

Viaduct Greenway: A Rails-to-Trail Conversion

RAISE Grant

APPENDIX D. MERIT CRITERIA



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Safety

Vulnerable Road Users: Pedestrian and Bicycle Safety

One of the main advantages of the Viaduct Greenway is that it will separate non-vehicular travelers from the dangers of surface streets in the same way that a pedestrian bridge does. It will quite literally create a new avenue for mobility that avoids all vehicular traffic.

Car crashes have been on the rise in Philadelphia and with that, a rise in incidents involving vulnerable road users such as pedestrians and cyclists. According to the [2023 Annual Philadelphia Vision Zero Report](#) there were 124 pedestrian deaths in Philadelphia, up from 112 the year prior. Within that upward trend, people walking accounted for the highest rate of fatal and serious injury crashes. (Philadelphia, 2023).

- *Philadelphia county represented 34.8% of Pennsylvania pedestrian deaths in 2022 but only 12.2% of the state's population¹*
- *There are nearly twice as many crashes involving a bicycle per 100,000 people in Philadelphia than the state average²*
- *The issue of road safety disproportionately affects Black Philadelphians, who make up 40% of the city's population but 50% of all traffic deaths*
- *There has been a 40% increase in Philadelphia bicyclists killed between 2020 and 2021 and a 250% increase between 2019 and 2021³*

In 2022 there were 53 vehicular crashes just within a quarter mile of the Viaduct Greenway footprint. An elevated trail will reduce the number of pedestrian and bicycle accidents involving vehicles.

While pedestrian injuries and deaths substantially outpace those of cyclists on Philadelphia streets, the density of active warehouses in this project area poses especially treacherous conditions for cyclists who must navigate many tractor trailers and delivery vehicles on narrow, single-lane streets. As an example, North 10th Street, which is on the High Injury Network, is the only southbound local road in the area with a protected bike lane, shown in light blue in Figure 1. That lane ends at Spring Garden, about a quarter mile before the northern terminus of the Viaduct Greenway. In a ten-day study in 2022 the [Delaware Valley Regional Planning Commission](#) counted an average of 133 bicycles and more than 2,600 vehicles per day on North 10th meaning that those bikes share a single lane cartway with thousands of vehicles until they cross Spring Garden. The Viaduct Greenway will offer these cyclists a much safer

¹ Derived from 2022 PADOT crash data and census data

² Determined using 2022 PADOT crash data (64 Philadelphia vs 184 statewide). Per 100k numbers translated to 11.7 versus 6.3 respectively.

³ The Bicycle Coalition of Philadelphia, May 2022 [Bicyclists Deaths Peaked in 2021 in Philadelphia & Pennsylvania - Bicycle Coalition of Greater Philadelphia](#)

alternative route, free from interaction with buses or trucks, and therefore has the potential to reduce injuries and fatalities.

Pedestrians and cyclists are particularly vulnerable at night when drivers cannot see as well and when emptier streets provide for more speeding and red light/stop sign running. The poor



Figure 1 Delineated bike lanes shown in purple, N 10th bike lane in light blue, and the Greenway in dark blue. Markers are bike share

state of repair of the viaduct overpasses worsens conditions for crashes. The overpass tunnels, some of which are more than 130' long, typically have only one or two barely functional lights over their span. Visibility is sometimes blocked by short dumps or encampments. This project will address these concerns by improving streetscape lighting under the bridges.

The Viaduct Greenway will meet two key goals of the **National Roadway Safety Strategy plan**. First, it will address inequality for underserved and marginalized vulnerable road users north of Spring Garden Street where the population is nearly 60% African American by shifting modality from surface streets to non-vehicle travel along the viaduct. Second, it will create redundancies in the system with a new north-south transportation option. With multiple connections to the mass transit system (see Community Connectivity section), non-vehicular travelers along the Viaduct Greenway will benefit from a cohesive trip using multiple modes of transit.

The Viaduct Greenway addresses these points in the FWSA Improving Safety for Pedestrians and Bicyclists Accessing Transit guide:

- Improved sidewalks under overpasses and along the parcel's street frontage
- Resilience and redundancy should surface streets be blocked
- More choice with transit connections and the ability to re-route to different connections

Crash Modification Factors:

As the Viaduct Greenway creates a new elevated trail, the most relevant factor to consider is that of installing a new pedestrian overpass.

Countermeasure	Crash Reduction Factor	Reference
INSTALL PEDESTRIAN OVERPASS/UNDERPASS	90	Gan, et al 2005
CONSTRUCT PEDESTRIAN AND OVERPASS/UNDERPASS – CRASHES BETWEEN VEHICLES AND BIKES OR PEDS AT THE CROSSING THE OVERPASS OR UNDERPASS WILL REPLACE	100	Gan, et al 2005

Personal Safety

Even though crime statistics do not bear out a definitive link between the unimproved viaduct and incidents of crime, the structure is no doubt contributing to a perceived lack of safety in its vicinity. The structure forces travel through low, dark tunnels that are in poor condition and often inhabited by people experiencing homelessness or addiction. Even if this is not resulting directly in crime, it is interfering with walking and biking circulation.



Figure 2 The Carlton Street bridge is 134' long with no functional lighting

Deficient lighting and a poor state of disrepair, including the complete disintegration of some sidewalks under the viaduct, worsen both real and perceived

safety. From stolen cars to burglaries, quality of life crime suppresses economic development and deters walking. When residents and workers do not feel safe traveling through any of the viaduct's overpasses, they may choose longer or less convenient routes that add to their commute time -- or altogether discourage them from accessing daily destinations.

Studies have shown that perceived safety concerns can influence parents' desire to encourage their children to utilize recreation facilities (Miles, 2007) and can suppress participation in team sports (Lenhart, 2017), contributing to negative adolescent and childhood health outcomes. The Viaduct Greenway will create 6.8 acres of new, well-lit park space with opportunities for future amenities such as sports courts or play equipment. This will be a tremendous addition to an area that lacks green space by connecting with the East Poplar Playground which lies one block to the north of the Fairmount Avenue terminus. Upgrades in cleanliness and lighting will encourage the use of those facilities and lead to better health outcomes through improved real and perceived safety.

Environmental Sustainability

The Viaduct Greenway will reduce the number of single occupancy vehicle trips by residents, workers, and visitors, leading to a reduction in greenhouse gas emissions. In addition to creating a new 6.8-acre greenspace, the goals of the Viaduct Greenway are to expand access for residents in areas of persistent poverty by reducing travel time and the cost burden of transportation, while increasing the number of trips not taken.

Air Pollution and Greenhouse Gases

Residents along the project area disproportionately rely on single occupancy vehicle trips to commute to work and access their daily needs⁴. This new linear park will reduce transportation-

⁴ Source: ACS 5-Year Estimate. Census commuting data shows that people are largely relying on single-occupancy vehicle trips for commuting out of these census tracts

related air pollution and greenhouse gas emissions in a disadvantaged community by offering a no-cost, no-emissions transportation option to overburdened residents and vulnerable employees who cannot work remotely.

According to the CensusOnTheBlock mapping tool, a mere .5% of residents within a two-block radius of the project remain close to home for work. *All commuting workers in tract 131, where the median income is under \$33,000 per year, leave their neighborhood for work* and about one third of those commuters drive alone to their jobs. Less than 1% of those who drive carpool. Only ten percent of those with access to a car choose public transportation. The Viaduct Greenway presents a tremendous opportunity to address climate change in Philadelphia and to improve equity for those commuters who bear a disproportionate amount of their income on the most expensive form of transportation to shift modality.

Of the thousand workers who commute out of the two-block radius for work, approximately a quarter head south to Chinatown and Center City. The Viaduct Greenway clearly presents an opportunity to improve their commute with a car-free connection to Chinatown, bike connections along Spring Garden Street, and mass transit lines along Broad Street that lead to City Hal and Center City Philadelphia.

Philadelphia has a strong bike culture.

In addition to Indego, the city's bike share company which provides low-income residents with low-fee membership, the city is home to the Philadelphia Bicycle Coalition which collects ridership and crash data while advocating for better facilities and laws. Existing bicycle use data from the Coalition, Indego, and our regional planning authority, DVRPC, demonstrates that there is a need for better, safer bike facilities near The Rail Park and Viaduct Greenway.⁵

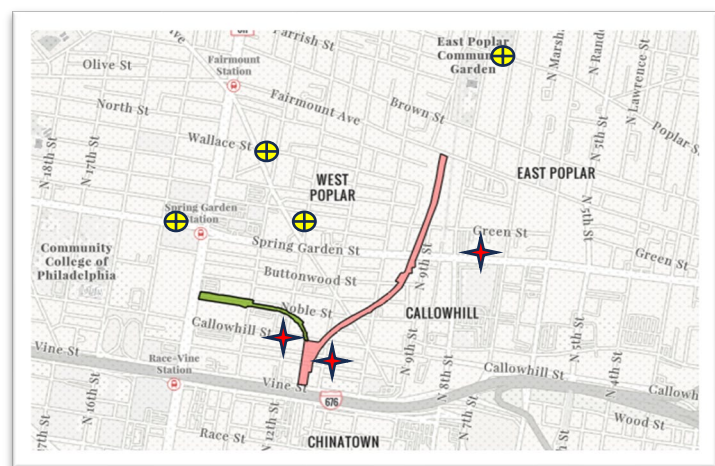


Figure 3 Red stars indicate existing Indego bike stations; yellow markers indicate requested stations

In 2023, there were 21,082 bike trips via the Indego station at 12th and Callowhill, close to entrance to Phase I and where an access point is planned for the Viaduct Greenway. As seen in Figure 3, requested new stations in West Poplar and near the East Poplar Playground create a picture of demand that has not yet been fulfilled for potential cyclists. Aligning Indego's low-income pass program with the communities north of the Viaduct Greenway is one strategy for fulfilling this need.

The Viaduct Greenway will capture carbon. This project will convert contaminated brownfield into a green space. Subtracting for the paved trail, the project will deliver 4.6 acres of vegetated spaces prior to the addition of athletic facilities that may be part of future development. Though the final type of coverage has not yet been determined, there will be a mix of treed areas, grass

⁵ <https://www.dvrpc.org/webmaps/trafficcounts/> for zip code 19123

plantings, and native plantings. Using a calculator developed by the organization [8 Billion Trees](#) which uses USDA Forest Service databases, for every 100 new trees planted on the topside of the Viaduct Greenway, 1152 lbs of oxygen will be produced and 432 lbs of carbon will be stored. Fast forward ten years, and those numbers grow **to six tons of oxygen and two tons of carbon storage**.⁶ Given that the Viaduct Greenway will have several hundred trees, the carbon capture potential is significant.

It will also reduce emissions. According to a recent study on active transportation, an average person who shifted travel modes from car to bike decreased life cycle CO₂ emissions by 3.2 kgCO₂/day with CO₂ emissions decreasing 62% for each avoided car trip (Brand, 2021). Knowing that 250 workers are currently commuting in parallel to the viaduct, this project has the potential for an 800 kgCO₂/day reduction in greenhouse gas emissions as workers headed into the city core shift commute modalities.⁷

Disproportionate Impacts

Although residential fuel use represents a relatively small portion of Pennsylvania's carbon emissions, its impact is more pronounced in an urban environment, particularly in an area that is heavily car dependent such as East Poplar. By reducing the reliance on vehicle trips, the Viaduct Greenway will also reduce exposure to air pollution and improve health and quality of life in the surrounding communities. The area within a quarter mile of the viaduct currently has higher than state average exposure to: ozone, air toxics cancer risk, air toxics respiratory risk, traffic proximity, lead paint, superfund proximity, hazardous waste proximity, wastewater proximity.

The Greenway originates in predominantly Black neighborhoods (East and West Poplar, see Figure 3) that have experienced disinvestment for generations. A vast area of housing in West Poplar was demolished in the late 1800's to make way for the railroad. The railroad then cut populations to its east off from more prosperous parts of the city. A once largely residential area evolved into an industrial zone segregating populations from Center City. By the mid 1900's redlining further diminished access to economic growth for these communities. The result is an area that continues to be distressed today. The residents of the Poplars have endured high rates of poverty, poor health, and depressed quality of life due to the railroad. This project will improve access to employment, reduce dependency on single-occupancy vehicle trips, and offer a safer route to and from the city's economic center. It will be a place for recreation, exercise, and connection that will help heal decades of injury.

Prior to the construction of Phase I of The Rail Park, the neighborhoods along its path had limited or compromised access to parks or athletic facilities. Nearby residents experience higher rates of major health issues such as diabetes, asthma, and heart disease.⁸ With the connection of both phases, users of the park will have better access to other public spaces, such as the East Poplar Playground, and have a 1.5-mile loop for walking or running that is safely elevated from surface streets.

⁶ Measuring Tree Benefits <https://8billiontrees.com/carbon-offsets-credits/carbon-ecological-footprint-calculators/how-much-carbon-does-a-tree-capture/>

⁷ 1000 workers x 25% x 3.2

⁸ EPA EJScreen tools for census tracts 131 and 376 plus surrounding tracts 367 and 132

Pennsylvania Carbon Reduction Strategies

The Viaduct Greenway meets the [Pennsylvania Climate Action Plan](#) by addressing two priority Opportunities to Adapt to the Impacts of Climate Change:

1. Increasing heat and flooding on overburdened and vulnerable populations
2. Flooding on built infrastructure

It will accomplish this by increasing access to resilient infrastructure and investing in nature-based solutions in high-risk communities.⁹

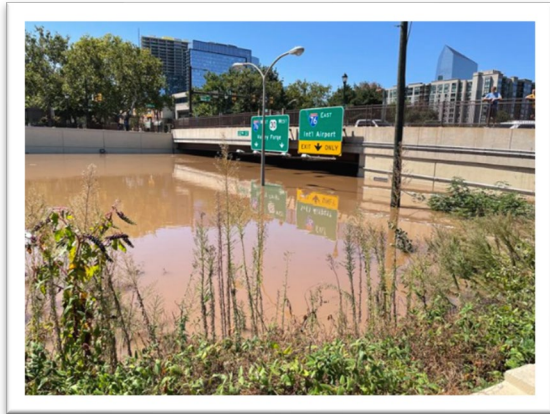


Figure 4 Hurricane Ida's impact on I676

The benefits to building the Viaduct Greenway include improved public health, improved economic outcomes, and a flood-resistant transportation route and outweigh the risks and impacts of inaction, such as road-closing flooding.

In 2021, Hurricane Ida flooded Philadelphia's inner-city highway, Interstate 676, filling it like a bathtub to the bottom of the overpasses (Figure 4). The Viaduct Greenway begins at I676. When it connects to the planned Chinatown Stitch, it will present a viable transportation alternative for workers and residents needing to get to in-person work at hospitals or grocery centers if roads near I676 are closed due to a climate catastrophe.

Quality of Life

The Viaduct Greenway will improve and expand transportation options and reduce reliance on motor vehicle dependence in a underserved community while providing a new public green space in place of a dividing and burdening structure.

Within census tract 131 at the northern end of the viaduct, 82.4% of residents are renters and 56% of households own at least one vehicle. The average household spends an estimated \$10,133 on transportation where the median household income is \$32,083 and more than half of households earn below \$50,000 per year¹⁰. This tells a story of a struggling community that is overburdened by the most expensive form of transportation: cars. The Viaduct Greenway can relieve some of this burden, particularly in accessing medical services and fresh food.

An attractive, well-maintained park will promote both active transportation and active recreation. From Fairmount Avenue to the western end of The Rail Park and back is a 1.5 mile loop. Increasing physical activity through community design is a priority strategy for the Centers for Disease Control and Prevention. The [CDC recommends](#) at least 150 minutes a week of moderate intensity activity, such as a brisk walk, for adults 18 and older. A complete loop on the

⁹ 2021 Impact Assessment Executive Summary of the PA Climate Action Plan outlines seven priority areas for adaptation.

¹⁰ ACS 2021 5-Year Estimate

Viaduct Greenway seven days a week would meet this requirement for most people. The Viaduct Greenway meets CDC goals by:

- Creating pedestrian connectivity
- Improving the bicycle network
- Being in close proximity to neighborhoods, worksites, schools and daily destinations

The Viaduct Greenway can improve quality of life for those with mobility challenges. For both the physically impaired and those with strollers, universal access to this elevated trail provides a safer means of transportation and exercise for all.

Current conditions near the viaduct reflect decades of neglect. Adjacent parcels and retaining berms are overgrown and trash strewn. The topside of the viaduct attracts encampments and short dumping. Students at FACTS Charter, an Asian-majority K-8 school which overlooks the viaduct, are reminded daily that this area has not been a priority for generations.

A quarter of all parcels within a block of the structure are vacant or used as surface parking, a far higher rate than surrounding communities. The improvement of the viaduct will spark investment in the area with an increase in mixed-use development and additional housing units. With careful coordination with neighborhood groups and City officials, this development can include affordable housing near affordable transit options and spaces for small businesses that can provide daily needs for residents.



Figure 5 FACTS Charter abuts the Reading Viaduct

Mobility and Community Connectivity

The Viaduct Greenway will connect residents with important daily destinations such as education, jobs, and fresh food. It will improve east-west connections by addressing poor conditions below the ten surface street bridges it spans and north-south connections with a new elevated trail.

Several key destinations are separated from residential populations by the viaduct. To the west of the viaduct, just blocks from the entrance to Phase I of The Rail Park, lies Community College of Philadelphia with nearly 9,000 full-time students. Four high schools are also to the west along Spring Garden Street. Students living north of Fairmount Avenue can travel the length of the Viaduct Greenway, connect to Phase I of The Rail Park to get to Broad Street and access Community College without having to cross a busy intersection. Or they could connect to buses or bike lanes on Spring Garden Street to access both the College or their high school. They can

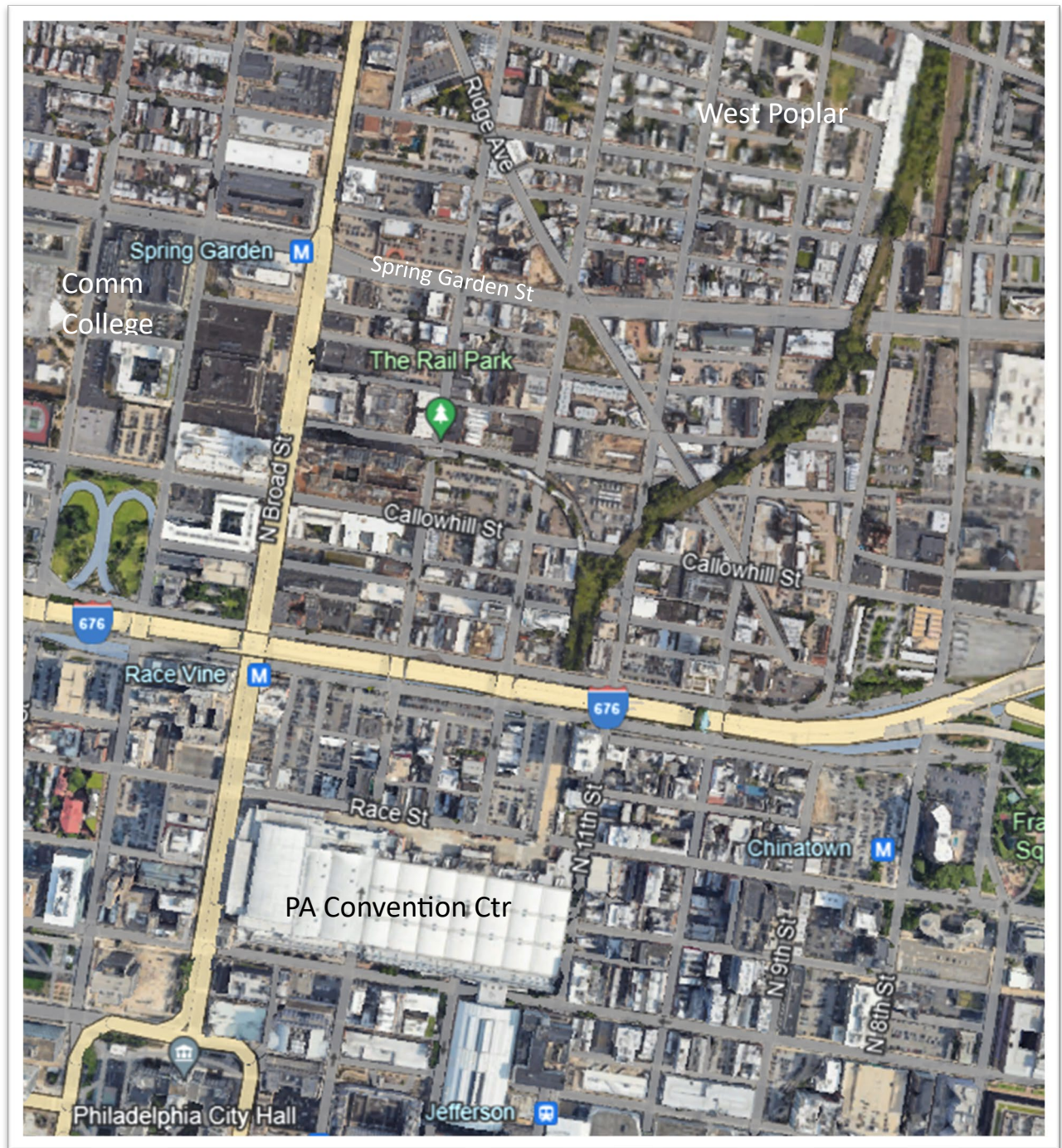


Figure 6 The Viaduct Greenway connects to the larger transportation system

mix different forms of non-motorized mobility, including scooters and skateboards, for a thorough connected, safe transportation route that is also a maintained park space.

The Viaduct Greenway along with Phase I, The Rail Park, will connect to other forms of modality, such as buses, trains, and walkways:

- SEPTA 23 bus route (North 11th and 12th Streets) that serves the PA Convention Center and Midtown
- The Broad Street Line subway which runs 12.5 miles north-south through Philadelphia
- SEPTA 43 bus on Spring Garden Street that connects to four high schools and the Community College of Philadelphia
- Jefferson Station - Market Frankford Subway Line entrance at Filbert Street

Of the 1,023 workers living within a two-block radius of the viaduct, almost 23% work in healthcare, meaning they most likely cannot work remotely and need reliable transportation options to get to their places of employment, such as Jefferson Hospital or Pennsylvania Hospital to the south. The Viaduct Greenway can be a reliable, affordable, and attractive mode of commuting for them.

The Viaduct Greenway will better connect people with the Reading Terminal Market, where fresh produce and meats are typically less expensive than grocery stores. Figure 7 shows in pink the area along the viaduct that is a hot spot for regular shoppers of the Reading Terminal Market (the marker in lower left). Just south of the Reading Terminal Market is the Jefferson Hospital campus and Penn Medicine 800 Walnut building which houses countless medical specialists. This project will improve equitable access to medical destinations by better connecting residents with disproportionately higher rates of disability and chronic disease with treatment facilities and by repairing sidewalks adjacent to the viaduct.

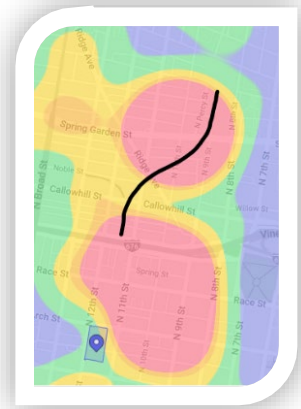


Figure 7 Trade area of the Reading Terminal Market. Pink indicates a high density of shoppers. Via Placer.ai

Economic Competitiveness and Opportunity

One quarter of all nearby parcels are vacant, unimproved, or surface use (Figure 8). That is a considerable amount of missed opportunity for businesses and housing. What employment is available in the area is largely low-paying warehouse work taken by people living outside the area, with few residents remaining close to home for work. This is one of the last undeveloped areas adjacent to Center City. As nearby districts such as North Broad and the Spring Garden Street corridor have seen tremendous growth and infill, the viaduct neighborhoods are missing out because of the blighting effect of the abandoned rail line.

The Viaduct Greenway will encourage tourism in an area that would benefit from the influx of dollars. Phase I of The Rail Park has become a destination park, drawing tourists and residents from outside the area to enjoy a peaceful space with a unique elevated view. Much like the Chicago 606 Trail or the High Line in New York City, The Viaduct Greenway will be a major draw,

giving visitors an unparalleled experience of Philadelphia neighborhoods. **New businesses, such as cafes or restaurants, would be supported by a client base beyond residents.**



Figure 8 Surface parking or unimproved property shown in red

The Viaduct Greenway is in an Opportunity Zone, created under the Tax Cuts and Jobs Act of 2017 and both 131 and 376 are Community Reinvestment (CRA) Eligible tracts.¹¹ This allows developers to defer taxes on capital gains derived from the sale of property elsewhere by investing in property within the zone. Given the high proportion of undeveloped lots near the viaduct, there is great potential for this designation to spur new construction once the viaduct is improved and the blight removed. CCD is working with its community partners, such as the Philadelphia Chinatown Development Corporation, on ways to retain small businesses, create inclusive economy opportunities, and fund low-income housing in future development that may be spurred by the viaduct's restoration.

There is a wealth gap exacerbated by the unimproved viaduct. There are large economic disparities between not just the project census tracts, but between those neighborhoods and adjacent neighborhoods. It is clear by examining these disparities that the unimproved viaduct is contributing to these inequities. 57% of residents in census tract 131 make less than \$55,000 per year. This is the area redlined in the early 1900's through which the Reading Line once ran.

¹¹ The Community Reinvestment Act seeks to prevent redlining, which Census Tract 131 has historically experienced

Figure 9 shows how poverty is concentrated around the remaining viaduct. The contrast is stark compared to adjacent neighborhoods that are not impacted by it, such as Northern Liberties and the area close to the completed Phase I section.



Figure 9 Poverty is concentrated near the derelict viaduct. From the City of Philadelphia Stress Index ArcGIS map.

State of Good Repair

The Reading Viaduct is currently in very poor state of repair. Though the bridges, overpasses, and retaining walls are still structurally sound, continued deterioration will eventually lead to failure which could be catastrophic in nature.

The viaduct is built on both fill and structure. Where it is on fill, there are both retaining walls and earth berms. Where it is on structure, it crosses fifteen surface streets with steel, stone, or concrete bridges. A feasibility study determined that all bridges and structures are sound,



Figure 10 Netting along the viaduct prevents falling debris as the structure deteriorates

though in need of repair, waterproofing, or lead paint remediation. Furthermore, the sidewalks under or adjacent to the structure must be repaired or, in many cases, entirely replaced. Lighting is mostly non-functional and will need to be upgraded. Currently, netting is in place along much of the viaduct to prevent rusted railings and decking from falling onto the streets below. Despite fencing, there is a sizable homeless encampment on the topside as the property is not monitored or patrolled.

The Viaduct Greenway project will restore the former Reading Railroad property to a state of good repair with the clearing of dumping, weeds, invasive species, poorly located trees, and deteriorated infrastructure. It will waterproof the stone and concrete bridges and remediate

and paint steel structures. It will further improve the parcel by adding new decking, lighting, safety fencing, and sidewalks with accessible ramps. Retaining walls will be repaired and secured to prevent collapse. Once restored, the risk of decking or other pieces falling onto surface streets will be reduced to near zero, as all hazardous elements will have been removed or replaced.

Beyond structural improvements, the Viaduct Greenway will include proactive stormwater management to alleviate contaminants leaching from the topside and the structure and improve the evacuation of large amounts of water in a major storm event. CCD's engineering contractor is already working with the Philadelphia Water Department on developing the stormwater management plan.

Partnership and Collaboration

The Viaduct Greenway has been a collaboration from the beginning. Because of Center City District's experience in creating and maintaining public spaces, the Callowhill Neighborhood Association approached CCD in 2011 about tackling the redevelopment of the Reading Viaduct. CCD then became the lead organization in the creation of Phase I, an \$11 million dollar capital investment on the western spur then owned by SEPTA. The broader community engagement process will launch to the public this April with event pop ups, multi-lingual surveys, and neighborhood meetings. It will gather sentiment on current conditions, access, desired amenities, and public safety to inform design. A second wave of engagement will follow that will focus on broader issues of equitable development and community involvement in park programming and stewardship. Throughout the evolution of this project, CCD has sought and will continue to seek involvement from Disadvantaged Business Firms as both primary and secondary contractors. As evidence, the firm selected for community engagement, Connect the Dots, is women-owned.

CCD also looks forward to partnering with [Richard Allen New Generation](#), a registered community organization that works with trade unions to hire and train residents for work on hyper-local development in West Poplar. They assist with job training and certifications to prepare residents for entering the building trades and then with developers on hiring. RANG came into being with the redevelopment of a large 1800's warehouse into The Poplar, a mixed-use development at Poplar and 9th Streets, just blocks from the viaduct. RANG will be instrumental in ensuring inclusive hiring from the impacted neighborhoods.

The Viaduct Greenway could include, in a future phase, a concessions building. As CCD has done with its concessions in Dilworth Park, small or local businesses could be recruited as vendors, offering them an opportunity to reach new customers and grow their business.

In partnership with community leaders, CCD will develop the Viaduct Greenway with cultural and physical access appropriate for the population it will serve while addressing more than a hundred years of negative environmental and economic outcomes by delivering an inclusive, welcoming connective park that fill gaps in the existing transportation network.

Innovation

As a 60-foot wide elevated park, The Viaduct Greenway is itself an innovative reimagining of public space. Like the High Line in New York City or the 606 Trail in Chicago, this project does more than improve a piece of land. It creates a world-class park and neighborhood anchor that will inspire civic pride (Figure 11).



Figure 11 The High Line NYC and The 6060 Trail in Chicago

The Viaduct Greenway will incorporate modern amenities and technologies. For example, a bike share station could be built on the top deck, allowing those who do not own bicycles to still enjoy riding the 1.5-mile loop with traditional or e-bikes. Pedestrian counters could be installed to track visitation and understand what programming is attracting people.

One of the most exciting additions that warrants further exploration is the incorporation of community electric generation in the park. At 6.8-acres, there is generous area for solar panels, either as shade structures or mounted along bridges, or even small wind turbines. Electric generation from these facilities could not only power the park, but potentially be sold back to the grid to fund park maintenance. Community-set priorities will help shape the vision.

Innovative Financing

CCD and its community partners are investigating the creation of a pay-as-you-go TIF district. Instead of financing construction, it would fund park maintenance, surface street cleaning, and potentially affordable housing and small business retention programs.