
THE LOWER SCHUYLKILL MASTER PLAN

May 2013



The Lower Schuylkill Master Plan envisions a 21st-century industrial district that seamlessly integrates exciting opportunities for new and growing businesses with sustainable features and compelling public amenities.



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We are very pleased to present the Master Plan for the Lower Schuylkill.

Prepared collaboratively by the Philadelphia City Planning Commission, the Philadelphia Department of Commerce, and the Philadelphia Industrial Development Corporation, the Lower Schuylkill Master Plan builds on exciting opportunities for economic growth, public amenities, and sustainable development that were identified in *Philadelphia2035* and the *Industrial Land & Market Strategy for the City of Philadelphia*.

Why the Lower Schuylkill? Why now?

Encompassing nearly one-quarter of all industrial land in Philadelphia, the Lower Schuylkill is one of Philadelphia's oldest and largest industrial districts. A vibrant economic hub, the Lower Schuylkill helped forge Philadelphia's "Workshop of the World" identity during the 19th and early 20th centuries. By the middle of the 20th century, however, fundamental shifts were beginning to occur in the nation's industrial sector. Subsequent decades brought steep and sustained decline, an all-too-familiar phenomenon for industrial zones from that era.

Today, signs of new economic promise are emerging all around the Lower Schuylkill. Academic and health care institutions from University City are expanding into the northern portion of the Lower Schuylkill. Immediately to the south, Philadelphia International Airport (PHL) is embarking on a massive, decade-long investment to expand capacity and enhance operational efficiency. To the east, The Navy Yard continues to grow as a dynamic location for office, R & D, and manufacturing, supporting more than 10,000 employees; it continues to evolve as a national center for commercial energy efficiency as well.

Building on these important economic drivers is the key to transforming the Lower Schuylkill into a modern, 21st-century industrial district. The Master Plan seeks to do that and much more, taking a comprehensive approach that integrates traditional elements of industrial planning such as site access, transportation, and zoning with unique features such as a recreational riverfront trail, open space, and progressive stormwater management.

The result of the Master Plan will be a vibrant economic district with millions of square feet of new research, production, distribution, and industrial facilities; thousands of new jobs offering Philadelphians a wide range of employment opportunities; new roads and recreational trails connecting employees and residents to economic opportunities and the natural beauty of the Schuylkill River; and comprehensive stormwater management integrated throughout to help restore the health of the district's namesake. The Master Plan includes an implementation strategy, to guide public investment over the next 20 to 25 years to transform this vision into a reality.

Special thanks go to the William Penn Foundation, whose generous support and guidance was instrumental in the development of the Master Plan.

We hope that you are inspired by the Lower Schuylkill Master Plan and invite you to join our efforts to implement its recommendations in the coming years.

Sincerely,

Alan Greenberger, FAIA

Deputy Mayor for Economic Development and
Director of Commerce, City of Philadelphia

John Grady

President, Philadelphia Industrial
Development Corporation

ACKNOWLEDGEMENTS

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ADVISORY BOARD

Minas Arabatzis, U.S. Army Corps of Engineers
Maggie Allio, Philadelphia Water Department
Jennifer Barr, Philadelphia City Planning Commission
Jessica Baumert, The Woodlands
Saul Behar, The Science Center
Matthew Berghaiser, University City District
Suzanne Biemiller, Office of the Mayor, City of Philadelphia
The Honorable Jannie Blackwell, 3rd Councilmanic District
Elizabeth Bressi-Stoppe, University of the Sciences
Elizabeth Brown, The Partnership CDC
Duane Bumb, Philadelphia Department of Commerce
Doug Carney, Children's Hospital of Philadelphia
Mark Chalupa, Forgotten Bottom Association
Aaron Colsher, Urban Industry Initiative
Byron Comati, Southeastern PA Transportation Authority
Christopher Corr, Brandywine Realty Trust
Ed Covington, Philadelphia Redevelopment Authority
Rina Cutler, Mayor's Office of Transportation and Utilities
Thomas Dalfo, Philadelphia Industrial Development Corporation
Edward Datz, University of Pennsylvania
Calvin Davenger, Philadelphia International Airport
Chuck Davies, PA Dept. of Transportation Engineering District 6
Jeffrey DeVuono, Brandywine Realty Trust
Mike DiBerardinis, Philadelphia Department of Parks and Recreation
Chris Dougherty, Philadelphia Department of Parks and Recreation
Vincent Dougherty, Philadelphia Department of Commerce
Cindy Dunn, PA Dept. of Conservation and Natural Resources
Spencer Finch, PA Environmental Council
Mark Focht, Philadelphia Parks and Recreation
Robert Frances, Drexel University
Katherine Gajewski, Mayor's Office of Sustainability, City of Philadelphia
Mark Gale, Philadelphia International Airport
John Gattuso, Liberty Property Trust
John Gentzler, Colonial Pipeline Company
Terry Gillen, Office of the Mayor, City of Philadelphia
William Goetz, CSX
Andrew Goodman, PennPraxis
Robert Gormley, Grays Ferry Civic Association
John Grady, Philadelphia Industrial Development Corporation
Alan Greenberger, Philadelphia Department of Commerce
Prema Gupta, University City District
John Haak, Philadelphia City Planning Commission
Virginia Hart, Sunoco
Donna Henry, Southwest CDC
Jody Holton, SEPTA
Joseph Houldin, Delaware Valley Industrial Resource Center
Gary Jastrzab, Philadelphia City Planning Commission
Quetta Jefferson, West Shore Civic Association
Michael Johns, Philadelphia Housing Authority
Kenyatta Johnson, 2nd Councilmanic District
Leigh Jones, Philadelphia Redevelopment Authority
Steve Jurash, Urban Industry Initiative
Thomas Kuczynski, Philadelphia Gas Works
Shawn Legendre, Delaware Valley Regional Planning Commission
Kate McNamara, Philadelphia Industrial Development Corporation
John Mast, Haines & Kibblehouse Inc.
Shawn McCaney, William Penn Foundation
Andrew Meloney, Philadelphia City Planning Commission
Sara Merriman, Philadelphia Department of Commerce
Thomas Morr, Select Greater Philadelphia
James Mundy, The Woodlands
Elhadji Ndiaye, Southwest CDC
Howard Neukrug, Philadelphia Water Department
Jessica Noon, Philadelphia Water Department
James Oppenheim, Sunoco
Kerry Pacifico, Pacifico Group
Anne Papageorge, University of Pennsylvania
Stephanie Phillips, Bartram's Garden
Joseph Reagan, Wexford Equities
Michael Ross, Southwest Philadelphia District Services
Maitreyi Roy, Bartram's Garden
Scott Schwarz, Mayor's Office of Sustainability
Jackie Slaughter, West Shore Civic Association
Sherry Spinraker, The Science Center
Harris Steinberg, PennPraxis
Joseph Syrnick, Schuylkill River Development Corporation
Clarena Tolson, Philadelphia Streets Department
James Tucker, Drexel University
Carolyn Wallis, PA Dept. of Conservation and Natural Resources
Nicholas Walsh, Philadelphia Regional Port Authority

Many thanks to the Working Group, a small team of City representatives and external consultants who met regularly throughout the process to guide and develop the plan.

WORKING GROUP

Thomas Dalfo, Philadelphia Industrial Development Corporation
Kate McNamara, Philadelphia Industrial Development Corporation
Dylan Salmons, Philadelphia Industrial Development Corporation
Danielle DiLeo Kim, Philadelphia City Planning Commission
John Haak, Philadelphia City Planning Commission
Jennifer Barr
Christopher Dougherty, Philadelphia Dept. Parks and Recreation

Vincent Dougherty, Philadelphia Department of Commerce
Sara Merriman, Philadelphia Department of Commerce
Stephen Buckley, Mayor's Office on Transportation and Utilities
Harris Steinberg, PennPraxis
Andrew Goodman, PennPraxis
Shawn McCaney, William Penn Foundation

CONSULTANT TEAMS

NBBJ

Alex Krieger
Alan Mountjoy
Drew Kane

LRSLA Studio

Julie Bush

HR&A INC.

Kate Collignon
Shuprotim Bhaumik
Alex Stokes

KS Engineers P.C.

David Hassinger
Sean Marzolf

Langan

Colleen Costello
Christopher Hager

ARUP

Trent Lethco
Philip Carter

Environetics

William Westhafer

VJ ASSOCIATES

Chongba Sherpa
Joseph Rajan

SPECIAL THANKS TO...

Troy Adams, Select Greater Philadelphia
Will Agate, Philadelphia Industrial Development Corporation
Steven Bessellieu, John Bartram Association
Brad Boone, Philadelphia Industrial Development Corporation
Linda Breitstein, Penn Center for Civic Engagement
Jeannette Bruegger, Philadelphia City Planning Commission
Iene Burak, Philadelphia Industrial Development Corporation
Brian Cohen, Liberty Property Trust
Mike Cooper, Philadelphia Industrial Development Corporation
Amanda W. Davis, Philadelphia Industrial Development Corporation
Carol de Fries, Philadelphia Industrial Development Corporation
Sonny DiCrecchio, Philadelphia Wholesale Produce Market
Liz Gabor, Philadelphia Industrial Development Corporation
Dr. Helen F. Giles-Gee, University of the Sciences
Eva Gladstein, Philadelphia City Planning Commission
Rich Gorodesky, Colliers International
Pat Green, CBRE
Marla Hamilton, Philadelphia Industrial Development Corporation
Curt Hess, Science Center
Mark Kocent, University of Pennsylvania
Facilities and Real Estate Services

Peter Longstreth
Stephen David Masters, Philadelphia City Council
Marryann McCann, Philadelphia Industrial
Development Corporation
Charles McIntosh, Army Corps of Engineers
Mary Kate McGinty, University of the Sciences
Anne Nevins, Philadelphia Industrial Development Corporation
Leon Poncia, Aquinas
Joseph Reagan, Wexford
Dave Ricci, The Flynn Company
Phil Rinaldi, PES
Greg Rogerson, J.G. Petrucci
Paul Sehnert, University of Pennsylvania
Facilities and Real Estate Services
Mark Seltzer, Philadelphia Industrial Development Corporation
Natalie Shieh, Office of the Deputy Mayor
for Economic Development
Maurie Smith, Philadelphia Industrial Development Corporation
Harris Sokoloff, Penn Center for Civic Engagement
Patrick Starr, PEC
Dr. Stephen Tang, The Science Center

LOWER SCHUYLKILL MASTER PLAN

TABLE OF CONTENTS



1	INTRODUCTION	1
	Background	3
	Planning	5



2	EXISTING CONDITIONS	7
	Overview	9
	Site Character	19
	Access and Connectivity	21
	Environmental Conditions	29
	OPen Space and Public Access	33



3	THE VISION	35
	Vision and Goals	37
	Three Campuses	39
	> Innovation District	41
	> Logistics Hub	45
	> Energy Corridor	49



4

MASTER PLAN

- Enhance Site Character
- Strengthen Access and Connectivity
- Improve the Environment
- Incorporate Public Space

55
57
67
79
85



5

IMPLEMENTATION

- Priority Development Sites
 - > Bartram's North
 - > Bartram's South
- Economic Development Tools
- Phasing Strategy
- Cost and Benefit

93
95
97
107
119
121
129



6

APPENDIX

- Acknowledgments
- Bibliography

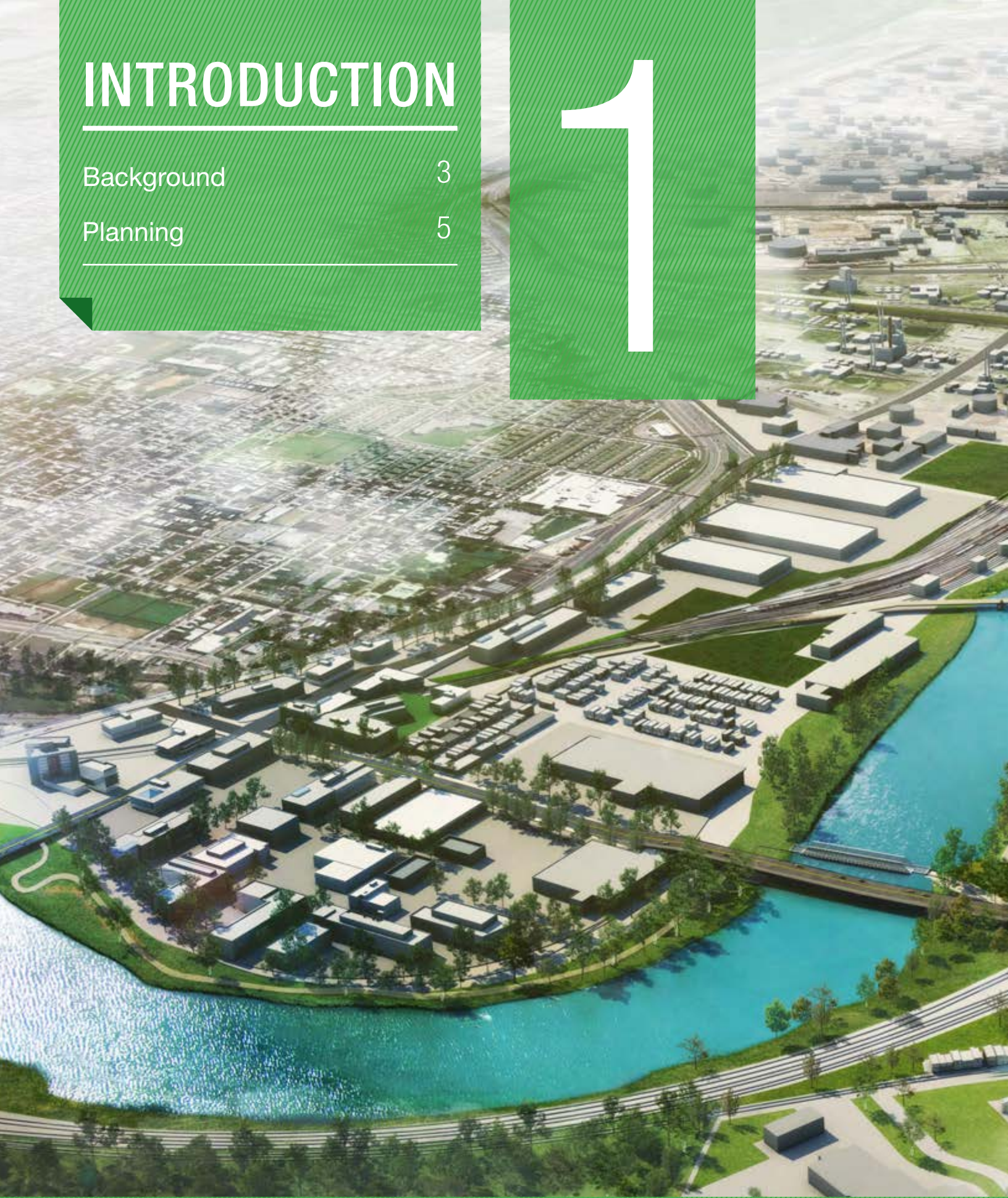
135
137
139

INTRODUCTION

Background 3

Planning 5

1





INTRODUCTION BACKGROUND

The Lower Schuylkill Master Plan is a collaborative effort to create a blueprint for high-quality, sustainable redevelopment of this historically industrial corridor.

Early Dutch settlers gave the Schuylkill River its name, which translates to the “Hidden River.” The Schuylkill River lived up to this name for 150 years, cut off from the rest of Philadelphia by the industries that transformed it into an economic powerhouse during the first wave of industrialization in the United States. Decades of industrial relocation, coupled with environmental contamination, aging infrastructure, and access challenges have deterred meaningful redevelopment, resulting in a district marked by extensive vacancy and under utilization.

Today there is hope for the Lower Schuylkill. The area is blessed that features which make it a strong candidate for redevelopment as a center for industry in the 21st century. It is located adjacent to the key drivers of Philadelphia’s economy: Center City, University City (with its collection of world-class universities and research centers), the Philadelphia International Airport, and The Navy Yard (an emerging commercial, industrial, and energy research center). The Lower Schuylkill is almost entirely industrially zoned and has parcels with the scale required to meet the needs of modern industry. Moreover, the area is surrounded by interstate highways and is served by freight rail. Finally, it straddles a riverfront that is increasingly being rediscovered as an amenity by Philadelphia’s residents, workers, and visitors.

In recognition of these strengths, the Philadelphia Industrial Development Corporation (PIDC), the Philadelphia City Planning Commission (PCPC) and the City’s Department of Commerce, with generous support from the William Penn Foundation, embarked on this master planning effort to identify opportunities for revitalization and develop a long-term blueprint for public investment that will unlock the potential this area holds. While the challenges of the Lower Schuylkill require a sustained focus, the benefits will be sizable. At full build-out, the Master Plan projects more than 5.5M SF of modern production facilities, R & D centers, and distribution centers; more than 5,500 new jobs employing a wide range of people; five miles of new waterfront recreational trails, connecting to Bartram’s Garden in the short term and Fort Mifflin when complete; and comprehensive stormwater management infrastructure designed to protect and improve the river that gives this district its name. Upon full implementation, the Lower Schuylkill will be a dramatically more productive, active, and connected part of Philadelphia.



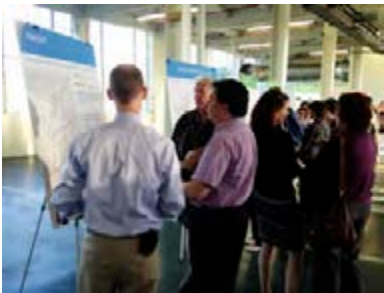
KEY FIGURES OF THE LOWER SCHUYLKILL MASTER PLAN

Size	3,700 acres	Permanent Jobs	5,500–6,500
Development Capacity	5.5M–6.6M SF	Economic Impact (City & State)	\$63B
Public Infrastructure Investment	\$411M	Private Investment Leveraged	\$860M
Greened Space	46 acres	Trails Created	5 miles



A future view of the Lower Schuylkill

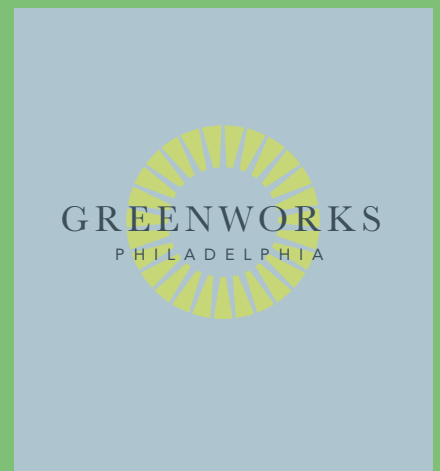
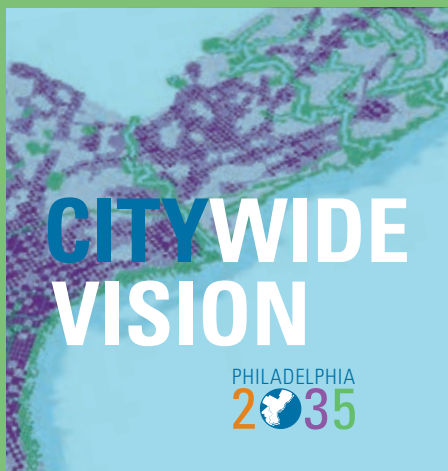
INTRODUCTION PLANNING



Photographs taken during public meetings

In 2010, the City of Philadelphia, PIDC, PCPC, and the Commerce Department released *An Industrial Land & Market Strategy for the City of Philadelphia* (“Industrial Land Strategy”), a comprehensive study that inventoried all of the industrial land in Philadelphia and found a critical shortage of modern industrial sites. The study concluded that this shortage places the city at a competitive disadvantage and hampers its ability to attract and retain industrial activity. The Industrial Land Strategy recommended the development of new industrial sites to facilitate economic growth, concluding that creation or redevelopment of 2,400 acres of industrial land could support 22,000 projected new jobs and substantial new tax revenue over the next 20 years. Based on its size, industrial character, transportation assets, and proximity to economic engines, the Lower Schuylkill was identified as a prime opportunity to satisfy this need.

The findings of the Industrial Land Strategy are echoed in *Philadelphia2035*, PCPC’s comprehensive plan to guide City policy, investment, and future growth. *Philadelphia2035* designates the Lower Schuylkill as an “industrial legacy area” with an array of redevelopment objectives, including business attraction; job creation; sites for key regional activities; support for economic activity in Center City, PHL, and The Navy Yard; and enhanced public access to the river’s edge. The timeline of this Master Plan is integrated with the implementation period for *Philadelphia2035*, resulting in a 22 year project timeline.



Over the course of the past six years, the City of Philadelphia has completed a series of other plans and studies aimed at balancing development with environmental and community objectives. The key goals and strategies outlined in Greenworks Philadelphia; Green2015; Green City, Clean Waters; and the Philadelphia Complete Streets Handbook challenge the conventional model for industrial space planning. Dedication to the growth of businesses and industries of the future, while maintaining a steadfast commitment to a healthy future for Philadelphia’s riparian corridors is paramount to the success of the Lower Schuylkill.



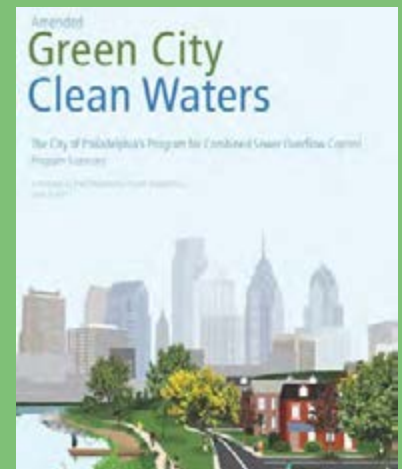
PLAN DEVELOPMENT

The opportunities identified in these studies spurred PIDC, PCPC, and the Department of Commerce to partner with the William Penn Foundation and PennPraxis to develop a comprehensive master plan to transform the Lower Schuylkill into a vibrant, 21st-century industrial campus featuring an array of businesses and jobs.

The Lower Schuylkill Master Plan team initiated an intensive, 18-month planning process involving stakeholders from the public and private sectors as well as community and advocacy groups. An Advisory Group made up of local institutions, community groups, and City officials provided guidance throughout the planning process. Four community meetings — two on each side of the Schuylkill River — were held at different phases of the planning process to maximize community input. The culmination of these planning efforts is this Master Plan, a document that envisions a bustling, modern industrial district in Philadelphia and outlines the necessary steps to get there.

WHO PARTICIPATED

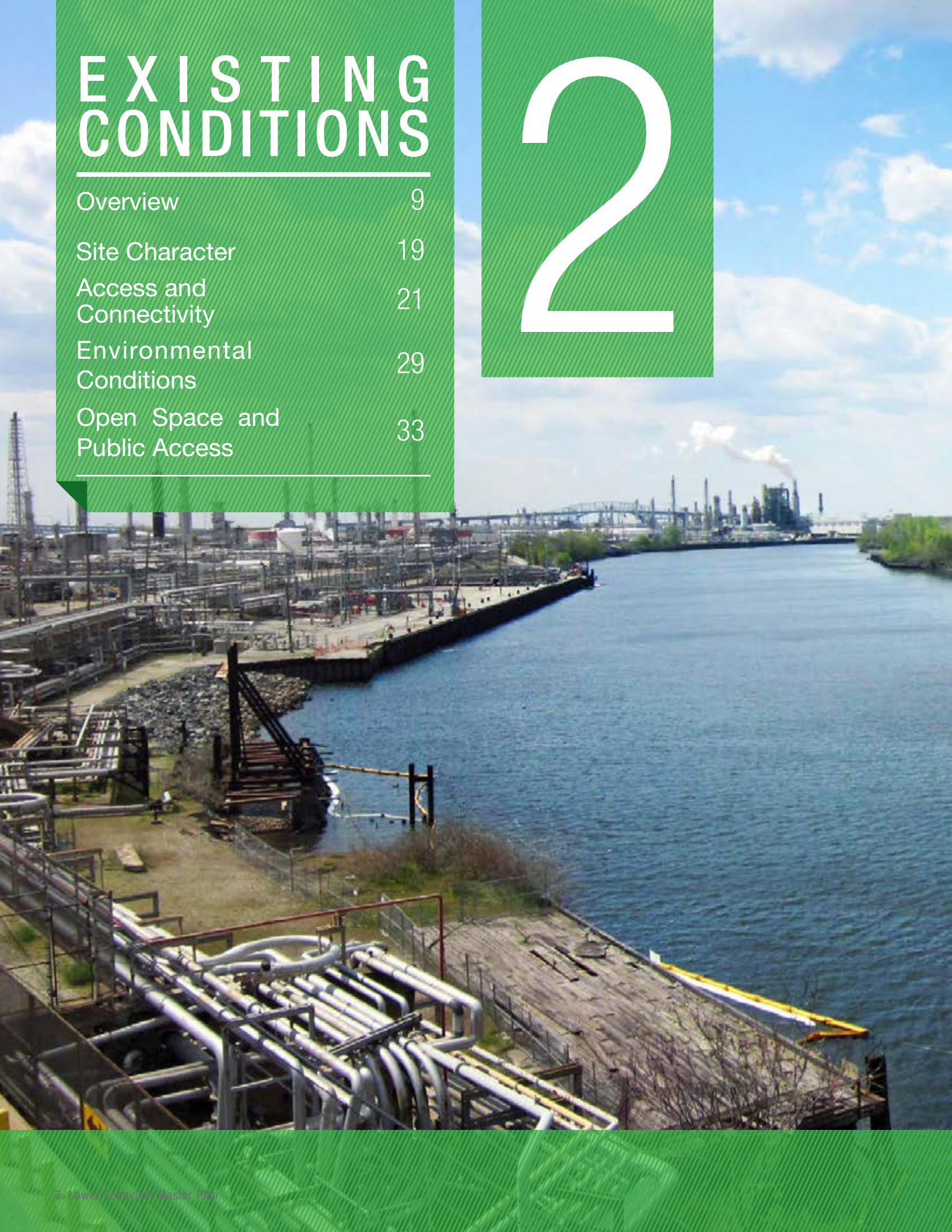
- Three lead agencies
- 48 organizations on the Advisory Group
- 100+ participants at community meetings
- General public through online survey



EXISTING CONDITIONS

Overview	9
Site Character	19
Access and Connectivity	21
Environmental Conditions	29
Open Space and Public Access	33

2





EXISTING CONDITIONS OVERVIEW

Today, the Lower Schuylkill is a shadow of the economic titan it used to be. Strategic public-sector interventions are essential to reconnect this area and unlock its potential as a competitive 21st-century industrial district.

STUDY AREA KEY FACTS

- 3,700 acres
- 2,010 real estate parcels
- Decades of job loss and negative economic growth
- Oldest active refinery in the U.S.
- Two national historic sites
- Flanked by four of the city's key economic drivers

The Lower Schuylkill is one of Philadelphia's oldest and most developed industrial corridors. Once a vibrant hub of heavy industry, including oil refining, manufacturing, distribution, utilities, and waste management, the Lower Schuylkill was hit hard by the contraction of the industrial sector in the latter half of the 20th century. Many companies closed, downsized, or relocated to the suburbs or overseas, leaving behind a trail of lost jobs and declining tax revenue.

Sixty-eight percent of the city's vacant and underutilized industrial land is located in the Lower Schuylkill. Meaningful development remains deterred here, due largely to the district's postindustrial legacy of environmental contamination, poor access, limited circulation, and aging infrastructure.

Despite these significant challenges, the Lower Schuylkill's strategic location, transportation assets, industrial character, and zoning provide a compelling foundation for economic revitalization and transformation into a modern, competitive 21st-century industrial district.



UNIVERSITY CITY

CENTER CITY

SOUTHWEST PHILADELPHIA

GRAYS FERRY

SOUTH PHILADELPHIA

EASTWICK

STUDY AREA

PHILADELPHIA INTERNATIONAL AIRPORT

NAVY YARD

Lindbergh Blvd

Passyunk Ave

Penrose Ave

I-76

I-95

Labels are provided for spatial reference and do not represent all communities surrounding the study area

OVERVIEW

CONTEXT

Surrounding Activity

\$900M+

in federal research dollars allocated to University City institutions in 2010

448k+

flight movements from Philadelphia International Airport annually.

\$129M

federal grant dollars backing Navy Yard developments in 2010 alone

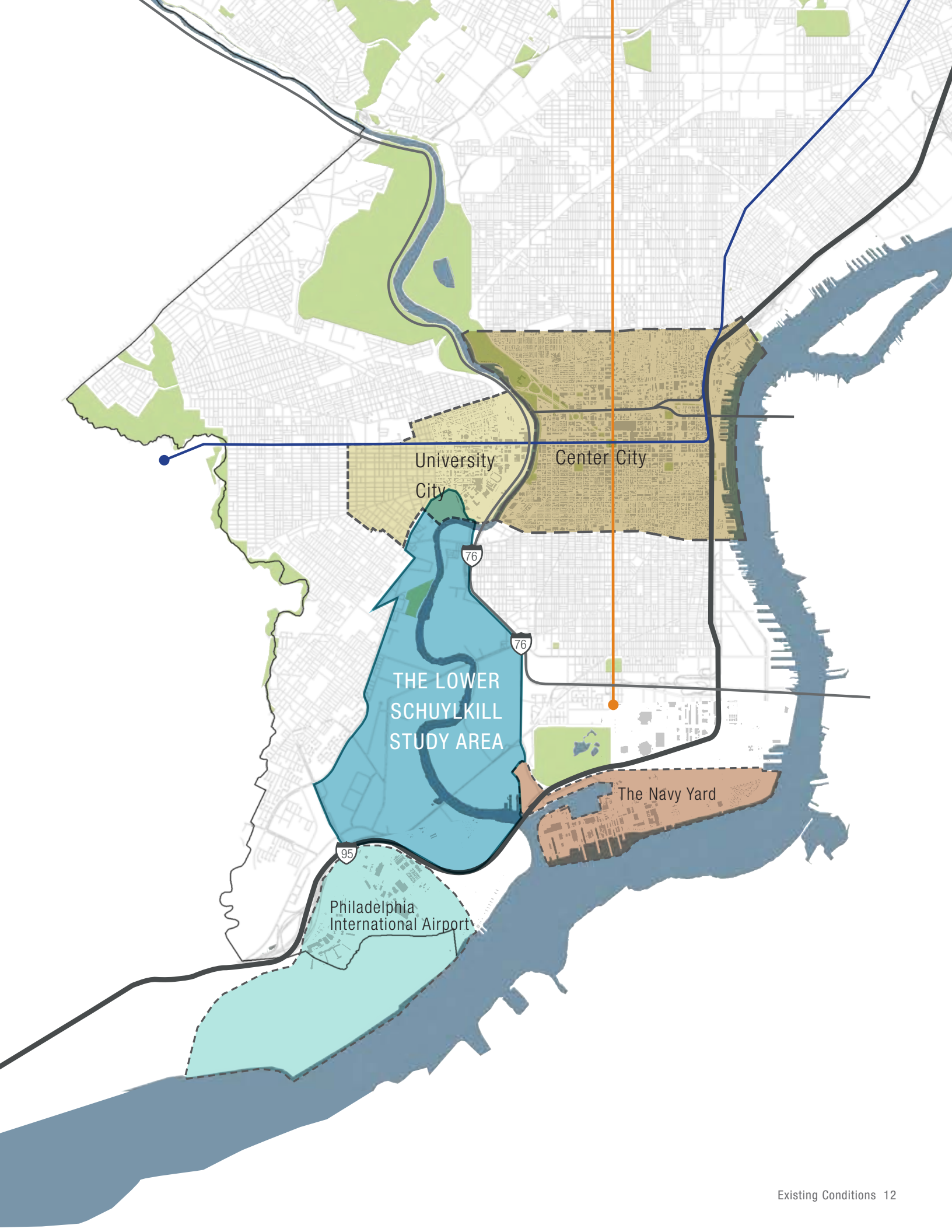
Despite its strategic location between four of the city's economic engines, the Lower Schuylkill is the "hole in the donut." It has remained relatively impervious to the growth and development occurring all around it, specifically in University City to the north, Center City to the northeast, the Navy Yard to the southeast, and Philadelphia International Airport to the southwest.

University City, on the study area's northern edge, is the epicenter of Philadelphia's thriving "eds and meds" cluster with over \$900M in NIH research dollars allocated to its diverse array of academic and research institutions in 2010 alone.

On its southern edge is Philadelphia International Airport (PHL), the 11th busiest airport in the world and one of the largest economic anchors in Southeastern Pennsylvania. In 2011, PHL handled 448,000 flight movements and 433,000 tons of cargo. These numbers are expected to increase substantially as PHL embarks on large-scale expansion to add a new runway, lengthen two existing runways, and add new terminal and cargo facilities.

To the southeast lies The Navy Yard, one of the city's most dynamic centers of economic growth. Since the Navy Yard was closed and conveyed to the City in 2000, it's been successfully redeveloped as a master-planned business campus with 10,000 employees representing a diverse mix of 130 office, commercial, and industrial tenants. In 2010, it was designated a national hub for energy-efficiency research, backed by \$129M in federal grants and programmatic support.

Center City, with nearly 9,000 businesses and 90,000 residents, is located just two miles from the Lower Schuylkill's northeastern border.



University City

Center City

THE LOWER SCHUYLKILL STUDY AREA

Philadelphia International Airport

The Navy Yard

OVERVIEW HISTORY

The Lower Schuylkill was once a national center of petroleum refining and manufacturing, home to industrial giants like Sun Oil and DuPont, as well as a diverse array of smaller industrial companies. Like many older industrial areas in the U.S., however, the Lower Schuylkill was hit hard by the relocation of industrial facilities in the decades following the Second World War. Many of these sites remain vacant or underutilized to this day, unable to overcome their legacy of contamination, isolation, and deteriorating infrastructure.



View of historic B&O Railroad Bridge looking northeast

AN INDUSTRIAL HERITAGE



1800–1899

- 1824 Schuylkill Canal opens between Philadelphia and Reading, changing the riverfront from bucolic to industrial.
- 1853 Penrose Ferry Bridge opens.
- 1853 Philadelphia Gas Works constructs Passyunk facility.
- 1866 Atlantic Refining Company opens on the Lower Schuylkill; by 1891, it was exporting 35 percent of the country's petroleum and producing 50 percent of the world's fuel.



1900–1949

- 1901 Grays Ferry Bridge opens.
- 1910 DuPont completes full expansion of paint mixing and chemical production facilities. Girard Point grain elevator built by Pennsylvania Railroad.
- 1924 "Redemption of the Lower Schuylkill" proposes river drives and greenways along the east and west banks.
- 1929 United States Gypsum builds plant in the Lower Schuylkill.
- 1935 M.A. Bruder and Sons (later MAB Paints) opens paint factory on Grays Avenue.



1950–1989

- 1950–60 PGW ceases production of gas at Passyunk facility and switches to distribution. DuPont also ceases manufacturing and focuses on research and development.
- 1988 Sun Oil Co. buys former Gulf Oil and Atlantic refineries and integrates into a single refinery complex.



1990–2009

- 1993 United States Gypsum closes.
- 1995 Breyers Ice Cream plant closes.
- Late 1990s National Heat and Power closes.
- 2005 MAB Paint closes.
- 2006 U.S. Postal Service opens \$300M distribution center on Lindbergh Boulevard; University of the Sciences opens McNeil Science and Technology Center on former Breyer's Ice Cream site.
- 2009 DuPont's Marshall Labs facility closes.
- 2009 Sunoco downsizes.



2010–2012

- 2010 University of Pennsylvania purchases the former DuPont Marshall Labs site and creates its new "South Bank" campus.
- 2011 The Philadelphia Wholesale Produce Market opens on Essington Avenue.
- 2011 Children's Hospital of Philadelphia announces plans to build 1.2M SF research campus on Schuylkill Avenue corridor.
- 2011 Development of the Lower Schuylkill Master Plan begins.
- 2012 Sunoco and the Carlyle Group form joint venture, Philadelphia Energy Solutions (PES) to operate refinery



AN INNOVATIVE FUTURE

OVERVIEW

ECONOMIC SNAPSHOT

Although the Lower Schuylkill contains nearly 28 percent of the City’s industrial acreage, it represents just 6.7 percent of the City’s total industrial inventory of built space, demonstrating significant potential for growth. Warehouse/manufacturing and low-level flex space comprise nearly all of the real estate inventory.

Existing job density within the Lower Schuylkill is significantly lower than other areas of the City

University City (40–46 jobs/acre)



Airport (15–20 jobs/acre)



Navy Yard (10–12 jobs/acre)



Study Area (<2 jobs/acre)



INDUSTRY CLUSTERS

Existing industry clusters within the Lower Schuylkill include manufacturing, transportation, warehousing and distribution, energy production, food processing, wholesale, printing and publishing, medical devices, and construction-related industry. Market analysis conducted for this report identified traditional manufacturing, advanced manufacturing, and transportation/logistics as the three market clusters with the highest growth potential for the Lower Schuylkill during the 22-year term of the Master Plan.

Industrial jobs represent 20% of the city’s employment

\$322M

in annual city tax revenues



Growth Cluster	Principal Cluster Components
Traditional Manufacturing	Energy; apparel; building fixtures; construction, housing, and real estate; publishing; metal fabrication; food processing
Advanced Manufacturing	Surgical, dental, ophthalmic, and medical equipment and supplies; biopharmaceuticals
Transportation & Logistics	Merchandise, food, and automotive wholesale; local and air transport, transportation warehousing

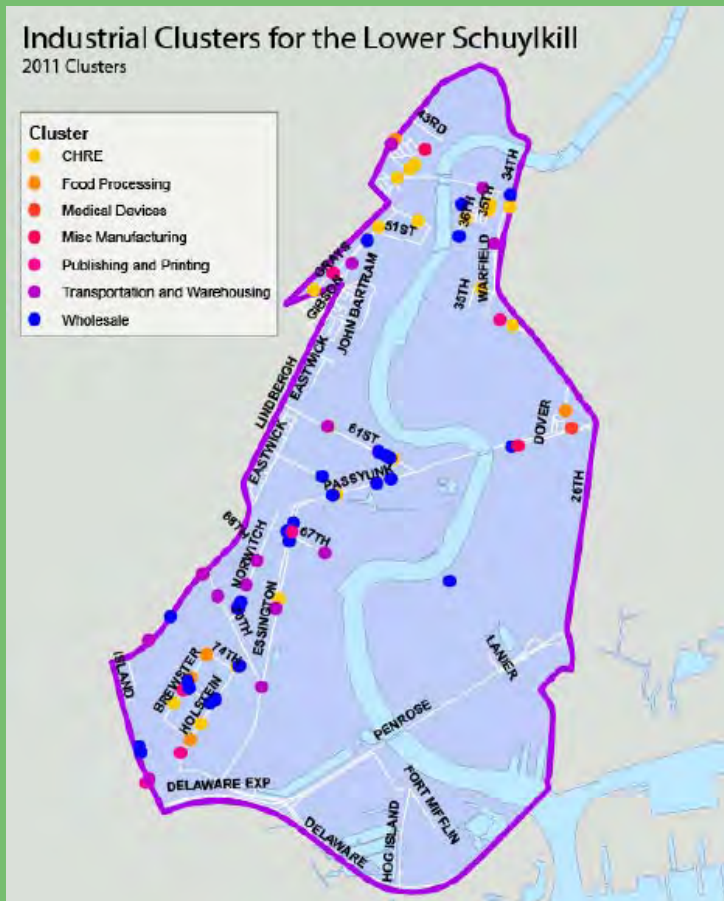
EMPLOYMENT

Industrial jobs (manufacturing, distribution and logistics, transportation, and utilities) comprise 20 percent of total City employment, with an average annual wage in excess of \$50,000. Employees range from highly educated professionals to line employees with technical training. Opportunities within the industrial sector are important to the 78 percent of Philadelphia residents who lack college degrees.

