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Sharing Vision for Shared Spaces:

Mobile Immersive Planning and Community-led Design of Green Spaces in Richmond's Southside

Prepared By: Maria Tova Enriquez Dougherty
Master of Urban and Regional Planning 2022
Wilder School of Government and Public Affairs
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L. Douglas Wilder School of
Government and Public Affairs



VIRGINIA
COMMUNITY
VOICE

Dedicated to the residents of Richmond Highway and all those with
the vision to see new possibilities

Acknowledgments

This project is thanks to the work and support of so many individuals, including the long-time community advocates, city employees, and faculty of the VCU Urban Planning Master's program, most especially my advisors, who work earnestly to realize better living conditions and inspire future generations.

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Executive Summary

Urban planning as a formal field has existed in the United States for a little over a century, but the challenges and need for designing livable space are nearly as old as humankind. While urban planning and design impacts all people, generally only a small group has access to this type of decision-making power. As the impacts of historic planning decisions are still being fully understood, the field now acknowledges the importance and need for community engagement as a way to expand decision making power. Challenges remain in this goal, but new technologies like augmented reality offer exciting possibilities to communicate the ideas of not only planners but also community members by showing real-time and true to scale visualizations of site developments.

In this project, a small-area case study and proof of concept for this new technology is provided. By facilitating site-planning processes with a mobile augmented reality application¹ and through embedded practice and relationship-building with the Richmond Highway RVA Thrives leadership, community goals and visions for future green projects were explored and visualized. The conditions of community activity pre-existing the project and the results of introducing this tool show that planning and design can become a more collaborative, exciting, and democratic process, not only moving the profession into the future but also addressing legacies of exclusion and disproportionate impact.

The recommendations in this plan seek to address findings from the small area analysis and community engagement and offer tailored goals, actions, and partnerships for the project clients to consider. The recommendations also seek to expand upon the lessons learned in this case-study towards larger city-wide processes and to make this new technology and approach more widespread. Together, this plan looks to revolutionize not only the processes of land-use planning, but also the relationship of Richmonders to their own neighborhoods and public spaces.

¹ The application licensed for this project is titled “iScape”



Purpose

This plan seeks to demonstrate the potential of immersive technologies, specifically augmented reality, in strengthening public engagement and enabling the collaborative, community led design of local green spaces. The City of Richmond, Virginia is one of the nation’s oldest planned sites, displaying both the successes and failures of the urban planning profession. A legacy of segregation and disinvestment is visible in its neighborhood streets and parks (or lack thereof); large portions of the city’s historic center and South side neighborhoods today are urban heat islands, as well as home to a majority Black and Latino population that is under-served and surveyed without major impact. Community engagement, while now a focal point of urban planning education, is still implemented in uneven strategies that often further distance the public from the process and understanding of city vision; new paradigms of outreach and community-government knowledge sharing must be explored to overcome common constraints of time, expertise, and language that prevent public participation in projects that directly impact their health. Immersive urban planning offers a way to bring people into the local process above and beyond traditional approaches by providing tools for autonomous exploration and imagination of public space, particularly neighborhood pocket parks and green spaces.

In this project, one site designated for future city park development in Richmond’s South side Windsor neighborhood (currently known as “Broad Rock Creek Park”) acts as a pilot location for a mobile-based augmented reality land-use planning experiment. At the site and in the surrounding walk shed area, community members will be approached to use this technology to visualize, problem solve, and design their ideal future green space by overlaying virtually represented landscape features onto the physical space. Using community survey responses and an AR landscape architecture design tool, user experiences and final design outputs will be analyzed to determine perceptions of the tool and common goals for the future park. This project will serve as an important steppingstone in transforming community participation by offering a tool to facilitate design made by and for neighborhood members.



Augmented Reality (AR)

Real world with digital information overlay. Real world remains central to the experience, enhanced by virtual details.



Plan Vision:

Richmond is a city with strong community engagement, leveraging advocacy groups and new technologies to allow all residents, particularly those marginalized by past planning decisions, opportunities in creating and envisioning their local green spaces.

Why Augmented Reality (AR)?

What is AR?

Augmented reality (AR) is defined as an interactive experience of a real-world environment, where the objects that reside in the real world are enhanced by computer generated perceptual information like 3-D models, videos, sounds, and more.

How can you use it?

AR can be used for education, recreation, to find your way or to plan and design your home (or in this case, your local park!) AR can help bring to light history no longer visible on a site or to imagine potential future developments on a site.

How is it different from VR?

AR and VR are both forms of immersive technology. The major difference is that VR hides your view of reality with digital media while AR interacts with it.

What are some examples of AR for urban planning and land use?

There are already some early examples of AR being used for historic preservation and comprehensive planning, particularly for large projects like new rail stations or to visualize architectural renderings of new buildings and construction. To date, few examples exist of AR being used by community groups for public design.

Why is it important?

Immersive participatory planning, using AR, can break down the barrier of non-professionalism and achieve the following goals:

- Communicate ideas to the public in a digestible format
- Get place-specific information from local communities usually missed by standardized methods of spatial analysis
- Give citizens the ability to submit ideas; comment, endorse, oppose, select, or reject ideas of others in a collaborative way
- Ensure that citizen participation in the process is significant and builds a greater sense of shared ownership



Figure 1: Wayfinding and mapping your route in real time



Figure 2: Interactive educational opportunities



Figure 3: Designing parks to include new public seating and address neighborhood-specific visions

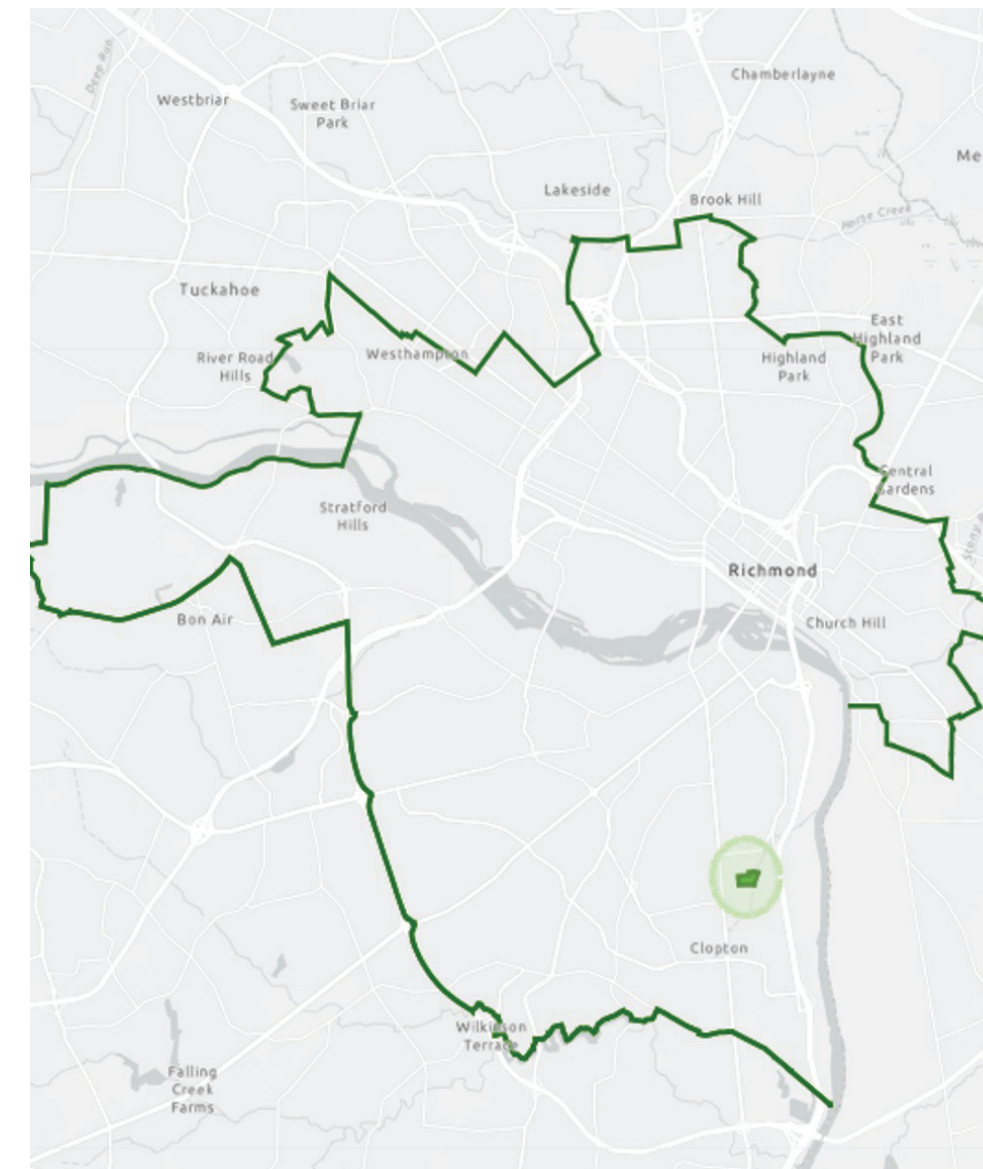


Figure 4: Imagining future transportation developments

Clients & Outline

For this plan, two co-client organizations are cooperating for the greatest shared outcomes. The first co-client is the **City of Richmond, VA Parks, Recreation, and Community Facilities Department**. Responsible for more than 170 parks, open spaces, athletic fields, playgrounds, and recreational lots, the department maintains 21 community centers while providing a full spectrum of services and leisure programs for all of Richmond's citizens. The second co-client organization, **Virginia Community Voice (VACV)**, is a community-power organization dedicated to equipping citizens and marginalized communities to realize their vision for their neighborhoods and preparing institutions to respond effectively. VACV is engaged with the Parks Department, Office of Sustainability, and South side ReLeaf on the newly formed South side Green Collaborative, created to listen to South side neighbors and equip them with the tools to create a community-centered plan for a greener, cleaner, and cooler South Richmond. While most of the Collaborative cooperated on this project, the primary points of contact are with Parks & Recreation and VACV.

This plan will begin with context about the issues and history relevant to the goals of the site project. The context grounds the work in the current thinking and approaches towards design, community engagement, environmental justice, immersive technologies, and other related themes. Next, the plan area will be introduced, followed by the research questions this study seeks to answer and the planned approach. Findings will be categorized into emerging themes and will inform the recommendations for the park site and surrounding neighborhood. The plan will conclude with a best practice guide to using augmented reality in outreach and land-use planning at other sites.



Map 1: City of Richmond, highlighting the future park site and the surrounding walk shed



GOALS FOR THE COLLABORATIVE

- Increase neighborhood leadership over decisions that affect Southside Richmond
- Equip neighbors to develop solutions to issues they have identified
- Direct resources to neighbor-led solutions to beautification and greening which have been identified as a top priority by Southside neighbors through several years of listening processes and engagement



GOALS FOR THE COLLABORATIVE

- Onboard new park(s) on Richmond's Southside
- Onsite engagement material development
- Active engagement in all adjacent neighborhoods
- Incorporate feedback into a plan for conceptual design, lists of potential amenities, prioritize
- Build community maintenance agreements through process
- Continue to seek funds for partnership and implementation



GOALS FOR THE COLLABORATIVE

- Tackle environmental disparities by building green spaces: planting trees, creating greater food access, reimagining parks, and public areas
- Reduce pollution and improve health outcomes
- Increase infrastructure assets to positively adapt to a changing climate
- Environmental advocacy: education, civic engagement, and thoughtful dialogue



GOALS FOR THE COLLABORATIVE

- Engagement and awareness
- Increase to 11% participation for each Southside council district with a targeted focus on 8th and 9th districts
 - RVA Green 2050 incorporation and participation representation equal to percentage population in district as percentage of district to the whole city

Figure 5:
The four complete member organizations of the South Side Green Collaborative

Context

Park History

Urban parks, however small, are integral for stimulating interaction with the city, encouraging both planned and unplanned visits as well as building personal relationships to public space; Access to parks, however, has been as varied over the years as the approaches to its design and use. The history of urban park planning and theory in the United States is generally agreed to have begun in the late 19th century, led by urban elite and reformers that believed that public design should encourage civic pride and community engagement by creating more beautiful cities and combating the growing industrial filth of urban centers with green spaces as pleasure gardens (i.e. New York City's Central Park). Park planning continued to be re-imagined along with the changing ideologies of city planning. The idea of the Reform Park that emerged in the early 20th century focused heavily on children

and the working class, where supervisors (often upper- or middle-class white women and police) would organize play and outdoor space as a vehicle of social progress; while this time saw an increase in local parks, they were not truly public spaces for users who had to behave according to their supervisors' wishes.

The second half of the 20th century saw the park change once more into an increasingly bureaucratic site, where public service implementation became institutionalized, and today, in the aftermath of multiple economic recessions, parks and recreation services have seen a severe decline in funding that is pushing many cities back towards privatized park management. Public spaces, particularly parks and green spaces, have never been value-neutral sites and today still struggle with concepts of ownership and democracy.

