



# Chester

Riverfront & Community  
RAIL ACCESS STUDY

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# Executive Summary

The question driving this study is the feasibility of constructing a new SEPTA regional rail station on the Wilmington/Newark line that would provide a connection with proposed development along the Chester City Riverfront. To this end, three possible alternatives were considered for a regional rail station connecting with the Chester City Riverfront:

1. **Retain the existing Highland Avenue Station:** SEPTA's engineering department estimates that the current station has a functional life of only three to five years, with estimated maintenance costs of \$75,000 per year. The station, according to SEPTA, needs to be replaced or rebuilt at the end of its useful life, here assumed to be 2015.
2. **Replace the Highland Avenue Station:** The replacement of the elevated structure would cost between \$25 and \$27 million, and would necessitate the use of a temporary station, with a minimum additional capital cost of \$250,000, to avoid service interruptions while construction is underway.
3. **Relocate the Highland Avenue Station:** The cost differences in station relocation depend on whether the new site is at street level (\$17 to \$20 million) or is elevated (\$25 to \$27 million). Other constraints, such as safe freight crossings, nearby land use, or planned/recent investment influence the location choice and cost. Depending on the work schedule, relocation may avoid the use of a temporary station.

Based on the factors outlined, Townsend/Engle or a new station at Highland Avenue appear to be the best choices, with a possibility of keeping Flower Street as another option. Townsend/Engle provides the greatest proximity and allows a safe passage over the Conrail freight tracks, and looks to balance city access to regional rail. Its adjacency to the new Dr. Martin Luther King Jr. Memorial Park presents an opportunity to build on this area's attractiveness and activity by incorporating the park and a station into a single gateway design. This could provide the strong visual link between two Chester amenities, while fulfilling developer preferences.

The details of land acquisition, design, and construction still need to be worked out between land owners, Chester City, and SEPTA. Since this would require a customized, context-sensitive station design, this alternative would require focused further investigation before eliminating the other alternative of replacing the existing Highland Avenue Station or the more distant possibility of a Flower Street location. The report informs the policy conversation and narrows possible locations for further engineering study.

A fourth alternative, enhanced fixed-route shuttle services, was not considered viable at this time due to conflicts with SEPTA operating regulations. However, an employment-based shuttle from the Highland Avenue Station, a relocated station, or the Chester Transportation Center might provide an alternative, if there is sufficient employee demand and employer financial support. Once development has occurred, it may be worth revisiting this question.



# Introduction

## Study Overview

The purpose of this study is to determine the feasibility of constructing a new regional rail station on SEPTA's Wilmington/Newark line to connect the built and proposed development on the Chester City Riverfront. The study will identify and analyze alternate locations for a station that is closer than the present Highland Avenue regional rail station to the built and proposed development along the Chester Riverfront between Highland Avenue and Flower Street.

Recent waterfront development includes the Wharf at Rivertown (with 396,000 square feet of Class A office space) and the Major League Soccer stadium (PPL Park). A critical component is the proposed mixed-use development by the Buccini/Pollin Group west of the stadium along the waterfront. This new waterfront proposal would include over 200 new residential units, over 22,000 square feet of retail space, 335,000 square feet of office space, a 200,000 square foot exhibition center, and a 1,350-space parking garage.

Additionally, access between any regional rail station over the active Chester Secondary Conrail freight right of way and the waterfront needs to be safe. Options considered include:

- ▶ Retaining the current Highland Avenue Station and addressing maintenance issues
- ▶ Replacing the current station at its current elevated location with a new ADA-compliant modern facility
- ▶ Relocating the Highland Avenue Station to either an elevated or an at-grade location with a new ADA-compliant modern facility closer to Chester Riverfront attractions
- ▶ Considering enhanced shuttle connections between the station (renewed or relocated) and the riverfront

## Background

The existing regional rail at Highland Avenue Station has three to five years left for its useful life and is averaging only 84 daily boards, ranking 137<sup>th</sup> out of 150 stations, according to the 2009 Regional Rail Census. Several development investments have been made along the nearby riverfront in the last several years. The Wharf at Rivertown is a commercial office redevelopment of the former Delaware County Power Plant into Class A office space and is located on the riverfront south of the Commodore Barry Bridge. Home games for the Philadelphia Union,

Philadelphia's Major League Soccer team, are held at PPL Park at the southern foot of the Commodore Barry Bridge. This stadium also proposes to host special events throughout the year, attracting regional visitors for concerts and other entertainment. Riverfront offices, residences, and retail stores are proposed to the west of this location as well.

Other studies have been conducted for this area and include the following:

- ▶ Union Square Urban Design Plan, CH Planning, in progress
- ▶ Updates to Chester City Vision 2000, City of Chester, in progress
- ▶ East Coast Greenway Trail Feasibility Study, Delaware County Planning Department, 2010
- ▶ TOD Plan for Highland Avenue, CH Planning, 2009
- ▶ Chester City Amtrak Service, DVRPC, 2009
- ▶ Waterfront Redefined Plan, City of Chester, 2005
- ▶ Conceptual Access Plan for the City of Chester, DVRPC, 2001

A Study Advisory Committee guided this study and included representatives from the following entities: the Delaware Valley Regional Planning Commission (DVRPC), City of Chester, the County of Delaware, SEPTA, Amtrak, the Delaware County Transportation Management Association, the Consolidated Rail Corporation (Conrail), the Pennsylvania Department of Transportation (PennDOT), the Philadelphia Union, Buccini/Pollin, and CH Planning.

