Introduction

The City of Pittsburgh is currently developing a 10-year neighborhood plan for Greater Oakland, the Oakland Plan. This plan will steer policy and investments to promote a more sustainable and equitable future for Greater Oakland. The Oakland Plan focuses on four topic areas: community, development, mobility, and infrastructure. This chapter provides an analysis and summary of the existing transportation system and network that will support policy and project recommendations as part of the mobility section of the neighborhood plan. The mobility section is organized by four topic areas:

1. Traffic calming and safety
2. Active transportation and micromobility
3. Transit accessibility
4. Network travel patterns and transportation demand management (TDM).

The existing conditions analysis, identification of key issues, and development of recommendations follow these four topic areas.

Greater Oakland is located east of Downtown Pittsburgh, just north of the Monongahela River, and west of Schenley Park. The area referred to as Greater Oakland is comprised of four neighborhoods: North Oakland, Central Oakland, West Oakland, and South Oakland. This neighborhood is a dynamic residential community and the center of Pittsburgh’s academic, medical, and cultural institutions. The University of Pittsburgh (Pitt), Carlow University, Carnegie Mellon University (CMU), The University of Pittsburgh Medical Center (UPMC), the Carnegie Library, the Carnegie Museum of Art, the Soldiers & Sailors Memorial Hall and Museum, and many other institutions attract thousands of residents, visitors, students, and employees. These institutions serve as key destinations in the neighborhood’s transportation network, and are accessed by many modes including walking, biking, public transportation, private shuttle services, and private vehicles. Other neighborhood destinations include open space and recreation amenities such as the Eliza Furnace Trail, Schenley Park, and Panther Hollow, and the commercial corridors along Fifth and Forbes Avenue(s). The City is implementing Bus Rapid Transit (BRT) along Fifth and Forbes Avenue(s), which will create more multimodal demand for the areas around the new BRT stations.

Despite the neighborhood’s many amenities and destinations, there are several barriers throughout Greater Oakland that present challenges for multimodal access and connectivity. The first main barrier is the steep topography. Pittsburgh is a city of hills, and Greater Oakland has steep inclines along the western and eastern borders. This topography creates challenges to making multimodal connections between destinations and results in isolated areas cut-off from nearby amenities, such as Panther Hollow and the Southside neighborhood. High-volume, high-speed roadways that currently serve as unwelcoming gateways are another barrier to neighborhood access. Interstate 376 is a six-lane highway that runs along the southern border of the neighborhood and separates Greater Oakland from the riverfront, the Eliza Furnace Trail, and creates multimodal conflict points where access ramps intersect with Bates Street. Boulevard of the Allies is a 4-5 lane arterial that runs east-west throughout the neighborhood with challenging crossings for non-motorized modes.

Many people use these high-speed facilities to enter and drive-through Greater Oakland, and these roads restrict people traveling to and from the neighborhood. Lastly, a barrier within Greater Oakland is the poor condition of city steps and the sidewalk network. The city steps serve as key infrastructure to help people navigate the steep topography and traverse between hilly areas, but many of these steps are in disrepair and have overgrown vegetation. Likewise, existing sidewalks are often narrow, uneven, close to level with the street, and there are missing sections of sidewalks creating gaps in the network. The key destinations and barriers are summarized on Figure 1.
Figure 1: Greater Oakland Study Area

GREATER OAKLAND

DESTINATIONS
- Institutions
- Fifth/Forbes Avenue(s)

Greater Oakland

BARRIERS
- Steep Slopes (>25%)
- High Speed Roads

Rail
Contours
Park/Open Space
Multi-Use Trails
City Steps

Map showing the Greater Oakland Study Area with various destinations and barriers marked.
NEIGHBORHOOD CONTEXT FOR TRANSPORTATION

Greater Oakland’s transportation network is greatly influenced and shaped by the current conditions identified in the larger Oakland Plan: its land use patterns, population characteristics, job centers, and housing types. The following is a summary of the key takeaways from the Existing Conditions Report for the Oakland Plan developed by Goody Clancy and its relevance to the mobility chapter.

Population + Demographics
Greater Oakland spans 962 acres and is home to over 20,000 residents, 80,000 employees, and 45,000 students. The neighborhood has a high population density, at approximately 15,000 people per square mile. Greater Oakland has over 7,000 households, with 19% of households including family households. The neighborhood has a mix of household incomes, with more very low income and very high-income households than the city overall on a percentage basis.

Given the proximity to several colleges and universities, such as University of Pittsburgh, Carnegie Mellon University, and Carlow University, Greater Oakland has a significant number of student residents with 67% of residents between the ages of 18 and 24. The student population drives Greater Oakland’s rental housing market and results in a relatively low neighborhood homeowner occupancy rate of 24% compared to 48% homeowner occupancy in Pittsburgh. Central and South Oakland have the highest concentration of student housing and the highest bedroom density. This student population can create parking conflicts when student rental housing properties have multiple parking permits per property.

Land Use
Greater Oakland is predominantly residential, with over 1/3 of the neighborhood dedicated to residential uses. Large swaths of Central, South, and North Oakland are largely single and multi-family residential. The second highest land use is institutional, with many government, education, medical, and museum institutions clustered in West and North Oakland surrounding Fifth and Forbes Avenue(s). Greater Oakland’s street typologies reflect these land uses, with Urban Core Mixed Use and Institutional streets along Fifth and Forbes Avenue(s), and Traditional Residential and Mid Rise Multifamily Residential streets in North, Central, and South Oakland. Several heavy Vehicular Corridors are identified at the entrances to the neighborhood, including Second Avenue, Bigelow Boulevard, Bates Street, Boulevard of the Allies. These street typologies identified in Goody Clancy’s Existing Conditions report are shown in Figure 2.

Employment
Greater Oakland is a major employment center, employing over 48,000 people within the neighborhood. Most jobs within the neighborhood are clustered in West and North Oakland, where the hospitals and universities are located. Approximately one-quarter of the people who work in Greater Oakland also live in Greater Oakland. Most people who work in Greater Oakland (63%) live within ten miles. This significant inflow of employees generates peak hour travel in and out of the neighborhood. Given the mix of hospitals, universities, and employment centers in the neighborhood, Greater Oakland has an estimated 106,800 people on an average workday during the academic school year. Two of Greater Oakland’s major employers, UPitt and Carnegie Mellon, operate private shuttles throughout the neighborhood for students and staff.
Figure 2 Urban Design Typology Areas with Street Character Overlay

Source: Oakland Economic Development and Urban Design Studies, Goody Glancy
BUS Rapid Transit (BRT) on Fifth and Forbes Avenue(s)

The Port Authority, Allegheny County, the City of Pittsburgh, and the URA are working together to design the Downtown-Uptown-Oakland-East End Bus Rapid Transit (BRT) project that will provide a vital east-west connection between downtown Pittsburgh and the Uptown, Oakland, and East End neighborhoods. The new route will use battery-electric buses. The project has been in the planning and design phases for several years; final design plans were completed in 2020 and construction is anticipated to begin in early 2022. Once completed, the new BRT line will connect the 2nd and 3rd largest employment centers in Pennsylvania: Downtown Pittsburgh and Central Oakland.

The Oakland portion of the BRT line will transform the Fifth and Forbes Avenue(s) corridors with dedicated BRT only lanes and multimodal infrastructure. Fifth Avenue will have an inbound dedicated bus lane on the north side of the street, and Forbes Avenue will have an outbound dedicated bus lane on the south side of the street. The existing contraflow bus lane on Fifth Avenue will be replaced with a two-way cycle track as far east as Bellefield Avenue. Multimodal improvements including painted bike lanes will also be made to Bigelow Boulevard surrounding Fifth and Forbes. New BRT stations will be located at Craig Street, Tennyson Avenue, Bigelow Boulevard, Bouquet Street, Atwood Street, McKee Place, Chesterfield Road, and east and west of Craft Avenue. As shown in the rendering of a proposed BRT station on Fifth Avenue in Figure 3, the new stations will include amenities including shelters, seating, real-time signs, ticket vending and validations, and emergency call buttons.

For the purposes of the Oakland Plan, the BRT project and its related multimodal improvements are being treated as an existing condition. New recommendations for Fifth and Forbes Avenue(s) developed as part of the Plan will be minimal since the corridors will be fully reconstructed in the next couple of years. The Plan will look to leverage this new investment and provide multimodal improvements to key corridors that will increase access to the BRT line.

