



# Innovation Oakland

Direction  
Information  
Destination

io

PITTSBURGH  
PENNSYLVANIA

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PHOTOGRAPH OF OAKLAND BY RICK ARMSTRONG

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SECTION **A** EXECUTIVE SUMMARY

INNOVATION OAKLAND IS A TECHNOLOGY-BASED APPROACH TO NEIGHBORHOOD TRANSFORMATION. IT INTRODUCES NEW WAYS OF THINKING ABOUT HOW COMMUNITY ASSETS, PUBLIC SPACES AND COMMERCIAL CORRIDORS CONTRIBUTE TOWARDS THE ECONOMIC PROSPERITY OF OAKLAND AND OF GREATER WESTERN PENNSYLVANIA. FUELED BY STATE OF THE ART TECHNOLOGIES, INNOVATION OAKLAND WILL COMBINE ART, DESIGN, PLACE MAKING AND WAYFINDING SOLUTIONS TO CREATE NEW INTERACTIVE PUBLIC DESTINATIONS FOR THE USE AND PLEASURE OF RESIDENTS, EMPLOYEES, STUDENTS AND VISITORS FROM AROUND THE COUNTRY AND THE WORLD.

## Innovation Oakland

Oakland is the third largest business district in Pennsylvania. Its assets include three universities, five hospitals, two museums, a panoply of smaller institutions, two commercial districts, four neighborhoods and over 40 acres of open green space in addition to the adjacent 450-acre Schenley Park. With its unmatched research base and medical concentration, Oakland is the driver of the regional economy. Every day 100,000 people arrive in Oakland to work, study or visit. Furthermore, almost half of its residents are between the age of 20 and 34. This density and combination of attributes lends Oakland a vibrancy that is unmatched in the region.

Innovation Oakland is a technology-based approach to neighborhood transformation, introducing new ways of thinking about how community assets, public spaces and commercial corridors contribute towards the economic prosperity of Oakland and of the greater Western Pennsylvania region. Its objective is to provide direction, information, and destination.

The major recommendation of this report is to use technology to deliver a physical and digital network of iconic wayfinding and artistic environments that include public spaces, websites, mobile phone apps, digital art installations, games and transportation infrastructure.

This integrated analog and digital wayfinding initiative aims to create a sense of place in Oakland, to improve navigation and wayfinding, to stimulate neighborhood and business revitalization, and to foster and celebrate the technological development that is happening now in Oakland's research institutions and commercial ventures.



### Project Sponsor and Research Team

Innovation Oakland is a community-wide infrastructure initiative of the Oakland Task Force (OTF) in partnership with the Oakland Business Improvement District (OBID), Carlow University, Carnegie Mellon University, University of Pittsburgh Medical Center (UPMC), and the University of Pittsburgh. The OTF, comprised of over thirty Oakland institutions, universities, hospitals, community groups, business groups, and public agencies, is the sponsor of the project. OBID, a non-profit member of OTF, was designated by the OTF to be the lead agency for Innovation Oakland.

OBID contracted with the Remaking Cities Institute (RCI) of Carnegie Mellon University (CMU) for research and proof of concept for a wayfinding strategy. The CMU team included an interdisciplinary collection of faculty, researchers and graduate students from the RCI, School of Design, School of Architecture, Heinz College, Department of Electrical and Computer Engineering (ECE), CyLab Mobility and Entertainment Technology Center (ETC).

### Project Funders

- » Carlow University
- » Carnegie Mellon University
- » Oakland Business Improvement District
- » UPMC
- » University of Pittsburgh
- » CMU Traffic21 Initiative
- » Richard King Mellon Foundation

### Project Process

The overall process for Innovation Oakland includes the following four phases:

- » Phase I: Database, Analysis and Benchmarking
- » Phase II: Preliminary Design and Proof of Concept
- » Phase III: Final Design and Prototype Testing
- » Phase IV: Fabrication and Installation

With this report, the Remaking Cities Institute completes Phases I and II. The OTF and OBID will contract with private design consultants and vendors for Phases III and IV.

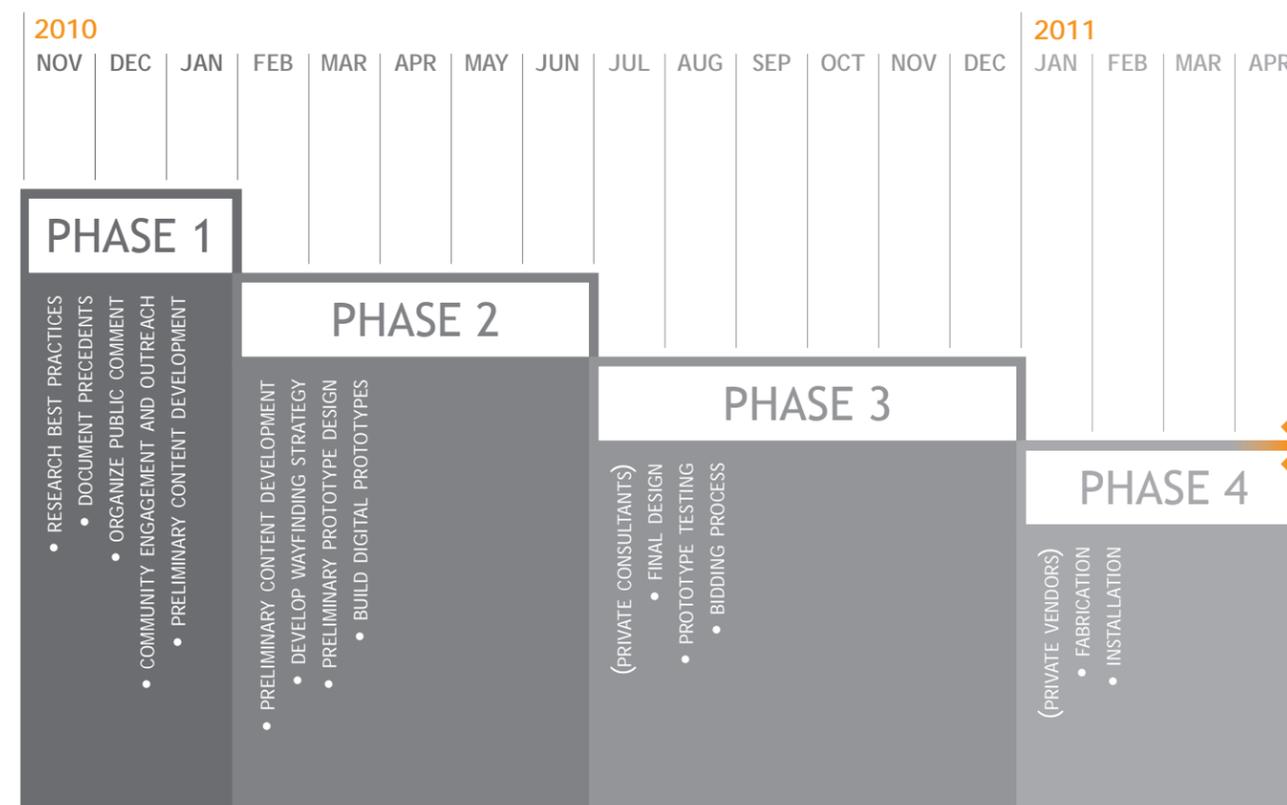
### Outcomes

This report documents research into existing conditions in Oakland and Pittsburgh; international benchmarking of best practices in wayfinding, public art and digital technology; design exploration; and recommendations in the following areas:

- » Analog and digital signage
- » Portal and gateway treatments
- » Information installations
- » Public art/digital interactive art
- » Spatial arrangement within Oakland of physical Information and art installations
- » Web-based applications for kiosks/smart phones
- » Transportation, particularly the use of real-time data for transit, parking and traffic management
- » Technology-enabled tours and games

All of these elements are presented as an integrated system that will provide visitors, employees and locals with a single-source of information about Oakland deployed through a variety of analog and digital applications.

Expanding the use of digital technologies throughout the public realm of Oakland is seen as the starting point for a similar initiative for the entire City of Pittsburgh. Establishing Innovation Oakland will provide the foundation for further expansion and will help support the growth of a digitally literate society while providing a critical update to the Pittsburgh Region's brand in the post-industrial economy.



# EXECUTIVE SUMMARY

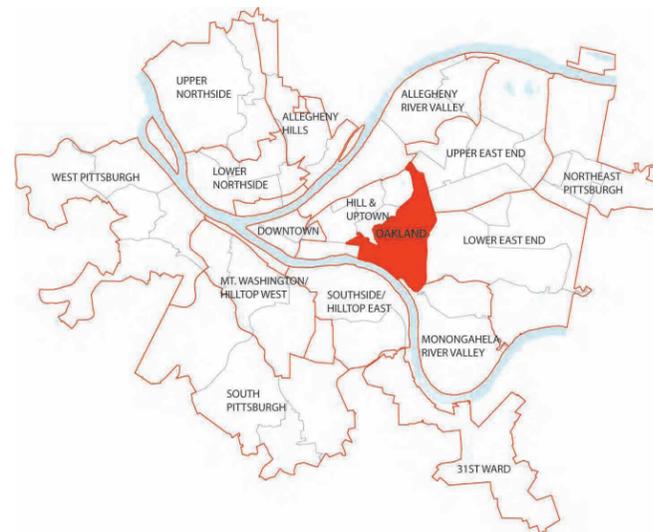
INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Wayfinding

Wayfinding is the process of using sensory cues from one's surroundings to navigate space (in the context of this project, urban space), and to find one's way to and between destinations using different modes of transportation. People find their way around cities using visual, audible, tactile and even olfactory cues. Visual cues can include building types, density and styles; open space and path types; landmarks; and of course, wayfinding signs and other graphic communication meant to help with navigation.

Modern wayfinding signage programs use a "sign family," a collection of different signs that share a graphic style to indicate identification, direction and regulation. Cities have their own signage programs, as do many sub-districts, such as institutions and business districts. More and more, people are using GPS-based mapping application on mobile devices in order to help situate and navigate their environments.

A wayfinding program can not only help people get around, it can be an opportunity to highlight certain assets and to convey a message about the location. In this sense, Innovation Oakland is as concerned with place making as it is with navigation.

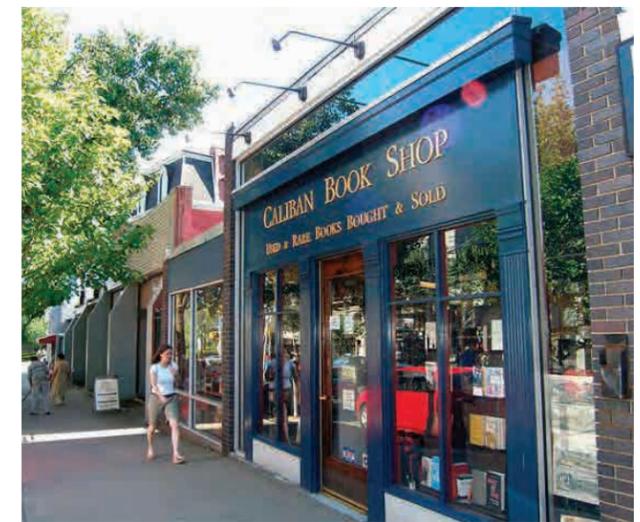


## Existing Conditions

A wayfinding program requires a thorough understanding of a place's assets and troubled areas. Analysis was performed using both user information derived from a public outreach process, through site observation and by overlaying physical, infrastructure, demographic, economic and cultural information on maps.

Some salient facts about Oakland:

- It is located high on a bluff above the Monongahela River, three miles from Downtown Pittsburgh and 21 miles from the Pittsburgh International Airport
- It is the region's second largest employment and commercial center, after Downtown Pittsburgh, with more than 38,000 jobs
- With its diverse research base, it is considered the key to the region's future economic prosperity
- It has a daytime weekday population of 100,000, in addition to 20,000 residents
- Two-thirds of the jobs in Oakland are in the educational, health and social services sector
- Oakland's density is twice that of Pittsburgh as a whole
- Nearly half of residents are between the ages of 20 and 34
- Oakland is the region's "global village": A quarter of students are international, in addition to international faculty and researchers
- Oakland's core includes 40 acres of open green space in addition to the 450-acre adjacent Schenley Park
- Oakland has four neighborhoods, including a historic residential district, Schenley Farms
- Oakland's museums, library and other cultural amenities attract more than 1 million people annually
- Oakland has 29 pieces of public art (including Carnegie Mellon University's campus)
- Oakland's "spine", Forbes Avenue and Fifth Avenue, each average around 13,000 vehicles per day
- The Port Authority of Allegheny County (PAT) estimates that over 60,000 bus riders pass through Oakland on a given weekday, with 23,000 embarking or disembarking in Oakland
- There is direct bus service to the Pittsburgh International Airport, and to 70 municipalities with 370,000 residents
- There are over 10,000 parking spaces in Oakland
- One of Pittsburgh's most iconic landmarks, the 535-foot Cathedral of Learning, is located in Oakland
- There are nearly two dozen free Wi-Fi HotSpots and HotZones, including Schenley Park



### Benchmarking

As part of the research process, we assessed the state-of-the-art practices in wayfinding signage, gateway and portal treatments, digital districts, public art, transportation, personal electronics and Smartphone apps, and kiosks.

Highlights of the benchmarking section include:

- » Bristol Legible City's wayfinding program, which addressed identity, information and transportation through a complete overhaul of the city's wayfinding infrastructure, and ultimately became the basis for the Walkable London wayfinding program
- » Digital Mile, Zaragoza, Spain, a mile-long mixed-use technology and digital arts corridor that has set a new standard for comprehensive digital public infrastructure public art works, such as Crown Fountain, Pulse Park and SpacePlace, that use web-based data and mobile device technologies to engage the public
- » Artistic interventions on building facades and public infrastructure that create unique places, including digital screens, lighting art works, murals and green walls
- » Ways in which GPS, sensors, Wi-Fi, the Internet and hand-held personal electronic devices are providing real-time data regarding public transit service, parking, traffic, car-sharing, and bike-sharing in cities like Paris, Montreal, Singapore, San Francisco and Pittsburgh
- » The latest in spatially-based Smartphone applications, including the locally-developed iBurgh mobile 311 system that uses GPS and crowd-sourced information to address complaints more efficiently



### Public Outreach

Focus groups were convened during the Fall of 2009 to obtain a range of perspectives regarding the strengths, weaknesses and opportunities related to wayfinding in Oakland, as well as other private, institutional and public sector projects that might be relevant.

The focus groups were:

- » City Agencies/Local Advocacy Groups
- » University Students
- » OBID Staff and OTF Members
- » Technical Advisory Group
- » Faculty and Staff
- » UPMC Visitors Group
- » Oakland residents



A public meeting was held in Oakland in January 2010.

Participants were asked:

1. The Good: What is Working for Wayfinding and Access in Oakland?
2. The Bad: What is NOT Working for Wayfinding and Access in Oakland?
3. Big Ideas: Ways to Improve Wayfinding and Access in Oakland

Simultaneously, a 10-question online survey collected responses from 629 individuals. A second public meeting testing the preliminary recommendations was held in June 2010.



### Recommendations

Innovation Oakland is a wayfinding system for visitors, workers, students and shoppers, providing:

- » Direction
- » Information
- » Destination

Eight guiding themes for Innovation Oakland emerged during the research and proof of concept phases. These themes are woven throughout the recommendations:

- » Technologically Innovative
- » Artistic
- » Sustainable
- » Accessible to All
- » Easy and Fun
- » Accurate and Updated
- » Adaptable
- » Replicable

The Innovation Oakland recommendations for placemaking and wayfinding are collected in eight interrelated categories:

### 1. Remove the Clutter

Two options are proposed:

- » Create a clean slate by removing all signs
- » Aggregate signs and work within the system

Oakland decision-makers should keep abreast of the Market Based Revenue Opportunities (MBRO) initiative currently being investigated by the city administration. MBRO sells corporate naming rights to objects in the public realm, increasing visual clutter through additional messaging.

### 2. Improve Signage

Oakland should establish an Oakland-specific sign family that would include gateway structures, pedestrian wayfinding poles and a unifying pylon that could be interactive. Analog and digital components should share the same graphic design language.

### 3. Define Entrances

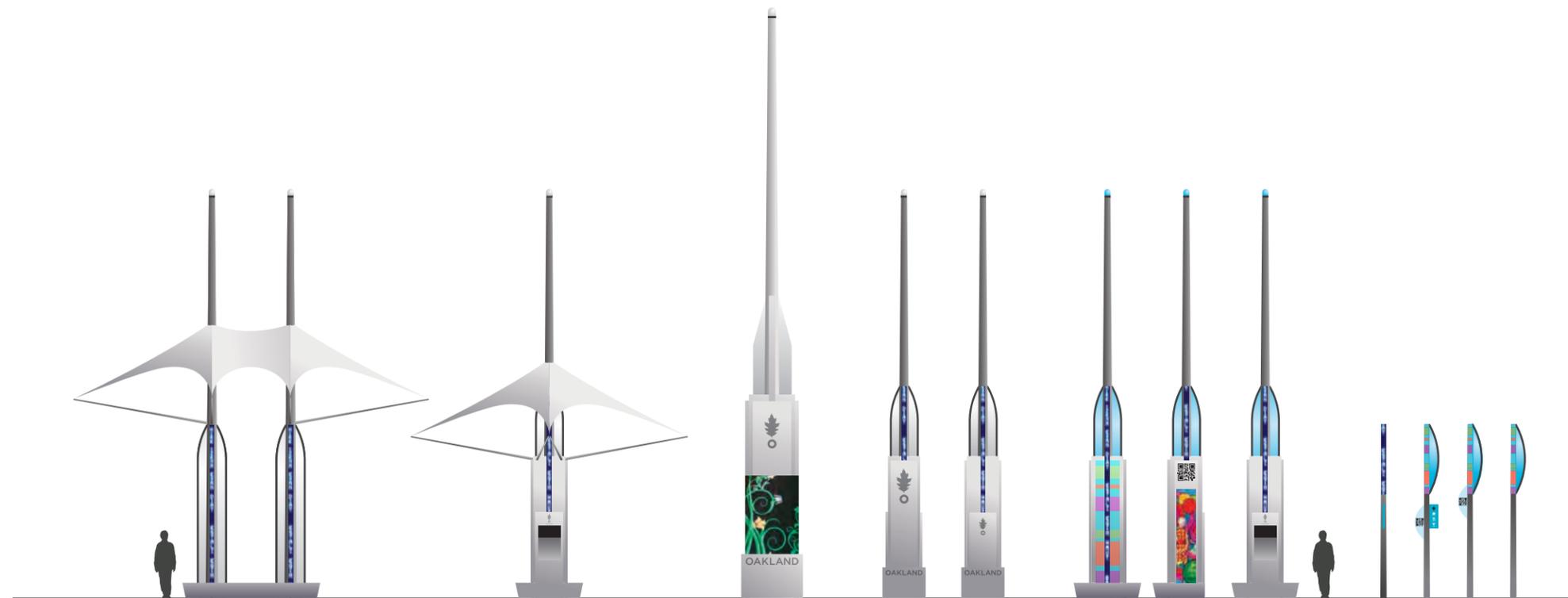
Mark Oakland's main gateways—Boulevard of the Allies, Bigelow Boulevard and Bates Street—with unique entry signs or vertical signs that both inform visitors and convey Oakland's brand. Minor gateways and portals, including high volume bus stops, should also have gateway signage.

### 4. Celebrate Streets

Architectural and spatial typologies are an important factor in wayfinding. Emphasizing the character of Oakland's different streetscapes, through urban design guidelines covering building setbacks, landscaping and street furniture, can help visitors with navigation. Fifth-Forbes Corridor, Boulevard of the Allies, Craig Street, the side streets connecting Fifth and Forbes, the roads ringing the open green spaces in Oakland's Civic Center, Atwood Street, the two smaller neighborhood commercial districts in South-Central Oakland and alleyways are identified as unique streetscape types.

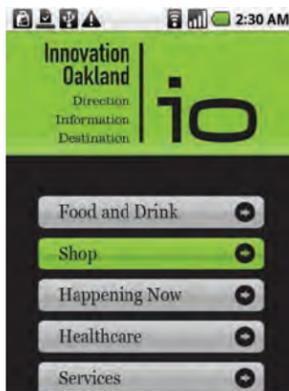
### 5. Create an Iconic Network

The iconic network is a system of recognizable wayfinding and artistic installations located in the public right-of-way, in institutional lobbies and on building facades. The system's elements perform a wayfinding function while being a draw in its own right. The installations feature a combination of static, web-based and digital real-time information, and/or public art in the form of a central, cultural information art hub, digital art screens, interactive street pylons, enhanced bus stops, and informational signs.



## EXECUTIVE SUMMARY

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### 6. Optimize Technology

Innovation Oakland recommends the use of wireless Internet, mobile, interactive and sensor technologies as broadly as possible. Specific recommendations are for an iO Mobile App, iO Kiosk and iO Website. Preliminary prototypes of the app and kiosk have been created and tested. The app, kiosk and website share the same graphic language and web-based information, and be universally accessible.

It is also suggested that free Wi-Fi be expanded across Oakland, in private businesses, in all public spaces, via enhanced Wi-Fi bus stops and on PAT buses.



### 8. Promote Play

Oakland can encourage three particular trends in play-oriented technological applications:

- » Technology-based travel information and tours, using mobile phones, GPS, QR codes and augmented reality
- » Geocaching and waymarking, with a GPS-device lending program operated in partnership with the Carnegie Library of Pittsburgh
- » Interactive digital public art, temporary or permanent, in partnership with regional technology firms, artists and art programs

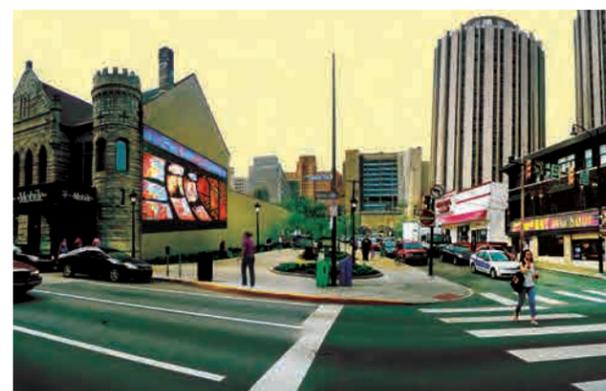
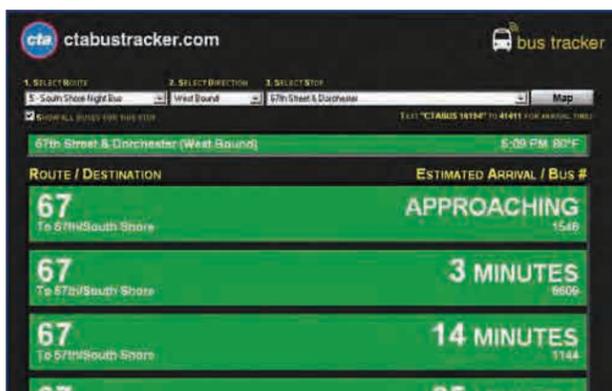
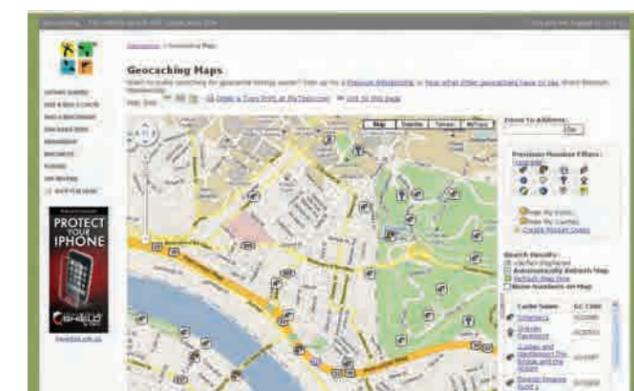
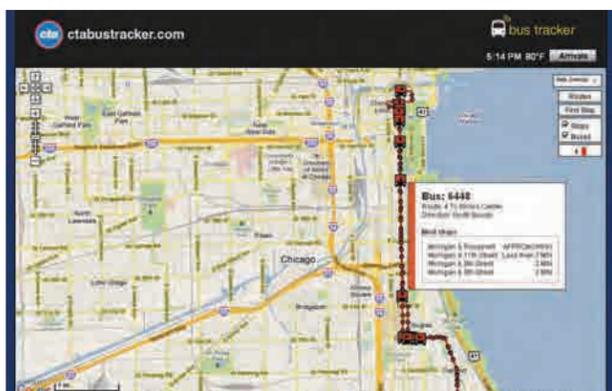


### 7. Optimize Transportation

Transportation is a key piece of the wayfinding system. The recommendations focus on ways in which the different modes of transportation used in Oakland—car, bus, bike and foot/wheelchair—can be enhanced, particularly through the use of GPS technology, personal electronics and real-time information. Large parking garages and lots, and high-capacity bus stops are also identified as important portals and decision-points into Oakland. Transportation infrastructure should include features that can be used by the sight- and hearing-impaired.

The major recommendations are:

- » Provide real-time arrival information for buses, displayed at bus stops, available online, via SMS and Smartphones apps
- » Enhanced bus stops at high volume locations featuring Wi-Fi, the iO Kiosk, maps and shelter
- » Install a Smart Parking system for public parking in Oakland, with real-time parking information displayed on street signs and via the iO Website and iO App
- » Encourage cycling, car-sharing and Smart Navigation by providing information through the various iO channels



SECTION **B** **BACKGROUND**

OAKLAND IS THE THIRD LARGEST BUSINESS DISTRICT IN PENNSYLVANIA AFTER CENTER CITY PHILADELPHIA AND DOWNTOWN PITTSBURGH. IT IS HOME TO THREE UNIVERSITIES, FIVE HOSPITALS, TWO MUSEUMS, AND MANY SMALLER INSTITUTIONS. OAKLAND, WITH ITS UNMATCHED RESEARCH BASE AND MEDICAL CONCENTRATION, IS THE DRIVER OF THE REGIONAL ECONOMY. EVERY DAY 100,000 PEOPLE ARRIVE IN OAKLAND TO WORK, STUDY, VISIT ONE OF THE INSTITUTIONS, SHOP AND DINE. OVER 25% OF VISITORS ARRIVE BY PUBLIC TRANSIT.

## Why Oakland?

Oakland is the third largest business district in Pennsylvania after Center City Philadelphia and Downtown Pittsburgh. It is home to three universities, five hospitals, two museums, and many smaller institutions. Oakland, with its unmatched research base and medical concentration, is the driver of the regional economy. Every day 100,000 people arrive in Oakland to work, study, visit one of the institutions, shop, and dine. Over one quarter of visitors arrive by public transit.

In November 2002 the Oakland community prepared *The Future of Oakland: A Community Investment Strategy*. Four consensus initiatives were agreed upon:

- » Create a Sense of Place in Oakland
- » Make it Easier to Get Into and Around in Oakland
- » Stimulate Neighborhood Revitalization
- » Foster Technology Development

This project, Innovation Oakland, tackles and combines all of these initiatives.

Addressing the wayfinding needs of Oakland requires a far-reaching vision to match the activities and research of its institutions that are shaping the future of the world. In order to keep and retain the talent that fuels these activities and in order to attract new resources to expand and consolidate innovative activities, Oakland must develop a world class public realm and state of the art wayfinding mechanisms that are not only functional, but are also, in themselves, creative and iconic in how they represent the assets of the community and symbolize the “sparks of genius” behind new ideas.

## An Overview: Innovation Oakland

Innovation Oakland is a wayfinding strategy and system for Oakland, the world renowned university and hospital district of Pittsburgh. It not only will provide “direction, information, and destination,” but will also demonstrate and celebrate the integration of leading edge technology, design, and public art. Innovation Oakland will be the prototype for place-based wayfinding systems worldwide. The technology and techniques developed for Innovation Oakland will create economic development and jobs in the Southwestern Pennsylvania region.

Innovation Oakland, spanning four square miles of pedestrian-packed environments with multiple bus lines, extensive parking, and a heavily used traffic network, will re-conceptualize information flows in the urban environment. Solutions will include analog signage, digital kiosks with interactive LED touch screen displays and web-based data, and wireless data delivery to hand held digital devices and remote computers. Innovation Oakland will highlight Oakland’s unique assets while providing critical information such as real-time public transportation schedules, parking availability and locations, ZipCar locations and availability, bike rack locations, community events, hospital facilities, museum exhibits, and locations and descriptions of the many restaurants, retail, and service businesses. Innovation Oakland will be user-friendly, engaging and informing residents, workers, students, faculty, researchers, and visitors.

## Project Sponsor & Lead Agency

The Oakland Task Force (OTF), comprised of over thirty Oakland institutions, universities, hospitals, community groups, business groups, and public agencies, including the Port Authority of Allegheny County and the Pittsburgh Parking Authority, is the sponsor of the project.

The Oakland Business and Improvement District (OBID), a non-profit member of OTF, was designated by the OTF to be the lead agency for Innovation Oakland.

**Project Funders** are OTF members Carlow University, Carnegie Mellon University, Oakland Business Improvement District, UPMC and the University of Pittsburgh, the CMU Traffic21 Initiative and Richard King Mellon Foundation.

## Research Team

OBID contracted with the Remaking Cities Institute (RCI) of Carnegie Mellon University (CMU) for research and proof of concept for a wayfinding strategy. The CMU team included the following CMU key staff plus assistance from other CMU faculty, researchers, and graduate students:

- » Donald K. Carter  
RCI, Director
- » Elise Gatti  
RCI, Research Associate
- » Joshua Welsh  
School of Design, Adjunct Professor
- » Christine Brill  
School of Architecture, Adjunct Professor
- » Robert Hampshire  
Heinz College, Assistant Professor
- » Priya Narasimhan  
Department of Electrical and Computer Engineering (ECE) and CyLab Mobility, Associate Professor
- » Rajeev Gandhi  
Department of Electrical and Computer Engineering (ECE) and Information Networking Institute, Systems Professor
- » Mk Haley  
Entertainment Technology Center (ETC),  
Associate Executive Producer

In addition, OBID contracted separately with the Entertainment Technology Center (ETC) of CMU to design and construct a free standing information kiosk featuring digital technology. The prototype kiosk design process was concurrent with the Innovation Oakland wayfinding strategy process, allowing the RCI and ETC teams to coordinate and collaborate throughout. The kiosk design was thus an important part of developing an overall wayfinding strategy and is integrated in several of the solutions. The kiosk design team was made up of ETC graduate students, Katie Smith (Manager), Andrew Edwards, Brent Elmer and Beom Sik Kim, and advised by Mk Haley.

# OVERVIEW

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

SECTION **C** **PROCESS**

ADDRESSING THE WAYFINDING NEEDS OF OAKLAND REQUIRES A FAR-REACHING VISION TO MATCH THE ACTIVITIES AND RESEARCH OF ITS WORLD RENOWNED INSTITUTIONS THAT ARE HELPING TO SHAPE OUR FUTURE. IN ORDER TO KEEP AND RETAIN THE TALENT THAT FUELS THESE ACTIVITIES AND TO ATTRACT NEW RESOURCES TO EXPAND AND CONSOLIDATE INNOVATIVE ACTIVITIES, OAKLAND MUST DEVELOP A WORLD CLASS PUBLIC REALM. HELPING TO GUIDE PEOPLE THROUGHOUT THIS REALM WILL BE STATE OF THE ART WAYFINDING MECHANISMS THAT ARE NOT ONLY FUNCTIONAL, BUT ARE ALSO CREATIVE AND ICONIC IN HOW THEY REPRESENT THE ASSETS OF THE COMMUNITY AND SYMBOLIZE THE “SPARKS OF GENIUS” BEHIND NEW IDEAS.

## Objectives

A primary goal of Innovation Oakland is to demonstrate and showcase Oakland as an international destination and a magnet for technology, research, art, culture, entertainment, and economic vitality.

The Innovation Oakland wayfinding system will support that goal by:

- » making it easier to identify and find businesses, services, amenities, cultural attractions, and educational and medical institutions
- » making real-time transit, parking, and traffic information available
- » coordinating public and private intelligent transportation and information systems
- » breaking down the barriers between the community and the campuses
- » encouraging innovation, creative thinking, and research and development
- » developing new technology companies and jobs for the 21st century
- » training and utilizing local talent
- » creating opportunities to showcase public art and advanced technology

## Process

The overall process for Innovation Oakland includes the following four phases:

- » Phase I: Data Base, Analysis, and Benchmarking (Nov 2009 – Jan 2010)
- » Phase II: Preliminary Design and Proof of Concept (Feb 2010 – Jun 2010)
- » Phase III: Final Design and Prototype Testing (2010)
- » Phase IV: Fabrication and Installation (2011)

The Remaking Cities Institute (RCI) of Carnegie Mellon University (CMU) took the research lead in Phases I and II. The Oakland Task Force and the Oakland Business Improvement District will contract with private design consultants and vendors for Phases III and IV.

The process for Phases I and II was collaborative and participatory with the Project Committee who met periodically with the research team. In addition there was public outreach to the Oakland community with seven focus group meetings and two public meetings.

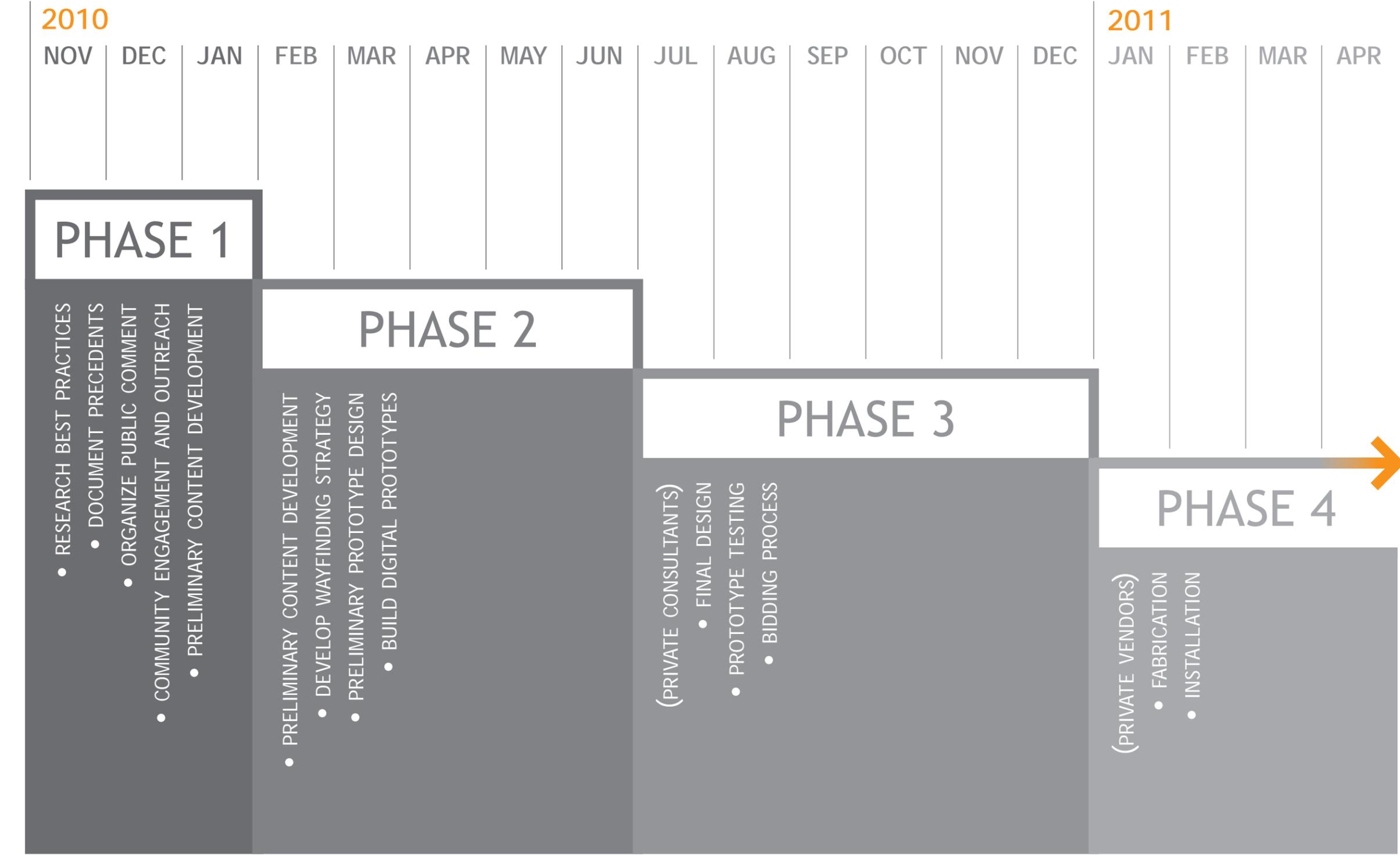
## Outcomes

This report documents research, benchmarking, design exploration, and recommendations in the following areas:

- » analog and digital signage guidelines
- » portals and gateways
- » information hubs
- » tours and games
- » public art
- » public kiosk
- » smart phone applications
- » web-based information systems for Oakland
- » real-time transportation data (transit, parking, traffic)
- » location, services, and hours of businesses and institutions

Section E (Research) documents this wayfinding research, including Oakland base data from the physical analysis and the public outreach. There is also a summary of the benchmarking of best international practices in wayfinding, signage, digital technology, and public art.

The heart of the report is Section F (Recommendations). The report concludes with Section G (Implementation). The Appendix includes technical reports and other supporting material.



# PROCESS

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SECTION **D** WAYFINDING 101

INNOVATION OAKLAND WILL BE A WAYFINDING SYSTEM THAT NOT ONLY PROVIDES “DIRECTION, INFORMATION, AND DESTINATION,” BUT ALSO WILL DEMONSTRATE AND CELEBRATE THE INTEGRATION OF LEADING EDGE TECHNOLOGY, DESIGN, AND PUBLIC ART. INNOVATION OAKLAND AIMS TO SET THE BAR HIGHER AND BE THE PROTOTYPE FOR PLACE-BASED WAYFINDING SYSTEMS WORLDWIDE.

## Wayfinding 101

Signs are a succinct graphic representation of information. They are used as a means to an end to provide messaging to people where it might not otherwise be readily available. Wayfinding is the result of using such information to help people appropriately navigate, learn, and act while existing in a particular space. The most direct physical manifestation of wayfinding is in signs. Signs, whether they are geared towards identification, direction, or regulation, offer concise information to help people quickly learn and make decisions.

Wayfinding, however, does not necessarily source its messaging primarily from signs. For instance, a church with its tall belfry, standing alone in a countryside, does not necessarily require a sign to denote its function. Furthermore with other instances, visual, tactile, and spatial information can be provided to a visitor of an interior or exterior space by many other means. Besides signs, such things as landmarks, word of mouth, and various art and technologies can be equally effective to help people learn information, navigate a space, and locate a destination. Together, these elements can help to create vibrant pedestrian-oriented spaces where visitors and residents can navigate around with ease.

Innovation Oakland uses every means by which Pittsburghers and its visitors can accomplish effective wayfinding and establishes a connected system that provides Direction, Information, and Destination to all those who visit this dynamic neighborhood. Innovation Oakland will augment the sense of place that currently exists by fostering greater awareness, participation, and sense of community. At present, there are several projects throughout the world that seamlessly integrate technology into an individual element of wayfinding. However, Innovation Oakland aims to be the first to successfully integrate new technologies throughout each element of its interconnected wayfinding strategy.



VIEW OF THE NEIGHBORHOOD'S PRIMARY LANDMARK, THE CATHEDRAL OF LEARNING, FROM SOUTH OAKLAND



VIEW OF FORBES AVENUE CORRIDOR

## WHAT IS WAYFINDING?

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



EXISTING "PITTSBURGH WAYFINDER" DIRECTIONAL SIGN



EXISTING PENNDOT HIGHWAY DIRECTIONAL SIGN



EXISTING CITY OF PITTSBURGH STREET SIGNS



Wayfinding in the 20th century has relied primarily upon the use of analog signs—physical signage with static messaging. As towns and cities have grown, so has the quantity and types of signs needed to provide regulatory information and direct people at decision points and to destinations. Relying primarily upon this type of system results in such problems of outdated messaging and an increase in visual signage clutter.

Where residents of other cities, devoid of the topographical challenges that exist in Pittsburgh, might provide directions by counting blocks or streetlights, or naming street intersections, Pittsburghers often use a different system. Such techniques might play a role, but where they fall short, the use of landmarks to aid in wayfinding works well and is part of the local cultural tradition. As an example, here might be a statement from a native Pittsburgher, spoken in the native dialect:

"To git to da Strip from da Sauthside, yinz need to head dahn Carson twerds Station Squere, turn right ontta da Smithfeld Street Bridge, turn right at da end and head through sev'rel lights. Once yinz see da new Greyhawnd Station, you can turn left, then right ontta Smallmen by da Convention Center..."

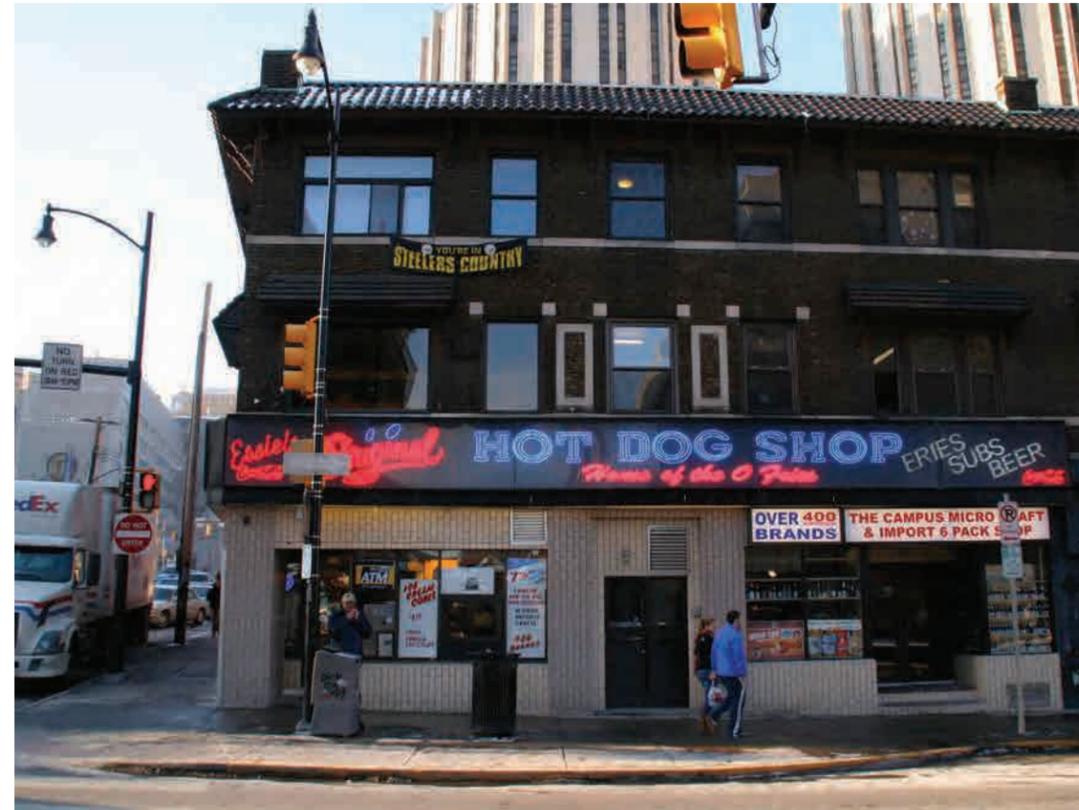
Due primarily to its hilly landscape, the City of Pittsburgh and its surrounding communities can be challenging to navigate. Furthermore, one cannot always rely upon word of mouth to get around. The peaks and valleys and converging rivers interrupt a network of scattered numbered street grids, can prove to be counterintuitive, and make navigating this city quite the learning experience. In the pedestrian-packed four square miles of Oakland alone, there are over thirty different sign types, several institutional signage standards and hundreds of unique signs. This is the result of years of relying only upon the outdated system of wayfinding in the 20th century.

Innovation Oakland will provide a comprehensive and fully-accessible system that utilizes both traditional analog format of the 20th Century with the various digital and wireless formats of the 21st century.

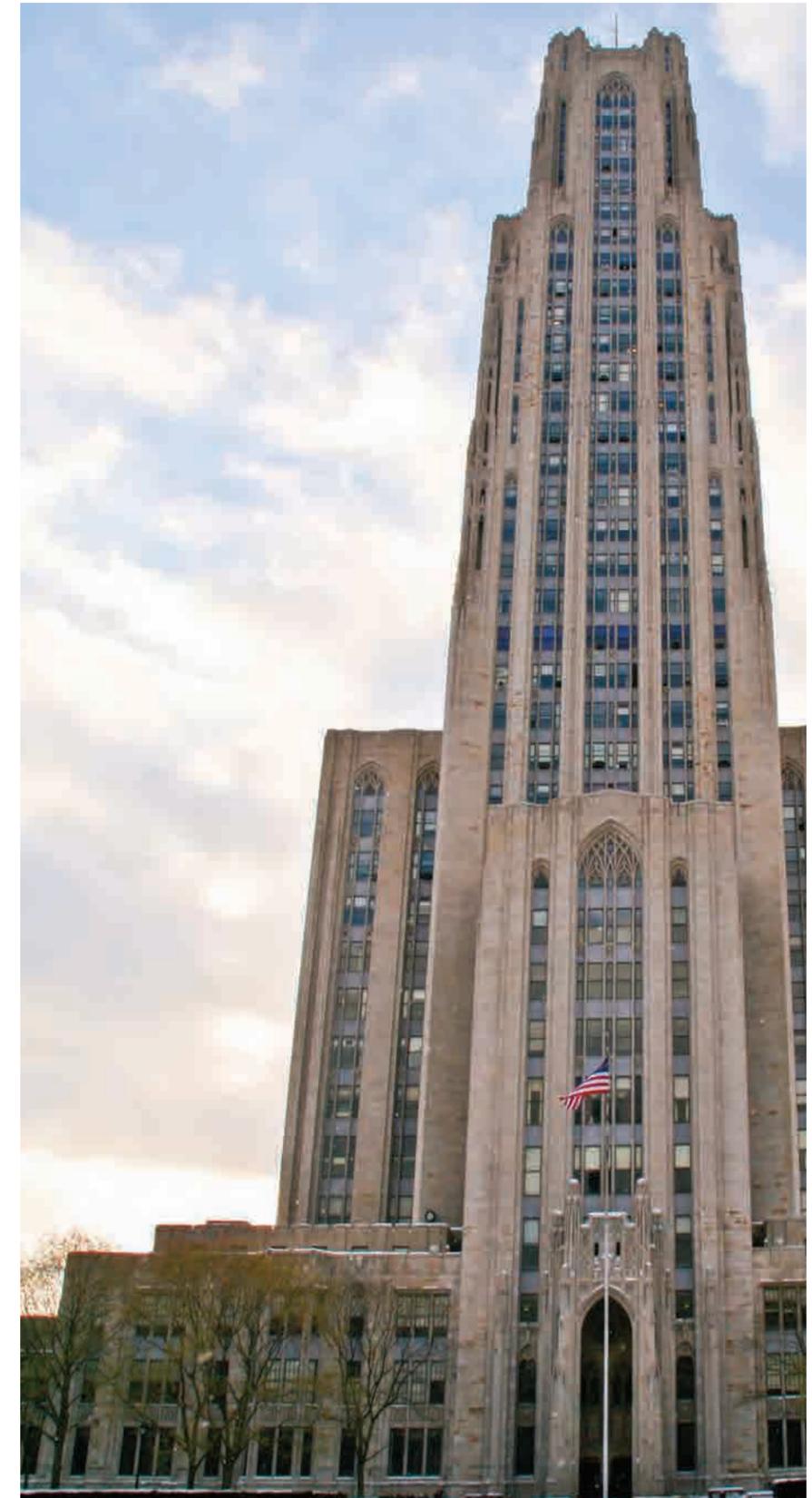
Access to new technology infrastructure has become as essential as water, sewer, transportation, and electricity services in creating healthy and successful communities of the 21st century. Invention and innovation are at the core of the activities of successful communities. Having the ability for communities to embrace and integrate emerging and effective technologies will enhance the competitive edge of inventive and innovative cities like Pittsburgh.

Oakland is often referred to as the “second downtown” of Pittsburgh. It is located just a few miles southwest of the downtown core, is situated atop a plateau of sorts, between two tall hills, and is defined by two primary one-way roads known as the Fifth-Forbes Corridor. Branching off Fifth Avenue and Forbes Avenue is a grid of secondary streets that bring visitors into the various hospital, educational, cultural, and residential districts of the neighborhood. Where wayfinding based in navigating a street grid falls short throughout other areas of Pittsburgh, aspects of it work well in Oakland. To supplement the grid and its named and numbered street signs, wayfinding is aided by prominent landmarks, as exemplified by the towering Cathedral of Learning or the cultural fixture—Original Hotdog Shop—known simply as “The O.” Innovation Oakland will build upon this.

Oakland is urban. As part this distinction, it is built with a high density of buildings, many of which are several stories tall and block the fields of view of pedestrians. Without a guide or word of mouth to help them, visitors often have trouble determining where to go or how to get there. The connected system established by Innovation Oakland will enable visitors to take advantage of local wayfinding techniques while providing those needing additional help with other methods championed by various technologies. Expanding the use of digital technologies throughout the public realm of Oakland is seen as the starting point for the entire city. Establishing this access will provide the foundation for further expansion and will help support the growth of a digitally literate society throughout the city and beyond.



RESTAURANTS AS LANDMARKS



THE CATHEDRAL OF LEARNING, OAKLAND'S PRIMARY LANDMARK

## WAYFINDING IN THE 21<sup>ST</sup> CENTURY

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

SECTION **E** RESEARCH

LOCATED IN THE HEART OF PITTSBURGH, ON A BLUFF HIGH ABOVE THE MONONGAHELA RIVER, OAKLAND IS AT THE EPICENTER OF THE REGION'S DIVERSIFIED ECONOMY AND IS THE KEY TO ITS FUTURE PROSPERITY. IT IS HOME TO MAJOR RESEARCH UNIVERSITIES AND TEACHING HOSPITALS, IMPORTANT CULTURAL AMENITIES, LARGE AND SMALL PARKS, AND QUAIN RESIDENTIAL NEIGHBORHOODS. THE COMBINATION OF DENSITY, YOUTH, CULTURE AND TECHNOLOGICAL RESEARCH LENDS OAKLAND A VIBRANCY THAT IS UNMATCHED THROUGHOUT THE REGION.

SECTION **E** **RESEARCH**  
1. EXISTING CONDITIONS

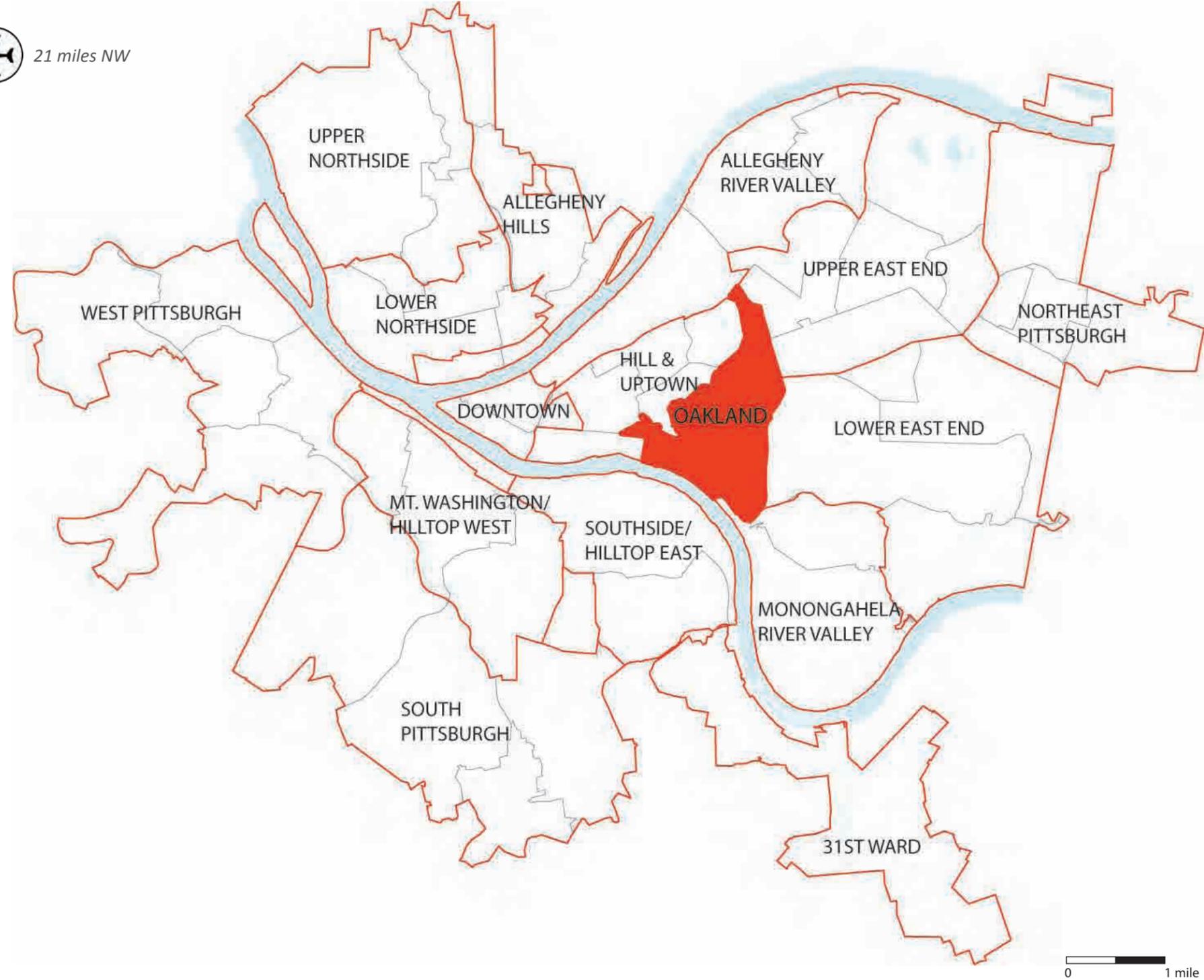
## Oakland: At the Center of it All

Oakland is located on a bluff above the Monongahela River in the heart of Pittsburgh, three miles from Downtown Pittsburgh and 21 miles from the Pittsburgh International Airport. As the home of Pittsburgh's largest research universities and teaching hospital network, it is considered the key to the region's future economic prosperity. The presence of the Carnegie Cultural Complex, comprised of two museums, a music hall and the central library, also makes Oakland an important cultural hub.

