



HIGH INTENSITY MOBILITY CORRIDOR STUDY



March 2024

Prepared for:



David Juba
Planning Manager
Djuba@rabbittransit.org

415 N. Zarfoss Drive
York, PA 17404
www.rabbittransit.org/

Prepared by:



Christof Spieler, PE, LEED AP, AICP
cspieler@huitt-zollars.com
713.622.1180

1001 Fannin Street Suite 4040
Houston, TX 77002
www.huitt-zollars.com

TABLE OF CONTENTS

Introduction	04
System Characteristics	06
Comparable Systems	12
Corridors	14
Process and Methodology	16
Big Ideas	20
Harrisburg Corridors	24
York Corridors	56
Regional Corridors	76
Conclusion	82

INTRODUCTION

rabbittransit is thinking toward the future of its bus network and how buses can provide reliable, frequent, high quality service across its service area. High Intensity Mobility Corridors are intended to be the backbone of this service. These are corridors that combine service improvements, like more frequent service, with improved infrastructure, like high quality bus stops and transit priority, to meet the travel needs of the region. Fundamentally, a HIMC is intended to connect critical destinations across the region with high quality service that people can rely on for their daily travel needs.

This project focuses on potential areas whose land use, travel needs, and destinations may support High Intensity Mobility Corridor (HIMC)-level service. This document is intended to serve as a long range master plan, providing rabbittransit with options for future study and project development.

It is not intended to serve as an exact roadmap. Each corridor in this document needs additional study to fully understand the travel demand and capital needs for each corridor. Some corridors may be deemed not viable and future study may even find new corridors not considered here. However, this is a starting point for rabbittransit to begin planning for the high quality service that will make the bus a reliable option for all trip types all across the region.

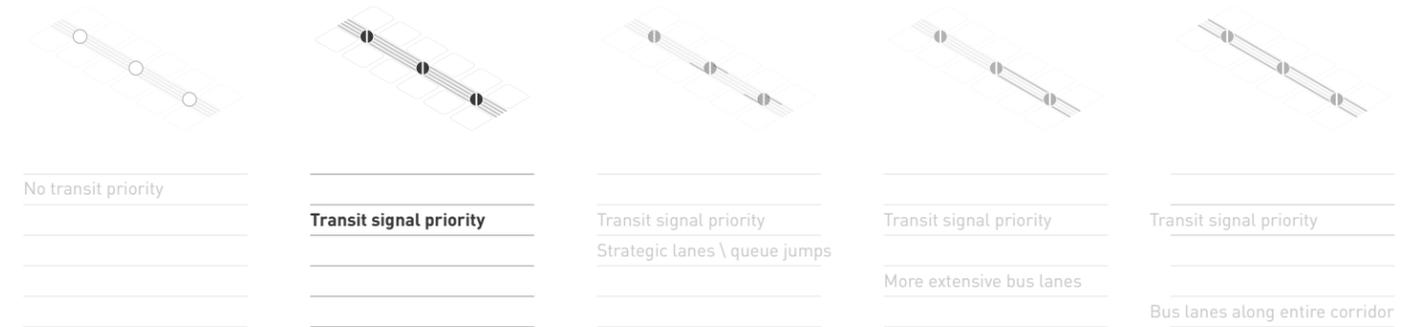


SYSTEM CHARACTERISTICS

A High Intensity Mobility Corridor (HIMC) consists of high frequency service and more amenities than traditional bus service, but this can mean a variety of things.

rabbitransit has the opportunity to determine how to balance transit investments and system characteristics when creating High Intensity Mobility Corridors in central Pennsylvania. The standards below set a realistic policy for HIMC planning in the region, describing a minimum that all service in these corridors should meet. However, some corridors, or portions of corridors, may warrant even more investment than laid out here. These standards consider how to best align rider needs with rabbitransit’s goals for future service.

TRANSIT PRIORITY

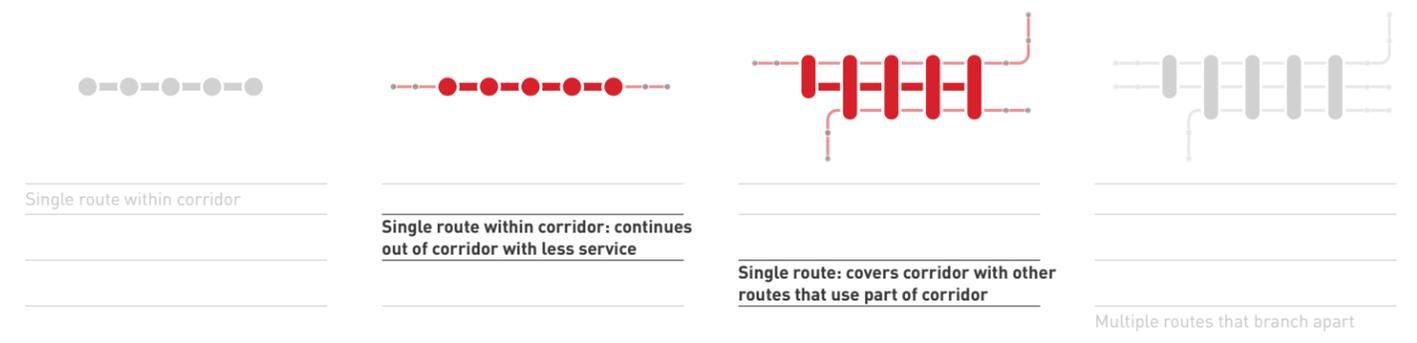


Transit priority investments are a significant part of what sets a High Intensity Mobility Corridor apart from a regular bus route. Transit priority investments can make a bus reliable and fast, increasing operational efficiency and improving the rider experience.

rabbitransit should pursue transit signal priority as a minimum priority investment. Transit signal priority is the prioritization of buses at intersections, usually through the use of traffic signal timing adjustments. For example, when a bus is detected at a transit priority intersection, the light may turn green earlier or hold the green light longer for the bus to get through the intersection. Transit signal priority interventions can transform a corridor from just a high-frequency bus into an efficient and reliable service that transports passengers to their location faster than a standard bus.

When necessary, queue jump lanes should also be considered. Queue jumps are short bus lanes that occur right before an intersection. These jump lanes allow the bus to get in front of cars in the intersection and are paired with a transit priority signal that allows the bus through the intersection before the rest of traffic can pass through. Queue jump lanes can either be a dedicated bus lane or can be built into a right-turn lane, where buses are the only vehicle allowed to go straight. These interventions are particularly useful when a bus has a curbside stop in a right turn only lane and would normally need to merge into a different lane to continue straight through an intersection. They can also be helpful in bad pedestrian environments, where farside stops are desirable for getting pedestrians as close to a safe crossing as possible but often cause operational issues for the bus. A queue lane can be used to get the bus in the rightmost lane, where it can quickly get through the signal and to the farside stop across the intersection.

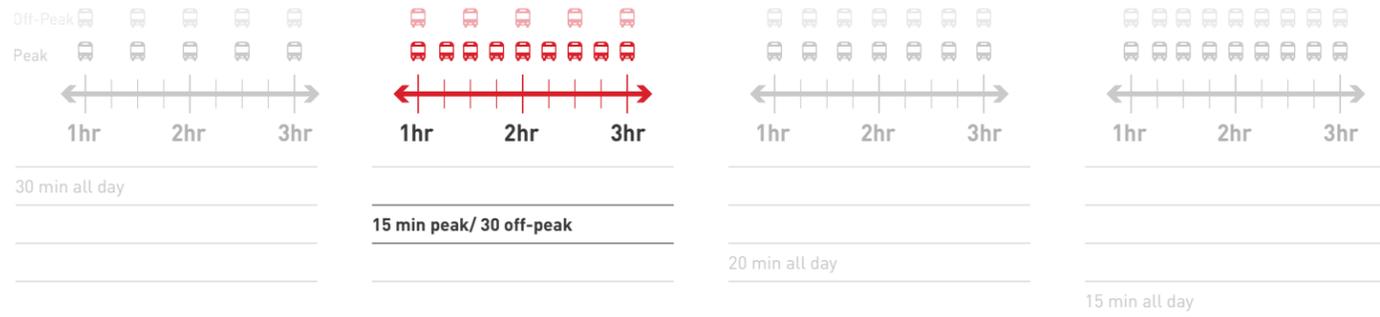
ROUTE STRUCTURE



Route structure is less of a standard, but it is nonetheless a decision that rabbitransit needs to make for each corridor. An HIMC is functionally a series of roadways where service is high frequency and capital investments make the bus experience better, but service can look different on these corridors. In some cases, a single route can use the corridor. In other cases multiple routes can overlap in the corridor, joining and leaving the corridor in different places. The decisions surrounding route structure often depend on the area being served by the corridor and its travel needs. A shared corridor may lead to less route coverage in other areas or be more confusing for riders. On the flip side, more routes in a corridor means more frequency and more routes benefiting from infrastructure that makes riding the bus a fast and convenient experience.

These decisions should be made on a corridor-by-corridor basis, especially as further study is done on route overlap and transit priority investments. **However, all rabbitransit HIMCs should have at least one core route that travels the corridor from end to end.** Depending on which corridors are selected for further study, supplemental bus routes will likely utilize corridor-specific transit priority improvements to provide additional service to areas not served by the main corridor transit route. Some corridors will likely have less frequent variants that continue beyond the corridor, providing more door to door service for riders.

FREQUENCY



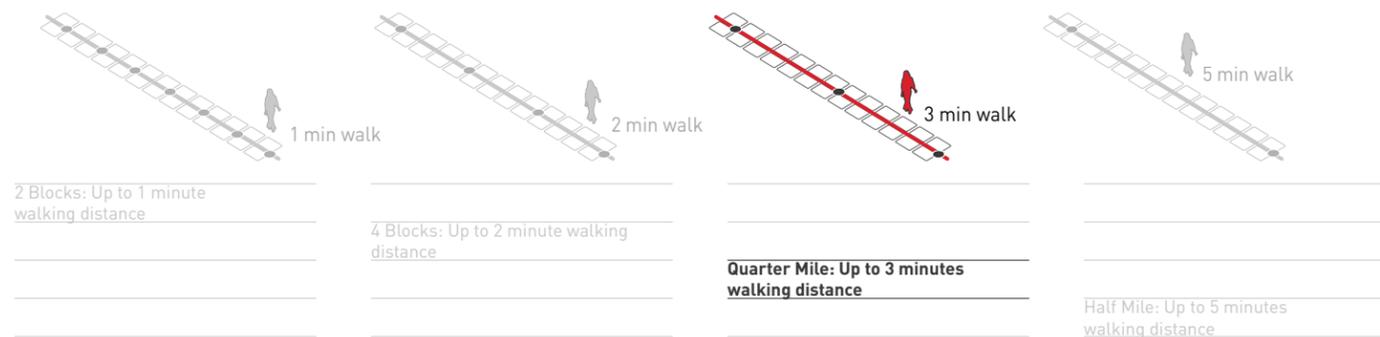
Bus frequency can make an incredible difference in the use of public transit as a reliable transportation option. Buses that run frequently allow individuals the freedom to plan their day with assurance that the bus will be there when they need it, as opposed to having to plan trips around bus schedules. Many HIMC’s key feature is providing more frequent service compared to a standard bus route.

For the rabbitransit network, High Intensity Mobility Corridors should have service every 15 minutes at peak and every 30 minutes off-peak. Frequency can be created by a single route, or by a variety of routes that overlap for the entirety of the corridor. For example, if two half-hour routes travel on the corridor before separating, where they overlap would have fifteen minute frequencies if scheduled well.

While a standard of 15 minutes at peak time and 30 minutes off-peak is a significant improvement from current 30 to 60-minute headways on most rabbitransit routes, it may not fit the needs of all rabbitransit riders. Current changes in workday schedules for remote work or industrial jobs that do not fit a standard schedule mean travel times no longer align with a standard travel window for all commuters. Additionally, access to locations like shopping centers or grocery stores may not be linked to a workday schedule, with riders needing more frequent access on a HIMC. For this reason, the 30 minute off-peak should be maintained as a minimum service level offered in a potential corridor, with a goal of offering 15 minute service all day, when possible.

Currently, the 1E bus in York has been running a pilot schedule of 15 minute peak frequency, with 30 minute service off-peak on nights and on weekends. This pilot test-case affirms that a 15 minute peak schedule is well-liked by riders and that it is operationally feasible for rabbitransit to run this service.

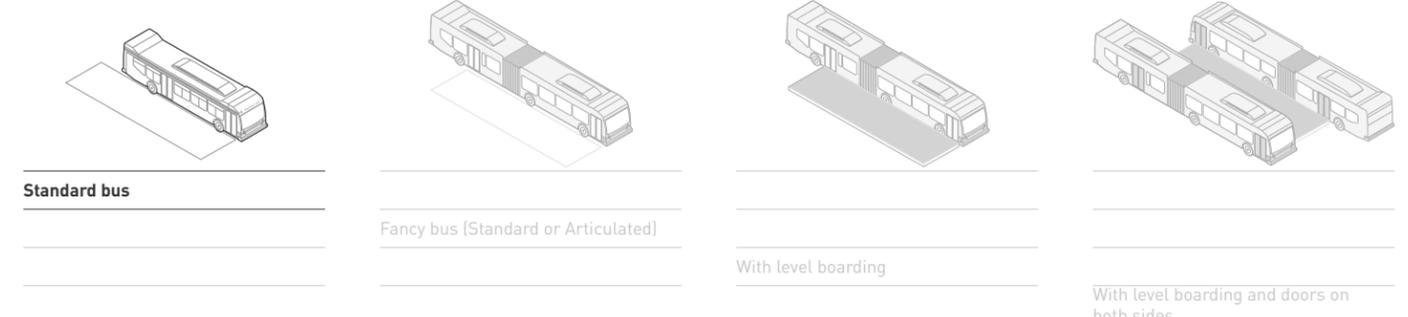
STOP SPACING



Determining a standard for distance between stops is useful for guiding investment decisions. An increased number of stops may reduce walk times for riders, but it may also require a compromise on stop quality or service quality. The more a bus stops, the longer it takes for a bus to run its route. Each stop adds time as the bus stops, pulls over, allows riders on board, collects fares, and then remerges into traffic. When the bus is able to run on a more frequent and reliable schedule with reduced dwell times, walking a short way to the nearest bus stop becomes a worthwhile trade-off. Additionally, the more stops a system has, the less it can invest in each individual stop with a fixed stop budget. Having fewer stops that can be heavily invested in will make for a better rider experience.

The recommended standard for the rabbitransit high-intensity corridor is a quarter mile apart, or approximately a maximum of three minutes walking distance in either direction before reaching your nearest stop. This stop distance may vary depending on road conditions and pedestrian access. For example, an express line may not stop every quarter mile or a bus may not stop if there are not any notable nearby destinations or neighborhoods in an area. There are also some cases where stops may be closer together, especially in areas that have destinations with particular needs, like medical centers. This standard is not a hard and fast rule, but rather a guideline for service decisions that can be adapted to specific land-use contexts.

VEHICLES AND BOARDING

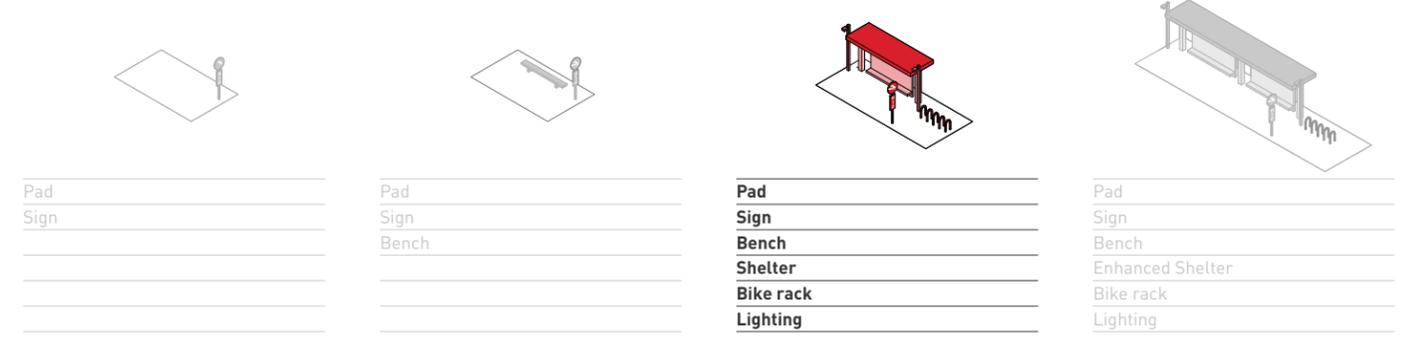


It is also important to consider vehicle types and associated boarding styles when designing HIMCs. Vehicle types can be chosen for operational reasons (such as allowing level boarding) or for aesthetic reasons (to help visually differentiate service and make it more appealing for riders).

rabbitransit will use its standard buses and utilize curb level boarding at most stops. Using the same bus fleet as the rest of its service means that it is easier for rabbitransit to maintain a fleet and replace buses when repairs are needed. New buses would mean that rabbitransit needs to maintain two different fleets that are not interchangeable when there are service issues and require different parts for maintenance. However, this also means that the buses will not be able to accommodate level boarding, as this requires a specific bus type with a specific ADA ramp style.

rabbitransit’s current buses, however, could work with near-level boarding. Near-level boarding brings curb height up to the range of 8-11 inches, allowing for faster boarding by reducing the height distance to the bus, but still works with the traditional ADA ramp for passengers to walk or wheel onto the bus. Near-level boarding provides a nice intermediate option, because it works with rabbitransit’s existing fleet while still providing boarding time savings for riders.

BUS STOPS

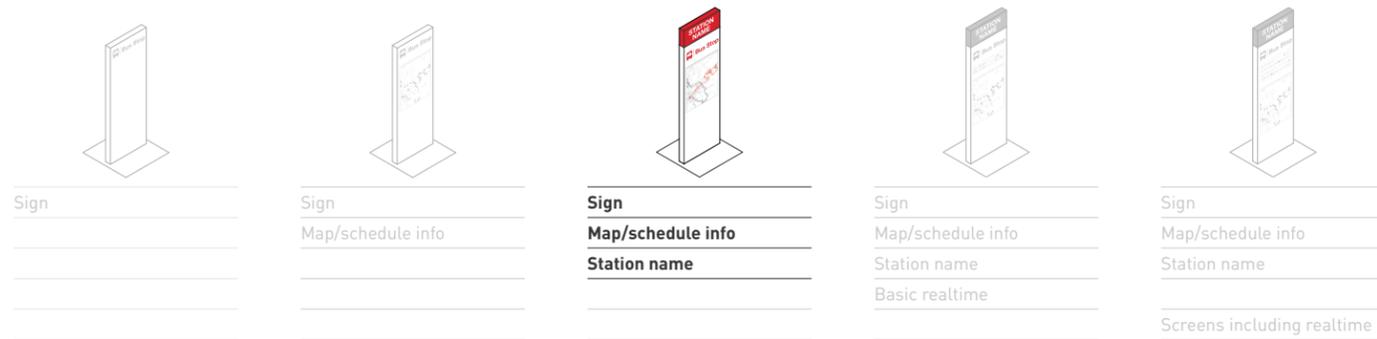


Bus stops are a key feature when planning corridor branding and passenger amenities. Due to a potential transit corridor’s high-ridership, investing in high-quality stops will provide comfortable waiting areas for riders and also advertise the high-intensity corridor to non-riders who may consider using the bus in the future.

All rabbitransit stops along the high-intensity corridor should have ADA compliant concrete pads and a bus shelter. These stops will serve a large number of riders who would benefit from a safe and comfortable waiting space protected from the wind, rain, or snow. At particularly high ridership stops, rabbitransit should consider going above and beyond this, which could include seating, larger than standard bus shelters, generous ADA compliant concrete pads, bike racks, and more.

A full bus shelter may not be feasible in every stop location considered. In some cases, a bus shelter may cause ADA issues for a sidewalk, and in such cases rabbitransit should consider creative solutions that still create a good transit and pedestrian experience.

PASSENGER INFORMATION

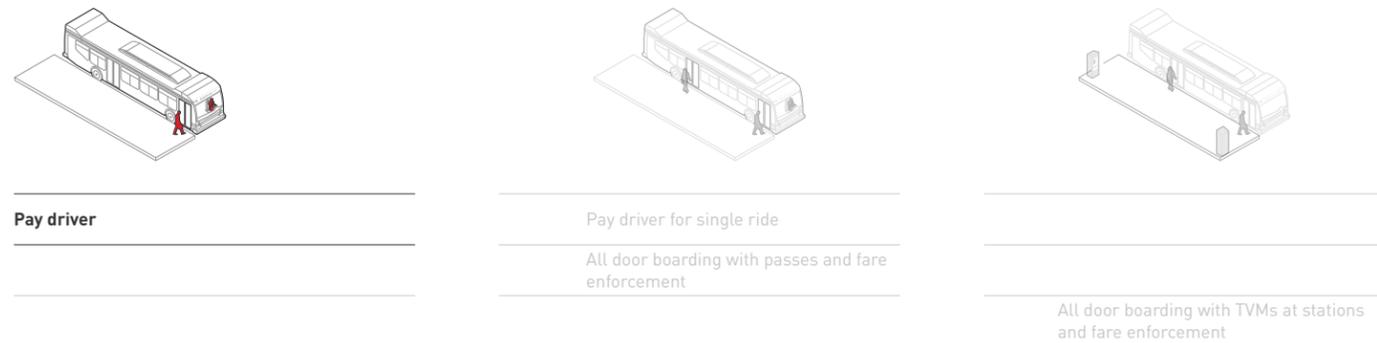


With advancements in information-sharing technology, HIMCs are an opportunity for rabbittransit to expand upon their passenger information standards at each stop. Currently, schedule and map information is not available at every rabbittransit bus stop, and stops generally do not have route numbers specified. However, online route maps, schedules, and real-time bus status are available through the rabbittransit and CAT websites.

The standard for passenger information along a High Intensity Mobility Corridor should be at minimum a printed map and schedule for the relevant routes affixed to the bus shelters at each stop. These printed posters may also include information for how those with smartphones can access route, schedule and real-time bus information online. This information is important for riders who are planning their trips around the rabbittransit schedule, especially when traveling during off peak times when buses may arrive less frequently.

Ideally, future bus stops may include realtime information in key locations. Knowing wait time can be extremely reassuring for riders, even when the printed schedule is displayed. Especially at 15 minute frequencies, riders should not be expected to look at a printed schedule, and dispatching should be more focused on headway management than schedule adherence. As there is further development of display technology, such as e-ink, displaying real-time information is becoming cheaper and easier to install and maintain. Keeping these options in mind when moving forward may lead to improved passenger experiences.

FARE COLLECTION

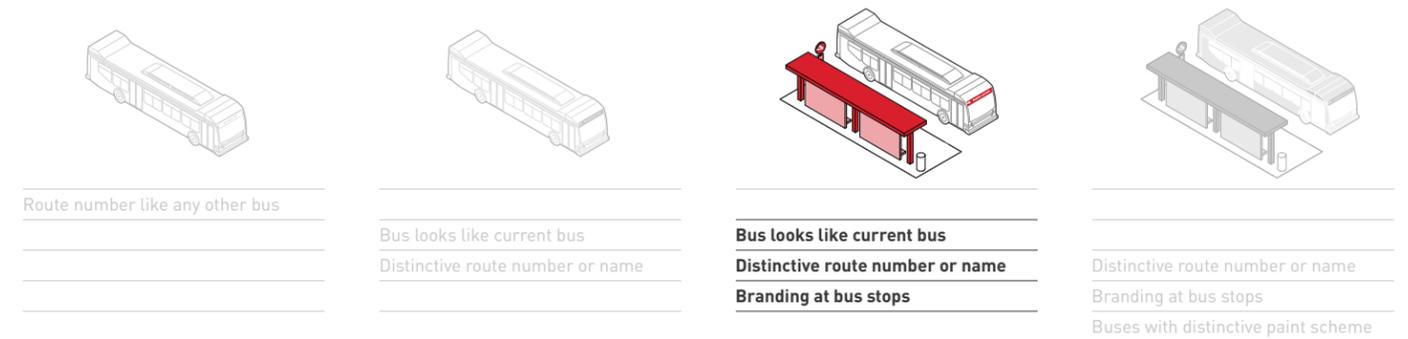


Some fare collection approaches allow riders to board at all doors, reducing dwell times at stops. However, these fare collection approaches usually require new technology and a change in fare policy to move towards a validation based approach that requires enforcement from the agency.

rabbittransit buses currently accept and validate payment with drivers at the front door, and this will continue to be true for HIMCs. As rabbittransit improves its fare collection system, an emphasis will be placed on mobile and online payments, but riders will still board through the front door. Prepaid ticket validation takes less time at each stop than cash fare payment, streamlining the boarding process.

