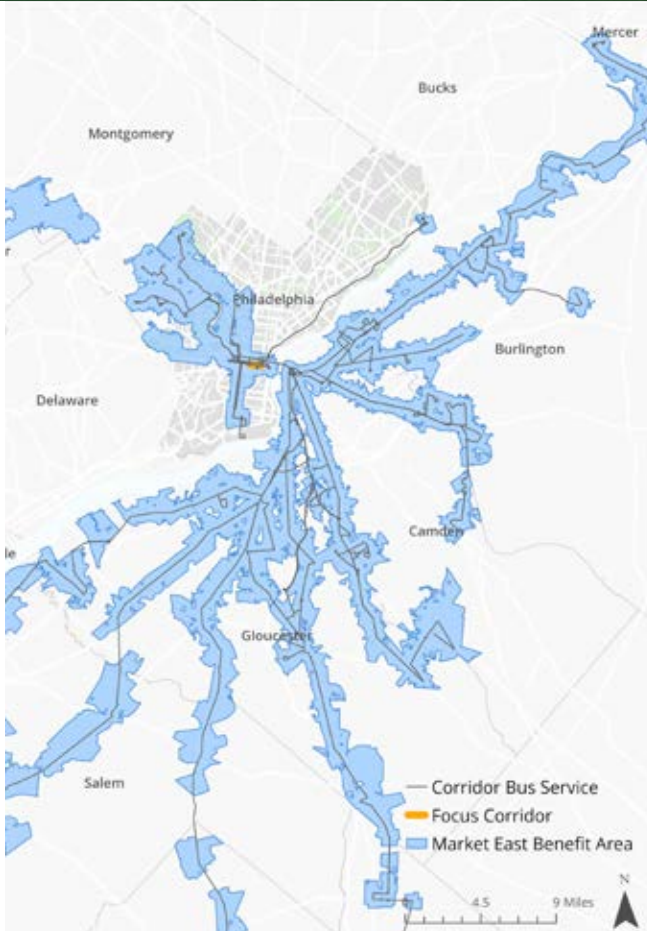
4,855 People

Average Peak Hour Speed

5.3 mph

Bus Trips per Day

1,098 Trips



Corridor Overview

Many SEPTA and NJ Transit routes converge along the corridor before fanning out to serve locations throughout the region, making this one of the busiest bus corridors in the city. The corridor is also a major transfer point to rail including the Market-Frankford Line, PATCO, the Broad Street Line, and Regional Rail.

The corridor is on both the High Injury Network and High Quality Bike Network plans.

Routes

Bus Routes on Corridor: 17, 33, 38, 44, 48, 62, 78 (SEPTA)
400, 401, 402, 404, 406, 408, 409, 410, 412, 414, 417 (NJT)

Connecting: MFL, BSL, Trolleys, PATCO, Regional Rail, 23, 45, 47, 57, 61



Shared bus/bike lanes run from City Hall to 6th Street

Curbside bus/bike lanes on Market Street serve almost one bus per minute during peak hours

Rideshare vehicles regularly block the bus/bike lanes; private and delivery vehicles double park

Most buses traveling the corridor stop at every block

On the north side of the street, each block has separate SEPTA and NJ Transit stops. As a result, SEPTA buses “leapfrog” NJT buses regularly, which slows down service

East Market Street

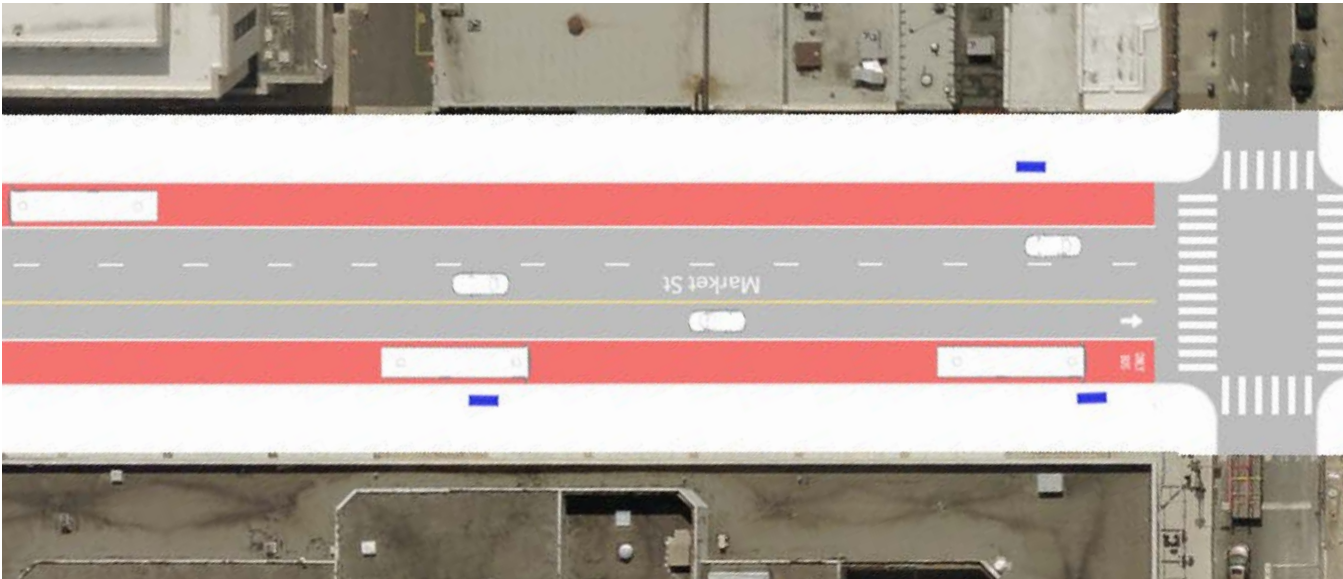
TOOLKIT IDEA 1

Painted Bus Lanes

The first concept for the East Market Street corridor enhances existing infrastructure. Heavy delays due to boarding and alighting passengers make this an ideal corridor to pilot off-board fare payment. Bus stop consolidation is targeted to reduce frequent stops. Paint, signage, and enhanced enforcement can ensure the bus lanes are free of car traffic.

- Paint existing curbside bus lanes red
- Pilot off-board fare payment to reduce bus stop delays
- Consolidate stops

Idea for Red Painted Bus Lane



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$	25%	\$\$	Bus lane location clear to drivers, less likely to inadvertently block.

East Market Street

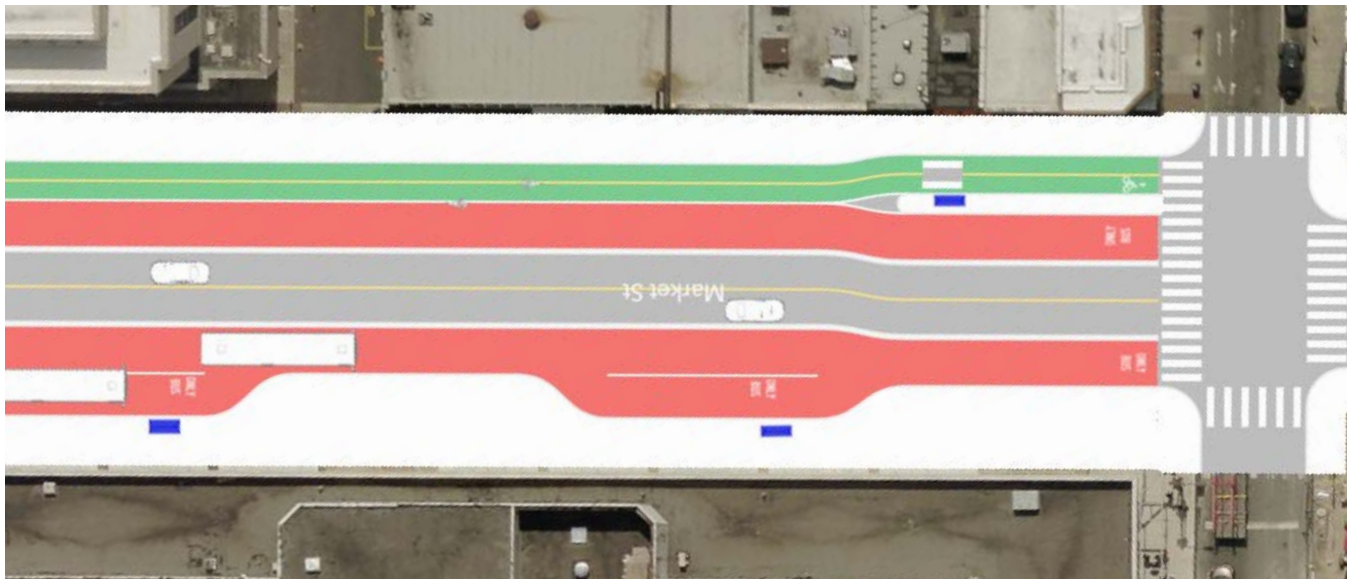
TOOLKIT IDEA 2

Separated Bike and Bus Lanes

The second concept for East Market Street rebalances street space to better serve transit riders, pedestrians and cyclists. With the removal of an eastbound travel lane, there is room to add two-way cycle track and add a curb to separate the eastbound bus lane from traffic. Features of this concept include:

- Dual curbside bus lanes in westbound direction
- Physical separation between transit and general traffic lanes
- Off-board fare payment
- Consolidate stops
- Two-way curbside cycle track

Idea for Dual Bus Lane and Cycle Track



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$\$	35%	\$\$\$	Exclusive bike infrastructure improves safety for everyone.