Oakland is the region's second largest employment and commercial center, after Downtown Pittsburgh, with more than 38,000 jobs and 100,000 daily visitors in addition to 20,000 residents. Two-thirds of the jobs in Oakland are in the educational, health and social services sectors.

Oakland covers four square miles. During the past few decades since the decline of the local steel industry, it has not suffered from the same population loss as the rest of the city, in part because of its large revolving student population. In spite of the presence of large institutions and substantial open greenspace, Oakland has a gross density of 12,788 persons per square mile (20 persons per gross acre), more than twice the density of the City of Pittsburgh. Half of its residents are between the ages of 20 and 34, compared to 25 percent for Pittsburgh.

This combination of density, youth, culture and technological research lends Oakland a vibrancy that is unmatched throughout the region.



### LEGEND

- PLANPGH SNAP SECTORS
- CITY NEIGHBORHOODS

PITTSBURGH, PENNSYLVANIA

## Oakland

Oakland is a “global village”. It is the region’s most international district, with more than 5,500 international students (2008-2009), in addition to international researchers and visitors. Yet it retains a local flavor with its cozy residential streets and small-scale commercial districts. Additionally, it has a significant number of heritage buildings, both institutional and residential, and ample green space.

Oakland’s strongest connections are with the adjacent neighborhoods of Squirrel Hill and Shadyside to the east. Both neighborhoods have strong residential markets and successful neighborhood commercial districts. Both are easily and quickly accessible to Oakland via Fifth and Forbes Avenues, either by car, bus or bike.

Topography prevents easy access to the Hill District to the northwest and to the South Side to the south, although the latter is quickly accessed by bicycle though a trail in Junction Hollow and a new pedestrian/cyclist path that spans the Monongahela River alongside the Hot Metal Bridge. The South Side features the successful SouthSide Works mixed-use brownfield redevelopment. The Hill District is a neighborhood in distress that is currently undergoing a long-term community revitalization planning process.

Half of Oakland’s eastern edge is bordered by a National Historic District and the 450-acre Schenley Park, the city’s second largest park.

### LEGEND

- PARKS
- WOODED AREAS
- STUDY AREA



STUDY AREA

## OAKLAND CONTEXT

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Determining “Who”

Oakland is best known as a university and research district, as well as a shopping and cultural destination. However it is also a place of residence, with an estimated population of nearly 20,000 in 2008. This figure represents a decrease of 4 percent between 2000 and 2008.

Demographically, Pittsburgh is an aging city. However, almost half of Oakland’s residents are between the ages of 20 and 34 (compared to 25 percent city-wide). This high proportion of youth is the direct result of the presence of the three Oakland universities, Carlow University, University of Pittsburgh and Carnegie Mellon University.

Almost 40 percent of resident have an income that is under the poverty line, which was defined in 2009 as \$11,161 for a single person under the age of 65, and \$21,756 for a family of two adults with two children under the age of 18.

Almost a quarter of residents over the age of 25 have a postgraduate degree, compared to 13 percent in Pittsburgh, with the highest concentration living in North Oakland, where the median income is \$53,991 versus the overall median of \$33,841 for Oakland.

Oakland has a higher percentage of renter-occupied housing units (69 percent) than the city (48 percent), and a higher ratio of apartment buildings, boosting the residential density to more than twice that of Pittsburgh. Oakland’s 8,754 housing units are spread out over 4 square miles, with an average gross density of 5,836 units per square mile. Cambridge, MA, a city with a comparably strong university/ research presence, has 6,957 units per square mile.

Oakland’s housing market remains stable and healthy, particularly in North Oakland, with low foreclosure rates. The neighborhoods of South, Central Oakland and West Oakland have experienced a rise in housing values consistent with that across the city.

Neighborhood	Estimated Population (2008)	Percentage change (2000-2008)	Percentage aged 20-34 (2000)	Less than High School (age 25+, 2000)	Highschool Diploma (age 25+, 2000)	Associate’s or Bachelor’s Degree (age 25+, 2000)	Postgraduate Degree (age 25+, 2000)	Median Income (2009)	Percent under Poverty (2009)	Percentage White (2000)
North Oakland	9,271	-5.9	46.0	6.7	21.8	33.1	38.4	\$53,991	39.7	75.3
Central Oakland	4,954	-3.9	68.4	11.8	38.8	24.5	24.9	\$19,354	55.2	79.9
West Oakland	2,487	9.5	28.7	23.7	46.6	12.2	17.5	\$30,572	29.6	40.6
South Oakland	2,509	-16.6	37.3	18.1	45.9	26.1	9.9	\$31,447	29.0	62.9
Total Oakland	19,221	-4.2	45.1	15.1	38.3	21.4	22.7	\$33,841	38.4	64.7
Pittsburgh	312,899	-6.2	25.1	18.8	48.8	19.7	12.6	\$34,532	20.4	67.4

Neighborhood	Population (2000 Census)	Housing Units (2000)	Percentage Housing Units Occupied (2000)	Percentage Renter Occupied (2000)	Percentage Group Quarters (2000)	Percentage of Housing Stock Built Pre-1939 (2000)	Median House Value (Claritas 2008)	Percentage Change in Housing Value (2000-2008)	Foreclosures (2008)
North Oakland	9,271	4,003	90.9	75.7	44.4	39.1	\$235,408	5.8	1
Central Oakland	4,954	2,555	90.6	88.3	5.5	42.4	\$79,774	28.5	1
West Oakland	2,487	638	84.0	56.7	43.5	41.0	\$57,976	22.1	3
South Oakland	2,509	1,558	89.7	53.6	2.5	58.4	\$58,928	23.5	10
Total Oakland	19,221	8,754	88.8	68.6	24.0	45.2	\$108,021	20.0	15
Pittsburgh	312,899	163,414	88.0	48.0	6.9	50.7	\$66,562	25.0	1,199

# DEMOGRAPHICS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Physical Barriers

Oakland sits on a glacial terrace more than 200 feet above the Monongahela River. Its dramatic topography and natural features provide for many outstanding views and green spaces. It also creates several natural edges and barriers that enhance the area but complicate connectivity.

To the southeast, Junction Hollow and Schenley Park (1) act as a natural boundary, buffering Oakland from adjacent Greenfield and Squirrel Hill while providing residents, employees and visitors with a beautiful recreational amenity. Junction Hollow (2) begins near Fifth Avenue and descends along the western edge of Schenley Park down to the Monongahela River. The Junction Hollow Trail offers quick access to Hazelwood, the Pittsburgh Technology Center (PTC), the South Side and the Eliza Furnace Trail (aka: Jail Trail) by bicycle. The valley also acts as a natural and psychological barrier between Carnegie Mellon University and the rest of Oakland. There are three vehicular crossing points across Junction Hollow.

The southern edge of Oakland is also limited by steep topography and the I-376/Penn-Lincoln Parkway (3). The Pittsburgh Technology Center sits isolated on the flats of the Monongahela. The western edge of Oakland is defined by a drastic rise in topography (4), rising steadily from Forbes Avenue. This slope is more graduated at the northern end of Oakland (5), with the exception of the ridge above Bigelow Boulevard. The interface between Oakland and Shadyside, between Baum Boulevard and Fifth Avenue, is the least inhibited (6).

### LEGEND

-  SLOPE GREATER THAN 25%
-  VEHICULAR ENTRY POINTS INTO OAKLAND
-  I-376/PENN-LINCOLN PARKWAY



ACCESS AND BARRIERS

## Getting To & Around Oakland

### Corridors

Oakland's main transportation thoroughfares are the mostly uni-directional Fifth Avenue and Forbes Avenue. Combined, these corridors transport over 25,000 vehicles on any given weekday, in addition to 60,000 bus riders.

The narrow, steep and often congested Bates Street is also a heavily-used corridor, offering access to Second Avenue and the Hot Metal Bridge, and ultimately to suburban communities in the South Hills. Its daily traffic volumes are in the same range as Fifth Avenue and Forbes Avenue, with 13,700 vehicles per day at Second Avenue.

Craig Street, Center Avenue and Bigelow Boulevard are also important corridors. From the Hill District and Polish Hill, Herron Avenue and Centre Avenue are also essential.

### Main Gateways

Oakland's main gateways are located at the exits from the Penn-Lincoln Parkway/I-376 onto the Boulevard of the Allies and Forbes Avenue (1), where traffic arrives from the west. The Pennsylvania Department of Transportation (PennDOT) recently completed a \$29.1 million reconstruction project to replace all of the existing ramps and to connect the Boulevard of the Allies to Fifth Avenue via a new ramp.

A secondary main gateway is Bates Street (2), where traffic exist off the westbound Penn-Lincoln Parkway/I-376 and from Second Avenue.

### LEGEND

- █ MAJOR CORRIDOR
- ① GATEWAY OR PORTAL



GATEWAYS AND CORRIDORS



(1) EXIT OFF OF I-376 PARKWAY: GATEWAY INTO OAKLAND



(1) I-276 PARKWAY: GATEWAY INTO OAKLAND



(1) I-376 PARKWAY: APPROACHING FORBES AVENUE



(2) BATES STREET AND BOULEVARD OF THE ALLIES

Average Daily Traffic Volume (24-hour Weekday)		
Street	Direction	Vehicles Per Day (VPN)
Forbes Avenue (at Craig Street)	Westbound	3,600
	Eastbound	8,600
	Total	12,200
Fifth Avenue (at Craft Avenue)	Westbound	13,000
	Eastbound	250
	Total	13,250
Bates Street (at Second Avenue)	Northbound	9,300
	Southbound	4,400
	Total	13,700
Centre Avenue (at Millvale Street)	Westbound	5,600
	Eastbound	6,100
	Total	11,700
Craig Street (between Fifth & Forbes)	Northbound	3,150
	Southbound	2,000
	Total	5,150



(3) BIGELOW BOULEVARD (LEFT) AT BLOOMFIELD BRIDGE



(3) BIGELOW BOULEVARD (RIGHT), CRAIG STREET (LEFT)

Bigelow Boulevard (3), which connects to the I-579/ Crosstown Boulevard and to highways leading to the north and south suburbs near Downtown Pittsburgh, is another major gateway. When driving along Bigelow Boulevard toward Oakland, there is an important decision point at the Bloomfield Bridge when drivers can decide to travel along Bigelow Boulevard or Craig Street to enter different sections of Oakland.

#### Minor Portals

From the south, the Birmingham Bridge (4) and the Hot Metal Bridge (5) bring traffic from the South Side and Carson Street.

From the east, Center Avenue at Craig Street (6), Fifth Avenue at Craig Street (7), and Forbes Avenue at Margaret Morrison Street (8), at the beginning of the Carnegie Mellon University campus are entryways. Also from the east, winding through Schenley Park, are the two portals, Schenley Drive (9) and Boulevard of the Allies (10), both of which cross by bridge over Junction Hollow.

From the north, there is a portal along Centre Avenue, above the University of Pittsburgh, at University Drive (11).



(5) HOT METAL BRIDGE, LOOKING AT SOUTH SIDE



(8) BEELER STREET PORTAL ONTO FORBES: CMU CAMPUS



(9) SCHENLEY DRIVE BRIDGE



(11) DARRAGH STREET PORTAL



(6) CENTRE AVENUE APPROACHING CRAIG STREET

# GATEWAYS & CORRIDORS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## The Pieces of Oakland

Oakland's businesses and institutions are mostly arranged along the busy commercial Fifth Avenue and Forbes Avenue Corridor, which runs southwest-northeast, connecting to Downtown Pittsburgh and the neighborhoods of Squirrel Hill and East Liberty. All of Oakland's sub-districts touch the Fifth-Forbes Corridor, with the exception of the Pittsburgh Technology Center (PTC), a research office park located along Second Avenue. Oakland's residential neighborhoods are dispersed around the Fifth-Forbes Corridor.

### Institutional Districts

Oakland's major institutional districts are the University of Pittsburgh, Carlow University, Carnegie Mellon University, UPMC, the PTC and the Carnegie Cultural Complex. The latter is comprised of the Carnegie Museum of Art, Carnegie Natural History Museum, Carnegie Music Hall, and the Carnegie Library of Pittsburgh. Combined, these institutions receive more than 1.4 million visitors a year. Carnegie Mellon and Carlow have traditional self-contained campus environments, while the University of Pittsburgh and UPMC campuses blend into the dense Fifth-Forbes Corridor.

### LEGEND

#### COMMERCIAL DISTRICTS

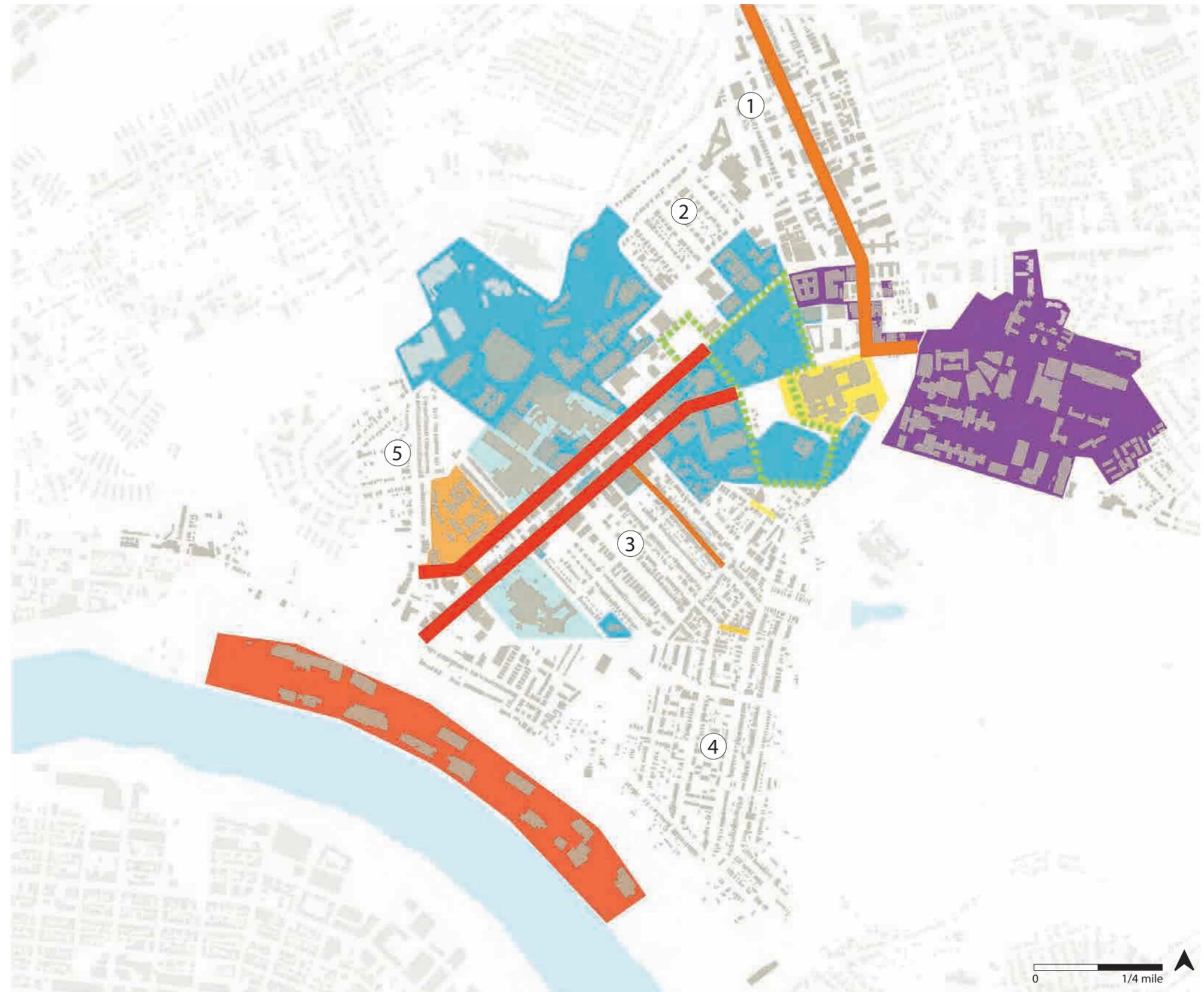
- █ FIFTH & FORBES CORRIDOR
- █ CRAIG STREET
- █ ATWOOD STREET
- █ SEMPLE STREET
- █ BOUQUET STREET

#### INSTITUTIONAL DISTRICTS

- █ CARLOW UNIVERSITY
- █ CARNEGIE CULTURAL COMPLEX
- █ CARNEGIE MELLON UNIVERSITY
- █ PITTSBURGH TECHNOLOGY CENTER
- █ UNIVERSITY OF PITTSBURGH
- █ UPMC

#### RESIDENTIAL NEIGHBORHOODS

- 1 NORTH OAKLAND
- 2 SCHENLEY FARMS
- 3 CENTRAL OAKLAND
- 4 SOUTH OAKLAND
- 5 WEST OAKLAND



**Business Districts**

The Oakland Business Improvement District (OBID) has more than 200 members concentrated along or near Fifth Avenue and Forbes Avenue, with a few businesses scattered along the Boulevard of the Allies. Oakland also has six hotels.

Craig Street South offers a pedestrian-scale mixed-use commercial environment, blending institutional, commercial and residential uses. The intersection of Craig Street and Forbes Avenue will gain prominence with the imminent redevelopment of the southern edge of Forbes near Craig Street by Carnegie Mellon University. Craig Street North near Centre Avenue has a mix of office, commercial and apartment buildings.

There are three other notable small-scale commercial streets: Atwood Street has a mix of residential buildings and businesses, particularly low-cost eateries; Semple Street, east of Bates Street, has a handful of neighborhood-serving businesses; and S. Bouquet Street has a halal grocery/cafe, bar, post office and bike shop.

**Neighborhoods**

Oakland's residential neighborhoods are North Oakland, Central Oakland, South Oakland and West Oakland. North Oakland is the most populous neighborhood, with an estimated 9,000 residents in 2008.

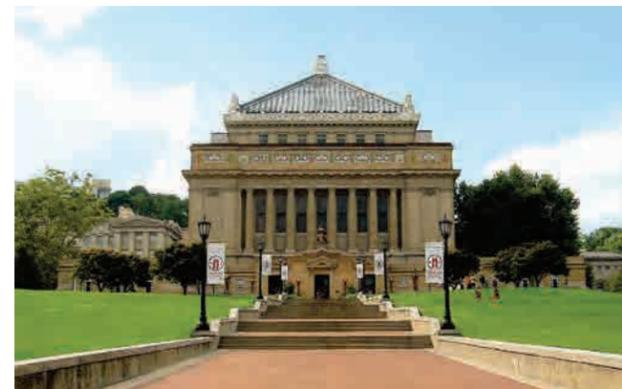
North Oakland is demographically divided into two sections: the wealthier, mostly owner-occupied Schenley Farms National Historic District, and a younger population living in apartment buildings clustered along Craig Street North. Nearly half of North Oakland's residents are between the ages of 20 and 34, and 76 percent of the 4,000 housing units are renter-occupied. Nearly half of the buildings contain the aforementioned apartment units. Schenley Farms (population 4,400) was designed in the early 1900s to be a quiet, suburban counterpart to the adjacent City Beautiful-style Oakland Civic Center above Fifth Avenue. In addition to large, single-detached and semi-detached homes, Schenley Farms includes 32 cultural and institutional buildings, located mostly in the south and east area of North Oakland, close to the heart of Oakland. The median house price in North Oakland in 2009 was \$235,408, which is more than twice the median price for all of Oakland and almost four times the median price of a home in Pittsburgh.



OAKLAND'S "CIVIC CENTER"



FORBES AVENUE AT OAKLAND AVENUE/CENTRAL OAKLAND



SOLDIERS & SAILORS MEMORIAL MUSEUM/CIVIC CENTER



SCHENLEY FARMS/NORTH OAKLAND

Central Oakland is the next most populous neighborhood, with 5,000 residents. Nearly 90 percent of its 2,555 housing units are renter-occupied, and more than half report an income that is below the poverty line. South Oakland is colloquially referred to as the "student ghetto" for the high concentration of students living in homes sub-divided into small apartments. It has the largest percentage of students and young people in Oakland (68 percent between 20 and 34 years old).

South Oakland and West Oakland share similar demographics. They have roughly 2,500 residents each and fewer residents between the ages of 20 and 34 (37 percent and 29 percent respectively). They are considered more stable residential communities, with half of the homes being owner-occupied. South and West Oakland are distinguished by their density and history. West Oakland includes the 664-unit Oak Hill Hope VI redevelopment of the former Allequippa Terrace public housing complex. This successful neo-traditional, mixed-income development accounts for the 9.5 percent increase in population in West Oakland residents since 2000, the only area in Oakland to have gained population.

Many of the university residences are located in Central Oakland. The University of Pittsburgh houses 7,110 students, only some of which are in Central Oakland; Carlow University has 370 on-campus students; and Carnegie Mellon University has 3,786 rooms on its campus.

Oakland Civic Center is a City Designated Historic District that includes the buildings on several blocks surrounding the University of Pittsburgh's Cathedral of Learning and Schenley Plaza, including: Schenley High School, the Western PA School for the Blind, Soldiers and Sailors Memorial Museum, Heinz Chapel, St. Paul's Cathedral, St. Nicholas Cathedral, the Board of Public Education, the University Club, Frick Fine Arts Museum, Bellefield Hall, Mellon Institute, Clapp Hall and the William Pitt Student Union.

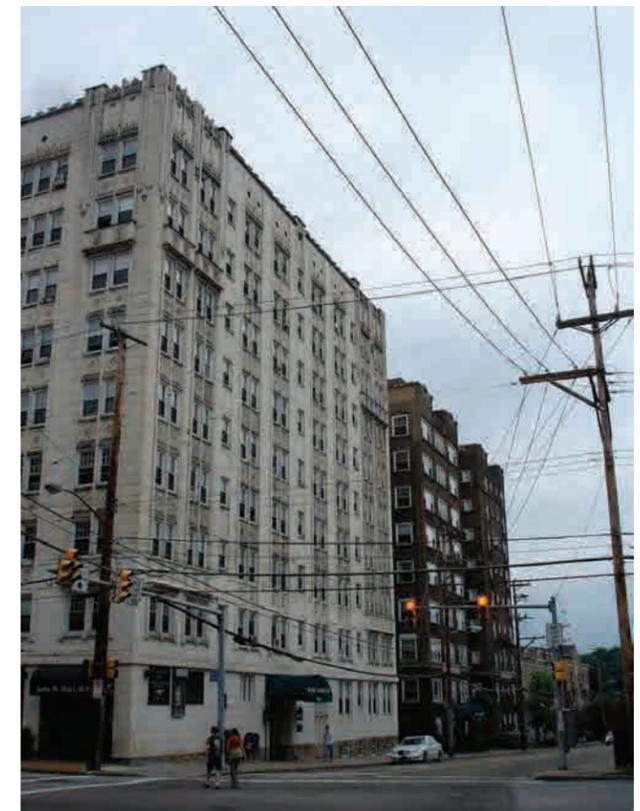
Hotels	Rooms
Forbes Avenue Suites	32
Hampton Inn	132
Holiday Inn	251
Marriott Residence Inn	174
Quality Inn	119
Wyndham Inn	209
<b>Total</b>	<b>917</b>



SOUTH CRAIG STREET



SOUTH OAKLAND



NORTH CRAIG STREET/NORTH OAKLAND

## The Built Environment

Oakland has a wide variety of building types that range from two-story rowhomes to 12-story institutional buildings that occupy an entire city block.

The figure-ground illustrates how institutional buildings dominate in Central Oakland and how residential neighborhoods are arranged around the Fifth-Forbes Corridor.

It also illustrates the great difference in scale between institutional districts and the neighboring residential fabric. In some instances, such as along Chesterfield Street (1), buildings of very different scales and types are adjacent to one another. Also apparent is the large amount of open space, particularly surrounding the Cathedral of Learning (2) and on Oakland's steepest slopes (3).



CHESTERFIELD STREET, LOOKING SOUTH

### LEGEND

- BUILDINGS WITHIN STUDY AREA
- INSTITUTIONAL BUILDINGS
- BUILDINGS OUTSIDE STUDY AREA



BUILDING FOOTPRINTS

## FIGURE-GROUND

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

## The Streets of Oakland

Pittsburgh's late-19th century street network can be characterized as an 'interrupted grid', with small collections of grid-patterned streets applied wherever possible and colliding in a sometimes awkward fashion. The flattest parts of the city, such as riverside neighborhoods and much of the East End, are well-connected through their grid street network. Other areas, such as Oakland, have a severed grid due to extreme topography on three of its edges.

In addition to some steep slopes, Oakland's street grid is interrupted by large institutional blocks. These impermeable blocks limit the opportunities for vehicle cross-travel in certain parts of the Fifth-Forbes Corridor, particularly above Fifth Avenue.

Forbes Avenue, Boulevard of the Allies, lower Bates Street and Second Avenue are signed State Routes.

Fifth Avenue and Forbes Avenue are uni-directional from Boulevard of the Allies until Bellefield Avenue, with Fifth running in the west direction until Bellefield Avenue. There are a handful of other smaller, partially uni-directional streets, such as Atwood, Oakland, Bouquet and Ditheridge.

Fifth Avenue is the widest street in Oakland, with an 89-foot right-of-way at Atwood Street compared to 59 feet for Forbes Avenue at the same intersection.

The following pages depict the sections keyed on this map.

### LEGEND

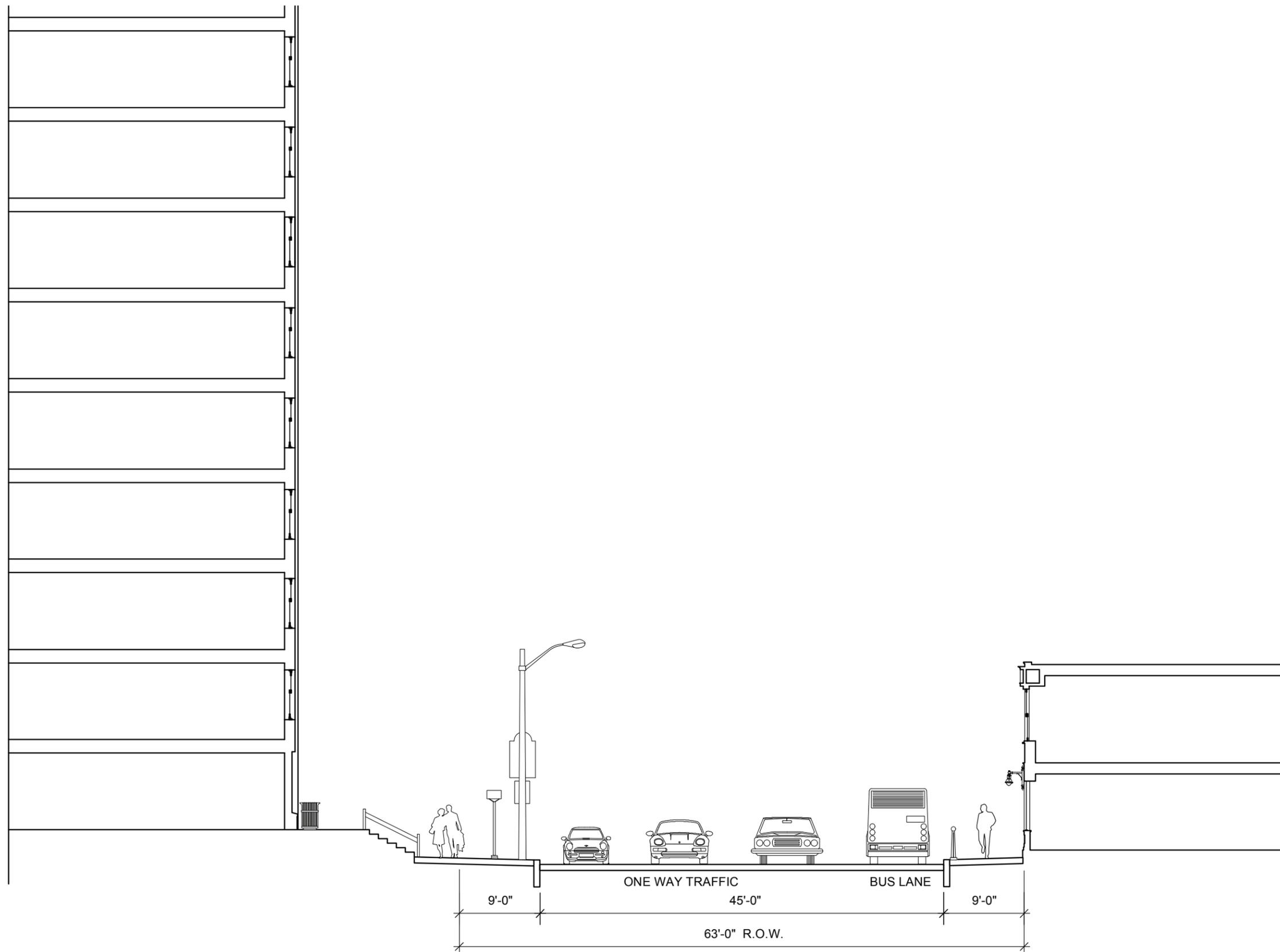
-  MAJOR THOROUGHFARE
-  STATE SIGNED ROUTE



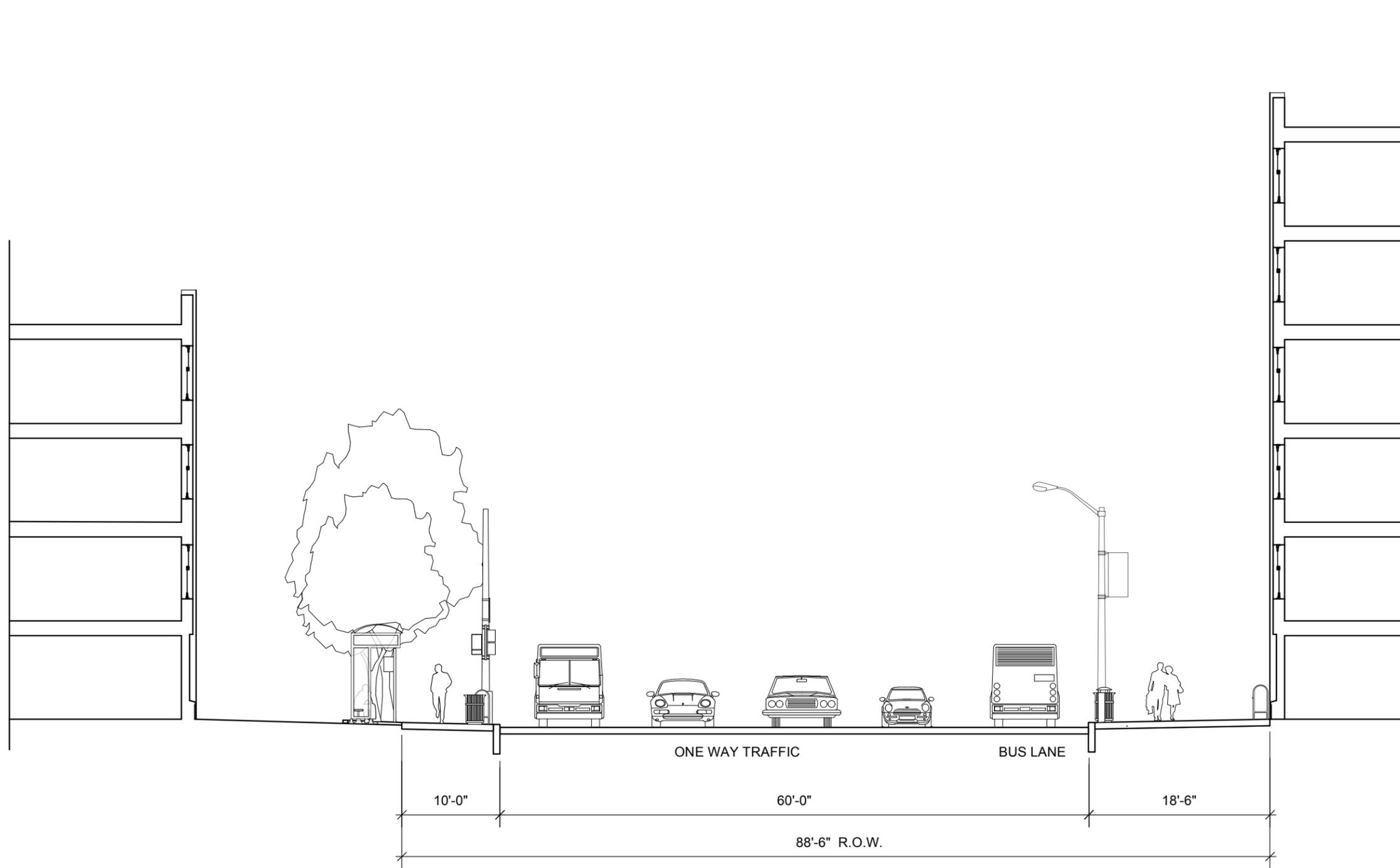
## STREETS

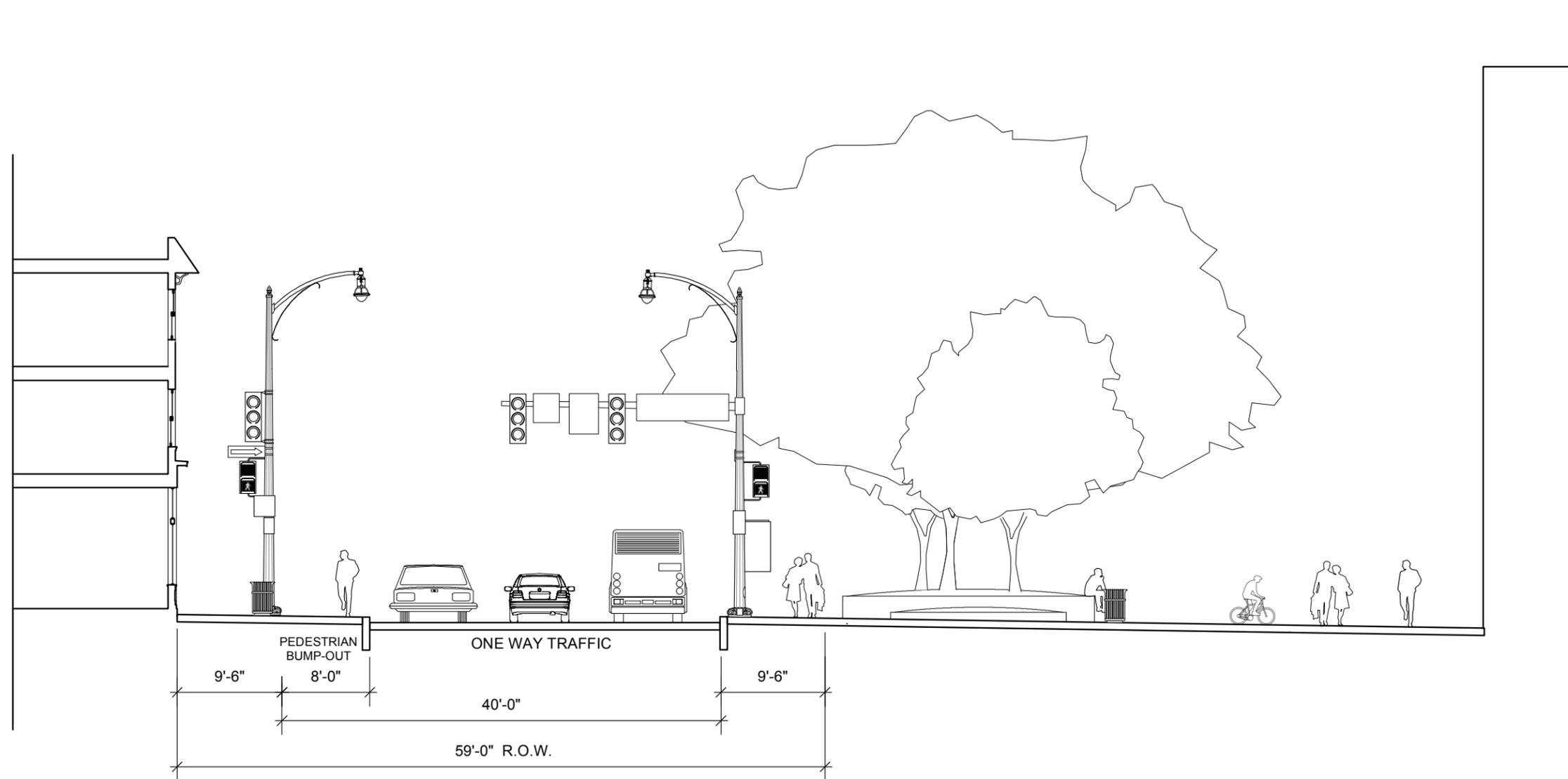
INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

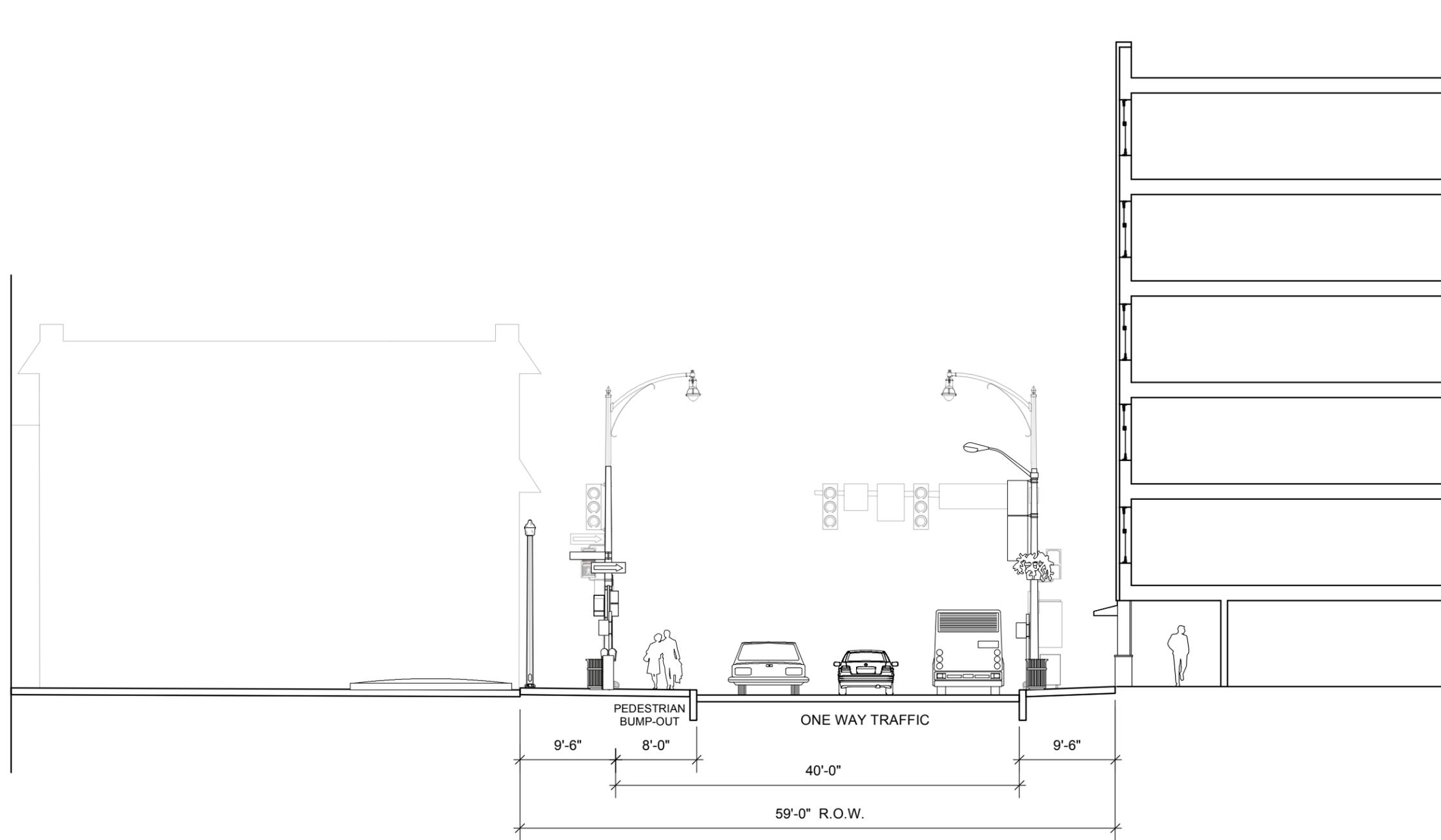
STREET NETWORK



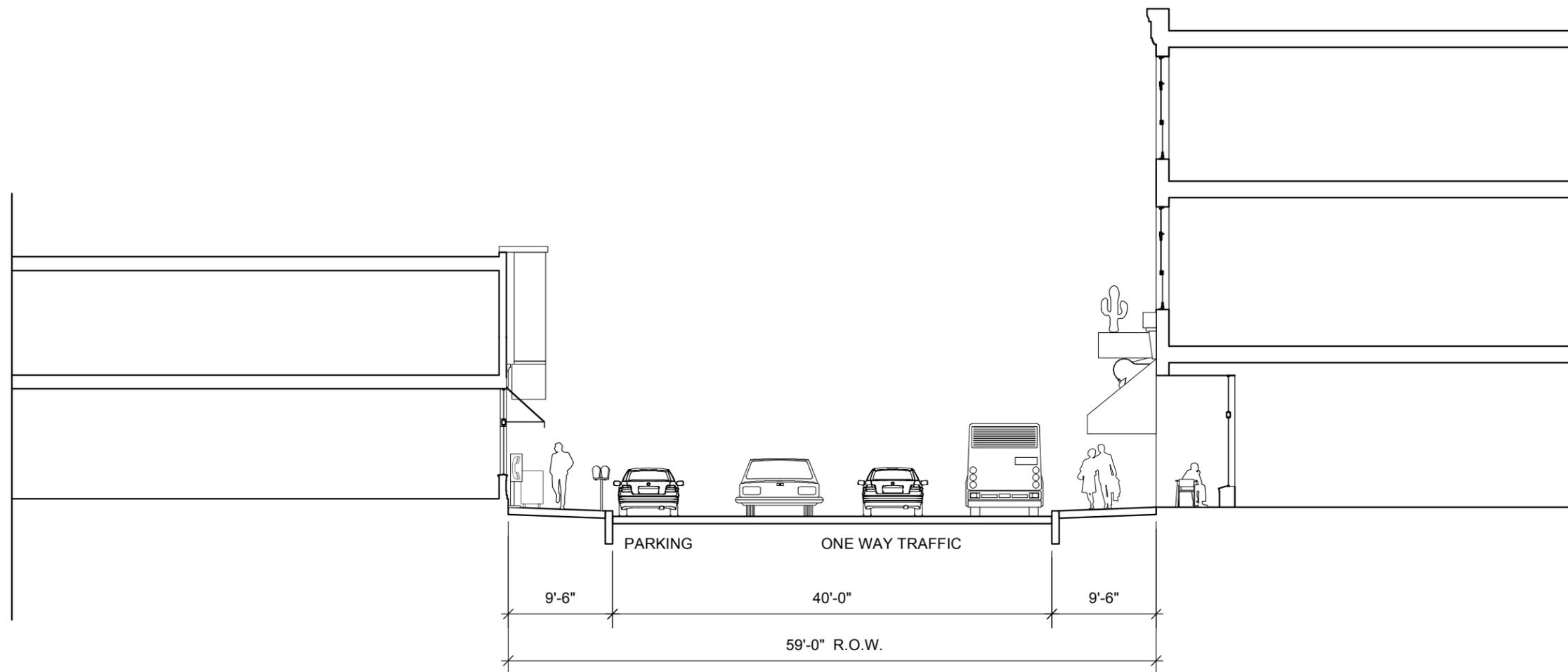
SECTION A-A: FIFTH AVENUE BETWEEN CHESTERFIELD STREET AND MCKEE PLACE



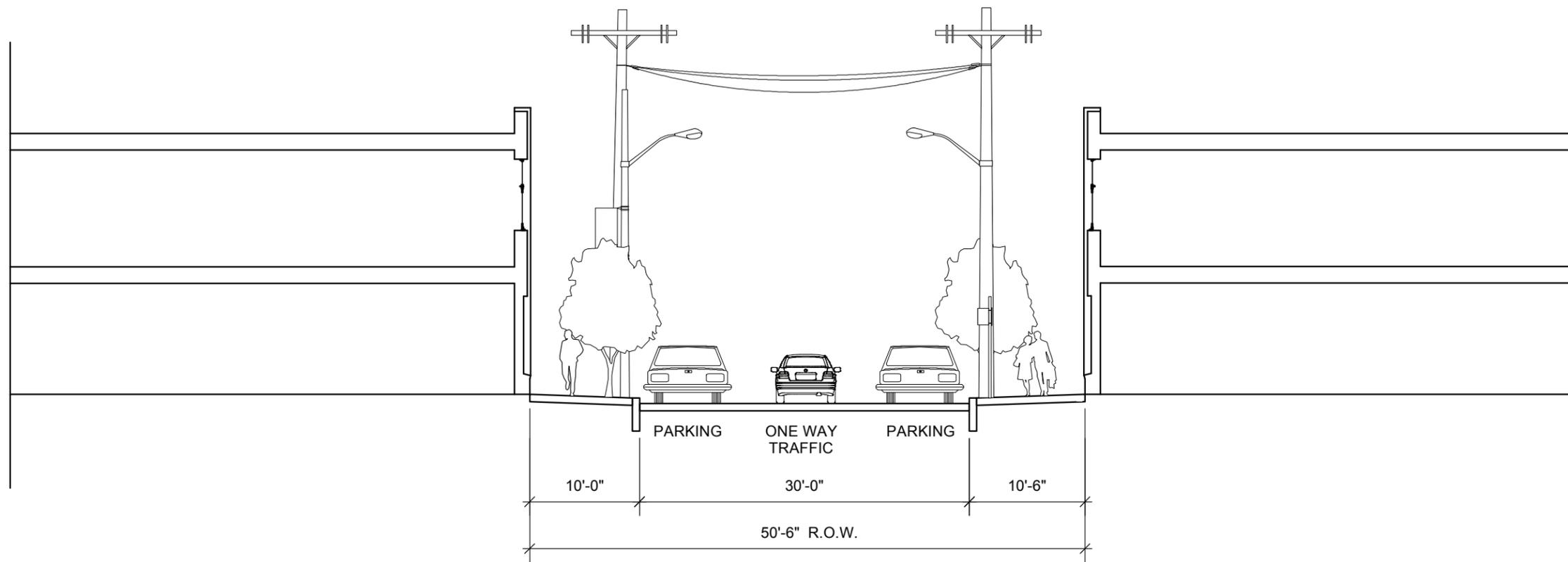


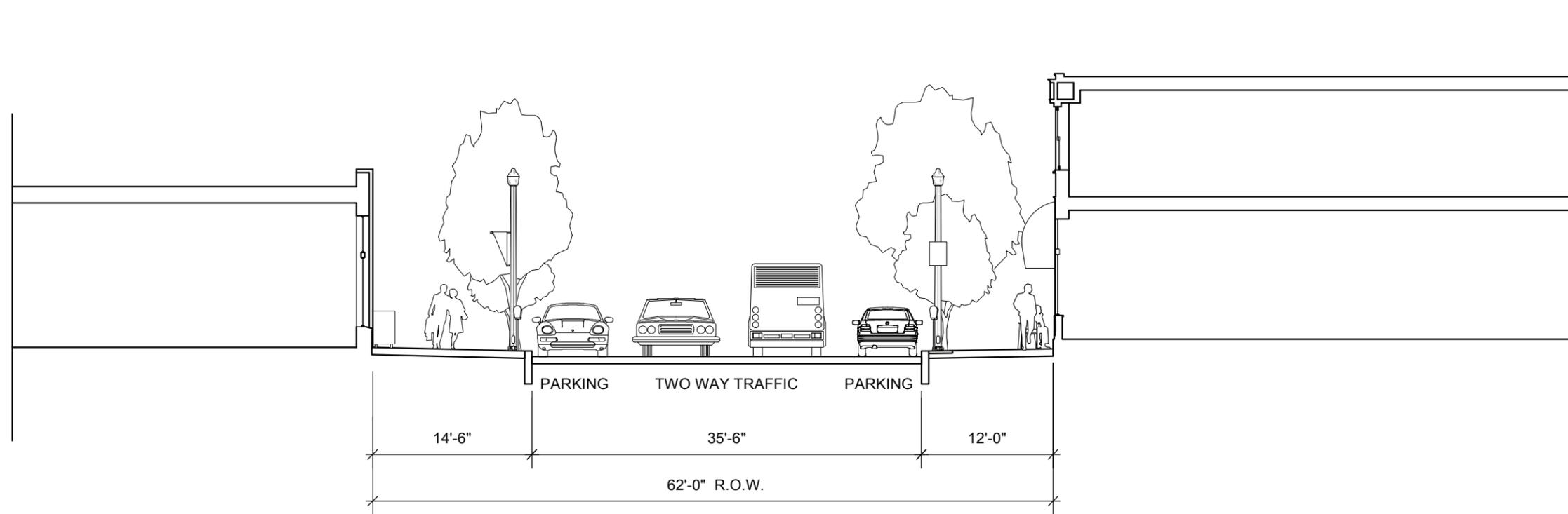


SECTION D-D: FORBES AVENUE, WEST OF BOUQUET STREET (PUBLIC SQUARE AT LEFT)



SECTION E-E: FORBES AVENUE, BETWEEN OAKLAND AVENUE AND ATWOOD STREET





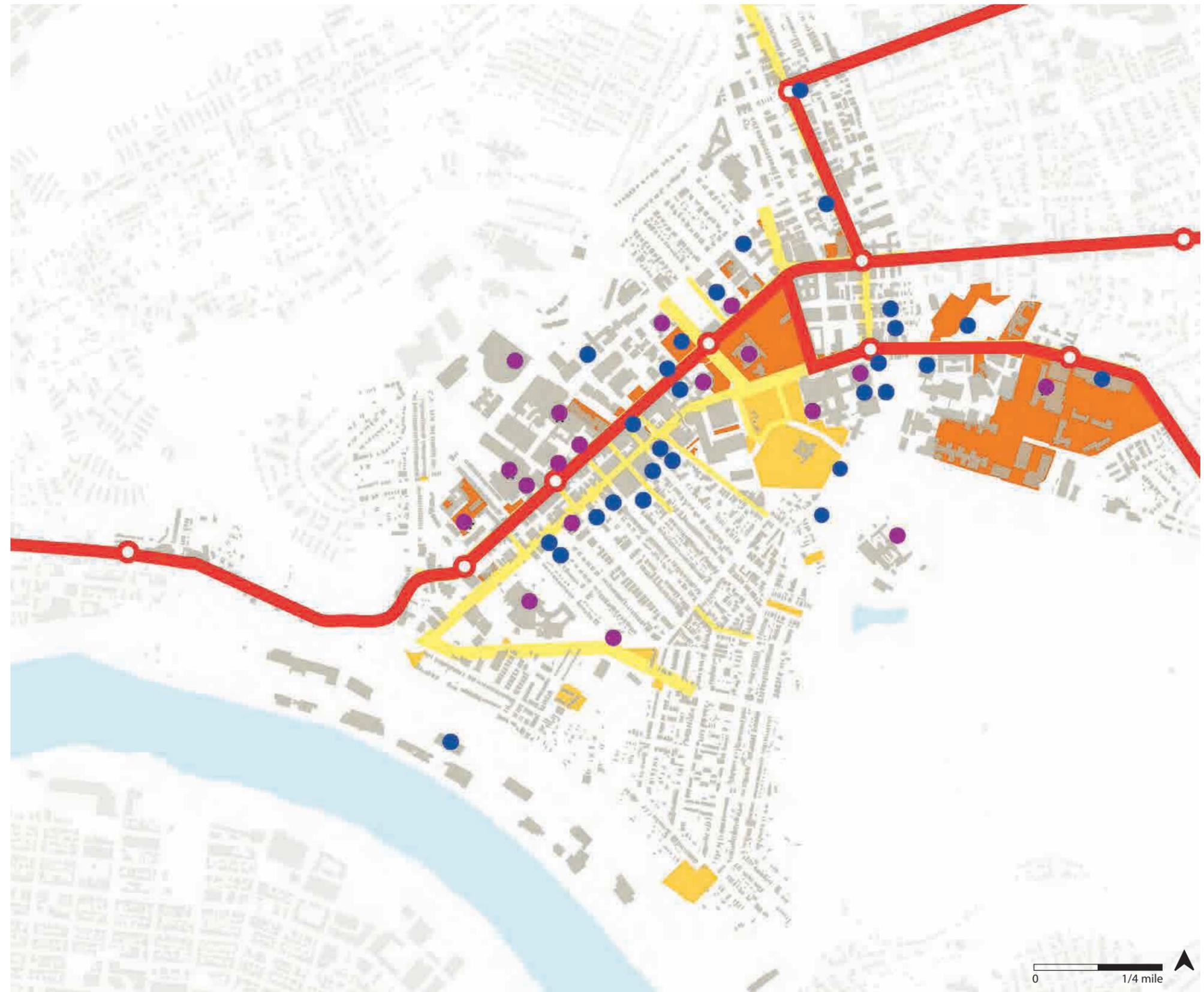
## The Concentrations of People

Oakland's 120,000 daily pedestrians, which include residents, students, faculty, employees and visitors, are concentrated along the Fifth-Forbes Corridor. Acute points of activity include hotel and institutional lobbies, larger capacity parking facilities, bus stops and, during warmer months, Schenley Plaza. Should the proposed Rapid Bus Service be implemented, the six stops within the study area will become important, concentrated portals into Oakland. More than 23,000 bus riders currently disembark in Oakland on any given workday, a number that can be expected to increase with better service. The most visited institution in Oakland is the main branch of the Carnegie Library of Pittsburgh (CLP), with nearly half a million visits annually. UPMC is the next most visited institution, with 408,000 visitors annually in addition to its 18,000 Oakland-based employees. The Carnegie Museums receive 360,000 annual visitors. The University of Pittsburgh has the largest community, with 29,976 students, faculty and staff in Oakland. Just over 7,000 Pitt students live on campus while another 2,400 live in the 15213 zip code area. Carnegie Mellon University's community is 15,774 strong, and Carlow University has 2,831 employees and students. In total, 48,500 university students, faculty and staff work or study in Oakland.

