Delaware River Waterfront **Sustainability and Resiliency Plan**

June 2026

Delaware River WATERFRONT Corporation

PREPARED FOR:

Delaware River WATERFRONT Corporation

PREPARED BY:

OLIN + ARCADIS

BJH ADVISORS | PROS CONSULTING | SGD URBAN SOLUTIONS

CONTENTS

Figure 1 People gather at the Waterfront even in the Winter thanks to DRWC's year-round programming like the Independence Blue Cross RiveRink Winterfest.
Source: Matt Stanley / DRWC.


01

SECTION 1:

EXECUTIVE SUMMARY

Ongoing development of the Central Delaware Waterfront as a civic and economic district must be strategically aligned with the immediate realities of climate change. This Sustainability and Resiliency Plan provides a framework for embedding environmental stewardship and climate adaptation priorities into DRWC's operations, capital projects, and regional advocacy. By establishing actionable goals across the public realm, transportation networks, and private development, this plan ensures that both the waterfront can continue to evolve as a safe, resilient, and accessible destination, and that DRWC as an organization can be resilient in the face of changing external conditions.

A PIVOTAL MOMENT

The Central Delaware Waterfront is at a pivotal moment, balancing a decade of significant economic momentum with the immediate realities of a changing climate. Over the past ten years, DRWC's strategic investments have transformed the waterfront into a highly utilized public asset, helping catalyze over $2.3 billion in private development.[1] However, the waterfront is already experiencing the practical impacts of climate change. More frequent tidal flooding regularly forces temporary closures at key spaces like Cherry Street Pier, while hotter summers create challenging conditions for maintenance staff and reduce public enjoyment. Looking ahead, heavier rainfall, rising sea levels, and extreme heat will only compound these operational and structural challenges.

The costs of delaying action are substantial and span financial, operational, and social impacts. Flooding can damage piers, utilities, and public spaces like the Delaware River Trail, which serves over 500,000 trips annually; meanwhile, weather-related disruptions directly jeopardize the DRWC's revenue streams, threatening the funding essential for ongoing operations and maintenance, as well as the delivery of free and low-cost waterfront programming for the public.[2] As the waterfront enters a new phase of growth driven by evolving real estate and development trends, proactive resilience planning is a practical necessity. Building on the 2012 Master Plan efforts, this plan seeks to focus efforts towards realizing sustainability and resilience. Without coordinated intervention now, the cumulative costs of infrastructure repairs, lost revenue, and rising insurance premiums will severely strain DRWC's resources. By integrating climate-resilient infrastructure and adaptive operations, DRWC can mitigate these risks, manage long-term costs, and ensure the waterfront remains a safe, vibrant, and accessible destination for generations to come. Sustainability and resilience are complex, long-term pursuits. This plan represents a starting point and a guide for focused action towards these objectives.

Sustainability

In the context of this plan, ***sustainability*** *means* ***supporting*** *and* ***maintaining ecological, human, and economic health and vitality,*** *including a commitment to* ***climate change mitigation*** *through greenhouse gas reductions, clean energy and waste reduction, and stewarding the biodiversity of DRWC's parks and open spaces.*

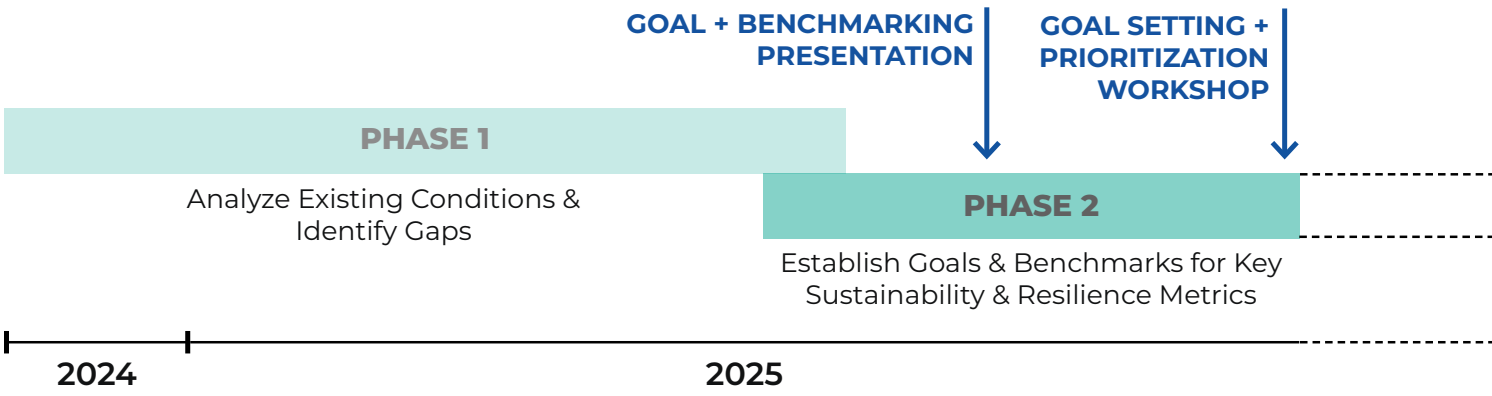
Resilience

This plan uses the term ***resilience*** *to indicate the* ***ability of a system to withstand and adapt*** *to a disturbance, particularly a changing everyday climate and worsening climate-related hazards. It will require assessing current and future climate risk in the project area and developing actionable, cost-effective, and prioritized solutions across a variety of scales.*

TOWARDS A MORE SUSTAINABLE AND RESILIENT DELAWARE RIVER WATERFRONT

Figure 2. Old pilings at near high tide at Washington Avenue Pier. Source: James Abbott/DRWC.

THE PROCESS



PHASE 1

Analyze Existing Conditions and Identify Gaps

The planning process began with a kickoff meeting to confirm overarching goals and clarify DRWC's role as an advocate and leader for waterfront sustainability. Following this, existing regional plans and the latest climate risk analyses were reviewed to identify planning gaps and align DRWC's initiatives with current science. Building on this review, public datasets were mapped over DRWC assets to analyze spatial hazard exposures and future climate threats, including coastal flooding, sea-level rise, and extreme heat.

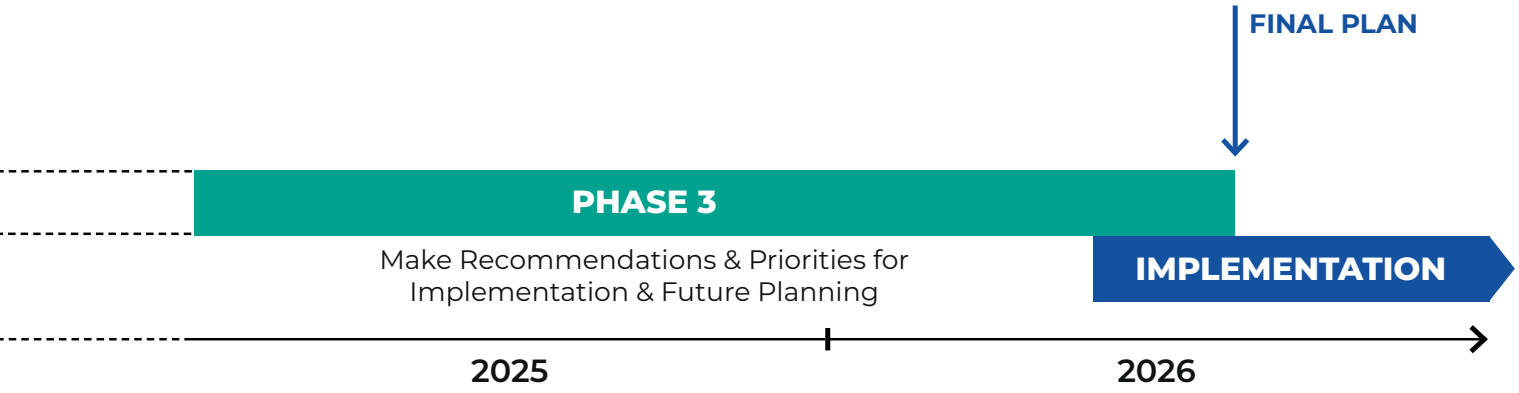
Concurrently, insights were gathered from DRWC operations and programming staff to understand their daily challenges and priorities regarding resiliency. All of these findings were synthesized into an Existing Conditions Summary and Gap Analysis. This comprehensive overview detailed the current state of waterfront sustainability and highlighted deficiencies in existing data and planning. These findings were presented to DRWC staff and a report was submitted at the end of Phase 1.

PHASE 2

Establish Goals and Benchmarks for Key Sustainability and Resilience Metrics

Building on insights from phase one, an interactive workshop was hosted with DRWC staff to establish qualitative goals and assign responsibilities across key areas, including energy, waste, water, risk management, and environmental justice. Local, regional, and national plans of significance were reviewed as precedents. In addition, industry rating systems like LEED, Envision, SITES, and WEDG were reviewed to help create a matrix of best practices that were tailored specifically to the Central Delaware Waterfront. These materials set the foundation for the workshop. The data captured during the workshop guided the shaping of a first set of draft goals and actions.

Figure 3. June goal setting and prioritization workshop at the Chart House along the Delaware River. Source: OLIN, 2025.



PHASE 3

Develop Recommendations and Priorities for Implementation and Future Planning

In the final phase, actionable recommendations were developed to help DRWC achieve its established sustainability and resiliency goals, ensuring alignment with economic viability, available funding, and partner initiatives. After presenting an initial draft to DRWC staff for review, these strategies were further refined to include:

- Recommendations for DRWC programming, operations, and maintenance across issue areas.
- Recommendations organized by DRWC's relationship to the public realm, transportation and infrastructure, and private development.
- Key partnerships and suggestions for prioritization for DRWC to undertake collaboratively to achieve these goals.

The plan prioritizes recommendations that link sustainability and resiliency issue areas and the existing systems along the waterfront that set DRWC up for future implementation and success.

These recommendations were developed with periodic input from our consultant team and subject-matter experts along with regular check-ins and feedback from DRWC. Regular coordination with the Office of Sustainability also generated input during this process. Incorporating this feedback alongside findings from the first two phases, the plan document was drafted. In addition to outlining existing conditions research, this document also features a detailed overview of DRWC's role and legacy in order to better situate the scope and implementation of this plan. The recommendations section is organized by issue area and details goals, actions, sub-actions, and measures to track progress. The final chapter outlines prioritization and implementation considerations for this plan.

After submitting the draft action plan, DRWC's final comments were incorporated to produce the final Sustainability and Resiliency Plan, formatted for both digital and print distribution.

A CHANGING CLIMATE ON THE WATERFRONT

Over the past decade, the physical and regulatory landscape of the Central Delaware has been fundamentally reshaped. Guided by a visionary public realm framework and driven by the resulting market demand, the waterfront is experiencing a sustained wave of residential-led mixed-use development, transitioning from underutilized industrial parcels into a dense, activated civic destination. This growth is guided by zoning mechanisms, such as the Central Delaware Overlay (CDO), which encourages best practices like public access and active ground floor uses, and the citywide Waterfront Setback, which supports critical riparian buffers. As these regulatory frameworks shape new investments and infrastructure at the river's edge, they also concentrate more people and property along the waterfront. This dense, newly accessible public realm sits directly on the frontline of escalating environmental hazards. As the waterfront accommodates this massive influx of residents, visitors, and infrastructure, understanding the specific, localized threats of coastal flooding and urban heat is the essential first step toward a more resilient future.

FLOODING

The Central Delaware Waterfront faces a complex and escalating flood risk driven by the compounding forces of increased precipitation, storm surge, and sea-level rise. Historically vulnerable due to dense development and aging sewer systems, the waterfront is now confronting rapid environmental shifts. Annual precipitation, which has risen by 0.82 inches per decade since the 1940s, is projected to increase by up to 12% by the 2050s, intensifying the effects of rainfall (pluvial) and riverine (fluvial) flooding.[3] Simultaneously, the tidal Delaware River is experiencing accelerating sea-level rise, with projections indicating an increase of 14 to 19 inches by the 2050s and more than three feet by the 2080s.[4] This rising baseline not only increases routine "sunny day" tidal inundation but also magnifies the destructive potential of storm surges. Recent climatic events, such as the record-setting 10.7-foot river crest during a 2024 winter Nor'easter and the rainless tidal flooding caused by Hurricane Erin in August 2025, demonstrate that the waterfront is already highly exposed to these threats.[5] As these compounding hazards threaten to overwhelm drainage systems and routinely inundate critical public amenities like Cherry Street Pier and South Wetlands Park, focusing on flood mitigation and adaptive edge design is critical to preserving the waterfront's physical and economic viability.

Figure 7. Flooding along Columbus Boulevard near Race Street Pier and the Benjamin Franklin Bridge. Source: OLIN.

Figure 8. Extreme heat creates drought like conditions and impacts tree canopy coverage along the waterfront. Source: OLIN.

EXTREME HEAT

In addition to increasing flood risks, the Central Delaware Waterfront faces a public health and environmental justice threat from extreme heat, currently the deadliest weather-related hazard in the United States. In Philadelphia, mean annual temperatures are projected to increase by up to five degrees by 2050, with the number of days exceeding 100°F potentially surging from a historical average of 0.3 to 17 by the end of the century.[6] While proximity to the river provides some localized cooling, the waterfront's extensive impervious surfaces and fragmentation by major roadways like I-95 intensifies the urban heat island effect. Extreme heat is also exacerbated by lack of tree canopy cover and other sources of shade along the waterfront. The 2023 Philly Tree Plan establishes a 30% canopy coverage goal for every neighborhood and DRWC-managed parcels currently possess only 2% to 7% coverage, alongside documented canopy losses between Graffiti Pier and Penn Treaty Park.[7] Since trees require decades to reach their maximum cooling and air quality potential, immediate, targeted planting is an essential part of heat mitigation strategies to keep vulnerable populations, outdoor workers, and waterfront visitors safe from increasingly dangerous heat exposure.

ENGAGEMENT

Addressing these escalating climate threats in a localized yet comprehensive manner requires a focused strategy, and close coordination with agencies and advocacy organizations doing similar work. By aligning with the Citywide Resiliency Strategy, led by the Office of Sustainability (OOS), DRWC can model a unified, district-wide approach to community and partner engagement. A critical component of this effort is establishing a shared vocabulary that connects everyday local challenges with long-term climate realities. By pairing clear communication and specific and measurable objectives with highly visible, early-action pilot projects, DRWC can translate abstract climate concepts into tangible progress, ensuring that future resilience advocacy directly responds to the needs of waterfront communities and remains proactive, consistent, and inclusive.

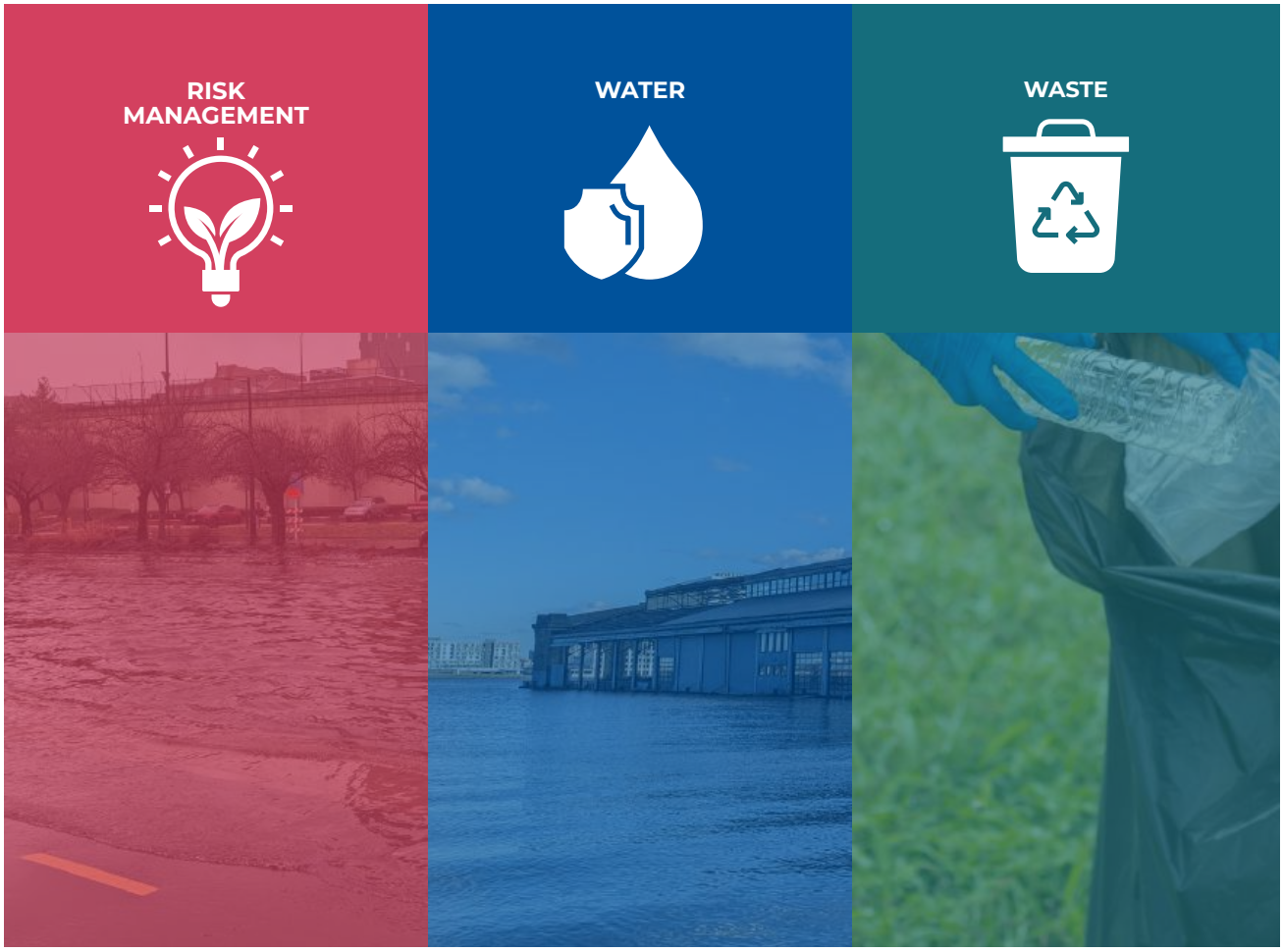
Figure 9. Seasonal workshops at Cherry Street Pier. Source: Austin Marsdale/DRWC.

PLAN STRUCTURE

The recommendations section of the plan is structured around six core sustainability and resiliency issue areas: Risk Management, Water, Waste, Energy, Biodiversity, and Environmental Health and Justice. Each issue area is introduced with a description of DRWC's specific role and agency to better situate the scope of the subsequent actions.

Within these six issue areas, we established specific goals which are categorized structurally by whether the necessary approach is to Measure, Act, or Advocate, alongside concrete actions to achieve them. Each action is paired with qualitative measures and quantitative metrics, where applicable, to help DRWC and its partners track ongoing progress and success. Each action is also marked by a tag indicating whether the action is led or supported by DRWC, which further defines the scope of implementation.

ISSUE AREAS:



TYPES OF GOALS:

MEASURE

Understand, track, and assess existing conditions and change over time to establish key baselines and monitor progress.

ACT

Address identified challenges, achieve metrics, and create new practices through implementation and operational strategies.

ADVOCATE

Promote and support partnerships that align with long term goals and build relationships to expand operational capacity.

ISSUE AREA

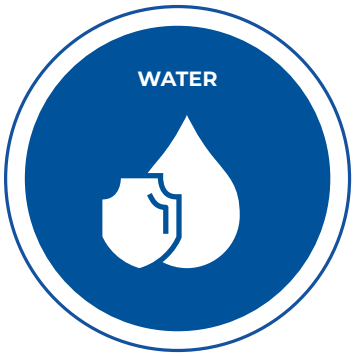
GOALS

Coastal flooding risks on the Central Delaware are significant, untested, and increasing, while extreme heat poses additional health hazards.

MEASURE: Characterize and quantify risk from climate hazards to the waterfront.

ACT: Seek strategies to reduce hazard risk and proactively respond to extreme events such as floods, heat waves, and emergency situations to promote safety.

ADVOCATE: Embed climate hazard preparedness into DRWC planning, policy, and capital projects.



Water quality impacts public health, recreation opportunities, and biodiversity, but is primarily driven by larger scale forces of city-wide infrastructure policy, regional land use, and industry – both existing and legacy.

MEASURE: Collect data to analyze DRWC's water consumption and water quality constraints on river access.

ACT: Improve Delaware River water quality and reduce DRWC's potable water use.

ADVOCATE: Increase public awareness of the importance of the history, health, and ecology of the Delaware River Watershed.

Waste affects water quality, public health, and visitors' experience at the waterfront. Along the Delaware River, waste and litter production is driven by waterfront visitors, vendors, DRWC operations, and private property owners.

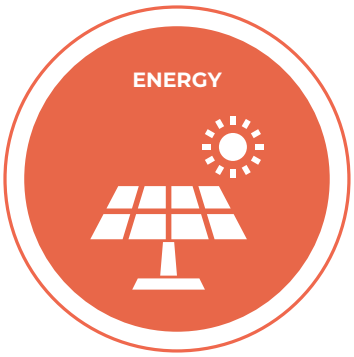
MEASURE: Establish a baseline and monitor DRWC's landfilled waste.

ACT: Reduce litter and landfilled waste at the waterfront through changes in DRWC's internal operations and expanded waste management for waterfront visitors.

ADVOCATE: Encourage waste reduction from private property owners and developers.

ISSUE AREA

GOALS



Waterfront transportation is multi-modal but still car-dominated, while energy is supplied by fossil fuels and building level energy-consumption is unknown.

MEASURE: Monitor DRWC's building and non-building energy use patterns and track low-carbon transportation.

ACT: Reduce DRWC's building, non-building, and transportation energy use, and advance active and low-carbon transportation opportunities.

ADVOCATE: Increase low-carbon and sustainable energy practices across the City through public engagement and events.

The waterfront is an emerging network of habitats with great potential due to both its adjacency to the river and large patches of open space – although the latter are not always protected.

MEASURE: Characterize the waterfront's natural habitat and species.

ACT: Improve the management and maintenance of the waterfront's habitats to enhance connections for all species.

ADVOCATE: Partner with private property owners, public infrastructure owners, neighbors, and environmental groups to improve habitat connectivity.

While waterfront residents are not the most economically vulnerable, the waterfront is both a refuge for all Philadelphians and a geography significantly impacted by air quality, water quality, and heat.

MEASURE: Document the current environmental health and justice context around the Delaware Waterfront.

ACT: Ensure equitable access to public spaces and programming at the Philadelphia waterfront, so that it remains a welcoming, healthy, and restorative refuge for all Philadelphians.

ADVOCATE: Advance environmental justice principles locally to promote comfort, health, and safety across the Philadelphia waterfront.

DRWC'S ROLE: THE THREE SYSTEMS

DRWC'S MISSION

The Delaware River Waterfront Corporation (DRWC) is a 501(c)3 nonprofit corporation organized exclusively for the benefit of the City of Philadelphia and its citizens. DRWC acts as the steward of the Delaware River waterfront to provide a benefit to all of the citizens and visitors of the City. The fundamental purpose of DRWC is to design, develop and manage the central Delaware River waterfront in Philadelphia between Oregon and Allegheny Avenues.

In pursuit of this mission, DRWC builds and maintains the waterfront's public realm, manages select transportation and other public infrastructure, and influences private development. These three areas of activity are the fundamental systems and building blocks of the waterfront, as described in the 2012 Master Plan for the Central Delaware. Each offers unique opportunities and mechanisms for pursuing a more sustainable and resilient waterfront.

PUBLIC REALM

As the aspect of the waterfront DRWC most directly controls, the public realm offers the greatest opportunity to embed sustainability and resilience into everyday practices. By integrating climate projections into the design and construction of capital projects, DRWC can utilize sustainable materials, mitigate urban heat, enhance flood resilience, and lower carbon emissions. Daily operations and maintenance can also be adapted through the use of clean-energy equipment and climate-resilient landscaping, which protects local biodiversity while shielding maintenance staff from extreme weather hazards. Furthermore, by proactively adjusting event programming to account for peak summer heat and potential flooding, DRWC can ensure safe, continuous public access while leveraging its events for environmental education. Underpinning all of these public-facing efforts is a commitment to organizational resilience by enhancing DRWC's internal capacity for data tracking, ecological management, and securing the long-term funding necessary to sustain a resilient waterfront.

Figure 10. The Washington Avenue Pier serves as a vital piece of the public realm along the Delaware River, providing accessible opportunities for nature exploration for visitors of all ages. Source: OLIN.

Figure 11. Coordinating with SEPTA can help strengthen transit options to access the waterfront from neighborhoods across Philadelphia. Source: DRWC.

TRANSPORTATION & INFRASTRUCTURE

Although DRWC does not directly control the waterfront's transportation and utility networks, it plays a critical role as a convener and advocate to ensure these regional systems support an accessible and resilient public realm. By collaborating with agencies like PennDOT and the Philadelphia Water Department (PWD), DRWC can leverage ongoing capital improvements along I-95 and Columbus Boulevard to integrate green stormwater infrastructure, mitigate noise pollution, and proactively address chronic coastal flooding. Furthermore, coordinating closely with SEPTA allows DRWC to champion expanded, equitable transit options, such as optimized bus routes and localized trolley or shuttle services, that connect adjacent neighborhoods to the Delaware River Trail while reducing vehicle reliance and emissions. Ultimately, aligning these multi-agency infrastructure efforts not only improves regional air and water quality but also transforms necessary civic construction into proactive climate adaptation, ensuring safe, multimodal access across the entire waterfront.

PRIVATE DEVELOPMENT

DRWC is uniquely positioned to mandate climate-adapted development on its own land by embedding rigorous sustainability, equity, and flood resilience standards directly into developer RFPs and enforcing them through application and reporting requirements. Beyond its directly controlled parcels, DRWC can advocate for critical updates to broader regulatory frameworks, such as strengthening the Central Delaware Overlay's setbacks and updating the Floodplain Overlay with future-focused climate modeling, to ensure all district-wide investments contribute to regional resilience. Furthermore, by acting as a leader within the development community, DRWC can connect private developers with financial incentives, broker vital infrastructure coordination, and establish shared district-wide practices for waste management and green infrastructure maintenance. Ultimately, by leveraging both contractual mechanisms and regulatory advocacy, DRWC can ensure that new development minimizes environmental impact, protects vulnerable assets, and secures the economic vitality of the entire waterfront.

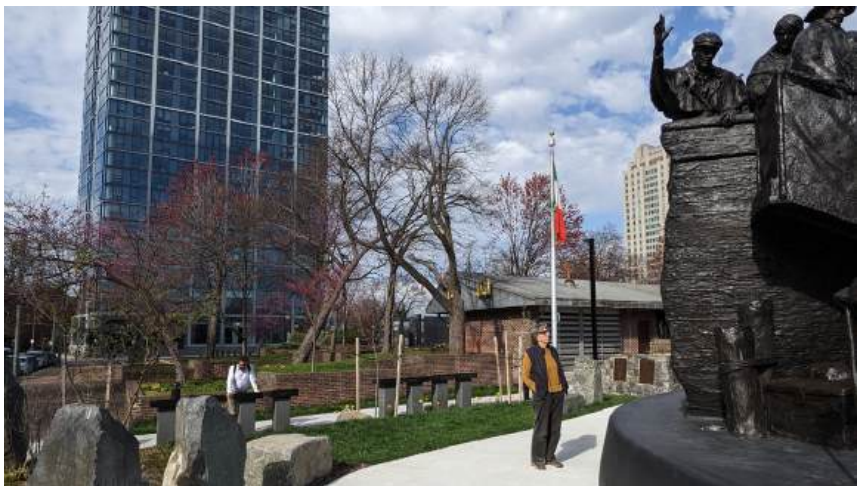


Figure 12. With a boom in new development, the Delaware River waterfront has evolved into a vibrant residential hub, attracting a growing community to the water's edge. Source: OLIN.

IMPLEMENTATION & PRIORITIZATION

Successful implementation of this plan requires a strategic and phased approach. Since accurate baseline data is essential for evaluating future progress, the immediate priority is executing the plan's Measure goals. This data will serve as a starting point for all subsequent actions. Since the scale of climate and sustainability challenges extends far beyond DRWC's direct footprint and operational capacity, we recommend working in parallel towards the Advocate goals, many of which involve cultivating long-term partnerships. By establishing concrete baseline metrics and initiating regional advocacy now, DRWC will build the necessary foundation to realize its long-term resilience objectives.

EARLY ACTIONS / OPPORTUNITIES

Within these broader priorities, we recommend focusing first on waste and energy for the Measure goals to establish baseline benchmarks, and risk management, water, and environmental health and justice for the advocate goals to help expand DRWC's partnerships.. At the same time, DRWC can take early direct action in risk management, waste, and biodiversity.

PARTNERSHIPS

To transition to a unified regional planning approach, strategic partnerships are essential. Given its central role in guiding waterfront development, DRWC has the capacity to serve as a leader for cross-sector resiliency, integrating waterfront initiatives directly with the broader Citywide Resiliency Strategy. Through strategic alliances, many of which cut across issue areas, DRWC can deliver visible, early-action implementation projects that translate conceptual planning into equitable, on-the-ground action. These collaborations not only expand operational capacity but also help access broader sources of funding. Key partners in this effort include the Philadelphia Water Department (PWD) for stormwater management, The Pennsylvania Horticultural Society (PHS) for tree canopy expansion, and Green Building United (GBU) for sustainable development standards, alongside local community organizations.

Figure 13. Rise to Resilience by Waterfront Alliance is an example of a coalition-based partnership.
Source: Waterfront Alliance.

TRACKING PROGRESS OVER TIME

Effective climate adaptation demands a balance between urgent, time-bound risk reduction and long-term strategic flexibility. This plan establishes dynamic, phased priorities categorized by the three systems–the public realm, transportation and infrastructure, and private development. Progress will be tracked iteratively through qualitative and quantitative measures established within each issue area, allowing DRWC to continuously evaluate its impact and adapt to evolving environmental and funding realities.

Figure 14. Built into the shell of a century-old municipal pier, Cherry Street Pier is a reflection of Philadelphia and the waterfront today—creative, diverse, historic, adaptable, and inspired. Source: Beaumonde Originals for DRWC.


02

CHAPTER 2:
INTRODUCTION

Philadelphia's waterfront is evolving. Guided by a shared vision for a vibrant, inclusive, and resilient Delaware River Waterfront, DRWC continues to work steadily to transform Philadelphia's Waterfront from former industrial land into parks, trails, and destinations that welcome communities from across the city and beyond. Thanks to public investment, community input, engaging programming, and new development, more people than ever are enjoying the river — a clear sign of the waterfront's vibrant, renewed role in city life.

At the same time, the waterfront is facing new pressures. Climate change is already affecting daily operations through increased flooding and higher temperatures, and future projections show these challenges intensifying. As sea levels rise and storms become stronger, the need to protect people, places, and investments along the river grows more urgent.

This chapter outlines the vision driving DRWC's sustainability and resilience work, the climate changes shaping the future of the waterfront, and the opportunities presented by ongoing development and public space success. Together, these intersecting forces highlight the importance of planning ahead — ensuring that the Delaware River Waterfront remains accessible, adaptable, and welcoming for generations to come.

A VISION FOR A SUSTAINABLE AND RESILIENT WATERFRONT

This plan takes on a great deal of breadth and complexity, however, it is focused on achieving one primary goal: a more sustainable, resilient Waterfront, focused on the six miles of the Central Delaware Waterfront.

Looking towards the future, the Central Delaware Waterfront will be a greener, safer, and healthier place to live, work, and visit. It will provide equitable access to public spaces and a biodiverse river's edge. It will be adapted to the rising waters and heat that we already face, and prepared for an uncertain future. It will build on the exceptional vision and coordination that has already been achieved to make the waterfront better connected, more multi-modal, and more livable— while also addressing the realities of climate change and our responsibility to steward a changing earth. It will also unite the many organizations, landowners, public agencies and individuals involved in maintaining that vision, acknowledging that a collective effort, and leadership, is required to achieve the future that we envision.

Sustainability is about **supporting** and **maintaining ecological, human, and economic health and vitality**, but it is also about a commitment to **climate mitigation** through greenhouse gas reductions, clean energy and waste reduction, and stewarding the biodiversity of DRWC's parks and open spaces.

Resilience is the **ability of a system to withstand and adapt** to a disturbance, particularly a changing everyday climate and worsening climate-related hazards. It will require assessing current and future climate risk in the project area and developing actionable, cost-effective, and prioritized solutions across a variety of scales.

Figure 15. Biking past the Weaver's Knot art installation along the central segment of the Delaware River Trail. Source: Visit Philadelphia.

A CHANGING CLIMATE

Figure 16. Flooding along Columbus Boulevard impacting trail and traffic flow. Source: OLIN.

The Delaware River Waterfront is already experiencing the effects of a changing climate. Hotter summers are making the waterfront less comfortable and are making it harder for people to enjoy the waterfront's open spaces and events, while more frequent tidal flooding is forcing temporary closures at places like Cherry Street Pier and sections of Columbus Boulevard. These changes will only become more noticeable in the years ahead, with more extreme heat, heavier rain, stronger storms, and steadily rising sea levels on the horizon. Climate change does not just affect the places Philadelphians visit — it affects the people who live and work nearby, local businesses, the river's health and ecosystems, and the overall experience that makes the waterfront special. Protecting this unique public space will require DRWC and partners across the city and region to work together, ensuring the waterfront remains welcoming and resilient for generations to come.

In this section:

PROJECTED INCREASE IN AIR TEMPERATURE IN PHILADELPHIA

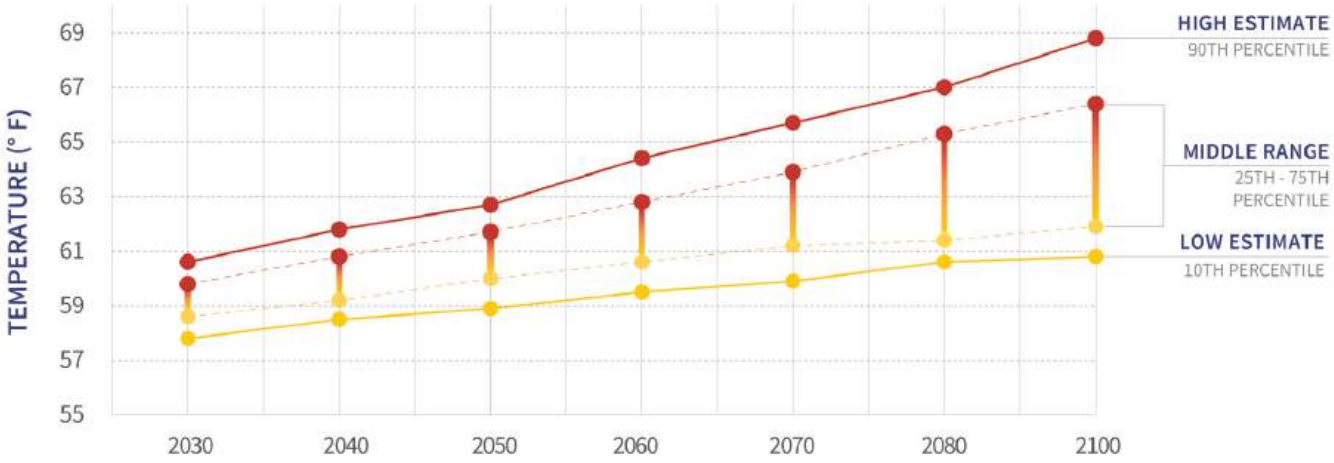


Figure 17. Projected increase in average air temperature through the end of the century for the Philadelphia region. Source: OLIN, data from CCRUN, The Climate Resilience Research agenda, 2022.

EXTREME HEAT

Extreme heat is the deadliest weather-related hazard in the United States.[8] In Philadelphia, annual average temperatures have risen steadily over the past 82 years, and eight of the ten hottest years on record have occurred since 2000.[9] Air temperatures in Philadelphia are expected to get hotter. Mean annual temperatures in the Greater Philadelphia region could increase by up to five degrees by 2100, and the number of days above 100°F may grow from a historical average of 4 to as many as 55 by the end of the century.[10]

The Centers for Disease Control and Prevention (CDC) defines extreme heat as weather that is significantly hotter and/or more humid than typical conditions for a given time and place. These conditions can have significant impacts on ecosystems and lead to serious health impacts, particularly for children, older adults, pregnant people, outdoor workers, residents with pre-existing health conditions, and those with lower incomes or limited access to cooling.

Philadelphia is among the hottest counties in Pennsylvania due in large part to urbanization, which intensifies the urban heat island effect.[11] Buildings, pavement, and other hard surfaces absorb and re-emit heat far more than natural landscapes like forests and waterways. Local air pollution can worsen the health risks associated with high temperatures.[12]

While the Delaware River waterfront generally appears cooler than surrounding neighborhoods on the City's heat exposure index, temperatures vary significantly within the area.[13] Parts of the waterfront experience very high surface temperatures due to limited tree canopy, extensive impervious surfaces, and insufficient cooling amenities such as pools and spraygrounds.

Up to a 5° temperature increase is likely by 2050, which can change ecosystems and use patterns at the waterfront.

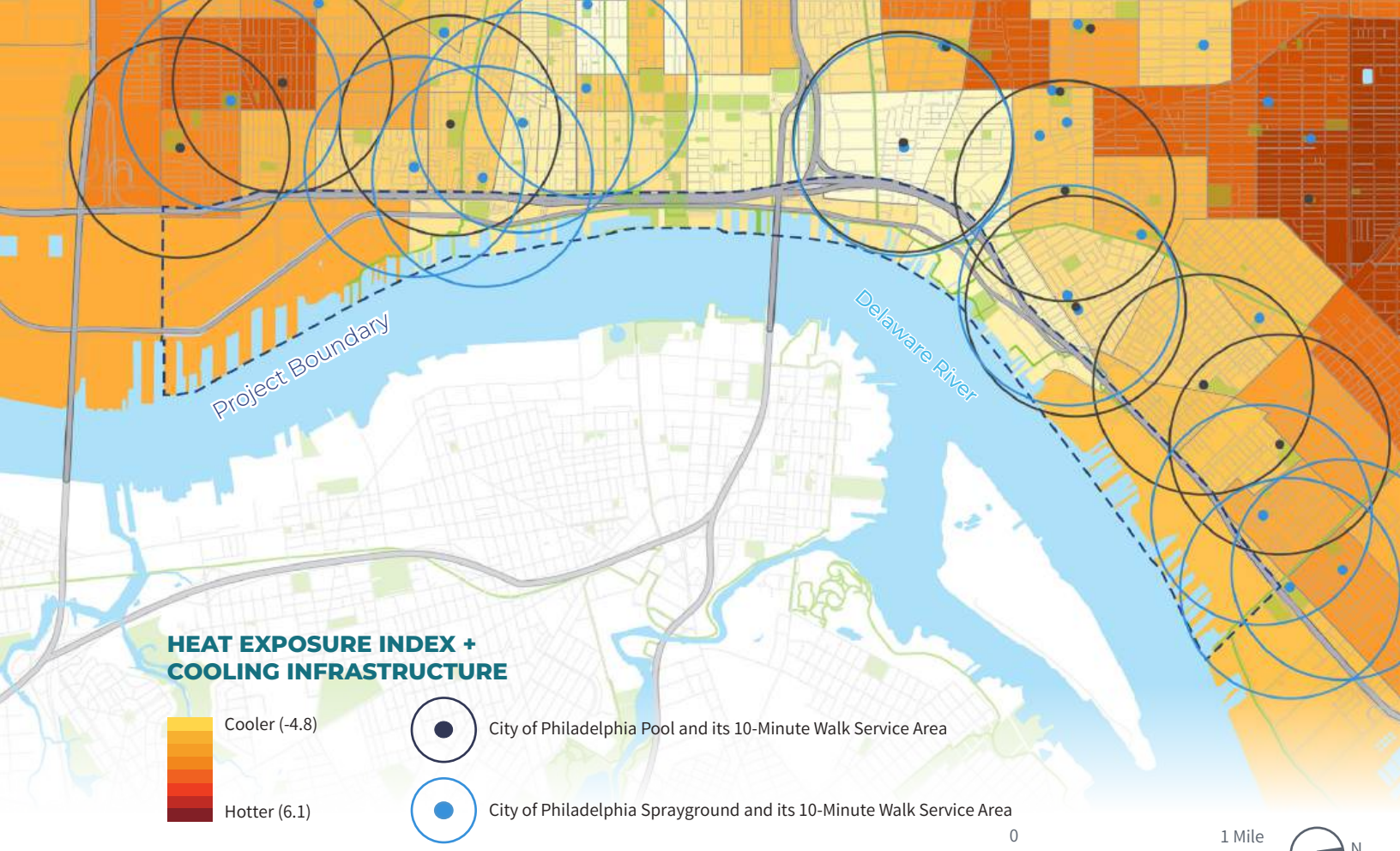


Figure 19. Heat Exposure index and distribution of public pools and spraygrounds across the waterfront. The southern and middle areas of the waterfront are further than a 10-minute walk from a City of Philadelphia pool or sprayground. Source: City of Philadelphia.