CORRIDOR IDEA

CHESTNUT / WALNUT ST

Length

1.95 / 1.80 Miles

Average Stop Spacing

460 / 485 Feet

Weekday Ridership

6,918 / 9,369 People

Low-Income Riders

2,124 / 2,896 People

Average Peak Hour Speed

4.8 / 5.4 mph

Bus Trips per Day

337 / 351 Trips



Corridor Overview

This corridor encompasses Chestnut and Walnut Streets from 2nd Street to 23rd Street. These streets run through the heart of Philadelphia's historic and commercial centers. Buses use Walnut Street to travel westbound and Chestnut Street to travel eastbound. These streets balance heavy demand from pedestrians, buses, cars, parking, and deliveries, resulting in serious congestion throughout the day.

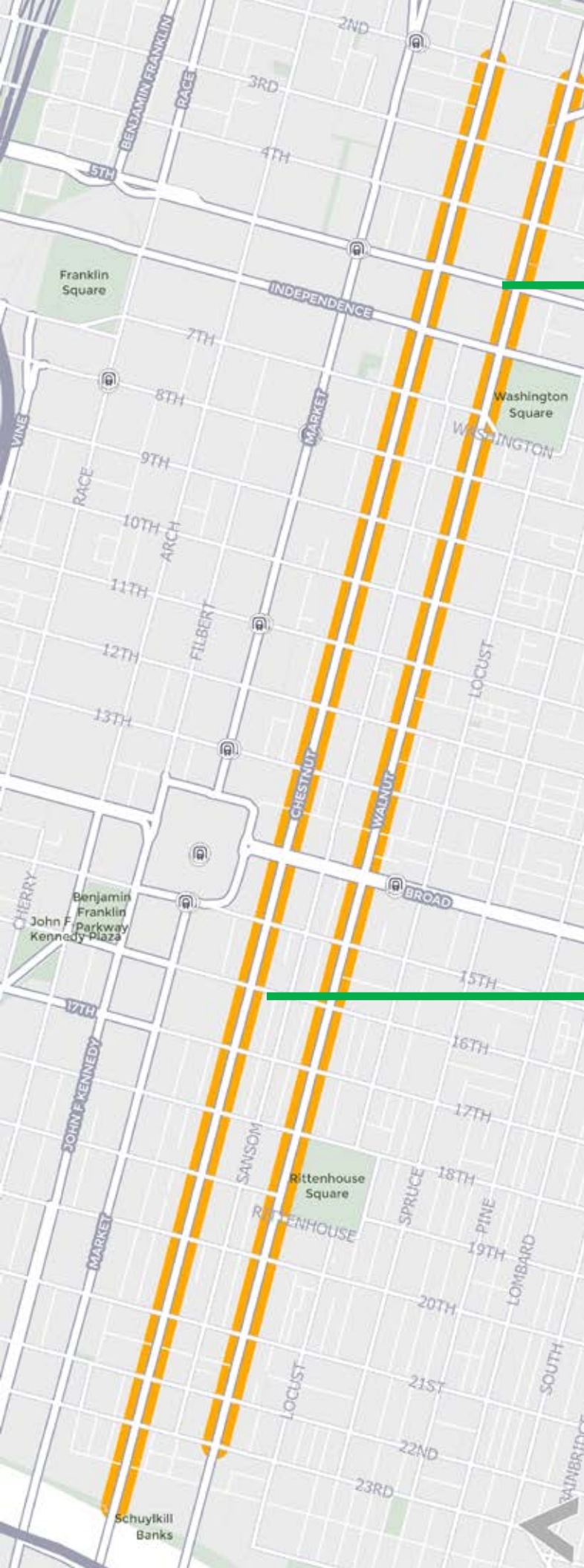
Walnut (11th to 5th) and Chestnut (40th to 11th) are the High Injury Network.

Routes

Corridor Serving: 21, 42, 9, 12^w, 38^c

Connecting: BSL, PATCO, 2, 17, 23, 45, 47, 57, 61

^c Runs only on Chestnut ^w Runs only on Walnut



Stops are placed at every block, leading buses to miss traffic signals due to frequent stops

Curbside bus lane on Chestnut, no bus lane on Walnut

Enforcement effort in 2019 showed promising results

Chestnut Street bridge closure showed drastic positive effect of forced turns



Buses and bicycles share the same lane on Chestnut Street

Buses stop nearside at most blocks, even where right turns are happening

Chestnut Street / Walnut Street
TOOLKIT IDEA 1

Painted Bus Lanes

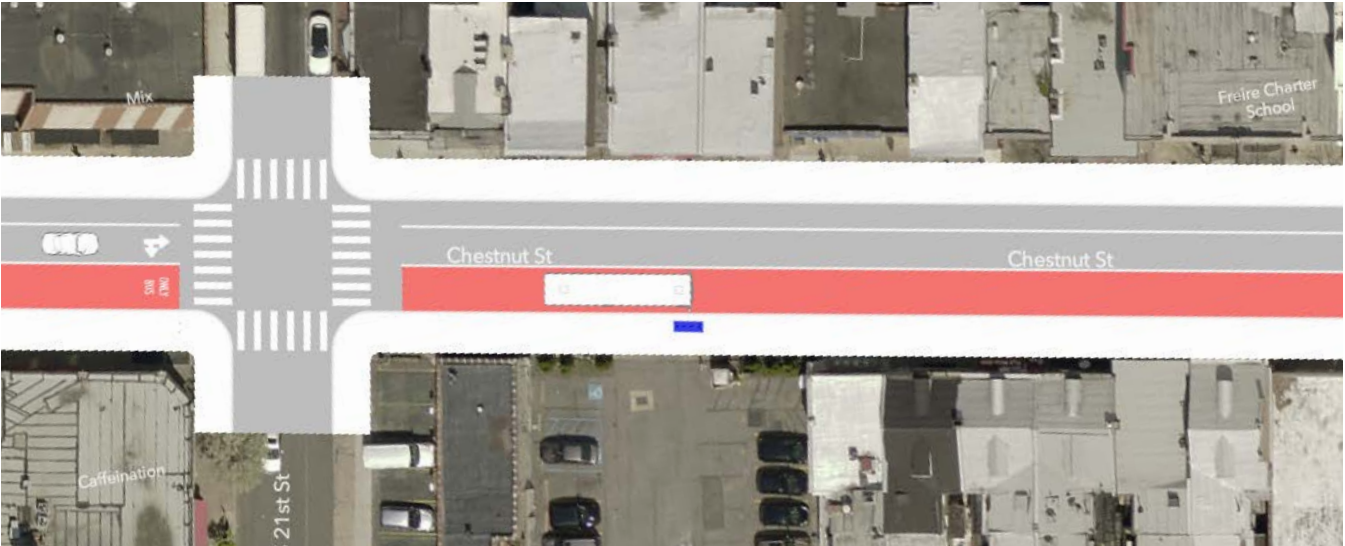
The first concept for the Chestnut Street and Walnut Street corridors focuses on bringing both streets up to a similar standard of transit infrastructure. Bus stop relocation and consolidation is targeted to allow buses to circumvent lengthy right turning vehicle queues and move buses more efficiently.