Institutions	Students	Staff	Visitors
Carlow University	2,270	561	n/a
Carnegie Library	n/a	n/a	490,213
Carnegie Museums	n/a	642	359,584
Carnegie Mellon University	11,042	4,732	n/a
Nationality Rooms	n/a	n/a	18,520
Soldiers & Sailors	n/a	n/a	120,000
UPMC	n/a	18,130	408,070
University of Pittsburgh	28,328	11,648	n/a
Total	41,640	35,713	1,396,387

### LEGEND

- BUSINESS CORRIDORS
- PROPOSED BUS RAPID LINES AND STOPS
- INSTITUTIONAL/HOTEL LOBBIES
- PARKING FACILITIES
- PUBLICLY-OWNED OPEN SPACE
- PRIVATELY-OWNED OPEN SPACE



## PLACES OF CONCENTRATED ACTIVITY

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

## Public Transit

Oakland has the second largest daytime concentration of people in the region, with an estimated 120,000 pedestrians and 70,000 vehicles circulating through Oakland on any given weekday. It is also the second most congested district in Pennsylvania, resulting in such negative impacts as traffic delays and air pollution.

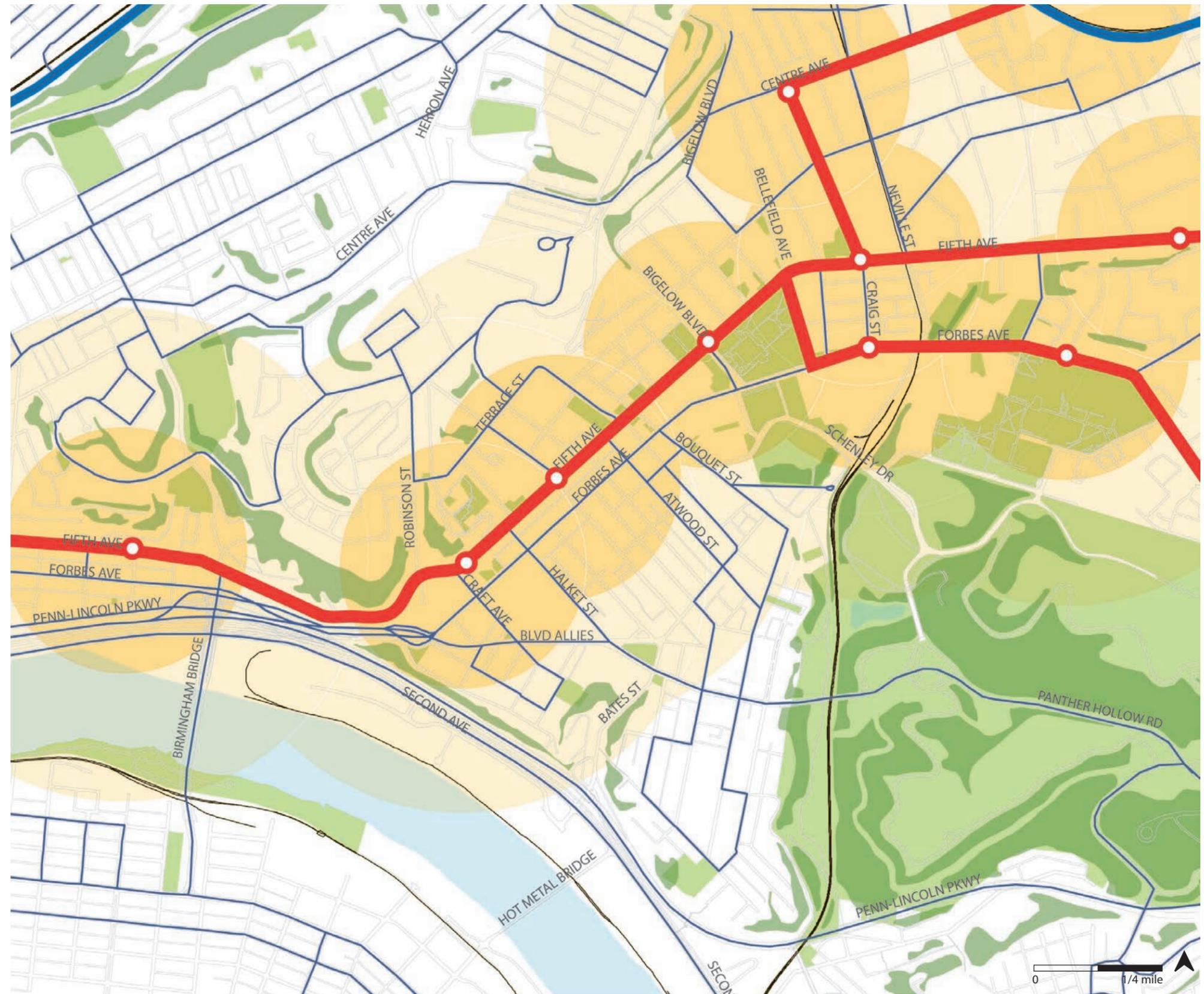
### Public Transportation

The majority of Oakland's transit routes run along Fifth Avenue's two bi-directional bus lanes and Forbes Avenue. The Port Authority of Allegheny County (PAT) estimates that over 60,000 bus riders pass through Oakland on a given weekday, with 23,000 embarking or disembarking in Oakland. Seventy municipalities with 370,000 residents have direct bus service to Oakland.

A survey of 43,000 institutional employees by the Oakland Transportation Management Association (OTMA) found that 44 percent used public transit at least one day per week. With one full bus equivalent to 40 cars, transit is a key piece of infrastructure. Public transit is particularly important to low-income residents, young people, seniors and students, many of whom rely on public transportation in order to get to work or access services. Since the late 1990s, the full-time students, faculty and staff of Carnegie Mellon University and of the University of Pittsburgh can use their institutional ID cards as bus passes.

### LEGEND

-  PAT BUS ROUTE
-  PAT BUSWAY
-  PROPOSED RAPID BUS SERVICE (RBS) ROUTE
-  RAIL LINE
-  1/4-MILE RADIUS AROUND RBS STOP
-  1/2-MILE RADIUS AROUND RBS STOP



PUBLIC TRANSPORTATION NETWORK

# TRANSIT

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

Over 50 percent of all trips between Oakland and Downtown occur by bus, making the Downtown-Oakland corridor one of the busiest transit corridors in the region. It is also one of the best served corridors with buses scheduled to run every two to three minutes during the weekday. However the lack of continuous, dedicated lanes and real-time arrival information makes it impossible for passengers to reliably know when a bus will arrive at a designated stop. Buses running at full capacity and unable to pick up additional passengers is another issue during rush hour for the 61 series bus line through Oakland, and is particularly arduous for bus riders during the cold winter months.

There have been several studies and proposals for Light Rail Transit (LRT) and Bus Rapid Transportation (BRT) service between Downtown and Oakland. Most recently, the Port Authority proposed a variation of BRT called Rapid Bus Service (RBS) in their 2009 Transit Development Plan (TDP).

The proposal would convert nine existing bus lines (28X Airport Flyer, 61A East Pittsburgh-Wilkinsburg, 61B Braddock-Swissvale, 61C-McKeesport-Homestead, 61D Summerset, 71A Negley and their variants) to Bus Rapid lines. With coordinated schedules and transit signal priority, these routes would provide rapid service between Oakland and Downtown every two minutes during peak periods and every four minutes during off-peak periods.

The seven proposed stops within the study area would be Fifth Avenue near Carlow University and Magee Hospital; Fifth Avenue near UPMC Montefiore; Fifth Avenue at the University of Pittsburgh Student Union/Cathedral of Learning; Craig Street at Forbes Avenue; Craig Street at Fifth Avenue; Craig Street at Centre Avenue; and Forbes Avenue near Morewood Avenue/Carnegie Mellon University.

The Port Authority's 28X Airport Flyer route runs along the Fifth-Forbes Corridor. The average daily ridership is over 1,000 riders and at peak university travel times, inundating the route's maximum bus capacity.

In addition to the 28X and the 61 series, the Port Authority operates the 84A and 84B routes which provide local service within Oakland and adjacent neighborhoods. In 2004, ridership on the 84A averaged over 1,100 weekday riders and just under 1,400 weekend riders during the school year.



61 SERIES OAKLAND-DOWNTOWN



MOREWOOD BUS STOP ALONG FORBES AVENUE



BUS SHELTER ALONG FORBES AVENUE



CMU SHUTTLE BUS

#### Local Shuttles

In addition to the local Port Authority 84 series, UPMC, Carnegie Mellon University and the University of Pittsburgh operate free circulators within Oakland, shuttling staff, faculty and students between buildings and parking lots.

The University of Pittsburgh shuttle transports on average over 3,300 passengers a day along routes that reach its Upper Campus, South Oakland, Chatham University, Carlow University, North Oakland, the Pittsburgh Technology Center (PTC) and the South Side.

The UPMC operates shuttle service to peripheral parking lots along Second Avenue, in North Point Breeze and on the South Side, as well as to its satellite facilities in Shadyside, South Side Works and Lawrenceville.

Carnegie Mellon University has two shuttle routes, one running between Oakland and Shadyside, and another between Oakland and the PTC.

All of these institutions partner with each other and Chatham University to provide service to each other's community.

#### Accessible Transportation

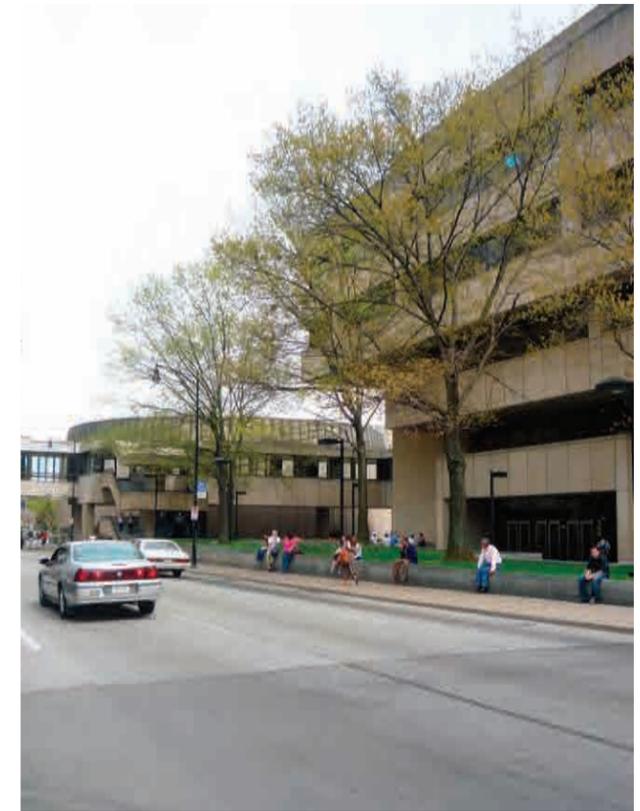
Disabled residents and visitors have three options for accessible transportation: ACCESS, CommTrans and Older Persons Transportation (OPT). All of these options require advanced reservations and provide door-to-door service.

#### Other Vehicle-based Alternatives

The OTMA attempts to reduce the number of single occupancy vehicles on Oakland's streets by promoting commuting alternatives, such as ridesharing programs, park-and-ride options and innovative car-sharing programs. ZipCar, the national car-sharing service, maintains a fleet of more than 50 cars in Pittsburgh, with most cars located in Downtown, Oakland and the South Side. There are five ZipCar parking spaces in Oakland, with two on Carnegie Mellon's campus.



BUS STOP ALONG FIFTH AVENUE



BUS STOP IN FRONT OF BARCO LAW LIBRARY

# TRANSIT

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Walking and Cycling in Oakland

Oakland has one of the highest concentrations of cyclists and pedestrians in the region, with an estimated 120,000 pedestrians walking about on any given weekday. Cycling and walking are healthy and economical modes of transportation. Public transit users and drivers all become pedestrians once they exit the bus or car.

### Walking

The City of Pittsburgh has been working to improve the pedestrian experience in Oakland, with initiatives ranging from intersection improvements on Forbes and Fifth Avenues to bus railing replacement along Fifth Avenue and mid-block cross-walks around the Cathedral of Learning. The green heart of Oakland (Schenley Plaza, the Cathedral of Learning, the Carnegie Library and the University of Pittsburgh's Hillman Library) has a pedestrian-only path network, as do Carlow and Carnegie Mellon Universities.

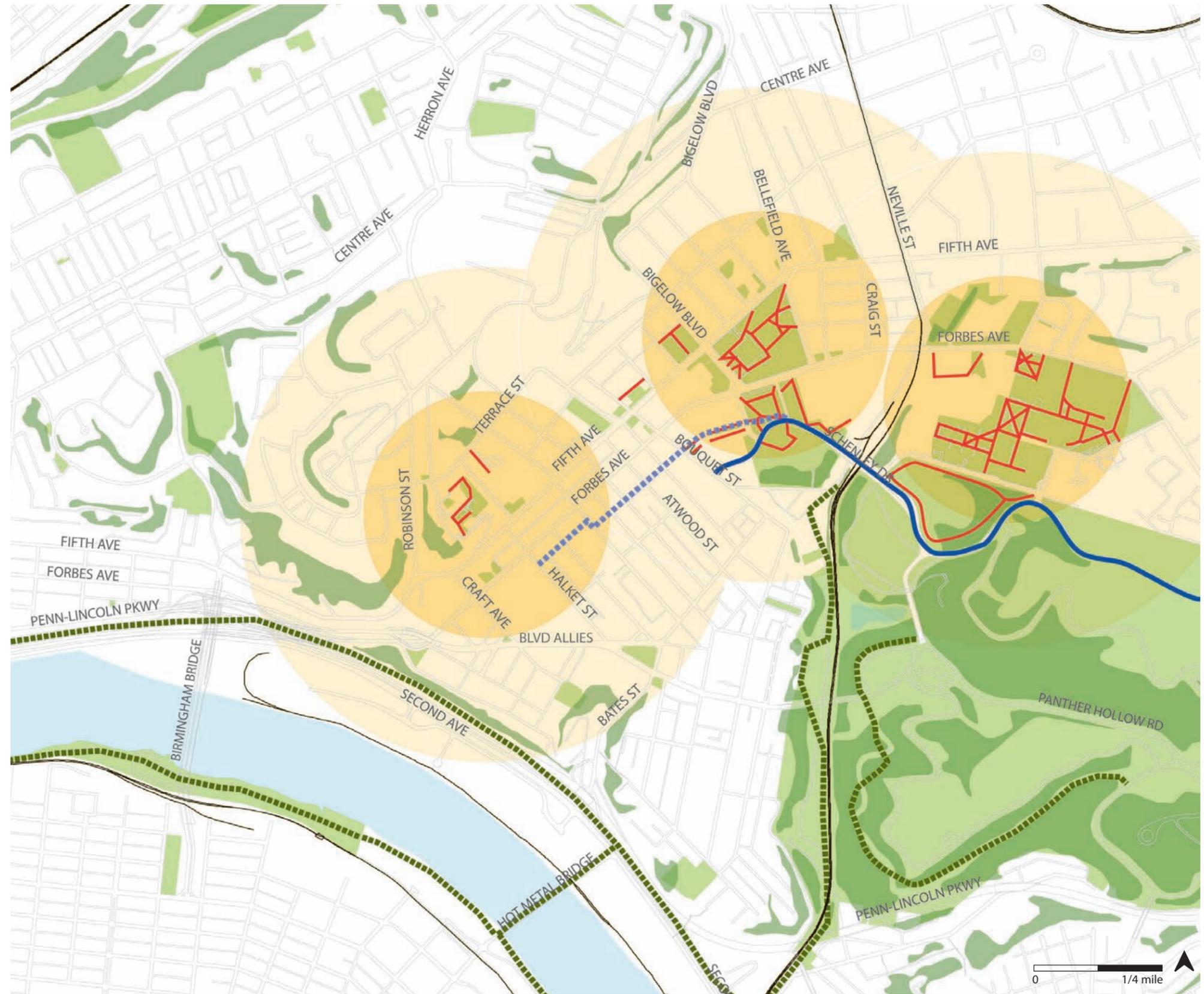
### Cycling

In spite of a higher-than-average density of cyclists, and the presence of wide avenues, Oakland does not have dedicated or shared bicycle lanes.

In late 2007, Bike Pittsburgh produced Universities Connect!, "recommendations to improve bicycle infrastructure and safety to, from and through Oakland". The recommendations are based on two City of Pittsburgh sponsored studies, the Oakland Bicycle Mobility Study and the Atwood Project. Universities Connect! notes the significant challenges to safe cycling in Oakland.

### LEGEND

- PEDESTRIAN PATH
- MULTI-PURPOSE TRAIL
- ON-ROAD PAINTED BIKE LANE
- - - PROPOSED OAKLAND GREENWAY
- 1/4 MILE RADIUS
- 1/2 MILE RADIUS

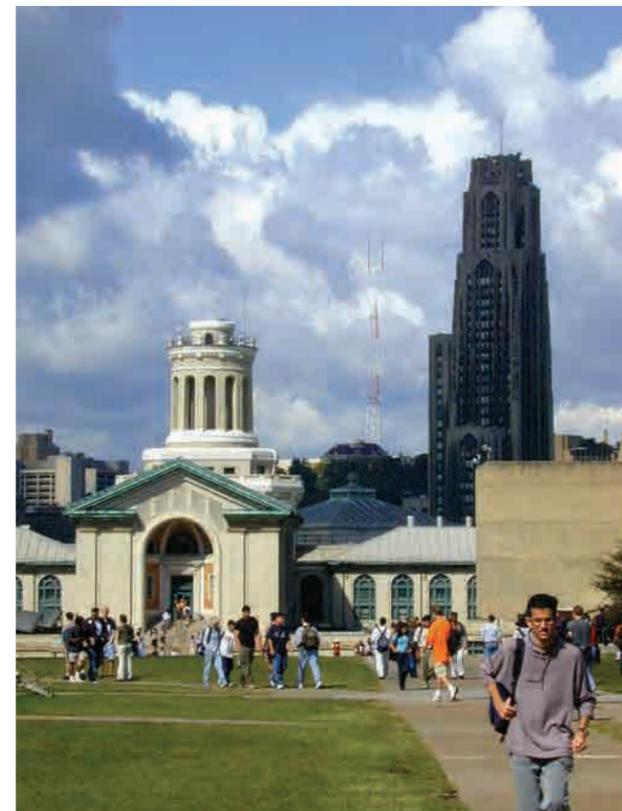
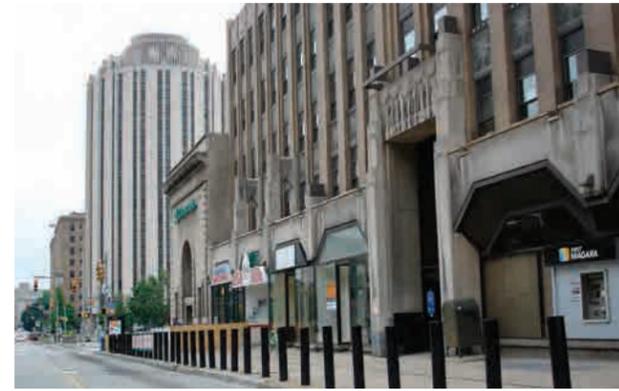


PEDESTRIAN/CYCLIST PATH NETWORK

Among its recommendations are “shared lane markings” (SLMs) or bike lanes along Fifth Avenue; changing the rightmost lane along Forbes Avenue into a “buses, bikes and right turn only” lane or eliminating on-street parking in favor of a dedicated bike lane; and an Oakland Greenway, a series of car-free side streets that would offer safe, direct flow through Oakland for cyclists, pedestrians and rollerbladers.

Bicycle commuters arriving from Downtown can ride along the multi-purpose Eliza Furnace Trail and up Junction Hollow Trail into Oakland. Commuters from the South Hills can now safely cross the Monongahela Bridge along the Hot Metal bike/pedestrian bridge. This bridge has also greatly increased comfort for pedestrians traveling between the Pittsburgh Technology Center (PTC) and the SouthSide Works.

The City is currently updating its Bicycle Plan as well as creating a Bicycle Route and Signage Plan, both of which will have implications for Oakland.



CARNEGIE MELLON UNIVERSITY



FORBES AVENUE AT MEYRAN AVENUE



FIFTH AVENUE AT OAKLAND AVENUE



SOUTH CRAIG STREET



CENTRAL-SOUTH OAKLAND RESIDENTIAL STREET



MEMORIAL FOR CYCLIST KILLED IN HIT AND RUN

# CYCLING & PEDESTRIAN PATHS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Where to Park in Oakland

Oakland's density and lack of a high-capacity public transportation system contribute both to congestion and to a high demand for parking. The types of parking available in Oakland range from on-street permit parking for residents, to on-street metered parking, parking lots and garages, and leasing options for employees.

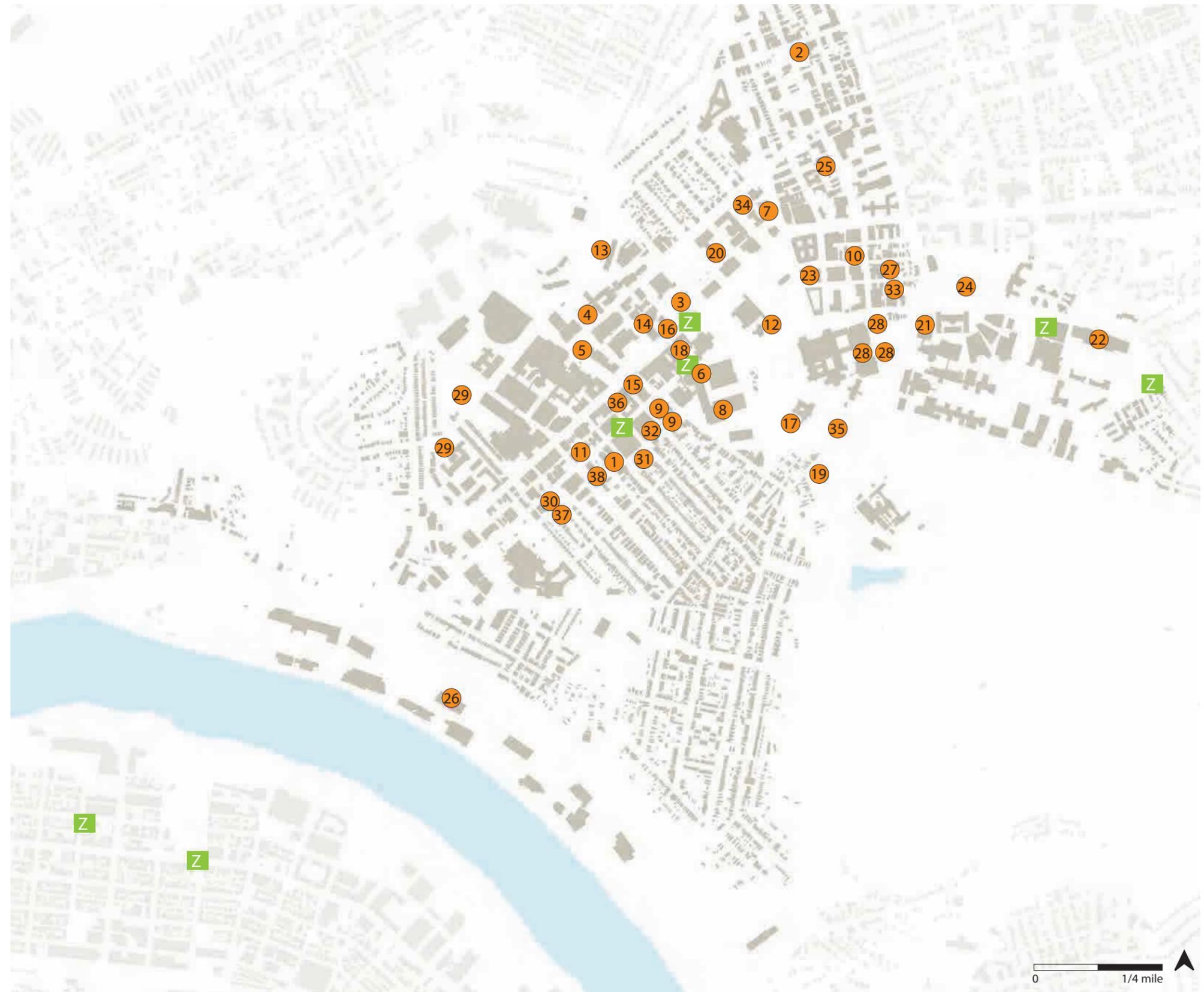
There are 1,591 on-street metered spaces in Oakland, including spaces regulated by single space meters and those regulated by the newer multi-space meters. These are mostly located around Schenley Plaza and around the larger institutions. There are 9,354 spaces in parking garages, of which 2,083 are available to the public at all times in five different locations or are available to the public during off-peak hours. The rest are reserved for lease holders or clients/patrons. In addition, there are a handful of privately-owned surface lots.

In partnership with the Pittsburgh Parking Authority (PPA), the Oakland Transportation Management Association (OTMA) operates a complimentary call-ahead parking reservation program for those unfamiliar with parking accommodations in the area. By making a phone call 24 hours in advance, one can reserve a parking place in a public garage. In addition, UPMC offers its visitors a valet service for those parking in their garages.

ZipCar, the nation-wide car-sharing service, has five reserved parking spots in Oakland.

### LEGEND

-  PARKING GARAGE/LOT
-  ZIPCAR PARKING
-  PRIVATE SURFACE PARKING LOT



PARKING IN OAKLAND

Parking Garages & Lots in Oakland				
	Name	Owner	Public	Spaces
1	Forbes Semple Garage	PPA	Yes	449
2	Craig-Center Lot	PPA	Yes	n/a
3	Soldiers & Sailors Garage	Pitt	Yes	934
4	O'Hara Garage	Pitt	No	455
5	Parran Hall Garage	Pitt	No	153
6	Schenley Garage	Pitt	No	74
7	LIS Garage	Pitt	No	84
8	Posvar Garage	Pitt	No	493
9	Sennot Square Garage/Lot	Pitt	No	74
10	Craig Hall Garage	Pitt	No	41
11	Forbes Hall Garage	Pitt	No	32
12	Log Cabin Lot	Pitt	Yes	n/a
13	Eberly Hall	Pitt	No	n/a
14	Thackery Lot	Pitt	Yes	n/a
15	Bouquet Lot	Pitt	Yes	n/a
16	University Place Lot	Pitt	Yes	n/a
17	Frick Fine Arts Lot	Pitt	No	n/a
18	Schenley Quadrangle	Pitt	Yes	n/a
19	Panther Hollow Lot	Pitt	n/a	n/a
University of Pittsburgh Total				4,912
20	University Ctr/Holiday Inn	UPMC	No	n/a
21	CIC Garage	CMU	Yes	n/a
22	East Campus Garage	CMU	Yes	n/a
23	Dithridge Street Garage	CMU	Evenings/ Weekends	n/a
24	CMU Forbes Lot	CMU	Weekends	n/a
25	Whitfield Hall Lot	CMU	Yes	n/a
26	ETC	CMU	Yes	n/a
CMU Total				2,896
27	201 Craig St. Lot	Plaza Prkg Services	Yes	n/a
28	Carnegie Museums Garage & Lots	Carnegie Museums	Yes	700
29	Carlow University Lots	Carlow U	No	397
30	Reft Leasing Co. Lot	Reft Co.	Yes	n/a
31	Forbes Tower Lot	n/a	n/a	n/a
32	Sennot Parking Lot	n/a	Yes	n/a
33	Filmore Street Lot	n/a	n/a	n/a
34	4400 Bigelow Lot	Teris	Yes	n/a
35	Joncaire & Boundary Lots	n/a	No	n/a
36	Garage	n/a	No	n/a
37	Lot	n/a	No	n/a
38	Lot	n/a	No	n/a



PRIVATE SURFACE LOT



POSTED PARKING RATES



PERMIT PARKING IN SOUTH OAKLAND



ON-STREET METERED PARKING ALONG CRAIG STREET



SOLDIERS & SAILORS PUBLIC GARAGE



PPA'S SEMPLE STREET GARAGE



PPA LOT AT CRAIG STREET AND CENTER AVENUE



ZIPCAR ON FORBES AVENUE NEAR SCHENLEY DRIVE



MULTI-SPACE METER ALONG SCHENLEY PLAZA

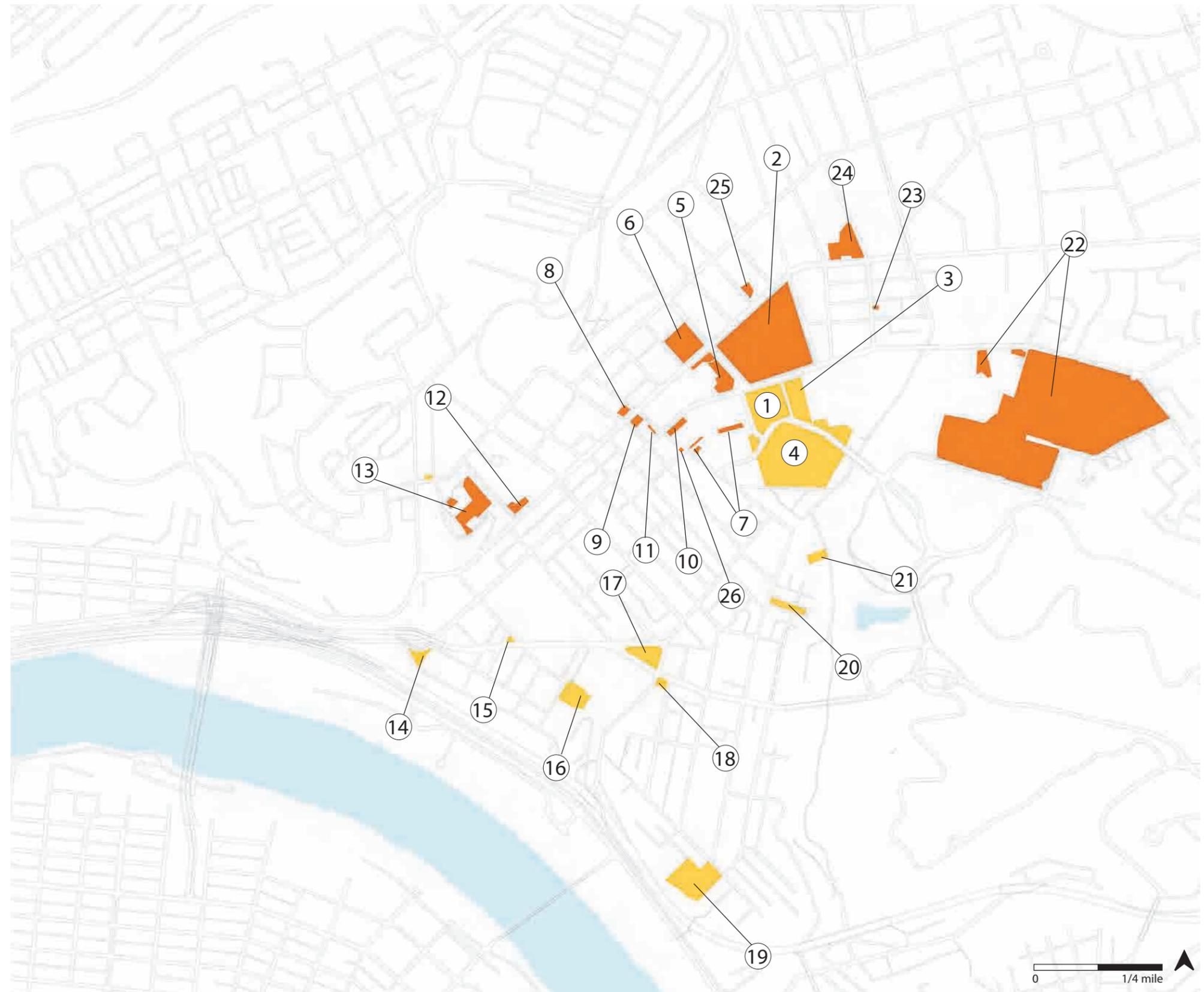
## Locating Public Spaces

Oakland's public space network includes sidewalks and streets, alleyways, open public green space, and open private green space, such as that found around large institutional buildings and within campuses. The district's many open green spaces provide relief from the hardscape and intensity of Oakland's bustling commercial and institutional areas.

Publicly-Accessible Open Spaces	
1	Cathedral of Learning Lawn
2	Schenley Plaza
3	Carnegie Library Lawn
4	Forbes Field/Schenley Park
5	Pitt Student Union Lawn
6	Soldiers & Sailors Lawn
7	Hillman Library Passage
8	Pitt GSPH Square
9	Fifth & Oakland Square
10	Barco Law Library Square
11	Forbes & Bouquet Square
12	UPMC Montefiore Lawn
13	Carlow University Campus
14	Lawn & Ophelia Parklet
15	Craft Parklet
16	Niagara Park
17	Zulema Parklet
18	Bates Parklet
19	Frazier Park
20	Oakland Square
21	Boundary Street Tot Lot
22	Carnegie Mellon Campus
23	Craig Street Square
24	St. Paul's Cathedral Lawn
25	Clapp Hall Square
26	Bouquet-Semple Square

### LEGEND

-  STREETS WITH SIDEWALKS
-  PUBLICLY-OWNED OPEN SPACE
-  PRIVATELY-OWNED OPEN SPACE



PUBLICLY-ACCESSIBLE OPEN SPACES



(2) SCHENLEY PLAZA



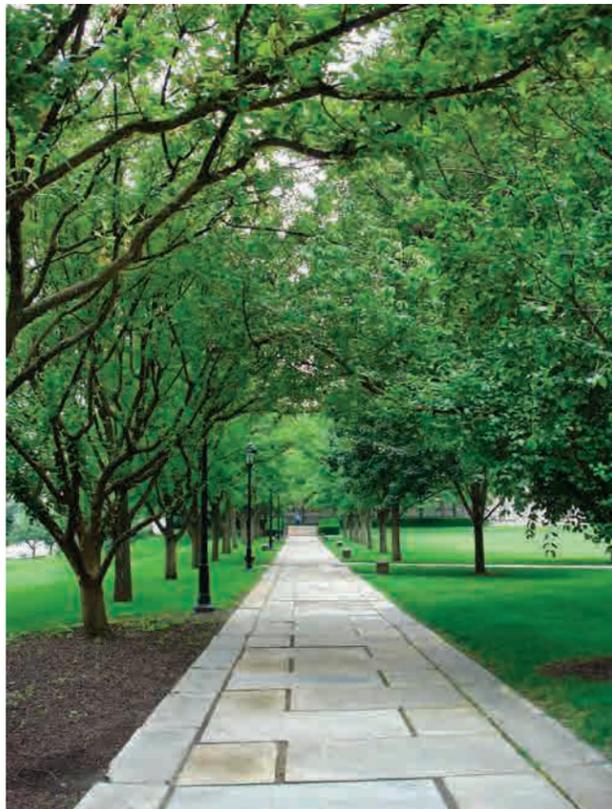
(5) UNIVERSITY OF PITTSBURGH STUDENT UNION LAWN



(8) PITT GRADUATE SCHOOL OF PUBLIC HEALTH SQUARE



(10) BARCO LAW LIBRARY SQUARE



(1) CATHEDRAL OF LEARNING PASSAGEWAY



(26) BOUQUET-SEMPLER SQUARE



(3) CARNEGIE LIBRARY LAWN



(11) FORBES-BOUQUET SQUARE



(7) PASSAGE WAY, HILLMAN LIBRARY AND POSVAR HALL

Much of Oakland's open space is located in the heart of Oakland, in what has been called Oakland's Civic Center. Together, Schenley Plaza and the open green spaces adjacent to the Cathedral of Learning, the Soldiers and Sailors Memorial Museum, the Carnegie Library of Pittsburgh, the Carnegie Music Hall, the University of Pittsburgh Student Union, and the Frick Fine Arts Building, total roughly 40 acres of publicly-accessible outdoor space.

In addition to this "green heart", there are an assortment of smaller urban squares and parklets distributed throughout Oakland's business district and residential neighborhoods, including the Barco Law Library Square, the Forbes and Bouquet Square, a linear public pedestrian passageway and public square between the Hillman Library and Posvar Hall, Zulema Parklet, Bates Parklet and the historic Oakland Square.

Carnegie Mellon University and Carlow University are organized around internal green spaces, and the nearby Flagstaff Hill, Phipps Conservatory and Botanical Gardens, and Schenley Park are used for an assortment of outdoor recreational and cultural activities, including disc golf, jogging, sunbathing, kite-flying, yoga and outdoor movie watching.



(23) CRAIG STREET POCKET SQUARE



(18) BATES PARKLET AT BIGELOW BOULEVARD

# PUBLIC SPACE NETWORK

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

## The Art & Landmarks of Oakland

Oakland, when including Carnegie Mellon University and Phipps Conservatory and Botanical Gardens, has 29 pieces of public and memorial art works by internationally-renowned artists such as Henry Moore, Richard Serra and Jonathan Borofsky.

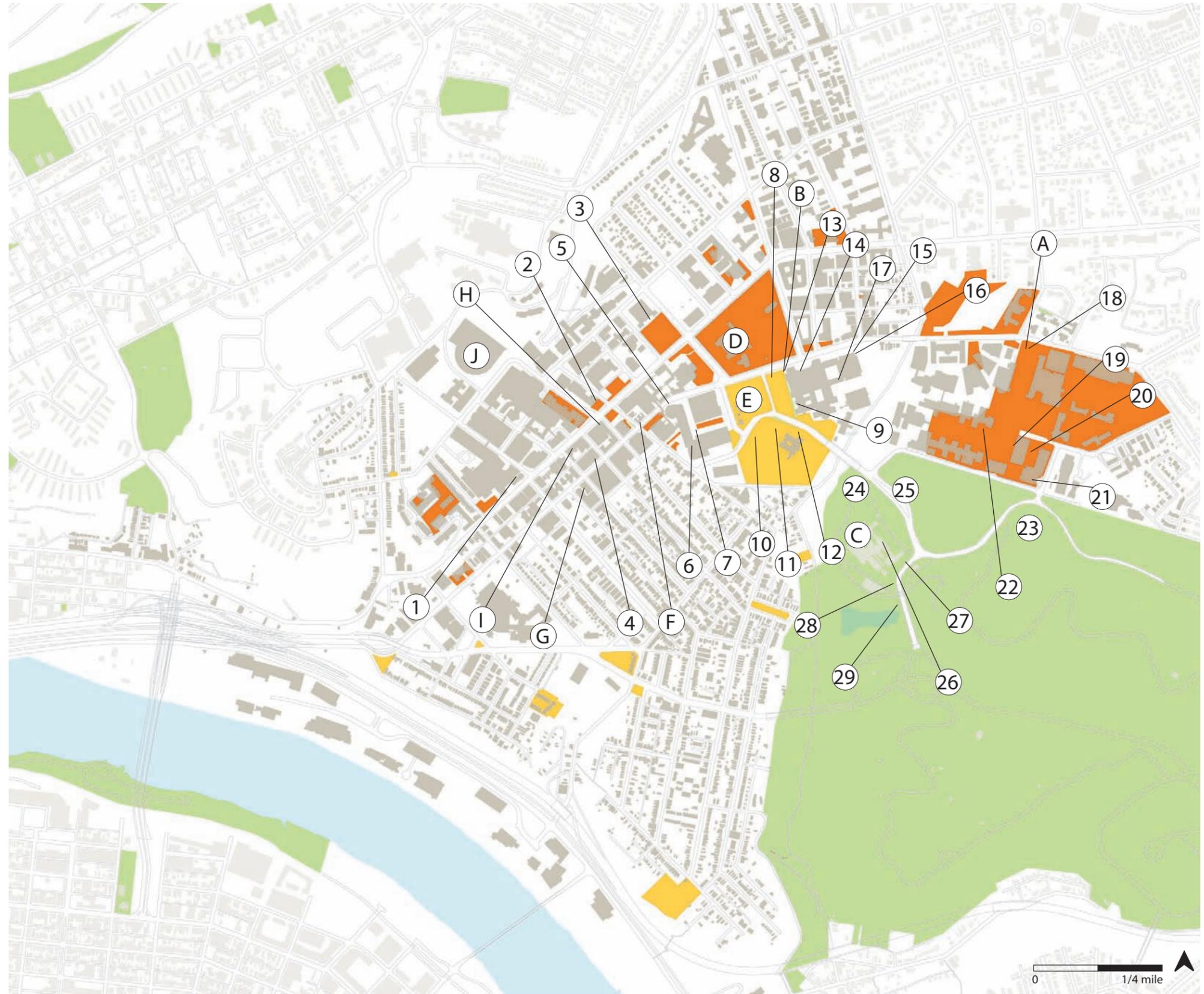
It also has a number of landmarks, the most iconic and visible being the historic Cathedral of Learning. Constructed between 1926 and 1934, the 535-foot, 42-story Late Gothic Revival building is the centerpiece of the University of Pittsburgh campus, and is visible from several vantage points across the city.

Landmark*	
A	Walk to the Sky (sculpture)
B	"Dippy the Dinosaur" (sculpture)
C	Phipps Conservatory and Botanical Gardens
D	Cathedral of Learning (tall building)
E	Schenley Plaza (public square)
F	"The O" Original Hot Dog Shop (neon sign)
G	Joe Mama's (art deco facade and neon sign)
H	Citizens Bank (neo-classical building)
I	Rita's Ice Cream (awning)
J	"The Pete" Petersen Events Center (dome)

\* Landmarks mentioned during the January 2010 iO public meeting

### LEGEND

- 1 PUBLIC ART
- A VISUAL AND CULTURAL LANDMARKS
- PUBLICLY-OWNED OPEN SPACE
- PRIVATELY-OWNED OPEN SPACE



LANDMARKS AND PUBLIC ART

Public Art		
	Title	Year
1	Mascaro Water Wall	2007
2	Man	1966
3	America; Two Reliefs; Parade Rest; Lookout	1910; 1911; 1923; 1923
4	Interpretations of Oakland	2006
5	Ode to Space	1966
6	Enlightenment and Joy	1977
7	Light Up!	1971
8	Stephen Foster	1900
9	Christopher Lyman Magee Memorial	1908
10	A Song to Nature	1918
11	Henry Clay Frick	1965
12	The Hiker	1925
13	Diplodocus Carnegii ("Dippy")	1999
14	Allegorical Figures	1907
15	Carnegie	1985
16	Reclining Figures	1957
17	Two Slender Lines; Three Forms; Hokusai's Wave; Running Man; Night; Tropical Garden's Presence	1981; 1970; 1982; 1976; 1939; 1975
18	Walking to the Sky	2006
19	College of Fine Arts Niches	1916;1993
20	Kraus Campo	2005
21	Industrial Reliefs; Reliefs	1951; 1951
22	Snowmen	2004
23	Westinghouse Memorial	1930
24	Christopher Columbus	1958
25	Edward Manning Bigelow	1895
26	Chihuly Chandelier	
27	Hygeia	1922
28	Robert Burns	1914
29	Panthers	1897



(1) MASCARO WATER WALL, UPMC



(18) WALKING TO THE SKY, BY JONATHAN BOROFSKY



(20) KRAUS CAMPO, CARNEGIE MELLON UNIVERSITY



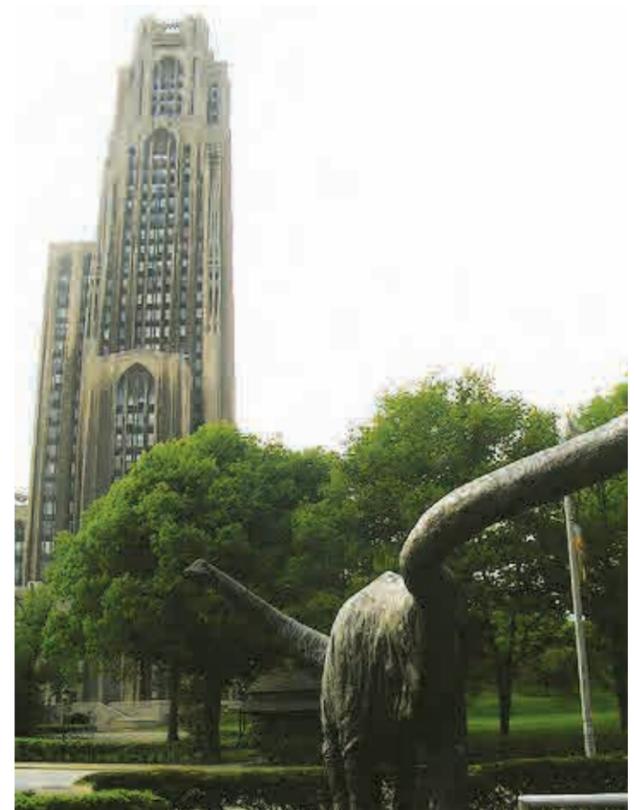
(16) RECLINING FIGURE, BY HENRY MOORE



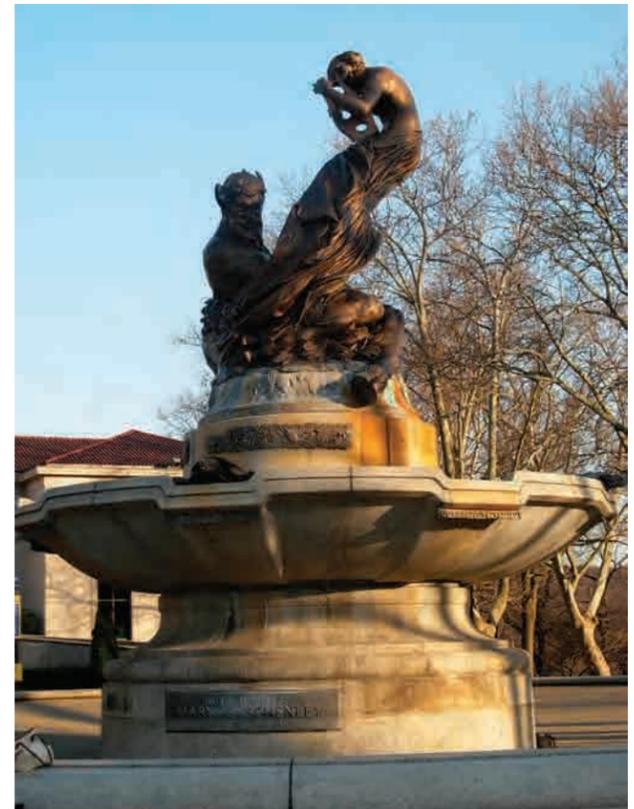
(17) LIGHT UP!, UNIVERSITY OF PITTSBURGH



(4) INTERPRETATIONS OF OAKLAND: MR. ROGERS



(13) "DIPPY" IN FRONT OF THE CARNEGIE MUSEUMS



(10) A SONG TO NATURE, MEMORIAL TO MARY SCHENLEY

# LANDMARKS & PUBLIC ART

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Decoding Zoning

The City of Pittsburgh's Land Use Control Division regulates the use of land and buildings through its Zoning Code. The zoning classification determines the permitted uses on any given property

### LEGEND

#### COMMERCIAL

- CP COMMERCIAL PLANNED UNIT DEVELOPMENT
- LNC LOCAL NEIGHBORHOOD
- UNC URBAN NEIGHBORHOOD

#### INDUSTRIAL

- GI GENERAL INDUSTRIAL
- NDI NEIGHBORHOOD INDUSTRIAL
- UI URBAN INDUSTRIAL

#### INSTITUTIONAL

- EMI EDUCATIONAL/MEDICAL

#### OAKLAND PUBLIC REALM

- OPR-A DISTRICT A
- OPR-B DISTRICT B
- OPR-C DISTRICT C
- OPR-D DISTRICT D

#### OPEN SPACE

- H HILLSIDE
- PO PARKS AND OPEN SPACE

#### RESIDENTIAL

- R1A-M SINGLE-UNIT ATTACHED-HIGH DENSITY
- R1A-H SINGLE-UNIT ATTACHED-HIGH DENSITY
- R1A-VH SINGLE-UNIT ATTACHED-VERY HIGH DENSITY
- R1D-VL SINGLE-UNIT DETACHED VERY LOW DENSITY
- R1D-L SINGLE-UNIT DETACHED-LOW DENSITY
- R1D-H SINGLE-UNIT DETACHED-HIGH DENSITY
- R2-L TWO-UNIT-LOW DENSITY
- R2-M TWO-UNIT-MODERATE DENSITY
- R2-H TWO-UNIT-HIGH DENSITY
- R2-VH TWO-UNIT-VERY HIGH DENSITY
- R3-M THREE-UNIT-MODERATE DENSITY
- RM-M MULTI-UNIT-MODERATE DENSITY
- RM-VH MULTI-UNIT-HIGH DENSITY
- RM-VH MULTI-UNIT-VERY HIGH DENSITY
- RP RESIDENTIAL PLANNED UNIT DEVELOPMENT

#### SPECIALLY PLANNED

- SP-1 DISTRICT 1
- SP-5 DISTRICT 5



CITY OF PITTSBURGH ZONING

# LAND-USE ZONING

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Determining Destinations

Oakland's major destinations include its hospitals and universities, the Carnegie Library of Pittsburgh main branch, the Carnegie Museums, various theaters and sporting venues, hotels, business districts and historic sites.

Institutions	
1	UPMC Montefiore
2	UPMC Magee Women's Hospital
3	UPMC
4	UPMC Emergency
5	Carlow University
6	Carnegie Museum of Art
7	Carnegie Museum of Natural History
8	Carnegie Library of Pittsburgh—Main Branch
9	Carnegie Mellon University
10	University of Pittsburgh
11	Western PA School for the Blind
12	Western Psych
13	VA Pittsburgh Healthcare System
14	Frick International Academy
15	Schenley High School
Entertainment Venues	
16	Carnegie Music Hall
17	Peterson Center
18	Pittsburgh Playhouse of Point Park University
19	Kuntu Repertory Theatre
20	Pittsburgh Irish and Classical Theatre
21	Pittsburgh Filmmakers
Sights and Public Outdoor Venues	
22	Cathedral of Learning/Nationality Rooms
23	Schenley Plaza
24	Schenley Park
25	Flagstaff Hill
26	Phipps Conservatory
27	Forbes Field
28	Soldiers and Sailors Memorial Hall and Museum
Hotels	
29	Hampton Inn Hotel
30	Holiday Inn
31	Quality Inn
32	Forbes Avenue Suites
33	Marriott Residence Inn
34	Wyndham Inn



VIEW OF FORBES AVENUE CORRIDOR

## Oakland's Plethora of Signs

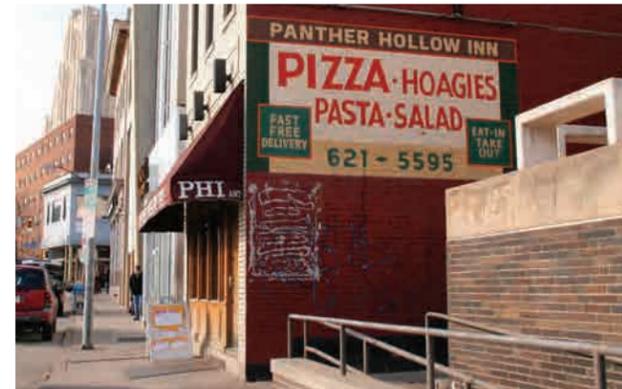
In the pedestrian-packed four square miles of Oakland alone, there are over 10 separate wayfinding systems, dozens of sign types, and hundreds of unique signs. This is the result of years of relying only upon the various outdated analog wayfinding systems of the 20th century.