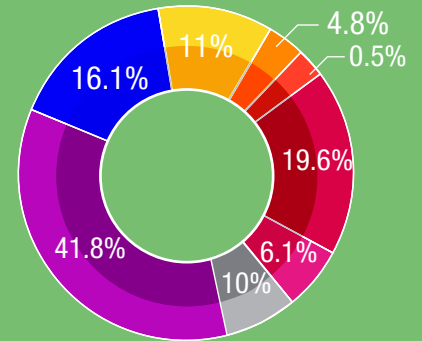
In the Lower Schuylkill, overall employment has declined since the 1950's due to the downsizing, relocation and closure of major employers such as DuPont, Sunoco, and MAB. In 2011, total employment in the study area was 5,813, which translates to less than two jobs per acre of developable land.

Two clusters account for nearly all employment within the Lower Schuylkill:

- Transportation (57.9 percent)
- Traditional manufacturing (41.6 percent).



NUMBER OF EMPLOYEES BY CLUSTER



- | | |
|---|--------------------------------|
| ● CHRE (Construction, Housing, Real Estate) | ● Transportation & Warehousing |
| ● Food Processing | ● Wholesale |
| ● Medical Devices | ● Misc. |
| ● Misc. Manufacturing | |
| ● Publishing & Printing | |

OVERVIEW

ECONOMIC SNAPSHOT

REAL ESTATE INVENTORY



Recently built flex space at The Navy Yard

The Lower Schuylkill has approximately 7.4M SF of industrial space, primarily consisting of manufacturing and warehouse facilities, with a small amount of low-finish flex. Vacancy rates are approximately 3.3 percent for manufacturing/warehouse space and 18.5 percent for flex space, both lower than comparative vacancy rates for the city as a whole.

Two recent projects, the U.S. Postal Service facility (2005) and the Philadelphia Wholesale Produce Market (2011), added 1,577,000 SF to the Lower Schuylkill's total warehouse inventory of 7,266,577 SF. From 2001 to 2010, the Lower Schuylkill absorbed 10.5 percent of the manufacturing/warehouse demand in the region, exceeding its fair share; asking rents have outpaced the city and eight-county region.



USPS Philadelphia processing and distribution center

Flex space within the Lower Schuylkill and the City has historically been located in repurposed buildings that are older and lower-quality than the new, less expensive flex space available in nearby suburbs. Flex vacancy rates in the Lower Schuylkill and city are higher than the region, although vacancy rates are trending downward and absorption is improving citywide due to quality new flex space at The Navy Yard; asking rents remain below the city and region, despite a dramatic increase from an average of \$3.20/SF in 2001 to \$10.08/SF in 2010.

Residential space comprises less than 5 percent of the Lower Schuylkill. Market analysis finds limited potential for growth in this sector, due to the area's pervasive industrial character, environmental contamination, lack of infrastructure and amenities, and prohibitive residential development costs.

RECENT MOMENTUM

University of Pennsylvania South Bank Campus

Penn's South Bank campus is located south of the Schuylkill River at the intersection of 34th Street and Grays Ferry Avenue. This 23-acre former heavy industrial site offers opportunities to accommodate a variety of uses, including aligning university-related research with private commercial enterprises seeking to operate in close proximity to University City and its numerous institutions.



Philadelphia Energy Solutions

Philadelphia Energy Solutions (PES), a newly formed joint venture of the Carlyle Group and Sunoco, assumed ownership of the Philadelphia oil refinery complex in 2012, averting a closure that would have severely impacted the city and region. Shortly thereafter, PES announced plans for significant capital investment and product diversification, thus renewing opportunities to leverage a valuable Philadelphia asset to support high-value, energy-related industrial activity within the city and region.



Philadelphia Wholesale Produce Market

The Philadelphia Wholesale Produce Market (PWPM) opened June 5, 2011, as the world's largest fully enclosed, fully refrigerated wholesale produce terminal at one-quarter of a mile long and 686,000 SF. In servicing its national customer base, PWPM receives and sells hundreds of truckloads of fresh produce on a weekly basis, leading to cumulative annual sales of \$1 billion.



COMPETITIVE POSITION

STRENGTHS FOR BUSINESS

- Proximity to Center City, University City, The Navy Yard, and PHL
- Small, medium and large, industrially zoned sites
- Proximity to major highways and national freight rail
- PHL and the Port of Philadelphia
- Proximity to local and regional consumption markets

CHALLENGES FOR BUSINESS

- Accessibility challenges
- Lack of shovel-ready sites
- Higher development and operating costs
- Need for environmental remediation on many sites
- Lack of amenities

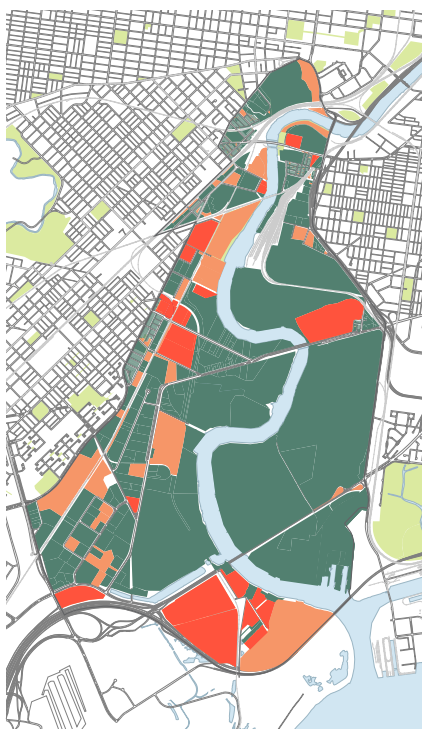
EXISTING CONDITIONS SITE CHARACTER

Despite its industrial character, development density within the study area is largely inconsistent and interspersed with vacant parcels.

LAND USE

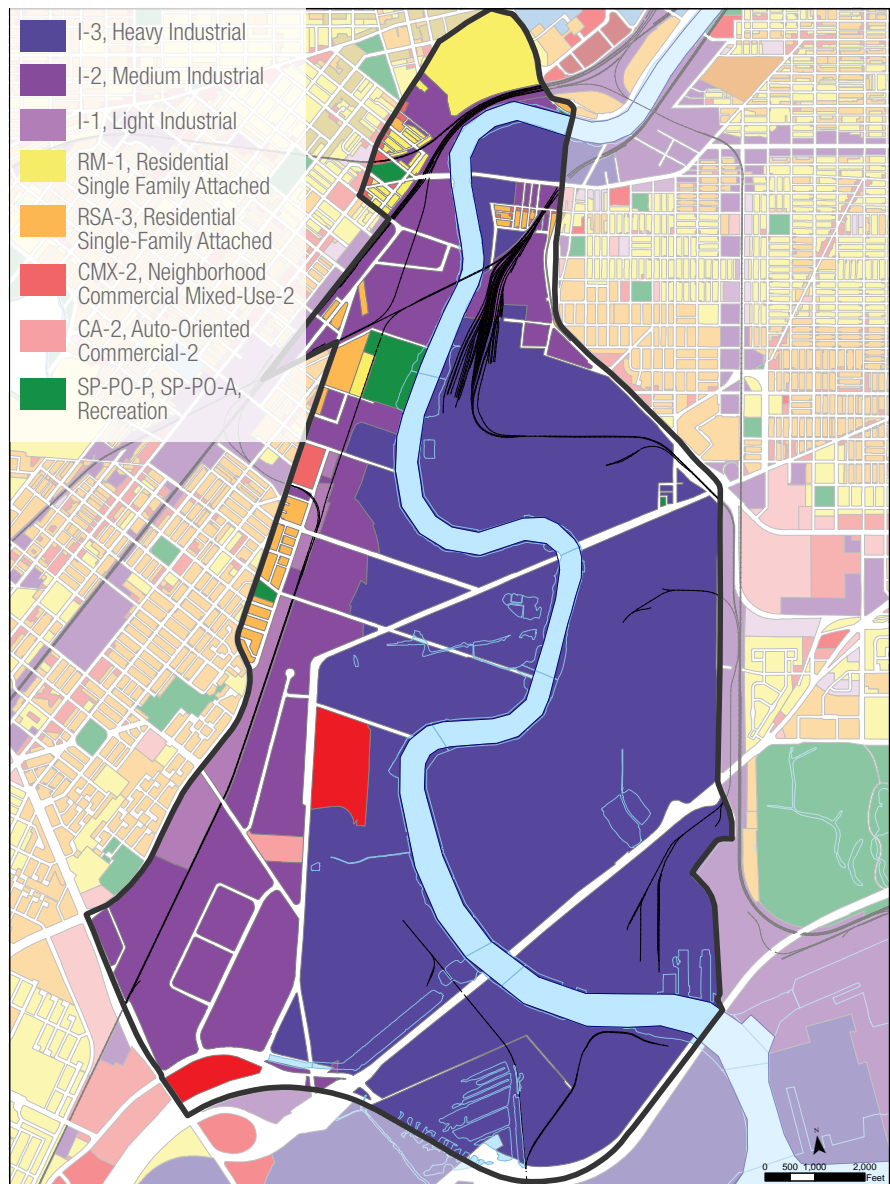
Approximately 95 percent of the Lower Schuylkill is zoned industrial. The current mix of uses includes petroleum processing, scrapyards, transportation, manufacturing, utilities, warehousing, distribution, and waste management. The remaining five percent consists of commercial, retail, open space, and residential uses on the study area's edges.

OWNERSHIP



- Privately owned
- City owned
- Publicly owned

Includes City, State, and Federal ownership



On the East Side

The east side is dominated by energy uses, including the active and inactive oil refinery sites of Philadelphia Energy Solutions (PES) and a natural gas facility owned by the Philadelphia Gas Works (PGW). To the north is a mix of freight rail facilities, industrial, the residential community of Forgotten Bottom, and the University of Pennsylvania's South Bank campus. The new Grays Ferry Crescent trail is a popular recreational amenity, which eventually will connect to the Schuylkill River Trail.

On the West Side

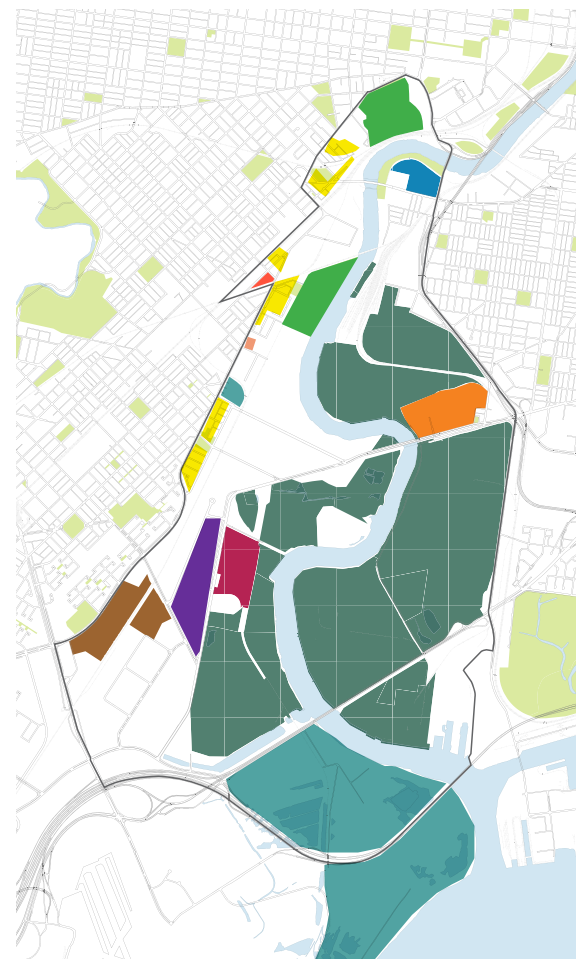
The west side has energy uses as well, but generally displays a more balanced and diverse mix. The northernmost section contains a slice of University City, including the University of the Sciences campus, the Veterans Administration hospital, the Woodlands, and small portions of the West Shore and Southwest residential communities.

Between University City and the historic Bartram's Garden site is a compact cluster of active and inactive industrial sites. A 100-foot riverfront strip is reserved for extension of the Schuylkill River Trail. To the south is Bartram's Garden, a public park that is the nation's first arboretum and home of John Bartram, an 18th-century botanist.

Moving south, land use quickly transitions to industrial and remains that way to the study area's southern boundary at I-95. Fuel storage and distribution facilities are clustered primarily near the river, between 63rd Street and Bartram Avenue. The Eastwick Industrial Park is a modern industrial campus, comprising 375 bordered by 70th Street/I-95/Island Avenue/Essington Avenue. It features an array of manufacturing, distribution, and other industrial uses.

The Philadelphia Auto Mall, a cluster of automotive sales and service businesses, is a prominent use along Essington Avenue between 67th and 70th Streets. A strip of junkyards and auto salvage is found along 61st Street and Passyunk Avenue, with municipal/governmental uses (e.g. Philadelphia Water Department [PWD], Army Corps of Engineers dredge materials facility) clustered between Penrose Avenue and I-95. Active and inactive freight rail lines criss cross much of the west side.

Residential is primarily located west of Lindbergh Boulevard and in Bartram's Village, a public housing site on the east side of Lindbergh between Harley Drive and 57th Street. The Richard Allen Charter School is located here as well.



Property Map

- | | |
|--|------------------------------|
| Crescent Iron Works | PGW |
| Penn South Bank | Philadelphia Auto Mall |
| PES | PWD/Army Corps |
| PWPM | Richard Allen Charter School |
| USPS | Residential |
| Bartram's Garden, The Woodlands Cemetery | |

EXISTING CONDITIONS

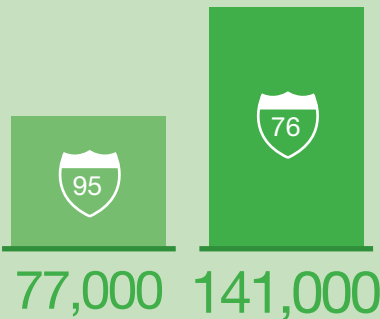
ACCESS AND CONNECTIVITY

Flanked by two interstate highways, major freight rail lines, and an extensive street network, the Lower Schuylkill's transportation assets are significant strengths. However, proximity to these assets does not make up for the area's limited connectivity and poor internal circulation. Strengthening connectivity to these assets will be essential to achieving long-term transformation.

KEY ROUTES

I-76 is a regional east-west interstate highway that extends across Pennsylvania to Harrisburg, the Pittsburgh area, and beyond.

I-95 is the major north-south interstate highway connecting Philadelphia to most major cities along the Eastern Seaboard including Baltimore, Washington, DC, New York, and Boston.



Typical two-way daily traffic volumes of vehicles traveling within the study area.

ACCESS

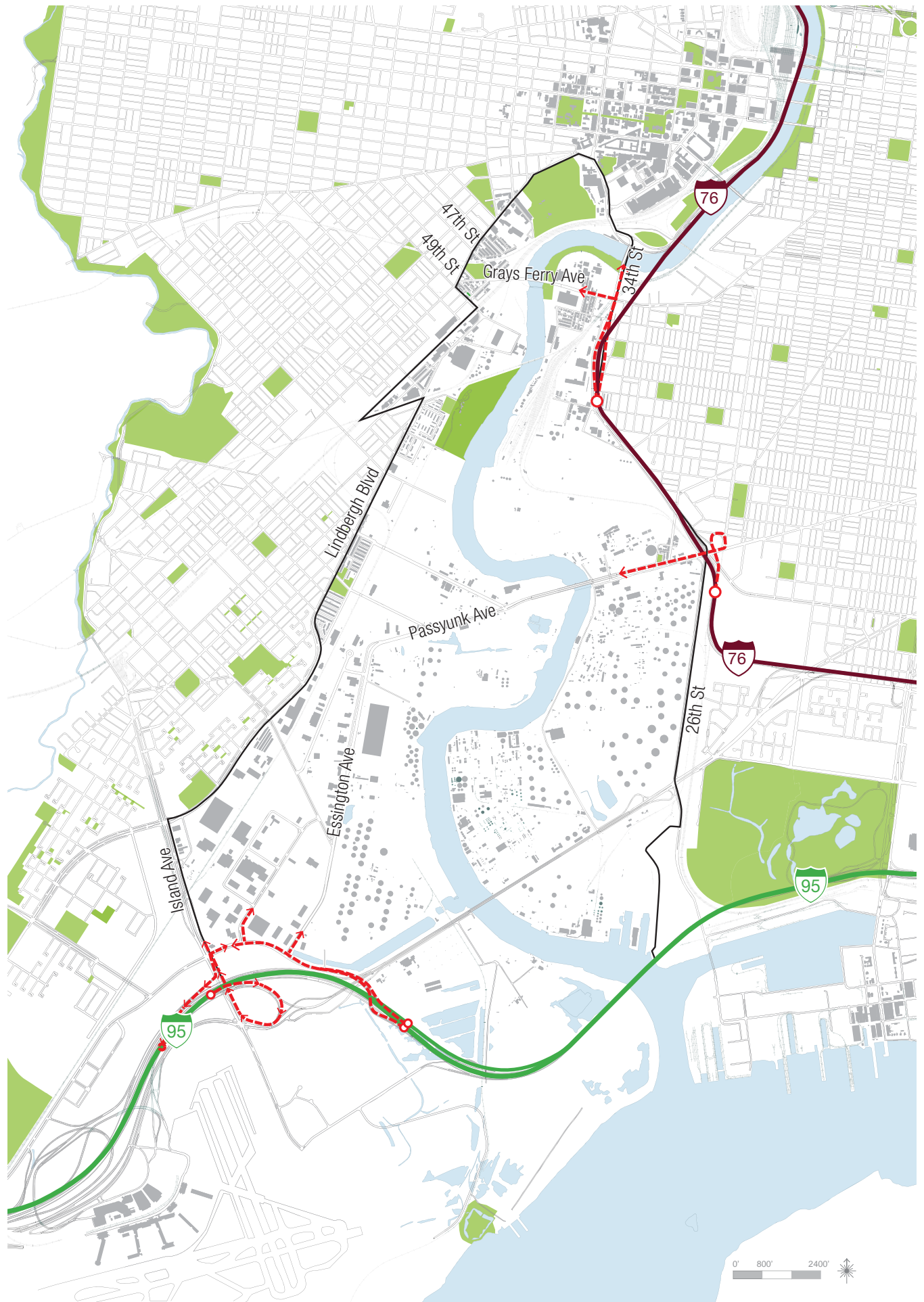
Lower Schuylkill businesses rely on key access points to get their products and services to city and regional markets. These access points also enable employees, customers, and other users to access the study area for business or recreational purposes.

Highway Access

The study area is accessible from two interstates: I-76 and I-95. I-76 is connected via on/off ramp pairs at Passyunk Avenue and University Avenue/34th Street, as well as slip ramps along the site's eastern edge. I-95 has a single exit at Essington Avenue that leads directly into the southwest quadrant. Both highways feature additional exits outside the study area boundaries, which connect to main arterial roads that can be used to access different parts of the Lower Schuylkill.

Lower Schuylkill businesses use I-76 and I-95 to distribute goods and services to Philadelphia's dense regional consumption market. I-76 also brings workers, customers, and suppliers from New Jersey and the city's suburbs into the Lower Schuylkill and its surrounding areas, while I-95 serves a similar function for users coming from the north and south. I-76 also provides an easy connection to Center City. I-95 and I-76 connect in only one place, the Walt Whitman Bridge, well outside of the study area.

The primary challenge for highway access is congestion. The Lower Schuylkill's portion of I-76 has the third-highest average daily traffic of any road in Pennsylvania. High volumes also exist on the Platt Bridge.



IMPEDIMENTS TO CONNECTIVITY

- Limited river crossings
- Obstructions from heavy infrastructure including I-76, railroad tracks, and the river
- Limited connections to adjacent economic drivers and disconnected street grid
- Poor conditions of arterial and access roads

Street Access

On the east side, street access is largely obstructed by I-76, which parallels nearly the entire eastern perimeter of the study area. Only Grays Ferry, Passyunk, and Penrose Avenues penetrate the site. Street access from the north is via the 34th Street Bridge. High volume and extended periods of congestion are significant challenges for the intersection at 34th Street and Grays Ferry Avenue.

On the west side, streets must bridge over or under an active rail line to connect into the study area. This occurs on 49th, 51st, 56th, 58th, 61st, 63rd, and 70th Streets, as well as Lindbergh Boulevard and Bartram Avenue in the south. Street access from the south is via Essington Avenue and Lindbergh Boulevard. Street access from the north is via Woodland Avenue, entering the study area at 49th Street and proceeding south along Grays Avenue to Lindbergh Boulevard. While this route is functional today, its capacity to support growth is limited by right-of-way (ROW) constraints and active local trolley service in the roadway.

East-west crossings are limited to the Grays Ferry Bridge in the north, the Passyunk Avenue Bridge at the midpoint, and the Platt Bridge in the south, providing fewer connections and crossing opportunities than the Upper Schuylkill River.

Circulation

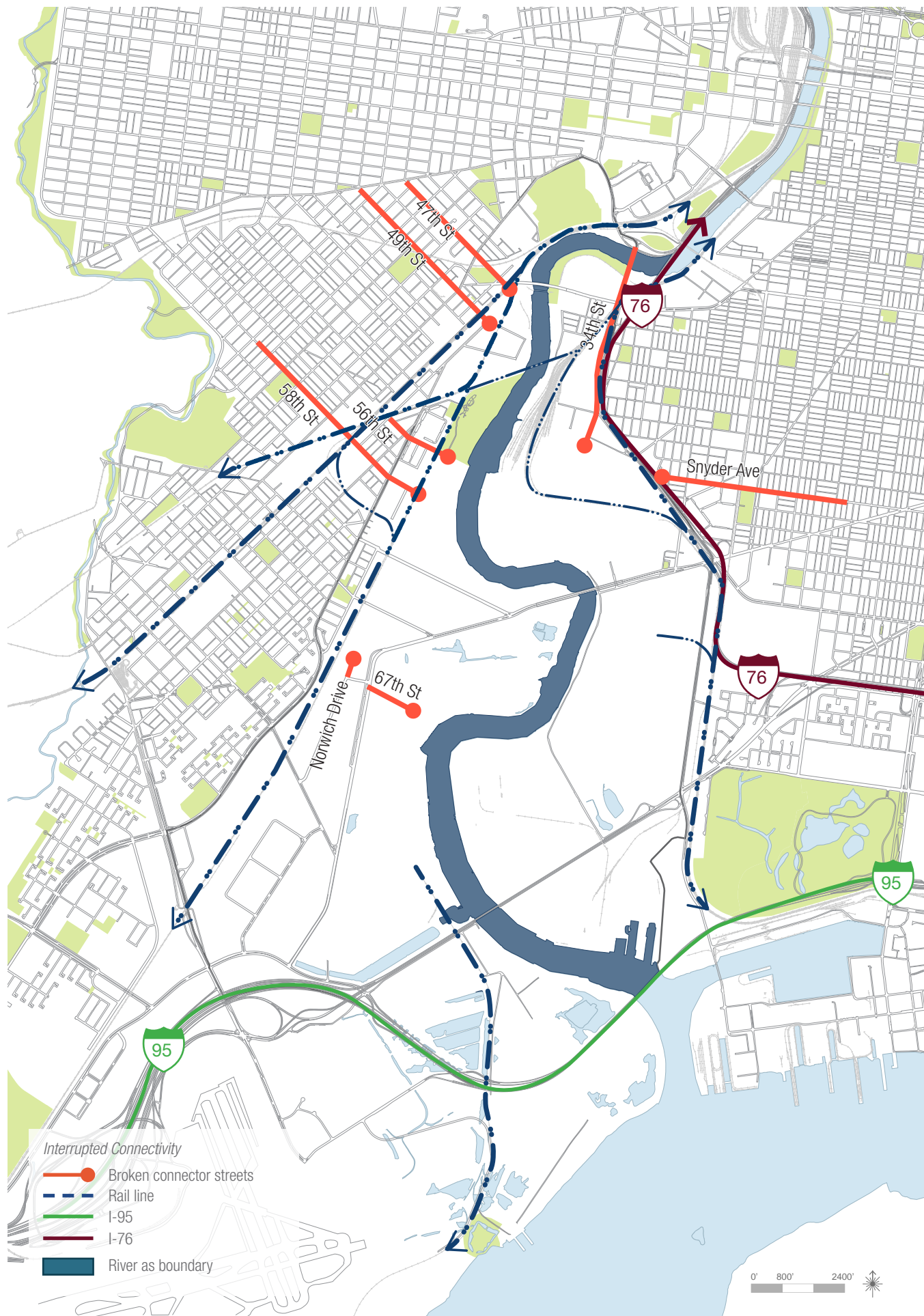
Businesses today rely overwhelmingly on truck and vehicular traffic to support their supply chain, distribute products, provide commuting modes for employees, and connect with customers. This is especially true for distribution and logistics businesses, many of which exist in the southwest portion of the study area.

Lower Schuylkill businesses, however, historically relied on barge and rail service. This resulted in the development of an incomplete street grid that today hinders circulation, limits site access, and generally makes it difficult and confusing to navigate. Many streets end abruptly, don't connect, or are otherwise impeded by the river, rail infrastructure, or private property. Rail crossings are particularly challenging on the west side, where some intersections are blockaded and viaducts present challenges for high-clearance vehicles. No roads on the west side provide direct access to the riverfront. Wayfinding is inconsistent at best, nonexistent at worst.

To open up new development sites, attract investment, and create successful public amenities, key links must be added to the incomplete street grid to facilitate access and circulation.



Disconnected roadway due to rail crossings



ACCESS AND CONNECTIVITY INFRASTRUCTURE



FREIGHT RAIL

The Lower Schuylkill is crisscrossed by multiple freight rail lines, illustrating its role as a key freight rail node. Freight rail infrastructure within the Lower Schuylkill is owned by Conrail or CSX and is used by CSX, Conrail, Norfolk Southern (NS), and Canadian Pacific (CP).

Freight rail on the west side of the study area is generally used for through traffic, either connecting into the West Philadelphia Elevated Branch that runs past the Philadelphia Zoo or crossing the Schuylkill River north of Bartram’s Garden and proceeding along the banks of the Schuylkill River, under the Art Museum and out of the city. On the east side are two major pieces of rail infrastructure: the CSX Eastside-Transflo rail yard and the 25th Street viaduct. The Transflo yard is located along the river, between Reed Street on the north and the PES North Yard property on the south. CSX services and switches trains, changes crews, and transfers goods (e.g., chemicals, corn syrup, pellets, flour) at this facility. The Transflo Yard is CSX’s largest terminal for bulk transloading.



Significant freight rail features within the study area

The elevated 25th Street viaduct runs parallel to the Lower Schuylkill’s eastern edge and is used by CSX, NS, and CP to access Greenwich Yards, the Packer Avenue Marine Terminal and other railroad facilities in that area.

PHL’s expansion is expected to eliminate an existing rail line serving the Army Corps of Engineers (ACE) Fort Mifflin dredge disposal facility, thus requiring rebuilding and reactivation of the deactivated 60th Street Track. Freight rail is an important asset within the Lower Schuylkill, yet it can also function as a barrier to access and redevelopment. Rail rights of way, safety zones between rail and other modes, grade separations between road and rail, and overhead power structures constitute dominant features which must be overcome in order to open up new development opportunities, improve connectivity and enhance access and circulation.

Daily Trans-Schuylkill Traffic



198,000

vehicles traverse the bridges within the study area alone.

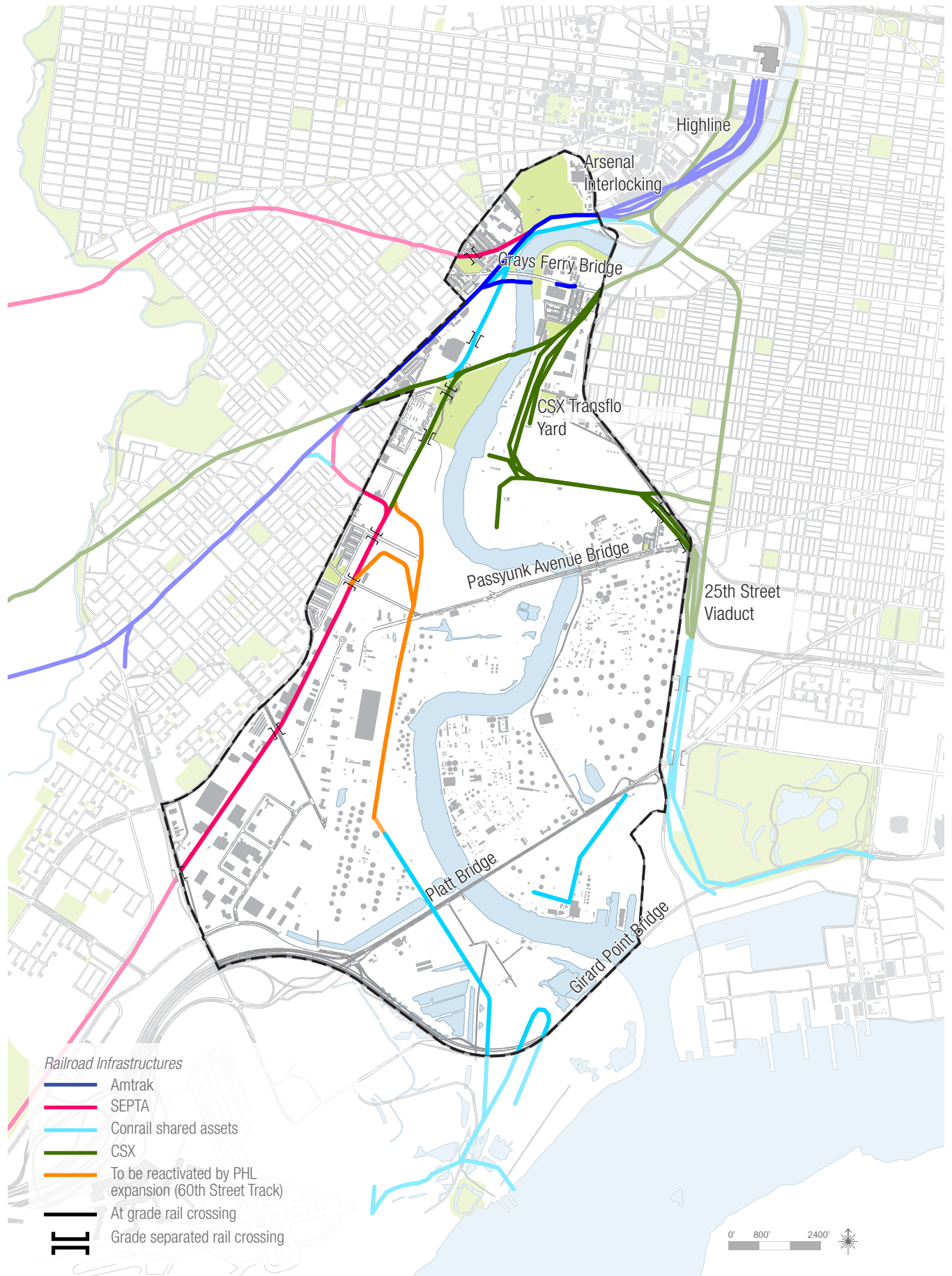


82+%

of all daily travel across the Schuylkill River corridor from Vine Street south to the Delaware River occurs within the study area.

BRIDGES

The trans-Schuylkill bridges are immense structures, built high above the river to accommodate maritime navigation and Coast Guard requirements. The Platt and Girard Point Bridges are 135’ above the Schuylkill at mean high water, while the Passyunk Avenue, CSX rail, 34th Street, and Grays Ferry Bridges have a 50’ clearance. High daily traffic volumes characterize all of the vehicular bridges in the study area. Capacity is similarly high, however, and in some cases (such as the Passyunk Avenue Bridge), it exceeds current needs.



ACCESS AND CONNECTIVITY

MODES OF TRANSIT

TRANSIT ISSUES

- Few direct transit connections between the study area and surrounding economic anchors.
- For employees, customers or visitors traveling into the Lower Schuylkill, SEPTA's buses provide limited access.

PUBLIC TRANSIT SERVICES

While an extensive network of public transit exists outside the study area, there are few transit routes that actually penetrate it and provide meaningful circulation. On the west side, SEPTA's Route 36 trolley provides limited service in the north, with bus service provided by Routes 12 and 52. On the east side, the Route 12 bus services the periphery of the Study Area. The 37, 64, and G buses traverse the study area and cross the Schuylkill River.

This lack of transit exacerbates the access challenges of the Lower Schuylkill, isolating it from adjacent communities and economic anchors. In their current state, these connections provide limited value as commuting or convenience options.

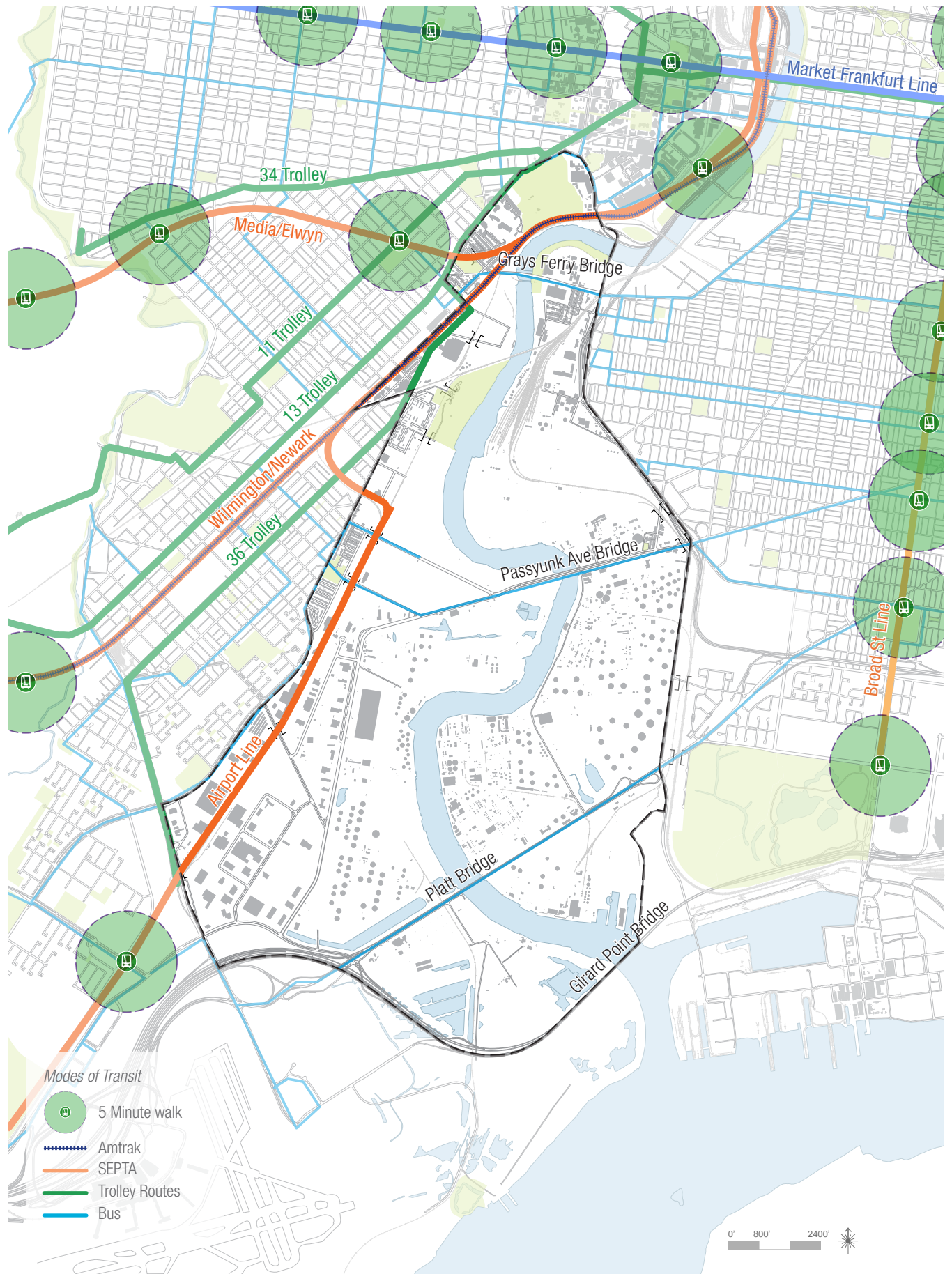
PEDESTRIAN AND BICYCLE ROUTES

Pedestrian and bicycle amenities are limited in both quality and quantity within the Lower Schuylkill. The area's industrial character and heavy reliance on vehicular transportation creates an environment that is generally not conducive to walking; very few pedestrians are observed. Similarly, the area has few bicycle-friendly streets, few destinations to ride to, and no dedicated trails that traverse the study area. Roadways generally prioritize the automobile, offering limited accommodation for pedestrians and bicycles. Currently, several bicycle lanes end just short of the Lower Schuylkill, creating a natural foundation for the extension of bike lanes into the study area.

The Lower Schuylkill has several bike trail projects in various stages of planning/construction, including the 58th Street Connector on the west side, which will connect the Bartram's Garden trail to the East Coast Greenway, as well as the Grays Ferry Crescent trail, which will ultimately connect to the Schuylkill Banks Trail.



Although the study area is ringed with bicycle routes, few permeate its interior.



EXISTING CONDITIONS ENVIRONMENTAL CONDITIONS

Heavy industrial activity has occurred in the Lower Schuylkill since the 19th Century, with portions of the east side's oil refinery facilities in operation since 1860. The nature of the activity that historically occurred in the Lower Schuylkill, as well as the type of materials used, contribute to a legacy of soil and groundwater contamination throughout much of the Lower Schuylkill.

BROWNFIELDS

At the peak of the Lower Schuylkill's economic might, barge-served businesses lined the river and navigation was essential to the economic vitality of the district. River access was dedicated almost exclusively to the operational needs of these businesses. As industry declined and many of these businesses closed or relocated, residual contamination became a significant deterrent to new investment and redevelopment. Despite the closure of many businesses along the river's edge, the river continued to be largely inaccessible to the public because access points were located on private property. The combination of these factors contributed increasingly to the pervasive sense of isolation in the district.

The banks along this stretch of the Schuylkill River have become increasingly empty and overgrown in many parts, truly transforming sections of it into a "hidden river." In contrast, the non-riverfront sections of the study area continue to bear the traditional hallmarks of heavily industrialized areas — significant quantities of impervious surfaces, poor aesthetics, and few high-quality environmental features.

A coordinated effort with the Pennsylvania Department of Environmental Protection and USEPA will be required to remediate the legacy of contamination that deters investment and redevelopment within the Lower Schuylkill.



Photograph taken along the once industrial, now vacant edge of the Schuylkill River

REMEDIATION

Some sites have already undergone environmental remediation and have been redeveloped for modern industrial use. Common restrictions for remediated sites within the study area include use limitations, groundwater restrictions, soil caps, nonuse-aquifer designations, and vapor barriers. Many sites remain contaminated, however, posing an ongoing deterrent to redevelopment.

Pennsylvania offers an effective statutory tool that can be useful in addressing this issue. The Pennsylvania Land Recycling Program (Act 2) supports voluntary remediation by property owners to achieve specific standards which facilitate redevelopment.