Figure 3 Rendering of Proposed BRT Station on Fifth Avenue
PREVIOUS STUDIES

The project team reviewed previous plans and other documents pertaining to transportation and growth and development in Greater Oakland. The following provides a summary of key takeaways and recommendations for the following documents:

- The Oakland 2025 Master Plan (2012) – Pfaffmann + Associates
- SR 885/Second Avenue Multimodal Study (2019) – WRA
- Bellefield Avenue Road Safety Audit (2015) – SPC


In the early 2000s, the Oakland Task Force collaborated with the Allegheny Conference on Community Development to create a strategic plan for the future of Oakland. The goal of Future of Oakland is to support the continued growth of Greater Oakland, including support of the neighborhood’s institutions, residents, commercial corridors, visitors, and cultural history. The plan is organized by five categories, including quality of life, appearance and amenities, development, housing, and retail and transportation. The plan discusses Greater Oakland’s strengths and challenges with its strengths being the institutions within its boundary, including Carnegie Mellon University facilities, Museums of Pittsburgh, University of Pittsburgh, UPMC Health Systems, and Schenley Park. Additional strengths of the neighborhood include diverse and urban residential neighborhoods, commercial centers with local character, and destinations that attract local, national, and international visitors. Oakland is home to many historic areas, parks, and open space. Neighborhood challenges include parking and traffic challenges, land use conflicts, and pressure of expansion from institutions and private development. Table 1 summarizes the issues, challenges, and recommendations related to transportation from the Future of Oakland report.

Table 1 Future of Oakland Multimodal Issues, Challenges, and Recommendations

<table>
<thead>
<tr>
<th>Mode</th>
<th>Key Findings</th>
<th>Recommendations</th>
</tr>
</thead>
</table>
| Active Transportation | • Land use sprawl make walking and biking difficult  
|                     | • Blighted gateways  
|                     | • Narrow sidewalks, poor sidewalk conditions, and run-down street furniture | • Fix areas with poor pedestrian infrastructure |
| Transit            | • Individually run private shuttle systems are confusing for new users       | • Commit to developing full light rail transit  
|                     |                                                                            | • Develop internal transit shuttles  
|                     |                                                                            | • Design and develop a new prototype bus station with amenities, including shelter, off-board fare collection, vending machines, bike racks, and security cameras  
|                     |                                                                            | • Expand carpool/vanpool programs |
| Vehicle Travel     | • Neighborhoods degraded by non-residential traffic  
|                     | • Perception of ‘nowhere to park’                                          | • Improve traffic hot spots  
|                     |                                                                            | • Intercept more traffic at Oakland’s perimeter  
|                     |                                                                            | • Gain more use of existing parking supply  
|                     |                                                                            | • Develop a traffic and parking plan for Schenley Plaza and Civic Loop |
The Oakland 2025 Master Plan (2012) – Pfaffmann + Associates

The 2012 Oakland 2025 Master Plan establishes a vision for the future of Oakland. The plan aims to guide and support continued growth in the neighborhood. The Oakland 2025 Master Plan builds on the Future of Oakland plan and other plans that preceded it. The master plan builds on the Future of Oakland’s recommendations and projects that were identified and later implemented, including streetscape enhancements to the Fifth and Forbes corridors, Schenley Plaza, and the Boulevard of the Allies Bridge reconstruction.

The Master Plan generated hundreds of valuable ideas that emerged from the community process and have been incorporated into the Master Plan. The key recommendations related to mobility are as follows:

1. Increase the number of people who both live and work in Oakland.
2. Establish model multimodal ‘complete streets’ linked to enhanced transit systems.
3. Increase access to parks, open space and trails.

Table 2 summarizes the key findings and recommendations related to transportation and mobility from the Master Plan.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Key Findings</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Transportation</td>
<td>● Discontinuous and unsafe sidewalks along Forbes Avenue and Boulevard of the Allies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Long, unsafe pedestrian crossings on Boulevard of the Allies</td>
<td>● Reorganize space within the existing street rights of way to accommodate all modes on Fifth and Forbes Avenue(s)</td>
</tr>
<tr>
<td></td>
<td>● Insufficient corner curb ramps</td>
<td>● Transform Bates and Boulevard of the Allies into complete streets</td>
</tr>
<tr>
<td></td>
<td>● Limited number of pedestrian signal heads</td>
<td>● Create green key corridors with ornamental planting</td>
</tr>
<tr>
<td></td>
<td>● Vehicles parking on sidewalks</td>
<td>● Improve neighborhood wayfinding</td>
</tr>
<tr>
<td></td>
<td>● Lack of street trees and plantings along major corridors</td>
<td>● Create a two-way cycle track on Forbes Avenue</td>
</tr>
<tr>
<td></td>
<td>● Lack of bicycling infrastructure in Central Oakland</td>
<td>● Improve trail connections, including on Eliza Furnace and Junction Hollow trails</td>
</tr>
<tr>
<td></td>
<td>● Lack of secure bicycle parking at some destinations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Poor connections to existing adjacent trail network</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Lack of bicycle rental opportunities</td>
<td></td>
</tr>
</tbody>
</table>
The Oakland Plan – Existing Conditions Mobility Chapter

### Key Findings

**Transit**
- Unsafe pedestrian conditions created by counter-flow bus lanes adjacent to narrow sidewalk on Fifth Avenue
- Lack of premium transit services (dedicated rights-of-way, bus rapid transit)
- Buses compete with auto traffic
- Bus stops are too small to accommodate peak pedestrian volumes and lack shelters and other amenities
- Shuttle services are only accessible to some users and duplication of routes and service leads to overall inefficiency
- Service cuts

**Vehicle Travel**
- One-way streets make wayfinding difficult and increase trip length
- Congestion at I-376 and Bates, Fifth, Forbes, and Craft
- Cut-through traffic impacts on residential streets
- Lack of intercept parking on neighborhood periphery
- Permit parking is inconsistently managed and is absent in some residential locations

**Traffic Calming and Safety**
- Cyclist fatality and crash concerns

### Recommendations

**Transit**
- Implement a bus rapid transit system along Fifth and Forbes Avenue(s)
- Create a two-way fixed-guideway circulator loop along Second Avenue to connect Oakland to Downtown, Lower Lawrenceville, the Strip District, the Pittsburgh Technology Center, and ALMONO site.
- Consolidate institutional shuttle services and local bus routes into a unified transit circulator system operating within two or more transit service areas. Shuttles should serve workers, students, visitors, and residents and service should overlap at key BRT or Circulator stations.
- Add new mobility hubs

**Vehicle Travel**
- Manage parking comprehensively to improve utilization
- Expand residential parking permit program and improve operations with consistent management and enforcement
- Improve wayfinding
- Evaluate minor directional changes to mitigate cut-through traffic on residential streets
- Use Intelligent Transportation Systems (ITS) to improve efficiency

**Traffic Calming and Safety**
- Curb bulb outs and planting buffers at locations with heavy pedestrian traffic (Fifth and Forbes Avenue(s))

---

**SR 885/Second Avenue Multimodal Study (2019) – WRA**

The Southwestern Pennsylvania Commission (SPC) initiated this planning study to explore existing multimodal transportation needs, future trends, and potential improvement strategies along the State Route (SR) 885 and Second Avenue corridor through the Bluff neighborhood, South Oakland, Greenfield, and Hazelwood. The main goal of the study was to manage congestion through multimodal strategies that would decrease the prevalence of single-occupancy vehicle trips. The study identified the Bates Street and I-376 Interchange Ramps intersection as a potential location for safety improvements due to queue spillback and the prevalence of rear-end and pedestrian crashes.