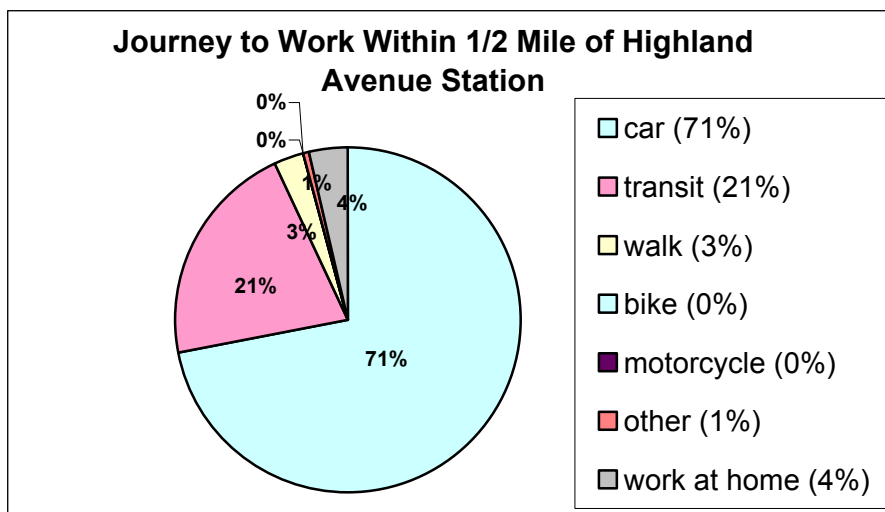


# Highland Avenue Station Study Area Overview

## Demographics

Approximately 5,800 people live within one-half mile of the Highland Avenue Station, according to the 2000 U.S. Census. The majority, 82 percent, is African-American, 13 percent are White, and three percent are Hispanic/Latino. This is a low-income area: 49 percent of households have annual incomes below \$25,000, 32 percent have incomes between \$25,000 and \$50,000, and only 19 percent have incomes above \$50,000. There are 6.2 dwelling units per acre, 51 percent of which are owner occupied. The median age is 31.6, and 1,749 residents are employed. Seventy-five percent of residents own zero or one car. The high percentage of residents with zero or one car makes transit access all the more critical to the livability of the area.

**Figure 1: Highland Avenue Station Area Journey-to-Work Mode Share**



Source: Reconnecting America, 2000 and DVRPC 2010

Figure 1 illustrates Journey-to-Work modes within a half mile of the Highland Avenue Station. While a high percentage of residents commute by car (71 percent), the alternatives do represent a significant portion of commuters. Twenty-one percent commute by transit, four percent work at home, three percent walk, and one percent uses another mode. Both two-wheeled modes, bicycling and motorcycling, register as zero percent use. Therefore, as one-quarter of the population does not commute by car, in discussions of alternative station scenarios, the day-to-

day mobility needs of residents must be considered, along with riverfront access for special events.

## Environmental Justice and Degree-of-Disadvantage Analysis

Title VI of the Civil Rights Act of 1964 and the 1994 President's Executive Order on Environmental Justice (#12898) states that no person or group shall be excluded from participation in or denied the benefits of any program or activity utilizing federal funds. Metropolitan Planning Organizations (MPOs), as a part of the United States Department of Transportation's Certification requirements, are charged with evaluating their plans and programs for Environmental Justice (EJ) sensitivity to identify any disproportionately high and adverse health or environmental effects of its programs on specific groups. In 2001, DVRPC developed a method of EJ analysis, which has been updated several times since then. U.S. Census data from 2000 is used to assess eight degrees of disadvantage (DOD): minorities, Hispanics, the disabled, carless households, impoverished households, female heads of household with children, elderly, and limited English proficiency households. Census tracts with a percent population that exceeds the regional average, or threshold, are considered EJ-sensitive.

Figure 2: Chester City Degrees of Disadvantage can be used as an indicator of EJ-sensitive areas and populations. Chester is an EJ-sensitive community; many of its census tracts have populations exceeding the regional threshold for several DODs. There are 14 census tracts within Chester City, all of which exceed the regional threshold for at least three DODs. Note that in the half-mile areas around Highland Avenue Station and PPL Park, all census tracts have five to six DODs.



A more detailed summary of DODs by census tract is summarized in Table 1: Riverfront Census Tracts with DODs above Regional Threshold, which includes only the five census tracts within the half-mile areas around Highland Avenue Station and PPL Park.

**Table 1: Riverfront Census Tracts with DODs above Regional Threshold**

Degree of Disadvantage (regional threshold)	405300	405400	404700	405700	405800	Total Tracts
Non-Hispanic Minority (24.9%)	X	X	X	X	X	5
Carless Households (16%)	X	X	X	X	X	5
Households in Poverty (10.9%)	X	X	X	X	X	5
Persons with Physical Disabilities (7.7%)	X	X	X	X	X	5
Female Head of Household with Child (7.4%)	X	X	X	X	X	5
Hispanic (5.4%)	X					1
Elderly, 75 and over (6.6%)			X	X		2
Limited English Proficiency (2.4%)						0
Total DODs	6	5	6	6	5	

Source: DVRPC 2010 (2000 U.S. Census data)

This DOD analysis calls the following to attention:

- ▶ All census tracts exceed the regional threshold for at least five DODs: Non-Hispanic Minority, Carless Households, Households in Poverty, Persons with Physical Disabilities, and Female Head of Household with Child.
- ▶ Two tracts meet the regional threshold population for Elderly, age 75 and over.
- ▶ One tract meets the regional threshold population for Hispanic population.
- ▶ None of the census tracts in this study area exceed the regional threshold for Limited English Proficiency.

All census tracts are approximately twice the regional threshold or higher for four of the DODs: Non-Hispanic Minority, Carless Households, Households in Poverty, and Female Head of Household with Child. While Chester City is considered an EJ-sensitive community for a number of reasons, these four DODs represent the most highly concentrated disadvantaged populations in the study area. Station alternative evaluations must consider the potential impact of relocation on these sensitive and often transit-dependent local populations.

## Regional Rail Service

Highland Avenue Station is one of two SEPTA Wilmington/Newark regional rail stations in Chester City, the other being the Chester Transportation Center (Chester TC), which is located 2.3 miles northeast of the Highland Avenue Station. The next outbound station is Marcus Hook Station, located in Marcus Hook, Pennsylvania, about 1.4 miles southwest of the Highland Avenue Station. Walking distance from Highland Avenue Station to the major league soccer stadium (PPL Park) is one mile via PA Highway 291, or approximately 1.2 miles via Seaport Drive. The station is a 0.9 mile walk to the Wharf at Rivertown via PA Highway 291, or 0.7 miles via Seaport Drive. It is also served by SEPTA's Route 113 bus.