The designs of Oakland's signs vary widely with regard to color, materials, shape, typeface, and branding method. The various sign systems are maintained by their respective agencies, but often there is an inconsistency in quality and maintenance, leading to such things as vandalism from the apparent sight of neglect. Furthermore, such inconsistency leads to conflicting sign messaging as the signs are updated sporadically and by varying oversight bodies and crews. While there exists a city sign code that regulates a comprehensive set of standards for sign development, there is not an ordinance or an agency whose responsibility it is to address the issue of sign clutter. To further complicate the issue, two state roads pass through Oakland and bring with them their own set of standards, sizes, and clutter.

Because of the topography of the region, wayfinding based in navigating a street grid falls short throughout most areas of Pittsburgh. However, aspects of it work well in Oakland since its two primary arteries, Forbes and Fifth Avenues, are straight, are intersected by secondary streets to create a grid, and sit at level grade atop a bluff. To supplement the grid and its effective named and numbered blue street signs, wayfinding is aided by prominent landmarks, as exemplified by the University of Pittsburgh's towering landmark of the Cathedral of Learning.



EXAMPLE OF SIGN CLUTTER



PRIVATE BUSINESS BUILDING SIGNAGE



COMMONPLACE REGULATORY SIGNAGE



INSTITUTION DIRECTIONAL SIGNAGE

What has been found to work best with regard to Oakland's wayfinding and signage includes the following:

- » Obtaining word of mouth directions from others
- » Utilizing prominent landmarks as navigational beacons
- » Utilizing the Fifth and Forbes corridors as navigational cues
- » Utilizing street signs with their three key pieces of information: street name, neighborhood name, and block number
- » Locating and utilizing physical campus and neighborhood maps in the form of traditional kiosks or printed brochures and maps

What has been found to be a detriment to the effectiveness of Oakland's wayfinding and signage includes the following

- » Lack of public information about available parking
- » Signage clutter
- » Lack of gateway identification or orientation signage
- » Lack of definition to the institutional boundaries throughout Oakland
- » Insufficient real time information with regard to public transit



COMBINED PUBLIC AND PRIVATE SIGNAGE



INSTITUTION STREETScape BANNERS



EXAMPLE OUTCOME OF MBRO SIGNAGE



INSTITUTION PARKING SIGN

## Ubiquitous Internet Access

The number of active high speed wireless network access points—called Wi-Fi HotSpots—has grown fourfold in the past five years in the U.S. The expanding use of smart phones and laptops means more and more consumers expect businesses, workplaces and even transportation infrastructure to double as a HotSpot.

In addition to private businesses, such as coffee shops, some cities or districts are offering free Wi-Fi access in public spaces and even on public transit, and many institutions offer their members free Wi-Fi on a building or campus basis. The Wi-Fi HotZone, defined as a geographical area comprised of many contiguous Hotspots, is becoming a standard for most downtowns and busy commercial districts. HotZones are often organized by governments or business improvement districts as a way to lure new customers and to brand themselves as technologically innovative.

### LEGEND

- CARLOW UNIVERSITY
- CARNEGIE LIBRARY OF PITTSBURGH
- CARNEGIE MELLON UNIVERSITY
- UPMC
- UNIVERSITY OF PITTSBURGH
- CAFE, BUSINESS OR HOTEL
- SCHENLEY PLAZA

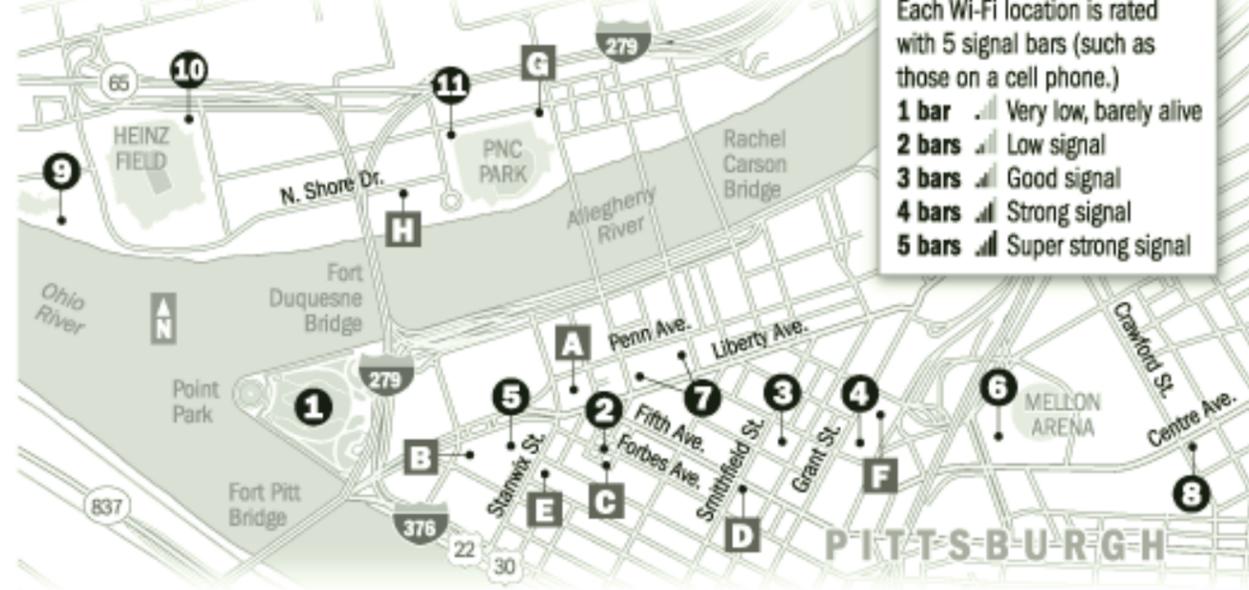


WIFI INFRASTRUCTURE

# WI-FI HOTSPOTS & HOTZONES

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

# Wi-Fi speeds and locations



MAP OF FREE WI-FI HOTSPOTS, DOWNTOWN PITTSBURGH (PITTSBURGH POST-GAZETTE)



USING FREE WI-FI DOWNTOWN PITTSBURGH



PITTSBURGH MAYOR RAVENSTAHL AT WI-FI UNVEILING



BRYANT PARK PUBLIC WI-FI HOTZONE, NYC



BRYANT PARK PUBLIC WI-FI HOTZONE, NYC



SCHENLEY PLAZA PUBLIC WI-FI HOTZONE



ALAMEDA-CONTRA TRANSIT (AC TRANSIT)

Free, Public Wi-Fi Hotzones and HotSpots  
 Manhattan's Downtown Alliance offers free wireless Internet access in nine public indoor and outdoor spaces, including parks, plazas, a foodcourt and an atrium. It recently upgraded its hotspots with higher bandwidth, new technology, and expanded coverage at each of the sites.

Boston Main Streets has made WiFi available in two Main Streets districts, and is developing sites in several more districts.

Public transportation agencies are beginning to offer free Wi-Fi service in their stations, at their stops or on their buses and trains. The Pittsburgh International Airport is one of a handful in the US that offers free Wi-Fi access to the public.

Downtown Pittsburgh offers two free hours of wireless Internet access daily in outdoor locations throughout downtown, the near North Shore and the lower Hill District.

### Oakland Wi-Fi Initiatives

In 2003, 3rc partnered with Grok Technology to deploy the Oakland Wireless Network along the Forbes Avenue Corridor. This secure public access network extended along Forbes from Meyran to South Craig Street, and was available for \$18.95 a month. The HotZone was discontinued in December 2004 due to limited customer interest, in part because of existing institutional Wi-Fi networks (free for their members) and a growing number of free Wi-Fi HotSpots in commercial venues.

Schenley Plaza has offered free Wi-Fi to the public since it opened in 2006.

Patron-only HotSpots and Institutional Wi-Fi HotZones  
 The University of Pittsburgh, Carnegie Mellon University and Carlow University campuses operate as Wi-Fi HotZones, offering free, secured Wi-Fi to their students and staff. UPMC offers free Wi-Fi for patients, staff and visitors, and the Carnegie Library of Pittsburgh's Main Branch offer Wi-Fi to all library card holders. Many businesses in Oakland's business districts have free Wi-Fi for their patrons, including all of Oakland's hotels.



AC TRANSIT FREE WI-FI LOGO

# WI-FI HOTSPOTS & HOTZONES

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

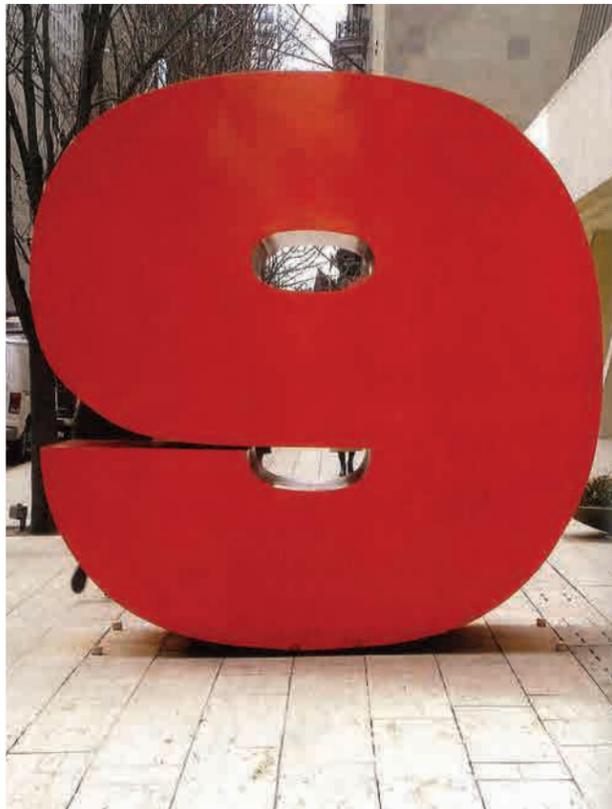
SECTION **E** **RESEARCH**  
2. BENCHMARKING



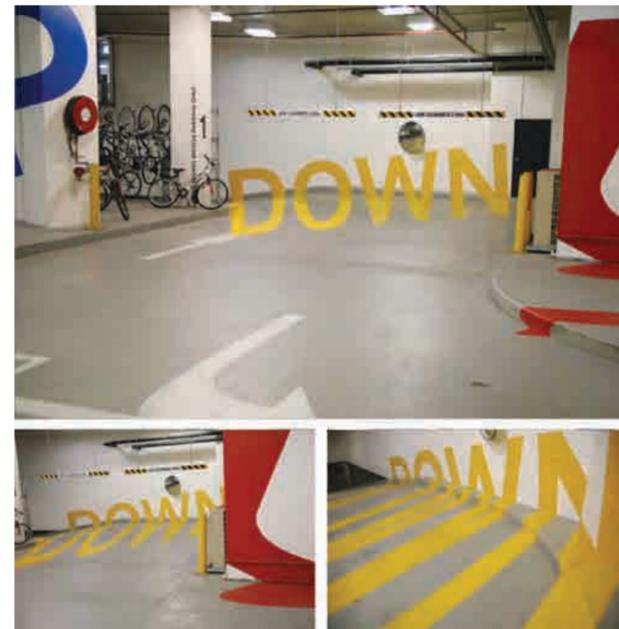
FINGERPOST DIRECTIONAL SIGN, LONDON



GUIDE LINES AT HVIDOVRE HOSPITAL, DENMARK



9 WEST 57TH STREET ID SIGN, NEW YORK CITY



EUREKA CARPARK, MELBOURNE



DIRECTIONAL SIGN, UNIVERSITY OF PENNSYLVANIA

## Sign Types

As stated in Section D of this wayfinding strategy, signage is a graphic representation of information. It is used as a means to an end to provide messaging to people where it might not otherwise be readily available. Signs inform their readers about something related to their particular location and with regard to this function they can be delineated into four different categories.

Identification Signs identify a particular position or something located at, or in relation to, that position. The famous Hollywood sign atop the Hollywood Hills of Los Angeles is a predominant example of an identification sign.

Descriptive Signs describe the state of affairs or the history of a certain location. Maps, signs with business hours of operation, building directories, and interpretive and historical panels are typically what make up this category of signs.

Directional Signs dictate what will be located in the directions indicated. Typically the faces of such signs utilize a graphic of an arrow in combination with a short message of text describing the noted destination.

Regulatory Signs are designed to direct behaviors. They regulate the activities within a space to ensure public safety and to optimize utility. Stop signs, one-way street signs and parking signs are examples of regulatory signs.

## Signage and its Various Forms

By effectively utilizing the four types of signage, a community can accomplish several things, including:

- » help identify important locations
- » direct visitors to the locations
- » provide information while experiencing those locations
- » regulate safe and effective activities

Such a comprehensive use of signage will help enable positive placemaking that responds to the needs of its users, accommodates multiple activities, and provides stories, information and services to the people of its community.

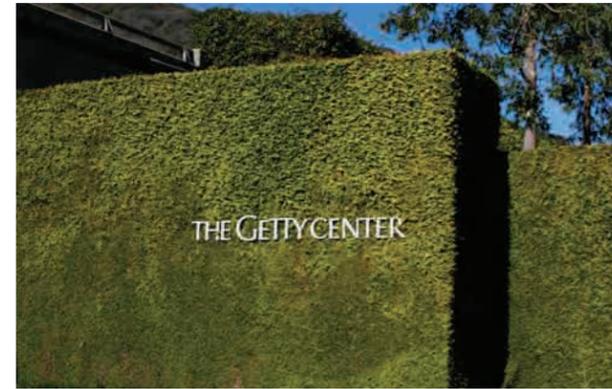
Furthermore, signage, when used sparingly and smartly, has the power to brand a space, support inclusive design, and utilize technology to tell stories that might otherwise not be heard.



TAXI STAND SIGN, BUENOS AIRES



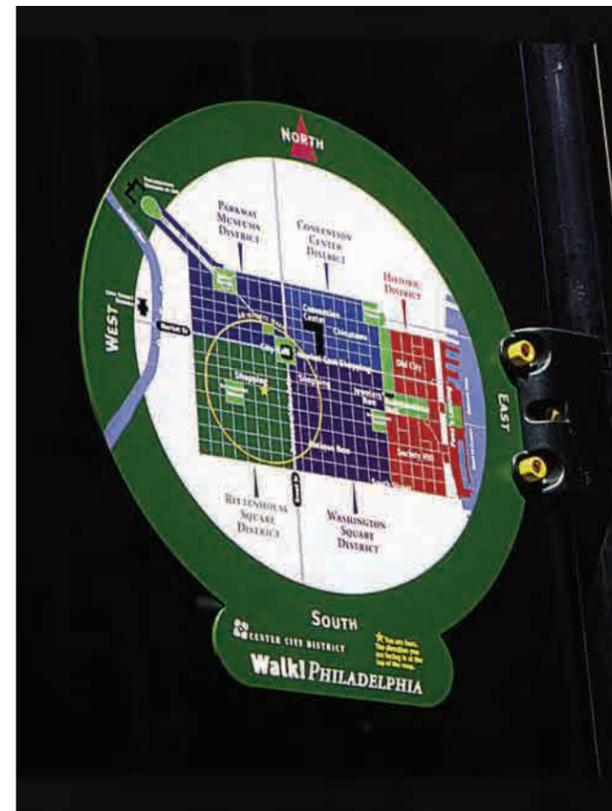
MALBORO TOBACCO PLANT SIGN, GREENSBORO



THE GETTY CENTER ENTRANCE ID, LOS ANGELES



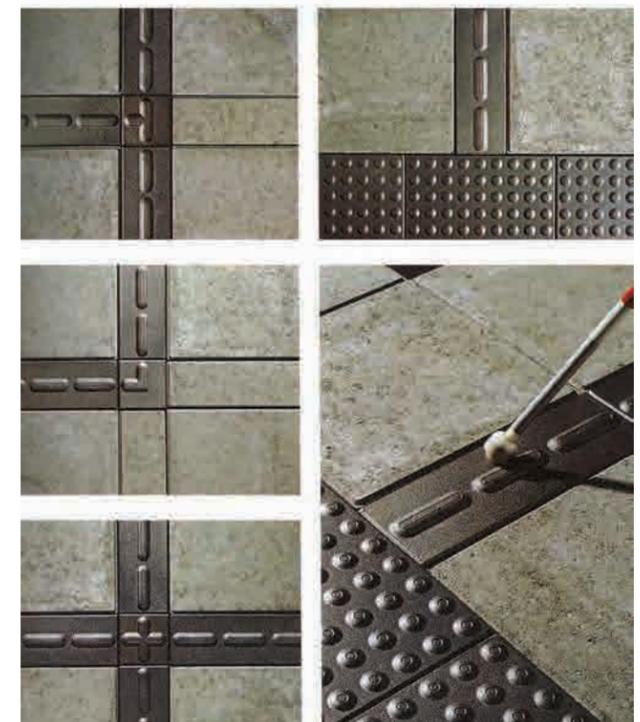
QR CODE BUILDING ID, NEW YORK CITY



"WALK! PHILADELPHIA" DIRECTIONAL SIGN & MAP



IN-GROUND SIGNAGE, VIENNA



PICTOFORM ACOUSTIC INFORMATION SYSTEM

# SIGNAGE

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA



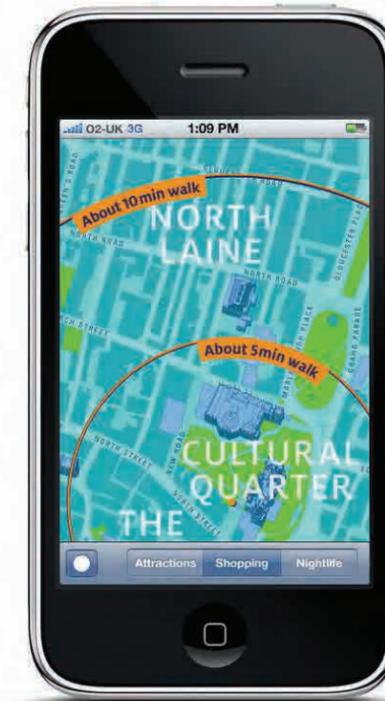
REMOVING THE EXISTING SIGN CLUTTER



INFORMATION SIGN FIVE-MINUTE WALKING RADIUS



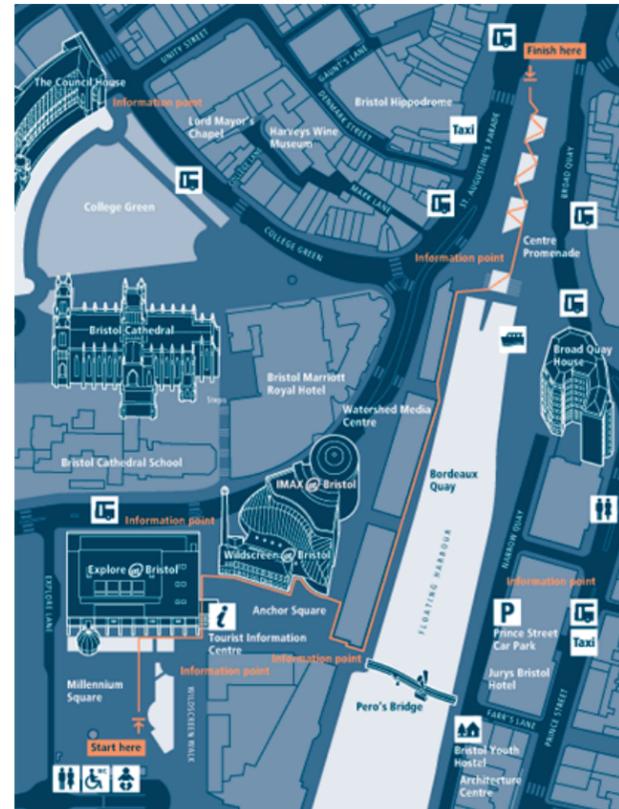
DIRECTIONAL AND INFORMATION SIGN



SMART PHONE WAYFINDING APPLICATION



"WALKIE-TALKIE" ARTIST PIECE & INFORMATION SIGN



MAP OF "WALKIE-TALKIE" ARTIST COMMISSIONS



DIRECTIONAL SIGN DETAIL



BRISTOL LEGIBLE CITY SIGN FAMILY

## A Case Study: Bristol Legible City

Because of the many parallels between Oakland and Bristol, England, in terms of size, industry, and demographic, it should be viewed as a potential source of inspiration for wayfinding remediation. "Bristol Legible City is a unique concept to improve people's understanding and experience of the city through the implementation of identity, information and transportation projects." The projects related to this program include entirely new direction signs, on street information panels with city and area maps, printed and digital walking maps, visitor information identity and arts projects.

The nature of this program is quite unique in the way each of the projects communicates to the residents and visitors of the city in a concise and effective fashion. Not only does each component share an attention to detail that has proven to be durable and lasting, they correspond to a singular aesthetic and voice.

The project began by taking the bold approach of removing all existing signs and clutter. The entirely new program that grew from this took a comprehensive wayfinding approach to its signage, and would in turn become the precedent for Walkable London, a signage solution for the nation's capital.



PEDESTRIAN BRIDGE PORTAL



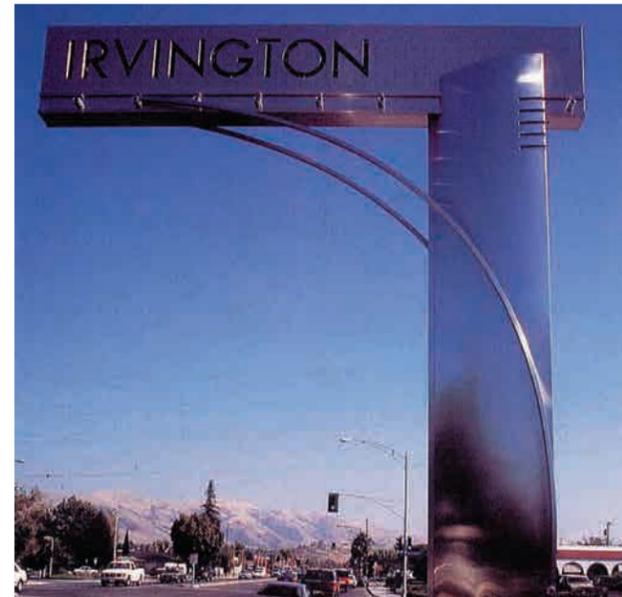
BIJLMER TUNNEL, AMSTERDAM



PEDESTRIAN CROSSWALK, MONTREAL



HIGHWAY VEHICULAR PORTAL



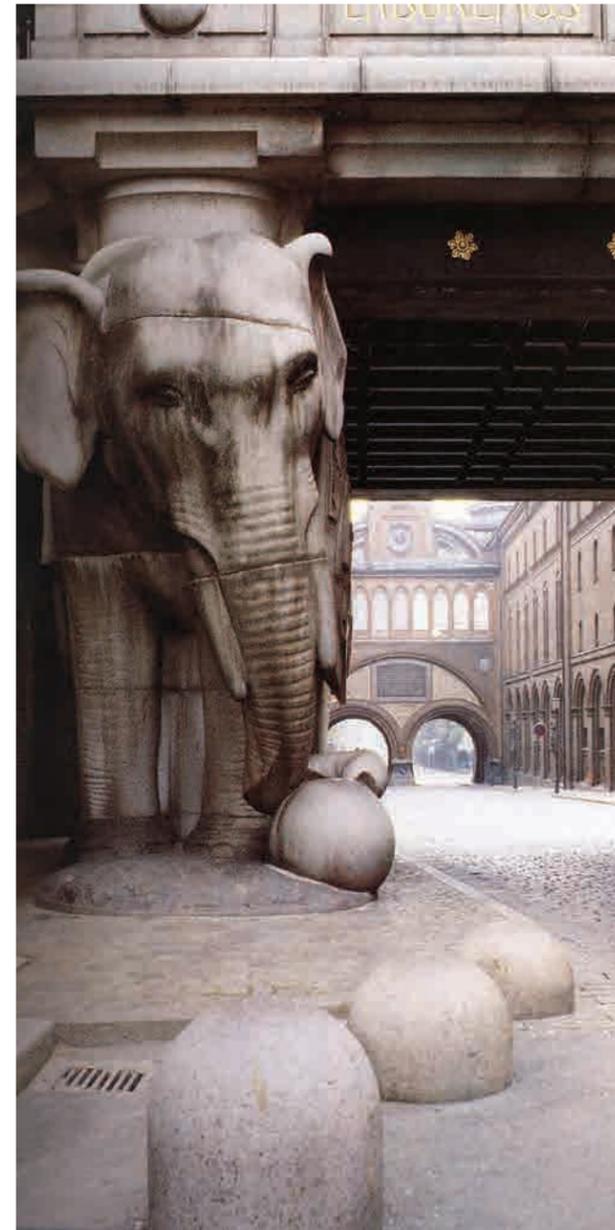
TRADITIONAL GATEWAY SIGN



PLANTED PEDESTRIAN ARBOR PORTAL



MILLENIUM PARK CLOUD GATE, CHICAGO



CARLSBERG BREWERIES' ELEPHANT GATE, COPENHAGEN

## Contextual Gateways

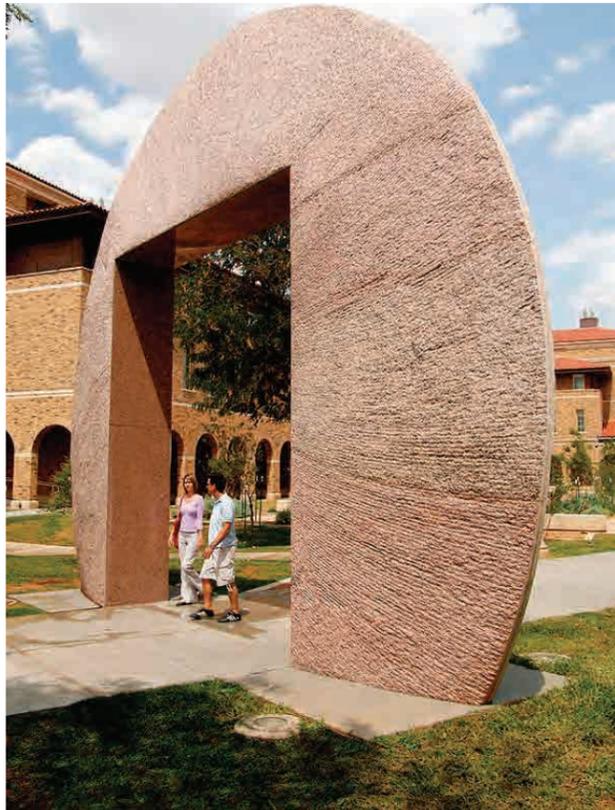
Gateways are a means of access to a particular place. When a person passes from one environment to another, whether it is from a forest to a grassland, or from a suburb to an urban core, they are crossing a threshold. This threshold is often defined by some sort of physical change. In the case of the forest to grassland transition, towering trees may change to waist-high grasses. In the case of the suburb to city transition, there is an obvious increase in the density and height of buildings and structures.

In the built environment, we have a tendency to augment this transition from one zone to another to proclaim arrival or departure. Creating a physical gateway helps to set the scene, tone, and/or aesthetic of a particular place. By passing through a constructed gateway, the information visitors receive and feelings they might have are dictated by the form and content of that gateway.

In the case of structures like Millenium Park's Cloud Gate in Chicago, visitors can be easily overcome with awe due to the grandiosity of each of these designs. Such gateways announce to all who visit that they have truly arrived. In other cases, the message may be delivered at a more subdued level or at one that is more playful or fun. In most cases, the scale, form, and content of a gateway should be contextual and correspond with its setting and supplement its overall character and sense of place.

# GATEWAYS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



SQUARE SPIRAL ARCH, UNIVERSITY OF TEXAS



SEVEN WONDERS, HOUSTON



SEVEN WONDERS, HOUSTON



LIGHT CUBE



PLAZA D'ESPANYA, BARCELONA



SEVEN WONDERS, HOUSTON



FOUNTAIN SQUARE, INDIANAPOLIS



FOUNTAIN SQUARE, INDIANAPOLIS

# GATEWAYS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Digital Mile, Zaragoza

The City of Zaragoza is one of Spain's oldest and most populous urban areas. It sits on the Ebro River, roughly 200 miles from both Madrid and Barcelona. In 2003, the state constructed a new inter-modal regional transportation station (Estación Intermodal de Zaragoza--Delicias) in Zaragoza's Las Delicias sector. The new station provides a modern terminal for the new high-speed commuter rail line connecting Zaragoza to Madrid and Barcelona. The Delicias station replaced the former "El Portillo" rail station, freeing up 23 acres of prime real estate in the heart of the city. At the same time, Zaragoza was chosen to host the global International Exposition in 2008 (Expo 2008). The Zaragoza City Council decided to use both of these opportunities to reposition Zaragoza's economy by developing a "technological urban development project" called the Milla Digital (Digital Mile).

City officials teamed up with the Massachusetts Institute of Technology (MIT) to redesign 330 acres (134 ha) of urban land in the Las Delicias and El Portillo districts. The resulting plan, the Digital Mile, is promoted as "an urban space of creativity and innovation," uses communication technology to add value to public space and was intended to raise the city's global, high-tech, entrepreneurial profile during Expo 2008. The umbrella initiative, the Digital Mile Campus, combines the Digital Mile's long term strategic aims with two additional cultural facilities, the Milla Museum/Mediateque in Portillo and the Centre for Art and Technology in the Almozara Park. The plan calls for nearly 4,000 new housing units to be built between the Portillo and Delicias districts.

The general design concept of the Digital Mile is to link physical and digital frameworks into a network of facilities and public spaces that can be used for multiple community and educational purposes. The physical elements are organized along a pathway--called the Paseo del Agua--consisting of three major event places: the El Portillo node, one of the city's most historic and culturally significant areas and location of the Museo de la Milla; the Almozara neighborhood, a highly visible area connected to Las Delicias by way of a pedestrian bridge; and the Ebro Rivergate, the main entrance to the Expo 2008 grounds and future gateway of Zaragoza's high-tech business sector and recreational amenities. The Paseo del Agua is accessible by subway and bus.



DIGITAL MILE PLAN



HOUSING COMPONENT IN ORANGE

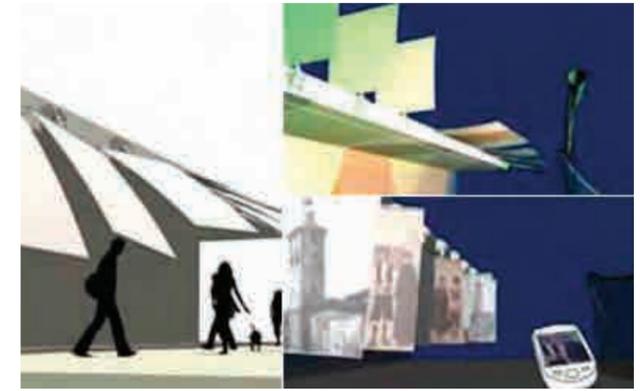


INTELLIGENT BUS STOP



"MEMORY WALK" DIGITAL PAVERS

The Digital Mile will include ambient technology amenities, including a ubiquitous free wireless network and location-based services accessible to subscribers. The project's digital elements will be embedded into every day urban objects, both functional and playful. For example, users will be able to manipulate new intelligent street and building light networks, along with digital menus and maps, according to their needs and whims. Intelligent Pavement will track users footsteps using lighted panels. The Adaptable Bus Stop will provide an interactive feature that digitally provides information and maps by touch or mobile phone according to the users wishes while simultaneously serving as a wireless hotspot. A Smart Parking program will allow drivers to digitally assess local parking availability. A digital graffiti wall will allow passersby to make their (temporary) mark using their cell phones or laptops. Digital awnings, essentially movable fabric screens mounted on the buildings adjacent to the digital plaza and promenade in El Portillo, will respond to climate and people's movements.



"DIGITAL AWNINGS"



"WATER WALL"

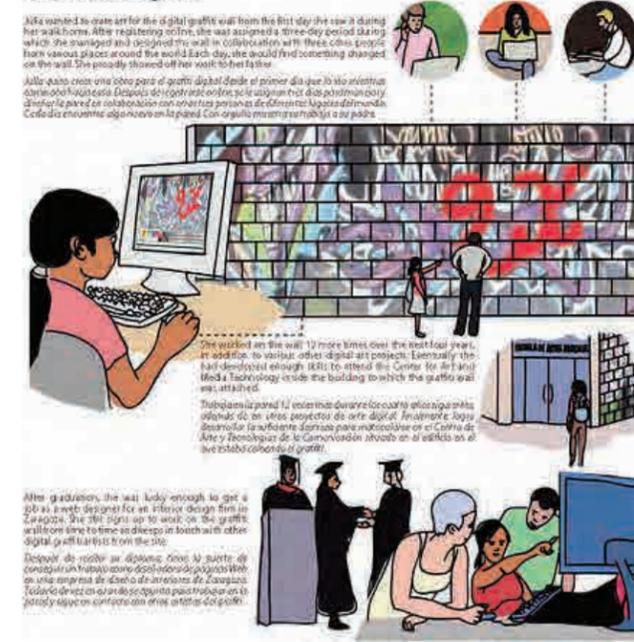


COMPLETED INFO CENTER WITH "WATER WALL"



COMPLETED INFO CENTER WITH "WATER WALL" AT NIGHT

### The Graffiti Gateway El Graffiti Digital



"GRAFFITI GATEWAY" INTERACTIVE DIGITAL PLAY

# DIGITAL DISTRICTS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Digital Media City, Seoul

With the highest rate of Internet users and broadband penetration rates in the world, Seoul's Digital Media City (DMC) builds on South Korea's existing technological strengths and geographically strategic position in North East Asia. It aims to be the global center for the media and entertainment industry, combining economic, cultural, environmentally-friendly objectives into a physically and digitally hyper-connected region.

Encouraged by the positive experience of the 1988 Seoul Olympics, Seoul Mayor Goh proposed the Digital Media City in the 1990s as part of a regional plan for Sangam, an underdeveloped area located in the Mapo-gu district in the western part of Seoul. The impetus for redevelopment was the FIFA World Cup tournament, held in Seoul in 2002, and the new Incheon International Airport, built in 2001.

The 1,630-acre Sangam New Millennium Town (SNMT) has four components: an environmentally friendly residential development that includes 7,000 apartment units along with services (30,000 residents, 71 million square feet); the 857-acre World Cup Park, built on the former Nanjido island landfill on the River Han; the World Cup Stadium, which includes 161,500 square feet of rentable commercial space; and at its heart, the 6.1 million square foot Digital Media City (DMC).

The DMC is designed to be a production center for digital media as well as a "world-class industrial-academic research center". The project has attracted leading businesses of the media and entertainment industry, including LG Telecom, Pantech, LG CNS and the Korean Film Archive, with the support of the Korea Culture & Contents Agency and the Ministry of Culture & Tourism and nearby universities. DMC is 2.5 miles from Sinchon, a college town with university cluster (Yonsei, Ewha, Sogang and Hongik).

In the vicinity of the Digital Media City are five expressways and a subway line connecting passengers to Seoul's central business district, just 4.5 miles away, in 15 minutes. Incheon International Airport is 30 minutes by car and a new high-speed rail line will run through the DMC on its way to international destinations. The project's digital infrastructure includes a tera byte-level communication network that connects Seoul to the wireless satellite communication network.

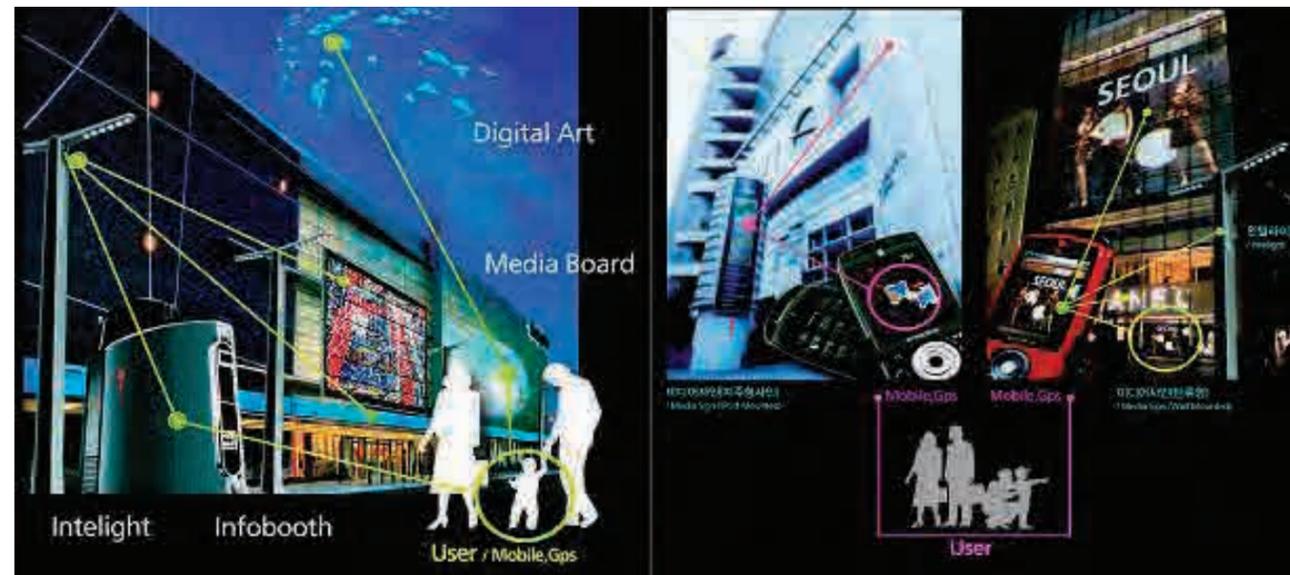


DIGITAL MEDIA CITY RENDERING

Running through the DMC in a graceful arc is the world's first pedestrian-only Digital Media Street (DMS), designed to showcase "intelligent" digital media technology as applied to urban public space. Specially designed responsive structures and fixtures ranging from the IP-Intelight, an artificial intelligence-based street lamp, to the Info-Booth information kiosk, will be integrated into plazas, street furniture and architecture in phases. Residents have earned the nickname "Denizens" (Digital Citizen) for their enthusiastic use of digital technologies.

The DMC plan also includes the Seoul Business Center, the Venture Office Building and the High Tech Industry Center, the latter which supplies affordable office space for innovative small and medium sized venture firms. The DMC has programs in place to support tenant businesses, with special incentives for foreign direct investors.

A cornerstone of the development is Nuritkum Square, a "digital pavilion" houses a mall, entertainment and media attractions, and research facilities where businesses can demonstrate new high-tech products to visitors. The firm Skidmore, Owings & Merrill (SOM) has designed the DMC Landmark Tower, which when completed in 2014, will be Asia's tallest building at 2,100 feet and 133 stories. The building makes use of solar radiation and wind to generate its own power and reduce energy use by up to 65 percent of a conventional tower. The mixed-use building will also include atrium gardens and open air green spaces to naturally filter air within the structure.



INTERACTIVE DIGITAL FEATURES: KIOSKS, SCREENS, URBAN LIGHTING



SOM'S DMC LANDMARK TOWER



NURITKUM SQUARE



DIGITAL SCREEN, NURITKUM SQUARE



DIGITAL SCREEN, NURITKUM SQUARE



MAIN SQUARE



FED SQUARE AERIAL VIEW



FED SQUARE AS SEEN FROM ACROSS THE YARRA RIVER



MAIN SQUARE



MAIN SQUARE

## Federation Square, Melbourne

Federation Square is a pedestrian-only cultural district built in Melbourne, Australia. Its main tenants include a public broadcaster, a museum, cinemas, exhibition spaces, art galleries, eateries and shops.

Fed Square, as it is known locally, opened in 2002 to controversy over its \$450 million cost (publicly-funded) and modern design which is based on the pinwheel. However in the time since its construction, it has become a popular meeting place and tourist sight.

Fed Square occupies an urban block and is organized around two main public spaces, an open air square and a covered atrium. Located near Melbourne's major attractions, it was designed in part to connect the city's historical center to the Yarra River. A major addition, Federation Wharf, was built in 2006, allowing direct elevator access to the adjacent ferry terminals.

Fed Square is built over rail lines and its public square faces the busy Flinders Street Station, the central railway station of Melbourne's suburban rail network. It is also connected to a new urban park, Birrarung Marr.

Fed Square is notable for its unorthodox aesthetics and its use as a large public gathering space. The square features a large, fixed public screen, typically used to broadcast major sporting events. The main square's paving, comprised of 470,000 ochre-colored sandstone blocks from Western Australia, is designed as a large artwork, titled Nearamnew. Overhanging the square are bare light bulbs.

A 1,700 square foot, highly-efficient passive heating and cooling system called the Labyrinth is located between the floor of the atrium and the underground rail lines. During the summer months, cold air cools the concrete during the day and warm air is dispelled at night, with the reverse process occurring during the winter months.

## Public Art

Public art is artwork that is accessible to the public. As such, it is typically outside, although it can also be located inside an accessible public building, such as a train station or government building. Public art can be made of any media. However given concerns about theft and vandalism, it is often large in scale. Common artworks include sculpture, installation works, landscape-based art and, memorial statues and monuments. Sometimes public art is designed to be temporary. The manifestations of public art are endless.

The following pages emphasize art that is interactive and digital. Interactive digital public art encourages the viewer to become a participant. The artwork may solicit a reaction from the audience, or may respond to the viewer's presence or actions, and in turn create a reaction in the audience. In some cases, the participant must use technology, such as a handheld device. The precedents also includes everyday objects rendered in a creative and artistic way, including building facades and other utilitarian structures.

(1) It Heals Up, by pop artist James Rosenquist, adorns the University of South Florida's Pediatric Research Center in St. Petersburg. The used Band-Aid is meant to contrast what is a normal occurrence for medical staff and children but not for the general public.

(2) An artistic interpretation of fencing around a parking lot in Seattle Center.

(3) Jonathan Borofsky's super-scaled kinetic Hammering Man in Frankfurt-am-Main is a landmark outside the Frankfurter Messe convention center.

(4) Doug Hollis' Listening Vessels in Discovery Green park, Downtown Houston, invites the public to sit in two limestone parabolas and converse at a normal volume in spite of the 60 foot distance.

(5) Puppy is an oversized topiary vision created by Jeff Koons that sits outside the Guggenheim Museum Bilbao.

(6) Reactive Sparks are seven LED towers located along the highly congested Mittlerer Ring road in Munich. The towers use wave patterns to depict real-time traffic data. As traffic increases, the waves at the bottom of the pillars get larger and increase in speed.



(1) IT HEALS UP



(2) SEATTLE CENTER PARKING LOT FENCING



(3) HAMMERING MAN



(4) LISTENING VESSELS



(5) PUPPY



(6) REACTIVE SPARKS



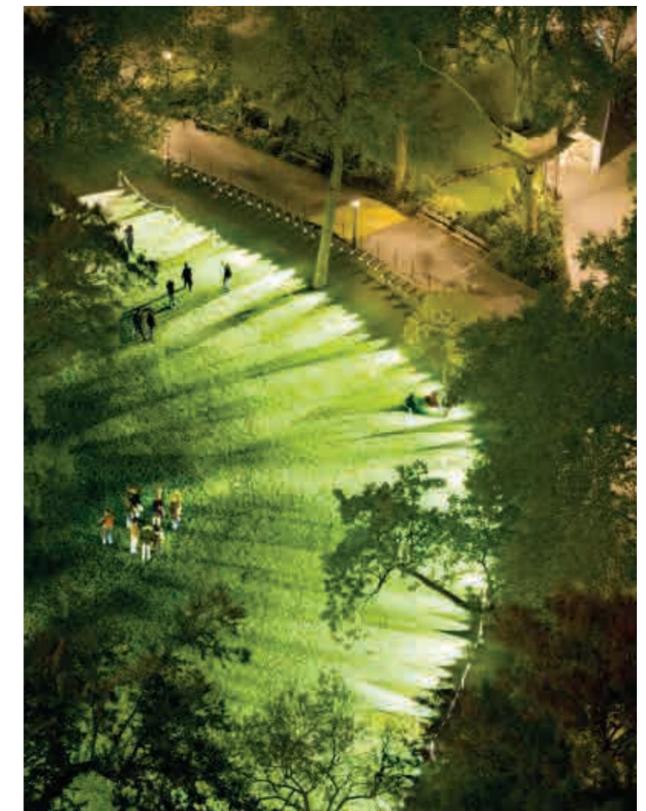
(6) REACTIVE SPARKS



(7) FOUNTAIN



(8) PULSE PARK



(8) PULSE PARK

## PUBLIC ART

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

(7) FUNtain is an acoustic keyboard fountain connected to a hydraulophone, a water-based pipe organ. Located at the entrance to the Ontario Science Center in Toronto, FUNtain was invited by engineering professor Steve Mann.

(8) Pulse Park, in New York City, was a night-based interactive public light sculpture for the city that never sleeps. It ran for a month in 2008, in Madison Square Park. Designed by Rafael Lozano-Hemmer, Pulse Park measured up to 200 visitors' heartbeats via two hand sensors, located in the park, triggering 200 theatrical spotlights that splashed a matrix of light across Madison Square Park.

(9) Crown Fountain is a large-scale installation work in Chicago's Millennium Park. Designed by Spanish artist Jaume Plensa, it consists of two 50-foot glass block towers placed at the end of a shallow reflecting pool. LED screens project video of 1,000 Chicago residents' faces. Plensa placed fountains in the wall in order to give the illusion of water flowing from their mouths, referencing gargoyles, from whose open mouths flow water symbolizing life. Visitors are invited to play in the reflecting pool as well as sit along its edges.

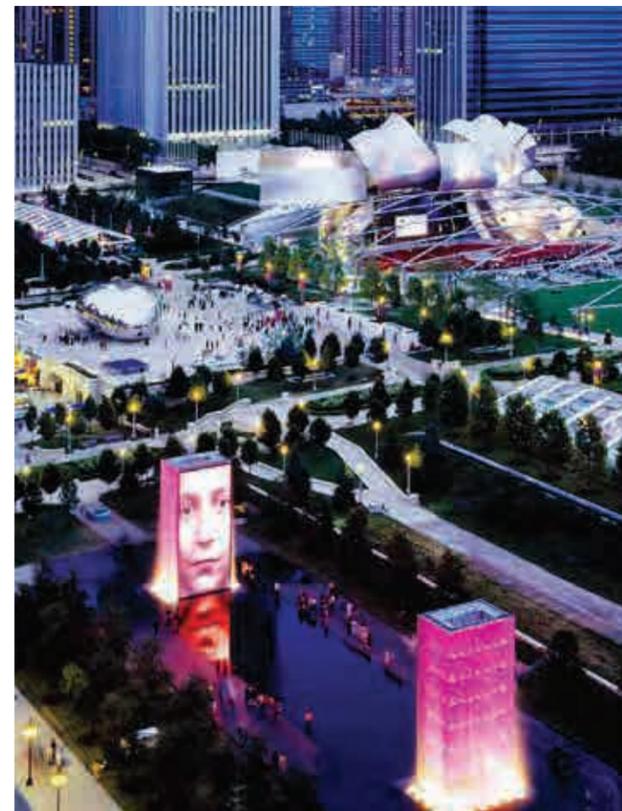
(10) SpacePlace: Art in the Age of Orbitization, is a free, public access artwork that allows for "mobile cultural production" in an underground pedestrian passage in Munich's downtown shopping district. Artists Philip Pockock and Peter Weibel installed two screens. One projection scans the passageway for mobile phones running Bluetooth while large messages invite passersby to use their phones as to interact with the computer and create a "web mash-up" using a database of content pulled from fine art, science fiction, architecture, music, film and other media. The goal is to eventually acquire an "art satellite" which would house only "space art".

(11) Digital Water Pavilion, designed by researchers from MIT, features water streaming in droplets from the edge of a roof overhang whose flow is turned on and off using sensors to allow for an interactive water wall. Unveiled during Expo 2008 in Zaragoza, Spain, the only solid piece of the pavilion is the water-covered roof which rests on pistons and can be flattened to the ground, disappearing altogether. The Digital Water Pavilion is part of the Digital Mile, reviewed in the Digital Districts section.

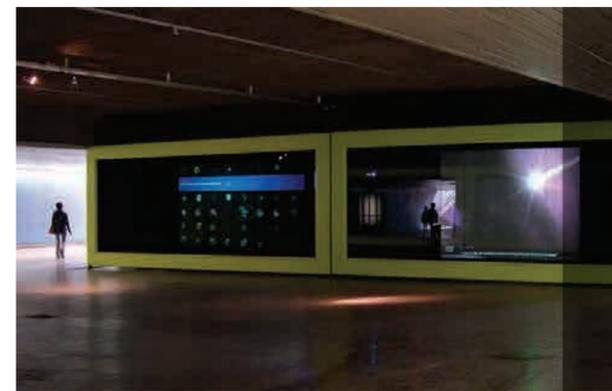
(12) Tampa Public Mood Ring, by Will Pappenheimer and Chipp Jansen, was a "combined internet and spatial artwork installation" that used social media to capture the emotional condition of participants and displayed it as color hue. The color-changing mood ring was a temporary 25-foot steel sculpture of a Super Bowl championship ring in Cotanchobee Park, Downtown Tampa. Visitors to TampaBay.com's NFL blogs could send a comment-mood directly to the giant mood ring during the height of the Super Bowl period in 2009. The artwork was part of the biennial art program, Lights on Tampa.



(9) CROWN FOUNTAIN



(9) CROWN FOUNTAIN, MILLENIUM PARK



(10) SPACEPLACE



(10) SPACEPLACE



(11) DIGITAL WATER PAVILION



(12) TAMPA PUBLIC MOOD RING



(12) TAMPA PUBLIC MOOD RING



(12) TAMPA PUBLIC MOOD RING: WEB INTERFACE



(11) DIGITAL WATER PAVILION

In an age of communication, building facades can become one more means of expression. Digital screens and light-emitting diode (LED) facade applications integrate media with architecture, conveying a dynamic cultural or business environment. There are both artistic and commercial applications to this new technology. Artists and designers have adapted new technologies, such as LEDs, Radio Frequency Identificaiton (RFID) tags and QR codes, and incorporated interactive features that use hand-held devices.

(13) The facade and lobby of the SK T-Tower in Seoul, Korea, is used to present digital art works curated by the Art Center Nabi.

(14) The Collegium Hungaricum (Hungarian Cultural Institute) in Berlin features multiple screens onto which artwork or live happenings within the building are projected.

(15) T-MOBILE's headquarters in Bonn was the first transparent media facade. The 3,200 square foot facade hosts 250,000 LEDs and a changing display of images.

(16) 555 KUBIK, or "how it would be, if a house was dreaming", was a temporary facade video projection on the Kunsthalle in Hamburg. Visualizations were derived from inside the art museum and from the architecture of the building itself.

(17) The architecture of the Kunsthaus Graz is suggestive of the contemporary mixed-media art found inside the building. Designed by architects Peter Cook and Colin Fournier, the Kunsthaus addition sits like a "blob" atop a building dating from 1847. The BIX Facade ("big pixels"), an acrylic glass skin, is a programmable urban screen embedded with 930 fluorescent rings, each representing a pixel and adjustable by computer.

(18) Tokyo's N Building has a facade made up of digital QR codes. Using a mobile phone with QR capability, one aims their phone at a window to find out information about the business, sales, and what the people inside are Tweeting (through Twitter geotagging).



(13) SK T-TOWER



(15) T-MOBILE



(16) 555 KUBIK



(17) KUNSTHAUS GRAZ



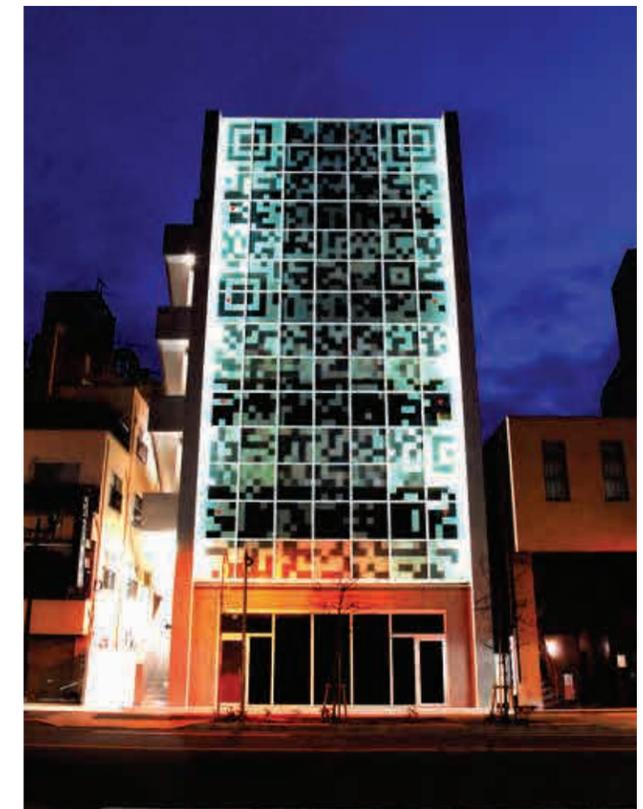
(18) N BUILDING



(14) COLLEGIUM HUNGARICUM



(14) COLLEGIUM HUNGARICUM



(18) N BUILDING

## PUBLIC ART

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

Building facades can also be activated by static or temporary artwork, such as light projections, green walls and vertical gardens, murals and sculpture. Even the simple application of color can add vibrancy to an otherwise bland streetscape.