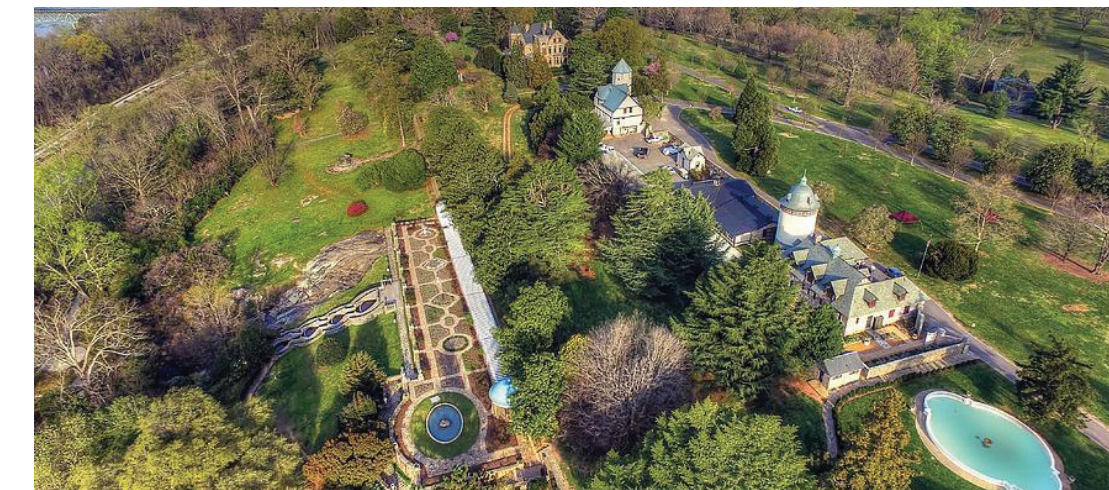


Figure 6: Maymont is one of the largest and most popular privately-owned green spaces in Richmond.



Figure 7: The well-loved and maintained Scuffletown Park was one of many pocket parks in the Fan crucial to residents during the pandemic--a feature noticeably absent from poorer and hotter areas of the city.

Park History, Cont.

As we plan for the creation of future public green spaces, it is necessary to recognize the unequal associations parks have for communities of color as well as pay attention to the design and maintenance of future parks that may deter equitable use.

One of the oldest cities in the nation, Richmond has a long and painful history of domination and exclusion that has echoed throughout the nation. The 2020 Summer of Civil Unrest led to mass protests across the former capitol of the Confederacy, with one of the most memorable results being the reclamation of the Robert E Lee Monument and surrounding grass circle into Marcus David Peters Circle. The site became a hub of mutual aid, including shared community gardens, art workshops, food pantry collection, and donations for those in need. Turning an unused traffic circle into a site of collective ownership and hope--however temporary.

This visible and symbolic act of insurgent planning--an approach characterized as counter-hegemonic, transgressive (often legally), and imaginative--shined a fresh light upon public belonging and land-use practices in the city. Richmonders reclaimed a site of painful memory and turned it into something practical and necessary during the unprecedented onslaught of the COVID-19 pandemic. Even after it's closure, it remained a vision of new possibilities in regards to public green spaces in the city, brimming with life, *designed by and for community.*



Figures 8 & 9: Marcus David Peters Circle in the shadow of the Lee Monument and its plaquard "Liberated by the People MMXX"

Design Justice

Understanding that park access and audience has an unequal history, any planning for future parks and green spaces must consider design justice to ensure a truly democratic space. Design justice is a framework for analysis of how design distributes benefits and burdens between various groups of people; it is a concept born out of the desire to center people normally marginalized by design, and to use collaborative and creative practices to rethink challenges facing communities (Costanza-Chock, 2020). Design is also a way of thinking, learning, and engaging with the world, so good design must consider and include the communities it serves. Pocket parks or local public green spaces can be wonderful opportunities for applied design justice as they have many potential benefits and can reflect the unique context of a neighborhood's needs and desires. Pocket parks and urban gardens, because of their small size and proximity to homes and businesses, are often easier to embed into pre-existing neighborhoods. These types of green spaces offer a more flexible and creative approach towards park development and urban revitalization.

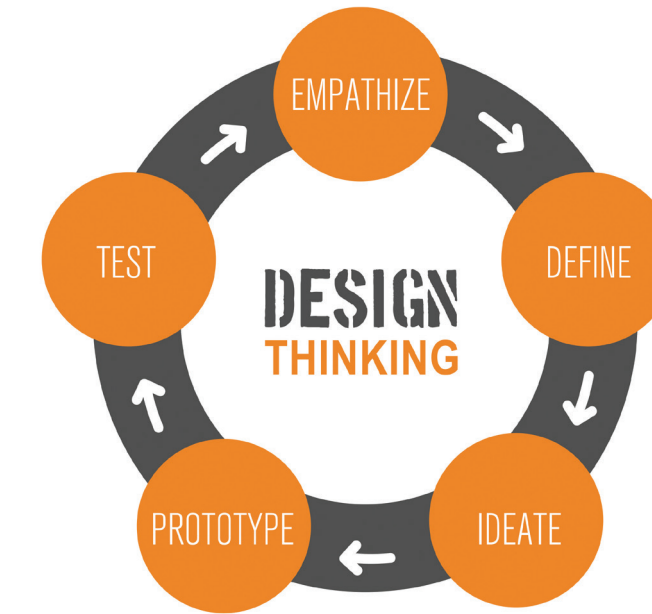


Figure 10: A Visualization of design as an ongoing and empathetic process
Source: Tactical Urbanism (2015)



Figure 11: The Sanfoka Community Orchard was built through public effort on a vacant lot at the southern edge of Westover neighborhood
Source: Craig Belcher (2021)

The History of Urban Heat and Environmental Justice

Environmental Justice is defined by U.S. policy as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (EPA, 2021). This definition came about due to the efforts of both the Civil Rights Movement and the Environmental Movement of the late 20th century, which collectively brought attention to the ways race and class affected the environmental well-being of neighborhoods. In many cities, including Richmond, the early 20th century practice of racial covenants and redlining done by the Home Owners Loan Corporation (HOLC) not only racially segregated the population for generations to come, but also literally shaped investment patterns in the city where black neighborhoods were undervalued compared to white neighborhoods. While the effects of this can be seen in several ways, including measures of income, education, and housing stability, one of the most striking in an age of global warming is that of the urban heat island effect; previously red-lined neighborhoods in Richmond, including many on the South-side, feature less tree coverage and more non-permeable surfaces like roads and parking lots that trap heat and critically impact the health of residents.

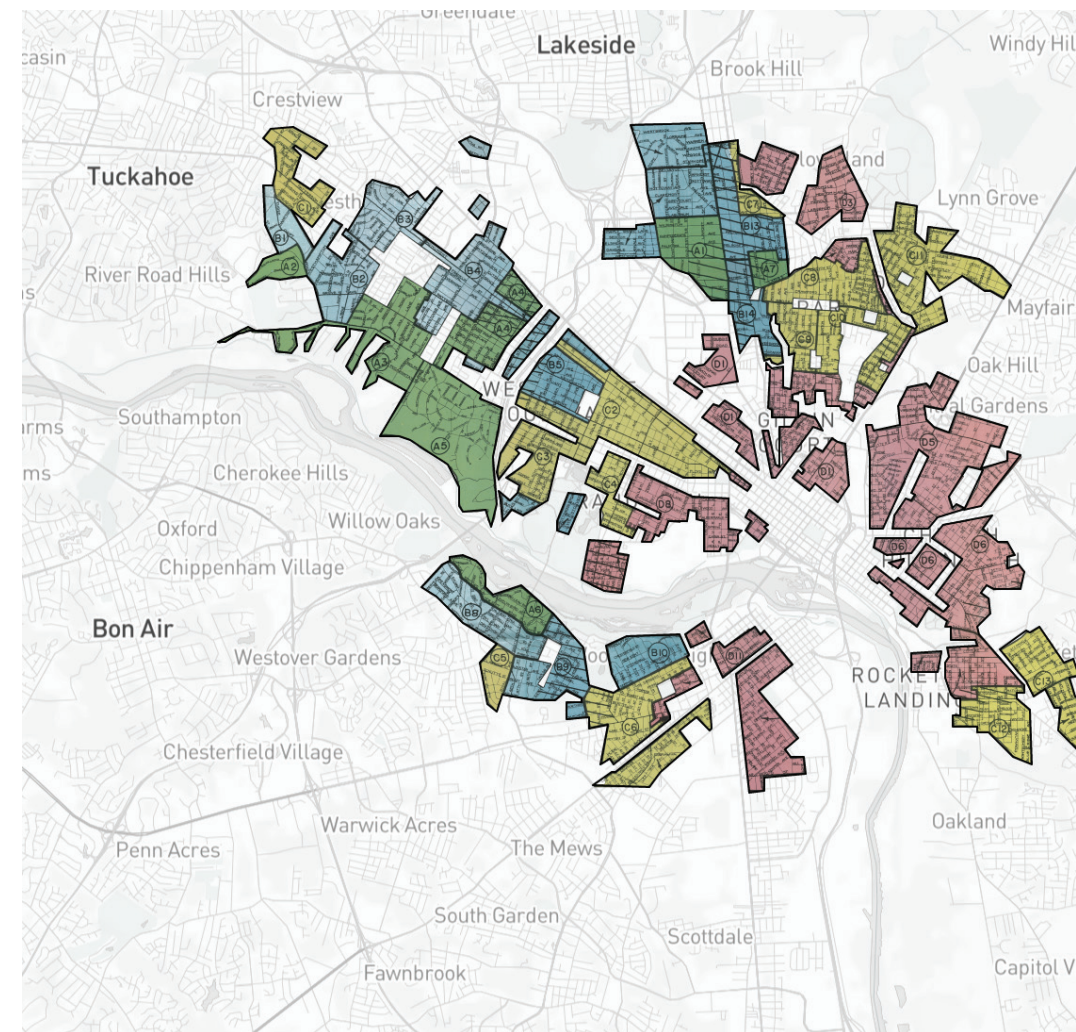


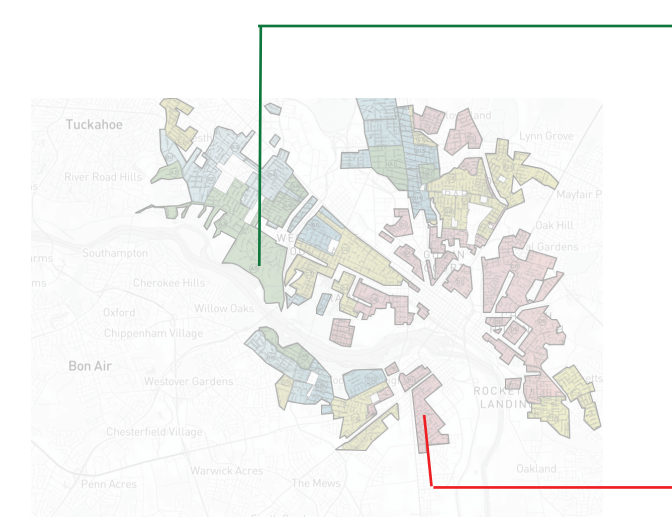
Figure 12: One HOLC Redlining Map of Richmond from 1940, where red and yellow is designated as “hazardous” or “declining” areas and green and blue as desirable for investment.

Source: University of Richmond’s Digital Scholarship Lab, “Mapping Inequality” (2021)

Types of Environmental Justice

Recent studies of extreme urban heat in Richmond have revealed a truth already well-known by its Residents: wealthier, well-developed, and historically white suburban neighborhoods in the city have more trees and are significantly cooler than historically black neighborhoods in the city.

Environmental Justice not only recognizes the inherited disparity of impacts due to racist practices but also the ongoing inequities of poor and minority citizens, including: who is involved in environmental decisions (**procedural justice**), how to make neighborhood public servicing more equitable (**restorative justice**), and how resiliency programs like home weatherization or street green infrastructure are made accessible (**distributive justice**). These are just some examples of the issues that must be considered when working towards long-lasting environmental justice.