Average relative humidity during the summer is about 70% which can create dangerous conditions along the waterfront.

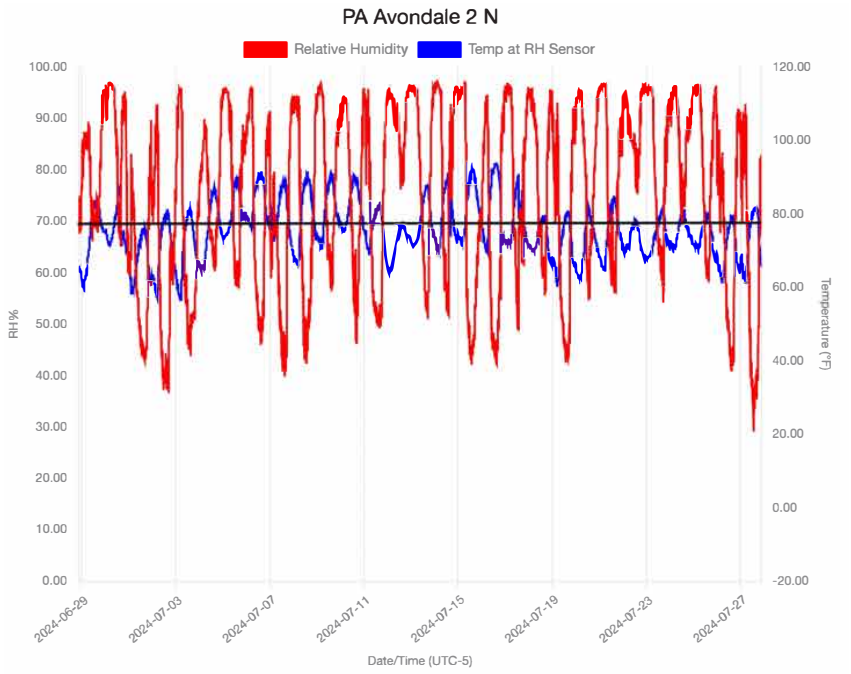


Figure 18. Average relative humidity (RH) at NOAA weather station closest to Philadelphia. Source: US Climate Reference Network, National Centers for Environmental Information.

TREE CANOPY

Tree canopy coverage is critical for environmental health as it provides cooling shade, improves air quality, and creates habitat for non-human species, among other critical benefits. The distribution of tree canopy coverage across Philadelphia, and particularly the Delaware waterfront, varies widely. The waterfront is also divided by highways and roadways like I-95 and Columbus Boulevard, which further fragments urban tree canopy coverage. In response to such pressures, the 2023 Philly Tree Plan recommends a 30% tree canopy coverage for every neighborhood, based on proven benefits to communities.[14] This recommendation builds on goals in both Philadelphia 2035: the comprehensive plan for Philadelphia and Greenworks Philadelphia.[15] Waterfront parcels have a particularly low tree canopy coverage as compared to the neighborhoods to the west of I-95. Although tree canopy cover along the waterfront has mostly grown between 2008 and 2018, it remains well below the recommended 30%—ranging from just 2% to 7% across the waterfront—leaving many public spaces, sections of the Delaware River Trail, and people exposed to dangerous heat. Furthermore, while canopy coverage between Graffiti Pier and Penn Treaty Park decreased during this period, the loss occurred in an area that already possessed negligible tree cover to begin with. Unequal access to Philadelphia's tree canopy has become a critical public health issue. Resolving this disparity requires swift collaboration and leveraging of the foundation of trust built between the City, community organizations, and residents. While it takes three decades or more for a tree to reach maximum cooling and air quality benefit, targeted planting today is essential to build the canopy that will protect the waterfront and its visitors from the worsening impacts of climate change.[16]

Tree canopy coverage along the waterfront ranges between 2% to 7%, which is significantly lower than the recommended 30%.

Figure 20. People gather under the tree canopy at Race Street Pier. Source: Matt Stanley/DRWC.

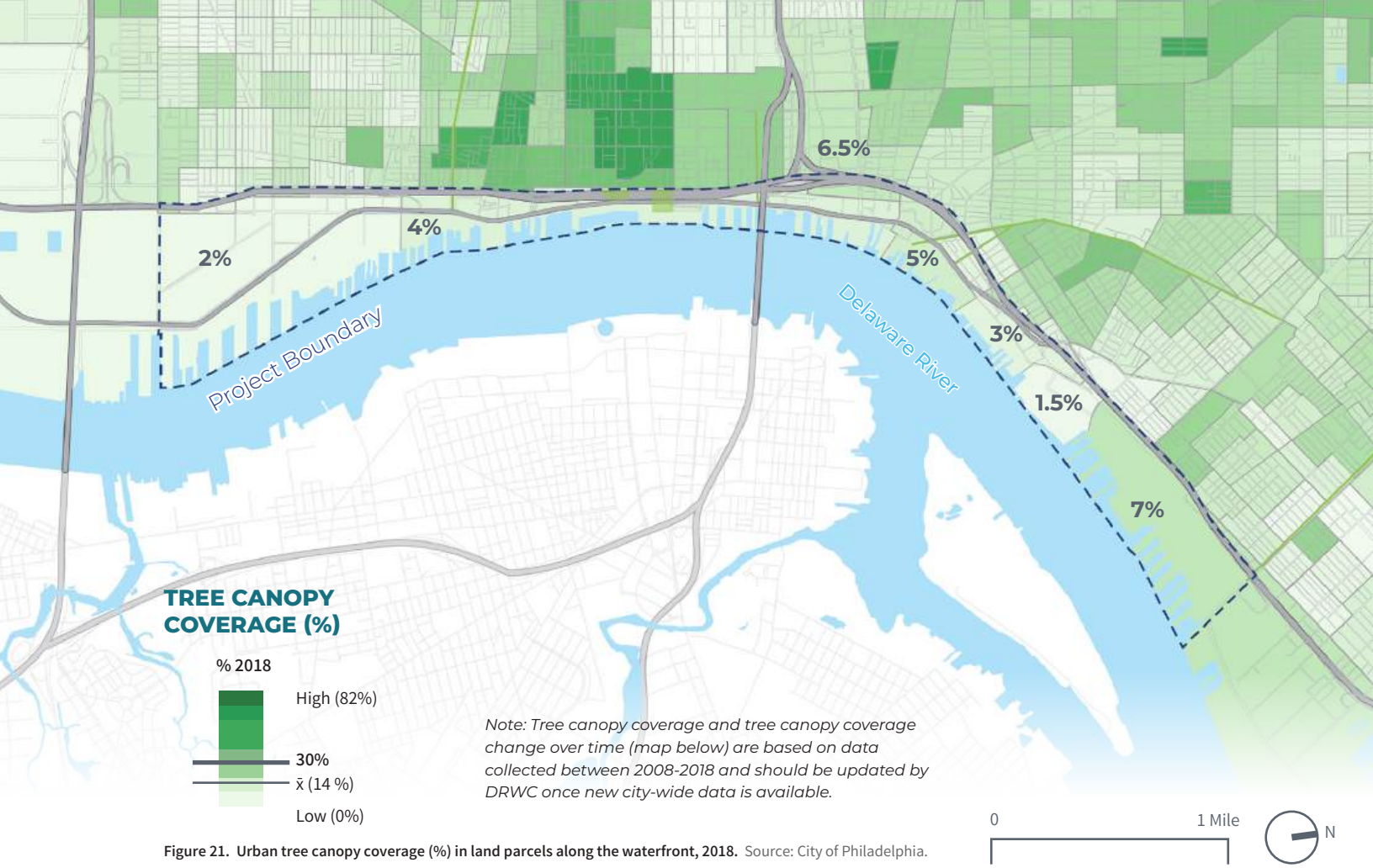


Figure 21. Urban tree canopy coverage (%) in land parcels along the waterfront, 2018. Source: City of Philadelphia.

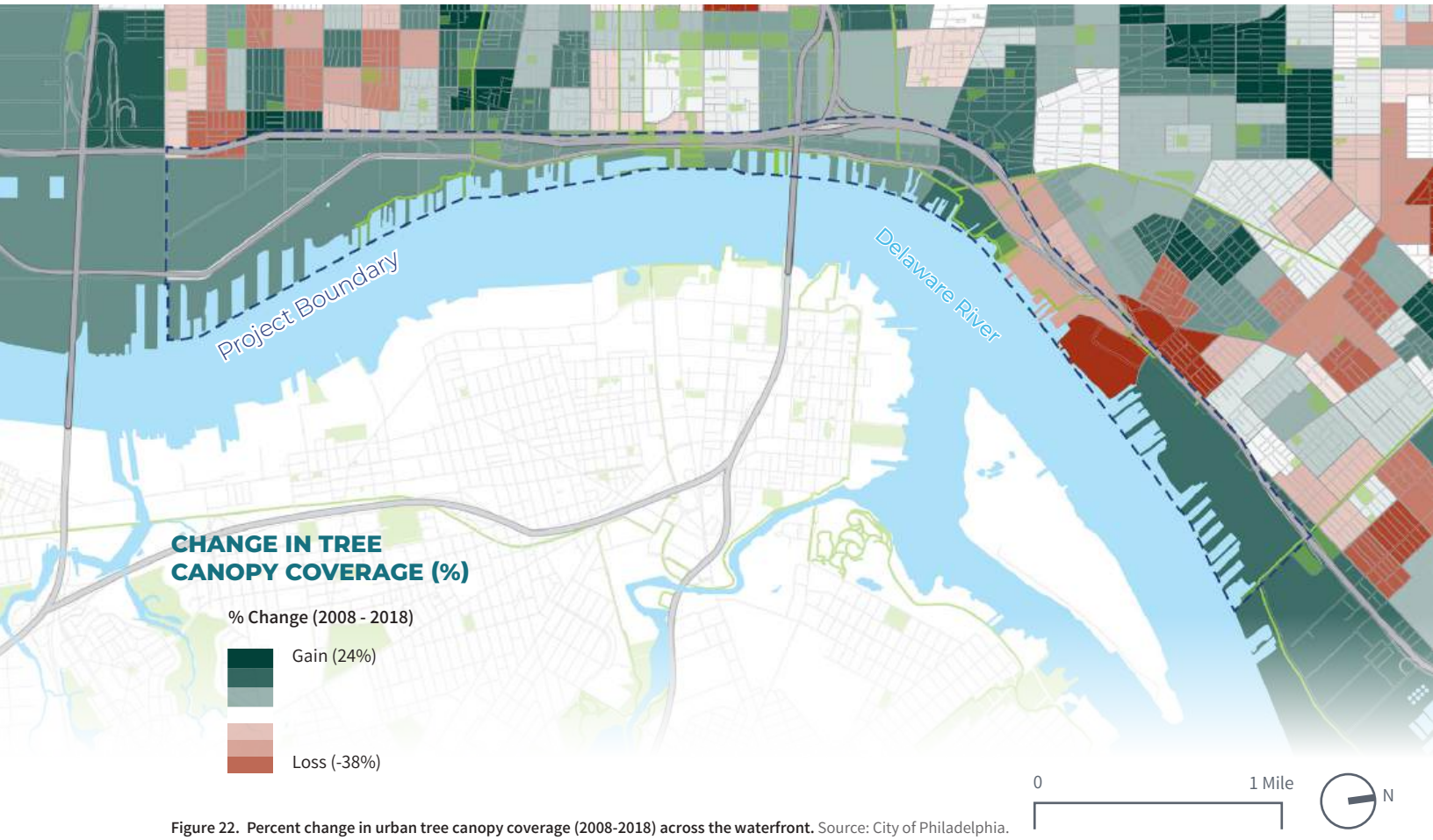


Figure 22. Percent change in urban tree canopy coverage (2008-2018) across the waterfront. Source: City of Philadelphia.

PROJECTED PRECIPITATION IN PHILADELPHIA

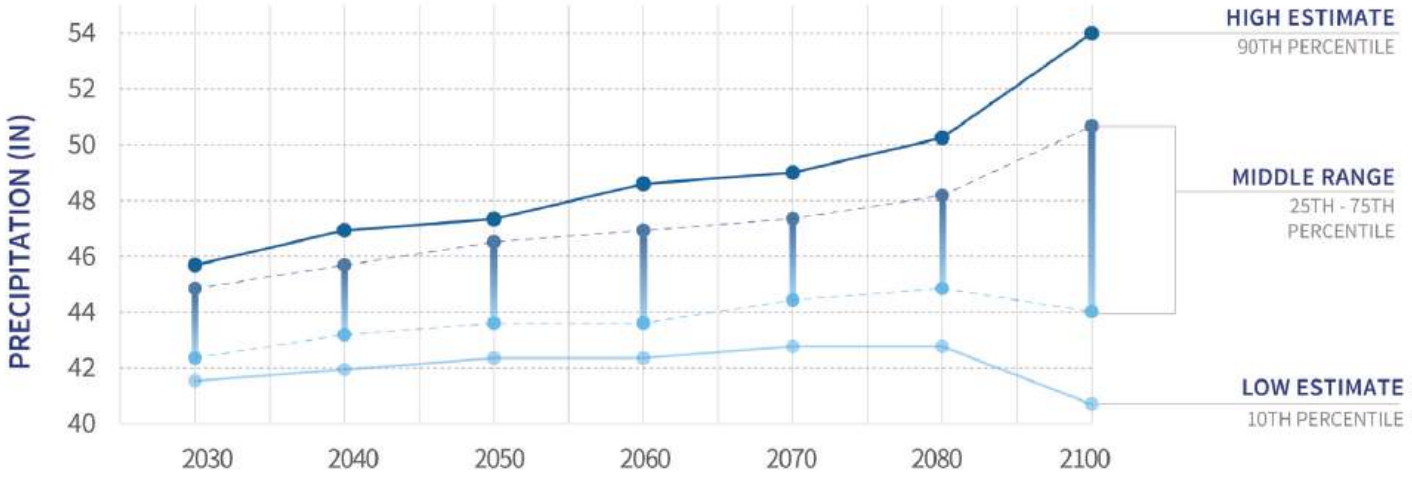


Figure 23. The line graph above shows the projected precipitation amounts over the next century in Philadelphia. Source: OLIN, data from CCRUN, The Climate Resilience Research agenda, 2022.

INCREASED PRECIPITATION

Philadelphia is experiencing more frequent heavy and extreme precipitation, with the largest increases expected during winter months in the coming decades. Since the 1940s, the city's annual average rainfall has risen by 0.82 inches per decade, totaling more than six inches, and six of the ten wettest years on record have occurred since 1990.[17] Of even greater concern, though harder to predict, is the rising frequency and intensity of extreme events—such as hurricanes, Nor'easters, and cloudbursts—which drive more severe rainfall (pluvial) and river (fluvial) flooding. By the 2050s, the city could see up to 12% more annual precipitation, with a very high likelihood (97%) of at least one major flood exceeding four feet.[18] This extra rainfall can lead to higher stormwater runoff, that overwhelms drainage systems, harms the Delaware River's water quality, and increases flooding along the Waterfront, putting public spaces, aging infrastructure, critical facilities, and nearby homes and businesses at risk.

12% more annual precipitation by 2050 could exacerbate the impacts of flooding along the waterfront.

WORSENING FLOODING

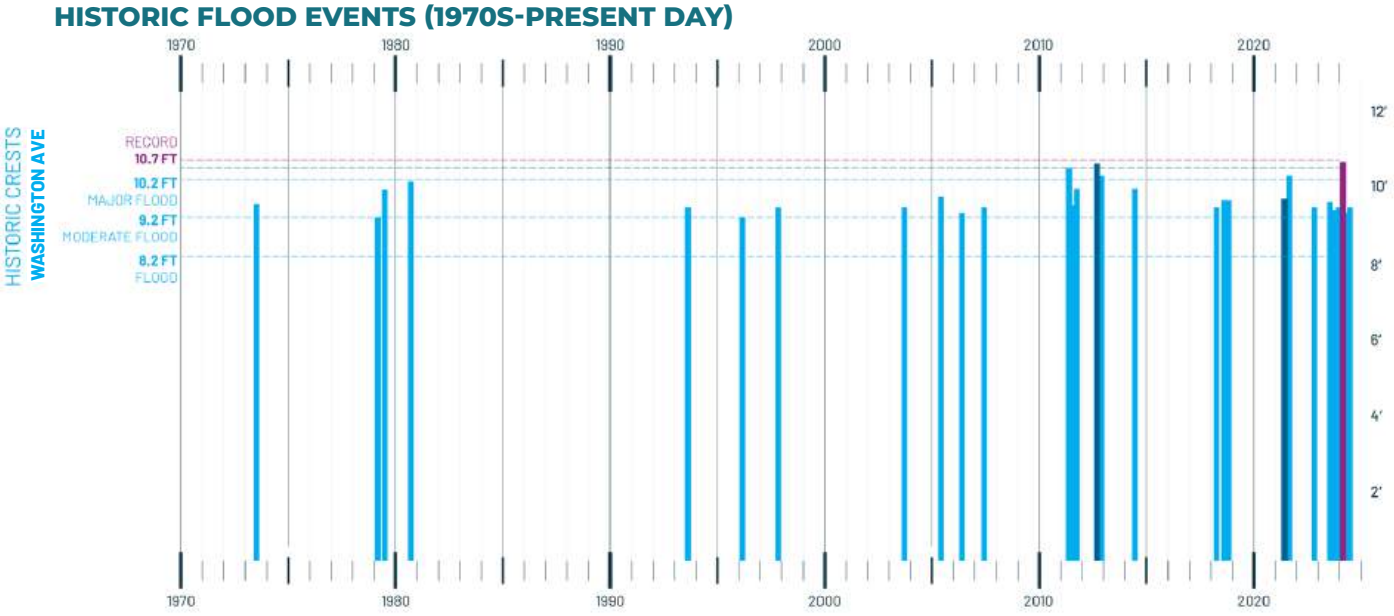
Philadelphia has a long and complex history with flooding. The city sits between two tidal rivers—the Delaware and the Schuylkill—and at the lower end of major watersheds. Its dense development, largely impervious

surfaces, and aging sewer system further increase flood risk. Along the Delaware River Waterfront, multiple types of flooding occur, each influencing the extent and impact of inundation. While flooding is a natural part of riverine and coastal systems, it is often intensified by compound events, such as when tidal surges in the Delaware River coincide with high flows from the Schuylkill River, creeks, or stormwater outfalls, leaving river-adjacent communities and facilities particularly vulnerable. Recent research on waterfront flooding in the city of Philadelphia suggests that "a current return period estimated using only a riverine flood model of a 50-year return interval is reduced to only 27 years when considering the effects of compound coastal and riverine flooding.[19]

Four key types of flooding along the Delaware Waterfront include:

- **Groundwater flooding** happens when a rising water table inundates surfaces or basements.
- **Fluvial flooding** occurs when rivers or streams exceed their banks. This generally results from excessive and/or prolonged rainfall upstream in the Delaware River Watershed which accumulates as it flows downstream, leading to higher and faster flowing floodwaters in the DRWC study area.
- **Pluvial flooding (surface or overland rainfall, often called "urban flooding")** occurs when intense rain overwhelms drainage systems. The DRWC study area can be particularly affected by this when the Delaware River is at high tide during an extreme storm event, which affects the ability of the outfalls to drain effectively by gravity as designed.
- **Coastal flooding** is driven by high tides and storm surge in the tidally influenced Delaware River, increasingly causing "sunny day" flooding due to sea-level rise and land subsidence.

Figure 24. The chart tracks historic crests at the USCG Station Washington Street tidal gauge against the flood/moderate flood/major flood levels, tracking all major climatic events in the region from 1970 to present day. It is notable that the event of record was a winter Nor'easter in 2024 with the previous record being hurricane Sandy - which did not even directly hit the region.[31]
Source: OLIN.



These flood risks are particularly relevant along the DRWC study area, where essential infrastructure, buildings, and public amenities are highly exposed to storm surge, high tides, and the long-term effects of sea-level rise. Flooding also threatens public health and safety for staff and visitors, and interrupts key services and programming DRWC provides. These exposures are expected to grow as sea levels rise 3–5 feet by the end of the century.[20]

SEA LEVEL RISE

Although Philadelphia is farther inland from the Atlantic Ocean compared to cities like Boston or New York, sea level rise poses a significant and growing threat along the Delaware River, where tidal dynamics already contribute to routine flooding. Rising ocean levels push higher tides into the Delaware Bay and up the river, gradually raising both high and low tide elevations. Over the last century, the tidal Delaware River has risen roughly 1.2 inches per decade.[21] Projections indicate sea levels could rise 7–11 inches by the 2030s, 14–19 inches by the 2050s, and 24–38 inches by the 2080s.[22] Even one foot of sea level rise would more frequently inundate large portions of the waterfront, including Cherry Street Pier, Race Street Pier, and South Wetlands Park. At five feet—NOAA's 2022 projections for 2120—the entire waterfront and many adjacent streets connecting to nearby neighborhoods could be underwater.

Sea level rise is already increasing the number of days Philadelphia experiences "sunny day" flooding—high tides that cause flooding even without a storm.[23] When combined with storm surges and heavy precipitation, these higher tides drive more frequent and severe coastal flooding. Rising sea levels also push salty and brackish water upriver, creating additional challenges for the health and resilience of local ecosystems and drinking water quality.[24]

SEA-LEVEL RISE ESTIMATES FOR PHILADELPHIA

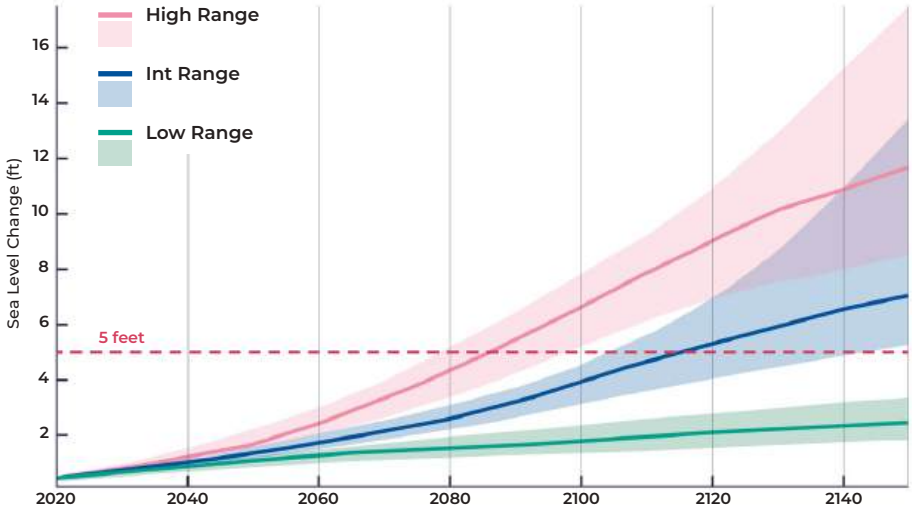
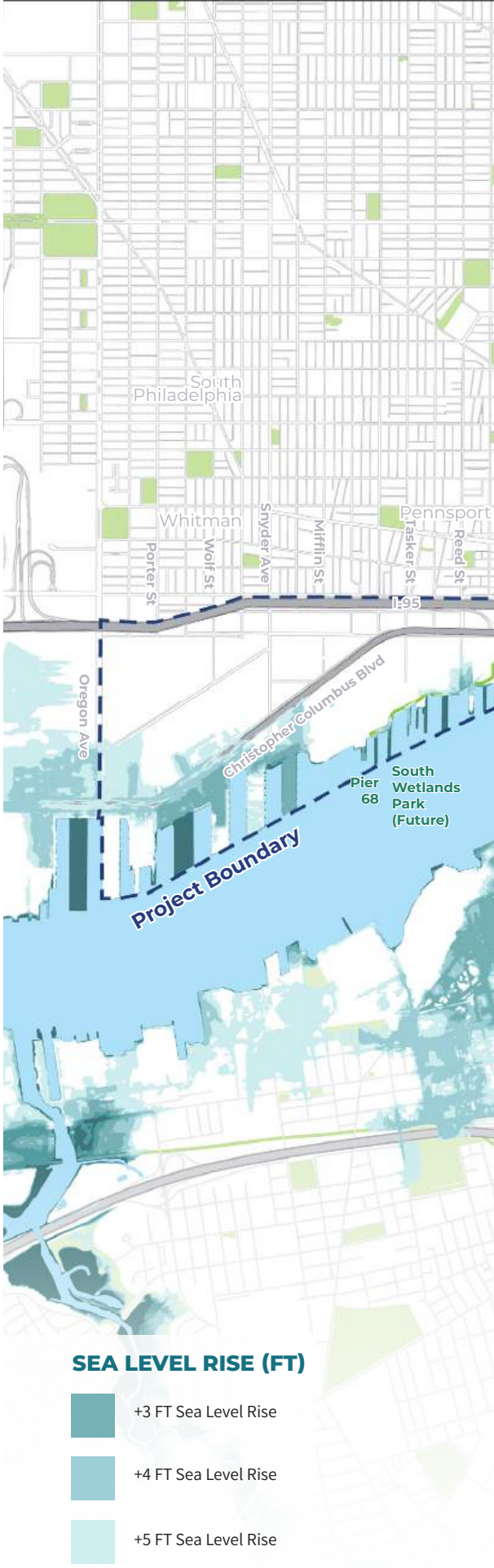


Figure 25. Philadelphia will see five feet of sea-level rise at some point in the future under all but the lowest scenarios. Source: US Interagency Task Force report titled "Global and Regional Sea Level Rise Scenarios for the United States."



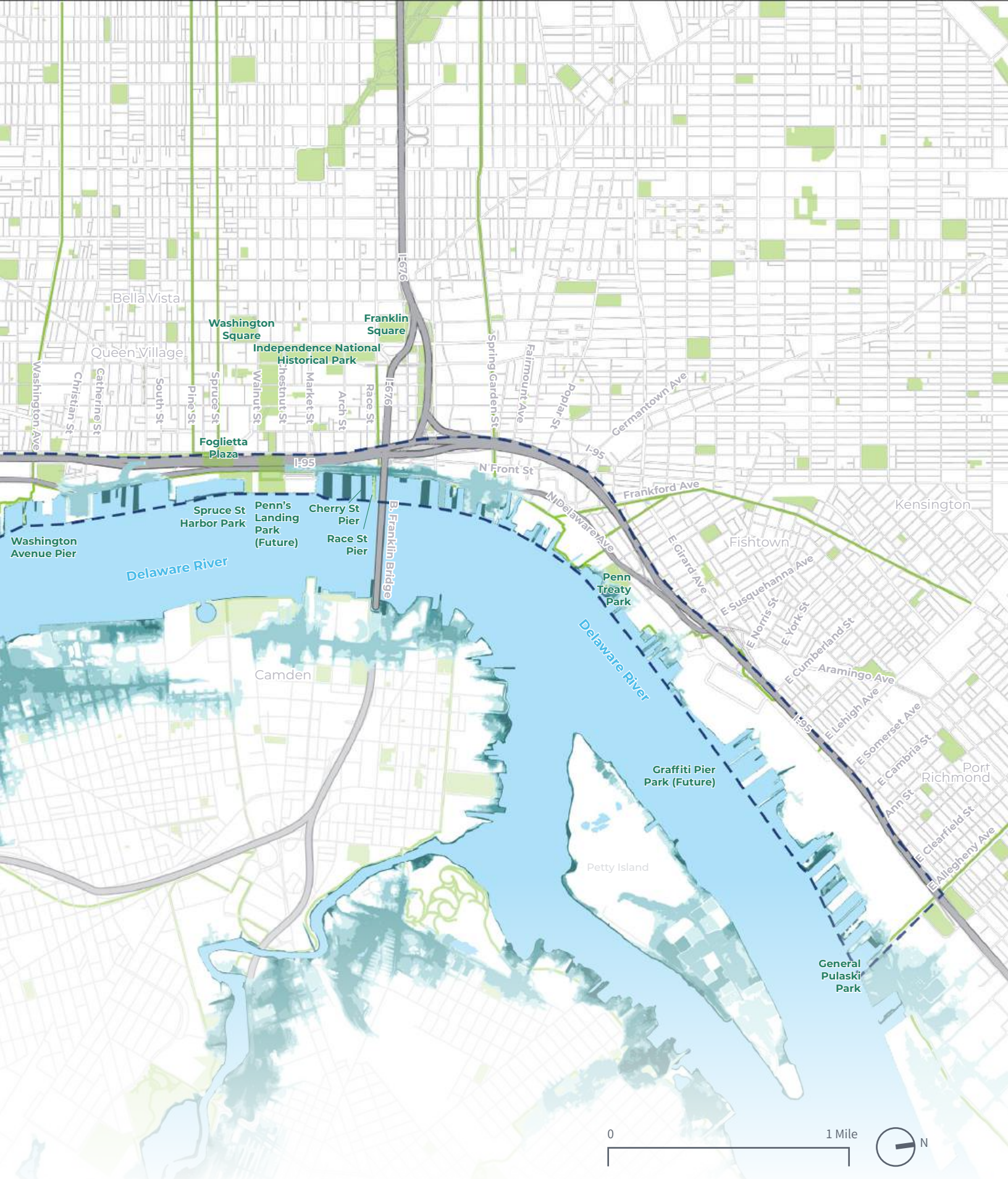


Figure 26. Extent of sea level rise scenarios (3ft, 4ft, and 5ft) along the waterfront. Source: NOAA.

STORM SURGE

Philadelphia's location places it in the path of storms, including hurricanes, tropical cyclones, and Nor'easters, that can track inland along the northeast corridor from Washington, D.C. to Boston. These storms can bring heavy rain, strong winds, and storm surge to low-lying areas along tidal waterways such as the Delaware River. While most tropical systems weaken before reaching the City, the risks to communities remain significant. Coastal storms can produce extreme winds, tornadoes, inland flooding, and storm surge—the latter being especially destructive and currently the leading cause of hurricane-related fatalities nationally.[25] Storm surge occurs when the force of wind pushes water from rivers and creeks onto land, and when it coincides with high tides, it can cause particularly severe inland flooding, damaging buildings as well as utility and transportation infrastructure. These surges are expected to worsen as sea levels rise and recurrent flooding becomes more frequent.[26]

Over the years, the Philadelphia region and the Delaware River Estuary have endured repeated severe weather events. Hurricane Floyd in 1999 caused extensive flooding, followed by significant impacts from Hurricane Irene in 2011 and Tropical Storm Isaias in 2020. More recently, in August 2025, Hurricane Erin triggered tidal flooding along Columbus Boulevard at Penn's Landing near Race Street—despite no rainfall in the city—caused solely by storm surge pushing water into the Delaware Bay and up the river.[27]

Events of record along the Delaware River in Philadelphia include Superstorm Sandy (2012) which raised the Delaware River to 10.62 ft at the USCG Station Washington Street tidal gauge.[28] Further, the river reached record levels at 10.7 ft in 2024 due to a Nor'easter in 2024.[29] The typical tidal range fluctuates 6.1 ft and modeled risk for this region is 5ft by 2100 in the intermediate scenario.[30]

While Philadelphia has not historically experienced major hurricane-related flooding, there remains a significant risk of coastal flooding along the central Delaware. NOAA has modeled storm surges for Category 1–4 storms across the Mid-Atlantic region. It's important to note that these NOAA surge models do not account for sea-level rise or increasing hurricane intensity in the future. As a result, this map of exposures for a current Category 3 storm can serve as a guide to represent a future Category 2 storm with SLR. Although a Category 4 storm is considered statistically unlikely here, a Category 3 simulation is used to evaluate the region's maximum storm surge potential. Today, no hurricane of that strength has ever made landfall in this area, but growing evidence suggests that climate change may increase the intensity of future storms. Should a storm of this magnitude occur in the region, the SLOSH model predicts depths as high as 11-12 ft in Marcus Hook and as high as 8-9 feet along the Schuylkill River.

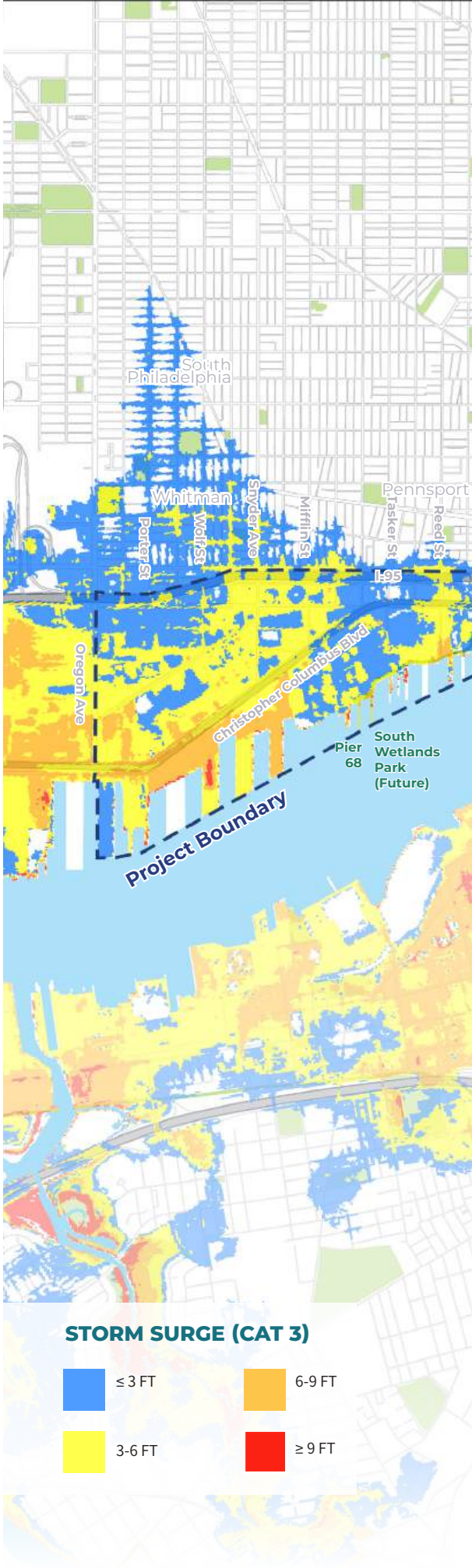


Figure 27. Storm surge from a category three storm along the waterfront. Source: NOAA.

EXISTING FLOOD RISK: FEMA FLOODPLAINS

FEMA's National Flood Hazard Layer (NFHL) is the most common tool for depicting flood hazards and their extents. These maps incorporate both riverine and coastal flooding based on past observations, studies, and hydrologic models, and they identify areas with a 1% (100-year) or 0.2% (500-year) annual chance of flooding.

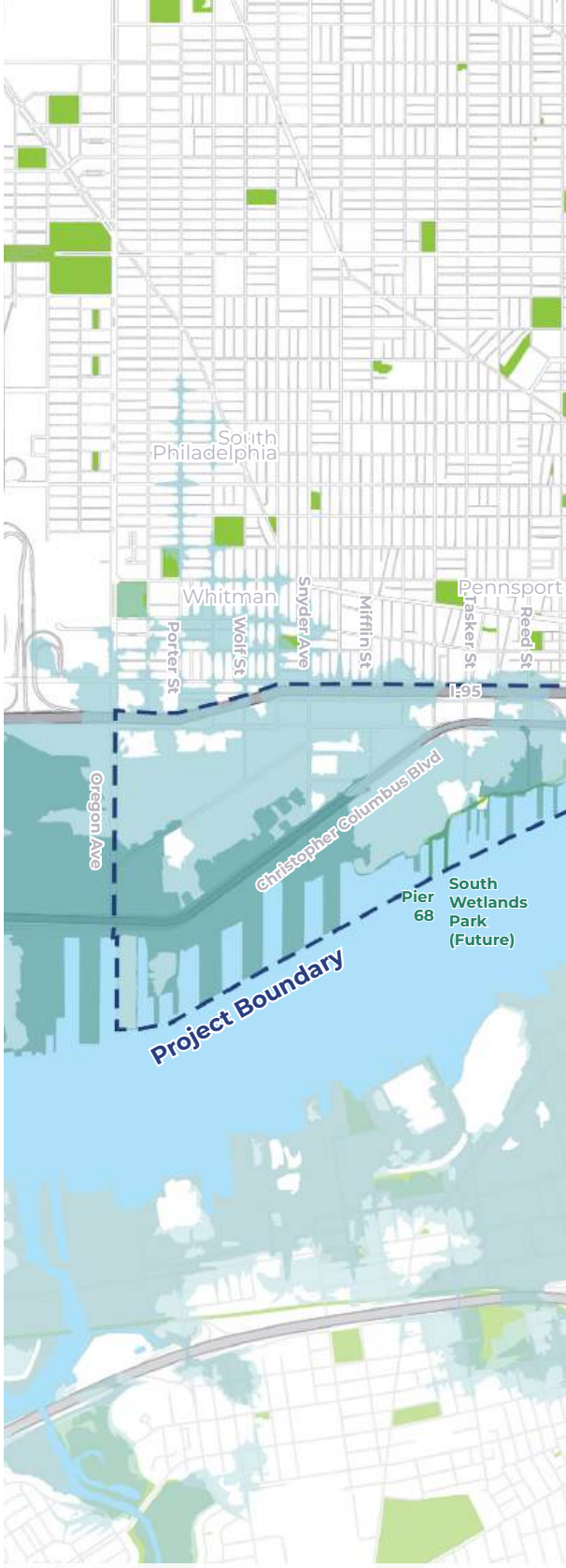
However, FEMA floodplains represent an estimate of existing flood risk, and their accuracy varies widely. The flood maps for the waterfront are more than a decade old, relying on older topographic information and rainfall data. They also do not account for sea level rise, meaning that current and future flood hazard exposures are almost certainly higher—especially as climate change increases the frequency and intensity of heavy rain and coastal storms. Despite these limitations, FEMA floodplain maps remain the primary regulatory tool for managing floodplains and setting flood insurance requirements.

1% (100-year) FEMA floodplain

- Areas with a 1% annual chance of flooding.
- The one percent annual chance floodplain means the area subject to inundation from a flood having a 1 percent (a 1 in 100 probability) chance or greater of being equaled or exceeded in a given year. However, planning and capital improvement decisions are not made by considering the probability of an event over a single year. Such long-term investments must consider probability over the life of assets, which often exceeds 50 years. The 1% annual-chance event (100-year flood) actually has a 40% chance of occurring over a 50-year period.

0.2% (500-year) FEMA floodplain

- Areas with a 0.2% annual chance of flooding.
- The 0.2-percent-annual-chance (500-year) floodplain means the area subject to inundation from a flood having a 0.2 percent (a 1 in 50 probability) chance or greater of being equaled or exceeded in any given year. However, planning and capital improvement decisions are not made by considering the probability of an event over a single year. Such long-term investments must consider probability over the life of assets, which often exceeds 50 years. The 0.2% annual-chance event (500-year flood) actually has a 10% chance of occurring over a 50-year period.



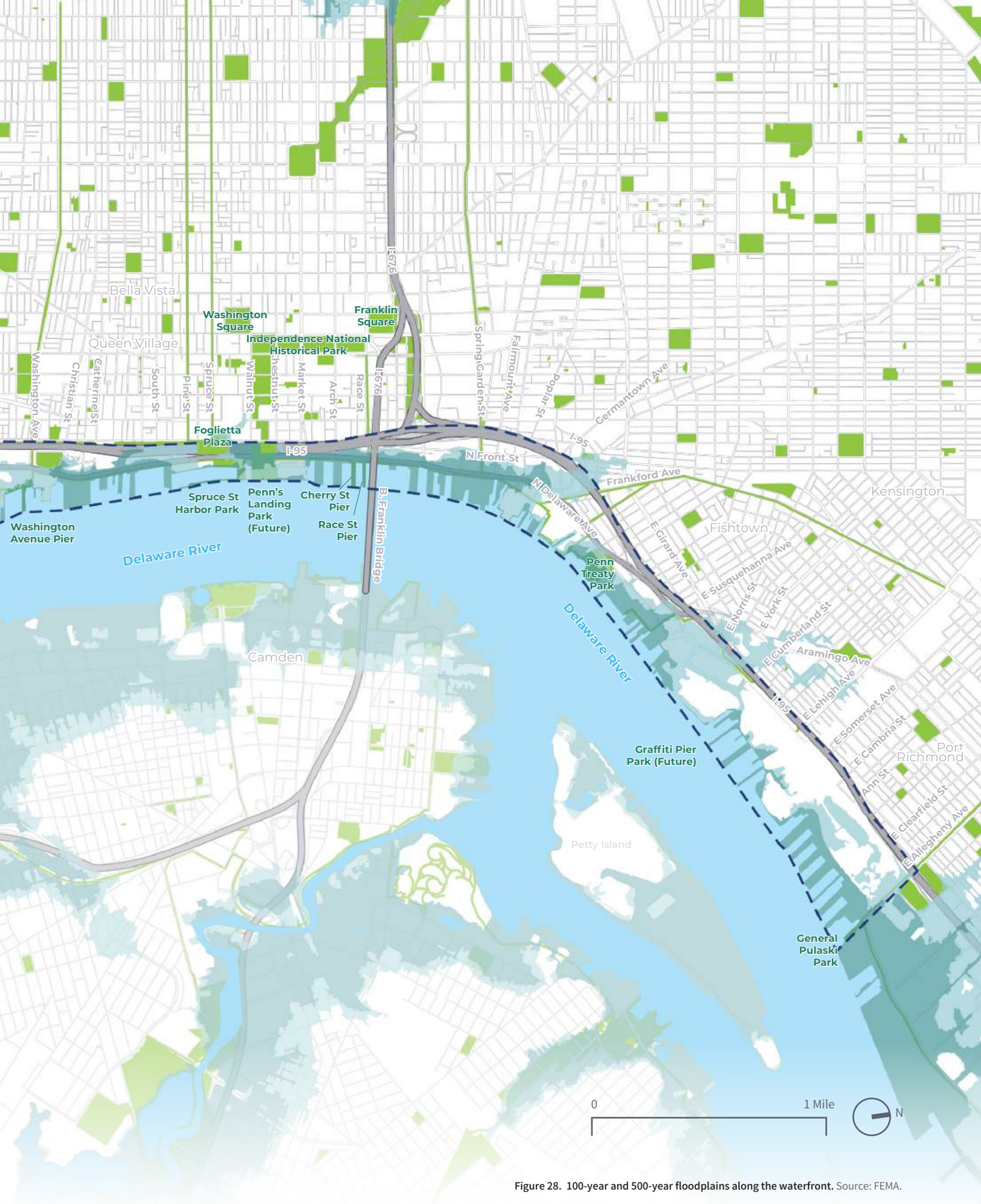


Figure 28. 100-year and 500-year floodplains along the waterfront. Source: FEMA.