- Paint existing curbside bus lane on Chestnut Street red
- Add painted curbside bus lane to Walnut Street
- Relocate bus stops at intersections with consistent conflicts between buses and turning vehicles to far side of intersection
- Consolidate lower-ridership stops
- Time traffic signals to a target bus speed of 8mph



Curbside painted bus lane (NYC DOT)

Idea for Red Painted Bus Lane



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$\$	17%	\$\$\$	Low-speed progression of traffic lights benefits cyclists

TOOLKIT IDEA 2

Transit Street with Limited Through Traffic

The second concept for Chestnut Street and Walnut Street represents a major transformation into transit priority streets to reduce travel times and improve reliability. In this scenario local traffic is allowed, but through traffic is restricted to transit vehicles only. Recent implementation of a similar design along 14th Street in New York City produced major travel time savings for transit riders with minimal additional congestion resulting from displaced vehicles on nearby streets. This concept includes:

- Forced turns for non-transit vehicles at select intersection
- Relocate bus stops at intersections with right turns to far side of intersection
- Consolidate lower-ridership stops
- Time traffic signals to a target bus speed of 10mph



14th Street Busway Illustration (NYC DOT)

Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$\$	22%	\$\$\$	Major improvement for emergency vehicle movement



CORRIDOR CONCEPT

MARKET STREET & JFK BOULEVARD

Length

0.49 / 0.43 Miles

Average Stop Spacing

449 / 455 Feet

Weekday Ridership

10,924 / 12,444 People

Low-Income Riders

3,605 / 3,459 People

Average Peak Hour Speed

4.5 / 5.0 mph

Bus Trips per Day

640 / 539 Trips



Corridor Overview

Market Street and JFK Boulevard form a major east/west arterial in Center City between City Hall and the Schuylkill River. This area is a major hub for all transportation modes due to its centralized location. From 20th to 15th streets, the corridor sees over 23k bus riders, in addition to tens of thousands of riders underground on the MFL, trolleys, and Regional Rail.

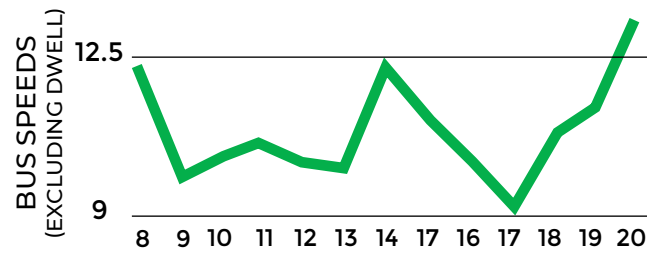
The corridor is on both the High Injury Network and High Quality Bike Network plans.

Routes

Corridor Serving: 78, 32, 62, 48, 49, 331, 33, 124, 31, 38, 44, 125, 17, NJT 555, NJT 414

Connecting: MFL, BSL, Regional Rail, Trolleys, and Bus Route 7

Bus speeds drop in the morning and late afternoon



Buses move from right lane to left to turn onto 19th Street and 20th Street

Bus stops are extremely busy, and dwell time makes up a large portion of running time

Each bus stop average 1,400 ons and offs per day

Buses move the same number of people as cars when the street is busiest, without a dedicated lane

Most of the bus stops have upgraded bus shelters

Market Street & JFK Boulevard

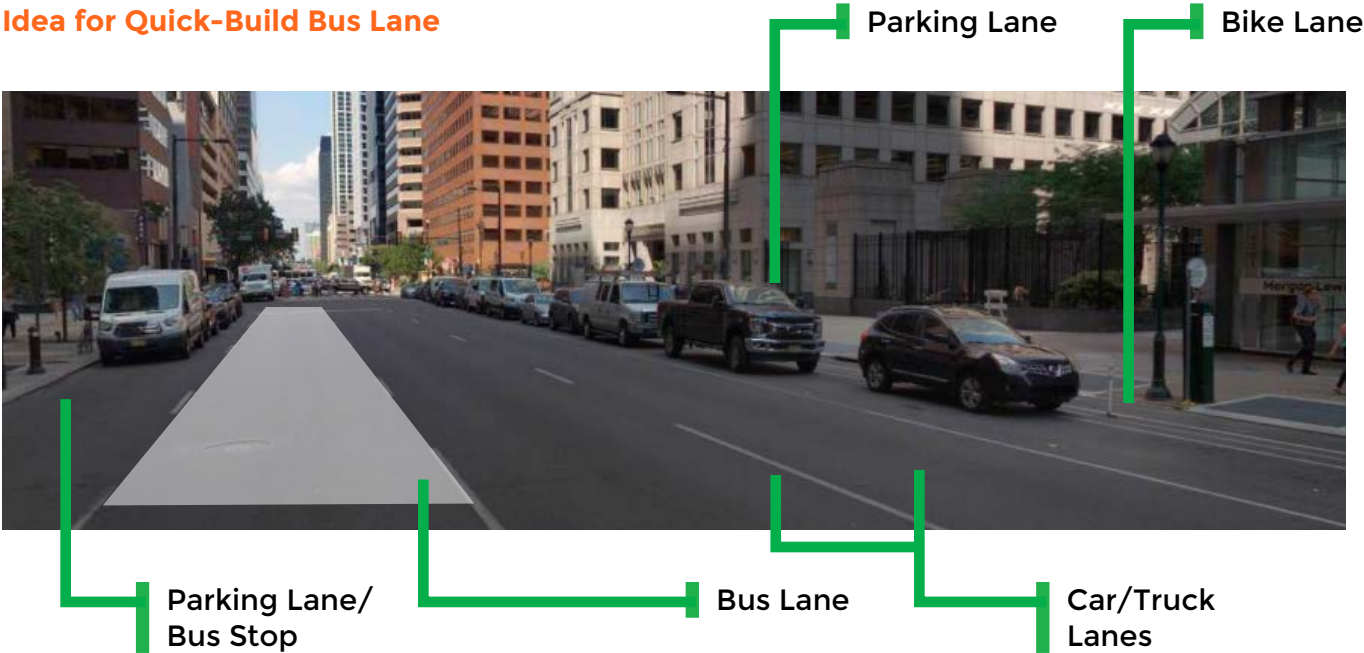
TOOLKIT IDEA 1

Quick-Build Bus Lane

To build on the pilot Vision Zero bike lane project completed in 2018, Idea 1 would stripe bus lanes on Market Street and JFK Boulevard between 20th and 15th Street. These lanes would be done in white paint and implemented quickly, as they do not eliminate parking.

Once the quick-build bus lane is built, we can look at further balancing the bus stop spacing, adding real-time kiosks, and piloting all-door boarding.

Idea for Quick-Build Bus Lane



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$	18%	\$\$	Bus lane also available for emergency vehicles

Market Street & JFK Boulevard

TOOLKIT IDEA 2**Ambitious Infrastructure**

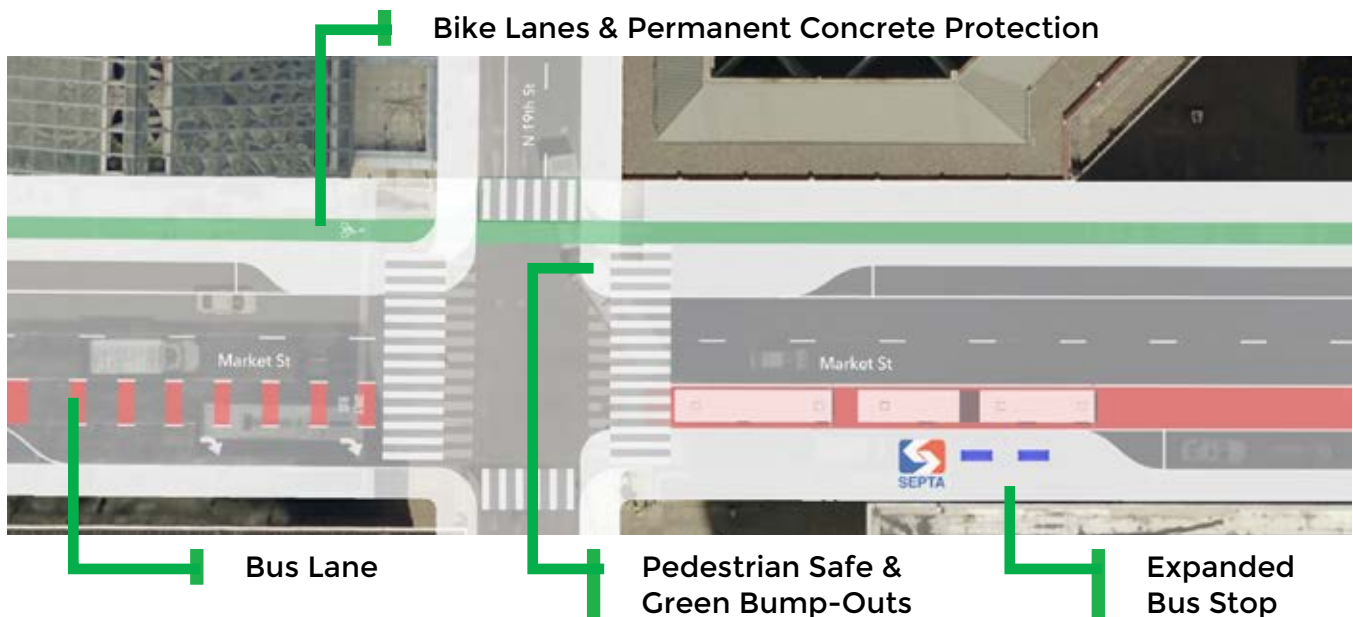
To upgrade the bus and bike lane design presented in Idea 1, this concept would apply red paint to the bus lane and provide permanent, concrete infrastructure for the bike lane and bus stops. Rear-door boarding would be expanded to full-time operation, either through infrastructure on the bus or at the stop.