Currently, rabbittransit is investigating its options for the future of fare payment. Improving fare collection technology would aid in ease of boarding and eliminate the drivers' responsibilities as a vendor at each stop. As new fare collection technology options are explored, reducing the amount of time the bus must stand at each stop should be prioritized, as well as ease of access for riders. When fare collection is simple, easy and streamlined, buses will run faster and more reliably.

BRANDING



Branding is an important part of the success of High Intensity Mobility Corridors. It should be clear that this service is different, providing an exciting new level of service. Branding can either occur on buses themselves or at each bus stop on the corridor.

Buses along the high-intensity corridor can be differentiated from standard buses through distinctive route numbering or naming or distinctive paint. However, distinctive paint schemes limit bus use to the single corridor. Riders may be confused to see a distinctive high-intensity bus along a non-corridor route. **Rabbittransit will focus its branding effort on stops and on distinct route naming schemes, as opposed to using branded buses.**

Distinctive stop branding effectively communicates to the public which stops provide frequent service. It will be easy to find the stops and easy to know what service uses those stops. A unique name or number for the routes that use these corridors will make it obvious to riders which buses they can expect high frequency service on, especially in locations where routes overlap. Bus stop branding lets riders know where they need to go to wait for their bus, making it the most effective and flexible branding tool for rabbittransit to implement along the selected corridor.

COMPARABLE SYSTEMS

Systems all over the country operate their own versions of HIMCs that all have a variety of different standards. In most cities, the features that separate these corridors from regular bus service include things like frequency, stop spacing, route structure, transit priority investments, vehicle and boarding type, bus stop attributes, distribution of system information, fare collection methods, and distinctive branding. Not all of these features are implemented across all systems, but many cities have selected key attributes that make their high-intensity bus transit system unique. rabbittransit's HIMC may share certain characteristics with Bus Rapid Transit (BRT) systems, but the High Intensity Mobility Corridor will not necessarily provide the same amenities as a BRT system.

VELOCIRFTA

The Roaring Fork Transportation Authority's VelociRFTA was one of the first rural bus rapid transit systems. This Colorado rapid transit system runs along a 40+ mile corridor, connecting Glenwood Springs and Aspen and providing tourist and commuter access to the ski and snowboard slopes between the two Roaring Fork Valley cities. VelociRFTA does not utilize any transit priority measures on its highway route, but operates on a frequent 12 minute peak, 30 minute off-peak schedule. With a unique name, VelociRFTA offers distinctive branding on buses and at high-quality stops. Stops along this system are about ½ mile apart within Aspen and Glenwood Springs while rural stops are farther apart, but include shelters, bicycle racks, and basic real-time displays. Tickets can be bought at ticket vending machines (TVMs) at bus stops, ensuring that boarding is quick and efficient.

VelociRFTA officially began public service in 2013, over a decade after the project was initially conceived. VelociRFTA BRT was first proposed in 2001, but delays in project development, planning and funding pushed back design and construction phase work until in 2010. About half of the \$46.2 million project was funded with federal funding from the Federal Transit Administration's Very Small Starts Capital Investment Grant program. The project included the purchase of 18 new low-floor compressed natural gas buses and the construction of 7 new bus stop stations and 3 park and ride lots. Within VelociRFTA's first five years of operation, Roaring Fork Transportation Authority's ridership increased by 25%.

If rabbittransit chooses to utilize rapid bus service as a regional connector, VelociRFTA may be used as a model for a system (or for particular corridors) that prioritizes express travel along the highway. For rabbittransit, this might look like a high-frequency line between Harrisburg and York or Gettysburg and Lancaster. Depending on service frequency, rabbittransit may also want to align their standards for bus stops with Roaring Forks Transportation Authority. VelociRFTA prioritizes connectivity over frequency of service, but this is paired with higher quality bus stops that are a comfortable and safe space to wait for a slightly longer period of time. This is one of the investment priority decisions rabbittransit might consider when deciding how to approach questions of priority for various HIMC amenities.



RIPTA PROVIDENCE DOWNTOWN CONNECTOR

The Providence Downtown Transit Connector is a 2-mile corridor running between the Providence Train Station and the Rhode Island Hospital. This corridor includes both transit priority signals and dedicated bus lanes, which are shared between multiple bus routes that extend North and South. With the combination of each route's staggered schedule, there is 5 minute service along the corridor all day. Stops are spaced at a maximum of 1/3 mile apart and utilize distinctive branding to convey that they are along the high-intensity corridor.

The Providence Downtown Connector was opened for service in June of 2021, after 3 years of construction, which started in 2018. The project cost \$17 million, and was partially funded using a Transportation Investments Generating Economic Recovery grant from the US Department of Transportation, which was awarded to the City of Providence in 2013. The connector concept was initially developed as a streetcar, but was redesigned as a BRT project in 2016. Construction included the addition of dedicated bus and bicycle lanes and improved bus shelters, with additional funding set aside for the purchase of new buses and plans for future station stop improvements.

rabbittransit may decide that to best utilize bus corridor investments, an inner-city shared corridor that serves multiple routes could improve service for all buses traveling within downtown Harrisburg or York. Since York's transfer center already requires buses travel into the Downtown area, a corridor strategically placed to cut down on travel time into and out of downtown York could significantly impact rider experience on multiple bus routes, not just one or two corridor-only routes. By connecting two high-demand locations along a very dense downtown area corridor, rabbittransit could provide service that benefits multiple routes.



TWIN CITIES METRO TRANSIT BUS RAPID TRANSIT

The Twin Cities Bus Rapid Transit system, operated by Metro Transit, is a great example of a bus rapid transit system that utilizes two types of HIMC, arterial and highway. The arterial routes serve high-traffic downtown areas, connecting important locations with a high-frequency service. The highway routes connect suburbs with downtown Minneapolis and St. Paul, and also has a rapid transit service to the Mall of America. The Metro Transit BRT runs every 10 minutes along a service corridor that utilizes priority traffic signals and the High Occupancy Vehicle lane on the highway. Bus stops are not branded differently, but do share real-time displays and note the bus number or color serviced by that stop. Stops also have TVMs for all-door boarding and ticket prepayment. Each BRT line is given a unique name that corresponds with a color and corridors are route-specific, with little overlap between routes.

Twin Cities BRT currently runs 5 BRT lines, with 7 additional lines in development. Their first line, the Metro A, was launched in 2016. This first BRT line was a \$27 million project that received \$7 million federal funding, \$16 million in state funding and \$4 million in local funding. Construction of the A took a full year and included the construction of new stations, the addition of signal priority along the route corridor, and the purchasing of new vehicles. The Metro Transit's second line, the Metro C, opened in 2019. In 2020, Metro Transit's network plan was refocused to expand and develop future BRT lines. The Twin Cities Metro Transit is planning to have 165 miles of bus rapid transit network by 2030.

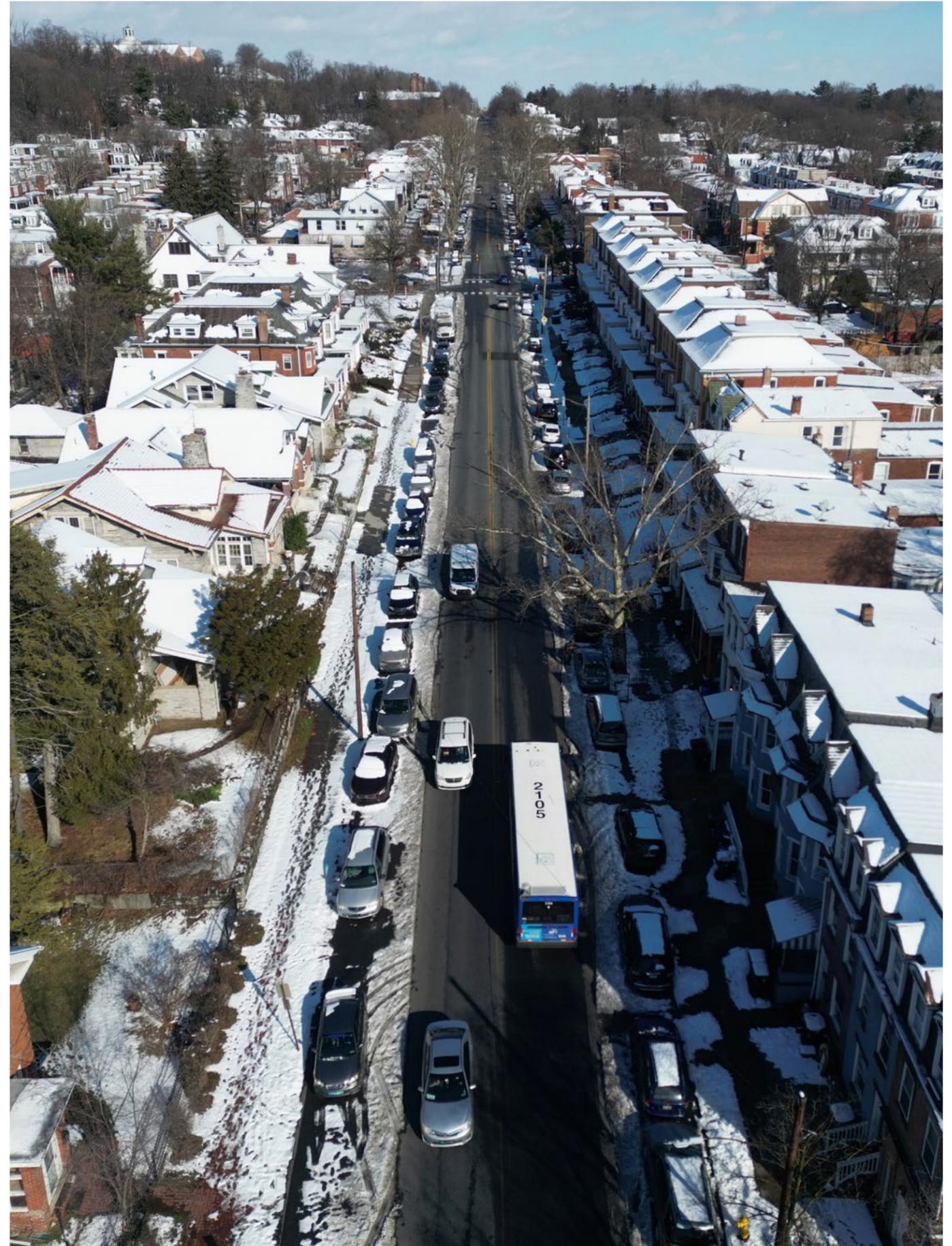
rabbittransit may choose to balance multiple types of HIMC, one serving suburban areas and commuters and another serving a denser downtown Harrisburg and/or York. Requiring very little transit priority investments aside from signal changes, the Twin Cities Metro Transit has increased high-frequency connectivity for communities both in and outside of urban centers. HIMC investment does not have to include dedicated bus lanes, as this system demonstrates. rabbittransit may choose to invest differently in fare methods, bus shelters or branding than other locations, but any measures taken to increase transit frequency, access, or rider comfort are a step forward overall.



CORRIDORS

The next section of the report outlines an initial list of High Intensity Mobility Corridors that should be studied by rabbitransit, and the process by which they were identified. These corridors connect key destinations with dense residential areas that have high transit propensity. They aim to make the region more connected and increase how far riders can travel on high quality, reliable service.

All of the corridors need further study to understand the travel market, the exact routing, and the capital and operational needs on the streets being studied. These corridors will evolve with future study and with rider input, but they serve as a critical starting point for rabbitransit in thinking towards future service.



PROCESS

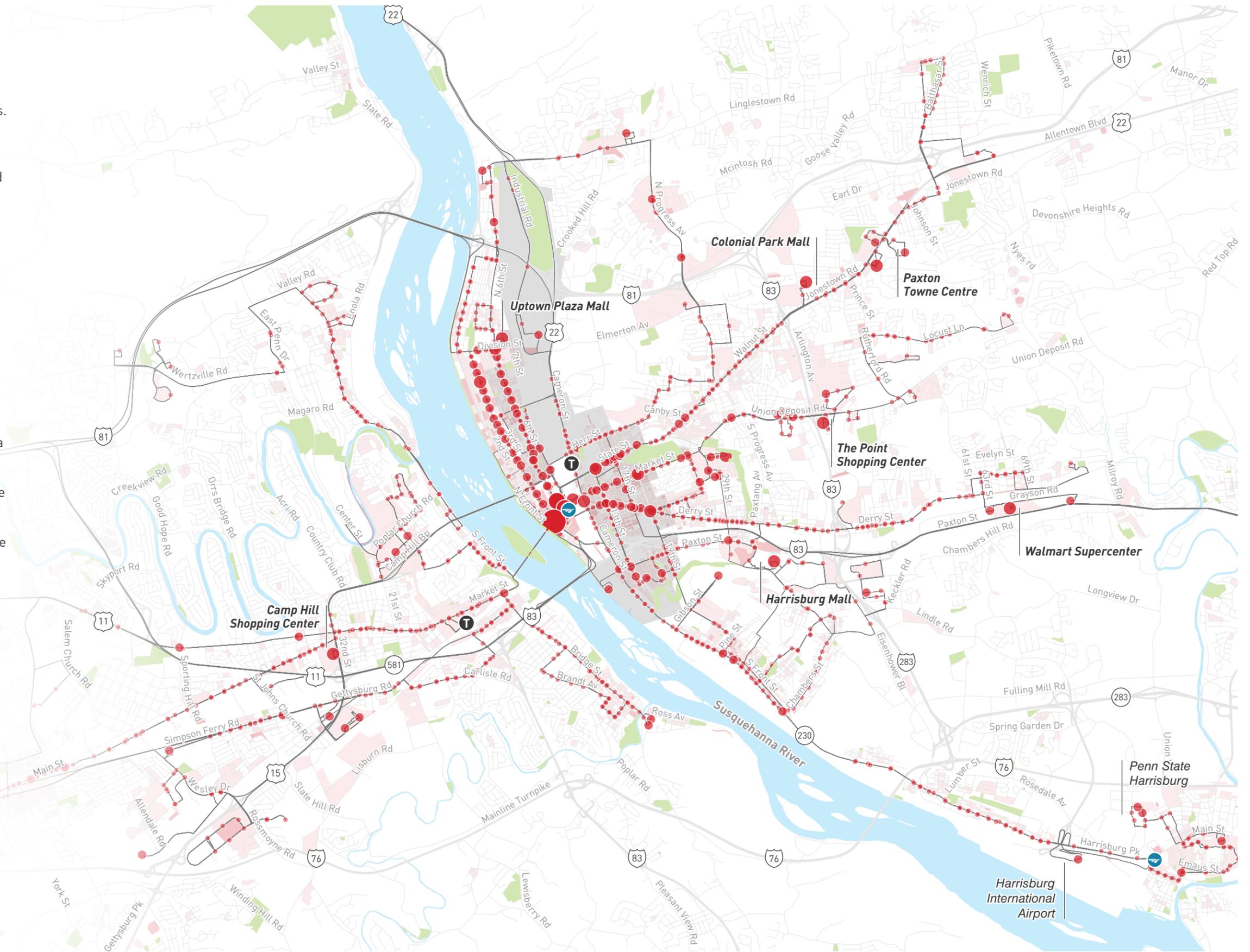
Defining potential corridors happened in a two step process.

First, data was used to quantify the potential of different corridors to support high intensity transit service that comes with higher service frequencies. The data identified areas with supportive land-use, ridership propensity, and current high ridership.

- Supportive land-use was identified primarily using population density from the 2020 U.S. Census and job density from the 2021 U.S. Census' LEHD Origin-Destination Employment Statistics (LODES). In combination, these data told us where there were a substantial number of residents and jobs that could lead to higher transit demand.
- Ridership propensity was identified by looking at the percentage of no-vehicle households, the percentage of people of color (non-white and/or Hispanic/Latino), and the percentage of low-income people (at 150% of the poverty threshold) in each block group in the region. These three percentages were combined into a ridership propensity index.
- Lastly, Fall 2023 stop level ridership data was used to identify places that currently have high ridership in the rabbitransit system.

Each corridor profile on pages 26 - 74 contains a data table with some key summary statistics for that corridor.

- The approximate length of the corridor in miles
- The percentage of the population within a 1/2 mile buffer of the corridor that is low-income and a person of color, and the percentage of households that have no vehicle
- The number of jobs within a 1/2 buffer of the corridor
- Existing routes that overlap the drawn corridor. This does not include routes that only overlap the corridor for a few blocks near the transit centers and then deviate from the corridor. These routes will benefit from reliability improvements in the area, but don't necessarily share substantial overlap in demand patterns, especially because people are more likely to walk than take the bus for one stop in these dense downtown areas with pedestrian infrastructure.



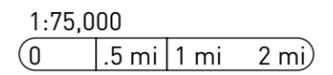
Harrisburg Methodology Data

T Transfer Center
 A Amtrak Station
 — Existing Routes

High Ridership Propensity

● Low to High Ridership per Stop

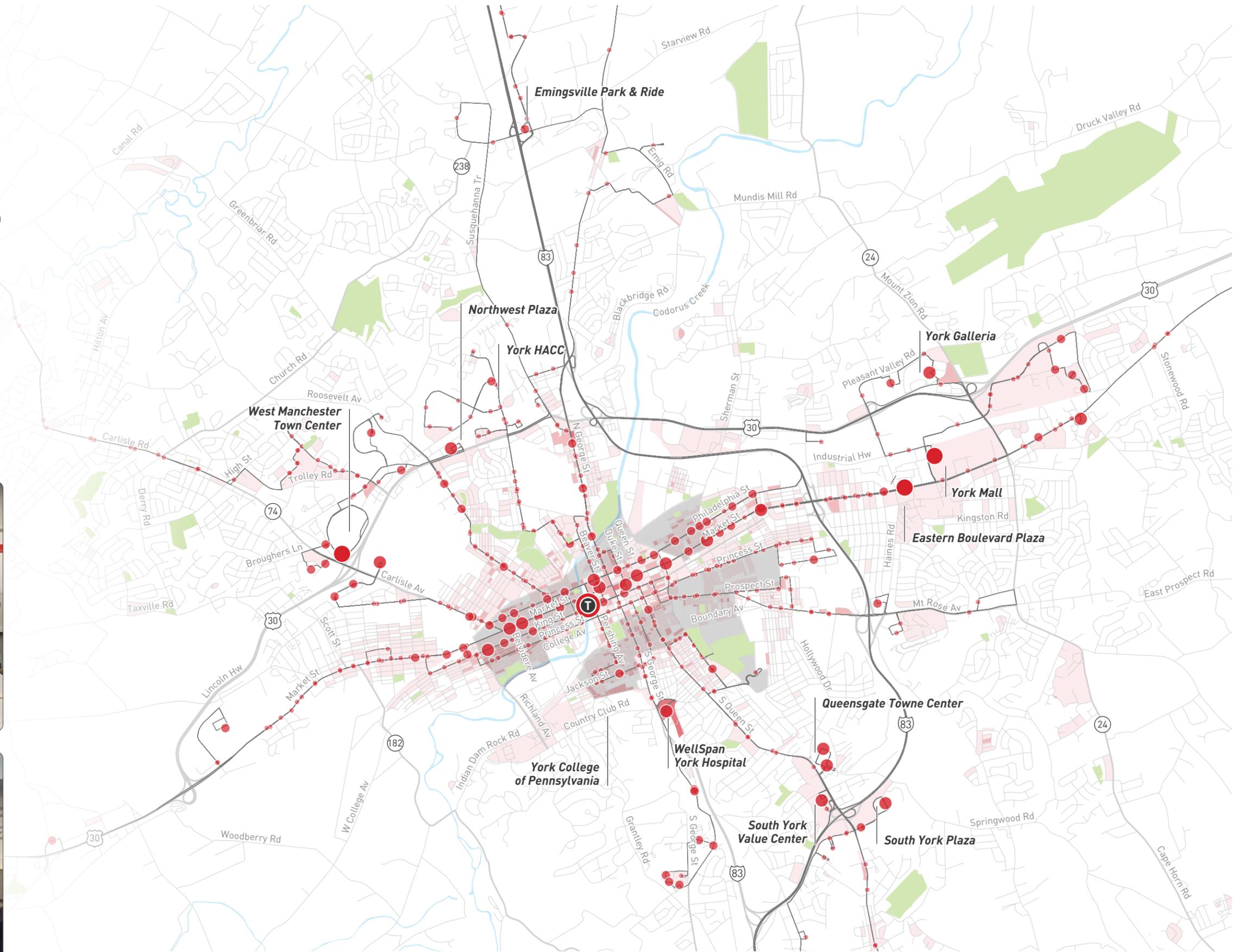
Low to High Population and Job Density



Looking at the data, we were able to get a general idea of places that could support or needed high-intensity service and served as a basis for creating a first draft of corridors, also taking into account connecting key destinations like grocery stores, schools, healthcare, and government and community services.

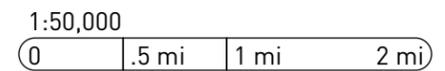
However, local context is critical to determining where high intensity corridors may be needed to support the York and Harrisburg communities and to fill in gaps not identified by data more broadly. Representatives from communities in the region shared their thoughts on corridor designs and destinations, rabbittransit staff contributed local and historical knowledge of obstacles to high quality transit service, and the project team performed site visits to understand the on the ground realities at proposed corridor sites.

Ultimately, these corridors were designed taking into account both a quantitative and qualitative understanding of the rabbittransit service area. Future studies into individual corridors should include deeper dives on both the qualitative and quantitative side to fully understand travel patterns and demand.



York Methodology Data

- T Transfer Center
- Existing Routes
- High Ridership Propensity
- Low to High Ridership per Stop
- Low to High Population and Job Density



BIG IDEAS

The past and present growth of the rabbitransit service area has led to a unique mix of dense urban centers, typical suburban areas, and rural towns in between. The area's historic manufacturing areas combined with the growing warehousing and distribution industry are also in need of attention from a transit standpoint. Infrastructure challenges for pedestrians outside of dense, walkable centers define the suburban and rural transportation landscape. And finally, urban centers themselves need better connectivity to each other.

This section is about "Big Ideas." These Big Ideas are concepts and observations that apply to more than one corridor, range in scale and application, and guide some of our corridor-level decisions within the rabbitransit service area. They include:

- Recognizing and serving the transit potential in the dense historic centers of both Harrisburg and York
- Serving the disperse suburban retail centers
- Identifying and serving the new patterns of industrial and distribution center development
- Supporting corridors with needed pedestrian improvements in needed areas
- Implementing a reliable regional network that connects to local major hubs and statewide destinations
- Ending service at important end of line destinations

TRANSIT POTENTIAL

Both of the major cities that were centrally studied in this project, York and Harrisburg, have areas of extremely high transit potential. There is dense housing stock near the centers of these cities, and these neighborhoods also house communities that are lower-income and have low car ownership rates. These areas have historical buildings, jobs, recreation opportunities, social services, and so much more. They are walkable and bikeable. Many HIMCs work to provide key inter neighborhood connections within these denser parts of town

In both areas, there is a sudden drop-off in density and ridership potential as you get to the suburbs. However these suburbs are home to critical retail, medical and job centers. Other HIMCs generally focus on connecting suburban and rural destinations to the density in and near the downtown areas.



SERVING RETAIL CENTERS

Retail centers are the perfect example of areas that could be better served by transit if the pedestrian infrastructure was improved, but they also have their own unique challenges to serve.

Retail centers are often set extremely far back from the road, with large parking lots. Centers are often clustered together in areas, but are not necessarily well-connected to each other. Especially in more suburban areas, they are separated by large streets and are often not on a grid. Serving these retail centers currently means going door-to-door because it can be unsafe to have a single stop on the main roadway and expect people to walk to the store they are visiting. This means that buses have to turn in and out of parking lots, taking indirect paths that add substantially to the travel time of a bus.

HIMCs cannot effectively serve each individual store because they are intended to be fast and direct. In areas with retail centers that are close by, the HIMC could include a high quality stop at the street and high quality pedestrian infrastructure can provide safe and convenient connections to the storefronts. In areas where retail centers are extremely dispersed, local circulator service or variants can provide more direct connections from a hub.