Petroleum saturated soils

IN FOCUS | *Bartram's North and South*

BARTRAM'S NORTH

PIDC acquired the former National Heat and Power and 49th Street Terminal sites in June 2007. National Heat and Power is a ±12 acre site located at 1627–35 S. 49th Street, in a Keystone Opportunity Zone. The 49th Street Terminal site is a one-acre property located at 1700 S. 49th Street. Since 2007, PIDC has worked closely with the U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (PADEP) to characterize the sites and develop a remediation plan. The sites formerly housed two bulk storage facilities for heating fuel; both have undergone closure and removal of all Aboveground Storage Tanks (ASTs). In addition to bulk fuel storage, it is believed bulk asphalt storage may have occurred at the sites. PIDC plans to submit a cleanup plan to PADEP in spring 2013, with remediation to commence upon approval.

BARTRAM'S SOUTH

PIDC is conducting a voluntary cleanup of two former industrial sites south of Bartram's Garden, pursuant to the Act 2 program administered by PADEP. The sites were formerly used for bulk storage and blending, gypsum manufacturing, auto repair, and chemical storage. The presence of liquid petroleum has been documented in some wells at the site and volatile and semi-volatile organic compounds have been identified in the soil and groundwater. The cleanup plan includes removal of the liquid petroleum from the groundwater, excavation and disposal of impacted soil, and demonstration of attainment of Non-Residential Site-Specific Standards. Active removal of soil will be completed in the early part of 2013, followed by monitoring of sampling wells to ensure that groundwater remediation is complete. The properties will ultimately support new industrial development and extension of the Schuylkill River Trail.



PIDC-owned sites undergoing remediation

ENVIRONMENTAL CONDITIONS

HYDROLOGY



Small segment of vegetated edge along the river

RIVER CONDITIONS

The Schuylkill River bisects the study area, traveling a meandering course as it proceeds south to its confluence with the Delaware River. In this area, the river is tidal. The majority of the riverbank is bulkheaded, with intermittent naturalized edges, riprap (crushed stone used in riverbank retention), and mud flats. In addition to the river itself, there are several historic streams within the study area, including Mingo Creek, Lands Creek, Botanic Creek, and Charles Creek. Some, such as Charles Creek have been culverted, with outfalls draining into the Schuylkill River.

Floodplain

Approximately 28 percent of the study area (1,142 acres) lies within the 100 and 500-year floodplains. Continued climate change and rising sea levels may cause this area to expand and/or experience intensified flood events. Accordingly, these factors will need to be considered when planning for redevelopment of the Lower Schuylkill.

Navigation

While still designated as a federal navigable channel, the Lower Schuylkill's heyday as a vital transportation link is past. Marine activity is primarily concentrated in the southern portion of the study area, with active docks found at the refinery and a barge fleet docked on the southwest bank. A limited number of vessels utilize the channel for commercial navigation each year, primarily serving a single customer located to the east of the 34th Street Bridge. The steady decline of commercial navigation on the Lower Schuylkill may create opportunities for lower bridge crossings in the future (currently they must be at least 50' high), as well as increased recreational use of the river.

Wetlands

The Lower Schuylkill contains at least one jurisdictionally determined wetland, in the southern portion of Bartram's Garden. Based on the geography and topography of the study area, additional wetlands may exist. A separate, more detailed analysis of potential wetland opportunities may be beneficial, to support future redevelopment within the Lower Schuylkill, as well as provide mitigation options for city and other capital projects.



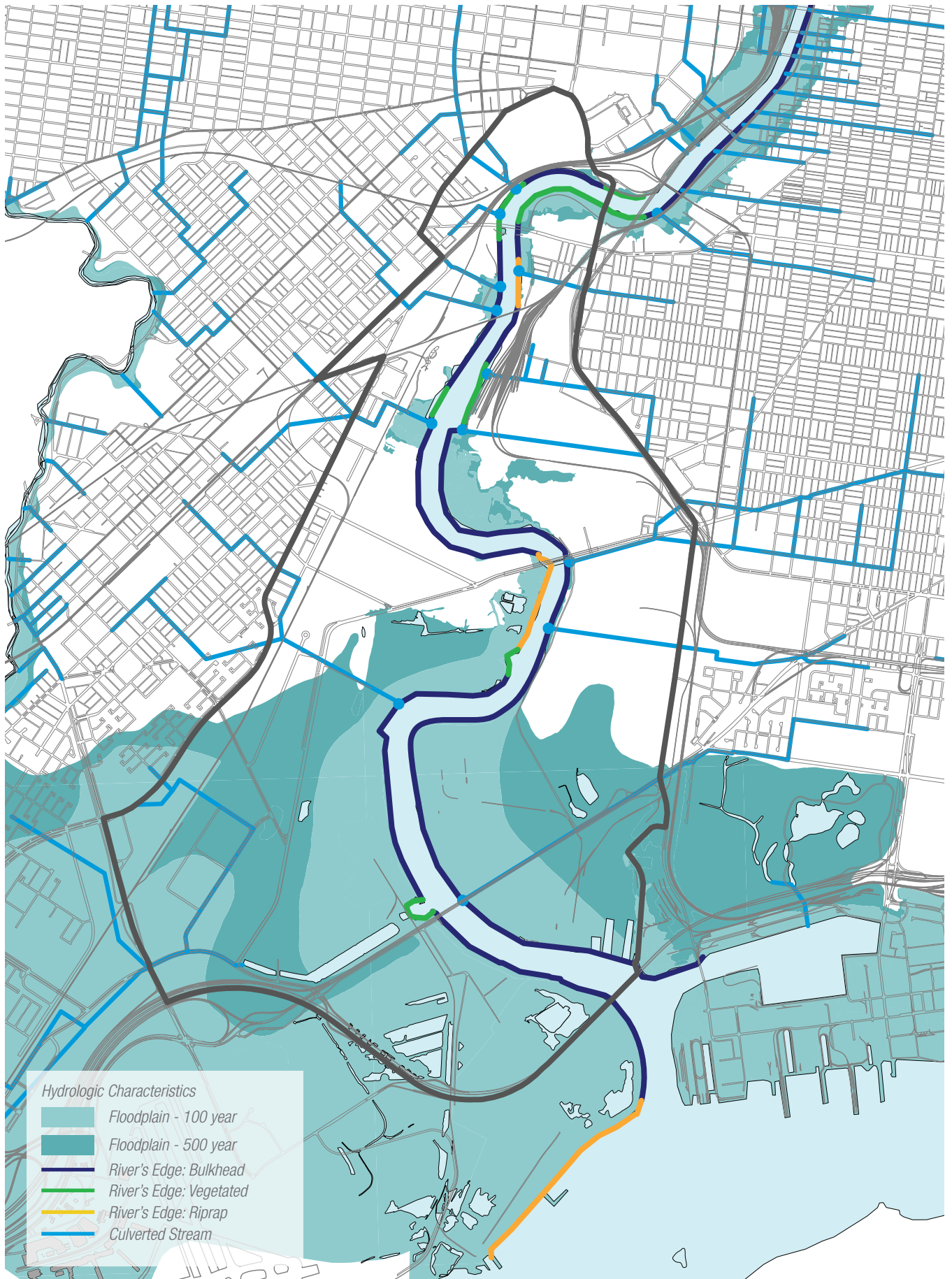
Impervious Land

Building Footprints

Impervious Surfaces within the study area

STORMWATER

Stormwater management is increasingly important, as the City of Philadelphia implements its Green Cities, Clean Waters and Greenworks initiatives to develop a robust foundation of green infrastructure. New development over one acre will need to meet PWD stormwater regulations and PADEP regulations. These include capturing the first inch of stormwater. Also, every new development over 5,000 SF will need to go through PWD's permitting process. Little, if any, green infrastructure currently exists within the Lower Schuylkill.



EXISTING CONDITIONS

OPEN SPACE AND PUBLIC ACCESS

The overwhelmingly industrial character of the Lower Schuylkill equates to few recreational amenities and little public access to the river.



View towards Center City from Grays Ferry Crescent Park

OPEN SPACE

Open spaces and public river access within the Lower Schuylkill are limited, found only at the Grays Ferry Crescent section of the Schuylkill Banks Trail (on the east bank) and the Woodlands Cemetery and Bartram's Garden (on the west bank). Fishing, a popular river activity in this area, is largely done from vacant private property. Plans are underway for additional segments of the Schuylkill Banks Trail to be constructed on the west bank, immediately north and south of Bartram's Garden. These new trail segments are expected to bring dedicated public river access to new communities and users. FDR Park on the east side of the river and John Heinz National Wildlife Refuge on the west side of the river are both outside of the study area, but are important, nearby, publicly accessible green space destinations.



Bartram's Garden

AMENITIES

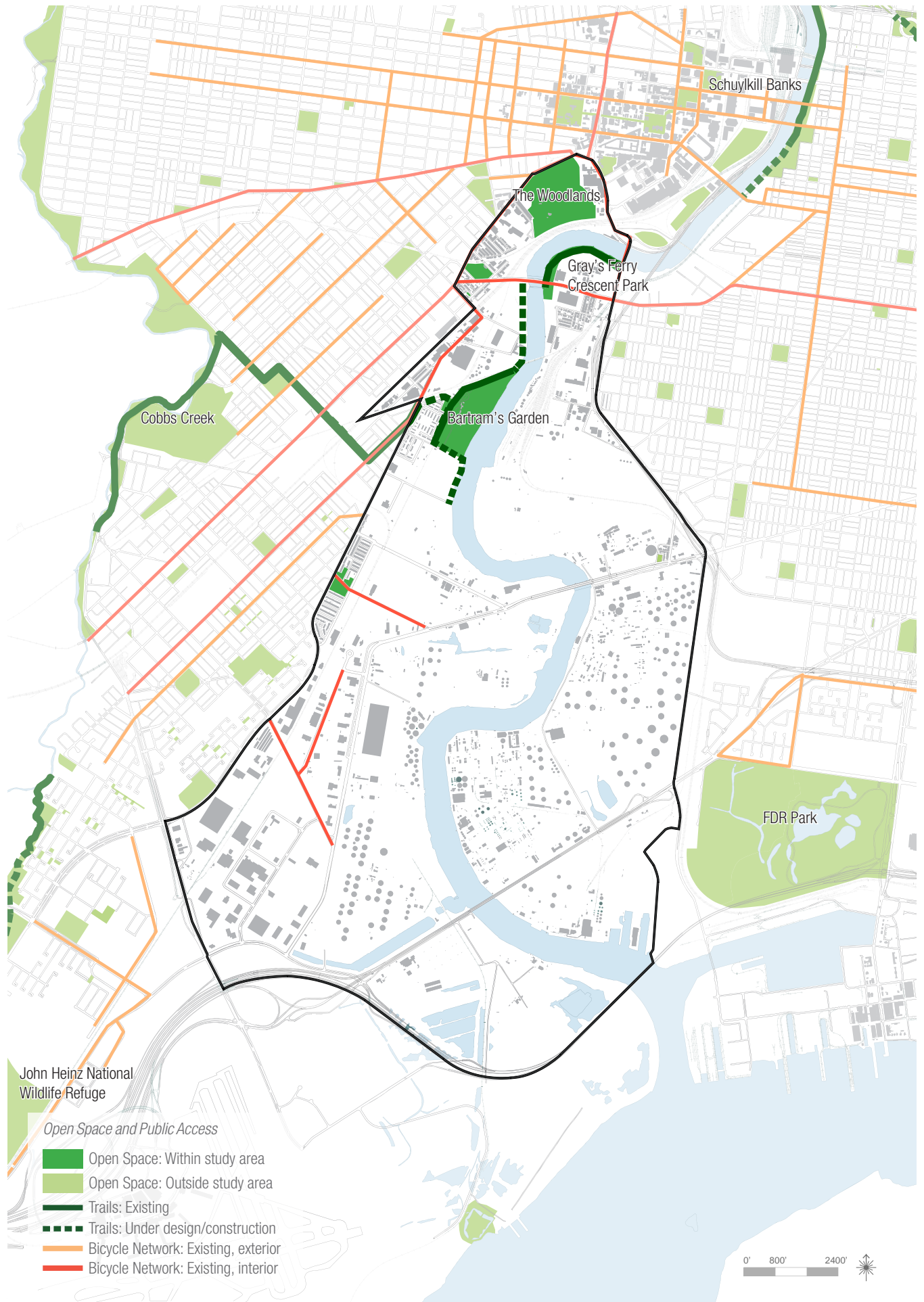
The overwhelmingly industrial character of the Lower Schuylkill equates to few recreational amenities. Public parks, recreation centers, and community athletic facilities are mainly found within adjacent residential communities, with several exceptions.

Two national historic sites, Bartram's Garden and the Woodlands, host community events, have community gardens, and offer trails available to the public during regular hours of operation. The Bartram's Garden trail connects to the 58th Street Greenway, which will eventually link to the East Coast Greenway, a 2,500-mile, path from Maine to Florida. In addition to its community garden, Bartram's Garden features a professionally operated farm, orchard, and greenhouse. Both sites feature historic buildings.



The Woodlands

As noted previously, the east bank features the Grays Ferry Crescent, which will soon be joined by new Schuylkill River Trail segments immediately north and south of Bartram's Garden on the west bank. The Schuylkill River Development Corporation (SRDC) in conjunction with Philadelphia Parks and Recreation operates the Schuylkill Banks Trail, and actively programs the Grays Ferry Crescent with free summer movies and other activities.



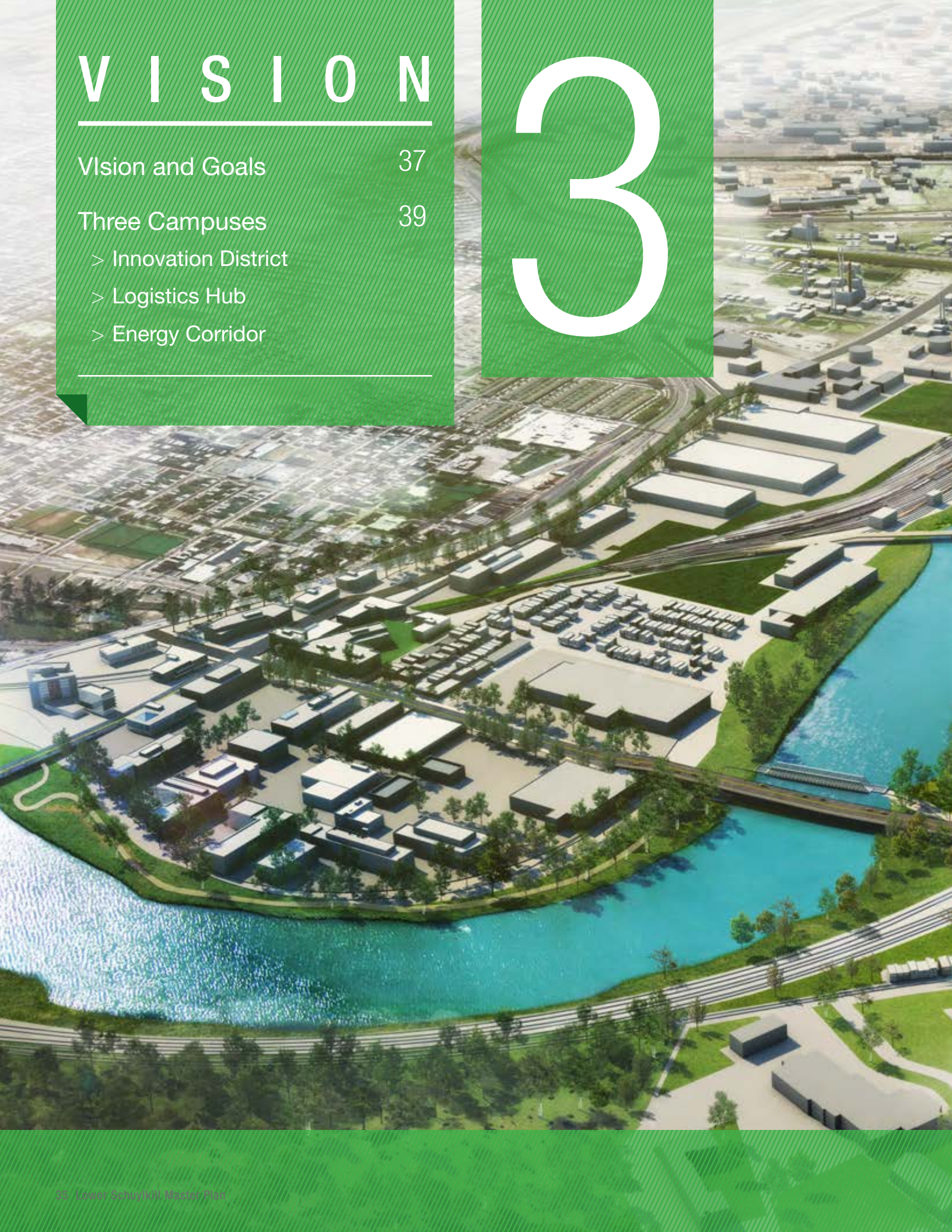
VISION

Vision and Goals 37

Three Campuses 39

- > Innovation District
- > Logistics Hub
- > Energy Corridor

3

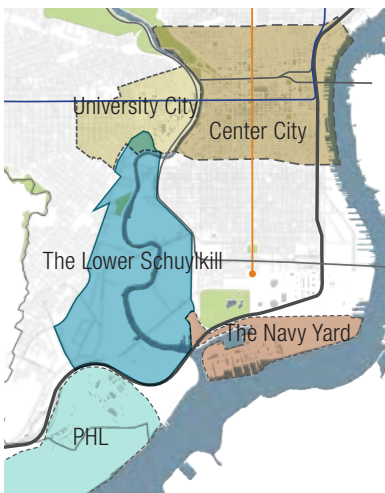




VISION

VISION AND GOALS

The Lower Schuylkill Master Plan seeks to leverage its superior location, key transportation assets, and striking natural features to develop a 21st century industrial district with exciting opportunities for new and growing businesses. An integrated network of three distinct campuses will maximize the area's diverse strengths, while integrating public amenities and sustainable features.



Proximity to economic anchors

VISION

Nestled between four of Philadelphia's strongest economic drivers, the Lower Schuylkill features a superior geographic location, proximity to key transportation assets and a long-hidden stretch of the winding Schuylkill River. Strategic infrastructure links will connect the Lower Schuylkill to surrounding economic drivers, the city, and the region, while completing missing links in the circulation network. New connections will bring people to the river and support an array of new public amenities, including trails, green space, and recreational river activities. Finally, the Master Plan envisions a new identity for the Lower Schuylkill, which captures and communicates its quiet strengths in energy production and logistics, as well as growing momentum in innovation technologies. These elements come together in the Master Plan to create an innovative, highly competitive center for new economic growth in Philadelphia.

GUIDING PRINCIPLES

To achieve this vision for the Lower Schuylkill, a set of guiding principles was developed through a collaborative process involving the planning team, the project sponsors, the Lower Schuylkill Master Plan Advisory Group (representing a broad array of public and private stakeholders, as well as community representatives and advocacy groups) and the general public through civic engagement meetings, community group meetings, and other public and private outreach. The principles also incorporate key goals and initiatives from other City and PIDC planning endeavors, including the Industrial Land and Market Strategy, Philadelphia2035, Greenworks and Green 2015. The guiding principles embody the diverse goals of the Lower Schuylkill Master Plan and provided a structured framework to the planning team. They also provide a set of key indicators by which the success of the Master Plan can be measured over time.



Collaborative planning and engagement process

GUIDING PRINCIPLES

1. CREATE A NEW IDENTITY AS A 21ST-CENTURY INDUSTRIAL DISTRICT

Promote the Lower Schuylkill as an attractive location for businesses. Integrate river access, open space, amenities, and progressive, district-wide solutions to showcase a truly unique Philadelphia asset.

2. PRIORITIZE JOB CREATION AND ECONOMIC GROWTH

Support and complement the growth of surrounding economic anchors, as well as capitalize on the unique locational assets of the Lower Schuylkill to develop new jobs for a variety of skills and education levels.

3. CONNECT THE LOWER SCHUYLKILL

Reconnect the Lower Schuylkill to surrounding economic anchors, adjacent communities, and the city as a whole to foster its development as a vibrant center for industrial and recreational activity.

4. FOSTER DIVERSITY OF USES

Support a diversity of uses within the Lower Schuylkill to create a thriving, energetic hub of economic and recreational activities. Integrate environmental and recreational objectives into overall development, to strengthen the long-term vitality and health of the Lower Schuylkill.

5. PROVIDE ACCESS TO THE RIVER

Bring Philadelphians back to the “hidden river” with picturesque riverside trails, vibrant public spaces, and dedicated access points.

6. BUILD SUSTAINABLY

Encourage exploration of opportunities for integrating energy-efficient buildings, alternative energy generation and distribution, new patterns of commuting, and progressive stormwater and floodplain management approaches.



VISION THREE CAMPUSES

Change is already underway within the Lower Schuylkill. University City’s academic and health care institutions have “jumped the Schuylkill,” making significant investments along Grays Ferry corridor. Additional investments in the refinery complex and distribution centers are spurring new growth and opportunities.

ONE PLAN, THREE CAMPUSES



University of Pennsylvania rendering of proposed South Bank Campus

Entrepreneurial businesses focusing on research, new technologies, and creative services are taking root at the University of Pennsylvania’s new 23-acre South Bank campus, while Children’s Hospital of Philadelphia is developing a 1.2M SF research campus just to the east. Philadelphia Energy Solutions is investing millions of dollars to upgrade Philadelphia’s oil refining facilities and develop new and complementary businesses. In the southwest sector, recent development of the Philadelphia Wholesale Produce Market and the U.S. Postal Service distribution facility represent over 1.1M SF of modern distribution facilities, setting an ambitious course for redevelopment as a competitive logistics hub.

To leverage this momentum and capitalize on the diverse strengths within the Lower Schuylkill, the planning team developed an integrated network of three distinct campuses. Each campus leverages existing market strengths and physical assets to create a unique platform for growth and expansion. Targeted infrastructure investments, progressive environmental planning, and creative place-making will position these campuses as attractive, competitive locations for innovation, industrial investment, and entrepreneurial growth.

FOUR PLANNING STRATEGIES TO SUPPORT THREE DISTINCT CAMPUSES

- IMPROVE SITE CHARACTER
- STRENGTHEN ACCESS AND CONNECTIVITY
- IMPROVE ENVIRONMENTAL CONDITIONS
- INTEGRATE OPEN SPACE AND PUBLIC ACCESS



INNOVATION DISTRICT

- Research and Development, Advanced, Artisanal and Traditional Manufacturing, Creative Professional Services, Institutional



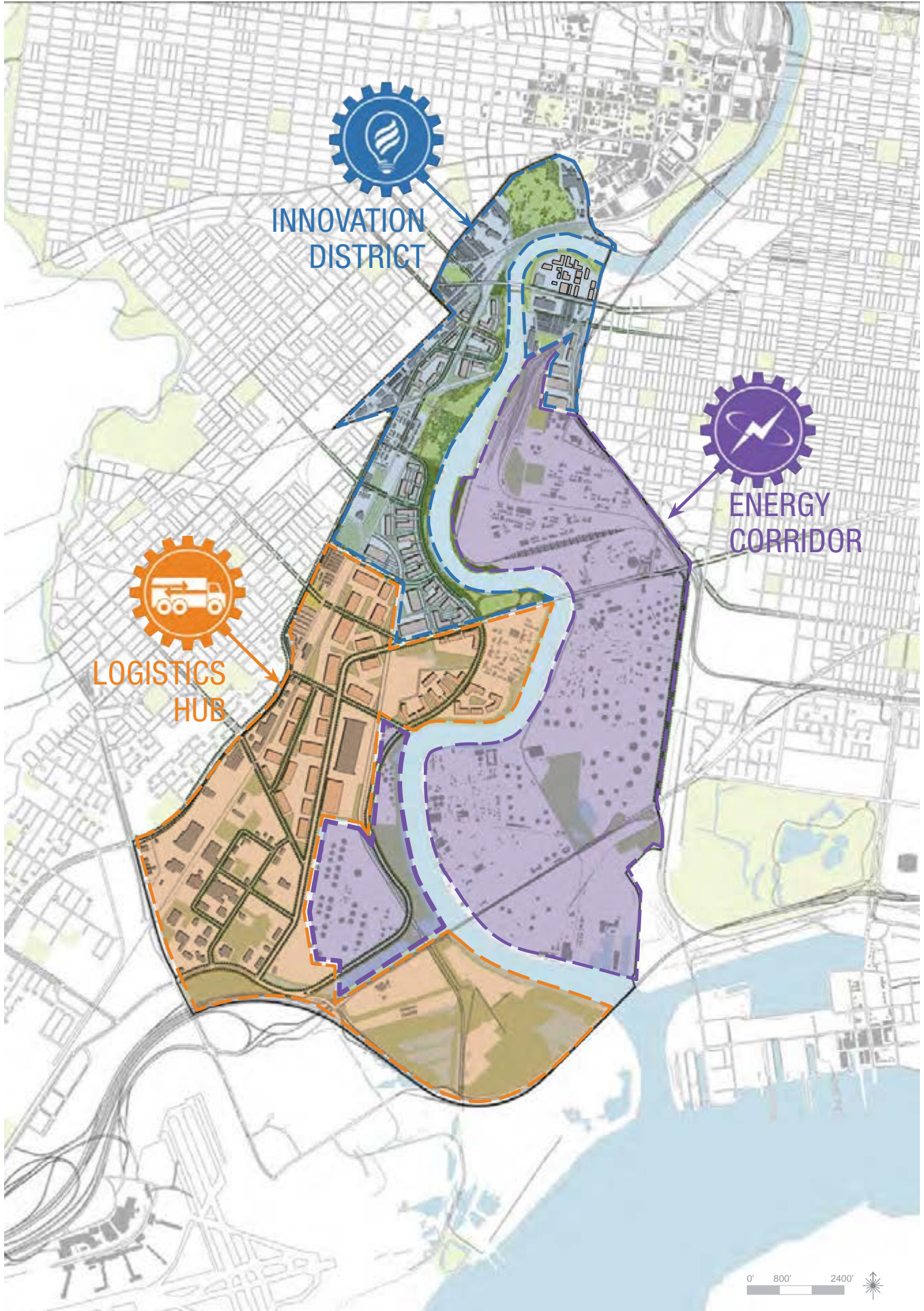
LOGISTICS HUB

- Distribution, Warehousing, Logistics, Manufacturing, PHL-Related Uses



ENERGY CORRIDOR

- Energy Generation and Distribution, Manufacturing, Rail Logistics



INNOVATION
DISTRICT

LOGISTICS
HUB

ENERGY
CORRIDOR





THREE CAMPUSES INNOVATION DISTRICT

The Innovation District is envisioned as a vibrant, green campus for research and development, advanced and artisanal manufacturing, institutional growth, and other high-quality uses. Streamlined connections, a new public riverfront, and a green makeover will transform this overlooked area into a compelling destination for businesses and residents alike.

KEY FACTS

- 512 acres on the east and west banks of the Schuylkill River
- Adjacent to University City economic drivers
- Penn's new South Bank campus on the east bank
- Two national historic sites (Bartram's Garden and The Woodlands) on the west bank

THE OPPORTUNITY

Historically, the Innovation District lacked any innovation space at all. Companies emerging from the Science Center and University City's institutional R & D and tech transfer programs had few options for suitable, affordable space to support their next phase of growth. Companies seeking proximity to University City faced similar challenges, resulting in the loss of companies and jobs to the Philadelphia suburbs and beyond. Two recent investments, however, are changing this dynamic.

Spurred by a dwindling inventory of developable space in University City, Penn and CHOP have pushed south, acquiring land for new campuses within and adjacent to the Innovation District. On the South Bank campus at 34th Street and Grays Ferry Avenue, Penn is transforming a 23-acre former industrial site into a mixed-use campus for emerging technology companies and institutional expansion. Less than half a mile to the east, CHOP is planning a 1.2M SF research campus. These investments are drawing new attention to this area and changing its perception, resulting in a dynamic opportunity to establish the Innovation District as a platform for the next phase of growth in the city's technology, life and material sciences, and institutional sectors.



View of Innovation District looking north to University City



THE PLAN

To maximize this opportunity, the Innovation District is planned as an integrated campus with attractive development sites, recreational and greenspace amenities, convenient links to University City, and a branded identity as Philadelphia's next center for economic growth.

R & D, advanced manufacturing, and similar uses typically seek one-story flex buildings from 15,000 to 50,000SF, with larger users requiring up to 200,000SF. The Innovation District's small-to medium-size parcels are well-suited to support this type of development, as well as multistory development should the market eventually demand it.

To foster a campus aesthetic and capitalize on the west bank's river and city views, the Master Plan envisions walkable clusters of flex buildings with a handful of larger, distribution sites in the interior. The flex clusters will bookend Bartram's Garden, making it the new "campus green" of the Innovation District. The west bank links to the east via an improved Grays Ferry Bridge and eventually, via the Schuylkill Banks pedestrian/bicycle bridge as well. The South Bank campus will anchor the east side, attracting complementary development and spurring revitalization of the Grays Ferry Avenue corridor. Aside from improving connections to the river, no changes are recommended for existing residential neighborhoods.

At full build-out, this approach is projected to support 2.4M–2.8M SF of new development, up to 3,300 direct jobs, \$13M in new annual tax revenue (city and state), and \$33B in total economic impact.

INNOVATION DISTRICT AT FULL BUILD-OUT

New Development Capacity	2.4M–2.8M SF
Infrastructure Cost	\$230M
Private Investment	\$420M
New Jobs	2800–3,300
New Annual Tax Revenue	\$13M
Total Economic Impact	\$33B

Source: HR&A Advisors



THREE CAMPUSES INNOVATION DISTRICT

THE PLAN



- New River Road
- Activated connector streets
- - - - - Extended Schuylkill Banks Trail
- Innovation East and West connection

Dramatic improvements to access and circulation are achieved through a dynamic new “River Road,” which connects the Innovation District directly to University City via 47th Street. It also provides effective north-south access throughout the entire west side of the Innovation District. This streamlined route opens up new development sites, alleviates capacity constraints, converts dead-end east-west streets into a functioning grid, and provides new access to the river. Details on the proposed alignment of the River Road appear in Chapter 4, Campus Connections pg. 69–70.

New amenities such as the extended Schuylkill Banks trail, a publicly accessible river sports center, and a new park at Passyunk Crescent, are designed to deliver public river access, while enhancing the attractiveness of the campus to targeted business sectors. Increasing access and amenities is expected to bring new activity, exposure, and energy, contributing to a positive change in the appearance and public perception of the area.

Achieving this transformation will require thoughtful investments in infrastructure, amenities, site preparation, and a creative branding campaign to accelerate public and market awareness of the new activity taking place in this area. These improvements are recommended for the first and second phases of the Master Plan (Years 1–14), based on the comparatively high number of redevelopment sites, significant level of public ownership, and strong market potential.



The west bank of the Innovation District

EARLY ACTION SITES

Areas immediately to the north and south of Bartram's Garden present significant opportunities for early action and redevelopment, consistent with the Innovation District plan. Both areas have significant public ownership, including two sites currently in the process of environmental remediation. Both of these areas will also feature segments of the Schuylkill Banks Trail, when it is extended as part of the "Bartram's Mile" initiative, currently being planned and implemented by Philadelphia Parks and Recreation in collaboration with SRDC, Bartram's Garden, PennPraxis and PIDC. As such, these areas have been identified by the planning team as key early action sites, capable of progressing quickly and establishing a precedent for high-quality development in the Innovation District. Early interventions including site preparation, streetscape and wayfinding devices, trail construction, stormwater management, and improved roadways will create a compelling destination for new, growing businesses. These sites and the early action projects needed to trigger private redevelopment and private investment are addressed in greater detail in Section 5, Implementation.



Early action sites within the Innovation District and planned extension of the Schuylkill Banks Trail



View of the Innovation looking District south with future Schuylkill Banks Trail highlighted in red



THREE CAMPUSES LOGISTICS HUB

The Logistics Hub is envisioned as a highly competitive center for distribution, warehousing, and manufacturing, with superior connections to Philadelphia’s expanding international airport, two interstate highways, and a dense regional population. Strengthening the commercial spine along Essington Avenue, improving connections, and supporting new business clusters will set the stage for enhanced growth.

KEY FACTS

- 1,132 acres along the southwest bank of the Schuylkill River
- Proximity to I-95 and I-76
- Adjacent to PHL
- Includes key distribution anchors (USPS and Philadelphia Wholesale Produce Market)
- Strong industrial base (Eastwick Industrial Park)



Distribution center forklift operator

THE OPPORTUNITY

Distribution and warehousing firms have long appreciated the superior location of the southwest quadrant of the Lower Schuylkill, capitalizing on its easy connections to I-95 and I-76 to serve a dense regional population, while utilizing adjacent PHL to reach beyond to the national and international markets. Anchors such as the USPS distribution facility on Lindbergh Boulevard and the Philadelphia Wholesale Produce Market on Essington Avenue are key examples. PHL, currently the 11th busiest airport in the world, is undergoing a 12-year expansion to increase runway capacity, add new terminals, and upgrade facilities.

The area’s deep industrial character also supports traditional manufacturing, a cluster of automobile dealerships along Essington Avenue, and a burgeoning cluster of food processing and distribution companies. Long-vacant riverfront parcels which once served the refinery complex are being freshly evaluated for redevelopment opportunities by the new owners of the refinery. Growth in this area has historically been slow and incremental. This will likely change, however, as growth clusters continue to develop and PHL’s long-awaited expansion comes online.

Unlike the Innovation District, there isn’t a large inventory of undeveloped land within the Logistics Hub. Currently, almost 80 percent is occupied by existing businesses. Several large, minimally developed sites exist to the south, but these serve key government functions (e.g., dredge material disposal, biosolids) and are not expected to redevelop during the term of this plan. Therefore, it’s crucial that the Master Plan provide a compelling framework for high-value redevelopment of the sites that are expected to redevelop, coupled with key enhancements to overall efficiency and competitiveness of the Logistics Hub.

The latent strength of existing businesses within the Logistics Hub, combined with the demand for new goods and services to support the expanded PHL, creates a unique opportunity for growth, densification, and diversification.



CEP preferred alternative plan

PHL CAPACITY ENHANCEMENT PROGRAM (CEP)

- Estimated 12-year construction time frame, resulting in completion by year 2035.
- During construction the CEP is projected to produce 44,700 to 46,400 jobs, resulting in an additional \$1.27 spent throughout the region per \$1 spent on construction.
- Increased capacity and runway extensions are projected to reduce daily delays by over half.



THE PLAN

The Master Plan envisions the Logistics Hub as a powerful industrial driver, supporting the growth of existing clusters and harnessing new, PHL-driven opportunities with improved infrastructure, functionality and aesthetics. Some existing clusters, such as the Auto Mall, are changing and may contract due to changes in auto retailing practices, creating new development opportunities along Essington Avenue. Improving access and circulation are key priorities, as Logistics Hub businesses rely heavily on trucks to move products and supplies. Branding this area as a competitive logistics location and developing a visually appealing environment will also be important in attracting new businesses.

To achieve these goals, the Master Plan establishes a long-term redevelopment framework that supports PHL-related services, distribution, warehousing, and manufacturing. Redevelopment sites, ranging from 15 to 50 acres, are clustered along Essington Avenue and the riverfront north of 67th Street. The sites are well-suited to support the single-story, 50,000 to 200,000 SF required by manufacturing, warehouse, and distribution facilities and larger-scale users can be accommodated through aggregation of sites. Should demand for additional flex space spill over from the Innovation District, flex buildings can be sited along the River Road between Passyunk Avenue and 67th Street.

At full build-out, this approach can support 3.1 to 3.8M SF of new development, with projections of up to 3,000 new jobs, \$12M in new annual tax revenue (city and state) and \$29.5B of total economic impact. Additional redevelopment opportunities could materialize over time if existing tank farms were relocated to the main refinery complex on the east bank. This would open up 230 additional acres for redevelopment and facilitate the extension of the River Road south from 67th Street to PHL.

LOGISTICS HUB AT FULL BUILD-OUT

New Development Capacity	3.1–3.8M SF
Infrastructure Cost	\$181M
Private Investment	\$340M
New Jobs	2500–3000
New Annual Tax Revenue	\$12M
Total Economic Impact	\$29.5B

Source: HR&A Advisors



THREE CAMPUSES LOGISTICS HUB

THE PLAN



- River Road to 67th Street
- - - Long-term River Road extension
- Essington Avenue upgrade
- Activated connector streets

Roadway improvements are designed to support the efficient movement of goods, while new gateways and aesthetic upgrades create a cohesive business campus. Essington Avenue continues to function as the commercial spine of the Logistics Hub, while receiving upgrades to facilitate effective stormwater management. Extending the new River Road to 67th Street opens up new development sites, while upgrades to existing streets support better circulation. Integrating stormwater features into roadway improvements and greenspace/recreational amenities will yield environmental improvements and enhance the competitiveness of sites within the Logistics Hub.

Opportunities for new greenspace and recreational amenities are not as plentiful as in the Innovation District, but the Logistics Hub offers a singular opportunity to develop a long-term bicycle connection from the Schuylkill Banks Trail to Fort Mifflin. Initially, this connection would parallel the River Road from Passyunk Avenue to 67th Street, then move inland and continue south along Essington Avenue. Should the tank farms eventually be consolidated into the main refinery complex, the southern segment of the River Road could be built with a trail running parallel. In either case, this link can eventually connect bicyclists to the John Heinz National Wildlife Refuge, located just west of the district. Existing greenspace along the river can be preserved in strategic locations to enhance the environment and augment stormwater management efforts.



Proposed upgrades to Essington Avenue including multimodal accessibility, as well as private and public stormwater management systems

THE FUTURE

Establishing this framework for growth will require strategic public investments in infrastructure, site preparation, branding, and amenities to foster public and market awareness of the Logistics Hub and to attract target businesses. In light of the comparatively smaller number of redevelopment sites within the Logistics Hub, as well as the projected 12-year construction period for PHL's expansion, the planning team recommends that investments in the Logistics Hub occur in Phase 3 (Years 15–22).



Proposed Logistics Hub banner, identifying the campus and reinforcing the larger signage and wayfinding strategy for the Lower Schuylkill

IN FOCUS | *Essington Avenue Logistics Today*

Philadelphia Wholesale Produce Market

The \$218M Philadelphia Wholesale Produce Market opened June 5, 2011, instantly becoming the world's largest fully enclosed, fully refrigerated wholesale produce terminal. The main building is 686,000 SF with 224 loading docks, extending the length of approximately 14 football fields (i.e., nearly one-quarter of a mile). The market houses 25 vendors and 68 stalls, each with outside access and independent refrigeration control.

A 2,800 ton, state-of-the-art refrigeration system provides uninterrupted cold-chain protection for fruits and vegetables. Cold-chain protection is critical in the food distribution business, as it supports product freshness, food safety and maximized shelf life. The Philadelphia Wholesale Produce Market receives and sells hundreds of truckloads of fresh produce on a weekly basis, leading to cumulative annual sales of \$1 billion.

The market is also open to the public, offering wholesale produce and food products along a central concourse lit with a skylight that extends the length of the building.

Adjacent to the main market building is an 18,000 SF recycling and waste processing facility. This facility supports efficient, environmentally friendly recycling of cardboard, pallets, and plastic, as well as the efficient discharge of organic waste.





THREE CAMPUSES ENERGY CORRIDOR

The Energy Corridor is envisioned as a national hub for energy production and distribution, leveraging superior rail, highway, and port assets. Preserving the integrity of the campus maximizes growth opportunities, while enhancing its perimeter improves key gateways and access routes.

KEY FACTS

- 2,056 acres primarily along the east bank of the Schuylkill River
- Oldest continually operating refinery complex
- Natural gas, petroleum, and other energy distribution facilities
- Adjacent to nationally designated “Energy Efficient Buildings” R & D hub at The Navy Yard



PES facilities at night

THE OPPORTUNITY

Philadelphia Gas Works (PGW) first constructed a natural gas facility on Passyunk Avenue in 1853. Oil refining followed in the 1860s and the Energy Corridor remains home to the oldest continually operating refinery in the nation. Just north of the Lower Schuylkill is Veolia Energy, which operates a steam loop fueling Center City office towers and the University of Pennsylvania. Extensive pipelines run below many properties in the Lower Schuylkill, facilitating energy distribution throughout the area.

The refinery complex has expanded and contracted over the years, echoing the boom and bust tendencies of the international oil markets. Aging facilities, deferred capital investments, rising costs, and supply chain volatility eventually eroded profit margins, however, resulting in the refinery being put up for sale in September 2011. Approximately 1,000 jobs and the future of the Energy Corridor were at risk.

Philadelphia Energy Solutions (PES), a newly formed joint venture of the Carlyle Group and Sunoco, stepped in and assumed ownership of the refinery, announcing plans for significant investment, an innovative rail-supported domestic supply system, product diversification (including Marcellus shale activity), and redevelopment of long-dormant parcels (including the 250 acre North Yard). PGW is also exploring new opportunities for underutilized portions of its site, including energy-focused options such as gas-to-liquids processing. These initiatives are timely, as production in Pennsylvania’s Marcellus shale field continues to grow, creating an array of new opportunities for gas processing, distribution and export.

Sustainability is also driving change in the energy sector. Veolia Energy is engaged in a multi-million dollar initiative to convert its Philadelphia network to 100% “Green Steam” and reduce the City’s carbon footprint. Just outside the southeastern edge of the study area is the Energy Efficient Buildings (EEB) Hub at the Navy Yard - the next frontier of innovative commercial energy management. Funded with \$129M from the U.S. Department of Energy and operated by a consortium of universities, private sector companies, and PIDC, the EEB Hub is developing next-generation energy-management technology to reduce energy consumption in the nation’s commercial buildings.

This unique spectrum of old-line and new-line energy solutions has developed organically into a specialty cluster with significant momentum. The Energy Corridor’s existing infrastructure and assets, as well as its excellent proximity to interstate pipeline and roadway networks, export hubs via air and sea, water resources, and a dense regional population uniquely positions it for development as a major energy corridor—the scale of which the city and region have not seen in a very long time.

THE PLAN

The Energy Corridor is planned as a discrete, limited-access campus dedicated to the unique requirements of this business sector. The plan envisions extensive redevelopment of the vacant and underutilized parcels within the Energy Corridor, primarily by energy-related firms, chemical manufacturers, businesses with synergistic processes and/or supply requirements, and complementary companies that benefit from proximity to major energy production facilities and/or the EEB Hub. These parcels include the largely-vacant North Yard and under-utilized areas of the South Yard and PGW site. The plan also seeks to develop a distinct identity for the Energy Corridor, raising market awareness of its status as a premier location for this industrial sector and attracting new businesses seeking a competitive location.

Unlike the Innovation District and the Logistics Hub, isolation and limited access are key benefits of the Energy Corridor. Its lack of connections and limited permeability are attractive to energy and distribution/transportation companies operating under federal, state, and internal regulations requiring secure perimeters and access control. To preserve the discrete character of these facilities, interventions are concentrated at the perimeter of the Energy Corridor, where the public is most likely to encounter it.



Upgrades to 34th Street and the Passyunk Avenue Bridge will improve the appearance of this campus in locations where the public is likely to interface with it. The Passyunk Avenue Bridge will also provide a key bicycle and pedestrian connection, linking trails and destinations on the east and west banks, including FDR Park in South Philadelphia, the proposed new Passyunk Crescent Park and the extended Schuylkill Banks trail on the west bank. These improvements are designed to occur over multiple phases of the Master Plan. Longer-term improvements to 26th Street provide an excellent opportunity to create a memorable, green approach to the City for visitors traveling from the airport and other locations.

Greenspace and public amenities are comparatively low priorities in the Energy Corridor, as there is extensive private ownership and little public access. Instead, a green buffer is planned for key segments of the campus' riverfront edges, to enhance its appearance where the public is likely to view it. Preservation of the undeveloped mud flats along the North Yard's shoreline can also yield important environmental benefits.



THREE CAMPUSES ENERGY CORRIDOR

THE IMPACT



Recommended areas for maintaining vegetated perimeters.

Projecting growth in the Energy Corridor is challenging, due to the broad range of building footprints associated with this sector. A large pipeline network may be run out of a small office, while production processes may require very large spaces with customized layouts. The good news is that the Energy Corridor can accommodate all of these uses, including very large-scale building footprints that are difficult to site elsewhere in the city.

The high incidence of private ownership in the Energy Corridor limits opportunities for public infrastructure investment to spur economic development. Growth and development within this area will be strongly correlated to the efforts of private owners. These owners appear highly motivated, with PES investing up to \$100M in new and existing facilities, CSX investing in new rail infrastructure to bring raw materials to the refinery complex and PGW exploring opportunities to attract new activity to its site.

Publicly available information suggests that new and existing PES facilities will create 100 to 200 new jobs. Additional jobs are expected to be created by new companies locating on vacant or underutilized land at the PES and PGW sites. Insufficient detail exists at this time, however, to accurately project the number of new jobs that could be created or the economic impact that could be realized. Based on the amount of vacant and underutilized land within the Energy Corridor, these numbers could be significant.

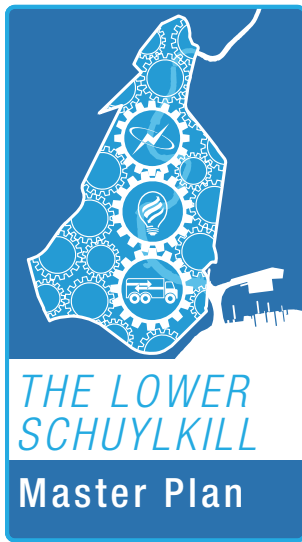


Proposed Passyunk Avenue Bridge upgrade improves connections between the Energy Corridor to the east and the Innovation District and Logistics Hub to the west.

While high levels of private ownership provide limited opportunities for transformative infrastructure investments, the public sector still has a significant role to play in the growth of this campus. Deploying a portfolio of targeted economic development tools to attract new companies will pay significant dividends in new jobs and tax revenues over time. Section 5, Implementation, details an array of economic development programs that can support this endeavor. The public sector should also explore opportunities to position the Energy Corridor and Philadelphia at the cutting edge of the energy sector, through public-private research initiatives, pilot programs for new energy uses, collaborations between industry and local universities, energy-related entrepreneurial programs, targeted workforce training, and similar initiatives. These programs could be run out of a new, dedicated entity (an Energy Institute) or through existing governmental entities. A comprehensive marketing and branding program is also recommended, to raise the profile of this area as a hub for the energy sector and to attract new businesses.



Upgrades to 26th Street can create a memorable, green approach to the City for visitors traveling from the airport and other locations



THREE CAMPUSES SUMMARY

Approaching the Lower Schuylkill as an integrated network of three distinct campuses creates diverse opportunities for growth, while allowing the Master Plan to customize interventions to the specific needs of each area. This will maximize the overall economic vitality of the Lower Schuylkill, as it develops over the next 22 years.

	INVENTORY	ASSETS
INNOVATION DISTRICT 	<ul style="list-style-type: none"> • Small to midsize parcels (3–20 acres) • Significant public ownership • Significant vacancy • Penn’s South Bank campus • Limited residential 	 <ul style="list-style-type: none"> • 5 –10 minutes from University City • Two national historic sites: The Woodlands and Bartram’s Garden • Riverfront parcels • Views of Center City • Some city fabric, amenities and street grid 
LOGISTICS CAMPUS 	<ul style="list-style-type: none"> • Mid-to-large size parcels (13–90 acres) • Most developable parcels are privately owned • Distribution and warehouse uses • Eastwick Industrial Park and Auto Mall • Significant government uses in southern section 	<ul style="list-style-type: none"> • Proximity to PHL • Strong connections to I-95 and I-76 • Existing industrial base • Development momentum with USPS and Philadelphia Wholesale Produce Market • Riverfront parcels 
ENERGY CORRIDOR 	<ul style="list-style-type: none"> • Primarily large parcels (30+ acre) • Some public ownership • Active oil refinery and natural gas facilities • CSX Transflo Yard • Marine facilities 	 <ul style="list-style-type: none"> • High-value industrial infrastructure • Existing energy hub with capacity for growth and diversification • Excellent pipeline access • Access to port, rail, and highway 



POTENTIAL



- Innovation campus supporting R & D, advanced and artisanal manufacturing, institutional growth and Philadelphia's growing technology, life sciences, clean energy, and applied science sectors.
- Campus-wide network of green amenities, including Schuylkill Banks trail, new greenspace and recreational river use.



- Competitive logistics hub featuring a cluster of distribution, warehousing, and related firms.
- Food processing and distribution that capitalizes on the Philadelphia Wholesale Produce Market.
- Airport-services cluster to support PHL expansion.



- Key East Coast energy hub with a diverse mix of traditional and next-generation fuel and energy facilities.
- Industry-leading supply chain rail service and rail facilities.



MASTER PLAN

Enhance Site Character 57

Strengthen Access and Connectivity 67

Improve the Environment 79

Integrate Public Space 85

4





MASTER PLAN ENHANCE SITE CHARACTER

To support future development in accordance with the Master Plan, a tailored zoning plan and land use framework are essential.

ZONING AND LAND USE

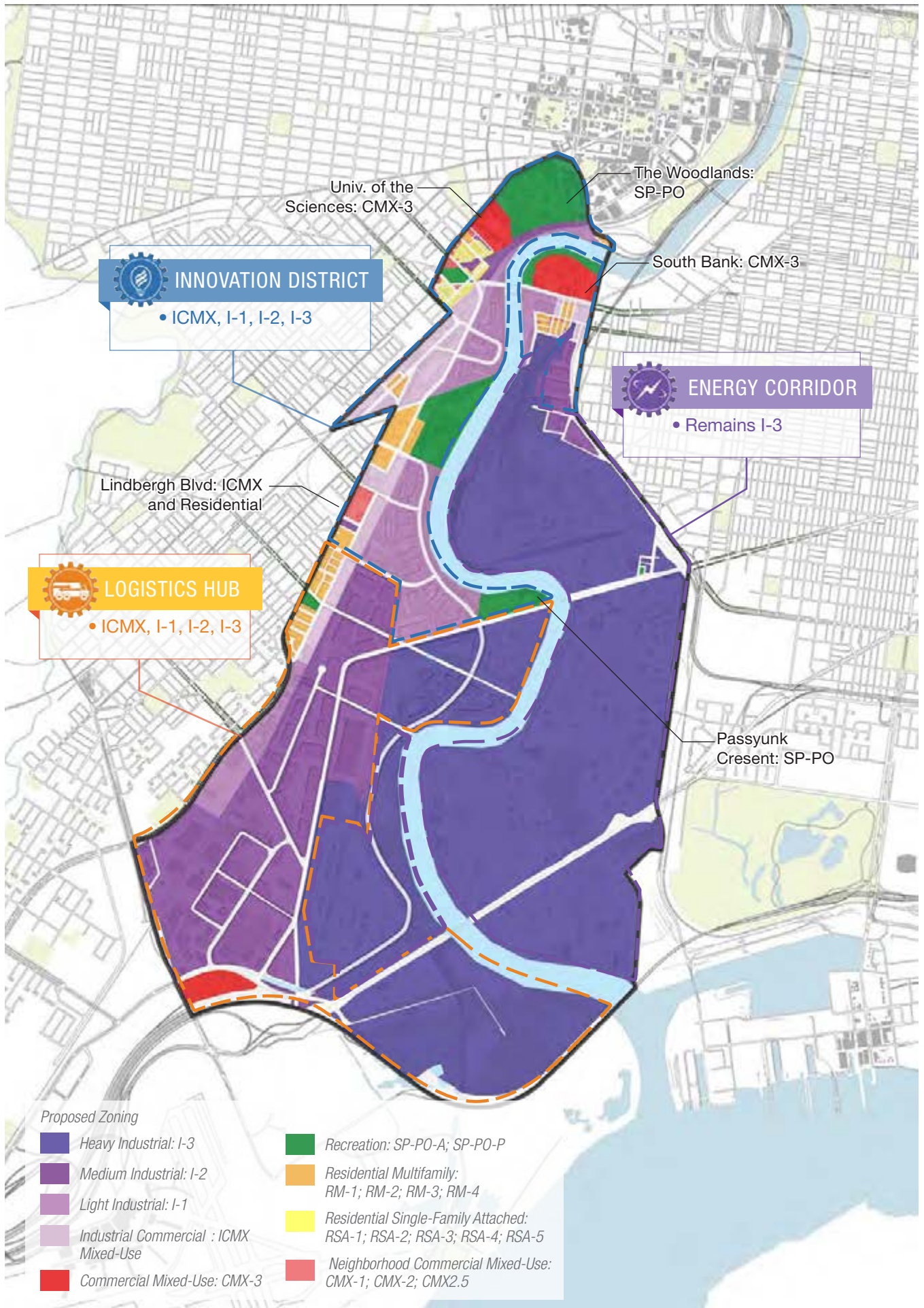
In 2012, the City of Philadelphia adopted a progressive new zoning code that incorporates many of the recommendations from the Industrial Land Strategy. The Philadelphia City Planning Commission (PCPC) is now incorporating the new code into its district planning process for *Philadelphia2035*, correcting inaccurate zoning designations and ensuring that zoning patterns support the long-term goals of *Philadelphia2035* and the districts themselves.

Currently, most of the Lower Schuylkill is zoned I-1 (light industrial) to I-3 (heavy industrial). To spur implementation of the Master Plan, zoning should be tailored to attract and support the types of industrial and commercial activity sought for each campus. Open space and recreational amenities should be zoned as such, while existing residential areas should remain unchanged.

In the Innovation District, zoning should support R & D, advanced and artisanal manufacturing, university-related uses, and light industrial. For example, rezoning the area north of Bartram's Garden from I-2 to I-1 and ICMX (industrial-commercial mixed-use) will help this area transition to lighter uses. Zoning can also be used to support improved gateways along Woodland Avenue and Grays Ferry Avenue. The industrial zoned parcels of the University of the Sciences and South Bank should be changed to CMX-3 (commercial mixed-use), with the I-2 and I-3 parcels lining Grays Ferry Avenue changed to ICMX and I-1. These changes will also support land uses that are more compatible with the neighboring residential communities.

In the Logistics Hub, the Master Plan recommends ICMX, I-1, and I-2 zoning to support and attract warehousing, distribution, and manufacturing, especially along its Essington and Passyunk corridors. The Eastwick Industrial Park should remain predominantly I-2, to maintain and grow its array of industrial users. As the Energy Corridor continues to develop, it is important to maintain I-3 zoning on the east bank to support and attract these intensive industrial firms.

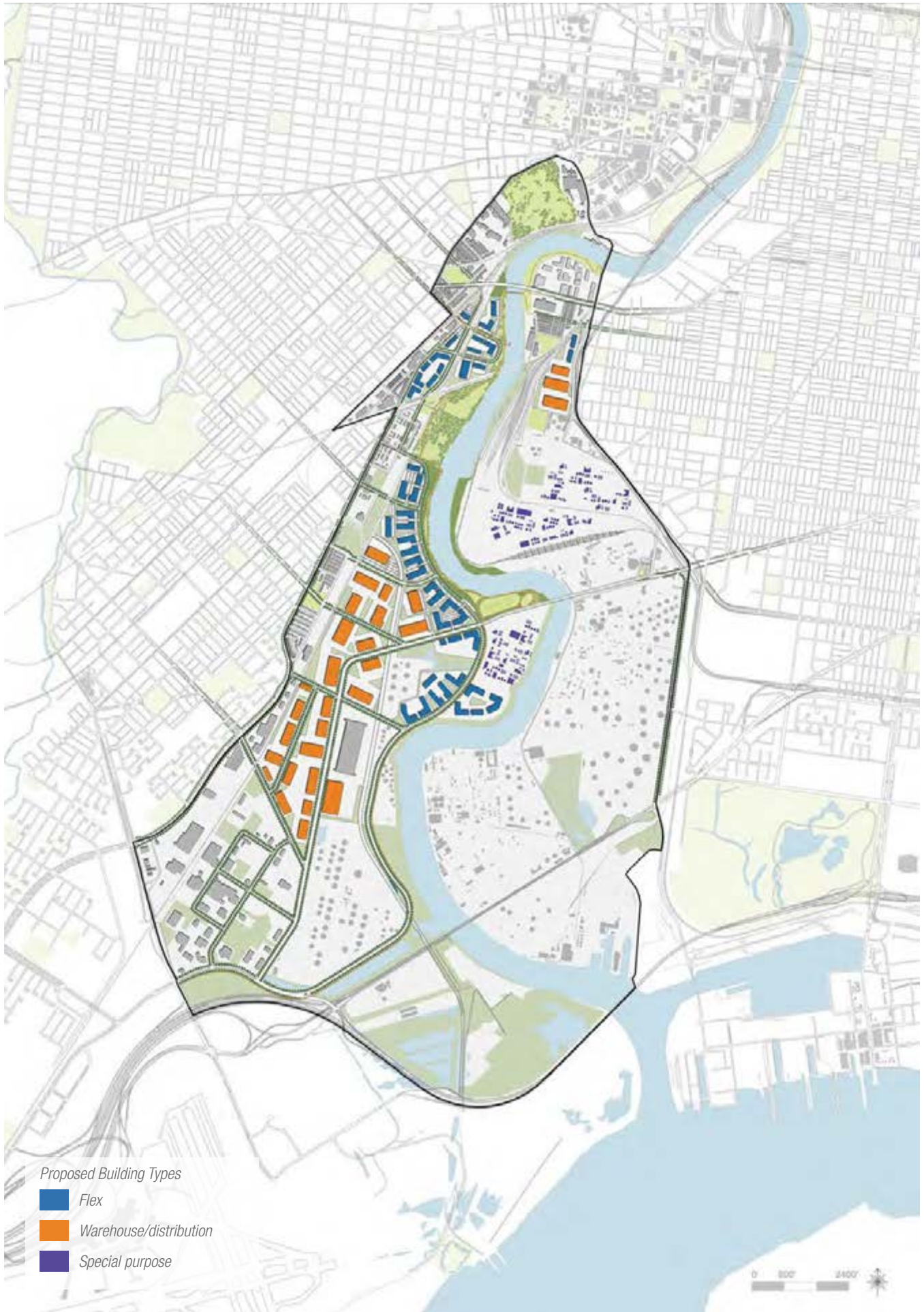
Key open spaces, such as the Woodlands, Bartram's Garden, and the Grays Ferry Crescent, should be zoned SP-PO (Special Purpose Parks and Open Space) to ensure passive or active recreation as the long-term use of these parcels. SP-PO zoning should also be applied to the future footprint of the Schuylkill Banks Trail and the planned park at Passyunk Crescent.



ENHANCE SITE CHARACTER DEVELOPMENT PATTERN

To maximize opportunities for economic development, the Master Plan recommends a mix of three building types: flex, warehouse/distribution, and special purpose. Flex buildings are primarily located in the Innovation District, where demand for advanced manufacturing and R & D space is expected to be high. Warehouse/distribution buildings are situated further south, in the Logistics Hub, where they will benefit from superior highway connections. Special purpose facilities are envisioned for the Energy Corridor, to reflect the unique structures required for these processes.

	CHARACTERISTICS	MASTER PLAN INVENTORY	EXAMPLE
FLEX	<p>The most common speculative industrial development, adaptable to the needs of a variety of industrial users, including ancillary office space. Labor-intensive users such as those that occupy flex buildings and manufacturing buildings seek locations that are convenient to an employment base.</p>	<ul style="list-style-type: none"> • R & D, Advanced Manufacturing • Single-story, divisible floorplan • 5–35 acres • SF Range: 25K–77K •  	 <p><i>Flex Buildings, The Philadelphia Navy Yard</i></p>
WAREHOUSE / DISTRIBUTION	<p>Used for the storage and distribution of goods. Proximity to major interstate highway systems is fundamental, since nearly all industrial uses rely on trucking to receive shipments and to distribute goods. Access to freight rail service remains desirable, though most industrial users depend on it far less than trucking. Many industrial businesses also rely on proximity to ports and airports, depending on need.</p>	<ul style="list-style-type: none"> • Warehousing, distribution and logistics, traditional manufacturing • Single-story, highbay • 12–90 acres • SF Range: 75K–200K •  	 <p><i>Philadelphia Wholesale Produce Market</i></p>
SPECIAL PURPOSE	<p>Structures designed to serve a specific manufacturing process. Many industrial businesses seek sites where operations will be minimally intrusive to neighboring communities.</p>	<ul style="list-style-type: none"> • Size and structure are use dependent •  	 <p><i>PES Refinery</i></p>



ENHANCE SITE CHARACTER CREATE CAMPUS IDENTITIES

BRANDING AND SIGNAGE

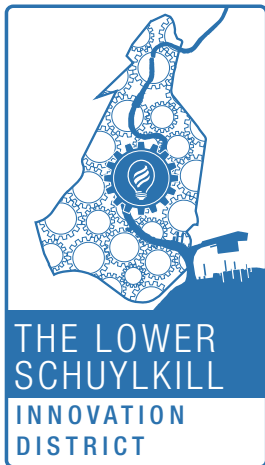
One of the primary challenges to redeveloping the Lower Schuylkill is that few people understand where it is and what opportunities exist. Creating distinct, branded identities for each campus offers an effective way to increase public and market awareness, while developing a new sense of place. This includes consistent utilization of campus names and logos in marketing materials and media coverage, as well as in the physical campuses themselves through flags, wayfinding, signage, and similar mechanisms. Transforming key access points into attractive campus gateways and delineating campus boundaries will further contribute to this new sense of place. Recreational amenities will attract new users and visitors to the campuses as well.

APPEARANCE AND AMENITIES

Upgrading the appearance of the campuses is a key factor in developing their identities as important, attractive places for commerce. The Master Plan recommends a customized set of aesthetic improvements for each campus, tailoring the proposed upgrades to the needs of targeted users.

In the Innovation District, the Master Plan envisions a cohesive program of streetscape and landscape improvements to develop a green campus. These improvements are augmented with a suite of amenities which reinforce the campus concept, including new greenspace, a landscaped multipurpose trail, a publicly accessible river sports center and a new park at Passyunk Crescent. Existing features such as Bartram's Garden, the Woodlands, and the Grays Ferry Crescent trail are seamlessly integrated into the campus. These features are highly valued by target companies and they echo and expand on those found in other successful innovation and technology campuses, such as Research Triangle Park, East Baltimore Science and Technology Park and the Pittsburgh Technology Center.

The Logistics Hub and Energy Corridor target distinctly different industrial sectors. For warehouse, distribution, PHL-related and energy sector firms, strategic location and transportation connections are the primary requirements. Accordingly, landscape and streetscape improvements are focused on key gateways and transportation spines, such as Essington Avenue, 26th Street, and the Passyunk Avenue Bridge. Landscaping in these locations serves the same beautification goals as in the Innovation District, but in certain key locations will also screen out unattractive views and/or uses. New and upgraded bicycle connections along Essington Avenue and the Passyunk Avenue Bridge provide key amenities in areas with limited public ownership.





Proposed River Road



Proposed Essington Avenue improvements



Proposed 26th Street improvements

ENHANCE SITE CHARACTER CREATING GATEWAYS



The Porch at 30th Street, an effective gateway in University City

Distinctive, visually appealing gateways will attract and welcome visitors to the campuses, as well as create smooth access and transition points. Additional opportunities exist to create gateways to the city itself. Precedents such as the Navy Yard and the Porch at 30th Street can help guide the development of attractive, successful gateways in the Lower Schuylkill.

1 34TH STREET AND GRAYS FERRY AVENUE

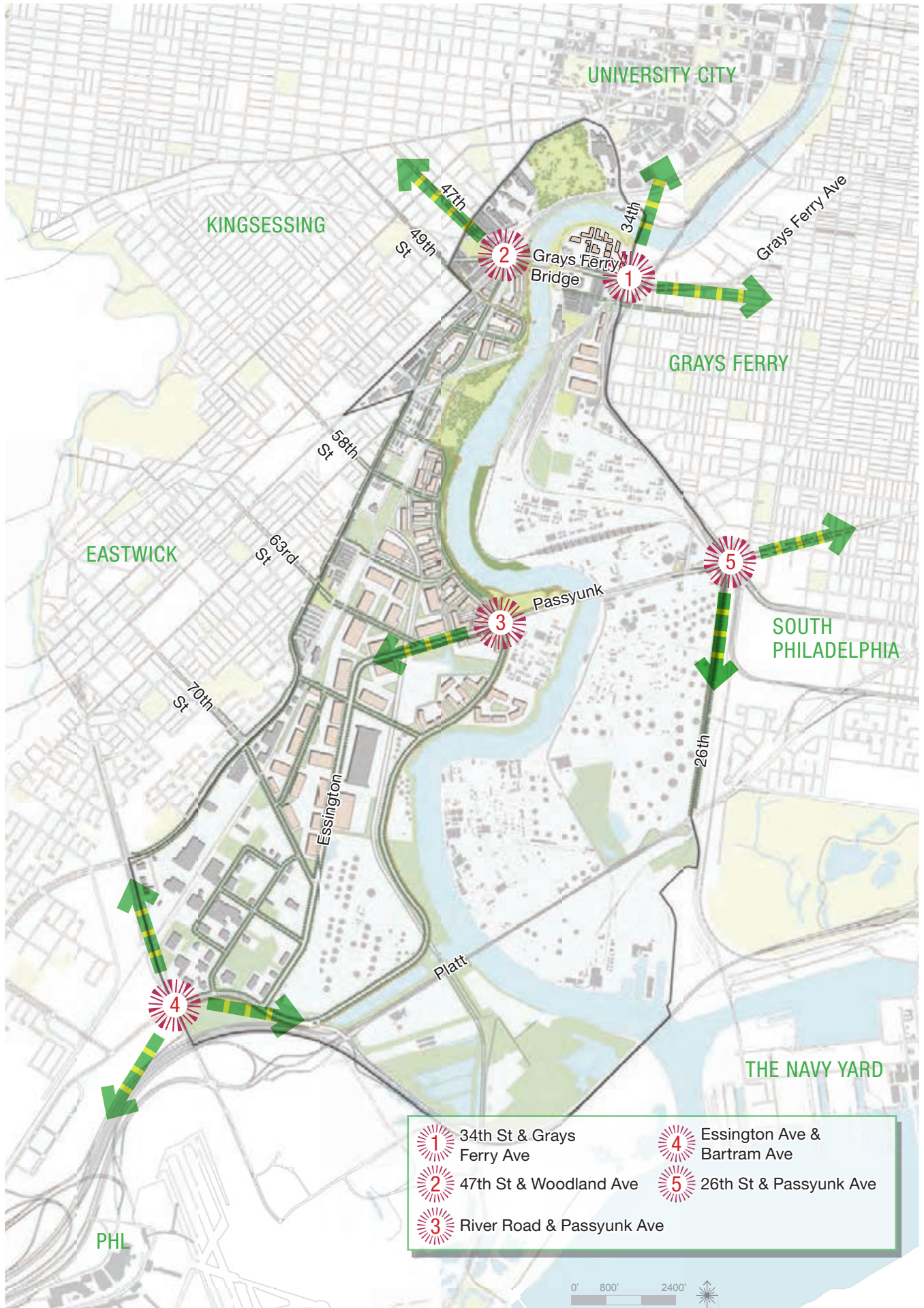
Over the short to medium term, the Innovation District's busiest entrance point will be 34th Street and Grays Ferry Avenue, so early efforts to create a compelling gateway should be focused there. This intersection will connect University City to the South Bank campus, as well as welcome visitors from Center City on the east and I-76 on the south. Transforming the appearance of this intersection provides a great opportunity for branding the Innovation District campus and exposing it to the large number of drivers traversing this intersection each day. Over the long term, efforts should be taken to upgrade and expand the roads and gateway to support increasing numbers of employees and visitors to the Innovation District campus.

2 47TH STREET AND WOODLAND AVENUE

The intersection at 47th Street and Woodland Avenue provides the interim and long-term gateway from University City to the Innovation District's west bank. The Master Plan envisions enhancements such as streetscape (including improved sidewalks and crosswalks), lighting, tree planting, and clear wayfinding signage. Initially, the gateway will direct traffic along the interim access route (Woodland Avenue to 49th Street to Grays Avenue to Lindbergh Boulevard). Once the new River Road is built, the gateway will direct Innovation District traffic down 47th Street to connect directly to the River Road.



34th Street and Grays Ferry Avenue can be improved by streetscape beautification. Improvements to capacity and functionality require further technical analysis.



- | | |
|-----------------------------|-------------------------------|
| 1 34th St & Grays Ferry Ave | 4 Essington Ave & Bartram Ave |
| 2 47th St & Woodland Ave | 5 26th St & Passyunk Ave |
| 3 River Road & Passyunk Ave | |



3 RIVER ROAD AND PASSYUNK AVENUE

The Master Plan envisions the new intersection at Passyunk Avenue and the River Road as an important gateway connecting the campuses. From the east bank, traffic will cross the Passyunk Avenue Bridge and encounter an attractive gateway that clearly directs vehicles north to the Innovation District (via the new River Road) or straight on Passyunk Avenue to access the Logistics Hub. A small segment of 61st Street is realigned, to connect into the River Road and complete a functional street grid; it also replaces the oddly angled, confusing intersection of 61st and Passyunk with a simpler, safer intersection at the River Road and Passyunk Avenue. Bicyclists and pedestrians approaching the intersection will find clear wayfinding, directing them to the Schuylkill Banks Trail.

4 ESSINGTON AVENUE AND BARTRAM AVENUE

From PHL, I-95, and points south, the gateway to the Logistics Hub will be the intersection of Essington Avenue and Bartram Avenue. As with the other gateways, this location needs to be prominently marked with distinctive wayfinding signage and an attractive gateway feature. Clear signage should direct users to clusters and features within the Logistics Hub, such as the Eastwick Industrial Park and the Philadelphia Wholesale Produce Market. If the southern extension of the River Road is built, this gateway will be the key location for shifting commercial traffic to Essington Avenue and passenger vehicles to the more scenic River Road.



The gateways at 61st Street and Passyunk Avenue, and Essington and Bartram Avenues provide tremendous opportunities, both as gateways to internal uses and as thresholds between the study area and its context.

5 26TH STREET AND PASSYUNK AVENUE

Across the river from Gateway #3 (River Road and Passyunk Avenue), the intersection of 26th Street and Passyunk Avenue provides another multicampus connection. Creating a true gateway here is challenging, as this complicated intersection brings together a key east-west arterial (Passyunk Avenue), a high-volume segment of I-76, 26th Street's north-south traffic flow and busy Oregon Avenue. Clear wayfinding signage, particularly signage directing traffic to the Energy Corridor and the west bank of the Innovation District, will accomplish the necessary goal without adding to the confusion of the intersection. Currently, the intersection is functional and able to handle the high volumes it receives. Modifications to signalization and better crossings for pedestrians and bicyclists may enhance the performance of the intersection. Should significant growth within the Lower Schuylkill begin to strain the functionality of this intersection, a detailed engineering study will be required to identify improvements that can increase capacity while balancing the needs of the various transportation routes which meet at this location.



Complex interchanges of roads at the intersection of 26th Street and Passyunk Avenue



Upgraded 26th Street corridor

MASTER PLAN STRENGTHEN ACCESS AND CONNECTIVITY

Connecting the campuses to adjacent economic drivers, opening up new development sites, and improving circulation by reconnecting key segments of the street network will unlock significant development potential and spur new investment within the Lower Schuylkill.

KEY GOALS

- Strengthen external connections to economic drivers and the interstate highway network
- Enhance internal circulation by filling in gaps in the street network
- Utilize complete streets to support multiple modes of transportation
- Expand transit options to support new development

A COMPREHENSIVE APPROACH

The Lower Schuylkill is nearly four miles long from University City to PHL. It is flanked by interstate highways and a traditional street grid on its perimeter, but lacks a robust internal network with efficient north-south and east-west connectivity. Expanding this network is essential to connect the campuses to surrounding economic drivers, as well as provide high-quality access and circulation within the Innovation District, Logistics Hub, and Energy Corridor. The Innovation District provides the most significant opportunity for transformative change, but other important opportunities also exist on the west side to introduce new roadways that tie into and expand the existing circulation network in the Lower Schuylkill segments. The east side does not afford the same porosity for internal and citywide connections, as it largely consists of a few, large private parcels with security constraints associated with its industrial activity.

To maximize the impact of these infrastructure investments, the Master Plan seeks to incorporate as much functionality as possible into the new and upgraded roadway network, including key City of Philadelphia initiatives, such as increased sustainability, street design, and stormwater management.

New and upgraded roadways are planned as “complete streets” where viable, with capacity to accommodate trucks, cars, buses, bicycles, and pedestrians. Comprehensive street upgrades will transform the existing patchwork of roadways into a logical, consistent network marked by high-quality appearance and functionality. Connector streets link adjacent communities with public access points for the Schuylkill Banks Trail. Green stormwater infrastructure is embedded in roadway right-of-ways to effectively manage runoff while greening and transforming the appearance of the campuses. Consistent streetscape, quality lighting, and effective wayfinding are incorporated to enhance navigability and safety, as well as contribute to the overall sense of place.



Philadelphia Complete Streets Design Handbook 2012



NEW ROADS

BENEFITS



- 1** • River Road

- Direct access to University City
- Key north-south connection linking the Innovation District
- Creates new development opportunities along the river's edge
- Completes the "grid" for east-west streets that dead-end at the river
- Connects University City and the Innovation District to the rest of the Lower Schuylkill

UPGRADES TO EXISTING ROADS



- 2** • Lindbergh Avenue

- Planted medians/bioswales to improve aesthetics and collect stormwater
- Better wayfinding signage for all user groups
- Improved pedestrian amenities



- 3** • Essington Avenue

- Extensive green infrastructure to improve stormwater management
- Multiuse trail



- 4** • I-76: Ramps & Intersections

- Streamlined ramp access at University Avenue/34th Street



- 5** • 61st Street

- Revised alignment to connect with River Road and complete street grid
- Green infrastructure to collect stormwater
- Improved public access to the riverfront

STRENGTHEN ACCESS AND CONNECTIVITY

CAMPUS CONNECTIONS



Grays Ferry Ave provides a key route between Innovation District West and East.





INNOVATION DISTRICT

To position the Innovation District as a viable flex campus, improved access and circulation are essential. 34th Street connects the east bank to University City and I-76, while Grays Ferry Avenue links to Center City. The west bank relies on a much more circuitous route connection to University City—Woodland Avenue to 49th Street to Grays Avenue and Lindbergh Boulevard. Lindbergh Boulevard’s ability to efficiently circulate north-south traffic is limited by its capacity constraints, residential character, and peripheral location. An entirely new way of accessing this area is needed. The Master Plan proposes a new, two-lane north-south road that will connect directly to University City and extend south to Passyunk Avenue.

47TH STREET EXTENSION

Currently, 47th Street is a two-lane road stretching south from University City and connecting to Grays Ferry Avenue as the bridge comes to grade on the west side of the river. The Master Plan recommends extending 47th Street further south, so that it crosses Grays Ferry Avenue and descends to grade south of the Grays Ferry Bridge structure and west of the existing freight rail line. A new signalized intersection at 47th Street and Grays Ferry Avenue would regulate traffic flow.



-  Existing 47th Street to Grays Ferry Avenue
-  Proposed signalized intersection
-  Proposed 47th Street extension
-  Proposed River Road

NEW RIVER ROAD

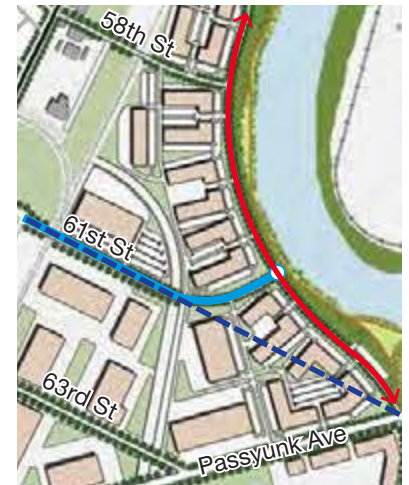
South of the Grays Ferry Bridge, 47th Street would transition to the new River Road, a two lane road running west of the existing freight rail line. The River Road would proceed south, skirting the western edge of historic Bartram’s Garden and continuing along the old Eastwick Avenue alignment (which currently exists only in disconnected segments). At 56th Street, the River Road would turn east to the Schuylkill River and then parallel the river as it proceeds south to Passyunk Avenue. The new River Road will: (1) connect the west bank of the Innovation District directly to University City; (2) open up new development opportunities, including riverfront sites with skyline views; (3) provide beautiful, convenient public access to the river and Schuylkill Banks Trail; and (4) transform east-west streets, which currently dead-end at the river, into a functioning street grid.

NEW 61ST STREET ALIGNMENT

Realigning a small section of 61st Street to terminate at the River Road (instead of Passyunk Avenue), creates a highly functional street grid and replaces an oddly angled, confusing intersection at 61st and Passyunk with a simpler, safer intersection at River Road and Passyunk. This would also create a connector street, providing neighboring residents with access to the river, trail, and the future Passyunk Crescent Park. The safety, connectivity and access benefits are substantial, however, it should be noted that this change would modify access to several existing properties and businesses. Close coordination with these owners will be essential to developing a viable implementation plan for realignment of 61st Street.

RIVER ROAD SOUTHERN EXTENSION

In the early phases of the Master Plan, the River Road intersects with Passyunk Avenue at the base of the bridge, creating a key intersection that allows traffic to proceed east across the bridge to access the east bank of the Innovation District East, the Energy Corridor, I-76, and South Philadelphia. Subsequently, the road is extended to 67th Street. Depending on the nature of the long-term development and use of PES's Schuylkill Tank Farms (land used for the storage of petroleum in large tanks), it may be possible one day to extend River Road further south, parallel to the 60th Street track right-of-way, terminating at Bartram's Avenue, just north of I-95 and PHL. If this full extension is realized, the River Road will create a four-mile, north-south internal roadway to and through the Lower Schuylkill, making seamless connections to University City and PHL.



--- Existing 61st Street alignment
 — Proposed 61st Street alignment

GRAYS FERRY AVENUE

Grays Ferry Avenue extends nearly two miles, from 23rd and South Streets to 48th Street and Woodland Avenue. The Master Plan leverages this connection to link the Innovation District to Center City on the east and West Philadelphia on the west. The Grays Ferry Bridge provides additional benefits in the Master Plan, by stitching together the east and west banks of the Innovation District and supplying part of a key circulation loop between the Innovation District and University City.

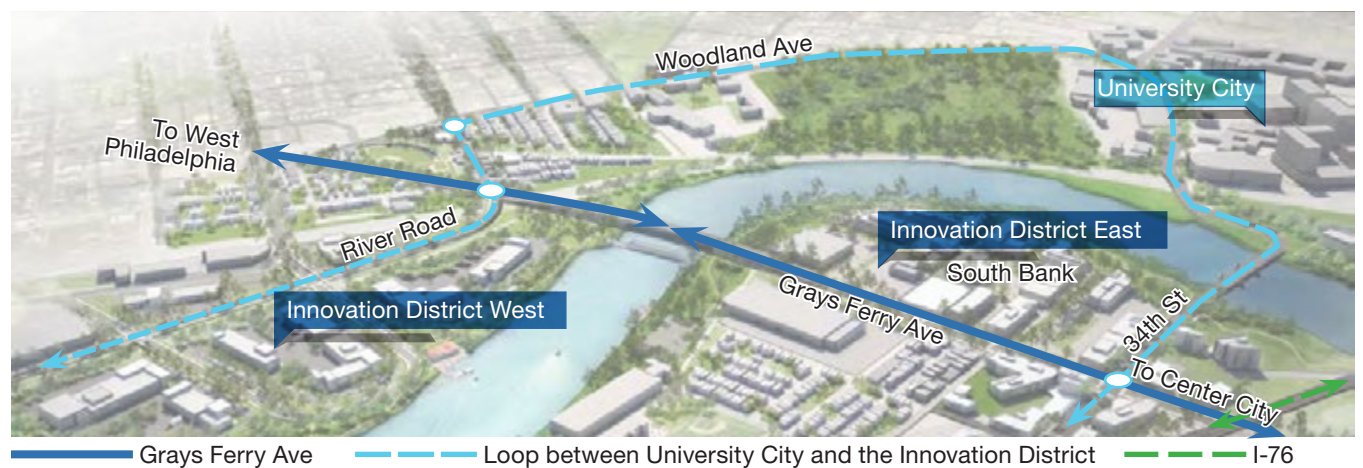
Aside from its importance as a key connector, the Grays Ferry corridor is also supplying much of the early momentum in the Innovation District, with the area between 34th and South Streets seeing important growth in institutional-related uses such as South Bank and CHOP's planned research campus on nearby Schuylkill Avenue. The Master Plan seeks to upgrade the appearance of this important corridor with landscape and streetscape, as well as create a signature gateway at 34th Street.



Southern extension of River Road to I-95 and PHL

I-76

Improving the efficiency, safety, and ease of connections for commuters from the Innovation District East and University City to I-76 is very important. The Master Plan recommends improvements to on-ramps for I-76 eastbound traffic by eliminating the 34th Street slip ramp and instead creating a gradual southbound extension of 34th Street starting at Wharton Avenue and merging into Warfield Avenue. A dedicated on-ramp is created at Moore Street and allows traffic to merge onto eastbound I-76 just north of Maiden Lane.



— Grays Ferry Ave - - - Loop between University City and the Innovation District - - - I-76

STRENGTHEN ACCESS AND CONNECTIVITY

CAMPUS CONNECTIONS



LOGISTICS HUB

ESSINGTON AVENUE

In the Logistics Hub, Essington Avenue provides a high-capacity, north-south arterial that will continue to serve as the primary access and transit route for trucks and vehicles. Essington Avenue links to PHL and I-95 on the south via Bartram Avenue. At the northern boundary of the Logistics Hub, Essington Avenue's L-shaped connection to Passyunk Avenue provides an efficient connection eastward across the river to I-76, Center City, South Philadelphia, and The Navy Yard. The Master Plan envisions Essington Avenue continuing in its role as the central spine of the Logistics Hub. To improve its appearance and functionality, the Master Plan recommends installing green infrastructure, landscaping, and streetscaping in the extremely large ROW to create an attractive main street for this campus while simultaneously improving its stormwater management capabilities. The existing green strip between the road and the service lane can accommodate a multiuse trail and attractive stormwater bioswales.



ENERGY CORRIDOR

Land on the east side of the Lower Schuylkill is held almost exclusively by PES, PGW and CSX, resulting in little need and few opportunities for public circulation roads. Opportunities for improvement are concentrated on the eastern boundary of this campus, along 34th Street (as discussed in Campus Connections - Innovation District, p.70) and 26th Street.

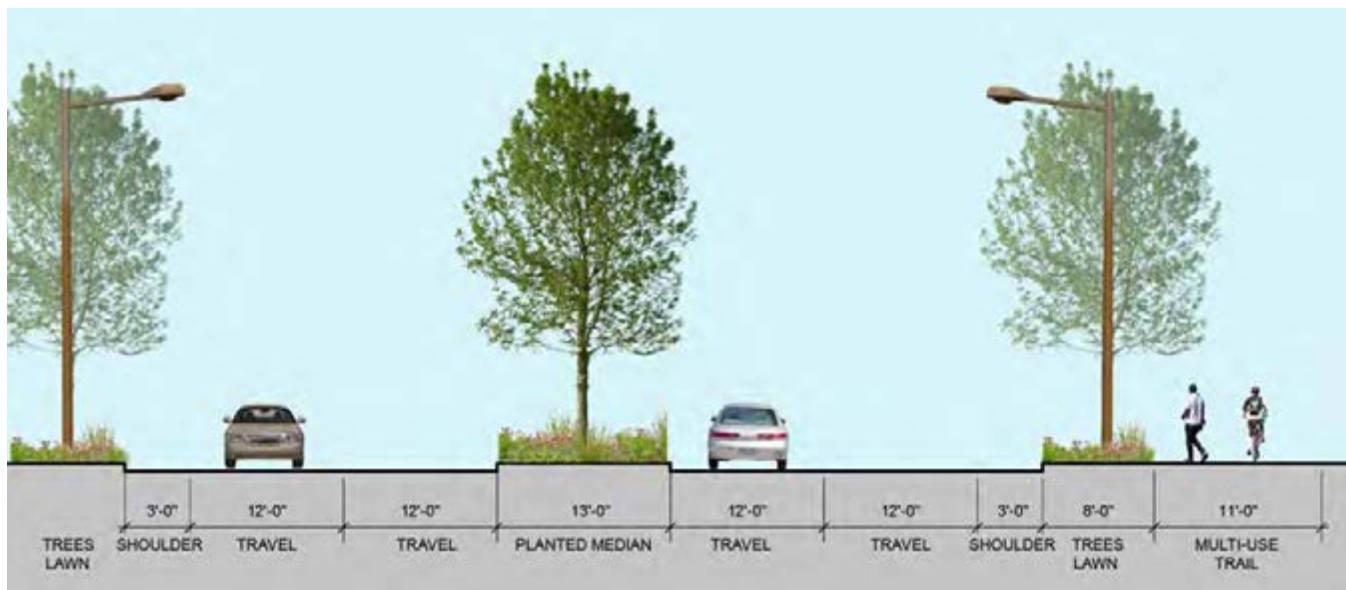
26TH STREET

The 26th Street corridor provides access north to I-76 and University City and access south to the Navy Yard and PHL. Its most important function, however, is as the main route connecting PHL to Center City and points beyond.

In years past, the 26th Street corridor has seen modest streetscape improvements to its east and west sides. Over the long-term, the plan calls for more ambitious improvements that include replacing the existing jersey barrier with a 13'-wide planted median and additional trees and lawn areas on either side of the cartway. These outer areas can also function as stormwater collection areas. The intersection of 26th Street and Penrose Avenue accommodates an off-road, multiuse trail that will tie into the Navy Yard access road. These streetscape and landscape improvements can transform the approach to the city for the majority of travelers arriving from PHL, as well as create recreational and stormwater benefits.



Important connections along the Energy Corridor



Proposed 26th Street multimodal trail and streetscape improvements

STRENGTHEN ACCESS AND CONNECTIVITY

TRANS-SCHUYLKILL ACTIVITY

BRIDGES

One of the great challenges to create physical east-west unity in the district is the river itself. Over the four miles of the study area, only four bridges span the Schuylkill River, compared to the six bridges servicing nearly every block where the river runs through Center City.

The lack of east-west connections is due mostly to having a single-land holder on nearly the entire east side preventing street extensions into or through their industrial property. Depending on the type and volume of development over the long-term, one or more additional crossings may make sense to provide additional connectivity, alleviate congestion on existing roads, and better integrate the district within the city. For the foreseeable future, the master plan recommends improving existing east-west bridges and their gateway intersections to better accommodate all users.

PASSYUNK AVENUE BRIDGE

The high, fast, and traffic-heavy Passyunk Avenue Bridge is in need of surface and structural repairs in the coming years. The Master Plan recommends that improvements include pedestrian and bicycle accommodations so the bridge can safely accommodate all users. Passyunk Avenue along with Grays Ferry Avenue and Penrose Avenue (that becomes West Moyamensing Avenue) extend across the study area and into the neighborhoods of South and Lower South Philadelphia, providing points of connection for residents to the Lower Schuylkill. Making safe and convenient access to the recreational and transportation amenities is an important guiding principle of the Master Plan; these amenities will also support additional modes of commuting. The western end of the Passyunk Bridge will provide access to the planned Passyunk Crescent Park.



The Lower Schuylkill has bridges spaced over one mile apart, compared to every block in Center City



Passyunk Bridge view westward, illustrating the potential for multimodal transit and excellent views of Passyunk Crescent Park

EARLY ACTION: GRAYS FERRY BRIDGE

The Grays Ferry Bridge is slated for structural repairs in the short-term. The City, PIDC, and other stakeholders are coordinating with the Pennsylvania Department of Transportation (PennDOT) to incorporate pedestrian and streetscape improvements to the bridge as part of the construction work.

The bridge has been identified by the Bicycle Coalition and the Philadelphia City Planning Commission as a high-priority project. The pedestrian and bicycle improvements to the Grays Ferry Bridge will serve users in both the short and long term. In the short term, people can use the Grays Ferry Bridge pedestrian accommodations as the means of getting across the river from Grays Ferry Crescent while SRDC continues to raise funds for the recreation-only railroad bridge immediately adjacent to its south.



Improvements to Grays Ferry Bridge — street section facing east

LONG-TERM VISION

If redevelopment of the North Yard (situated on the east bank between Passyunk Avenue and More Street) is flexible enough to accommodate additional transportation infrastructure, it opens the door to a visionary and transformational concept to create a new bridge across the Schuylkill River that connects the east and west sides of the Lower Schuylkill. This bold, long-term vision would help alleviate congestion, by providing an alternate crossing between South and West Philadelphia neighborhoods. A new bridge could extend 58th Street from West Philadelphia across the river and through the North Yard, passing under I-76 via a tunnel to Snyder Avenue in South Philadelphia. Such a citywide connection would provide access from Cobbs Creek in West Philadelphia, all the way to the Delaware River waterfront. It would be a great, long-term achievement for Philadelphia if the development of the North Yard could accommodate such transformational, citywide connections.



STRENGTHEN ACCESS AND CONNECTIVITY

TRANSIT

DETERMINING A STRATEGY

Expanding the limited array of transit options within the Lower Schuylkill is important for several reasons. A convenient, efficient transit loop can effectively link the Innovation District with University City, attracting more expansion activity and new businesses. For all of the campuses, transit will enhance the ability of employees to access these sites, opening up new employment opportunities for Philadelphians and others within the regional transit network. It can also provide new linkages to PHL and University City. A successful transit strategy can also have a positive impact by reducing demand on roadways and improving air quality through reduced vehicle emissions. As the campuses develop and employment numbers increase, a progressive transit strategy can provide key support for continued, sustainable growth, particularly in the Innovation District. Some exciting opportunities are detailed in this report, however, detailed studies will be needed as development progresses to determine appropriate transit modes, routes, and other features based on rider demographics, origin points, and final destinations.

BUS AND SHUTTLE SERVICE

Bus and shuttle service offer the most flexible, cost-effective method for providing transit support to the Lower Schuylkill as it expands and fills out with employment centers. The Master Plan recommends a dedicated express shuttle service for the Innovation District, as well as extending existing SEPTA bus routes throughout the district as demand and density increase.

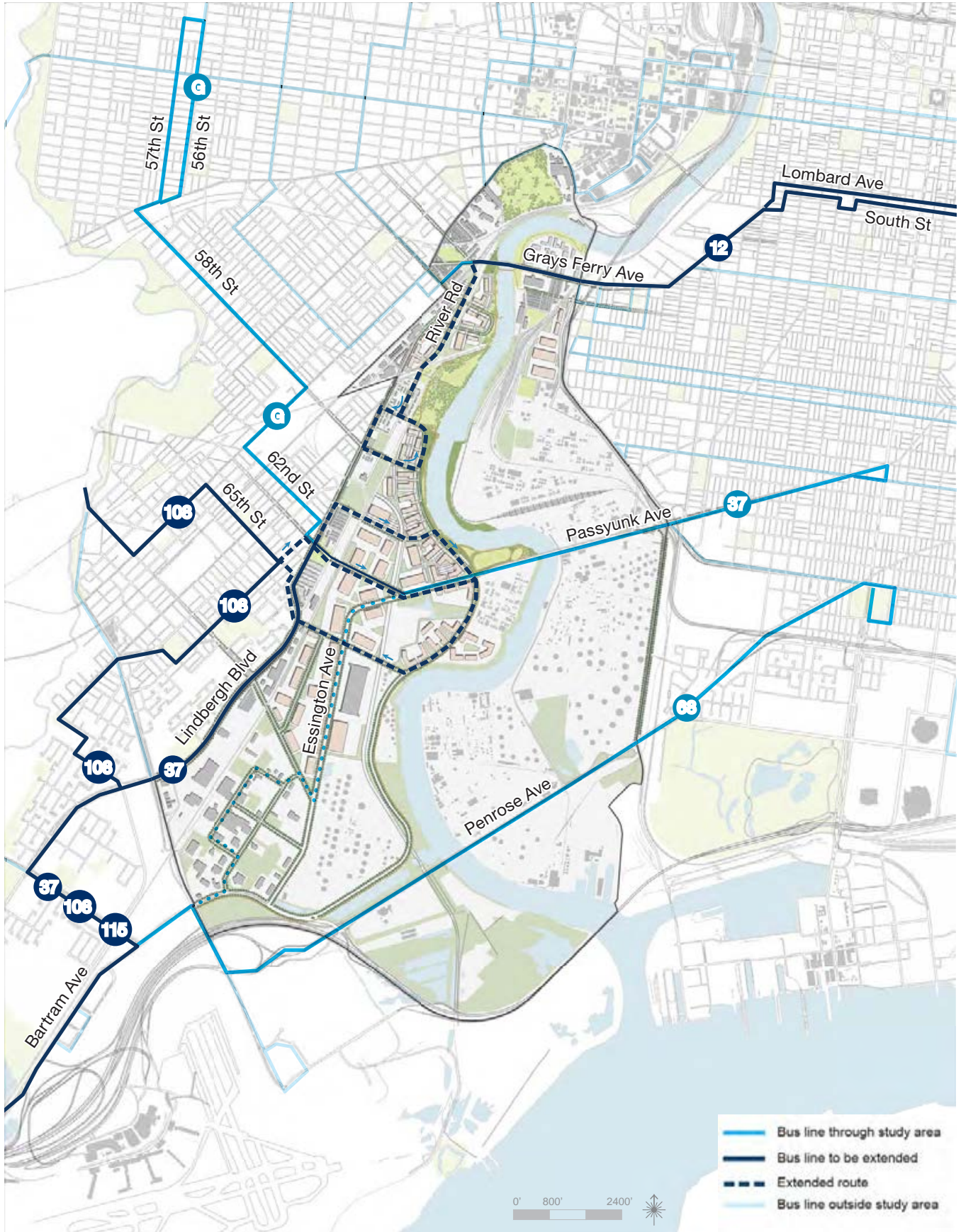
A dedicated, express shuttle service would connect both sides of the Innovation District and University City, providing a convenient link for users who travel between these locations. The actual location of stops can be determined as development progresses and demand crystallizes. Over time, this shuttle is envisioned to have 12-hour service with headways as often as every 15 minutes. The existing Navy Yard circulator and the LUCY shuttle in University City provide good models and a variety of options exist for operation and ownership of the shuttle service.

Depending on the manner in which development unfolds, existing SEPTA lines may also provide transit opportunities. Expansion of the Route 12 bus would connect both sides of the Innovation District with Center City, while extension of the Route 37 and 108 buses could provide access to the Innovation District and Logistics Hub from Southwest Philadelphia. Modifications to the existing Route 37 bus, which traverses the Schuylkill River at Passyunk Avenue, can similarly expand transit coverage within the Lower Schuylkill.



- Loop 1
- Loop 2
- - - Extension

Proposed dedicated shuttle lines, evolving as a series of extended loops as future development drives demand.



Proposed extension of preexisting SEPTA transit routes into the Lower Schuylkill

STRENGTHEN ACCESS AND CONNECTIVITY

TROLLEY AND RAIL

Currently, SEPTA's Route 36 trolley and SEPTA's Regional Rail Airport Line briefly transect the Innovation District, then split off to the south and west, providing minimal access or transportation benefit to the Lower Schuylkill. The Master Plan seeks to identify realistic approaches to make these somewhat tangential transit assets provide a tangible benefit or marketable feature.

CONNECT SERVICES TO EXPAND AIRPORT ACCESS

Currently, PHL travelers and employees can use SEPTA's Airport Line for a one-seat ride to PHL. The line makes no stops between University City Station and PHL, however, limiting its utility for PHL travelers and users on the west bank of the Innovation District, as well as neighboring communities and residents of Southwest Philadelphia. Extending SEPTA's Route 36 trolley (one of SEPTA's most highly utilized routes, connecting Center City, University City, and Southwest Philadelphia) to the airport would significantly expand options for one-seat transit access to the airport. Alternatively, the Route 36 trolley line could be connected to the Airport Line at Eastwick Station (currently one of the least-utilized stations in the Regional Rail network) to provide a two-seat transit connection to PHL. This option would have the potential to increase utilization of Eastwick Station, which was built as a temporary station in the late 1990s to service the then-new PNC building off Bartram Avenue. Both concepts are consistent with the recommendations of *Philadelphia2035* to enhance connectivity to the airport.



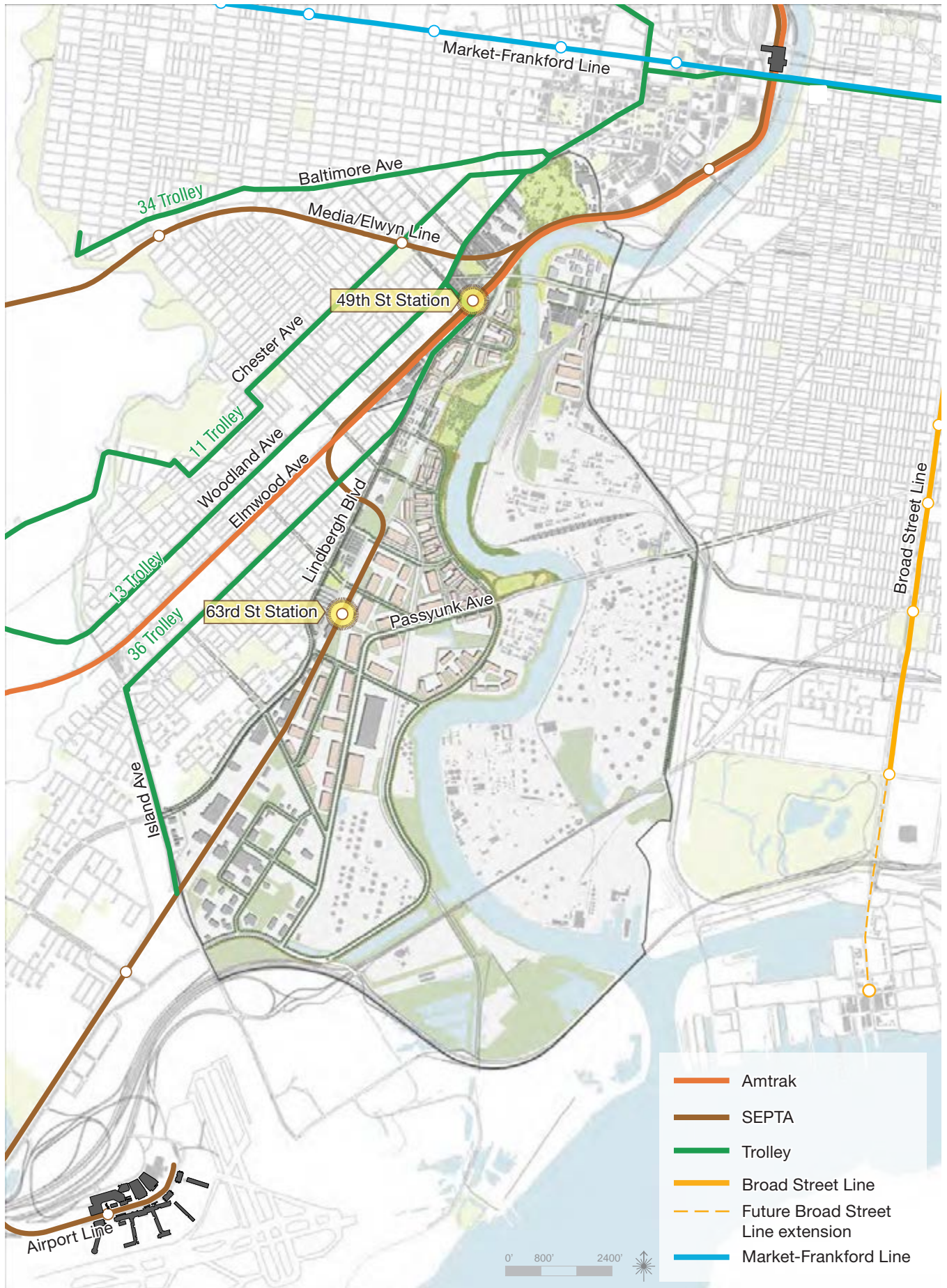
Proposed additional stops along SEPTA's Airport Line.

ADDING STOPS TO SEPTA'S AIRPORT LINE

Adding new stops to SEPTA's Airport Line is another way to improve transit connectivity between the Lower Schuylkill and PHL, as well as University City and Center City. Due to the high capital cost and operational modifications required for a new station, significant ridership potential must exist to justify such a project. At full build-out, there are two locations within the Lower Schuylkill which could provide sufficient density and demand to support new stations.

A new station at 49th Street would support employees traveling to and from the Innovation District, as well as facilitate easy back-and-forth between the Innovation District and University City. It would also serve as a key transit location for students and staff at the University of the Sciences, as well as residents of nearby communities. Depending on the density of future redevelopment, an additional station could also be viable at 63rd Street, servicing the Innovation District south of Bartram's Garden, the northern segment of the Logistics Hub, and nearby residential communities.

It should be noted that adding stations runs counter to *Philadelphia2035's* goal of expediting service between Center City and PHL, although it furthers the goal of enhanced transit coverage and connectivity. In the end, it will require a balanced assessment by City leaders, based on the pattern of new development that evolves, the costs and benefits of faster PHL service, and the physical and technical realities of both options.



Two potential station locations as the Lower Schuylkill develops and if demand warrants a passenger, fixed rail option.

MASTER PLAN IMPROVE THE ENVIRONMENT

An innovative, district-wide stormwater management program can transform the appearance of the Lower Schuylkill, while effectively managing runoff and providing a competitive advantage. Support for brownfield remediation is essential to establishing viable new development sites and attracting private investment.

KEY GOALS

- Create a district-wide stormwater management system to provide environmental, aesthetic, and competitive benefits.
- Use road and open space projects to incorporate stormwater infrastructure.
- Support brownfield remediation on public and private parcels.
- Encourage sustainable development.

A DISTRICT-WIDE STORMWATER APPROACH

PWD is deploying an innovative, ambitious initiative (Green City, Clean Waters) to reduce the amount of stormwater entering its combined storm/sewer system. New development will be required to satisfy PWD requirements that address water quality, channel protection, and flood control. Any development over one acre requires a National Pollutant Discharge Elimination System (NPDES) Permit. Recent PWD regulations, require commercial and industrial property owners to manage one inch of stormwater on their site for 24 hours; existing properties can implement green stormwater management techniques to accomplish this and reduce their fees. Many industrial property owners have been frustrated by the costs of these systems, which often require significant investments in stormwater retention and/or infiltration systems on their sites. In addition, a property-by-property approach is creating a disconnected web of stormwater “jails” that do little to enhance to the overall appearance of their area.

To address these issues, the Master Plan proposes a district-wide stormwater management system that will satisfy a portion of the overall stormwater management obligation associated with new development in the Lower Schuylkill, thus reducing the stormwater burden on individual property owners. A district-wide approach also creates opportunities to transform the appearance of the campuses by using attractive green infrastructure elements (e.g. vegetated bioswales) in public green space, roadway trails, and right-of-ways.

A green stormwater infrastructure project of this scale has never been implemented in Philadelphia, providing an opportunity for the Lower Schuylkill to serve as a pilot project for the city and the nation.



Example bioswale buffer adjacent to pedestrian trail



STORMWATER MANAGEMENT ZONE

BENEFITS

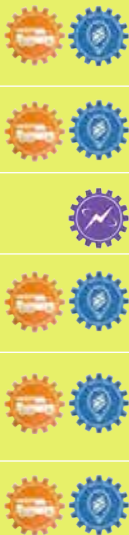


- Lower Schuylkill Stormwater District

- Designed to capture and manage stormwater within the Lower Schuylkill through a range of public and private treatment zones
- Extensive network provides plug-in capabilities for individual property owners and offers the opportunity for transformative appearance and functionality district-wide

PROPOSED STORMWATER INFRASTRUCTURES

BENEFITS



- 1** • River Road
- 2** • Essington Avenue
- 3** • 26th Street
- 1** • Internal Circulator Streets
- G** • Schuylkill Banks Trail
- X** • Passyunk Crescent Park

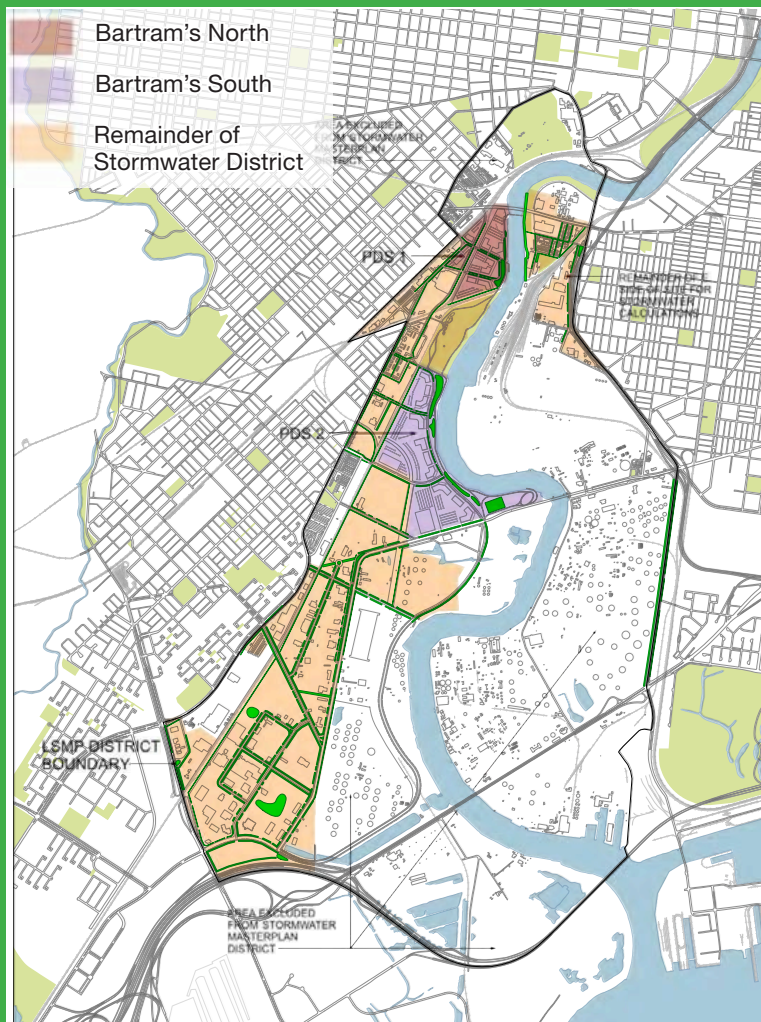
- Green infrastructure in ROW handles a portion of stormwater obligation for the west side of the Innovation District and improves the appearance the campus
- Embedding stormwater elements in median and ROW alleviates a portion of the stormwater burden for new development and significantly upgrades corridor appearance
- Planted medians capture stormwater
- Green infrastructure in ROW handles a portion of the stormwater obligation for the west side of the Innovation District and new development in the Logistics Hub
- Integrating stormwater management features under the trail and in 100' riparian buffer handles a portion of the stormwater burden for the west side of the Innovation District
- Incorporating stormwater elements handles a portion of the stormwater burden for the west side of the Innovation District

IMPROVE THE ENVIRONMENT STORMWATER MANAGEMENT



Rainwater garden in curb bump out

The Master Plan identified 957 acres within the Innovation District and the Logistics Hub that can support redevelopment over the next 22 years. Based on the development contemplated in the Master Plan and existing stormwater best management practices (BMP) loading requirements from PADEP and PWD, the planning team projects that an 80-acre, district-wide stormwater system (8.3 percent of 957 acres) can handle up to 50 percent of the total stormwater burden. The remainder of the stormwater burden would be handled by individual property owners on their sites. The Energy Corridor is not included in the proposed district-wide system, as landowners currently handle their own stormwater on-site and that is expected to continue.



COMPREHENSIVE STORMWATER MANAGEMENT

In many cases the 80 acres of green stormwater infrastructure will provide district-wide public amenities, thereby creating an integrated system of functioning green infrastructure, recreation uses, and open space. A variety of green stormwater elements such as bioswale medians and setbacks, rain gardens, and generous tree plantings along new and existing streets where possible will transform the study area. This system could be operated by, PWD, another government or a Business Improvement District.



Typical bioswales collecting runoff from streets and sidewalks

BENEFITS TO NEW DEVELOPMENT

The district-wide approach allows property owners who redevelop their properties in accordance with the master plan to reduce the amount of stormwater that must be handled on their parcel, thus reducing the capital investment required to comply with the stormwater requirements. Even if property owners are required to contribute to the cost of a district-wide system, the planning team believes that it will yield an overall savings due to the economies of scale that can be achieved with larger green stormwater elements and a district-wide system.

The district-wide system could also be designed to offer expedited “Green Review” by PWD to property owners who satisfy requirements for their site’s disconnected impervious area (DCIA) through a combination of on-site and district-wide features. This would be extremely attractive to property owners who currently must show 95 percent DCIA on-site to qualify for a Green Review. The Green Review would shorten permitting time from months to days, creating another benefit for property owners engaged in redevelopment.



Industrial uses tend to have extremely high levels of impervious surfaces, subjecting them to high PWD stormwater fees if stormwater is not managed according to the new standards.



- PRIVATE STORMWATER TREATMENT ZONE**
- Green roofs
 - Drainage swales
 - Porous paving
 - Storage tanks
 - Planted areas

- PUBLIC STORMWATER TREATMENT ZONE**
- Vegetated bioswales
 - Stormwater wetlands
 - Porous surfaces
 - Subgrade storage
 - Storage under recreation areas
 - Habitat

IMPROVE THE ENVIRONMENT

BROWNFIELDS

DEVELOPING A SOLUTION

Environmental contamination is a profound deterrent to redevelopment within the Lower Schuylkill. Remediation costs, as well as the time required, are significant. To overcome these barriers, public sector support for brownfields remediation is essential. The challenge is how to design and implement an effective program in a large district with a multitude of private owners, extensive contamination, and limited public resources.

A critical first step is an inventory of available funding resources for brownfield remediation. Developing these into a coordinated portfolio of local, state, federal, and private sector resources will provide a set of distinct and interlocking tools that can be deployed in the Lower Schuylkill on a targeted, project-by-project basis. Establishing this portfolio of brownfield funding programs on the front end will speed deployment during the implementation phase.

The public sector sponsors should also explore innovative approaches to utilizing Pennsylvania's voluntary cleanup program, the Land Recycling Program (Act 2). These approaches could include the development of district-wide standards and/or grouping multiple properties as a single "site" to maximize efficiencies in the remediation process. Development of soil management plans and land use covenants that can be pre approved by the agencies should also be considered, to streamline and expedite the review process.

PRIORITIZING REMEDIATION EFFORTS

Equally important is developing a system to prioritize cleanup projects so a critical mass of opportunities begins to emerge, rather than a dispersed set of smaller opportunities. Focusing initial cleanup efforts in the early action areas identified in Section 5, Implementation, is a smart way to create early redevelopment opportunities while maximizing the value of other public investments, such as stormwater features, roadway improvements, streetscaping, landscaping, green space, and public amenities. PIDC is in the process of remediating two properties within these early action sites. Remediation of other publicly owned sites within these areas should also be explored. In subsequent phases of the Master Plan, remediation resources should be targeted to areas where public infrastructure is being deployed to spur new development.

BUILDING PARTNERSHIPS AND AWARENESS

Once resources have been identified and priorities are established, a proactive outreach program is needed to connect with Lower Schuylkill property owners and educate them on available resources and the benefits of undertaking a remediation project. These benefits include reduced exposure to enforcement actions, liability relief under Pennsylvania's voluntary cleanup program, and increased market value. Again, outreach should be targeted to the areas of highest priority.

The City and PIDC are already taking steps to address this important issue by developing partnerships with the U.S. Environmental Protection Agency (USEPA), the Commonwealth of Pennsylvania's Department of Community and Economic Development (PADCED) and Department of Environmental Protection (PADEP) and the City of Philadelphia to support pilot brownfield remediation projects in the priority development sites of the Innovation District. In addition, PIDC and USEPA are partnering on a new revolving loan fund to provide low-cost loans for environmental cleanup projects within the Lower Schuylkill. Continuing and expanding these efforts is crucial to the long-term revitalization of the district.

IMPROVE THE ENVIRONMENT SUSTAINABILITY

ENCOURAGING SUSTAINABLE DEVELOPMENT

Sustainable development should be encouraged and supported throughout the Lower Schuylkill. Voluntary development guidelines should be developed to identify key features sought by the public sector. Examples may include LEED certification, preferred green infrastructure elements (e.g., green roofs, vegetated property buffers), and alternative energy sources. Once developed, a thoughtfully crafted portfolio of incentive programs (federal, state, local, and project-specific) can be deployed by the public sector to incentivize new development to incorporate these features. Public sector sponsors should also explore the viability of incorporating energy-efficiency technology from the EEB Hub at the Navy Yard into new and retrofit development, as well as the potential for integrating alternative energy sources such as natural gas turbines, solar, and other mechanisms into emerging development in order to improve its energy profile. Bioremediation may be appropriate for contaminated sites with limited potential for redevelopment.



Typical trail section at river bulkhead, with 100' development setback that serves as functioning green stormwater element while creating needed open space along the river

CLIMATE CHANGE ADAPTATION AND MITIGATION

Over the 22-year span of the Master Plan, the effects of climate change will begin to emerge, including heightened precipitation, flooding events, and excessive heat cycles. New development must begin to incorporate mitigation and adaptation measures to ensure long-term sustainability and competitiveness.

MEASURES TO PROMOTE LONG-TERM SUSTAINABILITY.

<p>District-wide green infrastructure system will increase resilience to flooding and drought events:</p> <ul style="list-style-type: none"> • Bioswales • Tree trenches • Rain gardens • Stormwater wetlands 	<p>New green space, trees, and vegetation will aid in offsetting an increase in the heat island effect.</p>	<p>New developments can benefit through by incorporating:</p> <ul style="list-style-type: none"> • LEED standards • Green roofs • Alternative energy systems • Collective stormwater management 	<p>Thoughtful adaptation of shorelines and careful design and construction of new infrastructure, will help manage risk from an expected rise in sea level and increased amounts of precipitation.</p>
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MASTER PLAN INTEGRATE PUBLIC SPACE

Provide Philadelphians with dedicated access to the Lower Schuylkill River while leveraging the waterfront location and open space amenities to attract high-quality businesses.

KEY GOALS

- Public access to the river
- Public parks approximately one mile apart
- Five miles of new recreation trails along or near the river
- Dedicated bicycle lanes on renovated and new streets and bridges
- Pedestrian amenities

AN INTEGRATED TRAIL NETWORK

Building on existing green assets and trail amenities, the Master Plan recommends integrating and expanding existing trails into a network which reaches an exciting array of destinations, including the northern section of the Schuylkill River Trail, the East Coast Greenway, FDR Park, Bartram's Garden, Fort Mifflin, and the John Heinz National Wildlife Refuge. To accomplish this, the Master Plan recommends extending the Schuylkill Banks trail progressively southward, as redevelopment progresses and activity increases. Linkages to other trails and destinations are incorporated as roadways are upgraded and expanded.



Grays Ferry Crescent





Programming along Schuylkill Banks Trail



PROPOSED TRAIL

BENEFITS

	<p>1 • Schuylkill Banks Trail (Grays Ferry Bridge Street to 61st Street)</p>	<ul style="list-style-type: none"> • Connects to existing trail, significantly expanding the trail network. • Pedestrian and bicycle access between University City, South Bank, and the rest of the Lower Schuylkill
	<p>2 • Schuylkill Banks Trail Extension (Passyunk Ave to Bartram's Ave)</p>	<ul style="list-style-type: none"> • Provides additional trail opportunities south of Passyunk Crescent Park with the ultimate intent of connecting to Fort Mifflin

PROPOSED GREEN SPACES

BENEFITS

	<p>1 • Passyunk Crescent Park</p>	<ul style="list-style-type: none"> • Transforms 25-acre strip into a multipurpose open space with public river access, recreational amenities and significant opportunities for green stormwater infrastructure.
	<p>○ • Public river sports center</p>	<ul style="list-style-type: none"> • A public river sports center is proposed at the terminus of 49th Street and Botanic Avenue, along the Schuylkill Banks Trail.

INCORPORATE PUBLIC SPACE TRAIL NETWORK

FIRST PHASE OF TRAIL NETWORK



Upgraded bicycle amenities and a proposed public river sports center create a trail head along the extended Schuylkill Banks Trail at 49th Street and Botanic Avenue

The Schuylkill Banks Trail currently terminates at the eastern base of the Grays Ferry Bridge. In the near term, the Master Plan recommends pedestrian and bicycle improvements to the Grays Ferry Bridge to encourage movement between the east and west sides of the Innovation District. This bridge will be important for new users at Penn's South Bank campus and new businesses on the west bank of the Innovation District. Over the short to medium term, the Master Plan supports adaptive reuse of the existing rail bridge (just south of the Grays Ferry Bridge) by the Schuylkill River Development Corporation to connect the Grays Ferry Crescent portion of the trail to the new trail segment on the west bank via a dedicated, river-level recreational connection.

As the development of Bartram's North, one of the Master Plan's priority development sites, progresses, 49th Street will serve as an important pedestrian and bicycle connector street from the West Shore neighborhood down to the Schuylkill River. The Master Plan envisions a publicly accessible river sports center at 49th Street and Botanic Avenue, offering programs, launch space, and storage to all kinds of recreational river users. The Schuylkill Banks Trail will continue south, along the river's edge, move inland through Bartram's Garden, then return to the river at 56th Street.



First phase of the trail network through the Innovation District, with proposed public river sports center at the 49th Street trail head.

SECOND PHASE OF TRAIL NETWORK

The trail extension parallels the river's edge from 56th Street down to Passyunk Avenue where it culminates in Passyunk Crescent Park. The trail will be situated within the 100' riparian buffer which should be designed to serve as an active green stormwater element. This green ribbon will add significant character and activity to the industrial district that looks onto it from the other side of River Road and is a defining element to the Lower Schuylkill as a whole.



Conceptual design of Bartram's Mile running alongside the western edge of Bartram's Garden's historic core entrance (Philadelphia Parks and Recreation, and Andropogon Associates)

LONGER-TERM PHASES OF THE TRAIL NETWORK

Developing the trail south of the Passyunk Bridge becomes significantly more complicated, due to the large private land holdings along the west side of the river and the nature of the industrial uses. The Master Plan recommends that the trail turn inland south of Passyunk and parallel the River Road until 67th Street.

If the River Road is ever continued southward or the 60th Street track is constructed, the trail should be increased so that it parallels one or both of these pieces of infrastructure to the Platt Bridge. At this point, users could turn on to Bartram Avenue to reach the John Heinz National Wildlife Refuge or continue to Fort Mifflin. The many uncertainties associated with this segment of the trail make it difficult to formulate recommendations. We recommend reassessing the feasibility of this trail phase as the variables evolve.



BARTRAM'S MILE

Philadelphia Parks and Recreation (PPR), the Schuylkill River Development Corporation (SRDC), PennPraxis and the John Bartram Association (JBA), are leading a process to reimagine what they are calling "Bartram's Mile." Bartram's Mile is a mile long extension of the Schuylkill Banks Trail along the western banks of the Tidal Schuylkill between Grays Ferry Avenue and 58th Street. As an integral component of the Schuylkill Banks extension, this new trail has the potential to provide riverfront access and recreation opportunities to an underserved neighborhood as well as help restore an important watershed.



Distribution of parks at approximately one-mile intervals

INCORPORATE PUBLIC SPACE OPEN SPACE

PARKS EVERY MILE

The length of the Lower Schuylkill River, with all of its twists and turns, from the Woodlands to Fort Mifflin is seven miles long. It would take an average rider about 50 minutes to bicycle from one end to the other. The Woodlands and Bartram's Garden are located about one mile apart—a five-minute bicycle ride or a leisurely 20-minute walk. The Master Plan recommends building on this one-mile increment and proposes open spaces at Passyunk Crescent Park and on existing forested land within the Logistics Hub to provide key stopping points and destinations along the long-term alignment of the trail.

PASSYUNK CRESCENT PARK

One such open space is the proposed Passyunk Crescent Park, a new greenspace that will be located approximately one mile south of Bartram's Garden, along a graceful bend in the Schuylkill River. Marked primarily by blight, vacancy, and low-level scrap uses today, Passyunk Crescent Park would transform this 25-acre area into a beautiful, multipurpose open space with public river access, recreational amenities (including the Schuylkill Banks trail, and passive space) and significant opportunities for green stormwater infrastructure. Its waterfront location and skyline views are expected to provide an important, marketable feature for development sites along the new River Road, while simultaneously functioning as a stormwater management area and a key public asset for city residents and visitors.



Rendering of Proposed Passyunk Crescent Park



INCORPORATE PUBLIC SPACE NEIGHBORHOOD ACCESS



58TH STREET GREENWAY

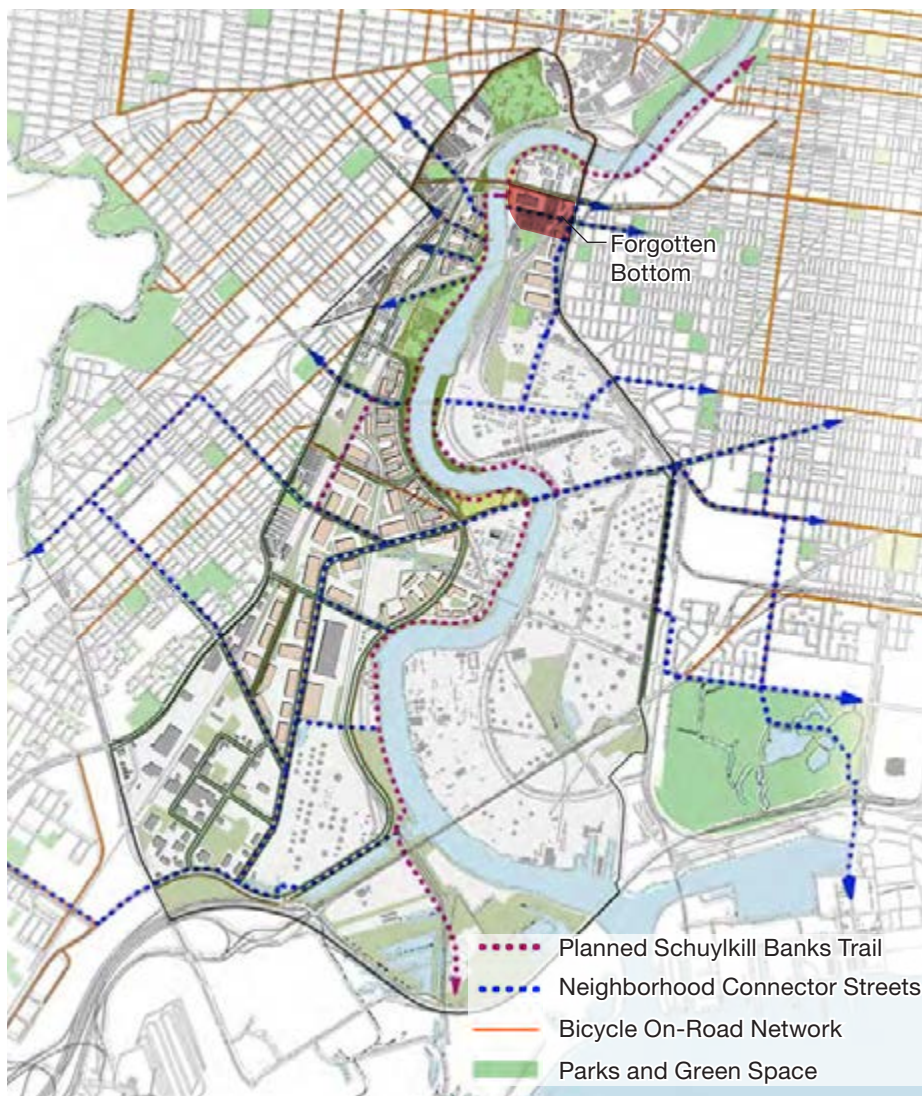
58th Street is an important connector, as it connects Bartram's Garden to Cobbs Creek and the East Coast Greenway, a nearly 3,000-mile bicycle and pedestrian trail system stretching from Canada to Key West, Florida. The Pennsylvania Environmental Council is developing segments of the vast trail network with local partners and the East Coast Greenway Alliance.

CONNECTOR STREETS

The Master Plan improves public access to the river by improving existing streets that lead directly to the river and the Schuylkill Banks Trail. Within the study area these streets will see improved streetscape amenities as adjacent development occurs, such as new sidewalks, bicycle lanes, pedestrian crosswalks, and green stormwater elements like rain gardens and tree trenches. Streets such as 47th, 49th, 51st, 58th, and 63rd have been identified as primary connector streets because they extend deep into Southwest Philadelphia, affording direct access to the greatest numbers of residents. Streets such as 56th and 61st provide river access to a more immediate population. For example, the residents of Bartram's Village will be able to access the river and the trail with less than a quarter of a mile walk down 56th Street. A fishing and lookout pier is recommended for the trail head at 56th Street, providing recreation opportunities and views towards the city skyline on this scenic stretch of the river.



Neighborhood access from the east side is more difficult to attain due to the significant, physical divides that separate neighborhoods from the river. In the northern section, the Forgotten Bottom and Grays Ferry communities can easily connect to the existing section of the trail at Grays Ferry Crescent. Until the dedicated trail bridge is operational, residents from Forgotten Bottom can access the trail on the west bank by crossing the Grays Ferry Bridge. Pedestrian and bicycle upgrades slated for the near future are expected to significantly improve the experience of crossing that bridge. South Philadelphia residents, however, are separated from the river by I-76 and the refinery. Improving bicycle and pedestrian amenities on the Passyunk Avenue Bridge will ultimately provide these residents with a convenient, appealing access route to the Schuylkill Banks trail, Passyunk Crescent Park and riverfront amenities on the west bank.



IMPLEMENTATION

Priority Development Sites 95

- > Bartram's North
- > Bartram's South

Economic Development Tools 119

Phasing Strategy 121

Cost and Benefit 129

5





IMPLEMENTATION PRIORITY DEVELOPMENT SITES

Focusing early implementation efforts on key sites within the Innovation District will spur redevelopment and establish a high-quality precedent for future growth.

LEVERAGING MOMENTUM

Penn's South Bank

- 23 acres
- 560K–1M SF of proposed development
- Research facilities and university-related functions and private sector

CHOP - Schuylkill Ave.

- Nine acres
- 1.2M SF of proposed development
- Proposed research campus on the east side of river

University City

- Six major hospitals and universities
- Key economic anchors and research institutions

Change is already happening in the Lower Schuylkill. Academic and health care institutions have “jumped the Schuylkill,” making significant investments in and around the east bank of the Innovation District. Entrepreneurial businesses focusing on research, new technologies and services are taking root at the University of Pennsylvania’s 23-acre South Bank campus, while Children’s Hospital of Philadelphia is developing a 1.2M SF research campus along the Grays Ferry Avenue corridor.

To leverage this momentum, the Master Plan recommends focusing early redevelopment efforts in the Innovation District. The planning team has identified two “priority development sites” with significant redevelopment potential on the west bank of the Innovation District. Located immediately to the north and south of Bartram’s Garden, the sites offer proximity to University City and South Bank. They also benefit from existing greenspace (Bartram’s Garden) and planned amenities (Schuylkill Banks river trail). Each site has publicly owned parcels, which can be leveraged for early action projects.

While the sites are currently characterized by high levels of vacancy and under-utilization, disconnected street networks, and environmental contamination, we believe that strategic public investments can address these factors and create an attractive environment for redevelopment.

The selection of these priority development sites also creates a unique opportunity for Bartram’s Garden. Often described as a “hidden gem,” Bartram’s Garden is surrounded by abandoned industrial sites and obscured from the closest main road by the Bartram’s Village public housing development. With careful planning and intervention, however, the same features that now isolate Bartram’s Garden can become a vibrant platform to showcase it. In turn, Bartram’s Garden can anchor a robust arc of economic revitalization.



Rendering of proposed Penn South Bank Campus



Children's Hospital of Pennsylvania



University City



BARTRAM'S NORTH

BARTRAM'S SOUTH

UNIVERSITY CITY

CHOP
Research
Campus

I-76

South Bank

Grays Ferry

Woodland Ave

Bartram's
Garden

Linbergh Ave

Passyunk Ave Bridge

26th St

Essington Ave

I-95



PRIORITY DEVELOPMENT SITES

BARTRAM'S NORTH

STRENGTHS

- 41 acres
- Geographic proximity to University City, Penn's South Bank campus, and future CHOP research campus
- Publicly owned riverfront parcels with views of University City and Center City
- Contains multiple Keystone Opportunity Expansion Zone (KOEZ) sites
- Has existing roadway and utility infrastructure
- Close to existing and future amenities (e.g., Bartram's Garden, Schuylkill Banks Trail extension).



Gathering at Grays Ferry Crescent along the banks of the Lower Schuylkill

OPPORTUNITY

Located just minutes from University City and South Bank, the Bartram's North site features a superior, riverfront location. Its small- and medium-size parcels can support a broad array of innovation-related businesses, including material and life sciences, R & D, advanced and artisanal manufacturing, product testing and verification, light industrial, creative-sector professional services, and a variety of products and services that support the academic and health care institutions in University City. Typically, these businesses seek 15,000 to 150,000 SF flex buildings on lots ranging from 1.5 to 15 acres. They also look for: (1) clusters of similar companies, (2) a highly-educated workforce, and (3) an urban location with amenities. With targeted infrastructure investments, Bartram's North is uniquely suited to support this type of development.

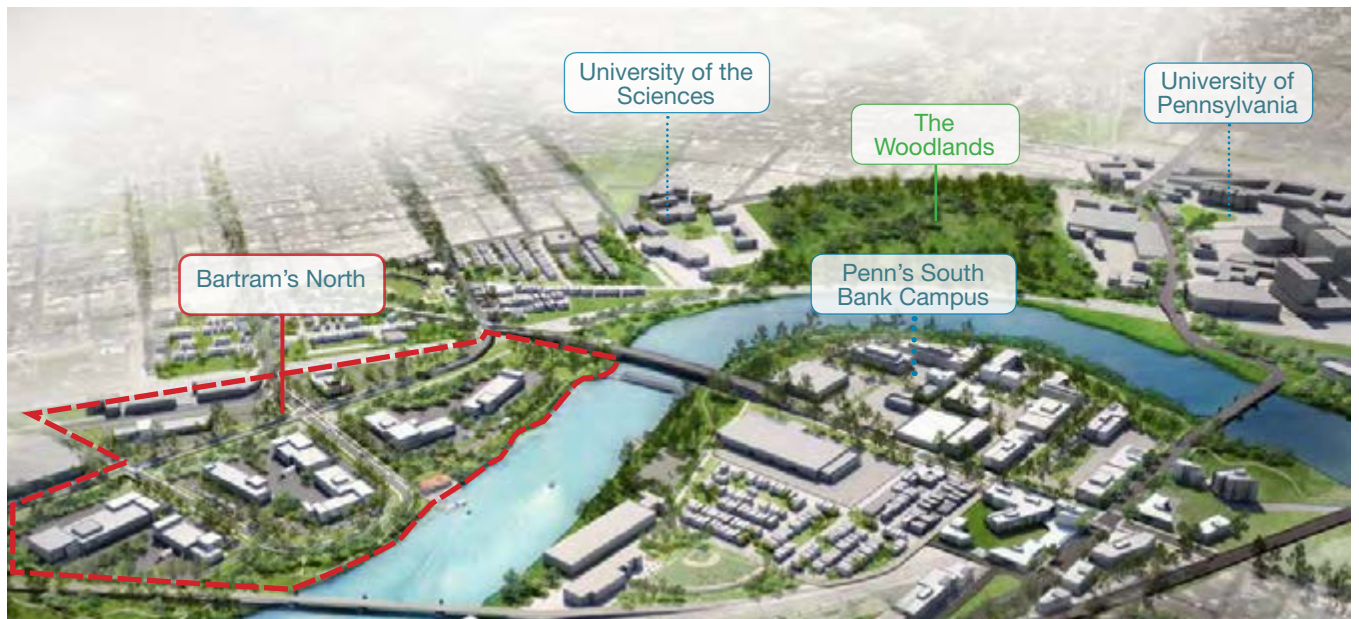
THE PLAN

To attract high-quality, innovation-focused companies, Bartram's North is planned as a vibrant green sub-campus with generous open space and excellent recreational amenities. The site is designed to accommodate a cluster of nine new, single-story flex buildings, ranging from 29,000 SF to 75,000 SF, to suit a variety of users. The buildings are configured to maximize developable space, while preserving the campus feel. New streetscape, landscape, and open space reinforce the campus aesthetic. Extending the Schuylkill Banks Trail along the river provides a marketable amenity and a valuable asset for adjacent communities and the city while the new river sports center animates the river with an array of publicly accessible boating activities.

BARTRAM'S NORTH AT FULL BUILD-OUT	
New Development Capacity	410K–490K SF
Infrastructure Cost	\$76M
Private Investment	\$58M
New Jobs	520–620
New Annual Tax Revenue	\$4.7M
Total Economic Impact	\$9.7B
Source: HR&A Advisors	



Proposed development plan for Bartram's North



Bartram's North's close proximity to surrounding institutions

BARTRAM'S NORTH TARGETED DEVELOPMENT

EARLY ACTION SITES



Aerial view of Early Action Site 1 as it exists today

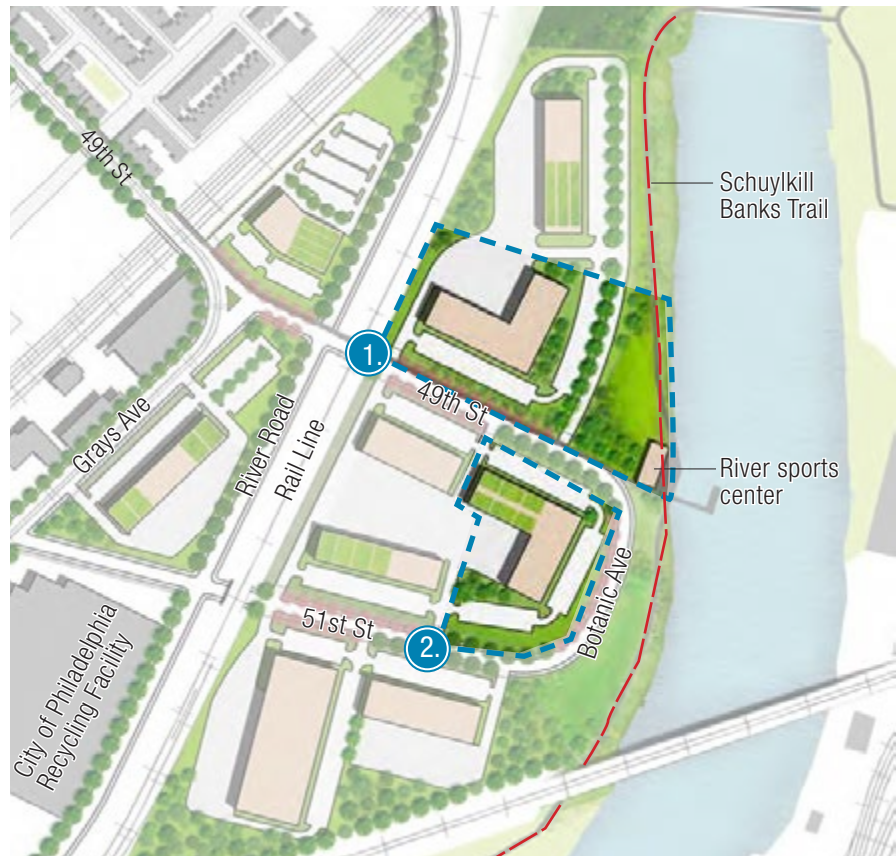
Bartram's North has several publicly owned sites that provide key opportunities to jump-start the Master Plan. The National Heat and Power and 49th Street Terminal sites, owned by the Philadelphia Authority for Industrial Development (PAID), combine to form 12.7 acres of riverfront property with excellent views of University City and Center City. The Schuylkill Banks Trail will run along the river, providing a landscaped 100'-wide buffer and a built-in recreational amenity. PAID is pursuing environmental remediation, as well as acquisition of a rail easement that bisects the site. Both steps are essential to create an improved redevelopment site. Taken together, the site's excellent location, public-sector ownership, ongoing environmental remediation, and planned amenity make it a compelling candidate for early redevelopment. Assuming acquisition of the rail easement and consolidation of the parcel, the site can accommodate development of a 40,000 SF single or multi-tenant flex facility. Acquisition of the vacant parcel just north of these sites would support an additional 40,000 SF flex building.

EARLY ACTION SITE 1

- 12.7 acres of riverfront property
- Former National Heat and Power and 49th Street Terminal sites
- Currently in the process of remediation

EARLY ACTION SITE 2

- Underutilized Streets Department depot
- 2.4 acres of riverfront property



Early action sites within Bartram's North.

RECLAIMING VALUE

Other promising early action sites include the City's Streets Department facility on Botanic Avenue (between 49th and 51st Streets) and the City of Philadelphia recycling facility on 51st Street (between Grays Avenue and Botanic Avenue). The Streets Department facility (Streets Parcel) is approximately 2.4 acres, including river frontage on its eastern boundary. The citizen recycling facility (Recycling Parcel) is approximately 8.5 acres, with street frontage on 51st Street. Both sites currently house active municipal operations, however, these uses are not site-specific and could be relocated to make way for early Innovation District redevelopment. The environmental condition of both parcels is unknown.

The small size of the Streets Parcel is countered by its fantastic riverside location. Adaptive reuse of existing buildings on the site or construction of a new structure could support a small, high-value flex site or the new river sports center. The Recycling Parcel could add 25,000 SF of new flex space, which could increase if the site were aggregated with nearby, privately-owned parcels.

Redeveloping these publicly owned sites will create a cluster of high-quality spaces that can be tailored to R & D, advanced and artisanal manufacturing, or other innovation-focused activities. Other existing buildings within or adjacent to Bartram's North may be suitable for adaptive reuse as multi-tenant or collaborative work spaces, similar to Philadelphia's Globe Dye Works (Frankford), the Dorrance H. Hamilton Center for Culinary Enterprises (West Philadelphia) and NextFab Studio (University City and South Philadelphia). This type of conversion would yield a set of smaller, affordable spaces suitable for new and emerging businesses and entrepreneurs. In addition to these early redevelopment projects, efforts should be made to acquire the necessary right-of-way for the new River Road.

It should be noted that a handful of heavy industrial businesses continue to operate within Bartram's North. These companies produce valuable economic activity and in many ways benefit from the current isolation and heavy industrial character of this area. As the Innovation District begins to thrive and flourish, however, the increased activity and changing character of the area may prove incompatible. The City should work closely with these companies to identify other locations within the City which may be more suitable for their long-term operations and growth.

IN FOCUS | ADAPTIVE REUSE

Built in 1906, the Streets Department facility at 49th Street and Botanic Avenue was originally operated as a garbage reduction facility by the Penn Reduction Company. The facility compressed garbage to acquire oils and grease that were then sold for a second life of industrial use. By 1911, the Facility had the capacity to treat 520 tons of garbage per 12-hour day. The City purchased the facility on January 1, 1921, and it continues to be used today by the Streets Department. The site has been considered by this Master Plan and other planning initiatives as a suitable site for redevelopment, either as an industrial site, publicly accessible river sports center, or site for amenities related to the planned extension of the Schuylkill Banks Trail. The site consists of 2.4 acres, with 252 feet of river frontage.



Streets Department facility at 49th Street and Botanic Avenue

BARTRAM'S NORTH A NEW CHARACTER

IDENTITY AND APPEARANCE

Currently, few people are familiar with Bartram's North or the larger area proposed for the Innovation District. Developing a recognizable identity will be crucial in attracting new businesses and private investment. Ideally, this will involve a smart branding campaign to communicate the Innovation District's location (with an early focus on opportunities at Bartram's North and South Bank) and ambitious goals to a broad audience of potential users and investors.

Upgrades to the appearance and amenities of Bartram's North are essential to attracting high-quality companies. Thoughtful investments in wayfinding, signage, landscape, streetscape, and lighting will create a distinctive, attractive, and memorable space. To convey the spirit of the Innovation District, these elements should share a consistent, modern design and integrate seamlessly to form a lush, urban campus setting.

Wayfinding and signage should consistently utilize the logo and colors of the Innovation District to build awareness of this new area and reinforce its identity. Landscaping should be integrated with the installation of green stormwater infrastructure in roadway ROWs and along the riverside trail to maximize impact and functionality. Landscaped separations between active freight rail tracks and the campus will preserve rail functionality while improving campus aesthetics. New public amenities should be actively promoted, programmed, and integrated into the campus, to increase activity levels and exposure.



PUBLIC AMENITIES

Schuylkill Banks Trail

Plans are already underway to bring the city's most popular recreational trail, the Schuylkill Banks Trail, to Bartram's North. This segment will be part of Bartram's Mile, a green network connecting Bartram's North, Bartram's Garden and Bartram's South. The trail will also connect over the river to the Grays Ferry Crescent and the main trail, which winds north along the river through Center City, the Art Museum area, and East Fairmount Park. In addition to providing a unique recreational asset and connecting Philadelphians to a long-forgotten section of the Schuylkill River, the trail will significantly improve the aesthetic edge of Bartram's North and provide a marketable amenity. Promoting and programming Schuylkill Banks will also bring new attention and activity, animating this long-dormant area.

River Sports Center

Sustained growth in the popularity of rowing, dragon boating, kayaking, and other river activities creates a unique opportunity for Bartram's North. A new, publicly accessible river sports center can serve as a hub for nonmotorized boaters of all types, supporting organized teams, instructional classes, and camps, while also offering rentals, storage, and concessions. Communities along the Lower Schuylkill will be able to access an amenity traditionally found only on the Upper Schuylkill. Similar to Schuylkill Banks, the river sports center will attract new attention and activity to Bartram's North, while reinforcing the "campus" environment.

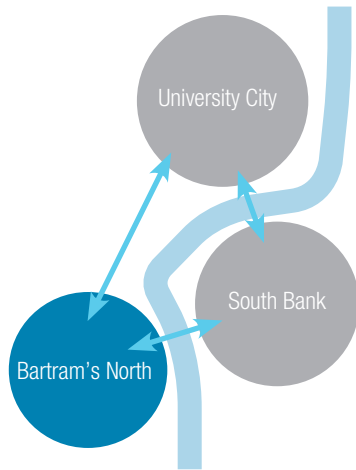
Bicycle and Pedestrian Network

Threading bike lanes and sidewalks through the newly attractive street network in Bartram's North will provide one of the most powerful public benefits of the entire plan, by connecting surrounding communities directly to the river for the first time in many years. Simultaneously, it will open up new opportunities for more sustainable modes of commuting, providing an especially powerful way of connecting Bartram's North to University City, which has exhibits one of the highest rates of bicycle usage and commuting in the city.



Proposed view of Botanic Avenue looking towards the river sports center

BARTRAM'S NORTH ACCESS AND CONNECTIVITY



Key access for future growth

KEY ROUTES FOR FUTURE GROWTH

Simply improving Bartram's North's appearance and amenities isn't enough to attract new businesses and investment. Employees, customers, and suppliers need convenient, reliable access and efficient circulation to make these sites viable. As detailed in Section 4, Master Plan, the new River Road will dramatically improve access and circulation over the long term. If early action projects in Bartram's North are to succeed, however, viable interim access and circulation routes need to be identified and prepared.

INTERIM VEHICULAR ACCESS

To South Bank

To reinforce the concept of an integrated Innovation District, it's also essential to connect Bartram's North and the Innovation District West to South Bank and the Innovation District East. The Grays Ferry Avenue Bridge provides a quick and easy connection, linking both sides of the Innovation District, as well as Bartram's North and South Bank. The City, PIDC, and private sector stakeholders are working closely with PennDOT to integrate bicycle, pedestrian, and aesthetic upgrades into an upcoming construction project on the Grays Ferry Bridge. These changes can transform the appearance of the bridge and improve connectivity between the east and west sides of the Innovation District.



Interim access and circulation routes for Bartram's North

To University City

Since proximity to University City is expected to be one of Bartram's North's most attractive features, a direct, clearly marked route between University City and Bartram's North is essential. Optimally, this will be accomplished by extending 47th Street southward to form the new River Road linking University City to the Innovation District West. In the short term, however, existing streets can provide interim access. With clear wayfinding and signage, 34th Street to Grays Ferry Avenue, and Woodland Avenue to 49th Street to Grays Avenue can provide a straightforward connection.

Entering Bartram's North via 49th Street is optimal, as it allows egress via 51st Street to facilitate the efficient flow of traffic. Currently, however, the at-grade crossing at 49th Street and Grays Avenue is blocked, creating an obstruction. Removing this obstruction and restoring the intersection will provide the most streamlined interim access route for vehicular, bike, and pedestrian traffic. If the obstructed intersection at 49th Street and Grays Avenue cannot be remedied (or remedied in a timely fashion), an alternative route would utilize 51st Street.

To reinforce the concept of an integrated Innovation District, it's also essential to connect Bartram's North and the Innovation District West to Penn's South Bank campus and the Innovation District East. The Grays Ferry Avenue Bridge provides a quick and easy connection, linking both sides of the Innovation District, as well as Bartram's North and the South Bank campus.



Improved intersection at 34th Street and Grays Ferry Avenue

BARTRAM'S NORTH ACCESS AND CONNECTIVITY

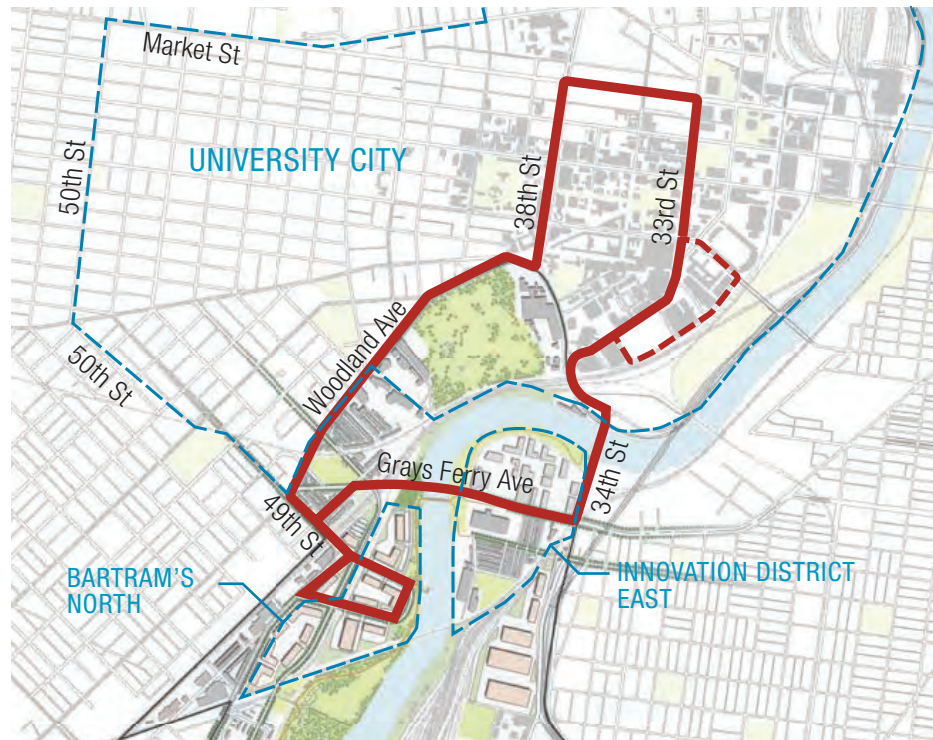
PUBLIC TRANSPORTATION



SEPTA ridership

Expanding transit options is an essential, strategic move that will attract and support new development within Bartram's North. Currently, transit consists of limited Route 36 trolley service and bus stops several blocks away for SEPTA's Routes 12 and 64 buses. SEPTA's Airport Line is nearby, but doesn't stop in Bartram's North (or the Lower Schuylkill).

A new express bus loop, linking key University City locations with Bartram's North and South Bank, would enable users to quickly, conveniently, and safely move between campuses. This service could be provided by SEPTA, a private entity, or as an extension of University City's LUCY service. Co-locating express bus stops with stops for the Route 36 trolley and/or the Routes 12 and 64 buses would expand transit options for commuters. As redevelopment progresses in Bartram's North and nearby institutions continue to expand and grow, the feasibility of a new fixed rail station at 49th Street should be investigated for SEPTA's Airport Line. These transit options will help position Bartram's North as an attractive location for institutional activity and companies seeking proximity to University City.



Proposed circulator route linking Bartram's North, University City, and Innovation District East

BARTRAM'S NORTH REVIEW



Focused, strategic investments can transform Bartram's North from an isolated area with vacant and underutilized properties to a thriving district marked by active industrial uses, attractive public amenities, and dedicated river access.

Located at the base of the Grays Ferry Bridge, in close proximity to South Bank, the University of the Sciences on the west bank, and other university and health care institutions, Bartram's North is ripe for opportunities. The development parcels are "unlocked" by proposed transportation improvements that provide streamlined access to University City for R & D and advanced manufacturing. A River Road creates a central street through Bartram's North, linking Grays Ferry Bridge to Bartram's Garden in a matter of minutes. The River Road continues south to Passyunk Avenue, providing much-needed circulation and access. Key interventions can significantly improve the accessibility, appearance, and economic functionality of Bartram's North, resulting in a vibrant campus that attracts private investments and creates new jobs.

CHALLENGES	SHORT-TERM SOLUTION	LONG-TERM SOLUTION
Proximity without connectivity to University City and key surrounding anchors	Upgrade, beautify, and clearly delineate existing roadway connections; enhance existing connection to South Bank	Connect Bartram's North directly to University City by constructing River Road; support Schuylkill River Development Corporation's bicycle/pedestrian bridge effort
Perception of area as isolated, unsafe and unattractive	Targeted landscape, streetscape and signage programs; extend the Schuylkill Banks Trail to Bartram's Garden and provide public river access; install temporary dock facilities for paddling sports and other recreational users	Animate Bartram's North with publicly accessible recreational assets and thoughtful open space programming
Lack of immediately viable development parcels	Support cleanup, site preparation and redevelopment of publicly owned sites; improve existing roadway infrastructure	Encourage cleanup and redevelopment of private parcels through targeted programs and incentives

PRIORITY DEVELOPMENT SITES

BARTRAM'S SOUTH

STRENGTHS

- 145 acres
- Proximity to University City, I-76, I-95, PHL, Logistics Hub
- Vacant and underutilized riverfront parcels with views of University City and Center City
- KOEZ parcels
- Proximity to large, diverse workforce
- Some existing roadway and utility infrastructure
- Existing and future amenities (e.g., Schuylkill River Trail extension, Bartram's Garden, Passyunk Crescent Park)



View from Schuylkill Banks Trail along the eastern edge of Bartram's South

OPPORTUNITY

Bartram's South occupies a boomerang-shaped, riverfront location between Bartram's Garden (to its north) and Passyunk Avenue (to its south). Bartram's South shares the strengths of Bartram's North and augments them with additional features, such as convenient access to I-76, I-95, and PHL. It's small- to medium-size parcels can support the same set of uses proposed for Bartram's North, as well as distribution and warehousing on the interior parcels. This diversity creates a unique opportunity for a dense Innovation District development along the river.

To realize this opportunity, public-sector investments are required to improve access and circulation, construct amenities, upgrade aesthetics, and support site preparation and assembly, if required. In addition, Bartram's South has 42 micro-parcels of <5 acres. To fully realize the site's potential, these micro-parcels should be assembled over time into sites that are more compatible with the needs of modern development and goals of the Master Plan. By embracing a mixed-use concept and thoughtfully locating uses, Bartram's South has the capacity to yield 1.3M SF of development, creating 1,105 direct jobs and \$8.2M annually in new tax revenue.

THE PLAN

Bartram's South will continue the Innovation District's green campus, with an arc of 16 new, single-story flex buildings, ranging in size from 30–75K SF. The flex sites can also be reconfigured to support fewer, larger buildings or a corporate headquarters campus. Multistory buildings may be possible over the long term, as Bartram's South develops and market demand grows.

Maximized river views, extensive greenspace, and high-quality amenities such as the extended Schuylkill Banks Trail and new Passyunk Crescent Park reinforce the campus environment and provide marketable features.

The width of the Bartram's South site also provides a unique opportunity to situate three larger footprint (125,000–170,000 SF) warehouse and distribution facilities on the interior parcels. In today's market, these facilities typically require one-story, high-bay structures of 50,000–200,000 SF on 4–16 acre sites. The larger footprint sites offer several features frequently demanded by users of this type of space: proximity to transportation networks, a central location within consumer markets, and deep skilled and unskilled labor pools. Located within the populous northeast corridor and close to I-95 and I-76, Bartram's South has the potential to be a very attractive site for these types of businesses.

This new, mixed-use campus will create a strong southern anchor for the Innovation District.

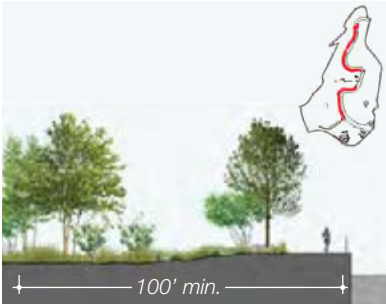


Proposed development plan for Bartram's South

BARTRAM'S SOUTH AT FULL BUILD-OUT	
New Development Capacity	1 –1.2M SF
Infrastructure Cost	\$153M
Private Investment	\$131M
New Jobs	1,100 – 1,300
New Annual Tax Revenue	\$8.2M
Total Economic Impact	\$13.2B
Source: HR&A Advisors	

BARTRAM'S SOUTH TARGETED REDEVELOPMENT

EARLY ACTION PROJECTS



100' ROW for portions of the Schuylkill Banks trail

There are fewer publicly owned parcels in Bartram's South, but those that exist offer strong redevelopment potential. These early action projects will bookend the Bartram's South site, communicating its new identity in a highly visible way. They also demonstrate the viability of this area as a diverse campus for innovation-focused businesses engaged in R & D, advanced, artisanal and traditional manufacturing, and light industrial activity. In addition to these early redevelopment projects, efforts should be made to acquire the necessary ROW for the new River Road and Schuylkill Banks Trail extension, as well as the acreage needed for the new Passyunk Crescent Park.

As with Bartram's North, some businesses currently operating within Bartram's South value its isolation and stark industrial character. As the area develops into the southern anchor of the Innovation District, the City should work closely with these companies to upgrade and integrate their facilities or assist them in identifying other locations within the city that may be more suitable for their long-term operations and growth.

EARLY ACTION SITE 1

- Prior U.S. Gypsum and Transmontaigne Facility
- 28 acres of riverfront property with 171K SF of proposed development
- Currently undergoing remediation

EARLY ACTION SITE 2

- Slated for use by PWD as sustainable model for support and operations within West Philadelphia
- Seven Acres



Early Action Site 1

Immediately south of Bartram’s Garden is a 28-acre riverfront site that previously served as a manufacturing location for U.S. Gypsum and Transmontaigne. The combined site is currently owned by PAID and environmental remediation is approaching completion. The U.S. Gypsum/Transmontaigne parcel is a key early action site for two reasons. First, it provides a crucial segment of the new River Road. At 56th Street, the River Road will turn toward the river, then run south directly alongside it until reaching the Passyunk Bridge. Reserving the necessary ROW for this segment is an important first step.

Secondly, the U.S. Gypsum/Transmontaigne parcel is an important early redevelopment site. Remediation work is expected to be complete in 2013, resulting in the non-ROW section of the site being available for rapid redevelopment. As laid out in the plan, this portion of the site can support a walkable cluster of four new flex buildings, with 171,000 SF in combined space. Attracting one or more Innovation District companies to this site will likely require diligence and flexibility from the public sector, as the surrounding uses are not yet compatible with the type of Innovation District development called for in this Master Plan. Concerted efforts to seed Innovation District companies in this location will yield significant dividends as it will begin to establish the area’s new identity and character, while setting a high-quality precedent for future growth.



Existing conditions of Early Action Site 1



Envisioned Build-out Early Action Site 1

Early Action Site 2

A second, more unique early action site is located on 61st Street, along the southwest border of Bartram’s South where land uses begin to transition into manufacturing, warehouse, and distribution uses. Also owned by PAID, this site is slated for redevelopment as a modern, sustainable industrial facility to support the Philadelphia Water Department’s operations in West Philadelphia. As currently envisioned, the facility will be LEED certified with an array of sustainable features such as geothermal HVAC, a green roof, natural daylighting, porous paving, and vegetated stormwater management elements. This type of high-quality, sustainable development can be promoted as a model for future industrial development in the Innovation District to the north and in the Logistics Hub to the south.



Existing conditions of Early Action Site 2



Proposed Philadelphia Water Department facility at Early Action Site 2

BARTRAM'S SOUTH A NEW CHARACTER



IDENTITY AND APPEARANCE

Converting the stark industrial landscape of today into a lush, green campus for the industry of tomorrow will require significant improvements to the appearance and amenities of Bartram's South. Many of these upgrades can be accomplished in tandem with implementation of a progressive, district-wide stormwater management program. As with Bartram's North, roadway ROWs will be equipped with attractive and functional green stormwater infrastructure, such as vegetated bioswales, to manage runoff while significantly improving its appearance to potential tenants and investors. Similarly, construction of the Schuylkill Banks Trail and the new Passyunk Crescent Park will contribute to stormwater management while creating a lush, green buffer with dedicated public access that enhances the marketability of the Bartram's South sites.



A bustling, vibrant Bartram's South, with views to Center City

To reinforce the concept of an integrated Innovation District campus, the distinct landscape, streetscape, lighting, and signage program in Bartram’s North should be carried through to Bartram’s South. We recommend upgrades to existing streets, transforming them from isolated routes of varying materials and quality into a network with excellent functionality and a consistent, attractive appearance. New street trees and sustainable landscaping will visually enhance key access routes, while serving a critical stormwater management function. Integrating bike lanes and dedicated sidewalks will add much-needed activity and provide a long-desired link from surrounding communities to the river. An improved lighting program will enhance safety and visibility, while attractive wayfinding signage will make navigation easy and comfortable for new users.

One of the most difficult challenges to creating a new identity and improved appearance for Bartram’s South is “Junkyard Alley,” the blighted, unattractive stretch of 61st Street at its southern boundary. Potential tenants, visitors, customers, employers and employees coming from I-76 and points east will get their first impression of Bartram’s South and the Innovation District from 61st Street. Currently it’s an eyesore, rivaling the former car crusher that greeted visitors entering the city from PHL. Over the long-term, the Master Plan calls for relocation of this scrap yard cluster to a more suitable location within the City, to facilitate the creation of Passyunk Crescent Park. In the interim, the City, PIDC, and key stakeholders should work closely with property owners to clean and green this stretch of 61st Street, improve facades wherever possible and screen areas and uses that are unattractive and/or undesirable. Innovation District flags, streetscape, and landscape can dramatically improve the southern front door of Bartram’s South as well.



Example of passive planted stormwater management



View north along the new River Road demonstrating integrated stormwater management, public access, and adjacent park space

BARTRAM'S SOUTH A NEW CHARACTER

PUBLIC AMENITIES

Schuylkill Banks Trail

One of the best ways to bring positive new activity and energy to Bartram's South is by extending the Schuylkill Banks Trail. As noted previously, PIDC is working with Philadelphia Parks and Recreation and other stakeholders to make this happen through the Bartram's Mile project.

The proximity of the trail to redevelopment sites is expected to be a unique amenity, which can be used in marketing Bartram's South to potential Innovation District businesses. Successful innovation campuses such as Research Triangle Park in North Carolina and the Pittsburgh Technology Center in western Pennsylvania have leveraged similar amenities to attract high-quality employers.



Pittsburgh Technology Center



View towards Center City from Schuylkill Banks Trail extension at Passyunk Crescent Park

In addition, extension of the trail into Bartram's South will give adjacent communities access to the river and expose citywide trail users to this relatively unknown section of the city. Local fishing enthusiasts, who currently access the river from crumbling bulkheads and abandoned river banks, will have a safe, well-lit space to interact with the river. Dedicated public access points and attractive, well-lit connector streets will foster activity and bring new energy, countering the area's current sense of isolation.

Passyunk Crescent Park

Development of a new park at Passyunk Crescent can also provide a valuable, multi-tasking amenity that enhances the attractiveness of Bartram's South to businesses, provides a signature public green space and manages stormwater runoff. The park provides a key connection point for the trail, allowing southbound bicyclists and pedestrians to pursue an eastward route over the Passyunk Avenue Bridge to FDR Park, a southern route along Passyunk/Essington to Fort Mifflin or to return to Bartram's Garden, the East Coast Greenway connector, and other destinations. The park's riverfront location provides opportunities for fishing, water sports, and recreation. It can also be used to host recreational athletic leagues for the Innovation District (a popular amenity at the Philadelphia Navy Yard and Research Triangle Park), as well as adjacent communities.



PASSYUNK CRESCENT PARK

- 24 acres of signature passive and active recreational areas
- To be serviced by the trail, bicycle routes, public transportation, and numerous neighborhood connector streets



Schuylkill Banks Trail in Bartram's South at Passyunk Crescent Park

BARTRAM'S SOUTH ACCESS AND CONNECTIVITY

INTERIM VEHICULAR ACCESS

Construction of the River Road is essential to unlock the redevelopment potential of Bartram's South. Without it, prime riverfront and minimally accessible interior parcels will continue to languish. Recognizing the time required to plan, fund, and construct new infrastructure, the planning team has also identified interim steps.

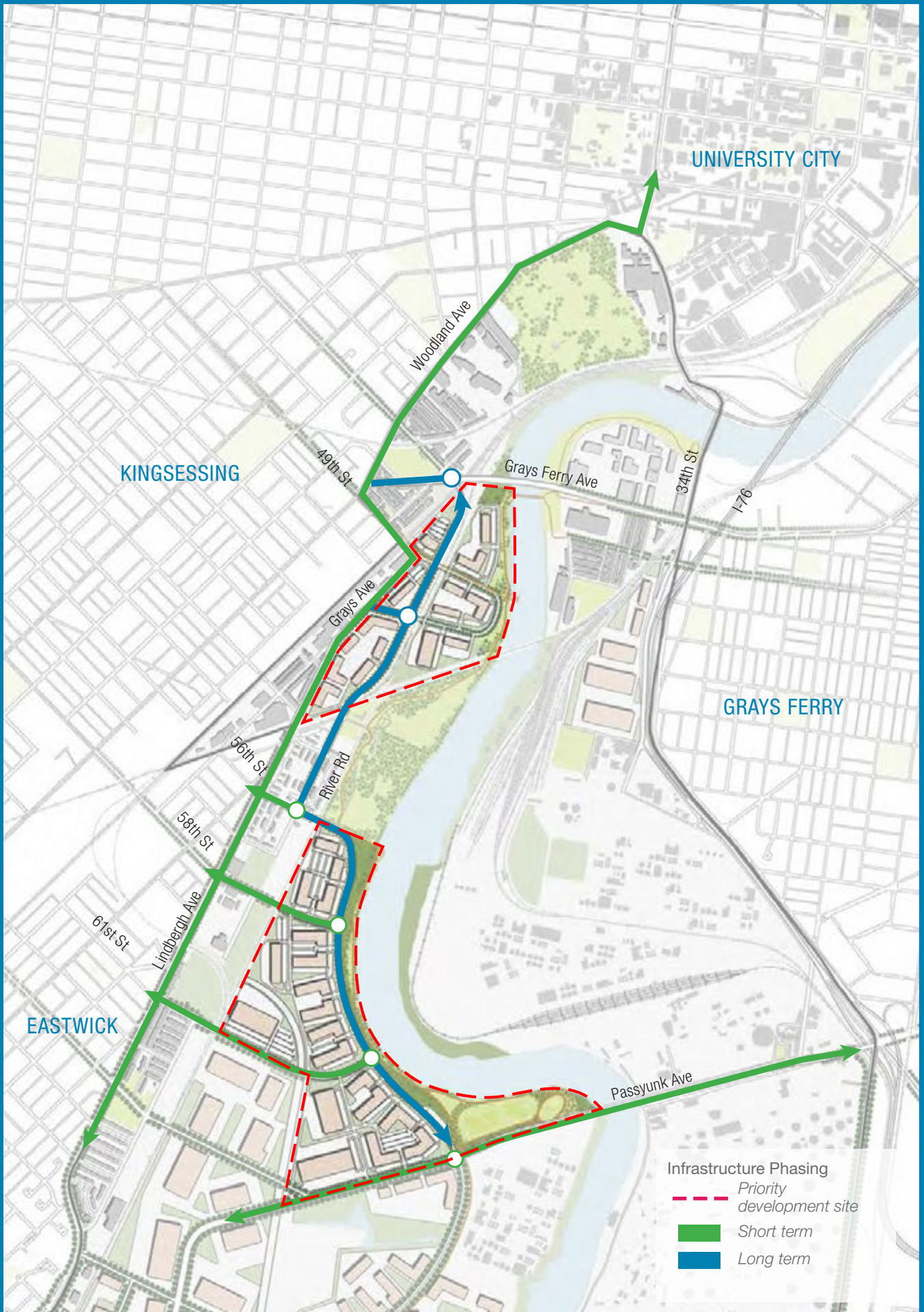
Early efforts should focus on upgrading the quality and appearance of existing access and circulation roads, particularly those that connect to University City and Bartram's North. Investing in roadway, streetscape, and landscape improvements along Lindbergh Boulevard, 61st Street, and Passyunk Avenue are key first steps, as these streets will function as Bartram's South's primary access routes north-south (Lindbergh Boulevard) and east-west (61st Street and Passyunk Avenue). The planning team also recommends similar upgrades to 56th and 58th Streets to enhance access to the U.S. Gypsum/Transmontaigne site and provide early access to the Schuylkill Banks Trail extension. Installing a comprehensive, user-friendly wayfinding system is also a key early action item. Attractive signage along key access routes (e.g., Lindbergh Boulevard, Essington Avenue, and Passyunk Avenue) will make navigation simpler and more comfortable for users who are unfamiliar with the Bartram's South area.

SHORT-TERM ACCESS - UPGRADE EXISTING NETWORK

- Upgrade the appearance and functionality of Lindbergh Boulevard, 61st Street and Passyunk Avenue to support interim north-south and east-west access.
- Upgrade 56th and 58th Streets to provide access to early development parcel.
- Improve connector streets linking adjacent communities to the river and the Schuylkill Banks trail extension.
- Install user-friendly wayfinding program to help new users navigate.

LONG-TERM ACCESS - NEW RIVER ROAD

- Build River Road to link Bartram's South to the Innovation District and University City.
- Provide a functional north-south connection.
- Anchor east-west connector streets, completing the grid and eliminating existing dead ends.
- Significantly improve access and circulation while providing a beautiful, riverside amenity for the city.

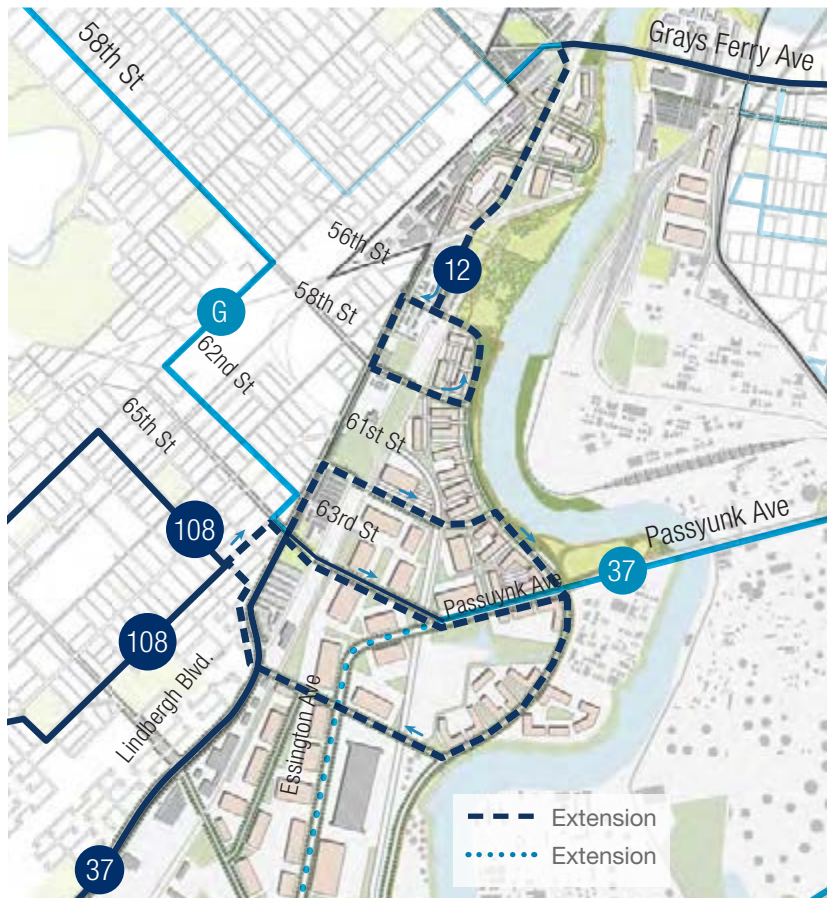


PUBLIC TRANSPORTATION

Currently, public transportation in Bartram’s South is limited to SEPTA’S Route 37 bus, which traverses 61st Street along the southern boundary of the priority development site. There is no trolley or regional rail service. Vacant parcels and low-density land uses provide little existing demand, but public transportation will become increasingly necessary and desirable as the southern anchor of the Innovation District develops.

The most efficient, cost-effective way to provide this service is through expansion of existing SEPTA lines or via a dedicated shuttle service, as discussed in connection with Bartram’s North. Expanded bus or dedicated shuttle routes should be designed with the goal of providing a convenient connection between Bartram’s South and University City, South Bank and the rest of the Innovation District. Co-locating bus/shuttle stops with other key public transportation stops (e.g., trolley, and main bus routes) in University City will enhance the utility of the system. Stakeholders should work closely with SEPTA and the LUCY system to identify opportunities for this service.

The study looked at the to extend existing routes into the study area; however, limited existing demand renders these as longer term options. A more reasonable approach would be to examine the extension of Route 12 along the future River Road from Grays Ferry Avenue and 47th Street and Route 37 east-west extension from Lindbergh Boulevard to the proposed River Road, looping around to the Passyunk/Essington Avenue corridor and creating a north-south interior connection along the Essington spine.



Potential extension of existing bus lines



- Loop 1
- Loop 2
- Loop 3
- - - Extension
- Extension

Proposed dedicated shuttle lines, evolving as a series of extended loops as future development drives demand

BARTRAM'S SOUTH REVIEW



Bartram's South continues the Innovation District to Passyunk Avenue, constructing the River Road and opening up development sites by connecting internal streets and creating riverfront parcels with Center City skyline views. Off-street trail and river amenities parallel River Road and are publicly accessible via 56th, 58th, and 61st Streets. The southeastern tip of Bartram's South, known as Passyunk Crescent, is planned as open space and can accommodate a range of uses from stormwater management to land and water recreation amenities.

Larger parcels in Bartram's South accommodate multiple buildings for warehousing, distribution, and research and development. These parcels will be accessed from the numbered streets and River Road, creating an industrial development spine along the riverfront. Initial economic projections presume these parcels will absorb one-story, flex buildings with surface parking and loading areas. However, denser, multi-story buildings along River Road may be possible over the long term as development pressures from the north move southward and ease of transportation access is complete.

CHALLENGES	SHORT-TERM SOLUTION	LONG-TERM SOLUTION
Proximity without connectivity to northern part of Innovation District, and University City.	Upgrade, beautify, and clearly delineate existing roadway connections along Lindbergh Boulevard and numbered streets; support Schuylkill River Trail expansion south of Bartram's Garden	Connect Bartram's South directly to University City by constructing River Road.
Proliferation of micro-parcels frustrates redevelopment and deters new investment	Identify opportunities for assembly or redevelopment	Identify opportunities for assembly or redevelopment
Lack of immediately viable development parcels	Support cleanup, site prep, and redevelopment of publicly owned sites; improve existing roadway infrastructure.	Encourage cleanup and redevelopment of private parcels through targeted programs and incentives

IMPLEMENTATION

ECONOMIC DEVELOPMENT TOOLS

A flexible portfolio of development tools and economic incentives will augment public-sector infrastructure investments and accelerate economic revitalization of the Lower Schuylkill.

DEVELOPMENT TOOLS AND INCENTIVES



A thoughtfully structured portfolio of development tools and economic incentives is key to attracting private investment to the Lower Schuylkill, particularly in attracting pioneer companies in the early years of this initiative. These tools and incentives can function in multiple ways — some support public sector infrastructure, land assemblage, and site preparation, while others can be tapped to fill transactional funding gaps or offset extraordinary costs that would otherwise deter new private development. Economic development resources should be extracted from all available sources, including federal, state and local agencies, as well as philanthropic entities. Incentives should be crafted strategically, to meaningfully enhance the competitiveness and desirability of the Lower Schuylkill development sites. Recommended categories of tools and incentives include:

- Brownfield Remediation and site preparation (e.g., EPA Assessment and Cleanup Grants, EPA Revolving Loan Fund, PADCED Industrial Sites Reuse Program, PA Business in Our Sites Program, Brownfields Tax Incentive Program, PennVEST Brownfield Redevelopment Loans)
- Tax credits (e.g. Job Creation Tax Credit, New Market Tax Credits)
- Low-interest financing (e.g., EB-5, tax-exempt conduit financing)
- Grants (e.g., Redevelopment Assistance Capital Program)
- Tax reductions or abatements (e.g., KOZ, KOEZ, Philadelphia’s Real Estate Tax Abatement)
- Tax increment financing
- Workforce training

Many of these resources currently exist at the federal, state, and local level. Officials should assess whether additional, more targeted tools are needed to further support and spur growth in the Lower Schuylkill.

WORKFORCE DEVELOPMENT

The proximity of a deep and diverse labor pool is one of the Lower Schuylkill’s most important assets. Market analysis performed in connection with this study uncovered several opportunities to strengthen this feature. Targeted workforce training programs can equip workers with the skills and experience required by Innovation District, Logistics Hub, and Energy Corridor companies. These programs can effectively position workers to compete for the new jobs that will come on-line, as well as attract companies with specific workforce needs. The Lower Schuylkill should also tout the positive profile of its labor pool as a selling point. Market analysis revealed misconceptions among regional companies, particularly in connection with the quality, competitiveness, and cost of Philadelphia’s workforce. In marketing the Lower Schuylkill, concerted efforts should be made to spotlight the quality and diversity of the local labor pool, from highly educated researchers in University City to technically savvy trades and administrative personnel.

HIGH-DEMAND POSITIONS IN MANUFACTURING AND LOGISTICS

- CNC machinists/operators and Programmers
- Tool and die makers
- Process control technicians
- Biomechanical, mechanical and electrical engineers
- Chemists
- Assemblers and calibrators
- Repair technicians
- Welders

EXISTING WORKFORCE TRAINING INITIATIVES

- Southeast PA Workforce Development Partnerships for Advanced Manufacturing, Logistics and Transportation and Food Processing
- Philadelphia Community College job training programs for advanced manufacturing and energy conservation
- Philadelphia School District Career and Technical Education training center for manufacturing
- Computer numerical control (CNC) training for incumbent workers
- Navy Yard training center for welding

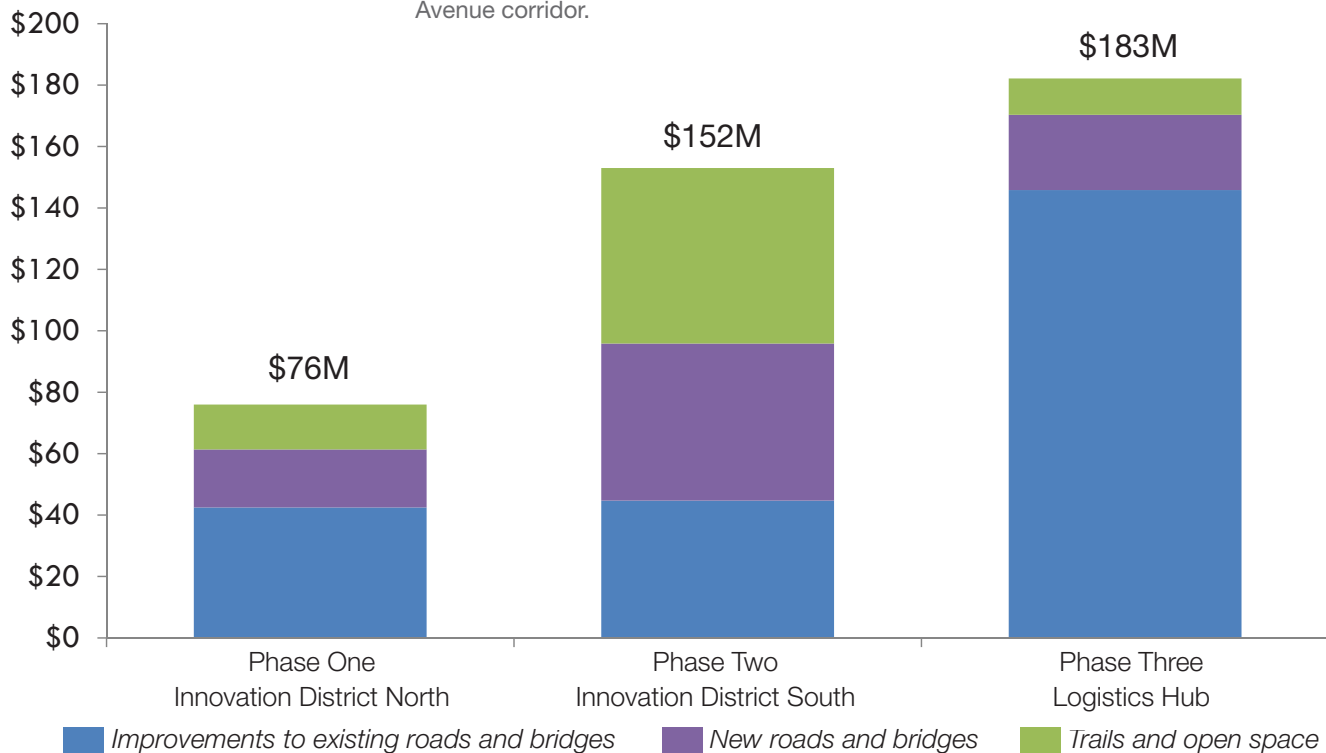


IMPLEMENTATION PHASING STRATEGY

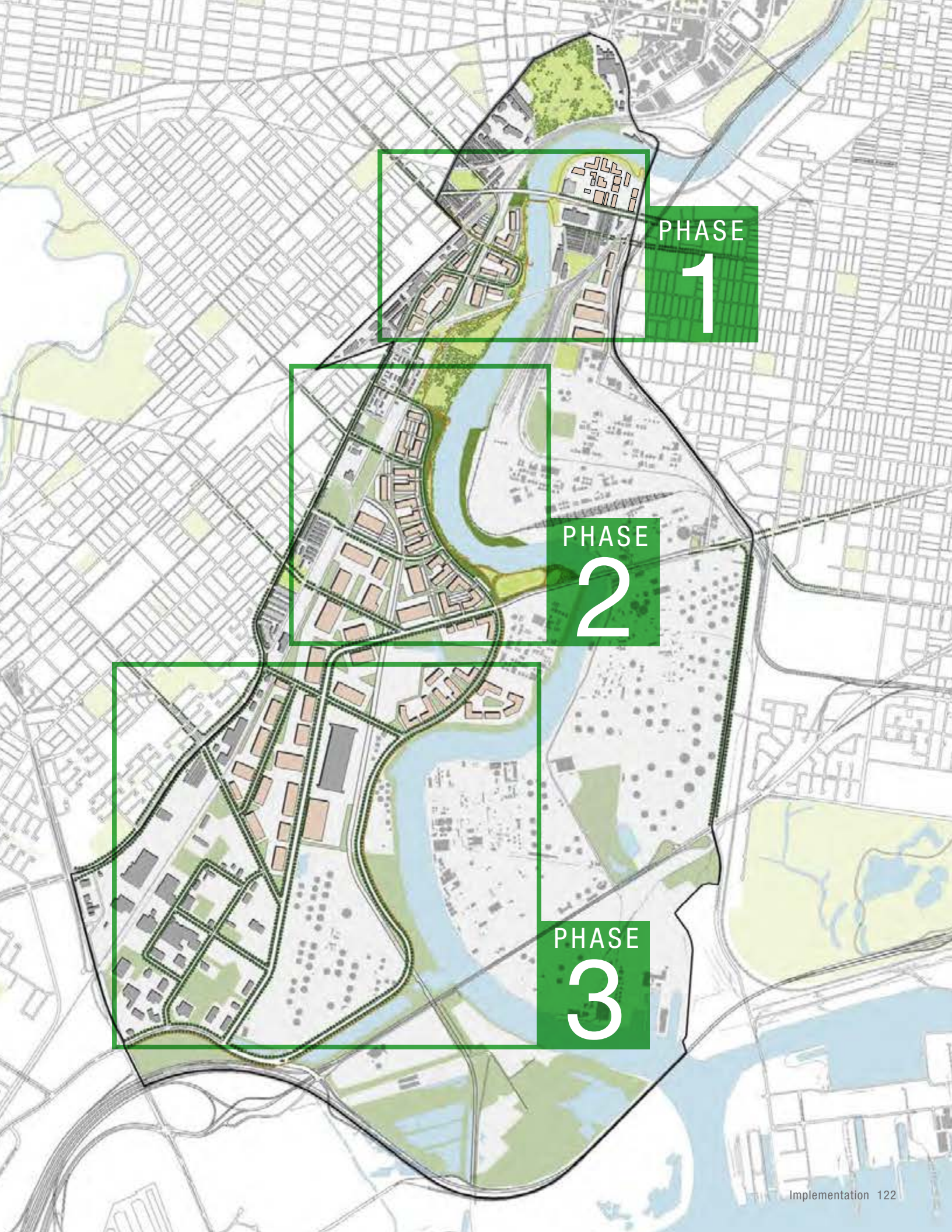
The master plan team identified \$411 million in public infrastructure projects that will be instrumental in establishing a strong foundation for new private development and investment.

Recent investments in South Bank, the refinery complex, and the Philadelphia Wholesale Produce Market demonstrate new momentum within the Lower Schuylkill and significant potential for economic revitalization. The sheer size and complexity of the area makes it extremely unlikely that market forces alone will be able to drive this transformation. Public sector intervention is essential to address long-standing barriers to redevelopment and create a sustainable platform for new investment and economic activity.

Early efforts should focus on developing the identities of the Lower Schuylkill's three distinct campuses through a branding campaign and marketing initiatives targeted toward compatible businesses. This could be done through Select Greater Philadelphia, PIDC, University City District, Greater Philadelphia Chamber of Commerce, or a partnership of key stakeholders. Short-term infrastructure investments should be focused in the upper half of the Innovation District to leverage continuing growth in University City, momentum at South Bank, and new development along the Grays Ferry Avenue corridor.



*Stormwater improvements tied to roadway projects are included in the categories for new and existing roads. The stormwater improvements listed in this category are not associated with any roadwork and are located only within the Logistics Hub.



PHASE
1

PHASE
2

PHASE
3

IMPLEMENTATION PHASE ONE

EARLY ACTION PROJECTS (0 –7 YEARS)

ACCESS AND CONNECTIVITY

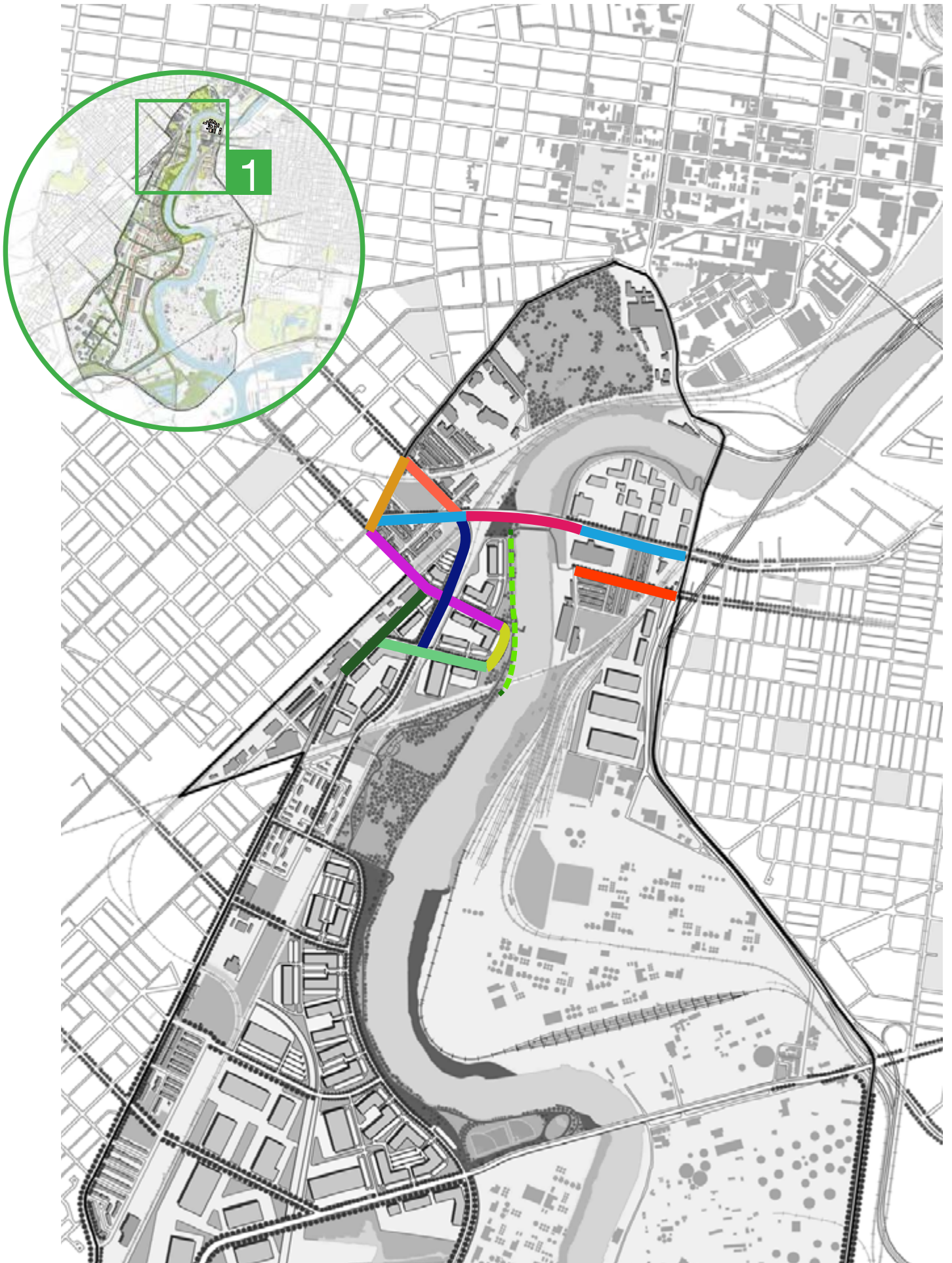
Circulation	Grays Ferry Bridge	Bridge upgrades, lighting, signage, multiuse trail	\$3.9M
Innovation District East & West Gateway	Grays Ferry Avenue	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$4.9M
Innovation District West Gateway	47th Street between Woodland Avenue and Grays Avenue	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$2.2M
Innovation District West Gateway	Woodland Avenue between 47th Street and Grays Ferry Avenue	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$2.1M
Innovation District West Gateway	49th Street from Woodland Avenue to Botanic Avenue	Roadway upgrades, streetscape, landscape, lighting	\$7.7M
Circulation	51st Street between Grays Avenue and Botanic Avenue	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$3.4M
Circulation	Botanic Avenue	Roadway upgrades, streetscape, landscape, lighting, signage	\$1.3M
Circulation	Grays Avenue between 49th Street and Lindbergh Boulevard	Roadway upgrades, streetscape, landscape, lighting	\$6.9M
Circulation	Wharton Street	Roadway upgrades, streetscape, landscape, lighting	\$9.7M
New Roadway and Innovation District West Gateway	47th Street flyover and new road segment to 51st Street	New roadway infrastructure, streetscape, landscape, lighting, gateway elements	\$19M

AMENITIES

Schuylkill River Trail Extension	Bartram's North	Trail, landscape, stormwater infrastructure	\$14.6M
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TOTAL INVESTMENT

\$76M



IMPLEMENTATION PHASE TWO

MEDIUM TERM PROJECTS (8–15 YEARS)

ACCESS AND CONNECTIVITY

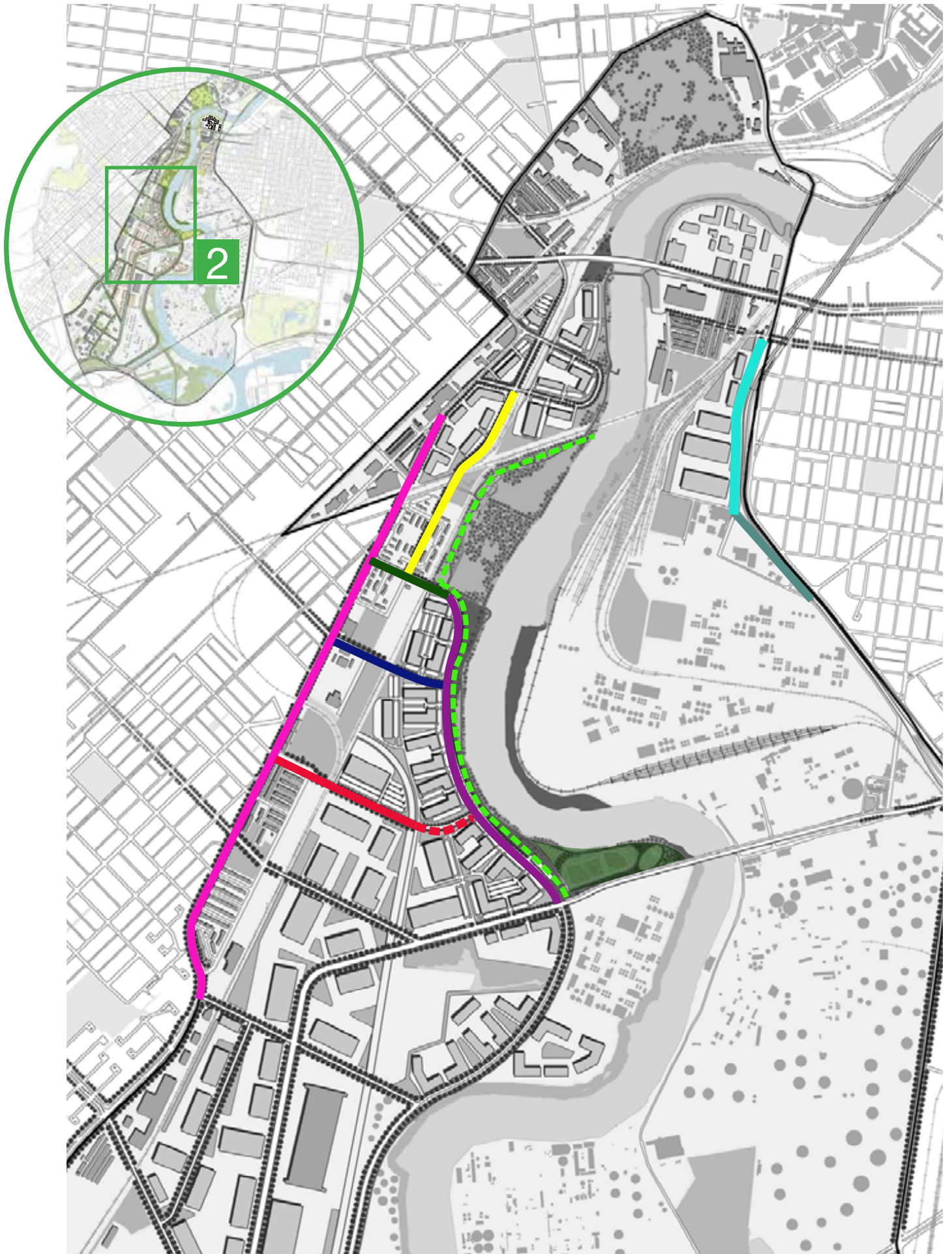
River Road	River Road extension from 51st Street to 56th Street	2 lane “complete streets” roadway (one lane in each direction) with stormwater infrastructure	\$27.1M
Circulation	58th Street between Lindbergh Boulevard and River Road	Roadway upgrades, streetscape, landscape, lighting, wayfinding	\$5.8M
Circulation	Lindbergh Boulevard between Grays Avenue and 67th Street	Roadway upgrades, streetscape, landscape, lighting, wayfinding	\$12.8M
Circulation	56th Street between Lindbergh Boulevard and River Road	Roadway upgrades, streetscape, landscape, lighting, wayfinding	\$3.4M
River Road	River Road extension from 56th Street to Passyunk Avenue	2 lane “complete streets” roadway (one lane in each direction) with stormwater infrastructure	\$18.5M
Circulation	61st Street between Lindbergh Boulevard and River Road	Street alignment to intersect River Road, streetscape, landscape, lighting, wayfinding	\$11M
Circulation	Eastbound I-76 access ramp	Roadway upgrades, streetscape, landscape, lighting, wayfinding	\$2.9M
Circulation	34th Street to Moore Street	Roadway upgrades, streetscape, landscape, lighting, wayfinding	\$14.4M

AMENITIES

Schuylkill River Trail Extension	Bartram’s South	Trail, stormwater infrastructure, landscape	\$12M
Passyunk Crescent Park	Bartram’s South	Trail, park, stormwater infrastructure, landscape	\$45.1M

TOTAL INVESTMENT

\$152M



IMPLEMENTATION PHASE THREE

LONG TERM PROJECTS (16–22 YEARS)