(19) A black and white photo mural in Soho, London, transforms an otherwise ordinary corner building into a landmark.

(20) Parisian kindergarden features colorful panels.

(21) (22) Festival of Lights is a nocturnal celebration of architecture and graphic art in Pittsburgh. Static and moving images are projected onto historic buildings and on walls.

(23) In Paris, a building facade is transformed into a living, breathing skin with a "mur végétal" or green wall.

(24) Yesterday's Tomorrow, a mural by Brian Holderman, turned a Pittsburgh Parking Authority (PPA) garage wall into a landmark, while a mural in Poland (26) livens up an apartment building.

(25) David Siqueiros' sculptural mural, El pueblo a la universidad, la universidad al pueblo, adorns UNAM's Central Library in Mexico City.



(20) FESTIVAL OF LIGHTS, PITTSBURGH



(23) GREEN WALL, PARIS



(25) UNAM, MEXICO CITY



(19) SOHO, LONDON



(20) PARIS



(21) FESTIVAL OF LIGHTS, PITTSBURGH



(25) YESTERDAY'S TOMORROW, PITTSBURGH



(26) MURAL, POLAND

## PUBLIC ART

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Mass Transit

Bus Rapid Transit (BRT) provides the high frequency service and convenience of rail service without the high capital infrastructure costs. It is a scaled down variant of Bus Rapid Transit. The adjacent table compares the features of BRT with light rail and subway service. From the table, it is clear that BRT provides some of the same benefits of rail service for less cost.

Cleveland's HealthLine Bus Rapid Transit (BRT) service is a model for Oakland. The BRT serves the Euclid Avenue corridor on Cleveland. This corridor is similar to Oakland with hospitals and universities district.

The Port Authority of Allegheny County (PAT) proposed a Rapid Bus service in the 2009 Transit Development Plan (TDP). Neilson/Neygard, a leading transportation planning firm, recently developed a proposal for Rapid Bus service in Pittsburgh. Eight Rapid Bus stations in the greater Oakland area.

Real-time bus arrival systems include information gathering and dissemination to provide riders and staff with real-time information regarding estimated arrival time and passenger load via dynamic message signs at stops, internet, smart phones, sms, and telephones. Real-time bus arrival systems reduce the wait time for riders and increase the operational efficiency of the transit provider.

The real time location information can be gathered in at least three ways:

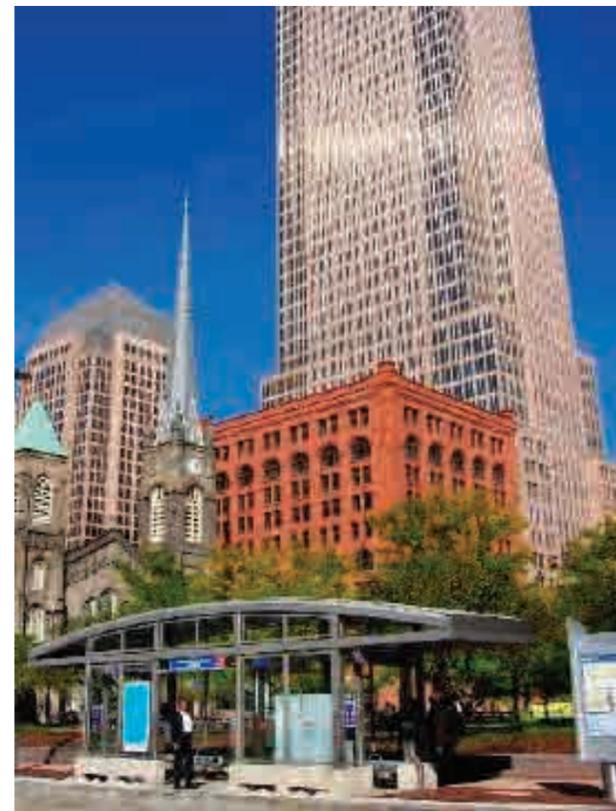
- » Automatic Vehicle Location (AVL): enhanced GPS units installed on buses that transmit location information to a centralized server via a wireless internet connection.
- » Crowd Source: riders' smartphones transmit their location while on the bus. This location information is sent and aggregated at a centralized server and disseminated via a web service.
- » Passive Infrastructure: buses communicate with sensors/wifi basestations as they pass them by. The sensors transmit the information about passing buses via the internet to a centralized server. This server then aggregates the bus location information and disseminates it through a web service.



CLEVELAND'S HEALTHLINE BRT STATION



CLEVELAND'S HEALTHLINE BRT LANE



CLEVELAND'S HEALTHLINE BRT STATION

During the summer of 2007, the Chicago Transit Authority launched the CTA Tracker, a real time arrival information service on 25 routes.

The program was an immediate success leading to 19 more routes being added shortly after launching. The service has increased rider satisfaction, and decreased the amount of time riders wait for the bus.

In the Fall of 2009, CMU's Heinz College deployed myRide, a real time arrival information system for the University shuttle systems.

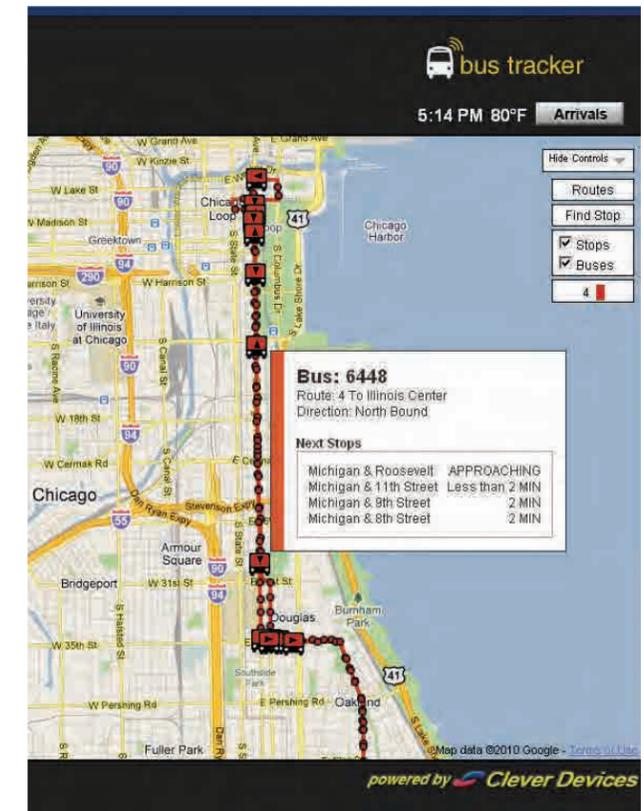
MyRide included the deployment of GPS enabled smart-phones on CMU shuttles in order to create a previously non-existent schedule for arrivals and departures based on real-time transmission of current latitude/longitude coordinates. Furthermore, the system then uses an algorithm through which a prediction of future location is made. In addition to location information, myRide provides a Twitter feed for each shuttle. Upon launching myRide, over 150 unique riders accessed real-time information daily.



MYRIDE REAL-TIME DATA



CTA TRACKER MOBILE APP



CTA TRACKER REAL-TIME ARRIVAL DATA

# TRANSPORTATION

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Smart Parking

In central business districts (CBDs), as many as one in three cars on the road are searching for a parking space. This "cruising for parking" is frustrating, and adds to road congestion and spews greenhouse gases into the atmosphere reducing air quality.

Parking based congestion management is an efficient and intelligent way to reduce congestion, decrease pollution and increase the quality of life in Oakland. Comprehensive smart parking management programs have been shown to remedy this inefficient search for parking.

The smart parking management strategy three components:

- » Parking Wayfinding System
- » technology (meters, sensors and smart cards)
- » infrastructure improvements



PARKING SENSOR USED IN SINGAPORE



SFPARK METER

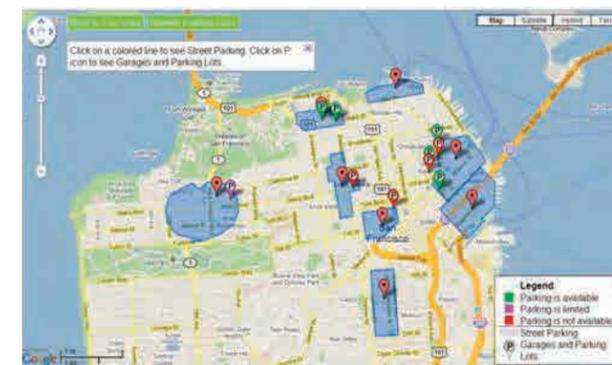
Singapore, and San Francisco have proven the congestion benefits of parking based congestion management. The key elements of a Smart Parking System are:

- » Parking Wayfinding System - Provide information to drivers via variable message displays about the availability of both on street and off street parking. The Parking Wayfinding System will have high impact during special events.
- » Smart Sensors - deployed in individual parking spaces and parking garages to monitor the availability of parking. This availability information is shared in real-time with drivers via the Parking Wayfinding System and other communication technologies.
- » Advanced Communication Technologies: The communication modes include the web, smartphone applications, SMS, IVR, and social media.

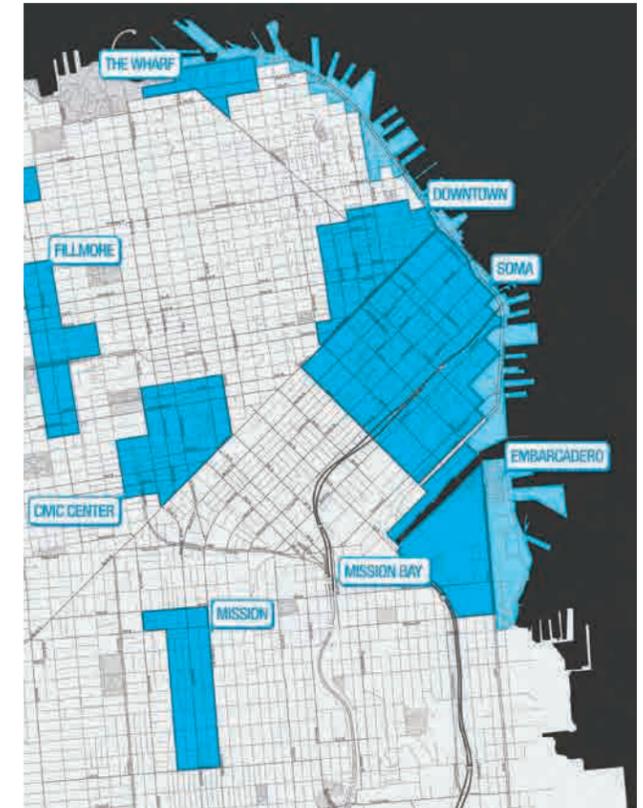
Singapore's Parking Guidance System (PGS) includes electronic displays at the appropriate gateways to the city which display parking availability. When the driver arrives at the parking lot or garage, an LED screen displays available parking spaces and direction.

San Francisco's SFPark is the world's most advanced parking management system pilot. It uses sensors, new meters, and real-time parking data. The pilot deployment includes over 6,000 on-street parking space and 11,500 off-street parking spaces. The pilot areas include Civic Center, Hayes Valley, Downtown, SOMA, the Mission, Fisherman's Wharf, the Fillmore, and the Marina.

The SFPark data will be disseminated via the 511 system, mobile devices, text message, and through new electronic display signs at high-traffic locations in the City. A sample website and iPhone, developed by CMU's Heinz College, are shown here.



SFPARK ZONES



SFPARK MOBILE APP MAP



SFPARK SENSOR

# TRANSPORTATION

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

## Bicycling

Bike rentals available at locations throughout a city. A member requests a bike from one of the locations and returns it to any other valid location.

Twenty-five percent of urban trips are made within one mile or less of the home. Forty percent are within two miles, and fifty percent of trips are less than 5 miles. Eighty-two percent of all trips, five miles or less, are taken by motorized vehicle (2001 National Household Travel Survey). Replacing some of these low-mileage car trips with bike trips can significantly reduce road congestion. Around the world, bike sharing programs have been shown to increase the mode share of biking and reduce car dependency.

Currently, over 100 cities worldwide have deployed bike sharing programs.

The recent growth of bike sharing systems is due to information and communications technology. Modern bike sharing programs, also known as 3rd generation, employ technology such as electronic locking mechanisms, smart card access and GPS to operate the system. They also provide real time bike availability information to members via a website or smartphone. Usage of bike sharing programs differs from rental car services and shared car services, like ZipCar, in that the majority of bikesharing trips are one way.

### Vélib, Paris

Paris' Vélib (vélos en libre-service) system has over 20,000 bikes and 1,400 stations in the program. There are on average over 80,000 trips taken per day on the shared bikes. It is reported that the system has reduced traffic levels by five percent.

### Bixi, Montreal

The bike sharing program in Montreal is the largest in North America with nearly 300 stations. The program is called Bixi, and has won several international design competitions for the bikes and bike stations. The bike stations are powered by solar panels and have a small urban footprint. There were over one million trips taken on Bixi during the first nine months of operation. Bixi programs have been adopted in Toronto, Washington, DC, Boston, Minneapolis, Melbourne and London.

### Funding Models

There are several funding models for bike sharing programs.

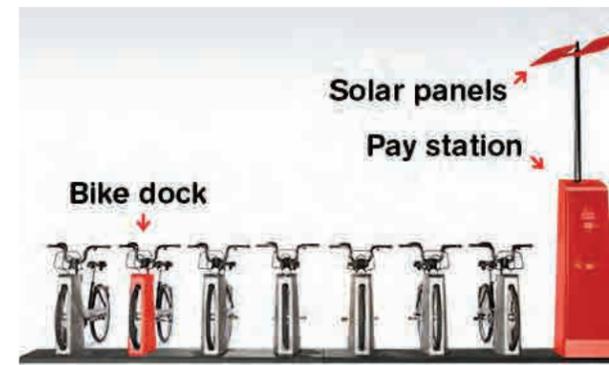
- » Privately owned and operated,
- » Public/private partnerships with advertising companies
- » Business district/association owned and operated
- » City department of tourism owned and operated
- » University owned and operated
- » City owned and operated



VÉLIB BICYCLE



VÉLIB, PARIS



BIXI BIKE COMPONENTS



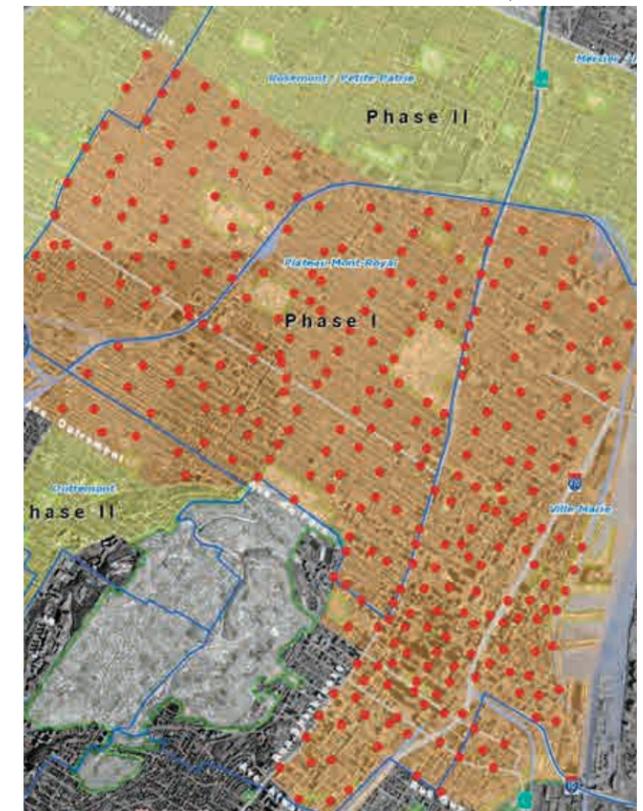
BIKE LANE, MONTREAL



BIXI BIKE RACK



BIKE LANE, MONTREAL



PHASE I DEPLOYMENT OF BIXI BIKE RACKS

# TRANSPORTATION

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Car Sharing & Smart Navigation

Car sharing is a model of car rental where people rent cars for short periods of time, often by the hour. Car sharing is attractive to customers who make only occasional use of a vehicle, as well as others who would like occasional access to a vehicle of a different type than they use day-to-day. Car sharing has been shown to reduce road congestion and pollution. Car sharing has proved effective for not only individuals, but also for institutions.

The Swedish Medical Center in Seattle, WA was able to reduce their number of fleet vehicles by using Zipcar. Swedish medical center has over 7000 employees. Many of these employees travel to other Swedish medical center locations throughout the day to visit patients. Travelling employees often drive their own cars, or the Swedish fleet of vehicles. In an effort to reduce the number of employees that drive to work, Swedish medical center used Zipcars as fleet vehicles. In addition, one Zipcar removes 10-15 cars from the parking garage, relieving demand for garage parking.

### Person-2-Person Carsharing (P2P)

Person-2-Person Carsharing (P2P) allows car owners to convert their personal vehicles into share cars which can be rented to other drivers on a short-term basis. Simultaneously, P2P car sharing provides those seeking short-term car rentals with the tools to locate vehicles near them which are available for rent. P2P car sharing can also benefit institutions by supplement fleet vehicles and reducing the demand for garage parking.

### Smart Navigation

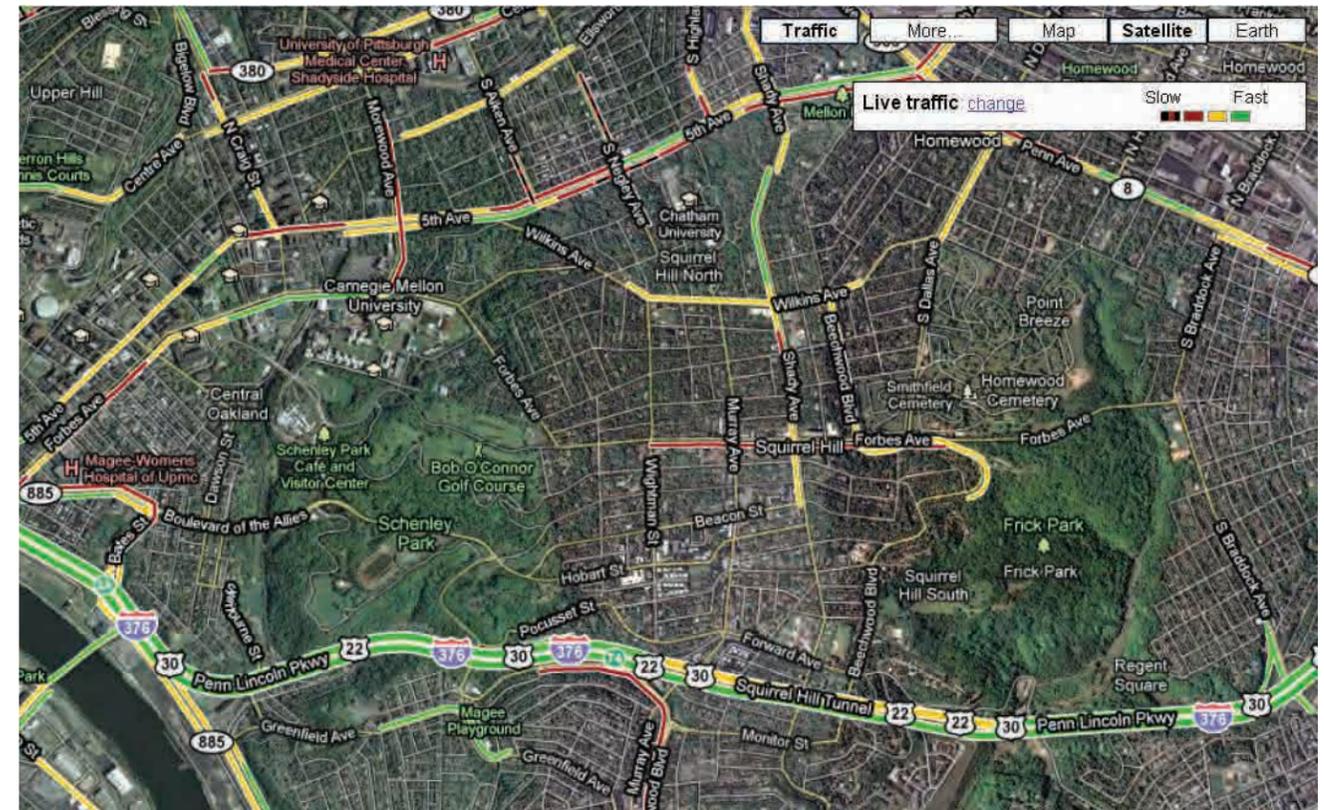
The proliferation of in-car GPS navigation systems makes it possible to provide drivers with real time directions. These real-time navigation instructions considers

- » Current and prediction congestion levels
- » Accidents
- » Road construction
- » Special events

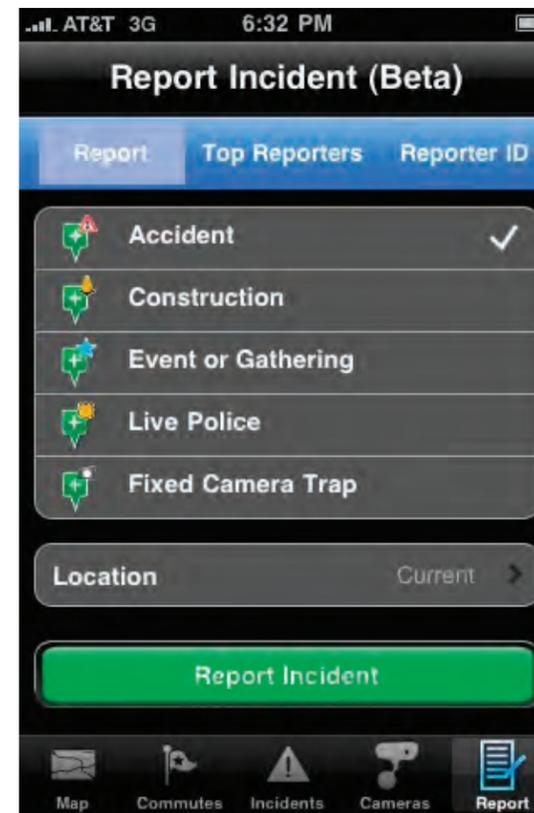
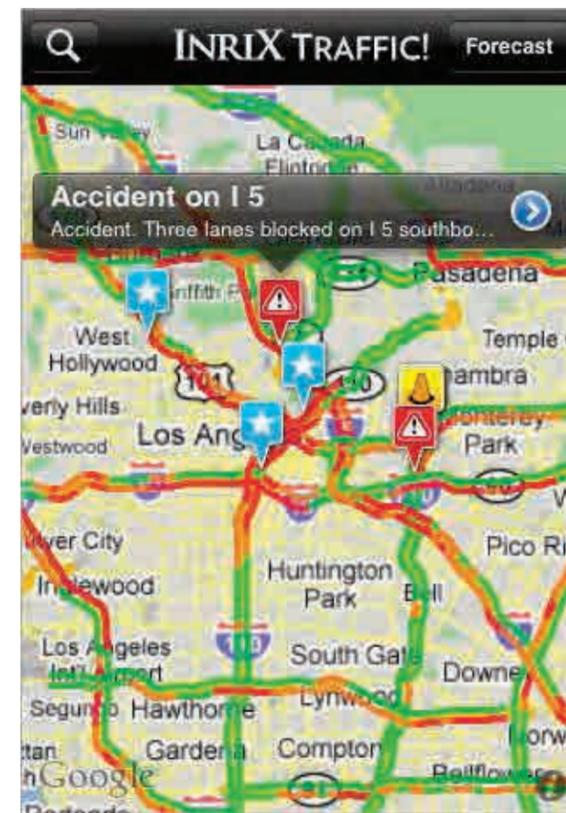
Google Maps provides a "Live Traffic" feature which displays the current traffic speeds. Users may select routes based on this information to avoid congestion when possible.

INRIX is a leading traffic data and navigation provider.

The INRIX iPhone app provides users with real time travel conditions, accident alerts and personalized trip planning.



GOOGLE'S LIVE TRAFFIC FEED FOR OAKLAND



INRIX MOBILE APP

## Going Mobile

One of the goals of the Innovation Oakland Project is to make mobile wayfinding possible. Smartphones are increasingly being used today, with most of them having advanced capabilities, such as onboard GPS, sensors (accelerometers, compass), wifi/Bluetooth, Internet access, etc. It is possible to leverage these capabilities to improve wayfinding for the Oakland visitor/resident, in a way that caters to their needs and interests. The mobile-wayfinding team that is a part of the Innovation Oakland project has had significant experience in developing and deploying solutions with real users, particularly with the iBurgh mobile 311 system, the HowsMyStreet crowdsourced snow-removal online platform, and the use of QR codes in retail environments to enhance the user experience.

### Mobile 311 Systems

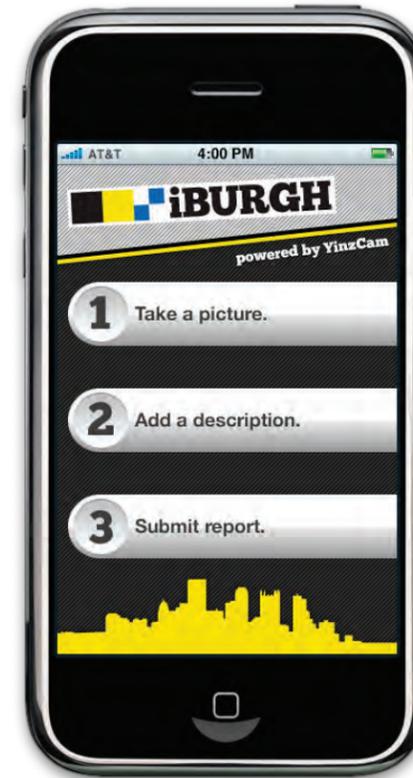
Various smartphone-based navigation and other civic capabilities exist. One of these, iBurgh, originated in Pittsburgh, and was developed jointly by Carnegie Mellon University in conjunction with the City of Pittsburgh. iBurgh launched in August 2009 on the iPhone platform and in January 2010 on the Android platform. It has had 10,000 downloads on the iPhone platform and approximately 1,500 downloads on the Android platform.

iBurgh essentially allows the residents of Pittsburgh to report incidents (graffiti, potholes, fallen trees, snow) directly to the City's Information Systems from their smartphones. The advantage of iBurgh lies in its auto-geotagging of the incident reports. Users simply take a picture of an incident and submit it—iBurgh discovers the GPS coordinates of the location where the picture is being taken and relays that information as additional context, along with the picture, to the City.

This is a significant improvement over the traditional complaint-reporting 311 phone/voicemail system that is currently in place with most cities—with the traditional system, the City officials need to decipher (often from some garbled/incomprehensible/incomplete phone call, voicemail or email) the location of the complaint and then dispatch repair crews to fix it.

iBurgh simplifies the task of both the users and the City:

- » Users do not need to type in long text messages, try to describe their incident-report through text, or wait on the other end of a phone line—with the simple push of a button to take the picture and to submit the report, the user can accomplish the same goals in a frustration-free, painless, efficient way
- » City officials do not need to worry about manual data-entry and deciphering of voice/audio-based complaints; furthermore, the City officials directly get the geographical location of the complaint, embedded with the complaint directly, making the complaint-reporting process efficient, streamlined and less error-prone, not to mention saving the City the costs of the manual data-entry and personnel to staff the 311 phone-complaint line.



IBURGH PHONE APP

## The Information Kiosk

Historically kiosks have been known as places, typically a small open-air structure, where one could interact with an attendant to obtain information or purchase refreshments or tickets to a show. In the context of wayfinding, kiosks are commonly otherwise known as 'information kiosks.' They exist to dispense free information in the form of maps, pamphlets, and other literature. In the case a kiosk is managed by an attendant, informational handouts are often supplemented by verbal advice.

As wayfinding has begun to embrace various technologies, kiosks have grown beyond their static wayfinding counterparts to become electronic and interactive. Such kiosks house a computer system that typically utilizes custom software designed solely for the functionality of that particular system. As the internet has gained a preeminent role in society, kiosks have been designed to link the internet and its limitless interfaces with the flow of the street.

Utilization of kiosks can provide critical and current information to a community. Such information as public transportation maps and schedules, community-wide events, public lectures, museum exhibits, local attractions, and shopping and dining amenities can be provided quickly and with ease. In order to support access and inclusivity, kiosks should be placed along the public right of ways, in public open spaces and at major decision points. Furthermore, to link the public realm with the private realm—outside with inside—lobby spaces of prominent institutions could also be utilized as locations.



BAUHAUS INFORMATION KIOSK, BY HERBERT BAYER



"ROLLING MAP" INFORMATION KIOSK, LOS ANGELES



GANGNAM MEDIA POLE, SEOUL



"ONE SIGN, FOUR FUNCTIONS" KIOSK, BIRMINGHAM



INTERACTIVE MAP, LAS VEGAS MARKET & DESIGN CENTER



FICTIONAL INFORMATION KIOSK

# KIOSKS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

SECTION **E** **RESEARCH**  
3. PUBLIC OUTREACH

## Public Participation

The following focus groups were convened during the Fall of 2010 to obtain a range of perspectives regarding the strengths, weaknesses and opportunities related to Oakland Wayfinding:

- » City Agencies/Local Advocacy Groups
- » University Students
- » OBID Staff and Committee Members
- » Technical Advisory Group (individuals involved in facilities management, parking and security)
- » Faculty and Staff
- » UPMC Visitors Group

A first Public Meeting was conducted in January of 2010 to solicit additional input about Oakland wayfinding.

The map at right reflects input collected from focus group and public meeting participants regarding the location of neighborhood gateways, places in Oakland in need of improved wayfinding, and nodes where people tend to gather.

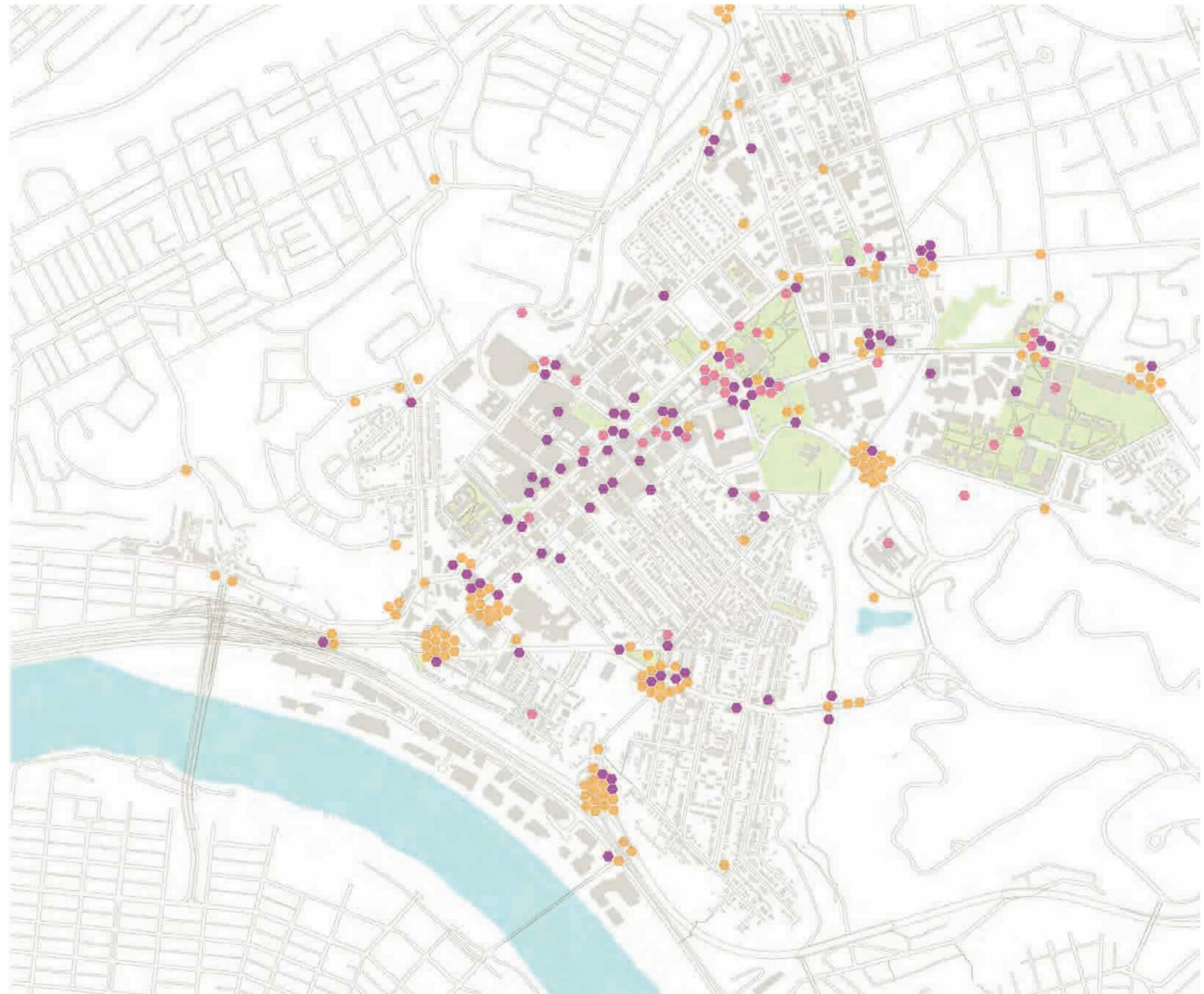
An on-line survey was created to obtain additional feedback from the Oakland community. Six hundred and twenty-nine people participated in the on-line survey. A copy of the survey questions and the survey results are provided in the Appendix of this document.

A second Public Meeting was held in June of 2010 to present findings and conceptual designs and to obtain additional community feedback regarding the Innovation Oakland design strategy and recommendations.

Public input was critical in guiding and fine-tuning the development of key Innovation Oakland strategies and recommendations.

### LEGEND

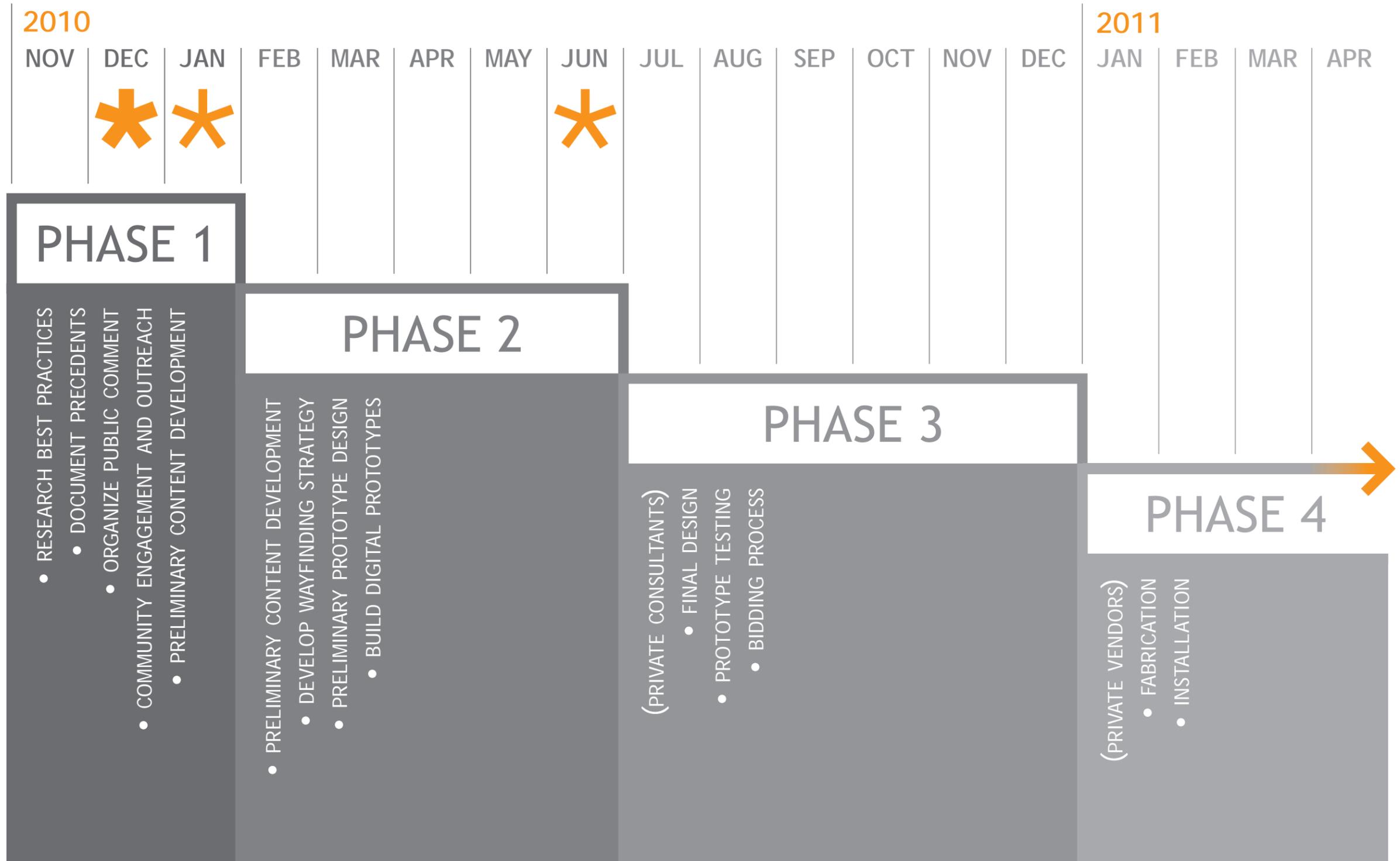
- LOCATION IN NEED OF WAYFINDING
- POINT OF ARRIVAL/GATEWAY
- PLACE WHERE PEOPLE GATHER



PUBLIC INPUT INTO OAKLAND WAYFINDING

## PUBLIC OUTREACH

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



Focus Group Outreach Sessions     Public Meeting Sessions

**The Good:  
What is Working for Wayfinding  
and Access in Oakland?**

1. Word of Mouth
2. Landmarks
3. Fifth and Forbes Corridors
4. Street Signs
5. Oakland Trip Pre-Planning using Google Maps, etc.
6. Pedestrian Enhancements to Intersections
7. Physical Campus Maps (Carlow, Pitt, etc.)
8. Bus Transportation
9. Vehicular Wayfinding
10. Event Information on the Radio and Television

**The Bad:  
What is NOT Working for Wayfinding  
and Access in Oakland?**

1. Difficult to Find Parking
2. Vehicular Traffic Congestion and Confusion
3. Bicycle Infrastructure
4. Signage Clutter in Streetscape
5. Lack of Gateway Orientation Signage
6. Poor Building Identification and Entry Signage
7. Campus/District Edges Not Clearly Identified
8. Insufficient Real-Time PAT Bus Information
9. Unpleasant Pedestrian Environment
10. Wayfinding Maintenance

**Big Ideas:  
Ways to Improve Wayfinding  
and Access in Oakland**

1. Treat Oakland as a Community with Shared Resources (parking, districts) via Coordinated and Consolidated Oakland Maps and Signage
2. Enhance PAT Bus Information (Real-Time Info)
3. Provide Bike Infrastructure
4. Improve Pedestrian Infrastructure
5. Clarify Parking Options and Provide Real-Time Availability Information
6. Improve Business District Lighting
7. Use Technology for Creative Interactive Wayfinding
8. Encourage More Public Art
9. Create an Oakland Information HUB/Center
10. Create District Guidelines related to Signs, Public Art and Architectural Aesthetics



SELECTED IMAGES FROM THE SEVEN FOCUS GROUP MEETINGS

SECTION **F** **RECOMMENDATIONS**

THE RECOMMENDATIONS ARE BASED NOT ONLY ON RESEARCHING AND BENCHMARKING BEST WAYFINDING PRACTICES INTERNATIONALLY, BUT THEY ALSO ARE GROUNDED IN THE PHYSICAL CHARACTERISTICS OF OAKLAND AND IN THE IDEAS AND GOALS GENERATED BY THE PROJECT COMMITTEE AND BY THE PUBLIC OUTREACH PROCESS.

## Overview

Innovation Oakland is a wayfinding system for visitors, residents, workers, students, faculty, researchers, and shoppers that provides:

- » **Direction**
- » **Information**
- » **Destination**

Consensus themes for Oakland wayfinding emerged during the research and proof of concept phases (Phases I and II). These themes are woven throughout the recommendations:

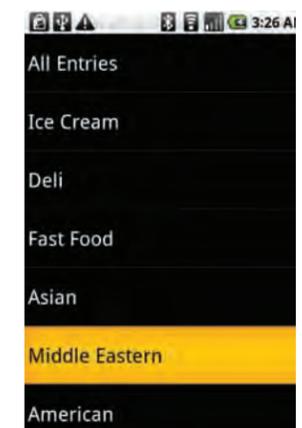
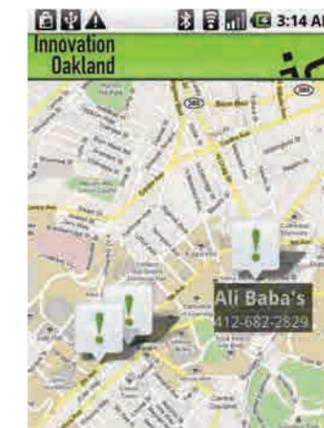
- » **Technologically Innovative**
- » **Artistic**
- » **Sustainable**
- » **Accessible to All**
- » **Easy and Fun**
- » **Accurate and Updated**
- » **Adaptable**
- » **Replicable**

The wayfinding recommendations that follow are in eight interrelated categories:

- 1. Remove the Clutter**
- 2. Improve Signage**
- 3. Define Entrances**
- 4. Celebrate Streets**
- 5. Create an Iconic Network**
- 6. Optimize Technology**
- 7. Optimize Transportation**
- 8. Promote Play**

These recommendations are based not only on researching and benchmarking best wayfinding practices internationally, but they also are grounded in the physical characteristics of Oakland and in the ideas and goals generated by the Project Committee and by the public outreach process.

Although the recommendations that follow are described in separate sections, they should be seen as essential pieces of an overall integrated wayfinding strategy that combines: digital and analog wayfinding techniques; online and place based wayfinding systems; and art and technology.



## OVERVIEW

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

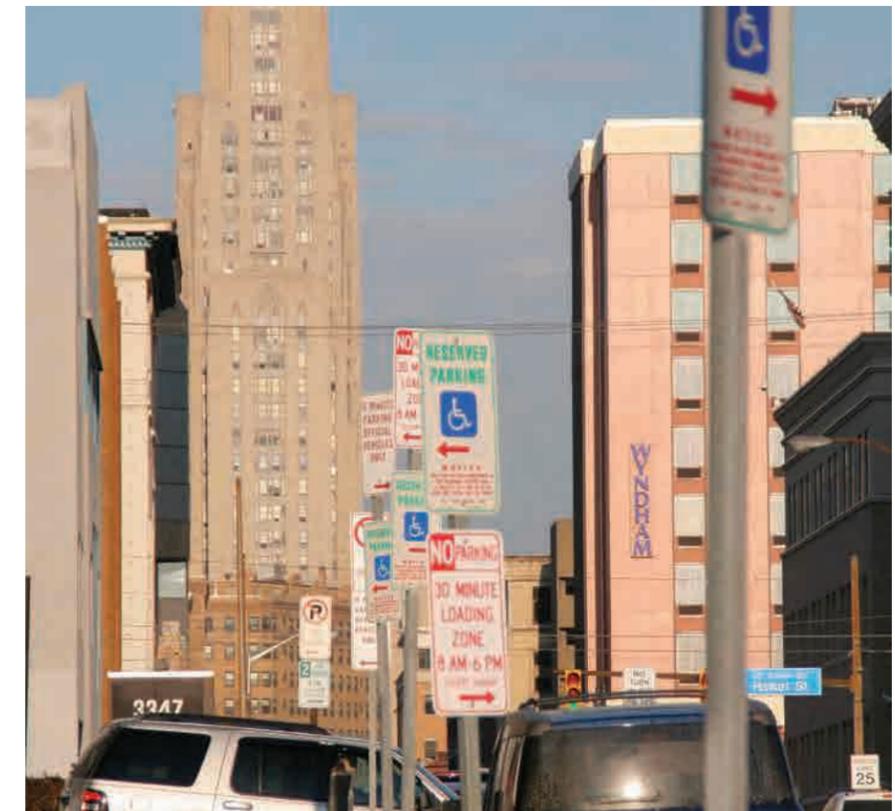
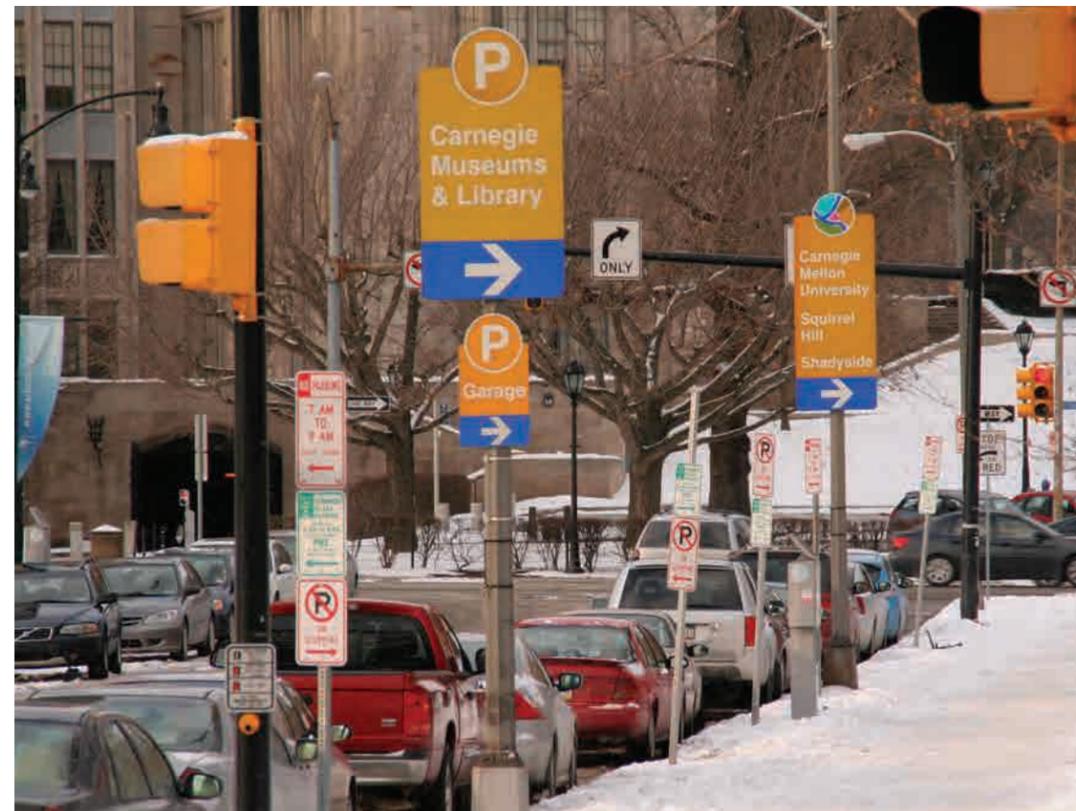
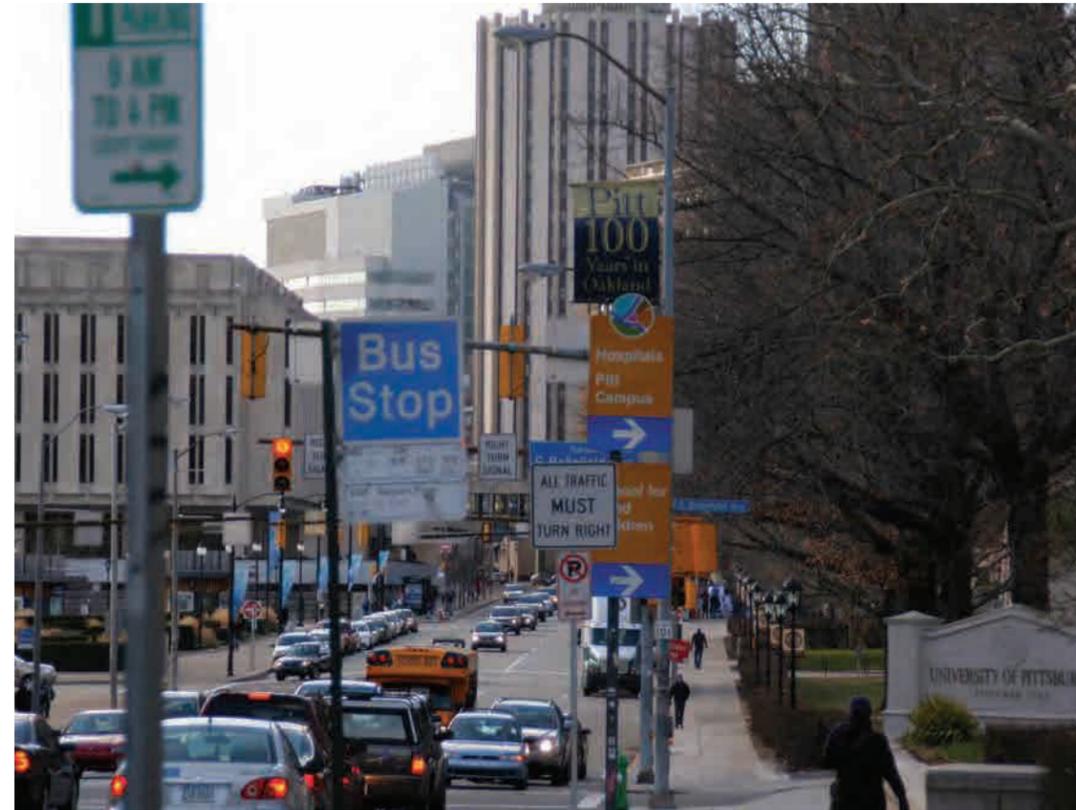
SECTION **F** **RECOMMENDATIONS**  
1. REMOVE CLUTTER

## Too Much Clutter

We have used public outreach, site reconnaissance, mapping exercises, ordinance research, a qualitative and quantitative survey, and other tools to develop a clear picture of the current situation regarding signage on the streets of Oakland. We have identified no fewer than 10 separate wayfinding systems, dozens of sign types, and hundreds of unique signs within the four square mile boundary of Oakland. Apart from the differences in ways in which information is written and presented, as well as discrepancies in design and quality, maintaining such a abundance of systems is costly.

The designs of Oakland's signs vary widely with regard to color, materials, shape, typeface, and branding method. The various sign systems are maintained by their respectful agencies, but often there is an inconsistency in quality and maintenance, leading to vandalism from the apparent sight of neglect. Furthermore, such inconsistency leads to conflicting sign messaging as the signs are updated sporadically and by varying oversight and crews. While there is a citywide sign code (Title 9 of the Pittsburgh Code, ARTICLE VI, CHAPTER 919) that regulates a comprehensive set of standards for sign development, nothing addresses the issue of sign clutter. To further complicate the issue, two state roads pass through Oakland and bring with them their own set of standards, sizes, and clutter.

Oakland is a dense and diverse neighborhood. Its varying sign systems have grown organically, and without singular oversight, throughout the years to address particular needs as they have risen. What currently works with the existing programs will need to be carefully considered in any new system while the overall clutter is reduced.