Through dedicated and high-quality bus and bike lanes, Market Street and JFK Boulevard will move people, more safely, than they do today.

As shown in the rendering on the right, the bike lane buffer provides a landscape and beautification canvas for two of the city's busiest and highest density corridors.



Image Source: Center City District

Idea for Capital Project Upgrade**Metrics**

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$\$	24%	\$	Streetscape beautification and reduced maintenance

CORRIDOR CONCEPT

20TH STREET

Length
0.34 Miles

Average Stop Spacing
380 Feet

Weekday Ridership
5,140 People

Low-Income Riders
3,582 People

Average Peak Hour Speed
9.42 mph

Bus Trips Per Day
272 Trips



Corridor Overview

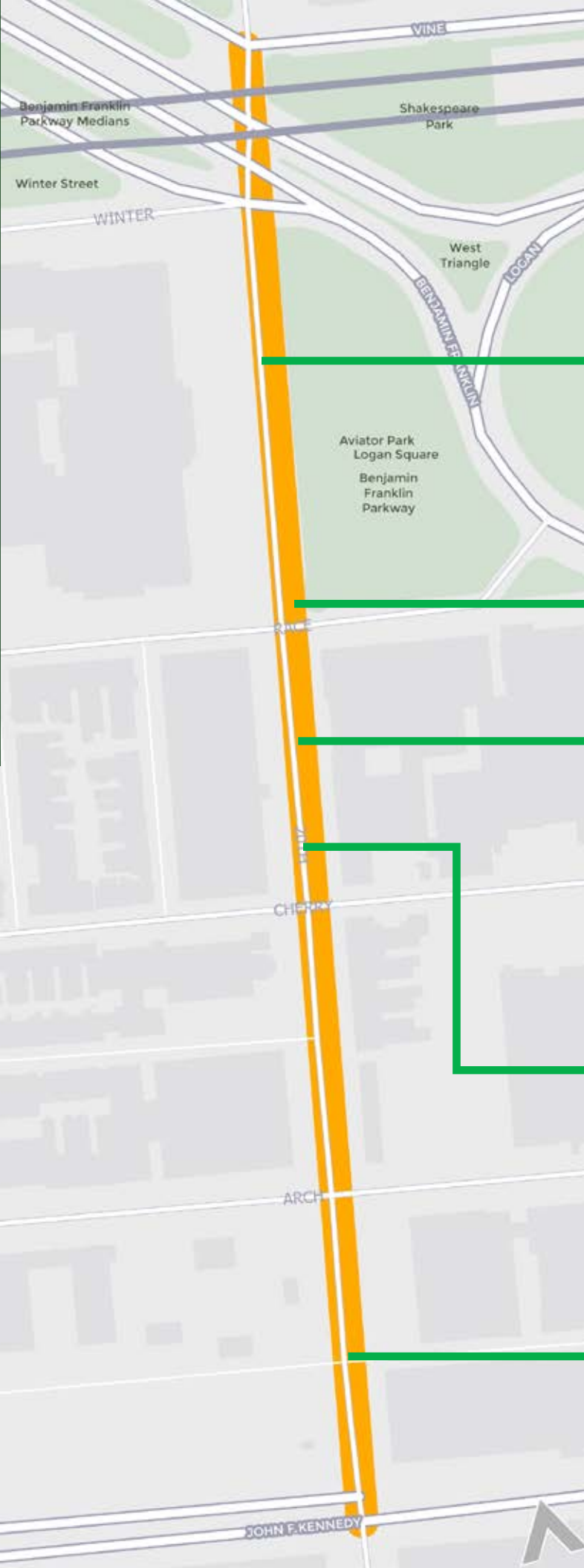
20th Street has three major bus routes operating along the corridor, with several private shuttles and buses also using the corridor. The existing cart-way is between 54 and 56 feet wide, and design recommendations were considered with that in mind. No changes are proposed to sidewalk or curb widths.

The corridor is on the High Quality Bike Network.

Routes

Corridor Serving: 33, 38, 49

Connecting: 17, 48, 31, 44, 62, 124, 125, NJ Transit Buses



Cyclist using existing parking lane

Loading lane for private bus and vehicles



Usable centerline, low turning volumes



Loading lane for Atria Senior Living



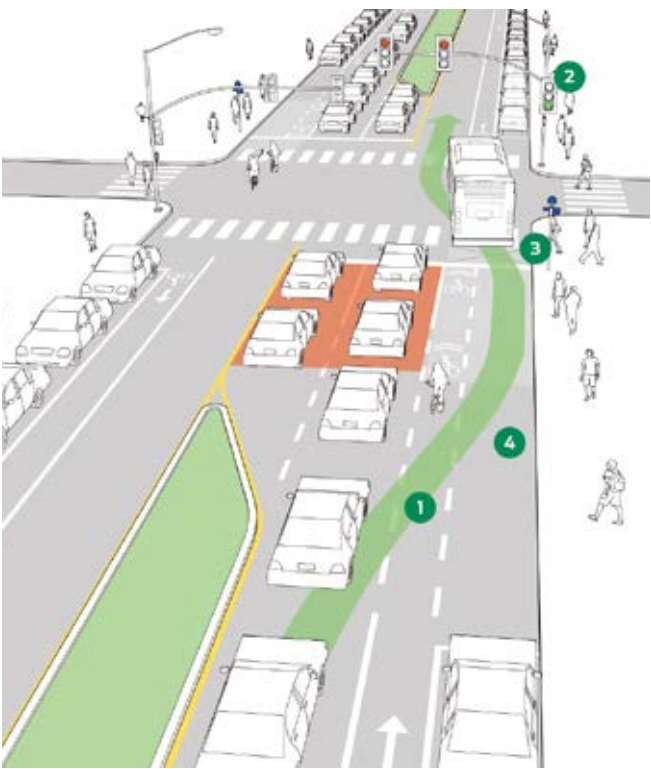
Higher northbound bus volumes

20th Street

TOOLKIT IDEA 1

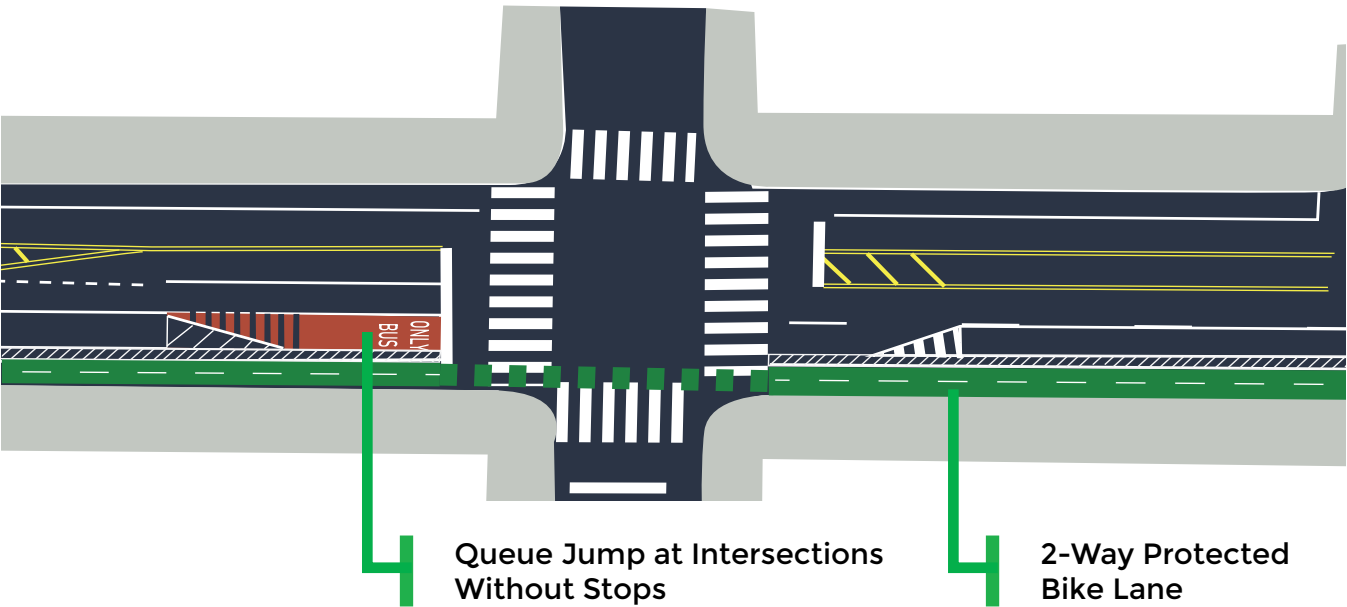
Reduced Intersection Delay

This concept shifts the parking lane from the curb into one of two existing northbound travel lanes. A two-way cycletrack with a two foot striped buffer is installed next to the curb. Queue jumps for transit priority, pictured in red, are added along the northbound approach of intersections, allowing buses to bypass traffic at stoplights. Over 80% of bus journeys are northbound, so queue jumps are warranted in the northbound lanes. Queue jumps are coupled with Transit Signal Priority (TSP) to allow efficient bus movement. Stops are relocated to the far side of the intersection.