The study recommends the following improvements for the South Oakland neighborhood:

- Reconstruction of Bates Street from 2nd Avenue to Boulevard of the Allies, including reconfiguration of I-376 interchange 2nd Avenue/Bates Street intersection
- New Bus Rapid Transit (BRT) service for West Mifflin, Homestead, Hazelwood, and connecting to the Oakland/Downtown BRT
- New trail link from Bates Street to the Eliza Furnace Trail
- Reconstruction of Frazier Street/Romeo Street steps with bike channels
- New trail link from Lawn Street to the Eliza Furnace Trail via the Parkway tunnel
Bellefield Avenue Road Safety Audit (2015) – SPC
SPC conducted a Road Safety Audit (RSA) on Bellefield Avenue between Forbes Avenue and Center Avenue in North Oakland to review potential road safety issues and identify opportunities for safety improvements. The RSA recommends the following improvements for the Bellefield corridor:

- Traffic calming treatments between Fifth Avenue and Centre Avenue (e.g. restriping, daylight intersections).
- Upgrade all intersections with high visibility crosswalks
- Restripe Bellefield Avenue between Forbes Avenue and Fifth Avenue to include two travel lanes and a designated parking lane
- Improve Filmore Street crossing with a bulb-out, ADA curb ramps, pedestrian crosswalk signage, and pedestrian scale lighting
- Conduct a multi-modal transportation study to determine if Bellefield Avenue should be converted to one-way between Centre Ave and Bayard Street due to the anticipated growth of vehicular, bicycle, and pedestrian traffic

Summary of Previous Plans
The review of previous planning studies highlight several key themes for Greater Oakland, including difficulties with walking and biking, conflicts between personal vehicles, private shuttles, and public transit, and added congestions and parking issues caused by commuters into the neighborhood. Figure 4 summarizes the recommended multimodal improvements from these previous studies, which will be used as a starting point for mobility recommendations in the Oakland Plan.
**Figure 4 Summary Map of Previous Transportation Recommendations**

**Oakland Plan Recommendations Summary**

- **Oakland 2025 Master Plan**
  - Circulator Loop
  - Bus Rapid Transit
  - Improve Trail Connections
  - Two-way Cycle Track
  - Complete Street

- **SR 885/Second Ave Multimodal Study**
  - West Miffline/Homestead BRT
  - Road Reconstruction and Reconfiguration
  - New Trail Link
  - Bike Access

- **Bellefield Avenue Road Safety Audit**
  - Traffic Calming, Signal Upgrades, and Intersection Improvements

**Transit:**
- Improve bus stop amenities
- Expand carpool/vanpool programs
- Consolidate private shuttle service

**Vehicular:**
- Intercept traffic at Oakland's perimeter

**Pedestrian:**
- Curb bulb outs and planters
- Improve neighborhood wayfinding
Existing Conditions Analysis

The existing conditions analysis provides an overview of the existing transportation system and network in Greater Oakland. The existing conditions analysis builds upon previous planning studies and includes qualitative and quantitative data collection and mapping, walking tours with community members, and stakeholder feedback from the Mobility Action Team. The project team worked with the City of Pittsburgh to identify and to compile data and information to inform the existing conditions analysis. The analysis uses the data sources described in Memorandum #1: List of Data Sources, to create maps that help illustrate the spatial distribution of transportation infrastructure, multimodal networks, and travel conditions. This analysis was completed in late summer of 2020 during the COVID-19 pandemic, which has caused a significant disruption to normal travel patterns. However, unless noted, the data presented in this memorandum is from time periods prior to the COVID-19 pandemic and is intended to represent non-pandemic travel patterns.

The existing conditions are summarized based on four focus areas:

- Traffic Calming and Safety:
- Active Transportation (walking and biking) and Micromobility
- Transit Accessibility
- Network Travel Patterns and Transportation Demand Management

This existing condition analysis helps identify issues and opportunities that will be incorporated in future mobility recommendations and the larger neighborhood plan.

TRAFFIC CALMING AND SAFETY

The project team sought to understand safety challenges and identify traffic calming opportunities within Greater Oakland. Travel in Greater Oakland is multimodal, with a mix of trips occurring by foot, bike, scooter, bus, and vehicle. Many streets lack dedicated facilities for different modes, which can create conflict areas with different modes competing for space. The following sections will explore safety concerns identified during the data analysis and stakeholder conversations, including crash history, speeding, cut-through traffic, and problem intersections.

Crash History

The crash history provides insight into problem areas in the neighborhood related to vehicle, pedestrian, and bicycle conflicts. The crash history may provide valuable information about issues related to speeding, roadway geometry, roadway configuration, and a need for bicycle and pedestrian infrastructure. Figure 5 shows crashes from January 2014 through December 2018. Pedestrian crashes are concentrated along Fifth Avenue, Forbes Avenue, Bates Street, and Craig Street north of Baum Boulevard. Crashes tend to be concentrated near intersections, especially on the residential streets. During this time period there were four crashes that resulted in fatalities. A summary of these crashes are listed below:

- 2014 – An early morning crash on a road segment hit a fixed object resulting in at least one fatality
- 2015 – An early morning head-on crash on a road segment resulted in at least one fatality
- 2015 – An evening rear-end crash on a road segment resulted in one bicyclist fatality
- 2016 – A late evening non-collision resulted in at least one fatality

As expected, pedestrian and bicycle crashes have occurred in areas with high pedestrian and bicycle activity. This data will help to inform and guide recommendations that will enhance safety and comfort facilities for all users.
Figure 5 Greater Oakland Crash History

Crashes (275 Total in 2018)
- Vehicle-Pedestrian Crash (34 Total)
- Vehicle-Bicycle Crash (2 Total)
- Vehicle-Vehicle Crash (176 Total)

Fatalities
There were no fatal crashes within the neighborhood of Oakland in 2018.

Injuries
117 out of 275 total crashes resulted in injuries.
**Speeding and Cut-Through Traffic**

Throughout Greater Oakland, most streets have posted speed limits of 25 MPH or less. A few streets, including Baum Boulevard, Boulevard of the Allies, and Bates Street have posted speeds of 30-35 MPH. Stakeholders reported several streets throughout Greater Oakland they perceive to have vehicular speeding. These streets include Bigelow Boulevard, Bates Street, and portions of Boulevard of the Allies. Stakeholders reported several locations where vehicles speed through intersections, often close to running red lights. Given the multimodal nature of Greater Oakland, speeding poses a significant threat to people biking and walking.

There are several factors that enable or encourage vehicular speeding, some of which include wide street widths, low rates of traffic enforcement, and long stretches of uncontrolled intersections. The data and stakeholder observations will be used to target key streets and intersections to implement traffic calming strategies. Traffic calming strategies may include horizontal (curb extensions, etc.) or vertical treatments (speed humps, raised crosswalks, etc.) aimed at reducing vehicular speeds and creating a calmer, more comfortable environment for all users.

In addition to speeding, stakeholders identified a few streets being used by drivers as cut-through routes to avoid traffic congestion. South Dithridge Street and Swinburne Street were highlighted as streets being used as detour routes for vehicles. Urban areas often have a network of streets that may be navigated by local and non-local trips. However, excessive cut-through traffic may introduce speeding and/or increased traffic volumes on small, local streets that may not be suited to carry non-local trips.

**Problem Intersections**

As indicated on Figure 6 stakeholders identified several intersections within Greater Oakland as problem intersections. Problem intersections were identified based on challenging roadway geometry, sight distance challenges, speeding, queueing, and congestion. Problem intersections were identified on the following streets:

- Bigelow Boulevard
- S Bellefield Avenue
- Bates Street
- Boulevard of the Allies
- Fifth Avenue
- Dithridge Street
- South Bouquet Street
- Schenley Drive

These identified problem intersections are exacerbated by speeding on Boulevard of the Allies and Bigelow Boulevard, along with traffic congestion on Fifth Avenue. Stakeholders identified intersections with geometry challenges along Bates Street. Figure 6 shows the intersection of Zulema Street and Bates Street, which was identified as a challenging/confusing intersection. This intersection has an irregular configuration, with Coltart Avenue, Zulema Street, and Bates Street intersecting at skewed angles. The irregular geometry poses sight distance challenges, creates long crosswalk distances, and threatens the visibility of pedestrians, bicyclists, and vehicles. As shown in Figure 6, the City installed signage to help vehicles navigate through the intersection.
Additionally, Boulevard of the Allies was indicated by the stakeholders as an uncomfortable street to walk on. Several intersections along Boulevard of the Allies have skewed intersections that create long crosswalks for pedestrians. Long crosswalks can be challenging for people with mobility challenges.

Summary of Findings
Based on the analysis and feedback from neighborhood stakeholders, key issues and opportunities in Greater Oakland were identified for the traffic calming and safety topic area. Figure 7 displays a summary map of the traffic calming and safety issues and opportunities, and a summary list is below.