ACCESS AND CONNECTIVITY

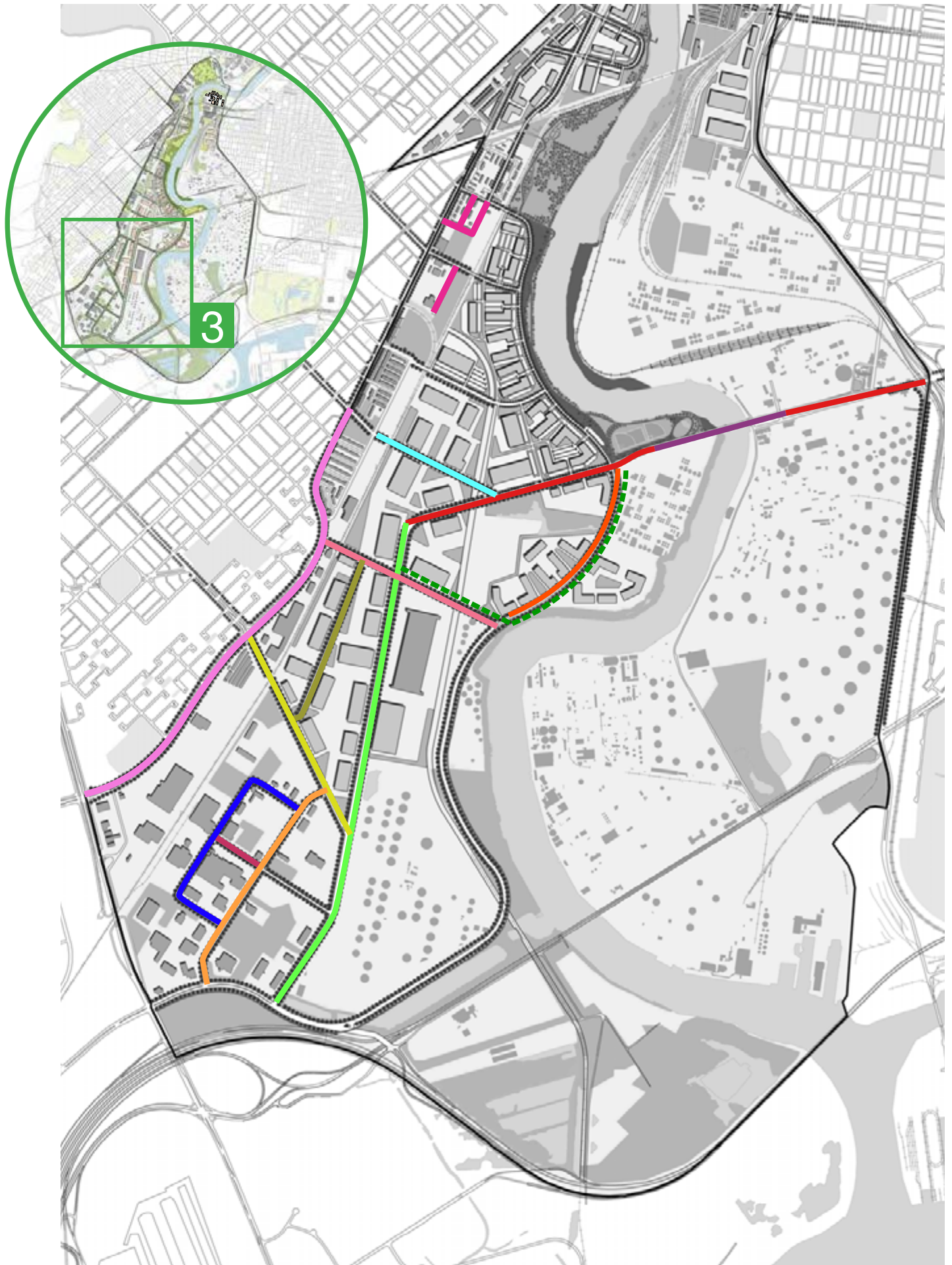
Circulation	Passyunk Avenue	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$16.9M
Circulation	Passyunk Avenue Bridge	Bridge upgrades, lighting, signage, multiuse trail	\$7.6M
Circulation	Essington Avenue	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$25.2M
Circulation	63rd Street	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$8.7M
Circulation	67th Street	Roadway upgrades, streetscape, landscape, lighting	\$13.4M
Circulation	Norwich Drive	Roadway upgrades, streetscape, landscape, lighting, gateway elements	\$12.3M
Circulation	70th Street	Roadway upgrades, streetscape, landscape, lighting	\$14.3M
Circulation	Holstein Avenue	Roadway upgrades, streetscape, landscape, lighting	\$13M
Circulation	76th Street	Roadway upgrades, streetscape, landscape, lighting	\$8.7M
Circulation	Brewster Avenue, 74th and 78th Streets	Roadway upgrades, streetscape, landscape, lighting	\$8.6M
Circulation	Lindbergh Boulevard	Roadway upgrades, streetscape, landscape, lighting	\$22.9M
River Road	River Road between Passyunk Avenue and 67th Street	New roadway, streetscape, landscape, lighting	\$17.6M
Circulation	76th Street	Roadway upgrades	\$1M

AMENITIES

Schuylkill River Trail Extension	Between Passyunk Avenue and 67th Street	Trail, landscape	\$11.8M
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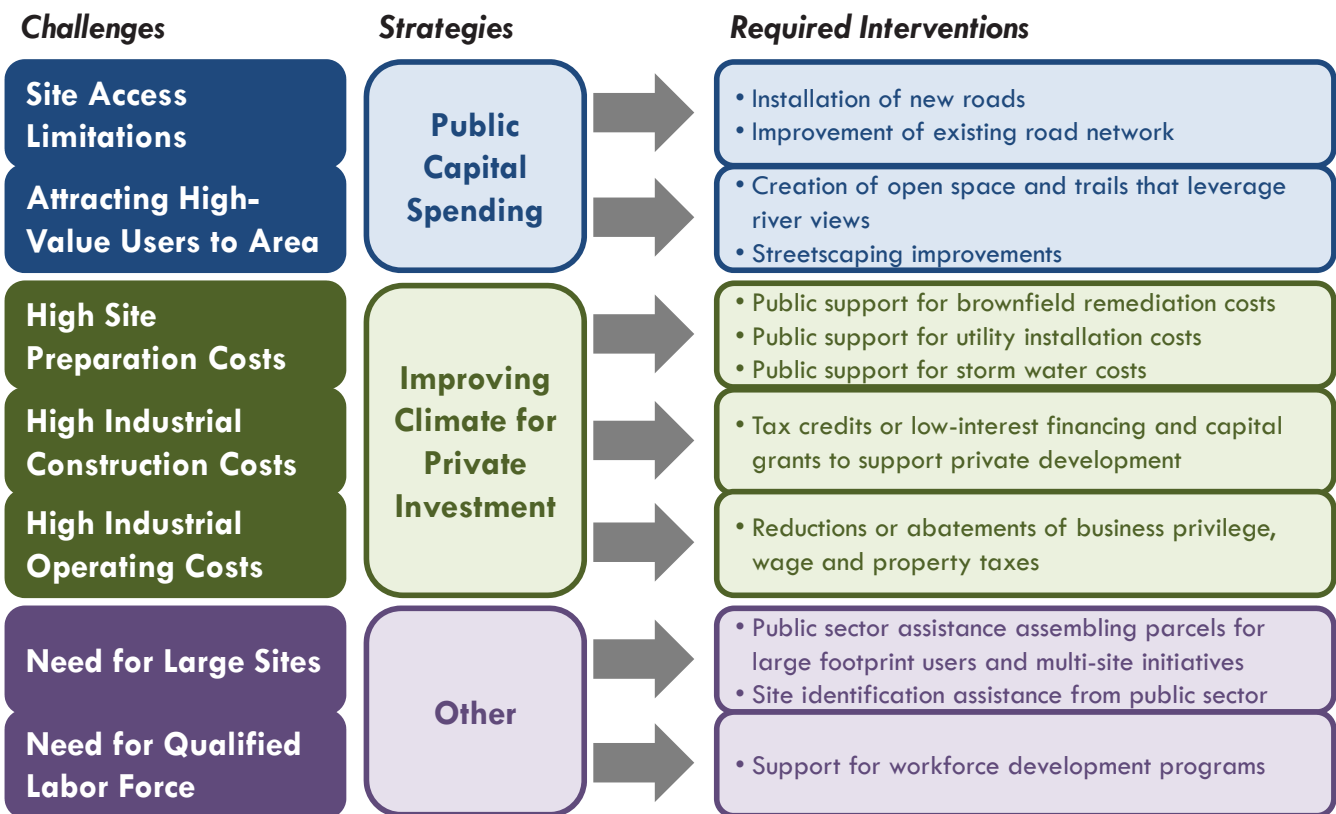
TOTAL INVESTMENT

\$183M



IMPLEMENTATION COST AND BENEFIT

The need for public infrastructure investment is one of the key constraints on development in the Lower Schuylkill district, though other challenges must be addressed at the same time.



COST AND BENEFIT ECONOMIC DEVELOPMENT

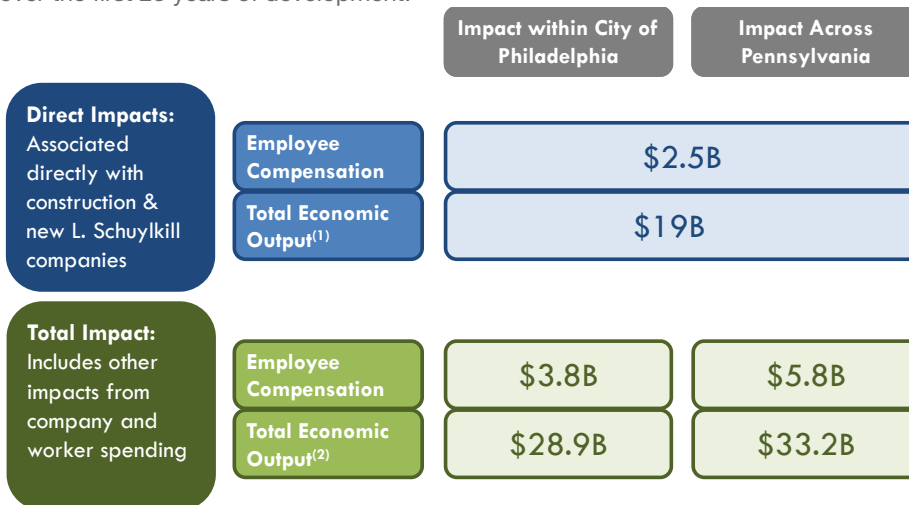
INNOVATION DISTRICT

Public Infrastructure: \$229M

Private Investment: \$420M

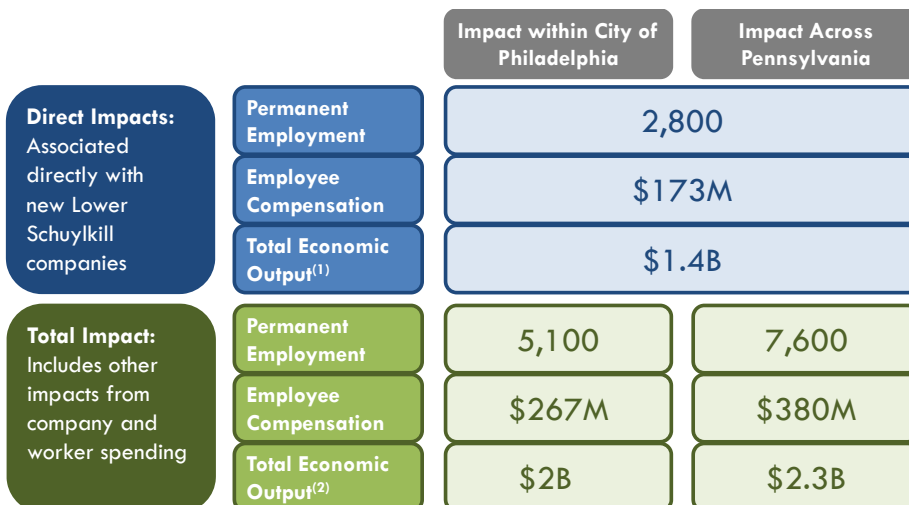
Interim Economic Impact

Construction and company operations will generate over \$30B of economic output over the first 23 years of development.



Ultimate Economic Impact

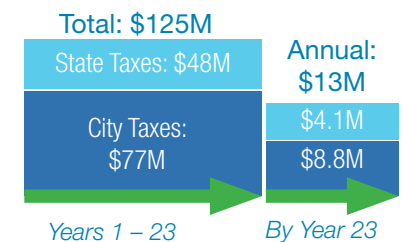
At full build-out, annual company operations will support over 6,000 jobs and generate \$1.8B in economic output across the state.



ECONOMIC IMPACTS

New private companies will pay \$125M in local and State taxes over the first 23 years of development, with significantly more revenues from spin-off activities.

By year 23, new private companies will pay \$13 million annually in local and state taxes.



*Spending impacts occurring as a direct result of a stimulus such as salaries, supplies, etc.; (2) Spending impacts occurring as a direct or indirect result of a stimulus, including expenditures incurred by other supporting firms.

COST AND BENEFIT ECONOMIC DEVELOPMENT

LOGISTICS HUB



Public Infrastructure: \$182M

Private Investment: \$340M

Interim Economic Impact

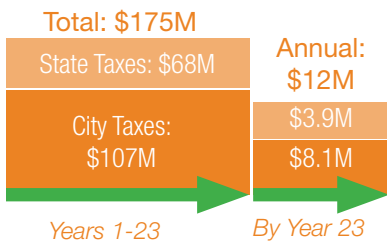
Construction and company operations will generate nearly \$30B of economic output over the first 23 years of development.

	Impact within City of Philadelphia	Impact Across Pennsylvania
Direct Impacts: Associated directly with construction & new L. Schuylkill companies	Employee Compensation \$1.9B	
	Total Economic Output⁽¹⁾ \$12.0B	
Total Impact: Includes other impacts from company and worker spending	Employee Compensation \$2.9B	\$5.0B
	Total Economic Output⁽²⁾ \$18.3B	\$29.5B

ECONOMIC IMPACTS

Construction and company operations will generate nearly \$30B of economic output over the first 23 years of development.

At full build-out, annual company operations will support nearly 6,000 jobs and generate \$1.4B in economic output across the state.



Ultimate Economic Impact

At full build-out, annual company operations will support nearly 6,000 jobs and generate \$1.4B in economic output across the state.

	Impact within City of Philadelphia	Impact Across Pennsylvania
Direct Impacts: Associated directly with new Lower Schuylkill companies	Permanent Employment 2,545	
	Employee Compensation \$133M	
	Total Economic Output⁽¹⁾ \$845M	
Total Impact: Includes other impacts from company and worker spending	Permanent Employment 4,280	5,805
	Employee Compensation \$200M	\$266M
	Total Economic Output⁽²⁾ \$1.3B	\$1.4B

*Spending impacts occurring as a direct result of a stimulus such as salaries, supplies, etc.; (2) Spending impacts occurring as a direct or indirect result of a stimulus, including expenditures incurred by other supporting firms.

ENERGY CORRIDOR

Interim Economic Impact

Construction activity associated with refinery improvements could support nearly 10,000 temporary jobs in the state. PES has publicly committed to \$100M in capital investments

		Impact within City of Philadelphia	Impact Across Pennsylvania
Direct Impacts: Associated directly with construction projects	Temporary Jobs (Job-Years)*	1,900 (from public sources)*	
	Employee Compensation	\$91M	
	Total Economic Output ⁽¹⁾	\$557M	
Total Impact: Includes other impacts from company and worker spending	Temporary Jobs (Job-Years)	2,915	9,740
	Employee Compensation	\$131M	\$429M
	Total Economic Output ⁽²⁾	\$827M	\$1.4B



ECONOMIC IMPACTS

Following the completion of refinery improvements, at least \$7M could be generated in annually in local and state taxes, with significantly more revenues from spin-off activities.

Total: \$7M
State Taxes: \$4M
City Taxes: \$3M

Ultimate Economic Impact

Refinery investments could result in the retention of 845 jobs and creation of up to 200 more permanent jobs, generating \$2.9B in economic output across the state.

		Impact within City of Philadelphia	Impact Across Pennsylvania
Direct Impacts: Associated directly with new Lower Schuylkill companies	Permanent Employment*	1,045 (from public sources)*	
	Employee Compensation	\$107M	
	Total Economic Output ⁽¹⁾	\$1.8B	
Total Impact: Includes other impacts from company and worker spending	Permanent Employment	2,340	5,640
	Employee Compensation	\$165M	\$409M
	Total Economic Output ⁽²⁾	\$2.2B	\$2.9B

*Direct job projections taken from public sources; other impacts calculated by applying Bureau of Economic Analysis impact ratios to direct job projections; (1) Spending impacts occurring as a direct result of a stimulus such as salaries, supplies, etc.; (2) Spending impacts occurring as a direct or indirect result of a stimulus, including expenditures incurred by other supporting firms.

COST AND BENEFIT ECONOMIC DEVELOPMENT

MASTER PLAN SUMMARY

Key Development Figures

Public Infrastructure Investment Private Investment Development Capacity Jobs Created Economic Impact

\$230M	\$420M	183 acres 2.4M–2.8M SF	2,800–3,300	\$33B
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Innovation District

\$181M	\$340M	311 acres 3.1M–3.8M SF	2,500–3,000	\$30B
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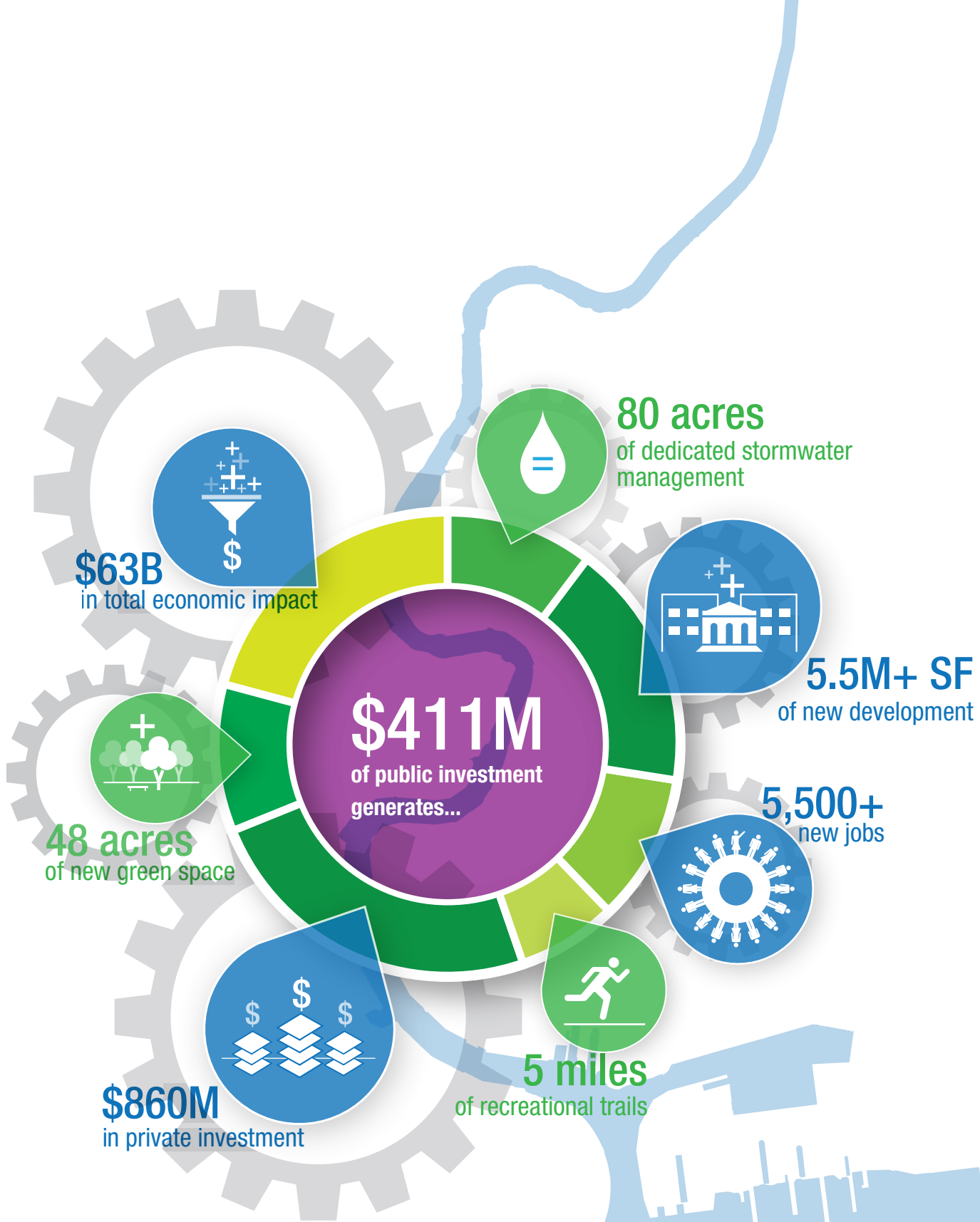
Logistics Hub

	\$100M+	320 acres	200+	
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Energy Corridor

\$411M	\$860M	814 acres 5.5M–6.6M SF	5,500–6,500	\$63B
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The Lower Schuylkill Totals



\$63B
in total economic impact

80 acres
of dedicated stormwater
management

5.5M+ SF
of new development

5,500+
new jobs

\$411M
of public investment
generates...

48 acres
of new green space

\$860M
in private investment

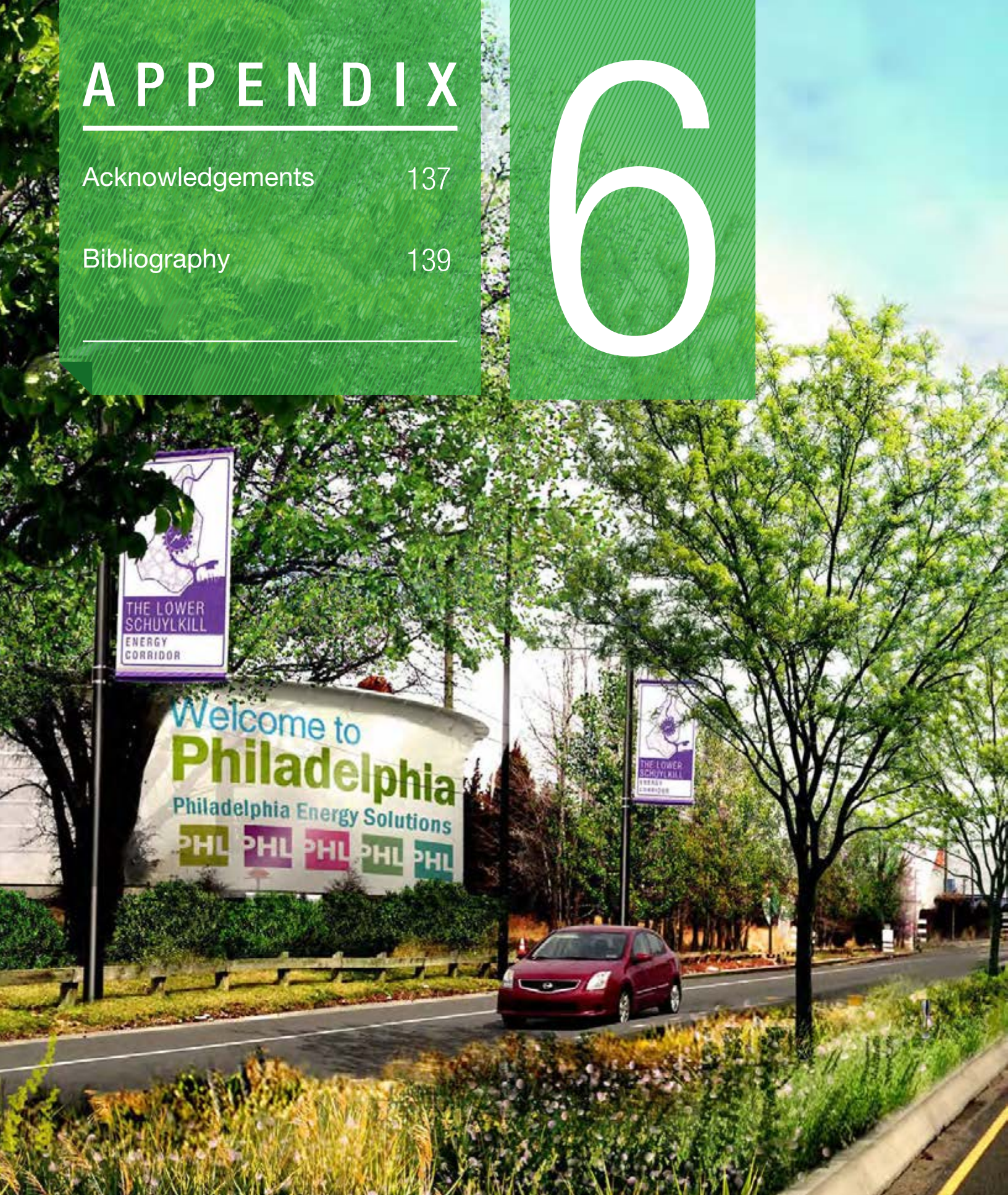
5 miles
of recreational trails

APPENDIX

Acknowledgements 137

Bibliography 139

6





APPENDIX

ACKNOWLEDGEMENTS

The Lower Schuylkill Planning team would like to thank all of the participants of the stakeholder interview process. Your input and contributions have been instrumental throughout the planning process.

STAKEHOLDER INTERVIEWS

Troy Adams, Select Greater Philadelphia
Yahya Adib Bey, Southwest Philadelphia District Services
Laura Ahramjian, Kise Straw and Kolodner
Mark Alan Hughes, University of Pennsylvania
Walker Allen, Delaware Valley Regional Planning Commission
Maggie Allio, City of Philadelphia Water Department
Rob Andersen, Colonial Pipeline Company
Christina Art, Delaware Valley Regional Planning Commission
Jessica Baumert, The Woodlands
Saul Behar, University of the Sciences
Matthew Bergheiser, University City District
Ken Blank, Temple University
Liz Bressi-Stoppe, University of the Sciences
Elizabeth Brown, The Partnership Community Development Corporation
Stephen Buckley, City of Philadelphia Mayor's Office of Transportation and Utilities
Gardner Cadwalader
Douglas Carney and Joseph Kiernan, Children's Hospital of Pennsylvania
Bill Cessnick, City of Philadelphia Water Department
Mark Chalupa, Forgotten Bottom Community Association
Byron Comati, Southeastern Pennsylvania Transportation Authority
Michael Cooper, Philadelphia Industrial Development Corporation
Ed Covington, City of Philadelphia Redevelopment Authority
Rina Cutler, City of Philadelphia Mayor's Office of Transportation and Utilities
Ted Dahlburg, Delaware Valley Regional Planning Commission
Ed Datz, University of Pennsylvania Facilities and Real Estate
Calvin Davenger, Philadelphia International Airport
Charles Davies, Pennsylvania Department of Transportation
Elder Davis, Open Door Mission True Light Church
Anthony DiArenzo, Conrail
Michael DiBerardinis, Philadelphia Parks and Recreation
Charlie Dilks, Dilks Consulting
Vincent Dougherty, City of Philadelphia Department of Commerce
Jon Edelstein, City of Philadelphia Department of Commerce
Jeffrey Featherstone, Temple University
Elizabeth Feinberg, Pennsylvania Environmental Council
Lane Fike, Schuylkill River Development Corporation
M. Therese Flaherty, Wharton Small Business Development Center
Robert Fleming, Philadelphia University
Robert Frances, Drexel University
Liz Gabor, Philadelphia Industrial Development Corporation
Katherine Gajewski, City of Philadelphia Mayor's Office of Sustainability
Mark Gale, Philadelphia International Airport
Paul Garvey, Cushman Wakefield
John Gentzler, Colonial Pipeline Company
Vincent Giordano, Vincent Giordano Corporation
William Goetz, CSX Transportation
Robert Gormley, Grays Ferry Community Council
Rich Gorodesky, Colliers International
Danielle Gray, Schuylkill River Development Corporation
Patrick Green, CBRE
John Haak, City of Philadelphia City Planning Commission
Mami Hara, City of Philadelphia Water Department
John Harty, Samuels & Sons Seafood
Donna Henry, Southwest Community Development Corporation
Curt Hess, University City Science Center
Michael Hines, CBRE
David Hollenberg, University of Pennsylvania Facilities and Real Estate
Jody Holton, Southeastern Pennsylvania Transportation Authority
John Kennedy James Newbold, Dominic Rocco, Zara Nucci, Stan Sneath, Walter Payne and Steve Sinding from PADEP
Quetta Jefferson, West Shore Civic Association
Michael Johns, Philadelphia Housing Authority
Prema Katari Gupta, University City District
Louis Kiang, BioBAT Inc., New York Science & Technology Center
Christine Knapp, Penn State
Jeffrey Knowles, Pennsylvania Environmental Council

Mark Kocent, University of Pennsylvania Facilities and Real Estate
 Thomas Kuczynski and Douglas Moser, PGW
 Peter Lindenmyer, TJX
 Bryan Lobel, Interface Studio LLC
 Khiet Luong, Pennsylvania Environmental Council
 Charles MacIntosh, United States Army Corps of Engineers
 Jim Mazzarelli, Liberty Property Trust
 Robert McGrath, Drexel University Office of Technology Commercialization
 Charles McIntosh, U.S. Army Corps of Engineers
 Shawn Megill Legendre, Delaware Valley Regional Planning Commission
 Andrew Meloney, City of Philadelphia City Planning Commission
 Patrick Morgan, Philadelphia Parks and Recreation
 Thomas Morr, Select Greater Philadelphia
 Karin Morris, Delaware Valley Regional Planning Commission
 Doug Moser, Philadelphia Gas Works
 Stephen Mulln, Econsult
 Jim Mundy, The Woodlands
 Anne Nevins, Philadelphia Industrial Development Corporation
 Jessica Noon, City of Philadelphia Water Department
 Elizabeth O'Brien, The Wistar Institute
 Scott Page, Interface Studio LLC
 Anne Papageorge, University of Pennsylvania Facilities and Real Estate
 Michael Poisel, UPenn Program Director, Center for Technology Transfer, University of Pennsylvania
 Robert Puentes, Brookings Institute
 Paul Racette, Pennsylvania Environmental Council
 Leon Robinson, The Partnership Community Development Corporation
 Tony Rod, Flynn Company
 Greg Rogerson, JG Petrucci Co.
 Rose Ann Rosenthal, Ben Franklin Technology Partners
 Michael Ross, Southwest Philadelphia District Services
 Scott Schwarz, Philadelphia Law Department
 Paul Sehnert, University of Penn Pennsylvania
 Jacqueline Slaughter, West Shore Civic Association
 Christopher Steele, CWS Consulting Group
 Rob Steinhart, Colliers International
 Andrew Stober, City of Philadelphia Mayor's Office of Transportation and Utilities
 Ryan Sweet, Moody's
 Joseph Syrnick, Schuylkill River Development Corporation
 Dr. Stephen Tang, The Science Center
 Danae Tilghman, City of Philadelphia Water Department
 Andrew Toy, The Enterprise Center
 James Tucker, Drexel University
 Paul Vernon, Kise Straw and Kolodner
 Robert Verrall, DB Schenker
 Dr. Timothy C. Wagner, United Technologies Research Center
 Carolyn Wallis, Pennsylvania Department of Conservation and Natural Resources
 Nicholas Walsh, Philadelphia Regional Port Authority
 Butch Walton, Waste Management
 Laura Wolf-Powers, University of Pennsylvania

APPENDIX

BIBLIOGRAPHY

SOURCES

- Center City District. "State of Center City 2011." (2011). <http://centercityphila.org/socc>.
- Community Design Collaborative. "Infill Philadelphia: Industrial Sites." (2010). <http://infillphiladelphia.org/news/2010/11/infill-philadelphia-industrial-sites-publication-now-available-online>.
- Federal Aviation Administration. "Bird Aircraft Strike Hazard Program." (YEAR). <http://wildlife-mitigation.tc.faa.gov/wildlife/certalerts.aspx>.
- Federal Aviation Administration. "PHL Capacity Enhancement Program (Record of Decision)." (2010). www.faa.gov/airports/environmental/records_decision/index.cfm?airport=phl.
- Federal Emergency Management Agency. "Floodplain Maps." (YEAR). <http://msc.fema.gov>.
- Key, Peter. "Sunoco, Carlyle form joint venture to keep refinery running." Philadelphia Business Journal, July 2, 2012.
- Lavelle, Marianne. "With Gas Prices High, U.S. Refinery Closures Hit Workers and Drivers." National Geographic Daily News, April 4, 2012.
- Lewis, John Frederick. "The Redemption of the Lower Schuylkill: The River As It Was, The River As It Is, The River As It Should Be." Philadelphia: City Parks Association, 1924.
- Loyd, Linda. "New Shelter for Food." Philadelphia Inquirer, April 7, 2011.
- Marder, Dianna. "The 'World's Largest Fridge' to Open in S.W. Philly." Philadelphia Inquirer, April 7, 2011.
- Mayor's Office of Sustainability. "Greenworks Philadelphia: 2010 and 2011 Progress Reports." (2009). www.phila.gov/green/greenworks/index.html.
- Penn Praxis. "Erase the Boundaries: Design Ideas for Greater Philadelphia." (2009). <http://issuu.com/pennpraxis/docs/erasetheboundaries>.
- Pennsylvania Department of Environmental Protection, Bureau of Watershed Management. Pennsylvania Stormwater Best Management Practices Manual, December 30, 2006.
- Pennsylvania Environmental Council. "Generating Recovery by Enhancing Active Transportation in Pennsylvania & New Jersey (GREAT-PA/NJ)." (2010). www.pecpa.org/GREAT_PA_NJ.
- Philadelphia City Planning Commission. "Philadelphia2035: A Citywide Vision." (2011). <http://phila2035.org/pdfs/final2035vision.pdf>.
- Philadelphia City Planning Commission. "Philadelphia2035: Lower South District Plan." (2012). <http://phila2035.org/pdfs/FinalLowerSouth.pdf>.
- Philadelphia City Planning Commission. "Philadelphia Pedestrian and Bicycle Master Plan, Phase I." (2010). <http://www.tooledesign.com/philadelphia/documents.html>.

Philadelphia Industrial Development Corporation. "An Industrial Land & Market Strategy for the City of Philadelphia." (2008). www.pidc-pa.org/reports-and-studies.

Philadelphia Industrial Development Corporation. "Philadelphia Navy Yard Master Plan." (2004). <http://www.navyyard.org/master-plan/shipyard>.

Philadelphia Parks and Recreation. "Green2015: An Action Plan for the First 500 Acres." (2010). http://issuu.com/pennpraxis/docs/green2015_full.

Philadelphia Zoning Code Commission. "Proposed Revisions to the Philadelphia Zoning Code and Proposed Zoning Conversion Map." (2010). <http://zoningmatters.org>.

Philadelphia Water Department. "Green City, Clean Waters." (2009). http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan.

Philadelphia Water Department. "CSOcast." November 12, 2012. http://www.phillywatersheds.org/what_were_doing/documents_and_data/live_data/csocast.

Philadelphia Water Department, Planning & Environmental Services Division. Stormwater Management Guidance Manual, Version 2.0, April 29, 2011. <http://www.pwdplanreview.org/StormwaterManual.aspx>.

Przeworski, Ken. "Capital Corner: Planning to Receive Bakken Crude." Philadelphia Energy Solutions, Energy Points, October 2012.

Schuylkill River Development Corporation. "The Tidal Schuylkill River Master Plan." (2003). <http://www.schuylkillbanks.org/sites/72.27.230.230/files/SRDC%20Master%20Plan.pdf>.

Stranahan, Susan Q. "Oil Cleanup Is Mired in Legal Battle: Pollution from S. Phila. Refineries Will Take Millions to Clean Up but Who Will Pay?" Philadelphia Inquirer, January 24, 1993.

University City District. "The State of University City 2012: Celebrating Neighborhood's Extraordinary Prosperity and Potential." (2012). <http://universitycity.org/press/state-university-city-2012-celebrates-neighborhoods-extraordinary-prosperity-and-potential>.

University of Pennsylvania. "Penn Connects: A Vision for the Future." (2006). <http://www.pennconnects.upenn.edu>.

IMAGE SOURCES

"58th Street Greenway." Photograph. Available from: connectthecity.org.

"Aerial." Pictometry International Corp. LRSLA. Accessed Summer 2012.

"Aerial." Pictometry International Corp. Philadelphia City Planning Commission. Accessed Summer 2012.

"Aerial." Pictometry International Corp. Philadelphia Industrial Development Corporation. Accessed Summer 2012.

"Aerial" Pictometry International Corp. Philadelphia City Planning Commission. Accessed Summer 2012.

"Bartram's Garden House." Photograph. Bartram's Garden.

"Bartram's Garden House." Photograph. Bartram's Garden.

"Bartram's Mile Central Site Section." Drawing. Philadelphia Parks and Recreation, Andropogon Associates.

"Blocked and Fenced at Grade RR Crossing." Photograph. PennPraxis.

"Center City Skyline from Grays Ferry Crescent." Photograph. SRDC.

"Children's Hospital of Philadelphia." Photograph. Children's Hospital of Philadelphia.

Cohen, Brian. "Flex Space." Liberty Property Trust.

"Eagle Point Refinery." LRSLA. Accessed March 2005.

"Early Action 1." Aerial. Map of Philadelphia, retrieved on January 15, 2013 from website www.maps.google.com.

"Early Action 2." Aerial. Map of Philadelphia, retrieved on January 15, 2013 from website www.maps.google.com.

"Flex Buildings." Aerial. Map of Philadelphia, retrieved on January 15, 2013 from website www.maps.google.com.

"Floodplain." Map. LRSLA.

"Forklift Operator." Photograph. Philadelphia Industrial Development Corporation.

Gabor, Liz. "Soils at Bartram's South." Photograph. Philadelphia Industrial Development Corporation.

"Grays Ferry Crescent." Photograph. SRDC.

"Harris Sokoloff" Photograph. PennPraxis.

"Historical Photos." Photograph. Available from the Philadelphia Water Department: http://www.phillyh2o.org/backpages/redemption/089_JFL.jpg.

"Historical Photos." Photograph. Available from the Philadelphia Water Department: http://www.phillyh2o.org/backpages/redemption/089_JFL.jpg.

Kocent, Mark. "South Bank." University of Pennsylvania

"Land Use Map." Map. Philadelphia City Planning Commission

"LUCY." Photograph. Available from University City District: universitycity.org.

"MAB Plant." Photograph. PennPraxis.

"NHP." Aerial. Map of Philadelphia, retrieved on January 15, 2013 from website www.maps.google.com.

"PES." LRSLA.

"PES." LRSLA.

"PHL Expansion." Map. Philadelphia International Airport Draft Environmental Impact Statement.

"Pittsburgh Tech Park." Photograph. LRSLA

"Produce Market Sign" Photograph. Philadelphia Wholesale Produce Market.

"Produce Market Worker" Photograph. Philadelphia Wholesale Produce Market.

"Produce Market." Photograph. NBBJ.

"Produce Market." Photograph. Philadelphia Industrial Development Corporation.

"Public Meeting at South Bank." Photograph. NBBJ.

"PWD- 61st Street." Rendering. Philadelphia Water Department.

"PWPM from Essington." Photograph. PennPraxis.

"PWPM." Aerial. Pictometry International Corp. Philadelphia City Planning Commission. Accessed Summer 2012.

"Rail Lines NHP" Photograph. LRSLA.

"Rail Road Swing Bridge." LRSLA.

"Rain Garden." Map of Philadelphia, retrieved on January 15, 2013 from website www.maps.google.com.

"Refinery (Day)." Photograph. PennPraxis.

"River." Photograph. PennPraxis.

"RR Swing Bridge." Photograph. LRSLA. March 2005.

Salmons, Dylan."Refinery (Night)." Philadelphia Industrial Development Corporation.

"Schuylkill Banks Opening." Photograph. SRDC.

"Schuylkill Banks." Photograph. SRDC.

"Schuylkill River." Photograph. DDK.

"Schuylkill River." Photograph. LRSLA. March 2005.

"SEPTA." Photograph. SEPTA.

"South Bank North" Photograph. University of Pennsylvania.

"South Bank." Rendering. University of Pennsylvania.

"Storm Water Vegetation." Photograph. PennPraxis.

"Streets Facility in PDS1." Photograph. PennPraxis.

"The Porch." Photograph.UCD.

"The Woodland's Cemetery." Photograph. PennPraxis.

"University City." Photograph. Available from University City District: universitycity.org.

"US Gypsum." 1926. Photograph. Aerial Viewpoint Inc.

"USPS." Photograph. Kling Stubbins.

"Vegetated Bank." Photograph. LRSLA.

"Warehouse Building." Aerial. Map of Philadelphia, retrieved on January 15, 2013 from website www.maps.google.com.

"Worker with Flat Surface." Photograph. Philadelphia Industrial Development Corporation.

"Worker with Forklift." Photograph. Philadelphia Industrial Development Corporation.

"Worker with Granite Slab." Photograph. Philadelphia Industrial Development Corporation.

"Worker with Machine." Photograph. Philadelphia Industrial Development Corporation.

"Worker with Paper." Photograph. Philadelphia Industrial Development Corporation.

"Worker with pipe." Photograph. Philadelphia Industrial Development Corporation.

"Workers on Production Line." Photograph. Philadelphia Industrial Development Corporation.



For more information regarding the Lower Schuylkill Master Plan
please contact:

Philadelphia Industrial Development Corporation
1500 Market Street, 26th Floor
Philadelphia, PA 19102

P: 215.496.8020
E: lsmp@pidc-pa.org

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