Queue jump illustration (NACTO)

Idea for Queue Jumps



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$	9%	\$	Limited parking removal; Bike network connection

TOOLKIT IDEA 2

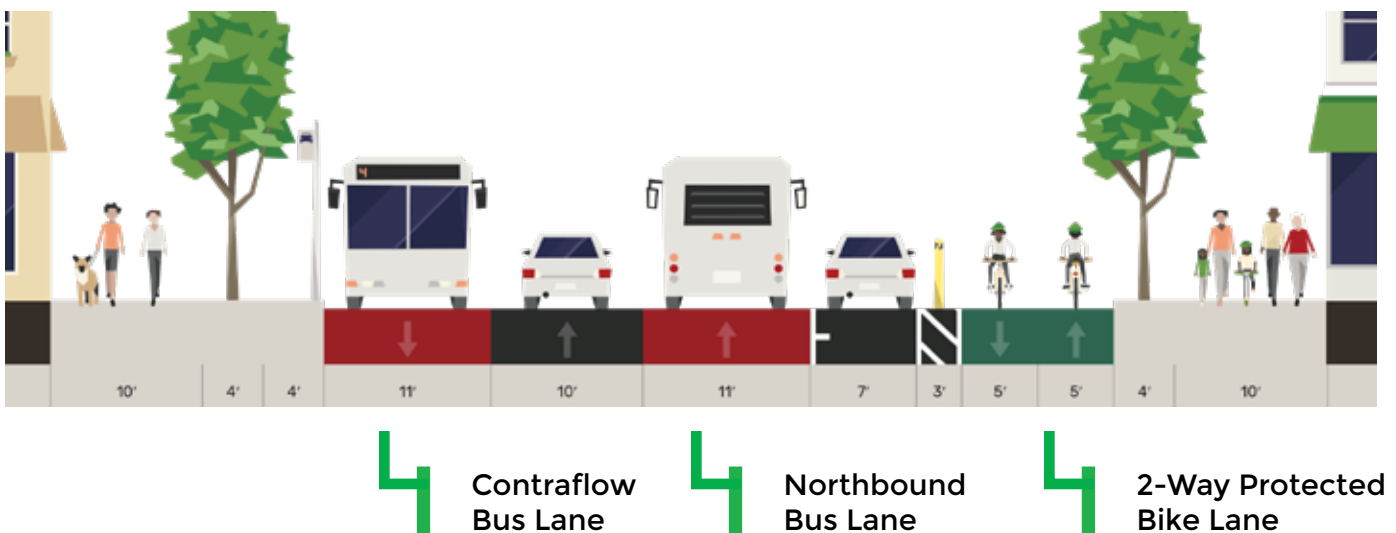
Multimodal Transformation

This concept replaces parking lanes and the Southbound travel lane with two bus lanes and a two-way cycletrack. Race and Arch Street stops are consolidated and cycle-friendly boarding platforms are installed to provide level boarding. Southbound automobile traffic is redirected to parallel streets while a Southbound contraflow bus lane is created. Rerouting buses from 21st and 19th to the new bus lane in conjunction creates capacity for displaced cars and eliminates car/bus conflicts on all three streets.

A contraflow bus lane would provide southbound access for buses into Center City and would need to be considered as part of CBNR.



Idea for Corridor with Bus Lanes



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$	26%	\$	Rationalize Street Grid Conflict Reduction on 19th, 20th, and 21st

CORRIDOR CONCEPT ERIE AVENUE

Length

2.00 Miles

Average Stop Spacing

459 Feet

Weekday Ridership

15,100 People

Low-Income Riders

5,289 People

Average Peak Hour Speeds

9.0 mph

Bus Trips per Day

698 Trips



Corridor Overview

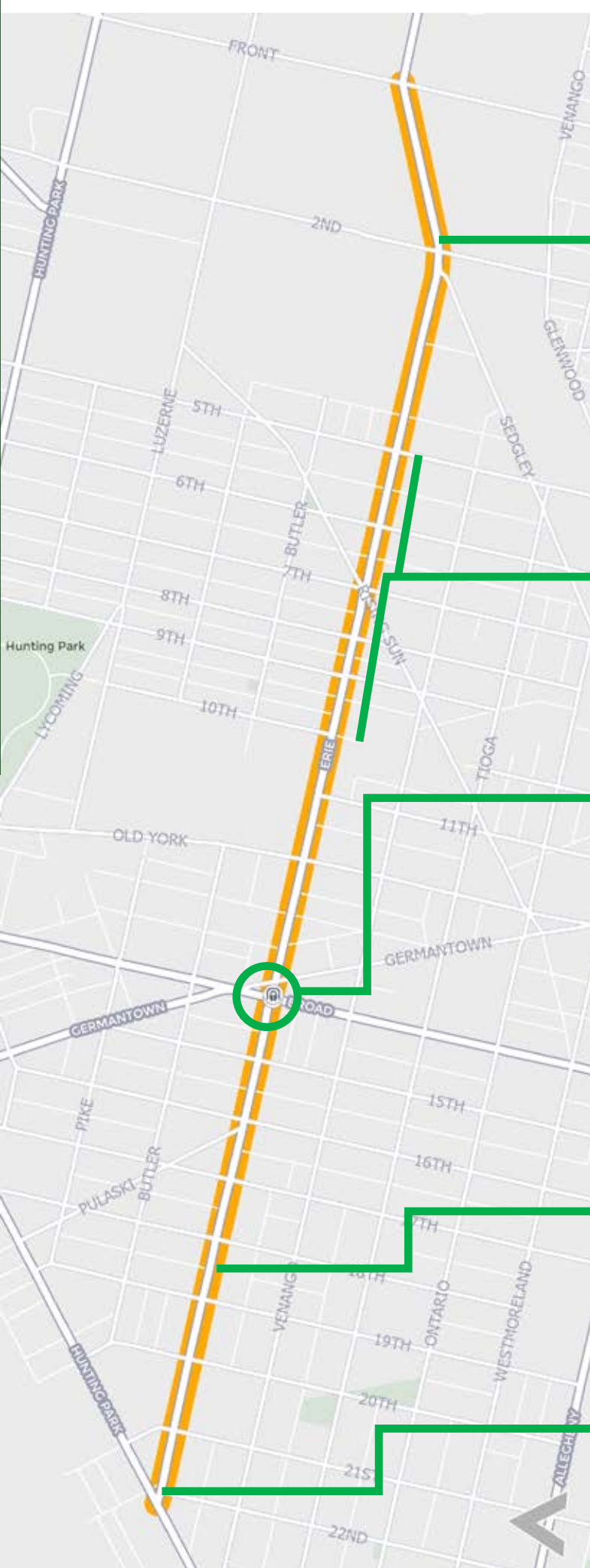
Erie Avenue has a long history as a key east-west corridor across North Philadelphia. Primarily serving the Route 56, one SEPTA's most productive routes, Erie Avenue connects to the BSL, MFL, and the future Direct Bus on Hunting Park Avenue. At the center of the corridor is Broad, Germantown, and Erie, the site of a major upcoming redesign that will provide bus lanes and bus passenger facilities on Erie Avenue.

The corridor is on both the High Injury Network and High Quality Bike Network plans.

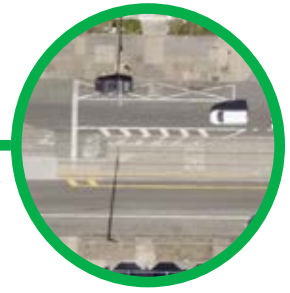
Routes

Corridor Serving: 56, 53, H, XH

Connecting: BSL, 23, 16, 4, 2, 47, 57



Legacy trolley track east of Broad not utilized by transit



Buses stop every block, mostly nearside

High density of side-street intersections between 10th and 5th

Speeds are slowest between 2 and 4pm

Planned transformation of Broad, Germantown, and Erie Intersection



Narrower cross-section west of Broad Street; buses are fast and frequent and see very high ridership

Transfer at Venango Loop to Direct Bus Phase B, providing express service to Wissahickon Transportation Center

Erie Avenue
TOOLKIT IDEA 1

Hunting Park to Broad

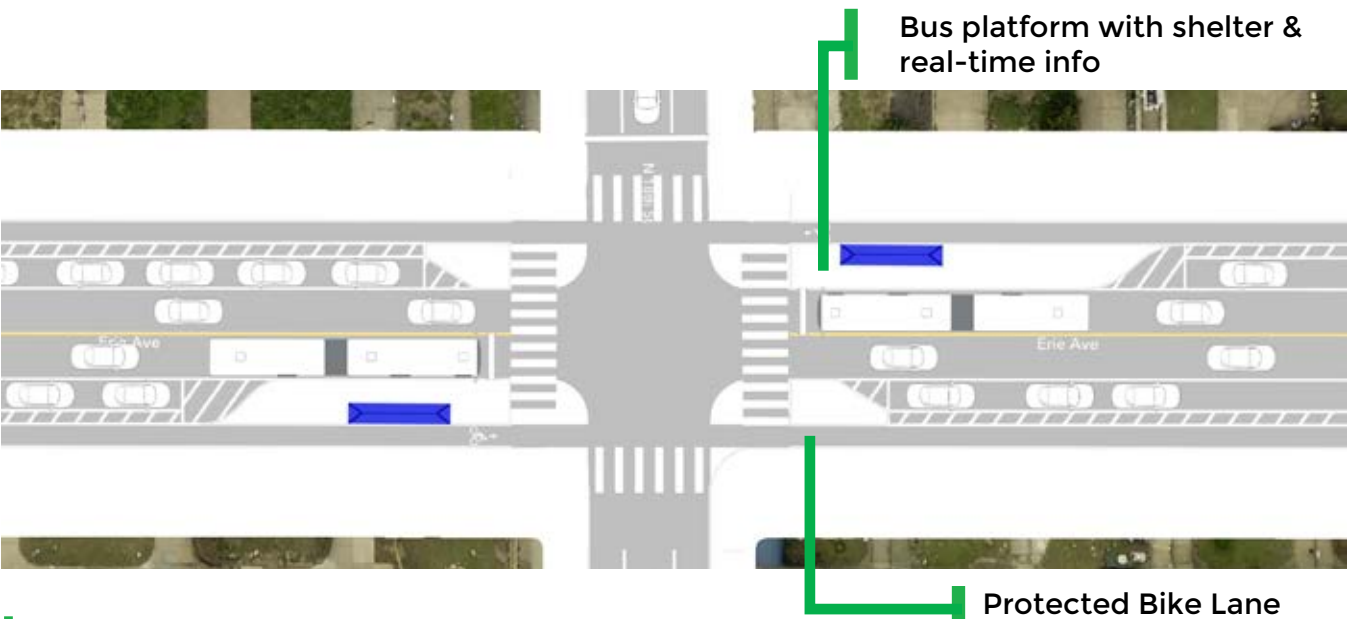
West of Broad Street, the 50' wide street would allow for protected bike lanes as well as bus boarding bump-outs with bus shelters. This configuration would keep traffic moving the same as today, but the slightly narrower moving lanes would mean cars speed less frequently, calming neighborhood traffic. The bike lanes would connect to the improvements at Broad, Germantown, and Erie. Long-term, bike lane improvements on Erie would provide a critical connection between the Tacony Creek trail and the Schuylkill River Trail, and would make it easier to access shift-jobs at Hunting Park industrial businesses.

The bus platforms would allow the buses to stop in-lane, meaning that they don't have to slow down and re-enter traffic. Bus shelters could be added, and real-time information would tell riders how long they have to wait for the next bus. Intersections without stops would have Transit Signal Priority.



Bus boarding island illustration (NACTO)

Idea for Cross-Section with Bus Platforms



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$	7%	\$	Upgrade of existing bike lane and added pedestrian safety

Erie Avenue

TOOLKIT IDEA 2

Broad to Front

Idea 2 would bring major investments to Erie Avenue, priming the corridor for something like Direct Bus or BRT service in the future. The City and SEPTA would work together to identify branding opportunities of bus facilities provided at this quality.

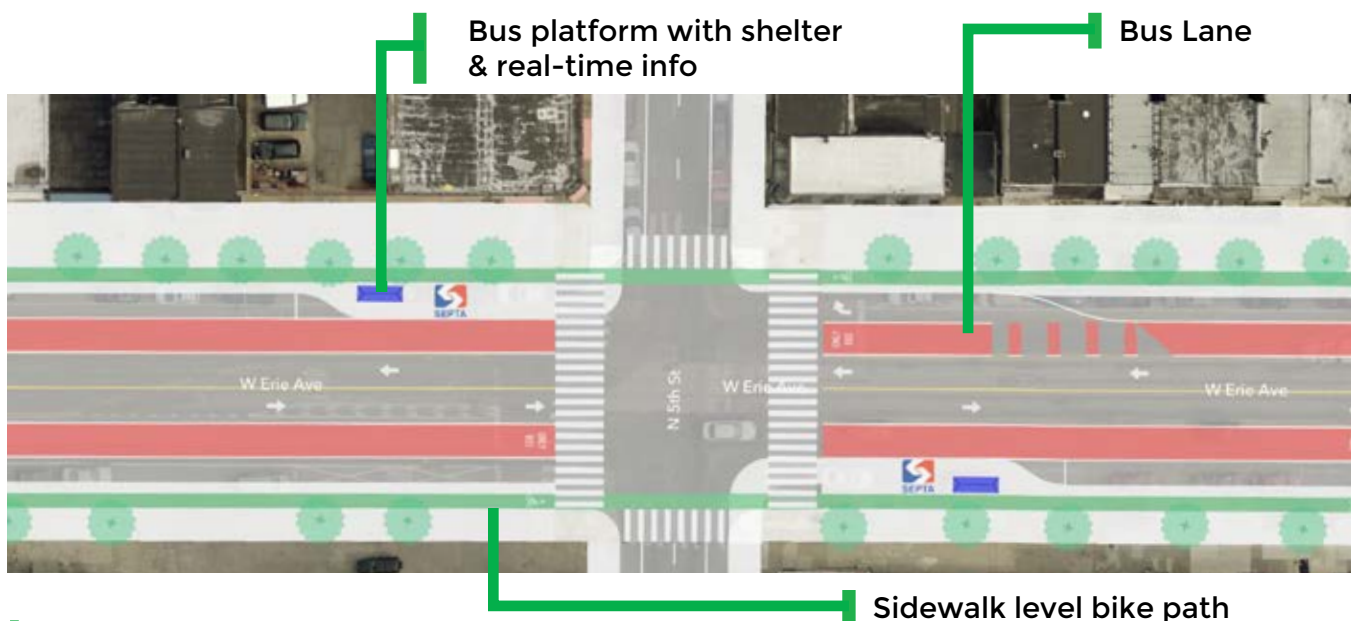
On the west side of Broad, this would carry-over Idea 1, with bus boarding islands and protected bike lanes.

On the eastern side of Broad Street, where the street is wider and the trolley track is in the median, the corridor would be rearranged to put the transit lanes curbside. This will create space for larger, ADA-compliant boarding facilities that are more comfortable to wait at, while also creating bus lanes.

A sidewalk level bike path would be extended from Broad and Erie towards the east, where it could eventually connect with the Tacony Creek Trail. Trees would be replanted on Erie Avenue, a major priority to mitigate the hot and rising temperatures in the neighborhood.

Another possibility would be to keep the center-running configuration and create new, ADA-compliant boarding islands. This would eliminate right-turn conflicts and retain existing historic resources but require passenger to wait on a platform with traffic passing behind them.

Idea for Cross-Section with Bus Lanes



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$	25%	\$\$	New bike network connection; pedestrian safety

CORRIDOR CONCEPT

52ND STREET

Length
2.4 Miles

Stop Spacing
550 Feet

Ridership
12,803 People

Low-Income Riders
4,966 People

Average Peak Hour Speed
7.8 mph

Bus Trips Per Day
331



Corridor Overview

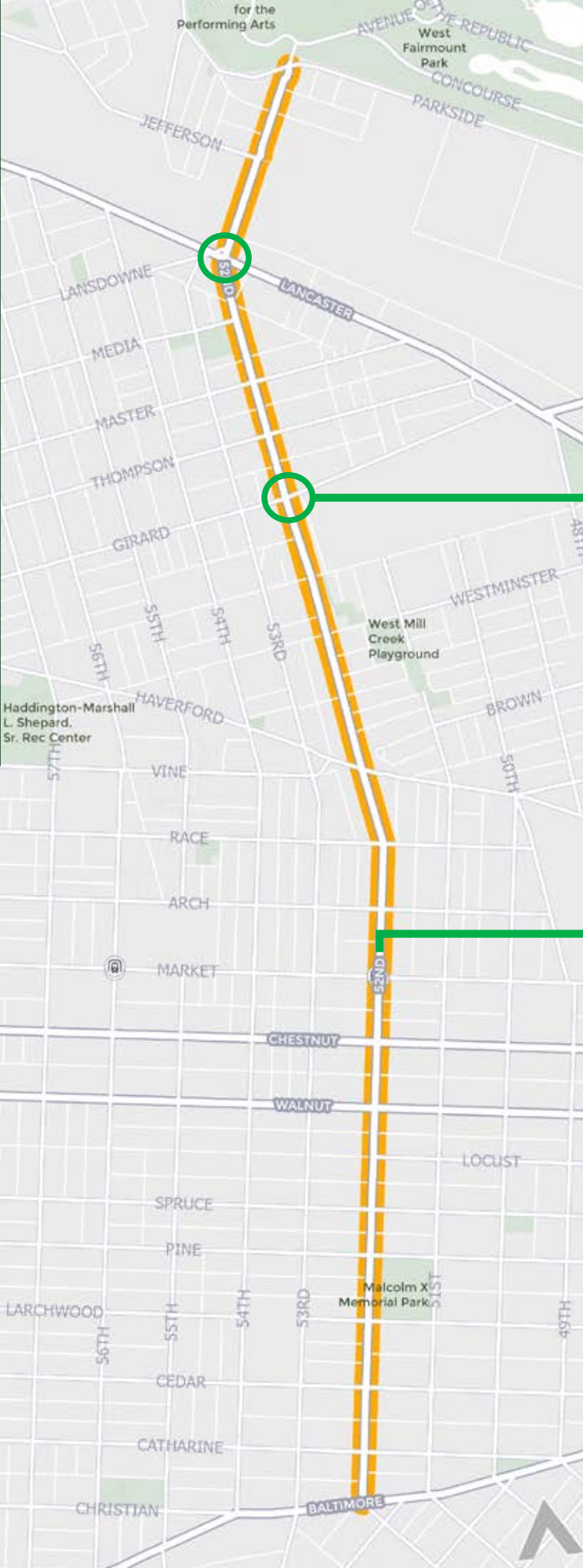
The 52nd Street corridor extends from Baltimore Avenue north to Parkside Avenue. The corridor experiences high transit ridership provided by the Route 52, which serves residential, business and institutional uses along 52nd Street. There are 331 trips per day with peak ridership occurring between 11 a.m. until 2 p.m.

The corridor is on the High Injury Network.

Routes

Corridor Serving: 52

Connecting: 34, 42, 21, 31, MFO, 30, 15, 10, 40



One travel lane each direction, center turn lane and parallel parking



Eight key transfer locations to trolley and bus

44 stops with average bus speed of 8 mph.

Most intersections are signalized, with dwell time affecting bus speed

High volume of transfers to Market Frankford Line at 52nd Street Station



Ongoing planning for streetscape improvements (Market to Pine)

52nd Street

TOOLKIT IDEA 1

Better Boarding and Streetscape Improvements

Idea 1 provides a treatment for the 52nd Street Commercial Corridor and is largely based on work proposed by the Enterprise Center.

At the 52nd Street Station, a level boarding platform would be built as an extension of the sidewalk to accommodate heavy volumes of passenger volumes and increase the comfort for riders. While the Market Street stops have highest volumes on the corridor, this same treatment could be replicated at several other high usage locations.

Streetscape improvements would include:

- Medians and median tips where possible
- Curb extensions/bumpouts
- Street trees and sidewalk repair
- New bus shelters and real-time information displays, potentially providing WiFi

Today, there are a mix of nearside and farside bus stops on the corridor, which will need to be reevaluated. Nearside stops will allow for bumpouts, larger passenger waiting areas, and potentially new shelters, but farside stops benefit from TSP and are faster in some scenarios. Further analysis is needed to make this tradeoff decision.



New Bus Shelter | Philadelphia

Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$	5%	\$	Improved streetscape for commercial corridor

52nd Street

TOOLKIT IDEA 2

Faster and More Reliable Service

The first idea is to improve reliability and speed up transit through residential areas, primarily above Market Street. Consolidating and upgrading stops will improve the passenger experience and bus speed and reliability. Modernizing the Transit Signal Priority (TSP) could further improve travel time for bus riders.

The focus of this idea is to:

- Balance stops and go to every-other-block stop spacing
- Modernize TSP infrastructure
- Install bus shelters and other passenger amenities as warranted by ridership

Example Intersection with Farside Stops



Metrics

Capital Costs	Travel Time Savings	SEPTA Savings	Other Benefits
\$\$	13%	\$\$	

CORRIDOR CONCEPT

ROOSEVELT BOULEVARD

Length

13.56 Miles

Stop Spacing

739.2 Feet

Weekday Ridership

28,465 People

Low-Income Riders

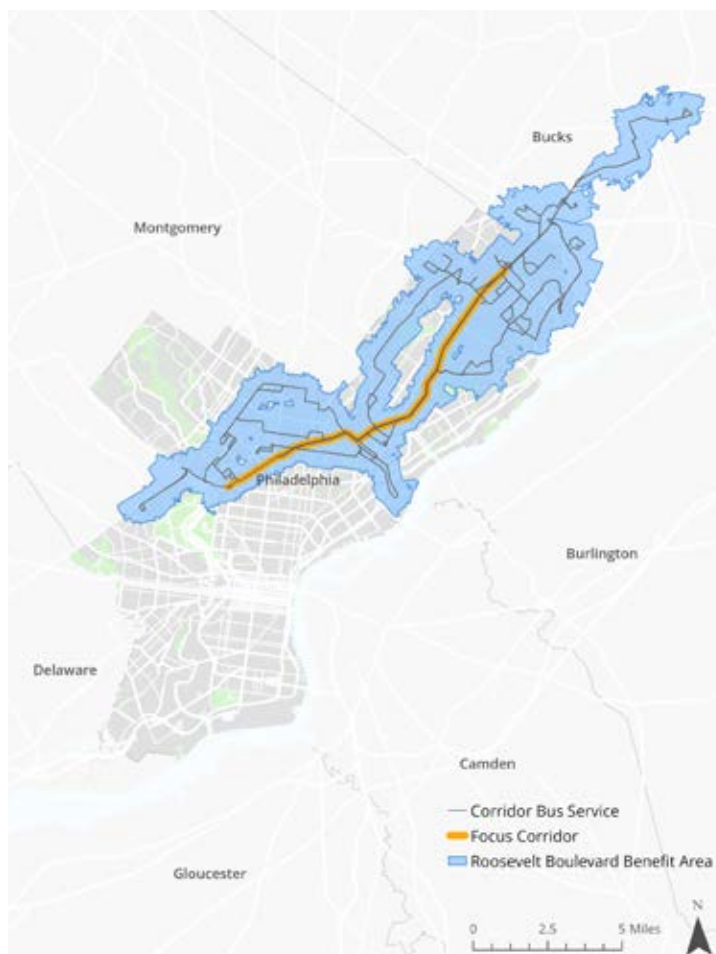
8,619 People

Average Peak Hour Speed

15.6 mph

Bus Trips per Day

1,252 Trips



Corridor Overview

Roosevelt Boulevard, stretching 14 miles from Broad Street to Bucks County, is one of the highest trafficked corridors in Philadelphia. The design of Roosevelt Boulevard currently gives preference to the 90,000 vehicles that pass through the Boulevard on a daily basis. Roosevelt Boulevard is one of the most dangerous corridor in Philadelphia, accounting for about 8% of all fatal and injury crashes in the city. The corridor provides connections to the Broad Street Line at Hunting Park station, as well as the Market Frankford Line and 18 other bus routes at Frankford Transportation Center.

The corridor is on both the High Injury Network and High Quality Bike Network plans.

Routes

Corridor Serving: 1, 8, 14, 20, 50, 56, 67, 75, J, K, R, Boulevard Direct Bus

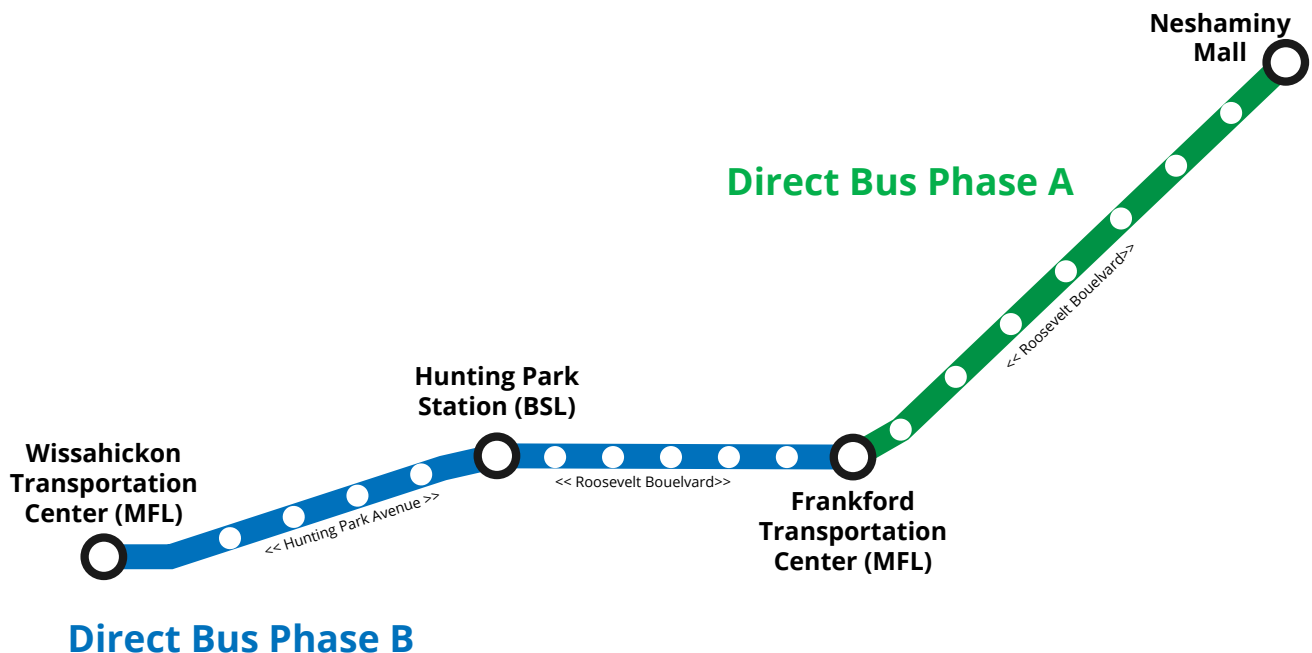
Connecting: MFL, BSL

Direct Bus Phase B

Boulevard Direct, serving Roosevelt Boulevard between Frankford Transportation Center and the Neshaminy Mall, was launched in the fall of 2017 operating under the new SEPTA DIRECT BUS brand. Boulevard Direct service offers an efficient and reliable travel options through a dedicated fleet of buses with the new DIRECT Branding. This is an enhancement to SEPTA Route 14 bus service which operates in the same 10-mile stretch with the average end to end trip taking about 47 minutes while making 80 stops, compared to 30 minutes on the Direct Bus. The service provides 10 new stations, with new plazas and curbs, ADA ramps, bus shelters that serve both Route 14 and Boulevard Direct customers, free standing bench seating, pedestrian-scale lighting, landscaping, solar trash and recycling receptacles and way-finding signage.

Building on the success of Phase A of Direct Bus, SEPTA and the City are working to implement Boulevard Direct Bus Phase B. This phase will include 11 new local/Direct bus stations at signalized intersections along the Roosevelt Boulevard and Hunting Park Avenue, connecting to Wissahickon Transportation Center.

Direct Bus Phase B will make significant improvements to existing local bus stops. Both the existing and new bus stations will include new plazas, a bus shelters, seating, pedestrian-scale lighting, and trash-recycling combo receptacles. The stations are also being prepared for real time bus arrival information. During weekday peak rush hour travel (7 to 9 a.m. and 3 to 6 p.m.), Boulevard Direct Phase B buses are expected to run every 10 minutes, with service every 15 minutes during most other periods. All regular SEPTA fares will be accepted on Boulevard Direct.



Roosevelt Boulevard

Local Bus Stop Improvements

As one of the improvement priorities for 2025, the City built a strategy for local bus stop improvements, first by completing a visual audit and bus stop ridership analysis to propose recommendations for changes at each of the existing 142 local bus stops along Roosevelt Boulevard, from Broad Street to the Philadelphia County line shared with Bucks County.

Of the 142 bus stops on Roosevelt Boulevard, 53 (44%) were classified as “Improvements Planned or Previously Completed.” This is in addition to the 24 stops (17%) that will be or have been transformed into Direct Bus stations. To improve rider safety, 37 stops (26%) are proposed to be eliminated; however,

these stops serve only 8% of boardings per day. Taken together, improved local stops and Direct Bus stations will serve upwards of 95% of riders on Roosevelt Boulevard after riders shift from eliminated stops to adjacent, improved stops.

Prior to making any changes to the local bus stops, the City and SEPTA will communicate and engage with the public. Once the improvements are complete and recommended bus stops are eliminated for safety, almost every rider will board a bus at either a Direct Bus stop or an improved local bus stop. This will be a significant improvement for the over 20,000 people who ride the bus along Roosevelt Boulevard.

Local Bus Stop Improvement Program Proposed in Route for Change

	Number of Stops	Percent of All Stops	Number of Daily Boardings	Percent of Daily Boardings
Direct Bus	24	17%	13, 464	58%
Improvements Planned or Previously Completed	62	44%	7,090	31%
No Change	19	13%	739	3%
Stop Elimination	37	26%	1,791	8%



The City of Philadelphia’s Office of Transportation, Infrastructure, and Sustainability was responsible for managing the Roosevelt Boulevard “Route for Change” Program, a 3-year planning effort funded by a USDOT TIGER planning grant, the City of Philadelphia, SEPTA, and the Pennsylvania Department of Transportation (PennDOT). While many plans have tried to address

how to fix the Boulevard, safety is still a significant concern. The current conditions of the Boulevard do not provide safe access or connectivity to the surrounding neighborhoods and businesses, and crossing the Boulevard by foot to access transit and destinations is a challenge for all. The Route for Change report, to be released in early 2021, provides a series of short term and long term improvement plans that will help create a more inviting corridor; one that will be safer, more accessible, and more reliable for all users including residents, pedestrians, cyclists, transit users, motorists, and visitors.

Roosevelt Boulevard

Implementing Business Access and Transit (BAT) Lanes

Another improvement priorities for 2025 on the Boulevard is the installation of Business Access and Transit Lanes. BAT lanes are expected to reduce bus travel time along the Boulevard, contributing significantly to the improvement of accessibility and reliability for transit riders. The right most outer (local) lane in each direction will become a bus and right-turn-only lane for both sections of direct bus. BAT lanes are not recommended between Pratt Street and Bustleton Avenue due to low number of buses traveling in this segment of the Boulevard.

BAT lanes implementation is broken into two phases:

Phase A - The City of Philadelphia, PennDOT, and SEPTA are working together to install BAT lanes between Bustleton Avenue to just north of Southampton Road.

Phase B – BAT lanes are proposed between 9th Street and Pratt Street along the southern end of the Boulevard. Additional analysis and community outreach is recommended in order to better understand the BAT lane's impact to on-street parking and vehicle congestion.



Curbside Bus Lane | 79th ST, New York

ACKNOWLEDGMENTS

The Transit Plan is the result of the efforts of many people working towards a City Connected by Transit. We would like to thank our partner agencies who helped draft and review the Transit Plan:

- SEPTA
- PennDOT
- DVRPC
- DRPA/PATCO
- New Jersey Transit

We would like to thank our partners who helped inform the Transit Plan:

- Transit Forward Philly
- 5th Square
- Bicycle Coalition of Greater Philadelphia
- Clean Air Council
- AARP
- Center City District
- Economy League of Greater Philadelphia
- Mt. Vernon Manor CDC/NAC
- Asociación Puertorriqueños en Marcha (APM)
- Strawberry Mansion CDC
- SEPTA Youth Advisory Council
- Sierra Club / Philadelphia Climate Works
- Mantua Civic Association
- North Philly Peace Park
- Sustainable Business Network of Greater Philadelphia
- Arts and Business Council of Greater Philadelphia
- People's Unemployment Project (PUP)
- Scribe Video
- Community College of Philadelphia
- University of Pennsylvania
- Drexel University
- Temple University
- Liberty Resources Group
- Tri-State Transportation Campaign
- Disability Rights PA
- SEPTA Citizens Advisory Council
- Royal Little Sisters
- SEAMAAC
- Alex Dody (Transit Advocate)

The Transit Plan was developed by the Office of Transportation, Infrastructure, and Sustainability (OTIS) with contributions from the following City agencies:

- Department of Streets
- Mayor's Office
- Mayor's Office for People with Disabilities
- Managing Director's Office
- Office of Sustainability
- Philadelphia City Planning Commission
- Department of Health
- Department of Commerce
- Department of Records
- Office of Community Empowerment and Opportunity

OTIS would like to thank staff from the following firms who contributed to the Transit Plan:

- Four-Square ITPD
- Whitman, Requardt, and Associates
- Hurley Franks
- Urban Engineers
- Global Strategy Group
- NACTO

OTIS would also like to thank the Bloomberg Foundation, National Resources Defense Council (NRDC), and the American Cities Climate Challenge for funding the surveys, focus groups, and bus priority toolkit.

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