Figures 14 & 15:
Images today of a South side red-lined neighborhood Blackwell, bottom) compared to a West-end top graded neighborhood (Windsor Farms, top) show clear differences in tree canopy due to historic land-use decisions
Source: Google Earth, 2022

Science of the Urban Heat Island Effect

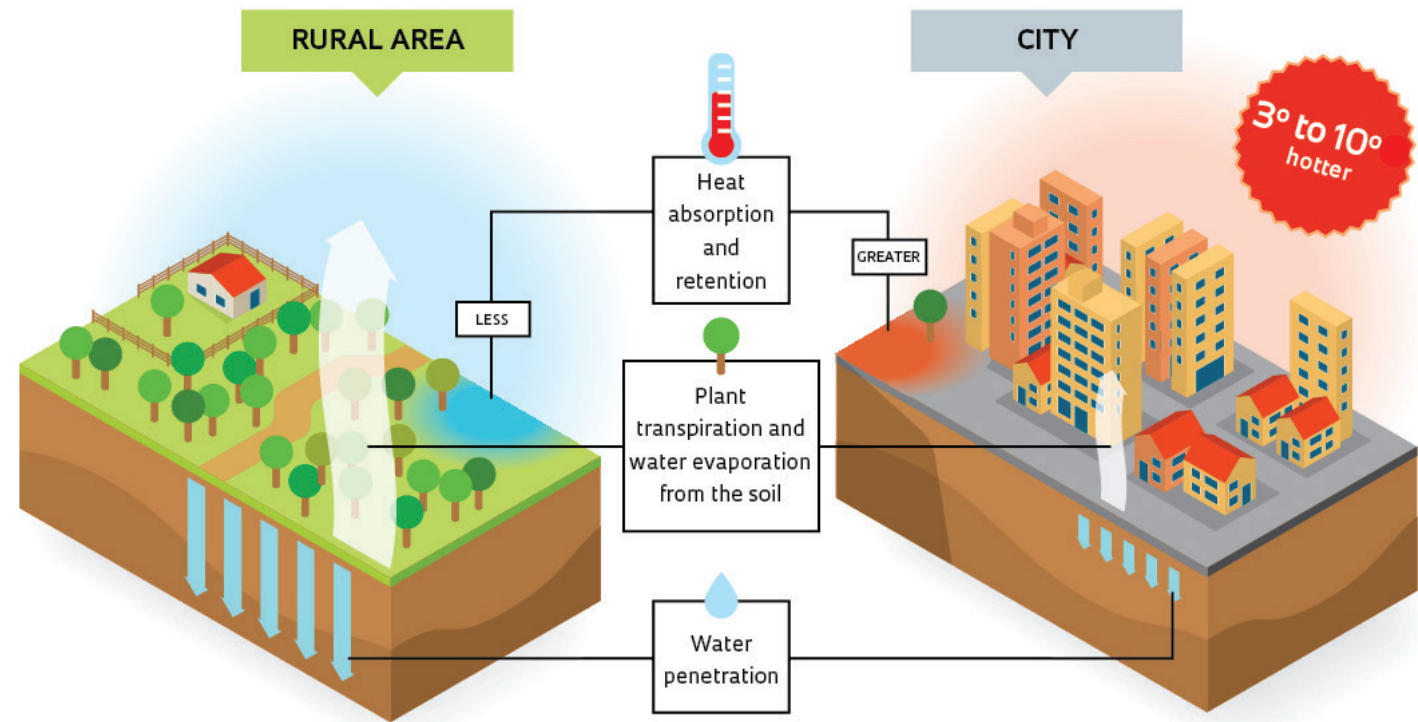


Figure 13: This info-graphic shows how impermeable services like asphalt or concrete prevent natural processes that help to release heat. This is why densely urban areas, often without much street vegetation, are so much hotter than landscaped suburbs or outlying rural areas

“We absolutely must invest in place-based strategies to prepare and empower communities with actionable science tools and data to achieve true climate justice.”
--Dr. Jeremy Hoffman

The Science Museum of Virginia

Participation and Inclusion in Planning

As the field of planning has developed over the 20th century to better understand the impacts of environmental justice and policy, it has simultaneously gained a greater awareness of the importance of community-led partnerships and engagement in all decisions. Until the 1950s, government decision-making about urban land use lacked meaningful public engagement and planners designed for communities rather than engaging with them as co-creators. This began to change because of the work of leaders and activists in the 1960s, who argued for greater direct public participation and giving people more say over how their representative government acts. The past few decades have generated significant dialogue in planning about how to achieve such collaboration with the public and to what end. Popular approaches today include surveys and the charette or workshop method, which involves multi-day or monthly events with municipal officials, developers, and residents to discuss goals.

While charettes promote joint ownership of solutions to problems, issues remain with this method of community engagement like the extensive requirements from citizens needed to participate (i.e. time) which often disqualify people from joining. Even the most intentional charette can still result in citizen voices being minimized next to developers and officials who can not only be able to regularly attend charettes but also speak the “language” of city planning. Additionally, in these large group meetings, there is often little room for individual exploration or meaning making about site design and land-use plans. There is a need for planners to search for additional methods of community centered engagement that can supplement charettes to meet citizens at home, remove any barriers to participation, and create personal relationships with physical space and design; emerging technologies like augmented reality provide tools to further this process.

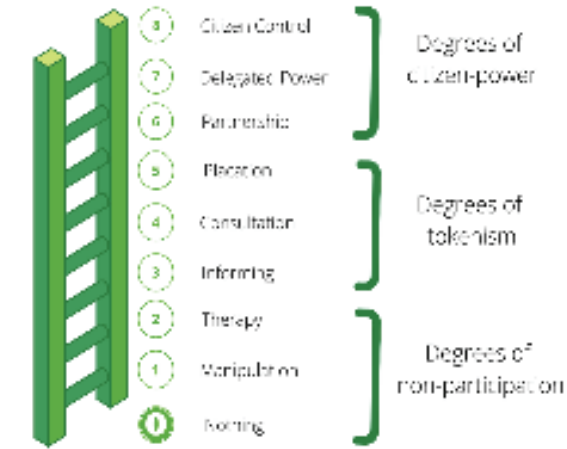


Figure 16: Arnstein's Ladder of Citizen Participation (1969) continues to help conceptualize the relationship of power between the public and its government



Figure 17: Example charette model in action in Jackson Ward (March 2022). These kinds of events enable the community to engage with visuals of a potential project and share opinions with developers and city officials

Ongoing Case Studies: AR for Participation and Civic Engagement

While AR and immersive technology are still new to most people and professions, there are some test cases already under way working to see how new tools could improve community participation and understanding of urban planning issues.

In late 2021, the Southeastern Pennsylvania Transportation Authority (SEPTA) along with SmartCityPHL and the Office of Transportation, Infrastructure, and Sustainability (OTIS), challenged teams of developers and designers to create augmented reality tools to help make transportation more accessible for people with disabilities across Philadelphia. Proposals included using virtual images, sounds, and haptic feedback or vibrations to alert riders and assist in wayfinding.

In 2020, an associate professor of urban design at UNC Charlotte, Ming-Chun Lee, was awarded funding from the John S. and James L. Knight Foundation to develop an immersive platform that provides 3D visualizations of future developments in Charlotte neighborhoods and community data. The project was conceived to encourage resident participation in the Charlotte Future 2040 Comprehensive Plan and is geared in particular to attracting young people's interest. Using VR and AR technology, rich GIS data sets, and 3D renderings of different place types, residents can participate in "scenario planning," by visualizing and responding to design choices that shape neighborhood outcomes.

These U.S. projects, along with many other international projects, show some of the interest and excitement that augmented reality and other immersive technology can bring to urban planning and community participation.



Figure X: Early users of Professor Lee's immersive planning projects at the Levine Museum of the New South in Charlotte

"This project will provide a valuable and accessible two-way communication tool that helps people visualize possibilities, change, and impact while also helping the City understand community values, priorities, and opportunities for adjustments for how we plan for growth."

--Rachel Stark, PLA

The City of Charlotte,
Planning Department

Plan Study Area: Broad Rock Creek Park and The Surrounding Walk Shed

To test the theory that AR can provide a way to combine design and environmental justice in the creation of parks, a future park site in Richmond's Bellemeade-Windsor neighborhood was chosen with help from the City of Richmond Parks and Recreation Department. The current parcel is one of many currently vacant and undeveloped plots within South side neighborhoods that is tapped for new park development by the Mayor's Green Team, determined through an analysis of environmental impacts and existing infrastructure. Also important in the Green Team's determination was identifying what sites failed to meet the Trust for Public Land's goal 10-min walk shed goal, ensuring greater accessibility to green spaces for those currently without parks in their neighborhoods. The future Broad Rock Creek Park site is within an area of intense urban heat (up to 95 degrees F on surface temperatures), and a quarter of the surrounding households lack access to a vehicle or rely on public transportation.

This site is also within the Richmond Highway (the former Jefferson Davis) corridor, which is the community of one of Virginia Community Voice's primary programs, RVA Thrives. The park site is thus perfectly located to address the Southside Green Collaborative's goal for community-centered green sites in South Richmond.



Map 2: The study area (green circle) is mostly within census tract 608, with some overlap to census tract 607.

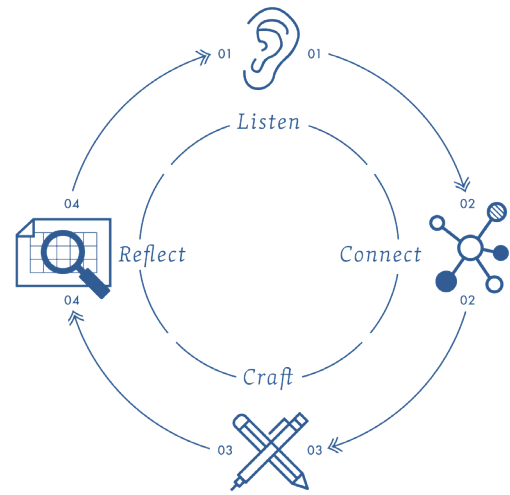


Figure 19: The VACV Engagement Process: “Listen, Connect, Craft, and Reflect”

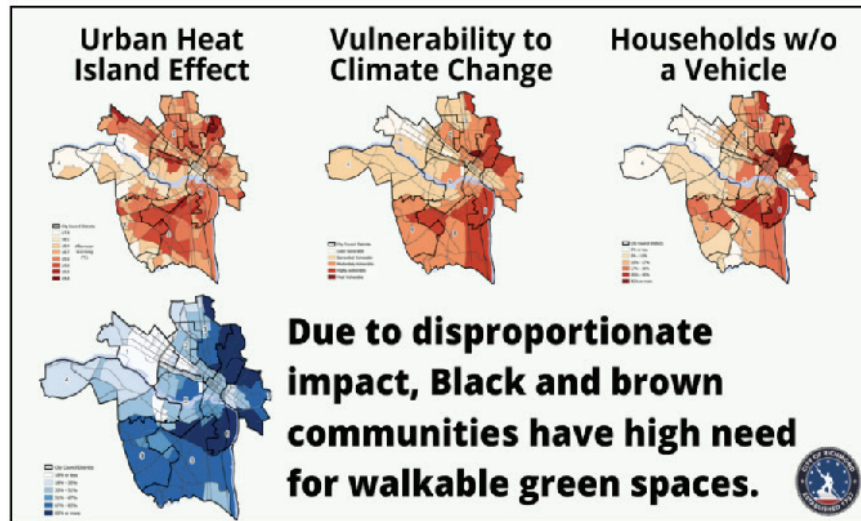


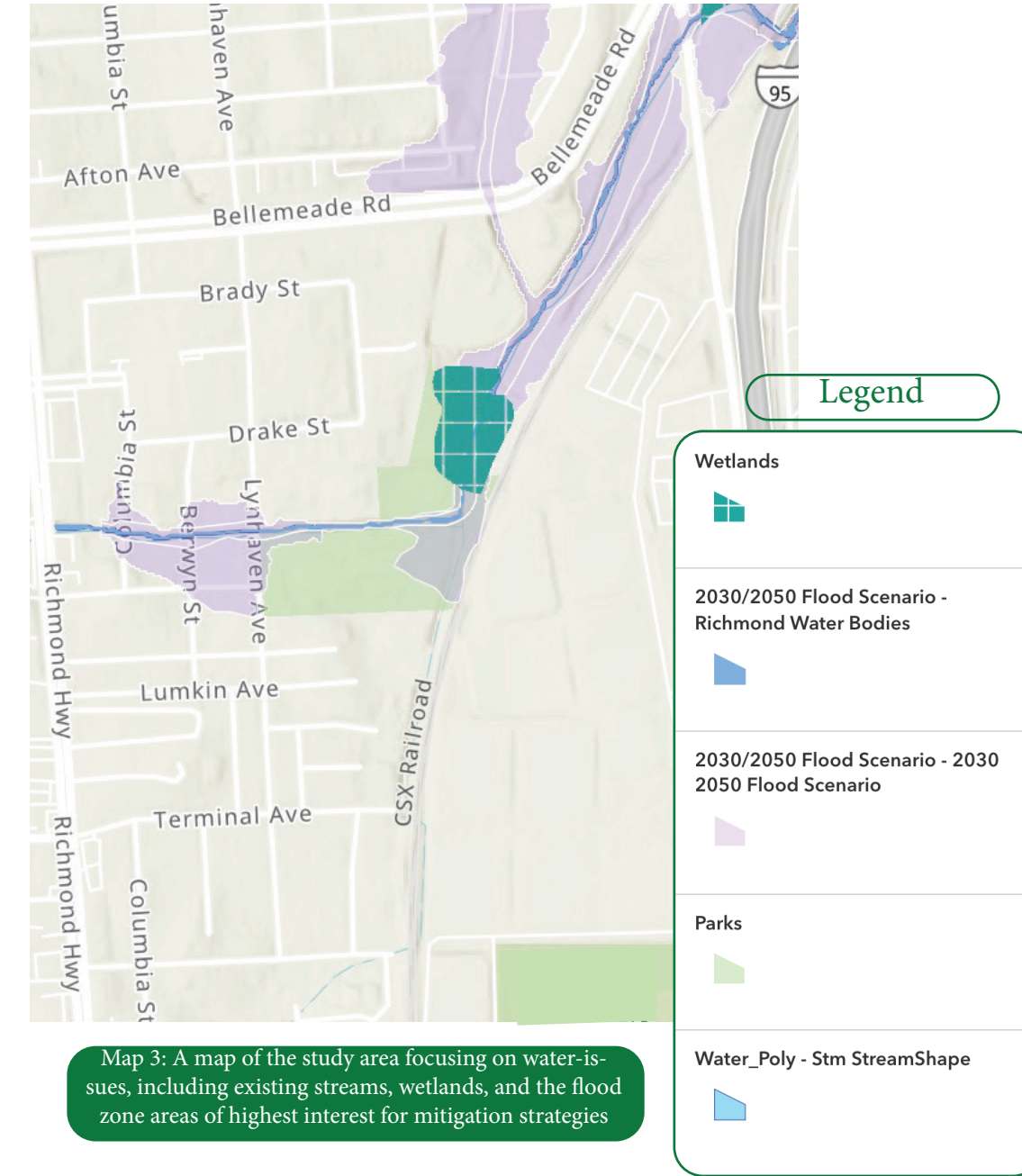
Figure 20: Maps released by the mayor’s office showing neighborhoods with compounded environmental impacts in South side, key criteria used to determine future green sites

Census reports across the past decade have shown neighborhoods along the Richmond Highway corridor, including the Bellemeade-Windsor areas, have stayed well behind the city’s average income and poverty rates. These areas of Southside also have a higher number of residents with limited English ability or access to food. In this area, the dominant racial groups are Black and White, and the Latine population has quadrupled from 2000 to 2019. While health experts have long called for Black and Latino neighborhoods to have better access to parks and outdoor recreation opportunities, the corona-virus pandemic also shined a spotlight on the interlocking health challenges exacerbated by the lack of parks in which to exercise, get fresh air and even reset sleep rhythms. These factors contributed to the area’s overall score and designation as socially vulnerable; the Richmond Highway corridor at Bellemeade Road is of central focus in the Richmond 300 Master Plan, designated as a future growth node.