COSTS OF A CHANGING CLIMATE

Climate change will increase both the likelihood of costly extreme events and the day-to-day expenses required to keep the waterfront safe, functional, and welcoming. These costs—financial, operational, and social—will be shared by DRWC, the City, local businesses, residents, and the many visitors who depend on the waterfront as a public asset. While some costs are measurable, such as infrastructure repairs, emergency response, and visitorship numbers, others—like declining quality of life and lost recreational opportunities—are harder to quantify but equally significant. Proactive planning is one of the most effective strategies to reduce these impacts and avoid larger public and private expenses in the future.

As the waterfront grows hotter and experiences more frequent flooding, DRWC's operations, maintenance, and programming will face increasing pressures. Higher temperatures may shorten the usable hours of public spaces, increase cooling and irrigation demands, and create unsafe working conditions for maintenance and patrol staff. Flooding can damage piers, parks, utilities, and the Delaware River Trail, interrupting access for the runners and cyclists who generate nearly 500,000 trips per year.[32]

Climate impacts also affect the people and livelihoods connected to the waterfront. More frequent disruptions to events and programming jeopardize income for the 3,600+ workers whose jobs depend on waterfront activities—from artists and performers to vendors and service staff.[33] Critically, these programs generate the essential revenue used to maintain and repair the waterfront's existing infrastructure; a decrease in programming leads to a decline in funding, triggering a vicious cycle where deteriorating facilities further limit the events that sustain them.

Over time, the cumulative cost of repairs, lost revenue, reduced programming days, increased insurance premiums, and declining visitor comfort could place substantial strain on DRWC's mission and budget. By investing early in climate-resilient infrastructure, adaptive operations, and equitable resilience strategies, DRWC can reduce these long-term costs while protecting the waterfront's role as one of Philadelphia's most important public destinations.

The cumulative financial and operational costs of climate disruptions risk placing a severe strain on DRWC's mission.

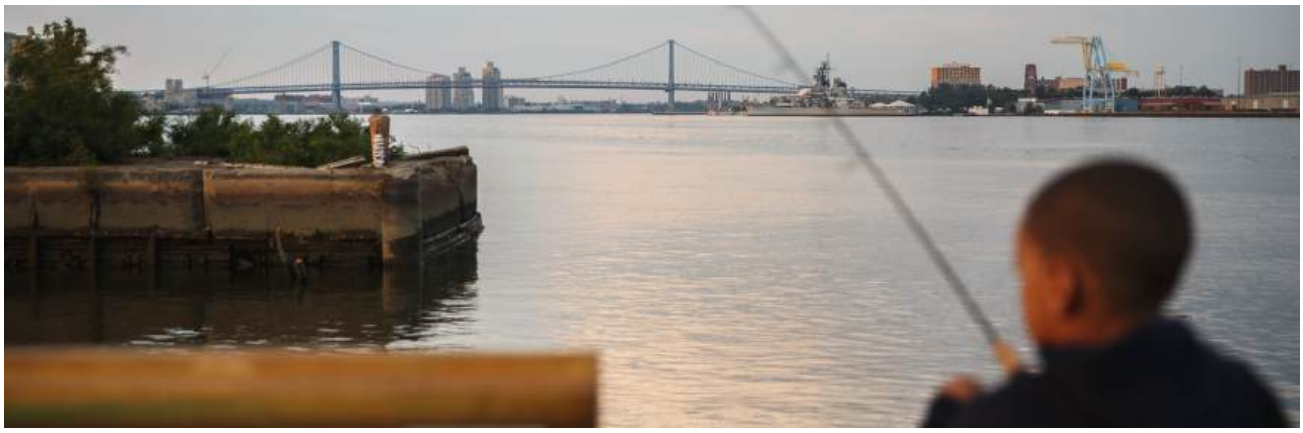


Figure 29. A view of the Ben Franklin Bridge from Pier 68. Source: Matt Stanley/DRWC.

Figure 30. The aftermath of flooding along the waterfront closing Cherry Street Pier. Source: OLIN.


03

CHAPTER 3:
DRWC'S ROLE

As steward, planner, and development catalyst, DRWC operates at the intersection of community needs, climate pressures, and long-term growth. This chapter outlines how that role has evolved and how it will continue to guide the future of the Central Delaware.

Over more than a decade, DRWC has built a legacy of transformative public spaces, connector streets, and civic destinations that have successfully reintroduced Philadelphians to the river. This sustained commitment to expanding access, enhancing resilience, and supporting mixed-use development is grounded in extensive foundational planning, from the Master Plan for the Central Delaware to targeted district-scale studies that align public and private partners around shared environmental goals. Today, DRWC's active role spans three interconnected systems—the public realm, transportation and infrastructure, and private development—which together define the organization's ongoing impact and its essential role in guiding a sustainable, resilient waterfront for decades to come.

DRWC'S STEWARDSHIP

Figure 31. Fireworks glow at Independence Blue Cross RiverRink Summerfest during a vibrant summer celebration. Source: Matt Stanley/DRWC.

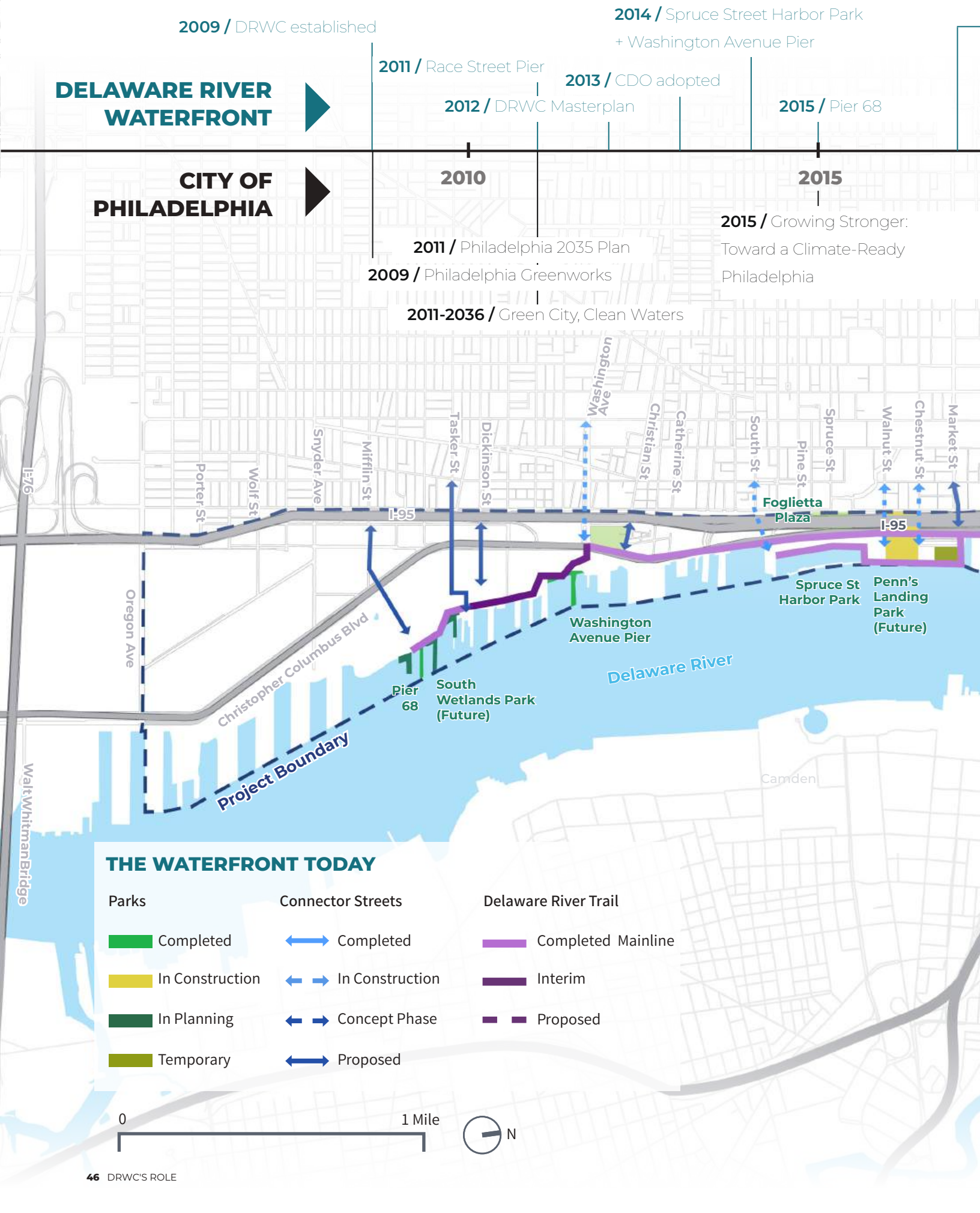
The Delaware River Waterfront Corporation (DRWC) is a 501(c)3 nonprofit corporation organized to act as the steward of the Delaware River waterfront, to provide a benefit to all of the residents of Philadelphia, and to waterfront visitors.

DRWC's daily charge is to design, develop and manage the central Delaware River Waterfront between Oregon and Allegheny Avenues using the Master Plan for the Central Delaware as the guiding document.

Since the completion of the Master Plan in 2012, DRWC has transformed these six miles into a vibrant destination for recreational, cultural, and commercial activities for the residents and visitors of Philadelphia.

In this section:

- Major Completed and Ongoing Projects
- Previous and Ongoing Planning Efforts


2009 / DRWC established
2011 / Race Street Pier
2012 / DRWC Masterplan
2013 / CDO adopted
2014 / Spruce Street Harbor Park + Washington Avenue Pier
2015 / Pier 68
DELAWARE RIVER WATERFRONT
CITY OF PHILADELPHIA
2010
2015
2015 / Growing Stronger: Toward a Climate-Ready Philadelphia
2011 / Philadelphia 2035 Plan
2009 / Philadelphia Greenworks
2011-2036 / Green City, Clean Waters
I-76
Porter St
Wolf St
Snyder Ave
Mifflin St
I-95
Tasker St
Dickinson St
Washington Ave
Christian St
Catherine St
South St
Pine St
Spruce St
Walnut St
Chestnut St
Market St
Foglietta Plaza
I-95
Oregon Ave
Christopher Columbus Blvd
Washington Avenue Pier
Spruce St Harbor Park
Penn's Landing Park (Future)
Delaware River
Pier 68
South Wetlands Park (Future)
Project Boundary
Walt Whitman Bridge
Camden
THE WATERFRONT TODAY
Parks
Completed
In Construction
In Planning
Temporary
Connector Streets
Completed
In Construction
Concept Phase
Proposed
Delaware River Trail
Completed Mainline
Interim
Proposed
0
1 Mile
N

2017 / Independence Seaport Museum Collaboration

2018 / Cherry Street Pier

2023 / Penn's Landing + I-95 Cap + Economic Impact Assessment

2026 / DRWC Sustainability & Resiliency Plan

2020

2021 / Philadelphia Climate Action Playbook

2023 / Philly Tree Plan

2025

2025 / City receives $600,000 to update climate resilience plan

2030

Building on a legacy of public realm stewardship, DRWC's highly visible waterfront projects will serve as a citywide standard for sustainable and climate-resilient development.

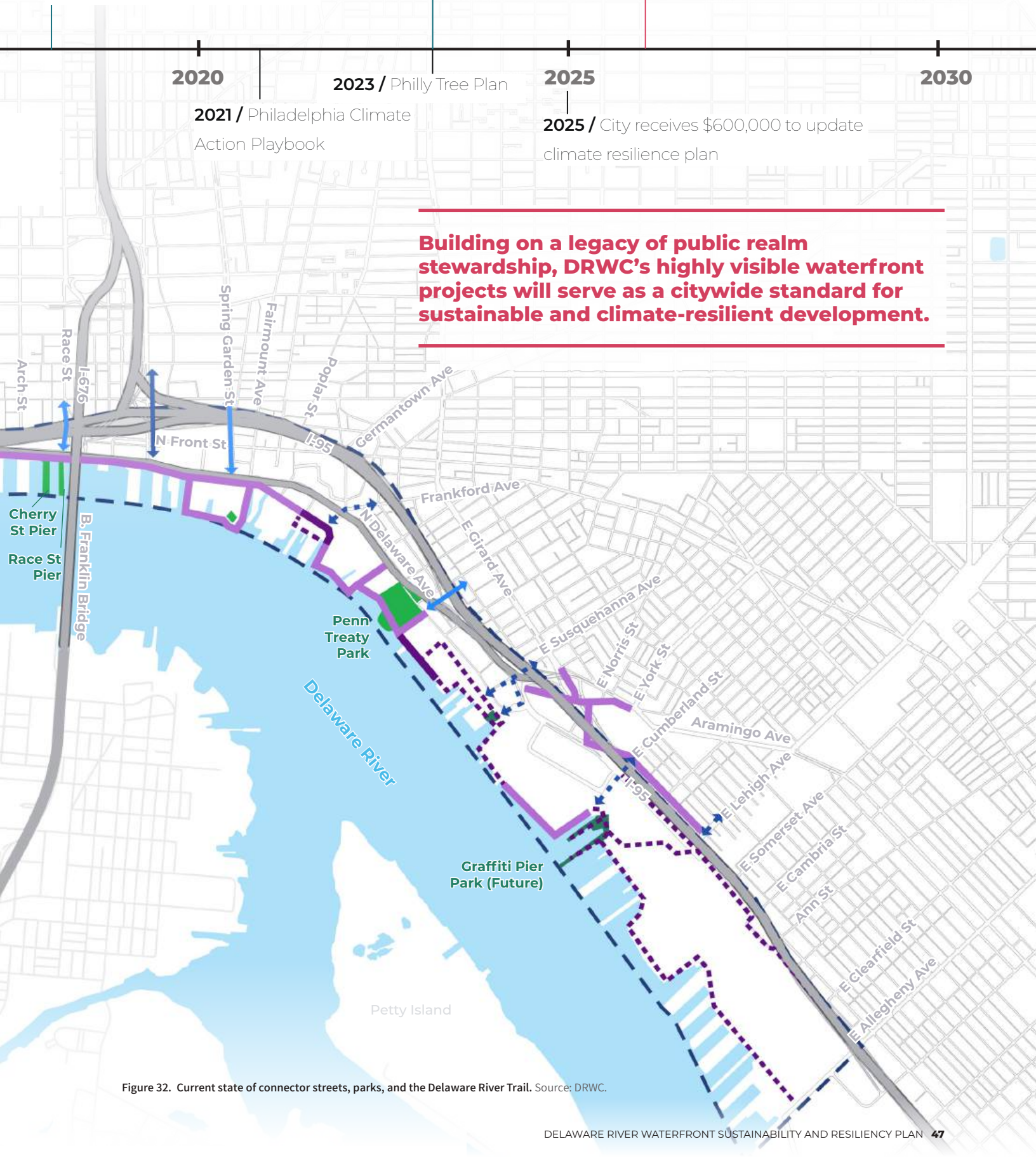


Figure 32. Current state of connector streets, parks, and the Delaware River Trail. Source: DRWC.

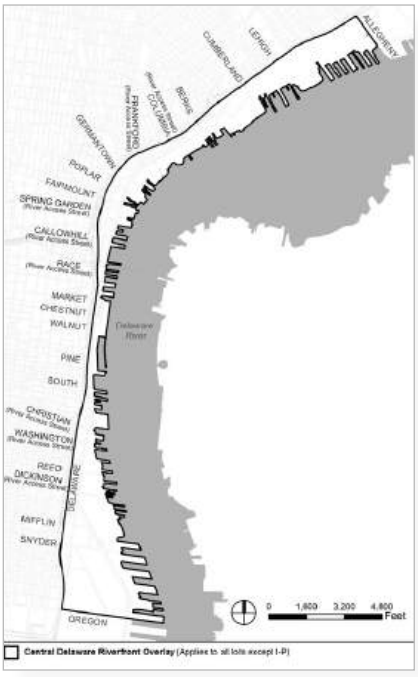
PREVIOUS & ONGOING PLANNING EFFORTS

This plan builds on the past planning work of DRWC, and the insights and themes developed by those plans are brought into this one. In addition to these DRWC-led projects, this plan looks to the guidance of several citywide sustainability and resiliency plans created by the City of Philadelphia, and others, as the recommendations from this plan must interweave with those strategies, and vice versa. The plans below were essential to the formation of this plan.

DRWC PLANS

Master Plan for the Central Delaware

Date: 2011
Prepared by: Cooper Robertson and OLIN for DRWC
Summary: With the support of the City, partners, and residents, DRWC created the Master Plan for the Central Delaware, a viable, flexible roadmap to guide all waterfront development between Port Richmond and Pennsport. The goal of the Master Plan was to transform a six-mile length of Philadelphia's Central Delaware River waterfront into an authentic extension of the thriving city and vibrant neighborhoods immediately to its west. The Master Plan identifies policy changes and investment strategies for economic development, community development, and open space along the waterfront and provides DRWC and the City with the tools necessary to make Philadelphia's original waterfront a treasured public amenity.



Central Delaware Overlay

Date: 2013, revised in 2019
Prepared by: City of Philadelphia
Summary: The Central Delaware Overlay (CDO) is the zoning legislation that stemmed from the Master Plan for the Central Delaware to improve public access, connect neighborhoods to the river, support economic development, foster walkable communities, and protect natural and historic resources. Adopted in 2013 and revised in 2019, the CDO guides development east of I-95 from Oregon Avenue in Whitman to Allegheny Avenue in Port Richmond.

Penn's Landing Park

Date: Ongoing
Prepared by: Hargreaves Jones, PennDOT, City of Philadelphia, DRWC
Summary: The new Penn's Landing Park will be an 11.5-acre civic space stretching between Chestnut Street, Walnut Street, Front Street, and the Delaware River. The park will include a wide variety of activities and features, including flexible open space for performances and festivals; food and drink options; a new play area; a relocated RiverRink for ice skating in the winter; and a water play area to cool off in the summer. DRWC conducted a robust city-wide effort to engage Philadelphians from all backgrounds and neighborhoods to determine what the park should include, and how its programming and operations can ensure it is a park for everyone.

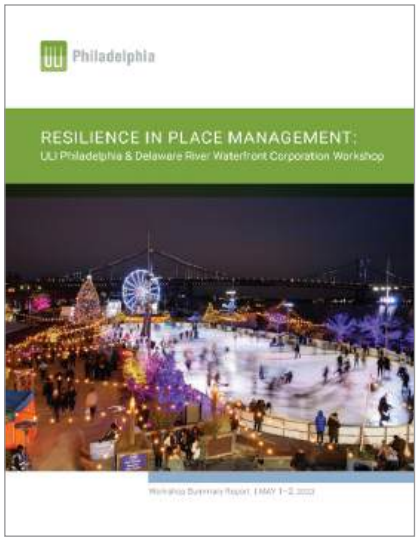
Waterfront Transit Study

Date: 2019
Prepared by: Foursquare Integrated Transportation Planning for DRWC
Summary: The Waterfront Transit Study specifically focuses on ways that DRWC can immediately encourage transit to the river and improve upon existing City and SEPTA public transportation services. This study explores ways to achieve a more dense, walkable, and human-scale Waterfront for Philadelphia, consistent with the vision established by the Master Plan for the Central Delaware. Since large-scale transformations to Waterfront transit are long-term goals, the study recommends a series of transit improvements that DRWC can initiate in the "near-term" more quickly.

ULI Virtual Advisory Services Panel: Delaware River Waterfront Corporation - Washington Avenue Waterfront Piers and District

Date: April 2021
Prepared by: Urban Land Institute
Summary: ULI convened a three-and-a-half-day Virtual Advisory Service Panel to focus on the redevelopment and reinvestment of the study area along the southern reach of the Delaware River in Philadelphia and to assist the organization with strategies to ensure that the future waterfront is not only active and vibrant, but also resilient to the imminent impacts of sea-level rise on the waterfront properties. Key recommendations include:

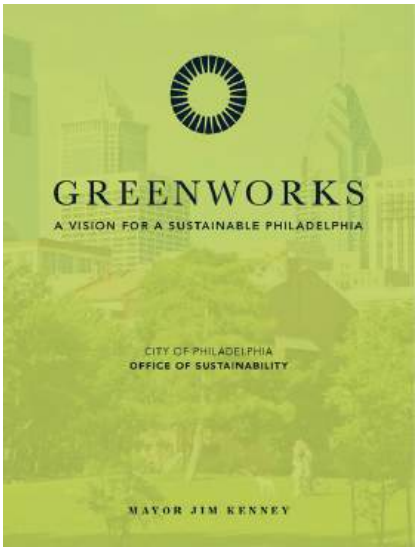
- Create a comprehensive infrastructure plan to bring DRWC and private owners into consensus about sea-level rise, coastal inundation, flooding and infrastructure design assumptions.
- Create a formal association of existing private landowners to foster partnership and coordination across public and private sectors.
- Continue to acquire abandoned piers and shorelines for the purpose of establishing unprecedented public access to the formerly industrial waterfront.



Resilience in Place Management: ULI Philadelphia and Delaware River Waterfront Corporation Workshop

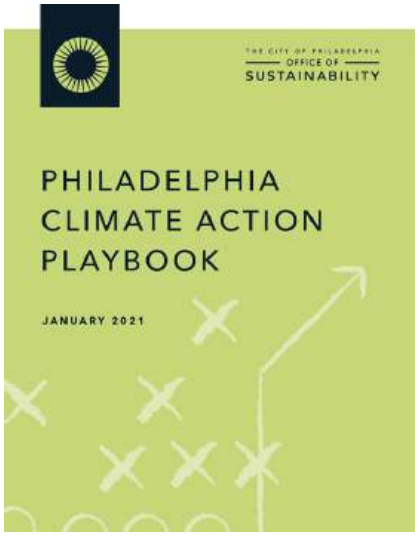
Date: May 2023
Prepared by: Urban Land Institute
Summary: ULI Philadelphia and DRWC hosted representatives from across North America for a focused discussion on best practices, lessons learned, and ideas for further exploration for managing public spaces through the lens of climate change, equity, and resilience. The Resilience in Place Management Workshop surfaced several key issues about which participants expressed mutual concerns, frustrations, or interest in seeing more data. These include issues related to insurance and indemnity; upstream (river) threats for waterfront-based organizations; outdated zoning codes; and legislation to enable research and demonstration spaces.

CITYWIDE PLANS



Greenworks: A Vision for a Sustainable Philadelphia

Date: 2016
Prepared by: City of Philadelphia Office of Sustainability
Summary: Greenworks is a framework for advancing the city's sustainability goals such as energy efficiency, waste reduction, water conservation, and equitable access to green resources. The report serves as a roadmap for action for city agencies, businesses, and residents.[34]



Philadelphia Climate Action Playbook

Date: January 2021
Prepared by: City of Philadelphia Office of Sustainability
Summary: This report outlines strategies to reduce greenhouse gas emissions and enhance resilience against climate impacts. It identifies key areas for action, including energy efficiency, sustainable transportation, and urban greening. The Playbook serves as a roadmap for city agencies, stakeholders, and residents, promoting collaborative efforts to achieve the city's climate goals.[35]

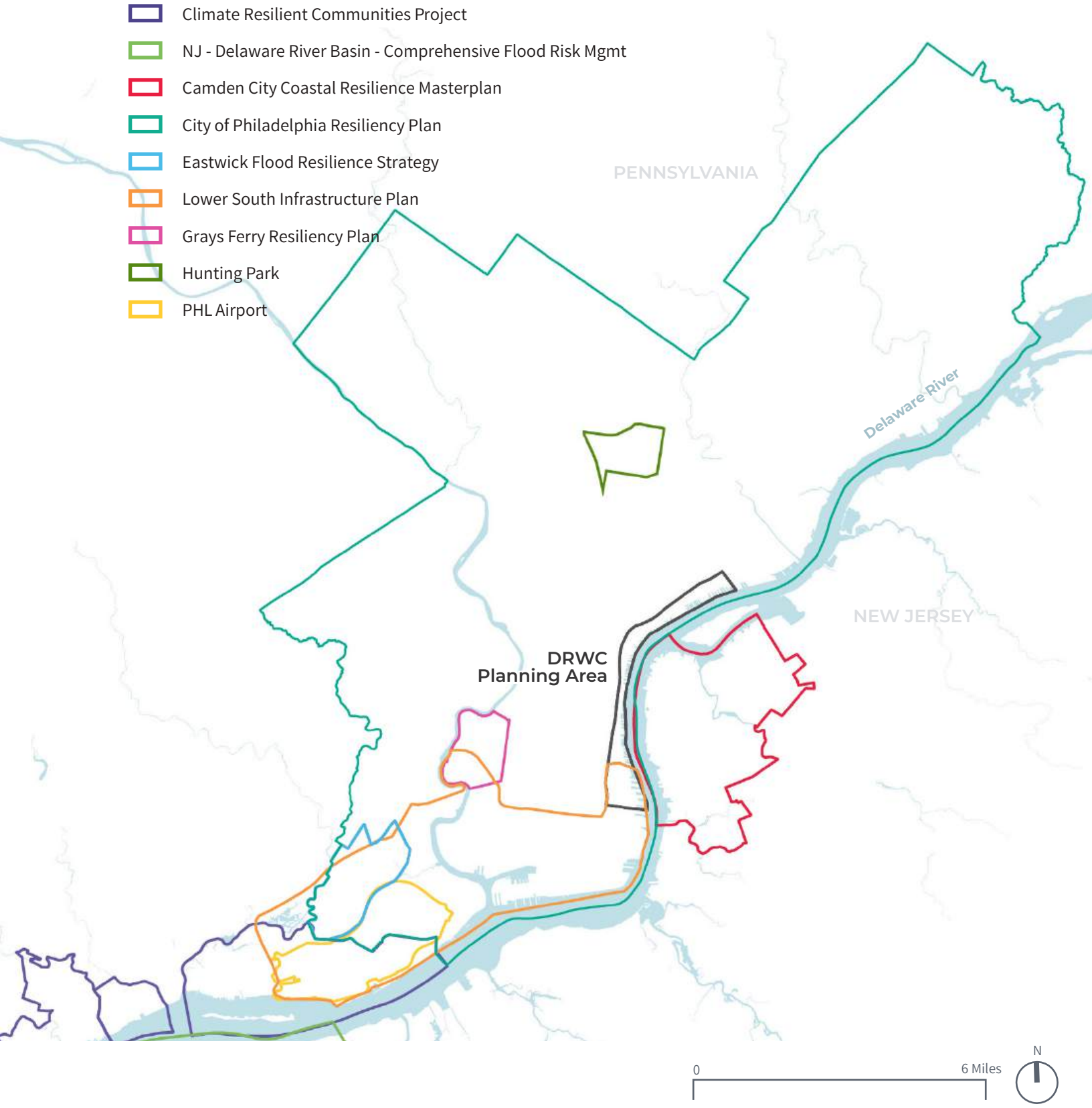


Figure 33. Geographic scope of resiliency planning efforts and projects across Philadelphia. Source: City of Philadelphia, OLIN.

A CHANGING WATERFRONT

Figure 34. Visitors stroll along the boardwalk at Spruce Street Harbor Park, surrounded by food stalls on the Delaware River Waterfront. Source: Maria Young/DRWC.

Over the past decade, DRWC has advanced a steady, coordinated effort to transform the waterfront and bring the vision of the Master Plan to life. Strategic public investments—new trail segments, reconnected streets, signature parks and public spaces—have laid the groundwork for a more accessible and connected waterfront. Since 2015, these efforts have helped catalyze more than $2.3 billion in private development, signaling a dramatic shift in how Philadelphians and investors view the waterfront.[36]

Today, the waterfront is entering a new phase of growth shaped by evolving real estate and development trends, updated zoning tools and overlays, and expanding opportunities for public access and activation. As developers, entrepreneurs, and civic partners reimagine the waterfront, the area is becoming not only a regional destination but also a powerful engine for inclusive economic development. Together, these forces are redefining what a resilient, equitable, and vibrant Delaware River waterfront can be.

In this section:

- Real Estate and Development Trends
- Zoning and Overlay Districts
- Access and Activation

Figure 35. Completed in 2025, Rivermark Northern Liberties is on the site of the former Festival Pier, featuring rental units, retail and restaurant space, and 4 acres of waterfront public-use space. Source: DRWC.

REAL ESTATE AND DEVELOPMENT TRENDS

Over the past decade, DRWC's public-realm development delivery – public infrastructure, parks, and destinations – has helped shift market perception and unlock significant private investment along the Central Delaware on the sites that allow development opportunities. DRWC reports $100 million in public capital investment to date (11 major projects completed and 8 underway) and $2.3 billion in private development investment since 2015, with $6 billion more anticipated over the next decade.[37]

$6B in anticipated investment over the next decade could reshape the waterfront's economic trajectory.

The market is responding with waterfront residential and commercial growth. Over the past decade, mixed-use multifamily inventory has grown steadily, with a major stock increase in 2024. While vacancy rates increased due to the completion of new development, rents increased 11% since 2014 with consistent outperformance of the city, and net absorption remained positive (+780 units from 2014-2024).[38] The strength of multifamily fundamentals explains the heavily residential mix of recent development

Figure 36. Completed, in-construction, and proposed private development projects along the waterfront. Source: DRWC.

and continued pipeline. The DRWC Economic Impact Report notes a sharp increase in new residential permits since 2019, signaling sustained interest in waterfront residential development.[39] Retail trends follow this trajectory, with an inventory square footage expansion of 6% since 2014 (driven largely by big box additions in the southern waterfront area). Vacancy remains far below the citywide rate and the market recorded positive net absorption (+103,000 SF) over the past decade, alongside nearly 20% rent growth.[40] Together, these indicators suggest a reinforcing Central Delaware dynamic: as public investments strengthen the waterfront's accessibility and identity as a destination, residential growth deepens the customer base for retail and daily-needs services, which further supports a mixed-use waterfront environment.

1,989 new residential units since 2015 indicate an expansion of the customer base for retail and daily-needs services.

Waterfront industrial inventory has been relatively stable, characterized more by renovations than new construction. The net absorption of industrial space has been negative over the decade and vacancy spiked in 2023 before improving. At the same time, industrial rents have increased substantially (+113% since 2014) and remain higher than the city overall, indicating ongoing demand for well-located product even as occupancy fluctuates. Office trends are comparatively constrained, with no new office buildings along the Delaware since 2014. Additionally, while vacancy spiked after the pandemic and has since recovered to below the city average, net absorption remains negative over the last decade and rents, though up 33%, are still below citywide levels.[41]

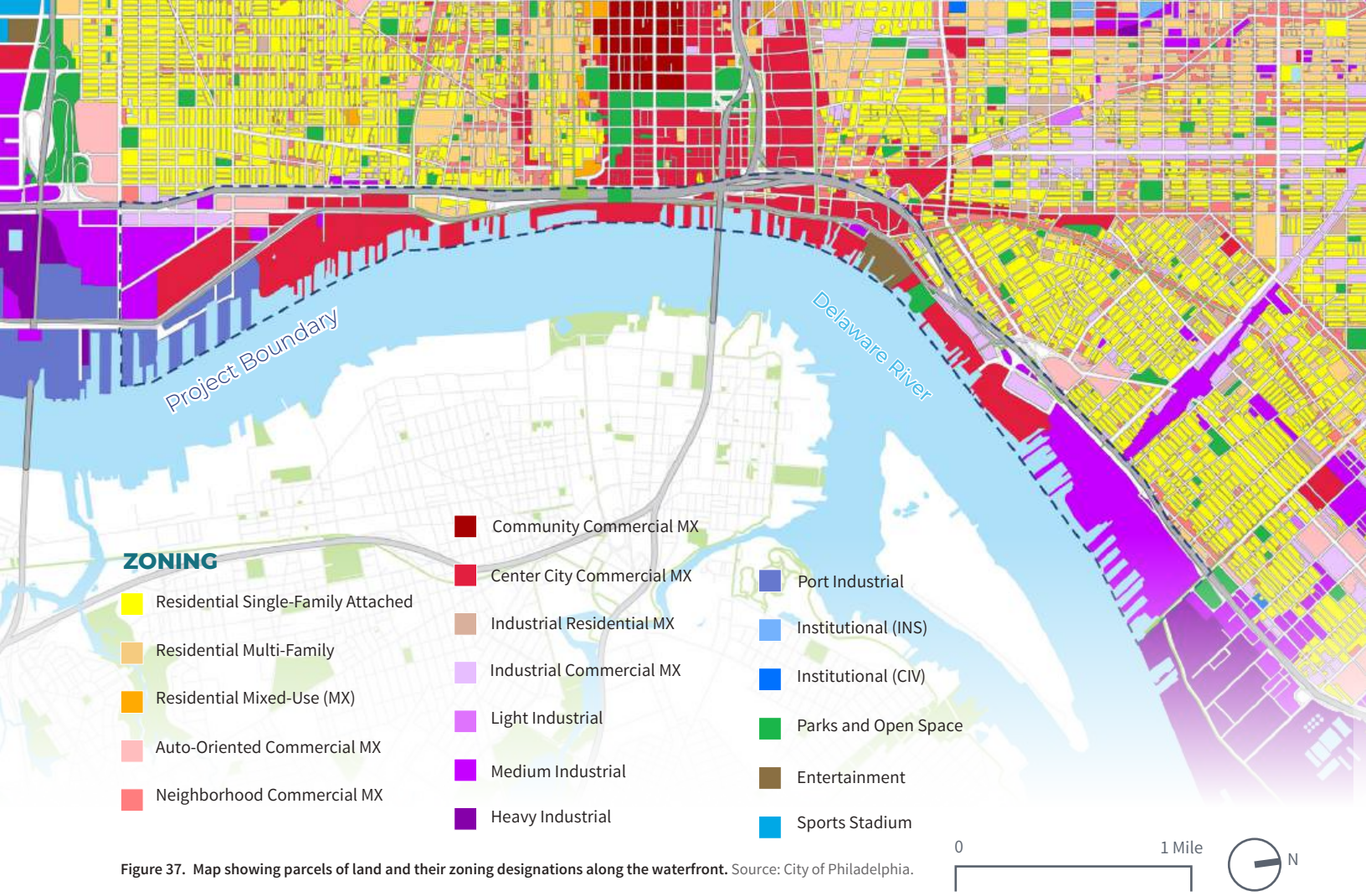


Figure 37. Map showing parcels of land and their zoning designations along the waterfront. Source: City of Philadelphia.

These development trends point to a waterfront that is increasingly defined by residential-led mixed-use growth, supported by strong retail performance and selective reinvestment in other sectors. The market signals align with the core development narrative of the waterfront: public capital projects and place-based improvements set the stage, while private investment responds most strongly in product types that benefit directly from improved access, amenities, and a strengthened destination identity.

ZONING AND OVERLAY DISTRICTS

CURRENT ZONING

Zoning plays a central role in shaping the Delaware River waterfront, serving as the primary tool the City uses to ensure new development advances the goals of the Master Plan for the Central Delaware. Most of the waterfront is zoned CMX-3 (Community Commercial Mixed-Use), which supports mixed-use development—residential, commercial, retail, and dining—and is layered with additional requirements from zoning overlays that apply to specific parcels.[42]

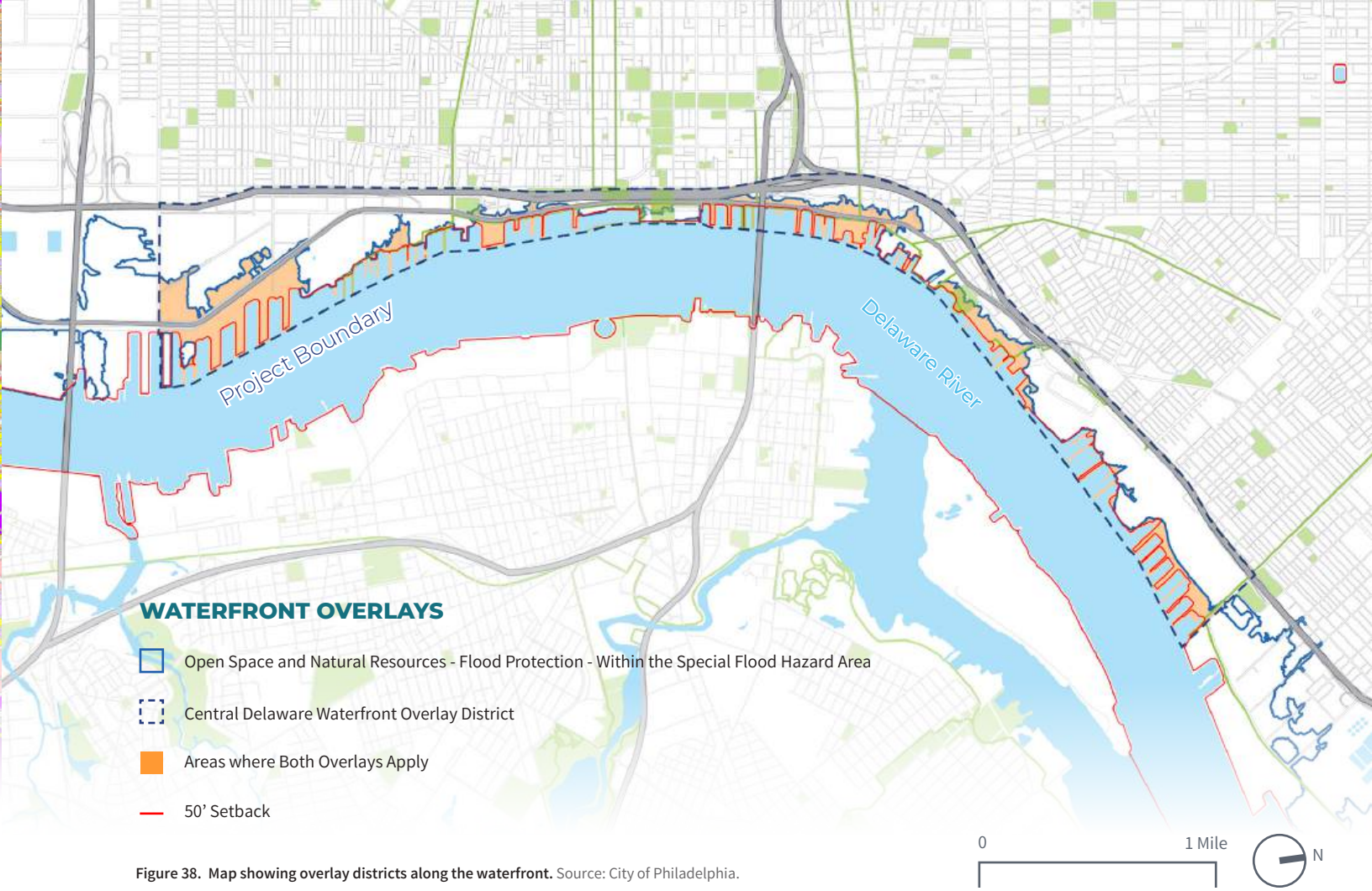


Figure 38. Map showing overlay districts along the waterfront. Source: City of Philadelphia.

CENTRAL DELAWARE OVERLAY

The Master Plan called for a dedicated waterfront zoning district to improve public access, connect neighborhoods to the river, support economic development, foster walkable communities, and protect natural and historic resources. In response, DRWC worked closely with stakeholders, the City, and District 1 Councilmember Squilla to create the Central Delaware Overlay (CDO), adopted in 2013 and updated in 2019.

The Central Delaware Riverfront Overlay District applies to all properties east of I-95 between Oregon Avenue and Allegheny Avenue, excluding Port Industrial zones. It establishes a network of "river access streets"—key corridors that pass under I-95 and terminate at major existing or planned waterfront destinations. These include Dickinson, Washington, Christian, Race, Callowhill, Spring Garden, Frankford, Columbia, Tasker, Mifflin, South, Walnut, Market, Chestnut, and Berks streets.

Over 40% (573 acres) of the Central Delaware District is in the Special Flood Hazard Area.

To strengthen the pedestrian experience, the overlay requires active ground-floor uses in designated locations, ensuring visible, publicly accessible uses, such as retail and restaurants, with entries on Delaware Avenue/Columbus Boulevard or on river access streets. The 2019 update also limits the amount of ground-level residential frontage on these corridors to prevent suburban-style development patterns.

The 2019 update further requires developments to provide public spaces designed to clearly welcome visitors. These spaces must be at least 50 feet in both width and depth and located adjacent to a public street, river access street, or trail.

To incentivize public benefits, the overlay offers height bonuses for incorporating retail, public space, mixed-income housing, stormwater management features, public art, trail extensions, or transit. Developers can earn up to 156 additional feet of height, offset by the reduction of the base height limit from 100 feet (2013) to 84 feet (2019), for a maximum allowable height of 240 feet. Some projects may also pursue an optional special review for additional exemptions from height or parking requirements.

WATERFRONT SETBACK

Beyond the CDO, other regulations shape waterfront development. Most notably, the citywide Waterfront Setback requirement of the Open Space and Natural Resources section of the zoning code, adopted alongside the CDO, prohibits new construction within 50 feet of the top of bank of any river or stream. This setback reduces flood risks, improves stormwater performance, and protects the waterfront's natural edge. While the setback does not mandate public access, it enables DRWC to make selective acquisitions, facilitating the creation of the Delaware River Trail and its associated city-wide benefits.

Figure 39. The Delaware River Trail runs adjacent to the Delaware River on the waterfront setback. Source: James B. Abbott/DRWC.

Figure 40. Biking along the Delaware River Trail is a popular summer activity. Source: Matt Stanley/DRWC.

Figure 41. Access to the waterfront allows for opportunities to fish and connect with nature. Source: Matt Stanley/DRWC.

Figure 42. People roll and stroll along the Delaware River Trail in the spring months. Source: Matt Stanley/DRWC.

ACCESS AND ACTIVATION

Over the past 15 years, DRWC has reshaped the waterfront into an inviting, interconnected system of parks and attractions, all tied together by the expanding Delaware River Trail (DRT). Whether in lively programmed spaces or calm, passive parks, visitors can find experiences for every interest.

ACCESS

Delaware River Trail

The Delaware River Trail (DRT) is a grade-separated, multi-use corridor stretching more than five miles along the Central Delaware. Designed for both recreation and everyday mobility, the trail links Philadelphia's waterfront parks and connects adjacent river neighborhoods. A major segment between Washington Avenue and Spring Garden Street was completed in Spring 2022, significantly improving safety along Columbus Boulevard by creating dedicated, separated space for walkers, joggers, and cyclists. Since its opening, trail use has increased by 58% as residents and visitors continue to embrace the waterfront.

Trail use has increased by 58% following the completion of the Washington to Spring Garden segment in 2022.

Pedestrians and cyclists frequent the waterfront, generating 500,000+ annual trips.

The Master Plan for the Central Delaware identified strong public demand for a continuous waterfront trail with close proximity to the river wherever possible. In line with this vision, DRWC is actively pursuing acquisition, design, and construction of the DRT. DRWC is currently advancing the next phase of the trail to extend between Columbia and Lehigh Avenues, closing a critical gap between Penn Treaty Park and The Battery. These improvements will strengthen bicycle and pedestrian connectivity while reconnecting more communities to the river and its iconic landmarks.

The trail is also a key segment of the East Coast Greenway and the Circuit Trails network, linking Philadelphia to hundreds of miles of regional multi-use trails across Pennsylvania and New Jersey. Towards the North, the DRT connects to Spring Garden Street, the site of a planned greenway that will link the Delaware and Schuylkill Rivers.

Key features of the DRT include:

- Two miles of curb-separated, bi-directional asphalt bicycle path with a dedicated sidewalk for walking and running
- Landscaped planting beds that buffer travel modes and introduce hundreds of new trees and seasonal plantings
- Solar-powered pedestrian lighting
- Distinctive furnishings such as benches, bicycle racks (including a two-tier shelter at Spruce Street Harbor Park), and trash and recycling receptacles
- A bicycle and pedestrian counter at Spruce Street Harbor Park displaying monthly and annual volumes
- Enhanced stormwater management through new inlets and strategically placed garden beds
- Improved access to public, commercial, and residential destinations along the waterfront

Connector Streets

One of the primary challenges to waterfront access is the barrier created by I-95 and its associated infrastructure. The Master Plan identified improvements to key east–west connector streets as essential to creating safe, welcoming, and intuitive routes between neighborhoods and the river. These connector streets were formalized in the Central Delaware Overlay (CDO), and DRWC has steadily advanced projects to strengthen these critical links.

DRWC is currently implementing two major connector projects—the Washington Avenue Connector and the Cumberland Street Connector. Each will transform its corridor into a greener, safer, and more inviting path to the waterfront for nearby communities, from South Philadelphia to Port Richmond and Olde Richmond. Planned improvements include new sidewalks, protected bike lanes, upgraded lighting, street trees, and enhanced public spaces that make the journey to the river more comfortable and accessible for all.

Figure 43. The Race Street Connector project enhances the pedestrian experience when traveling from Old City to the Delaware River by creating a welcoming and effective connection, as well as an attractive gateway to the waterfront.
Source: Langan/DRWC.

ACTIVATION

Through inclusive, year-round programming, DRWC brings the waterfront's parks, piers, and trails to life. Free events—from sunset yoga to vibrant festival weekends—showcase the energy of Philadelphia, while arts installations, performance series, and passive park spaces provide diverse ways for the public to connect, relax, and engage. Each activation is designed to foster a shared sense of place along the waterfront.

Events and Performance Series

In 2024, the Delaware River Waterfront hosted over 600 civic and community-focused events, bringing the waterfront to life for residents and visitors alike. DRWC's programming spans all ages and interests, from weekly movement and mindfulness classes through Wellness on the Waterfront to family-friendly movie nights, story time, art-making, and guided play across waterfront venues, reaching tens of thousands of Philadelphia families each year.

Multicultural programming remains a cornerstone of the waterfront experience. Through the PECO Multicultural Series and seasonal festivals, DRWC celebrates African, Indigenous, Islamic, Caribbean, Latinx, and Southeast Asian cultures with food, music, dance, and hands-on activities, reflecting the city's rich diversity.

The expansion of performance spaces along the waterfront add to its vibrancy. In summer 2024, the Lazy Hammock stage debuted at Spruce Street Harbor Park, hosting live music, DJ sets, and jazz dance parties that add rhythm and energy to the park's relaxed atmosphere. Meanwhile, seasonal attractions at the Independence Blue Cross RiverRink offer fun with a Philadelphia twist: Summerfest delivers a classic boardwalk experience, while Winterfest transforms the space into a cozy holiday destination, together creating enduring year-round traditions. Spruce Street Harbor Park itself blends local flavor with waterfront relaxation, featuring hammocks, floating barges, local eateries, and weekly live music that turn warm-weather nights into memorable experiences.

Looking ahead, the new Penn's Landing Park will cap I-95, reconnect Center City to the river, and create 11.5 acres of public space featuring trails, skating, water features, and a café. As part of a $1.6 billion investment, this transformative project will further strengthen the waterfront as a vibrant, accessible destination for culture, recreation, and community gatherings.

Figure 44. Spruce Street Harbor Park has become the waterfront's most iconic outdoor destination, offering live music, al fresco dining, and signature hammocks. Source: BeauMonde Originals/DRWC.

Figure 45. A young performer showcases traditional Indigenous dance at the We Are the Seeds event, part of the PECO Multicultural Series at the Delaware River Waterfront in Philadelphia. Source: Maria Young/DRWC.

Figure 46. Monthly market event at Cherry Street Pier. Source: Matt Stanley/DRWC.

Arts Programming

Figure 47. "Weavers Knot: Sheet Bend" by Studio Ball Nogues made possible through the The Office of Arts, Culture and the Creative Economy's (OACCE) Percent for Art Program. Source: Matt Stanley/DRWC.

The Waterfront Arts Program activates the waterfront with high-quality, innovative public art and performance, transforming non-traditional spaces into cultural destinations and reinforcing the Delaware River Waterfront as a vibrant arts corridor for the city. Since its launch nearly a decade ago, DRWC and its partners have brought a diverse range of artistic experiences to the waterfront.

A notable example is "Weaver's Knot: Sheet Bend" (2022), a site-specific installation by Studio Ball Nogues located between Cherry Street Pier and Race Street Pier along Columbus Boulevard. The work was realized in collaboration with the City of Philadelphia's Office of Arts, Culture, and the Creative Economy (OACCE) through its Percent for Art Program.

Additional arts programming highlights include the annual Flag Exhibition, which features the work of 16 artists from Philadelphia and beyond, and a robust calendar of rotating exhibitions at Cherry Street Pier. The Pier hosts year-round displays of mixed-media installations, sculptures, and public art, and serves as a creative hub through its artist-in-residence studios. In 2024, Cherry Street Pier welcomed more than 65,000 visitors and supported 14 artist residencies. Overall visitation has grown by 176% between 2020 and 2024, underscoring the growing cultural momentum along the waterfront.

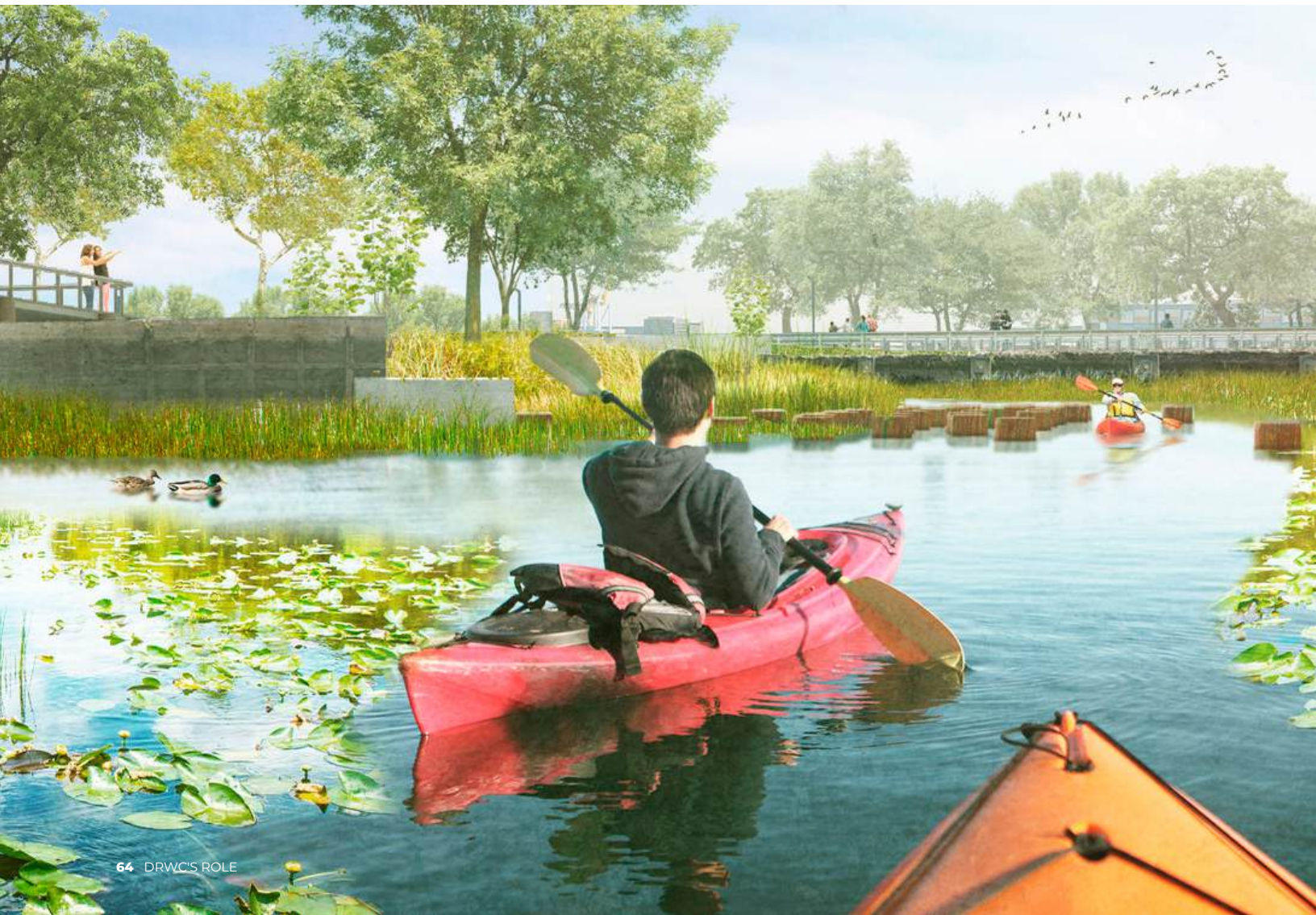
Visitorship to Cherry Street Pier grew 176% between 2020 and 2024, underscoring the growing cultural momentum along the waterfront.

Passive Parks

Washington Avenue Pier, Race Street Pier, and Pier 68 offer some of the most serene spaces along the waterfront—places to experience sweeping river views, learn about the history of Philadelphia's working shores, and reconnect with native plants and habitats. These passive parks provide opportunities for recreation such as fishing, birdwatching, picnicking, or simply enjoying a peaceful moment away from the city's bustle. From 2021 to 2024, visitorship across these spaces has steadily grown, reflecting the public's increasing desire for nature-based respite along the river.

Looking ahead, DRWC is advancing South Wetlands Park, an ambitious project that will restore critical waterfront wetlands and create an immersive ecological destination. The park will feature elevated boardwalks traversing historic piers, offering visitors an intimate experience of tidal wetlands, wildlife habitat, and the river's natural rhythms. Once complete, South Wetlands Park will provide a unique blend of ecological restoration, education, and passive recreation—strengthening both the health of the waterfront and the public's connection to it.

Figure 48. Images (clockwise from top left): Race Street Pier, Pier 68, Washington Avenue Pier, South Wetlands Park rendering. Source: Matt Stanley, Douglas Bovitt, and OLIN.




04

CHAPTER 4:
RECOMMENDATIONS

This chapter outlines the path forward for advancing sustainability and resiliency along the Central Delaware. Building on DRWC's vision, existing initiatives, and an understanding of the waterfront's evolving climate and community needs, the recommendations translate analysis into clear direction for action. They establish a coordinated framework to guide DRWC's operations, capital projects, partnerships, and policy advocacy over the coming decade.

Organized around six critical issue areas—risk management, water, waste, energy, biodiversity, and environmental health and justice—the chapter presents goals, actions, and metrics to drive progress. Each section identifies where DRWC can lead directly or where it can collaborate with City and regional partners or private developers. Together, these strategies support a healthier ecosystem, lower-carbon operations, improved climate readiness, and more equitable benefits for residents and visitors. Collectively, these recommendations position DRWC to strengthen the resilience of the waterfront while advancing sustainability as a core organizational value.

STRUCTURE OF THE RECOMMENDATIONS

This action-oriented portion of the plan is organized around the six issue areas that are encompassed in the sustainability and resiliency plan. Each issue area contains Goals, Actions, and Metrics.

The introductory text describes DRWC's role and agency in impacting that particular issue area. Goals describe the future state to achieve. Actions describe how those goals will be achieved; and the metrics to track progress help measure if success has been achieved and to what extent. It allows DRWC, and partners, to continually advance the goals of this plan.

In some cases, building a baseline is the initial step, or understanding a starting point from which to measure progress. In other cases, the goal cannot be accomplished by DRWC alone; and DRWC's role might simply be to advocate, to join in a collective effort towards a greater goal. To that end, the Goals associated with each issue area call DRWC to **MEASURE, ACT, or ADVOCATE**, to better describe the work required for each.

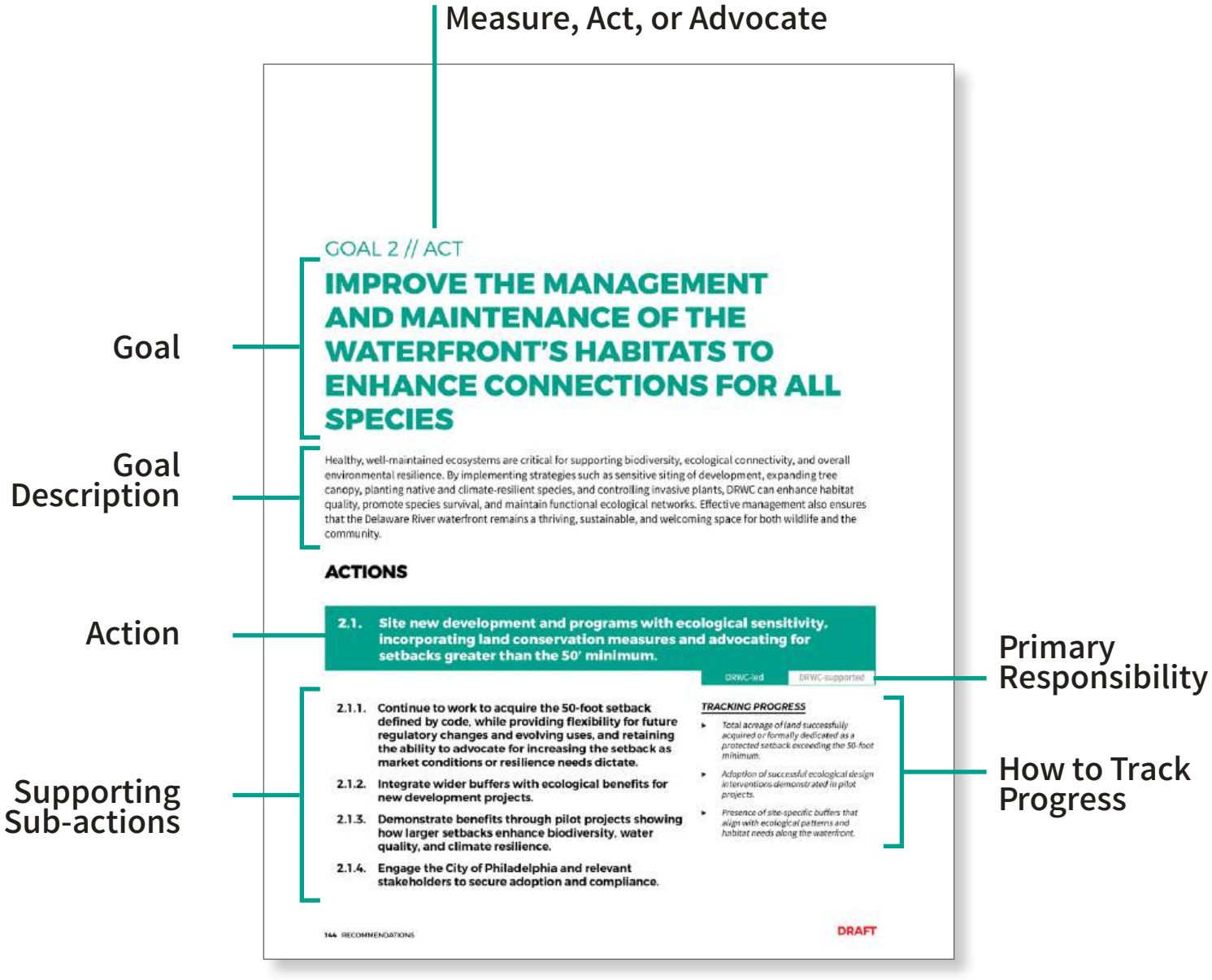
SOURCES

The recommendations presented in this plan are derived from three groups of sources to ensure they are both ambitious and actionable. First, they build on over a decade of foundational past planning efforts. This includes integrating insights from DRWC-led documents like the Master Plan for the Central Delaware (2011) and the Waterfront Transit Study (2019) , as well as citywide guidance such as the Philadelphia Climate Action Playbook (2021) (See Chapter 3). Second, the strategies are informed by a rigorous review of industry-leading rating and certification systems to establish a matrix of best practices that inform all issue areas (See Appendix). These include:

- LEED v5, U.S. Green Building Council
- SITES, U.S. Green Building Council
- Envision, Institute for Sustainable Infrastructure
- LBC (Living Building Challenge), International Living Future Institute
- WEDG (Waterfront Edge Design Guidelines), Waterfront Alliance
- RELi, U.S. Green Building Council
- CRS (Community Rating System), FEMA

Finally, these recommendations were shaped and vetted by subject matter experts, partner agencies, and the project's consultant team to ensure they reflect best practices in urban climate adaptation.

MEASURE	ACT	ADVOCATE
Understand, track, and assess existing conditions and change over time to establish key baselines and monitor progress.	Address identified challenges, achieve metrics, and create new practices through Implementation and operational strategies.	Promote and support partnerships that align with long term goals and build relationships to expand operational capacity.



RISK MANAGEMENT

Figure 50. Flooding at Cherry Street Pier. Source: OLIN.

Coastal flooding on the Central Delaware is significant and increasing, while extreme heat poses additional health hazards, creates disruptions for public events, and impacts recreation and infrastructure use. DRWC can implement site- and district-scale resilience measures, influence private development through developer RFPs, advocate for policy changes, and coordinate with city-wide resilience planning.

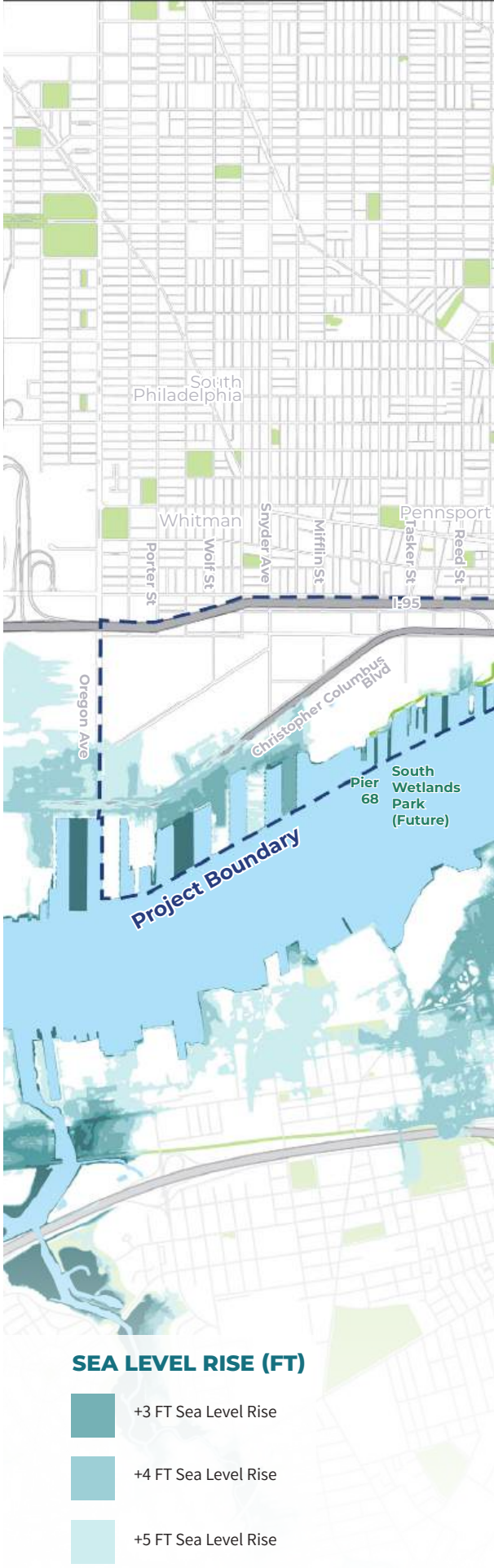
MEASURE ▶ Characterize and quantify risk from climate hazards to the waterfront.

ACT ▶ Seek strategies to reduce hazard risk and proactively respond to extreme events such as floods, heat waves, and emergency situations to promote safety.

ADVOCATE ▶ Embed climate hazard preparedness into DRWC planning, policy, and capital projects.

RISK MANAGEMENT TODAY

An integral step in advancing the resiliency of the Delaware River waterfront is developing actionable disaster preparedness, response, and recovery processes. DRWC can mitigate risks, promote safety, and enhance resiliency by incorporating lessons learned and best practices into future planning and programs that improve disaster response and recovery capabilities. The approach to risk management necessarily includes the notion of resilience, which is the ability of a system to withstand and adapt to a disturbance – like climate change. It will require assessing current and future climate risk in the project area and developing actionable, cost-effective, and prioritized solutions across a variety of scales. The recommendations follow industry standards including the National Preparedness Goal, National Response and Recovery Frameworks, and the National Continuous Improvement Guidance outlined by the Federal Emergency Management Agency's (FEMA). This approach offers DRWC the ability to improve the overall disaster preparedness and readiness of staff, partners, and stakeholders.



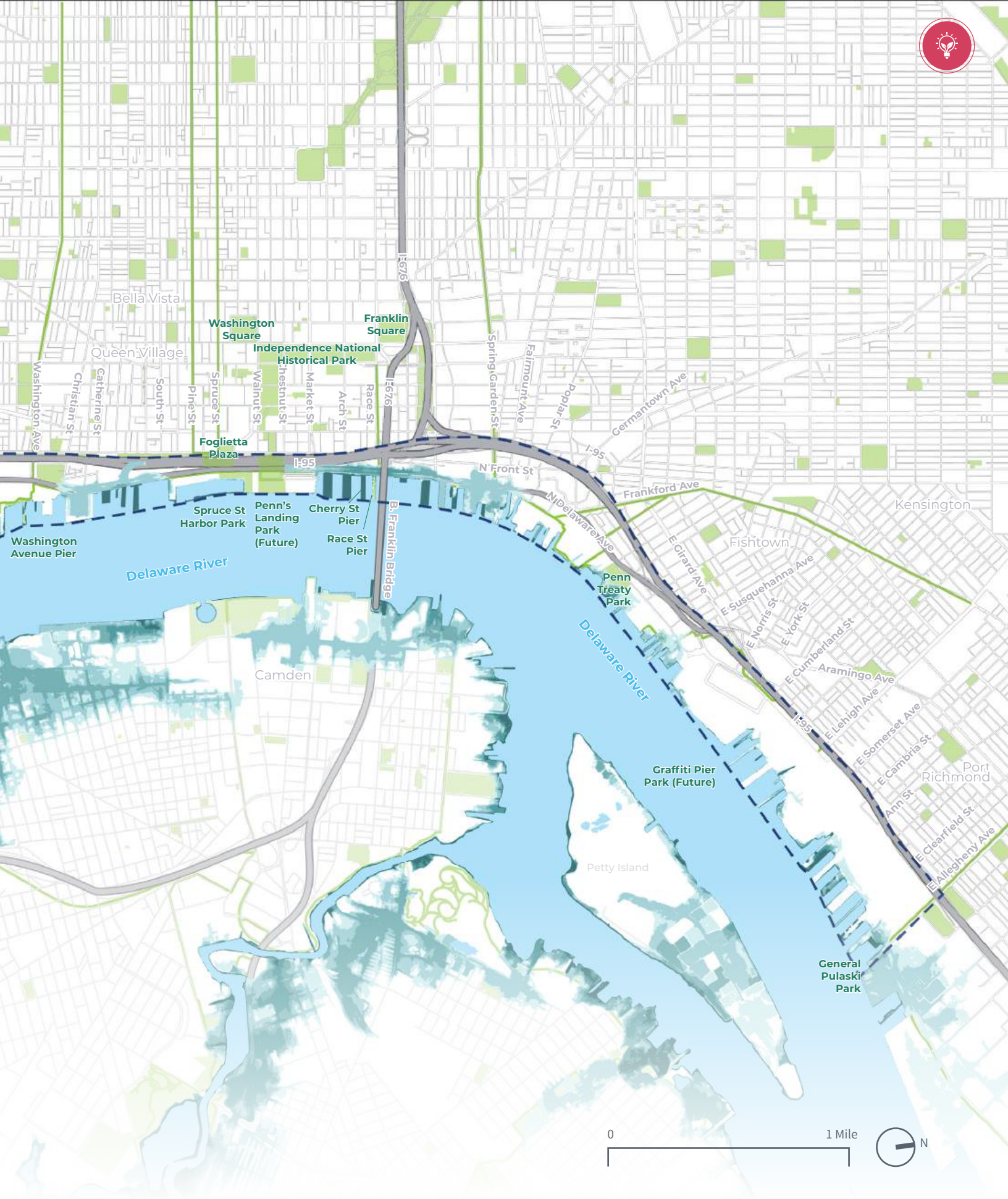


Figure 51. Extent of sea level rise scenarios (3ft, 4ft, and 5ft) along the waterfront. Source: NOAA.

GOAL 1 // MEASURE

CHARACTERIZE AND QUANTIFY RISK FROM CLIMATE HAZARDS TO THE WATERFRONT

The Delaware River waterfront faces increasing threats from coastal flooding, extreme heat, and other climate-related events. Without a clear understanding of these risks, facilities, infrastructure, and public spaces remain vulnerable, potentially compromising public safety, access, and long-term sustainability. By assessing future hazards relative to exposures and vulnerabilities, DRWC can prioritize interventions, guide resilient design and management strategies, and ensure the waterfront remains safe, functional, and welcoming for all Philadelphians in the face of a changing climate.

ACTIONS

1.1. Conduct a Multi-Hazard Risk Assessment of the Delaware Waterfront District that reflects estimates of future hazard exposure due to climate change.

DRWC-led | DRWC-supported

1.1.1. Partner with a risk assessment consultant.

1.1.2. Integrate the risk assessment into relevant plans and the annual capital improvement planning and prioritization process in the next update cycle.

TRACKING PROGRESS

- *Complete a risk assessment to produce a risk profile for the district and update every 5 years.*

Figure 52. Extreme heat impacts not only human comfort and health, but the health of trees. Source: OLIN.

GOAL 2 // ACT

SEEK STRATEGIES TO REDUCE HAZARD RISK AND PROACTIVELY RESPOND TO EXTREME EVENTS SUCH AS FLOODS, HEAT WAVES, AND EMERGENCY SITUATIONS TO PROMOTE SAFETY

Proactive planning and rapid response reduce these risks, protect visitors and staff, and minimize long-term damage to facilities and the environment. By preparing hazard-specific response plans and maintaining emergency supplies, DRWC ensures the waterfront remains a safe, resilient, and welcoming space even during extreme climate events.

ACTIONS

2.1. Develop an extreme heat adaptation plan for public spaces and DRWC-owned facilities/buildings within the waterfront planning district.

DRWC-led | DRWC-supported

2.1.1. Establish indices for temperature that determine emergency conditions.

2.1.2. Define protocols and responsibilities for pre-event preparation, emergency actions during the event, and recovery/post-heat event support.

2.1.3. Develop communication and training materials for heat.

TRACKING PROGRESS

- *Percent reduction in average surface temperatures across DRWC sites.*

2.2. Develop storm and flood response plans for operations that include risk reduction for public assets within the waterfront district.

DRWC-led | DRWC-supported

2.2.1. Establish indices for flood levels that determine emergency conditions.

2.2.2. Define protocols and responsibilities for pre-event preparation, emergency actions during the event, and recovery/post-flood event support.

2.2.3. Develop communication and training materials for flooding.

TRACKING PROGRESS

- *Number of flood adaptation measures implemented within DRWC managed parcels.*
- *Annual contribution to the CRS points system through floodplain management practices that reduce flood risk within DRWC study area.*

2.3. Ensure emergency supplies and power for DRWC properties is available in the event of a climate hazard.

DRWC-led | DRWC-supported

2.3.1. Assess need, ensure compliance, and arrange for supplies for DRWC-owned properties.

2.3.2. Ensure that all DRWC properties requiring electricity have adequate back-up power located at least 3 ft above the base flood elevation.

TRACKING PROGRESS

- *Develop protocols to provide emergency supplies for 36 hours / 1.5 days for DRWC properties, including water and food.*

Figure 53. Cherry Street Pier hosts over 65,000 people each year. Flooding and other extreme events impact operations. Source: OLIN.

2.4. Develop and adopt climate resilient waterfront design guidelines and principles.

DRWC-led | DRWC-supported

2.4.1. Align DRWC activities and development with existing waterfront guidelines such as WEDG (Waterfront Alliance).

TRACKING PROGRESS

- *Develop resilient waterfront design guidelines.*
- *Ensure all projects are built 2 ft above the 1% (100-year) flood elevation for standard projects, and 3 ft above the 1% (100-year) flood elevation for future critical assets.*

2.5. Incorporate climate projections and heat and flood adaptation strategies into DRWC capital planning processes.

DRWC-led | DRWC-supported

2.5.1. Align with the Office of Sustainability's efforts to embed climate projections into DRWC planning processes.

2.5.2. Include design flood elevation standards in DRWC RFPs for new development.

TRACKING PROGRESS

- *Number of projects that are built above minimum design flood elevation standards.*

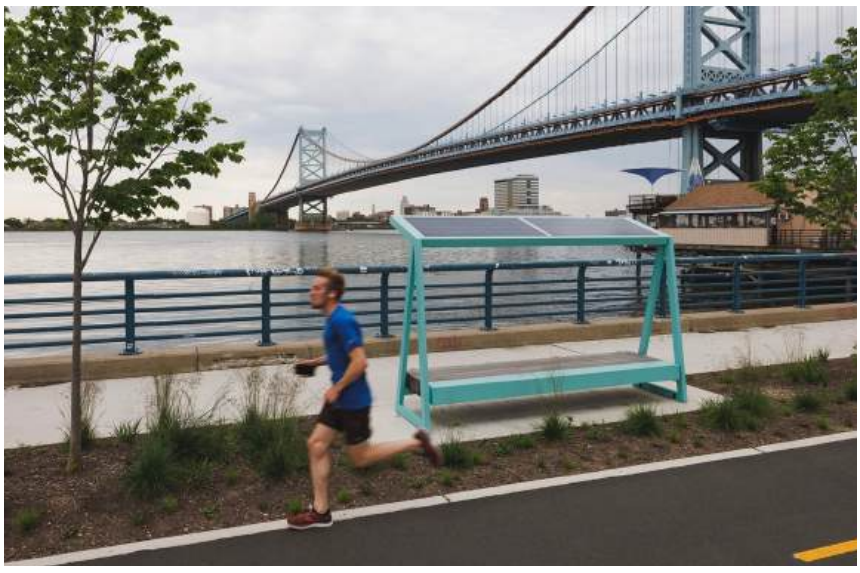


Figure 54. Benches with a shade canopy not only provide comfortable places to sit, but also help power lighting along the DRT. Source: DRWC.

ADAPTATION STRATEGIES

As climate change introduces new environmental stressors to the waterfront, DRWC is committing to a resilient future by embedding climate adaptation directly into its capital planning. The following are a few practical strategies to combat the two most pressing climate vulnerabilities along the waterfront—flooding and extreme heat.

Flooding Strategies

Elevate critical infrastructure, like trails and utilities, above projected surge levels

Design living shorelines with salt-tolerant native vegetation

Utilize deployable barriers to protect vulnerable facilities and visitors

Heat Strategies

Increase tree canopy

Install shade structures

Utilize high-albedo (reflective) and permeable paving materials to actively lower surface temperatures

GOAL 3 // ADVOCATE

EMBED CLIMATE HAZARD PREPAREDNESS INTO DRWC PLANNING, POLICY, AND CAPITAL PROJECTS

Incorporating resilience into capital projects and policy ensures that infrastructure and public spaces can withstand these hazards, protecting visitors, residents, and investments over the long term. By advocating for climate-informed design, integrating projections into planning, and educating stakeholders, DRWC can create a safer, more sustainable, and adaptive waterfront that meets both current and future community needs.

ACTIONS

3.1. Advocate for waterfront priorities in City- and Region-Wide resilience strategies.

DRWC-led | DRWC-supported

3.1.1. Partner with city and region-wide resilience agencies

3.1.2. Support the City of Philadelphia's planned participation in the FEMA CRS to help incentive-based flood risk reduction investments along the Delaware River Waterfront.

3.1.3. Integrate climate planning into the Central Delaware River Overlay Zone (CDO) in collaboration with the City.

TRACKING PROGRESS

- *Number of CRS incentive measures that are adopted within the Central Delaware Waterfront district.*
- *Number of new waterfront resilience standards adopted into the CDO.*

3.2. Educate residents and property owners on waterfront resilience strategies.

DRWC-led | DRWC-supported

3.2.1. Partner with community organizations, property owners, and resident groups.

3.2.2. Leverage existing sharing platforms to disseminate information.

TRACKING PROGRESS

- *Provide links to updated climate projections on the DRWC website for developer and community reference.*
- *Increase climate literacy and waterfront emergency preparedness among city stakeholders, measured through post-meeting surveys or assessments*

Figure 55. Community engagement for South Wetlands Park included education around native ecology and climate resilience. Source: OLIN.

WATER

Figure 56. The Delaware River near Washington Avenue Pier. Source: OLIN.

As identified in the U.S. Water Alliance's One Water Approach, sustainable management of the full water life cycle, ranging from water in rivers to stormwater to drinking water, is critical to ensuring a healthy and vibrant future. Water quality impacts public health, recreational opportunities, and biodiversity, but is primarily driven by larger-scale forces of city-wide infrastructure policy, regional land use, and industry – both existing and legacy. DRWC can contribute to a sustainably-managed water cycle by reducing its potable water consumption and implementing creative stormwater management solutions. DRWC can advocate for policies and specific investments at both the city and regional level, while adhering to high standards for stormwater management along the waterfront and managing appropriate levels of public contact with the river.

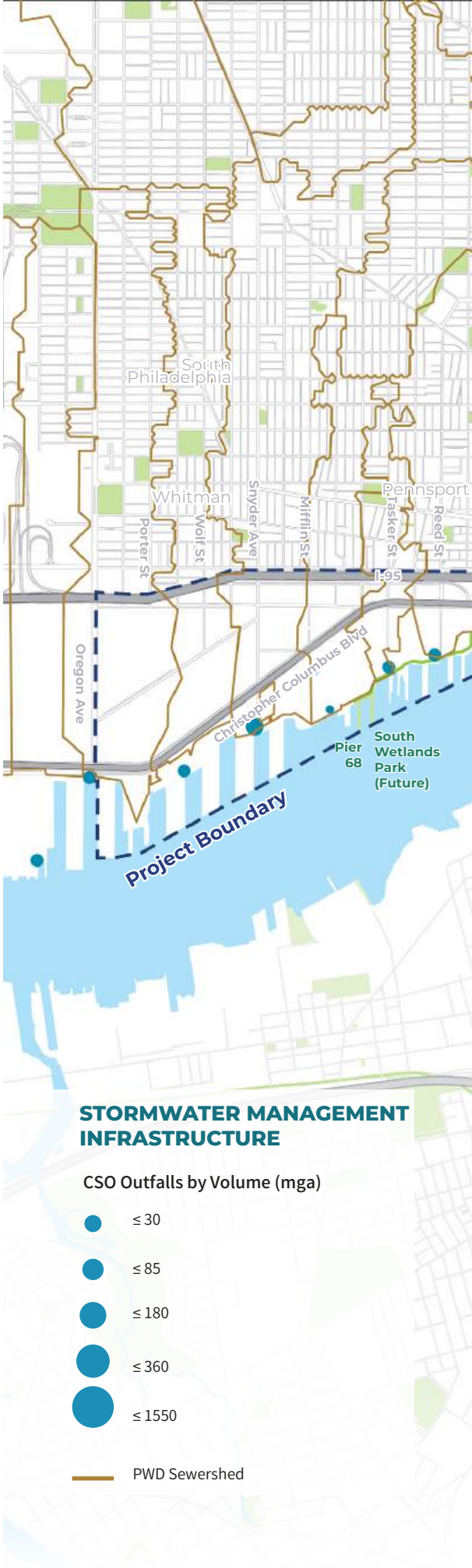
MEASURE ▶ Collect data to analyze DRWC's water consumption and water quality constraints on river access.

ACT ▶ Improve Delaware River water quality and reduce DRWC's potable water use.

ADVOCATE ▶ Increase public awareness of the importance of the history, health, and ecology of the Delaware River Watershed.

WATER TODAY

The Delaware River waterfront faces several challenges, including chronic pollution and poor water quality due to Combined Sewer Overflows (CSOs) that discharge sewage and stormwater runoff into the river during rain events. While the Philadelphia Water Department (PWD) is working to mitigate CSO pollution through its Green City, Clean Waters program, the system is routinely overwhelmed, resulting in elevated levels of fecal bacteria near the shoreline, especially close to combined sewer outfalls.[43] There are several CSOs along the entire stretch of the waterfront, and those with the highest volume of sewage outflow are mainly located north of the Benjamin Franklin Bridge. Furthermore, DRWC uses potable water across its operations, from landscaping to sanitation, and managing this resource responsibly is a critical piece of incorporating sustainability into the organization. DRWC can collaborate with city agencies to enhance water quality, promote potable water conservation, and manage water thoughtfully, as well as strengthen infrastructure approaches to better manage the stormwater and coastal flooding that put people and assets at risk.