Previously, there was a third rail station in Chester City, the Lamokin Station, which was located just west of Pennell Street. This station was closed in 2003 due to low ridership (see DVRPC report #03034, *Regional Rail Station Closures Study*). It averaged 47 daily boards in 2001, well below acceptable service standards. Closure was sought after repeated attempts to increase station boards failed. Eliminating a stop also increases service speed along the regional rail line, enhancing the attractiveness of inbound service to Philadelphia. The proposed Pennell Street Station alternative would site a new station in essentially the same location.

The Highland Avenue Station is the first Wilmington/Newark line station in Zone 4 and has no sales office. The station parking lot was recently paved with 30 parking spaces, and recent checks indicated nearly all parking spaces were occupied. There are two trains per hour during peak commute times (6 AM to 9 AM and 4 PM to 6 PM) and approximately 1.3 trains per hour during off peak times.

Advance purchase tickets to Center City Philadelphia cost \$6.25 peak (\$7.00 on board), and \$4.75 off-peak (\$6.00 on board), as of July 1, 2010. Round-trip tickets bought in advance are \$0.25 less than two one-way tickets. A Zone 4 TrailPass costs \$47.75 per week, or \$176 per month, as of July 1, 2010.

Ticket and TrailPass prices for Chester TC, in Zone 3, are lower than prices for Highland Avenue. Advance purchase tickets from Chester TC to Center City Philadelphia cost \$5.50 peak (\$6.00 on board), and \$4.75 off-peak (\$6.00 on board), as of July 1, 2010. A Zone 3 TrailPass costs \$42 per week, or \$155 per month, as of July 1, 2010. For regular commuters traveling to Center City Philadelphia, the Chester TC price difference represents a weekly savings of \$5.75, a monthly savings of \$21, and a yearly savings of \$252. There could be a small correlation between the lack of ridership at Highland Avenue Station when compared to the Chester Transportation Center, due to the higher priced zone designation. Perhaps changing the Highland Avenue Station to a Zone 3 station could increase ridership.

Ridership at Highland Avenue Station has increased from 50 daily boards in 2003 to 84 daily boards in 2009. This ridership is near the SEPTA service standards minimum threshold for maintaining service (75 daily boards). Ridership at adjacent stations is higher, with 303 daily boards at Chester TC, and 464 at Marcus Hook in 2009.

Site visits revealed that freight railroad tracks separate the riverfront from rail station access. The Consolidated Rail Corporation (Conrail) operates local freight rail service through Chester City on

at-grade tracks located adjacent to the riverfront development. The existing pedestrian crossings over the Conrail tracks are currently limited to Highland Avenue, Flower Street, and Norris Street, though these will soon be improved, along with the pedestrian crossing at Townsend Street.

According to the 2009 Transit Oriented Development Plan by CH Planning, Highland Avenue Station is currently in a significant state of disrepair and neglect, and current conditions are not suitable to attract or sustain current residents and employees.

CH Planning lists the following improvements necessary to bring the station up to the minimum acceptable conditions:

- Provide access that meets Americans with Disabilities Act (ADA) standards
- Replace stairs leading to station platforms
- Increase parking lot capacity, lighting, and security
- Provide seating and shelters on both platforms
- Improve signage and way-finding at and around the station
- Provide ticketing services and/or schedule information
- Provide amenities such as a news stand

These improvements are viewed as critical in providing a viable transit option for area commuters, according to the CH Planning study. The parking lot was repaved within the last year, with a capacity of about 30 slots, and has been found to be between 90 and 100 percent occupied. Chester City's comprehensive plan envisions it as a western transportation center in Chester City, particularly when new commercial and residential developments are introduced to the riverfront.

## Bus Transit Overview

Four SEPTA bus routes connect to Chester City via the Chester Transportation Center. Routes 114, 117, and 119 have been modified since 2005 (both the routing and schedule), which may account for some of the ridership increases and decreases below.

SEPTA Bus Route 113 runs between 69th Street Terminal and the Tri-State Mall via Darby and Chester. This is the only bus route with a direct connection at Highland Avenue Station. It also serves Harrah's, Chester TC, the Wharf at Rivertown, and the new PPL Park. The route has 30-minute headways at peak. Ridership has increased 18 percent in the five years from 2003 to 2008, with 4,604 to 5,446 boards, respectively.

SEPTA Bus Route 114 runs between the Darby Transportation Center and Granite Run Mall, with a connection at Chester TC. Ridership has decreased seven percent in the five years from 2003 to 2008, with 2,111 to 1,974 boards, respectively.

SEPTA Bus Route 117 runs between Fentonville and Penn State-Brandywine, with a connection at Chester TC. Ridership has increased 96 percent from 2003 to 2008, with 1,182 to 2,314 boards, respectively.

SEPTA Bus Route 119 runs between Harrah's in Chester to Cheyney University via Marcus Hook, with a connection at Chester TC. It has a stop at Highland and 3<sup>rd</sup> Street, approximately two blocks from the Highland Avenue Station. Ridership has decreased 31 percent from 2003 to 2008, with 860 to 656 boards, respectively.

Collectively, all four routes show a fair increase in ridership, but the Route 117 stands out for the degree of increase, owing in part to the service modifications. Nonetheless, all four of the Routes are within reasonable walking distance of the Highland Avenue Station and may be viewed as multimodal assets complimenting the regional rail service.





## Station Alternatives

There are three primary alternatives to consider in assessing the feasibility of a connection between a regional rail station and the riverfront.

1. Retain the existing Highland Avenue Station
2. Replace the Highland Avenue Station in its current elevated location
3. Relocate the Highland Avenue Station to either an elevated or at-grade location

This section examines each of these alternatives and considers the respective costs and benefits of each. Additionally, the creation of a connecting shuttle or circulator service is also briefly raised as an alternative.

### Station Evaluation Criteria Considerations

SEPTA helped outline evaluation criteria, including: engineering requirements, user convenience and connectivity to destinations, and long-term use concerns. One important consideration is that Amtrak owns the rail line and the station (which is leased to SEPTA) and any changes are subject to Amtrak approval. Amtrak's involvement adds an additional layer of administration and cost. Any proposed improvements would not only require Amtrak approvals, but may also require redundant Amtrak labor (engineering review, flagmen, etc.) and may be charged at a higher wage than SEPTA labor.

The following points are relevant for all station alternatives:

- ▶ Amtrak-owned rail line—all improvements at alternative station sites are subject to Amtrak approval.
- ▶ Cost of building new station—any station design, either elevated or at-grade, triggers Americans with Disabilities Act (ADA) requirements, which influence building costs.
- ▶ Costs of closing existing station—this includes consideration of displaced passengers, who may have to travel further to access a train.
- ▶ The Buccini/Pollin Group, developers of the Wharf at Rivertown, have plans to build an adjacent mixed-use development (retail/condos/apartments/office) anchored by the soccer stadium. This new waterfront development is slated to include over 200 new residential units,

over 22,000 square feet of retail space, 335,000 square feet of office space, a 200,000 square foot exhibition center, and a 1,350-space parking garage.

## Engineering and Logistics Considerations

- ▶ Condition of the current Highland Avenue Station—SEPTA engineers estimate the current location has an effective life span of only three to five years, suggesting a 2015 planning horizon. The station also requires annual maintenance of \$75,000 during this time to remain viable.
- ▶ Station at elevated level—building an above-grade structure increases the costs of design and construction (\$25 to \$27 million).
- ▶ Station at-grade level—design and construction is less expensive when the structure is at street grade (\$17 to \$20 million).
- ▶ Land availability—there must be space for the new station and necessary parking.

## Convenience and Connectivity Considerations

- ▶ Distance from any proposed station to current PPL Park, Wharf at Rivertown, or proposed riverfront development and attractions should not exceed a walkable half mile.
- ▶ Pedestrian crossings over Conrail's Chester Secondary freight line are limited and require safety enhancements—there is Transportation Improvement Program (TIP) funding in place to fix the four crossings at Highland Avenue, Townsend Street, Flower Street, and Norris Street (see Chester Waterfront Rail Crossings below).
- ▶ Station access—bridge clearances and road alignments adjacent to the station must accommodate buses, trucks, and other vehicles, thus any additional road or access improvements raise the cost.
- ▶ Ridership opportunity—any station location must present opportunities to retain previous riders and gain new ridership.

## Development Considerations

- ▶ Land ownership—ownership of land adjacent to the station impacts potential for development and future station-related expansions.
- ▶ Recent studies or programmed TIP investments:
  - ◆ Chester Waterfront Development/Streetscape Improvements (MPMS # 65127)—\$846,000 has been programmed for streetscape improvements along the Highland Avenue corridor from 2<sup>nd</sup> to 5<sup>th</sup> streets.
  - ◆ Chester Waterfront Rail Crossings (Various MPMS #'s)—\$1,500,000 has been programmed for four rail crossings on Conrail's Chester Secondary freight line at

Highland Avenue, Townsend Street, Flower Street, and Norris Street. These include the installation of high-type surfacing over the tracks (permitting foot traffic unimpeded by jutting rail tracks) and railroad warning devices with gates and other safety improvements, as required.

- ◆ The bicycle/pedestrian East Coast Greenway is routed through Chester City along PA 291 (West 4<sup>th</sup> Street) and Post Road, a block from both the Highland Avenue Station and the Chester Transportation Center.

## Retaining the Highland Avenue Station

Retaining the current elevated station with annual maintenance must be considered as a “no build” alternative in order to compare costs and benefits of station relocation. This scenario presents several benefits and potential investment opportunities:

- ◆ Highland Avenue has \$846,000 in programmed TIP streetscape improvements between 2<sup>nd</sup> and 5<sup>th</sup> Streets and along the riverfront (MPMS #65127).
- ◆ Highland Avenue is a through-street, with \$467,000 programmed in the TIP for a waterfront freight rail crossing at Highland Avenue (MPMS #90473).
- ◆ The parking lot at Highland Avenue, which was recently repaved by SEPTA, has 30 spaces.
- ◆ The Felton Fire Company parking lot across the street presents potential opportunities for multimodal transportation (such as a taxi or shuttle bus station).
- ◆ CH Planning already drafted the Transit-Oriented Development Plan for Highland Avenue in 2009, providing a blueprint for supportive development.

There are some negative factors to consider in keeping the Highland Avenue Station open:

- ◆ The station has underlying structural issues limiting its useful life to the next three to five years, after which it must be entirely rebuilt or relocated.
- ◆ The station has very low ridership (84 daily boards, ranking 137<sup>th</sup> out of 150 stations, according to the 2009 Regional Rail Census).
- ◆ There are few destinations near the station and it is not conveniently located for stadium access (almost a one-mile walk to the stadium via PA Highway 291).
- ◆ Perceived safety of the neighborhood surrounding the station may discourage new riders.
- ◆ Sidewalks do not exist between the Conrail crossing of Highland Avenue and the riverfront developments, although one could walk along PA 291.

Continued basic maintenance costs for the existing Highland Avenue Station are approximately \$75,000 per year for not more than three to five years. Thus, maintenance costs range between \$225,000 and \$375,000 over this time. A decision regarding the station would be necessary before 2015 in order to schedule work that avoids service interruptions.

## Replacing the Highland Avenue Station

SEPTA estimated a cost of \$25 to \$27 million to replace the existing elevated station. For the Highland Avenue Station, cost estimates include \$3 million for Amtrak design review costs, upwards of \$20 million for new platforms and station building, \$1.5 million for station design, and \$2 million for parking. Some of these estimated costs may be reduced or increased based on the specific needs at Highland Avenue Station. For example, depending on the new station design, the existing parking lot may not need to be replaced, or the ADA improvements could be more extensive.

## Relocating the Highland Avenue Station

The study advisory committee identified six candidate sites for potential station relocation:

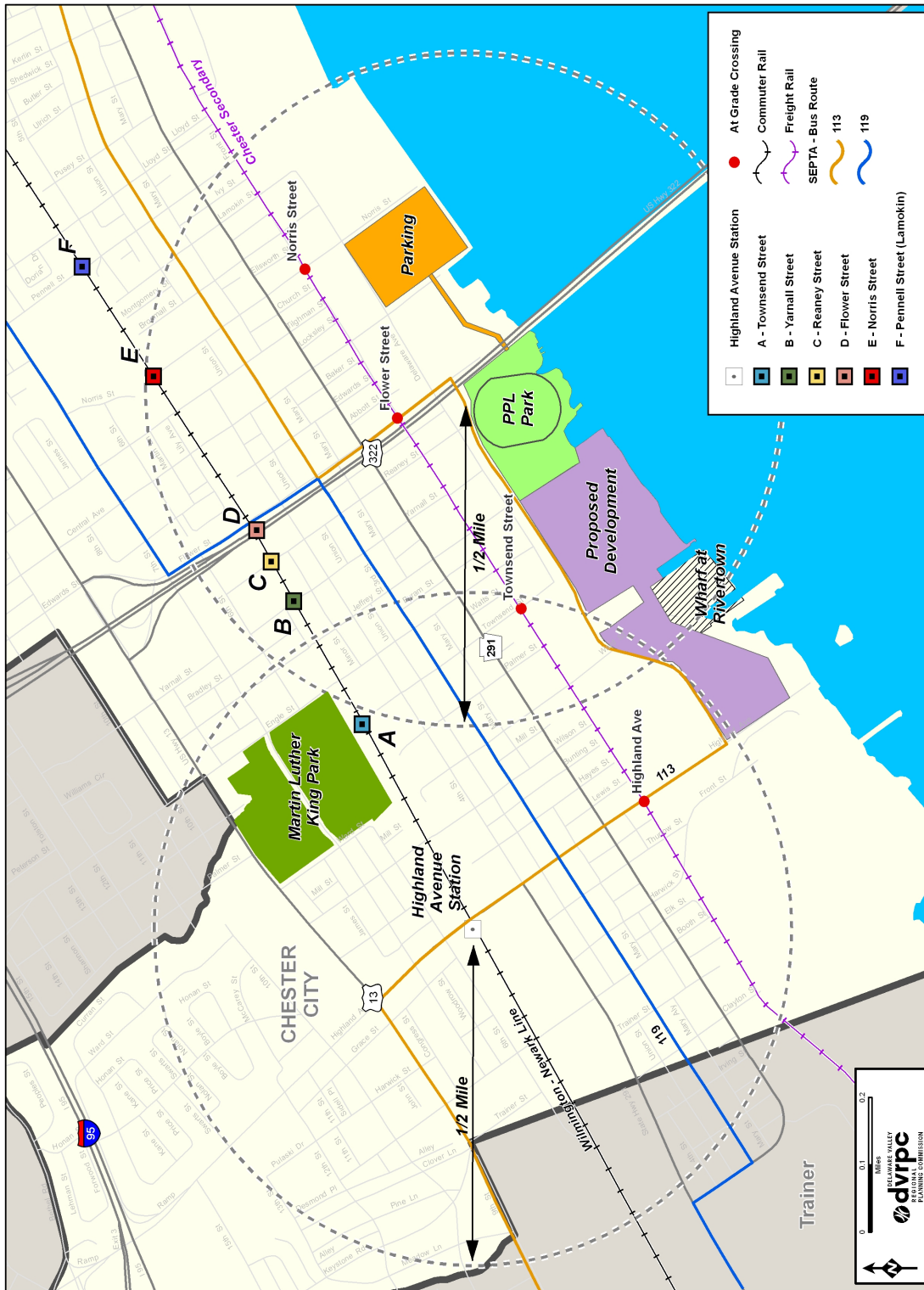
- Townsend/Engle Street (site A)
- Yarnall Street (site B)
- Reaney Street (site C)
- Flower Street (site D)
- Norris Street (site E)
- Pennell Street (former Lamokin Station, site F)

Each location was reviewed according to eight criteria:

1. Whether the station location is at-grade or elevated;
2. Whether there is land available for a station;
3. Whether there is land available for parking;
4. Whether there is a safe pedestrian crossing of the Conrail freight right of way;
5. Whether riverfront amenities are within a half-mile;
6. Whether station access to the riverfront is on a through-street;
7. Whether there are appropriate clearances for buses or shuttles; and
8. Whether there is recent or planned investment.

Candidate station locations (including Highland Avenue) are depicted in Figure 3 and summarized in Table 2 later in this chapter.

**Figure 3: Chester City Rail Station Candidates**



Source: DVRPC 2010

## Townsend/Engle Street (Site A)

Station relocation to Townsend/Engle Street is mixed in meeting the following criteria:

- ◆ Park land to the north is owned by the City of Chester and could potentially be used for a station if the city so chose. Given the recent investment in the park and the importance of green space to the community, however, this may not be the best choice, unless the station takes up minimal space. An appropriate context-sensitive design could enhance the site as a gateway. Any parking built for the station should be south of the station and not use park land.
- ◆ The location is 0.6 miles from the stadium and is close to the proposed Buccini/Pollin riverfront development west of PPL Park.
- ◆ There are programmed pedestrian amenities over Conrail's Chester Secondary freight line (MPMS #90620).
- ◆ The adjacent Engle Street is a through-street across the railroad tracks to the north, but not to the riverfront, while Townsend Street is neither.
- ◆ The location is adjacent to the new Dr. Martin Luther King Jr. Memorial Park, a public space with recent infrastructure investments, with a direct street route to the proposed Buccini/Pollin riverfront development.

The Buccini/Pollin Group have commented that a station in this area is desirable as a convenient location for its proposed development, PPL Park, and the Wharf at Rivertown. It has proposed Townsend Street as the main entrance to its development site. Train riders could walk directly down Townsend Street to the riverfront.

A number of factors limit the practicality of a Townsend/Engle Street Station:

- ◆ This location is elevated, thereby increasing design and build costs.
- ◆ The existing buildings on the southern side of the tracks at this location limit both station and parking alternatives.
- ◆ Pedestrian access to the south may be limited by adjacent Townsend Street buildings, and complicated by indirect access via Engle to Townsend and the proposed gateway.
- ◆ The bridge clearance on Engle Street may not accommodate a bus or shuttle, although a bus may not need to pass under the bridge depending on the station layout and the location of the bus stop.

## Yarnall Street (Site B)

Station relocation to Yarnall Street meets the following criteria:

- ◆ There is enough land available to accommodate both a station and a small parking lot.
- ◆ This location is close to the waterfront (less than half a mile from the stadium) and has a visual sightline to the stadium.
- ◆ Twenty-six new houses were constructed in the vicinity during the past two years, representing recent investment in the area.

Several factors limit the practicality of a Yarnall Street Station:

- ◆ This location is elevated, thereby increasing design and build costs.
- ◆ There is no pedestrian crossing over Conrail's Chester Secondary freight line from Yarnall Street.
- ◆ Yarnall is not a through-street to the riverfront.
- ◆ Bridge clearance may not accommodate tall vehicles such as shuttles and connecting bus service, although a bus may not need to pass under the bridge depending on the station layout and the location of the bus stop.

## Reaney Street (Site C)

Station relocation to Reaney Street meets the following priorities:

- ◆ There is land available at this location to accommodate a station and a small parking lot.
- ◆ This location is close to the riverfront (0.4 miles from the stadium) and includes a sightline to the stadium, though the sightlines may be obscured by newly constructed bridge ramps.

Several factors limit the practicality of a Reaney Street Station:

- ◆ This station location requires elevation, thereby increasing design and build costs.
- ◆ There is no safe pedestrian crossing over Conrail's Chester Secondary freight line from Reaney Street.
- ◆ Reaney is not a through-street to the riverfront.
- ◆ Bridge clearance may not accommodate tall vehicles such as shuttles and connecting bus service, although a bus may not need to pass under the bridge depending on the station layout and the location of the bus stop.
- ◆ There is no recent or planned investment proximate to this site.

## Flower Street (Site D)

Station relocation to Flower Street meets the following criteria:

- ◆ There is room at this location for a station, though the outbound platform might be restricted by nearby housing.
- ◆ There is room for an associated parking lot.
- ◆ There is a programmed pedestrian crossing over Conrail's Chester Secondary freight line at Flower Street for \$607,000 in improvements (MPMS #90477).
- ◆ The new stadium is a half-mile walk down Flower Street, though the western end of the development, including the Wharf at Rivertown, is almost a mile away. The sightlines may be obscured by newly constructed ramps and the need to cross under PA 322.
- ◆ Flower Street is a through-street to the riverfront.

Factors limiting the practicality of a Flower Street Station include:

- ◆ The station would need to be elevated, thereby increasing design and build costs. Additionally, the outbound platform would be restricted by proximate housing.
- ◆ Bridge clearance may not accommodate tall vehicles such as shuttles and connecting bus service, although a bus may not need to pass under the bridge depending on the station layout and the location of the bus stop.
- ◆ There is no recent or planned investment proximate to this site, though the adjacent residential area is mature and could potentially generate ridership.

## Norris Street (Site E)

Station relocation to Norris Street meets the following criteria:

- ◆ There is a pedestrian crossing over Conrail's Chester Secondary freight line from Norris Street, which is programmed for \$426,000 in improvements (MPMS #90478 and #90480).
- ◆ This location is just within half a mile of the stadium, but with no visual sightline. And while the stadium is a half-mile walk, the western end of the development, including the Wharf at Rivertown, is almost a mile away.
- ◆ Norris is a through-street to the riverfront but provides limited vehicle access, as well as no access to the north of the rail line.

Station relocation to Norris Street is limited due to several factors:

- ◆ This location requires elevation, thereby increasing design and build costs.
- ◆ Land for a new station and accompanying parking is limited.



- ◆ Bridge clearance may not accommodate tall vehicles such as shuttles and connecting bus service, although a bus may not need to pass under the bridge depending on the station layout and the location of the bus stop.
- ◆ There is no recent or planned investment proximate to this site.

### **Pennell Street (former Lamokin Station, Site F)**

Station relocation to Pennell Street, site of the former Lamokin Station, meets the following four criteria:

- ◆ This location is at street level, thereby decreasing development costs.
- ◆ Land is available to accommodate a street-level station.
- ◆ There is room for a small parking lot.
- ◆ Appropriate clearances are not an issue at this site.

Several factors limit the practicality of a Pennell Street Station:

- ◆ This location is farthest from riverfront attractions (0.9 mile from the stadium) and there is no visual sightline.
- ◆ There is no direct pedestrian crossing over Conrail's Chester Secondary freight line from Pennell Street.
- ◆ Pennell Street is not a through-street to the riverfront, thereby limiting access.
- ◆ There is no recent or planned investment proximate to this site.

Depending on a variety of factors affecting the location and funding for a new station, a temporary station could be situated at the former Lamokin Station site. Depending on when a decision regarding Highland Avenue is reached, this is one short-term option to accommodate permanent construction elsewhere and avoid service interruption. SEPTA's capital investment for a temporary station is estimated to be about \$250,000, roughly the same as three years of projected maintenance at the Highland Avenue Station.

The station information is summarized below in Table 2, with an “X” for meeting a priority on the respective criteria.

**Table 2: Chester City Rail Station Candidates by Prioritization Criteria**

Criteria	Highland Avenue	Townsend / Engle Street	Yarnall Street	Reaney Street	Flower Street	Norris Street	Pennell Street
Street level							X
Land/space for station	X	0.5X	X	X	X		X
Land/space for parking	X	0.5X	X	X	X		X
Improved freight crossing	X	X			X	X	
Half mile to riverfront		X	X	X	X	X	
Appropriate clearances	X						X
Through street	X				X	X	
Recent planned investment	X	X	X				
Total	6X	4X	4X	3X	5X	3X	4X

Source: DVRPC 2010

## Narrowing Candidate Sites – Final Considerations

Not all of these criteria may be regarded equally. The land to locate a station at street-level or at-grade could save upwards of \$10 million in costs. Additionally, safe pedestrian crossing over Conrail’s Chester Secondary freight line and walkable distances from/to the stations may also be influential to the success of the riverfront. Planned investment means that any station construction may be leveraged with funding that might enhance both desirability and likely ridership of a specific station location.

Pennell Street is the only alternative in this study that offers a street-level at-grade location, yet it is less desirable given its distance from the waterfront, lack of improved freight crossing, and no planned investment. While it meets four criteria, Pennell Street may be regarded as a temporary station alternative if Highland Avenue is closed during construction of a new station. As the site of the former Lamokin Station, there is precedent for providing facilities, even if temporary.

Two of the station alternatives, Reaney Street and Norris Street, only meet three of the criteria. Therefore, only the other four options for train station locations are further considered: Yarnall Street, Highland Avenue, Flower Street, and Townsend/Engle Street. All of these locations meet four or more of the priority criteria posited above.

The Yarnall Street site benefits from its closer location to the riverfront attractions and the recent investment in infill housing. It is hampered, however, by not having a pedestrian crossing of the Conrail freight line, nor is it a through street to the riverfront.

Highland Avenue has been discussed in detail. It is worth repeating that the station must be removed from service within three years. It is also noteworthy that over a million dollars in improvements have been programmed along Highland Avenue. The location, however, is not central to either the current or the proposed waterfront development. If proximity is the most important factor, then Highland Avenue, though meeting six criteria, may not be as desirable as the other three choices.

The Flower Street site satisfies many general criteria for station relocation. Strengths of this location include the pedestrian crossing over Conrail's Chester Secondary freight line and accessibility to nearby residential development. However, space is limited for an outbound platform due to nearby housing on the outbound side, and auto access is similarly restricted on the outbound side. Flower Street is close to PPL Park, but is not as proximate to the Wharf at Rivertown and the proposed riverfront development as Townsend/Engle.

The Townsend/Engle Street site is mixed in meeting the criteria for station relocation. It may not have sufficient clearances for some vehicle types on Townsend or Engle. A Townsend site does not allow direct road access to the north and has large buildings restricting it to the south. The Townsend site does have, however, an improved pedestrian crossing over the Conrail tracks, which will also provide safer pedestrian access for those using the Route 119 bus stop at 3<sup>rd</sup> Street and Townsend. Buccini/Pollin also prefers Townsend as a gateway to its proposed riverfront development.

An Engle Street site does allow automobile access to the north, and there is some vacant land to the south that could be used to site a station. The park land to the north could accommodate a station, however the taking of park land, especially for parking in particular, should be avoided. An Engle site would slightly lengthen the pedestrian route to the safe freight crossing at Townsend.

The Townsend/Engle Street site could also distribute regional rail access more evenly in Chester City than the more western Highland Avenue site. Bracketed by the recently renewed Dr. Martin Luther King Jr. Memorial Park and new development, it might create a new corridor worthy of consideration. This option would require further investigation, but it very well could provide the visual link between two Chester amenities, while fulfilling developer preferences with a strong sightline to new development on the riverfront.

## Enhancing Transit Service to the Riverfront

Fixed-route shuttle service from either the Chester Transportation Center (Chester TC) or the existing Highland Avenue Station was considered as an alternative to station relocation. This section describes public transit access to the Chester Riverfront district serving Chester residents and commuters, and for encouraging transit-oriented development. There are two scenarios reviewed in this section: special event-related shuttle services; and non-event-related shuttle

services. Both scenarios are limited by their service operators and with their individual planning concerns and jurisdictions.

## **Event-Related Shuttle Services**

SEPTA is unable at this time to provide additional train cars or increase service frequencies to Chester City regional rail stations, and these options are not considered in this analysis. Additionally, access from either the Highland Avenue Station or Chester TC to the stadium would require shuttle service. At the time of this study, some station-to-stadium shuttle services are staged from Chester TC.

These game-day shuttle services are provided privately by the PPL Stadium Management group and the Delaware County Transportation Management Association (DCTMA). Strategies to move patrons to and from the games without automobiles are required, because available parking spaces are only about half of the 18,500 seats in the stadium.

This situation necessitates remote automobile parking and a shuttle system for the majority of those attending but not able to park at the stadium. To this end, DCTMA conducted a transportation survey of season ticket holders to determine from where they originate, the number traveling, and the preferred mode of transport. PPL Stadium event planners then analyzed survey results to determine spectator origins and locate satellite parking lots in the suburbs from which bus shuttles would transport fans to the stadium.

Game days also require unique traffic patterns for Chester. Local police and stadium management have helped determine the optimal traffic patterns and shuttle routes used on game days throughout Chester City and along PA 291. Police close some roads, change traffic directions on other roads, and alter the number of inbound and outbound lanes before and after games. Traffic patterns are appropriately adjusted to support those arrivals and then again rearranged to assist patrons as they depart the area. Emergency response vehicles and shuttles use separate routes from the regular vehicle traffic.

## **Non-Event-Related Shuttle Services**

Non-event-related service in the study area may be duplicative of these bus services and may not be permissible under SEPTA's bylaws. The study area is served by SEPTA, particularly the 113 bus between 69th Street Terminal and the Tri-State Mall, and the 119 bus between Harrah's and Cheyney University. The proximate bus services, such as the 114, 117, and 119, do not "connect the dots" along the waterfront as well as the 113 bus.

The 113 bus has connections at Highland Avenue Station, the Chester Transportation Center, Harrah's, the Wharf at Rivertown, and PPL Park. The 113 bus is the best-performing suburban bus route in the SEPTA system and is operating near capacity. Currently, there are no plans to modify 113 service.

The 114 bus makes a connection with the Chester TC, runs parallel to the regional rail line, north of the candidate sites by about four blocks, turns north on Engle, and is never close to the Highland Avenue Station. Running north of the regional rail, it does not connect with the Wharf at Rivertown, or PPL Park, or with Harrah's, and would require considerable rerouting (and subsequent duplication of the 113) to serve those areas.

The 117 bus similarly makes a connection at Chester TC and runs north of the regional rail line along 9th Street, turning north on Highland Avenue, thus never getting close to either Highland Avenue Station or the proposed station relocation candidate sites.

The 119 bus connects with both Harrah's and Chester TC and runs south of the regional rail tracks along 3rd Street, west of Flower Street. It does not connect with the Highland Avenue Station, the Wharf at Rivertown, PPL Park, or planned developments along the riverfront. Altering the 119 route to improve access to the riverfront corridor would either remove service from the west end residential neighborhood, or increase the travel time of the medium and long distance riders not destined to the riverfront. However, the proposed rail crossing on Townsend Street will safely improve pedestrian access from the train station relocated to the Townsend site and to the 119 bus stop along 3<sup>rd</sup> Street.

Any proposed non-event-related shuttle service would need to be reviewed by SEPTA to ensure that service duplication is not occurring. One exception for nonevent shuttle service might be if an employment-based shuttle were established between a regional rail train station and a specific employer in the study area. An employment shuttle would require sufficient employment and employees at a destination and a number of supporting regulations to encourage employee use. A direct service between the Wharf at Rivertown's businesses and Highland Avenue Station could be staged in the present parking lot (similar to Paoli Station and others). For this to work, employers at the Wharf at Rivertown would need to plan for limited parking, commuter benefits, and guaranteed rides home. This would not be the same as a general nonevent shuttle, but if concentrated development were coupled with pedestrian amenities along the riverfront, then an employment shuttle might make sense.

In summary, non-event-related private shuttle service is not feasible at this time, but may be in the future. Highland Avenue Station is currently served by the 113 bus, which makes stops at the existing destinations in the study area. The 119 bus provides ancillary service for those living in the corridor south of the regional rail. Additional resources would need to be found if all parties agreed to additional service or changes to the service coverage. Specific employment shuttles may provide some value for employers encouraging their staffs to commute via transit to the job site.



## Conclusion

The question driving this study was the feasibility of constructing a new SEPTA regional rail station to provide a connection with proposed development along the Chester City Riverfront. As the study progressed, it was determined that the Highland Avenue Station had structural concerns requiring action within three to five years. This timing provides an opportunity to consider both station replacement or relocation and timing, and propose a plan that Chester City and SEPTA may find mutually beneficial.

To this end, three possible alternatives were considered for a regional rail station connecting with the Chester City riverfront:

1. Retain the existing regional rail station at Highland Avenue

The station has a functional life of only three to five years, here posited to 2015, with estimated maintenance costs between \$225,000 and \$375,000 during that time. The current station must be closed at that time due to structural safety concerns by SEPTA engineers.

2. Replace the Highland Avenue Station

The replacement of the elevated structure would cost between \$25 and \$27 million, and would necessitate a temporary station while construction was underway, with both rider inconvenience and an additional capital cost of \$250,000 for a temporary station.

3. Relocate the Highland Avenue Station

The cost differences in station relocation depend on whether the new site is at street level (\$17 to \$20 million) or is elevated (\$25 and \$27 million). Additionally, other constraints, such as safe freight crossings or proximate land use may influence the location choice and cost. Relocation may avoid the use of a temporary station depending on the work schedule.

Based on the factors outlined, it is suggested that Townsend/Engle or a new station at Highland Avenue appear to be the best choices, with a possibility of keeping Flower Street still viable as an option. Townsend/Engle provides the greatest proximity and allows a safe passage over the Conrail freight tracks, and looks to balance city access to regional rail. Its proximity to the new Dr. Martin Luther King Jr. Memorial Park presents an opportunity to build on this area's attractiveness and activity by incorporating the park and a context-sensitive station into a single gateway design. This option could very well provide the strong visual link between two Chester amenities, fulfilling developer preferences with a strong sightline.

The details of land acquisition, design, and construction still need to be worked out between land owners, Chester City, and SEPTA. Since this would require a customized, context-sensitive station design, this alternative would require focused further investigation before eliminating the other alternative of replacing Highland Avenue Station in its current location, or the more distant possibility of a Flower Street location. This report informs the policy conversation and narrows possible locations for further engineering study.

Project scheduling is also important, namely, deciding on a strategy and beginning construction before closing the Highland Avenue Station. Relocating the station would avoid the need for a temporary station and consequent multiple patron disturbances.

Anything that the City of Chester can commit to promote a new station site as the western anchor of the city would be desirable—including retail recruitment, enhanced security, and lighting and posted information on the best walking routes to the riverfront and attractions. Regardless of station choice, Chester City should further enhance way-finding signage directing riders from the new station to the riverfront and perhaps other destinations, such as Chester Community Hospital.

It is recommended that, when appropriate development or station relocation has occurred, there be discussions with SEPTA regarding existing bus service in the area.

If the station is relocated to a more central location, such as Townsend/Engle Street, walk times to the Wharf and the stadium would decrease and lessen the need for a shuttle bus. This may encourage more Wharf workers and soccer fans to take the train to work or games.

With or without station relocation, a nonevent shuttle from Highland Avenue Station, a newly located station, or the Chester Transportation Center to riverfront employment locations is recommended as a good alternative to stimulate station use and as a good practice. A peak shuttle service, paid for by employers, would help determine both the need and desire for the regional rail to riverfront connection, establishing a baseline for future service expansion.



**Publication Title:** City of Chester Riverfront and Community Rail Access Study

**Publication Number:** 10054

**Date Published:** July 2011

**Geographic Area Covered:** Chester City, Delaware County

**Key Words:** SEPTA Regional Rail, Chester City, Harrah's, Wharf at Rivertown, Highland Avenue Station, Chester Transportation Center, PPL Park

**Abstract:** This study examined connecting SEPTA's Wilmington-Newark regional rail line with existing and planned development along the Chester City Riverfront. Three alternatives were considered for connecting the regional rail service and the Chester City Riverfront: retain, replace, or relocate the Highland Avenue Station. Construction costs ranged from \$17 to \$27 million, depending on the strategy. It was determined that the current Highland Avenue Station would necessitate closure in 3 to 5 years based on structural safety concerns. Based on the factors outlined, it is suggested that Townsend/Engle or a new station at Highland Avenue appear to be the best choices, with the possibility of keeping Flower Street as another option. The details of land acquisition, design, and construction still need to be worked out between land owners, Chester City and SEPTA. The report informs the policy conversation and narrows possible locations for further engineering study.

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