While challenges persist, residents have been mobilized for years and are increasingly organized thanks to the efforts of VACV and RVA Thrives; RVA Thrives was formed in 2017 to amplify the voices of residents living along the Jefferson Davis Corridor, a community that has long felt neglected by the city. Since 2017, RVA Thrives has conducted more than 100 one-to-one conversations and interviews and has collected more than 980 community surveys. Through their iterative process “Listen, Connect, Craft, and Reflect,” the group (Which became a primary program of VACV in 2019), has created proposals and action plans and further developed relationships to identify and address the community’s greatest challenges. The current VACV greening group developed from the neighborhood safety and beautification goals, and has increasingly been focusing on issues of urban heat and environmental injustice in the area. The area’s history is rich with citizen-led advocacy and offers a blueprint for how other institutions can engage marginalized communities equitably in land-use decisions.

The chosen Broad Rock Creek park site is in a neighborhood that is surrounded by industrial uses, both on the Richmond Highway to the left and I-95 to the right (as visible in Map 3). The large industrial parcels are predominantly made of impermeable surfaces like concrete, asphalt, or metals that absorb heat and trap it within the area, leading to an overall heat increase in the surrounding neighborhoods. The James River bends alongside the right boundary of the South side, on the other side of I-95. Goode Creek and Broad Rock Creek, both located within the park site, drain into the James, so the maintenance of these water bodies affects both the river and the larger Chesapeake Bay Watershed. Therefore, run-off into the creek from surrounding impervious surfaces and storm drains in the neighborhood must be controlled to prevent pollution of these systems.

While currently undeveloped and overgrown from the site’s long vacancy, the park also has natural wetlands in the northern-most section of the parcel that could be revitalized. Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs (EPA). An immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish and mammals can be part of a wetland ecosystem. Wetlands can also contribute to natural water quality improvement and aid in flood resiliency. As many homes in the neighborhood are located within the floodplain and experience increasing flooding by the creeks, measures to mitigate this strain must be prioritized inside and around the park site.



Map 3: A map of the study area focusing on water issues, including existing streams, wetlands, and the flood zone areas of highest interest for mitigation strategies

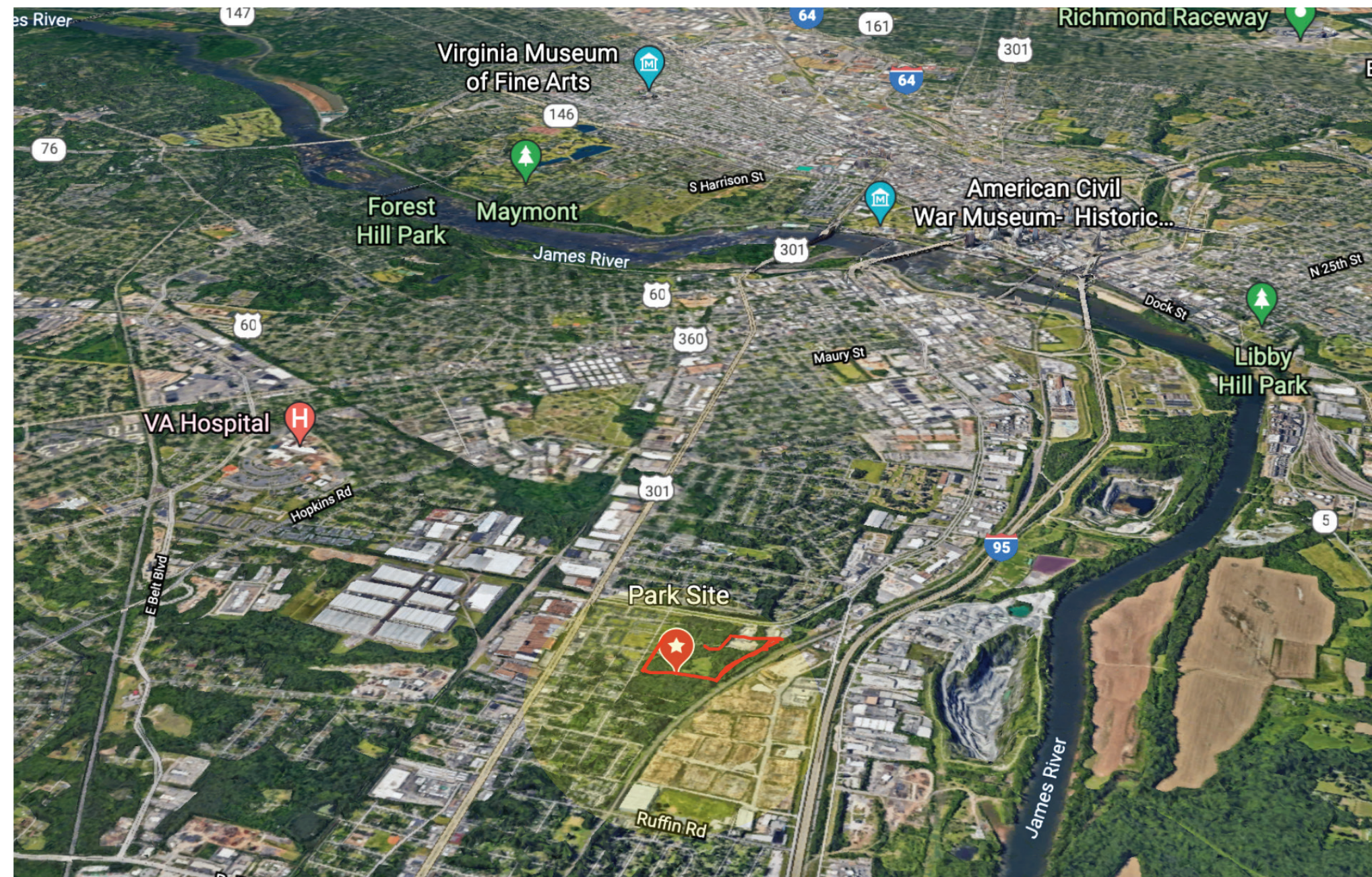


Figure 21: An aerial view of the project area (yellow) in the context of Richmond taken from Google Earth. The pre-existing park site (in red) is unused but already full of trees and plants, visibly one of the largest green sites in an area bounded by impermeable surfaces and industrial uses on either side.

Existing Conditions Photographs



Figure 22: A new mural installed along Richmond Highway by neighbors and Mending Walls RVA beautifies the wall of an empty factory and visualizes community voice



Figure 23: Area buildings and lots, including the former Gee's Supermarket on Bellemeade (pictured) and some industrial sites, stand vacant and could be re-purposed with new zoning



Figure 24: A view of the auto-oriented Richmond Highway Corridor and its lack of shade discourage pedestrian activity

The existing conditions photographs pictured here work to illustrate at a glance the more in-depth SWOT analysis on page 21. Overall, these pictures show current trends in the area are auto-oriented, lacking in urban forest or cultivated green space, and behind in maintenance of pedestrian pathways. They also indicate that the community is already engaged in beautifying their neighborhoods and has current improvement projects coming into the area through the City of Richmond's Parks and Recreation department.



Figure 25: The TB Smith community center (highlighted in yellow) on Ruffin Road is set to receive funding from The City of Richmond to expand its size, programming, and amenities



Figures 26 & 27: Trash, broken sidewalks, and overgrown grasses are visible in some neighborhood streets and along the park entrance. About 1,072 households live in the immediate 10-min park area/walkshed, according to census data

SWOT Analysis

Strengths	Weaknesses	Opportunities	Threats
Fire Station 21, Oak Grove Elementary School, Bellemeade Community Center, and Bellemeade Park are all present and relatively accessible to the community.	Some sidewalks are in poor condition and the area is in general need for infrastructure investment (including, physical infrastructure like paved roads and increased trash collection, as well as social infrastructure)	There are ample opportunities to incorporate public art along the corridor, as well as landscaping interventions to support ecosystem services like street trees and natural stormwater management opportunities like bioswales	New housing and development in the area could result in higher property values affecting current residents and upticks in gentrification
The area already has an engaged community and community organizations focused on green development and community voice	There is evidence of trash dumping in the park and around the area, as well as standing water along the corridor	The future Ashland to Petersburg trail (Fall Line Trail) is a planned 40-mile multi-use trail that will run alongside Richmond Highway and Bellemeade Road and could connect the park to new green areas of interest	Natural creek flooding could get worse with climate change if mitigation strategies are not employed
Bus routes run along Richmond Highway and enable access to the park and the surrounding neighborhoods	Vacant properties and underutilized lands are abundant in the area	Continued intentional and affirming community engagement and development-i.e. investment into youth greening groups, public arts, food gardens and education, multi-cultural celebration spaces	Maintenance of new city parks and green streets could rely too heavily upon neighbors
The corridor's identification as a Priority Growth Node in the Richmond 300 Master Plan is a significant strength as future development is planned	The population is at high risk of health issues due to heat, surrounding pollutants, and lack of accessible nature sites	Creating an inspiring entrance design for the future park and visible, multi-functional new green public spaces in the walkshed through collaborative design	
The new Ruffin Road Community Center is in active development and engagement stage	The area is a functional food desert without adequate numbers of grocery stores for the population	Addressing safety and public health with new infrastructure and climate resiliency planning in the form of green streets	



Figure 28:
Proposed map of Fall Line Trail and its intersection with the study area in yellow

Theory and Approach:

Guiding Principle

The guiding theoretical framework for this project is the radical approach, defined as the centering of community power and the relegation of the planner to a position of translation or facilitation of the community's wishes. This contrasts with the "rational" tradition which places the planner as the sole expert. This type of theoretical framework calls for a re-imagining of the future where the public is naturally activated and acknowledged as partners in planning processes, distinct from citizen surveys or committee feedback alone, which places the public in the role of editor instead of co-creator. The radical approach believes people know what is best for their own communities and that an outside planner can bring their own knowledge of systems to complement and achieve goals rather than to provide all-encompassing solutions.

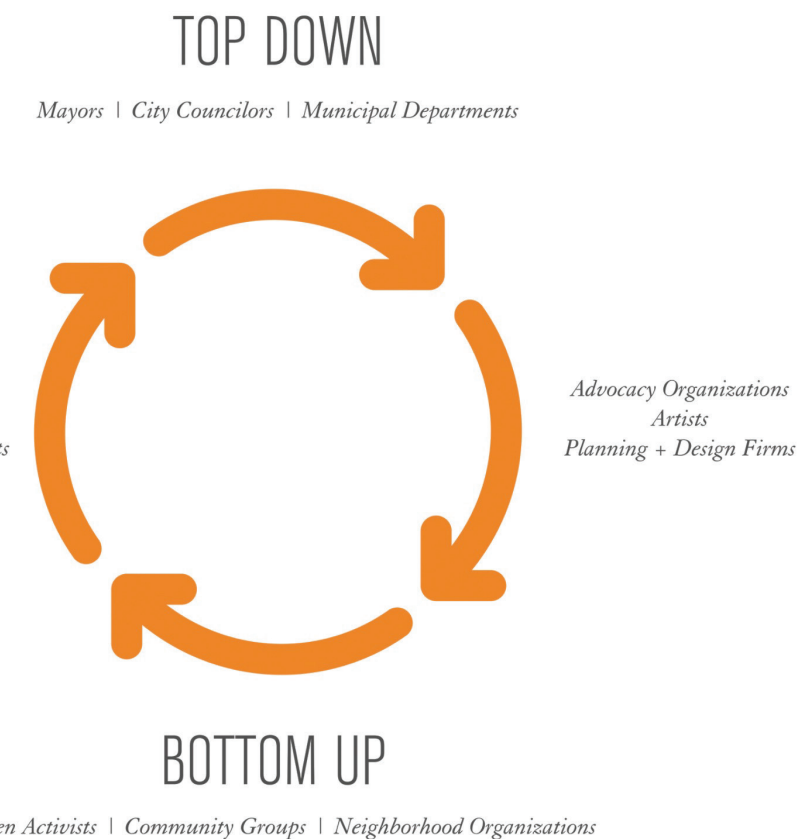


Figure 29:
This diagram shows how urban planning can be undertaken by any number of parties, ideally in concert with each other, taking neither a strictly bottom-up or top-down approach but one that is dynamic and recognizes all parties as equal in the process
Source: Tactical Urbanism (2015)

Theory and Approach:

Project Goals

In this project, the goal of integrating technology is not to further entrench expertise with the planner or to create additional barriers to public engagement. Rather, the goal is to present a tool that is intuitive and requires minimal training on the part of the public, enabling them to re-imagine and visualize their own goals for local sites with technology. The role of the planning student is to assist the public, make revisions to the plan based on the way the community uses the mobile tool and communicates, and then promote the designs of the public to clients on the South Side Green Collaborative. In other words, it is the aim of this capstone study to help introduce, facilitate, and integrate mobile-based augmented reality to public processes, not to impose personal belief upon the use or output of design.

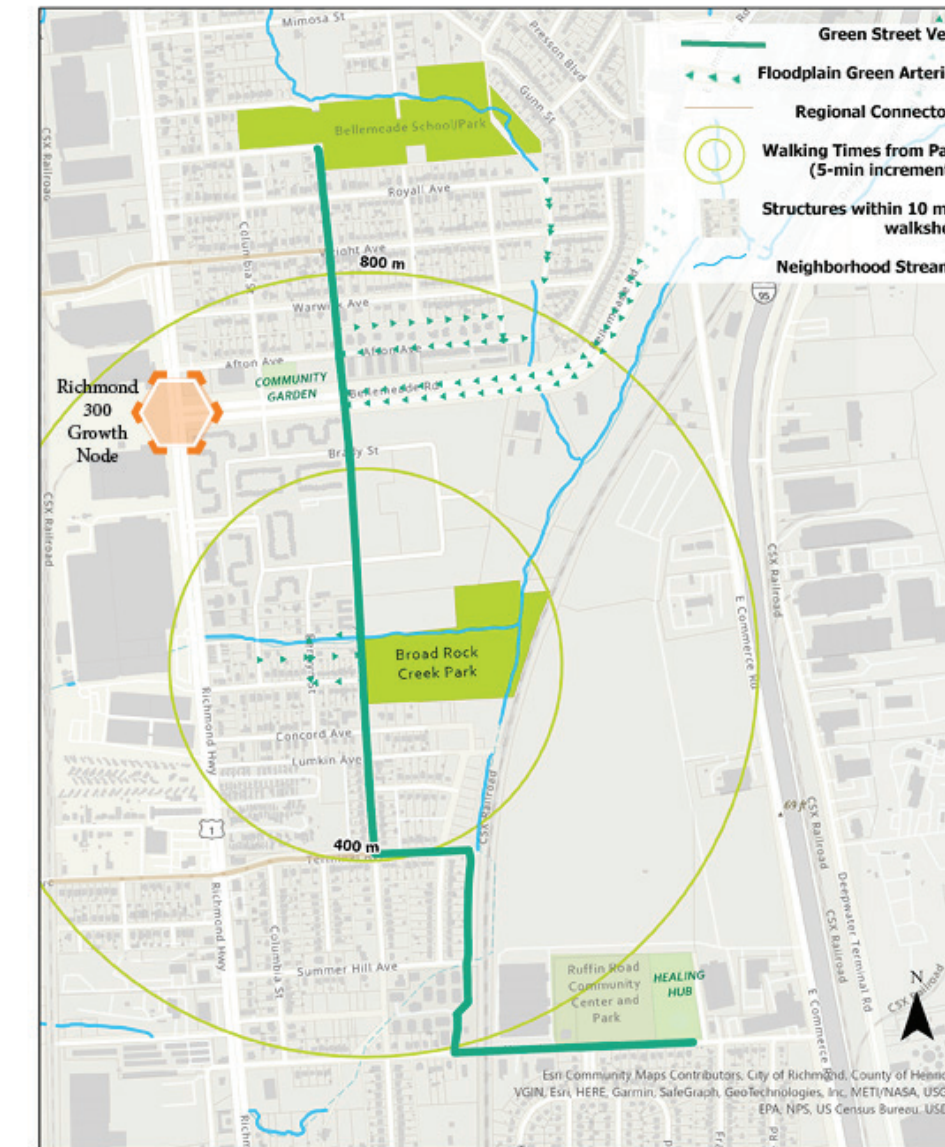


Figure 30: Image from the student project “Urban AR” in the Netherlands, which tested mobile public design using immersive technology

This is particularly important to mention as there are inherent technical knowledge and power dynamics at play when utilizing new technology, and the goal of a project like this would be to ultimately democratize app development and open it to public use without facilitation by a planner. Radical theory cannot be arbitrarily invented and must grow from long periods of sustained trust-building and practice, which is not possible in the short time of the capstone. Nevertheless, it is the goal of this plan to at least provide a new tool for planners and community organizations like the Richmond Green Collaborative, who have already established trust with the community, to utilize with the public and achieve radical solutions.

Research Scope

The SWOT analysis showed the potential for future park development to impact the wider area. The entirety of the park was not tested due to time and accessibility limitations; Instead, the primary scope of immersive community design was focused on the front entrance lot (bottom center), and, as conversations progressed two other vacant sites of interest were added for testing, including one at the intersection of Bellemeade and Columbia Street (bottom left) and one at the former Ruffin Road Elementary School, next to TB Smith Community Center (bottom right). Both sides are within the park’s surrounding 10-min walk shed, and all three sites were approached from a multi-use pocket park perspective.



Map 4: A view of areas within a 5-min and 10-min walk from the park (as defined by Trust for Public Land measures), as well as the vacant sites of interest for public design labeled in green

Research Scope

While the initial goals of this project were to gain direct designs and feedback from community-members living within the future park's walkshed, ongoing strains on outreach capacity and safety due to the COVID-19 pandemic meant that site visits were not possible for most during the time period of this study. Instead, observations of ongoing greening projects and neighborhood developments, site visits and discussions with VACV leadership, and site analysis of the future park area helped piece together the direction and goals of the community, represented in the findings.

These findings can be also used by others interested in pairing immersive technology with community-led site design to assess and create a framework needed for success. Such a framework includes the readiness and organization of the community for partnerships, the willingness of the local government to center equity and citizen input in shaping public spaces, and opportunities to further enhance existing partnerships through education, funding, and master planning, all of which were found in the finding's major ideas below.

Research Questions

1. To what extent can mobile AR help the Bellemeade community imagine and design the park entrance and other potential green spaces?
2. What do the AR designs tell us about this community's vision for their area?
3. What are some opportunities and obstacles in using AR for public land use design, as shown in this project?

Embedded Planning

Embedded Planning is an approach that stresses street-level engagement and an emphasis on working in the community (Pacheco Bell, 2018). By situating planners on the ground, professionals can gain a greater understanding of people's needs and build trust and authentic relationships, increasing the likelihood of participation, particularly from marginalized communities that often feel overlooked. When exploring new technologies and methods for participation like mobile AR, first going out into the community enables a planner to learn the priorities of a neighborhood and how the tool can best assist in their context, as well as helping the planner re-assess land use in a new perspective. This approach was taken in the walkshed community to better understand the neighborhood as well as the progress of developments coming to the area.

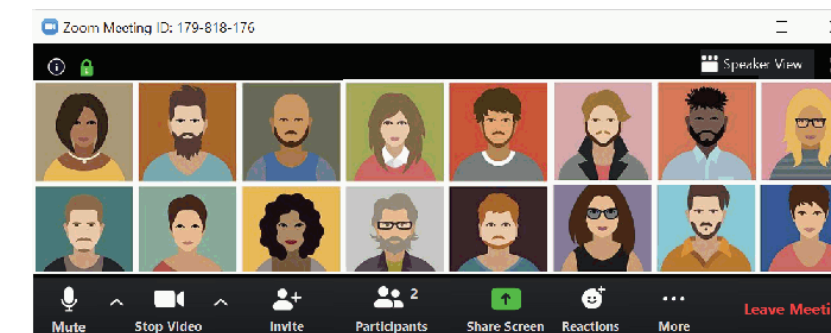


Figure 31: Although online video meetings are still a form of desk-bound participation, consistently joining local community conversations, like the bi-weekly greening conversations hosted by VACV, shows a commitment to listening to and assisting community wishes



Figure 32: Joining community in their neighborhood to facilitate vision-making for their future TB. Community Center (Davee Gardens)

“Orthodox planning relies on stakeholder engagement in controlled spaces. People’s lives are at the heart of planning. We must understand their experiences to assuage their struggles — but we cannot do that from our desks.”

--Jonathan Pacheco Bell

American Planning Association
Social Equity Task Force

Summary of Findings

To date, findings have been assembled from:

- Observation of ongoing greening meetings and pre-existing surveys
- Engagement at greening meetings and through social media
- Attendance at community charettes in the walk shed
- Neighborhood and site visits with community leaders

These findings directly inform the recommendations for future green development in the area, found in the next section.

Capstone findings revealed the strength and organization of the Richmond Highway community resulting from many years of connection and advocacy through the RVA Thrives/VACV model. These efforts have generated goals and opportunities in the site area to integrate immersive technology into existing programs and to further expand neighborhood place-making and place-keeping. Overall, interest and enthusiasm for the use of immersive technology is present in the study area community.

Three key ideas emerged from the research:

1. Activation and Education

2. Maintenance, Care, and Hope

3. AR as a Tool

Activation and Education

Community-Led Design Of RVA's Southside

Pilot Site: Future Broad Rock
Creek Park Entrance

Figure 33: The landing page of the project website, made to further educate and visualize the idea of AR for the public (www.argreenrva.com)

Thanks to the multi-year engagement along the Richmond Highway corridor, a diversity of residents are represented in the RVA Thrives green working group. A range of ages, genders, languages, disabilities, and races are consistently present in the bi-weekly online strategy meetings. Education is a major focus of these meetings, bringing in guest speakers like regional scientists and planners to discuss their work; these lessons are tied to local issues of power and how to advocate for resources to achieve the community's goals.

Due to this organization, residents already have a breadth of knowledge on planning terms and concepts (i.e. green infrastructure) and are thinking of how to connect their homes, businesses, and future parks to be more accessible and successful spaces. When surveyed about new developments in the area, residents reported that they wanted to be included **from the start** and to have a place to see updates or learn about how to volunteer as a project remains ongoing.

Immersive design tools are made more successful for public use when people are already aware of planning possibilities. When the idea of AR design was raised with community representatives and in greening meetings, the utility of the technology was immediately apparent for re-envisioning long abandoned lots in the area; these were the two sites added to the study scope. The AR tool used in this project offers a range of landscape feature options; while this could be a challenge to some users, the VACV greening group, already familiar with projects like bioswales and permeable pavers, is able to more easily utilize options in the tool to create their vision.

Trusted community partners and embedded planners could utilize this ongoing education structure to help train residents in immersive technology and other design tools. This could help residents better participate in “scenario planning” exercises by visualizing and responding to design choices that shape their neighborhood. The importance of repeated explanations, demonstrations, and educational materials when introducing a new technology like AR is crucial, and the multiple flyers, websites, and presentations created during the capstone period were necessary to reinforce and reach multiple audiences. Fundamentally, activation and education are the necessary first steps required to see the full potential of immersive technologies realized for community-engaged land-use planning.



Figure 34: Kids engaged in removal of impervious pavements through Portland's Depave Organization, an idea residents voiced in the VACV Greening Group meetings that could be visualized in AR
Source: Depave Portland

Maintenance, Care, and Hope

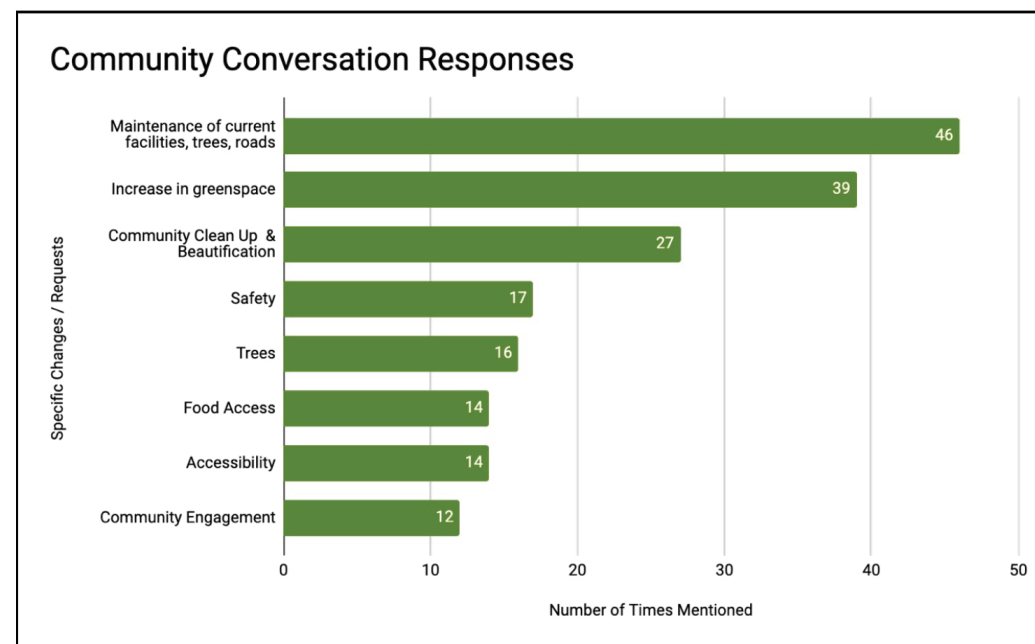


Figure 35: VACV's Greening Survey Responses (2020-2021)

In a series of conversations organized by VACV, 39 unique participants were engaged from neighborhoods within the study area, including those in census tracts 608 and 607, about what they wanted to see in future greening initiatives. Conversations were held over four months, from Dec 2020 to April 2021, and several key insights were heard. Responses showed that neighbors would like to see not only more green spaces but a better connection to them. These responses were echoed in the greening conversations from November 2021-February 2022, where neighbors voiced concerns about the care of the area; The community wants to feel the city has not forgotten them through better public servicing and maintenance. Neighbors are concerned about safety – both in terms of their health/heat levels but also related to traffic and comfort walking in the streets, including better street lighting and better sidewalks.

When envisioning what the communities would look like with development, they identified having outside spaces to be together and to connect (including having the ability to host parties and share space). Residents also expressed their desire for accountability from the city and their fellow community members in the development and post-development process.

Reimagining vacant lots and sites of disrepair is part of the important stage of crafting solutions in the RVA Thrives model. The importance of hope through community vision was discussed with VACV leadership at site visits, particularly as the locations have history to the community; this will be discussed further in the initial designs. By looking towards these sites, now full of trash and broken infrastructure, and imagining spaces for shared healing and enjoyment of nature, immersive technology offers a way for new meaning-making and revitalization goals to be planned in the area.

AR as a Tool for Communication & Collaboration

AR is coming in at a critical junction in the neighborhood, where education and vision sharing has already led to preliminary ideas for sites. Most importantly for the goals of AR in this project, residents have voiced a desire to be involved in the design process of new area developments, making immersive tools valuable potential tools in community efforts.

The newness of immersive tech is both an opportunity and an obstacle in using AR for land-use planning. A variety of individuals (including local planners, community members, and educators) expressed excitement through greening meetings, social media outreach, in-person discussions, and community events. Nevertheless, getting people to the sites still proved to be challenging. Leadership can help alleviate any hesitancy by trying new technology first and then integrate it into ongoing clean up and gardening projects in the community.

The immediacy and ease of mobile AR design for those with smartphones is particularly appealing for parents with young children or for use in existing Parks and Recreation youth programming. Immersive tools offer an exciting new way to engage these digital natives into learning about their local environment.

The ability of AR to show the size and potential positions of landscape features is particularly impactful for those with limited experience in site design. By understanding the scale of features, it becomes easier to realize the full potential of a site (for example, the technology shows how many raised garden beds could reasonably fit within an area of land,) This was noted by VACV leadership and local urban farmers who wish to coordinate with the Richmond Highway community. Parks and Recreation leadership sees AR as a complementary tool to their larger site-plan engagement efforts; While showing the full map of a park site to the public helps get feedback on overall goals and uses, on-the-ground site design through immersive technology can help users better understand the feasibility of particular amenities (i.e. shelters, courts, or playgrounds) and create points of interest throughout the park that feel more rooted in community vision.



Figure 36: Site-specific design with AR can help add detail to design charrettes normally made on a larger-scale, like the one pictured above
Source: University of George

Shared and Unique Vantages

(City View)

- Revolutionizing park planning
- Shared language & Covid Safe (remote collaboration)
- Translation of Community vision in a tangible way that can be utilized for policy/political support

(Organizer View)

- Goals for egalitarian use—pocket parks, vacant lots
- Moving beyond project site in the future towards sites not yet planned
- Shared language & Covid Safe (if remote)

(Resident View)

- Fun shared experience with family and friends in nature
- Help in seeing site potential and re-claiming areas lost to disinvestment
- Ensuring resident needs and vision are baked into the final design

The following designs were generated through site visits with VACV leadership and neighborhood representatives, and are intended to serve as a kind of representation of some of the community's early vision through immersive technology with the goal of visualizing what is possible in future citizen-led design efforts.

AR Designs: Park Streetscape

A Green Vein in The Neighborhood

This green street addresses issues of maintenance and safety, beauty, and resilience that were voiced in surveys and greening meetings. By adding trash and recycling, as well as implementing green infrastructure through permeable pavers and bioswales to aid in stormwater uptake and filtration, the street becomes more functional for neighbors and park visitors and aids in stormwater management from the nearby creek. The design shows a trail sign and bike path to show how the park entrance can connect to the incoming Fall Line Trail and act as the main green “vein” in the neighborhood, connecting other areas by bike and through street art.



1A

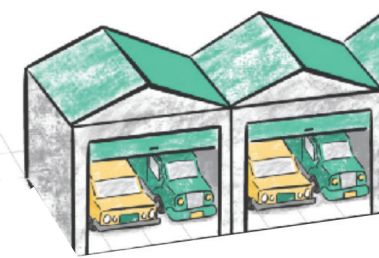


1B

AR Designs: Park Entrance



2A



The current entrance lot, pictured above (2A), is large enough to contain various uses at 960 sq feet (roughly the size of one four-car garage). This is an opportunity for AR design to showcase the flexibility of a future park or green space, both in terms of natural features as well as the community character upon their new local park “face.”

VACV leadership had multiple ideas at this space. One idea was to create a beautiful, standard entrance that helps draw the eye in and show users opportunities and features inside the park through maps and sign-up boards (2B). Another thought was to instead have the entrance be a multi-use space, with raised garden beds alongside nature education signage (2C).

Shared visions for the site include covered seating for meeting friends at the park or to enjoy local greenspace, changing the existing metal guardrail into a community mural, and ensuring recycling, trash, and composting systems are installed.



2B



2C

Designs: Vacant Lot 1

Imagining spaces for healing...

One of the most important reasons for engaging and embedding practice with community design is that they see their streets through the lens of memory. The now empty green space between the TB Smith Community Center on Ruffin Road and the former Elementary school used to be filled with kids playing (2A); out of date facilities and abandonment of the Elementary school building has left the space lackluster compared to 40 years ago, when many of the residents in the adjacent Davee Gardens neighborhoods were growing up. Residents at a recent meeting with the mayor and city developers on the site shared their memories and ideas for the community center and property to be revitalized and better utilized for all ages--ideas that have been discussed amongst themselves for over a decade.

When visiting the site on a second occasion with community representatives, a vision of turning the old school and surrounding land into a Healing Hub was shared. The Healing Hub would use the existing building as a place for resources, therapeutic activities, recovery groups, and more. The surrounding area would be filled with beautiful landscaping, community gardens, and spaces for private enjoyment of nature as well as socializing. With this vision, preliminary AR sketches were explored, as visualized in 2B.

VACV leadership expressed interest in including a feature that the community could interact with and share their feelings; This was visualized in the “wishing tree” visible in red, where people tie ribbons with messages onto the branches. Mobile AR apps like the one used in this study allowed for photo uploads of examples in other parks and green spaces, which helped address unique and specific ideas like those for this space.

3A



4A



...and spaces for connection

These images show a second vantage of the space with the abandoned elementary school and design 3A/B to the viewer's back. In this shot, the courts and TB Smith Community Center in the distance can be faintly seen, space that is currently being re-planned for expansion and amenity upgrades with the city's Parks and Recreation Department; the photo on page 25 shows a photo from the public charette held on the site in March 2022. This second design shows the lot also serving as a central site for social connection between the healing hub building and gardens and the upgraded community center. While this parcel is separately owned from PRCR, this space could be a complimentary place for community to enjoy the outside when visiting either the community center, play spaces, or healing hub center. The design (4B) features raised garden beds, a rain barrel, covered seating for all-weather use, lighted pathways and an electric fire pit; these ideas came from listening to neighbors at the charette meeting, talking to VACV leadership, and looking to the nearby Bellemeade Park for examples in shared space design.



3B



4B



Figure 33: In this aerial view of the site, the community center is the small building on the left and the empty school on the right. The healing garden design 2B occupies the area shown in purple and 3B in green.

Designs: Vacant Lot 2

Imaging spaces for food access and youth engagement



Figure 38: Overview shot of the Bellemeade-Richmond Highway corridor showing the open space under powerlines



Figure 39: Example of a bike path below power lines

The second vacant lot of interest to community members is a large paved, vacant lot adjacent to a now-abandoned grocery store; this site was discussed both in public greening meetings and touring the neighborhood with VACV leadership. Memories of Gee's Grocery and Deli providing food and employment opportunities for local teenagers were shared fondly, along with goals of seeing the site depaved and turned into a public garden to help tackle issues of food insecurity in the area. The site design in 5A is modeled after another public Southside food garden, Sankofa Community Orchard in Westover, which has raised beds, a community tool shed, and spaces for social gathering. This potential garden site, like sanfoka, could address critical community-expressed needs for fresh food access, mitigation of urban heat island effect and opportunities to develop public horticultural workforce skills.

This lot is located alongside Bellemeade Road, a corridor that community also envision becoming more bike and pedestrian friendly. The large, two way road separates the Windsor neighborhood immediately surrounding Broad Rock Creek Park from Oak Grove Elementary school and the Bellemeade Walkable Walkshed project to the north; it remains empty due to existing high-voltage power lines, which prevent development. This empty lot and its strategic location could help connect the project study area to its neighbors and to other parts of the city through smart use of this land in the form of new bike paths. Significantly, the intersection of Bellemeade and Richmond Highway is a growth node designated in the Richmond 300 Master plan, and the incoming Fall Line Trail could easily be connected to Broad Rock Creek park through this avenue.



Figure 40: 5A shows the augmented side of the lot in overlaying image 5B, which is how it looks today

Designs: Overall Themes

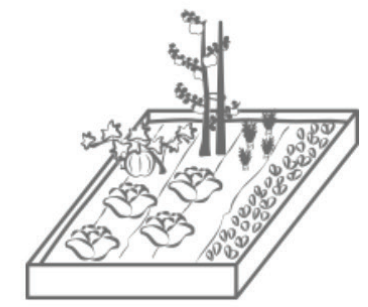
Beauty



Community Cohesion



Food Access



Health & Safety



Resilience



Figures 41 & 42: Examples of features that were "cut and pasted" into new AR designs, chosen for how they helped increase education, wayfinding, and connection at Bellemeade Park

The AR application used in this capstone (i-Scape) utilized 3D immersive design as well as enabled 2-D design by adding features on top of site photographs. This tool allowed successful features seen elsewhere in the city to be added into a design, and also aided in collaborative feedback by increasing accessibility for those unable to attend design days. Both parts of the AR tool will be used in upcoming design workshops in the community

Recommendations

Recommendations and their implementation goals work to synthesize findings from this study and connect them to existing projects, parties, and funding. This section helps realize the plan's vision through tangible benchmarks and objectives, starting at the smallest scale and working out towards a city-wide plan for implementing immersive technology across parks, neighborhoods, and departments. These recommendations are not intended to be exhaustive, but rather to serve as a strategy document that VACV and PRCR can use to assist their evolving greening goals around Richmond Highway. Each goal will include a narrative about how its recommendations emerged and, if applicable, examples from other projects to help illustrate actions and objectives. While the following ideas are in the primary service of the clients, VACV and PRCR they can also serve as a framework for anyone interested in integrating technology into design, particularly in the service of land-use and community voice issues.

Vision:

Richmond is a city with strong community engagement, leveraging advocacy groups and new technologies to allow all residents, particularly those marginalized by past planning decisions, opportunities in creating and envisioning their local green spaces.

Goal 1: Make Broad Rock Creek Park A Beautiful Neighborhood Destination and Central Hub for the Walk shed Community's Greening Projects

Goal 2: Connect and Educate Neighbors with Trusted Community Advocacy & Partnership

Goal 3: Integrate immersive technology into the land-use planning and engagement process city wide

Goal 1: Make Broad Rock Creek Park A Beautiful Neighborhood Destination and Central Hub for the Walk Shed Community's Greening Projects

This goal addresses the future park site and connects it to ongoing plans in the area, both community-led and city-led with Richmond 300. The idea of this goal is to promote the new Broad Rock Creek Park as the green "heart" or center of an area eco district that integrates other vacant lot projects for maximum benefit. The responses from the VACV greening goals survey (Figure 31, pg. 37), specifically those related to maintenance, increasing greenspace, beautification, and safety are also represented in the goals of this section. Topics of education in the greening conversations like green infrastructure (GI) and climate resilience are woven into best practices for a site like this which is being built on top of wetlands and the James River Floodplains.

Objective 1.1

Create and implement an ongoing maintenance plan for the park and surrounding street scape

Action 1.1.1: Partner with DPW to identify and schedule trash collection

Action 1.1.2: Create ongoing tools for community feedback and Parks and Recreation response (can be paired on-line with 311 as well as exist on-site/off-line)

Action 1.1.3: Use green infrastructure to beautify and provide ecosystem services (heat & flooding) within at the park entrance site, any possible parking lots, and street

Action 1.1.4: Address sidewalk and bridge deterioration at park entrance

Action 1.1.5: Seek funding for green street implementation

The screenshot shows a web form for reporting a park maintenance issue. It features a progress bar with four steps: 1. What, 2. Where, 3. Who, and 4. Review. The 'What' step is active. The form includes a 'Problem *' dropdown menu, a 'Description *' text area with a 2000-character limit, and a 'Date/Time Observed *' field with a date and time picker.

(Above) New York City's online park maintenance request and review function (below) A neighborhood green streetscape example with permeable pavers and bioswales



This objective seeks to connect infrastructure projects throughout the study area to complementary programming. This connection should help to ensure longevity of amenities and adoption of new healthy activities in the area; these directly address community priorities of maintenance, safety, increasing green space, and accessibility.

Objective 1.2

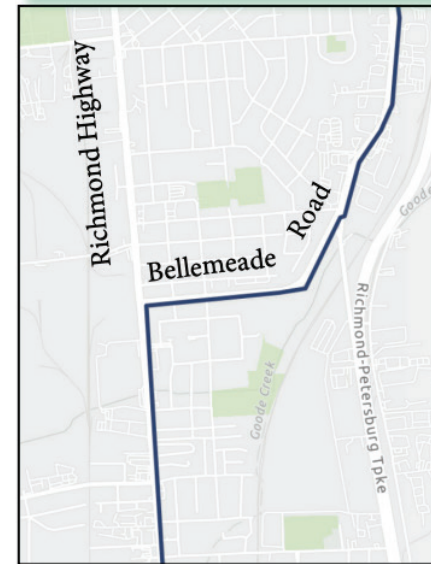
Create active and passive services to the walk-shed community

Action 1.2.1: Create safe and accessible paths and trails throughout the park with attention to drainage (including grade reversals and drain dips) to assist in the park's natural uptake of storm water, prevent erosion, and improve path longevity

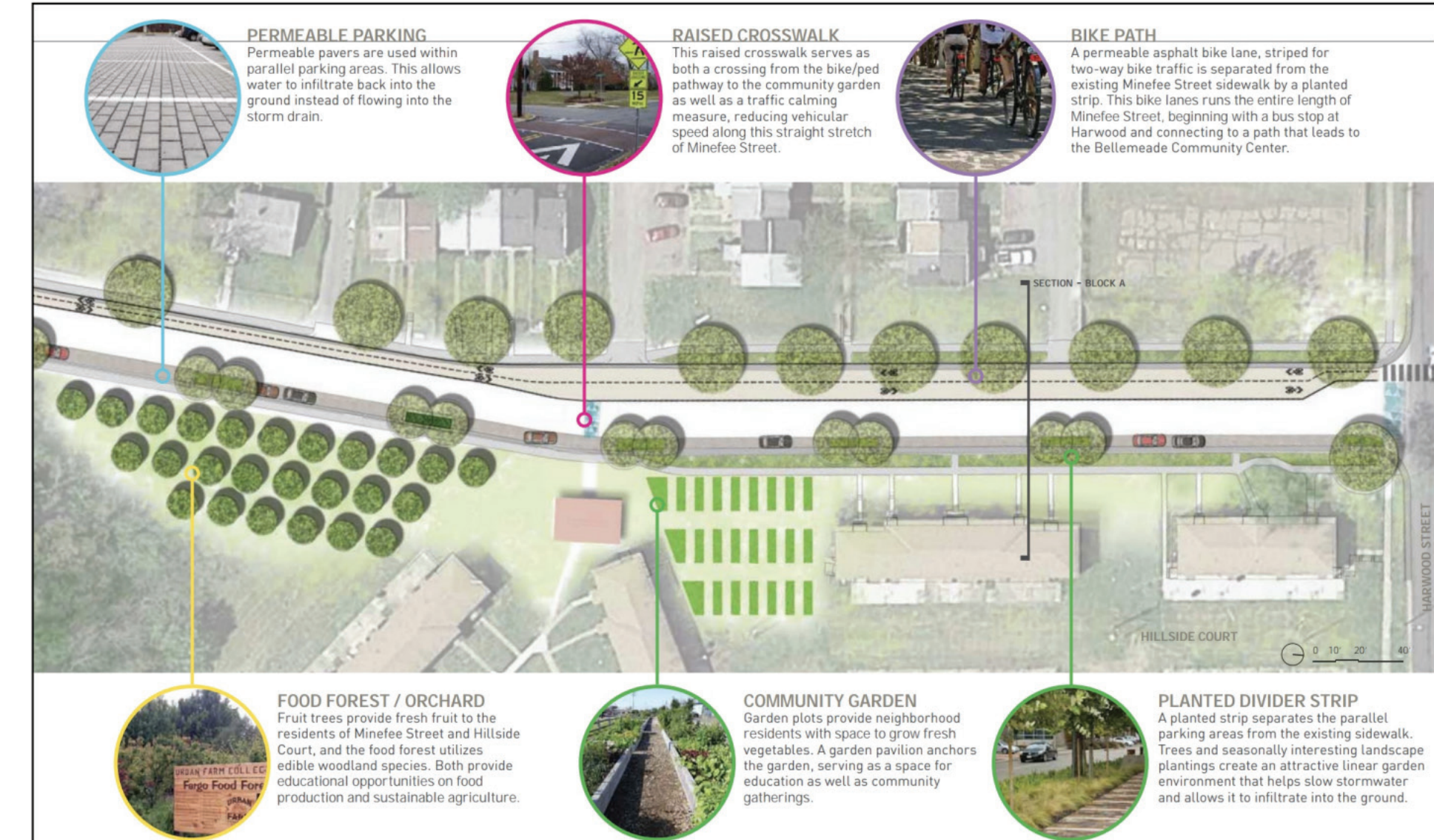
Action 1.2.2: Assess and pursue wetland restoration in a portion of the park, including removal of invasive species and re-introducing native plant species

Action 1.2.3: Clearly connect the park entrance to the incoming Fall Line Trail, Bellemeade Park and Green Walk shed, and vacant lot redevelopments through street art, signage, and bike paths

Action 1.2.4: Install bike-share stations and bike shops along the corridor and within commercial spaces in future Richmond Highway/Bellemeade mixed-use developments



- Counterclockwise from top:
1. Examples of protected bike paths and bike sharing stations
 2. Beautiful and functional park trails,
 3. The route of the future Fall Line Trail route in the study area
 4. Signs along Capital Trail help guide bikers,
 5. Friends walk a comfortable and beautiful park path



The Bellemeade Green Streets project directly north of the project area stands as a kind of proof-of-concept of how to knit green infrastructure throughout an area, and offers many ideas for how to continue the idea of the “walkable walkshed” along Richmond Highway neighborhoods.

This objective addresses shared goals of maintenance, safety, and community engagement, and seeks to establish opportunities for public park education and volunteering.

Objective 1.3:
Prioritize community members in the design and programming of the park

Action 1.3.1: Leverage existing community working groups on the Southside Collaborative to create cooperative green infrastructure engagement, installation, and maintenance structures

Action 1.3.2: Broadcast on-site and remote collaborative AR design of the entrance site to the public with the RVA Thrives leadership in both English and Spanish

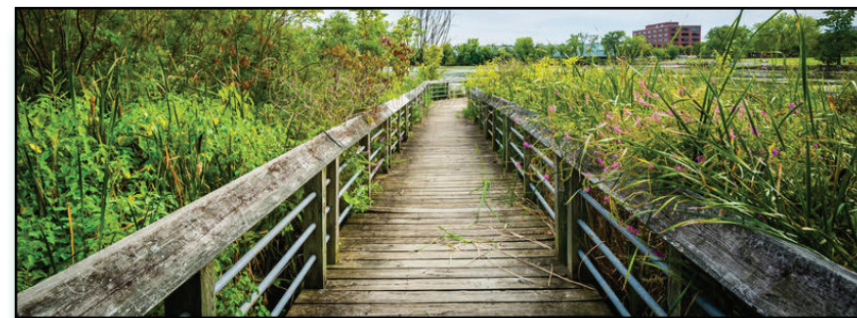
Action 1.3.3: Install bilingual kiosks and boardwalks to enhance nature programming and to educate visitors on the importance of wetlands and their inhabitant species within the park

Action 1.3.4: Address safety concerns through proper street lighting, park maps, ADA compliant access to the front lot and wherever else possible, and in-park blue light emergency phones

Action 1.3.5: Convene public strategy discussions with neighbors and VACV to share site analysis and ensure future park assets and programming investments support community needs



Counterclock wise from top: Philadelphia's interactive green infrastructure and stormwater signs explain projects in the area, Wetland boardwalks in Alexandria's Rivergate City Park allow close access to special ecosystems



Goal 2: Increase Engagement and Education and Pair Greening Goals with Trusted Community Partners

This goal suggests ways to continue the successful efforts of VACV and RVA Thrives to advocate for the Richmond Highway community. Suggestions for nonprofit and city partnerships address greening goals throughout the study area as well as other quality of life factors that are impacted by resiliency development.

There is general agreement that gentrification has been either an intentional tool or an unintended consequence of revitalization that has targeted neighborhoods with concentrated poverty and people of color; as the area becomes a focus for Richmond 300 developments, community-based interventions aimed at increasing livability in communities must be rooted in social equity and involve the voices, talents, and spirit of those local communities.

Objective 2.1:
Explore new programs to create and maintain green spaces in the area

Action 2.1.1: Utilize the expanding TB Smith Community Center for meetings, classes, and design workshops

Action 2.1.2: VACV partners with established urban farmers to create a network of caretakers to manage, maintain, grow, and educate the community on gardening practices to help feed the area (i.e. Groundworks, Duron Chavis/Happily Natural Day)

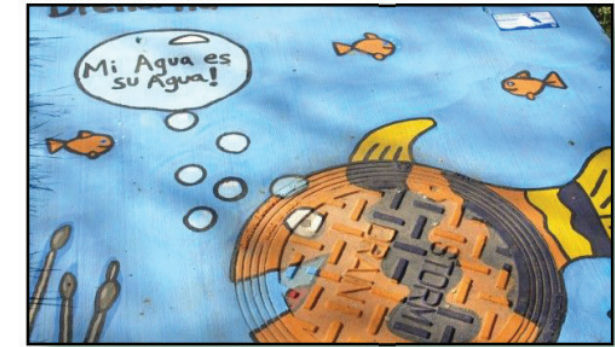
Action 2.1.3: Engage student and youth building opportunities in outdoor maintenance and education through Parks summer leadership programs, street art programs, ARCA and more

Action 2.1.4: Increase funding and opportunity for VACV to build capacity

Action 2.1.5: Install stormwater and mural art projects along green infrastructure streets

Action 2.1.6: Encourage and support groups dedicated to increasing recreation activities and providing resources to promote healthy lifestyles, such as:

- Black Girls Do Bike
- Urban Cycling Group
- Beyond Boundaries RVA



From top to bottom: Volunteers at Sankofa Community Orchard, Stormwater Drain Art, The RVA chapter of Black Girls Do Bike

Objective 2.2:

Build strategic partnerships with state representatives, the City of Richmond, and partner developers to ensure incoming developments are equitable and address community concerns

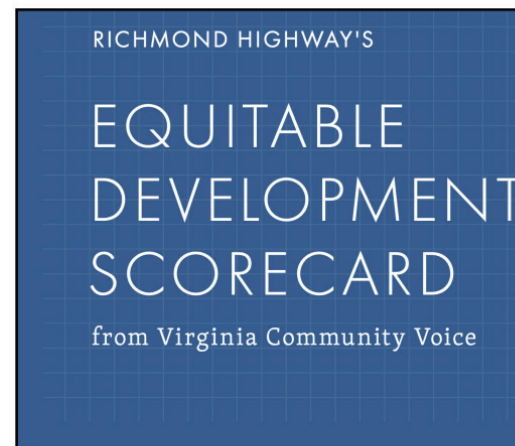
Action 2.2.1: The City of Richmond's new Office of Equitable Development creates positions for embedded planners to join ongoing community meetings and complete the VACV Score Card when creating the Richmond Highway small area plan for Richmond 300 Master Plan

Action 2.2.2: Identify and prioritize locations in the area most at-risk to climate conditions for green street/green infrastructure developments (i.e. areas within the floodplain or areas with highest heat levels)

Action 2.2.3: Establish a homeowners group to address maintenance concerns from greening developments and educate neighbors on housing repair and weatherization options to reduce utility costs, improve living conditions, and optimize energy use in the area

Action 2.2.4: Connect the RVA Thrives housing working group to The Department of Housing and Community Development's (DHCD) to increase access to:

- Housing Innovations in Energy Efficiency (HIEE) funding opportunities and 2022 public meetings
- Virginia Eviction Reduction Pilot assistance and non-profit implementation partners
- Affordable home ownership pathways



The memory of sites often came up in conversation with VACV leadership and at public meetings. This objective explores ways to honor the history and community members of the Richmond Highway area alongside exciting new developments.

Objective 2.3:

Connect past, present, and future generations to the history of the area through shared memory and preservation policies

Action 2.3.1: Collect data on communities through historical context, census data, and ongoing interviews/oral histories and community conversations (including RVA Thrives working groups)

Action 2.3.2: Explore adding traditional and QR-coded signs in future public green spaces to tell the story of spaces past and include opportunities to engage new generations

Action 2.3.3: Create interactive sites (i.e. walls, art spaces) where community can speak to each other, and express their dreams and barriers

Action 2.3.4: Reduce/freeze property tax assessments for long-time homeowners and connect residents to The Maggie Walker Land Trust (MWLT) funding to protect against green gentrification and displacement



(Top) "The World We Want" project installs chalkboard walls for people to add thoughts and hopes (Bottom) A young family and their home, bought with the support from MWLT



Goal 3: Integrate immersive technology into the land-use planning and engagement process city wide

This goal seeks to expand the potential utility of AR to other parts of the city and to missions beyond green infrastructure and site design. Early examples of immersive technology in historic preservation and interpretation, education, and transportation show how complex goals can be supported with better visualization and outreach tools. On-site engagement tools also help facilitate a more embedded-praxis that can bring planners and professionals closer to communities they shape. Community-led design requires organization and is greatly enhanced by design education, features exemplified in the Richmond Highway project area and VACV' mission.

Objective 3.1:
Using VACV as guidance, encourage and structure community voice organizations throughout the city to determine goals before approaching with design ideas and questions, (particularly when engaging marginalized communities)

- Action 3.1.1: Identify existing neighborhood organizations and facilitate training through the VACV Blueprint and model*
- Action 3.1.2: Share the work and success of VACV and its neighbors across the city and host community exchange and celebration days*
- Action 3.1.3: Create ongoing community education and engagement meetings focusing on issues of importance to neighbors*
- Action 3.1.4: Invite community design facilitators from Storefront Richmond to develop familiarity with design concepts and perspectives*



Top: VACV offers ongoing training and coaching sessions to share their blueprint with other community organizations
Bottom: A photo of one of Storefront Richmond's community vision and strategy meetings

Objective 3.2:
Establish official immersive technology training opportunities and networks for planning professionals

- Action 3.2.1: Create a specialty department dedicated to training, testing, and implementing immersive technology for city projects*
- Action 3.2.2: Pursue grants and other methods of funding for the cost of:*
 - mobile devices (i.e. ipads, tablets, smartphones)
 - custom app and web development
 - education and outreach materials and support
 - staffing
 - site-plan implementation
 - stipends for neighbors and coverage to remove barriers (i.e. technology for virtual meetings, interpretation for Spanish/ASL, and in person meetings snacks, childcare and transportation)
- Action 3.2.3: Have city planners attend APA planning conferences and connect to technology conferences dedicated to expanding the use and reach of immersive tools for land-use planning and embedded practice*



This goal speaks to the goal of technology inspiring and engaging citizens to become planners in their own neighborhoods, and draws on lessons learned from outreach in the study area. This goal also proposes other use cases in Richmond that could be particularly impacted with AR technology.

Objective 3.3:
Democratize mobile AR and develop applications that are tailored to specific community goals (i.e. greening architecture, education, long-term engagement, etc.)

Action 3.3.1: Create guidelines and standards for AR use in land-use scenarios, including strengths and limitations of the technology

Action 3.3.2: Utilize engaging visuals and social media tools to expand knowledge of augmented reality to the public

Action 3.3.3: Integrate into other area redevelopment plans to aid goals of historic preservation and storytelling about long-gone structures and experiences (i.e. Shockoe Bottom)

Action 3.3.4: Facilitate the use of AR or VR into schools to enable more engaging educational experiences in and outside the classroom



Implementation

This plan is not meant to have one completion date. Instead, it hopes to continue conversations about spaces in the Richmond Highway neighborhood surrounding the new Broad Rock Creek Park and stoke longterm interest in making immersive design tools an integral part of greening engagement and equity goals. The implementation section lays out the recommendations previously described and suggests timelines, leaders, and funding sources.

Short Range (S): 0–2 years
Mid Range (M): 2–5 years
Long Range (L): 5+ years

Goal 1: Make Broad Rock Creek Park A Beautiful Neighborhood Destination and Central Hub for the Walk Shed Community's Greening Projects

Objective 1.1: Create and implement an ongoing maintenance plan for the park and surrounding streetscape	S	M	L	Leadership	Possible Funding Sources
Action 1.1.1: Partner with DPW to identify and schedule trash collection	x			DPW, PRCR	City of Richmond
Action 1.1.2 Create an ongoing online tool for community feedback and Parks and Recreation response (can be paired with 311)	x	X	X	PRCR, Office of Equity and Development	City of Richmond
Action 1.1.3: Use green infrastructure to beautify and provide ecosystem services (heat & flooding) within at the park entrance site, parking lot, and street		X		PRCR, RVA H2O,	Virginia Environmental Endowment, Chesapeake Bay Trust,
Action 1.1.4: Address sidewalk and bridge deterioration at park entrance		X	X	DPW divisions, Roadway Maintenance and Capital Projects Management	City of Richmond
Action 1.1.5: Seek funding for green street implementation		X	X	PRCR, James River Association, Groundwork RVA, RVA H2O, VACV	Chesapeake Bay Trust's Green Streets, Green Towns Grant Program, Private Donors/Sponsors (Altria, Dominion, etc.)

Goal 1: Make Broad Rock Creek Park A Beautiful Neighborhood Destination and Central Hub for the Walk Shed Community's Greening Projects

Objective 1.2: Create active and passive services to the walkshed community	S	M	L	Leadership	Possible Funding Sources
Action 1.2.1: Create safe and accessible paths and trails throughout the park with attention to drainage (including grade reversals and drain dips) to assist in the park's natural uptake of stormwater, prevent erosion, and improve path longevity	X	X	X	PRCR	City Budget, The National Park Service—Rivers, Trails, and Conservation Assistance Program
Action 1.2.2: Assess and pursue wetland restoration in a portion of the park, including removal of invasive species and re-introducing native plant species		X	X	PRCR, Virginia Department of Environmental Quality, Wetland consultants	Chesapeake Bay Trust, Wetlands Banking,
Action 1.2.3: Clearly connect the park entrance to the incoming Fall Line Trail, Bellemeade Green Streets Project, and vacant lot redevelopments through street art, signage, and bike paths	X	X	X	PRCR VACV ARCA VDOT, JRA, Mending Walls RVA	Virginia Capital Trail Foundation, VDOT,
Action 1.2.4: Install bike-share stations and bike shops along the corridor and within commercial spaces in future Richmond Highway/Bellemeade mixed-use developments		X		RVA Bike Share Office of Equitable Development	VDOT, City, Private Donors/Sponsors

Goal 1: Make Broad Rock Creek Park A Beautiful Neighborhood Destination and Central Hub for the Walk Shed Community's Greening Projects

Objective 1.3: Prioritize community members in the design and programming of the park				Leadership	Potential Funding Opportunities
Action 1.3.1: Leverage existing community working groups on the Southside Collaborative to create cooperative green infrastructure engagement, installation, and maintenance structures	X	X	X	PRCR, VACV (YEER) Groundwork RVA, Oak Grove-Bellemeade School, Ruffin Road Community Center	
Action 1.3.2: Broadcast on-site and remote collaborative AR design of the entrance site to the public with the RVA Thrives leadership in both English and Spanish	X	X		VACV, Southside Green Collaborative	
Action 1.3.3: Install bilingual kiosks and boardwalks to enhance nature programming and to educate visitors on the importance of wetlands and their inhabitant species within the park		X	X	PRCR, Science Museum of Virginia, VCU Life Sciences & Rice Rivers Center	
Action 1.3.4: Address safety concerns through proper street lighting, park maps, ADA compliant access to the front lot and wherever else possible, and in-park blue light emergency phones	X	X	X	PRCR	
Action 1.3.5: Convene public strategy discussions with neighbors and VACV to share site analysis and ensure future park assets and programming investments support community needs	X	X		PRCR, VACV, Storefront Richmond	

Goal 2: Connect and Educate Neighbors with Trusted Community Advocacy & Partnership

Objective 2.1: Explore new programs to create and maintain green spaces and environmental justice in the area	S	M	L	Leadership	Possible Funding Sources
Action 2.1.1: Utilize the expanding TB Smith Community Center for meetings, classes, and design workshops	X	X	X	Storefront, VACV, PRCF	
Action 2.1.2: ACV partners with established urban farmers to create a network of caretakers to manage, maintain, grow, and educate the community on gardening practices to help feed the area (i.e. Groundworks, Duron Chavis/Happy Natural Day)	X	X	X	PRCR (Community Gardens), VACV, Happily Natural Day, Virginia Association of Farmer's Markets/SOJ	USDA Community Food Projects Grant, USDA Urban Agriculture and Innovation Production (UAIP) competitive grants, HOME Depot Community Grants
Action 2.1.3: Engage student and youth building opportunities in outdoor maintenance and education through Parks summer leadership programs, street art programs, ARCA and more	X	X	X	VACV, GroundWork RVA	Blue Sky Fund
Action 2.1.4: Increase funding and opportunity for VACV to build capacity	X	X	X	VACV	Evidence for Action (E4A)/ Robert Wood Johnson Foundation, Marguerite Casey Foundation (Core Grant Making), Meyer Foundation, Bush Foundation Community Innovation Grant
Action 2.1.5: Install stormwater and mural art projects along green infrastructure streets	X	X		RVA H2O, VACV (ARCA), Mending Walls RVA	
Action 2.1.6: Encourage and support groups dedicated to increasing recreation activities and providing resources to promote healthy lifestyles		X	X	Office of Equitable Transport and Development, VACV, PRCR, Virginia Capital Trails, Existing recreation orgs	

Goal 2: Connect and Educate Neighbors with Trusted Community Advocacy & Partnership

Objective 2.2: Build strategic partnerships with state representatives, the City of Richmond, and partner developers to ensure incoming developments are equitable and address community concerns	S	M	L	Leadership	Possible Funding Sources
Action 2.2.1: VACV advocates for embedded planners from the Office of Equitable Development to join ongoing community meetings and complete the VACV Score Card when creating the Richmond Highway small area plan for Richmond 300 Master Plan	X	X	X	Office of Equitable Development, VACV,	City of Richmond
Action 2.2.2: Identify and prioritize locations in the area most at-risk to climate conditions for green street/green infrastructure developments (i.e. areas within the floodplain or areas with highest heat levels)	X	X		City of Richmond Office of Equitable Development, Science Museum of Virginia,	
Action 2.2.3: Establish a homeowners group to address maintenance concerns from greening developments and educate neighbors on housing repair and weatherization options to reduce utility costs, improve living conditions, and optimize energy use in the area	X	X	X	VACV RVA Thrives Housing Working Group	Weatherization Assistance Program (DHCD) through Project: HOMES
Action 2.2.4: Connect the RVA Thrives housing working group to The Department of Housing and Community Development's (DHCD) to increase access to: <ul style="list-style-type: none"> Housing Innovations in Energy Efficiency (HIEE) funding opportunities and 2022 public meetings Virginia Eviction Reduction Pilot assistance and non-profit implementation partners 	X	X		VACV, DHCD	Housing Innovations in Energy Efficiency (HIEE) RGGI Funding through DHCD

Goal 2: Connect and Educate Neighbors with Trusted Community Advocacy & Partnership

Objective 2.3: Connect past, present, and future generations to the history of the area through shared memory and preservation policies	S	M	L	Leadership	Possible Funding Sources
Action 2.3.1: Collect data on communities through historical context, census data, and ongoing interviews/oral histories and community conversations (including RVA Thrives working groups)	X	X		VACV, Valentine Museum, Library of Virginia, VCU Libraries, Virginia Department of Historic Resources	
Action 2.3.2: Explore adding traditional and QR-coded signs in future public green spaces to tell the story of spaces past and include opportunities to engage new generations	X	X	X	VACV, Studio Two Three, Virginia Department of Historic Resources	
Action 2.3.3: Create interactive sites (i.e. walls, art spaces) where community can speak to each other, and express their hopes		X		Mending Walls RVA, Studio Two Three, Storefront Richmond	
Action 2.3.4: Reduce/freeze property tax assessments for long-time homeowners and connect residents to The Maggie Walker Land Trust (MWLT) funding to protect against green gentrification and displacement		X	X	Project: HOMES, VACV, