



# Hazelwood Green Long Range Transportation Plan

December 2019

# Acknowledgements

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Thank you to all Stakeholder and Task Force members that participated throughout this plan process.

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# PREFACE

The Hazelwood Green Long Range Transportation Plan (LRTP) describes a multimodal transportation network by recommending policies and projects that will:

1. reduce vehicle miles traveled,
2. preserve existing streets and sidewalks and respect community context,
3. improve connectivity and modal options for travel,
4. provide a better link between land use and transportation,
5. position Almona and the City of Pittsburgh (in partnership with its regional agencies such as PennDOT, the Port Authority and the Southwestern Pennsylvania Commission) to successfully pursue transportation funding that benefits multiple stakeholders, and
6. identify further opportunities for redevelopment through transit oriented development.

It is critical that Hazelwood Green in conjunction with stakeholders identifies its transportation priorities to be prepared to implement and ultimately compete for federal and state funding opportunities.

The last decade has brought a proliferation of new technologies and tools, including the smartphone, that facilitate new ways of using transportation modes and connects networks more seamlessly. From ride-hailing services like Uber and Lyft, bikeshare networks and e-assist bikes, to advances in aerial and water transport, and the advent of autonomous vehicles, mode share nationwide has and will continue to evolve over the coming years. In order for Hazelwood Green to connect to the City and region, the provision of a wide range of choices for travelers is key and will build upon the principles of the Hazelwood Green Preliminary Land Development Plan (PLDP). These principles focus on advancing human well-being, inspiring innovation, regenerating the ecology and the creation of resilient places.

In this regard, Hazelwood Green envisions the following:

- Comfortable and convenient ridership experience, including more hours of service and better places to wait for the bus
- Safe pedestrian and cyclist routes and crossings that exemplify best practices.
- Reliable vehicular travel by reduction and use of smart technologies.
- Improved connections both between different parts of the City and Region and different modes of transportation
- Resilient and sustainable transportation systems that will work to address climate change and create models for others.

A strategic planning document like the LRTP should both enable Hazelwood Green and local agencies to better attract competitive sources of funds, like grants, and to target those grant funds on projects that will be transformative for the site and adjacent communities. The ongoing PennDOT projects to improve four intersections along Second Avenue at Bates Avenue, Hot Metal Bridge, Greenfield Avenue, and Hazelwood Avenue all arose from the earlier planning phases of Hazelwood Green. These projects highlight that real-world improvements arise out of developing a strategic approach to transportation planning and investment. Yet, these projects were planned without the benefit of a multi-modal strategy that this LRTP presents in response to current shifts in markets and user needs.



Planning and building an enhanced multimodal transportation network is a complicated and costly endeavor, especially within an urban environment. The City's investment in infrastructure has occurred over nearly a 260-year period – meaning that Hazelwood Green and its partners are not starting from scratch and that much of the predominant infrastructure is built. An additional complication is that federal and state transportation funding continues to shrink. Developing 178 acres of reclaimed brownfield including 1.2 miles of river frontage with approximately 8 million gross square feet of mixed-use building requires a coordinated and complementary urban and regional transportation system.

Most transportation projects are paid for with multiple sources of funds. Rarely is there a road, bridge or even major sidewalk project that is paid for with one source of funds due to the regional economic benefit and impact of these projects. Local and developer funds make up the smallest pool of funds for transportation improvements. Federal and state funds, while making up the largest share of available funding, have been shrinking over recent decades. Additionally, there are numerous programs and sources of funds for transportation projects that each come with their own focus and set of requirements. Therefore, it is imperative that Hazelwood Green identifies its priorities and does so in collaboration with partners..

One of the primary funding tools for local transportation projects is through federal Fixing America's Surface Transportation Act (FAST Act) which replaced the Moving Ahead for Progress in the 21st Century Act (MAP-21). These funds are programmed through the local Metropolitan Planning Organization's Transportation Improvement Plan (TIP). The Pittsburgh's region's TIP funds are budgeted through 2022 by the Southwestern Pennsylvania Commission (SPC). The Hazelwood Green LRTP assumes that the projects and initiatives programmed in the current TIP will be built as planned and become part of the network. The projects and policy recommendations within the Hazelwood Green LRTP are not intended to supplant or change the projects funded and scheduled in the TIP.

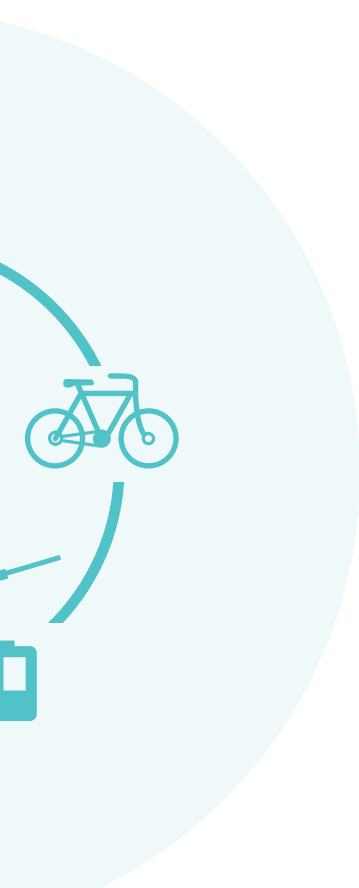




Photo by ReMake Group

# 1

## Introduction






The arc of development at Hazelwood Green mirrors the proud history of Pittsburgh industry as well as its intrinsically linked urban neighborhoods – a robust economic engine in close proximity to walkable-scale streets lined with homes, shops, and other businesses. Beginning with development of steel mills in the 1880s, Hazelwood grew into one of the most important industrial sites not just in the city but in the entire country. It eventually hosted 12,000 workers on its 178 acres, many of whom lived in the Hazelwood neighborhood on the adjacent hillsides, with businesses lining Second Avenue, Hazelwood Avenue, and other streets. The slow decline and eventual closure of the mills in the late 1990s left contaminated, blighted industrial land, and a neighborhood gutted of its economic lifeblood and increasingly of its residents.

Hope emerged with the acquisition of the site by Almono LP in 2002, which allowed for critical site remediation and cleanup to occur. Ambitious long-range redevelopment planning followed, with a series of plans and studies amid changing market conditions culminating in the first Preliminary Land Development Plan (PLDP) in 2013. Management changes and ongoing evaluation led to a new PLDP and accompanying zoning text, reflecting more ambitious development and performance targets. The future Hazelwood Green will host a projected 8 million square feet of mixed-use development, meeting stringent standards for environmental, livability, and other important shared community goals. Its public spaces – well-designed parks, ample paths, and walkable streets – will connect it to the Hazelwood neighborhood to provide safe access between Hazelwood Green’s development and amenities and Hazelwood’s homes and businesses.

With plans for thousands of new residents, workers, and visitors every day, it is essential to ensure safe and efficient transportation options to Hazelwood Green, and connections to Hazelwood. To support the first increment of new development, approximately 2.8 million square feet, a Transportation Impact Study (TIS) has been submitted (pending City approval in 2019) that details the amount and distribution of new travel to and from Hazelwood Green. To accommodate that new activity, the TIS documents new and improved streets, paths, and intersections to provide safe passage for people on foot, on bikes, and in transit and private vehicles. It also outlines improvements to transit services, including upgrades to high-quality Bus Rapid Transit (BRT) along Second Avenue and through the Hazelwood Green site. Hazelwood Green will also institute a suite of Transportation Demand Management (TDM) policies to ensure travelers understand and can take advantage of all the options available to them.

In the longer term, full development of Hazelwood Green, to reach the goals articulated in the PLDP, will likely require more substantial changes to the transportation system connecting it to the region. This Long-Range Transportation Plan (LRTP) endeavors to explore the range of possibilities, and propose priority services and infrastructure to be developed in conjunction with and in support of Hazelwood Green. Many of these changes would require major investment and the stakeholder will to sustain it over time, through years of design, funding, and construction. The time to identify priorities, build support, and begin planning is now.

This LRTP seeks to recommend priority transportation system changes that meet six key goals:

 <b>Assure Environmental Sustainability</b>	Design transportation facilities and services that improve air and water quality.
 <b>Assure Equity for All System Users</b>	Ensure that future transportation systems provide equitable access and address the needs of all potential users.
 <b>Enhance Neighborhoods</b>	Create transportation links and services that connect Hazelwood neighborhoods, both existing and new, and contribute to the creation of vibrant communities.
 <b>Maintain Fiscal Responsibility</b>	Build a transportation system that future generations can afford to maintain and is adaptable to the evolution of new technologies and systems..
 <b>Promote Economic Growth</b>	Provide transportation choices that support economic opportunity and community prosperity.
 <b>Provide Connectivity Choices</b>	Create a transportation system that provides users with multiple options to access the site and to move within the site.

The focus on equitable access is deliberate and reflects a deep commitment to its neighborhood of Greater Hazelwood as well as to the City and region as a whole. In Pittsburgh, 23% of households do not have access to a car. These residents require reliable, affordable access to transit service, safe walking conditions, and improved bike infrastructure. Additionally, while housing costs in Pittsburgh are moderate when compared to its peer cities at only 23% of average income, Pittsburgh households spend nearly as much (18% of average income) on transportation. This represents a significant cost burden on low- and moderate-income households. For current residents of the Hazelwood neighborhood, spending on housing plus transportation jumps to 45-50% of household income, above what experts consider an affordable level for any household. Due to its scale and opportunity, Hazelwood Green is positioned to create new models for addressing mobility issues that are prominent throughout Pittsburgh.

(Source: <https://htaindex.cnt.org/>)



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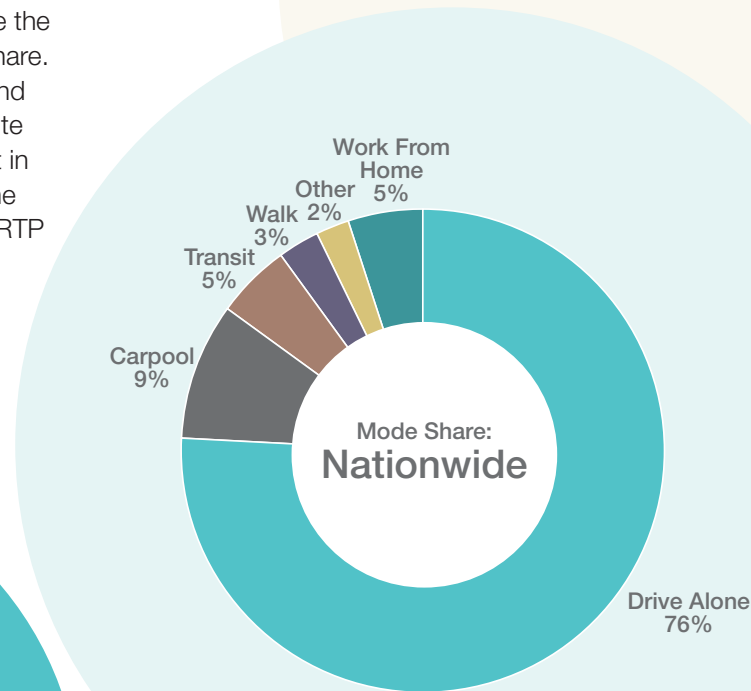
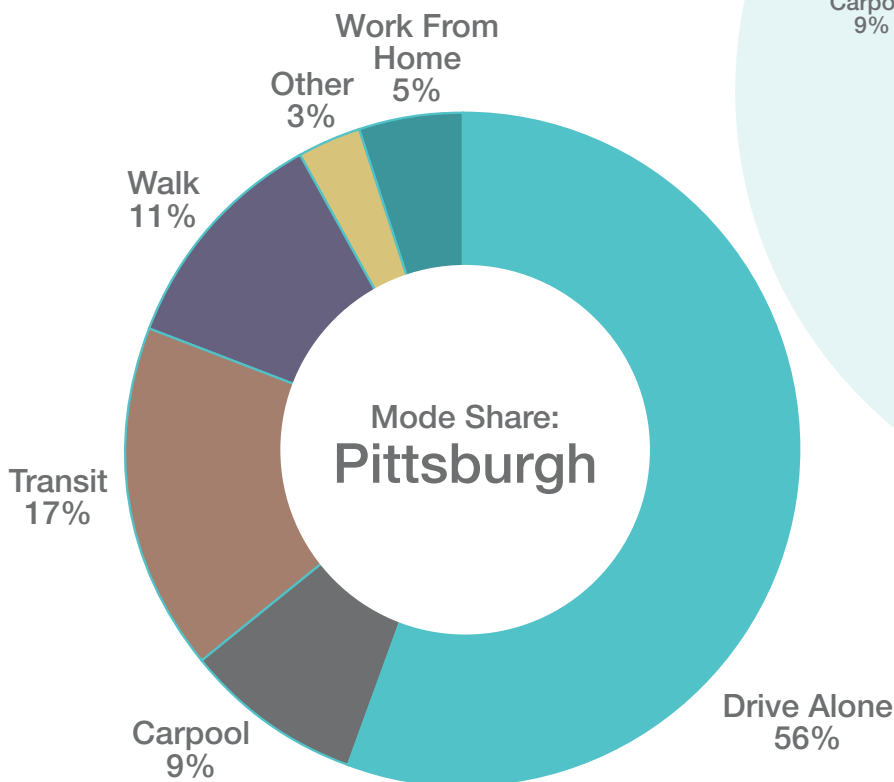


# 2

## Mobility Today & Hazelwood Green Development

In 2017, it was estimated that 56% of Pittsburgh’s 165,000 workers drove alone to and from their places of employment, while 17% commuted using public transportation and 11% walked to work. In the City, a full 23% of households do not have access to a car. These households are transit-dependent for all their daily trips. In comparison the Hazelwood neighborhood sees a drive alone rate of 66.5% with 9.3% using public transit for their commute to work.

With an estimated vehicular trip generation of 16,943 vehicles daily under Phase 1 build out in 2028 and as many as 50,000 vehicle trips daily upon full build out in 2040, the previously highlighted mobility vision has led to targeted mode share goals to reduce the single occupant vehicles entering the site. At full build-out of Hazelwood Green, the site has a goal to reduce the drive alone mode share to 26% with a 35% public transit share. This is a notable difference from where the neighborhood and city is today. However, the influx of additional people over site build-out has the potential to catalyze increased investment in transit service due to the density of new transit demand. The strategies and recommendations considered through the LRTP have been guided to meet those goals.



2017 American Community Survey, Census Bureau

## Roadway Network

As part of the transportation impact study (TIS) for the Hazelwood Green PLDP, a study area of eighteen (18) intersections was included. This study area focused on eleven (11) intersections along Second Avenue, four (4) intersections along Bates Street, two (2) intersections along Irvine Street and one (1) at the Hot Metal Bridge. The major roadway facilities within the study area are summarized in the table at right.

### Existing Roadway Network

Roadway	Classification	Lanes	Speed	ADT*
Second Avenue	Urban Principal Arterial	2-4	25 mph	8,220
Irvine Street	Urban Principal Arterial	3	25 mph	8,213
Boulevard of the Allies	Urban Principal Arterial	4-5	35 mph	14,650
Bates Street	Urban Principal Arterial	2	25 mph	18,394
Greenfield Avenue	Urban Minor Arterial	2	25 mph	7,876
Hazelwood Avenue	Urban Minor Arterial	2	25 mph	5,365

\*PENNDOT 2016/2018 ADT Traffic Data

Through the Hazelwood area, 2nd Avenue plays an important role as an active, vibrant main street corridor – despite some aging infrastructure – with a mix of residential uses, local businesses, activity centers, and public space. From a regional perspective, 2nd Avenue also functions as a broader primary transportation connection along the north side of the Monongahela River. As a result it connects access between the Glenwood Bridge and areas south directly to downtown Pittsburgh.

The study area and specifically Second Avenue (SR. 885) has daily traffic volumes up to approximately 20,000 vehicles per day. The immediate corridor between Greenfield Avenue and Hazelwood Avenue has daily vehicle volumes of approximately 8,200. Feeder routes to the corridor such as Hazelwood Avenue and Greenfield Avenue serve 5,365 and 7,876 vehicles daily respectively.



## Transit Network

The Port Authority of Allegheny County (also known as the Port Authority) is the second-largest public transit agency in Pennsylvania and the 26th-largest in the United States. The county-owned, state-funded agency is based in Pittsburgh. The Port Authority's bus, light rail and incline system covers the City and Allegheny County and includes 97 bus routes, three rail lines and two inclines.

The Port Authority system design generally follows a radial scheme, meaning that most routes radiate out of the downtown, providing travel between outlying residential neighborhoods and the central

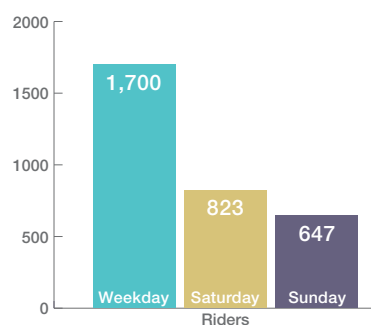
business district. Today, Port Authority records about 63 million boardings annually. Boardings declined between during the 1980's and 1990's due to various causes including continued suburbanization of jobs and housing, fluctuating gas prices, funding shortfalls and service cuts. Since 2010 boardings annually have remained steady at approximately 63 million with a slight increase of 1.95% in 2018 to 64.22 million.

Within proximity to Hazelwood Green, the Port Authority of Allegheny County provides four (4) bus routes.

### Route 56 (Lincoln Place)

Local route providing service along 2nd Avenue between downtown and Glenwood before crossing the Glenwood Bridge and following Mifflin Road to Lincoln Place and McKeesport.

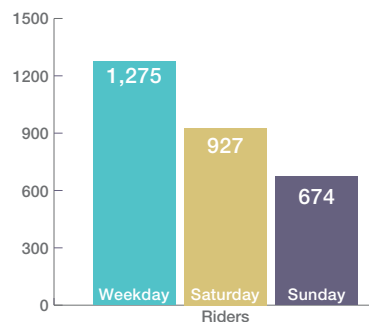
*Major route destinations include downtown, Hazelwood, Lincoln Place, Dravosburg, McKeesport and Penn State.*



### Route 57 (Hazelwood)

Local route providing service along 2nd Avenue between downtown, through Hazelwood Green, to Homestead including The Waterfront.

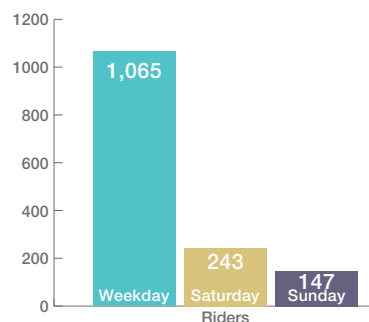
*Major route destinations include downtown, Hazelwood Green, Glen Hazel, Homestead and The Waterfront. As of April 2019 the route traverses through the Hazelwood Green development along Blair Street.*



### Route 58 (Greenfield)

Local route providing service along 2nd Avenue from downtown to Greenfield before following Panther Hollow to Oakland.

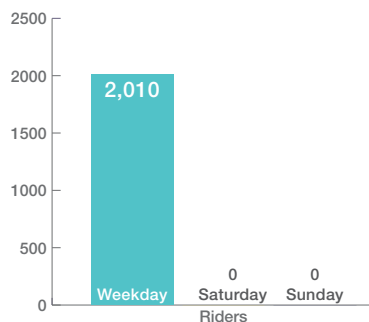
*Major route destinations include downtown, Duquesne University, Greenfield, Oakland, University of Pittsburgh and Carnegie Mellon University.*



### Route 93 (Lawrenceville-Oakland-Hazelwood)

Local route providing service between Lawrenceville, Oakland and Hazelwood along Boulevard of the Allies through Panther Hollow.

*Major route destinations include the neighborhoods of Lawrenceville, Oakland, South Oakland, Squirrel Hill, Greenfield, Hazelwood and Glen Hazel.*

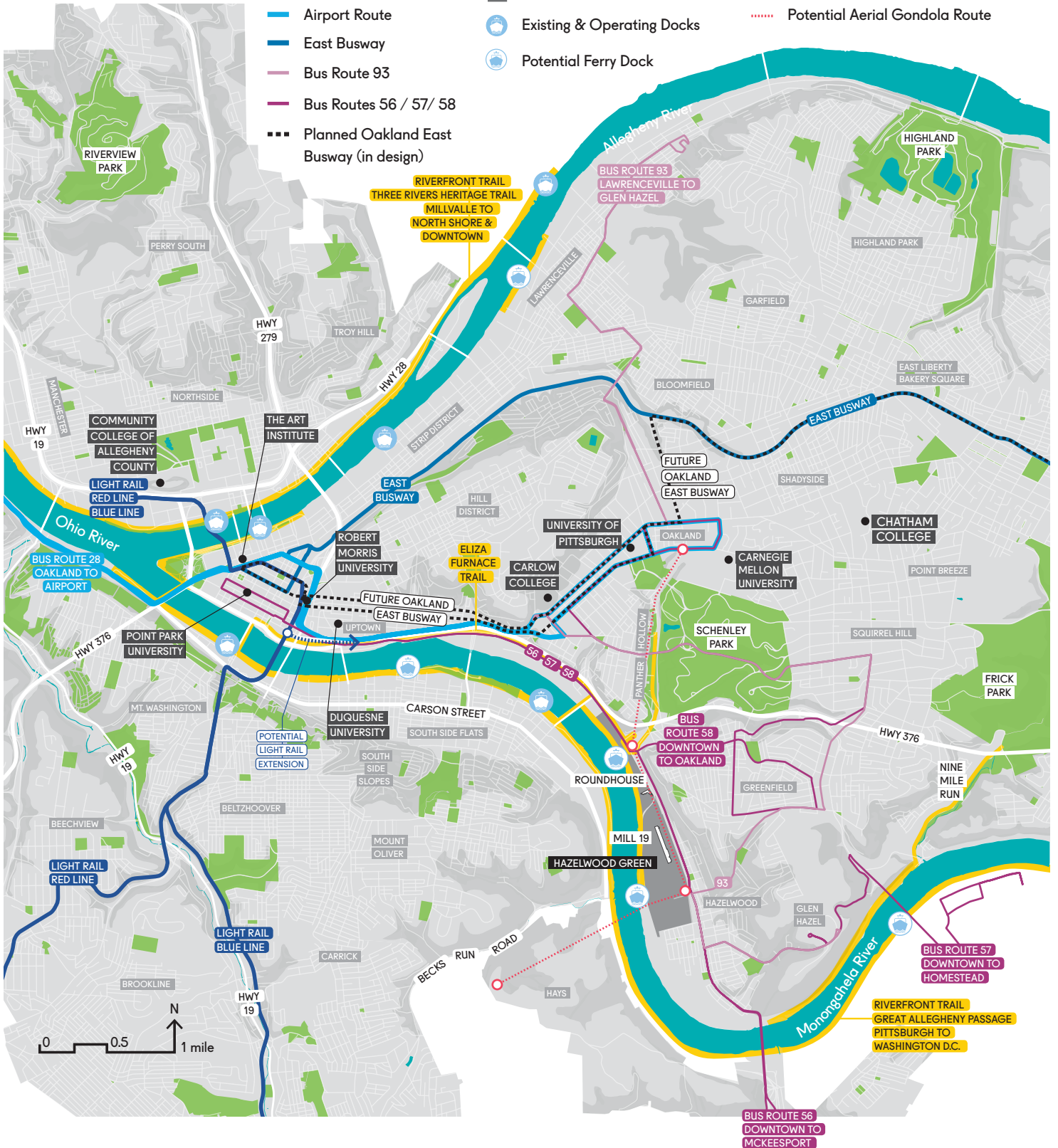


Port Authority 2018

# Existing & Potential Multi-Modal Connections To Hazelwood Green

## LEGEND

- Multi-Use Trail
- Light Rail
- Airport Route
- East Busway
- Bus Route 93
- Bus Routes 56 / 57/ 58
- - - Planned Oakland East Busway (in design)
- Major Institutions
- Hazelwood Green
- Existing & Operating Docks
- Potential Ferry Dock
- ➔ Potential Light Rail Extension
- Potential Aerial Gondola Station
- ⋯ Potential Aerial Gondola Route



## Pedestrian Network

The densest part of the City's pedestrian network was developed over 100 years ago and, as such, was built to accommodate different transportation needs than exist today. As the automobile came to dominate, newly developed areas were built without sidewalks, while excessive roadway widening degraded the existing sidewalk network. Pedestrian access and safety are therefore lacking, even along some of Pittsburgh's highest ridership transit corridors. As such the current pedestrian network within Hazelwood varies in coverage, condition and ADA-compliance depending on its age and code requirements at the time of installation. Some areas with sidewalks are missing other pedestrian network elements, such as pedestrian scale lighting, adequate road crossings, and ways to travel through barriers such as interstate ramps.

## Pedestrian Safety

From 2013 through 2017, there was 1,219 pedestrian crashes in Pittsburgh with 25 pedestrians killed and 102 pedestrians with major injuries. In *Dangerous by Design 2017* by Smart Growth America, the City of Pittsburgh was rated the 50th most dangerous metropolitan area in the U.S. for pedestrians with 10.2% of traffic deaths between 2002-2013 being pedestrians. In an update of the *Dangerous by Design* report in 2019, Pittsburgh had fallen to the

92nd most dangerous metropolitan area in the U.S. although the Pedestrian Danger Index rose from 25.1 to 27.3<sup>1</sup> Many of these pedestrian safety challenges have been created by the following:

- Active rail lines divide local streets, often without a suitable means for crossing.
- Arterials, highways, and interstate freeway ramp crossings are uncomfortable or impossible for walking or crossing.
- The lack of a continuous walking network causes people to walk along the roadway or to not walk at all due to the actual or perceived lack of a complete safe and comfortable network of facilities that connect to their desired destinations.

<sup>1</sup> The PDI represents a way to measure the relative exposure rate across the county's metropolitan areas. First developed in the 1990s by the Surface Transportation Policy Partnership and used more recently by Transportation for America, PDI is the rate of pedestrian deaths relative to the number of people who walk to work in the region.



**Pedestrian safety improvements make streets safer for everyone.**

Photo from NACTO Design Guide

## Bicycle Network

People riding bicycles are more vulnerable than those driving automobiles. The combination of inadequate infrastructure including lighting and signage, distracted and aggressive driving, and increasing numbers of SUVs and other larger vehicles mean that people on bicycles and on foot are susceptible to serious and fatal injury when collisions occur.

Since the 1999 City bike plan, the system of bike lanes and shared lane markings has continued to grow, attempting to address local concerns about safety by including bike routes on low volume streets and protected bike lanes on higher volume streets, such as Liberty Avenue.

Most recently a 1.9 mile stretch of road and trail was opened through the Hazelwood Green site. On the northern end, the new bike lanes are connected to the refurbished Hazelwood Trail that links directly to the Hot Metal Bridge and the rest of the Three Rivers Heritage Trail system. On the southern end side, they connect to a new pair of bike lanes on Hazelwood Ave and a block-long path along Gloster Street to Tecumseh Street, that provides access to the Hazelwood business district.



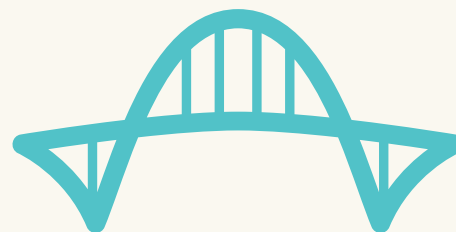
## Railroads

Pittsburgh has an extensive railroad network with major yards and extensive spur connections to industrial properties. The City is served by operators CSX, Norfolk Southern and Union Railroad Company, Allegheny Valley Railroad, and Amtrak. Both CSX and Norfolk Southern operate multiple yards and intermodal transfer facilities in the city, including immediately south of the site. Pittsburgh still has numerous at-grade rail crossings, many of which are in close proximity to residential neighborhoods, including one at Hazelwood Avenue at the southern access point to the site.



## River Bridges

A city built of bridges and tunnels, Pittsburgh has already heavily invested in infrastructure throughout the region, which today the local and governments are challenged to adequately maintain partially due to the significant reduction in population and tax base since much of this infrastructure was first built. The LRTP recommendations aim to improve upon this existing infrastructure through smart capital improvements that improve the efficiency (number of people moved through an existing corridor), quality of service, and multi-functionality of existing infrastructure, before building anew.





## HAZELWOOD GREEN

Hazelwood Green is a 178-acre site located along the Monongahela River and within the Greater Hazelwood neighborhood of Pittsburgh, Pennsylvania. It is a site with a long, rich history that has left a mark on its landscape and shaped its potential for future redevelopment. The following sections provide an overview of (1) the development plan (2) the proposed mobility networks, and (3) the transportation strategies outlined in the Preliminary Land Development Plan (PLDP).

This site represents a unique opportunity for the Greater Hazelwood neighborhood, for the city of Pittsburgh, and for the Greater Pittsburgh region as a driver for sustainable, community-based, economic development. In doing so, the development of Hazelwood Green:

- Provides a platform for the Pittsburgh region’s growing innovation economy and momentum that is largely driven by the nearby universities and institutions in Oakland.
- Aligns with the City’s development goals and targets, acting as a proving ground and pilot for sustainable design and planning in practice and development.
- Integrates with the Greater Hazelwood neighborhood to physically and economically revitalize the neighborhood.

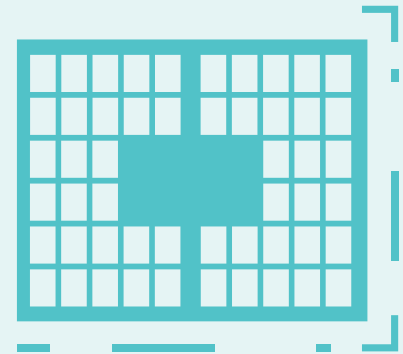
On January 8, 2019, the amended SP-10 Zoning Ordinance was passed by City Council. This Zoning Ordinance amendment accompanied the new Preliminary Land Development Plan (PLDP), which was approved on September 11, 2018 by Pittsburgh Planning Commission to replace the plan of record.

### Development Plan

The Hazelwood Green development site is envisioned as a place where people thrive, new ideas are forged, and the ecological condition is regenerated. This will be accomplished in part through the development of a mix of uses within a planning framework that encourages social interaction and generates diversity of economic benefits. Large-scale urban development projects once mimicked sprawling, car-oriented, suburban development models governed by parking minimums and single family detached housing separated from employment and retail centers. Hazelwood Green is responding to a new era of urban development practices, where density improves economic models, increases options for multi-modal access, and encourages a mix of uses with amenities required to attract a new generation of workers and residents. The approved Preliminary Land Development Plan (PLDP) contains regulations and land uses for the site’s development Districts to:

- Ensure a balanced ratio of uses are created to achieve site vitality;
- Establish minimum intensity and density targets to create critical mass;
- Integrate built and natural environments to improve performance; and
- Provide flexibility in implementation that is adaptive to future market changes.

The plan comprises three distinct districts: the Mill District, the Flats District, and the River District. Each District is a unique urban place framed by the differences in adjacent uses, and existing site conditions and boundary lines. The built form established through this PLDP for each District is intended to further shape variety and visual interest across the site. The public realm elements of each District are intended to work together with the existing site conditions and the built form to support a walkable community with site-wide opportunities for social interaction and economic vitality.

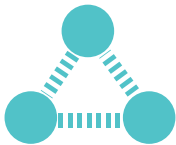


## Mobility Networks

The site's location – between two rail lines, the river and a steep slope – requires innovative solutions for creating a robust mobility network that connects the site with its neighborhood and the rest of the city. These solutions must consider fast-shifting market trends in urban transportation methods and technologies and provide affordable alternatives that are accessible to an array of users. As a result, Hazelwood Green's mobility network is grounded around two key elements as outlined in the PLDP.



**WALKABILITY:** establish a walkable street grid. Extending the existing Hazelwood street grid will reconnect the site to its neighborhood. During the era of steel mill operations, thousands of people walked from the neighborhood to jobs on the site. This jobs-housing proximity is not a new idea, it is how communities once functioned. Walkable communities significantly reduce the need for households with cars and recapture time lost commuting, while also promoting healthy, active lifestyles.

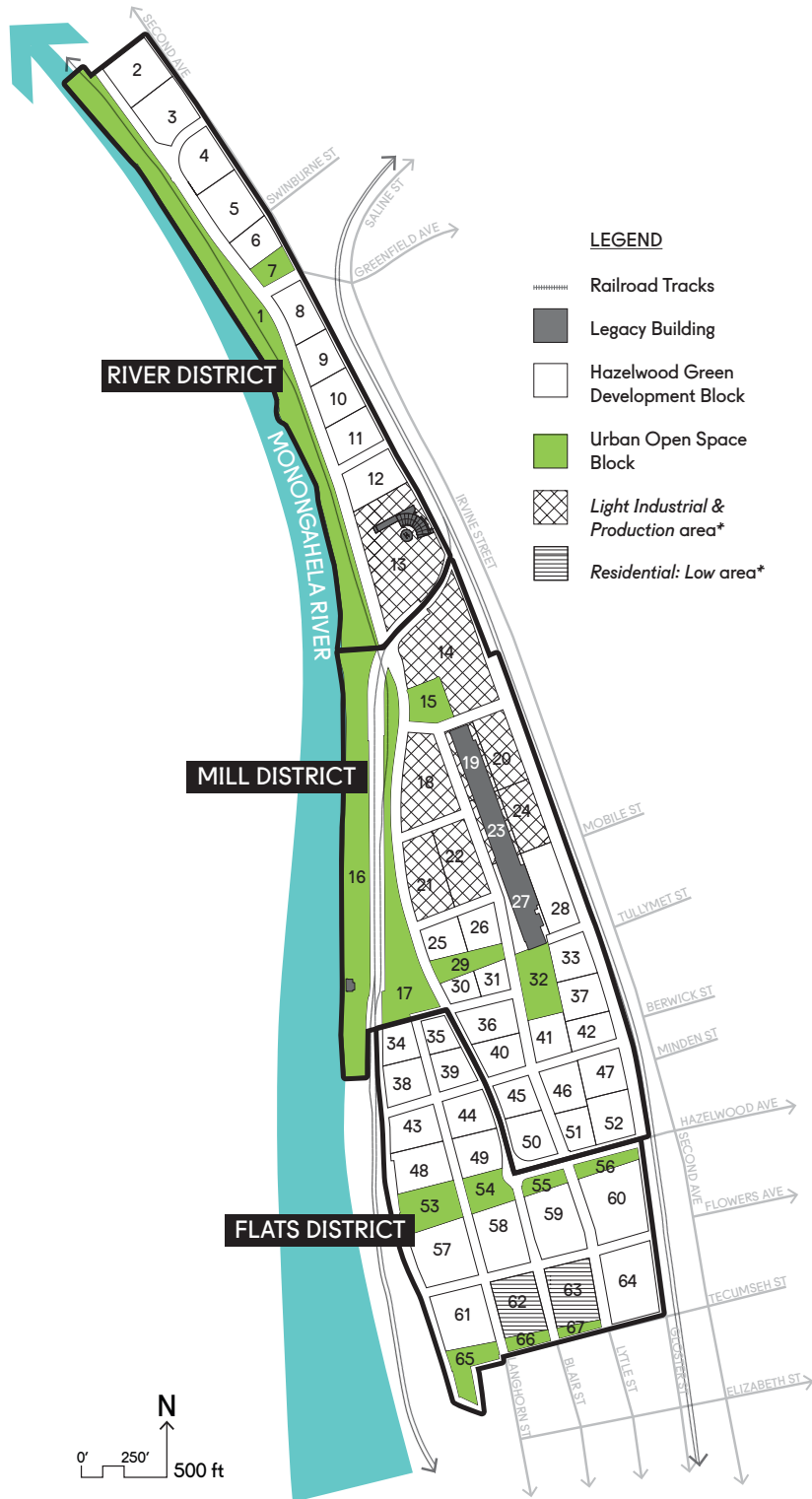


**MULTI-MODAL CONNECTIVITY:** connect to and enhance existing multi-modal systems. The Hazelwood Green riverfront trail will provide direct, off-street trail connections from the Greater Hazelwood neighborhood to South Side, Downtown, Oakland, and to the Greater Allegheny Passage. The site's development will also provide the opportunity, resources, and critical mass to strengthen Second Avenue as a multi-modal corridor. Leveraging on- and off-site improvements at key intersections and along critical routes, Hazelwood Green will facilitate a shift to efficient, healthy, and equitable mobility options.



2018 PLDP Vision for Hazelwood Green  
Illustration by Depiction LLC, 2018; courtesy of Almono LLC.

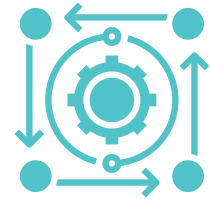
### Hazelwood Green Districts & Land Uses



Source: Hazelwood Green Preliminary Land Development Plan

## Transportation Strategy

As stated in the PLDP transportation demand is not static. People choose to drive, walk, bicycle, and ride transit based on the availability of options, convenience, price, weather, and changing schedules. A comprehensive transportation strategy is essential to ensuring adequate infrastructure and managing transportation demand as the site builds out both short and long term. The project team estimates that the Hazelwood Green development will generate approximately 61,000 daily person trips at full buildout. The team determined the total Hazelwood Green generated transit trips by applying the City of Pittsburgh 17% transit mode share to this overall person trip estimate – resulting in a conceptual estimate of 10,500 daily transit riders. This figure is conservative, as it is likely that the transit investments that will accompany development at Hazelwood Green will increase the neighborhood transit mode share above the citywide mode share. The transportation strategy must also be adaptive to market and technological changes, and be resilient to market stresses due to accidents, weather events, construction, etc. The strategies outlined in the PLDP for Hazelwood Green includes a series of transportation infrastructure improvements, transportation demand management, and a flexible shared parking strategy.

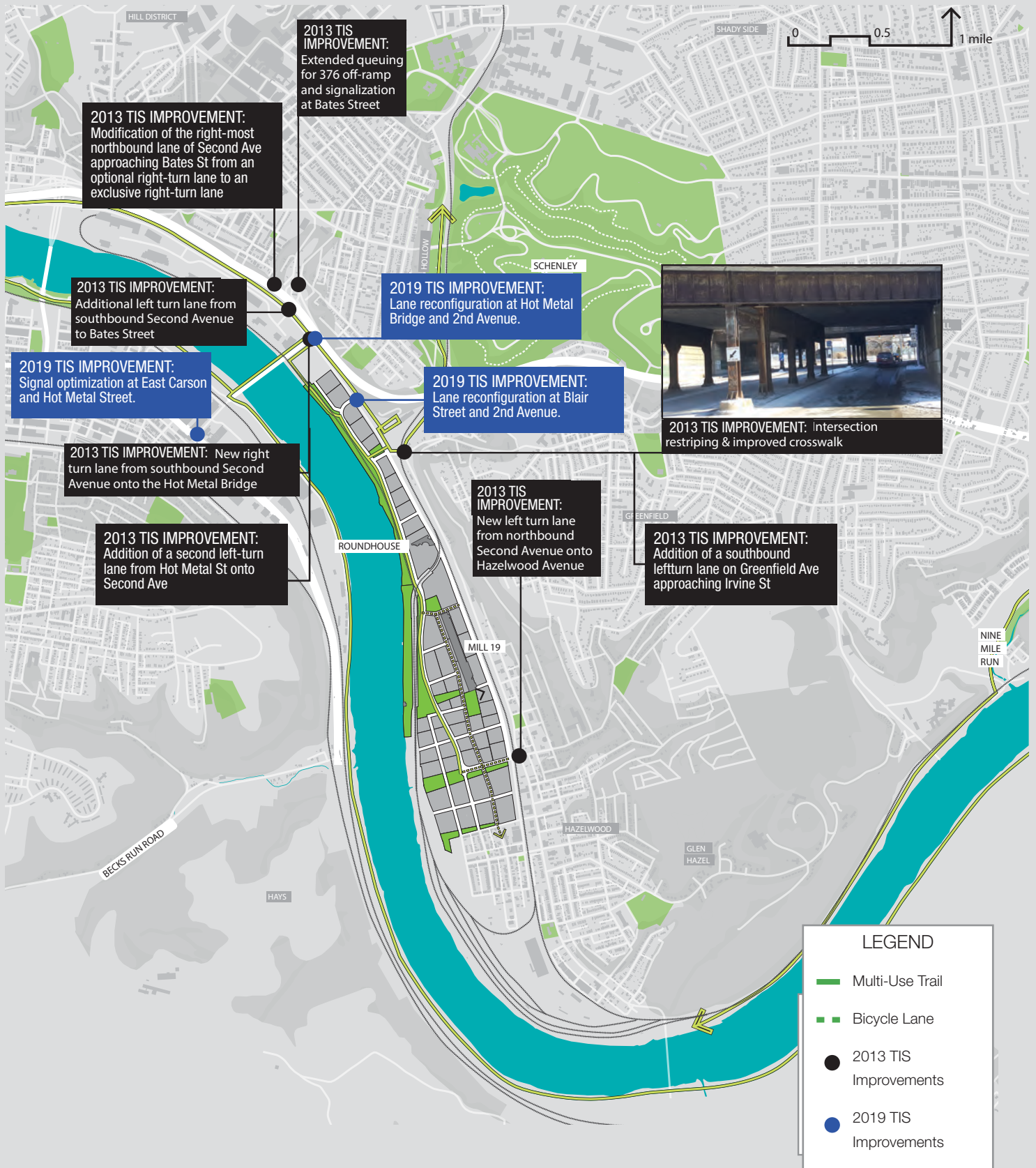


## Infrastructure Improvements

A series of transportation improvements identified during the 2013 Traffic Impact Study (TIS) are already underway as part of the original PLDP approvals. As part of the revised PLDP an updated TIS for Hazelwood Green was undertaken to assess the traffic impacts of development for Phase 1 (Mill District) of Hazelwood Green, which is anticipated to be built out from 2018 to 2028. The 2019 TIS includes goals and mitigation from Transportation Demand Management (TDM) strategies that are used to forecast the trip generation of Phase 1 of Hazelwood Green and predict the necessary investments (transit, roadway, and intersections) required to mitigate this added trip generation.

The series of transportation improvements identified during the 2013 TIS include four intersection improvements along Second Avenue at the intersections of Bates Avenue, Hot Metal Bridge, Greenfield Avenue, and Hazelwood Avenue. These are being led by PennDOT in collaboration with Almono LLC and the City of Pittsburgh's Department of Mobility and Infrastructure (DOMI). The 2019 TIS recommendations included lane reconfigurations at Hot Metal Bridge/2nd Avenue and Blair Street/2nd Avenue as well as traffic signal optimization at East Carson Street/Hot Metal Bridge.

# PENNDOT Intersection Improvements



Source: Hazelwood Green Preliminary Land Development Plan



Photo by ReMake Group

# 3

## Planning for 2040

### VISION TO REALITY

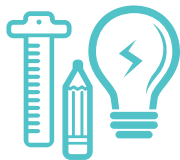
Achieving Hazelwood Green's full vision will require decades of investment and continued commitment from government leadership at all levels and support from innumerable local and regional partners. The return on the investment will be creating stronger, more vital neighborhoods; sharing prosperity among many including disadvantage populations that have few mobility choices; meeting our responsibility to the environment; and making the region more competitive among its domestic and global peers. The full implementation of the LRTP will incorporate planned growth and result in better multimodal access to and from Hazelwood Green.



### USING THE HAZELWOOD GREEN LRTP

The Hazelwood Green LRTP is intended to be a starting point for coordinated transportation investments for Hazelwood Green over the next 20 years. It presents needed and realistic multimodal transportation network investments and policy concepts that help achieve the goals established as a part of the PLDP process. The plan does not present specific and final design solutions, nor has the plan analyzed all of the trade-offs for individual components of the plan. The plan focuses on a system-level analysis.

The plan will continue to evolve to take into account future changes that cannot be anticipated today. Financial, political, and demographic trends result in changing demands on the transportation system in the City and the region as a whole. Finally, some elements of the plan may not become reality. Finally, some elements of the plan will require further feasibility analysis before becoming reality.



### The Project Development Process

Hazelwood Green and partner agencies will not be able to advance all of the LRTP recommendations at once, but should look to implement complementary projects over time to support the incremental growth in population and employment at Hazelwood Green and adjacent communities during the next 20 years. Pursuing investments that best meet Hazelwood Green's and the region's objectives is essential to the success of the City's transportation system and its connectivity to regional networks. It is worth noting that in many cases, the LRTP recommendations— due to size, scale, cost, and complexity— cannot be immediately constructed and will first require refinement through the appropriate Project Development Process of PennDOT, SPC and the City. The additional evaluation and development processes may adjust the character, location, and other elements of some recommendations. This is a natural evolution of recommendations identified in long-range plans as they move toward implementation.



### Regional Funding Processes

Several processes guide both operating budget and capital program for City, County, State, and Regional agencies which in turn guide annual work programs and future implementation processes.

- The City annually produces a capital improvements program as well as an annual operating budget.
- The SPC approves the region's Transportation Improvement Program (TIP). Projects using federal funds must be included in the TIP before they can be implemented.
- The State Transportation Improvement Plan (STIP) and the TIP are the first four years of the Twelve Year Program (TYP), which outline the multimodal transportation improvements spanning a four year period. The STIP covers the entire state and includes 23 individual TIPs representing the MPOs and Regional Planning Organizations. The TIPs feed into the statewide STIP.



## EXISTING AND POTENTIAL FINANCING

Fully realizing Hazelwood Green's vision will require substantial investment over the next 20 years. To support the LRTP's recommendations, considerable funding from many different sources will be needed. The financial plan underlying the plan includes a combination of traditional (or "committed") and non-traditional (or "potential") funding sources. Traditional sources are those that have been used to fund transportation in the past and have easily predictable funding levels for the future. Non-traditional sources are those that may not be as available or predictable.

### Committed Funding Sources

The Pittsburgh's region's TIP funds are budgeted through 2022 by the Southwestern Pennsylvania Commission (SPC). In order for projects to be included with the TIP and receive federal funding, the federal government requires MPOs to prepare a Long Range Transportation Plan (LRTP) for transportation projects. The MPO-LRTP includes a list of transportation projects that must be fiscally constrained and based on the amount of funding the MPO expects to receive over the next 20 years. The MPO-LRTP is updated every four or five years to reflect new data and changes to regional priorities for transportation investment.

### Potential Funding Sources

Source	Purpose	Magnitude	Eligibility	Timeframe
Fixing America's Surface Transportation Act (FAST Act)	<ul style="list-style-type: none"> <li>• Transit</li> <li>• Project Delivery</li> <li>• Transit Oriented Development</li> <li>• Safety</li> <li>• Technical Assistance</li> <li>• Freight</li> </ul>	\$63 Billion into the Statewide TIP	State, Regional and Local agencies	Regional MPO TIP reviewed every 2-years
BUILD Transportation Discretionary Grant program (previously TIGER)	Road, rail, transit and port projects that promise to achieve national objectives	\$1.5 billion in FY2018	State and local through competitive process	Annually
CMAQ Program (through the FAST Act)	Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards	\$2.5 billion in FY2020	Through statewide program	Annually
Capital Investment Grant (New Starts/ Small Starts) Financing	Transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit	\$2.3 billion in FY2020	State and local government agencies, including transit agencies	Annually
Transportation Infrastructure Finance and Innovation Act (TIFIA)	Provision of credit assistance in the form of direct loans, loan guarantees, and standby lines of credit (rather than grants) to projects of national or regional significance	Minimum Anticipated Project Costs - <ul style="list-style-type: none"> <li>• \$10 million for Transit-Oriented Development, Local, and Rural Projects</li> <li>• \$15 million for Intelligent Transportation System Projects</li> <li>• \$50 million for all other eligible Surface Transportation Projects</li> </ul>	<ul style="list-style-type: none"> <li>• State Governments</li> <li>• State Infrastructure Banks</li> <li>• Private Firms</li> <li>• Special Authorities</li> <li>• Local Governments</li> <li>• Transportation Improvement Districts</li> </ul>	Annually
Public-Private Partnership	A public-private partnership is a possible vehicle for financing. The basic structure engages long-term involvement by a private team to design, finance, build, operate and maintain the system.	Funding is provided by the State or local government via "availability payments" that make up the difference between farebox revenues and required debt service and annual O&M costs.		Enables the private sector's flexibility, efficiency and access to capital while assuring quality performance through a series of performance metrics





## Potential Revenue Sources

Committed TIP related sources of funding may not provide enough revenue to support the full implementation of the MPO-LRTP's recommendations particularly considering the competition for committed sources. Potential revenue sources could include:

- **Increases in FHWA funds and Highway Trust Fund:** Federal funding levels have not kept up with inflation, and federal revenues for transportation have not been increased in two decades; however, there is a high potential that during the next 20 years, additional federal funds will be made available to state and local agencies for purposes such as maintenance and asset management.
- **Sales and Gas taxes:** In 2016, the state's 6 percent sales and use tax was extended to items downloaded electronically or digitally. That includes songs, movies, e-books, online games, streaming services and apps. The state Independent Fiscal Office estimated the change would generate \$45.7 million annually.
- **Cordon Charges:** This revenue source is related to the establishment of a cordon area with Pittsburgh to manage the demand for single-occupancy vehicle accessing the downtown area, reduce congestion, and create capacity on downtown streets for multimodal needs.

None of these sources have been committed and each may have challenges in implementation. Any new source of revenue would need to go through the legislative process at the appropriate level (State, region or local), and additional potential sources may exist that were not assessed through this plan.

The purpose of the HG Long Range Transportation Plan is to recommend and prioritize projects that enable the continued growth of Hazelwood Green and its connections to adjacent communities and the region as a whole. It is imperative that projects are prioritized to maximize the effectiveness of the capital investments while also meeting the Hazelwood Green LRTP goals. In transforming the built environment at Hazelwood Green, the essential elements of ensuring connectivity, removing mobility barriers and improving safety and health are keys to the plan.

## PRIORITY PROJECT RECOMMENDATIONS

The following pages provide details for individual priority projects identified through the LRTP planning process that support development of the site to create economic opportunity for the region. Projects are categorized based on modes and context, and are summarized in the following implementation matrix.

The projects are the recommended priority capital investments and are in addition to the ongoing programmatic spending, maintenance and operations undertaken by local and regional agencies such as SPC, PennDOT and the City of Pittsburgh. In combination with the redevelopment of Hazelwood Green, these priority projects offer transformative potential for the city and region.

The planning, design, and construction schedule for each project will be driven by many factors including funding availability, coordination with other construction projects, and urgent safety and maintenance needs. Costs may vary depending on project complexity, cost of materials, extent of improvements and other factors. It is important to note that stated costs are planning level estimates and will likely change as project scopes are refined.

# IMPLEMENTATION MATRIX

## Priority Projects

### Downtown to Hazelwood Green and the Greater Mon Valley

### Oakland to Hazelwood Green and the greater Mon Valley

### Greenfield Avenue Intersection: Neighborhood Gateway

### Monitor, manage, and incentivize non-SOV modes of transportation through Transportation Demand Management Strategies

### Pittsburgh Innovation Districts by Water Ferry

### Bicycle & Pedestrian Network Improvements

#### Cost Key

LOW	<\$1million
MEDIUM	\$1-10million
HIGH	>\$10million

## IMMEDIATE TERM

0-1 Year

Begin discussions with Pitt, CMU, Oakland employers, and TMA about shuttle consolidation/potential new shuttle services

Participate in SPC's Second Avenue Study to work towards strategy alignment

Begin discussions with DOMI, PennDOT, railroads about access management

Propose 2nd Avenue as part of SPC Regional Traffic Signal Program

Begin discussions with PACC, DOMI about potential gondola routes (as a longer-term solution that would supplement plans underway for the interim Mon-Oakland Connector included under Medium Term, in conjunction with further Second Ave rapid transit analysis)

Begin discussions with key stakeholders about Transportation Management Association creation/expansion

	Capital Cost	Operating Cost
TDM Coordinator	LOW	LOW

Begin discussion with PACC, DOMI, about potential ferry service

Add key community stairs to City priority list

	Capital Cost	Operating Cost
Expand Bikeshare	LOW	LOW

**Priority Projects**

	SHORT TERM 1-5 Years		MEDIUM/LONGER TERM 5+ Years	
	Capital Cost	Operating Cost	Capital Cost	Operating Cost
<b>Downtown to Hazelwood Green and the Greater Mon Valley</b>	New Park and Ride Facilities	LOW	LOW	BRT Along 2nd Avenue HIGH MEDIUM
	Access Management	MEDIUM-HIGH	LOW	Continued Access Management MEDIUM-HIGH LOW
	Signal Optimization	LOW	LOW	
	2nd Avenue Lane Management	LOW	LOW	
<b>Oakland to Hazelwood Green and the greater Mon Valley</b>	Support PACC and DOMI during gondola planning and grant application process	LOW	LOW	Oakland-Hazelwood-South Side Gondola HIGH HIGH
	Mon-Oakland Connector	MEDIUM	MEDIUM	
	One-Seat Ride to Oakland	LOW	MEDIUM	
	Consolidated Shuttle Services	LOW	LOW	
<b>Greenfield Avenue Intersection: Neighborhood Gateway</b>	Greenfield Avenue Intersection: neighborhood gateway	HIGH	LOW	
<b>Monitor, manage, and incentivize non-SOV modes of transportation through Transportation Demand Management Strategies</b>	Parking Cash-Out	LOW	LOW	Continued expansion of TDM strategies as HG site develops
	Unbundled Parking	LOW	LOW	
<b>Pittsburgh Innovation Districts by Water Ferry</b>	Commuter Ferry	MEDIUM	HIGH	
<b>Bicycle &amp; Pedestrian Network Improvements</b>	Junction Hollow Connection	LOW	LOW	Glenwood Bridge Connection LOW-MEDIUM LOW
	South Oakland Ped Bridge	MEDIUM-HIGH	LOW	
	East End Neighborhoods by bicycle	MEDIUM	LOW	
	Homestead (and Mon Valley) by bicycle	LOW	LOW	



# DOWNTOWN TO HAZELWOOD GREEN AND THE GREATER MON VALLEY

via a rapid transit corridor along Second Avenue

## Recommendations:

- Rapid Transit Along 2nd Avenue
- New Park and Ride Facilities
- Roadway and Corridor Management
- Signal Optimization
- 2nd Avenue Lane Management

## Interim Steps:

- Port Authority initiates an Alternatives Analysis / Feasibility Study for a rapid transit corridor(s) from Hazelwood to Downtown & Oakland.
- Provide improved interim service with existing bus routes: increase frequency and/or extend to better serve Hazelwood Green / Greater Hazelwood.
- Signal Optimization along 2nd Avenue Corridor
- 2nd Avenue Lane Management
- Identify and implement new Park n' Ride Facilities to the South (Sandcastle / Century III / McKeesport).



## Rapid Transit Along 2nd Avenue

### Description

Rapid Transit along Second Avenue between Downtown Pittsburgh and Hazelwood, running via the Downtown-Oakland BRT line through Uptown and then continuing on a new alignment on Second Avenue to Hazelwood Green. The anticipated transit demand of Hazelwood Green could be leveraged to provide higher quality transit service to the Mon Valley via Homestead, McKeesport, Century III Mall, etc.

### How Will This Help?

Would provide a faster and more reliable transit service between Hazelwood and Downtown, serving as the backbone of the neighborhood's alternative mobility network.

### How Can It Happen?

Requires the reconfiguration of Second Avenue, including dedicated transit lanes and improved stations, as well as a connection from Second Street to Fifth/Forbes via Brady Street, a connection that was proposed in the SPC Second Avenue Corridor Study or an alternative connection.

### Next Steps:

Stakeholder Consensus Building

Alternatives Analysis (Port Authority with key partners)

### Interim Recommendations:

- Provide improved interim service with existing bus routes: increase frequency and/or extend to better serve Hazelwood Green / Greater Hazelwood.
- Signal Optimization along 2nd Avenue Corridor
- 2nd Avenue Lane Management
- Identify and implement new Park n' Ride Facilities to the South (Sandcastle / Century III / McKeesport).

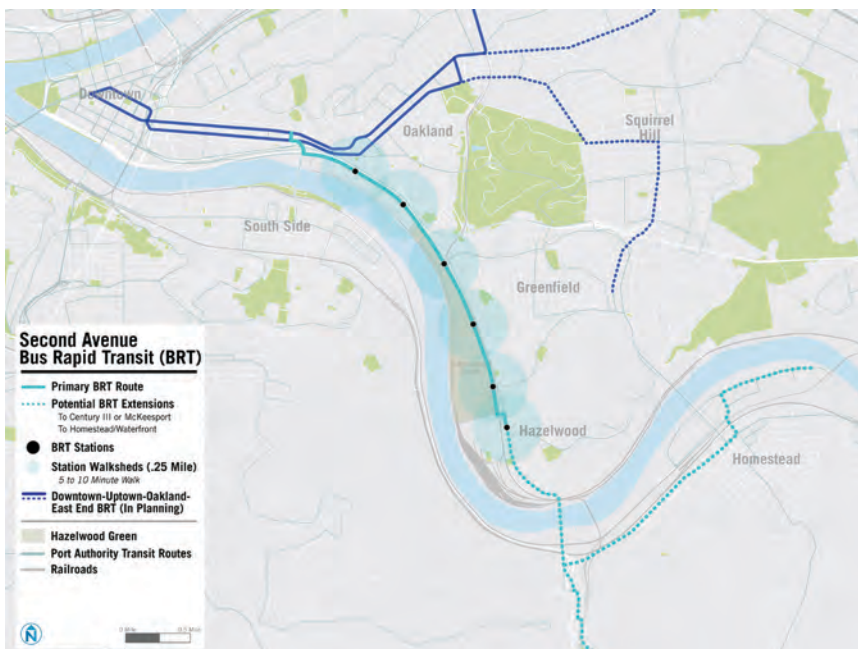


Photo by Ant Kozetsky on Unsplash

### COST



Capital: \$54 Million

Operating: \$5 Million Per Year

### TIME

4+ Years

### KEY STATISTICS

Distance 4 Miles  
 No. of Stops 14 (6 new)  
 Travel Time ~16 Minutes

### SERVICE HOURS

Span 18 Hours Daily  
 Peak Freq 10 Minutes  
 Off-Peak Freq 15 Minutes

### RIDERSHIP

HG (2040) ~6,000  
 Addtl Capacity 8,000+

### CONNECTIONS

Downtown Bus Connections  
 Downtown-Oakland BRT  
 Routes 56, 57, 58, 93

### MODE SHARE IMPACT

HIGH

### PARTNERS

PennDOT  
 Port Authority  
 City of Pittsburgh  
 Allegheny County  
 University of Pittsburgh  
 FHWA

### ADVOCATES

PCRG  
 Pittsburghers for Public Transit  
 Hazelwood Initiative  
 Department of City Planning

### HURDLES

\$\$\$  
 HIGH CAPITAL COSTS

INTEGRATION WITH DOWNTOWN/OAKLAND

HIGH CAPITAL COSTS

EXISTING LOW DENSITY ALONG MUCH OF CORRIDOR



## New Park and Ride Facilities

### Description

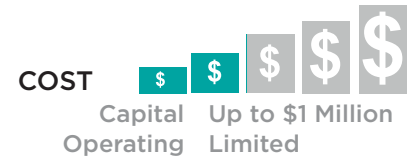
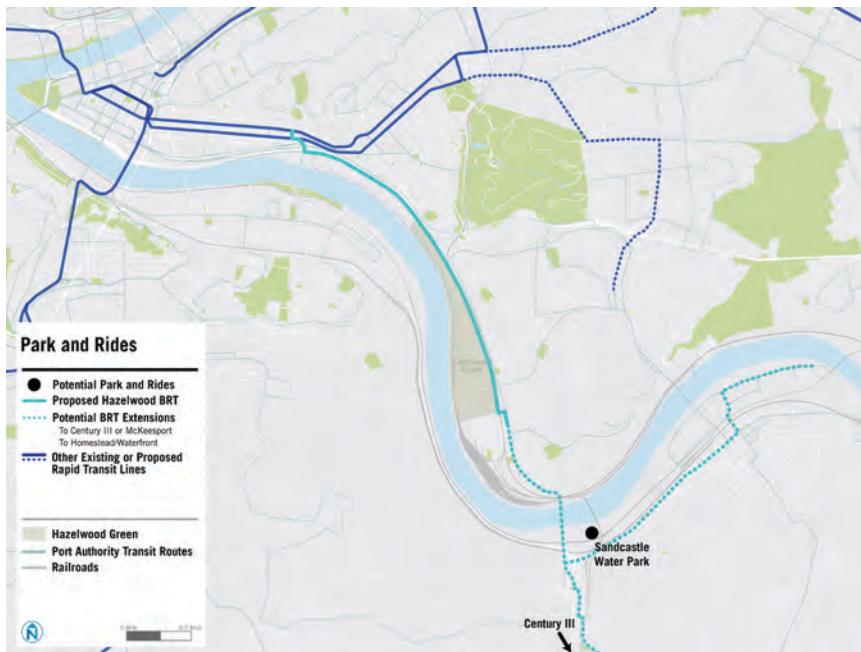
Develop new park and ride facilities at Sandcastle Waterpark, and potentially Century III. Explore if any park n' ride facilities could be multi-functional and also meet some of Port Authority's growing need for transit garage space.

### How Will This Help?

New park and rides would enable customers to park and use transit to complete their trip to Hazelwood Green, Downtown, and Oakland – reducing vehicle miles traveled on Second Avenue. This will encourage single-occupancy vehicles to stop prior to crossing the Glenwood Bridge and therefore enable the re-allocation of Second Avenue right-of-way to better facilitate transit and pedestrians.

### How Can It Happen?

New park and rides would require leasing agreements with parking lot owners and collaboration with the Port Authority to realign routes to serve the facilities.



**PARTNERS**

- Port Authority
- Homestead & West Mifflin
- Allegheny County
- SPC
- FHWA

### HURDLES



STAKEHOLDER NEGOTIATIONS



Park and Ride Facility in Alpine Village, PA



## Roadway and Corridor Management

Transportation corridors often contain underutilized capacity in the form of parallel roadways, single-occupant vehicles, and transit services that could be better leveraged to improve person throughput and reduce congestion. Facilities and services on a corridor are often independently operated, and efforts to date to reduce congestion have focused on the optimization of the performance of individual assets.

Integrated Corridor Management (ICM) is the realization that the overall transportation network will see significant improvements in the efficient movement of people and goods through institutional collaboration and aggressive, proactive integration of existing infrastructure along major corridors. Through an ICM approach, transportation management of the corridor as a multimodal system with appropriate operational decisions will benefit the corridor as a whole.



## Access Enhancements

### Description

Provision of safe and effective access to/from the Hazelwood Green site from 2nd Avenue throughout the construction phases and into the future for all vehicles (i.e., Hazelwood Avenue, Greenfield Avenue, Blair Street). Potential undergrounding/capping of the existing rail line would provide additional ROW for multimodal improvements along 2nd Avenue and enable full reconfiguration of the Greenfield Avenue/2nd Avenue intersection.

### How Will This Help?

Access Enhancement is the proactive management of vehicular access to the Hazelwood Green. Good access enhancement promotes safe and efficient use of the transportation network for all vehicles. The reconfiguration of the Greenfield Avenue intersection would enhance access to the site for all modes as well as providing solutions to a known capacity constriction along the corridor.

### How Can It Happen?

From Second Avenue Hazelwood Green has three proposed access points at Blair Street, Hazelwood Avenue and Greenfield Avenue. Both Blair Street and Hazelwood Avenue are currently constructed with 2013 PennDOT Improvements planned at Hazelwood Avenue to improve northbound access to the site. The undergrounding/capping of the rail line would need to occur north of Greenfield Avenue and continue south to beyond Elizabeth Street.

### Strengths +

#### MOBILITY IMPACTS

Creation of safe vehicular access to Hazelwood Green from 2nd Avenue and adjacent communities with additional ROW for multimodal enhancements (i.e., rapid transit and bike/pedestrian facilities).

#### FUNDING SOURCES

PennDOT, SPC CIP funding programs, Federal Transit Administration.

#### MOBILITY CONNECTIONS

Multimodal access along the 2nd Avenue corridor including from the Greenfield and Hazelwood communities and provision of multimodal access for all vehicle types and modalities.

#### OVERALL ADVANTAGES

Provides safe and efficient access to Hazelwood Green for all modes.

### Weaknesses -

#### ADJACENT MOBILITY GAPS

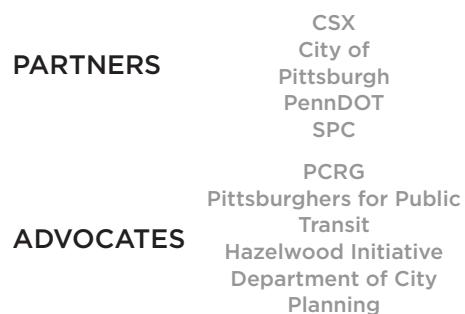
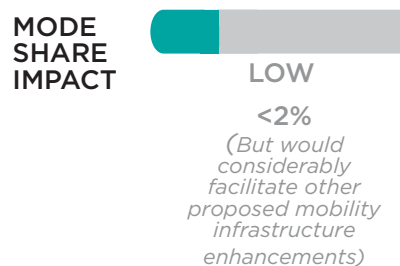
Predominantly addresses vehicular access to/from 2nd Avenue corridor and those three immediate access points.

#### CAPITAL COST

Major infrastructure requirements at Greenfield Avenue and the undergrounding of the rail line would require significant investment.

#### FACILITY DEFICITS

Limited ROW along 2nd Avenue due to existing railroad infrastructure.





## Signal Optimization

### Description

The 2nd Avenue corridor between the Glenwood Bridge and the Hot Metal Bridge has eleven (11) signalized intersections. The corridor operations could be improved by adjusting the timing and/or updating equipment. Signal optimization is one of the most cost effective measures that can significantly reduce congestion and help with traffic flow on arterial roads.

### How Will This Help?

A traffic signal optimization program would reduce travel delays for all vehicles and modes and help reduce air pollution. Recent optimizations on two corridors in Maryland estimated the following annual savings: 950,000 vehicle-hours of delays, 320,000 gallons of fuel, 5.5% in hydrocarbon emissions, and 0.5% in nitrogen dioxide (NOx) emissions. It was also assumed that with vehicle delay hours valued at \$10 per hour, the benefit achieved was an estimated \$19 million over two years.

### How Can It Happen?

Through the SPC's Regional Traffic Signal Program, the 2nd Avenue corridor would be proposed for funding.

### Strengths +

#### MOBILITY IMPACTS

Monitoring of vehicle speed and flow with inclusion of transit signal pre-emption.

#### FUNDING SOURCES

SPC Regional Traffic Signal Program, PennDOT.

#### MOBILITY CONNECTIONS

Progresses vehicular flow to and through Hazelwood and enabling reliable transit connections.

#### OVERALL ADVANTAGES

Enhancing vehicular flow along the 2nd Avenue Corridor to provide efficient progression through and to Hazelwood.

### Weaknesses -

#### ADJACENT MOBILITY GAPS

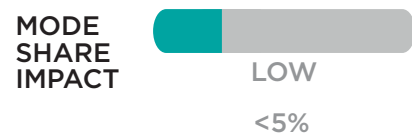
Focuses on 2nd Avenue corridor within Hazelwood and would benefit from corridor optimization continuing north and south.

#### CAPITAL COST

New signal equipment updates may be required to fully benefit from available technology.

#### FACILITY DEFICITS

Current signal equipment is old with limited communication technology.



**PARTNERS**

SPC  
PennDOT  
City of Pittsburgh

**ADVOCATES**

Bike Pittsburgh  
Hazelwood Initiative

### HURDLES

COMPETITIVE FUNDING PROGRAM WITH SPC

CHANGING CONDITIONS ALONG THE CORRIDOR DUE TO DEVELOPMENT



# 2nd Avenue Lane Management

## Description

The current configuration of 2nd Avenue provides for a three-lane cross-section that is regulated as two-lanes northbound and a single-lane southbound in the morning peak period. At all other times the corridor operates as a single-lane in each direction with parking on both sides of the roadway. A corridor lane management program would enable the roadway to operate as two lanes northbound in the AM peak and two lanes southbound in the PM with associated dedication for transit as appropriate. Existing parking regulations would be affected with the loss of parking on the southbound side of 2nd Avenue during the PM peak period.

## How Will This Help?

Lane management would provide for additional capacity in the peak periods and enable the available roadway capacity to be utilized differently as demand changes throughout the day.

## How Can It Happen?

In association with the Signal Optimization program, lane management infrastructure can be incorporated along the corridor.

## Strengths +

### MOBILITY IMPACTS

Provide greater efficiencies of existing 2nd Avenue ROW.

### FUNDING SOURCES

PennDOT and SPC CIP funding program, FHWA funding.

### MOBILITY CONNECTIONS

Provision of peak and off-peak lane management increase vehicle capacity and/or capacity for alternative mobility options (i.e., transit).

### CAPITAL COST

Minimal infrastructure costs especially if coordinated with signal optimization project.

### OVERALL ADVANTAGES

Enhances use of existing ROW for all modes and enhances ability to provide multimodal improvements.

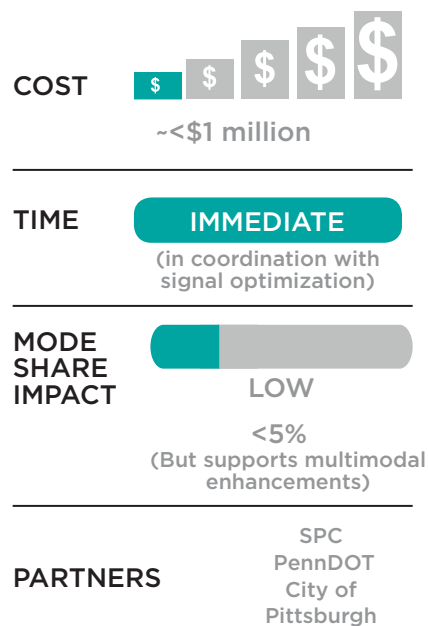
## Weaknesses -

### ADJACENT MOBILITY GAPS

Focuses solely on 2nd Avenue corridor capacity between the Glenwood Bridge and Hot Metal Bridge.

### FACILITY DEFICITS

Limited ROW along the corridor so parking could be periodically impacted.



## HURDLES



COMPETITIVE FUNDING PROGRAM WITH SPC



WOULD NEED BUY-IN FROM RESIDENTS AND BUSINESSES



# OAKLAND TO HAZELWOOD GREEN AND THE GREATER MON VALLEY

## Recommendations:

- Frequent and Fast One Seat Ride to Oakland
- Oakland-Hazelwood-Southside Gondola
- Utilize and Leverage Existing Shuttle Services

## Interim Steps:

- Support a low-impact pathway for electric shuttles through Junction Hollow as an interim connection for rapid transit to Oakland.
- Port Authority initiates an Alternatives Analysis / Feasibility Study for a rapid transit corridor(s) from Hazelwood to Downtown & Oakland.
- Almono pursues a Feasibility Study for gondola service from Hazelwood to Oakland, and potential extensions to South Side or Hays.



## Frequent and Fast One Seat Ride to Oakland

### Description

Create a new frequent, one-seat bus service connecting Oakland and Hazelwood Green. The service could initially be an extension of Route 75 across the Hot Metal Bridge to Hazelwood with increased headways. Ultimately, this service could leverage the Downtown/Oakland BRT via a Brady Street connection to provide faster and more reliable service.

### How Will This Help?

The new bus service would provide a more direct to Oakland from much of Hazelwood Green, reducing travel times by up to 15 minutes compared to existing transit options. Service would also operate significantly more frequently than Routes 58 and 93, enabling spontaneous travel.

### How Can It Happen?

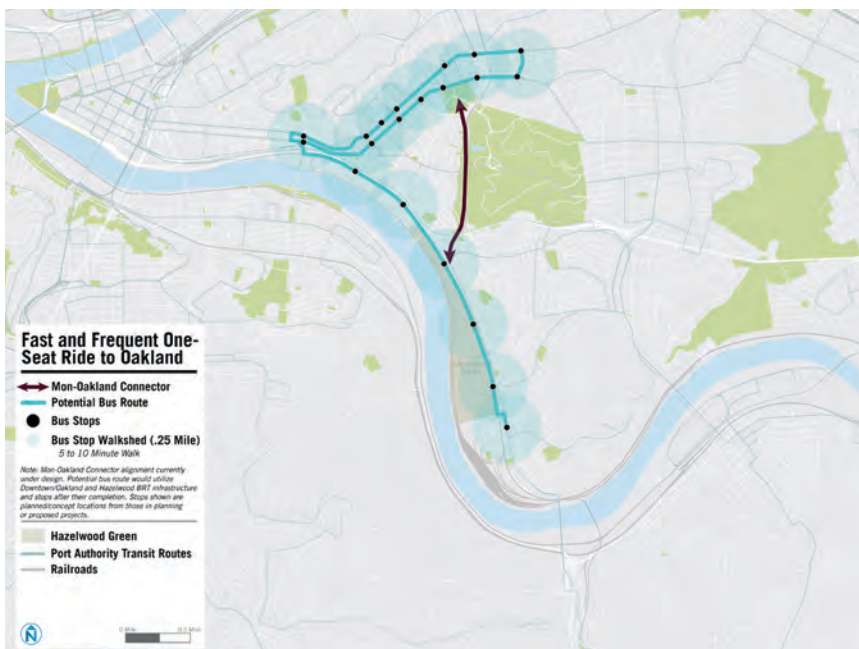
Stakeholders could work with the Port Authority to establish the new route as part of regular service changes, directly fund a Port Authority-operated service, or operate the route as a shuttle.

### Next Steps:

Apply for funding and complete alternatives analysis & feasibility study of Brady Street connection, Mon-Oakland Connector route, Bates Street reconfiguration. This would need to be done in conjunction with a gondola feasibility study, to understand if both connections were needed and any trade-offs between the two.

### Interim Recommendations:

Support a low-impact pathway for electric shuttles through Junction Hollow as an interim connection for rapid transit to Oakland (Mon-Oakland Connector), and/or work with the Port Authority to provide improved service through Oakland through increased frequency of the 93 and/or route modifications such as the Route 75 extension mentioned above.



### KEY STATISTICS

Distance	4.6 Miles
No. of Stops	~11
Travel Time	18-23 Minutes

### SERVICE DESIGN

Span	18 hours
Peak Freq	10 Minutes
Off-Peak Freq	15 Minutes

### RIDERSHIP

HG (2040)	~2,500
Add'l Capacity	6,000+

### CONNECTIONS

Fifth/Forbes Bus Routes  
Downtown-Oakland BRT  
Pitt & CMU Shuttle Systems



**PARTNERS**  
Port Authority  
DOMI  
Innovate PGH/OTMA  
University of Pittsburgh

### HURDLES

LIMITED SECONDARY ACTIVITY CENTERS

TRAFFIC WILL AFFECT RELIABILITY



# Oakland-Hazelwood-South Side Gondola

## Description

Aerial gondola connecting Oakland, Hazelwood Green, and the South Side via Junction Hollow and over the Monongahela River. The gondola would have three stations: one in Oakland (near Forbes Avenue), one at Hazelwood Green (near Second and Greenfield Avenues), and one on the South Side (near East Carson Street). Alternate routing could be individual routes from South Side to Hazelwood or Hazelwood to Oakland.

## How Will This Help?

An aerial gondola would provide a frequent, congestion-free mobility option between Hazelwood Green and major employment, residential, and entertainment districts in Oakland and the South Side. Depending on final station locations, a gondola may provide faster service between these locations than any land-based transit alternative.