SERVING NEW INDUSTRIAL JOBS

One of the fastest growing job markets in the rabbitransit area are warehouse and distribution jobs. These jobs are often on the outskirts of town, far away from other destinations. Even when they are relatively concentrated, the job sites themselves are so big that they end up extremely far apart from each other. The door to door distance in these areas is enormous and difficult to serve with a fixed route bus. On top of that, these jobs are often shift jobs, with many early morning and late night shifts that aren't well matched to the general span of services offered by transit agencies.

All of these factors make these industrial jobs extremely difficult to fully serve. However, employees often don't have another way to get to these jobs, and employers are having difficulty hiring. This makes it important to consider how transit can help those without cars access these job opportunities.

Fixed route transit service can get people close to these jobs, but rarely to the front door of their particular warehouse or distribution center. Rather, transit can connect people to a hub that would serve these job centers either with 1) microtransit service areas, 2) company-run shuttle buses, or 3) bike infrastructure, including safe lanes/trails and bike storage. These can help close the first-/last-mile gap in industrial areas.

As a principle, corridors in this document were never drawn to only serve industrial job centers. The demand to these places is relatively low and not consistent throughout the day, and because they are difficult to serve, they do not warrant an HIMC by themselves. However, when corridors came close to these job centers, the project team considered where a hub could be along the corridor to provide those connections.



ROADWAY CONFIGURATIONS AND THE PEDESTRIAN EXPERIENCE

The suburban and rural parts of the rabbittransit service area are home to some key destinations people want to get to, but the pedestrian environment makes it difficult for people to access these destinations without a car. Unsafe or nonexistent pedestrian infrastructure means that there is no safe space to put a bus stop on the street. The bus stop needs to be located in parking lots and at the front doors of businesses, so far from the main roadway that the speed and reliability benefits of an HIMC quickly disappear.

Some corridors recommended in this document have transit potential, but implementing the corridor would need to be paired with roadway reconstruction projects. These would primarily be focused on pedestrian improvements, creating sidewalks and safe pedestrian crossings, but they could also improve the road for buses, cars, and/or bikes, looking at lane configurations, signalization, and the right of way.



HIMCS AND NETWORK DESIGN

HIMCs, when fully implemented, will be the backbone of rabbittransit's network. They will be flagship services that are frequent, fast, and extremely visible, and the structure of HIMCs can help inform rabbittransit's network as a whole, especially where supplementary service should be maintained or added. Future network design desires can be kept in mind as rabbittransit is thinking about which HIMCs to study and implement.

For example, an HIMC could help create a two-hub network in Harrisburg. This two-hub network would be anchored by the Harrisburg and Lemoyne Transfer Centers with a HIMC between the two, providing frequent and fast service across the river. In this network design, routes could operate in one of two ways:

- All routes stop at the transfer center on their side of the river, and riders must transfer to the HIMC service to cross to the other side. This is the most operationally efficient, but least rider friendly version of this network.
- All lower ridership routes stop at the transfer center on their side of the river with riders transferring to get across. However, all high ridership routes cross the river and end on the opposite transfer center, providing a one seat ride across the river. This maximizes connections while still providing operational benefits.

This would be a long-term network design, but setting up the right HIMCs would make it easier to implement. This is just one example of how thinking long-term can help rabbittransit decide which HIMCs to move forward with for study and design.



REGIONAL CONNECTIONS

The Amtrak Keystone Service provides intercity connectivity across the state. With the announcement of increased service from New York to Pittsburgh from once to twice a day, it is clear that Amtrak is a popular option for Pennsylvanians traveling between major cities. However, there is not a comprehensive intercity bus network between cities served by Amtrak and major surrounding cities and towns. Expanding the number and frequency of travel connections in the region can make it easier for people to travel within the region and outside of it without relying on a car.

Bus networks can fill this gap in connectivity if utilized as express connections between cities with Amtrak stations and populous cities not on the Keystone Line. Intercity service may also increase commuter ridership for those working in the tourism industry or those traveling as a tourist without car access. Access to locations like Hershey or Gettysburg, where tourism is a large part of the local economy, increases employment opportunities for individuals across central Pennsylvania. Having a strong network of diverse transportation options provides greater independence to individuals without a car, providing long-distance transit options for commuting to work, going to the doctor, visiting friends and family, or even going on vacation. Pennsylvania is a larger state, but by providing accessible intercity service, it can become navigable for anyone, regardless of driving status.



END OF LINE ANCHORS

HIMC examples across the country rely on very strong end of line anchors to define their service. The end of line locations are often large, well-known institutions and locations that serve as easy ways for riders to understand what the corridor connects them to and as easy places for buses to layover and turnaround.

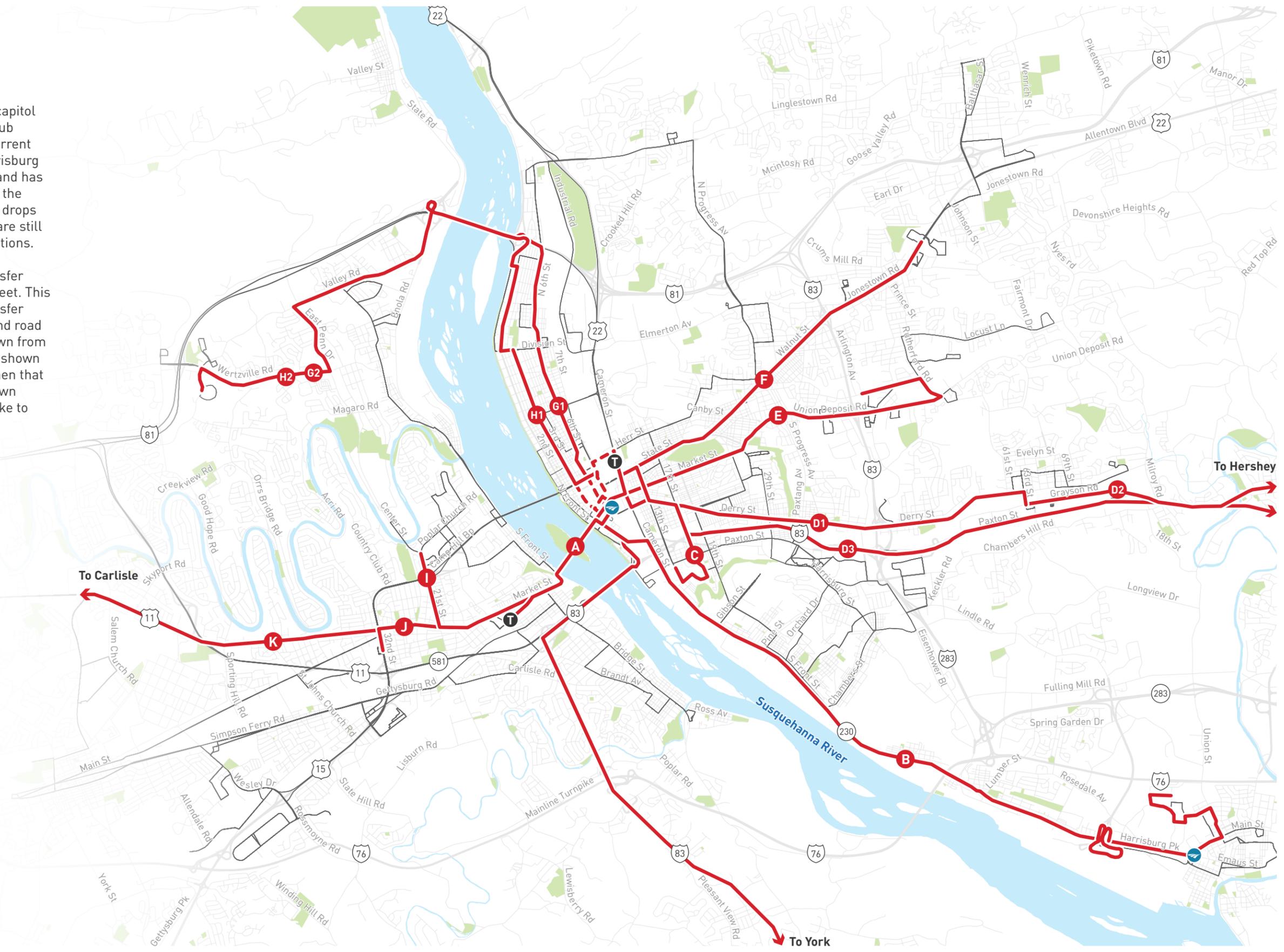
In the HIMCs proposed in this document, these end of line anchors are often educational institutions, medical centers, or major retail centers. In some cases, they are major transportation centers in a downtown area. However, some HIMCs have less clear anchors and future studies will need to think about the end of lines in more detail.



HARRISBURG CORRIDORS

The Susquehanna River divides the Pennsylvania capitol region in two. Downtown Harrisburg serves as a hub for jobs and entertainment, and most of today's current service focuses on getting people Downtown. Harrisburg itself, on the east side of the river, is high density and has the highest ridership propensity neighborhoods in the capital area. This density and ridership propensity drops off quickly in the more suburban areas, but there are still many key retail, medical, and employment destinations.

Currently, rabbittransit is working to move its transfer center from downtown Harrisburg to Cameron Street. This is just a short distance away from the current transfer center location, but the pedestrian environment and road layout means that it is not easy to walk to Downtown from the new transfer center location. All corridors are shown ending at the new transfer center location, and when that path does not travel through Downtown, a Downtown extension is included to show what it would look like to serve both the transfer center and Downtown.



Harrisburg Corridors

- High Intensity Mobility Corridors
- - - HIMC Extension
- T Transfer Center
- A Amtrak Station
- Existing Routes

1:75,000

0 .5 mi 1 mi 2 mi

N

A HARRISBURG TRANSFER CENTER TO LEMOYNE TRANSFER CENTER

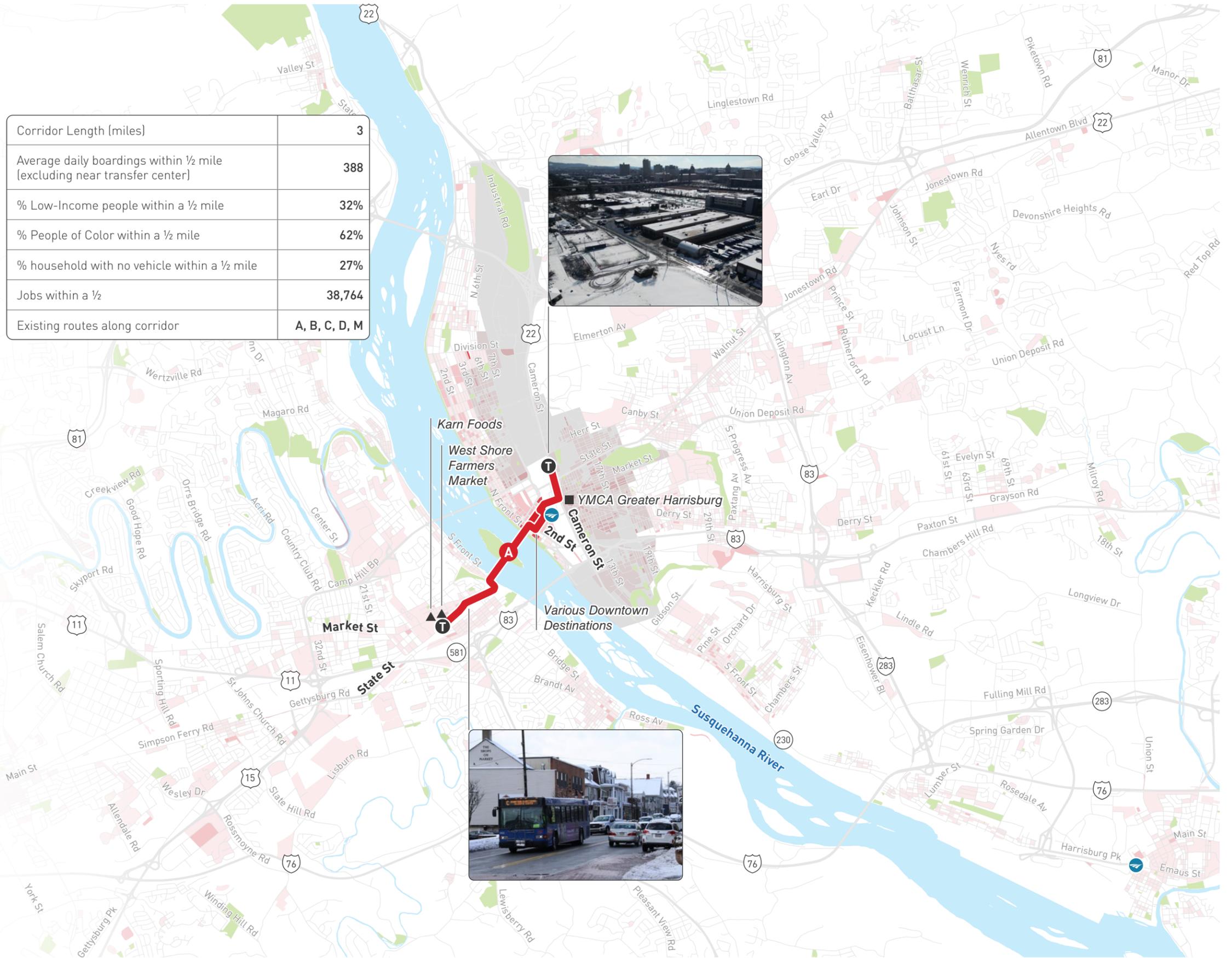
This 3-mile high-intensity mobility corridor explores the potential for a greater transit network redesign featuring a two-hub network with a frequent connection between the Lemoyne and Harrisburg Cameron Street transfer centers. The purpose of this corridor would be to connect both transfer centers as a hub for all transit on each side of the city, with westbound buses departing from Lemoyne Transfer Center and eastbound buses departing from the new Harrisburg Cameron Street Transit Center. Outbound spoke bus routes could be timed to pulse following high-intensity bus arrival, decreasing wait time at each transit hub. This corridor could reduce the number of buses that cross the Susquehanna River and decrease the time it takes to travel across the city.

The high-intensity mobility corridor would provide a higher-service option for those traveling across the city while providing reliable access to downtown Harrisburg and the Amtrak station. This route would depart from the Harrisburg Transfer Center, traveling south down Cameron Street and turning onto Market Street, with a short loop to Chestnut Street before turning to Market Street to cross the Market Street Bridge with a potential stop at City Island. The Bus would then continue onto State Street where it would complete its route at Lemoyne Transfer Center.

Further analysis of service design in Harrisburg would be necessary before this route is considered feasible. Bus service in Harrisburg does not currently utilize the Lemoyne Transfer Center as a center for westbound buses, and the planned Cameron Street Transfer Center is not yet in use. The creation of the new Transfer Center may justify a greater study of route planning, where a hub and spoke network could be explored. In addition to a service network redesign, this route would require additional capital improvements, namely an expansion of the Lemoyne Transfer Center. The Lemoyne Transfer Center is not currently equipped to serve as the "hub" for westbound trips. However, investment into this property may be justified if there is a greater service redesign as discussed in the "Big Ideas" section of this report.

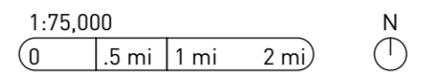
Due to this route's purpose as a transfer center connection service, it is relatively urban, providing high-frequency service to the many jobs located in downtown Harrisburg. This service would not travel through as many residential neighborhoods as other proposed corridors, instead linking residential bus routes to downtown Harrisburg, the Amtrak station, and City Island on a high-frequency line.

Corridor Length (miles)	3
Average daily boardings within ½ mile (excluding near transfer center)	388
% Low-Income people within a ½ mile	32%
% People of Color within a ½ mile	62%
% household with no vehicle within a ½ mile	27%
Jobs within a ½	38,764
Existing routes along corridor	A, B, C, D, M



Harrisburg Corridors

- HIMC
- T Transfer Center
- Amtrak Station
- ▲ Landmarks
- High Ridership Propensity
- Low to High Population and Job Density



B HARRISBURG TRANSFER CENTER TO PENN/STATE/AIRPORT/MIDDLETOWN

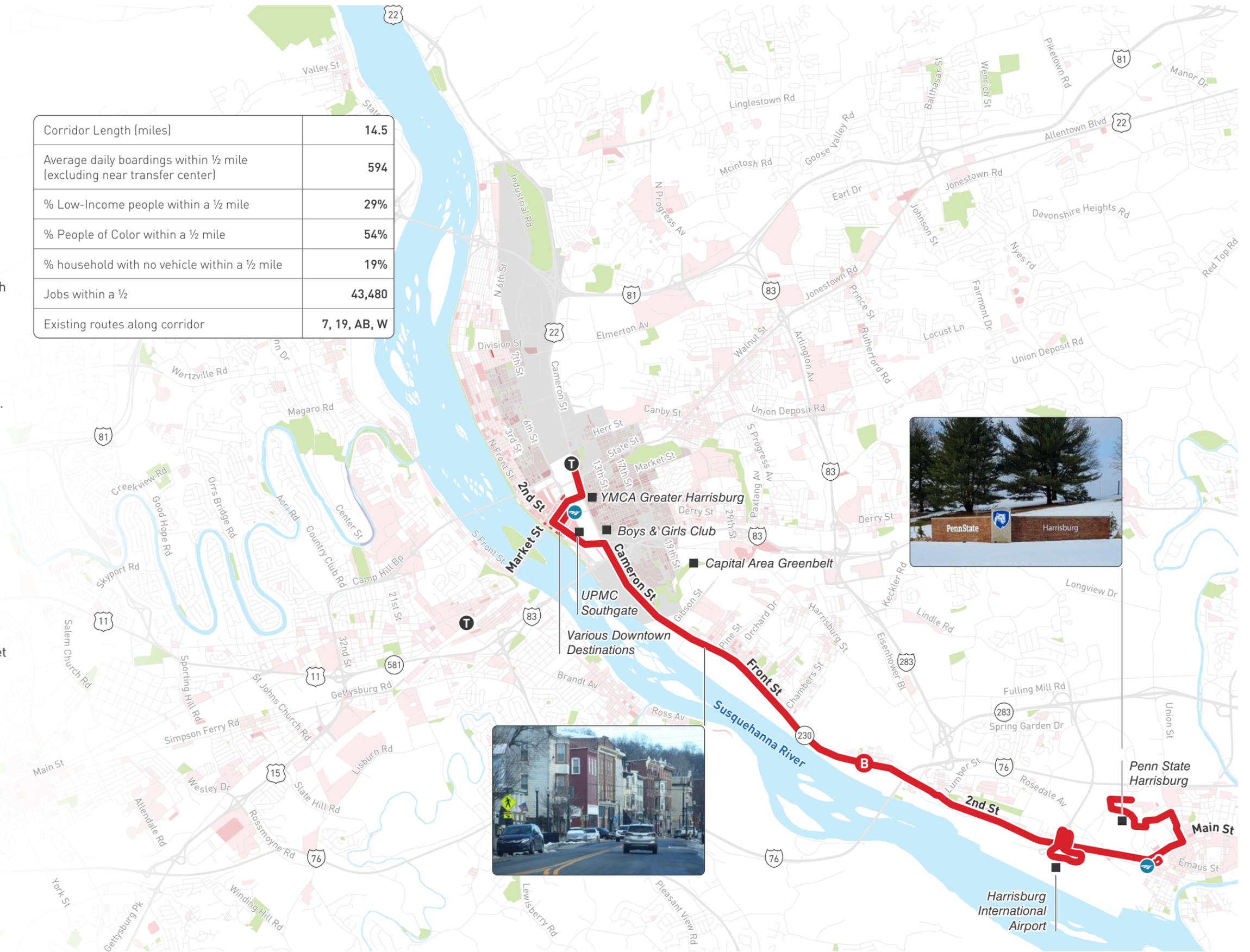
This high-intensity mobility corridor is 14.5 miles long and connects downtown Harrisburg to Middletown. The corridor begins at the Harrisburg Transfer Center, traveling through downtown Harrisburg and connecting to Amtrak and the major employers in the downtown area. The corridor continues south on Route 230, passing through Steelton and Highspire, and ends in Middletown. In Middletown, the corridor connects to the Harrisburg International Airport, the Middletown Amtrak station, downtown Middletown, and the Penn State Harrisburg campus. The corridor ends at the industrial park just north of Penn State.

This corridor sees consistent ridership today, with most ridership at the Harrisburg end of the corridor but with pockets of decent ridership levels at Penn State, the airport, and in Steelton. This corridor has medium population and job density, mostly in the township centers. Steelton and Middletown both show ridership propensity.

Currently, this corridor passes through downtown Harrisburg before going to the transfer center, prioritizing direct service to the jobs and services Downtown for residents of Steelton and Middleton, students at Penn State, and travelers coming in from the airport. However, an alternative is for this corridor to travel through the Alison Hill neighborhood further north before coming to the transfer center. This alternative would provide a one-seat high-intensity ride to the residents of the Alison Hill neighborhood to job, travel, and educational opportunities further south, but would make it so that travelers from the south attempting to reach Downtown would need to transfer. Further study is needed to understand the market potential of these two different paths and which trip type should be prioritized in the corridor design. This corridor could also be shortened at the east end, terminating at the Middletown Amtrak station where rabbittransit owns real estate. In this case, service would continue beyond the Amtrak station, but not as a part of the high-intensity corridor. This would be more difficult to communicate to riders but may save some capital and operating investment, and the cost-benefit depends on demand in Middletown.

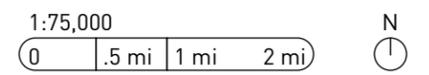
Additionally, there are industrial centers near but not on the corridor as currently drawn, including a cluster of distribution centers off of Fulling Mill Road and south of Middletown. Future studies can consider if and how these centers should be served in relationship to the high intensity corridor.

Corridor Length (miles)	14.5
Average daily boardings within ½ mile (excluding near transfer center)	594
% Low-Income people within a ½ mile	29%
% People of Color within a ½ mile	54%
% household with no vehicle within a ½ mile	19%
Jobs within a ½	43,480
Existing routes along corridor	7, 19, AB, W



Harrisburg Corridors

- HMC
- T Transfer Center
- Amtrak Station
- ▲ Landmarks
- High Ridership Propensity
- Low to High Population and Job Density



C HARRISBURG TRANSFER CENTER TO HALL MANOR VIA 13TH/17TH STREET

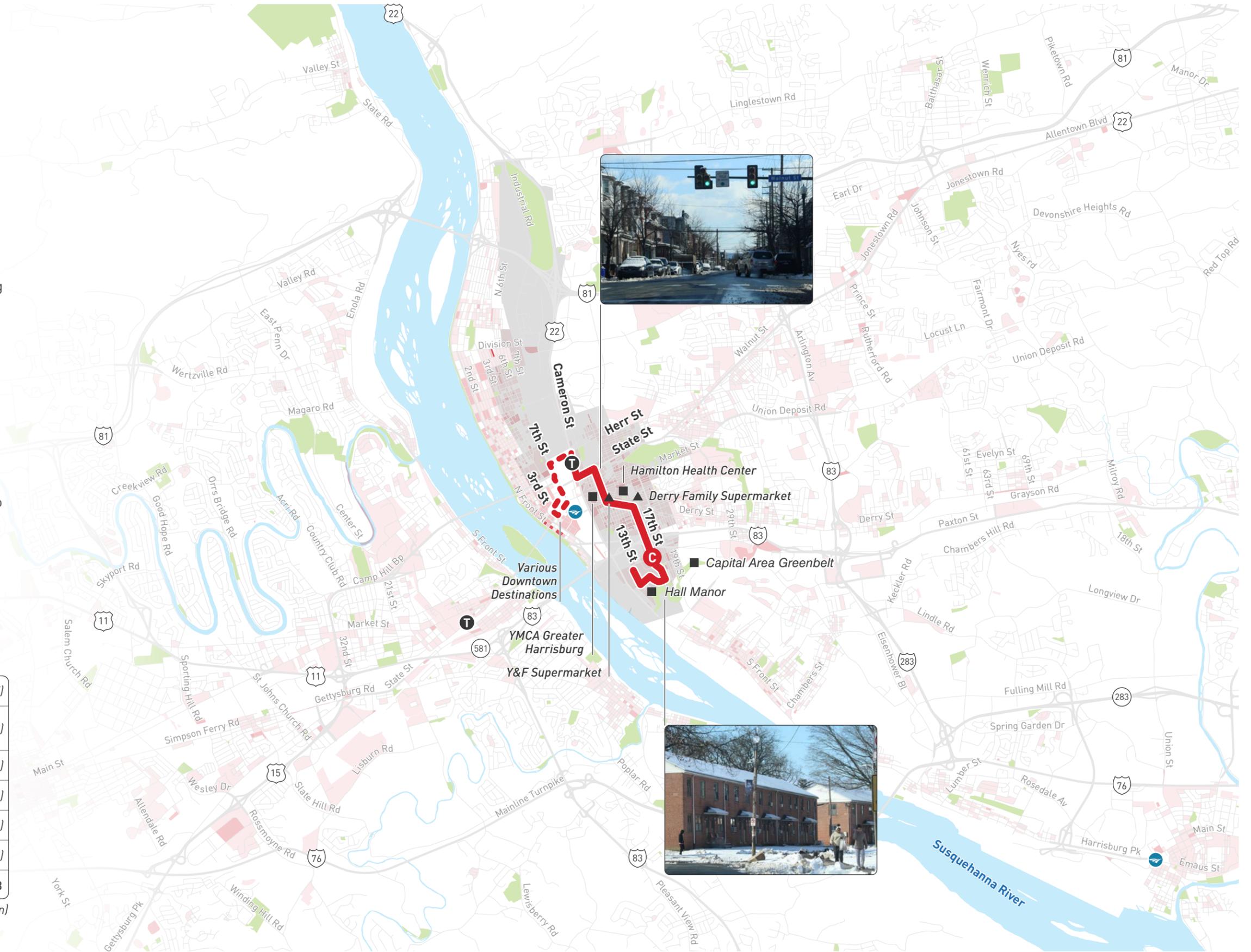
This corridor runs northwest - southeast down 13th and 17th Streets, which are both dense residential streets through the Alison Hill neighborhood. This neighborhood has some of the highest ridership in the current Harrisburg bus network. This route would begin at the Harrisburg Cameron Transfer Center and travel down Cameron to State Street and 13th. The route then travels east for 4 blocks on Derry Street, connecting riders to two fresh-food grocery stores before turning down 17th. The route ends at Hall Manor, a mixed-income housing development managed by the Harrisburg Housing Authority.