CRASH HISTORY
- Pedestrian crashes are concentrated along Fifth Avenue, Forbes Avenue, Bates Street, and Craig Street north of Baum Boulevard.
- Crashes tend to be concentrated near intersections, especially on the residential streets.
- Pedestrian and bicycle crashes generally occur in areas with high pedestrian and bicycle activity.

SPEEDING AND CUT-THROUGH TRAFFIC
- Bigelow Boulevard, Bates Street, and portions of Boulevard of the Allies were identified as streets that stakeholders perceive to have vehicular speeding.
- South Dithridge Street and Swinburne Street were highlighted as streets being used as detour routes for vehicles, with corresponding perceived vehicular speeding.

PROBLEM INTERSECTIONS
- Problem intersections were identified on Bigelow Boulevard, S Bellefield Avenue, Bates Street, Boulevard of the Allies, Fifth Avenue, Dithridge Street, South Bouquet Street, and Schenley Drive.
- The area around Zulema Street/Bates Street/Boulevard of the Allies was highlighted due to high-perceived vehicle speeds, skewed intersection approaches, excess pavement, missing pedestrian crossings and sidewalk connections, excessively long crosswalk distances and large roadway widths, and poor sight distance that threatens the visibility of pedestrians, bicyclists, and vehicles.
- Boulevard of the Allies was identified as uncomfortable for people walking and biking due to skewed intersections that create long crosswalks for pedestrians and high-perceived vehicle speeds.
- Challenging crossings for people walking to Schenley Park were also emphasized.
Figure 7 Summary Map of Traffic Calming and Safety Issues and Opportunities

Oakland Action Team Meeting 2 Comments
Traffic Calming and Safety

- Rail
- City Steps
- Contours
- Park/Open Space
- Greater Oakland
- Speeding
- Traffic Congestion
- Reconsider Geometry
- Pedestrian Activity
- Pedestrian Crossing Challenge
- Problem Intersection
- Curbside Challenge
- Bicycling Activity
- Bicycling Challenge
- Cut-through Traffic
- Uncomfortable Street

Lack of bicycle connection up hill
Congested, uncomfortable intersections, speeding
Hilly, high-risk, high speeds
High-risk Intersection
ACTIVE TRANSPORTATION AND MICROMOBILITY

The neighborhood is home to trails, parks, commercial areas, restaurants, institutions, and other destinations that attract visitors. Many residents, employees, and students in Greater Oakland travel throughout the neighborhood by walking, biking and other forms of active transportation. However, many of the neighborhood destinations are not fully accessible to active transportation modes. Pedestrian crossing challenges and limited bicycle infrastructure make it difficult and often uncomfortable for non-motorized users to travel to, from, and throughout the neighborhood. As noted previously there are barriers that present challenges to people who want to walk and bike in Greater Oakland. The steep topography, narrow or incomplete sidewalks, poor condition of city steps, unsafe crossings on high-speed roadways, and lack of street trees and street furniture are some of the most prevalent challenges pedestrians and bicyclists face.

Existing Bicycle Network + Connectivity

Biking can be challenging in Greater Oakland due to the lack of a complete network of comfortable bicycle infrastructure as well as the hilly terrain.

Figure 9 shows existing bicycle facilities, including protected bike lanes, trails, bike lanes, sharrows, on street bike routes, cautionary bike routes, and bike share stations, as well as network gaps. Since 2012, several new dedicated bicycle facilities were installed based on recommendations from the Oakland 2025 Plan. Most of the dedicated bicycle facilities are in North and Central Oakland; there are protected bike lanes on Schenley Drive and the northern end of Forbes Avenue, and on-street bike lanes on Bouquet Street, Neville Street, O’Hara Street, Bigelow Boulevard, and a portion of Forbes Avenue. While Fifth and Forbes Avenue(s) do not currently have bicycle facilities, a two-way cycle track will be installed as part of the BRT on Fifth Avenue, providing a key connection through the neighborhood.

There are significant gaps in Greater Oakland’s bicycle network, and two potential connectors – Bates Street and Boulevard of the Allies - are identified as Cautionary Bike Routes where biking is uncomfortable and feels dangerous for most users. Generally, Boulevard of the Allies is a wide, high speed facility that is uncomfortable for people biking. Bates Street presents challenges for bikers trying to enter and leave Greater Oakland due to high vehicle volumes, steep incline, and dangerous intersections with the I-376 ramps.
Figure 9 Existing Bicycle Facilities and Gaps

EXISTING BICYCLE FACILITIES

- Rail
- Protected Bike Lane
- Contours
- Bike Lanes
- Trails
- Park/Open Space
- City Steps
- Greater Oakland
- Bike Gap
- Greater Oakland
- Trail Gap
- Sharrow

Legend:

- 0 1,000 2,000 3,000 4,000 5,000 6,000 feet
- 0 .75 1 1.5 miles

Map showing existing bicycle facilities and gaps in Oakland, including rail, protected bike lanes, contours, bike lanes, trails, park/open space, city steps, and greater oakland. The map also indicates bike gaps, trail gaps, and sharrow markers.
In addition to missing bike connections, issues that create an uncomfortable biking experience that feels dangerous to most users include faded markings, significant double parking in bike lanes, and bike lanes or sharrows that are between the travel lane and parking lane. A common challenge with traditional bike lanes is the issue of vehicles blocking the bike lane. Conditions like this are uncomfortable for people biking who may need to move into the travel lane to avoid hitting the stopped vehicle. Though O’Hara St has an existing on-street bike lane, it was identified by the Action Team as a location with bike challenges. The existing lane is between the travel and parking lane leaving cyclists vulnerable to dooring (where a cyclist is hit by the door of a parked vehicle opened by a passenger or driver), weaving traffic, and double parking. This makes for an uncomfortable biking experience that feels dangerous and can deter less experienced urban cyclists from biking in Greater Oakland. Figure 10 shows examples of these typical bicycle conditions in Greater Oakland.

**Figure 10 Parking in the Bike Lane on Forbes Avenue (left), Faded Sharrow Markings (center), Campus Shuttle Driving in the Bike Lane (right)**

### Potential Bicycle Connections

BikePGH has proposed several facilities that would help close the gaps in Greater Oakland’s bicycle network, including the following:

- Bike lane on Boulevard of the Allies/Halkett Street from Schenley Park to Fifth Avenue to connect Schenley Park to the major commercial areas on Fifth and Forbes Avenue(s)
- Bike lane on Bates Street from Boulevard of the Allies to 2nd Street would connect Schenley Park to the Three Rivers Heritage Trail that runs along I-376
- Extension of Junction Hollow Trail along the rail line from its current end south of Bouquet Street to just south of Forbes Avenue where the rail crosses Neville Street
- N Neville Street from Fifth Avenue to Forbes Avenue – connect the existing bike lane on Neville Street above Fifth Avenue to the existing bike lane on Forbes Avenue
- Roberto Clemente Drive from Schenley Drive to S Bouquet Drive – continue the existing parking protected two-way bike lane on Schenley Drive to connect to the existing bike lane on S Bouquet Drive
- Adding bike lanes along the loop created by Darragh, Terrace, and Desoto Streets would provide a bicycle connection from Fifth Avenue to the UPMC Hospital buildings and the University of Pittsburgh’s Petersen Events Center, which hosts sports games, concerts, and other large events. This connection would make it easier for residents and students to access the Events Center by bike and would connect to the existing bike lane along O’Hara Street.

These previously proposed bicycle facilities are shown on Figure 11.
Figure 11 Proposed Bicycle Facilities

EXISTING & BIKE PGH PROPOSED BICYCLE FACILITIES

<table>
<thead>
<tr>
<th>Existing Facilities</th>
<th>Proposed Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail</td>
<td>Bike Lanes</td>
</tr>
<tr>
<td>Contours</td>
<td>Trails</td>
</tr>
<tr>
<td>Park/Open Space</td>
<td>Sharrows</td>
</tr>
<tr>
<td>Greater Oakland</td>
<td>On Street Bike Route</td>
</tr>
<tr>
<td>Bike Share Station</td>
<td>Cautionary Bike Route</td>
</tr>
<tr>
<td>City Steps</td>
<td></td>
</tr>
</tbody>
</table>
Existing Pedestrian Network + Connectivity
Greater Oakland has high levels of pedestrian activity, and the neighborhood’s many jobs, retail locations, large universities, health institutions, and high-density student housing contribute to highly walkable areas in North and Central Oakland. Fifth and Forbes Avenue(s) are busy commercial corridors with significant pedestrian traffic, and McKee Place, Atwood Street, Bouquet Street, and Meyran Avenue serve as key pedestrian connectors between Fifth and Forbes and Central Oakland. However, pedestrian conditions and topography are not consistent throughout the neighborhood, and walkability and connectivity are major issues in certain areas. For example, in South Oakland, the neighborhood is at a lower elevation than surrounding areas and is closed off by the surrounding interstate highway to the south and Boulevard of the Allies to the north. Boulevard of the Allies was highlighted as a wide, high speed facility that is uncomfortable for people walking. Additional key pedestrian gaps in Greater Oakland’s pedestrian network include the following locations:

- Missing sidewalk connections crossing east and west of Boundary Street along the rail tracks in South Oakland where pedestrians want to access Schenley Park and the various trails through the area
- East to west sidewalk connections which would cross over Boulevard of the Allies and I-376
- Missing sidewalk connections along Bates Street
- Inadequate pedestrian crossing facilities at Zulema Street to Bates Street; Coltart Avenue; Childs at Swinburne Street

Pedestrian access to public transit is also uneven throughout Greater Oakland. Many of the transit routes are located on Fifth and Forbes Avenue(s), including the proposed BRT, which is over a mile from parts of South Oakland. This distance, combined with steep topography, creates a challenging environment for South Oakland residents to walk to transit. Figure 12 summarizes the existing pedestrian network, gaps, ADA challenges, and critical city steps in Greater Oakland.

SIDEWALKS
Sidewalks in Greater Oakland are generally in fair to good repair; however, sidewalk width varies, and vertical separation is common due to settling, erosion, vehicular parking and tree roots. The curb condition also varies significantly, often in relationship to the condition of the sidewalk. Whether it is in its original condition or has been repaired or replaced at some interval. Where the curb is granite, the wear and tear are less significant, but the height and angle has shifted due to vehicles parking and erosion. Where sidewalks have a verge between the sidewalk and the back of curb, the condition of the verge also varies. Some verges exist as grass and weeds, some have been paved over, some have been infilled with stone or brick. This verge area serves as an uneven gap between the sidewalk and the curb, and combined with sidewalk and curb conditions, creates ADA accessibility challenges throughout Greater Oakland. In particular, ADA challenges were highlighted on the Boulevard of the Allies, Fifth and Forbes Avenue(s), Craig Street, and Dithridge Street due to steep topography, narrow sidewalks, and poor sidewalk condition.
Figure 12 Existing Pedestrian Network + Gaps

SIDEWALK GAP ANALYSIS

- Rail
- Contours
- Park/Open Space
- Greater Oakland

Legend:
- City Steps
- Walking Gaps
- ADA Challenges
- High (>25%) Slope

Map showing existing pedestrian network and gaps with symbols indicating rail, contours, and other features.
Pedestrian connectivity in Greater Oakland is impeded by the neighborhood’s narrow sidewalks, obstructions to sidewalks, and gaps in the sidewalk network. Narrow sidewalks, vertical utility structure obstructions, and inadequate sidewalk conditions exist along Fifth and Forbes Avenue(s), Halket Street, and Ohara Street in Central Oakland. Narrow sidewalks and vertical utility structure obstructions exist along N Craig Street, a principal and minor arterial corridor, and Dithridge Street located in North Oakland. Although Fifth Avenue will be redesigned as part of the BRT project, the sidewalks are planned to remain in their current condition. Due to the narrow street width, where parking is permitted on both sides of the street, vehicles are often parked on top of the curb and sidewalk. This condition is most prevalent where the curb has subsided or deteriorated to the extent that it is not a parking deterrent. Sidewalk gaps also appear where buildings have been demolished. This scenario is likely because it is the property owner’s responsibility to repair and maintain the sidewalk surrounding the property and permits are required. If the property is abandoned, the responsible party does not exist, and the sidewalk falls into disrepair. Common sidewalk condition issues throughout Greater Oakland are summarized in Figure 13.

**Figure 13 Common Sidewalk Issues**

![Common Sidewalk Issues](image)

**CITY STEPS**

City steps are a well recorded feature of the Pittsburgh landscape. There are 29 sets of City maintained steps in Greater Oakland that are integrated with the sidewalk network. These steps help pedestrian traverse the steep terrain in the neighborhood, and it is not unusual to reach a point along a vehicular street and find that it has transitioned into a set of pedestrian steps. The conditions of the city steps vary as funding for repairing the steps is limited. Many locations have vegetation overgrowing the steps, railings are rusty and/or broken, and the steps themselves have cracks. Figure 14 shows examples of existing city steps conditions in Greater Oakland.

The locations of some of Greater Oakland’s city steps provide the only way to traverse between key areas (e.g., Central Oakland to Panther Hollow, South Oakland to and Bates Street), making it even more critical that those steps are in good condition. In a 2017 study, the City rated the importance of all city steps according to access to transit schools and destinations, surrounding population, and density of steps. Many of Greater Oakland’s steps were rated 9 out of 10 or higher on the rating scale, including the following locations (also shown on Figure 12):

- A cluster of three staircases in North Oakland at University Drive, Allequippa Street, and Iowa Street
- Louisa Street from Coltart Avenue to McKee Place in Central Oakland
- Group of staircases around Bates Street at Romeo and Frazier Streets in South Oakland. The City has allocated $300,000 of the FY2020 budget to fix the steps, which will improve a critical connection between South Oakland and Bates Street/Southside.
Summary of Findings
Based on the analysis and feedback from neighborhood stakeholders, key issues and opportunities in Greater Oakland were identified for the active transportation and micromobility topic area.
Figure 15 displays a summary map of the active transportation and micromobility issues and opportunities, and a summary list is below.

**EXISTING BICYCLE NETWORK + CONNECTIVITY**

- There are significant gaps in Greater Oakland’s bicycle network, and two potential connectors – Bates Street and Boulevard of the Allies - are identified as Cautionary Bike Routes where biking is uncomfortable and feels dangerous for most users.
- There is no continuous, comfortable bike route in the north-south direction through the neighborhood nor is there an easily accessible connection to either of the two trails within the neighborhood.
- Key destinations such as the commercial areas in central and north Oakland, Downtown Pittsburgh, and Schenley Park are not easily accessible by bike.
- Residential areas in South Oakland, the western edge of West Oakland, and North Oakland north of Centre Avenue have virtually no dedicated bicycle facilities, making it difficult for residents to travel by bike.
- In South Oakland, there are several key gaps in the bicycle network, including between Schenley Park and the Fifth/Forbes corridor and Bates Street. Community feedback indicated a desire for comfortable facilities on Joncaire and Bouquet Streets as a possibility to fill this gap.
- Lack of connectivity to existing trails in Panther Hollow and the Three Rivers Heritage Trail
- The O’Hara Street bike lane was identified as a location with bike challenges.
Figure 15 Summary Map of Active Transportation and Micromobility Issues and Opportunities

Oakland Action Team Meeting 2 Comments

Active Transportation and Micromobility

- Green: Rail
- Blue: City Steps
- Gray: Contours
- Green: Park/Open Space
- Red: Greater Oakland
- Orange: Bike Challenges
- Pink: Missing Multimodal Connections
- Teal: Pedestrian Crossing Challenge
- Yellow: Key City Steps
- Gray: Pedestrian and ADA Challenges
- Blue: Pedestrian Activity
- Dark Purple: Disconnected Streets
- Light Blue: Need for Bike/Ped Improvement

Narrow sidewalks

Key pedestrian connector streets

Disconnected bicycle network

Connect open spaces with safe routes
POTENTIAL BICYCLE CONNECTIONS

- Locations identified as priorities by BikePGH:
  - Boulevard of the Allies/Halkett Street from Schenley Park to Fifth Avenue
  - Bates Street from Boulevard of the Allies to 2nd Street
  - Extension of Junction Hollow Trail along the rail line from its current end south of Bouquet Street to just south of Forbes Avenue where the rail crosses Neville Street
  - N Neville Street from Fifth Avenue to Forbes Avenue
  - Roberto Clemente Drive from Schenley Drive to S Bouquet Drive
  - The loop created by Darragh, Terrace, and Desoto Streets

- Improving accessibility on McKee Place, Atwood Street, and Bouquet Street would make it easier for people biking to access the main transit corridor on Fifth and Forbes Avenue(s)

- Facilities on Joncaire and Bouquet Streets would help provide access from Schenley Park to Fifth and Forbes Avenue(s)

EXISTING PEDESTRIAN NETWORK + CONNECTIVITY

- Pedestrian conditions and topography are not consistent throughout the neighborhood, and walkability and connectivity are major issues

- Improving accessibility on McKee Place, Atwood Street, Bouquet Street, and Meyran Street would make it easier for people walking to access the main transit corridor on Fifth and Forbes Avenue(s)

- Boulevard of the Allies is a wide, high speed facility that is uncomfortable for people walking.

- Missing sidewalk connections:
  - Crossing east and west of Boundary Street along the rail tracks,
  - East to west sidewalk connections which would cross over Boulevard of the Allies and I-376
  - Along Bates Street

- Inadequate pedestrian crossing facilities at Zulema Street to Bates Street; Coltart Avenue; Childs at Swinburne Street

- Sidewalks in Greater Oakland are generally in fair to good repair; however, sidewalk width varies, and vertical separation is common due to settling, erosion, vehicular parking and tree roots

- ADA challenges on many streets including Boulevard of the Allies, Fifth and Forbes Avenue(s), Craig Street, and Dithridge Street due to steep topography, narrow sidewalks, and poor sidewalk condition

- Multimodal upgrades to key city steps are needed to increase neighborhood connectivity
TRANSIT ACCESSIBILITY

The transit network in Greater Oakland serves a range of riders and provides both private and public services. Transit service plays a critical role in transporting residents, employees, students, and visitors to, from, and throughout the neighborhood on a daily basis. Approximately 19,000 people use transit daily to travel to, from, and through Greater Oakland. Greater Oakland has the second-highest transit ridership by neighborhood in Pittsburgh. The Port Authority of Allegheny County (PAAC) public bus service provides express, corridor, rapid, and local bus service throughout the neighborhood. Bus Rapid Transit (BRT) is planned along the Fifth and Forbes Avenue(s) corridor, which will further expand the transit network. In addition to PAAC transit service, the University of Pittsburgh (Pitt) and Carnegie Mellon University (CMU) offer private shuttle services to transport staff, visitors, and students. Figure 16 displays existing and future public transit services provided within Greater Oakland.

PAAC Bus Routes

Figure 16 displays the twenty-three bus routes that traverse Greater Oakland, three of which are commuter routes that transport riders longer distances to Squirrel Hill, the Airport, and eastern neighborhoods and suburbs. Nearly all routes operate daily and provide local service. The typical peak headway ranges from 15 to 30 minutes, except for Route P3 (6-8 minute headways) and Route 81 (35 minute headways). Bus routes currently operate alongside traffic throughout Greater Oakland, with no access to dedicated right-of-way, which can cause conflicts with vehicular traffic at intersections along Fifth and Forbes Avenue(s). Due to vehicular traffic during peak hours, bus service has reliability challenges, especially along Boulevard of the Allies, Neville Street, and S Craig Street. Additionally, buses have turning conflicts at several intersections throughout the study area, often due to narrow streets and on-street parking.

Most bus routes in Greater Oakland, regardless of origin, are concentrated along Fifth and Forbes Avenue(s); up to 18 bus routes use stops along these corridors. Other than the Fifth and Forbes Avenue(s) bus routes, there are limited bus routes in other areas of Greater Oakland. PAAC provides service in West Oakland to the Oakland Hill Apartments and Pitt. In North Oakland, PAAC routes travel along Craig Street and provide access to Oakland Catholic High School and retail and commercial activities. Lastly, in South Oakland PAAC routes travel along Boulevard of the Allies through Schenley Park.
Figure 16 Existing Public Transit Service
Public Transit Amenities

Bus stop facilities, amenities, and rider waiting conditions vary throughout the neighborhood. Despite heavy transit ridership, 85% of the bus stops in Greater Oakland lack bus shelters. Many bus stops lack amenities and provide only a bus stop sign, shown in Figure 17. Along Fifth and Forbes Avenue(s), the lack of transit amenities is due to the limited sidewalk space and right-of-way to accommodate bus shelters. Some bus stops provide shelters, benches, lighting, garbage cans, and other amenities, as shown on Craft Avenue in Figure 18. The bus stops without shelters often lack seating and an alternative form of shade and cover from rain or snow. Boulevard of the Allies is another corridor with limited bus stop infrastructure. The lack of station amenities, such as benches, shelter, wayfinding, and lighting creates uncomfortable waiting conditions for riders.

During the working sessions, stakeholders emphasized the importance of bus stop amenities. Bus stop amenities improve comfort for transit riders, especially those with physical challenges. Bus stop amenities show an investment in transit and can encourage increased ridership. Stakeholders mentioned that Greater Oakland has limited places to purchase transit fares and lacks adequate wayfinding. These challenges may discourage new users from taking transit.

Figure 17: Port Authority Bus Stop on Forbes Avenue at Atwood Street

Figure 18: Port Authority Bus Stop on Craft Avenue
Public Transit Ridership
Transit ridership varies throughout the neighborhood, with the majority of PAAC transit trips occurring along Fifth Avenue, and Forbes Avenue to a lesser extent. All ten of the highest ridership bus stops are along the Fifth and Forbes Avenue(s) corridors, as indicated on Figure 16. This is likely due to the high density of job and institutional land uses along these corridors and the multiple bus routes that serve those stops. Transit stop ridership does not correlate with station amenities, as six out of the ten stops with highest transit ridership lack shelters. In addition, stakeholder feedback indicated challenges to accessing bus stops by crossing Fifth and Forbes Avenue(s).

South Oakland’s main bus routes along Boulevard of the Allies have significantly lower ridership rates, in part due to the low frequency of the routes and the unpredictability of the service. Other low ridership routes include routes that run along Baum Boulevard, North Craig Street (North of Centre Avenue), Allequippa Street, and Terrace Street. These routes generally run through hilly terrain and may be challenging for some riders to access. Bus stops along Allequippa Street are more spaced out than along Fifth and Forbes Avenue(s). Riders with physical, casual, or cognitive impairments may have trouble accessing the bus in areas of Greater Oakland that are hilly, have deteriorating city steps, and limited sidewalks.

Public Transit Network Gaps
Many residents rely on public transit service to navigate throughout Greater Oakland. However, during feedback sessions with local stakeholders, several gaps in the public transit network emerged. Stakeholders identified the following public transit system and network gaps:

- Limited north-south connections
- Lack of bus stops and signage throughout Schenley Park
- Limited bus service in South Oakland
- Lack of station amenities and uncomfortable waiting conditions on Boulevard of the Allies
- Bus reliability challenges on Boulevard of the Allies and South Neville Street
- Desire for a bus stop at Craft Avenue and Boulevard of the Allies
- Lack of transit on Junction Hollow
- Lack of bus stops and signage throughout Schenley Park

Future Bus Rapid Transit (BRT)
Bus Rapid Transit (BRT) will be implemented during the next two years on Fifth and Forbes Avenue(s), as shown in Figure 16. BRT will work towards achieving goals to improve public transit travel time and capacity. Additionally, BRT plans will bring station amenities upgrades and streetscape enhancements, including street trees, curb extensions, and improved pedestrian buffers. The Oakland 2025 Master Plan recommends creating “mobility hubs” at key BRT stations with integrated car sharing, secure bicycle parking, and commuter intercept parking to serve as modern “park and rides. Local stakeholders identified potential connections to the proposed BRT network, including S Bouquet Street, Atwood Street, and Meyran Avenue. These streets intersect with Fifth Avenue and Forbes Avenue and provide key connections to Bates Street.

Private Transit (Private Shuttle Services)
In addition to public transit services offered by PAAC, Pitt and CMU offer private shuttle services to students, employees, and faculty. The private shuttle services run routes along many residential streets throughout Greater Oakland but provide limited access and are not available to the general public. Stakeholders recommend either offering private shuttle services to the general public or converting private shuttle routes to public transit routes, in an effort to expand and combine the neighborhood’s transit network. Table 3 summarizes the Pitt private shuttles routes provided in Greater Oakland. The public and private transit routes are somewhat redundant, as shown in Figure 19, with multiple services (PAAC, Pitt Shuttle, and CMU Shuttle) running along the Fifth and Forbes Avenue(s) corridor.

Kittelson & Associates, Inc.
Figure 19 Private Transit Service

EXISTING PRIVATE SHUTTLE SERVICES

- City Steps
- Rail
- Contours
- Park/Open Space
- Greater Oakland

UPitt Shuttle Routes
1-15 Min Headway
15 Min Headway
30 Min Headway
CMU Shuttle Route (30-45 min headways)
Public Transit Routes
Table 3. Private Shuttle Service in Greater Oakland

<table>
<thead>
<tr>
<th>Route</th>
<th>Route Name</th>
<th>Streets</th>
<th>Service</th>
<th>Weekday Headway (Weekend Headway)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10A</td>
<td>Upper Campus</td>
<td>Centre/Craig</td>
<td>Daily</td>
<td>1-15 minutes (15-30 minutes)</td>
</tr>
<tr>
<td>10B</td>
<td>Upper Campus</td>
<td>Petersen Events</td>
<td>Weekdays</td>
<td>30 minutes</td>
</tr>
<tr>
<td>15A</td>
<td>OC Lot</td>
<td>Fifth/Bigelow</td>
<td>Weekdays (no midday)</td>
<td>15 minutes</td>
</tr>
<tr>
<td>20A</td>
<td>North Oakland</td>
<td>Centre</td>
<td>Daily</td>
<td>30 minutes</td>
</tr>
<tr>
<td>20B</td>
<td>North Oakland</td>
<td>Morewood/Centre</td>
<td>Weekdays</td>
<td>30 minutes</td>
</tr>
<tr>
<td>30A</td>
<td>South Oakland</td>
<td>Meyran/Dawson</td>
<td>Weekdays</td>
<td>30 minutes</td>
</tr>
<tr>
<td>30B</td>
<td>South Oakland</td>
<td>Dawson/Mcpee</td>
<td>Weekdays (no midday)</td>
<td>30 minutes</td>
</tr>
<tr>
<td>30C</td>
<td>South Oakland</td>
<td>Kennett</td>
<td>Daily</td>
<td>30 minutes</td>
</tr>
<tr>
<td>40A</td>
<td>Biotech Center</td>
<td>Bates/Kennett</td>
<td>Weekdays</td>
<td>30-60 minutes</td>
</tr>
</tbody>
</table>

Pitt offers additional Chatham University shuttle services, including the Oakland Shuttle and Eastside Shuttle. Additionally, Pitt offers the SafeRider shuttle services, which provides on-call drivers who can help when special, nonemergency situations arise for Pitt students, faculty, and staff.

Carnegie Mellon University students are charged a Port Authority Fee each semester, which provides full unlimited access to the public transit system. In addition, Carnegie Mellon operates a shuttle service daily during the regular academic terms from 6:45 am to 10:45 pm between campus and nearby off-campus locations. Carnegie Mellon also offers an escort service, which operates from 6:30 pm to 6:30 am throughout Greater Oakland, Shadyside, and Squirrel Hill. The escort service provides overnight transportation and runs approximately every 30 minutes.

Summary of Findings
Based on the analysis and feedback from neighborhood stakeholders, key issues and opportunities in Greater Oakland were identified for the transit accessibility topic area. Figure 20 displays a summary map of the transit accessibility issues and opportunities, and a summary list is below.

PAAC BUS ROUTES
- Most bus routes in Greater Oakland are concentrated along Fifth Avenue and Forbes Avenue.
- Due to vehicular traffic during peak hours, bus service has reliability challenges, especially along Boulevard of the Allies, Neville Street, and S Craig Street.
- Buses have turning conflicts at several intersections throughout the study area, often due to narrow streets and on-street parking.

PUBLIC TRANSIT AMENITIES
- There are limited bus stop amenities, uncomfortable waiting areas, and long wait times for bus service along Boulevard of the Allies.
- Need for improved bus stop wayfinding.
Figure 20 Summary Map of Transit Issues and Opportunities

Oakland Action Team Meeting 3 Comments

Transit Accessibility
- Rail
- City Steps
- Contours
- Park/Open Space
- Greater Oakland
- Transit Not Feasible
- High Ridership
- Bus Reliability Challenges
- Uncomfortable Waiting Area
- Transit User Crossing Challenge
- Desired Bus Stop Location
- Bus Turning Conflict
- Multimodal Connections to BRT

General Comments:
- Bus stop spacing should accommodate those with physical challenges
- More bus stops; Improved location, signage, and wayfinding
- Limited places to purchase transit fares
- Buses generally go where people need to go

Consider allowing resident access on Pitt shuttles to access Fifth/Forbes

Limited north-south connections

Lack of transit in Junction Hollow; Repurpose freight rail to transit?

Lack of bus stops and signage throughout the park

Limited bus service in South Oakland; No transit within walking distance

Kittelson & Associates, Inc.
PUBLIC TRANSIT RIDERSHIP
- The highest ridership routes are concentrated on Fifth Avenue and Forbes Avenue.
- Transit users experience crossing challenges at several locations on Fifth Avenue and Forbes Avenue.
- South Oakland’s main bus routes along Boulevard of the Allies have significantly lower ridership rates, in part due to the low frequency of the routes and the unpredictability of the service.
- Other low ridership routes include routes that run along Baum Boulevard, North Craig Street (North of Centre Avenue), Allequippa Street, and Terrace Street.
  - These routes generally run through hilly terrain and may be challenging for some riders to access.
  - Bus stops along Allequippa Street are more spaced out than along Fifth Avenue and Forbes Avenue.
  - Riders with physical, casual, or cognitive impairments may have trouble accessing the bus in areas of Greater Oakland that are hilly, have deteriorating city steps, and limited sidewalks.

PUBLIC TRANSIT NETWORK GAPS
- Limited north-south connections
- Lack of bus stops and signage throughout Schenley Park
- Limited bus service in South Oakland
- Lack of station amenities and uncomfortable waiting conditions on Boulevard of the Allies
- Bus reliability challenges on Boulevard of the Allies and South Neville Street
- Desire for a bus stop at Craft Avenue and Boulevard of the Allies
- Lack of transit on Junction Hollow
- Lack of bus stops and signage throughout Schenley Park

FUTURE BUS RAPID TRANSIT (BRT)
- Bus Rapid Transit (BRT) will be implemented during the next two years on Fifth and Forbes Avenue(s) and will also bring station amenities upgrades and streetscape enhancements
- The Oakland 2025 Master Plan recommends “mobility hubs” at key BRT stations with integrated car sharing, secure bicycle parking, and commuter intercept parking to serve as modern “park and rides.”
- South Bouquet Street, Atwood Street, and Meyran Avenue may serve as connections to future BRT.

PRIVATE TRANSIT (PRIVATE SHUTTLE SERVICE)
- The public and private transit routes are somewhat redundant, with multiple services (PAAC, Pitt Shuttle, and CMU Shuttle) running along the Fifth Avenue and Forbes Avenue corridor.
- Private shuttles should consider expanding service to non-employees and non-students or convert private shuttle routes to public transit routes, in an effort to expand and combine the neighborhood’s transit network.
NETWORK TRAVEL PATTERNS AND TRANSPORTATION DEMAND MANAGEMENT

Due to Greater Oakland’s status in the region as a job center, it sees a significant influx of non-residents that travel into the neighborhood for work on a daily basis. A reliance on single occupancy vehicles for many of these trips leads to high traffic volumes and congestion on the neighborhood’s streets and high demand for parking, both on-street and in surface parking lots and garages.

Vehicular Network Patterns

Figure 21 shows the existing street network with Average Annual Daily Traffic (AADT) from PennDOT along with neighborhood access points and commuting patterns. As shown on the map, there is a limited number of major roadways that provide access to Greater Oakland, including Bigelow Boulevard to the north, Fifth and Forbes Avenue(s) in West and North Oakland, and Boulevard of the Allies and Bates Street/I-376 in South Oakland.

Fifth and Forbes Avenue(s) serve as the only north-south connectors that cut through the entire neighborhood. No other streets provide that full connection, and the one-way directionality of Fifth and Forbes can cause network connectivity issues where areas of the neighborhood to only be accessible by one route. Boulevard of the Allies provides a full east-west connection through South Oakland and connects to Schenley Park; as a result, it is often used for cut-through traffic moving through the neighborhood. Craig Street and Bigelow Boulevard serve as the main roadways for travel through North Oakland, while Gold Way and Melwood Avenue present wayfinding challenges and are confusing streets for drivers.

Lastly, Bates Street connects to I-376 in South Oakland and serves as a southern gateway to Greater Oakland. All of these roadways are classified as principal arterials for at least some portion; however they vary in their typical cross-section. Fifth Avenue, Forbes Avenue, and Boulevard of the Allies have two or more travel lanes per direction. Conversely, Craig Street, Bigelow Boulevard, and Bates Street typically have narrower cross-sections with only one travel lane per direction and on-street parking on both sides.

Due to the limited number of entry points into the neighborhood, those entry points often see significant congestion during peak travel times as people are entering and leaving the neighborhood. As an example, Bates Street backs up in the northbound direction in the morning from the I-376 on ramp, and it backs up southbound in the evening for commuters trying to access I-376. Drivers often use parallel streets to avoid this congestion, causing heavy volumes and unsafe movements on neighborhood streets.
Figure 21 Vehicular Network Patterns

VEHICULAR NETWORK PATTERNS

- Rail
- Contours
- Park/Open Space
- Greater Oakland
- City Steps
- High Volume Streets (### - AADT)
- Main Access Points
- Key One-Way Streets

Map showing vehicular network patterns with various symbols and labels.
Commuting Patterns

Greater Oakland is a key employment center for the City of Pittsburgh due to the high concentration of universities and hospitals. Travel and parking needs are different for commuters versus residents. Longitudinal Employer-Household Dynamics (LEHD) and StreetLight data were evaluated to observe commuting patterns to/from and within Greater Oakland. StreetLight is an on-demand mobility analytics platform that uses data from mobile devices to determine origins and destinations, routes, and travel times.

Figure 22 shows the inflow and outflow of workers throughout Greater Oakland. Of the 57,926 total jobs in Oakland, 99% of the workers live outside of Greater Oakland and commute into the neighborhood. 3,545 (81%) of the residents of Greater Oakland work outside of the neighborhood and only 816 (1% of workers, 19% of residents) live and work in Greater Oakland. Figure 23 and Figure 24 show the geographical distribution for workers and residents in Greater Oakland, respectively. As shown in Figure 23 most employees who work in Greater Oakland live within a 10-mile radius of the neighborhood and primarily live north and east of Greater Oakland. Figure 24 shows where people who live in Greater Oakland go to for work, a large share of Greater Oakland residents work in areas west of Greater Oakland, which includes downtown Pittsburgh, and east of Greater Oakland, which includes the neighborhoods of Bloomfield and Shadyside, and extends to the Pittsburgh suburbs. These patterns show that people who commute to Greater Oakland are generally coming from all directions, while neighborhood residents who commute to outside of Greater Oakland are generally heading west towards downtown or east towards nearby suburbs.
Figure 23 Distance and Direction for Employees in Greater Oakland

Figure 24 Distance and Direction for Residents in Greater Oakland
In addition to the LEHD analysis, StreetLight data were evaluated to understand commuting patterns along specific roadways through Greater Oakland. Table 4 shows the top five streets with the highest share of trips that end in Greater Oakland. Forbes Avenue is a key connector for people traveling to Greater Oakland as it has the highest share of trips in the weekday morning and weekday evening and has more than double the share of trips as the second highest street. Centre Avenue, Bates Street, Bigelow Boulevard, Boulevard of the Allies, and Fifth Street all have similar shares of trips with each other and between the morning and evening. These findings support the LEHD analysis and suggest that majority of the trips to and from Greater Oakland are in the east/west direction. Further, these findings are consistent with community feedback indicating a perception of a large portion of high-speed cut-through and commuter traffic on Boulevard of the Allies.

### Table 4 Streets with Highest Share of Trips Morning and Evening

<table>
<thead>
<tr>
<th>Top 5 Streets with Highest Share of Trips that end in Greater Oakland – Morning (7am – 10am)</th>
<th>Top 5 Streets with Highest Share of Trips that end in Greater Oakland – Evening (3pm – 6pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forbes Avenue – 22%</td>
<td>Forbes Avenue – 16%</td>
</tr>
<tr>
<td>Centre Avenue – 9%</td>
<td>Centre Avenue – 7%</td>
</tr>
<tr>
<td>Boulevard of the Allies – 7%</td>
<td>Bates Street – 7%</td>
</tr>
<tr>
<td>Bates Street – 7%</td>
<td>Fifth Avenue – 5%</td>
</tr>
<tr>
<td>Bigelow Boulevard – 6%</td>
<td>Bigelow Boulevard – 4%</td>
</tr>
</tbody>
</table>

### Parking and Curbside Management

In Greater Oakland there are concerns with high parking demand and limited parking supply. Figure 26 shows the different types of existing parking facilities in Greater Oakland. There are numerous public and limited access parking lots and garages. These facilities are concentrated near key destinations such as UPMC and the Pitt and CMU Campuses. However, to avoid parking fees, many people who travel to Greater Oakland for work try to park on the unregulated residential streets. While there are residential parking permit areas, they are mostly concentrated in Central and South Oakland, and exclude many residential streets. Furthermore, there is a lack consistency in the enforcement of the permit, resulting in non-residents using these streets. This reduces the available on-street parking for residents. Concerns about high parking demand are concentrated in Central Oakland near the UPMC campus and along Frazier Street in South Oakland. There are reports of hospital staff parking on residential streets to avoid paying for hospital parking. The parking problem is particularly noticeable when Pitt and CMU are in session and students living in group homes in Central and South Oakland create additional parking demand. Along the curbside, stakeholders have indicated a lack of commercial loading zones and pick-up/drop-off locations on Fifth and Forbes Avenue(s) in Central Oakland.
Figure 26 Existing Parking Facilities
Summary of Findings
Based on the analysis and feedback from neighborhood stakeholders, key issues and opportunities in Greater Oakland were identified for the network travel patterns and transportation demand management topic area. Figure 27 displays a summary map of the network travel patterns and transportation demand management issues and opportunities, and a summary list is below.

VEHICULAR NETWORK PATTERNS
- There are limited access points into the neighborhood, and subsequent congestion on those routes, including Bigelow Boulevard to the north, Fifth and Forbes Avenue(s) in West and North Oakland, and Boulevard of the Allies and Bates Street/I-376 in South Oakland.
- One-way directionality of Fifth and Forbes Avenue(s) leads to isolated areas of the neighborhood.
- Craig Street and Bigelow Boulevard serve as the main roadways for travel through North Oakland, while Gold Way and Melwood Avenue present wayfinding challenges and are confusing streets for drivers.

COMMUTING PATTERNS
- Most employees who work in Greater Oakland live within a 10-mile radius of the neighborhood and primarily live north and east of Greater Oakland.
- Vehicle commute trips travel to/from Greater Oakland along Forbes Avenue, Centre Avenue, Boulevard of the Allies, Bates Street, and Bigelow Boulevard.
- The community perception is that there is high-speed cut-through and commuter traffic on Boulevard of the Allies.

PARKING AND CURBSIDE MANAGEMENT
- Concerns about high parking demand are concentrated in Central Oakland near the UPMC campus and along Frazier Street in South Oakland.
- Enforcement of RPP zones is inconsistent, and community reports of hospital employees commuting by vehicle and utilizing neighborhood parking, along with students creating additional parking demand when Pitt and CMU are in session.
- There is a lack of commercial loading zones and pick-up/drop-off locations on Fifth and Forbes Avenue(s) in Central Oakland.
Figure 27 Summary Map of Network Travel Patterns and TDM Issues and Opportunities

Oakland Action Team Meeting 3 Comments

Network Travel Patterns and Transportation Demand Management

- Rail
- City Steps
- Contours
- Park/Open Space
- Greater Oakland
- Missing Street Connection
- Wayfinding Challenges
- Commercial Loading Challenge

General Comments:
- Limited residential parking
- One-way streets are confusing
- Limited loading zones
- Lack of pick-up/drop-off locations
- Lack of parking enforcement
- Parking on sidewalks
- Hospital staff are parking in the neighborhoods, increasing the demand for on-street parking

Trucks not allowed through Schenley Park