## How Can It Happen?

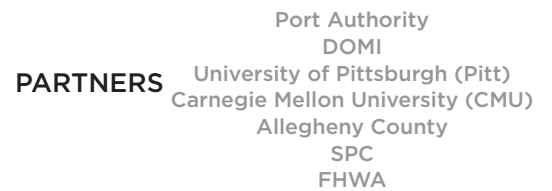
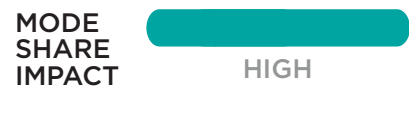
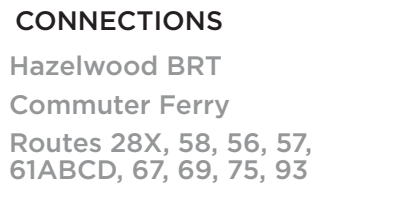
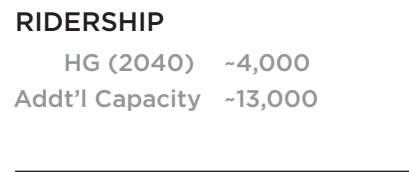
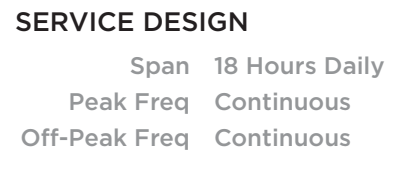
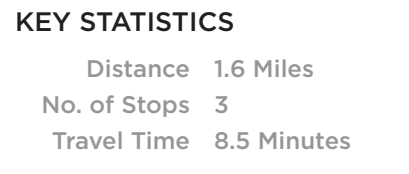
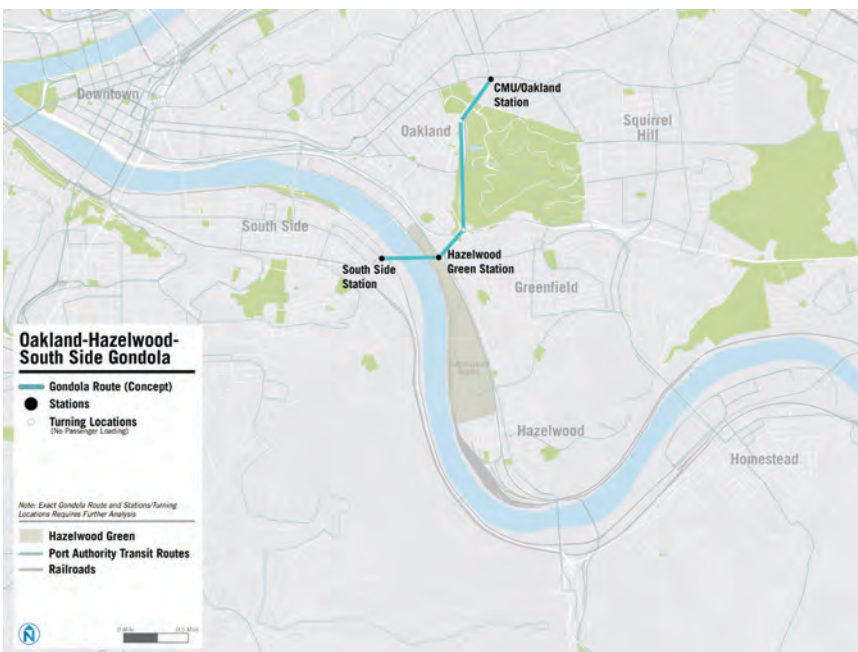
Constructing an aerial gondola would require strong collaboration between public agencies and private stakeholders to determine specific station sites, as well as tower and turning station locations.

## Next Steps:

Apply for funding and complete alternatives analysis & feasibility study.



Aerial Gondola in Portland Oregon





## Utilize and Leverage Existing Shuttle Services

### Description

Review the consolidation of Pitt, CMU, and UPMC shuttles to create a unified network serving Oakland and Hazelwood. An initial step could include consolidating existing Pitt, CMU, and UPMC shuttles that serve the Pittsburgh Technology Center and Hazelwood. Future steps could include a unified shuttle system that coordinates service for Pitt, CMU, UPMC, Duquesne University, and on the South Side.

### How Will This Help?

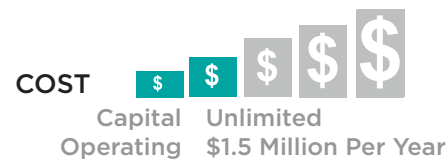
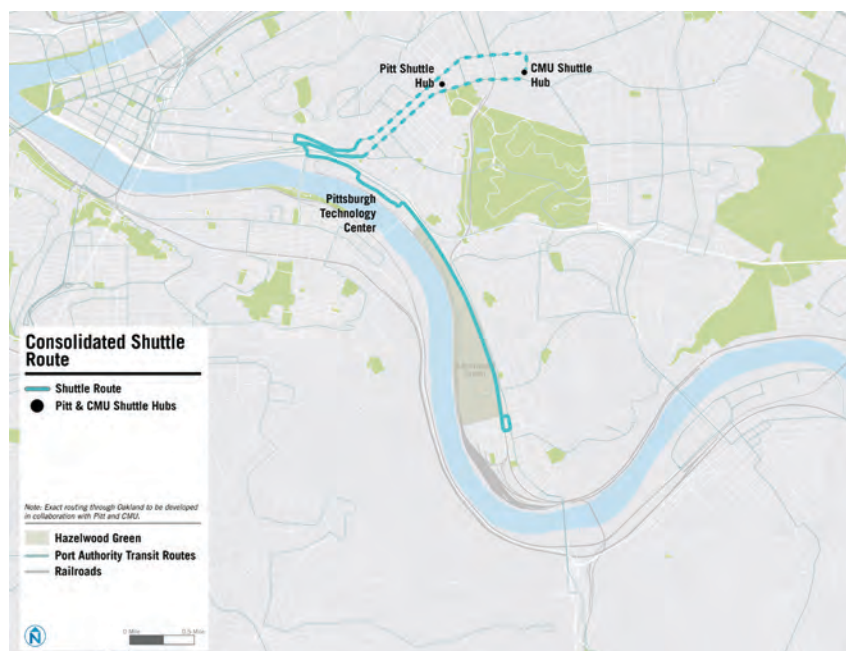
A unified shuttle network would enable more frequent service between more destinations at a similar cost as the existing separate shuttle systems. A similar consolidated system exists in Boston's Longwood Medical District – which, like Oakland, has a high concentration of hospitals and universities.

### How Can It Happen?

Pitt, CMU, UPMC and other partners could study the benefits and trade offs of a unified shuttle system – including studying potential routes and developing a funding and operations structure. Stakeholders would also need to determine whether to open shuttle routes to the general public, which would increase ridership, but potentially increase costs and complicate operations. Services available to the general public would also need to be coordinated with the Port Authority to ensure they compliment, rather than compete, with other public transit options.



Boston's Massco



**KEY STATISTICS**

Distance	4.6 Miles
No. of Stops	~15
Travel Time	23 Minutes

**SERVICE DESIGN**

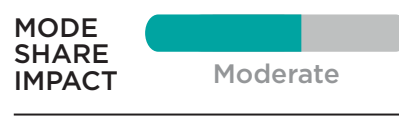
Span	18 Hours Daily
Peak Freq	20 Minutes
Off-Peak Freq	30 Minutes

**RIDERSHIP**

HG (2040)	~1,500
Add'l Capacity	3,000+

**CONNECTIONS**

- Pitt & CMU Shuttle Systems
- Downtown-Oakland BRT
- Fifth/Forbes Bus Routes



**PARTNERS**

- OTMA
- Port Authority
- Pitt /CMU/UPMC
- Innovate PGH
- City of Pittsburgh
- Duquesne University
- Carlow

**HURDLES**

STAKEHOLDER NEGOTIATIONS

TRAFFIC NEGATIVELY AFFECTS RELIABILITY



# GREENFIELD AVENUE INTERSECTION.

A neighborhood gateway.



## Greenfield Avenue Intersection: A Neighborhood Gateway

### Description

Create a new access point by reconfiguring and reconstructing Greenfield / Irvine / Second / Saline Intersection to improve bicycle and pedestrian connections, facilitate a transit corridor, and provide additional vehicular access.

### How Will This Help?

The existing infrastructure is a pinchpoint within the existing mobility network, not just for vehicular traffic but also for pedestrians and bicyclists utilizing the trail network. Reconfiguration of this intersection would provide for enhanced access for all modes

### How Can It Happen?

The SPC Second Avenue Study has begun to evaluate the possible configurations with discussions on-going with the appropriate partners of PennDOT, the City and SPC.

### Next Steps:

- Stakeholder consensus through the SPC Second Ave Study.
- Ensure the infrastructure project is included in the transportation improvement plan for future funding of feasibility, design, and construction.

### Interim Recommendation:

- Sidewalk improvements under railroad bridges to provide more space for pedestrians and cyclists in the interim, as well as improved crosswalk facilities.
- Ensure the infrastructure project is included in the transportation improvement plan for future funding of feasibility, design, and construction.

## Strengths +

### MOBILITY IMPACTS

Creation of safe vehicular access to Hazelwood Green from 2nd Avenue corridor and adjacent communities with additional ROW for multimodal enhancements (i.e., rapid transit and bike/pedestrian facilities).

### FUNDING SOURCES

PennDOT, SPC CIP funding programs, Federal Transit Administration.

### MOBILITY CONNECTIONS

Multimodal access along the 2nd Avenue corridor including from the Greenfield and Hazelwood communities and provision of multimodal access for all vehicle types and modalities.

### OVERALL ADVANTAGES

Provides safe and efficient access to Hazelwood Green for all modes.

## Weaknesses -

### ADJACENT MOBILITY GAPS

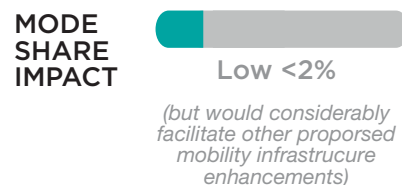
Predominantly addresses vehicular access to/from 2nd Avenue corridor and those three immediate access points.

### CAPITAL COST

Major infrastructure requirements at intersection with railroad bridge impact.

### FACILITY DEFICITS

Limited ROW within intersection due to existing railroad infrastructure





## MONITOR, MANAGE, AND INCENTIVIZE NON-SOV MODES OF TRANSPORTATION.

### Recommendations:

- Transportation Demand Management
- Parking Cash-Out
- Unbundled Parking





# Transportation Demand Management

Transportation demand is not static. People choose to drive, walk, bike, and ride transit, based on the availability of options, convenience, price, weather, and changing schedules. Transportation Demand Management (TDM) is an overarching term for policies and programs that make all modes viable for different trips and helps people make rational transportation choices each time they travel. The following are TDM programs and policies that should be considered as a total package rather than individual elements.



## TDM Coordinator

### Description

Site wide TDM coordinator for Hazelwood Green to manage an implement TDM program and interaction with adjacent TMAs/ Agencies.

### How Will This Help?

Transportation Coordinators have the authority to implement TDM strategies and oversee the management and marketing of TDM programs. The Coordinator is responsible for developing and updating information materials, managing transportation services offered as part of the TDM program, monitoring results, and coordinating with City staff, transit operators and on-site representatives.

### How Can It Happen?

Hazelwood Green would fund the TDM coordinator role from private funding or funding from potential Parking Benefit Districts. This is also reliant on including TDM requirements within developer agreements.

## Strengths +

### MOBILITY IMPACTS

Coordinates TDM activities across Hazelwood Green and with adjacent TMAs.

### FUNDING SOURCES

Private and/or from TMAs/Parking Benefit District structure.

### MOBILITY CONNECTIONS

Connects employers, employees and residents to available mobility options.

### OVERALL ADVANTAGES

Increases and promotes awareness and use of TDM programs.

## Weaknesses -

### ADJACENT MOBILITY GAPS

At outset will be Hazelwood Green site based.

### CAPITAL COST

Require funding for TDM coordinator and TDM programs.

### FACILITY DEFICITS

Reliant upon implemented non-SOV infrastructure to/from Hazelwood Green.

**COST** ~<\$1 million

---

**TIME** **IMMEDIATE**

---

**MODE SHARE IMPACT** **HIGH**  
 10% Increase in non-single occupant vehicle modes  
*(Dependent on mobility infrastructure enhancements)*

---

**PARTNERS** City of Pittsburgh, TMs, PennDOT, SPC, Developers & Tenants

---

**HURDLES**  
 CMAQ CONTINUATION OF CONGESTION MITIGATION AND AIR QUALITY CMAQ FUNDS FOR STATE-WIDE TMA PROGRAMS  
 PRIV PRIVATE FUNDING



## Parking Cash-Out

### Description

A parking cash-out program gives employees the choice of keeping their parking space at work or accepting a cash payment in lieu of the space. This provides a monetary incentive to find alternative means of transportation to work, reducing demand for parking. Similarly, charging employees for parking can reveal the “true” cost of providing the space and incentivize employees to commute via transit, shuttle, walking, or biking.

### How Will This Help?

This strategy not only provides an opportunity for current drivers to choose another form of commuter benefit, in the form of more take-home pay, but also provides equity for employees who do not drive, and thus cannot take advantage of the parking benefit. When parking rates are structured on a daily schedule, this can also provide maximum flexibility to commuters who might prefer to cycle or use transit on some days, but don't want to forfeit their driving options entirely. Conversely, monthly or semester-based permits encourage more driving as parking costs become a sunken investment, after which parking becomes essentially free and choosing to take the bus or train becomes an expense and a choice that can be perceived as wasting the parking permit investment.

### How Can It Happen?

Hazelwood Green would encourage and incentivize employer led parking cash-out throughout the site.

## Strengths +

### MOBILITY IMPACTS

Demand for parking reduced and increased ridership for transit, bicycle and walk modes.

### FUNDING SOURCES

Private and/or from TMA's/Parking Benefit District structure.

### MOBILITY CONNECTIONS

Promotes use of transit and non-SOV modes to/from Hazelwood Green.

### OVERALL ADVANTAGES

Reduction of parking demand and supply on the Hazelwood Green development with reduction in site related VMT.

## Weaknesses -

### ADJACENT MOBILITY GAPS

At outset will be Hazelwood Green site-based.

### CAPITAL COST

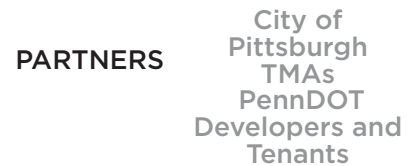
Requires funding for cash-out/TDM benefits (or trade-off from parking revenues).

### FACILITY DEFICITS

Reliant upon implemented non-SOV infrastructure to/from Hazelwood Green.



5% Increase in non-single occupant vehicle modes  
*(Dependent on mobility infrastructure enhancements)*



### HURDLES



**PRIVATE EMPLOYER FUNDING**



## Unbundled Residential Parking

### Description

Parking construction and operating costs are sometimes subsumed into the price of housing. Although the cost of parking is often hidden in this way, parking is never free. Instead, the cost to construct and maintain the “free” parking is included in the cost to buy or rent housing, or carried-over into public spending.

### How Will This Help?

Unbundling the price of parking provides a financial incentive to employers to encourage residents to use only the amount of parking they need. For residential development, unbundled parking may prompt some residents to dispense with one of their cars and to make more of their trips by other modes. Among households with below-average vehicle ownership rates (e.g., low-income households, students, singles, seniors, etc.), unbundled parking can also provide a substantial financial benefit that increases housing affordability.

### How Can It Happen?

Hazelwood Green would encourage and incentivize residential developers to lead the unbundling of parking throughout the site.

## Strengths +

### MOBILITY IMPACTS

Demand for parking reduced and increased ridership for transit, bicycle and walk modes.

### FUNDING SOURCES

Private and/or from TMA's/Parking Benefit District structure.

### MOBILITY CONNECTIONS

Promotes use of transit and non-SOV modes to/from Hazelwood Green.

### OVERALL ADVANTAGES

Reduction of parking demand and supply on the Hazelwood Green development with reduction in site related VMT.

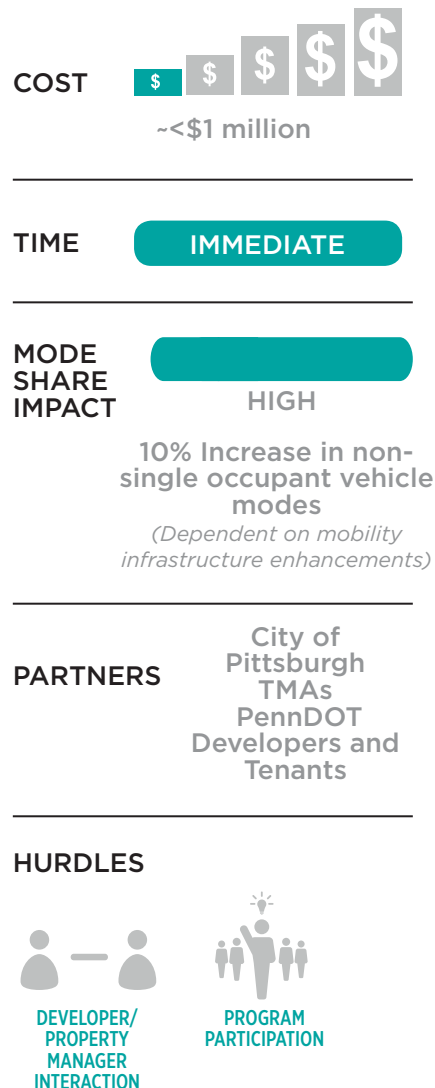
## Weaknesses -

### ADJACENT MOBILITY GAPS

At outset will be Hazelwood Green site-based.

### FACILITY DEFICITS

Reliant upon implemented non-SOV infrastructure to/from Hazelwood Green .





## PITTSBURGH INNOVATION DISTRICTS BY WATER FERRY.

Connect Hazelwood Green, South Side, Uptown, Downtown, North Side, the Strip District, and Lawrenceville via a water ferry system.

### Interim Steps:

- Leverage existing shuttle operations to provide short-term / gap coverage of Hazelwood Green to other innovation districts, South Side, North Shore, the Strip District, Lawrenceville, East Liberty, etc.



## Connecting Innovation Districts by Water Ferry

### Description

A scheduled, fixed-route water ferry service along the Monongahela, Ohio, and Allegheny Rivers – serving 10 stations at the Waterfront, Hazelwood Green, South Side, Downtown, North Side, and the Strip District.

### How Will This Help?

A water ferry could provide faster, more reliable connections between neighborhoods separated by the three rivers and congestion through Downtown. Like in many other cities, water taxis, if done right, also double as a sight-seeing tourist attractions; an easy and pleasant way for newcomers to explore the city and new neighborhoods.