VARIOUS EXAMPLES OF SIGN CLUTTER IN OAKLAND

## REMOVE SIGN CLUTTER

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



EXISTING INTERSECTION, WITH CLUTTER



INTERSECTION OF CRAFT AVENUE AND BOULEVARD OF THE ALLIES, WITHOUT CLUTTER

## OPTION 1: REMOVE ALL EXISTING SIGNS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

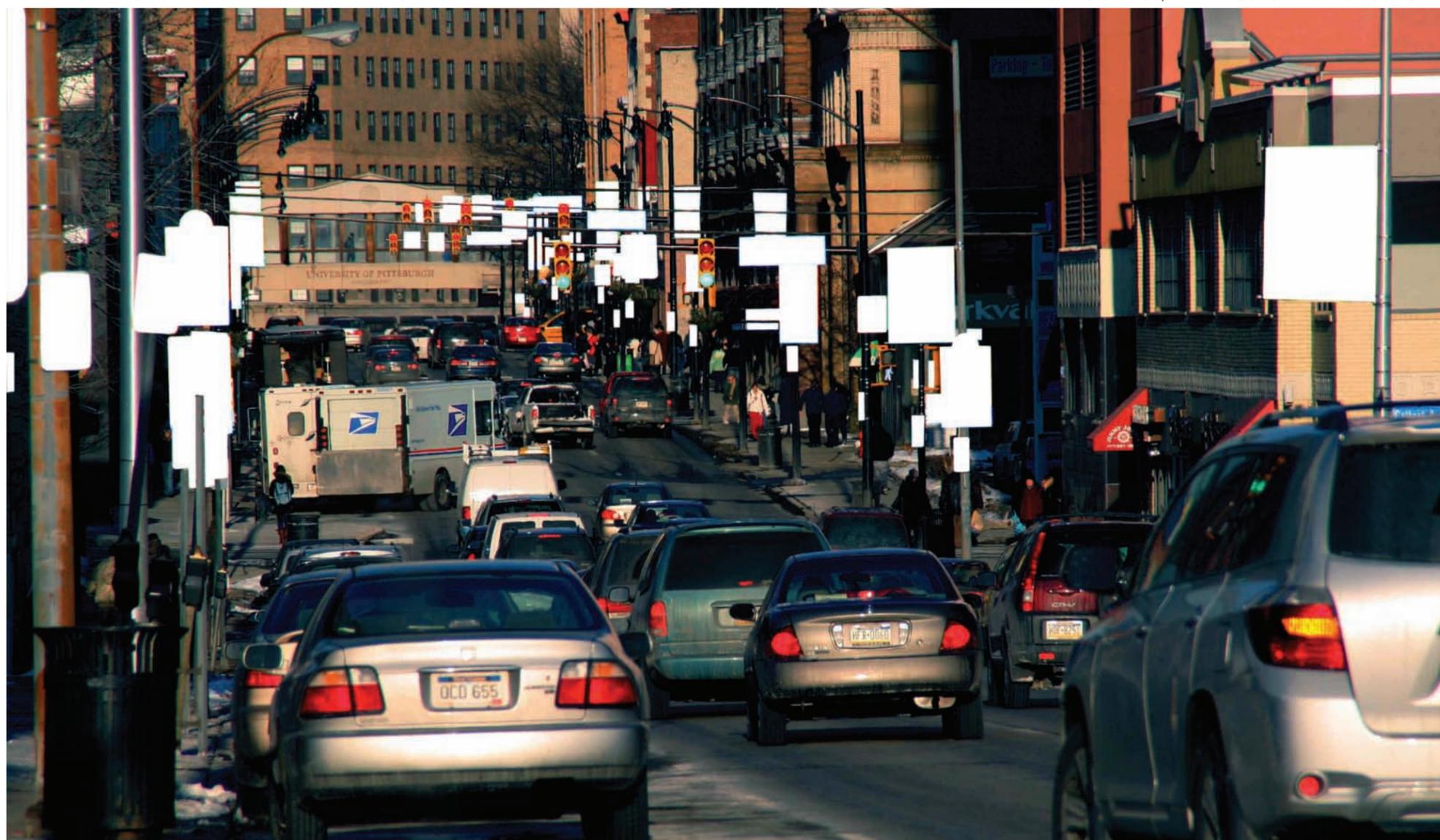
## Removing All Signs

During the heyday of traditional architecture, building uses were often dictated by the character of their facades and forms. Churches, often centered within a town, could be seen from far by their towering belfries. Banks were known as such from their colonnades and street presence that commanded attention. Houses were often stately and adorned with porches. As design styles have changed and as cities and towns have expanded and amassed greater and greater populations, built environments have grown more complicated. To help make order of this complication and help its citizens efficiently and effectively travel from one location to the next, the use of signs has grown in importance.

In order to visualize streetscapes devoid of sign clutter, a photo of an existing intersection has been altered to remove all signs. Granted, removing all identification, description, directional, and regulatory signs from the environment would produce havoc with traffic. Cities such as Makkinga in the Netherlands have done away with all traffic signs and have produced positive results—people are forced to drive more cautiously and be more alert as a result. While this approach may still be too extreme for the United States, the lesson learned with this exercise may be embodied in the adage, “less is more.”



EXISTING AVENUE, WITH DISORGANIZATION & CLUTTER



VIEW OF FORBES AVENUE BUSINESS CORRIDOR, WITH DISORGANIZATION & CLUTTER HIGHLIGHTED

## Aggregating Signs

Because removing all signs is not an option for Oakland at this moment in time, the sign clutter should be addressed in a more systematic fashion. Short of creating an entirely new singular system that accounts for the messaging of all signs, such as what was created for the Bristol Legible City program in the United Kingdom, the following steps should be taken to ensure that the issue of sign clutter be addressed:

1. Inventory every important identification, description, directional, and regulatory sign in Oakland.
2. Map the directional and regulatory signs, paying close regard to redundancy of messaging and inefficiency of placement.
3. Determine which signs are not integral to maintaining a safe and efficient environment for the community.
4. With the signs that are remaining, determine key decision points where these signs can be appropriately aggregated and organized.

## OPTION 2: AGGREGATE SIGNS & WORK WITHIN THE SYSTEM

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



COMMONPLACE AND CREATIVE EXAMPLES OF M.B.R.O. PROGRAMS

## Addressing MBRO

On May 10, 2006, a resolution was introduced in Pittsburgh City Council to create a Market Based Revenue Opportunities Task Force to investigate potential revenue generating opportunities for the city, which recently declared bankruptcy at the time. Such Market Based Revenue Opportunities (MBRO) have been appealed for by supporters as an alternative to raising taxes. MBRO can take many forms, from facility and park naming rights, such as the high profile "PNC Park" or "Heinz Field," to event sponsorship and endorsement of an 'official' soft drink and other products to the City of Pittsburgh.

Corporate naming rights are not new to any city in this country. The current audit will examine the potential of MBRO as a revenue source for the City of Pittsburgh and how the City should pursue more MBRO. The downtown core of Pittsburgh and the neighborhood of Oakland will be the two communities most impacted by this measure. Whatever the future of wayfinding in Oakland holds, it will need to be equipped to creatively incorporate such revenue opportunities into its designs without adding to the current state of overwhelming visual clutter, and without losing its local character.

# ADDRESSING MARKET BASED REVENUE OPPORTUNITIES

SECTION **F** **RECOMMENDATIONS**  
2. IMPROVE SIGNAGE

## Establishing a Sign Family

Bridging all aspects of Innovation Oakland is an identity that links each of the components of this comprehensive wayfinding program together. The standardization of these components will offer clear, concise, and consistent communications and aesthetics to residents and visitors. Such a consistent nomenclature and unified look will allow visitors to identify directions, destinations, and information quickly and easily.

Whether a visitor to Oakland is arriving by vehicle and searching for parking, waiting for a bus and requires some schedule information, or is seeking current event information on their portable electronic device, visual continuity will be maintained between the components through which information is derived. In order to achieve this, typefaces, symbols, and colors must embody a visual consistency.

The physical manifestation of the graphic standard will often be coupled with an established logomark that defines the destination.

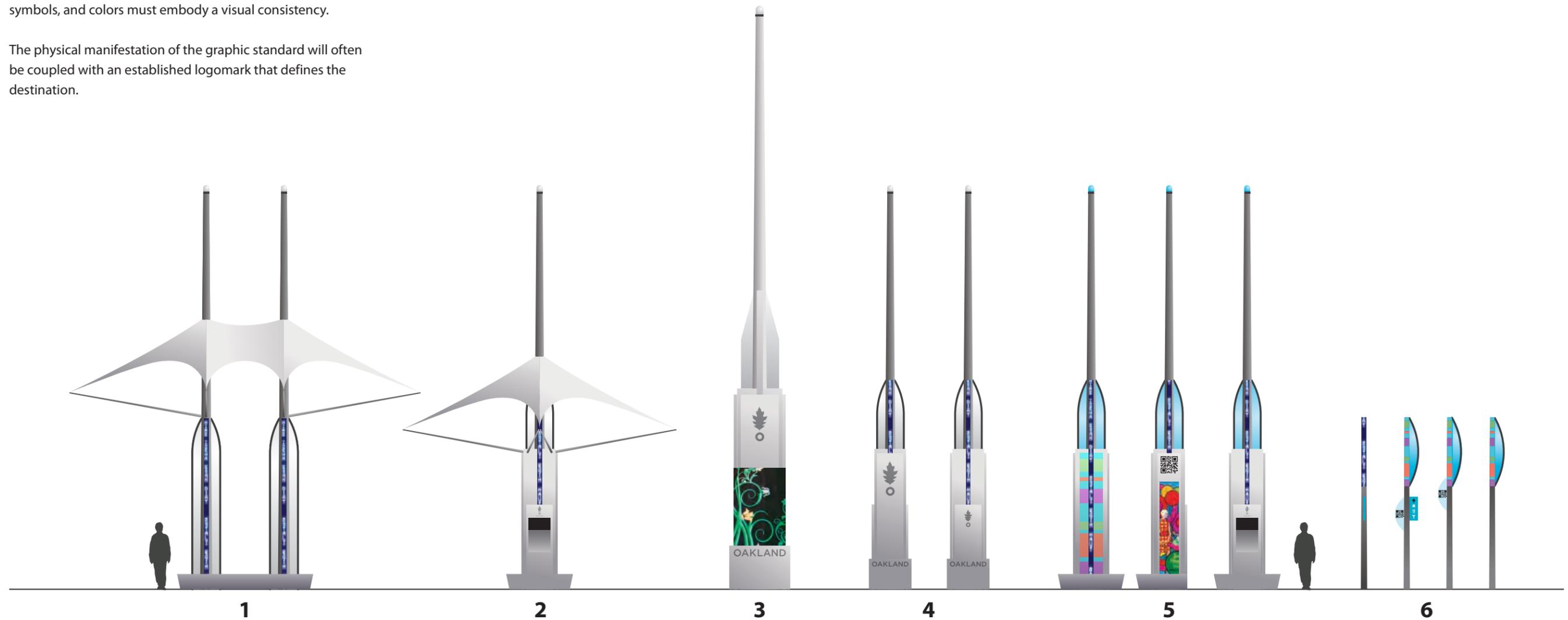
To help establish the brand of the neighborhood of Oakland, the graphic standard will adorn analog signage which will define portals, wayfinding decision points, and boundaries to help identify directions, destinations, and information quickly and easily. Subsequently the graphic standard will be carried throughout all other physical, digital, and virtual components of Innovation Oakland.

The drawings below illustrate a proposed family of wayfinding elements. The elements vary in scale and purpose, from marking gateways, to providing directional information to pedestrians, and creating a unified aesthetic for Oakland.



CATHEDRAL OF LEARNING  
FORM INSPIRATION FOR SIGN FAMILY, OPTION 1

- 1 Information Hub Option 1
- 2 Information Hub Option 2
- 3 Primary Gateway Pylon
- 4 Secondary Gateway Pylon
- 5 Unifying Interactive Pylon
- 6 Pedestrian Wayfinding Poles

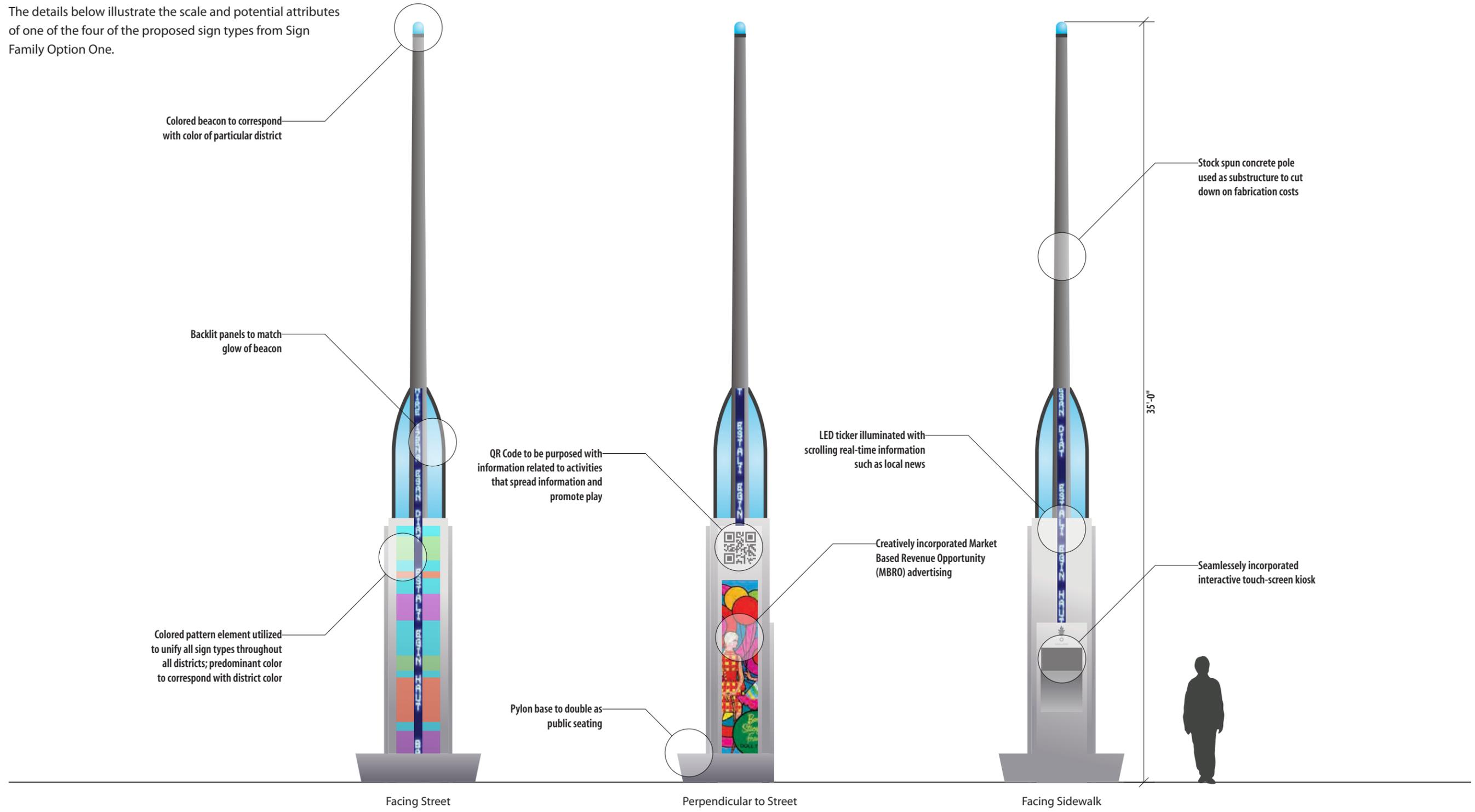


## SIGN FAMILY, OPTION 1

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

# Establishing the Details

The details below illustrate the scale and potential attributes of one of the four of the proposed sign types from Sign Family Option One.



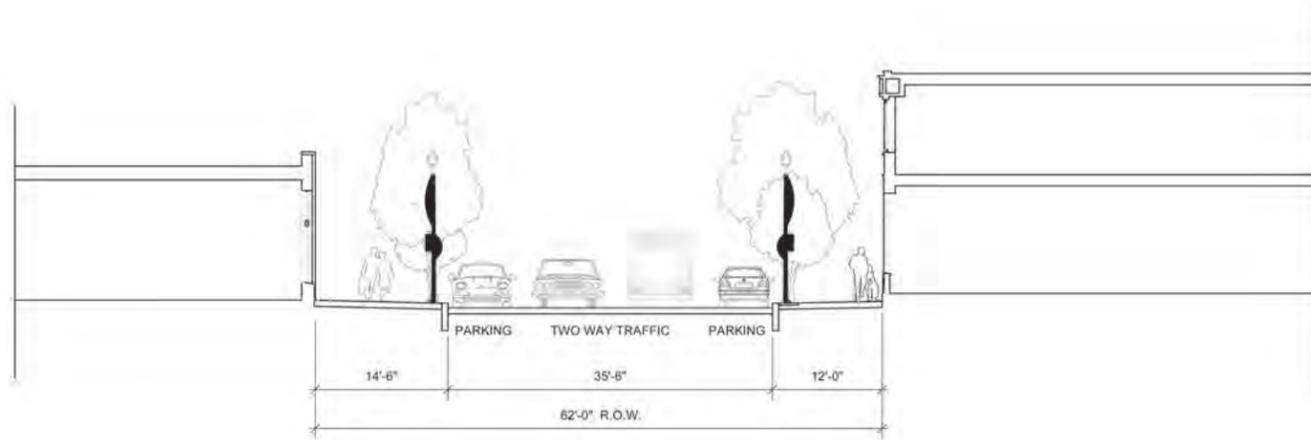
Unifying Interactive Pylon Details

# SIGN FAMILY, OPTION 1: SAMPLE DETAILS

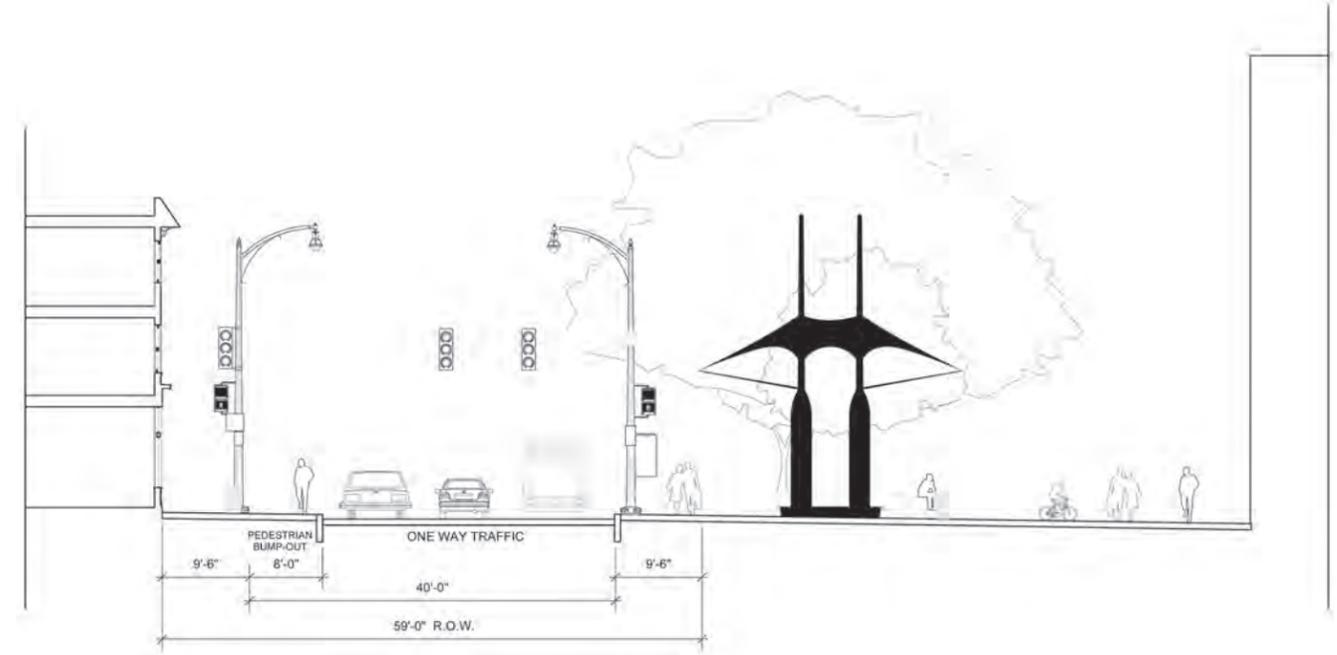
INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Establishing a Context

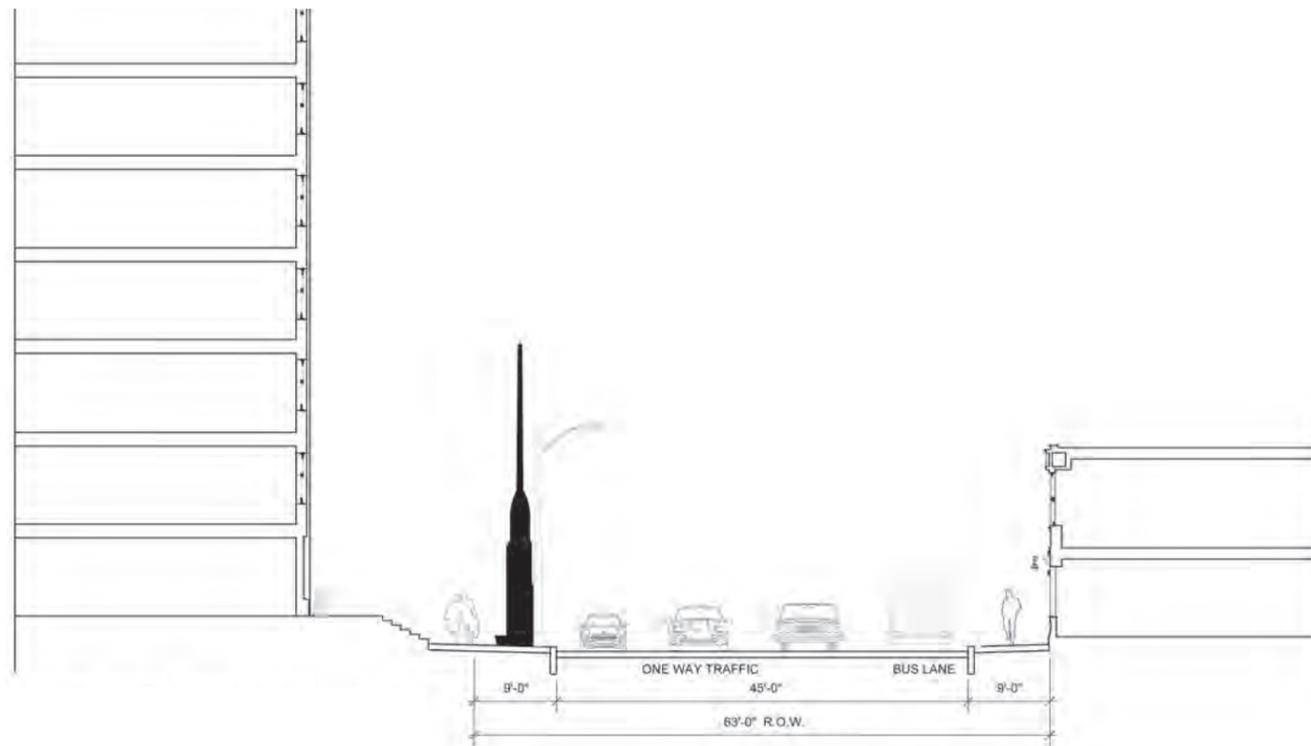
The street sections below illustrate the scale and potential locations of four of the proposed sign types from sign family option one.



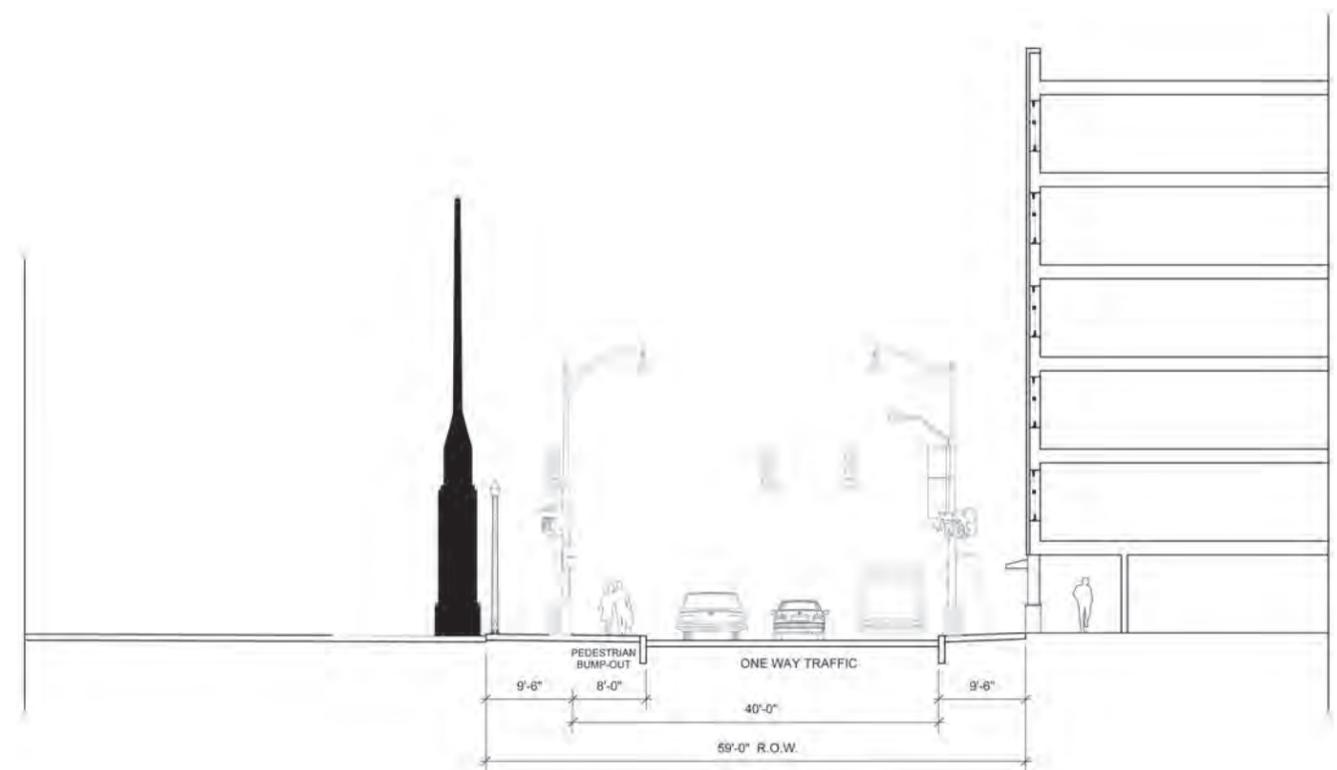
PEDESTRIAN WAYFINDING POLES ALONG CRAIG STREET AT FORBES AVENUE AND FILMORE STREET



INFORMATION HUB AT FORBES AVENUE AND SOUTH BOUQUET STREET (EAST)



UNIFYING INTERACTIVE PYLON ALONG FIFTH AVENUE AT CHESTERFIELD ROAD AND MCKEE PLACE



PRIMARY GATEWAY PYLON AT FORBES AVENUE AND SOUTH BOUQUET STREET (WEST)

# SIGN FAMILY, OPTION 1: STREET SECTIONS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## An Alternate

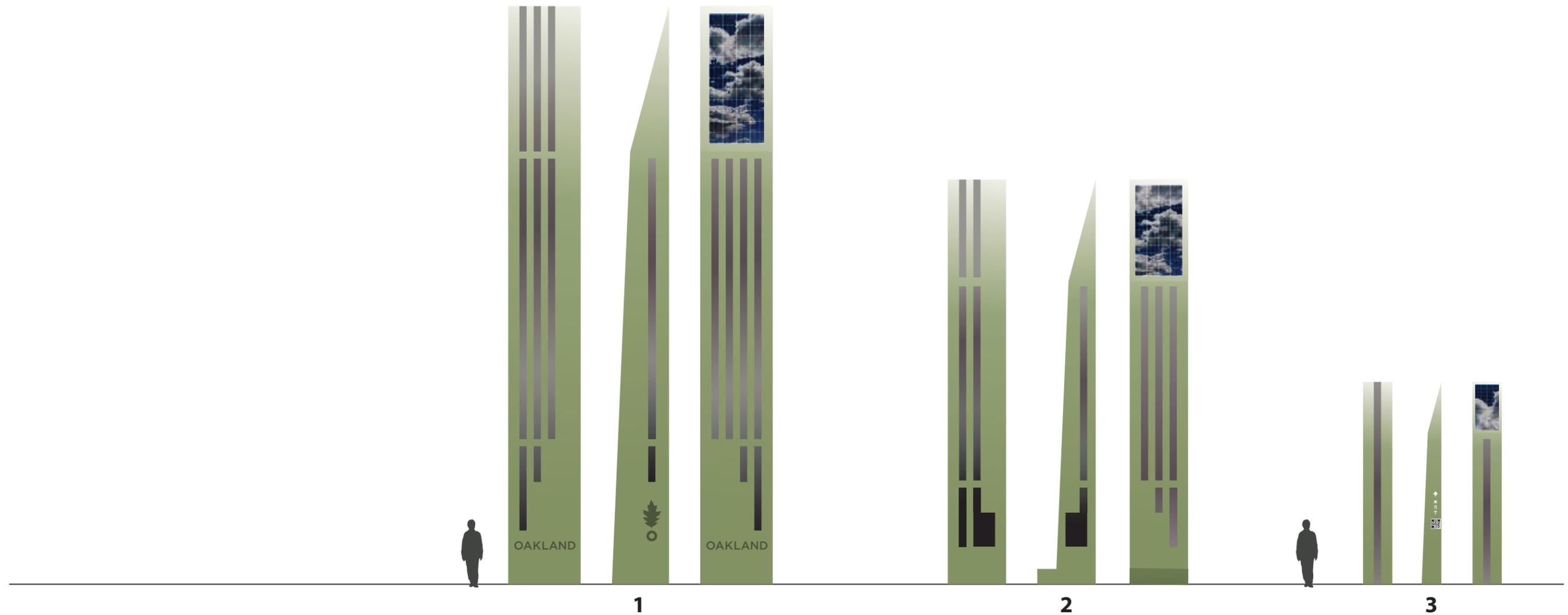
The drawings below illustrate a second proposed family of wayfinding elements. Again, the elements vary in scale and purpose, from marking gateways to providing directional information to pedestrians, to creating a unified aesthetic for Oakland. Furthermore, such technologies as solar panels, could provide added depth and functionality to these elements.



SERGEL'S SQUARE, STOCKHOLM, SWEDEN  
FORM INSPIRATION FOR SIGN FAMILY, OPTION 2

- 1 Primary Gateway Pylon
- 2 Unifying Interactive Pylon
- 3 Pedestrian Wayfinding Poles

2010  
 OAKLAND TASK FORCE  
 OAKLAND BUSINESS IMPROVEMENT DISTRICT  
 REMAKING CITIES INSTITUTE  
 CARNEGIE MELLON UNIVERSITY



## Unifying Interactive Pylons

Currently, the majority of visitors to Oakland commute by personal vehicle. Upon arrival, these visitors typically are searching not only for a visual cue to make them aware that they have arrived, but for information to help them locate their final destination and nearby parking. The current state of the information and directional signage is both disorganized and inconsistent. Various sign systems and their wide-ranging colors, sizes, and formats compete for visitors attention and are counter to a sense of streamlined visual unity that is necessary for straightforward self-navigation.

To provide visual continuity to the wayfinding of Oakland, a number of steps will need to be taken, including the removal of sign clutter and the aggregation of existing signs. However, in order to extend some visual elements established by entry signs and successfully establish a visual branding of the neighborhood, a sign type similar to the unifying interactive pylon will need to be developed. Such a sign type will not only reinforce the Oakland brand, it can embody several other wayfinding elements.

Colored beacons and lit elements could correspond with the color coding of a specific district. For instance, blue lights could let visitors know that they have entered into a district primarily dedicated to healthcare. In addition, integrating such technology as a LED ticker could provide the opportunity to offer embedded real-time news, traffic, and parking information. Such a sign type as the unifying interactive pylon could further enhance the unification of information and visual branding by providing wayfinding elements, such as QR coding and interactive kiosks, strictly designed for use by pedestrians on foot.



EXISTING FIFTH AVENUE VEHICULAR CORRIDOR



PROPOSED UNIFYING INTERACTIVE PYLON DURING DAYTIME, FIFTH AVENUE VEHICULAR CORRIDOR



PROPOSED UNIFYING INTERACTIVE PYLON AT NIGHT

## Unifying Wayfinding Poles

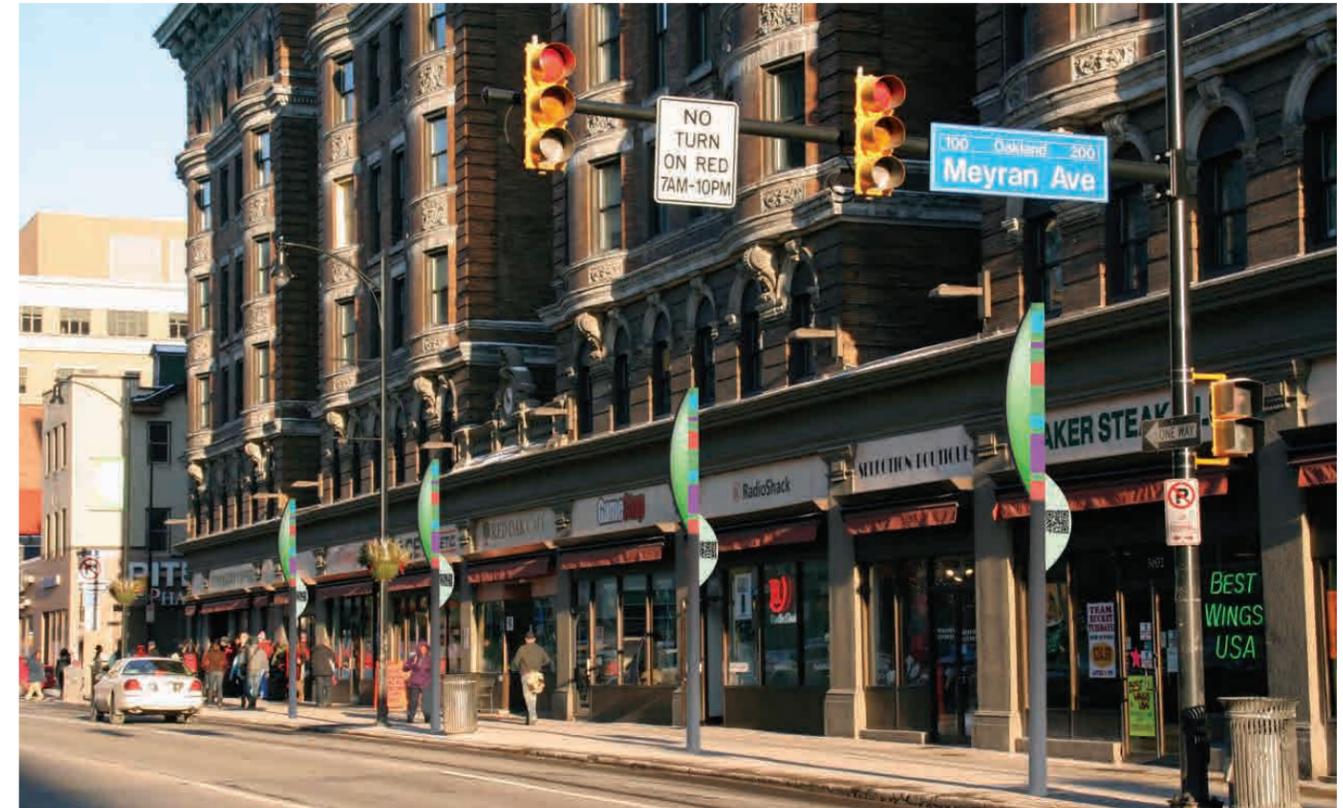
Once a visitor arrives in Oakland and steps out of their personal vehicle, unboards a city bus, or locks up their bicycle, they then must travel by foot or wheelchair and are subjected to a different pace and scale. The various sign systems that they now encounter respond to this change in environment and often present another layer of colors, sizes, and formats. This additional layer is necessary wherever there are pedestrians traveling by foot or by wheelchair, and yet, it too must provide the streamlined visual unity that is necessary for straightforward self-navigation.

To extend the visual continuity to the wayfinding of Oakland established by the gateway pylons and signs and continued by the unifying interactive pylons, the design of a pedestrian wayfinding pole has been proposed. Such a pole could embody the functionality of a street banner while acting as both a pedestrian directional sign and a miniature real-time information provider.

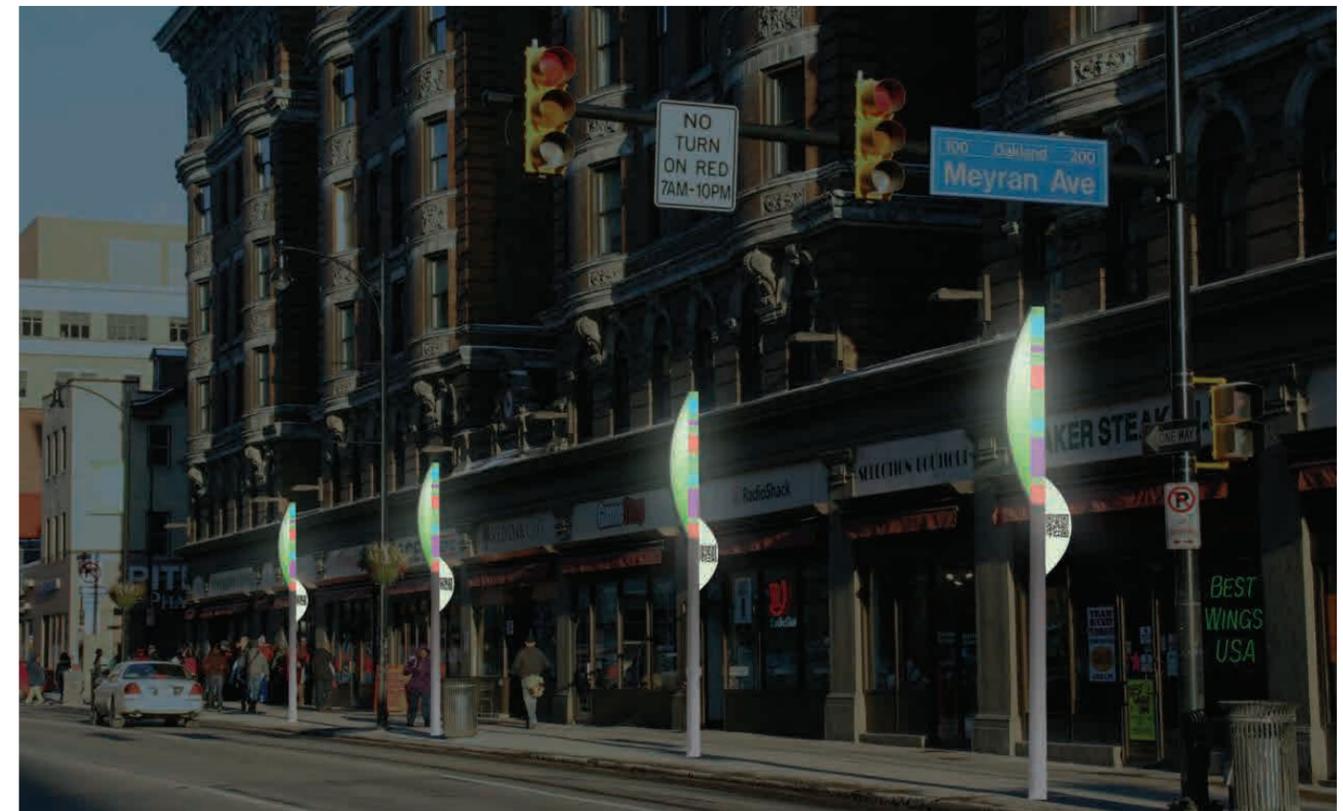
The continuation of lit elements in various colors, as well as establishing a specific color banding pattern could again correspond with the color coding of a specific district. In addition, the poles could also incorporate LED tickers could provide embedded real-time information related to news and events. Such a sign type as the pedestrian wayfinding pole could also display a panel with static wayfinding directional and destination information. Meanwhile, a subsequent panel could display a QR code embedded with information, such as something related to an Oakland-wide scavenger hunt, to promote play.



EXISTING FORBES AVENUE PEDESTRIAN CORRIDOR



PROPOSED UNIFYING WAYFINDING POLES DURING DAYTIME, FORBES AVENUE VEHICULAR CORRIDOR



PROPOSED UNIFYING WAYFINDING POLES AT NIGHT

SECTION **F** **RECOMMENDATIONS**  
3. DEFINE ENTRANCES



EXISTING BOULEVARD OF THE ALLIES ENTRY CORRIDOR



PROPOSED GRAPHIC TREATMENT DURING DAYTIME, BOULEVARD OF THE ALLIES ENTRY CORRIDOR



PROPOSED GRAPHIC TREATMENT AT NIGHT

# LINEAR ENTRY SIGN CONCEPT

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

## Unique Entry Signs

When entering a built environment, visitors typically pass through one of two primary types of entrances, or gateways. The first is a transition zone through which one passes without quite realizing that they have arrived until after doing so. The second is a more dramatic solution, where one's arrival is realized immediately and pronounced by passing through a constructed gateway or past a welcome sign or pylon or iconic piece of art or architecture.

In its current state, Oakland's entrances are transition zones and lack pronounced character. One can locate Oakland from any number of vantage points throughout the city by locating the Cathedral of Learning, which sits in the heart of Oakland. However, when at the pedestrian and vehicular scale along the physical boundaries of Oakland, there are very few cues to pronounce an arrival.

As arguably the most prominent entrypoint, the Boulevard of the Allies corridor is burdened by a monolithic and non-descript concrete retaining wall. This recently constructed wall lacks any adornment whatsoever and beckons to be an idea canvas for the Oakland branding mark. As one travels up the boulevard and rounds the bend, they can spy the Cathedral of Learning straight ahead down the avenue. The wall before this bend could and should set the scene for arrival into the community.



EXISTING BATES STREET ENTRANCE



PROPOSED PRIMARY GATEWAY PYLON, BATES STREET ENTRANCE



EXISTING BIGALOW BOULEVARD ENTRANCE



PROPOSED SECONDARY GATEWAY PYLONS, BIGALOW BOULEVARD ENTRANCE

## Vertical Entry Signs

For all other entrypoints into Oakland, namely the Bates Street entrance and the Bigalow Boulevard entrance, the appropriate solution for a gateway or entry sign is one that is vertical. Due primarily to the region's hilly topography, elements that are designed to command attention of vehicular and pedestrian traffic must be vertical by design. Not only is physical real estate a premium commodity, such wayfinding elements have both the topography and adjacent multi-story buildings to compete with for attention.

Beyond being a commanding presence and a beacon, both the proposed primary and secondary gateway pylons from Sign Family, Option 1, could incorporate several additional design features. They could include an LED ticker or screen to display art or scrolling real-time information, such as local news and weather. They could also include the physical brand of Oakland, the 'O' and the 'oakleaf' icons to set the tone for the visual branding of Oakland as visitors venture into its core.

SECTION **F** **RECOMMENDATIONS**  
4. CELEBRATE STREETS CAPES

## Oakland's Unique Streetscapes

Strengthening the visual identity of different districts and their streets will help visitors better understand Oakland. We recommend focusing on enhancing the existing character of the following streetscapes, with particular attention to interventions that improve the pedestrian experience. OBID may wish to pursue urban design guidelines for some of these streetscapes in the future as a way of assisting building and site owners with their facade and landscaping choices.

On this map, we identify eight different and unique streetscapes in Oakland.

### **Fifth Avenue and Forbes Avenue**

The Fifth and Forbes Corridor is the "backbone" of Oakland; all of the district's major institutions are aligned along these two avenues. They also connect Oakland to Pittsburgh's Downtown and many of the East End neighborhoods.

A main goal for the Fifth and Forbes Corridor is to find a way to function more deftly as a major thoroughfare for vehicles, public transit, pedestrians and cyclists. It must balance the need to move traffic with an atmosphere that is inviting to shoppers and visitors. A repetitive unifying physical element, as proposed in the Signage section, will help tie this mile-long corridor together.

### LEGEND

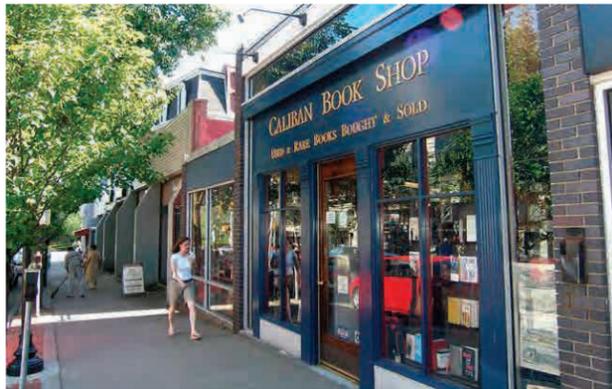
-  FIFTH-FORBES CORRIDOR
-  BOULEVARD OF THE ALLIES
-  CRAIG STREET
-  FIFTH-FORBES CONNECTOR
-  GREEN PROMENADE
-  ATWOOD RESTAURANT ROW
-  NEIGHBORHOOD COMMERCIAL DISTRICT
-  PEDESTRIAN AND CYCLIST PATH



STREETSCAPES



MULTI-MODAL 9TH AVENUE, NEW YORK CITY



CRAIG STREET SOUTH



CONNECTING STREET BETWEEN FIFTH AND FORBES



GREEN EDGE ALONG CATHEDRAL OF LEARNING

**Boulevard of the Allies**

Boulevard of the Allies is another major road that serves primarily to connect Central and South Oakland's neighborhoods to the I-376, and Oakland to Squirrel Hill through Schenley Park. Interventions along the Boulevard of the Allies should strive to create a more elegant green boulevard as it leads into Schenley Park to become a parkway, with a focus on creating a dramatic tree canopy punctuated by three urban green spaces: the triangle at Boulevard of the Allies and Craft Avenue; Zulema Parklet and Bates Park. A continuous and unique lighting treatment can help define this parkway-like boulevard.

**Craig Street**

Craig Street is a narrow but high volume thoroughfare, an important connection between Oakland and Downtown Pittsburgh via Bigelow Boulevard. Craig Street S., which runs between Fifth and Forbes, is a cozy, pedestrian-oriented business district, and this character should continue to be emphasized with improved landscaping and pedestrian amenities in the various small public spaces that dot the sidewalk. Beyond Fifth Avenue, Craig Street becomes less pedestrian-friendly, with a narrower sidewalk. Attention to the details of the pedestrian experience, from strongly delineating the edge of the public realm with landscaping and fencing (particularly when confronted with surface parking lots or large setbacks), to adding street trees and street furniture, will improve this section.

**Fifth and Forbes Connectors**

The side streets between Fifth and Forbes Avenues were highlighted in the public outreach process as not being pleasant. These important connectors can help draw staff and visitors from the larger institutions on Fifth Avenue down to the smaller scale, commerce-heavy Forbes Avenue. Better landscaping, signage and lighting, as well as outdoor patios will help entice pedestrians down their paths.

**Green Edges**

The Civic Center surrounding the Cathedral of Learning might more aptly be called Oakland's "green heart". As mentioned in the Research section on Public Space, this collection of green space that includes Schenley Plaza, the grounds of Soldiers and Sailors Memorial Museum, the Carnegie Library of Pittsburgh, the Carnegie Music Hall, the University of Pittsburgh Student Union, and the Frick Fine Arts Building, totals roughly 40 acres of publicly-accessible outdoor space.



SHADED RESTAURANTS ON ATWOOD STREET



RESTAURANT ROW, KERNS DISTRICT, PORTLAND



SERVICES ALONG BOUQUET STREET



CREATIVE ALLEYWAY LIGHTING

The roads ringing this green core should be treated similarly where space permits in order to enhance the character and identity of the area contained within.

**Atwood "Restaurant Row"**

Atwood Street is a charming, mostly residential street that begins as a connector street between Fifth Avenue and Forbes Avenue, and continues down to Bates Street, ending at Dawson Street. Nestled into the ground floors of some buildings are small storefront businesses, mostly restaurants.

Atwood Street has the potential to become a "restaurant row", a quiet street minutes from the busy Forbes and Fifth Corridor where residents, workers and visitors can enjoy a meal or pick up take-out food. Due to the scale of Atwood Street, attention to detail in landscaping and storefronts is particularly important, such as is found in Portland's restaurant row in the Kern Business District.

**Neighborhood Commercial Segments**

Within the Central-South Oakland neighborhoods are two small pockets of neighborhood-serving businesses: Bouquet Street from Joncaire Street to Pier Street, and Semple Street from Bates to Ward Street. The first area includes a bike shop, US Postal Service office, bar and halal grocery/cafe. On the block of Semple Street, one finds a handful of ethnic restaurants and take-out venues offering pizza, Mexican, Middle Eastern and Korean food, and a beer distributor.

These are important neighborhood commercial spots that should be enhanced with sidewalk amenities, such as landscaping, outdoor seating and bike racks, lighting and signage indicating their location from important nearby decision points, such as Forbes and Sennott at Bouquet Street, and Forbes and Sennott Street at Atwood Street.

**Pedestrian and Cyclist-Oriented Alleyways**

The proposal by Bike-PGH to create an alternative thoroughfare to Forbes Avenue for cyclists along Sennott Way and Iroquois Way should be adopted. Called the Oakland Greenway in their 2007 Universities Connect! report, this proposal is an easy and safe solution to the issue of cyclist connectivity in Oakland. These alleyways, which function more as streets, are also heavily used pedestrian paths. Continuous streetscaping should include better tree cover and lighting for safety, perhaps with the possibility of a mobile phone app that can activate additional night lighting.

SECTION **F** **RECOMMENDATIONS**  
5. CREATE AN ICONIC NETWORK

## Creating a Draw

As the third largest commercial district in Pennsylvania, Oakland is a concentration of universities, health care facilities, cultural institutions, restaurants, local businesses and distinctive residential neighborhoods. Despite its important role in the regional economy and the abundance of activities and things to do, there is no single place or site that effectively expresses the energy, excitement, vitality and innovative spirit that makes Oakland so unique.

Many cities, like New York City and Chicago Millennium Park have “must-see” iconic places, in this case Times Square and Millennium Park respectively. The Agnes R. Katz Plaza, in Downtown Pittsburgh’s Cultural District, provides a signature site for live jazz and summer concerts, with iconic sculpture and a fountain as a backdrop.

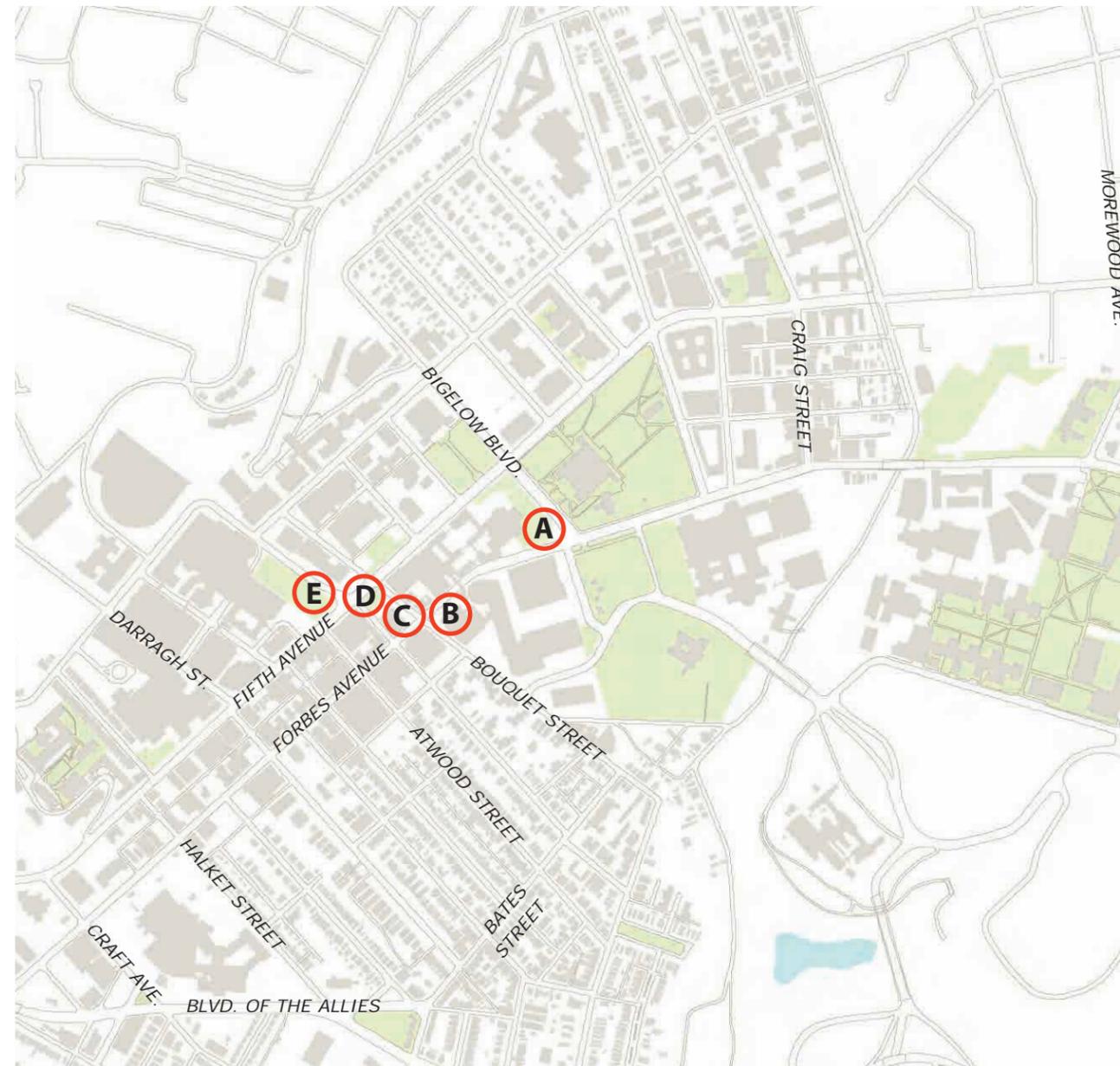
The goal of the Iconic Network recommendation is to create a system of recognizable elements in Oakland, objects that provide navigational information and/or that are public art works. An option, to be discussed by OBID and OTF, is to create a central draw within this system, a single location that would stand for Oakland’s innovative spirit.

### Central Information Art Hub

We have identified five potential sites, at right, within Oakland’s central core, as having the potential to be transformed into a single, iconic destination that attracts tourists, students, workers and residents alike. Visibility, pedestrian activity and the availability of open space were factors taken into consideration when sites were selected.

The destination, which we call the “Central Information Art Hub”, would be a multifunctional space: part wayfinding information hub, part cultural hub, part public art work. It would include maps, the iO kiosk, interactive digital art and exhibition space for art and design created in Oakland, the Pittsburgh Region and internationally.

Such a space would reflect the full range of local innovation and connections to the world, providing information about local resources and destinations, and serving as a cross-disciplinary center for creative expression and social activity.



CENTRAL INFORMATION + ART HUB: ALTERNATIVE LOCATIONS



(A) FORBES AVENUE AT THE WILLIAM PITT UNION



(B) BARCO LAW LIBRARY SQUARE

- A William Pitt Student Union Lawn**
  - » Northwest corner of Forbes Avenue and Bigelow Boulevard
  - Owned by the University of Pittsburgh
  - » Faces a busy bus stop
- B Barco Law Library Square**
  - » Northeast corner of Forbes Avenue and Bouquet Street
  - » Important PAT bus stop
  - » Owned by the University of Pittsburgh
- C Forbes and Bouquet Square**
  - » Northwest corner of Forbes Avenue and Bouquet Street
  - » Owned by the University of Pittsburgh
- D Fifth and Bouquet Parklet**
  - » Southwest corner of Fifth Avenue and Bouquet Street
  - » Owned by the University of Pittsburgh
- E Former Children's Hospital**
  - » Northeast corner of Fifth Avenue and Oakland Avenue
  - » Owned by UPMC; current building will be demolished



(D) BARCO LAW LIBRARY SQUARE



(E) UPMC FORMER CHILDRENS' HOSPITAL SITE

# PROPOSAL 1: CENTRAL INFORMATION ART HUB

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



(C) FORBES AND BOUQUET SQUARE



(C) FORBES AND BOUQUET SQUARE CENTRAL INFO ART MOCK-UP

# PROPOSAL 1: CENTRAL INFORMATION ART HUB

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

**Mini Info Hubs**

The full range of Oakland’s offerings—the universities, institutions, restaurant, shopping districts, cultural centers, events and residential neighborhoods—is not easily apparent to visitors, students, commuters and residents alike. One of the comments we received during the public outreach process was that a central point of information for all things Oakland, including up-to-date information about events, was needed. The interconnected iO kiosk, website and phone app is our solution.

We recommend a system of outdoor information stations where people can learn about local events, happenings, special offers and resources. This system of “Mini Info Hubs” could either replace or be in addition to a singular, centralized, digital Information and Art Hub (see the previous page).

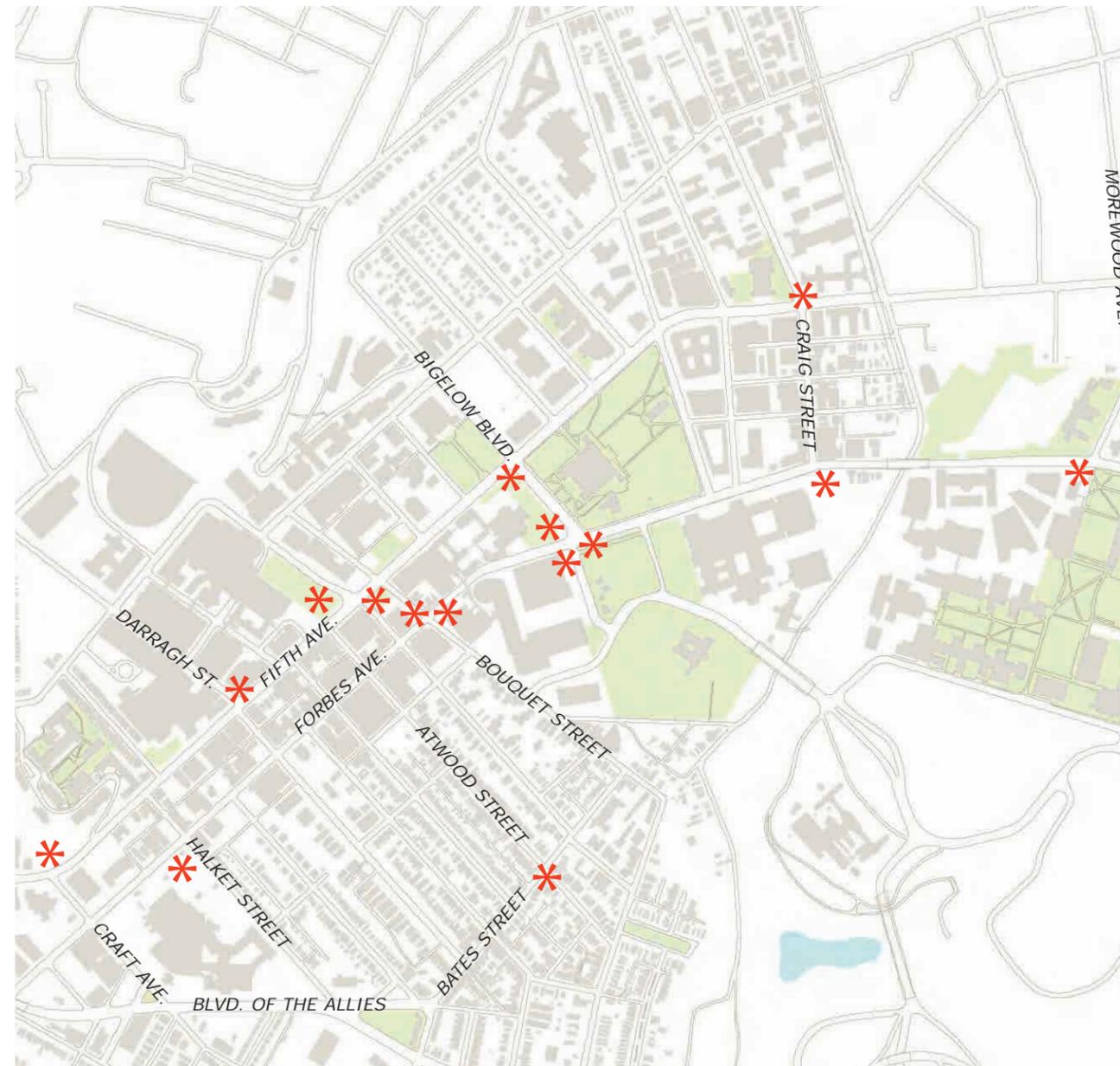
The Mini Info Hubs are intended to help people who are already in Oakland connect to the resources and destinations that the neighborhood has to offer. The hubs would provide information about:

- directions
- searchable directories of businesses, universities, medical centers, cultural institutions and public art
- local history, open space and recreational amenities
- transportation, including real-time data about public transit, parking, traffic conditions and construction detours, bicycling and walking
- events, such as freshmen orientation, plays and festivals
- games, such as geocaching, interactive tours and interactive art

The hubs would provide maps, a kiosk, connect to the OBID website and access other web-based resources.

The proposed locations of these mini hubs, shown at right, are distributed throughout central Oakland. Sites were identified, through a public outreach process, as places that simultaneously need wayfinding improvements but also happen to currently serve as wayfinding decision points and social gathering nodes.

Mini Info Hubs can be designed into the proposed Unifying Interactive Pylon in the section on Signage, or integrated into enhanced bus stops of the planned limited stop Rapid Bus System.



MINI INFO HUBS: POSSIBLE LOCATIONS



NORTHEAST ENTRY POINT TO SCHENLEY PLAZA



SCHENLEY PLAZA ALONG FORBES AVENUE



FORBES AVENUE AND CRAIG STREET



ATWOOD AND BATES STREETS

**PROPOSAL 2: MINI INFO HUBS**  
 INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



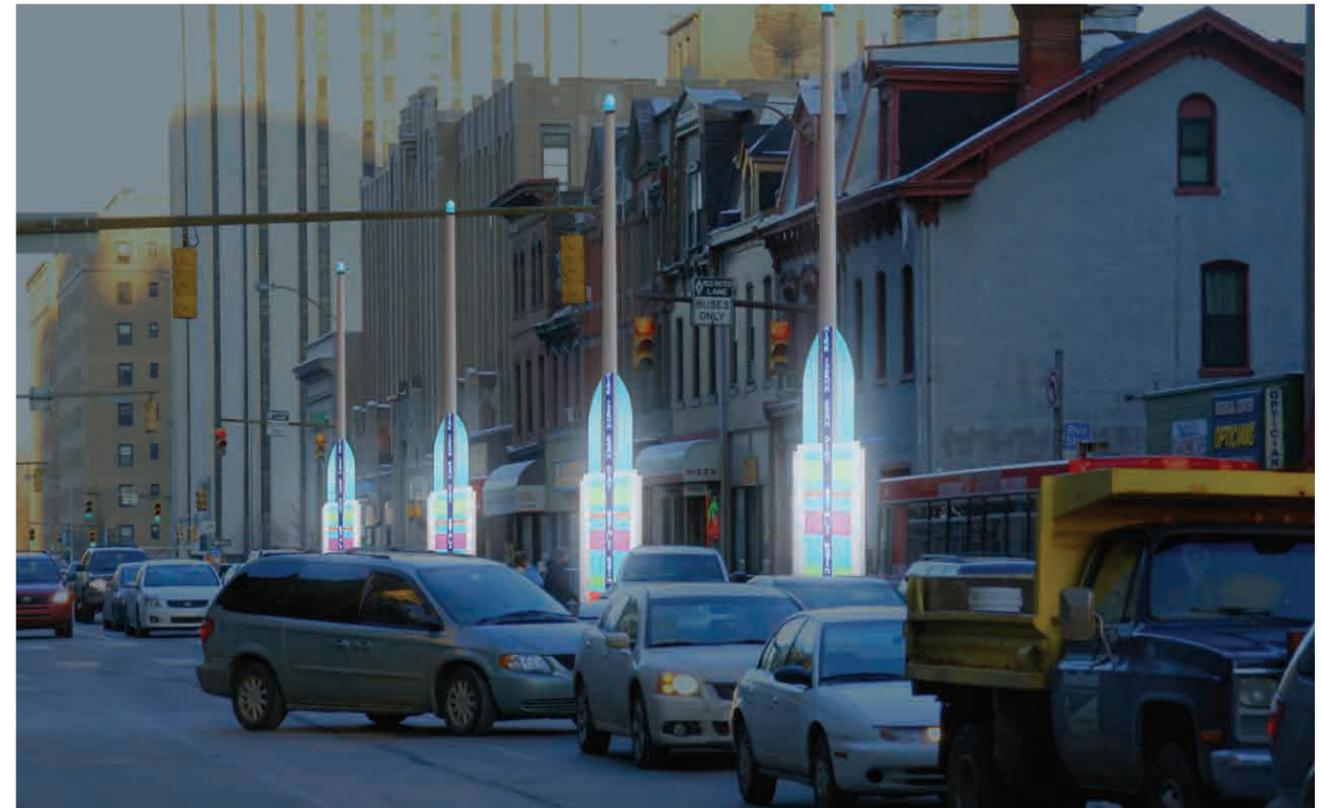
EXISTING BUS STOP



EXISTING STREETScape



ENHANCED RAPID BUS STOP WITH KIOSK



ENHANCED STREETScape WITH UNIFYING INTERACTIVE PYLON

# PROPOSAL 2: MINI INFO HUBS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

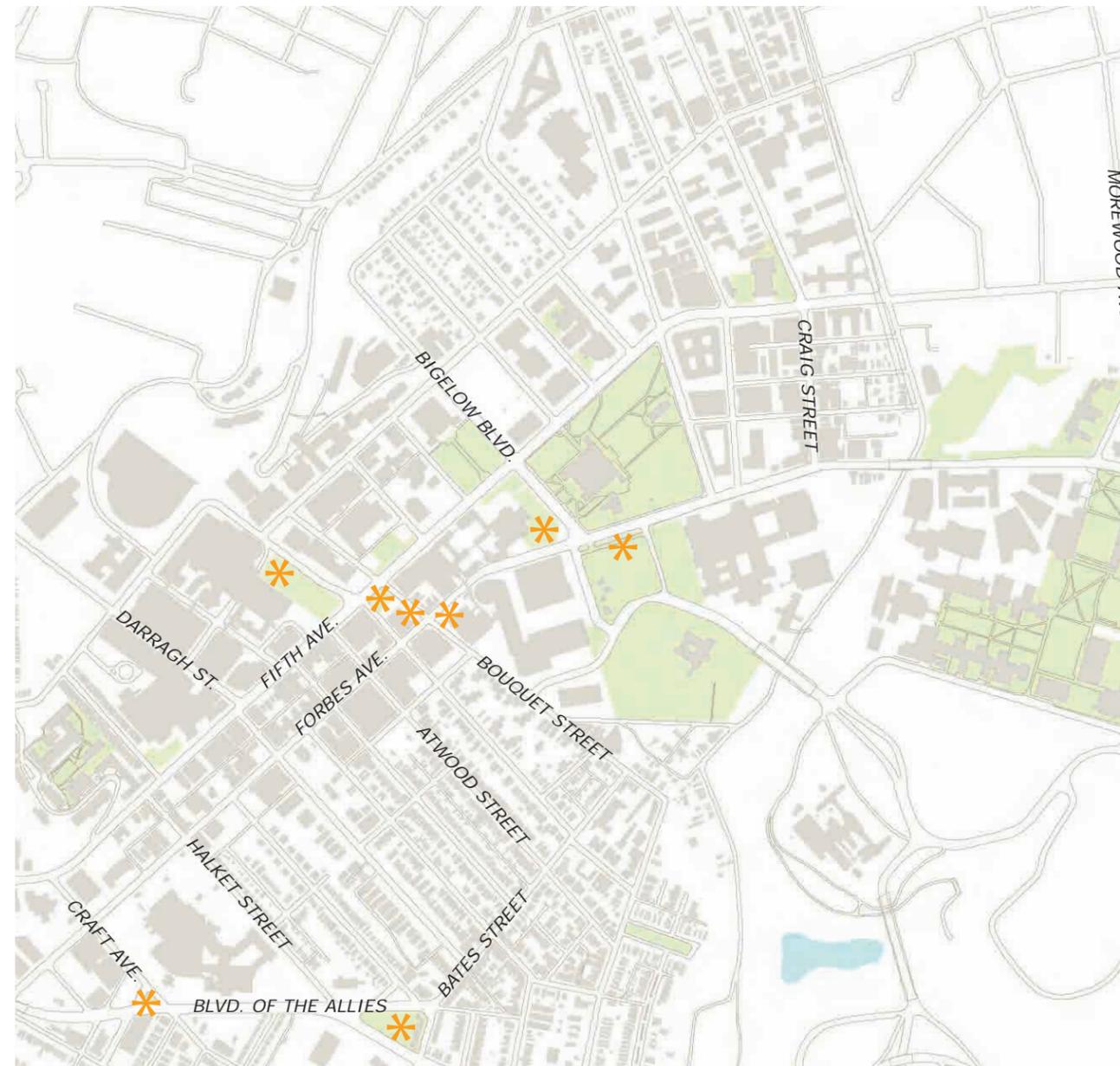
### Public Art

Public art is important not only as a form of cultural and social expression, but signature works can also serve a valuable role as wayfinding landmarks, helping people to orient themselves within busy urban districts and serving as destinations where people gather or meet.

Although there are already dozens of examples of public art in Oakland, as shown in the section on Research, the scale and grandeur of its civic core suggests many additional opportunities for including new art works in the public realm. The stern monumentality of many institutional buildings could, in some cases, be softened by pedestrian-scaled creative works. The triangular pocket parks along Boulevard of the Allies suggest the potential for art works that could be appreciated from motor vehicles or bicyclists as well.

In recent decades, public art has expanded from the traditional media of sculpture and fountains to also include integrated architectural and landscape elements and electronic, interactive installations, as shown in the Benchmarking section on public art.

Public art pieces may be installed for the long term, but some cities, such as San Francisco, have programs through which public art works are rotated among its many neighborhoods. There are many opportunities to expand and enhance the quantity, type, range and character of public art that is enjoyed within Oakland.



POTENTIAL PUBLIC ART WORK SITES: ALTERNATIVE LOCATIONS

Some possibilities to consider when pursuing a new public art work program:

- » solicit art from around the world through a public art competition
- » create a dedicated space for rotating artwork from students in art programs at Oakland institutions
- » create a dedicated space for artwork from faculty
- » teaching art in Oakland institutions



EXISTING FACADE



EXISTING FACADE



BARCO LAW LIBRARY SQUARE, FORBES AVENUE MOCK-UP



LAWRENCE HALL, FORBES AVENUE MOCK-UP

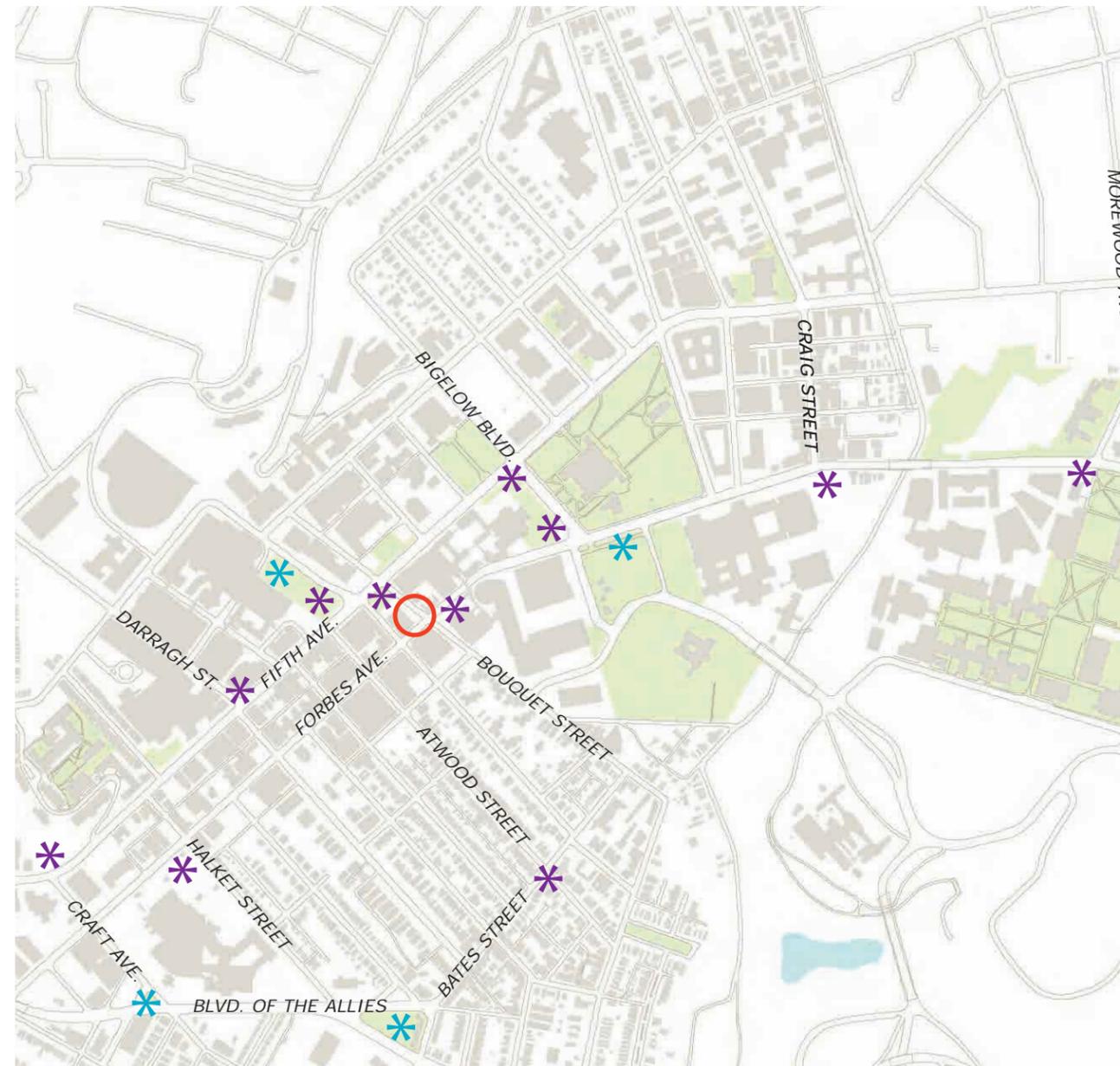
### Mini Info Hubs

The scenario illustrated to the right is one possible combination of digital information and elements that could be implemented within the central Oakland core.

A central Iconic Information Art Hub is shown at the northwestern corner of Forbes Avenue and Bouquet Street, adjacent to the former King's Court building on property owned by the University of Pittsburgh. The site is currently being used as a passive park in the heart of the Forbes Avenue business district. This busy site is trafficked 24 hours a day, 7 days a week by college students, hospital employees and Oakland visitors. The importance of this intersection as a node of pedestrian activity is exemplified by the recent installation of curb bump-outs at Bouquet Street, presumably to aid pedestrians in safely crossing Forbes Avenue.

In this scenario, the Central Info/Art Destination is supplemented by distributed system of Mini Information Hubs throughout Oakland's core, serving potential restaurant patrons, medical staff, visiting parents and residents alike. The value of the interactive Mini Information Hubs is in enriching peoples' experience of being in Oakland and helping them to explore more of the resources that the neighborhood has to offer.

This scenario also calls for the installation of new public art works throughout central Oakland, along its major pedestrian and vehicular corridors. Public art can bring new energy, vitality and critical interest, thereby transforming existing public spaces. With a rigorous and distributed public art program, Oakland could become a destination within the City, region and world for its expressive innovation and artful creativity.



POSSIBLE COMBINATION

### LEGEND

-  CENTRAL INFO ART HUB
-  MINI INFO HUB
-  NEW PUBLIC ART WORK

SECTION **F** **RECOMMENDATIONS**  
6. OPTIMIZE TECHNOLOGY

## iO Mobile App

The Innovation Oakland mobile wayfinding app will allow residents and visitors to Oakland to learn about activities, events, offerings, specials and the like in real-time, thus enabling them to have pertinent information about Oakland at their fingertips. Information available will include:

- » Where to shop, eat, drink
- » What to watch for and do in Oakland
- » Special offers (that might be time-sensitive)
- » Digital tags around Oakland
- » Availability of assets (hotel rooms, hours of operations, handicap access, etc.)
- » Problem reporting

The Innovation Oakland team has worked with five OBID member businesses to extract the following information:

- » Hours of operation
- » Description, history, popularity (external reviews)
- » Digital media assets (video commercials, video promotions, SMS promotions, images)
- » Specials, including coupons or new features, including both time-sensitive and non-time-sensitive promotions
- » Items that the business has available, such as rooms if the business is a hotel, toothpaste if that business is a pharmacy, etc.
- » Nearest bus-stop
- » Nearest (and most convenient) parking garage to that business
- » Accessibility
- » Availability of outdoor seating (if applicable)
- » Delivery options (if applicable)
- » Twitter feed for OBID as well as that business

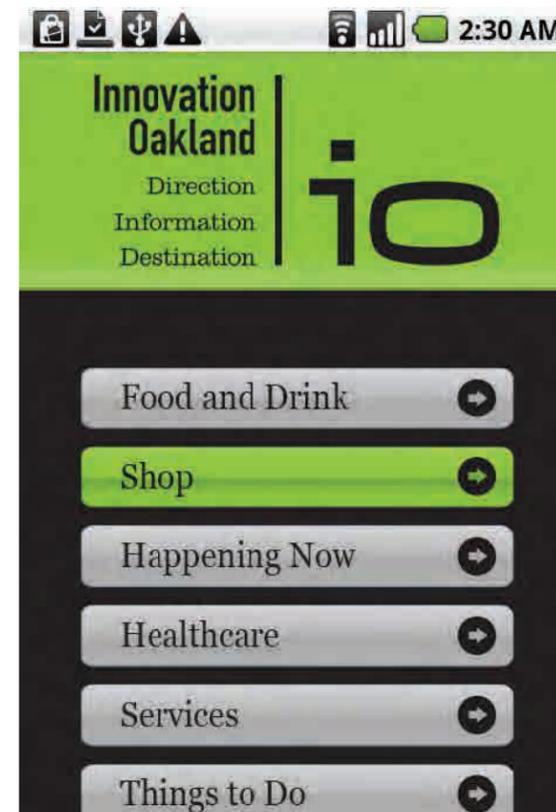
This information from every OBID member organization will be available in a database that can then be queried by a smartphone application.

In addition, the Innovation Oakland team will use the digital media assets to associate them with QR codes of various sizes that can then be applied to storefronts, fliers, and other physical/structural assets associated with each Oakland business. The Innovation Oakland mobile app would serve as a way of scanning Oakland-specific QR codes to get more details about the business. For example, the India Garden video commercial can be captured into a QR code that could then be printed onto India Garden's fliers, printed onto placards to be displayed at the front of India Garden (perhaps on the awning, on the window or even on the sidewalk).

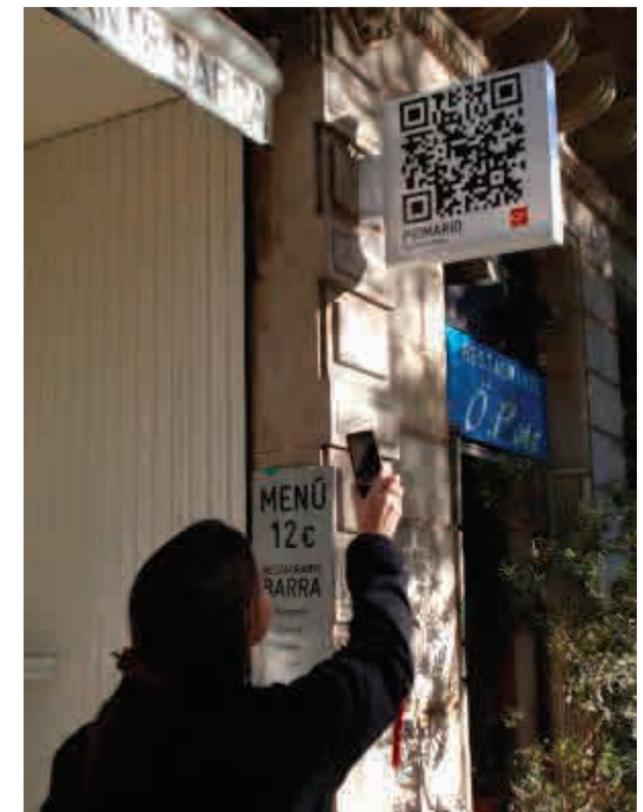
Not only would these digital tags be informational and educational for both residents and visitors alike (visualize these digital tags being placed prominently in front of historical assets in Oakland, allowing people to scan these tags to view video clips on their phone associated with those historical assets), but they could be a fun aspect of "Discover Oakland," allowing users to gain more points, as they uncover and scan more digital tags throughout Oakland.

There could be incentives associated with this, such as coupons for discounts at an Oakland business if a user collects all five digital tags associated with that business, where the five digital tags might be scattered around Oakland. Incentivizing users in this manner not only allows Oakland businesses to promote their offerings through existing digital media avenues, but it also encourages users to explore Oakland, to discover its history and its interconnections. Moreover, these digital tags are a valuable way of increasing awareness and visibility, promoting a business, increasing revenue and driving traffic to the business.

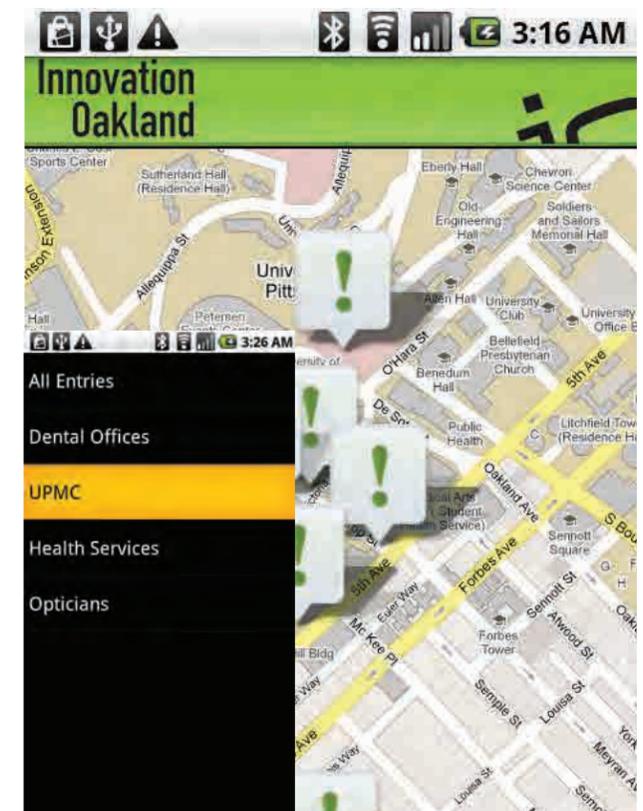
The current version of the iO mobile app supports the scanning of digital tags in the form of QR codes. Some of the screenshots of the current Android version of the iO mobile app are shown here.



IO APP PHONE APP MENU (ANDROID SCREENSHOT)



QR CODE OUTSIDE A RESTAURANT



IO APP (ANDROID SCREENSHOTS)

## Other Location-Based Apps

There are several mobile applications targeting location-based services, such as finding the nearest restaurants, bars, hotels and transportation options, for the iPhone and the Android platforms. However none of these applications is specific to a particular city. With most of these applications, local businesses have no, or little, control over the database used by these applications.

Moreover a frequent visitor to Oakland, or even a tourist, would have to use several of these applications in order to improve their shopping/eating/staying experience. A single one-stop application that includes all the functionality provided individually by these multiple applications would be tremendously useful for a visitor to Oakland, and is what the iO mobile app aims to be.

The single OBID applications could combine many of the functionalities provided by these individual applications in addition to using QR codes to deliver supplementary information to the visitors. These applications are a subset of similar applications available at Apple AppStore and Android Market Place.

## Yelp

- » Searches for businesses near users using the GPS provided by the phone to locate restaurants, gas stations, laundromats, etc.
- » Has limited augmented reality capability to overlay business information on the view provided by the video cameras
- » Allows users to look at reviews for the businesses

## Urbanspoon

- » Provides similar functionality as Yelp but limited to finding restaurants
- » Allows users to specify the location in more detail compared to Yelp
- » Allows users to specify the type of cuisine

## Happy Hours

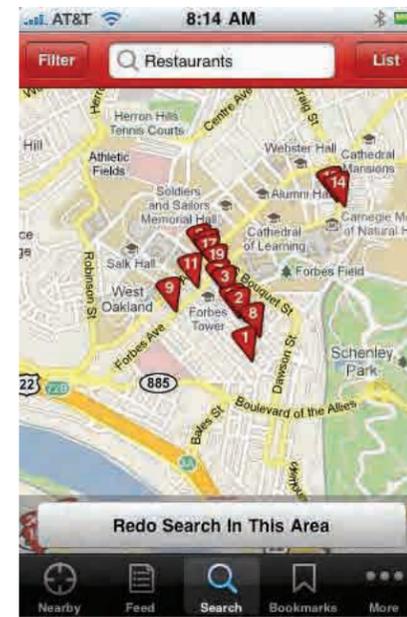
- » Shows all the food and drink specials that are available near a user
- » Provides ranking for the different businesses based on feedback from other users
- » Has support for limited number of cities

## Live Cams

- » Provides live feeds for cameras located throughout the world on a user's phone
- » Also provides a time lapse for some of the feeds
- » Includes the feeds from University of Pittsburgh cameras, although the frame rate for the cameras is really low
- » Something similar from cameras located throughout Oakland with close up views of the area would be really useful to visitors

## uPNext 3d Cities

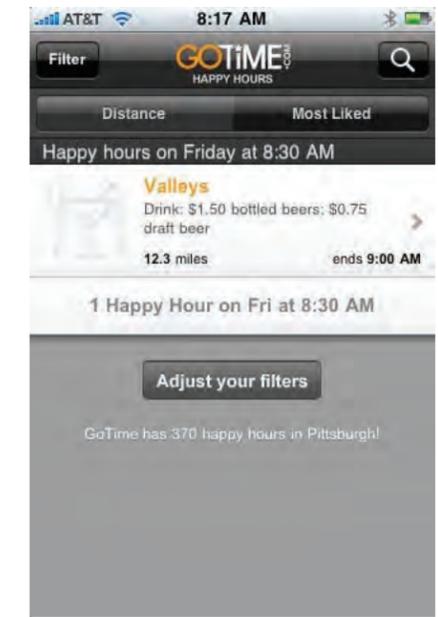
- » Provides searchable, tappable 3D maps for select cities
- » Users can drill down further and get a 3D view of the area
- » Pittsburgh is not included in the list yet



YELP MOBILE APP



URBANSPOON MOBILE APP



HAPPY HOURS MOBILE APP



LIVE CAM MOBILE APP



UPNEXT 3D CITIES MOBILE APP

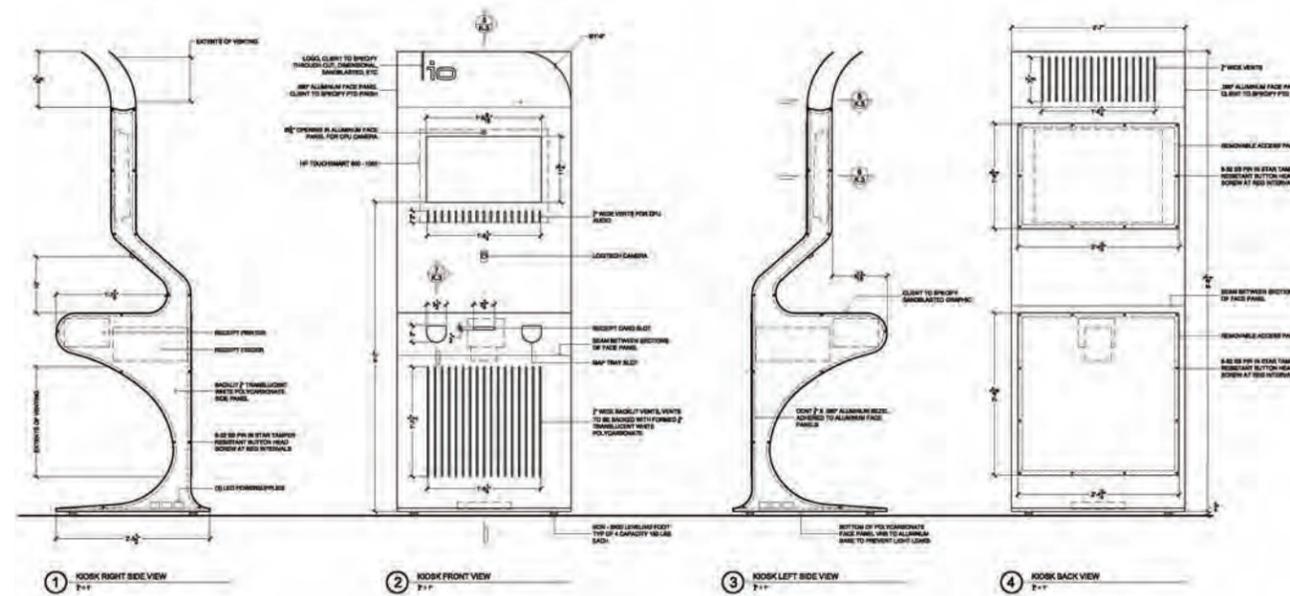
## iO iKiosk

Augmented Reality, the layering of digital content over a live video feed, offered the most robust opportunity for interaction. AR features could be integrated with a standard touch screen interface. The additional layer of AR added a unique interactivity, while the touchscreen interface allowed for the presentation of practical content (restaurant listings, transit information, turn-by-turn directions, etc.) that was desired. This system could be easily updated with new content (new businesses, events, real time promotions, etc.), whereas other options explored could not. The 3D view of Oakland, that an AR map would present, seemed particularly well suited to display the typography of the neighborhood.

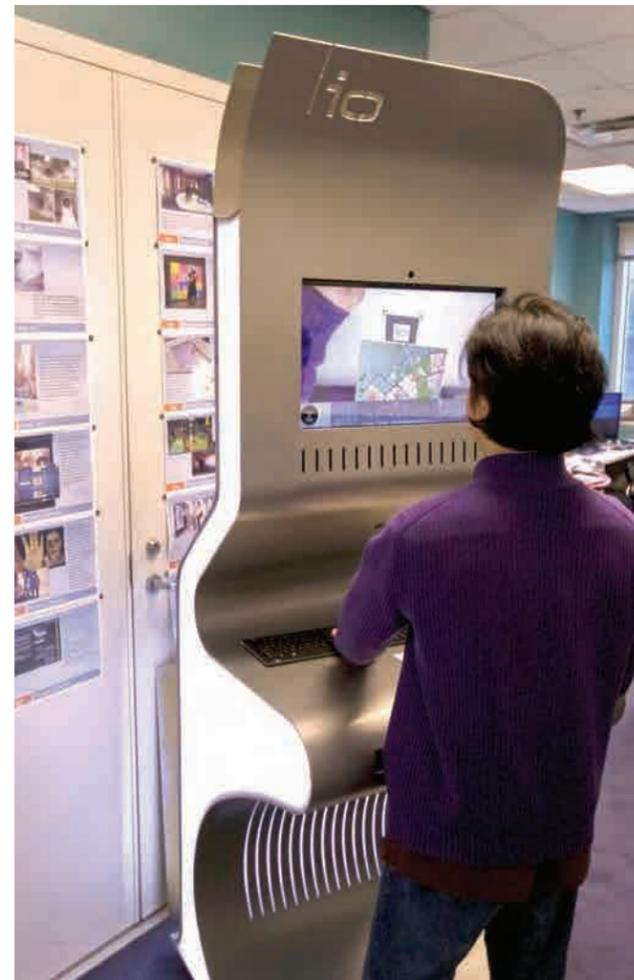
Once Augmented Reality was selected as the direction to pursue, the ETC team entered a second phase of benchmarking research. AR is an emerging technology with many exciting new uses in marketing campaigns, video games, and museums displays. The movie Avatar partnered with Coke for a recent marketing campaign. AR markers were printed onto the sides of Coke Zero cans.

When these cans were held up in front of a webcam, users could steer a 3D helicopter from the movie by rotating the can. Another example is a recent Playstation game, Eye of Judgment, which used AR playing cards. The game came with a webcam, stand, and game board. The user would set up the camera on the stand so the entire game board would be seen on screen. When the AR playing cards were placed down, 3D models of the characters would pop up on screen. The user could manipulate the cards to cause onscreen characters to battle. A third example is Perfect Prototype, a firm based out of Philadelphia. The company recently completed an AR museum exhibit for the Gulf Coast Exploreum Science Center in Mobile, Alabama. The display featured a 3D human heart. The users could rotate a card in the display table surface, and see an animation of the heart beating onscreen.

This benchmarking research largely informed the prototype that the ETC team created. In all of the AR examples explored, there was need for a printed marker. The ETC team felt that having a marker on the back cover of Oakland's folded pocket size maps would both serve as trigger for the AR kiosks and be useful as a map takeaway for users



KIOSK WORKING DRAWINGS



KIOSK PROTOTYPE

who utilized the kiosk. The ETC team developed a print map version, identical in size and printing to the currently distributed O-Zone maps, with an AR marker on the back cover.

The prototype developed has many engaging features. When the user approaches the kiosk, they see photographs of Oakland on screen with the words "Touch to Start" displayed. When the user touches the screen an introduction animation is played. The user is guided to select a map from the map dispensers built into the front of the kiosk. The user then places the map on the surface, guided by an outline that indicates where the map should be placed.

When the map is properly aligned, a "Next" button appears onscreen. At this point, there is also a "No Maps Available?" button in the likelihood that the map supply is exhausted. Then an intro animation plays in which the 3D map of Oakland springs out of the IO marker. 3D buildings appear to be falling from the sky onscreen.

The buildings land onto the map complete with sound cues as each building falls into place. Now a menu bar appears at the bottom of the screen. The user can choose from categories of information, "Food and Drink, Shopping, Services, Healthcare, Thinks to Do, or Surprise Me.". There is a prototype database of 160 businesses that can be selected. When the user selects their category, a second tier of subcategories appears. In the case of "Food and Drink," the subcategory is the different types of restaurants, "American, Asian, Bars, Coffee, etc."

Once a subcategory is selected, the names of the corresponding establishments appear. The user selects their destination, and a detail popup window appears. A photograph of the facade of the business, address, phone number, and hours of operation are displayed.

The user can select a "Directions" tab. Here turn-by-turn directions appear, generated through Google, guide the guest from the kiosk to their destination. A "Print" button is displayed. If selected, the business name, turn-by-turn directions, address, phone number, and distance are instantly printed out. There is a thermal ticket printer mounted just beneath the table surface which prints this information onto custom thermal ticket stock with the IO logo.



## iO Website

Currently housed at [www.onlyinoakland.org/io](http://www.onlyinoakland.org/io), the iO webpages are a place to learn more about the Innovation Oakland project. Its contents consist primarily of three sections:

### 1. Blog

This section is a place where inspirational and parallel projects live to help inform the public of where Innovation Oakland is coming from, and what it might embrace and grow beyond. Furthermore, the blog interface will allow people to add comments and suggest additional ideas that could have the potential to, in turn, positively influence the reality of Innovation Oakland.

### 2. News Section

This section is a place where news will be shared, as it becomes public, about the actual progress of the project throughout its various phases. Its primary role is to keep the public and all stakeholders involved abreast of Innovation Oakland's progress.

### 3. "Wayfinding 101"

This section is nearly identical to Section D of this report and exists strictly to inform those, who might be new to this project, what the project is centered around and what exactly "Wayfinding" means.

Once Innovation Oakland reaches Phase 4 and enters into the stages of fabrication and installation, the website will need to transform into a component of the overall wayfinding system of Oakland. It should house an interactive map, identical in look and navigation to that which is used with the information kiosk and cellular applications. Furthermore, it should become the primary input/output site for the real-time information and data, pertaining to such things as public transit, parking, restaurants, hotels, and events, that will be key to the success of Innovation Oakland.



SCREENSHOT OF INNOVATION OAKLAND WEBSITE



WI-FI ZONE



WI-FI CAFE



WI-FI ZONE



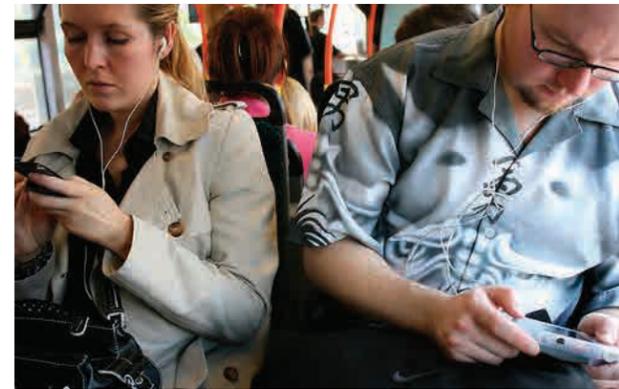
WI-FI BUS STOP IN SAN FRANCISCO



WI-FI ZONE SIGN



WI-FI ZONE



WI-FI ON THE BUS



WI-FI CAFE

## Wi-Fi Zones

Free Wi-Fi access in public and “third spaces”—the restaurants, bars and other common meeting places where people socialize and do business—has become a staple of commercial districts. OBID can encourage ubiquitous Wi-Fi Internet access throughout Oakland through any of the following ways:

- » Encourage Oakland businesses, including those offering non-food services, to individually become Wi-Fi HotSpots and to offer free Internet service to patrons
- » Encourage institutions to provide free Wi-Fi in their public lobbies
- » Create an OBID Wi-Fi network for members with the purpose of increasing patron access
- » Expand Oakland’s free public Wi-Fi HotSpots from Schenley Plaza to other public spaces, including new iO information and art hubs
- » Turn bus stops along Oakland’s major corridors into Wi-Fi HotSpots
- » Encourage PAT to offer free Wi-Fi on buses
- » Create a competitive Oakland Wi-Fi service for residents and businesses with short term membership options for students in order to expand access and coverage

SECTION **F** **RECOMMENDATIONS**  
7. OPTIMIZE TRANSPORTATION

## Public Transit

We strongly recommend Oakland supporting the provision real-time data for PAT buses and institutional shuttle buses.

The real time location information can be gathered in a least three ways:

- » Automatic Vehicle Location (AVL) uses enhanced GPS units installed on buses that transmit location information to a centralized server via a wireless internet connection.
- » With the Crowd Source method, riders' smartphones transmit their location while on the bus. This location information is sent and aggregated at a centralized server and disseminated via a web service.
- » With Passive Infrastructure, buses communicate with sensors/WiFi base stations as they pass them by. The sensors transmit the information about passing buses via the internet to a centralized server. This server then aggregates the bus location information and disseminates it through a web service.

The realtime bus information may be distributed to the public via:

- » Electronic displays at bus stops, and private businesses
- » iO mobile app and website
- » Smartphone
- » SMS (text messaging)
- » Interactive Voice Response(IVR) system
- » Kiosk
- » Technology used by the sight- and hearing-impaired

We additionally recommend building enhanced PAT Rapid Bus Service stops (RBS stops) along the Fifth-Forbes Corridor. Specifically, we suggest converting a Rapid Bus station into a wayfinding landmark. The bus stop would more resemble a train station with economic activity, real-time data, maps, seating, shade, games, and lighting.



EXISTING BUS STOP



ENHANCED RAPID BUS STOP WITH INTERACTIVE KIOSK, INFORMATION HUB, GREEN ROOF, ETC.

# IMPROVE TRANSPORTATION EXPERIENCE

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



EXISTING BUS STOP



ENHANCED RAPID BUS STOP WITH INTERACTIVE KIOSK, INFORMATION HUB, GREEN ROOF, ETC.

# IMPROVE TRANSPORTATION EXPERIENCE

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



EXISTING SOLDIERS & SAILORS GARAGE



SOLDIERS & SAILORS SMART PARKING MOCK-UP



BATES STREET SIGN MOCK-UP

## Smart Parking

In order to reduce traffic congestion caused by drivers looking for parking, we recommend that Oakland provide real-time data for all public spaces in parking garages and lots. This recommendation would provide information particularly for the 2,083 spaces in the Pittsburgh Parking Authority's (PPA) Semple Street garage (449 spaces), UPMC's Soldiers and Sailors garage (934 spaces) and Carnegie Museums garage and lot (700 spaces). The University of Pittsburgh and Carnegie Mellon University public parking lots and garages may also be included, should these institutions be willing to participate.

There are at least two ways to collect real-time parking availability:

- » Working with PPA and institutional garage owners, collect in-out car counts directly from the gate technology. The gate technology would then transmit the in-out car counts to a centralized server via the Internet.
- » Install internet enabled loop detectors at the entries and exits of each garage. The loop detectors would then transmit the in-out car counts to a centralized server via the Internet. Handicap spaces can be counted separately using sensors.

The real time parking information may be distributed via:

- » Electronic displays located at Oakland gateways, specifically Bates, Forbes and Bigelow
- » iO mobile app and website
- » Smartphone
- » SMS (text messaging)
- » Interactive Voice Response(IVR) system
- » Kiosk
- » Garage/lot entrances

A parking reservation system similar to the one operated by the Pittsburgh Downtown Partnership should also be put in place to ease concerns over accessing parking.

## Additional Transportation Recommendations

### Bicycling

We recommend that more investments be made into cycling infrastructure, including signage, safer bike routes along the Fifth-Forbes Corridor, and the Green Route as proposed by Bike-PGH in their 2007 Universities Connect! proposal. The image below from Madison, Wisconsin demonstrates a multi-modal street design for a large avenue similar to Fifth Avenue.



MULTI-MODAL STREET DESIGN IN PORTLAND, OREGON

Oakland employers should be encouraged to provide safe employee bicycle parking options, such as the example shown here with the Bicycle Commuter Center in Downtown Pittsburgh. Bike-PGH has a number of programs that can help institutions improve infrastructure for bicycle commuters, and to educated commuters on safe commuting.

Once safer options for cycling are available, we also recommend supporting a bike-sharing program in partnership with Oakland institutions, the City of Pittsburgh, Venture Outdoors and Bike-PGH.

### Car-sharing

We recommend that Oakland more aggressively push car-sharing by including information about ZipCar and any institutional car-sharing program on the transportation section of iO App and website.



### Smart Navigation

Oakland can provide real-time traffic data regarding congestion, events and rerouting suggestions via the iO website, mobile app and kiosk. We also recommend that Oakland support traffic light synchronization efforts by PENNDOT and others.



BICYCLE COMMUTER CENTER, DOWNTOWN PITTSBURGH



ZIPCAR MOBILE APP



ZIPCAR VEHICLE

## IMPROVE TRANSPORTATION WAYFINDING

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

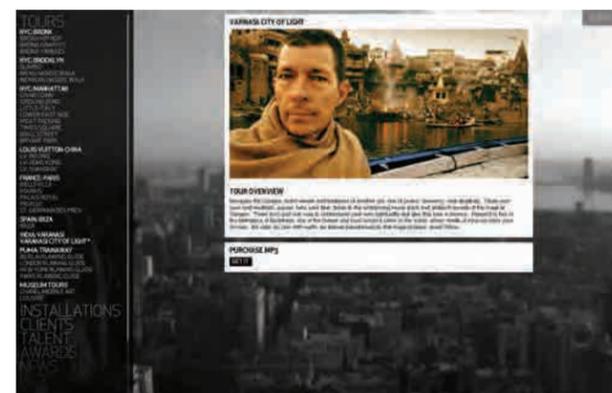
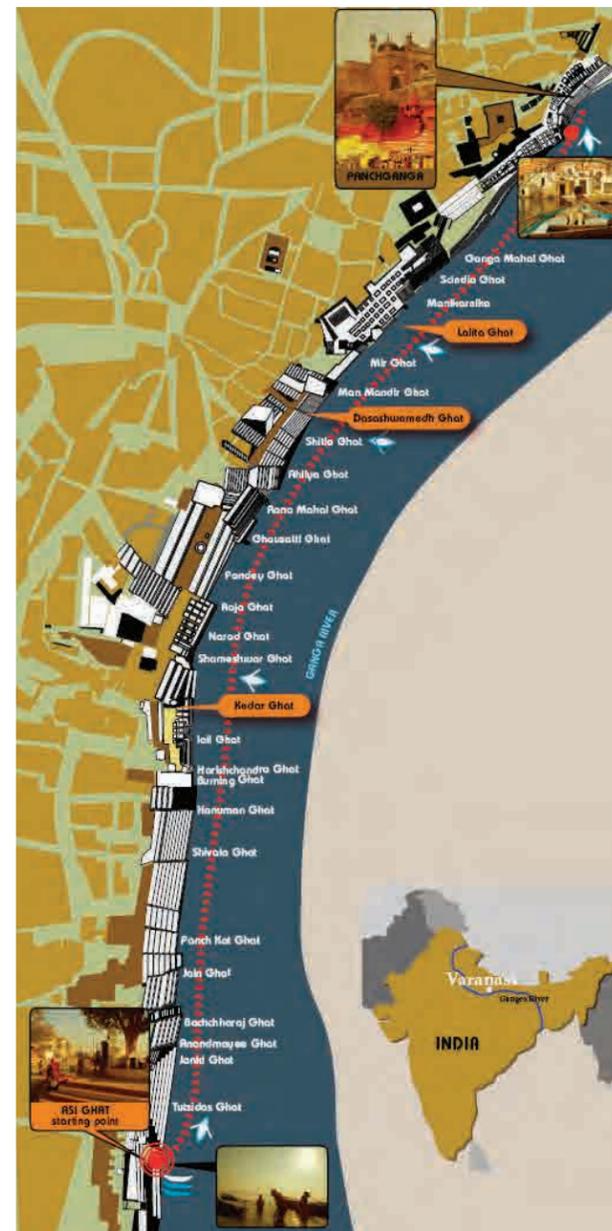
SECTION **F** **RECOMMENDATIONS**  
8. PROMOTE PLAY



LONELY PLANET MOBILE APPS



[MURMUR] KENSINGTON MARKET, TORONTO



SOUNDWALK'S ARNASI TOUR

## Using Technology for Fun

Technology is being used to promote play and learning in interesting and innovative ways. Oakland can encourage three particular trends:

- » Technology-based travel information and tours
- » Geocaching and waymarking
- » Interactive digital public art

### Technology-based Travel Information and Tours

Many cities and travel guide companies are using mobile apps, the Internet, GPS, QR codes and Augmented Reality (AR) to create new ways of learning about places and people. Travelers can now choose between travel books and mobile phone downloads as a way to navigate a new city.

Lonely Planet, long the favorite travel guide for backpackers, now offers a free mobile web site. It has also partnered with an augmented reality company to offer mobile AR experiences. The LP's Compass Guides to 10 American cities overlay information on the real-time view of a phone camera. QR codes and Augmented Reality (AR) are expanding the possibilities of travel.

[murmur] is a documentary oral history project that collects personal stories and anecdotes about their neighborhoods and makes them accessible to the public using mobile phones. Users look for a [murmur] sign and call the posted telephone number to listen to a story about that specific place. Listeners may be invited to continue walking or to look around them. [murmur] began in Toronto's Kensington Market in 2003 and has since expanded to other neighborhoods across Toronto, Calgary, San Jose, California, Edinburgh, Dublin and Geelong, Australia.

Soundwalk, an audio tour company based in New York and Paris, has created more than 40 walking tours (20 in New York) ranging across a variety of themes and locales, including: a tour of the birth of Hip Hop in the Bronx, a Women's Hasidic Walk through Brooklyn, a tour of the Ganges in Varnasi, India, tours of neighborhoods in Paris, and running guides for Berlin, London, NY and Paris for Puma, the athletic apparel company. Tours are guided by scholars, practitioners and artists.

# PROMOTE PLAY

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Geocaching

Geocaching can be described as a “world wide treasure hunt using GPS”. There are over 300,000 caches located in 222 countries, and over one million players worldwide. “Treasure”, or caches, are hidden in weather-proof containers along with a logbook and pencil, and tracked using GPS coordinates. Geocachers join online (www.geocaching.com) and can choose any geocache from a list based on postal code and difficulty.

Using a GPS device and the coordinates, the geocacher sets off to find the geocache. Clues are provided using words and photos. Once found, the player signs the logbook and returns the geocache to the original location for someone else to find. Objects in the cache can be taken if replaced with another object.

Geocaching can help attract visitors to parks and other outdoor public spaces, and is one way to showcase points of interest, art and history. Drawbacks can include security concerns, trespassing, damage to grounds and confused onlookers.

In addition to hidden caches in the form of a box or object, virtual caches or waymarks are caches in the form of a unique or interesting location. Seekers must solve a puzzle, for example by answering a question, in order to figure out what the location (virtual cache) is. Earthcaches are locational caches that are non-cultural, such as natural formations or interesting phenomena, and are typically used to teach people about science and the wonders of the Earth.

The City of Eugene, Oregon, has been proactive in managing geocaching in order to harness the positive impacts of this growing outdoor social activity. It has established a virtual geocaching course highlighting the City’s major points of interest, and also offers a GPS-Geocaching class through its Recreational Services Outdoor Program. The public library rents GPS receivers and provides maps, and in 2009, the City sponsored a free geocaching event.

With a huge population of students and nearby Schenley Park, Oakland is well-positioned to similarly promote geocaching with the participation of the Carnegie Library of Pittsburgh and the Pittsburgh Parks Conservancy. There are also plenty of cultural and historical points of interest in Oakland to support a virtual caching network.



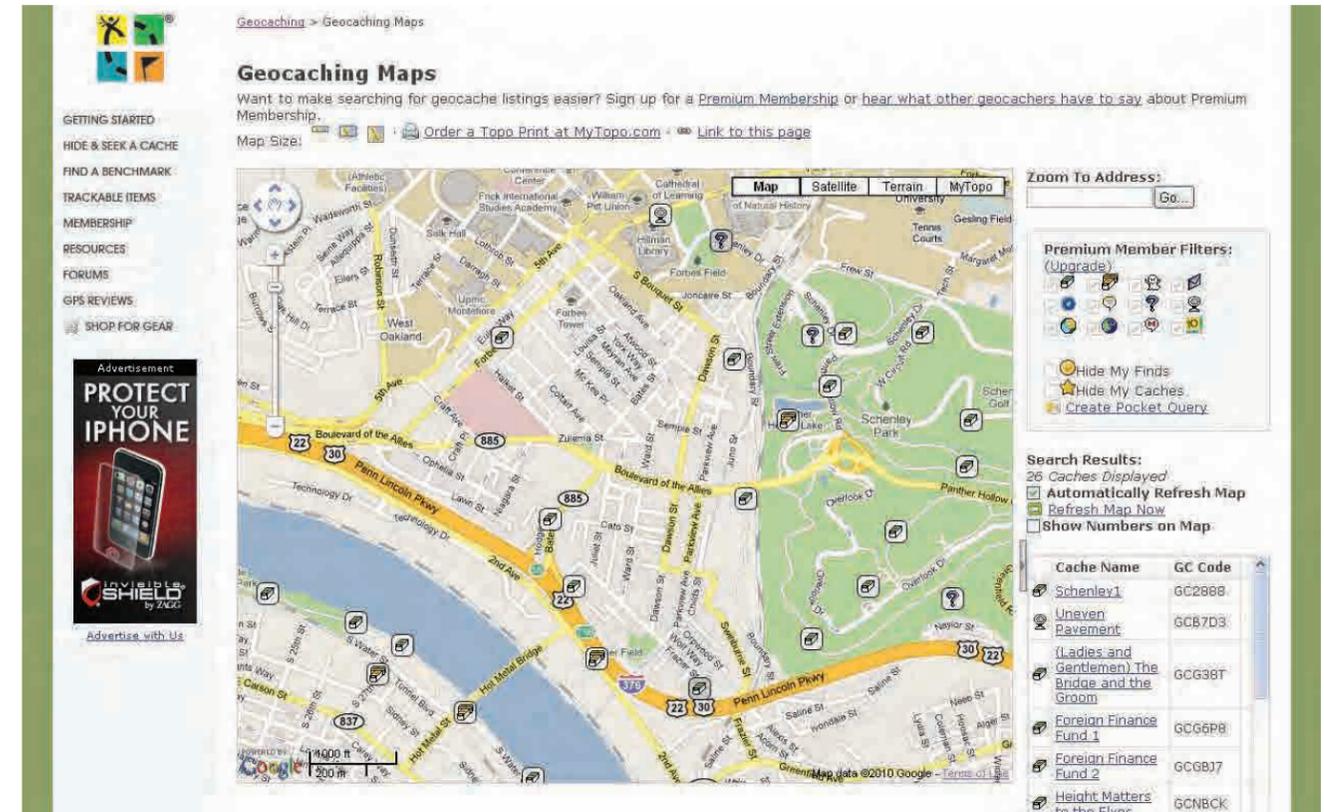
GEOCACHE



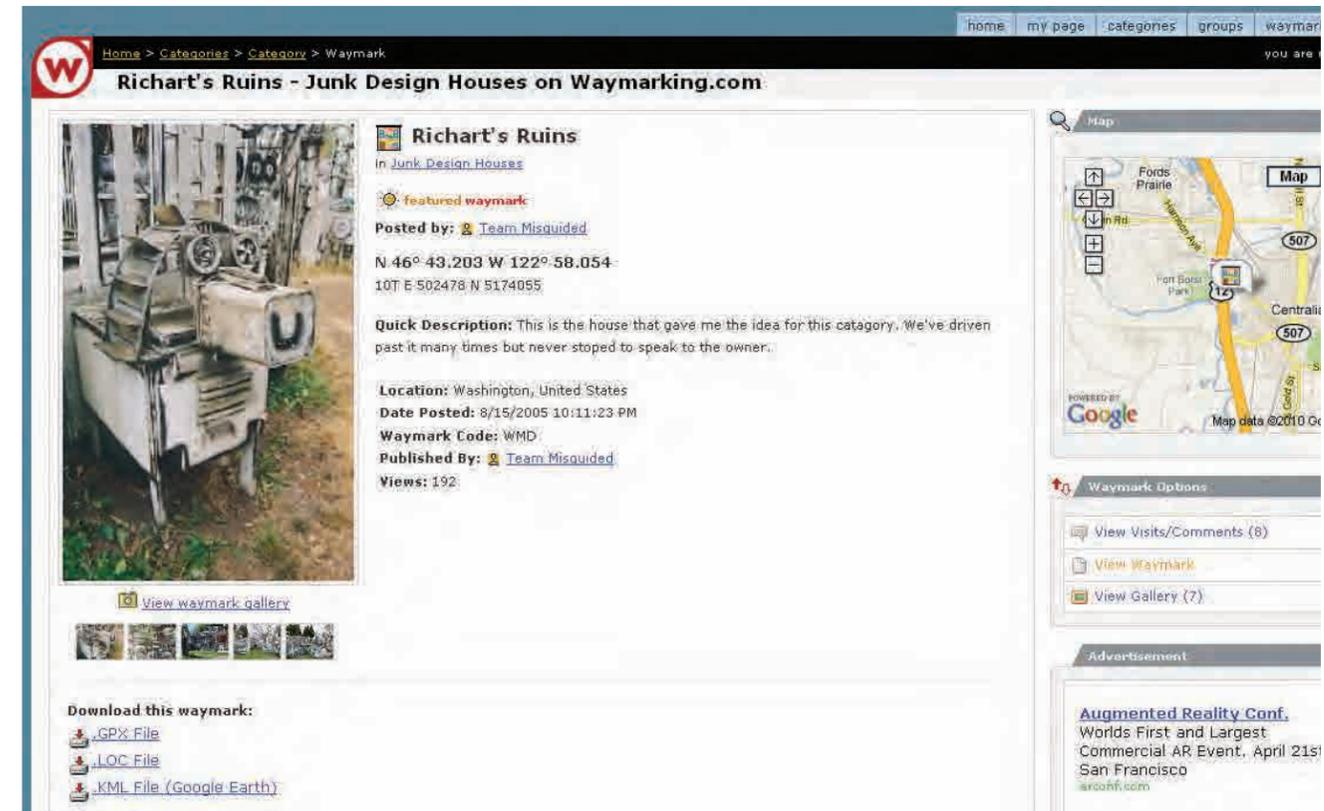
GEOCACHE



GEOCACHING EQUIPMENT



GEOCACHES IN OAKLAND



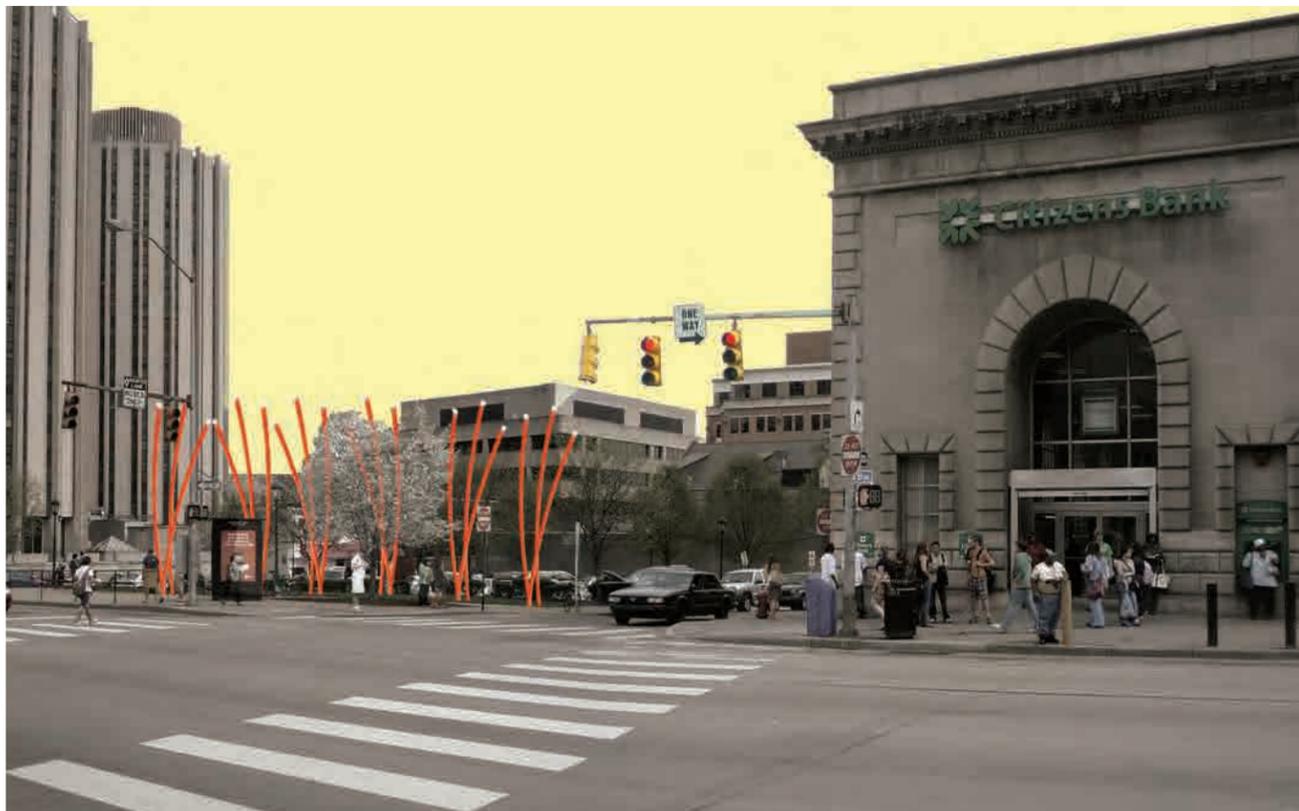
WAYMARKING WEBSITE

# PROMOTE PLAY

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



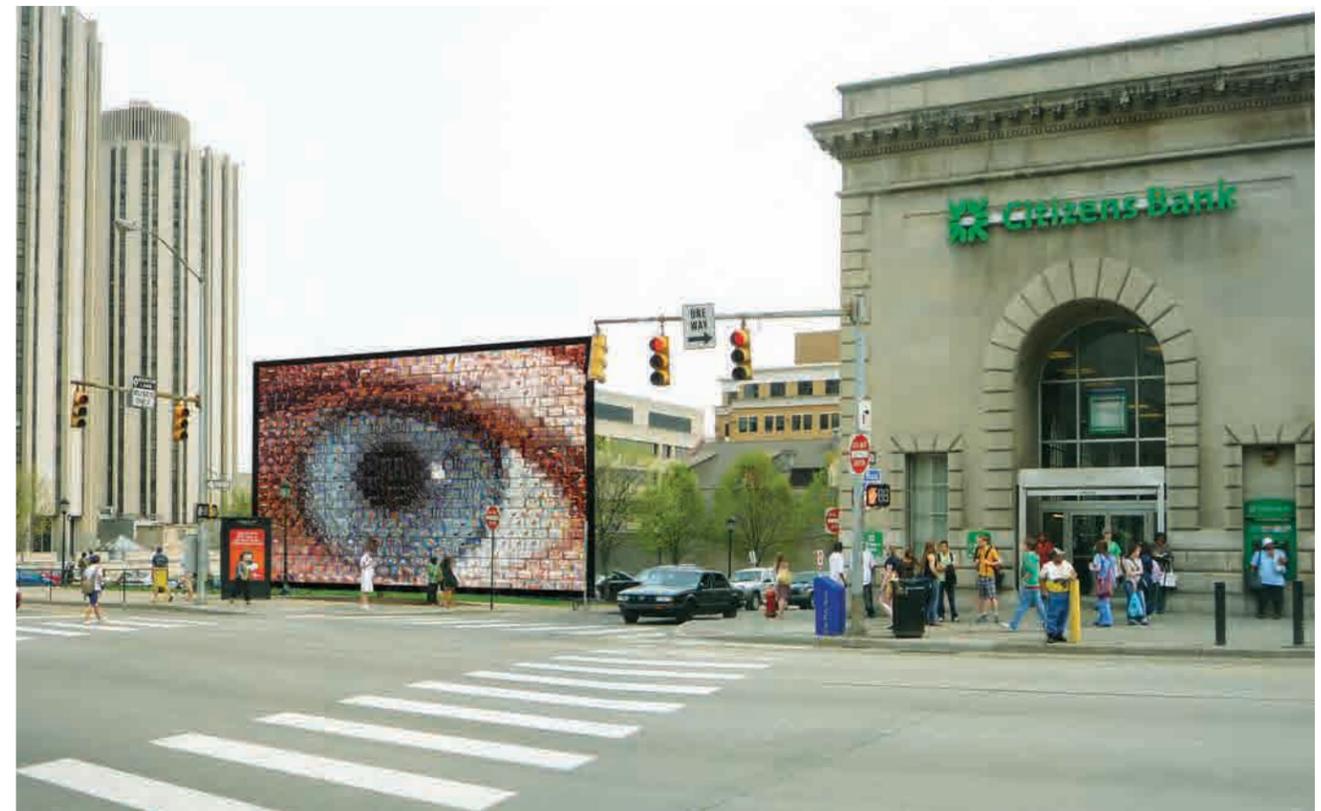
INTERACTIVE DIGITAL FIBER OPTIC ART INSTALLATION



INTERACTIVE DIGITAL FIBER OPTIC ART INSTALLATION



EXISTING PUBLIC SPACE



INTERACTIVE DIGITAL SCREEN

**Interactive Digital Art**

OBID can sponsor public art works that use digital technology in an interactive way, along the lines of the examples shown in the benchmarking section.

The example on this page shows two hypothetical art installations in the public square at Fifth Avenue and Bouquet Street. One mimics fiber optic strands whose color would change with the input of information, such as crowd sourced online data or monitoring data. It might react to statistics, such as the number of bus riders passing through Oakland at any given moment, or user-generated content created specifically for the project. The other example shows a large-format digital screen that could also use RFID tags embedded in an Oakland pass or other specific artifact. Participating carriers of the RFID card would be sensed by the screen which would then “speak” to the individual, calling them out by name, etc., or in this case, displaying a photo of their eye as previously taken by their cell phone.

**PROMOTE PLAY**

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA



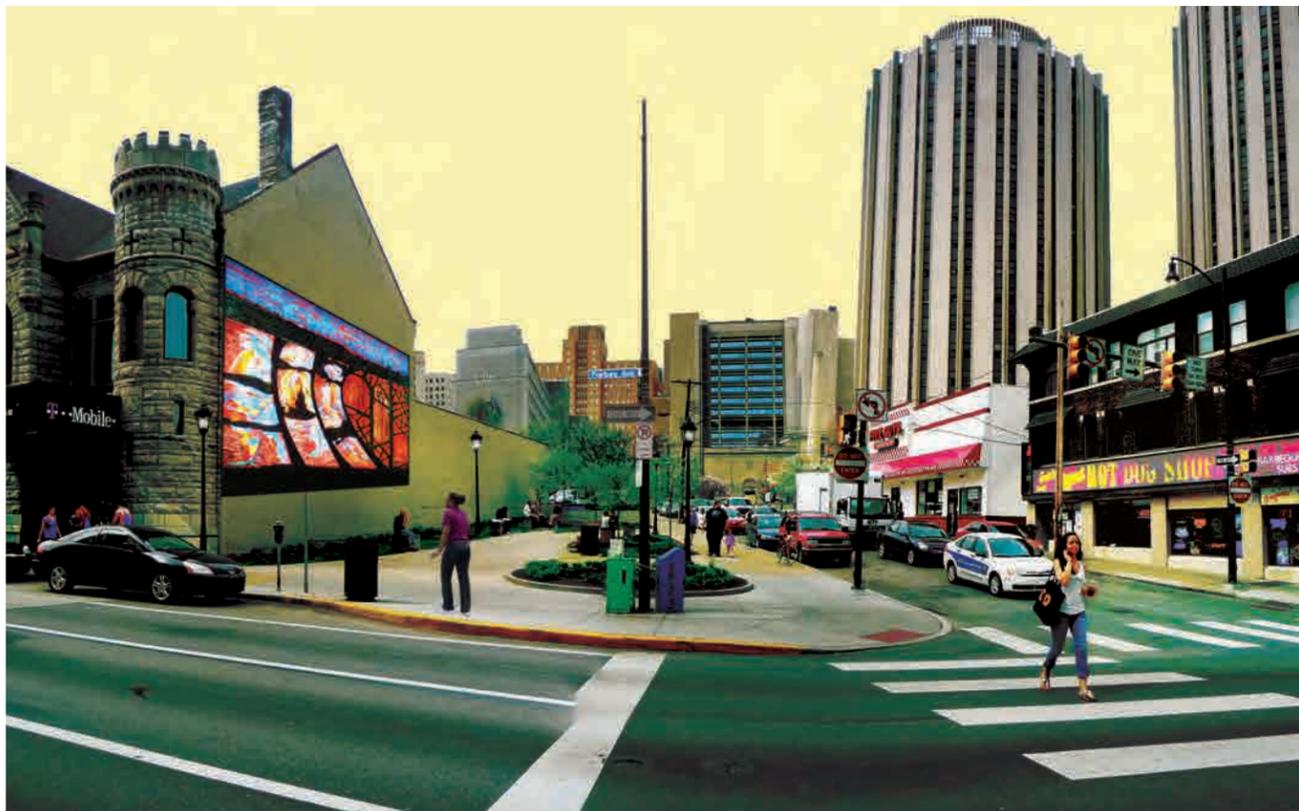
DIGITAL SCREEN



EXISTING PUBLIC SPACE

**More Examples**

The hypothetical example on this page depicts a digital screen that could display graphic and video art from art and design students studying at Oakland institutions, Pittsburgh artists, and projects from the Pittsburgh Filmmakers/ Pittsburgh Center for the Arts. It also shows a living, green wall with the word Oakland embedded in color.



DIGITAL SCREEN



VEGETATED MURAL

**PROMOTE PLAY**

INNOVATION OAKLAND | PITTSBURGH, PENNSYLVANIA

SECTION **G** **IMPLEMENTATION**  
1. REGULATORY FRAMEWORK



## Implementation Overview

Because many of the elements recommended in this document will be located in or adjacent to the public right-of-way, several different organizations and City agencies will need to be involved in helping to make Oakland wayfinding improvements a reality.

Below is a list of relevant various regulatory agencies along with a brief description of their anticipated role in this process. Contact information for individuals at each organization/agency is also provided.

On the following page, a matrix outlines which organizations or agencies will be responsible for planning, reviewing, installing and maintaining the various elements recommended in this Wayfinding Strategy for Oakland.

### Oakland Business Improvement District (OBID)

OBID is dedicated to improving the cleanliness, appearance, and perception of safety in Oakland, bringing about revitalization, preserving Oakland's unique commercial environment, and undertaking marketing and development initiatives to make Oakland a vibrant destination for visitors, residents, owners, employees and students.

Contact: Georgia Petropoulos Muir  
Executive Director  
412-683-OBID (6243)  
georgia@oaklandbid.org

### Department of City Planning

The Department of City Planning sets the framework for the City's development through policy and development review by the Planning Commission and through administration of the zoning ordinance. City Planning will want to be involved in I-O discussions relating to Zoning, signage, outdoor information kiosks and other projects impacting the public realm.

Contact: Dan Sentz  
Environmental Planner  
412-255-2233  
dan.sentz@city.pittsburgh.pa.us

### Historic Review Commission (HRC)

The HRC protects and maintains historically and architecturally significant buildings and neighborhoods in the City. The HRC may be involved in I-O projects that impact or modify sites or building exteriors within the Oakland Civic Center and Schenley Farms Historic Districts.

Contact: Katherine Molnar  
Historic Preservation Planner  
412-255-2243  
Katherine.molnar@city.pittsburgh.pa.us

### ADA Coordinator

The ADA Compliance Officer is responsible for ensuring that all programs, services, and activities provided by the City of Pittsburgh are accessible to people with disabilities. The Coordinator also assists people/ organizations in designing or redesigning their facilities so that they are usable by all persons, including those with disabilities.

Contact: Richard Meritzer  
ADA Coordinator  
412 255-2102  
richard.meritzer@city.pittsburgh.pa.us

### Art Commission

The Art Commission works to improve the aesthetic quality of the City's public spaces. The Art Commission is mandated to review elements erected on or above land owned by the City; which are within the public realm under its control, including parks and bridges; and in which City funds are invested. This includes many recommended Innovation Oakland elements, such as public art, outdoor kiosks, gateway signs, banners, information hubs, etc. The Art Commission administers the review process, which includes preliminary and final approvals. The Art Commission is also mandated to review all works of art owned by the City of Pittsburgh and those proposed to be acquired by the City. Art or design concepts should be brought to the Art Commission as early as possible to facilitate their subsequent approval and implementation. If a multitude of art pieces were proposed for all over Oakland, the project might need to also be approved by City Council. The Art Commission will be especially concerned with the ownership and maintenance of elements located in the public realm, and their impact on the function of the public right-of-way.

Contact: Morton Brown  
Public Art Manager  
412-255-8996  
morton.brown@city.pittsburgh.pa.us

### Department of Public Works

Public Works maintains the City's infrastructure and meets the environmental needs of Pittsburgh residents. Public Works would be involved in I-O projects involving the removal or addition of street signage, and may be involved in the installation and/or maintenance of recommended streetscape elements.

Contact: Pittsburgh Public Works  
412.255.8850

### Forestry Division

The Pittsburgh Forestry Division is charged with the care and keeping of Pittsburgh's public tree stock. The Urban Forester can provide information about street tree removals and plantings.

Contact: Lisa Ceoffe  
Urban Forester  
412-393-0154  
lisa.ceoffe@city.pittsburgh.pa.us

### Oakland Transportation Management Association (OTMA)

OTMA is committed to promoting alternative transportation options that will aid in reducing traffic congestion and improved air quality. OTMA receives funding through the Pennsylvania Department of Transportation (PennDOT) and the University of Pittsburgh. Membership is open to institutions, businesses, non-profit community organizations, local government agencies and regional transportation planners and providers. The OTMA, along with fellow regional TMA's, works to respond to Oakland transportation issues. OTMA can also help identify relevant contacts at the Port Authority of Allegheny County and PennDOT.

Contact: Mavis Rainey  
Executive Director  
412-687-4505  
mrainey@otma-pgh.org

## Implementation Matrix

I-O Recommendations / Elements	Planning Responsibility	Standards + Review Responsibility	Installation + Maintenance Responsibility
<b>1. Remove the Clutter</b> <ul style="list-style-type: none"> <li>Street sign inventory, removal and reorganization</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of Public Works</li> <li>City Legal Department</li> <li>Oakland Transportation Management Association</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>Department of Public Works</li> <li>OBID</li> </ul>
<b>2. Improve Signage</b> <ul style="list-style-type: none"> <li>New Oakland wayfinding system</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of City Planning</li> <li>City Legal Department</li> <li>Department of Public Works</li> <li>Oakland Transportation Management Association</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>Department of Public Works</li> <li>OBID</li> </ul>
<b>3. Define Entrances</b> <ul style="list-style-type: none"> <li>Gateway signs</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of City Planning</li> <li>Art Commission</li> <li>Oakland Transportation Management Association</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Private institutions and businesses</li> <li>Department of Public Works</li> </ul>
<b>4. Celebrate Streets</b> <ul style="list-style-type: none"> <li>Unifying street elements (poles, pylons)</li> <li>Enhancing the street environment (street trees, sidewalks, lighting, outdoor seating, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of City Planning</li> <li>Art Commission</li> <li>Department of Public Works</li> <li>Forestry Division</li> <li>ADA Coordinator</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of Public Works</li> <li>Private institutions and businesses</li> <li>Forestry Division</li> </ul>
<b>5. Create an Iconic Network</b> <ul style="list-style-type: none"> <li>Digital information / art hub</li> <li>Mini info hubs</li> <li>Public art works</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of City Planning</li> <li>Art Commission</li> <li>Department of Public Works</li> <li>ADA Coordinator</li> <li>Historic Review Commission</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>Private institutions and businesses</li> <li>OBID</li> <li>Department of Public Works</li> </ul>
<b>6. Optimize Technology</b> <ul style="list-style-type: none"> <li>Indoor information kiosks</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Private institutions and businesses</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Private institutions and businesses</li> </ul>	<ul style="list-style-type: none"> <li>Private institutions and businesses</li> <li>OBID</li> </ul>
<b>7. Optimize Transportation</b> <ul style="list-style-type: none"> <li>Enhanced Rapid Bus Transit stops</li> <li>Real-time data at all bus stops</li> <li>Real-time data at parking garages and street signs</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of City Planning</li> <li>Art Commission</li> <li>Department of Public Works</li> <li>ADA Coordinator</li> <li>Port Authority of Allegheny County</li> <li>Historic Review Commission</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>Port Authority of Allegheny County</li> <li>Oakland Transportation Management Association</li> <li>Department of Public Works</li> <li>Private institutions, businesses or parking facility operators</li> <li>OBID</li> </ul>
<b>8. Promote Play</b> <ul style="list-style-type: none"> <li>Interactive digital art</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of City Planning</li> </ul>	<ul style="list-style-type: none"> <li>Department of City Planning</li> <li>Art Commission</li> <li>Department of Public Works</li> <li>Historic Review Commission</li> <li>OBID</li> </ul>	<ul style="list-style-type: none"> <li>OBID</li> <li>Department of Public Works</li> <li>Private institutions and businesses</li> </ul>

SECTION **H** APPENDICES



SECTION **H** **APPENDIX**  
A. GLOSSARY

### **Augmented Reality (AR)**

Term used to describe a direct or indirect view of a physical real-world environment whose elements are augmented by virtual computer-generated imagery to enhance one's perception of reality. AR provides the capability to link the virtual world with the physical world through such techniques as superimposing video or live feeds with a 3D model of the same environment and adding hidden information accessible from sensors like radio-frequency identification tags (RFID).

### **Automated Vehicle Location (AVL)**

A computer-based vehicle tracking system that automatically determines the geographic location of the vehicle and transmits the information to the person or computer requesting it. With regard to transit, the actual real-time position of each networked vehicle is determined and relayed to a central information center. Positioning and relay techniques vary, and depend on the needs of the transit system and the technologies used.

### **Crowdsourcing**

Also referred to as User Generated Content, crowdsourcing is the act of obtaining information from the general public about such things as current events, products and retail establishments. Such information that is traditionally researched and inputted by an employee or contractor is instead handled by a large group of people (a crowd), through an open call. Such a technique is often the fastest means by which to generate comments and suggestions.

### **Digital Signage**

As the counterpart to traditional analog signage, digital signage incorporates electronic displays to present information, advertising and other dynamic messaging. Displays commonly used are LCD, LED, and plasma displays, or projected images. These can be located in both public and private, as well as interior and exterior, environments. Digital signage is often used in place of static signage in situations where changing, or dynamic, messaging is preferred so that the content can be changed out more easily, animations can be shown, and the signs can adjust their content to match a specific audience.

### **Geotagging**

Geotagging refers to the process of adding geographical identification data, typically latitude and longitude coordinates, to various media such as photographs, video, websites, or RSS feeds. Data can also include such notations as altitude, bearing, distance, accuracy data, and place names. Geotagging can help users find a wide variety of location-specific information and can potentially be used to find location-based news, websites, or other resources.

### **Global Positioning System (GPS)**

GPS is the acronym for the phrase, "Global Positioning System". A global navigation satellite system based in space that provides location and time information at all times, anywhere on Earth, regardless of the weather. GPS is used in all types of transportation systems, and has applications relevant to everything from map-making to cellular phone networks. GPS was created and implemented by the US Department of Defense and is freely accessible to anyone using a GPS receiver.

### **Interactive Voice Response (IVR)**

IVR is the acronym for the phrase, Interactive Voice Response. IVR is a technology that allows a computer to have voice recognition and understand tonal keypads. IVR has long been used to sort out high volumes of incoming calls in call centers, but has recently been increasingly used in hands-free automobile systems and technology related to the universal design of cellular phones.

### **Netbook**

Netbooks refer to a category of small, lightweight, and inexpensive laptop computers designed for general computing and primarily for accessing web-based applications. They are typically marketed as accessory devices designed to augment a user's other web and computer access.

### **Personal Digital Assistant (PDA)**

PDA is the acronym for the phrase, personal digital assistant. A PDA is a mobile device that functions as a manager of personal information and typically has the ability to connect to the web. A PDA typically employs a touchscreen display and typically double as mobile phones and/or portable media players.

### **QR Code**

QR stands for "Quick Response." A QR Code is a two-dimensional bar code used to read codes at high speed. Such codes can commonly be found on courier delivery package labels, but can have several layers of information embedded in them such as website links, thus affording many uses. Furthermore, QR codes can be reused and repurposed with new information and can be easily read with mobile phone equipped with cameras and a simple code-reading application.

### **Real-Time Data**

Real time data refers to information that is delivered immediately after collection. Typically this data is used for tracking and navigation purposes, such as tracking the location of a public bus to inform patrons waiting at a stop when their ride will arrive.

### **Radio-Frequency Identification (RFID)**

RFID or RFID tags refer to "Radio-Frequency Identification". These electronic tags are typically applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. RFID tags emit a radio-frequency signal that can be received and transmitted by an antenna. Tags can be received from up to several yard away A common use of RFID is as a rice grain-sized microchip implanted into pets for identification purposes in the case that they become lost.

### **RSS Feed**

RSS stands for "Really Simple Syndication". This syndication is comprised of a family of web feed formats used to publish, in a standardized format, frequently updated works, such as blog entries, news headlines, audio, and video. The resulting RSS document, which is commonly referred to as the "feed", includes full or summarized text, as well as metadata containing such notations as publishing dates and authorship. In order to subscribe to and read RSS feeds users need software called: "RSS reader", "feed reader", or "aggregator". Such applications can be web-based, desktop-based, or mobile device-based.

### **Short Message Service (SMS)**

SMS is the acronym for a mobile device service known as, "Short Message Service". SMS is otherwise known as "texting" or "text messaging" when referring to its mobile phone use.

### **Sensor**

A sensor is a device that measures a physical quantity and converts it into a signal that can be read by an observer or by an instrument. An example would be the sensor used at the entry and exit of a parking garage to recognize a vehicle and signal to the gate to lift and allow ingress or egress.

### **Smartphone**

A smartphone is a mobile phone that offers more advanced computing ability and connectivity than a basic mobile phone. Currently some prime examples or smartphones include the iPhone, a Blackberry, and the Android. Because they run complete operating system software, providing a platform for application developers, Smartphones allow the user to install and run much more advanced applications. A smartphone could be considered as a PDA integrated within a mobile telephone.

### **Social Media**

Social media are primarily web- and mobile-based tools for sharing and discussing information. The term most often refers to activities that integrate technology, telecommunications and social interaction, and the construction of words, pictures, videos and audio. This interaction, and the manner in which information is presented, depends on the varied perspectives and creation of shared meaning among communities as people share their stories and experiences with the public. Blogs, social networking, social news and bookmarking, and photography sharing are all examples of social media.

### **Twitter**

Twitter is a free social networking service that enables its users to send and read other user messages called “tweets”. Tweets are text-based posts of up to 140 characters displayed on the author’s profile page. Users of Twitter may subscribe to, or follow, other user’s tweets or the tweets of all the users they are following. All users can send and receive tweets via the Twitter website, various external applications available to such devices as smartphones, or by SMS.

### **Universal Design**

Universal design refers to a broad-spectrum solution that produces products, architecture, and environments that are effective and usable for everyone, regardless of disability or age. The principles of Universal Design include the following: equitable use, flexibility in use, simple and intuitive, perceptible information, tolerance for error, low physical effort, and size and space for approach and use.

### **Wayfinding**

Wayfinding encompasses all of the ways in which people orient themselves in physical space and navigate from place to place. With regard to navigating the built environment, wayfinding typically includes constructed elements such as signage and other graphic communication, visual cues inherent in buildings and landmarks, logical space planning, audible communication, tactile elements, and provision for users with impairments and special needs.

### **Wi-Fi**

Wi-Fi refers to a specific wireless Internet technology, the IEEE 802.11 wireless local area network (WLAN) standard. It is widely assumed to stand for “wireless fidelity” and is used to represent wireless Internet capability. Wi-Fi-enabled devices can include desktop computers and laptops, smartphones, video game consoles, and printers.

SECTION **H** **APPENDIX**  
B. PUBLIC OUTREACH:  
COMPREHENSIVE FINDINGS

## A. The Good – What is Working for Wayfinding and Access in Oakland?

### 1. Word of Mouth

#### 2. Landmarks

- » Cathedral of Learning,
- » “Walking to the Sky,”
- » Peterson Events Center (“Pete”),
- » The “O,”
- » Schenley Plaza,
- » Dippy the Dinosaur
- » Panera
- » Wendy’s
- » Joe Mama’s
- » Rita’s Ices, etc.

### 3. Fifth and Forbes Corridors

- » Main orientation and transportation spines

### 4. Street Signs

- » White-on-blue with neighborhood identification and block numbers
- » City color-coded signs work well

### 5. Oakland Trip Pre-Planning

- » Calling institutions for directions ahead of time
- » On-line business and map searches (Google, MapQuest, CMU, Carlow, Pitt)

### 6. Pedestrian Enhancements to Intersections

- » Bump-outs on Forbes and Fifth (despite 45 degree ramp into traffic and occasional flooding),
- » Four-way crossing signal (Craig Street), auditory signals and piano-key crosswalks

### 7. Physical Campus Maps (Carlow, Pitt, etc.)

### 8. Bus Transportation

- » 71 bus on ----; 61 bus on ----
- » “This bus goes to” on the side of the bus
- » Route Shout (beta) allows PAT bus riders to access bus time tables via text messages from certain transit stops that generally serve a student population

### 9. Vehicular Wayfinding

- » Highway signs from the east will get you to Oakland and university destination signs generally work for motorists
- » GPS for drivers
- » Driving works if you have a parking space
- » Traffic light counting to provide directions

### 10. Event Information on the Radio and Television

## B. The Bad – What is NOT Working for Wayfinding and Access in Oakland?

### 1. Difficult to Find Parking

- » Full lots, public vs. private, inconsistent signage

### 2. Vehicular Traffic Congestion and Confusion

- » No traffic control or re-routing for big events
- » Hard to know which lane to get into for exits: need time and warning
- » One-way streets confusing
- » Few places to drop people off

### 3. Bicycle Infrastructure

- » Lack of bike lanes, parking, trail access, etc.

### 4. Signage Clutter in Streetscape

- » Lack of standardization/uniformity of signs

### 5. Lack of Gateway Orientation Signage

- » Bates Street is especially poor
- » Entry to Oakland for bicyclists from Boundary Street

### 6. Poor Building Identification and Entry Signage

- » For Some Larger Institutional Buildings

### 7. Campus / District Edges Not Clearly Identified

### 8. Insufficient PAT Bus Information

- » No maps of the larger bus system are available at bus stops: you can get around fine with busses if you have the information
- » Bus schedules are not readily available
- » Signs at bus stops are not accurate regarding routes, etc.

### 9. Unpleasant Pedestrian Environment

- » Due to narrow sidewalks, fast-moving vehicular traffic, monolithic institutional building facades, discontinuous business districts (Craig Street/CMU vs. the rest of Oakland), few street trees, surface parking lots and structured parking garages
- » Fifth and Forbes are disconnected from one another for pedestrians - side streets don't tie them together
- » Motorist-oriented destination signs do not serve pedestrians and bicyclists

### 10. Wayfinding Maintenance

- » Signs are showing their age and bus signage is out of date re: routes
- » Redundancy and proliferation of signs (needs consolidation)
- » Nothing should be installed unless there is a clear responsibility, commitment and money to maintain it

## C. Ideas – Ways to Improve Wayfinding and Access in Oakland

### 1. Treat Oakland as a Community with Shared Resources (parking, districts) via Coordinated and Consolidated Oakland Maps and Signage

- » Develop a system of pavement marking signage – not more pole signs
- » Consolidate and integrate existing signs to clean up the streetscape
- » Make signs throughout Oakland more consistent.
- » Adhere to international, universal graphic standards. More visual icons and colors, less text.
- » Install corner signs listing businesses/destinations “just down the street” (Atwood, Oakland Avenue, Craig Street, etc.)
- » Incorporate landmarks into maps: connect 2D and 3D wayfinding

### 2. Enhance PAT Bus Information

- » Provide an accessible Fifth and Forbes Bus/Shuttle Loop every few minutes
- » Provide real time GPS bus arrival time information
- » Provide information about the entire bus route and system at shelters and on busses
- » Display information about Oakland in bus shelters, on shuttles, etc.

### 3. Provide Bike Infrastructure

- » Provide “Zip Bikes”
- » Improve bicycle infrastructure

### 4. Improve Pedestrian Infrastructure

- » Continue to improve pedestrian infrastructure (bump-outs, street trees, landscaping, etc.)
- » Crosswalk improvements: one mode of transport at a time at crosswalks, no right turns on red, better lighting at crosswalks, replace 45° sidewalk accessibility ramps with 90° ramps

### 5. Clarify Parking Options and Provide Real-Time Availability Information

- » Locate “park and ride” garages at the edges of Oakland (with a local transit loop) to minimize congestion
- » Add sensors and real-time digital signage to facilitate parking search

### 6. Improve Business District Lighting

- » Improve nighttime light conditions in the business districts (5th Avenue and Atwood Street especially) via streetlights, storefront lighting, etc.

### 7. Use Technology for Creative Interactive Wayfinding

- » Develop portable means of wayfinding using smart phone apps, Google overlays and bar codes,
- » Provide up-to-date digital information re: parking, events, etc. at neighborhood gateways and entries/lobbies of major institutional buildings
- » Create a centralized on-line resource w/ information about Oakland with different access portals: website, kiosks, smart phone, text message, etc.

- » Kiosks: must be updatable, maintained and user-friendly across ages, physical abilities and languages
- » Create a searchable database of Oakland businesses, w/ customized user profiles and preferences, etc.
- » Install digital screens to enliven the streetscape and provide information
- » Put information about Oakland resources/destinations on screens in lobbies, on hotel and hospital television screens, etc.
- » Use different colored lighting on event days to direct traffic and limit congestion

### 8. Encourage More Public Art

- » Express Oakland’s innovative spirit, history, culture and campus/collegiate identity through creative neighborhood gateways and public art
- » Develop a marketing brand for Oakland, eg: Lawrenceville’s Design Zone
- » Create more pedestrian-scaled landmarks/public art in the business district
- » Provide information about local history and culture
- » Combine signage and infrastructure w/ public art and cultural information

### 9. Create an Oakland HUB / Center

- » Provide an engaging large-scale public art that utilizes technology, invites interactivity and becomes a landmark (Schenley Plaza as a possible location)
- » Create an interactive Oakland Visitor Center with maps, information about neighborhood destinations and events, and for-sale tickets to local venues. Showcase the “big picture” of Oakland’s offerings for visitors, employees, students and long-term residents alike.

### 10. Create District Guidelines related to Signs, Public Art and Architectural Aesthetics

- » Solid walls of “modern” buildings are unfriendly / not welcoming
- » A preference signs and technology that overlay and respect the older buildings - an added layer that lets the past read through, eg: new signage at the Oakland Carnegie Library

SECTION **H** **APPENDIX**  
C. USER SCENARIOS

## Student Scenario



**Tuesday, 8:35 am**

Carnegie Mellon University undergraduate student Tyra Goode leaves her apartment in Central Oakland and rides her bicycle to campus.



**11:42 am**

After class, Tyra checks in to Four Square, a social networking site that allows users to “see” where their friends are located. She finds her friend Jing-Wei, a Pitt student, and rides over to meet her at the Cathedral of Learning.



**12:03 pm**

Jing-Wei and Tyra meet up at the iO Information Art Hub at Forbes and Bouquet to use the kiosk and see what specials are available on Atwood’s “Restaurant Row”. They print a coupon and walk down Atwood Street to have lunch.



**1:36 pm**

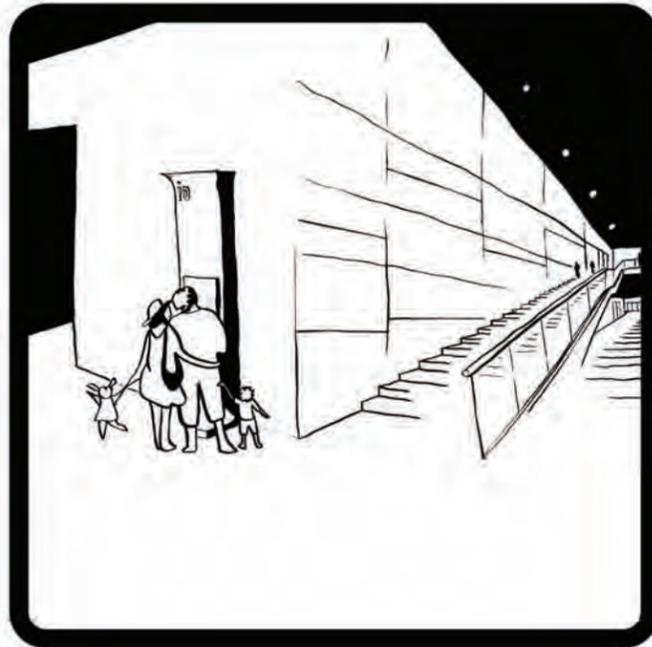
Tyra and Jing-Wei stop at Schenley Plaza to listen to a live band. Jing-Wei takes out her Notebook and, using the free Wi-Fi access, they add a review of the restaurant they ate at on the crowd-sourcing iO website...

## Tourist Family Scenario



### 8:00 pm Friday Evening

It's late in the winter season and the Shah Family—Sanjiv, Leonore and their two young children—have exhausted the indoor family attractions available near their Northside neighborhood. Sanjiv logs onto their home computer to search the Carnegie Museum of Natural History website to learn about current child-oriented exhibits. He clicks on a new blinking iO icon at the top of the website and discovers the Innovation Oakland website.



### 2:30 pm Saturday Afternoon

After perusing the exhibits, the Shahs regroup in the Museum lobby. Leonore and the kids are interested in getting ice cream cones before they head back to the Northside. They notice the iO kiosk in the lobby with the familiar iO logo on it. They search for ice cream vendors and head to Dave & Andy's on Atwood Street.



### 3:06 pm

After their ice cream, they head back to the Carnegie Museums parking garage, stopping at Schenley Plaza to ride the carousel. They notice a games rentals service and decide to explore the options. They learn about virtual geocaching, a form of geocaching, called virtual geocaching or waymarking.



### 3:32 pm

The Shahs track down Oakland's historic and cultural sights using a GPS unit borrowed from the central branch of the Carnegie Library of Pittsburgh. Here, they discover the fabled outfield wall of the former Forbes Field...

## USER SCENARIOS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

## Local Employee Scenario



### 3:00 pm Wednesday Afternoon

Every Wednesday afternoon, George leaves Carlow University where he works as a maintenance engineer and walks up to the Carnegie Library where he meets up with the local chess club. He walks along Forbes Avenue, enjoying the pedestrian atmosphere.



### 6:24 pm

George encounters an old friend walking his dog outside of the library just as he is leaving. They decide to catch up over a meal at the "Dirty O", just like old times. Walking up Forbes, they see a large crowd gathered around the iO Information Art Hub at Oakland Avenue waiting to buy half-price tickets to different events going on in Oakland tonight that evening.



### 6:32 pm

They take their meal "to go" and sit outside the Info Art Hub, watching people waiting for the bus in front of the Barco Law Library.



### 8:16 pm

George and his friend part ways. George waits for the bus under the green roof of the Bouquet/Fifth bus rapid enhanced bus stop to catch a bus home to Uptown...

## Business Traveler Scenario



### Thursday, 9:28 pm

Jacklyn Gerard arrives in Oakland in a taxi from the airport. She's just arrived from Chicago for an interview at UPMC the next day. As the taxi exits the I-376, she notices the Oakland gateway sign along the ramp.



### 10:55 pm

At the hotel, Jacklyn hops online using the hotel's free wi-fi service. The hotel's homepage highlights a link to the iO website. Hungry, she clicks on the link and looks for a nearby restaurant that is still open. After browsing through some user reviews, she chooses a restaurant three blocks away.



### Friday, 10:45 am

Jacklyn leaves her interview at UPMC. Feeling positive about her prospects and with 6 hours until her flight back to Chicago, she decides to explore the neighborhood of her potential new city. Walking down Forbes Avenue, she spots a neighborhood map at a bus shelter. She locates her position and surveys the neighborhood. She learns about Oakland's QR code program and web-based audio tours. She decides to get a coffee and try out a tour.



### 11:22 am

Leaving a cafe, Jacklyn heads back out onto the street. She has decided to listen to the City Beautiful architecture walking tour, with the goal of ending at the Carnegie Museum of Art to see their current exhibit. She plugs in her earphones and starts walking to the Soldiers and Sailors Memorial Museum, marveling at the building's architecture and modern public green space...

## USER SCENARIOS

INNOVATION OAKLAND|PITTSBURGH, PENNSYLVANIA

SECTION **H** **APPENDIX**  
D. PARALLEL PROJECTS

## MBRO

The City of Pittsburgh Act 47 financial recovery team recommended that Pittsburgh implement a more active and structured Market-Based Revenue Opportunities (MBRO) program to maximize the revenue-generating capacity of its municipal assets. This broad term encompasses various entrepreneurial concepts, including advertising, exclusivity arrangements, rental agreements, and corporate sponsorships. The program will include a formal program of naming rights and advertising in the public realm on City benches, trashcans, parking meters, little league scoreboards, etc. No advertising will be permitted on sign poles or street light poles.

Downtown and Oakland will be impacted by the MBRO program because advertisers will want to have a presence where there is the greatest number of visitors. The City is also concerned that the implementation of some Innovation Oakland recommendations may open up the public realm to additional advertising. For example, if the Innovation Oakland outdoor kiosks are installed and are interpreted as being a form of advertising, other advertising companies may insist on being allowed to install their own kiosks as well.

For more information about the MBRO program, please contact Dan Sentz, Environmental Planner with the City of Pittsburgh, by e-mail at [dan.sentz@city.pittsburgh.pa.us](mailto:dan.sentz@city.pittsburgh.pa.us) or by phone at (412) 255-2233.

## City of Pittsburgh Electronic Sign Ordinance

Although electronic signs, such as Light-Emitting Diode (LED) billboards, have been erected in and around the City of Pittsburgh in past years, the existing City Zoning code is silent as to their regulation. Bills were introduced in City Council, in 2008, proposing text amendments to the Zoning Code that revise and supplement sections in the Code relating to signage by adding new definitions and procedures for electronic signage. Amendments would regulate electronic identification signs as well as electronic advertising signs. The proposed rules define an electronic sign as any sign with text or graphics generated by electronic components, including but not limited to LED and plasma displays, or any other past or future technology. The amendments would govern the size, light level intensity, height, location and maintenance of future electronic signs located in or visible from the public realm. This ordinance would relate to signage only and would not govern electronic art, which is under the jurisdiction of the Public Art Commission. Proposed Zoning language is currently being reviewed by City Planning and by the general public.

The City of Pittsburgh Electronic Sign Ordinance is relevant to the Innovation Oakland project because several recommended project elements include electronic sign components. Such elements might include real-time digital arrival notification signs in bus shelters and scrolling "ticker tape" signs that could enhance a future information hub.

For more information about proposed modifications to the Pittsburgh Electronic Sign Ordinance, please contact Dan Sentz, Environmental Planner with the City of Pittsburgh, by e-mail at [dan.sentz@city.pittsburgh.pa.us](mailto:dan.sentz@city.pittsburgh.pa.us) or by phone at (412) 255-2233.

## MOVEPGH: The Transportation Component of the City of Pittsburgh Comprehensive Plan

The City of Pittsburgh is embarking on its first comprehensive plan, PLANPGH, which will be Pittsburgh's game plan for growth over the next 25 years. An open and inclusive process, it is focused on public participation and finding common threads among people and the places they care about.

MOVEPGH is one of PLANPGH's 12 staged components that will be studied in greater detail. This component will chart the future of Pittsburgh's transportation system. Whether they are walking, biking, driving, using public transportation or floating on the three rivers, Pittsburgh residents, commuters and visitors need to get around efficiently. MOVEPGH will provide a blueprint for livable communities and sustainable systems, and identify what kind of transportation network is needed to keep them moving. It will coordinate and prioritize investments impacting transportation, land use and the environment, and guide a complete multi-modal transportation system for the City's future. MOVEPGH is a conscious attempt at creating an integrated transportation plan, in coordination with land use and environmental planning efforts. New public realm standards will come out of the MOVEPGH process, including a streets design manual outlining a transportation-oriented wayfinding system. MOVEPGH may also dictate the possible reconfiguration of streetscapes in downtown/Oakland. The MOVEPGH planning process is scheduled to start in 2010 and finish in 2012.

MOVEPGH is relevant to Innovation Oakland because the project targets improvements to Oakland's public streetscapes and wayfinding systems. Innovation Oakland recommendations could influence the future of transportation and navigation systems throughout Oakland. But conversely, MOVEPGH guidelines could impact the implementation of Innovation Oakland elements situated in the public right-of-way.

Visit [www.planpgh.com](http://www.planpgh.com) for more information about MOVEPGH and the City of Pittsburgh's comprehensive planning process.



# Innovation Oakland

Direction  
Information  
Destination



**JUNE 2010**  
OAKLAND TASK FORCE  
OAKLAND BUSINESS IMPROVEMENT DISTRICT  
REMAKING CITIES INSTITUTE  
CARNEGIE MELLON UNIVERSITY

[www.onlyinoakland.org/io](http://www.onlyinoakland.org/io)