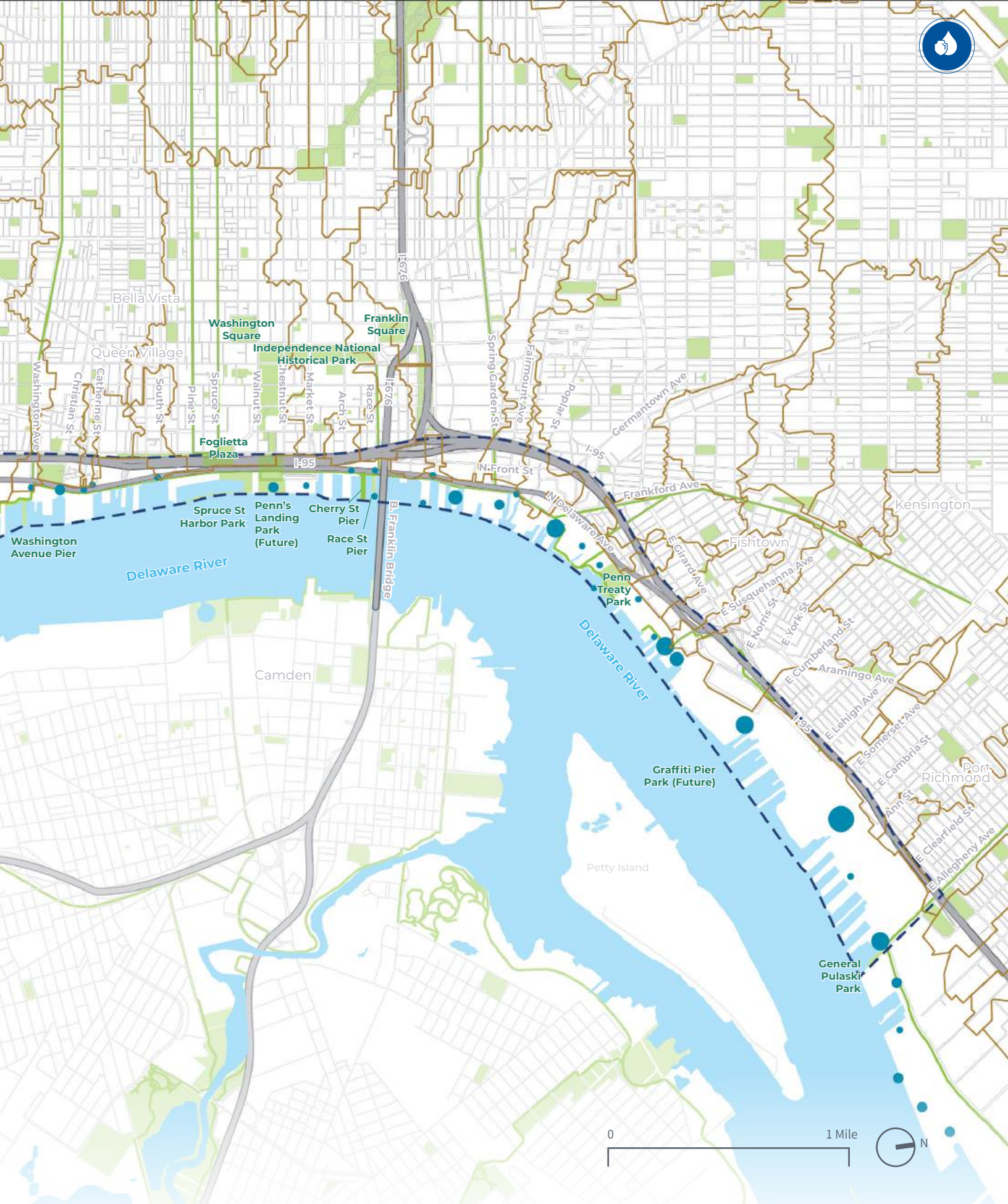


Figure 57. Map showing distribution of CSO outfalls by volume (mga) and the accompanying PWD sewershed boundaries. Source: City of Philadelphia, PWD.

GOAL 1 // MEASURE

COLLECT DATA TO ANALYZE DRWC'S WATER CONSUMPTION AND WATER QUALITY CONSTRAINTS ON RIVER ACCESS

Water is a critical part of DRWC's mission and operations, from providing safe and enjoyable public access to the Delaware River to using water for landscaping, sanitation, and operations along the waterfront. Furthermore, climate change will affect all aspects of water: drought will affect potable water access, extreme heat may increase demand for primary contact water recreation, and changes in rainfall intensity and duration will necessitate additional stormwater management. To facilitate sustainable potable water use and support a resilient Delaware River system, DRWC must first gather data on Delaware River water quality and DRWC's potable water use.

ACTIONS

1.1. Track and share information about and support water quality improvement in the Delaware River.

DRWC-led | DRWC-supported

1.1.1. Partner with Delaware River-focused water quality organizations to track water quality metrics and understand historical water quality data trends.

1.1.2. Develop a dashboard on DRWC's website to share water quality data, including but not limited to E. coli, dissolved oxygen, turbidity, temperature, and pH.

1.1.3. Track water quality metrics over time inform efforts to promote recreational use and ecological enhancement of the Delaware River.

TRACKING PROGRESS

- *Creation of a water quality page on DRWC's website, including a water quality metrics dashboard, that integrates data from the USGS monitoring site at Penn's Landing and the NOAA monitoring site at the Washington Street US Coast Guard station, among other sources.*
- *Development of an annual report summarizing water quality metrics.*

1.2. Develop a monitoring system to track DRWC's potable water use.

DRWC-led | DRWC-supported

1.2.1. Measure potable water use across DRWC operations, including water used for landscaping and in DRWC buildings.

1.2.2. Establish a baseline for potable water use across DRWC buildings and landscape operations.

TRACKING PROGRESS

- *Development of an internal-facing annual report documenting potable water use and evaluating progress toward potable water-related goals.*

Figure 58. Water quality in the Delaware River limits how people can interact with it. Source: OLIN.

GOAL 2 // ACT

IMPROVE DELAWARE RIVER WATER QUALITY AND REDUCE DRWC'S POTABLE WATER USE

DRWC recognizes the intrinsic value of water and understands that the organization must thoughtfully manage water—from the Delaware River to stormwater to potable water—to contribute to overall water system sustainability. This approach is consistent with the U.S. Water Alliance's One Water framework. To support water sustainability, DRWC will act to improve Delaware River water quality, in partnership with City leaders and other stakeholders, to support safe, expanded recreation in the River and healthy river ecology. Furthermore, DRWC recognizes potable water as a finite resource, and that acting to reduce water use today is critical to maintain potable water access for generations to come.

ACTIONS

2.1. Reduce the use of potable water in DRWC operations and buildings.

DRWC-led | DRWC-supported

2.1.1. Using data collected via Goal 1, establish a target reduction goal for DRWC potable water use, informed by the water use baseline and peer organizations' goals.

2.1.2. Audit water-related appliances at DRWC buildings (such as faucets, toilets, and dishwashers) and determine potential water savings from appliance replacement.

2.1.3. Develop a strategy for reducing water in landscaping and other DRWC operations, including infrastructure for rainfall capture and water reuse.

TRACKING PROGRESS

- *Percent of water-related appliances replaced with high-efficiency appliances.*
- *Number of graywater tanks and rain barrels at DRWC buildings.*
- *Percent reduction in potable water use within DRWC buildings.*

2.2. Reduce water use for new and existing buildings through the adoption and implementation of clear standards and incentives.

DRWC-led | DRWC-supported

2.2.1. Establish water efficiency standards for new development on DRWC-owned waterfront sites. Incorporate those standards into RFPs and relevant agreements related to new development.

2.2.2. Advocate for more stringent water efficiency standards within the Central Delaware Riverfront Overlay District (The Philadelphia Code § 14-507/ CDO, Central Delaware Riverfront Overlay District (2025)).

TRACKING PROGRESS

- *Percent reduction in potable water use in new and existing development within the waterfront district.*
- *Number of new and existing buildings using high-efficiency water appliances.*

2.3. Catalyze deployment of CSO mitigation measures.

DRWC-led | DRWC-supported

2.3.1. In partnership with PWD, identify strategies for DRWC to enhance or streamline plan implementation (e.g., facilitating developer partnerships, enhancing maintenance of existing systems, identifying optimal locations for green infrastructure, etc.).

2.3.2. Take action to support Long-Term Control Plan implementation such as setting up public-private partnerships with developers and leveraging additional funding.

2.3.3. Explore opportunities to establish a shared green infrastructure maintenance district.

TRACKING PROGRESS

- *Number of actions/projects implemented that reduce CSO pollution.*

Figure 59. An active CSO overflowing into the Delaware River. Source: Philadelphia Water Department.

2.4. Reduce runoff from DRWC-managed sites.

DRWC-led | DRWC-supported

2.4.1. Create a comprehensive stormwater management strategy and guidelines for DRWC-managed buildings, informed by the City of Philadelphia's guidelines, established third-party standards, and peer organizations.

2.4.2. Map impervious surface area on DRWC parcels to establish a baseline.

2.4.3. Working with PWD, assess green infrastructure options and stormwater capture solutions on DRWC-managed sites, focusing on opportunities for targeted retrofits that align with existing PWD stormwater grant programs.

TRACKING PROGRESS

- *Percent reduction in runoff from directly connected impervious surfaces on DRWC properties.*
- *Volume of runoff from directly connected impervious surfaces within DRWC properties managed.*

2.5. Encourage developers to implement creative stormwater management solutions above and beyond current requirements for DRWC development sites, and ensure implementation and enforcement for existing policies across the waterfront.

DRWC-led | DRWC-supported

2.5.1. Encourage private developers to implement stormwater best management practices by sharing information about grants and incentives.

2.5.2. Work with PWD and the City of Philadelphia to understand current stormwater management regulation compliance along the waterfront and to identify opportunities for increased compliance through targeted engagement with property owners.

2.5.3. Work with PWD to improve developer use of existing PWD stormwater management incentives and innovative policy structures, such as the Green Project Review and Stormwater Management Banking and Trading policy.

2.5.4. In partnership with PWD, develop a mechanism for waterfront developers to "overmanage" stormwater, storing and managing stormwater from the site and the surrounding right-of-way.

TRACKING PROGRESS

- *Create a guidance document outlining stormwater grants and incentives to increase participation in existing PWD funding programs.*
- *Percent improvement in tracked stormwater compliance for existing stormwater best management practices.*
- *Percent increase in developers using existing stormwater incentives.*
- *Develop pay-for-performance RFP language for developers to "overmanage" stormwater.*
- *Identify a funding mechanism for the inclusion of neighborhood-scale (site plus right-of-way) stormwater management with development/ redevelopment projects, such as the existing stormwater grant program or the Green Roof Density Bonus.*

Figure 60. Stormwater management solutions along the Delaware River Trail. Source: Matt Stanley/ DRWC.

GOAL 3 // ADVOCATE

INCREASE PUBLIC AWARENESS OF THE IMPORTANCE OF THE HISTORY, HEALTH, AND ECOLOGY OF THE DELAWARE RIVER WATERSHED

Water quality in the lower Delaware River is strongly influenced by upstream water quality and conditions within the larger Delaware River watershed, which spans multiple states. DRWC has limited ability to improve water quality alone; improving water quality at this scale requires coordination with and buy-in from local leaders and other regional stakeholders. However, individual actions make a difference in improving water quality, and DRWC's public-facing position can facilitate meaningful education about watersheds, water quality, and what people across the region can do at home to contribute to improved Delaware River water quality.

ACTIONS

3.1. Facilitate public engagement and educational opportunities related to the watershed, water quality, and upstream

DRWC-led | DRWC-supported

3.1.1. Work with a partner organization to implement a public engagement and education program focused on watersheds and water quality advocacy in the Delaware River Watershed.

3.1.2. Install educational signage about the water cycle and the watershed along the Delaware River Trail and public access frontage of the Delaware River.

3.1.3. Develop an engagement plan to increase the level of public participation with water-related topics at DRWC events.

TRACKING PROGRESS

- *Number of public engagement events focused on watershed education.*
- *Quantity of informational water quality and watershed signage installed.*
- *Number of individuals engaged on watershed and water quality topics.*

3.2. Educate DRWC staff about the Delaware River Watershed and the challenges it faces.

DRWC-led | DRWC-supported

3.2.1. Identify a partner organization equipped to share information about the Delaware River watershed with DRWC staff and relevant stakeholders.

3.2.2. Establish a training program for new and existing DRWC staff on DRWC's role in stewarding the health of the Delaware River.

TRACKING PROGRESS

- *Establish formal partnerships with partner organizations to develop a watershed-focused training program for DRWC staff.*
- *Develop new hire training materials to include Delaware River Watershed information.*
- *Percentage of staff trained on the Delaware River Watershed.*

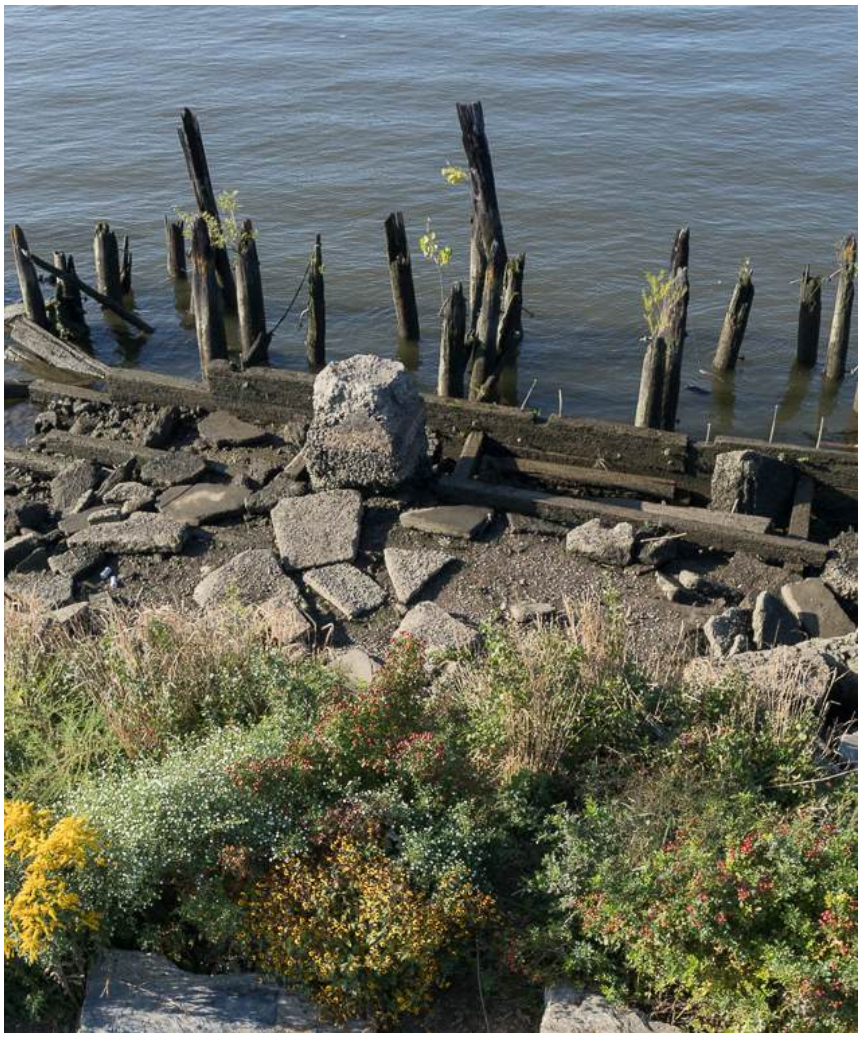


Figure 61. The Delaware River's health starts upstream. Source: James Abbott / DRWC.

WASTE

Figure 62. DRWC can implement strategies to reduce landfilled waste along the waterfront. Source: JKorawat / Shutterstock.

Waste affects water quality, public health, and visitors' experience at the waterfront. Along the Delaware River, waste and litter production is driven by waterfront visitors, vendors, DRWC operations, and private property owners. To advance waste reduction strategies, DRWC should start by measuring waste generation at the waterfront and refining a plan to track and reduce landfilled waste over time. DRWC can implement strategies to reduce landfilled waste along the waterfront, align with citywide waste reduction goals, and encourage non-DRWC-owned properties along the waterfront to follow suit.

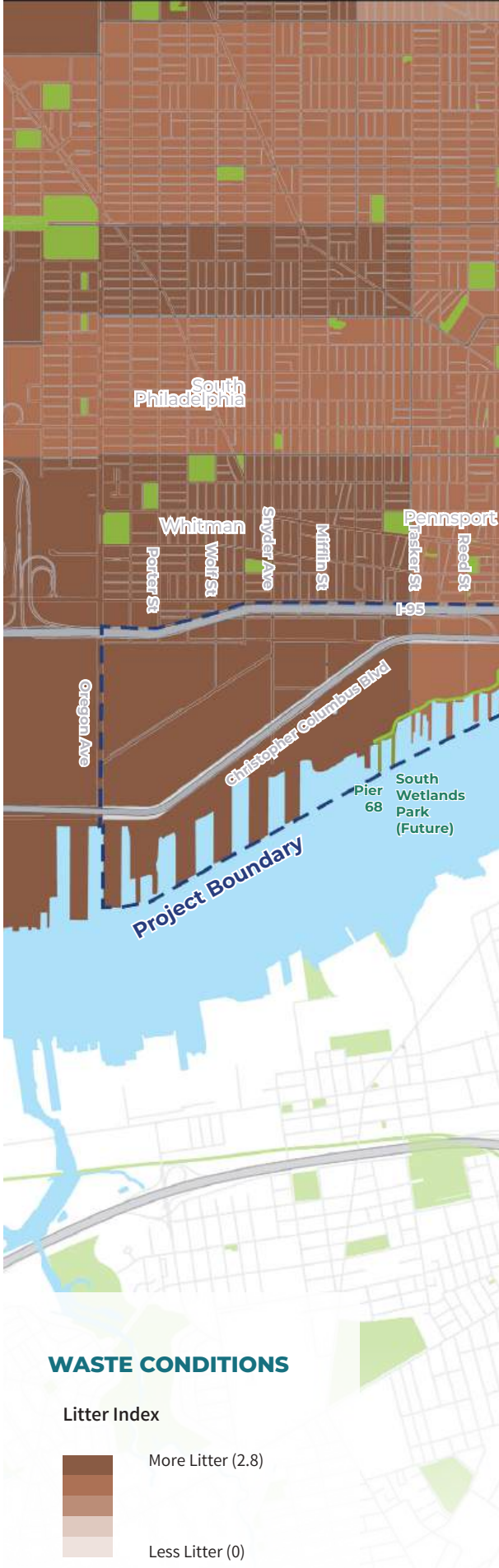
MEASURE ▶ Establish a baseline and monitor DRWC's landfilled waste.

ACT ▶ Reduce litter and all other waste at the waterfront through changes in DRWC's internal operations and expanded waste management for waterfront visitors.

ADVOCATE ▶ Encourage waste reduction from private property owners and developers.

WASTE TODAY

Litter and all other waste present an opportunity for improved sustainability at the waterfront and in DRWC operations. Recycling has historically been challenging for DRWC due to expensive recycling stream contamination in the past, and composting has not been incorporated into DRWC's operations or offered to waterfront visitors. DRWC currently lacks data on waste generated by DRWC operations and waterfront visitors, as well as information on the floatables that pollute the Delaware River but are generated outside the waterfront. Once DRWC has gathered data, the organization can track progress towards reductions in landfilled waste, accomplished through organization-wide action and public outreach to reduce landfilled waste from waterfront visitors. Like other issue areas, waste, especially litter and floatables, is not an issue DRWC can address alone. DRWC's advocacy can catalyze private action to reduce waste across the waterfront.



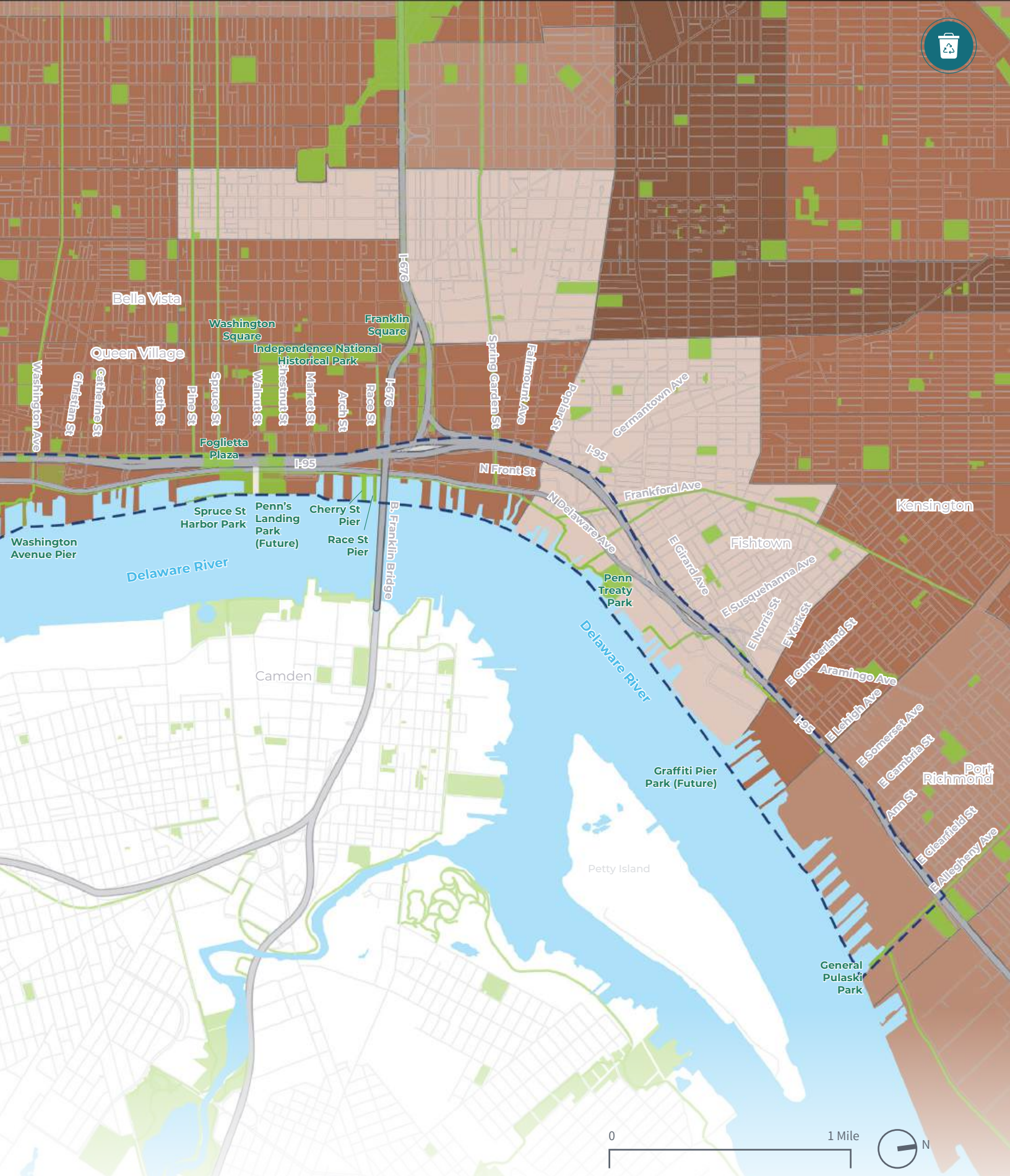


Figure 64. Map showing distribution of litter index ratings by parcel and locations of various waste bin types across the waterfront. Source: City of Philadelphia, 2018.

GOAL 1 // MEASURE

ESTABLISH A BASELINE AND MONITOR DRWC'S LANDFILLED WASTE

DRWC sees the impacts of waste and litter daily along the waterfront. DRWC can lead by example, monitoring organizational waste production and assessing methods of reducing and diverting waste, to decrease pollution and emissions associated with landfilled waste.

ACTIONS

1.1. Develop a waste production baseline and waste production tracking program.

DRWC-led | DRWC-supported

1.1.1. Conduct a waste audit in partnership with a consultant.

1.1.2. Develop a long-term program to monitor waste.

1.1.3. Add composting and recycling requirements into DRWC vendor RFPs.

TRACKING PROGRESS

- *Create a waste production tracking program.*
- *Establish a waste generation baseline.*
- *Percent reduction in landfilled waste.*

Figure 65. There is an opportunity to move away from styrofoam and plastic dishware among food and drink vendors. Source: Maria Young / DRWC.

Figure 66. Visitors explore the many colorful food and drink vendors at Spruce Street Harbor Park. Source: BeauMonde Originals / DRWC.

GOAL 2 // ACT

REDUCE LITTER AND LANDFILLED WASTE AT THE WATERFRONT THROUGH CHANGES IN DRWC'S INTERNAL OPERATIONS AND EXPANDED WASTE MANAGEMENT FOR WATERFRONT VISITORS

Litter along the waterfront impacts wildlife and water quality and detracts from the public experience along the waterfront. DRWC can encourage members of the public to be good stewards of the waterfront by properly disposing of waste, and DRWC can contribute to responsible waterfront waste management by decreasing its landfilled waste.

ACTIONS

2.1. Adopt recycling and composting at DRWC facilities to reduce landfilled waste.

DRWC-led | DRWC-supported

2.1.1. Identify and hire a composting partner and contract with a recycling company.

2.1.2. Pilot composting and recycling at the waterfront.

2.1.3. Install compost and recycling bins within DRWC facilities.

2.1.4. Educate DRWC facility staff on recycling and composting disposal procedures to ensure bins are not contaminated with non-recyclable or compostable items.

TRACKING PROGRESS

- *Number of recycling bins installed at DRWC buildings and operations facilities for internal use.*
- *Create a composting program for staff at DRWC's headquarters.*
- *Percent of outdoor organic materials (such as yard waste, leaves, and wood chips) composted.*
- *Percent of DRWC facility staff trained on recycling and composting procedures.*

2.2. Reduce floatables in the Delaware River.

DRWC-led | DRWC-supported

2.2.1. Identify local partners for reductions in floatables, such as PWD and other local organizations.

2.2.2. Determine cleanup frequency for floatables.

TRACKING PROGRESS

- *Number of waterfront litter cleanups held with local partners.*
- *Number of in-water river cleanups held through the Litter and Floatables Control Program.*
- *Reduction in the waterfront litter rating, using the City of Philadelphia's Litter Indexing methodology.*

2.3. Offer recycling and composting at special DRWC events.

DRWC-led | DRWC-supported

2.3.1. Identify partner organizations for special events composting and recycling.

2.3.2. Implement the City of Philadelphia's guidelines on low-waste events at DRWC events.

2.3.3. Establish a frequency for low-waste events.

TRACKING PROGRESS

- *Number of DRWC events that include recycling and composting opportunities for visitors.*

2.4. Facilitate educational opportunities about waste and litter for members of the public.

DRWC-led | DRWC-supported

2.4.1. Identify a partner organization equipped to work with DRWC to develop and implement a public engagement and education program related to waste and litter.

2.4.2. Establish an annual engagement plan for waste-related organizations at DRWC events.

TRACKING PROGRESS

- *Number of signs installed to explain litter and all other waste and its impact on the Delaware River.*
- *Number of opportunities for partner organizations to attend DRWC-led events and educate the public about litter and all other waste.*

GOAL 3 // ADVOCATE

ENCOURAGE WASTE REDUCTION FROM PRIVATE PROPERTY OWNERS AND DEVELOPERS

Properties along the waterfront that are not managed by DRWC can contribute to sustainability in the region by reducing their landfilled waste, which reduces pollution and emissions resulting from waste.

ACTIONS

3.1. Advocate for private property owners along the waterfront to reduce their landfilled waste.

DRWC-led | DRWC-supported

3.1.1. Identify partner organizations for waste reduction education and distribute waste reduction information to private property owners along the waterfront (for example, 1) identifying and sharing resources for local vendors who recycle or compost hard-to-dispose materials, 2) pairing up developers with shared waste-related requirements to identify efficiencies in waste pickups and storage).

3.1.2. Ask property owners to track their waste generation.

3.1.3. Offer opportunities for waste coordination across the waterfront.

TRACKING PROGRESS

- *Number of outreach opportunities to discuss landfilled waste reductions with private property owners along the waterfront.*
- *Percent reduction in private property owners' waste generation over time.*

3.2. Incorporate waste management and waste diversion requirements into new development RFPs.

DRWC-led | DRWC-supported

3.2.1. Establish new waste management and diversion requirements (such as recycling and composting infrastructure and equipment, operating best practices, signage and education, and a waste management plan that includes roles and responsibilities for recycling and composting), using peer organizations and standards as reference.

TRACKING PROGRESS

- *Percent of new developer RFPs that incorporate waste monitoring requirements.*
- *Percent of new developer RFPs that meet waste management and diversion requirements.*

3.3. Incorporate circular economy practices into the design and construction of new development at the waterfront.

DRWC-led | DRWC-supported

3.3.1. Establish diversion requirements for construction and demolition waste (such as using low-carbon materials, enhancing structural efficiency, and salvaging/recycling construction and demolition debris and waste for reuse), using peer organizations and standards as reference.

TRACKING PROGRESS

- *Percent of construction bid packages that incorporate circular economy practices.*
- *Percent reduction in landfilled construction/demolition waste.*

Figure 67. New mixed-use developments like Rivermark Northern Liberties offer opportunities to embed circular economy and waste reduction practices directly into the built environment.
Source: Rivermark Northern Liberties.

ENERGY

Figure 68. Solar-Powered Pedestrian Light Poles Illuminate the Delaware River Trail at Night. Source: Matt Stanley / DRWC.

Transportation and buildings are the primary drivers of energy use on the waterfront. Waterfront transportation is multi-modal but still car-dominated, while energy at the waterfront is dominated by fossil fuels and building level energy-consumption is unknown. DRWC must assess its energy consumption across buildings, non-building operations like outdoor and event infrastructure, and transportation, and subsequently set targets for reductions in energy consumption based on local, peer, and third-party standards. DRWC can continue to promote multi-modal transportation, invest in EV charging infrastructure, incorporate energy improvements into capital projects, and adopt energy standards for developer RFPs, which will reduce emissions and energy consumption on a broader waterfront-wide scale.

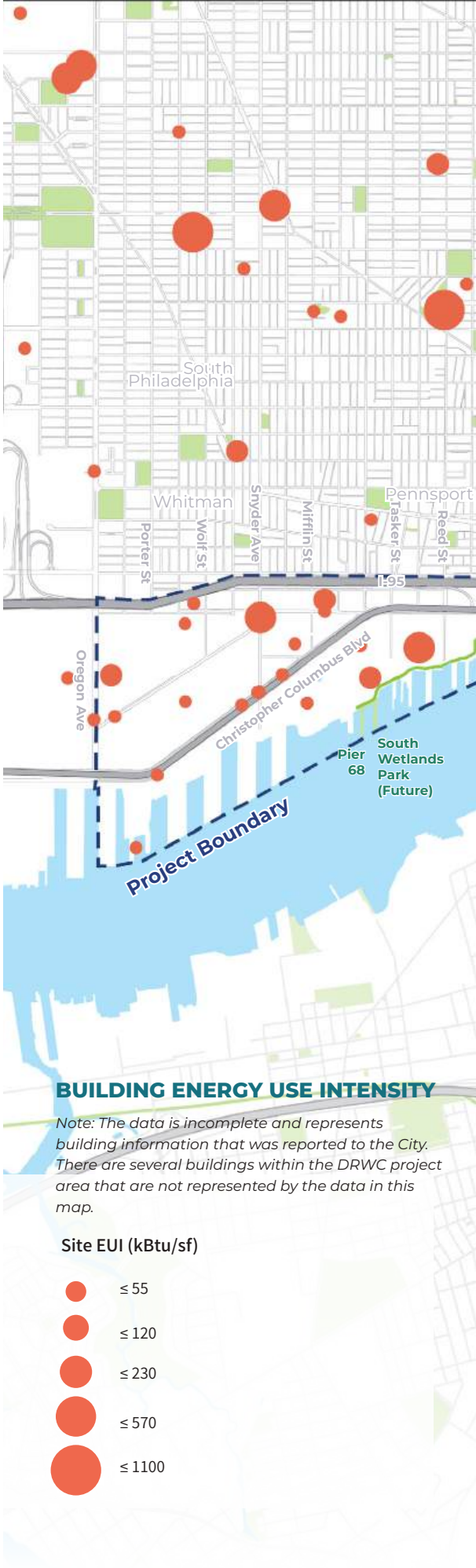
MEASURE ▶ Monitor DRWC's building and non-building energy use patterns and track low-carbon transportation.

ACT ▶ Reduce DRWC's building, non-building, and transportation energy use, and advance active and low-carbon transportation opportunities.

ADVOCATE ▶ Increase low-carbon and sustainable energy practices across the City through public engagement and events.

ENERGY TODAY

Energy is critical to DRWC's operations, from buildings and non-building operations (like outdoor and event infrastructure) to transportation. Like the rest of Philadelphia, electricity supplied to the waterfront is sourced predominantly from fossil fuels; additionally, DRWC's fleet is comprised of combustion engine vehicles. DRWC is committed to implementing sustainable practices within the organization and contributing to broader resilience by reducing its emissions. DRWC first needs to begin tracking energy use across the organization, and can subsequently integrate energy-efficient appliances and vehicles across its operations and identify opportunities to source renewable energy. Furthermore, through its public-facing role, can facilitate citywide emissions reductions. DRWC can share information about energy efficiency that members of the public can implement at home. In addition, its advocacy for expanded transit and its commitment to expanding the Delaware River Trail offer opportunities for the public to reduce transportation emissions as they visit and travel along the waterfront. Though reducing emissions poses a challenge, DRWC's changes can inspire others to follow suit and contribute to a more sustainable waterfront.



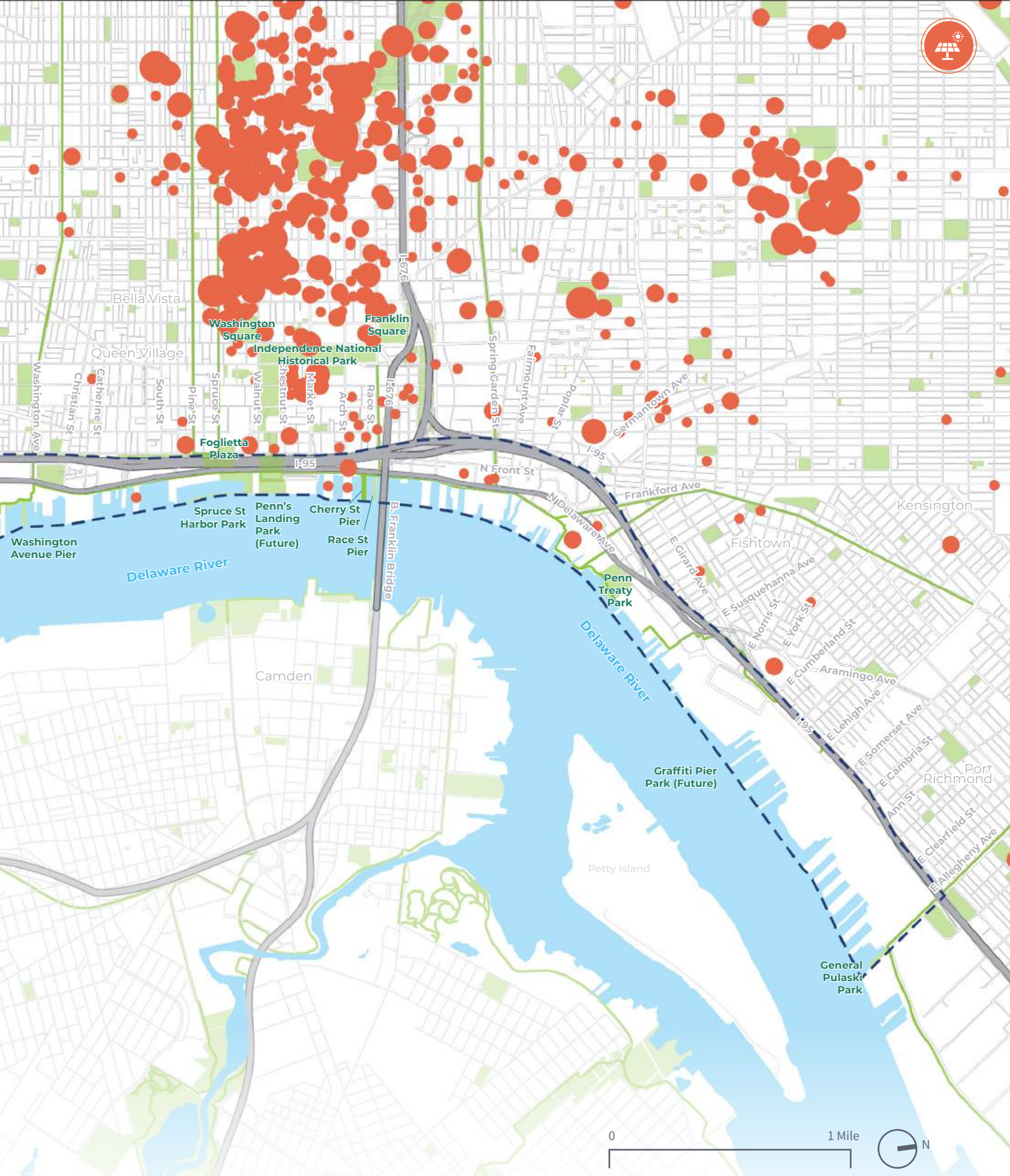


Figure 69. Energy Use Intensity (EUI) reported for buildings across the waterfront. Source: City of Philadelphia, 2023.

GOAL 1 // MEASURE

MONITOR DRWC'S BUILDING AND NON-BUILDING ENERGY USE PATTERNS AND TRACK LOW-CARBON TRANSPORTATION

DRWC faces significant climate change impacts, particularly related to flooding and extreme heat. Tracking energy use in DRWC operations will help DRWC hold itself accountable as it explores opportunities to reduce energy use. Furthermore, DRWC's existing work in expanding the DRT facilitates low-carbon transportation, which should be monitored as the trail continues to be developed.

ACTIONS

1.1. Establish an energy monitoring program to gather data on and track DRWC's building energy use.

DRWC-led | DRWC-supported

1.1.1. Use historic energy use data to establish building energy use baselines for natural gas, electricity, and other fuels, in partnership with a consultant team, PGW, PECO, and other relevant energy stakeholders.

1.1.2. Begin building metering, including monitoring energy use intensity data, if suitable.

TRACKING PROGRESS

- *Complete an annual audit of building energy use, especially for assets with high energy consumption.*
- *Establish a building energy use monitoring program (total and per square foot) and review the program annually to ensure continuous improvement and data accuracy.*
- *Create an energy monitoring dashboard accessible to relevant stakeholders, such as DRWC staff and waterfront property managers.*

1.2. Establish an energy monitoring program to gather data on and track DRWC's non-building (outdoor and event infrastructure) energy use.

DRWC-led | DRWC-supported

1.2.1. Use historic energy use data to establish non-building energy use baselines for natural gas, electricity, and other fuels, in partnership with PGW, PECO, and other relevant energy stakeholders.

1.2.2. Begin metering, including monitoring energy use intensity data, if suitable.

TRACKING PROGRESS

- *Complete an annual audit of non-building energy use, especially for assets with high energy consumption.*
- *Establish a comprehensive inventory and baseline of all site and outdoor infrastructure and its energy use, identifying the highest-consuming infrastructure assets, and which is reviewed annually.*
- *Create an energy monitoring dashboard accessible to relevant stakeholders.*

1.3. Establish a monitoring system to track automobile, DRWC fleet, and low-carbon transportation patterns along the waterfront, and measure bicycle and pedestrian use of the DRT.

DRWC-led | DRWC-supported

1.3.1. Use DRWC's historic transportation energy use data to establish energy use baselines for gasoline and diesel in partnership with a consultant team and relevant energy stakeholders.

1.3.2. Leverage additional bicycle/pedestrian counters along the DRT and at pier entrances.

1.3.3. Develop a survey for waterfront visitors to assess transportation patterns and establish a survey distribution system.

TRACKING PROGRESS

- *Percent increase in DRT usage, measured through trail counters and periodic user surveys.*
- *Percent reduction in visitors using cars to reach the waterfront, measured through periodic user surveys of visitors' transportation mode split.*
- *Percent increase in visitors using transit to reach the waterfront, measured through periodic user surveys of visitors' transportation mode split.*
- *Complete an annual review of DRWC's fleet fuel consumption, and upon EV adoption, EV use.*

GOAL 2 // ACT

REDUCE DRWC'S BUILDING, NON-BUILDING, AND TRANSPORTATION ENERGY USE, AND ADVANCE ACTIVE AND LOW-CARBON TRANSPORTATION OPPORTUNITIES

DRWC strives to reduce its contributions to climate change by curtailing building, non-building, and transportation energy use, thereby lowering its emissions. Furthermore, DRWC can facilitate emissions reductions for waterfront visitors and commuters across the City by expanding the DRT, facilitating safe, low-carbon transportation.

ACTIONS

2.1. Reduce fossil energy use in DRWC buildings and facility operations.

DRWC-led | DRWC-supported

2.1.1. Assess opportunities for reducing energy consumption and identify replacement timelines for appliances in DRWC building appliances, HVAC, and lighting systems.

2.1.2. Monitor high-efficiency equipment (lighting, HVAC, appliances), phasing equipment in when current resources reach end of life.

2.1.3. Identify a renewable energy provider and enter into an agreement to procure clean energy for buildings and facilities.

TRACKING PROGRESS

- *Percent reduction in building energy consumption.*
- *Percent reduction in the share of fossil fuels in DRWC's energy mix.*

2.2. Reduce non-building fossil energy use across DRWC's outdoor and temporary infrastructure.

DRWC-led | DRWC-supported

2.2.1. Transition outdoor lighting to high-efficiency LED fixtures and smart controls, and pilot renewable energy (e.g., solar lighting, battery storage) for outdoor areas, temporary event power, and waterfront lighting.

2.2.2. Establish guidelines for energy use by vendors, pop-up events, and festivals to encourage use of efficient equipment and renewable sources where feasible.

TRACKING PROGRESS

- *Percent increase in outdoor lighting converted to LED and/or smart controls.*
- *Percent reduction in non-building energy consumption.*

2.3. Reduce automobile emissions at the waterfront by supporting Electric Vehicle transportation to the waterfront and electrifying

DRWC-led | DRWC-supported

2.3.1. Assess EV chargers on the market, and conduct a Benefit-Cost Analysis to weigh EV charger build-out costs and revenue projections to inform the purchase of chargers.

2.3.2. Secure funding to purchase EV chargers for DRWC parking facilities.

2.3.3. Explore private sector collaboration for charging incentives or pilot programs (e.g., free charging periods, fleet partnerships)

2.3.4. Monitor utilization rates of installed EV chargers to optimize placement and capacity.

2.3.5. Monitor EVs on the market, phasing EV fleet vehicles in when current vehicles reach end of life.

TRACKING PROGRESS

- *Number of EV charging stations installed at critical parking nodes along the waterfront.*
- *Percent increase in electric vehicles in the DRWC fleet.*
- *Increase in the utilization rates of installed EV chargers.*

Figure 70. There is an opportunity to electrify DRWC's fleet. Source: Scharfsinn / Shutterstock.

2.4. Continue to expand bicycle and pedestrian pathways along the waterfront.

DRWC-led | DRWC-supported

2.4.1. Continue to progress the DRT by securing funding for trail expansion, meeting with City and stakeholders to promote the trail, and tracking trail construction progress by segment.

2.4.2. Establish and sustain a maintenance schedule for the DRT, including any needed safety upgrades.

2.4.3. Work with the City of Philadelphia and local bicycle advocacy groups to share information about the DRT with cyclists and pedestrians.

TRACKING PROGRESS

- *Percent of the DRT from Oregon Avenue to Allegheny Avenue completed.*

Figure 71. A pedestrian counter allows you to see many people use the trail daily. Source: Matt Stanley / DRWC.

Figure 72. A visitor's parked bike at Washington Avenue Pier. Source: Douglas Bovitt / DRWC.

GOAL 3 // ADVOCATE

INCREASE LOW-CARBON AND SUSTAINABLE ENERGY PRACTICES ACROSS THE CITY THROUGH PUBLIC ENGAGEMENT AND EVENTS

DRWC's operations and facilities (Independence Blue Cross RiverRink Winterfest and Summerfest, Cherry Street Pier, and more) offer many opportunities to interact with members of the public. DRWC can use its position to facilitate engagement opportunities around energy efficiency and conservation, informing waterfront visitors of ways to reduce their energy use and the resulting emissions.

ACTIONS

3.1. Advocate for increased public transit to and along the waterfront.

DRWC-led | DRWC-supported

3.1.1. Continue to implement the goals of the Waterfront Transit Study.

3.1.2. Advocate for increased and improved transit to and along the Waterfront and specifically along Delaware Avenue/Columbus Blvd.

3.1.3. Track advocacy milestones for public transit (petitions, funding, projects)

TRACKING PROGRESS

- *Number of advocacy milestones completed annually.*
- *Number of key waterfront locations displaying real-time transit information.*

Figure 73. A SEPTA bus running along Market Street towards the waterfront. Source: ChromeGames / Wikimedia Commons.

3.2. Partner with organizations to offer educational opportunities related to energy efficiency and emissions reduction strategies.

DRWC-led | DRWC-supported

3.2.1. Identify a public-facing energy education partner such as OOS, PECO, PGW, Philadelphia Energy Authority, Green Building United, or American Council for an Energy-Efficient Economy.

3.2.2. Determine a cadence for public-facing energy education opportunities, led by the partner.

TRACKING PROGRESS

- *Number of opportunities for energy education organizations to share information about energy efficiency with the public.*
- *Distribute educational materials about fossil fuel transition, energy efficiency, and electrification with private buildings along the waterfront.*

3.3. Educate DRWC staff on energy conservation best practices.

DRWC-led | DRWC-supported

3.3.1. Identify a partner organization that can provide energy efficiency training tailored to DRWC's needs, and offer energy efficiency training materials to all staff; update the training annually to reflect best practices, technology changes, and staff feedback.

3.3.2. Solicit feedback from staff on training and ways to tailor training to their work.

3.3.3. Encourage all event partners and vendors to adopt energy-efficient equipment, and, when possible, use renewable energy sources during their operations at the waterfront.

TRACKING PROGRESS

- *Establish formal partnerships with partner organizations to present on energy efficiency at DRWC all-staff meetings annually.*
- *Update new hire training materials to include energy efficiency information.*
- *Percent increase in DRWC staff completing the annual training.*

3.4. Incorporate sustainable energy practices and, if possible, renewable energy preference into new vendor contracts.

DRWC-led | DRWC-supported

3.4.1. Promote sustainable energy practices for vendors, and encourage vendors to adopt energy-efficient equipment and use renewable energy sources when possible.

TRACKING PROGRESS

- *Establish sustainable energy guidelines for vendors, developed in partnership with existing DRWC vendors.*
- *Number of vendors using energy-efficient equipment and renewable energy.*

BIODIVERSITY

Figure 74. Washington Avenue Pier offers an abundance of biodiversity for visitors to explore. Source: James Abbott / DRWC.

Biodiversity, a key element of resiliency, is threatened by climate change and development, but is also a key element of resiliency. Urban biodiversity is often limited by scale and fragmentation, but a river corridor offers unparalleled scale and connectivity within a city. The waterfront is an emerging network of habitat with great potential due to both its adjacency to the river and large patches of open space – although the latter are not always protected. DRWC can help build biodiversity through site-level acquisition and design, improved monitoring, and regional advocacy.

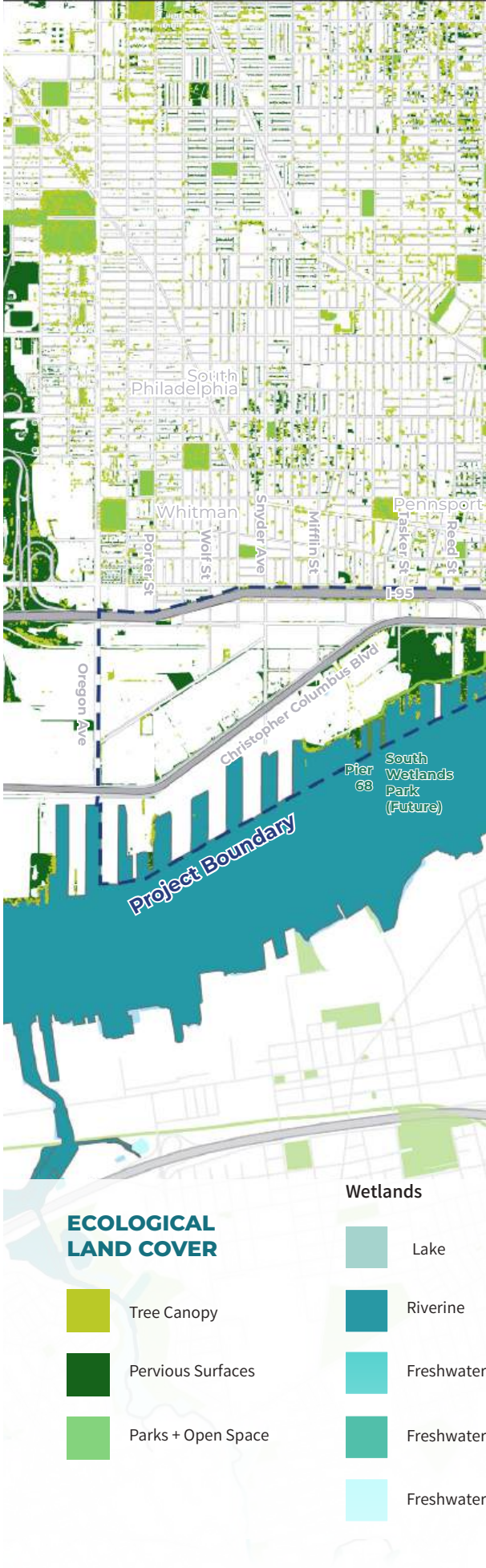
MEASURE ▸ Characterize the waterfront's natural habitat and species.

ACT ▸ Improve the management and maintenance of the waterfront's habitats to enhance connections for all species.

ADVOCATE ▸ Partner with private property owners, public infrastructure owners, neighbors, and environmental groups to improve habitat connectivity.

BIODIVERSITY TODAY

Biodiversity efforts on the Delaware River Waterfront face several significant challenges and gaps due to ongoing environmental pressures. A critical gap is the lack of long-term species monitoring, which hinders the establishment of baselines and tracking ecological health. These monitoring needs are complicated by challenges such as the limited habitat value of existing soils and structural shorelines, as well as the difficulty of maintaining newly planted rain gardens and vegetation due to poor soil conditions and water quality. The waterfront's predominantly paved landscape, coupled with its history of fill and increasing sea level rise (SLR), creates an increasingly difficult environment for long-term tree and habitat health, driving persistent tree canopy loss and demanding specialized vegetation maintenance. Despite these obstacles, significant opportunities exist to enhance habitat value and resilience: these include piloting in-water oyster habitat and water filtration projects, dramatically increasing and maintaining the urban tree canopy, and strategically increasing pervious surfaces to decrease impervious cover. Ultimately, the greatest long-term opportunity lies in the creation and maintenance of living shorelines to restore natural ecosystem function.



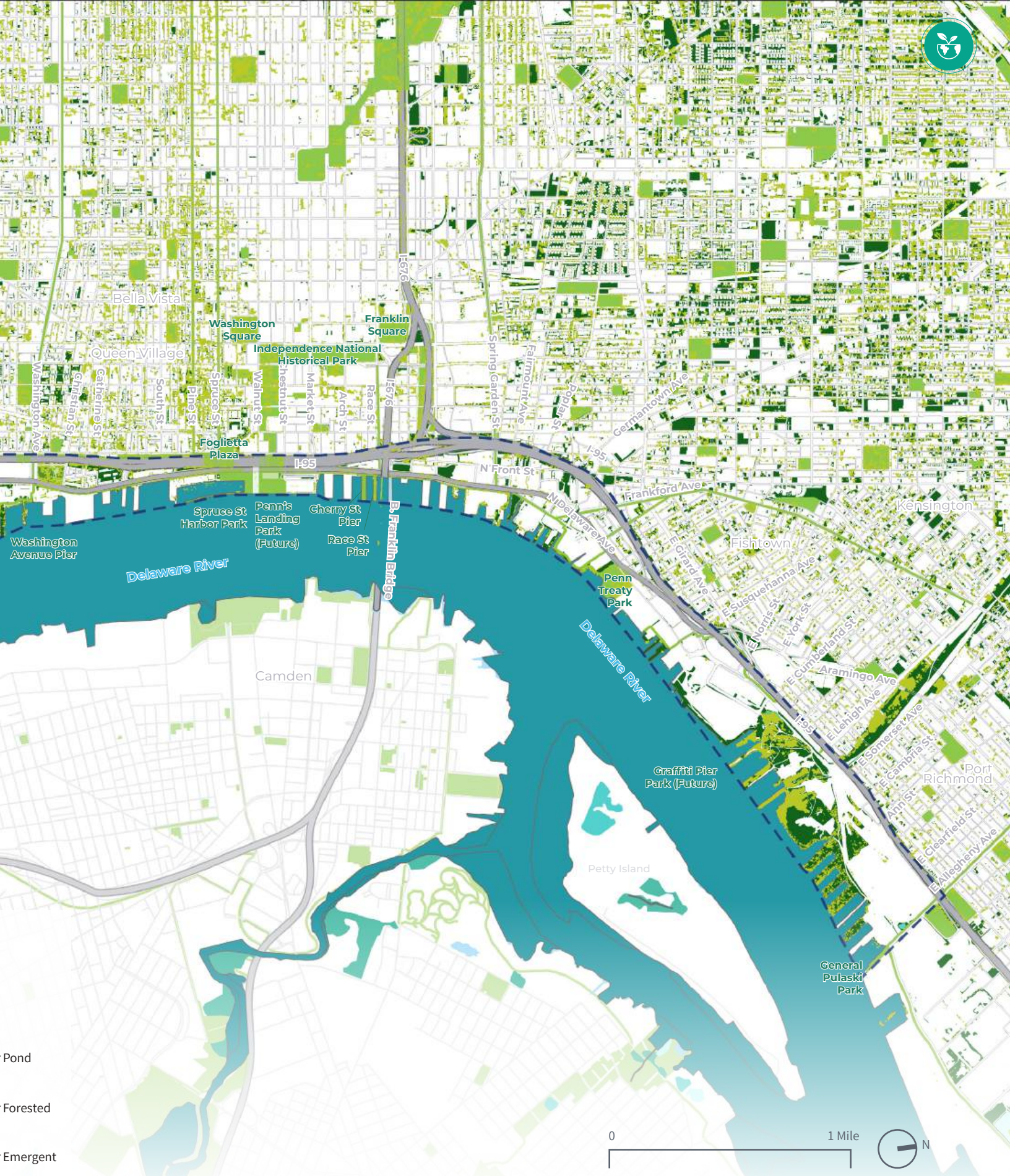


Figure 76. Map showing protected areas (PA State), parks, pervious surfaces, and wetlands across the waterfront and adjacent neighborhoods.
Source: City of Philadelphia.

GOAL 1 // MEASURE

CHARACTERIZE THE WATERFRONT'S NATURAL HABITAT AND SPECIES

Measuring the waterfront's natural habitats and species is essential for protecting and enhancing the ecological health of the Delaware River waterfront. By monitoring the diversity of plants, animals, insects, fish, and birds and developing a conservation management plan, DRWC can identify opportunities for restoration, guide sustainable development, and ensure that management and design efforts support long-term biodiversity and ecosystem resilience along Philadelphia's Waterfront.

ACTIONS

1.1. Initiate a long term conservation management plan for habitat, wetlands, and water bodies.

DRWC-led | DRWC-supported

1.1.1. Partner with an ecological planning and conservation organization.

1.1.2. Develop site-specific long-term management strategies.

1.1.3. Establish monitoring and adaptive management protocols to track ecological health and adjust practices over time.

TRACKING PROGRESS

- *Create a plan with a funding source for management, and the involvement of qualified botanical and wildlife specialists.*

1.2. Monitor plant species diversity in the study area.

DRWC-led | DRWC-supported

1.2.1. Collaborate with a regional botanical society, university horticulture department, arboretum, or other ecological monitoring organization.

1.2.2. Conduct a baseline floristic quality assessment followed by seasonal vegetation inventories.

TRACKING PROGRESS

- *Number of species / cultivars per acre.*

1.3. Monitor animals, insects, fish, and bird species in the study area.

DRWC-led | DRWC-supported

1.3.1. Partner with an ecological monitoring organization that specializes in wetland wildlife species management.

1.3.2. Identify key indicator species and establish associated survey protocols.

TRACKING PROGRESS

- *Species richness and abundance by taxonomic group.*

Figure 77. (Right) Bioblitz participants at the future South Wetlands Park. Source: OLIN.

Figure 78. (Below) Bird identification during a bioblitz engagement event at the future South Wetlands Park. Source: OLIN.

GOAL 2 // ACT

IMPROVE THE MANAGEMENT AND MAINTENANCE OF THE WATERFRONT'S HABITATS TO ENHANCE CONNECTIONS FOR ALL SPECIES

Healthy, well-maintained ecosystems are critical for supporting biodiversity, ecological connectivity, and overall environmental resilience. By implementing strategies such as sensitive siting of development, expanding tree canopy, planting native and climate-resilient species, and controlling invasive plants, DRWC can enhance habitat quality, promote species survival, and maintain functional ecological networks. Effective management also ensures that the Delaware River waterfront remains a thriving, sustainable, and welcoming space for both wildlife and the community.

ACTIONS

2.1. Site new development and programs with ecological sensitivity, incorporating land conservation measures and advocating for setbacks greater than the 50' minimum.

DRWC-led | DRWC-supported

2.1.1. Continue to work to acquire the 50-foot setback defined by code, while providing flexibility for future regulatory changes and evolving uses, and retaining the ability to advocate for increasing the setback as market conditions or resilience needs dictate.

2.1.2. Integrate wider buffers with ecological benefits for new development projects.

2.1.3. Demonstrate benefits through pilot projects showing how larger setbacks enhance biodiversity, water quality, and climate resilience.

2.1.4. Engage the City of Philadelphia and relevant stakeholders to secure adoption and compliance.

TRACKING PROGRESS

- *Total acreage of land successfully acquired or formally dedicated as a protected setback exceeding the 50-foot minimum.*
- *Adoption of successful ecological design interventions demonstrated in pilot projects.*
- *Presence of site-specific buffers that align with ecological patterns and habitat needs along the waterfront.*

2.2. Create a tree planting strategy that increases canopy coverage and provides guidelines for new development and maintenance.

DRWC-led | DRWC-supported

2.2.1. Develop tree planting standards that follow best practices identified by the International Society of Arboriculture (ISA) and other guides like the Philadelphia Water Department's Stormwater Regulations and Landscape Guidelines.

2.2.2. Adopt regulations or incentives that require or encourage developers to meet tree planting and long-term maintenance standards.

2.2.3. Initiate a tree replacement policy that requires that during construction, a replacement tree(s) must sequester the same amount of carbon dioxide within 5 years as the tree before.

TRACKING PROGRESS

- *Percent increase toward 30% tree canopy coverage in every neighborhood based on proven benefits to communities.*

2.3. Plant more native and climate-resilient species and conserve existing native species.

DRWC-led | DRWC-supported

2.3.1. Incorporate protections for existing native species into permitting and land-use policies.

2.3.2. Develop plant selection and conservation guidelines that prioritize native and climate-resilient species in all new development and restoration projects.

TRACKING PROGRESS

- *Percent increase in native planting in the study area, supported by partnerships with local nurseries.*

2.4. Monitor and manage invasive plant species in the study area.

DRWC-led | DRWC-supported

2.4.1. Develop and implement management and maintenance strategies.

TRACKING PROGRESS

- *Create an invasives management plan and maintenance regime.*

GOAL 3 // ADVOCATE

PARTNER WITH PRIVATE PROPERTY OWNERS, PUBLIC INFRASTRUCTURE OWNERS, NEIGHBORS, AND ENVIRONMENTAL GROUPS TO IMPROVE HABITAT CONNECTIVITY

Ecosystems do not stop at property lines and effective conservation requires coordinated efforts across the landscape. By collaborating with diverse stakeholders, DRWC can expand and link habitats, enhance biodiversity, and create resilient ecological networks along the Delaware River waterfront. These partnerships also foster community engagement, education, and stewardship, ensuring that conservation efforts are sustained, widely supported, and integrated into local planning and development decisions.

ACTIONS

3.1. Collaborate with environmental organizations to pilot, monitor, and steward upland and in-water habitats.

DRWC-led | DRWC-supported

3.1.1. Identify priority upland and in-water habitat sites through ecological assessments in collaboration with partner organizations.

3.1.2. Launch pilot restoration or enhancement projects (e.g., shoreline stabilization, wetland restoration, native planting) with monitoring protocols.

TRACKING PROGRESS

- *Increase in acres of upland and in-water habitat.*

3.2. Enhance environmental education through partnerships with schools and academic institutions.

DRWC-led | DRWC-supported

3.2.1. Identify key organizations and establish formal education partnerships with schools, colleges, and universities.

3.2.2. Create site-based learning opportunities, in collaboration with educational partners, such as field trips, habitat monitoring, and restoration activities.

TRACKING PROGRESS

- *Number of walking tours and engagements.*

3.3. Create paid community based professional development programs for biodiversity monitoring and maintenance.

DRWC-led | DRWC-supported

3.3.1. Establish funding and partnerships with organizations like PHS (for tree planting and care), Bartram's Garden (for habitat monitoring) to support community participants.

3.3.2. Develop certification or credentialing pathways to formalize skills in biodiversity monitoring and stewardship.

TRACKING PROGRESS

- *Number of people trained through community workforce development programs.*

Figure 79. Blooms at Washington Avenue Pier.
Source: James Abbott / DRWC.

ENVIRONMENTAL HEALTH & JUSTICE

Figure 80. Vendors showcase handmade accessories at the Caribbean Festival during the PECO Multicultural Series on the Delaware River Waterfront.
Source: Maria Young / DRWC.

Waterfront residents are not the most vulnerable to environmental stressors compared to some other Philadelphia residents. However, the waterfront is a geography significantly impacted by air quality, water quality, and heat, while also providing a refuge for all Philadelphians. DRWC can implement site-specific mitigation measures, advocate for regional policy and design changes to infrastructure investment, and continue to make the waterfront an inclusive, inviting network of public spaces.

MEASURE ▶ Document the current environmental health and justice context around the Delaware Waterfront.

ACT ▶ Ensure equitable access to public spaces and programming at the Philadelphia waterfront, so that it remains a welcoming, healthy, and restorative refuge for all Philadelphians.

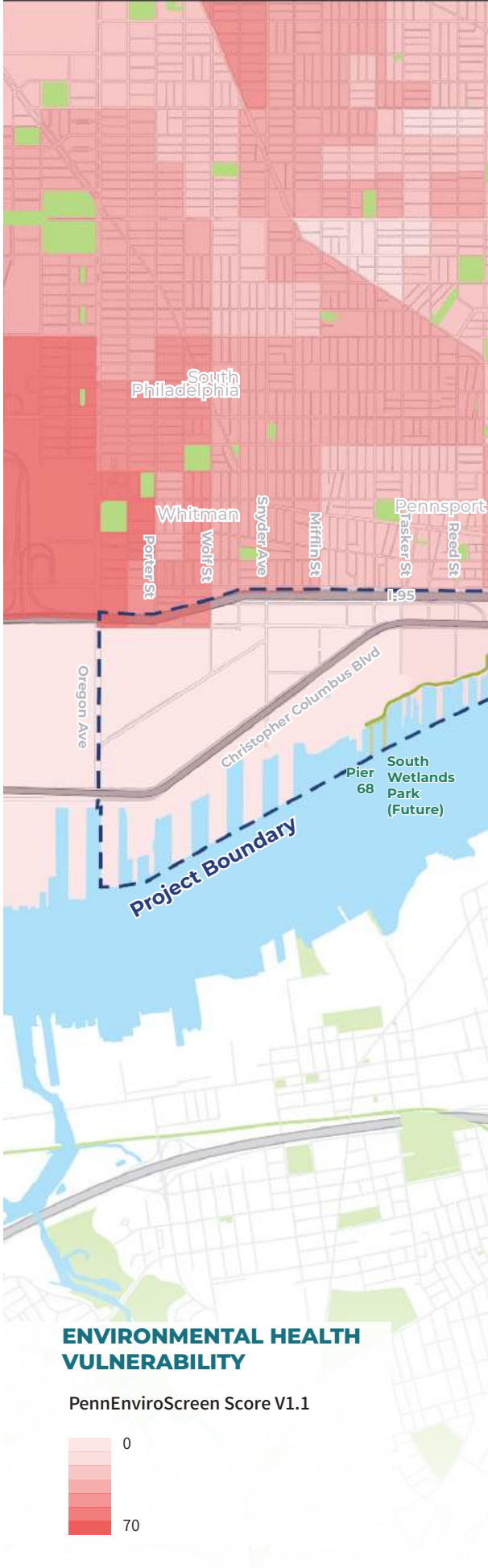
ADVOCATE ▶ Advance environmental justice principles locally to promote comfort, health, and safety across the Philadelphia waterfront.

ENVIRONMENTAL HEALTH AND JUSTICE TODAY

The waterfront is a resource for all Philadelphians. Although most waterfront residents don't fall within the most vulnerable demographics, the waterfront is closely linked and essential to the diverse neighborhoods that border it. The waterfront is the first line of defense for flooding and a place for much-needed recreation and access to nature—but also a hot, busy transportation corridor. The proposed recommendations focus on how the waterfront can be a greener, safer, and more welcoming refuge for all Philadelphians.

Strategies to continue pollution reduction, the cleanup and remediation of existing brownfield and contaminated sites, and the management of active industrial sites that may be contaminated or actively storing hazardous materials are critical as climate change increases the risk of flooding at these sites and extreme heat amplifies pollution's impacts on air quality. The 2020 study Greenscapes to Brownscapes also provides baseline data and strategies that are important reference points for the DRWC context and can continue to inform future environmental health work.[44]

While the direct impacts of flooding may be the most damaging threat to waterfront assets, extreme heat is a growing concern for public health generally and a particular risk for the operation of outdoor events and programming as winters grow warmer and wildfire smoke and heat waves stretch over weeks of the summer. The recent Heat Watch Philadelphia Summary Report supported by NOAA, CAPA Strategies, and The Nature Conservancy suggests that the waterfront can be particularly vulnerable to urban heat island effect due to increased sun exposure (lack of shade from buildings) and many large paved areas.



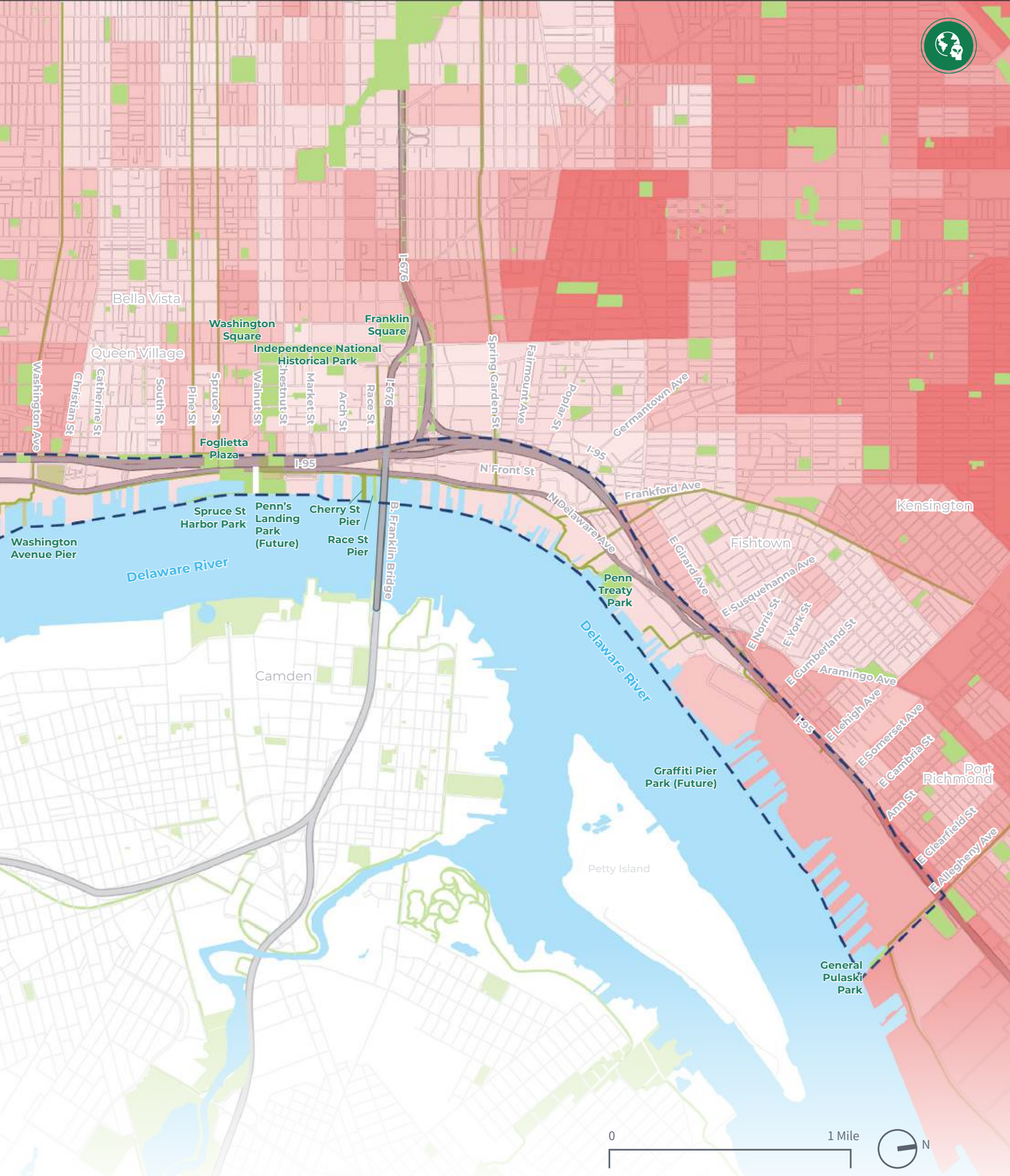


Figure 82. PennEnviroScreen Score v1.1 data shows vulnerable neighborhoods adjacent to the waterfront, emphasizing the importance of north-south connections and the potential for the waterfront to act as a refuge for all Philadelphians. Source: PA Department of Environmental Protection, Office of Environmental Justice.

GOAL 1 // MEASURE

DOCUMENT THE CURRENT ENVIRONMENTAL HEALTH AND JUSTICE CONTEXT AROUND THE DELAWARE WATERFRONT

The Delaware River waterfront is affected by air and water quality, urban heat, and other environmental hazards that can impact public health and equity. By assessing these conditions and existing environmental justice programs, DRWC can identify disparities, prioritize interventions, and ensure that planning and management decisions promote inclusive, safe, and healthy access to the waterfront. This understanding enables DRWC to create a more equitable and resilient public space that benefits all Philadelphians.

ACTIONS

1.1. Assess the existing environmental health issues and environmental justice programs in the DRWC study area.

DRWC-led | DRWC-supported

1.1.1. Engage and partner with a local environmental justice assessment organization.

1.1.2. Utilize PA Health Mapper data to assess and track environmental health and justice issues in the DRWC study area.

TRACKING PROGRESS

- *Datasets to assess and track environmental health and justice progress in the DRWC study area.*

GOAL 2 // ACT

ENSURE EQUITABLE ACCESS TO PUBLIC SPACES AND PROGRAMMING AT THE PHILADELPHIA WATERFRONT, SO THAT IT REMAINS A WELCOMING, HEALTHY, AND RESTORATIVE REFUGE FOR ALL PHILADELPHIANS

Waterfront areas are affected by air and noise pollution, urban heat, and uneven access to public space, which can disproportionately impact adjacent communities. By prioritizing and implementing air quality improvements, noise mitigation, green infrastructure, inclusive programming, and affordable multimodal access, DRWC can address these inequities, enhance public health, and create a comfortable, resilient waterfront that serves a diverse cross-section of Philadelphians.

ACTIONS

2.1. Advance air quality improvements along the waterfront by promoting multimodal transportation, supporting building emission reductions, and advocating for site-level interventions.

DRWC-led | DRWC-supported

2.1.1. Collaborate with PennDOT, PhilaPort, and other industrial and transportation stakeholders.

2.1.2. Partner with an environmental design organization to both identify sites for, and implement, green buffers.

TRACKING PROGRESS

- *Number of DRWC sites with air quality monitoring equipment installed to track conditions and guide interventions.*
- *Number of green buffer or pollution barrier projects supported by DRWC.*
- *Number of regional partnerships supported or partnered with that advocate for building emissions reduction policies.*

2.2. Reduce noise impacts on waterfront-adjacent neighborhoods through sound walls and other noise mitigation strategies.

DRWC-led | DRWC-supported

2.2.1. Collaborate with PennDOT, PhilaPort, and other industrial and transportation stakeholders.

2.2.2. Integrate noise reduction design strategies into new development along the waterfront.

TRACKING PROGRESS

- *Develop a noise impact assessment in collaboration with relevant organizations.*
- *Number of sound walls or comparable noise reduction measure(s) installed.*

2.3. Increase tree canopy, green infrastructure, and select appropriate surface materials to promote shade and evapotranspiration across DRWC sites.

DRWC-led | DRWC-supported

2.3.1. Partner with environmental monitoring and design organizations.

2.3.2. Conduct localized heat studies to monitor ground-level air temperature conditions.

2.3.3. Implement design interventions that reduce surface temperatures and heat island effects.

TRACKING PROGRESS

- *Increase tree canopy coverage percentage on DRWC-managed properties. (See same metric for Biodiversity).*
- *Percent increase of impervious surfaces replaced or retrofitted with permeable or green infrastructure solutions.*
- *Add shade structures or natural shade in all new DRWC capital projects.*
- *Percentage of new or renovated DRWC projects that integrate high-albedo materials, green roofs, or cooling interventions.*

Figure 83. Visitors Dine in the Garden at Cherry Street Pier. Source: Maria Young / DRWC.

2.4. Expand health-focused programs, amenities, and recreational activities to continue to attract a diverse cross-section of Philadelphia residents to the waterfront.

DRWC-led | DRWC-supported

2.4.1. Partner with public health agencies and nonprofits to design inclusive recreational amenities and programs.

2.4.2. Secure funding and sponsorships to support free or low-cost access for underserved communities.

TRACKING PROGRESS

- *Number of new recreational amenities installed, like water features.*
- *Number of partnerships with community-based organizations to co-develop culturally relevant, low-cost health, wellness, and recreational programming.*
- *Expand recreational programs, like boating, in partnership with local organizations.*

2.5. Expand affordable, multimodal access to the waterfront, including low-cost transit options, improved bike infrastructure, and accessible parking solutions.

DRWC-led | DRWC-supported

2.5.1. Partner with SEPTA, PennDOT, and Indego to explore transit and parking improvements serving waterfront sites.

2.5.2. Leverage the Delaware River Trail and Connector Streets to promote safe, non-vehicular access for all ages and abilities.

TRACKING PROGRESS

- *Enhance wayfinding and signage to and on the DRT to improve access to nearby community facilities.*
- *Percent increase of DRT usage, measured through trail counters and periodic user surveys.*
- *Number of connector street(s) installed.*
- *Number of low-cost transit or mobility pilot programs to waterfront destinations implemented or supported.*

Figure 84. Visitors Relax and Unwind with Free Yoga Classes at Race Street Pier. Source: JBeauMonde Originals / DRWC.

GOAL 3 // ADVOCATE

ADVANCE ENVIRONMENTAL JUSTICE PRINCIPLES LOCALLY TO PROMOTE COMFORT, HEALTH, AND SAFETY ACROSS THE PHILADELPHIA WATERFRONT

The waterfront serves as a vital public space, offering health, social, and environmental benefits, but barriers such as limited outreach, accessibility challenges, and social inequities can prevent some communities from fully participating. By advocating for inclusion, engaging underrepresented groups, and collaborating with service providers, DRWC can create a waterfront that is safe, welcoming, and restorative for everyone while promoting social equity and community well-being.

ACTIONS

3.1. Build partnerships and coordinated initiatives with environmental health and justice organizations to amplify impact and engage in regional advocacy.

DRWC-led | DRWC-supported

3.1.1. Identify and formalize coalitions and advocacy networks with environmental health and justice organizations.

3.1.2. Share data, tools, and resources to strengthen advocacy campaigns.

TRACKING PROGRESS

- *Number of regional coalition(s) or working group(s) focused on environmental justice and health established or joined.*
- *Number of regional convenings or forums participated or co-hosted per year to share knowledge, advocate for policy change, and align infrastructure investment priorities.*
- *Number of joint grant funding or pilot projects pursued with partner organizations.*

3.2. Enhance marketing strategies and partnerships to continue to reach and engage vulnerable, underrepresented, and diverse communities across Philadelphia.

DRWC-led | DRWC-supported

3.2.1. Co-create campaigns with community input to build trust, ensure relevance, and increase accessibility (multilingual, culturally appropriate).

TRACKING PROGRESS

- *Percent increase in participation from underrepresented communities in DRWC programming, tracked through event surveys and demographic data collection.*

3.3. Develop and deliver environmental education programs, pilot innovative mitigation strategies, and position DRWC as a resource on environmental health and justice.

DRWC-led | DRWC-supported

3.3.1. Embed environmental justice and education goals into DRWC's long-term strategic frameworks.

3.3.2. Create a knowledge-sharing platform for events, online hub, speaker series, etc. to position DRWC as a trusted resource in environmental health and justice.

3.3.3. Track engagement metrics such as participation rates, demographics reached, feedback surveys.

TRACKING PROGRESS

- *Number of educational or outreach programs per year related to environmental health, air/water quality, or climate impacts.*
- *Number of site-based mitigation project pilots (e.g., urban greening, cooling interventions, water filtration).*
- *Create an online resource hub on DRWC's website to share data, project updates, and partner resources.*

3.4. Collaborate with unhoused individuals, advocates, and service providers to promote safety and support pathways during potential relocation amid redevelopment.

DRWC-led | DRWC-supported

3.4.1. Establish formal partnerships with housing and social service organizations to coordinate relocation and support strategies.

TRACKING PROGRESS

- *Number of formalized partnerships with advocacy or service organizations.*
- *Create a standard operating protocol for engagement and support of unhoused individuals.*

Figure 85. Visitors relax in the shade at Spruce Street Harbor Park, a tree-covered retreat along the Philadelphia Waterfront. Source: Maria Young / DRWC.

05

CHAPTER 5:
PRIORITIZATION AND IMPLEMENTATION

This chapter outlines how DRWC can mobilize resources to ensure the Waterfront's sustainable evolution. As the entity charged with the design, development, and management of the public realm, DRWC's staff handles everything from daily operations and maintenance to complex capital planning. This Plan builds on that foundation, recognizing the long-term effort required to sustain the activated waterfront enjoyed today. By establishing clear metrics for tracking progress, identifying high-impact early actions, and formalizing an engagement strategy built on diverse partnerships, this Plan equips DRWC with the structure necessary to navigate an evolving climate and waterfront.

DRWC'S ROLE ON THE WATERFRONT TODAY

Figure 86. The Delaware River Waterfront is activated 7-days-a-week. Source: Maria Young/DRWC.

DRWC continues its charge of design, development, and management of the waterfront's public realm. The small and dedicated staff of DRWC are responsible for the daily operations of these sites, programming, maintenance and ongoing design and development. Their work takes on many scales, including operations and maintenance, programming and marketing, as well as capital planning and projects. This plan builds on this work and recognizes the significant amount of work and long-term planning that is required to achieve the activated waterfront that is widely-enjoyed today.

Like the Master Plan for the Central Delaware, this plan addresses the three major systems that make up the Waterfront while acknowledging the varying degrees of control that DRWC has over each:

In this section:

- Public Realm
- Transportation and Infrastructure
- Private Development

Figure 87. Washington Avenue Pier. Source: Douglas Bovitt/DRWC.

PUBLIC REALM

As the aspect of the waterfront DRWC most directly controls, the public realm offers the greatest opportunity to embed sustainability and resilience into everyday practices. Capital investments in the public realm can embed resilient infrastructure, increase biodiversity, manage stormwater—and with careful design and specification can produce significantly lower carbon emissions than status quo construction. Small changes to operations and maintenance practices can similarly achieve sustainability and resiliency goals, but must also be adapted to the changing conditions that challenge programming and maintenance.

The public realm is where DRWC has the greatest power to put climate resilience into action.

DESIGN AND CONSTRUCTION

Opportunities

There are several opportunities for DRWC to advance sustainability and resilience goals in the design and construction of new capital projects, including reducing the environmental impacts of construction by using more sustainable materials and methods. By integrating flood resilience measures and guidelines into design considerations, other benefits such as habitat

Figure 88. Cherry Street Pier. Source: Maria Young/DRWC.

creation and potential insurance premium reductions can also be achieved. Further, incorporating shading and cooling features can help mitigate urban heat island effects along the waterfront.

Mechanisms

To realize these opportunities, effective mechanisms must be deployed, such as defining clear sustainability and resilience objectives for all capital projects, utilizing certification systems and comprehensive checklists to enforce compliance with established standards, and implementing robust carbon and metric tracking protocols to accurately measure and manage environmental performance.

Relevant Actions

Risk Management: 2.4. Develop and adopt climate resilient waterfront design guidelines and principles. (**DRWC-led** / DRWC-supported)

Risk Management: 2.5. Incorporate climate projections and heat and flood adaptation strategies into DRWC capital planning processes. (**DRWC-led** / DRWC-supported)

Water: 2.1. Reduce the use of potable water in DRWC operations and buildings. (**DRWC-led** / DRWC-supported)

Water: 2.2. Reduce water use for new and existing buildings through the adoption and implementation of clear standards and incentives. (DRWC-led / **DRWC-supported**)

Water: 2.4. Reduce runoff from DRWC-managed sites.(**DRWC-led** / DRWC-supported)

Waste: 3.3. Incorporate circular economy practices into the design and construction of new development at the waterfront. (DRWC-led / **DRWC-supported**)

Energy: 2.1. Reduce fossil energy use in DRWC buildings and facility operations. (**DRWC-led** / DRWC-supported)

Energy: 2.2. Reduce non-building fossil energy use across DRWC's outdoor and temporary infrastructure. (**DRWC-led** / DRWC-supported)

Energy: 2.4. Continue to expand bicycle and pedestrian pathways along the waterfront. (**DRWC-led** / DRWC-supported)

Biodiversity: 2.1. Site new development and programs with ecological sensitivity, incorporating land conservation measures and advocating for setbacks greater than the 50' minimum. (**DRWC-led** / DRWC-supported)

Biodiversity: 2.2. Create a tree planting strategy that increases canopy coverage and provides guidelines for new development and maintenance. (**DRWC-led** / DRWC-supported)

Biodiversity: 2.3. Plant more native and climate-resilient species and conserve existing native species. (**DRWC-led** / DRWC-supported)

Environmental Health & Justice: 2.2. Reduce noise impacts on waterfront-adjacent neighborhoods through sound walls and other noise mitigation strategies. (DRWC-led / **DRWC-supported**)

Environmental Health & Justice: 2.3. Increase tree canopy, green infrastructure, and select appropriate surface materials to promote shade and evapotranspiration across DRWC sites. (**DRWC-led** / DRWC-supported)

Environmental Health & Justice: 2.4. Expand health-focused programs, amenities, and recreational activities to continue to attract a diverse cross-section of Philadelphia residents to the waterfront. (DRWC-led / **DRWC-supported**)

Adopting climate resilient waterfront design guidelines and principles can help mitigate risk in the public realm.

OPERATIONS AND MAINTENANCE

Protecting seasonal and full-time employees from extreme heat and hazardous air quality is an operational priority, essential to reducing the climate-related health risks faced by operations and programming staff.

Figure 89. Seasonal workshops at Cherry Street Pier. Source: Austin Marsdale/DRWC.

Opportunities

Operations and maintenance activities for the public realm are critical and incremental opportunities to advance sustainability and climate resilience. A key focus is on reducing the overall environmental impacts of daily operations and maintenance through efficiency and cleaner practices. It is vital to prioritize the adaptive management of vegetation so it can withstand and thrive under increasing climate stressors, such as rising heat and salinity. Equally critical to daily operations is the physical safety of the maintenance workforce, necessitating new labor practices and scheduling adjustments that limit their exposure to severe heat and environmental hazards.

Mechanisms

Mechanisms to achieve sustainability and resiliency within operations and maintenance in the public realm include infrastructure/fleet changes, such as transitioning to electric or hybrid equipment, and implementing sustainable landscape maintenance practices. Resilience, particularly for green infrastructure (GI), can be achieved through adaptive landscape maintenance practices, which involve selecting climate-appropriate plant species and utilizing smart irrigation. Finally, establishing a shared GI maintenance district (see sub-action 2.3.3.) can provide the necessary administrative and financial framework to pool resources, ensure consistent upkeep, and guarantee the long-term performance of these vital assets.

Relevant Actions

Energy: 2.3. Reduce automobile emissions at the waterfront by supporting Electric Vehicle transportation to the waterfront and electrifying DRWC's fleet. (**DRWC-led** / DRWC-supported)

Biodiversity: 2.3. Plant more native and climate-resilient species and conserve existing native species. (**DRWC-led** / DRWC-supported)

Biodiversity: 2.4 Monitor and manage invasive plant species in the study area. (**DRWC-led** / DRWC-supported)

Water: 1.2. Develop a monitoring system to track DRWC's potable water use. (**DRWC-led** / DRWC-supported)

Water: 2.3. Catalyze deployment of CSO mitigation measures. (DRWC-led / **DRWC-supported**)

Water: 2.4. Reduce runoff from DRWC-managed sites. (**DRWC-led** / DRWC-supported)

PROGRAMMING

Opportunities

Programming along the Delaware waterfront offers high-value opportunities to directly address climate risks and promote resilience. Creating climate-adapted events and calendars that are adapted to the seasonal rhythms of public engagement at the waterfront can manage disruptions from heatwaves or coastal flooding. This ensures continuous public access and enjoyment of sites like Cherry Street Pier and new spaces like the Penn's Landing Park. Furthermore, an important organizational imperative is reducing the climate-related health burden on outdoor staff and protecting seasonal and full-time employees from extreme heat and air quality issues that are amplified on the waterfront. Finally, all events can be leveraged for education through programming, using the waterfront as a living classroom to teach visitors about the Delaware River's ecology and the importance of sustainability and resiliency measures.

Figure 90. People relax and unwind with free yoga classes at Race Street Pier through the Wellness on the Waterfront program presented by Independence Blue Cross. Source: BeauMonde Originals/DRWC.

Mechanisms

These approaches can be implemented by adapting programming calendars and building flexibility into the schedule for events and festivals, particularly during peak summer months, potentially shifting activities to cooler evening hours or leveraging existing shaded areas or future indoor spaces. This minimizes public and staff risk to extreme temperatures. Real-time communications about extreme weather should serve both external and internal functions. Externally, DRWC can use its channels to amplify City-issued public safety alerts, including heat emergencies and cooling center locations, to reach visitors who may not monitor municipal feeds. More critically, DRWC should develop a formal internal system to notify on-the-ground staff of hazards so they can safely adapt daily operations, maintenance, and event programming. Further, integrating clear educational messages about DRWC's resilience goals directly into the cultural and recreational programming across the waterfront can help achieve educational programming goals, reaching a wide variety of audiences.

Relevant Actions

Risk Management: 2.1. Develop an extreme heat adaptation plan for public spaces and DRWC-owned facilities/buildings within the waterfront planning district. (**DRWC-led** / DRWC-supported)

Risk Management: 2.2. Develop storm and flood response plans for operations that include risk reduction for public assets within the waterfront district. (**DRWC-led** / DRWC-supported)

Environmental Health & Justice: 3.2. Enhance marketing strategies and partnerships to continue to reach and engage vulnerable, underrepresented, and diverse communities across Philadelphia. (**DRWC-led** / DRWC-supported)

ORGANIZATIONAL RESILIENCE

Opportunities

Organizational resilience focuses on enhancing the internal capacity necessary to support and sustain DRWC's long-term sustainability and climate adaptation goals. A primary opportunity is building capacity to support the establishment of baselines and ongoing data tracking, which is critical to accurately measure progress against the goals set out in this plan. Concurrently, there is an opportunity to strengthen internal expertise by building capacity for more sophisticated ecological management, which is necessary to support biodiversity and climate adaptation across waterfront assets. Finally, a strategic, long-term opportunity involves proactively positioning the organization for accessing resilience funding, securing the significant capital required to implement large-scale, adaptive projects.

Mechanisms

To capitalize on these opportunities, DRWC can leverage three main mechanisms: data tracking, capacity building, and funding strategies. For data tracking, this involves implementing new systems and protocols to collect, analyze, and report on key performance indicators related to environmental impact, asset health, and energy usage. This data is essential for informed decision-making. For capacity building, simultaneous skills development is necessary, achieved through specialized training or partnerships that equip staff with the expertise needed for complex ecological management and grant writing. Finally, for funding strategies, the development of a long-term approach that strategically targets federal and state resilience grants, private financing, and other potential revenue streams will help ensure the sustained operation and adaptation of the waterfront.

Building capacity to support the establishment of baselines and ongoing data tracking is critical to accurately measure progress against the goals set out in this plan.

Relevant Actions

Goal 1 - Measure (across all issue areas) for actions on data gathering and tracking

Risk Management: 2.3. Ensure emergency supplies and power for DRWC properties is available in the event of a climate hazard. (**DRWC-led** / DRWC-supported)

Water: 3.2. Educate DRWC staff about the Delaware River Watershed and the challenges it faces. (**DRWC-led** / DRWC-supported)

Energy: 3.3. Educate DRWC staff on energy conservation best practices. (**DRWC-led** / DRWC-supported)

Figure 91. The Delaware River Trail runs 3.3 miles from Pier 70 in South Philadelphia to Penn Treaty Park in Fishtown. Source: Matt Stanley/DRWC.

TRANSPORTATION AND INFRASTRUCTURE

Along with parks, transportation infrastructure on the waterfront, including sidewalks, trails, roads, and transit, forms the public realm structure of the district and ensures safe accessibility north and south, east and west. These same systems can also pose significant impacts to air quality, water quality, carbon emissions, and human safety, and are themselves vulnerable to climate risk—particularly flooding. Through partnership with PennDOT, the City, and SEPTA, DRWC can continue to encourage less carbon intensive forms of transportation, mitigate air and water impacts, and address climate risk. Although DRWC does not directly control the waterfront's transportation infrastructure, it can work with infrastructure agencies to leverage state and federal funding to address multiple sustainability and resiliency goals.

Transportation systems can pose significant impacts to air quality, water quality, carbon emissions, and human safety, and are themselves vulnerable to climate risks, like flooding.

I-95 AND COLUMBUS BLVD

Opportunities

I-95 and Columbus Boulevard, while critical for access, present significant opportunities to enhance the sustainability and resilience of the Delaware River Waterfront. A key focus is reducing air quality and noise impacts from roadways by leveraging and integrating with planned capital roadway improvements by agencies like PennDOT. In parallel, there is a chance to improve water quality by coordinating stormwater measures with these same capital improvements, transforming necessary construction into integrated green infrastructure projects. Furthermore, strategic efforts in demand management can target reduced vehicle emissions and improved air quality. Additionally, there is an opportunity for a coordinated multi-agency approach to Columbus Boulevard flooding. Addressing this significant flooding issue is complicated, but coordination is essential to drive an approach that can move beyond temporary fixes to jointly design and implement permanent, integrated infrastructure solutions, like enhanced drainage and green street features, that protect both the roadway and the adjacent public realm from flooding.

DRWC can collaborate with agencies like PennDOT and PWD on flooding solutions, which can lead to adaptive infrastructure fixes.

Mechanisms

To translate these opportunities into action, DRWC must focus on collaborative mechanisms with key external agencies. The primary tool is engagement with the ongoing I-95 capital planning process, where DRWC can advocate for and ensure the integration of green infrastructure, noise reduction barriers, and low-impact development standards into construction phases. DRWC is uniquely positioned to act as a convener, facilitating collaboration between agencies like PennDOT and PWD on flooding solutions, which can lead to adaptive infrastructure fixes. Complementing these capital efforts, supporting operational changes—such as smart traffic management or promoting less carbon-intensive transportation options—can immediately reduce the environmental impact and improve the public realm adjacent to these major transportation corridors.

Relevant Actions

Energy: 2.3. Reduce automobile emissions at the waterfront by supporting Electric Vehicle transportation to the waterfront and electrifying DRWC's fleet. (**DRWC-led** / DRWC-supported)

Energy: 3.1. Advocate for increased public transit to and along the waterfront.(**DRWC-led** / DRWC-supported)

Environmental Health & Justice: 2.1 Advance air quality improvements along the waterfront by promoting multimodal transportation, supporting building emission reductions, and advocating for site-level interventions. (DRWC-led / **DRWC-supported**)

Environmental Health & Justice: 2.2 Reduce noise impacts on waterfront-adjacent neighborhoods through sound walls and other noise mitigation strategies. (DRWC-led / **DRWC-supported**)

TRANSIT

Opportunities

Focusing on transit along the Delaware River Waterfront presents key opportunities to achieve both equity and sustainability goals. A primary area of focus is providing additional options that promote equitable waterfront access, ensuring that all Philadelphia residents, regardless of their proximity to the waterfront or car ownership, can safely and easily reach DRWC events and destinations. Improving transit also directly translates into environmental benefits by decreasing roadway demand, which in turn yields significant energy and air quality benefits, which is a critical consideration for a corridor dominated by major highways. These efforts are crucial to the success of the Delaware River Trail (DRT) and adjacent connector streets by making them more accessible and enjoyable for the broader public.

Improving transit advances environmental health and justice goals by creating a more accessible and healthier waterfront district.

Mechanisms

Realizing these benefits requires strategic collaborative mechanisms, which includes close coordination with SEPTA to optimize existing routes, secure improved frequency, and potentially pilot new or seasonal service offerings that directly connect residential neighborhoods to the waterfront. In parallel, the DRWC can pursue non-SEPTA initiatives that fill critical gaps in the existing transit network. This is the place to champion and support innovative transit services through public-private partnerships that can provide reliable north-south movement along the river, directly serving

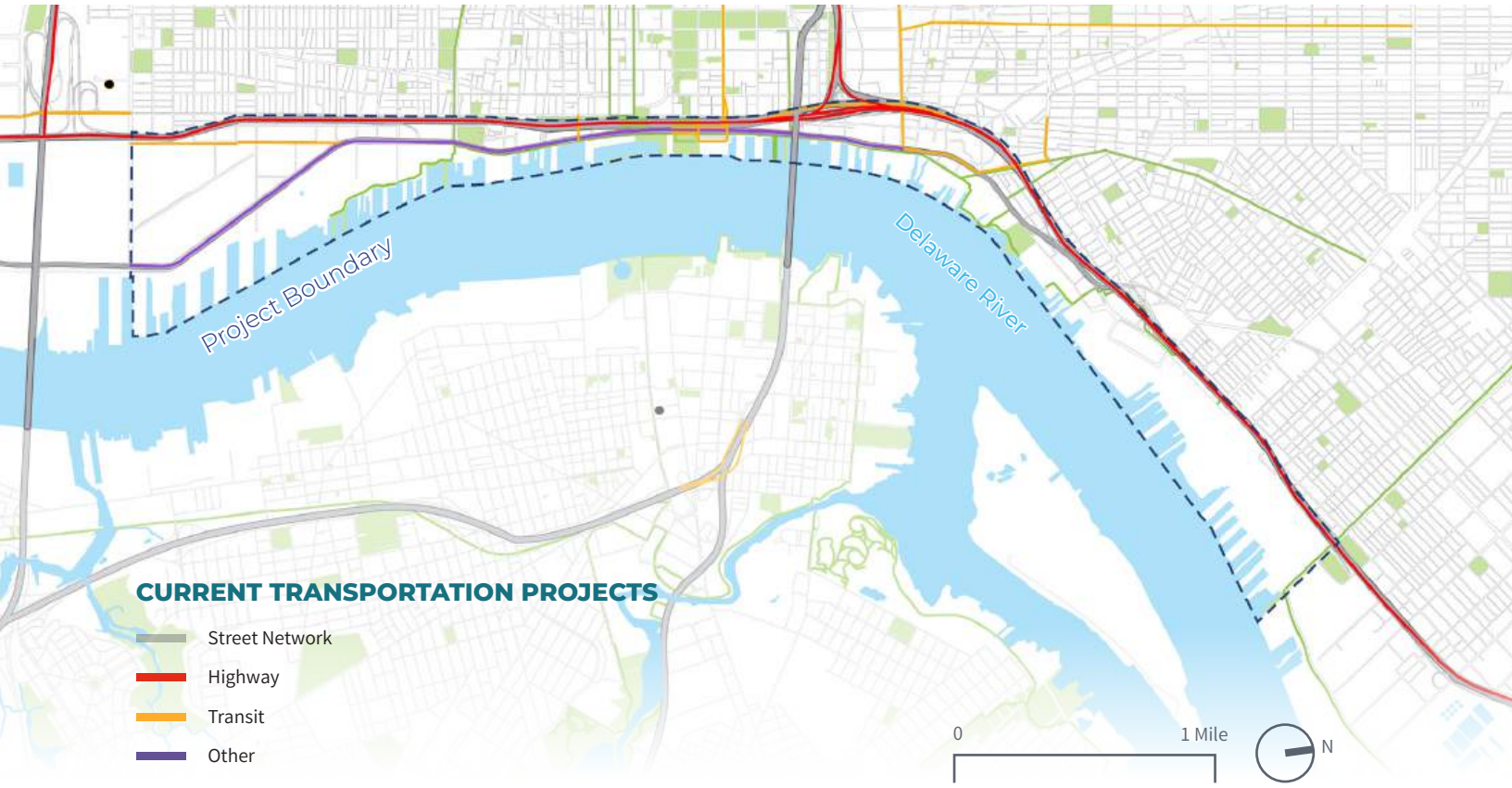


Figure 92. PennDOT (2025-2028) and DVRPC Long Range Plan (2050) transportation and infrastructure projects under construction and on-going. Source: City of Philadelphia.

the new parks and public spaces that the DRWC is developing. These dual mechanisms ensure a comprehensive approach to transit, maximizing both official agency service and localized, innovative solutions.

Figure 93. Infrastructure and transportation define the edge of the Delaware River. Source: OLIN.

Relevant Actions

Energy: 2.4. Continue to expand bicycle and pedestrian pathways along the waterfront. (**DRWC-led** / DRWC-supported)

Energy: 3.1. Advocate for increased public transit to and along the waterfront. (**DRWC-led** / DRWC-supported)

Environmental Health & Justice: 2.5. Expand affordable, multimodal access to the waterfront, including low-cost transit options, improved bike infrastructure, and accessible parking solutions. (DRWC-led / **DRWC-supported**)

PWD STORMWATER INFRASTRUCTURE

Opportunities

Collaboration with PWD on stormwater infrastructure presents significant opportunities to enhance the sustainability and resilience of the waterfront. By aligning DRWC's capital projects and green infrastructure development with PWD's Green City, Clean Waters program, DRWC can maximize the impact of reducing polluted stormwater runoff into the Delaware River.

Mechanisms

To be coordinated with the Philadelphia Water Department.

Relevant Actions

Water: 2.3. Catalyze deployment of CSO mitigation measures. (**DRWC-led** / DRWC-supported)

Water: 2.4. Reduce runoff from DRWC-managed sites. (**DRWC-led** / DRWC-supported)

Water: 2.5. Encourage developers to implement creative stormwater management solutions above and beyond current requirements for DRWC development sites, and ensure implementation and enforcement for existing policies across the waterfront. (DRWC-led / **DRWC-supported**)

Water: 3 .1. Facilitate public engagement and educational opportunities related to the watershed, water quality, and upstream interventions. (DRWC-led / **DRWC-supported)**

Waste: **2.2. Reduce floatables in the Delaware River.** (DRWC-led / **DRWC-supported**)

Collaboration with PWD presents opportunities for more robust green stormwater infrastructure and flood mitigation approaches.

Figure 94. DRWC land control and relationships across the waterfront. Source: City of Philadelphia.

PRIVATE DEVELOPMENT

By filling out the framework of the waterfront's transportation infrastructure and public realm, development can create the kind of dense, walkable urbanism that promises sustainability. But the significant assets associated with waterfront development are vulnerable to climate risk, and the promise of urban sustainability through private development must be realized through regulation. DRWC is uniquely positioned to influence the sustainability and resiliency of waterfront development, both through the disposition and development of DRWC-controlled land and by advocating for strengthening sustainability-focused land use regulations such as the Central Delaware Overlay.

DRWC can effectively influence private development outcomes through its land control and contractual mechanisms.

DEVELOPER RFP AND LEASES

Opportunities

Private development along the Delaware River Waterfront presents a critical set of opportunities for realizing the long term sustainability and resilience

potential of the area. A core goal is to increase the sustainability and overall performance of private development on DRWC land, ensuring new buildings exceed basic code requirements for energy, water, and materials efficiency. Equally important is the opportunity to actively integrate resilience measures and waterfront edge design guidelines into this private development, protecting new assets and future residents from climate hazards like flooding and heat. Furthermore, DRWC must leverage its influence to ensure private development results in equitable outcomes for other waterfront users and to reduce long-term risk for the developers, residents, and tenants who occupy these vulnerable areas.

The most impactful mechanism is to formally require sustainability, equity, flood resilience, and circularity standards in the minimum qualifications and evaluation criteria of all Developer RFPs.

Mechanisms

DRWC can effectively influence private development outcomes through its land control and contractual mechanisms. The most impactful mechanism is to formally require sustainability, equity, flood resilience, and circularity standards in the minimum qualifications and scored evaluation criteria of all Developer RFPs. This can be achieved by mandating specific certifications (like LEED, WEDG) or clear performance standards that address relevant issue areas. To ensure compliance and long-term performance, DRWC must implement annual reporting requirements and compliance reminders tied directly to the ground lease obligations, potentially using performance-based incentives or penalties to ensure sustainability measures are achieved over the life of the lease.

Relevant Actions

Risk Management: 2.4. Develop and adopt climate resilient waterfront design guidelines and principles. (**DRWC-led** / DRWC-supported)

Risk Management: 2.5. Incorporate climate projections and heat and flood adaptation strategies into DRWC capital planning processes. (**DRWC-led** / DRWC-supported)

Water: 2.5. Encourage developers to implement creative stormwater management solutions above and beyond current requirements for DRWC development sites, and ensure implementation and enforcement for existing policies across the waterfront. (DRWC-led / **DRWC-supported**)

Waste: 3.2. Incorporate waste management and waste diversion requirements into new development RFPs. (**DRWC-led** / DRWC-supported)

Energy: 3.4. Incorporate sustainable energy practices and, if possible, renewable energy preference into new vendor contracts. (**DRWC-led** / DRWC-supported)

ZONING OVERLAYS

Opportunities

DRWC has significant opportunities to expand the scope of sustainability and resilience efforts beyond its own land holdings and influence the broader Central Delaware District. This broader scope can help achieve more sustainable and resilient outcomes in all new private development, not just on fragmented parcels directly controlled by DRWC. This expansion can influence the beginning of a comprehensive approach to climate risk management across the entire Central Delaware area. By influencing the regulatory landscape, DRWC can ensure that every new private investment contributes to the area's resilience, collectively minimizing environmental impact and protecting the economic vitality of the entire waterfront district.

Mechanisms

Achieving district-wide influence relies heavily on regulatory and planning mechanisms that transcend individual land deals. The most effective mechanism is revisions to the Central Delaware Overlay (CDO) in collaboration with the Philadelphia City Planning Commission and other stakeholders to formally incorporate broader sustainability and resilience goals. This would involve expanding and strengthening existing overlay standards, such as increasing the effectiveness of the 50-foot setback, to create more protective and climate-adapted development rules. Furthermore, the DRWC should advocate for revisions to the Floodplain Overlay to address future and projected flood risk based on climate modeling, or ensure these forward-looking standards are effectively incorporated into the revised CDO. This regulatory update is key to creating a lasting, mandatory framework for resilience.

Relevant Actions

Risk Management: 3.1. Advocate for waterfront priorities in City- and Region-Wide resilience strategies. (DRWC-led / **DRWC-supported**)

Biodiversity: 2.1. Site new development and programs with ecological sensitivity, incorporating land conservation measures and advocating for setbacks greater than the 50' minimum. (**DRWC-led** / DRWC-supported)

Achieving district-wide influence relies heavily on regulatory and planning mechanisms that transcend individual land deals.

LEADERSHIP IN THE DEVELOPMENT COMMUNITY

Opportunities

DRWC's leadership potential can act as a catalyst to shape the development community's approach to climate resilience and sustainability. A central opportunity is connecting developers with incentives, which effectively attracts public and private funding necessary to support more sustainable and resilient construction practices. Another important area is brokering infrastructure updates, improvements, and coordination between public

agencies like PWD and private developers. This ensures that utility and stormwater needs are met efficiently and collaboratively. Finally, DRWC must focus on building trust and relationships with public agencies, the development community, and the public, creating a cohesive and supportive environment necessary for realizing large-scale, adaptive waterfront projects.

Mechanisms

To successfully execute this leadership role, DRWC must employ focused mechanisms of guidance and requirements. DRWC should play an active role in ensuring developers are knowledgeable about existing public, private, and utility-level incentives, but also go further to actively guide developers into existing external incentives—such as PWD stormwater grants, C-PACE energy financing, or FEMA Community Rating System (CRS) benefits—and importantly, require participation as a condition of project approval on DRWC-controlled land. Beyond project-specific guidance, DRWC should also establish district-wide practices and structures that assist individual landowners with sustainability, such as creating a formal GI maintenance district or establishing a zone-wide waste hauling and hard-to-recycle take-back program to provide shared support for sustainable operations.

DRWC has the capacity and proven track record to be a citywide leader in climate-resilient development.

Relevant Actions

Risk Management: 1.1. Conduct a Multi-Hazard Risk Assessment of the Delaware Waterfront District that reflects estimates of future hazard exposure due to climate change. (**DRWC-led** / DRWC-supported)

Risk Management: 3.2 Educate residents and property owners on waterfront resilience strategies. (DRWC-led / **DRWC-supported**)

Waste: 3.1. Advocate for private property owners along the waterfront to reduce their landfilled waste. (DRWC-led / **DRWC-supported)**

Energy: 3.2. Partner with organizations to offer educational opportunities related to energy efficiency and emissions reduction strategies. (DRWC-led / **DRWC-supported**)

A PATH FORWARD

Figure 95. Penn's Landing CAP and Civic Space Groundbreaking, September 6, 2023. Source: Austin Marsdale/DRWC.

Successful implementation of this Sustainability and Resiliency Plan requires a strategic and intentionally phased approach. While all of the outlined goals fundamentally support the waterfront's long-term environmental health and climate readiness, specific initiatives must be activated first to lay the groundwork for future success.

In this section:

- First Steps
- Tracking Progress
- On-going & Priority Projects
- Early Actions & Opportunities
- Partnerships

FIRST STEPS

As an important initial step, DRWC should review and familiarize its team with the plan's recommended performance standards and certification systems, such as the Waterfront Edge Design Guidelines (WEDG), which will act as a guide for capital projects and operational shifts.

Since accurate, comprehensive baseline data is foundational to tracking meaningful progress, the immediate priority for implementation should be executing the plan's Measure goals. Organizations cannot effectively manage what they do not measure, making these early data-gathering and tracking initiatives essential for evaluating future success. By establishing concrete baseline metrics first, DRWC will create a clear, data-driven starting point that will inform, justify, and streamline all subsequent adaptation and mitigation actions across the waterfront.

In parallel with internal data collection, expanding and sustaining external advocacy must also begin immediately. The scale of climate and sustainability challenges—from watershed health to regional transit networks—extends far beyond DRWC's direct footprint and operational capacity. Given DRWC's unique convening role within the city and the larger region, along with the long lead times inherently required for large-scale infrastructure solutions, initiating the Advocate goals now is essential. Cultivating these long-term relationships today will build the necessary partnerships to realize this plan's resilience objectives.

TRACKING PROGRESS

Recognizing that climate resilience is a long-term, evolving process, this plan balances urgent, time-bound risk reduction with long-term strategic flexibility. The realities of waterfront development, from coordinating with external agencies like PWD and PennDOT to securing complex federal and state resilience grants, require a high degree of operational flexibility. To account for this, progress will instead be tracked iteratively through the qualitative and quantitative measures established within each action across all the outlined goals. By measuring these outcomes alongside dynamic, phased priorities, DRWC can continuously evaluate the effectiveness of its actions. This approach ensures the organization maintains this strategic flexibility, allowing leadership to adapt their priorities as environmental conditions change, new best practices emerge, or new funding streams become available.

Figure 96. Youth dance in vibrant attire at the Islamic Heritage Festival, one of the many cultural showcases in the PECO Multicultural Series.
Source: Matt Stanley/DRWC.

ON-GOING AND PRIORITY PROJECTS

To translate this plan's vision into tangible action, below is a selection of priority projects that can help advance the goals of this plan in the near term. Informed by the spatial vulnerabilities and community needs analyzed in previous chapters, these initiatives represent priorities to advance capital developments and conduct operational audits. By focusing investments where they address the greatest intersection of climate risk, environmental justice, and ecological health, these immediate priorities will serve as catalysts for a more resilient and equitable waterfront

Capital Projects

Penn's Landing Park

Project Status: In construction

Flagship park development that enhances biodiversity, improves organizational energy and water usage, and provides vital public green space accessible to all of Philadelphia.

Cherry Street Pier

Project Status: In planning

Resiliency Improvements to upgrade this public asset to mitigate immediate flood risks and long-term coastal vulnerabilities.

South Wetlands Park

Project Status: In design

Park development to manage flood risk, improve water quality, and expand equitable green space access.

Graffiti Pier

Project Status: In design

Site preservation to protect local biodiversity, enhance water quality, protect upland communities, and support environmental justice.

Delaware River Trail

Project Status: Multiple segments in design

Expansion of segments to reduce carbon emissions through active transit and enhance ecological corridors.

Connector Streets

Project Status: Multiple streets in planning, design, or construction

Development of connections such as Cumberland Street and Washington Avenue for greening and infrastructure upgrades based on transit, canopy, and equity gaps, and public space connections.

Images sources: DRWC

Operational Audits

Waste

Project Status: Seeking Funding

Mapping existing bins and tracking illegal dumping to protect environmental health and improve waste operations.

Energy

Project Status: Seeking funding

Assessing DRWC-owned facilities to identify immediate upgrades and reduce operational carbon.

Vulnerability Assessment

Project Status: Seeking funding

Assessing waterfront properties to better understand climate risk across the district.

Waterfront Tree Canopy Audit

Project Status: Seeking funding

Assessing waterfront properties to establish baseline tree canopy coverage.

Images sources: DRWC

EARLY ACTIONS & OPPORTUNITIES

While Chapter 4 lays out the complete scope of the recommendations to provide a long-term roadmap for waterfront resilience, building early momentum is critical. This section outlines the most immediate, high-impact starting goals highlighted in blue below across the Measure, Act, and Advocate categories. These specific goals—such as prioritizing waste and energy baselines, taking direct action on risk management, waste, and biodiversity, and building partnerships to further risk management, water, and environmental health and justice actions —were selected because they leverage existing organizational momentum and address some of the waterfront's most pressing vulnerabilities. By focusing on these highlighted targets first, DRWC can secure highly visible, early wins that can propel the broader plan forward.

MEASURE

The Measure goals establish the critical data foundation required for long-term climate adaptation. By actively tracking and assessing existing conditions along the waterfront, DRWC can establish the baseline metrics needed to evaluate changes over time, monitor operational progress, and ensure the success of all future sustainability initiatives.

- **Risk Management: Characterize and quantify risk from climate hazards to the waterfront.**
- **Water: Collect data to analyze DRWC's water consumption and water quality constraints on river access.**
- **Waste: Establish a baseline and monitor DRWC's landfilled waste.**
- **Energy: Monitor DRWC's building and non-building energy use patterns and track low-carbon transportation.**
- **Biodiversity: Characterize the waterfront's natural habitat and species.**
- **Environmental Health & Justice: Document the current environmental health and justice context around the Delaware Waterfront.**

Goals in pink are recommended early actions.

ACT

The Act goals translate planning into tangible, on-the-ground sustainability and resilience. By implementing targeted operational strategies and creating new sustainable practices, DRWC can directly address identified climate challenges, achieve its performance metrics, and build a safer, more adaptive waterfront.

- **Risk Management: Seek strategies to reduce hazard risk and proactively respond to extreme events such as floods, heat waves, and emergency situations to promote safety.**

- **Water:** Improve Delaware River water quality and reduce DRWC's potable water use.
- **Waste: Reduce litter and landfilled waste at the waterfront through changes in DRWC's internal operations and expanded waste management for waterfront visitors.**
- **Energy:** Reduce DRWC's building, non-building, and transportation energy use, and advance active and low-carbon transportation opportunities.
- **Biodiversity: Improve the management and maintenance of the waterfront's habitats to enhance connections for all species.**
- Environmental Health & Justice: Ensure equitable access to public spaces and programming at the Philadelphia waterfront, so that it remains a welcoming, healthy, and restorative refuge for all Philadelphians.

ADVOCATE

The Advocate goals expand DRWC's impact far beyond its direct operational footprint. By promoting strategic partnerships and building relationships that align with long-term climate objectives, DRWC can significantly expand its operational capacity and drive systemic, regional resilience.

- **Risk Management: Embed climate hazard preparedness into DRWC planning, policy, and capital projects.**
- **Water: Increase public awareness of the importance of the history, health, and ecology of the Delaware River Watershed.**
- **Waste:** Encourage waste reduction from private property owners and developers.
- **Energy:** Increase low-carbon and sustainable energy practices across the City through public engagement and events.
- **Biodiversity: Partner with private property owners, public infrastructure owners, neighbors, and environmental groups to improve habitat connectivity.**
- **Environmental Health & Justice: Advance environmental justice principles locally to promote comfort, health, and safety across the Philadelphia waterfront.**

Figure 97. A rendering of the South Street Bridge Extension, a 258-foot span that will carry the city's existing structure from the east side of Interstate 95 across Christopher Columbus Boulevard to the Delaware River waterfront at Lombard Circle. Source: PennDOT.

PARTNERSHIPS

Realizing the goals of this plan requires a highly collaborative, cross-sector approach. Because climate and sustainability challenges are not limited to property boundaries, DRWC must leverage its unique position as a regional leader to align waterfront development directly with the citywide resiliency efforts. By building strong alliances across different issue areas, DRWC can bridge the gap between conceptual planning and tangible, equitable action. Beyond sharing knowledge, these essential collaborations serve to multiply DRWC's internal operational capacity and open critical pathways to new, larger-scale funding streams. The facing page outlines suggested organizations that DRWC can partner with to advance the goals and actions within each issue area.

The organizations listed on the facing page are a sample of potential organizations that DRWC could partner with, by issue area.

ENGAGEMENT STRATEGY

Addressing these escalating climate threats in a localized yet comprehensive manner requires a focused strategy, and close coordination with agencies and advocacy organizations doing similar work. Historically, resilience planning in Philadelphia has largely been piecemeal, usually focusing on specific neighborhoods more so than citywide challenges. By aligning with the Citywide Resiliency Strategy, led by the Office of Sustainability (OOS), DRWC can model a unified, district-wide approach to community and partner engagement that focuses on the interconnectivity of larger systems.

A critical component of this effort is establishing a shared vocabulary that connects everyday local challenges with long-term climate realities and a deeper understanding of the structural issues that underlie environmental justice issues. An important step toward this is clearly separating temporary nuisances like litter, noise, and traffic from systemic environmental justice issues like extreme heat and contamination. It is equally important to recognize where these categories intersect, such as in cases of illegal dumping and flooding. By pairing clear communication with highly visible, early-action pilot projects, DRWC can translate abstract climate concepts into tangible progress, ensuring that future resilience advocacy directly responds to the needs and lived experiences of waterfront communities. This plan helps foreground this understanding, so that future public communication about sustainability and resiliency can be proactive, consistent, and inclusive.

Additionally, as identified throughout the actions of this plan, it is envisioned to be carried out together with partners across the city. There are numerous actions that DRWC will support, rather than lead, but will together create a comprehensive approach to addressing sustainability and resiliency along the waterfront. The plan identifies opportunities to partner with schools and educational institutions, and facilitate public engagement about water quality and consumption, waste, and low carbon advocacy, particularly within the waterfront's public realm. Across the length of the plan's implementation, the goal is to create a more engaged and educated citizenry, who incorporate sustainability and resiliency into their everyday life, and advocate for a cleaner, healthier waterfront.

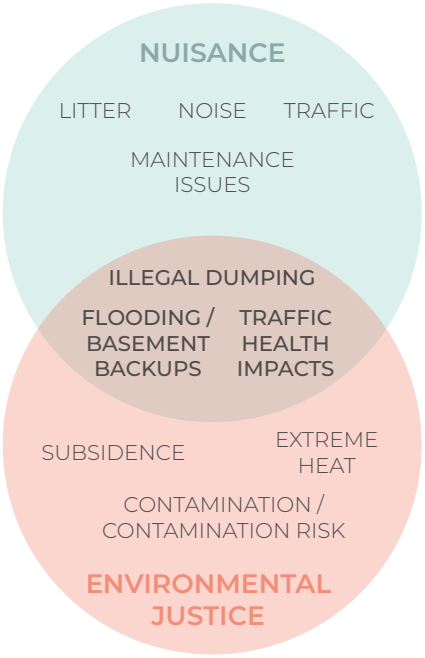


Figure 99. (Above) Diagram showing the intersection of environmental justice issues and nuisances. Source: OLIN.

Figure 98. (Right) Suggested organizations that DRWC can partner with by issue area. Source: OLIN.

Consortium for Climate Risk in the Urban Northeast

Convenes academics, advocates, and non-profits to research weather and climate-related vulnerability and advance opportunities for adaptation.

Urban Land Institute

Brings multidisciplinary expertise to help communities solve challenging land use, development, and redevelopment issues on behalf of agencies and community-based nonprofits.

Delaware Valley Regional Planning Commission

Helps build consensus for a shared regional vision; enables data-based, community-centered solutions; and helps put plans into action.

RISK MANAGEMENT

The Pennsylvania Horticultural Society

Uses horticulture to advance the health and well-being of the Greater Philadelphia Region.

The Nature Conservancy - Pennsylvania Chapter

Works to to protect rivers and iconic nature in the Commonwealth and pursues strategies that will help ensure the vitality of Pennsylvania's people, places and wildlife for generations to come.

Partnership for the Delaware Estuary

Leads collaborative, science–based efforts to improve the Delaware River for clean water, thriving fish and wildlife, accessible recreational activities, and a robust economy.

BIODIVERSITY

Bennett Compost

Collaborates and partners with organizations to make composting easy for all Philadelphians, strengthening our community and making Philadelphia a better place.

Circular Philadelphia

Materials management and circular economy professionals who bring together individuals, businesses, manufacturers, institutions, local government, and policy makers to lead the shift to a circular economy in the region.

Office of Clean and Green Initiatives

Addresses quality of life issues like litter and graffiti, using a data-driven action plan.

WASTE

Green Building United

Promotes the development of buildings that are sustainable, healthy for inhabitants, resilient, and cost-effective.

Philadelphia Energy Authority

Catalyst for the growth of a robust, equitable, diverse clean energy economy in Philadelphia through the development of long-term energy projects, policy, education and strategic partnerships.

PECO

Committed to balancing future energy needs with sustainability and supporting efforts to restore and enhance natural habitats and biodiversity.

Philadelphia Gas Works

Creates community partnerships and initiatives that bring Philadelphia closer to an eco-friendly future.

ENERGY

Philadelphia Water Department

Sustains and enhances the region's watersheds and quality of life by managing wastewater and stormwater effectively.

Delaware Riverkeeper Network

A watershed wide environmental advocacy organization empowering communities to act and advocate for change through monitoring, restoration, awareness, and litigation.

The Water Center at Penn

Supports communities in meeting their critical water challenges by identifying resilient and sustainable solutions, combining natural and built systems, and based on equitable principles.

WATER

Delaware River Basin Commission

Oversees the unified approach to managing the Delaware River system.

Clean Air Council

Protecting people's health from the harmful impacts of pollution and right to a healthy environment through public education, community action, accountability, and enforcement of environmental laws

Philly Thrive

Organizes for environmental, racial, and economic justice in Philadelphia through community support programs and campaigns to change injust systems.

The Environmental Collaboratory at Drexel University

Facilitates the co-creation and implementation of climate justice centered solutions and best practices with the leadership of community partners in the Philadelphia region. Initiatives are community-driven, deeply researched and support capacity and network building for community-based organizations.

ENVIRONMENTAL HEALTH AND JUSTICE

ENDMATTER

RESOURCES

GLOSSARY

0.2% (500-year) Floodplain: An area subject to inundation from a flood having a 0.2 percent (a 1 in 50 probability) chance of being equaled or exceeded in any given year.

1% (100-year) Floodplain / Flood Elevation: An area subject to inundation from a flood having a 1 percent (a 1 in 100 probability) chance of being equaled or exceeded in a given year. This is used as a baseline to set design flood elevations for waterfront projects.

Adaptive Landscape Maintenance: Maintenance practices that involve selecting climate-appropriate plant species and using smart irrigation to build resilience.

Base Flood Elevation [BFE]: The computed elevation to which floodwater is anticipated to rise during the base flood.

CAPA Strategies: A climate analytics organization that partnered with NOAA and The Nature Conservancy to support the recent Heat Watch Philadelphia Summary Report, helping to identify the waterfront's specific vulnerabilities to the urban heat island effect.

Centers for Disease Control and Prevention [CDC]: The national public health agency that defines extreme heat conditions.

Central Delaware Overlay / Central Delaware Riverfront Overlay District [CDO]: A zoning mechanism that applies to properties east of I-95 from Oregon Avenue to Allegheny Avenue, designed to guide waterfront growth by mandating public access, active ground-floor uses, and critical riparian buffers.

Coastal Flooding: Flooding driven by high tides and storm surge in the tidally influenced Delaware River.

Combined Sewer Overflow [CSO]: Systems that discharge sewage and stormwater runoff into the river during rain events, causing chronic pollution and poor water quality.

Commercial Property Assessed Clean Energy [C-PACE]: An energy financing incentive that DRWC can actively guide developers to utilize.

Community Rating System [CRS]: A FEMA program providing benefits and incentives that DRWC can encourage developers and the City to participate in to incentivize flood risk reduction investments.

Connector Streets (River Access Streets): Key corridors formalized in the Central Delaware Overlay that pass under I-95 to create safe, welcoming, and intuitive pedestrian and bicycle routes between adjacent neighborhoods and waterfront destinations.

Delaware River Trail [DRT]: A grade-separated, multi-use corridor stretching over five miles along the Central Delaware, designed for both recreation and everyday mobility.

Design Flood Elevation [DFE]: Standards included in DRWC RFPs to ensure new development is built above minimum flood levels, specifically 2 feet above the 1% flood elevation for standard projects and 3 feet above for critical assets.

Electric Vehicle [EV]: Vehicles that DRWC is aiming to support through the installation of charging stations and by transitioning its own fleet to reduce automobile emissions.

Environmental Justice [EJ]: A framework that ensures that no group disproportionately bears negative impacts caused by environmental events, hazardous waste or resource extraction without benefit. For the purposes of this plan, it is distinct from temporary or longstanding nuisances such as noise pollution or persistent litter.

Evapotranspiration: A natural cooling process promoted by increasing tree canopy and green infrastructure across DRWC sites.

Extreme Heat: Weather that is significantly hotter and/or more humid than typical conditions for a given time and place, which is currently the deadliest weather-related hazard in the United States.

Federal Emergency Management Agency [FEMA]: The federal agency responsible for producing floodplain maps, which serve as the primary regulatory tool for managing floodplains and setting flood insurance requirements.

Floatables: Debris and waste that pollute the Delaware River but are generated outside the waterfront, which DRWC aims to reduce through cleanups.

Floristic Quality Assessment: A baseline botanical survey conducted to monitor plant species diversity.

Fluvial Flooding: Riverine flooding that occurs when rivers or streams exceed their banks, generally resulting from excessive and/or prolonged upstream rainfall.

Green Building United [GBU]: A strategic partner organization focused on sustainable development standards.

Green City, Clean Waters: A PWD program working to mitigate CSO pollution along the waterfront and reduce polluted stormwater runoff.

Green Stormwater Infrastructure [GI]: Integrated infrastructure solutions leveraged alongside ongoing capital improvements to help mitigate noise pollution, address coastal flooding, and sustainably manage runoff.

Groundwater Flooding: Flooding that happens when a rising water table inundates surfaces or basements.

High-Albedo Materials: Reflective materials integrated into projects to actively lower surface temperatures and reduce heat island effects.

Indicator Species: Key wildlife species identified to establish survey protocols and monitor ecological health.

International Society of Arboriculture [ISA]: An organization whose best practices will inform DRWC's tree planting standards.

Land Subsidence: The gradual sinking of land that, when combined with sea-level rise, increasingly causes "sunny day" flooding.

Living Shorelines: Shoreline designs utilizing salt-tolerant native vegetation to serve as a flood adaptation strategy and restore natural ecosystem function.

Multi-Hazard Risk Assessment: An assessment conducted by DRWC to produce a risk profile for the waterfront district, integrated into annual capital improvement planning.

National Flood Hazard Layer [NFHL]: FEMA's primary tool for depicting flood hazards and their extents.

National Oceanic and Atmospheric Administration [NOAA]: The federal agency that provides sea level rise and storm surge projections, supported the Heat Watch report, and operates monitoring stations.

Office of Arts, Culture, and the Creative Economy [OACCE]: A City of Philadelphia office that collaborates with DRWC on public art installations through its Percent for Art Program.

Office of Sustainability [OOS]: The city agency responsible for leading the broader Citywide Resiliency Strategy and advancing sustainability goals.

One Water Approach: A framework by the U.S. Water Alliance that promotes the sustainable management of the full water life cycle, from river water to stormwater to drinking water.

Organizational Resilience: The focus on enhancing DRWC's internal capacity—such as data tracking, ecological management, and long-term funding strategies—necessary to support and sustain long-term sustainability and climate adaptation goals.

PECO / PGW: Energy stakeholders DRWC will partner with to establish energy use baselines for electricity, natural gas, and other fuels.

Penn's Landing Park: A new 11.5-acre civic space currently advancing that will stretch between Chestnut Street, Walnut Street, Front Street, and the Delaware River.

Pennsylvania Department of Transportation (PennDOT): The state agency responsible for Pennsylvania's transportation infrastructure. PennDOT is a key partner in managing the adjacent I-95 corridor and developing multi-modal waterfront connector streets.

Pennsylvania Horticultural Society [PHS]: A strategic partner organization focused on tree canopy expansion along the waterfront.

Percent for Art Program: A city program managed by OACCE that helps realize site-specific arts and cultural installations along the waterfront.

Philadelphia City Planning Commission (PCPC): The municipal agency guiding Philadelphia's physical development. PCPC oversees zoning, land use, and comprehensive planning to ensure waterfront projects align with broader citywide goals.

Philadelphia Office of Sustainability (OOS): The city department responsible for Philadelphia's climate and environmental equity initiatives. OOS ensures waterfront projects advance local resilience, carbon reduction, and environmental justice targets.

Philadelphia Water Department [PWD]: A key partner agency for DRWC regarding stormwater management, chronic coastal flooding, and CSO mitigation.

PhilaPort: An industrial and transportation stakeholder that DRWC can collaborate with to advance air quality improvements.

Pluvial Flooding (Urban Flooding): Surface or overland flooding driven by rainfall that occurs when intense rain overwhelms drainage systems.

Resilience: The ability of a system to withstand and adapt to a disturbance, particularly climate change, requiring the assessment of current and future risks to develop actionable solutions.

Sea Level Rise [SLR]: The gradual increase in ocean levels that pushes higher tides up the Delaware River, raising both high and low tide elevations and exacerbating flooding.

SLOSH Model: A modeling tool used to predict potential storm surge depths during extreme hurricane scenarios.

Sound Walls: Noise mitigation infrastructure used to reduce noise impacts on waterfront-adjacent neighborhoods.

Southeastern Pennsylvania Transportation Authority [SEPTA]: The transit agency DRWC coordinates with to optimize existing routes, secure improved frequency, and encourage public transit use to the river.

Storm Surge: A rise in coastal water levels during extreme weather events that occurs when the force of wind pushes water from rivers and creeks onto land.

"Sunny Day" Flooding: High tides that cause flooding even without a storm, driven primarily by sea-level rise and land subsidence.

Sustainability: The active support and maintenance of ecological, human, and economic health and vitality, including a commitment to climate mitigation through greenhouse gas reductions, clean energy, waste reduction, and biodiversity stewardship.

Urban Heat Island Effect: A phenomenon where localized temperatures are intensified by buildings, pavement, and other hard surfaces that absorb and re-emit heat, exacerbated by a lack of canopy cover along the waterfront.

Urban Land Institute [ULI]: An organization that convened a Virtual Advisory Service Panel and a Resilience in Place Management Workshop to help DRWC strategize on climate impacts and public space management.

Waterfront Setback: A citywide zoning mechanism (within the Open Space and Natural Resources section of the zoning code) that prohibits new construction within 50 feet of the top of bank of any river or stream in order to mandate critical riparian buffers, reduce flood risks, and improve stormwater performance.

Waterfront Transit Study: A 2020 study focusing on near-term ways DRWC can immediately encourage transit to the river and improve upon existing public transportation services.

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APPENDIX

PREVIOUS PLANNING REVIEWED

PLAN / DOCUMENT NAME	DATE	PREPARED BY	PREPARED FOR	ACCESS LINK
A Guide to Flooding in Philadelphia	2021	Philadelphia's Citywide Flood Risk Management Task Force	City of Philadelphia	https://www.phila.gov/media/20210909170757/Flood-Guide_V1-2_21.07.30_spreads.pdf
A River Reconnected: The Challenges and Opportunities of Public Access to the Tidal Delaware River	2021	DVRPC	DVRPC	https://www.dvrpc.org/reports/21016.pdf
Beat the Heat Hunting Park: A Community Heat Relief Plan	2019	Office of Sustainability	City of Philadelphia	https://www.phila.gov/documents/beat-the-heat-hunting-park/
Camden City Coastal Resilience Masterplan	2025	Penn Praxis, eDesign Dynamics, Water Center at Penn	The Center for Environmental Transformation	https://resilience.cfet.org/plan
Central District Plan	2014	Philadelphia City Planning Commission	City of Philadelphia	https://www.phila2035.org/central
Climate-Resilient Planning and Design Guidance	2024	Philadelphia Water Department	City of Philadelphia	https://water.phila.gov/wp-content/uploads/files/climate-resilient-guidance.pdf
Commercial Waste Report Guide	2020	City of Philadelphia	City of Philadelphia	https://www.phila.gov/documents/commercial-waste-report-guide/
CONNECT: Philadelphia's Strategic Transportation Plan	2018	Office of Sustainability	City of Philadelphia	https://www.phila.gov/media/20190821132925/Connect-Philadelphia-Strategic-Transportation-Plan-2018.pdf
Delaware Direct Watershed River Conservation Plan	2011	CH2MHill, Pennsylvania Horticultural Society, Philadelphia Water Department	Philadelphia Water Department	https://elibrary.dcnr.pa.gov/GetDocument?docId=1742115&DocName=RiverRegistry107_Delaware.pdf
Delaware River Bacteria Study	2024	The Water Center at Penn	Various	https://watercenter.sas.upenn.edu/sites/default/files/Delaware%20River%20Bacteria%20Study_Final%20Version%20with%20Appendices1.pdf?mc_cid=b971d1ca35&mc_eid=be60bb77d0
Delaware River Basin Climate Resilience Plan	Underway	Delaware River Basin Commission	N/A	https://www.nj.gov/drbc/home/newsroom/news/approved/20240613_climateplan.html
Delaware River Basin Comprehensive Flood Risk Management Interim Feasibility Study and Integrated Environmental Assessment for New Jersey	2012	USACE and NJ Department of Environmental Protection	USACE and NJ Department of Environmental Protection	https://www.nap.usace.army.mil/Portals/39/docs/Civil/DelComp/factsheet.pdf
Delaware River Recreation Safety Study	2023	Sage Services LLC	Philadelphia Water Department	https://water.phila.gov/pool/files/delaware-river-recreation-safety-study-2023-06.pdf
Delaware River Trail: Columbia Avenue to Lehigh Avenue Extension & Neighborhood Connections	2024	NV5: Planning, Landscape Architecture, Civil Engineering	DRWC	https://www.delawareriverwaterfront.com/where-to-go/delaware-river-trail/trail-extension-columbia-ave-to-lehigh-ave
DRWC and the Delaware River Waterfront's Transformation: Implementation of the Master Plan for the Delaware Waterfront: 2022 Economic Impact Assessment	2023	ESI Econsult Solutions Inc	DRWC	https://drwcsite.s3.amazonaws.com/files/623432294330619295-drwc-economic-impact-report-full-report.pdf
Eastwick: From Recovery to Resilience - A Place-based Framework for Environmental Justice and Climate Resilience	2023	Office of Sustainability	City of Philadlephia	https://www.phila.gov/media/20240904105131/OOS-Place-Based-Framework-final.pdf
Energy Poverty Alleviation Strategy	2024	Office of Sustainability	City of Philadelphia	https://www.phila.gov/documents/energy-poverty-alleviation-strategy/

PLAN / DOCUMENT NAME	DATE	PREPARED BY	PREPARED FOR	ACCESS LINK
Graffiti Pier & Port Richmond Waterfront Planning Study	2020	Studio Zewde	DRWC	https://drwcsite.s3.amazonaws.com/files/692577541433279652-graffiti-pier-planning-study-report-small.pdf
Green City, Clean Waters	2009	Philadelphia Water Department	City of Philadlephia	https://www.phila.gov/media/20160421133948/green-city-clean-waters.pdf
Green City, Clean Waters -- Year 10 Evaluation and Adaptation Plan	2022	Philadelphia Water Department	City of Philadlephia	https://water.phila.gov/wp-content/uploads/files/gccw-year-10-eap.pdf
Green Stormwater Infrastructure (GSI) Cooling Analysis: Nighttime Heat Mitigation Co-Benefits of Vegetated GSI	2023	Office of Sustainability	City of Philadelphia Office of Sustainability	https://www.phila.gov/media/20230912155935/GSI-Cooling-Analysis-Report-202309.pdf
Green Stormwater Infrastructure Strategic Framework	2022	Philaelphia Water Department	City of Philadelphia	https://water.phila.gov/wp-content/uploads/files/gsi-strategic-framework.pdf
Greenworks Program	2009-2022	Office of Sustainability	City of Philadelphia	https://www.phila.gov/documents/greenworks-program-archives/
Growing from the Root: Philidelphia's Urban Agriculture Plan	2023	Interface Studio	Philadelphia Parks & Recreation	https://www.phila.gov/documents/philadelphias-urban-agriculture-plan/
Growing Stronger: Toward a Climate-Ready Philadelphia	2015	Office of Sustainability and ICF International	City of Philadelphia	https://www.phila.gov/media/20160504162056/Growing-Stronger-Toward-a-Climate-Ready-Philadelphia.pdf
Guide for Development in the Floodplain	2023	Department of Licenses and Inspections	City of Philadelphia	https://www.phila.gov/media/20231129135000/Guide-for-Development-in-the-Floodplain-Rev-11.2023.pdf
Heat Watch Philadelphia	2022	CAPA/NIHHIS	City of Philadelphia	https://osf.io/3xts6/overview?view_only=3a5aaebda6884c28a1948c57caf06040
I-95 Central to South Philadelphia Master Plan	2025	AECOM	US Department of Transportation Federal Highway Administration, PennDOT	https://95revive.com/wp-content/uploads/2025/09/9.2.25-I-95-CSP-Masterplan.pdf
Leading the Transformation of Philadelphia's Central Delaware River Waterfront: 2023 Economic Impact Report	2023	DRWC	DRWC	https://drwcsite.s3.amazonaws.com/files/670117922195982299-23061-drwc-report23-final-web-lowres.pdf
Lower Eastwick Public Land Strategy	2019	Interface Studio	Philadelphia Redevelopment Authority	https://phdcphila.org/land/special-projects/lower-eastwick-public-land-strategy/
Lower South District Plan	2012	Philadelphia City Planning Commission	City of Philadelphia	https://www.phila2035.org/lower-south
Master Plan for the Central Delaware	2012	OLIN	DRWC	https://www.delawareriverwaterfront.com/what-we-build/master-plan-for-the-central-delaware
Municipal Energy Master Plan	2017-2026	Office of Sustainability	City of Philadelphia	https://www.phila.gov/documents/municipal-energy-master-plan/
Northern Liberties Waterfront Plan: An Addendum to the Northern Liberties Neighborhood Plan	2007	Interface Studio	Northern Liberties Neighbors Association	http://archive.phillywatersheds.org/img/Delaware_RCP/NLNA_WaterfrontPlan.pdf
Nothern Liberties Neighborhood Plan	2005	Interface Studio	Northern Liberties Neighbors Association	http://archive.phillywatersheds.org/img/Delaware_RCP/NLNA_Plan.pdf
PECO's Creating a Resilient, Equitable, & Accessible Transformation in Energy (CREATE) for Greater Philadelphia	2023	PECO	PECO	https://www.peco.com/smart-energy/innovation-technology/reliability-information/electric-investments/create

PLAN / DOCUMENT	DATE	PREPARED BY	PREPARED FOR	ACCESS LINK
Pennsylvania Climate Action: Strategies for Environmental Justice	2023	Preservation Design Partnership	PA Department of Environmental Protection	https://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/ClimateChange/2023-06-27_PA_DEP_Final_Report_HI_RES.pdf
Philadelphia 2035 Comprehensive Plan	2011	City of Philadelphia	City of Philadlephia	https://www.phila2035.org/citywide-vision
Philadelphia All-Hazard Mitigation Plan	2022	WSP	Philadelphia Office of Emergency Management	https://www.phila.gov/media/20230706165653/OEM-Hazard-Mitigation-Plan-2022.pdf
Philadelphia Citywide Greenhouse Gas Inventory	2022, 2025	Office of Sustainability	City of Philadelphia	https://www.phila.gov/documents/2019-municipal-greenhouse-gas-inventory/
Philadelphia Clean & Green Resident Resource Guide	2023	Hinge Collective	Resilient Communities Stormwater Initiative (RCSI)	https://static1.squarespace.com/static/5fea51c3732d43798c656dbe/t/63f641435fe9ec17ab591924/1677082948224/RCSI+Community+Resource+Guide+2023_DigitalDownload.pdf
Philadelphia Climate Action Playbook	2021	Office of Sustainability	City of Philadelphia	https://www.phila.gov/media/20210113125627/Philadelphia-Climate-Action-Playbook.pdf
Philadelphia Climate Justice Collective Report	2024	Strategy Arts	Philadelphia Climate Justice Collective	https://drexel.edu/environmental-collaboratory/~/media/Drexel/Provost-Group/Environmental-Collaboratory/Documents/Philadelphia-Climate-Justice-Collective-Final-Update.pdf
Philadelphia Navy Yard Plan	2022	James Corner Field Operations	PIDC	https://navyyard.org/wp-content/uploads/2023/03/2022_Navy_Yard_Plan.pdf
Philadelphia Trail Master Plan: 2024 Update	2024	City of Philadelphia	City of Philadelphia	https://www.phila.gov/media/20241220112555/Philadelphia-Trail-Master-Plan-Update-2024.pdf
Philadelphia Transit Plan	2021	Office of Transportation and Infrastructure Systems	City of Philadelphia	https://www.phila.gov/documents/philadelphia-transit-plan/
Philadelphia's Municipal Clean Fleet Plan	2021	City of Philadelphia	City of Philadelphia	https://www.phila.gov/media/20211006130414/Philadelphia-Municipal-Clean-Fleet-Plan-202110.pdf
Philadelphia2035: Implementation Updates	2024	Philadelphia City Planning Commission	City of Philadelphia	https://www.phila.gov/documents/philadelphia2035-implementation-updates/
PhilaPort Strategtic Plan: Destination 2040	2024	HaTech	PhilaPort	https://player.flipsnack.com/?hash=RkU4NTVFQUE5RjcrdTNxeHFhZms5cw%3D%3D&forceWidget=1&t=1729084221&p=1&fd=true
Philly Tree Plan	2023	Philadelphia Parks & Recreation	City of Philadelphia	https://www.phila.gov/documents/urban-forest-strategic-plan/
Plan for Health and Racial Equity: 2022-2026	2023	Department of Public Health	City of Philadelphia	https://www.phila.gov/media/20231130115809/Plan-Health-Racial-Equity_28-Nov-2023.pdf
Powering Our Future: A Clean Energy Vision for Philadelphia	2018	Office of Sustainability	City of Philadelphia	https://www.phila.gov/documents/powering-our-future-a-clean-energy-vision-for-philadelphia/
Resilience in Place Management: ULI Philadelphia & Delaware River Waterfront Corporation Workshop	2023	Urban Land Institute	DRWC	https://ulidigitalmarketing.blob.core.windows.net/ulidcnc/sites/28/2023/12/2304_ULI-PHL_DRWC-Resilience-in-Place-Management_v3_FINAL.pdf
Waterfront North Master Plan	2021	NV5, Econsult Solutions, Stokes Creative Group	Waterfront North Partnership	https://waterfrontnorth.org/get-involved-donate/masterplan/
Riverward District Plan	2015	Philadelphia City Planning Commission	City of Philadelphia	https://www.phila2035.org/river-wards

PLAN / DOCUMENT NAME	DATE	PREPARED BY	PREPARED FOR	ACCESS LINK
South District Plan	2015	Philadelphia City Planning Commission	City of Philadelphia	https://www.phila2035.org/south
State of the Waterfront 2025 Impact Report	2025	DRWC	DRWC	https://www.delawareriverwaterfront.com/what-we-build/state-of-the-waterfront
The Green Building Rating Systems	2024	Pennsylvania Department of General Services	Commonwealth of Pennsylvania	https://www.pa.gov/agencies/dgs/programs-and-services/greengov/sustainable-buildings.html#accordion-ecb860ff3d-item-f4ffb3c059
Trail & Sidepath Maintenance Study	2022	WSP	City of Philadelphia	https://www.phila.gov/media/20220805130335/WO-27-Study-Report_FINAL-07.13.22.pdf
ULI Panel Report: Washington Avenue Waterfront Piers and District - Executive Summary Report	2021	Urban Land Institute	DRWC	https://knowledge.uli.org/en/reports/aspr/2021/philadelphia-pa-rluc
Useful Climate Information for Philadelphia: Past and Future	2014	ICF Incorporated	City of Philadelphia Office of Sustainability	https://www.phila.gov/media/20160505145605/Useful-Climate-Science-for-Philadelphia.pdf
Waterfront Transit Study	2019	Foursquare Integrated Transportation Planning	DRWC	https://drwcsite.s3.amazonaws.com/files/710921077734804201-drwc-waterfront-transit-study-final.pdf
Zero Waste and Litter Cabinet Action Plan	2016	City of Philadelphia	City of Philadelphia	https://www.phila.gov/media/20190821131753/Zero-Waste-Litter-Action-Plan-2017.pdf

PEER STANDARDS AND PLANS CASE STUDIES REVIEWED

PLAN / DOCUMENT	DATE	PREPARED BY	PREPARED FOR	CITY	ACCESS LINK
Visualizing Harborwalk 2.0: Designing A More Resilient And Equitable Waterfront For Greater Boston	2023	Boston Harbor Now	Boston Harbor Now	Boston, MA	https://www.bostonharbornow.org/wp-content/uploads/2024/07/Visualizing-Harborwalk-Doc_Landscape_122123.pdf
Riverlife: Completing the Loop Report	2021	evolveEA	Riverlife	Pittsburgh, PA	https://riverlifepgh.org/wp-content/uploads/2022/04/Completing-the-Loop-v_5.3-spreads.pdf
Buffalo Bayou East Master Plan	2019	Michael Van Valkenburgh Associates	Buffalo Bayou Partnership	Houston, TX	https://www.buffalobayou.org/location/buffalo-bayou-east/
Baltimore Blueway: Water Trail Master Plan for Baltimore Harbor	2023	Biohabitats, Toole Design Group, REJ & Associates	Waterfront Partnership of Baltimore	Baltimore, MD	https://static1.squarespace.com/static/639b796f243a6024d4b9d9ff/t/64cb3eee2846b6072dcfe904/1691041558332/Baltimore+Blueway+Master+Plan+2023.pdf
Schuylkill River Development Corporation Strategic Plan 2016-2020	2016	Schuylkill River Development Corporation (SRDC)	SRDC Board, City of Philadelphia	Philadelphia, PA	https://www.schuylkillbanks.org/sites/default/files/attachments/SRDC%20Strategic%20Plan%202016-2020.pdf
Climate Ready Boston	2016	HR&A, Arcadis, Sasaki	City of Boston	Boston, MA	https://www.boston.gov/sites/default/files/file/2023/03/2016_climate_ready_boston_report.pdf
Battery Park City Sustainability Plan	2020	SCAPE, Buro Happold, Battery Park City Authority	Battery Park City Authority	New York, NY	https://bpca.ny.gov//wp-content/uploads/2022/03/BPC-Sustainability-Plan.pdf
FiDi & Seaport Climate Resilience 2021 Master Plan	2021	Arcadis (BJH supporting)	NYCEDC and NYC Mayor's Office of Climate Resiliency,	New York, NY	https://fidiseaportclimate.nyc/plan
Coastal Flood Resilience Design Guidelines	2019	Boston Planning & Development Agency (BPDA), Utile Inc.	City of Boston	Boston, MA	https://www.bostonplans.org/documents/planning/waterfront-planning/flood-resiliency-building-guidelines-zoning-overla/bpda-cob-coastal-flood-zoning-design-guidelines
Climate Resilient Design Standards & Guidelines	2018	Weston & Sampson	City of Boston Public Works Department	Boston, MA	https://www.boston.gov/sites/default/files/embed/file/2018-10/climate_resilient_design_standards_and_guidelines_for_protection_of_public_rights-of-way_no_appendices.pdf
Coastal Flood Resilience Guidelines & Zoning Overlay District	2021	City of Boston Planning Department	City of Boston	Boston, MA	https://www.bostonplans.org/planning-zoning/planning-initiatives/flood-resiliency-building-guidelines-zoning-over
Coastal Resilience Solutions for Downtown and the North End	2020	Stoss Landscape Urbanism, Arcadis	City of Boston, Barr Foundation	Boston, MA	https://www.boston.gov/sites/default/files/file/2020/10/Climate%20Ready%20North%20End%20Downtown%20Final_EMBARGO%20102820.pdf
Climate Resiliency Design Guidelines Version 4.1	2022	NYC Mayor's Office of Climate and Environmental Justice	City of New York	New York, NY	https://www.nyc.gov/assets/sustainability/downloads/pdf/publications/CRDG-4-1-May-2022.pdf
Port Authority of New York and New Jersey Climate Resilience Design Guidelines V1.2	2018	Port Authority of New York and New Jersey, Engineering Department	Port Authority of New York and New Jersey	NY & NJ	https://www.panynj.gov/port-authority/en/about/Environmental-Initiatives/climate-resilience.html
Resilient Building Design Guidelines Addendum – City of Hoboken	2022	Michael Baker International, Inc. and LRK	City of Hoboken	Hoboken, NJ	https://assets-global.website-files.com/58407e2ebca0e34c30a2d-39c/62d180a35a1957b9fb4569a2_Resilient_Building_Design_Guidelines_Addendum_Final_071422.pdf
Climate Ready DC: Resilient Design Guidelines	2021	District of Columbia Department of Energy & Environment (DOEE)	Government of the District of Columbia	Washington, D.C.	https://doee.dc.gov/sites/default/files/dc/sites/ddoe/service_content/attachments/CRDC%20resilient%20design%20guidelines_FINALApproved.pdf

EXISTING RATING/CERTIFICATION SYSTEMS RELEVANCE TO ISSUE AREAS

	LEED USGBC	**LEED ND** USGBC	**SITES** USGBC	**Envision** Institute for Sustainable Infrastructure	**LBC** International Living Future Institute	**WEDG** The Waterfront Alliance	**RELi** C3 Living Design	**CRS** FEMA
Water	X	X	**X**	X	X	**X**	X	X
Waste	X	**X**	**X**	X	X		X	
Risk Management			X			**X**	**X**	**X**
Environmental Health & Justice	X	X	X	X	**X**	**X**	**X**	X
Biodiversity		X	**X**	X	**X**	**X**		
Energy	X	X		**X**	X		X	

X Primary Focus

X Secondary Focus

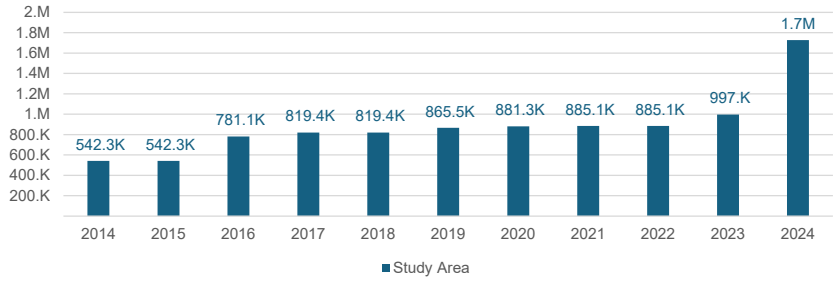
☐ Not a Focus

REAL ESTATE MARKET ANALYSIS

This research was compiled by BJH Advisors LLC, May 2025.

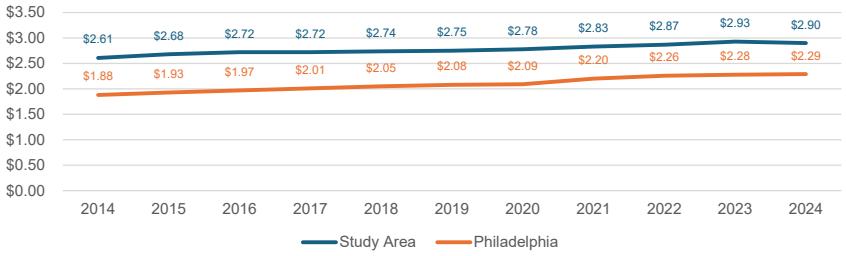
Multifamily

Inventory

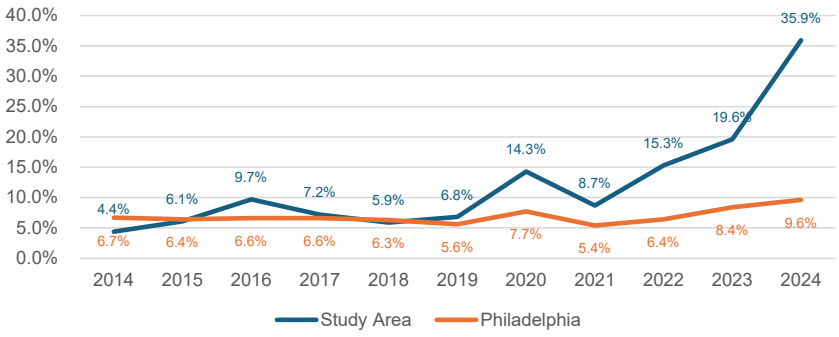


Dramatic growth in the Study Area compared to Philadelphia shows a changing make-up along the Delaware River Waterfront.

Rent Per Square Foot

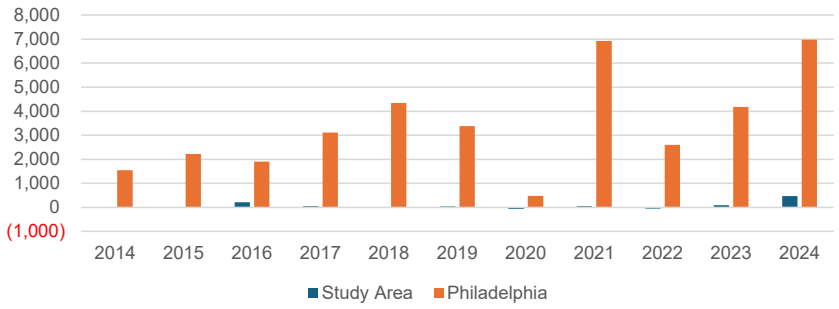


Vacancy



There are higher vacancies and lower rent rates as the submarket adjusts to major inventory additions.

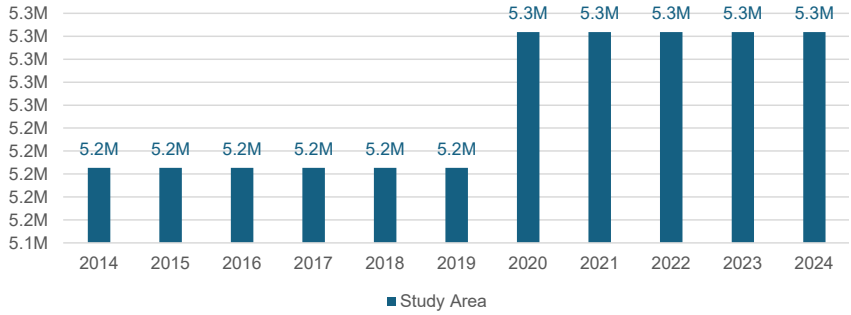
Absorption



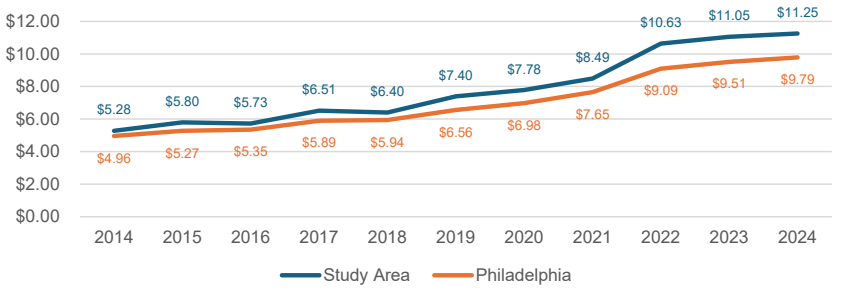
Industrial

Amazon facility is only new industrial property since 2020, representing post-pandemic demand for last-mile distribution

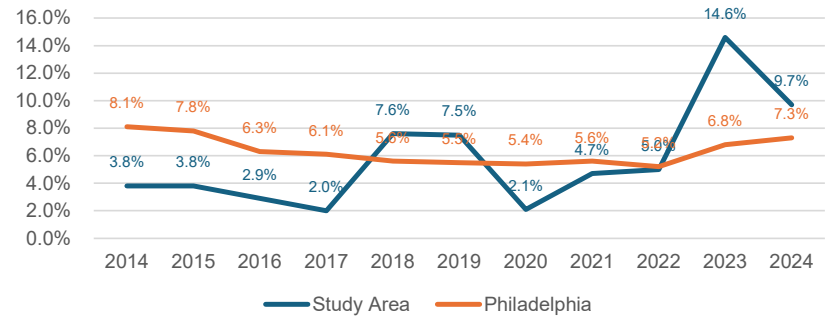
Inventory



Rent Per Square Foot

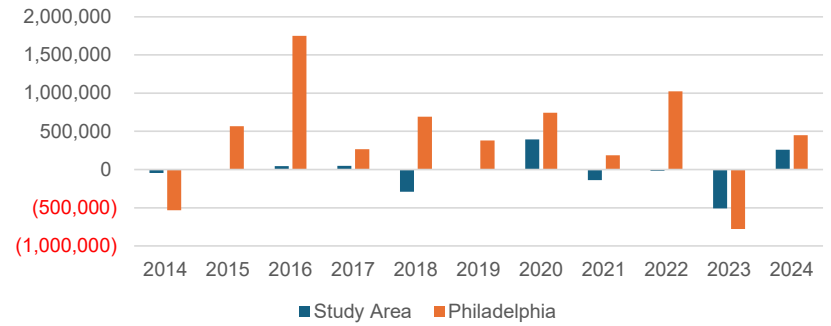


Vacancy



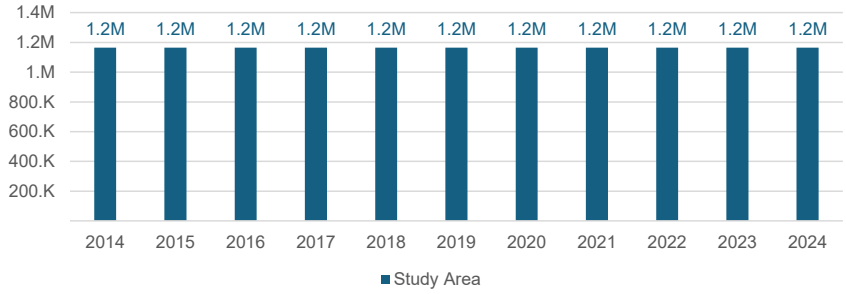
SoPhi Logistics Center is an example of retrofitting old facilities, a great option for preserving buildings, increasing development feasibility, & creating new spaces for tenants.

Absorption

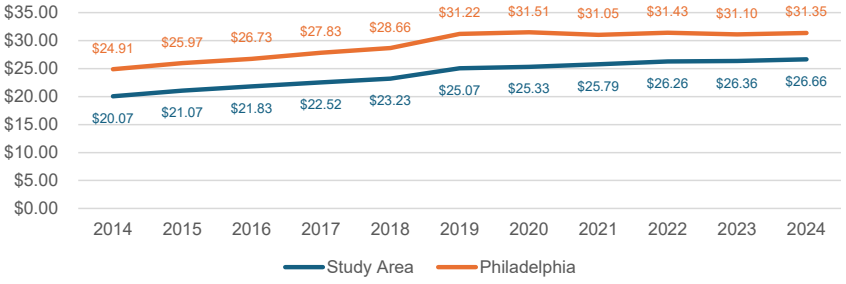


Office

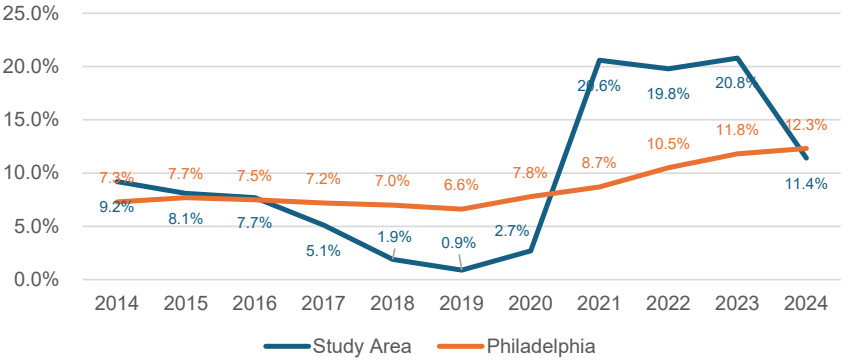
Inventory



Rent Per Square Foot

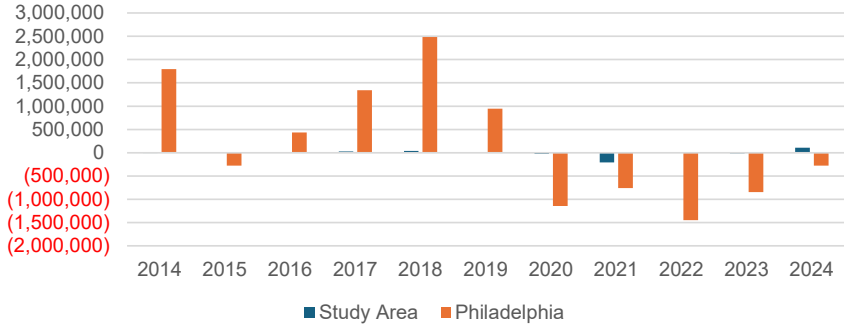


Vacancy



There is a clear effect of the pandemic on vacancies, but the Study Area is showing strong resilience, perhaps speaking to the attractiveness of working / living near the waterfront and interesting new inventory.

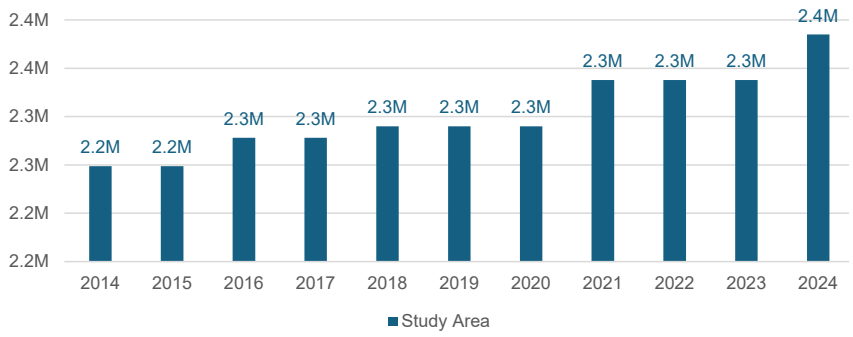
Absorption



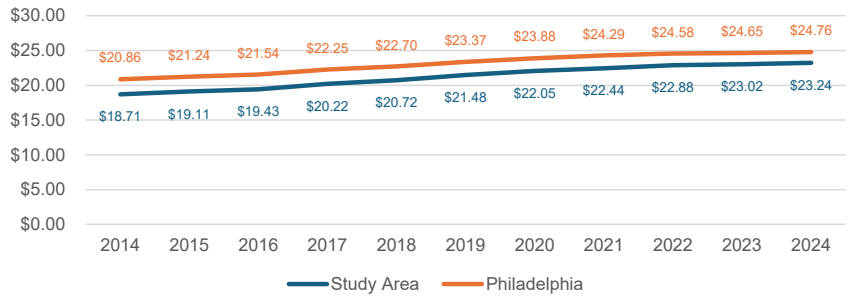
Retail

Massive growth in retail inventory accompanied by steady rents and declining vacancies shows strengthening of the submarket.

Inventory

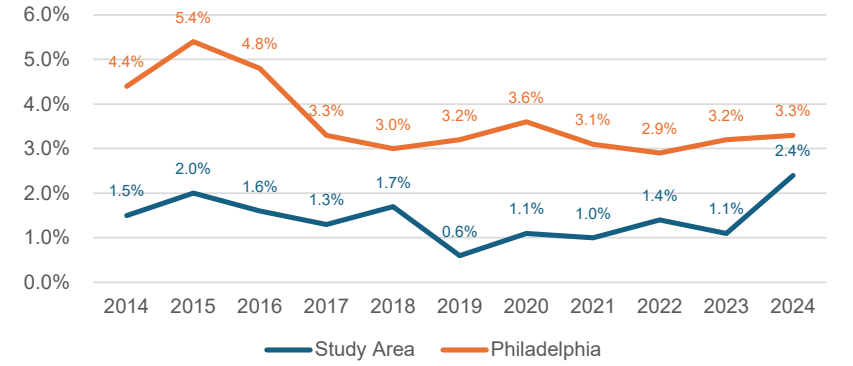


Rent Per Square Foot

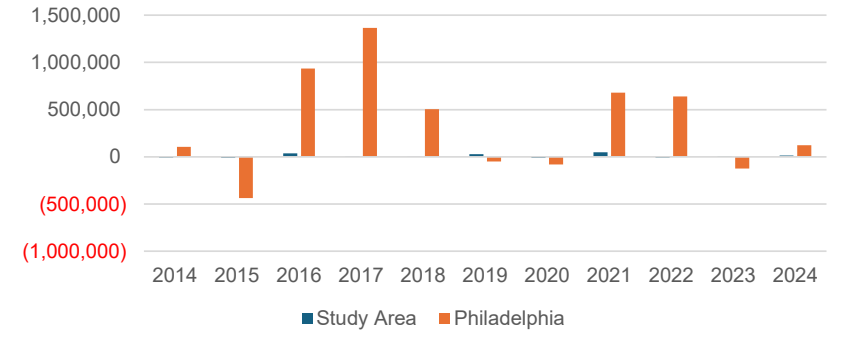


Study Area is becoming a place where retail wants to be because people want to be here.

Vacancy



Absorption



PREPARED BY:

OLIN + ARCADIS

BJH ADVISORS | PROS CONSULTING | SGD URBAN SOLUTIONS