Unlike other proposed corridors, this route's end-of-line anchor is a housing development. The main focus of this corridor is not connections to major shopping centers or medical facilities, but rather inter-neighborhood connections to smaller businesses, homes, and the transfer center, where riders can transfer to other bus lines. This corridor services a high-density residential area where 83% of residents are people of color and 30% of residents do not own a vehicle. Serving those who rely on transit, this corridor would make the transfer center more accessible for those commuting far distances or into downtown Harrisburg.

An extension of this corridor could run Northwest directly into downtown Harrisburg, looping on Chestnut Street to serve the Amtrak Station and other Downtown bus routes. This extension would provide a residential-Downtown link for residents of South Harrisburg commuting Downtown for work or leisure.

Corridor Length (miles)	3 (4.5)
Average daily boardings within ½ mile (excluding near transfer center)	602 (681)
% Low-Income people within a ½ mile	49% (48%)
% People of Color within a ½ mile	83% (81%)
% household with no vehicle within a ½ mile	30% (30%)
Jobs within a ½	22,611 (38,931)
Existing routes along corridor	6/13, AB

(With HIMC Downtown Extension)



D1 HARRISBURG TRANSFER CENTER TO HERSHEY, LOCAL

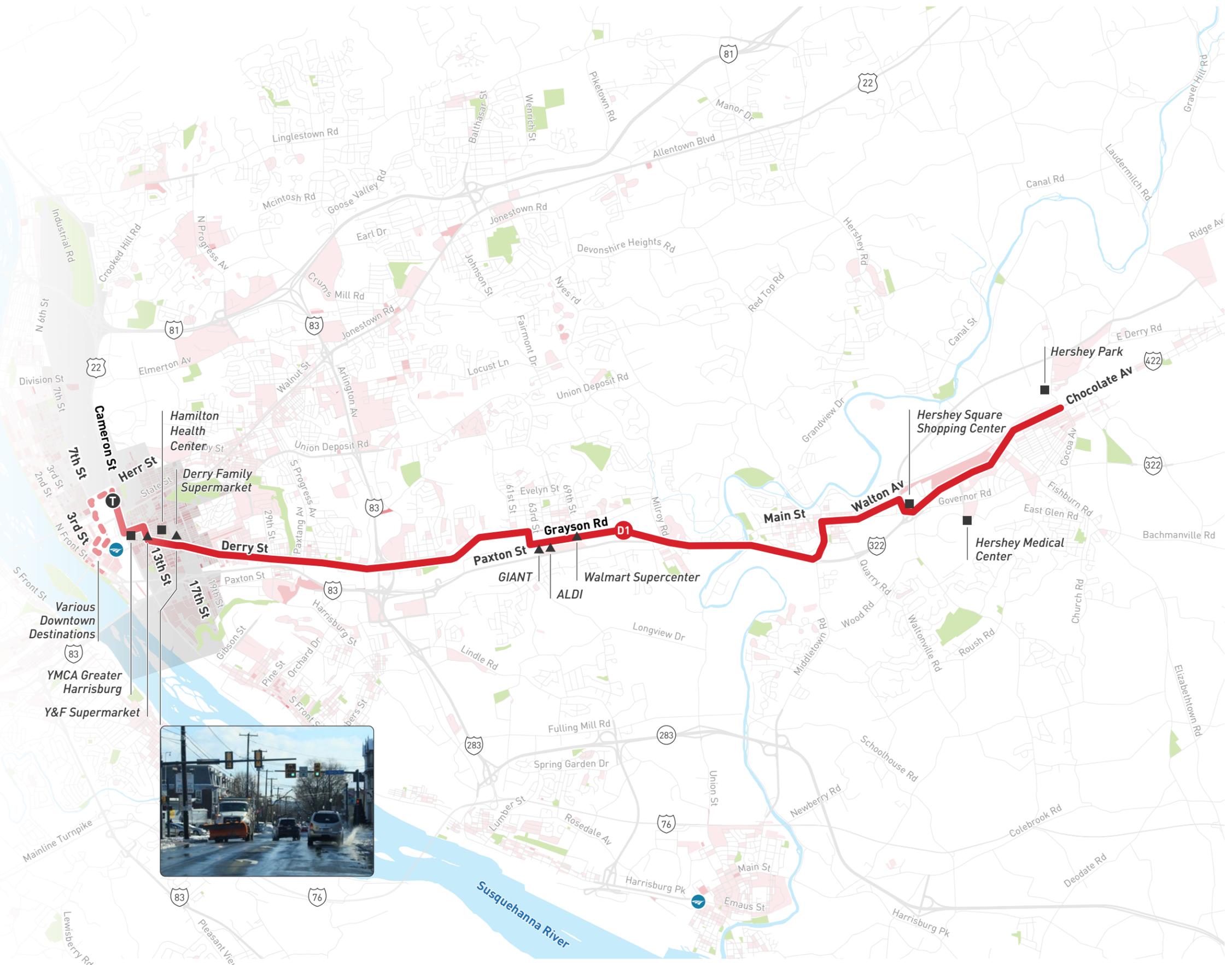
This 14 mile corridor connects Harrisburg to the city of Hershey, PA. This eastbound route travels down Derry Street to the Swatara Crossing shopping center, which has a Walmart Supercenter, ALDI and GIANT.

Ridership propensity drops off significantly outside of Harrisburg, as does population and job density. However, Hershey has a substantial number of major employers and these employers have been struggling to hire enough staff since the COVID-19 pandemic.

Demand for this line may be seasonally affected, with more employment and recreational opportunities available in Hershey in the summer. However, there may be enough demand for this line that it would be worthwhile to provide more frequent service because of those traveling into Harrisburg from the eastern suburbs. Further study of this corridor may require an analysis of whether high-intensity all-day service would be necessary, or if the majority of trips along this route are traditional commute-based and/or seasonal only.

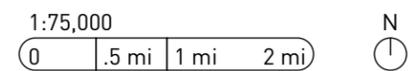
Corridor Length (miles)	13.5 (14.5)
Average daily boardings within 1/2 mile (excluding near transfer center)	702 (782)
% Low-Income people within a 1/2 mile	19% (19%)
% People of Color within a 1/2 mile	50% (50%)
% household with no vehicle within a 1/2 mile	12% (13%)
Jobs within a 1/2	61,893 (72,629)
Existing routes along corridor	8, 19, 20, 322

(With HMC Downtown Extension)



Harrisburg Corridors

- HMC
- - - HMC Extension
- T Transfer Center
- Amtrak Station
- ▲ Landmarks
- High Ridership Propensity
- Low to High Population and Job Density



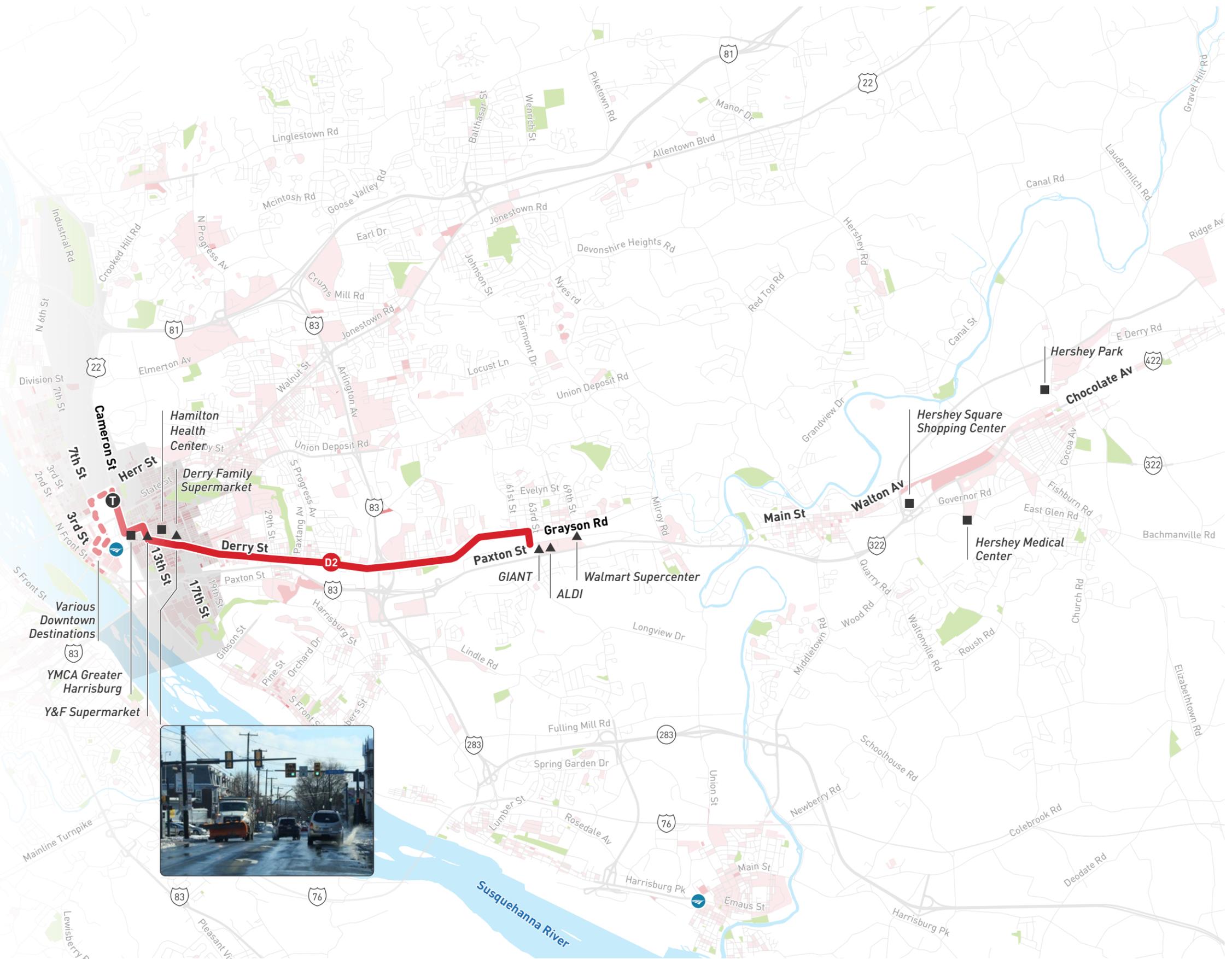
D2 HARRISBURG TRANSFER CENTER TO GRAYSON RD WALMART

Another way to serve Hershey could be with a shorter HIMC with a transfer to a different bus service. This eastbound corridor travels down Derry Street to the Swatara Crossing shopping center, which has a Walmart Supercenter, ALDI and GIANT. The Walmart stop could serve as a high-quality transfer to a frequent bus running regular service to Hershey, similar to the 322 Hershey / Hummelstown line. This would provide reasonable transit connections to Hershey without necessarily providing the capital infrastructure in the lower density, lower ridership potential areas along the entirety of the travel corridor.

If demand is determined to be seasonally affected, this option could be better suited for flexible service. Capital investments would be focused on the portion of the corridor with similar demand year-round, while service from the transfer hub east could be ramped up to seasonally to match demand.

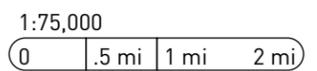
Corridor Length (miles)	6 (7.5)
Average daily boardings within ½ mile (excluding near transfer center)	661 (741)
% Low-Income people within a ½ mile	27% (30%)
% People of Color within a ½ mile	68% (66%)
% household with no vehicle within a ½ mile	18% (18%)
Jobs within a ½ mile	36,869 (47,605)
Existing routes along corridor	8, 19, 20, 322

(With HIMC Downtown Extension)



Harrisburg Corridors

- HIMC
- HIMC Extension
- T Transfer Center
- A Amtrak Station
- Landmarks
- High Ridership Propensity
- Low to High Population and Job Density



D3 HARRISBURG TRANSFER CENTER TO HERSHEY, EXPRESS

As an alternative to Corridors D1 and D2, this corridor serves as an express service, traveling on U.S. Route 322 and Highway 83 to connect downtown Harrisburg with downtown Hershey. As drawn, this corridor would not stop in between Hershey and 17th Street, providing a fast and direct connection.

This express route to Hershey addresses issues discussed on page 23 concerning connectivity between cities. Hershey is a major destination for visitors and for tourism-based employment during the summertime.

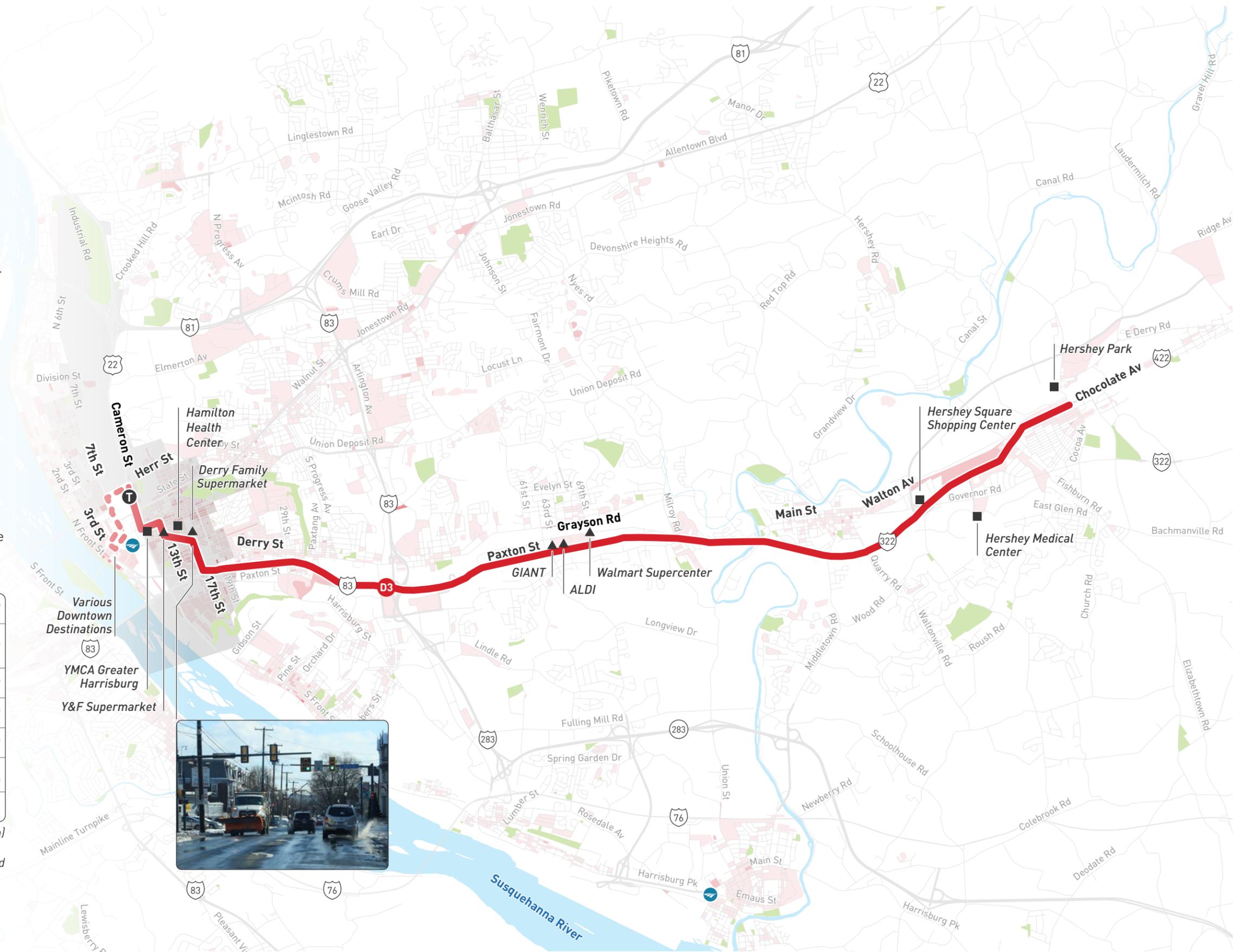
This alternative would be desirable to Corridor D1 if most of the demand along this corridor is from endpoint to endpoint. Highway service with few stops requires substantially less capital investment to make fast and direct.

There is potential for a few stops along the highway, if adequate pedestrian infrastructure can be built. The Swatara Crossing Shopping Center, which is currently a stop on the 322 Hershey/Hummelstown bus, is directly along this route and may be included as a stop along the corridor. If this corridor is selected for further study, an analysis of stop demand and necessity may suggest that some stops from the Hershey local route be included in the express corridor.

Corridor Length (miles)	13.5 (15)
Average daily boardings within ½ mile (excluding near transfer center)	579 (659)*
% Low-Income people within a ½ mile	27% (29%)*
% People of Color within a ½ mile	59% (59%)*
% household with no vehicle within a ½ mile	21% (22%)*
Jobs within a ½	27,059 (41,533)*
Existing routes along corridor	8, 19, 20, 322

(With HIMC Downtown Extension)

*Excludes portion of corridor between Derry and Paxton Road



Harrisburg Corridors

— HIMC - - - HIMC Extension

ⓘ Transfer Center

ⓘ Amtrak Station

▲ Landmarks

■ High Ridership Propensity

■ Low to High Population and Job Density

1:75,000

0 .5 mi 1 mi 2 mi

N

E HARRISBURG TRANSFER CENTER TO UPMC OSTEOPATHIC VIA MARKET

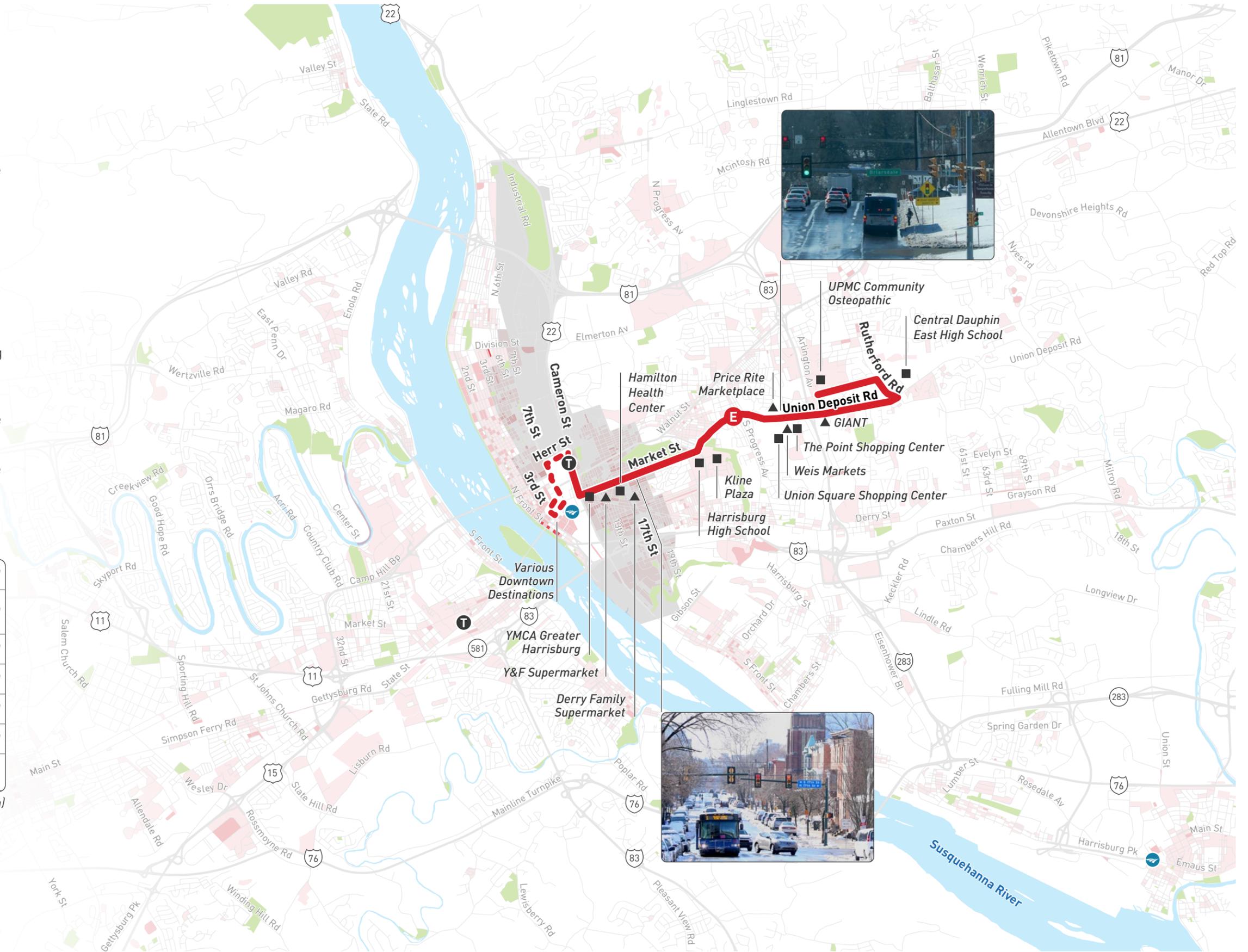
This corridor begins at the Harrisburg Transit Center and travels east down Market Street to Union Deposit Road, then curving north into the UPMC Community Osteopathic complex. While the route acts as a connection between the Harrisburg Transit Center and the Osteopathic complex, the bus travels along Market Street, which has a relatively high ridership in today's network.

This corridor would also connect the Transit Center with Harrisburg High School's John Harris Campus, Central Dauphin East High School, Kline Plaza, The Point Shopping Center, and Union Square Shopping Center. These shopping centers include fresh-food grocery stores, making this corridor a strong contender as a grocery and shopping connection route, with the advantage of providing service to the John Harris High School, which CAT already works with to provide transportation options for students.

This corridor currently hooks at the end in order to provide service to both the Central Dauphin East High School and the UPMC complex, but future studies should include some investigation as to the best corridor alignment at the end of this corridor. The streets in this part of the city are not gridded, and turning movements and directness may limit potential paths.

Corridor Length (miles)	6 (7.5)
Average daily boardings within ½ mile (excluding near transfer center)	776 (856)
% Low-Income people within a ½ mile	27% (27%)
% People of Color within a ½ mile	67% (66%)
% household with no vehicle within a ½ mile	18% (18%)
Jobs within a ½	29,284 (43,747)
Existing routes along corridor	1, 14, 17, 6/13, 114

(With HIMC Downtown Extension)



Harrisburg Corridors

— HIMC
 - - - HIMC Extension
 T Transfer Center
 A Amtrak Station
 Landmarks
 High Ridership Propensity
 Low to High Population and Job Density

1:75,000

0 .5 mi 1 mi 2 mi



F HARRISBURG TRANSFER CENTER TO PAXTON TOWNE CENTER VIA STATE

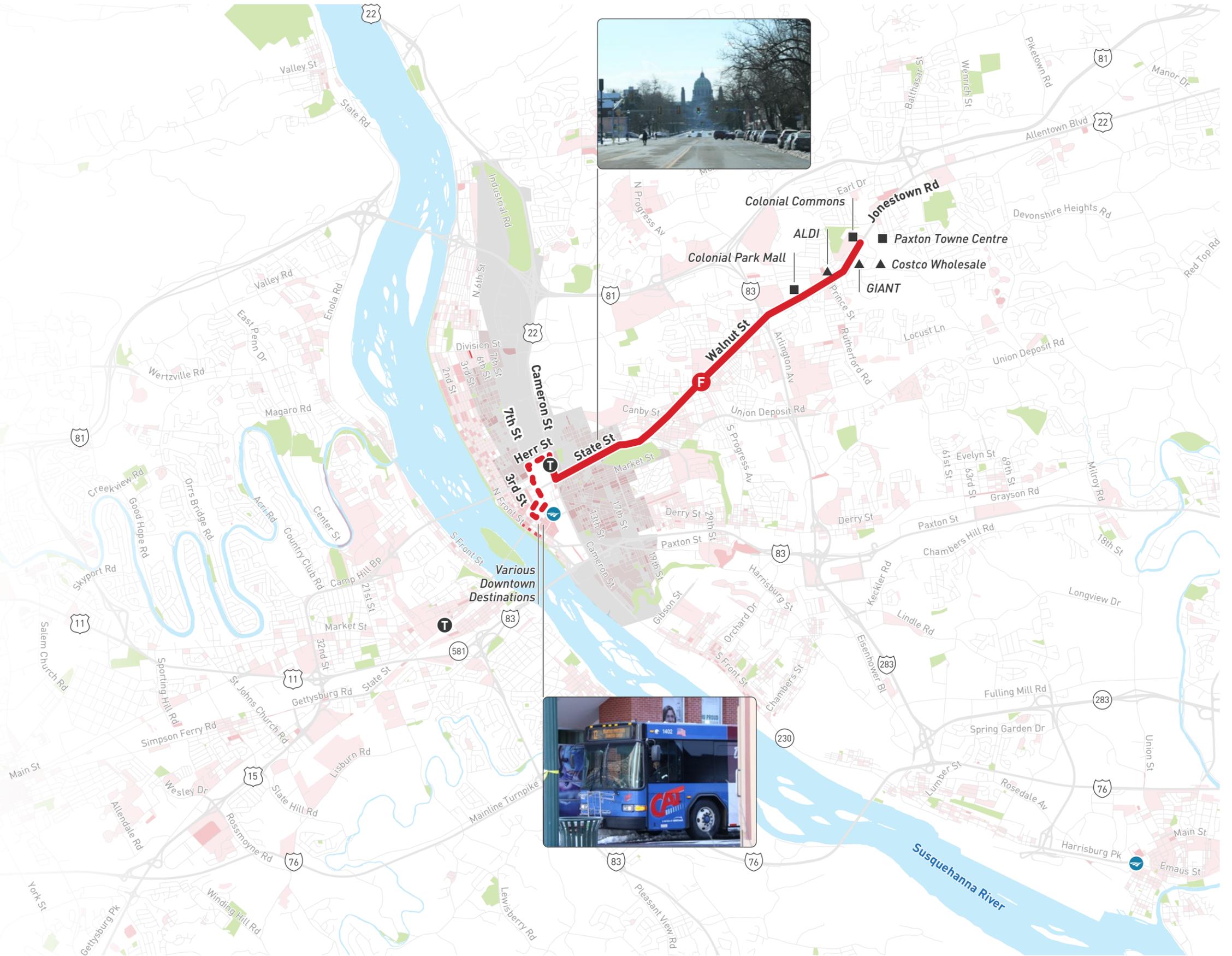
This corridor travels northeast from the Harrisburg Transfer Center, driving up State Street/Jonestown Road. The anchor at the end of this line is Paxton Towne Center, a shopping center with a current ridership that is relatively high. State Street contains a mix of density, with a steep dip in density and ridership propensity after leaving the Harrisburg city limits.

Despite the drop in density and propensity, this corridor serves as a critical and well-used connection to the shopping centers to Harrisburg's northeast. There are some small concentrations of apartment buildings and higher density areas north of the end of line, and this corridor would likely include some variants that veer off the corridor in order to provide direct service to these areas.

Overall, this is a fairly simple corridor that stays on one street serving a very clear demand pattern. Future studies will need to focus on how this corridor compares to others as far as travel needs.

Corridor Length (miles)	5 (6.5)
Average daily boardings within ½ mile (excluding near transfer center)	591 (671)
% Low-Income people within a ½ mile	21% (21%)
% People of Color within a ½ mile	57% (56%)
% household with no vehicle within a ½ mile	16% (16%)
Jobs within a ½	28,847 (45,739)
Existing routes along corridor	12, 17

(With HIMC Downtown Extension)



Harrisburg Corridors

- HICM
- - - HICM Extension
- T Transfer Center
- A Amtrak Station
- ▲ Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

1:75,000

0 .5 mi 1 mi 2 mi



G1 HARRISBURG TRANSFER CENTER TO CAMP CURTIN MIDDLE SCHOOL VIA 6TH STREET

This corridor connects the Transit Center with the Uptown Harrisburg neighborhood, traveling up 6th Street from Forster Street. This route has consistent ridership throughout, and travels through the mixed-use eastern side of Uptown Harrisburg. On its route north, this corridor passes notable locations such as the Sylvia H. Rambo United States Courthouse and Harrisburg Area Food Pantry. The corridor would end on Division Street at Camp Curtin Middle School, only a two-block walk away from the Uptown Plaza Mall and Save A Lot grocery store.

This route passes through dense residential areas and a substantial number of key destinations, making it an extremely promising HIMC.

This route does not travel through downtown Harrisburg, but a potential extension on the bottom of the corridor could loop through Downtown, connecting to Market Street and State Capitol Complex. This extension could connect Uptown residents to jobs, schools and other resources in Downtown via high-intensity bus line.

Corridor Length (miles)	2.5 (4)
Average daily boardings within 1/2 mile (excluding near transfer center)	578 (725)
% Low-Income people within a 1/2 mile	32% (36%)
% People of Color within a 1/2 mile	67% (70%)
% household with no vehicle within a 1/2 mile	26% (27%)
Jobs within a 1/2	33,919 (43,221)
Existing routes along corridor	2, 3/6, 6/13, W, 23X

(With HIMC Downtown Extension)



Harrisburg Corridors
 — HIMC - - - HIMC Extension T Transfer Center Amtrak Station ▲ Landmarks High Ridership Propensity Low to High Population and Job Density

Scale: 1:75,000
 0 .5 mi 1 mi 2 mi

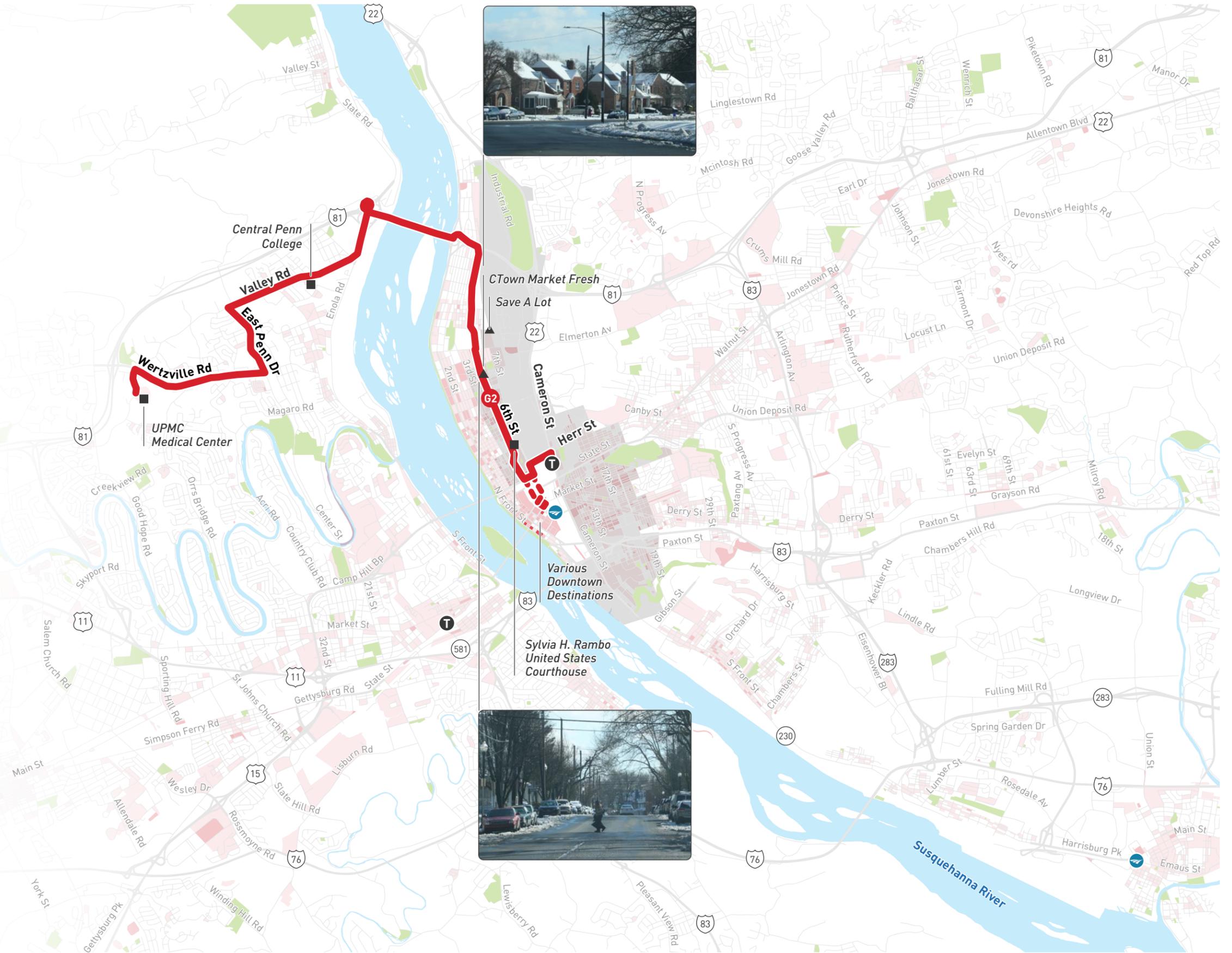
N

G2 HARRISBURG TRANSFER CENTER TO UPMC WEST SHORE VIA 6TH STREET

Similar to Corridor G1, this corridor connects downtown Harrisburg to the Uptown Harrisburg neighborhood, but continues west across the river. This extension would continue northwest from Italian Lake Park, continuing up 6th Street and west across the George N. Wade Memorial Bridge. The route would then travel down Valley Road, with potential stops at Central Penn College, Pennsboro Commons, and the UPMC West Shore location. The section of this corridor on the west side of the river does not have much ridership within the current system, and a study of demand may be necessary before including this extension.

Corridor Length (miles)	11 (12)
Average daily boardings within ½ mile (excluding near transfer center)	706 (747)
% Low-Income people within a ½ mile	19% (19%)
% People of Color within a ½ mile	49% (49%)
% household with no vehicle within a ½ mile	17% (17%)
Jobs within a ½	42,992 (52,374)
Existing routes along corridor	2, 3/6, 6/13, F, W, 23X

(With HIMC Downtown Extension)



Harrisburg Corridors
 — HIMC - - - HIMC Extension T Transfer Center Amtrak Station ▲ Landmarks High Ridership Propensity Low to High Population and Job Density

1:75,000
 0 .5 mi 1 mi 2 mi N

H1 HARRISBURG TRANSFER CENTER TO ITALIAN LAKE PARK VIA 3RD STREET

Paralleling Corridor G1, this corridor begins at the Harrisburg Transfer Center and travels west on Forster Street and north on 3rd Street through Uptown Harrisburg. Traveling north, the bus route travels past several Midtown shops, restaurants and theaters, the Madeline L. Olewine Memorial Library, and the Polyclinic Medical Building. The corridor ends at Italian Lake Park.

While the proposed route does not travel through downtown Harrisburg, there is opportunity to run the bus south on 7th Street through Downtown to connect to Market Street and the State Capitol Complex before continuing north on 3rd Street. This could provide job access for Uptown residents working Downtown and could bring transit corridor improvements to buses running through Downtown.

Italian Lake Park may not be a particularly strong end of line anchor, so future studies should include some thought as to the end of line location for this corridor. One option could be the Camp Curtin Middle School on 6th Street.

In a future network, this corridor and Corridor G1 can both be constructed if there is high enough demand in the Uptown Harrisburg area. Likely one will be chosen to serve the area primarily, although it is possible to create a third option that combines the corridor on 3rd Street for a portion of travel and 6th Street for another portion. Closer to Downtown, 3rd Street has a higher concentration of destinations, but 6th Street has more consistent ridership demand throughout. Generally, the eastern side of this neighborhood has more ridership propensity compared to the waterfront side.

Corridor Length (miles)	2.5 (4)
Average daily boardings within ½ mile (excluding near transfer center)	575 (726)
% Low-Income people within a ½ mile	32% (36%)
% People of Color within a ½ mile	67% (70%)
% household with no vehicle within a ½ mile	26% (27%)
Jobs within a ½	35,162 (41,943)
Existing routes along corridor	2, 3, 3/6

(With HIMC Downtown Extension)



Harrisburg Corridors

- H1M
- - - H1M Extension
- T Transfer Center
- A Amtrak Station
- ▲ Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

1:75,000

0 .5 mi 1 mi 2 mi

N

H2 HARRISBURG TRANSFER CENTER TO UPMC WEST SHORE VIA 3RD STREET

Paralleling Corridor G1, this corridor begins at the Harrisburg Transfer Center and travels west on Forster Street and north on 3rd Street through Uptown Harrisburg. Traveling north, the bus route travels past several Midtown shops, restaurants and theaters, the Madeline L. Olewine Memorial Library, and the Polyclinic Medical Building. The corridor ends at Italian Lake Park.

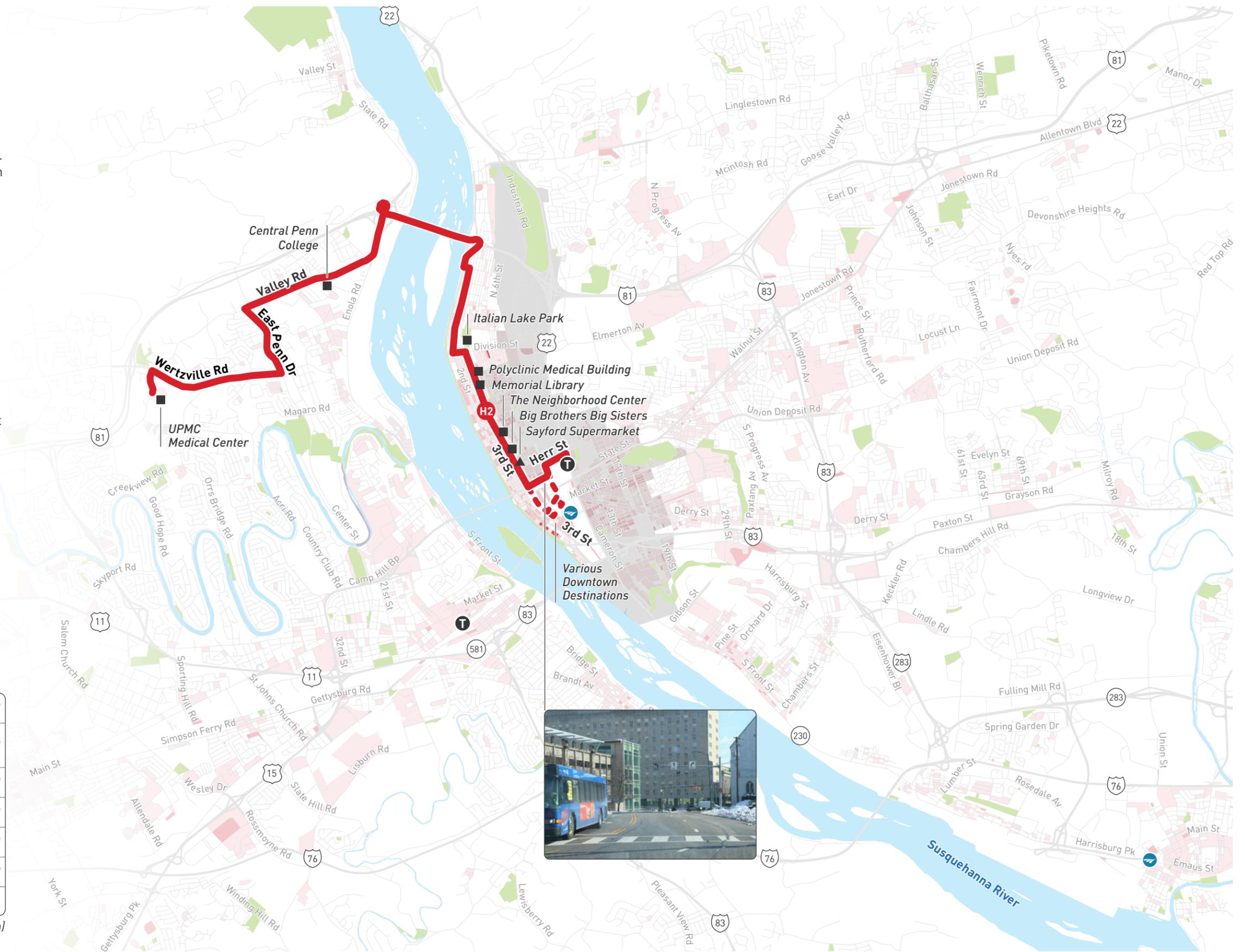
While the proposed route does not travel through downtown Harrisburg, there is opportunity to run the bus south on 7th Street through Downtown to connect to Market Street and the State Capitol Complex before continuing north on 3rd Street. This could provide job access for Uptown residents working Downtown and could bring transit corridor improvements to buses running through Downtown.

Italian Lake Park may not be a particularly strong end of line anchor, so future studies should include some thought as to the end of line location for this corridor. One option could be the Camp Curtin Middle School on 6th Street.

In a future network, this corridor and Corridor G1 can both be constructed if there is high enough demand in the Uptown Harrisburg area. Likely one will be chosen to serve the area primarily, although it is possible to create a third option that combines the corridor on 3rd Street for a portion of travel and 6th Street for another portion. Closer to Downtown, 3rd Street has a higher concentration of destinations, but 6th Street has more consistent ridership demand throughout. Generally, the eastern side of this neighborhood has more ridership propensity compared to the waterfront side.

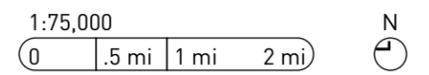
Corridor Length (miles)	11 (13)
Average daily boardings within ½ mile (excluding near transfer center)	704 (747)
% Low-Income people within a ½ mile	19% (19%)
% People of Color within a ½ mile	49% (49%)
% household with no vehicle within a ½ mile	17% (17%)
Jobs within a ½	43,116 (49,897)
Existing routes along corridor	2, 3, 3/6, F, W

(With HIMC Downtown Extension)



Harrisburg Corridors

- HIMC
- - - HIMC Extension
- T Transfer Center
- A Amtrak Station
- Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

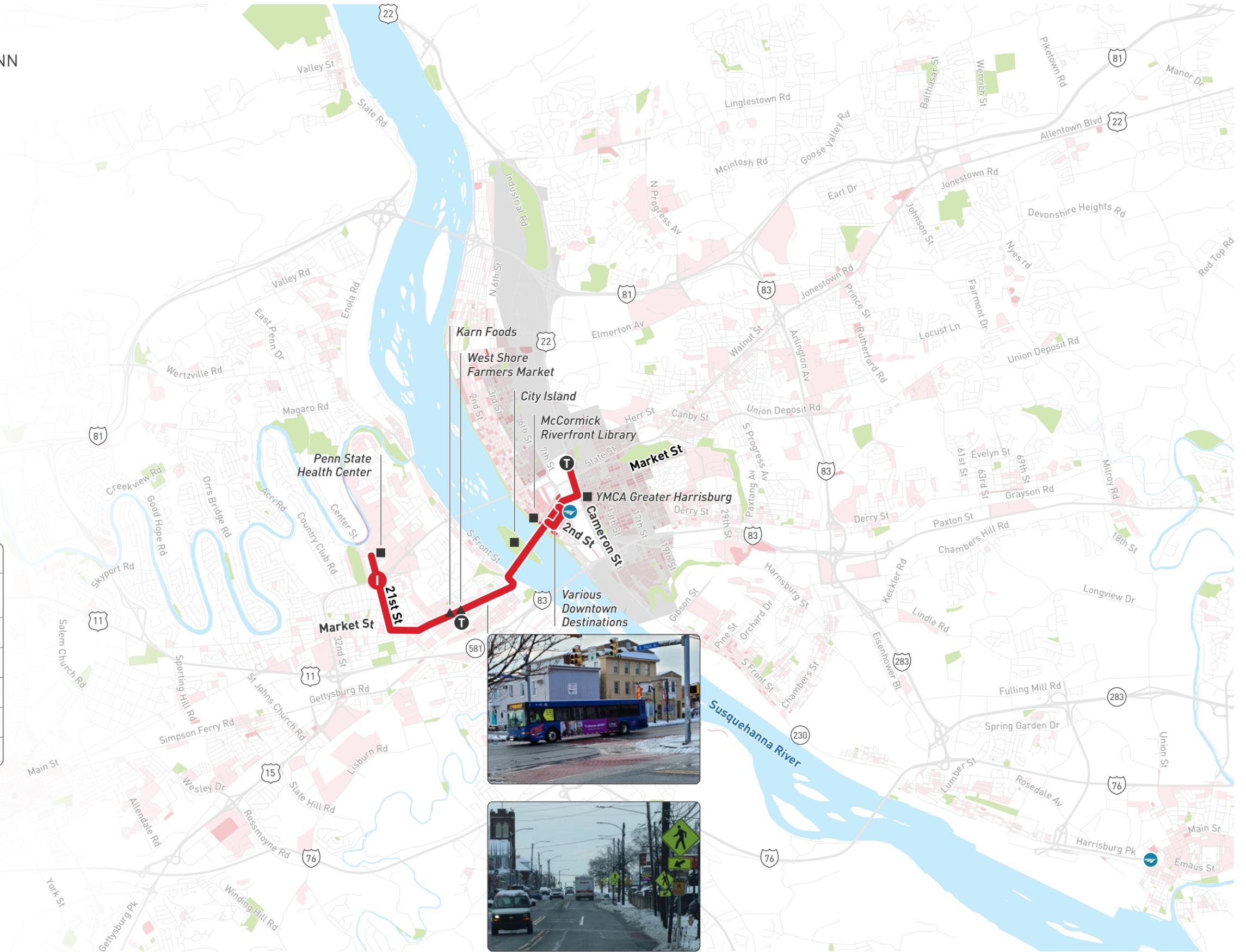


HARRISBURG TRANSFER CENTER TO PENN STATE HEALTH CENTER VIA MARKET

This corridor begins at the Harrisburg Transfer Center and travels south down Cameron Street turning onto Market Street with a detour to the Chestnut Street Amtrak connection stop. The bus would then continue to Market, crossing the Market Street Bridge, and passing the West Shore Farmers Market before turning north onto 21st Street, which the corridor follows until turning into the Penn State Holy Spirit Medical Center. This is an area with less ridership propensity than other proposed corridors. However, high frequency service from the transfer center and Amtrak Station to the Medical Center is necessary for those who do not have a car.

Likely, much of the ridership of this route would come from transfers, with riders coming from more residential areas in Harrisburg across the river to the Medical Center. More study is needed to understand the demand patterns to this area, and where both patients and employees may be coming from to the transportation center. This corridor shares a substantial amount of overlap with other corridors (including corridors A - two-hub, J - Camp Hill, and K - Carlisle), and depending on project development, may make sense as a service variant from one of those corridors as opposed to a standalone corridor.

Corridor Length (miles)	4.5
Average daily boardings within 1/2 mile (excluding near transfer center)	419
% Low-Income people within a 1/2 mile	22%
% People of Color within a 1/2 mile	49%
% household with no vehicle within a 1/2 mile	20%
Jobs within a 1/2	45,970
Existing routes along corridor	A, B, C, D, M



Harrisburg Corridors

- HMC
- T Transfer Center
- Amtrak Station

- Landmarks
- High Ridership Propensity

- Low to High Population and Job Density

1:75,000

0 .5 mi 1 mi 2 mi

N

J HARRISBURG TRANSFER CENTER TO CAMP HILL SHOPPING CENTER VIA MARKET

This route begins at the Harrisburg Transfer Center and travels south down Cameron Street until turning onto Market Street, with a short loop to Chestnut Street to provide Amtrak station service before crossing Market Street Bridge with a potential stop at City Island. The bus would then continue on Market Street to Camp Hill, where it would turn south on 32nd Street and arrive at the Camp Hill Shopping Center.

The Camp Hill Shopping Center is currently a very high ridership stop, and Camp Hill is a dense mixed use neighborhood that could use service for both local travel and getting across the river. This Corridor is a slight extension/variation of Corridor X. In fact, this part of Camp Hill would be a great place for the Transfer Center on the west side of the river given the high demand to this area.

Corridor Length (miles)	5
Average daily boardings within ½ mile (excluding near transfer center)	447
% Low-Income people within a ½ mile	24%
% People of Color within a ½ mile	50%
% household with no vehicle within a ½ mile	22%
Jobs within a ½	42,885
Existing routes along corridor	A, B, C, D, M



Harrisburg Corridors

— HIMC

Ⓜ Transfer Center

Ⓜ Amtrak Station

▲ Landmarks

■ High Ridership Propensity

■ Low to High Population and Job Density

1:75,000

0 .5 mi 1 mi 2 mi



K HARRISBURG TRANSFER CENTER TO CARLISE VIA CARLISE PIKE

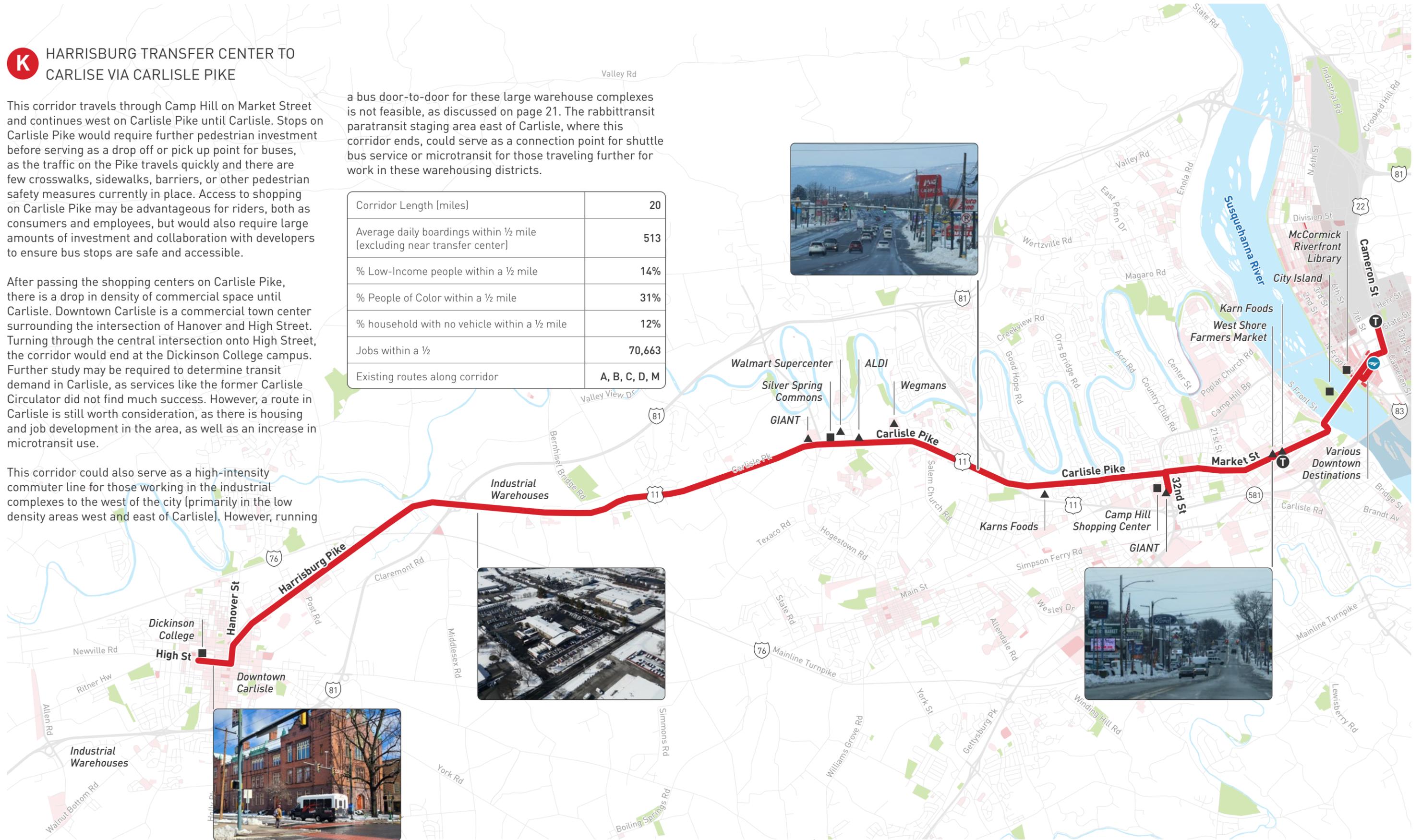
This corridor travels through Camp Hill on Market Street and continues west on Carlisle Pike until Carlisle. Stops on Carlisle Pike would require further pedestrian investment before serving as a drop off or pick up point for buses, as the traffic on the Pike travels quickly and there are few crosswalks, sidewalks, barriers, or other pedestrian safety measures currently in place. Access to shopping on Carlisle Pike may be advantageous for riders, both as consumers and employees, but would also require large amounts of investment and collaboration with developers to ensure bus stops are safe and accessible.

After passing the shopping centers on Carlisle Pike, there is a drop in density of commercial space until Carlisle. Downtown Carlisle is a commercial town center surrounding the intersection of Hanover and High Street. Turning through the central intersection onto High Street, the corridor would end at the Dickinson College campus. Further study may be required to determine transit demand in Carlisle, as services like the former Carlisle Circulator did not find much success. However, a route in Carlisle is still worth consideration, as there is housing and job development in the area, as well as an increase in microtransit use.

This corridor could also serve as a high-intensity commuter line for those working in the industrial complexes to the west of the city (primarily in the low density areas west and east of Carlisle). However, running

a bus door-to-door for these large warehouse complexes is not feasible, as discussed on page 21. The rabbittransit paratransit staging area east of Carlisle, where this corridor ends, could serve as a connection point for shuttle bus service or microtransit for those traveling further for work in these warehousing districts.

Corridor Length (miles)	20
Average daily boardings within ½ mile (excluding near transfer center)	513
% Low-Income people within a ½ mile	14%
% People of Color within a ½ mile	31%
% household with no vehicle within a ½ mile	12%
Jobs within a ½	70,663
Existing routes along corridor	A, B, C, D, M



Harrisburg Corridors

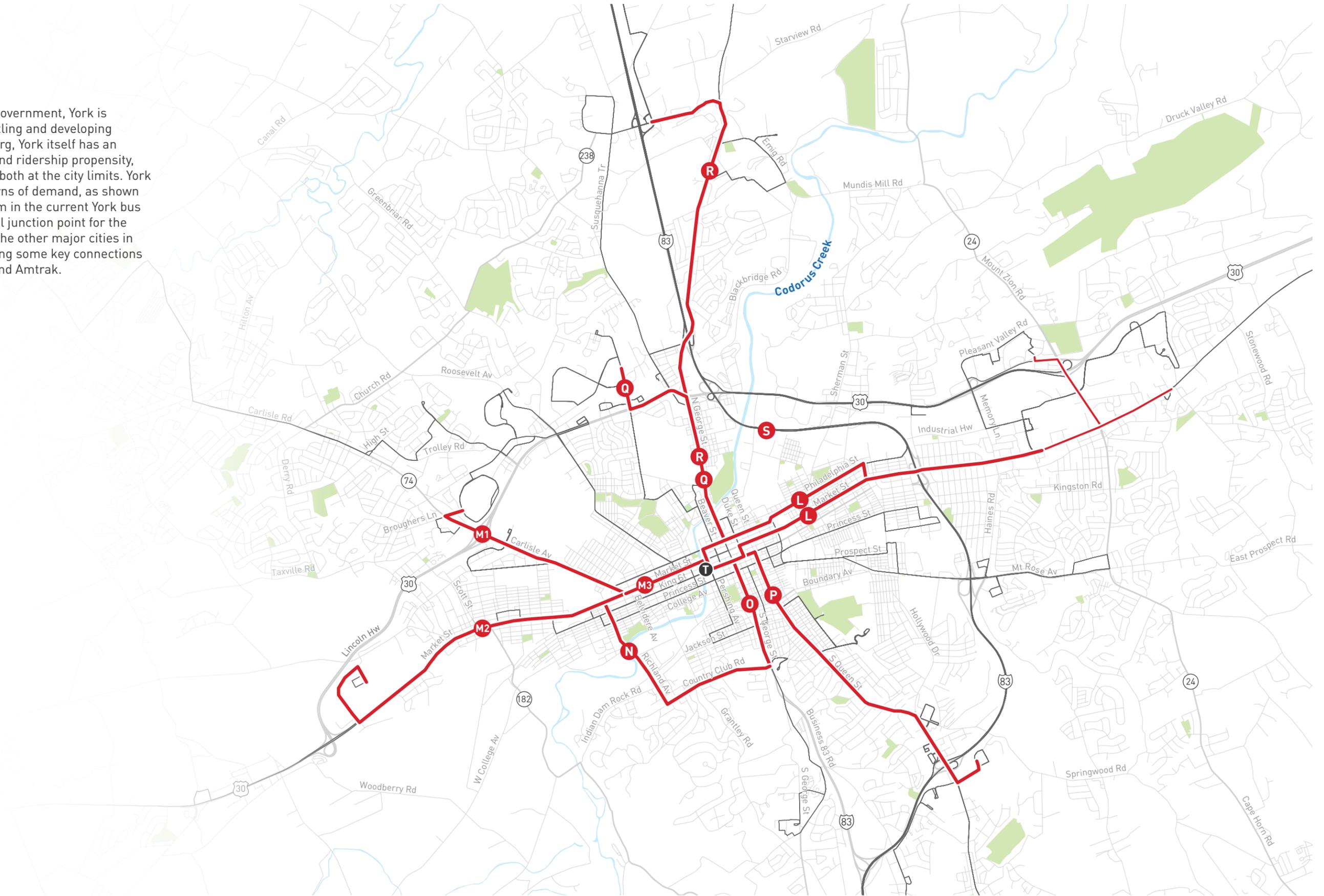
- HIMC
- T Transfer Center
- Amtrak Station
- ▲ Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

1:75,000



YORK CORRIDORS

While Harrisburg is the seat of government, York is a quaint, smaller city with a bustling and developing downtown. Similarly to Harrisburg, York itself has an extremely high level of density and ridership propensity, with a fairly extreme drop-off in both at the city limits. York has some clear east-west patterns of demand, as shown by how well those routes perform in the current York bus network. York serves as a critical junction point for the region since it is between all of the other major cities in the area. Despite this, it is missing some key connections to destinations like the airport and Amtrak.



York Corridors

- High Intensity Mobility Corridors
- T Transfer Center
- Existing Routes



YORK TRANSFER CENTER TO YORK MALL SHOPPING CENTER VIA E MARKET

This corridor begins at York Transfer Center and continues east on Market Street until the major retail centers on Market Street and Memory Lane. The portion of east York that this corridor traverses is extremely dense and has high ridership propensity until reaching Harrison Street, and then becomes a less dense area but with major retail destinations that drive a substantial portion of today's ridership on the 1E.

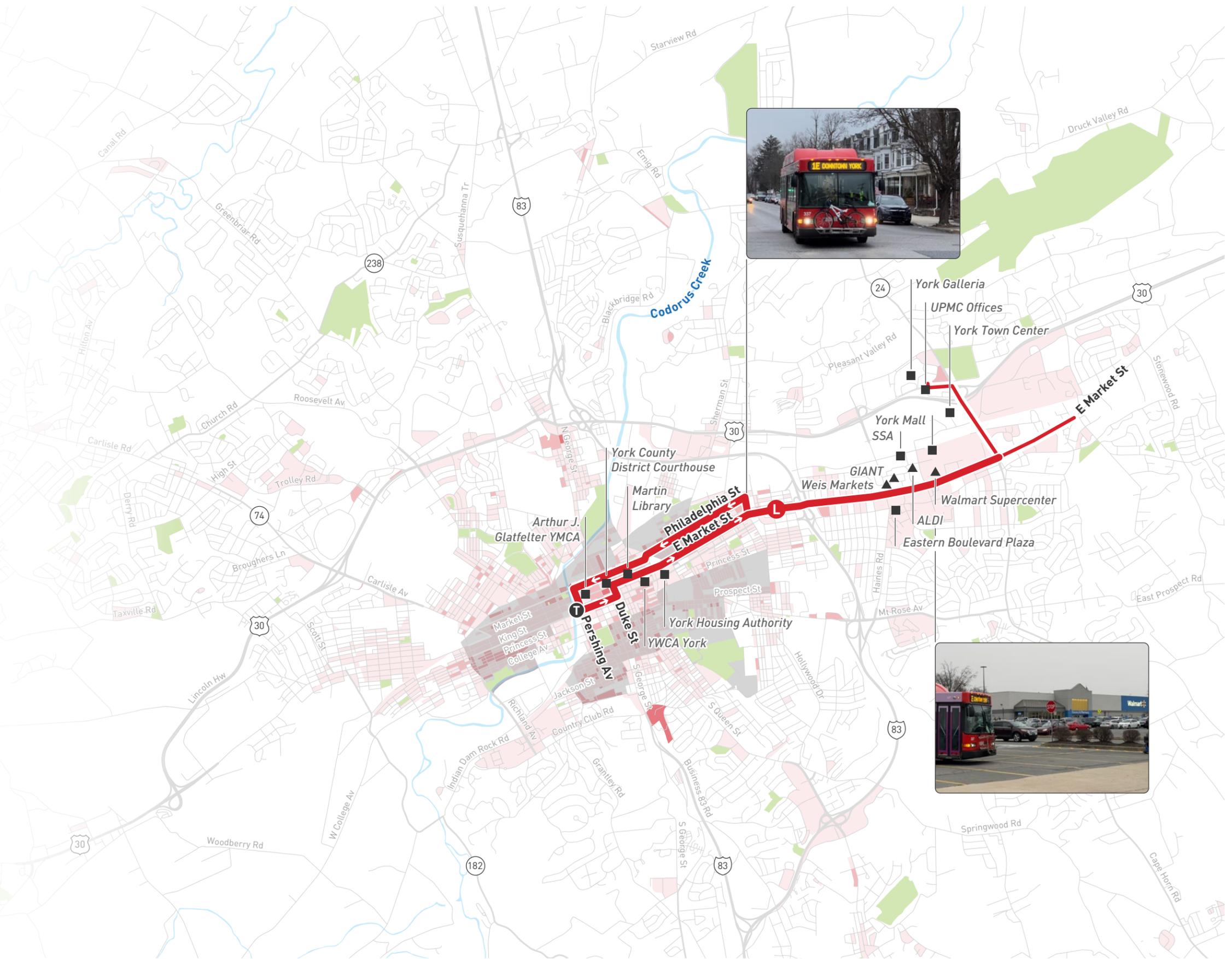
There are then two variants, shown as thin lines on the map to the right, which continue the service to the York Galleria Mall and Stonybrook Shopping Center.

The 1E has recently been piloting high frequency service, with 15 minute service from the AM peak to the PM peak, and 30 minute service at nights and weekends. This level of service is similar to that proposed for a High Intensity Corridor. Early signs show that this service improvement has seen success on this route. Today's 1E is a complicated route with many variants, so some simplification would likely need to happen to make it clear which service would be the high-intensity service and which would be lower frequency coverage.

A portion of this corridor is on paired one-way streets: East Market and Philadelphia. In general, paired one-way streets are less efficient for transit service, more confusing for new riders, and sometimes require more capital investment depending on the infrastructure requirements for corridors. While unlikely in the near term, turning one of the two streets into a busway and one into a two-way car street could help mitigate some of these issues in the long-term.

Corridor Length (miles)	3.5 (6)
Average daily boardings within ½ mile (excluding near transfer center)	827 (944)
% Low-Income people within a ½ mile	30% (24%)
% People of Color within a ½ mile	54% (45%)
% household with no vehicle within a ½ mile	17% (13%)
Jobs within a ½	19,739 (25,538)
Existing routes along corridor	1E, 5E

(with less frequency HIMC)



York Corridors

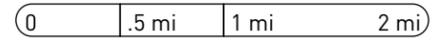
— HIMC — HIMC with less Frequency T Transfer Center

▲ Landmarks

High Ridership Propensity

Low to High Population and Job Density

1:50,000

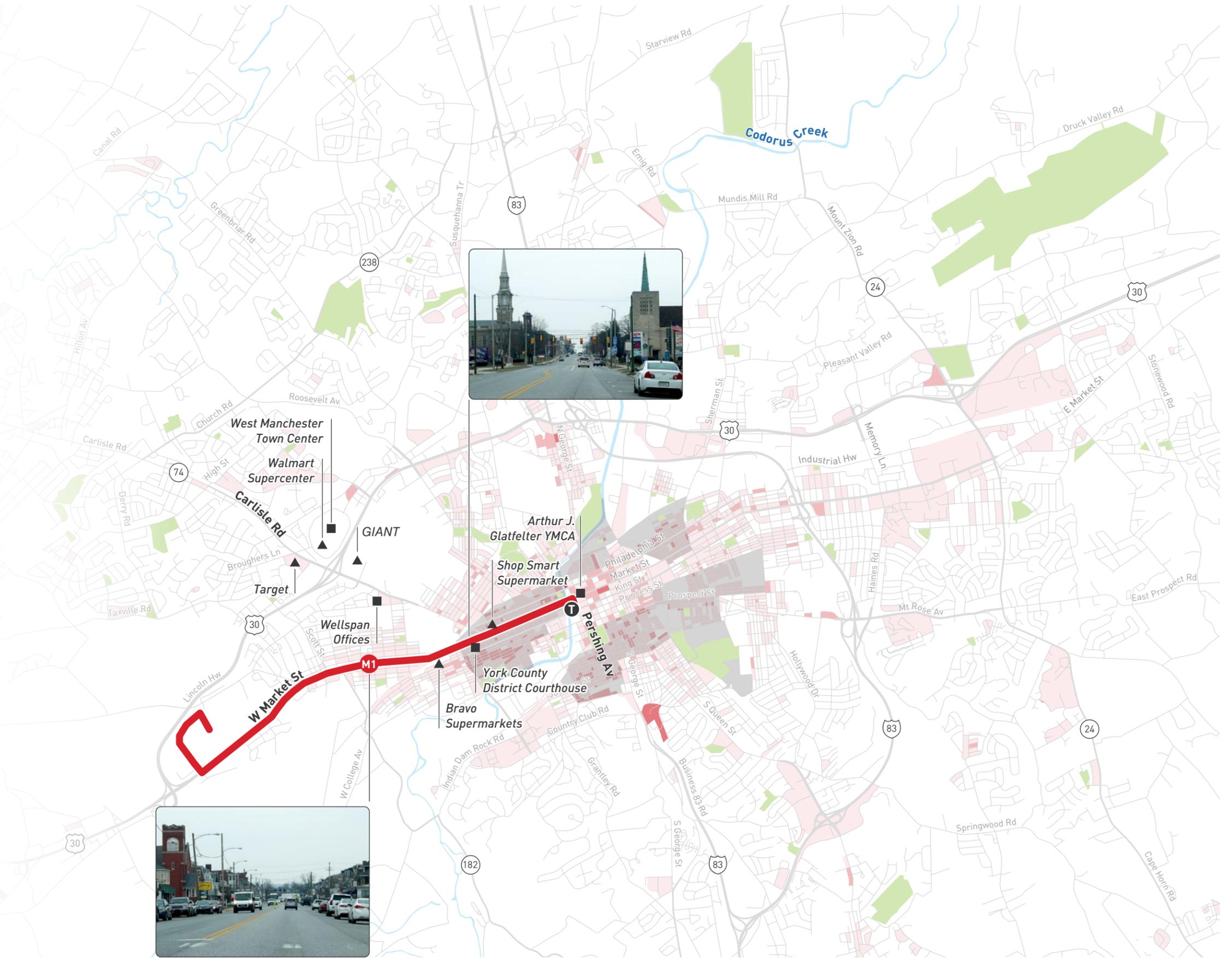


N

M1 YORK TRANSFER CENTER TO WEST MANCHESTER MALL

This corridor begins at the York Transfer Center and goes east along West Market until Carlisle Avenue, where it continues until the West Manchester Mall. This corridor has a lot of potential, with high ridership in today's network and a variety of destinations, including retail centers, schools, and the front entrance of the York Expo Center. Additionally, there are plans to construct high density age-restricted housing units near the end of this proposed corridor, which would be a good anchor for frequent service with improved stop accessibility.

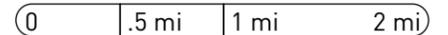
Corridor Length (miles)	3
Average daily boardings within ½ mile (excluding near transfer center)	564
% Low-Income people within a ½ mile	25%
% People of Color within a ½ mile	50%
% household with no vehicle within a ½ mile	17%
Jobs within a ½	12,699
Existing routes along corridor	1W, 5W, 16



York Corridors

- HIMC
- T Transfer Center
- Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

1:50,000

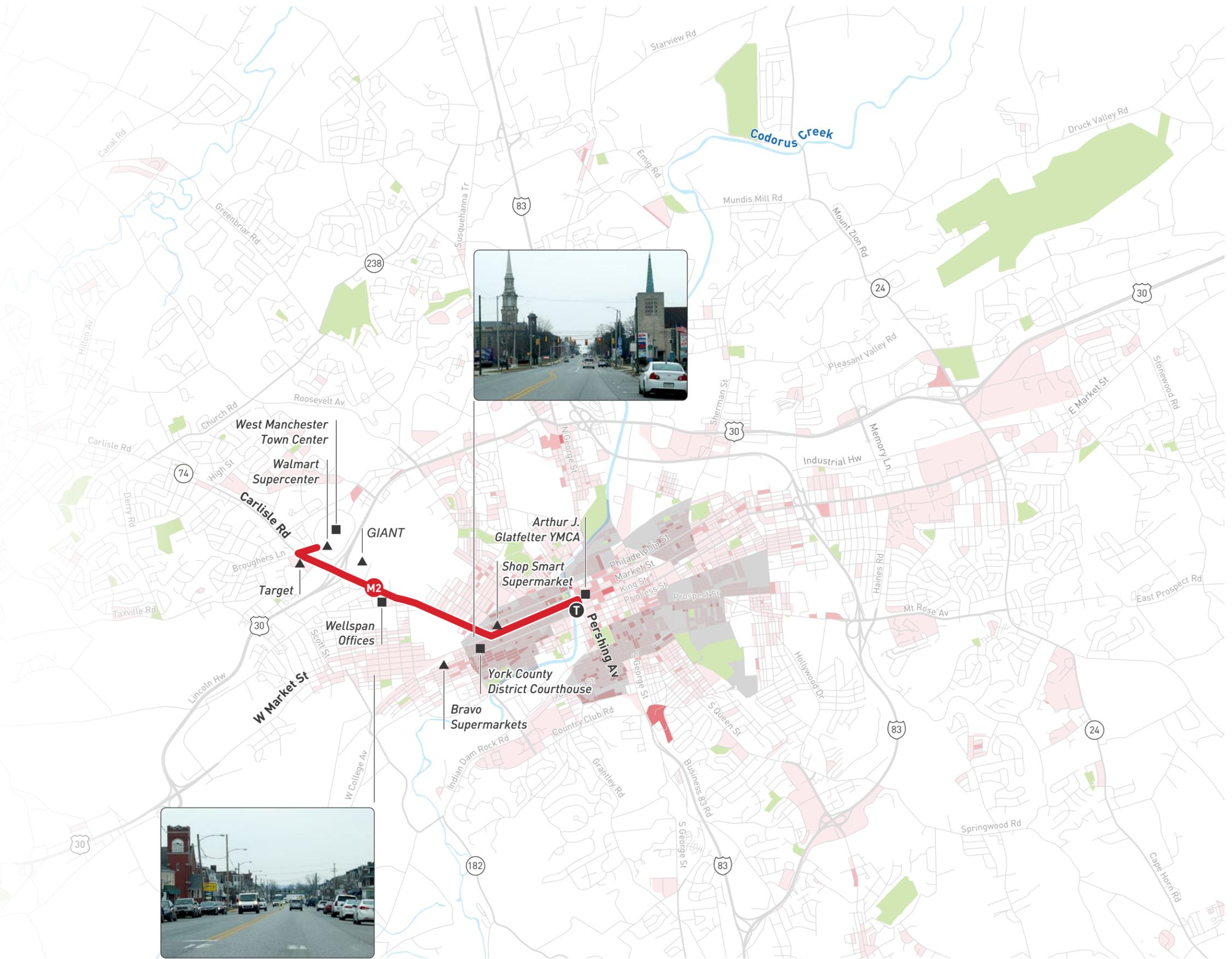


M2 YORK TRANSFER CENTER TO ZARFOSS DRIVE/RABBITTRANSIT (VIA W MARKET)

This corridor begins at the York Transfer Center and goes east along West Market until reaching the rabbittransit offices on Zarfoss Drive. The Market Street corridor has less immediately obvious demand, as the corridor drops off quickly in density. However, the westernmost portion of this corridor is the beginning of a large industrial job area. Should rabbittransit hope to serve these employers with either employer provided shuttles or microtransit zones, the rabbittransit offices could be a hub where high quality transit connects to a parking lot that can serve as a staging area for smaller services to get riders to jobs. However, there is little else in this area to support ridership on this corridor outside of the immediate West York neighborhood.

Additionally, while the rabbittransit offices are a good hub for industrial job services, it is not a strong end of line anchor for communicating service to riders.

Corridor Length (miles)	4.5
Average daily boardings within ½ mile (excluding near transfer center)	426
% Low-Income people within a ½ mile	27%
% People of Color within a ½ mile	52%
% household with no vehicle within a ½ mile	18%
Jobs within a ½ mile	12,114
Existing routes along corridor	1W, 5W, 16



York Corridors

- HIMC
- T Transfer Center
- Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

1:50,000

0 .5 mi 1 mi 2 mi

N

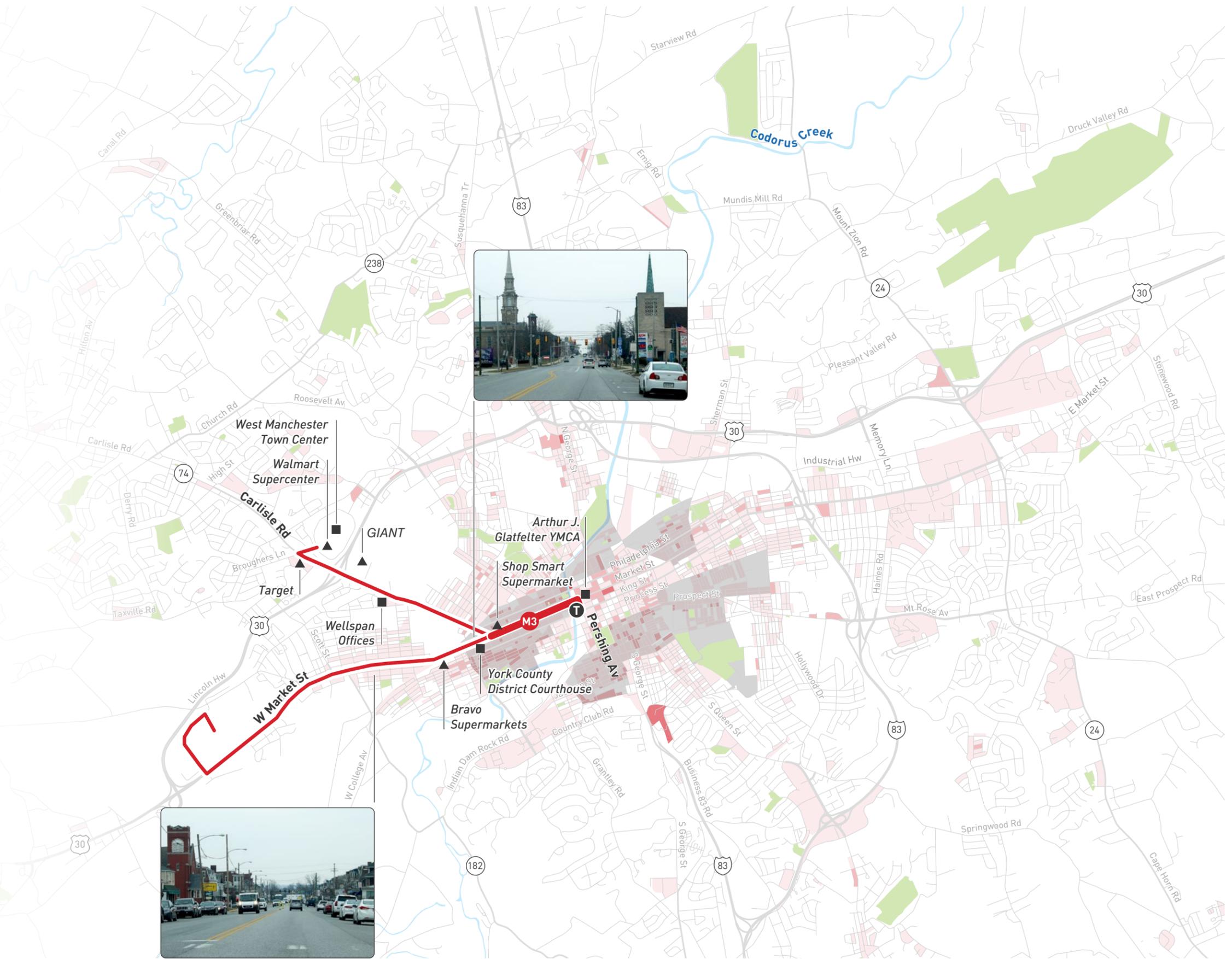
M3 YORK TRANSFER CENTER TO CARLISLE AVE (VIA W MARKET)

This corridor begins at the York Transfer Center and goes east along West Market until Carlisle Avenue, concentrating high intensity service on the overlapping section of Corridors M1 and M2. This section of west York has extremely high transit propensity and relatively high ridership for such a short 1-mile stretch of road. From the end of this corridor, buses will alternate which service they continue onto: one continuing on Market Street until the rabbittransit offices (like Corridor M2) and one turning onto Carlisle Avenue until the West Manchester Mall (Like Corridor M1).

Beyond the Market Street and Carlisle Ave intersection, service would be fairly frequent, but there would be less capital investment in those portions of the route than in the easternmost portion of the corridor. This option may be preferable if the West Manchester Mall corridor does not have enough demand to warrant 15 minute service by itself.

Corridor Length (miles)	1 (6.5)
Average daily boardings within ½ mile (excluding near transfer center)	370 (608)
% Low-Income people within a ½ mile	30% (23%)
% People of Color within a ½ mile	57% (46%)
% household with no vehicle within a ½ mile	22% (17%)
Jobs within a ½ mile	8,887 (15,397)
Existing routes along corridor	1W, 5W, 16

(with less frequency HIMC)



York Corridors

— HIMC — HIMC with less Frequency T Transfer Center

▲ Landmarks

High Ridership Propensity

Low to High Population and Job Density

1:50,000

0 .5 mi 1 mi 2 mi

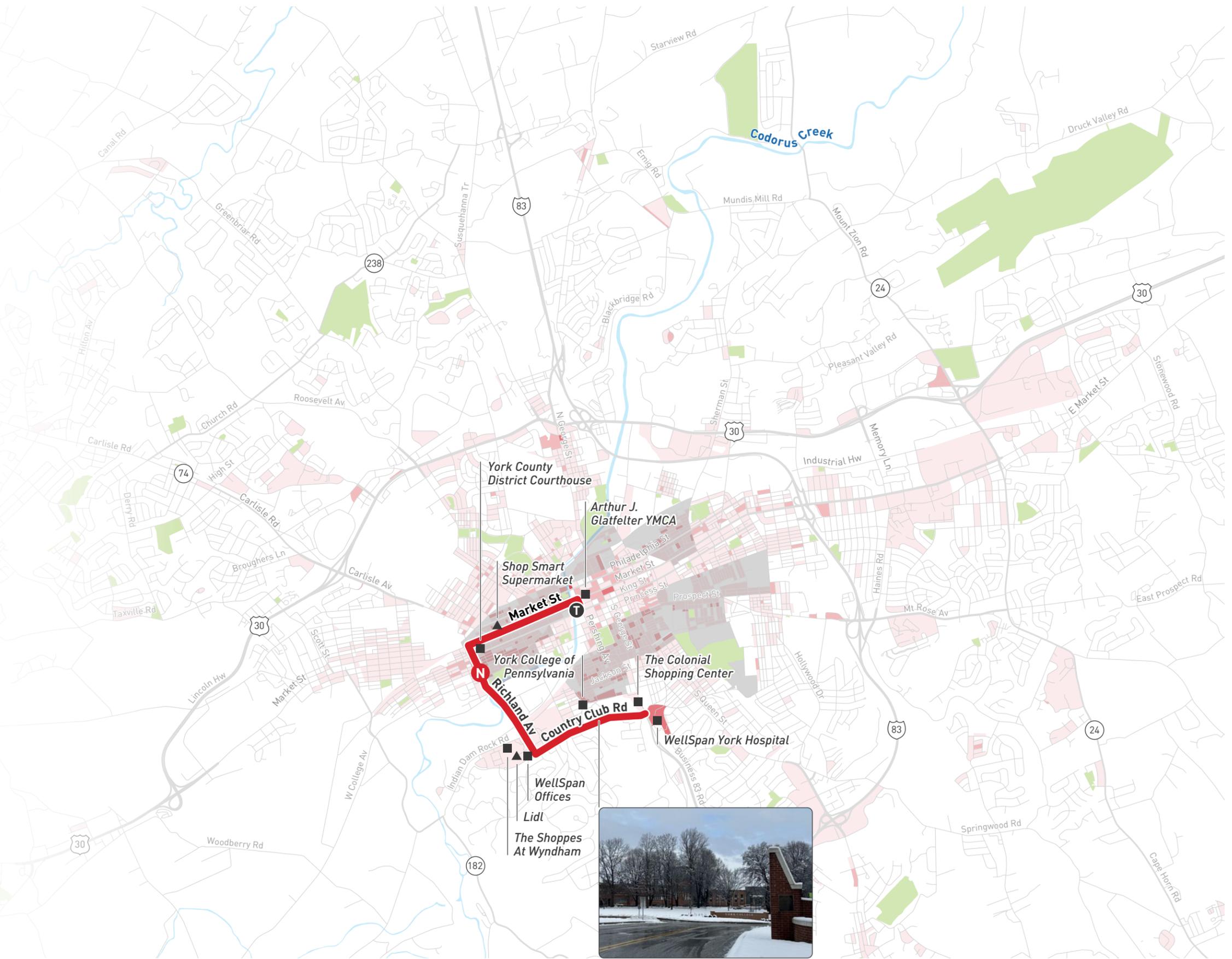
N

N YORK TRANSFER CENTER TO WELLSPAN YORK HOSPITAL VIA COUNTRY CLUB RD

Alternatively, or in addition to corridor N, York Transfer Center can be connected to WellSpan York Hospital through west York instead of east York. This corridor continues west on Market from the Transfer Center, south on Richland, and then east on Country Club Road until reaching the hospital. This corridor would connect the west side of York, which is further away and has a high transit propensity, to the hospital with a one seat high-quality ride.

This corridor would need substantial study on the demand for transit along the Richland Avenue and Country Club Road segments. This area has low ridership propensity and low density, but has some major destinations, including other healthcare providers and York College. There is currently no service in this area, and past attempts to provide transit to this area have not seen success. It's important to understand how improved service quality may change that in the future and how potential low-demand in the middle of the corridor does or does not outweigh the demand for connecting west York to South George Street and the hospital.

Corridor Length (miles)	3.5
Average daily boardings within ½ mile (excluding near transfer center)	427
% Low-Income people within a ½ mile	28%
% People of Color within a ½ mile	52%
% household with no vehicle within a ½ mile	20%
Jobs within a ½	17,288
Existing routes along corridor	1W, 5W, 16

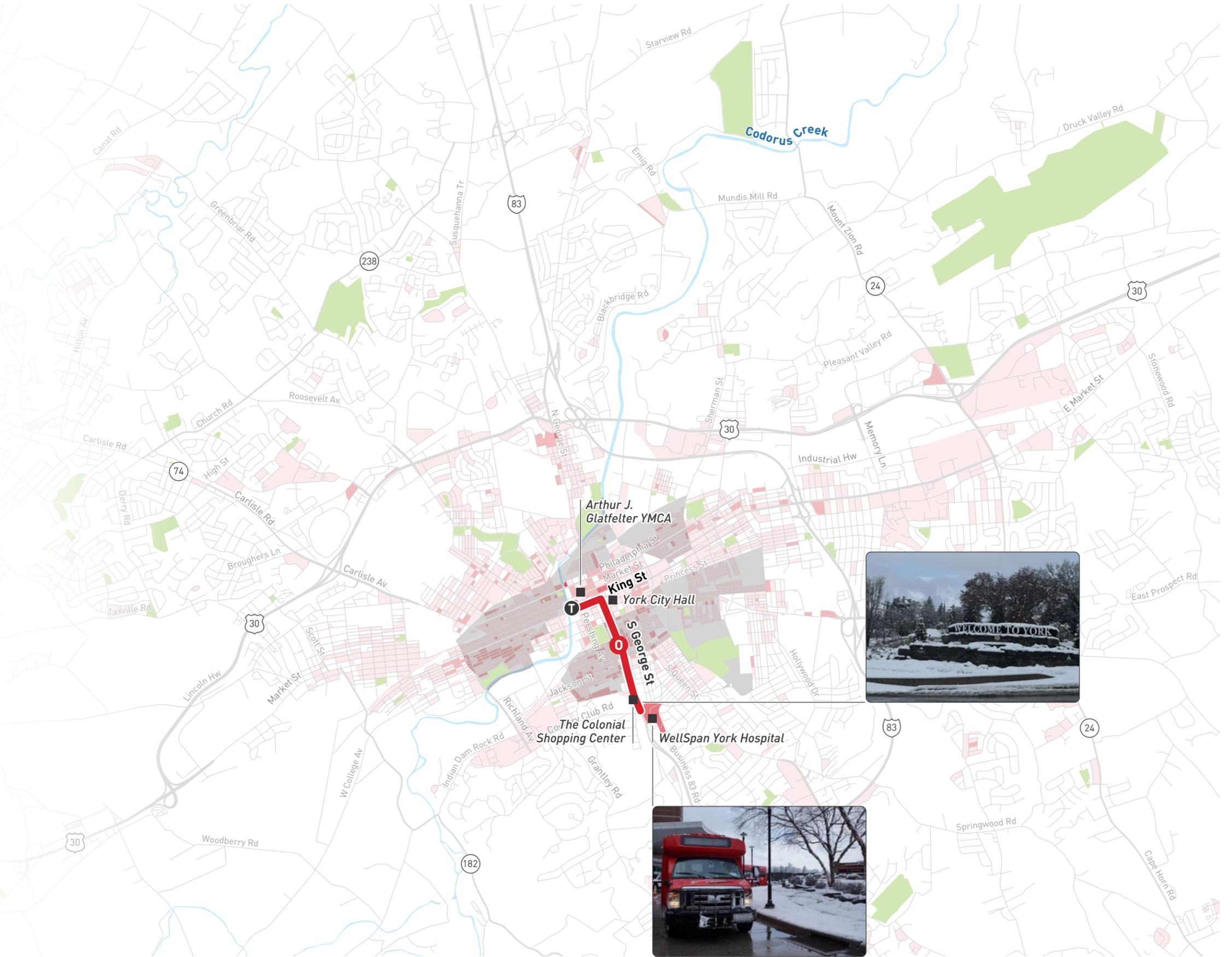


O YORK TRANSFER CENTER TO WELLSPAN YORK HOSPITAL VIA S GEORGE ST

This corridor connects York Transfer Center to the WellSpan York Hospital on South George Street. This area is mostly residential with some commercial zones and the hospital being the primary anchor. The bus route would provide service to locations in downtown York, like City Hall, while the southern end of the corridor provides access to the Colonial Shopping Center. It is a relatively dense and high transit propensity area and some of the residential areas this corridor passes through are student neighborhoods.

South George Street is being invested in for road reconstruction, and currently has a bike lane on it. This road reconstruction project could be coordinated with to ensure that a future high-intensity mobility corridor is viable. This road reconstruction project could also be thought of as a reason to deprioritize this corridor (in order to spread transportation investments geographically) or to prioritize it (in order to coordinate with and capitalize on the investments already being made by the city and to maximize the benefits to the roadway as a test corridor).

Corridor Length (miles)	1.5
Average daily boardings within ½ mile (excluding near transfer center)	278
% Low-Income people within a ½ mile	36%
% People of Color within a ½ mile	61%
% household with no vehicle within a ½ mile	22%
Jobs within a ½ mile	15,843
Existing routes along corridor	85, 95



York Corridors

— HIMC

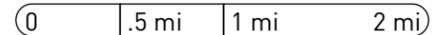
Ⓡ Transfer Center

■▲ Landmarks

■ High Ridership Propensity

■ Low to High Population and Job Density

1:50,000



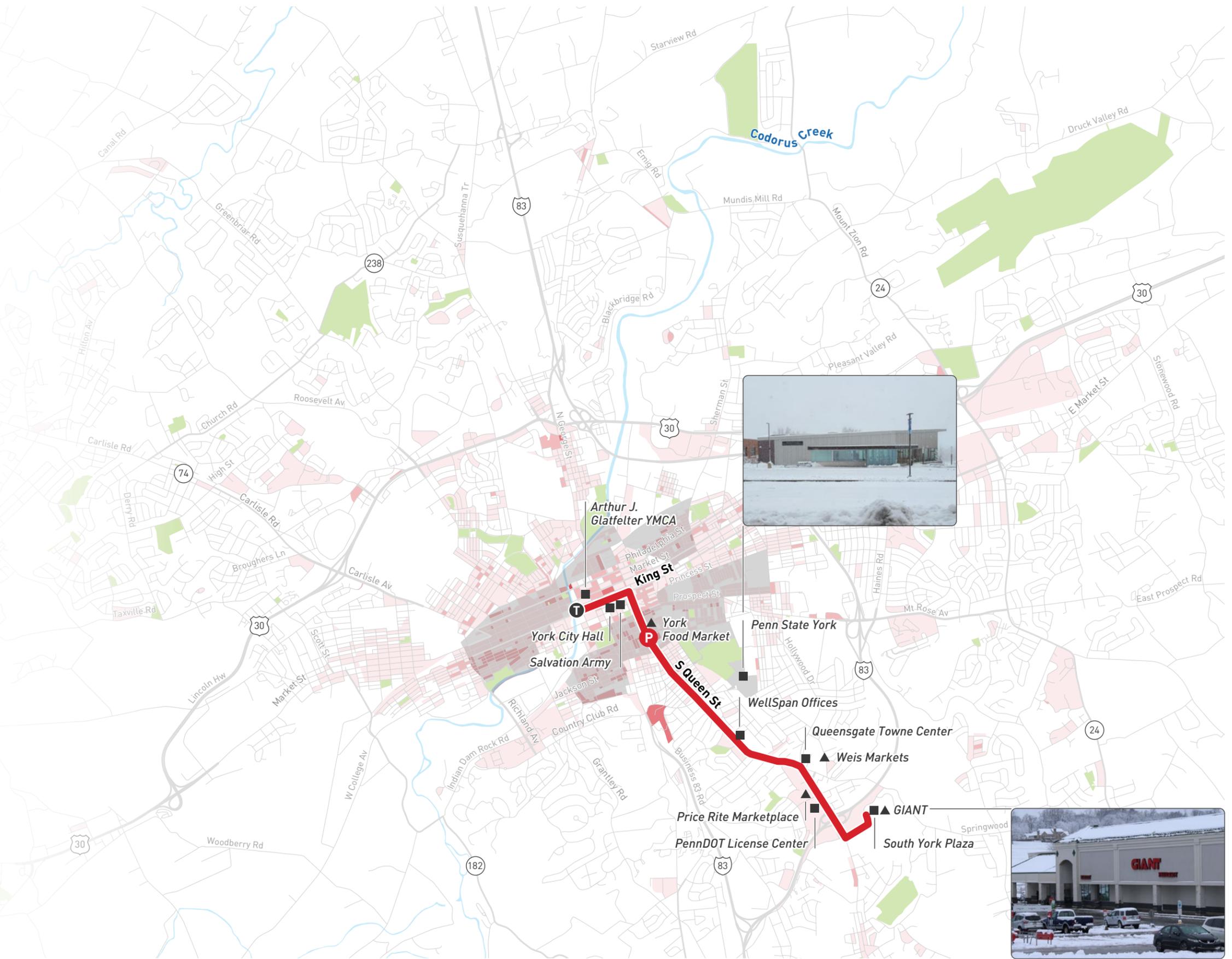
N

P YORK TRANSFER CENTER TO SOUTH YORK PLAZA VIA S QUEEN ST

This 4-mile corridor connects York Transfer Center to the South York Plaza retail center via South Queen Street. This corridor has high ridership propensity on either end and the many retail centers in these locations currently have high ridership, but there are some low propensity, low density areas in the middle through Spring Garden Township.

This is a simple straightforward corridor with a relatively high expected return on investment for rabbittransit.

Corridor Length (miles)	4
Average daily boardings within ½ mile (excluding near transfer center)	430
% Low-Income people within a ½ mile	33%
% People of Color within a ½ mile	56%
% household with no vehicle within a ½ mile	20%
Jobs within a ½ mile	20,685
Existing routes along corridor	10S, 4E, 5E



York Corridors
— HIMC **T** Transfer Center **■▲** Landmarks High Ridership Propensity Low to High Population and Job Density

1:50,000
 0 .5 mi 1 mi 2 mi **N**

Q YORK TRANSFER CENTER TO HACC VIA N GEORGE ST

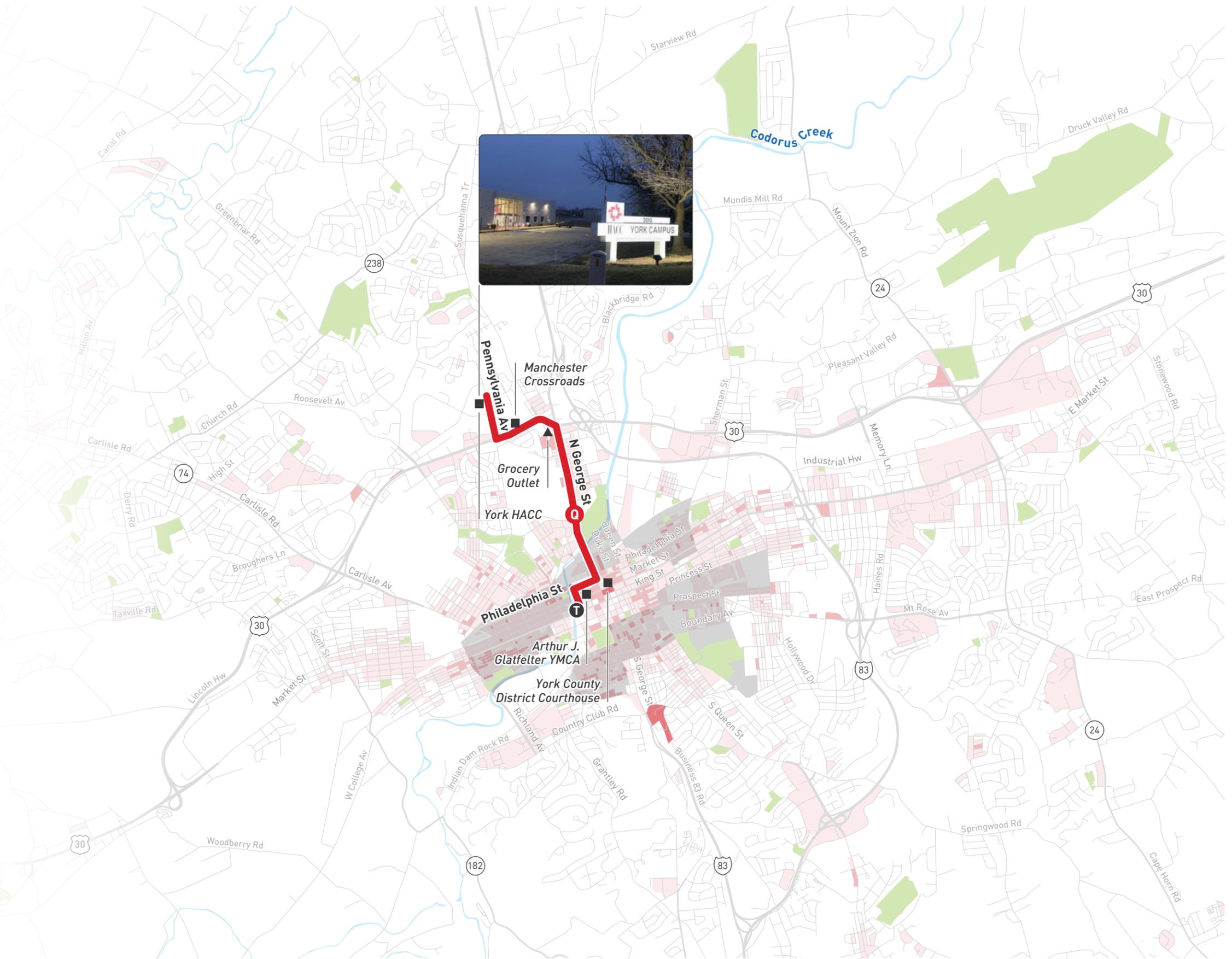
This corridor runs north on George Street from the York Transfer Center, providing service to WellSpan Park, the residential areas of north York, and the Harrisburg Area Community College. North York has medium levels of density and medium levels of transit propensity.

Alternatively, this corridor could serve some of the retail along Loucks Road/Route 30, including the Northwest Plaza, which is a high ridership area in the current system, but it is difficult for a single corridor to serve both the retail areas and HACC well.

George Street is undergoing a road reconstruction project that may make it more difficult to run buses on North George Street depending on the configuration. Additionally, this corridor requires that the bus turns and travels briefly on Loucks Road/Route 30, which is a large, often congested roadway with difficult turning movements. This area would need to be considered for significant roadway improvements if it is selected as a location for a high-intensity corridor.

In the past, this part of York has not seen substantial ridership success, but more study is needed to understand what transit service may meet the demand in the area.

Corridor Length (miles)	3
Average daily boardings within ½ mile (excluding near transfer center)	281
% Low-Income people within a ½ mile	36%
% People of Color within a ½ mile	56%
% household with no vehicle within a ½ mile	24%
Jobs within a ½	13,797
Existing routes along corridor	2N, 6N

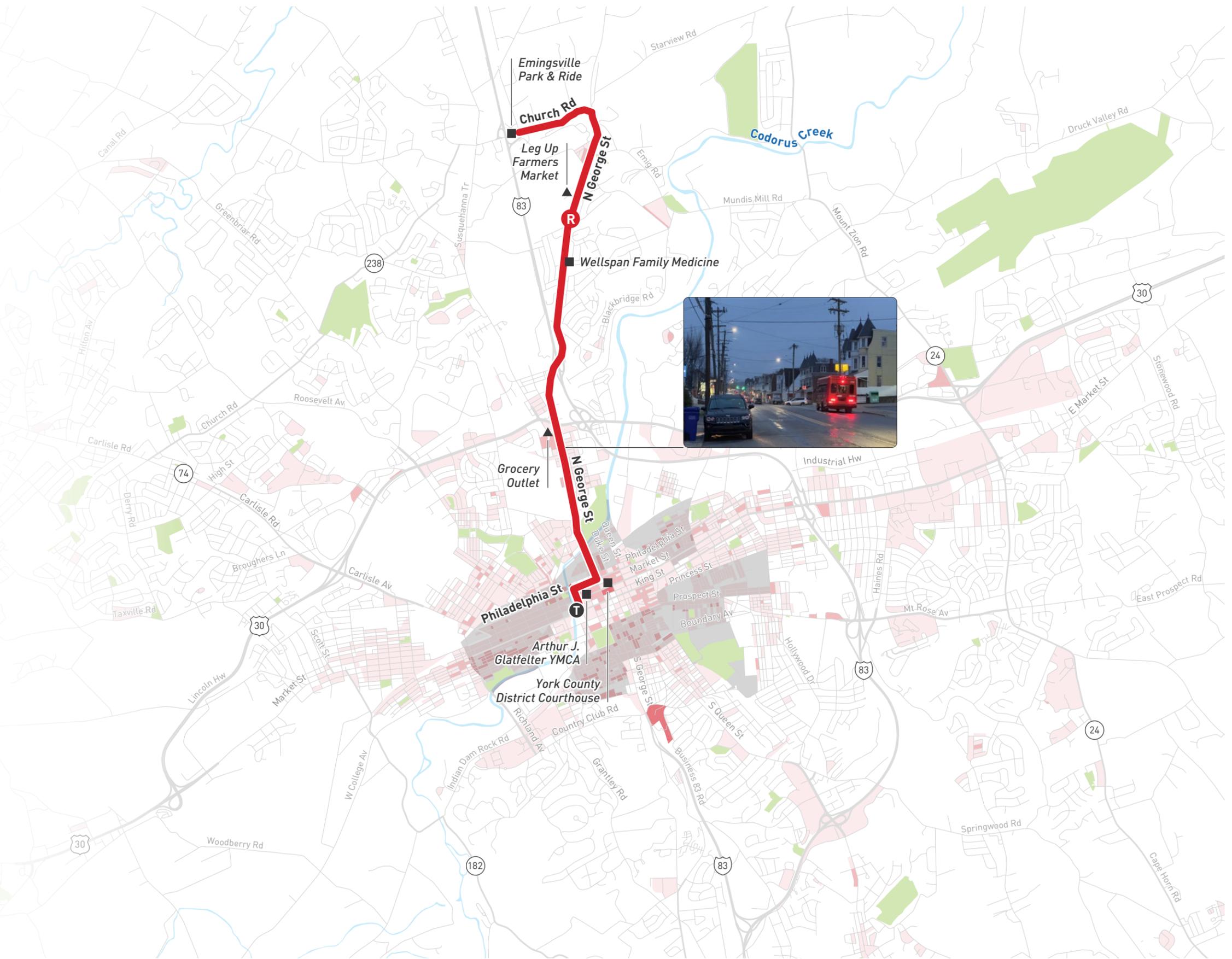


R YORK TRANSFER CENTER TO EMIGSVILLE
PARK AND RIDE VIA N GEORGE ST

This corridor is essentially a northern extension of Corridor Q, continuing north on George Street instead of turning west and into the HACC. Similarly to Corridor Q, it serves WellSpan York Arena and then the residential portion of North York. As it continues north, density and transit propensity drop off significantly, with the corridor ending at Emigsville Park and Ride.

What this extension adds is a connection to a growing industrial job area north and northwest of Emigsville Park and Ride. This corridor would be aiming to bring people from York to the jobs available in this area, where Emigsville Park and Ride could serve as a hub for more dispersed connections to jobs. More study is needed to understand whether there is enough demand to warrant the substantial length of this corridor, the majority of which is extremely low density.

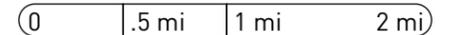
Corridor Length (miles)	5.5
Average daily boardings within 1/2 mile (excluding near transfer center)	265
% Low-Income people within a 1/2 mile	32%
% People of Color within a 1/2 mile	52%
% household with no vehicle within a 1/2 mile	20%
Jobs within a 1/2 mile	15,777
Existing routes along corridor	2N, 6N



York Corridors

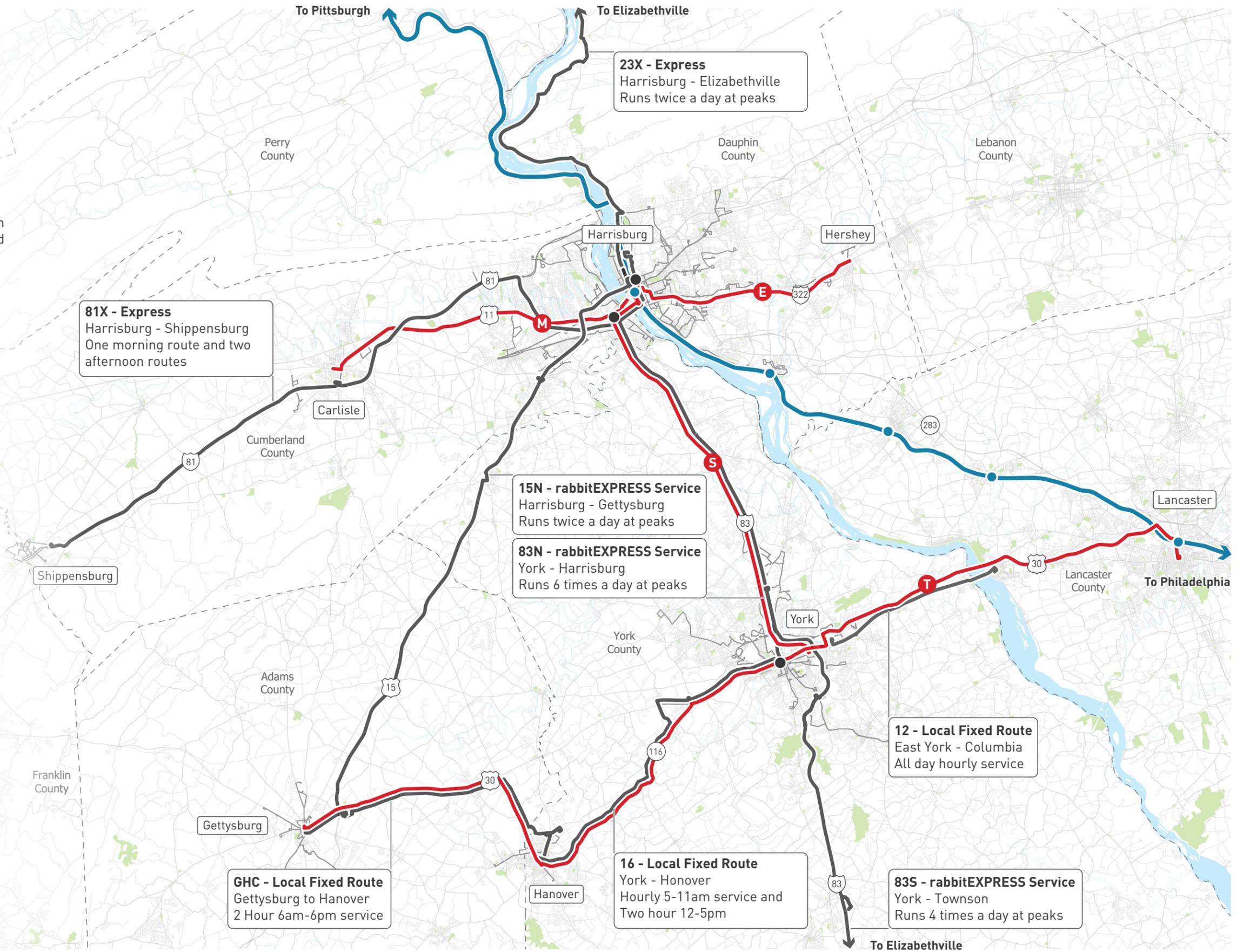
- HIMC
- T Transfer Center
- Landmarks
- High Ridership Propensity
- Low to High Population and Job Density

1:50,000



REGIONAL CORRIDORS

The following corridors discussed are referred to as Regional Corridors. These corridors are the longest proposed corridors, connecting major cities and towns to each other. Service and infrastructure on these corridors may look a little different than the standards set by rabbittransit. They may not be quite as frequent or stop quite as often, but they provide a reliable major connection for people traveling between these hubs. These trips could be for work, they could be for school, they could be for entertainment, or they could be for travel connections to Amtrak and the airport

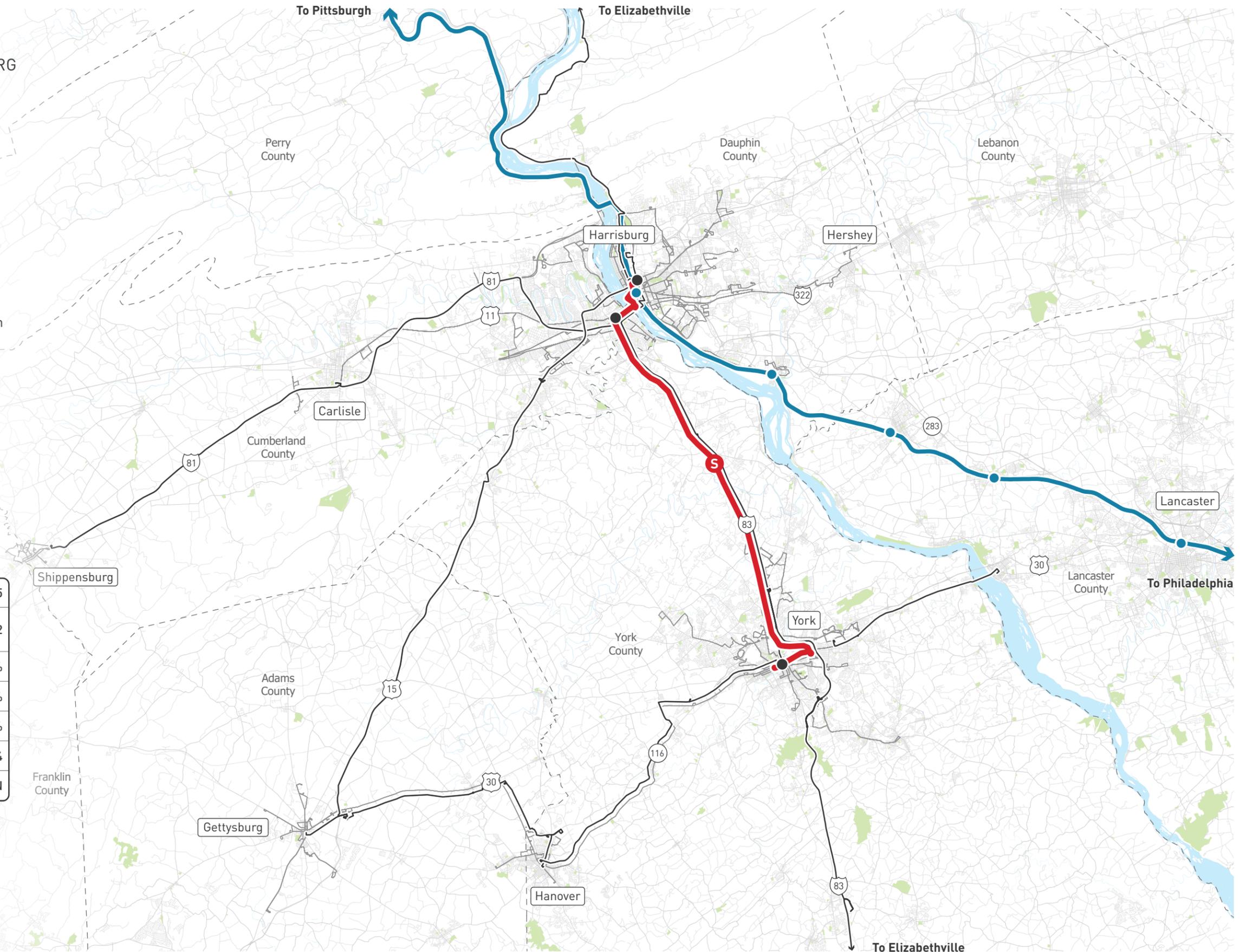


S YORK TRANSFER CENTER TO HARRISBURG TRANSFER CENTER, EXPRESS

York and Harrisburg are substantially different cities with different opportunities. Harrisburg is the State Capital, with a variety of job opportunities, travel connections, and recreational options. York is a more quaint town, also with a growing job market and a charming and bustling downtown with recreational opportunities. The current service between these two cities is very low frequency and targets 9 to 5 commuters. However, people may want to travel for non-traditional jobs or non commuter trips, and service does not allow for them to make this trip in an easy way. A high intensity mobility corridor between the two cities could create that critical connection, but significant thought needs to be put into demand and which connections are important to make.

Currently, this corridor travels between York and Harrisburg on the west side of the river, crossing over on the Highway 83 bridge. There are a substantial number of industrial jobs off of this 83 corridor between York and Harrisburg. However, the corridor could cross over earlier, continuing on the east side of the river to provide connections to Middletown, Penn State, and the Airport, and connecting to Corridor B. This would be a less direct path and likely be a longer travel time, but depending on market demand may provide some critical connections, particularly for residents of York.

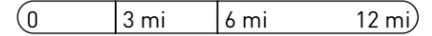
Corridor Length (miles)	28.5
Average daily boardings within 1/2 mile (excluding near transfer center)	1,082
% Low-Income people within a 1/2 mile	23%
% People of Color within a 1/2 mile	41%
% household with no vehicle within a 1/2 mile	15%
Jobs within a 1/2	72,684
Existing routes along corridor	15N, 83N



Regional Corridors

- HIMC
- Current Intercity Connection Routes
- Transfer Centers
- Amtrak Routes
- Amtrak Stations

1:350,000

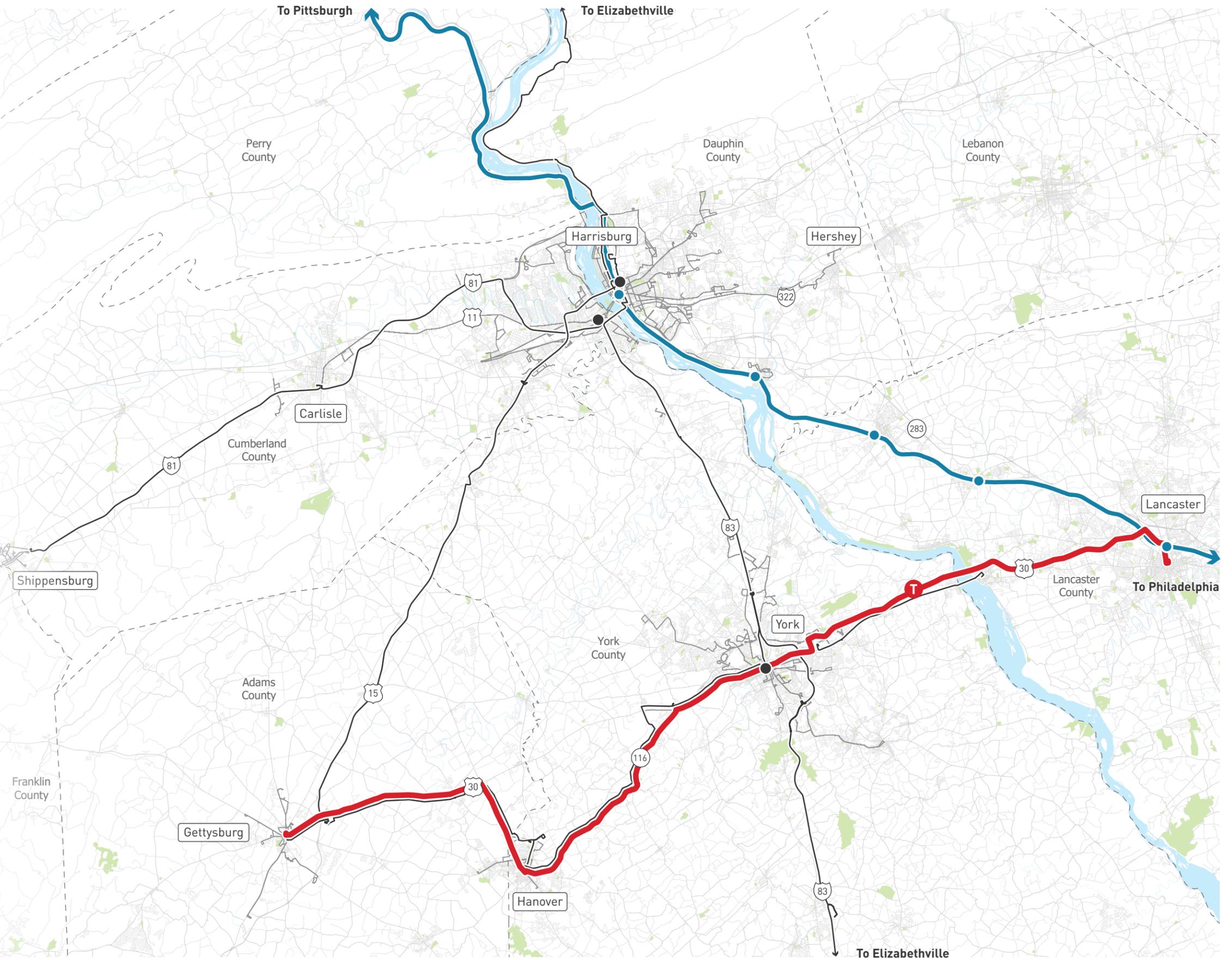


**T EXPRESS: LANCASTER TO YORK
TRANSFER CENTER TO GETTYSBURG**

This 63 mile corridor connecting Gettysburg to Lancaster is the longest corridor considered for study. With this regional corridor, this southern portion of Central PA would be fully connected across Gettysburg, Hanover, York, and Lancaster. The Lancaster connection provides access to Amtrak, and service could be timed to connect to Amtrak trains traveling on the Keystone Line.

Within a larger network of High Intensity Corridor, this regional connection could mean that people in Gettysburg or Hanover have a two seat ride to Harrisburg or connections to job opportunities and recreation all across York.

Corridor Length (miles)	63
Average daily boardings within ½ mile (excluding near transfer center)	1,220
% Low-Income people within a ½ mile	15%
% People of Color within a ½ mile	32%
% household with no vehicle within a ½ mile	11%
Jobs within a ½	101,469
Existing routes along corridor	GHC, 16, 12

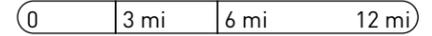


Regional Corridors

— HIMC — Current Intercity Connection Routes

● Transfer Centers — Amtrak Routes ● Amtrak Stations

1:350,000



CONCLUSION

Integrating High Intensity Mobility Corridors into the rabbitransit system has the potential to greatly improve transit access in York and Harrisburg, providing high frequency service to popular destinations. HIMC's exist on a sliding scale of system characteristics, which may be balanced to create a service that aligns with budget restraints while also meeting riders' expectations and needs. By creating standards for future planning, rabbitransit can focus on investing in amenities that will best serve their population, such as bus stop quality and connectivity.

The corridors presented in this report have been selected using data-driven analyses supplemented by qualitative reviews of an area, attempting to serve riders and also address some larger issues of connectivity and access. Many of these corridors feature connections between transfer centers, retail centers or hospitals as high-demand anchor point locations. HIMCs offer a high level of service, and ensuring this service is focused on areas with high ridership propensity was important when laying out potential corridors. Proposed corridors may change as service shifts in York and Harrisburg, and there are several questions to consider before corridors can be solidified for future study.

There are still decisions to be made regarding potential adjustments in network design following the opening of the new Harrisburg Cameron Street Transfer Center; decisions that could change future corridor structure and demand. Additionally, consideration of what purpose the HIMCs will serve is important for selection. For example, will the purpose of HIMCs be to serve faster service for long-distance regional trips? Or is serving high ridership routes between transfer and shopping centers a higher priority? There may also be a combination of service types that fit multiple needs within one corridor.

Next steps following the consideration of this report might include the in-depth study of a few selected corridors. These studies might include more in depth market and demand studies, deeper dives into infrastructure and capital needs, service planning evaluations around level of service, turning movements, and layovers, public feedback on designs, and more.