### How Can It Happen?

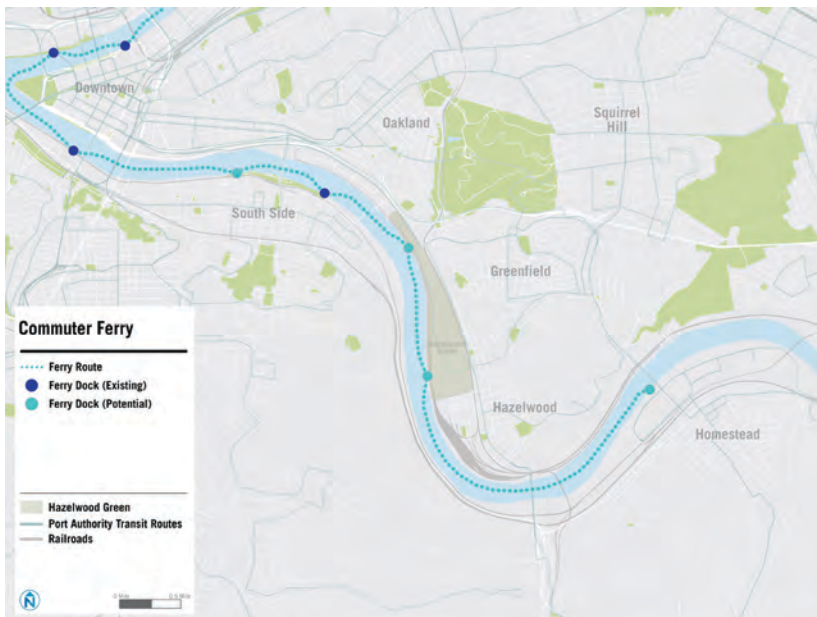
A new water ferry service could leverage existing docks, along with new docks at Hazelwood Green and other key locations. Water ferry services are most successful when docks are located adjacent to dense developments and provide seamless transfers to first/last mile mobility options. Stakeholders would therefore need to collaborate to ensure compatible development and connectivity both at Hazelwood Green and other dock sites.

### Next Steps:

- Incorporate ferry dock into Hazelwood Riverfront Park Master Planning process.
- Begin water ferry feasibility study once design/funding is in place for docks (or marina) on site.

### Interim Recommendations:

Leverage existing landside shuttle operations to provide short-term / gap coverage of Hazelwood Green to other innovation districts – South Side, North Shore, the Strip District, Lawrenceville, East Liberty, etc.



New Orleans RTA 149 Passenger Ferry

### COST

Capital ~\$22 Million  
Operating ~\$5.8 Million

### TIME

2-3 Years

### KEY STATISTICS

Distance 10 miles  
No. of Stops 9  
Travel Time 40 Minutes

### SERVICE HOURS

Span 12 Hours/Wkds  
Peak Freq 30 Minutes  
Off-Peak Freq 60 Minutes

### RIDERSHIP

HG (2040) ~1,500  
Addt'l Capacity 4,000+

### CONNECTIONS

Oakland-Hazelwood-South Side Gondola

Hazelwood BRT

Bus Connections at the Waterfront, Hazelwood Green, and Downtown

### MODE SHARE IMPACT

MODERATE

### PARTNERS

Port Authority  
DOMI  
SPC  
Port of Pittsburgh  
Allegheny County

### ADVOCATES

Department Of City  
Planning  
URA  
Riverlife  
Firends Of The Riverfront  
Hazelwood Initiative

### HURDLES

\$\$\$  
HIGH CAPITAL COSTS

CONNECTIONS BETWEEN RIVERFRONT AND CITY

WINTER WEATHER



# BICYCLE AND PEDESTRIAN NETWORK IMPROVEMENTS

## Recommendations:

- Community Stair Restoration and Bridge
- Neighborhood Bicycle Connections
- Bike Share Expansion
- South Oakland by Pedestrian Bridge
- East End Neighborhoods by Bicycle
- Homestead (and Mon Valley) by Bicycle

## Interim Steps:

- Implement City Bike Plan through DOMI and infrastructure as per Greater Hazelwood Neighborhood Plan
- DOMI to apply for multi-modal grant funds as necessary to support City's capital budget



## Community Stair Restoration and Bridge

### Description

Restoration and maintenance of stair and bridge network within Oakland/Hazelwood/South Oakland.

### How Will This Help?

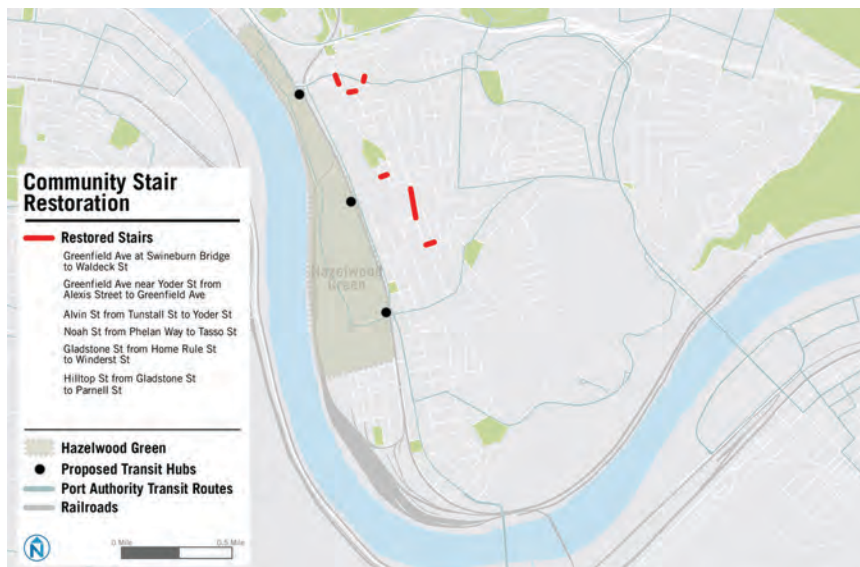
Many short trips within neighborhoods are currently convoluted due to the poor maintenance of the stair network. Restoration and a maintenance program would enable much of the network to be fully usable. Priority should be given to those stairs that are rated highest on the detour scale. Relocation of pedestrian bridge over Irvine Street/CSX rails to Hazelwood Green to ensure pedestrian/bicycle connection to Tullymet Street.

### How Can It Happen?

The City undertook a City Steps study in 2017 to provide an overall assessment of the stair network. This study is now programming an action plan and partners to enable implementation of the plan.



Source: Pittsburgh Steps Blog



### Strengths +

#### MOBILITY IMPACTS

Fill short gaps within neighborhoods and connects communities.

#### FUNDING SOURCES

**Federal sources** - Transportation Alternatives (SRTS, Recreation Trails Program) Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program.

#### MOBILITY CONNECTIONS

Provides connection to adjacent communities including access to trails and riverfront.

#### OVERALL ADVANTAGES

Connects and preserves Pittsburgh's steps infrastructure and provides continued mobility choices.

### Weaknesses -

#### ADJACENT MOBILITY GAPS

Doesn't address ADA accessibility needs.

#### CAPITAL COST

Requires rehabilitation, renovation and on-going maintenance.

#### FACILITY DEFICITS

City has to maintain over 800 sets of steps and prioritization over years is ongoing.



**PARTNERS**

City of Pittsburgh  
BikePGH  
Office of Public Art

**ADVOCATES**

Hazelwood Initiative  
Greenfield Community Association

#### HURDLES





## Neighborhood Bicycle Connections

### Description

Three Rivers Heritage Trail to Junction Hollow Trail Connection through the Irvine St/Greenfield Ave. intersection (include connection to Hazelwood Trail via an extension of Greenfield Avenue).

### How Will This Help?

Provides the missing connection within the bicycle network linking the communities of Greenfield, Hazelwood, Oakland and Hazelwood Green.

### How Can It Happen?

Reconfiguration of the intersection of Second Avenue and Greenfield Avenue is being recommended in the SR885/Second Avenue Multimodal Corridor Study. Bicycle and pedestrian facility improvements from/ to Junction Hollow can be incorporated into this design.

### Next Steps:

- Implement City Bike Plan through DOMI and infrastructure as per Greater Hazelwood Neighborhood Plan
- DOMI to apply for multi-modal grant funds as necessary to support City's capital budget



Bicyclists riding in bike lane

### Strengths +

#### MOBILITY IMPACTS

Reconfiguration of connection of local and regional bike trails enables enhanced commuting and recreation options.

#### FUNDING SOURCES

**Federal sources** - Transportation Alternatives (SRTS, Recreation Trails Program) Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program.

#### MOBILITY CONNECTIONS

**Federal sources** - Transportation Alternatives (SRTS, Recreation Trails Program) Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program.

#### OVERALL ADVANTAGES

Completes off-road trail system.

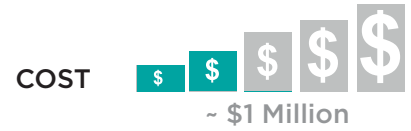
### Weaknesses -

#### CAPITAL COST

Requires infrastructure in proximity to railway lines.

#### FACILITY DEFICITS

Accommodating grade over railroad infrastructure and underneath Frazier St. bridge. Connection at Boundary Street (north and south).



**RIDERSHIP** 2% Increase

**PARTNERS**  
City of Pittsburgh  
PennDOT  
Bike PGH  
CSX

#### HURDLES







# Bike Share Expansion and Introduction of Electric-Assist Bicycles

## Description

Expansion/Extension along Second Avenue corridor to Greater Hazelwood and Hazelwood Green, including incorporation of e-bikes into the bikeshare fleet.

## How Will This Help?

Provides access to Hazelwood via bicycle from Downtown, Oakland and South Side. With over 100 stations currently, the anticipated expansion will increase the system to 175 stations throughout the City with a fleet of 700 bikes. E-bikes help to overcome the topographically challenges of bicycling in Pittsburgh.

## How Can It Happen?

New stations can be sponsored to expand the system.



Bike share dock



## Strengths +

### MOBILITY IMPACTS

Provides first-mile/last-mile connectivity to/from Hazelwood Green as well as connectivity to adjacent communities.

### FUNDING SOURCES

Healthy Ride funding and private sponsorship/funding.

### MOBILITY CONNECTIONS

Provides connection within communities as well as to adjacent communities for short trips.

### OVERALL ADVANTAGES

Expands existing system and promotes short/quick bike trips for residents, locals and visitors. Facilitated by partnership with the Port Authority to bring ConnectCard users unlimited 15 minute rides.

## Weaknesses -

### ADJACENT MOBILITY GAPS

In order to be successful station density needs to be enhanced to provide short-trip destinations.

### CAPITAL COST

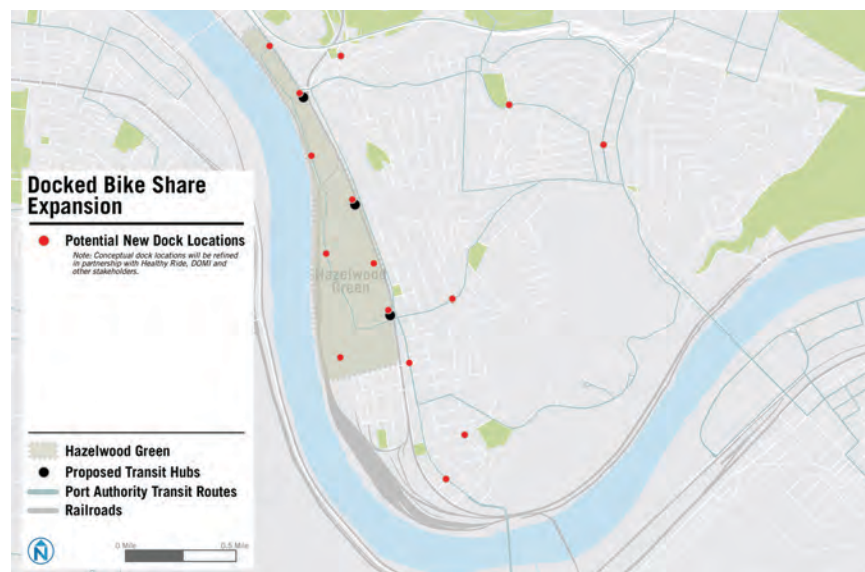
Infrastructure for stations/bikes as well as operating costs need to be procured. There are individual costs based on usage.

### TOPOGRAPHY OF PITTSBURGH

This is overcome by E-bikes which should be priority enhancement to the fleet particularly between HG and Oakland as an initial pilot location.

### FACILITY DEFICITS

Requires station visibility, footprint and public access to be successful and user friendly.





## South Oakland by Pedestrian Bridge

### Description

Pedestrian (and bicycle) bridge connection over I-376 to connect South Oakland to Three Rivers Heritage Trail and Second Avenue. The landing at Frazier Park is at an elevation of approximately 900 ft with Hazelwood Green at approximately 740ft. The required distance to bridge would be approximately 600-ft. It is noted that both landing locations could also be potential Gondola stations utilizing infrastructure requirements.

### How Will This Help?

Provides a direct connection between communities from south Oakland to Second Avenue/Hazelwood Green. This would replace a previously existing bridge.

### How Can It Happen?

Requires right-of-way crossing over I-376 with landing in Frazier Park to the north and Hazelwood Green to the south. Examples of neighborhood connections by bridge include Seattle's combination Lenora Street, Bell Street and Pike Place as well the north and west side neighborhoods of La Crosse, Wisconsin.



Source: RS&H

### Strengths +

#### MOBILITY IMPACTS

Connects South Oakland across I-376 to Hazelwood Green and trail network.

#### FUNDING SOURCES

**Federal sources** - Transportation Alternatives (SRTS, Recreation Trails Program) Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program.

#### MOBILITY CONNECTIONS

Provides connection to adjacent communities including access to trails and riverfront.

#### OVERALL ADVANTAGES

Provides connection to adjacent communities including access to trails and riverfront.

### Weaknesses -

#### ADJACENT MOBILITY GAPS

Would need to be multimodal (Bike and Pedestrian) to fill current gap in system.

#### CAPITAL COST

Requirement of infrastructure over I-376 with appropriate landing infrastructure.

#### FACILITY DEFICITS

Topographical elements would have to be addressed to ensure ADA access and I-376 height clearance .



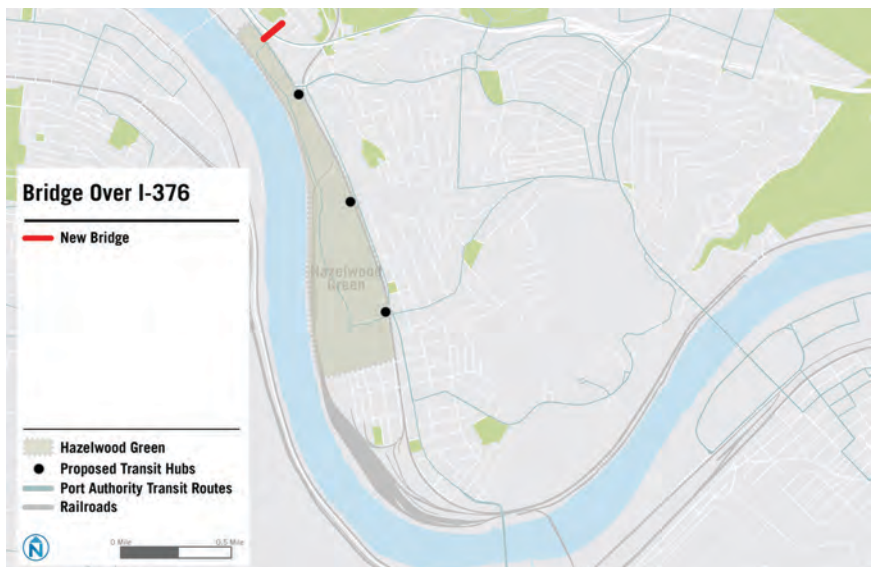
**PARTNERS**

- City of Pittsburgh
- PennDOT
- Bike PGH
- FHWA

**ADVOCATES**

- University of Pittsburgh
- OPDC
- OTMA
- Bike PGH

#### HURDLES





## East End Neighborhoods by Bicycle

### Description

Duck Hollow Trail Connection to Hazelwood Trail with completion of the missing gaps (under Glenwood Bridge and along Second Ave from Glenwood Bridge to Hazelwood Ave). Connection along the Second Ave corridor would utilize parallel route along Herbert Way/Dyke St to access the existing pedestrian bridge to Lytle Street.

### How Will This Help?

Provides a direct connection from Duck Hollow and Homestead to Hazelwood Green and onto Downtown via the Three Rivers Heritage Trail.

### How Can It Happen?

Requires right-of-way across the existing CSX rails and/or through the CSX rail yard. Existing rights-of-way in Hazelwood would need to be improved (resurfacing, striping, street lights, and signage) for cyclists and pedestrian access, and Duck Hollow Trail would need to be restored, following water utility and erosion damage in 2018.



Protected cycle track - the Hazelwood Trail

## Strengths +

### MOBILITY IMPACTS

Connection of local and regional bike trails from Duck Hollow to Hazelwood Trail enables enhanced commuting and recreation options.

### FUNDING SOURCES

**Federal sources** - Transportation Alternatives (SRTS, Recreation Trails Program) Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program.

### MOBILITY CONNECTIONS

Connects regional bicycle "highways" of Duck Hollow to Three Rivers Heritage Trail and Junction Hollow. Connects east end neighborhoods (Squirrel Hill, Regent Square, Point Breeze and Swisshelm Park) to Hazelwood.

### OVERALL ADVANTAGES

Completes off-road trail system from Great Allegheny Passage to Duck Hollow to Hazelwood Green.

## Weaknesses -

### CAPITAL COST

Requires infrastructure under Glenwood Bridge and through CSX railway yard

### FACILITY DEFICITS

Acquiring right-of-right through or adjacent to CSX property including crossing under Glenwood Bridge.



**RIDERSHIP** 2% Increase

**PARTNERS** City of Pittsburgh  
PennDOT  
Bike PGH  
CSX

### HURDLES





## Homestead (and Mon Valley) by Bicycle.

### Description

Connection of the Three Rivers Heritage Trail and the Great Allegheny Passage across the Monongahela River via the Glenwood Bridge to the Duck Hollow Trail and Hazelwood Trail.

### How Will This Help?

Provides a direct connection from Duck Hollow and Homestead to Hazelwood Green and onto Downtown via the Three Rivers Heritage Trail.

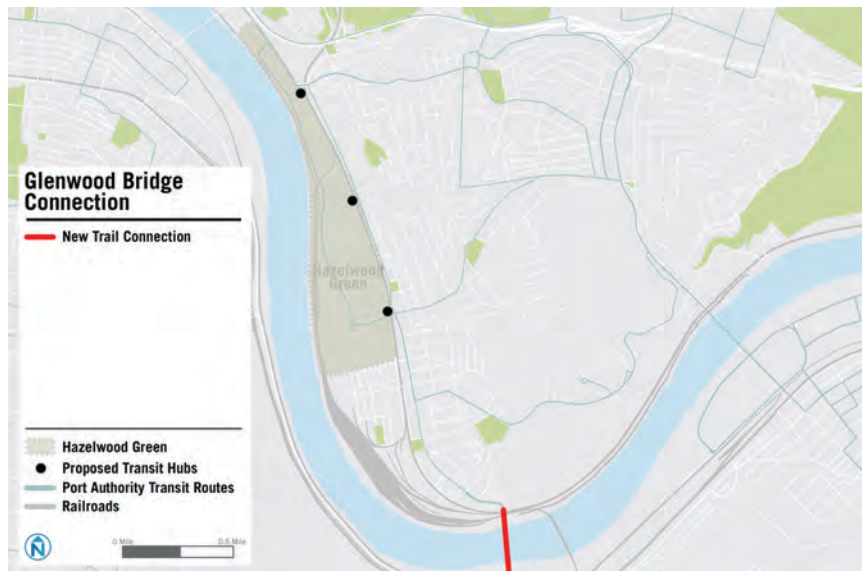
### How Can It Happen?

Requires right-of-way across the Glenwood Bridge for bicycle facilities and access to the Great Allegheny Passage trail on the south side of the Bridge.



**PARTNERS** City of Pittsburgh  
PennDOT  
Bike PGH  
Allegheny County

### HURDLES



## Strengths +

### MOBILITY IMPACTS

Connection of local and regional bike trails across the Monongahela River Trail enables enhanced commuting and recreation options between Hazelwood, Homestead and Hays.

### FUNDING SOURCES

**Federal sources** - Transportation Alternatives (SRTS, Recreation Trails Program) Surface Transportation Block Grant Program (STBG), Highway Safety Improvement Program.

### MOBILITY CONNECTIONS

Connects local and regional bicycle trails on both sides of the Monongahela River.

### OVERALL ADVANTAGES

Completes off-road trail system from Great Allegheny Passage to Duck Hollow to Hazelwood Green.

## Weaknesses -

### ADJACENT MOBILITY GAPS

Limited connection on southside of bridge with the exception of Great Allegheny Passage.

### CAPITAL COST

Requires infrastructure to access Glenwood Bridge and on the bridge span itself.

### FACILITY DEFICITS

Requires infrastructure enhancements on both sides of the bridge to connect to existing trail systems.

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# Appendix A: Project Process and Timeline



## KEY STAKEHOLDER GROUPS

The project team utilized a project task force and stakeholder committee organized by Almono project manager to represent industry and business groups, major institutions, and neighborhood and transportation-focused interest groups. These stakeholders underscored the community’s rich tradition of civic engagement and advocacy and included the following:

TASK FORCE COMMITTEE	
ORGANIZATION	Participated
Downtown Partnership	●
Southwestern Pennsylvania Commission (SPC)	●
Port Authority of Allegheny County	●
InnovatePGH	●
Department of Mobility and Infrastructure (DOMI)	●
PennDOT	●
Oakland Transportation Management Association (OTMA)	●
Pittsburgh Community Reinvestment Group (PCRG)	●

The task force and stakeholder committee met throughout the process and played a key role as a primary source of feedback. By their nature and focus, the committee members were intended to provide valuable perspectives on project details through their representation of peer agencies, government departments and advocacy groups.

One of the primary roles the stakeholder committee played was as a sounding board for the challenges and issues and shared priorities of the stakeholders.

STAKEHOLDER COMMITTEE	
ORGANIZATION	Participated
Almono LP	●
Department of City Planning	●
The Heinz Endowments	●
Downtown Partnership	●
BikePGH	●
Hazelwood Initiative	●
University of Pittsburgh Medical Center (UPMC)	●
Urban Redevelopment Authority (URA)	●
Southwestern Pennsylvania Commission (SPC)	●
Port Authority of Allegheny County	●
Richard King Mellon Foundation	●
InnovatePGH	●
Department of Mobility and Infrastructure (DOMI)	●
Carnegie Mellon University CMU	●
Oakland Transportation Management Association (OTMA)	●
Allegheny County	●
Pittsburgh Parking Authority	●
Pittsburgh Community Reinvestment Group (PCRG)	●
University of Pittsburgh	●
WRA - Second Ave Consultant	●
Healthy Ride	●
Pittsburghers for Public Transit	●
Pennsylvania Department of Transportation (PennDOT)	●

## PLANNING PROCESS

### Structure Of The Hazelwood Green Long Range Transportation Plan

The Hazelwood Green LRTP process was structured to build on the 2018 Preliminary Land Development Plan (PLDP) and the 2019 Transportation Impact Study. Four phases of work led to the LRTP as presented.

First, a background review focused on the collection of data and review of existing plans and policies. This shared understanding of the City and regional transportation system and travel patterns allowed the task force and stakeholder committee to provide their ideas and feedback.

Second, the project team worked with stakeholders and community members to establish goals and assess the strengths and weaknesses in the existing system.

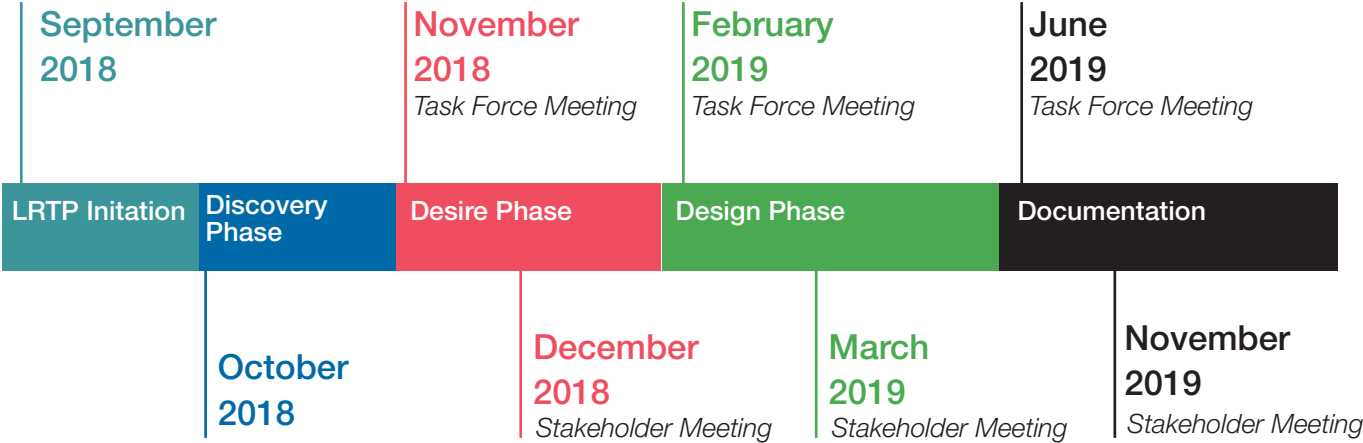
The third phase focused on the generation of ideas for changes to the transportation system, the translation of those ideas into potential strategies and projects, and their evaluation.

The fourth and final phase included assembling the strategies into this coherent plan, and developing a framework for implementing the results of this LRTP.



## TIMELINE

The LRTP development process was undertaken over approximately one year with a brief delay during the summer of 2019 to ensure that the SPC Second Avenue Corridor Study, initiated in Spring 2019, was reflected in the final LRTP document.













## VISION FOR MOBILITY AND ACCESS

This LRTP seeks to recommend priority transportation system changes that meets the following vision and six key goals:

- Establish standards of access and mobility that match Hazelwood Green's position as a major mixed-used development in Pittsburgh, and as a catalyst for sustainable and adaptive community development.
- Provide a transportation system that directly supports Hazelwood Green's mission to provide a platform for experimentation that advances Pittsburgh's evolving innovation economy for a full spectrum of workers.
- Support the Development Plan as it develops and evolves over time to full site build out.

## GOALS

 <b>Assure Environmental Sustainability</b>	Design transportation facilities and services that improve air and water quality.
 <b>Assure Equity for All System Users</b>	Ensure that future transportation systems provide equitable access and address the needs of all potential users.
 <b>Enhance Neighborhoods</b>	Create transportation links and services that connect Hazelwood neighborhoods, both existing and new, and contribute to the creation of vibrant communities.
 <b>Maintain Fiscal Responsibility</b>	Build a transportation system that future generations can afford to maintain and is adaptable to the evolution of new technologies and systems.
 <b>Promote Economic Growth</b>	Provide transportation choices that support economic opportunity and community prosperity.
 <b>Provide Connectivity Choices</b>	Create a transportation system that provides users with multiple options to access the site and to move within the site.

# Appendix B: Transit Methodology

This document details the methodologies used by the project team to estimate the capital cost, operating cost, and potential ridership for transit projects included in the Hazelwood Green LRTP.

## CAPITAL COSTS

The project team based capital cost estimates on a survey of unit costs for similar, recently completed transit projects in the United States. Table 1 details the project definition, comparable project used for costing, and the total estimated cost for each transit project in the Hazelwood Green LRTP.

**Table 1 – Estimated Capital Costs by Project**

Project	Definition	Comparable Project Unit Costs	Estimated Project Cost
Bus Rapid Transit on Second Avenue	4 mile alignment with 6 stops	Pittsburgh Downtown-Uptown-Oakland-East End BRT (\$13.4 million per mile)	\$54 million
Commuter Ferry	4 new docks; 5 new commuter ferries	Washington State Ferries (\$3 million per dock; \$2 million per boat)	\$22 million
Oakland-Hazelwood-South Side Gondola	1.6 mile alignment with three stations	Portland Aerial Tram (\$43.5 million per mile) 15% escalator for an additional station	\$80 million
New Park and Ride Facilities	Up to three new facilities	Comparable Local Park & Ride Projects	Up to \$1 million*

\*Cost of Park and Ride facilities varies greatly based whether the spaces are leased from an existing private facility or newly constructed

The project team assumed the following transit projects would have limited initial capital costs:

- **Consolidate Shuttle Services:** This project would require limited initial capital expenditures if (1) the shuttle service would operate with vehicles from the existing Pitt, CMU, and/or UMPC shuttle systems, or (2) the stakeholders contracted with a private operator that supplies its own equipment. Significant capital expenditures would be required if consolidating shuttle services requires the procurement of new transit vehicles or other equipment, such as the recommended phasing in of use of electric vehicles to reduce carbon emissions. Full consolidation may also require limited capital expenditures for new signage and customer information.
- **Frequent, Fast One-Seat Ride to Oakland:** This project would require limited initial capital expenditures if operated by (1) the Port Authority of Allegheny County using existing equipment or (2) a private operator that supplies its own equipment. Significant capital expenditures would be required if initiating service requires the purchase of new equipment.
- **The Mon-Oakland Connector,** currently under design by DOMI, will provide a multi-modal mobility corridor through Junction Hollow. This corridor should serve as an interim rapid transit connection between Hazelwood Green and Oakland- providing a congestion-free mobility option for area residents and workers.

## OPERATING COSTS

The project team developed conceptual operating plans for each applicable transit project, including service frequency, span, and vehicle requirements. The team then used these operating plans to develop annual operating cost estimates. Projected hourly operating costs were based on current Port Authority of Allegheny County operating costs, when applicable, or on the hourly operating cost for similar services elsewhere in the United States.

Table 2 shows the conceptual operating plan for each applicable transit project.

**Table 2 – Conceptual Operating Plan by Project**

Project	Span (Operating Hours)		Frequency (Vehicles per Hour)			Annual Revenue Vehicle Hours
	Weekday	Weekend	Peak	Off-Peak	Weekend	
Bus Rapid Transit on Second Avenue	18	18	10	15	15	21,302
Commuter Ferry	12	-	30	60	-	10,120
Oakland-Hazelwood-South Side Gondola	18	18	1	1	1	6,426*
Frequent, Fast One-Seat Ride to Oakland	18	18	10	15	15	23,326
Consolidated Shuttle Route	18	18	20	30	30	14,876

\*Calculated as total hours of system revenue operation, rather than revenue vehicle hours

Table 3 shows the projected operating cost for each applicable transit project, as well as the hourly operating cost that served as the basis for this estimation. Please note that the project team calculated the cost to operate the Frequent, Fast One-Seat Ride to Oakland as both a Port Authority of Allegheny County service and as a privately-operated service.

**Table 3 – Estimated Annual Operating Cost by Project**

Project	Cost Source	Cost Per Revenue Hour	Estimated Annual Operating Costs#
Bus Rapid Transit on Second Avenue	Port Authority of Allegheny County Local Bus Operating Cost + 25% Premium for BRT Operations	\$234	\$5,000,000
Commuter Ferry	Median Operation Cost of All Commuter Ferry Operators (2017 National Transit Database)	\$570	\$5,825,000
Oakland-Hazelwood-South Side Gondola	Portland Aerial Tram and Roosevelt Island Tram	\$311*	\$2,000,000
Frequent, Fast One-Seat Ride to Oakland	(Port Authority)	Port Authority of Allegheny County Local Bus Operating Cost	\$4,375,000
	(Private Operator)	Typical Hourly Rate for Private Bus Operators	\$2,350,000
Consolidated Shuttle Route	Typical Hourly Rate for Private Bus Operators	\$100	\$1,500,000

#Rounded to nearest \$25k

\*Based on \$2 million annual operating cost for system revenue operation

## RIDERSHIP ESTIMATES

The project team developed overall capacity and conceptual ridership estimates for each applicable transit project. Please note that these ridership estimates are conceptual and require further refinement as projects advance towards implementation.

Overall capacity estimates were based on the conceptual operating plan for each project (as described above) and typical maximum passengers per vehicle used for similar services. Table 4 includes the bi-directional peak hour and daily capacity for weekday operations for each applicable project.

**Table 4 – Weekday Peak Hour and Daily Capacity by Project**

Project	Max Passengers Per Vehicle	Peak Hour Capacity	Daily Capacity
Bus Rapid Transit on Second Avenue	80	960	14,080
Commuter Ferry	149	596	5,960
Oakland-Hazelwood-South Side Gondola	8	960	17,280
Frequent, Fast One-Seat Ride to Oakland	50	600	8,800
Consolidated Shuttle Route	50	300	4,400

The project team estimates that the Hazelwood Green development will generate approximately 61,000 daily person trips at full buildout. The team determined the total Hazelwood Green generated transit trips by applying the City of Pittsburgh 17% transit mode share to this overall person trip estimate – resulting in an conceptual estimate of 10,500 daily transit riders. This figure is conservative, as it is likely that the transit investments that will accompany development at Hazelwood Green will increase the neighborhood transit mode share above the citywide mode share.

The project team then assigned transit trips to the applicable transit projects based on:

- The quality of the provided service (customers are more likely to ride services that operate more frequently and more reliably, such as BRT)
- Ridership on other transit services in the project’s capture area (as a proxy for regional travel flows)
- Connectivity to other high quality transit service.

Table 5 shows the distribution of overall Hazelwood Green generated transit ridership across each applicable project, as well as the resulting weekday daily boardings for each project. The table also includes the remaining capacity of each project, which indicates the number of existing transit riders and riders generated from other new developments that could be accommodated on each project without exceeding operational capacity.

**Table 5 - Conceptual Ridership Estimates and Remaining Capacity by Project \***

Project	% of Daily Boardings	HG-Generated Weekday Ridership	Remaining Daily Weekday Capacity
Bus Rapid Transit on Second Avenue	40%	4,200	9,900
Commuter Ferry	10%	1,000	5,000
Oakland-Hazelwood-South Side Gondola	25%	2,600	14,700
Frequent, Fast One-Seat Ride to Oakland	15%	1,600	7,200
Consolidated Shuttle Route	10%	1,000	3,400

\* Ridership figures rounded to nearest 100

# Appendix C: Previous Planning Efforts and Key Plans in Development

## Previous Planning Efforts

In addition to reviewing existing conditions and data, part of the background analysis included the review of existing plans and policies to inform the process and build on these efforts. Multiple planning efforts within the City and adjacent to Hazelwood Green have introduced new ideas and established goals and objectives for the overall transportation system. The following provides a list and brief description of those plans and initiatives reviewed.



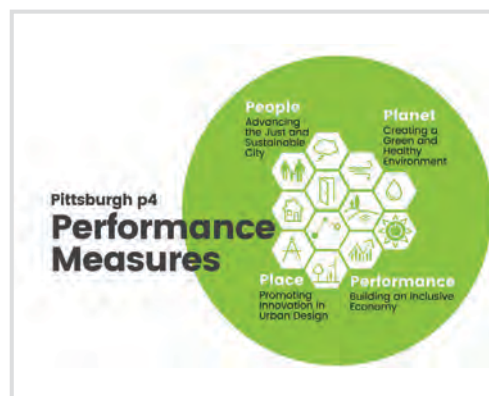
### Greater Hazelwood Neighborhood Plan (2019)

The Greater Hazelwood Neighborhood Plan focuses on ways to strengthen and improve the community while proactively preparing for future growth and change. Greater Hazelwood’s Plan is distinct in its clear objective: Develop without displacement. As the neighborhood continues to evolve, the community will use its Plan to ensure it remains an inclusive, family-friendly neighborhood that recognizes that its’ greatest asset is its’ people.

The Mobility chapter focuses on how people move to, through, and around the neighborhood. It looks at current strengths and shortcomings, and recommends strategic improvements to transit service and stations; pedestrian access, safety, and circulation; bicycle infrastructure; traffic safety; and parking.

Priorities:

1. Calm through-traffic.
2. Address gaps in multi-modal network throughout the community.
3. Ensure residents have access to high-quality transit that increases economic opportunity and supports everyday needs.
4. Improve neighborhood walkability and bike-ability.

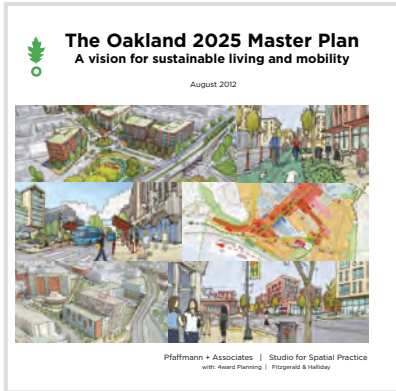


### Pittsburgh P4 Performance Measures

The P4 Performance Measures project (“the Measures”) was an intensive year-long process to develop an evaluation tool that informs the prioritization of investments in real estate development projects located in the City of Pittsburgh.

During 2017, the Urban Redevelopment Authority of Pittsburgh (URA) formed a working group to integrate use of the Measures within relevant URA programs.

The “Connect” Measure incorporates all four p4 goals – People, Place, Performance, and Planet. The Measure targets the expansion of transportation options that improve human access to employment centers and community services. Providing mobility options, such as walking and biking, also encourages health benefiting physical exercise. This Measure also reduces greenhouse gas (GHG) emissions through expansion of transport options that avoid the use of single-occupancy vehicles (SOVs). Furthermore, parking demand is reduced, which in turn can decrease overall project costs.



### The Oakland 2025 Master Plan: A Vision for Sustainable Living and Mobility

The stated transportation goal of the Oakland 2025 Master Plan is to establish a transportation network that will be highly multimodal, serving pedestrians, cyclists, and transit users equally as well as automobiles, with strong neighborhood connections that are well designed, safe, and accessible.

The following are the recommended strategic actions and priorities of the Transportation Master Plan.

- Expand Connections to Oakland
- Provide New Transit Options
- Improve Major Corridors
- Connect Bikes through Oakland



### Smart Moves for a Changing Region

The Regional Vision means taking advantage of our considerable existing assets and developing, supporting, and implementing projects and programs that advance our progress. It means investing in regionally connected, seamless transit, and new transit investments in key corridors and networks. It means developing modern support infrastructure that prepares the region not only for current technological advances, but also for the new technology being advanced in this region. This plan is about creating and connecting people to opportunity.

- The three primary goals towards achieving the vision of the plan include:
- Connected Mobility
- Resilient Communities
- Globally Competitive Economy



### UPMC Mercy Hospital: Institutional Master Plan Revision

The UPMC Mercy Hospital Plan Institutional Master Plan identifies the following mitigation measures required to minimize impacts on level of service under 2022 build conditions:

- Upgrade pedestrian amenities along Locust Street at its intersections with Marion Street and Pride Street, and between Forbes Avenue and Locust Street along Marion Street, including:
  - Repaint pedestrian crosswalks;
  - Repaint stop bars;
  - Investigate tactile upgrades to the Locust Street/Marion Street intersection, to be developed as part of the design of the hospital expansion;
  - Provide safety upgrades including lighting and additional measures to be identified during the design of the hospital expansion, to connect pedestrians from public transit, including the future BRT stations at Forbes/Pride, Forbes/Miltenberger, Fifth/Pride and Fifth/Miltenberger intersections, to the UPMC Mercy campus.
- Provide new streetscape treatments wherever roadways and sidewalks are disturbed including Marion Street and Locust Street in accordance with City of Pittsburgh standards.
- TDM Strategies and Parking Management Plan Strategies

### City of Pittsburgh Complete Streets Policy

The City of Pittsburgh adopted its first complete streets policy in July of 2016. The stated vision of the policy is to create a safe, accessible, and livable mobility network for users of all ages and abilities including, but not limited to, pedestrians, bicyclists, motorists, transit riders and freight carriers. The policy vision further states that the city must consider all transportation improvement projects within the City's public realm as opportunities for multi-modal infrastructure that will enhance mobility, equity and livability for all people.

### City of Pittsburgh Climate Action Plan

The Transportation and Land Use chapter of the City of Pittsburgh Climate Action Plan identifies two transportation objectives, each with descriptions of ongoing and/or recommended strategies that can contribute to efforts to achieve these objectives.

**Objective 1:** VMT within the City has showed a continuous decline since 2003 despite the State's continuing to increase.

**Objective 2:** Vehicle Electrification: The City recently received funding to install 8 new EV charging stations bringing the City's total to 19. Additionally, a City grant was received to purchase 9 new EV's for the City fleet doubling the current number.

### ONEPGH: Pittsburgh's Resilience Strategy

The transportation strategies presented in the ONEPGH Resilience Strategy are designed with the goal of improving the city's sense of place by using land systematically to benefit all residents; increasing social cohesion, connectivity, public and ecological health; and protecting against current and future risks. These strategies and actions will help the city design, scale, and maintain infrastructure for current and future needs equitably and sustainably, providing benefits and services to the region during times of calm and crisis.

### 2015 Regional Operations Plan for Southwestern Pennsylvania

The overarching goal of the region's long range plan is a regional transportation system that is actively managed and operated to allow the system to function at its full potential. Towards this goal a series of objectives and strategies were developed, including the following that are relevant to mobility in the Oakland area:

- **Mitigate recurring congestion**
  - Facilitate travel demand management by providing and marketing travel modes other than single-occupancy vehicles and by encouraging travel shifts to off-peak times
- **Minimize the impact of unplanned events**
  - Provide timely and reliable traveler information for un-planned events



## Key Plans in Development

As of early 2019, there are several planning efforts currently in production that will have an impact on transportation and mobility in the communities surrounding Hazelwood Green. These planning efforts include the following:



### 4 Mile Run Watershed and Mobility Plan/ Mon-Oakland Mobility Plan

The Watershed and Mobility Plan will provide a strategy for mitigating impacts of encroaching urbanization on the Four-Mile Run watershed, which consists of multiple neighborhoods throughout the City of Pittsburgh, including a large portion of Squirrel Hill, all of Schenley Park, a majority of Oakland, and parts of Greenfield and Hazelwood. The Mon-Oakland Mobility Plan, a conceptual component of the 4 Mile Run Watershed and Mobility plan, envisions a shuttle connection between Oakland, Four Mile Run, Greenfield and Hazelwood.

### State Route 885/Second Avenue Multimodal Corridor Study

The Southwestern Pennsylvania Commission (SPC), in association with PennDOT, the City of Pittsburgh, Allegheny County, and the Port Authority of Allegheny County, have initiated a multimodal corridor study for SR 885 / Second Avenue between Uptown and the Hays neighborhood. This corridor study aims to produce a 20-year shared vision and plan for multimodal access, mobility, and livability.

### Pittsburgh Comprehensive Plan

The City of Pittsburgh is currently in the early stages of developing a Comprehensive Plan that will consolidate the city's previous, ongoing, and anticipated planning efforts and projects.

### City of Pittsburgh Bicycle Plan

The most recent bicycle plan for the City of Pittsburgh was published in 1999, and many of its projects have since been implemented. The city is currently in the midst of an updated plan, scheduled to be released in 2019, that will establish a new framework for building a safe, comfortable, and convenient bike network for all types of riders and all types of trips. The Department of Mobility and Infrastructure's overall goals will be woven into the mission and vision of the new plan, and are as follows:



- No one dies or is seriously injured traveling on city streets.
- Every household in Pittsburgh can access fresh fruits and vegetables within 20 minutes travel of home, without the requirement of a private vehicle.
- All trips less than 1 mile are easily and enjoyably achieved by non-vehicle travel.
- Streets and intersections can be intuitively navigated by an adolescent.
- The combined cost of transportation, housing and energy does not exceed 45% of household income for any income group.

# Appendix D: Innovation and Best Practices in Transportation Systems

The success of Hazelwood Green as a center of residential, economic, and recreational activity in the long term depends on developing strong linkages to Pittsburgh's two main economic centers in Downtown and Oakland, as well as the as well as connections within Greater Hazelwood and connections to adjacent communities, such as Greenfield and South Side. In decades past, discussions about transportation linkages were hampered by the focus on where can people drive (usually by themselves), and the subsequent decline in transit services, predominantly the bus system.

In other cities, reinvestment in transit has led to increased ridership. Reinvestment can include improved frequency and quality of service, often supported by technology like real-time information and electronic ticketing. New modes that supplement (or in some cases supplant) transit have emerged, from ride-hailing services like Uber and Lyft, to more environmentally friendly bikeshare networks and e-assist bikes, to advances in aerial and water transport. The advent of autonomous vehicles will further change the transportation landscape, though probably not as soon as some hope (or fear). Regardless, the network and services that will connect Hazelwood Green to the region will provide a wide range of choices for travelers.

Among that wide range, this plan identifies a set of enticing improvements currently being utilized world-wide, from which priorities will be chosen and implemented as Hazelwood Green develops. Specifically, this section looks at the following:

- **Enhancements in Rapid Transit**
- **First and Last Mile Connections**
- **Aerial Transit Solutions**
- **Bicycling Network Enhancements**
- **Emerging Mobility Options**
- **Car Share and Ride Hailing Services**



## ENHANCEMENTS TO RAPID TRANSIT



### Prioritize Transit

**Transit service is most attractive when the time it takes to make a trip on transit is comparable to the time it takes in a car.** To make transit faster, it can be given priority over regular traffic. This can be done through the use of grade-separated busways as elsewhere in Pittsburgh, exclusive bus lanes, peak period-only bus lanes, queue jump lanes, and transit signal priority. Although these strategies are critical components of premium services such as Rapid Bus or Bus Rapid Transit (BRT), they can also be implemented to enhance regular bus service by improving speed and reliability along specific corridors.



### Bus Rapid Transit

**Bus Rapid Transit (BRT) is frequent, fast bus service that features special vehicles, transit signal priority, exclusive travel lanes, level boarding, pre-paid fare collection, and unique branding to provide a premium bus service.** BRT provides light rail-like service without the high costs associated with rail infrastructure. Compared to light rail transit (LRT), BRT typically has much lower capital and operating costs than LRT, and compared to regular buses, BRT is faster, more reliable, and more easily identifiable. Since the late 1990s, nearly 200 cities throughout the world have developed BRT services that have made bus service much more attractive and greatly increased ridership.

The development of new BRT services provides an important opportunity to significantly improve transit in the short to medium term. Corridors that could be considered for BRT include Second Avenue adjacent to the Hazelwood Green site. Implementation of BRT would require a great deal of community involvement and context-sensitive designs.



### Rapid Bus

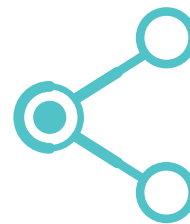
**Rapid Bus service includes the elements of BRT without exclusive bus lanes.** Rapid Bus service can be implemented on existing roadways at a lower cost and in a much shorter timeframe, and can also be a first step toward full BRT. These services feature premium shelters, real-time information at stations, and transit signal priority. Additional upgrades such as re-branding and slightly closer station spacing could further add to Rapid Bus service in Pittsburgh and provide the ability to convert more local service to Rapid Bus service.

## FIRST AND LAST MILE CONNECTIONS

When it comes to a traveler's experience, "the last mile can be the longest mile." The connecting journeys before and after the transit ride can be influential enough to encourage or discourage a person to ride transit again. For this reason, transit agencies and cities across the nation are developing and implementing strategies to improve first and last mile connections to transit services, stops, and stations in order to facilitate a seamless and convenient travel experience and attract more riders. Opportunities include:

- Developing transportation management agencies (TMAs) can address specialized local transportation needs and greatly enhance first mile/last mile connections.
- Shuttle services could provide connections between Hazelwood Green and PACC services, local job sites, and local attractions. These shuttles could be provided by local organizations, TMAs, and/or PACC itself.
- Improving bicycling and walking connections provides safer and more comfortable

access to transit. Better bicycling facilities can also provide a place for emerging e-assist modes, including shared scooters, to travel safely. Mutually supportive improvements to sidewalks, bicycle facilities, and sharing systems like Healthy Ride can together change behavior to encourage travelers to use transit and these means for seamless travel.



- Private rideshare, such as UberPool and LyftLine, can be used to provide the first and last mile connection. These services help expand transit services to lower demand areas through partnerships rather than by providing direct service. While the development of these types of partnerships is still in the early stages, they offer the potential to launch quickly, provide service at lower costs, and better tie expenditures to actual use.

## POTENTIAL AERIAL SOLUTIONS

### Gondola or Tramway

Once restricted to novel geographies (like Roosevelt Island in New York's East River), temporary applications (New Orleans's World's Fair in the 1980s), or resort locations (typically ski), gondolas and aerial trams are now considered for urban transportation applications. New York, Chicago, Austin, Boston, Oakland and other cities have studied new routes, and Portland has built an aerial tram that integrates with the rest of the city's multimodal transportation network. Outside the U.S., specifically in South America and Europe, hilltop neighborhoods are connected to downtown by efficient and well-used aerial trams or gondolas. (Aerial trams are permanently connected to a cable operating on a counter-weighted system, limiting stations and frequency, while gondolas can be detached from the moving cable increasing station and frequency opportunities).

Advantages to aerial transit include the ability to fly over geographic barriers, traffic, and other

earthbound nuisances. The cost of providing a given link can be substantially less than improving ground transportation, while still providing the ability to move substantial numbers of travelers (if not the volumes of BRT or rail systems). In addition, aerial operations are relatively energy efficient. Disadvantages that have limited their application to-date include difficulties in creating complex, multi-stop lines, and in integrating with existing transportation networks. However, for point-to-point service, or perhaps with relatively simple lines, gondolas can provide a cost-effective way to overcome terrain while moving reasonable volumes of people.



## IMPROVEMENTS TO BICYCLING NETWORK AND FACILITIES

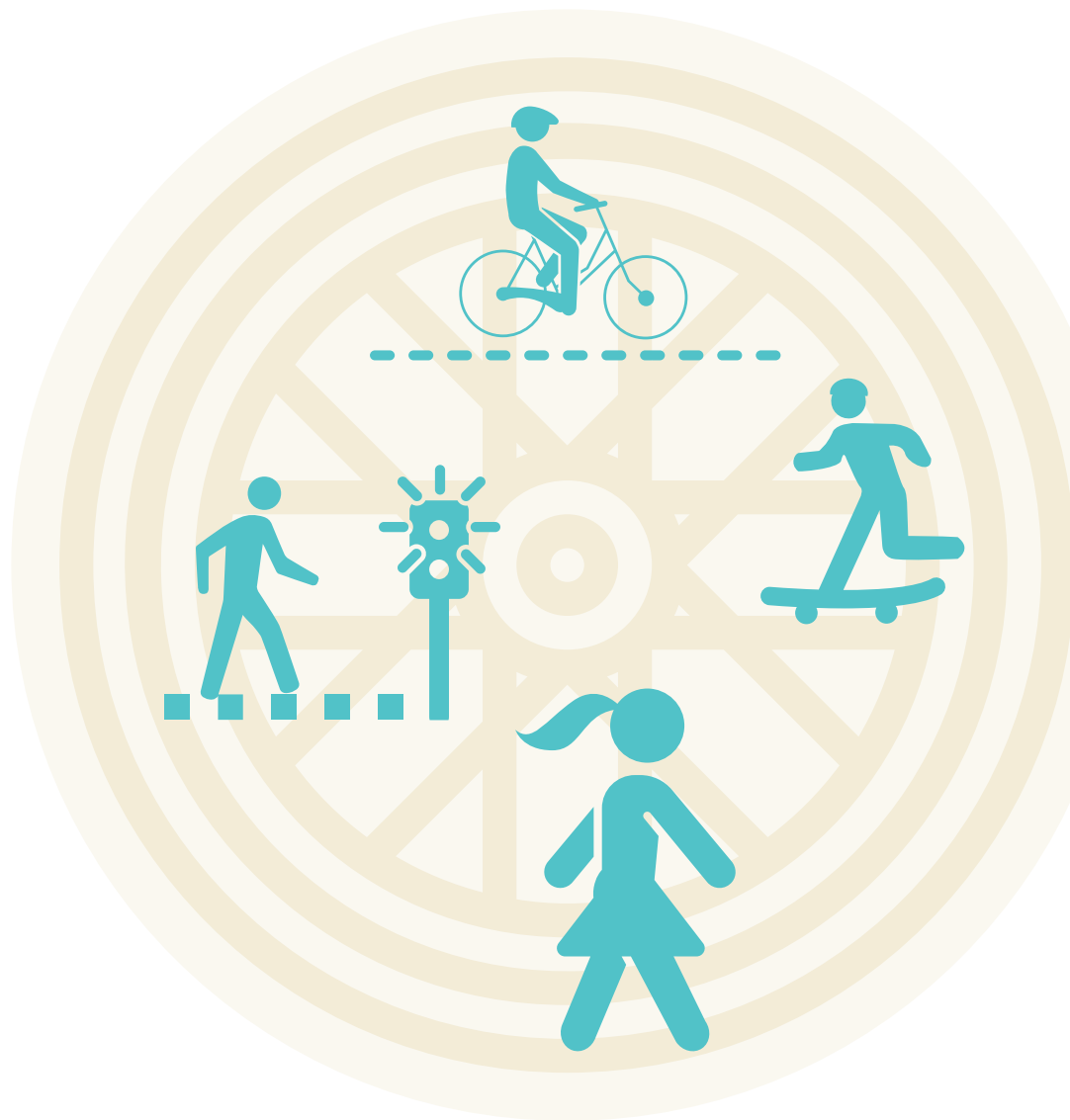
### Pedestrian and Bicycle Access

Given Pittsburgh's topography of river and stream valleys, cycling and walking can feel intimidating to travelers. However, Pittsburgh boasts a large, growing, and diverse population of travelers using their own power to get around – and emerging e-mobility options including e-assist bikes and e-scooters help flatten out remaining barriers, real and perceived. Safe travel, by people of all ages and abilities, relies on an improved network of sidewalks, paths, and lanes that separate the vulnerable from heavier and faster motor vehicles.

The Hazelwood Green site itself will boast seamless multimodal networks that provide safe places

for walkers, bikers, scooters, and others. Getting around within the site, and to its edges, only meets part of the need. Improvements are needed at connection points to the adjoining neighborhood, across the river, and up the hill toward Oakland and downtown.

Best practice in design has evolved quickly in the past decade, with the most useful general guidance coming from NACTO. In particular, making protected lanes standard, and connecting them with protected intersections, holds real promise to provide safe environments for “ages 8 to 80.”



## EMERGING MOBILITY OPTIONS INCLUDING E-ASSIST BIKES AND SCOOTERS

Emerging mobility options include a range of services, such as bike share, scooter share, car share, ride hailing services, and ride sharing services. These options are described in more detail in the following sections.

### Bike Share

Bike sharing is a system of bicycles that is available to users to access as needed for point-to-point or round-trip trips, traditionally to station kiosks in dense urban areas. Docked bike share systems are generally unattended and offered through public-private partnership. Advances in bike share locking technology have allowed for dockless, free-floating bikes, lockable anywhere within a geographic region; a relatively discrete geography with significant density of people. This model is becoming increasingly popular and are often privately owned and operated.

Bike sharing systems can include electric-assist bicycles (e-bikes) and cargo bicycles. These types of bicycles may encourage people to use the bike

share system that would not use it otherwise. E-bikes allow people to travel faster and farther than they would on a typical bike share bicycle. Cargo bikes provide a means for people to travel with children or carry goods, such as groceries.



To date the City does not have any dockless systems operating with Healthy Ride, a non-profit (Pittsburgh Bike Share) currently the sole provider.

### E-Scooter Share

Scooter share is a system of electric scooters whereby riders use an app to rent and travel to their destination and then park the scooter in a similar fashion to parking a dockless bike. Scooters launched in the U.S. in 2018 and by the end of the year over 85,000 e-scooters were available for public

use in about 100 U.S. cities. Under Pennsylvania State Law, e-scooters are currently not legal and would require new legislation to enable them to be used on roads and sidewalks.



## Car Share

Car sharing programs allow people to access a shared fleet of vehicles on as-needed, per-hour or per-mile basis for point-to-point or round-trip trips. Car sharing programs reduce the need for businesses or households to own vehicles, and they also reduce personal transportation costs and vehicle miles traveled. At the site, car sharing would

be available at the shared parking facilities distributed across the site in a manner that is equally accessible to all residents.



## Ride Hailing Services

Ride hailing services, also known as Transportation Network Companies (TNCs), match riders with drivers in real-time through mobile apps that also accept payment. These platforms typically operate through a network of third-party contractor drivers using non-commercial vehicles. Ride hailing drivers are not themselves travelers. Ride hailing companies are distinguished from taxi services by the inability to street hail (can only pick up prearranged rides). The companies typically offer several ride types, such

as private ride and pooled-ride/fare splitting (in which multiple users with origins and destinations along a similar route can hail the same driver in real time). While TNC pickups can take people anywhere, the distance between the site and other destinations might limit the number of drivers nearby at any one time.



## Ride Sharing Services

Ride sharing services, or carpool platforms, are third-party services that match riders and drivers with similar shared origins and/or destinations, enabling them to split the cost of the ride. Unlike ride sourcing and ride splitting, the driver is themselves a traveler and is not fare-motivated. There are two types of ride sharing services. On-demand, dynamic matching is facilitated through a software platform with no long-term commitment required. Second is the pre-arranged batching of matches, where travelers enter their desired pickup and drop-off schedule, and drivers and riders are matched daily with an advance alert to users. Examples of providers include services by GoCarma, WazePool and RideAmigos.



Mobile apps are a key element in emerging mobility options such as ride- and bike-sharing and ride-hailing. Image from Getty Images

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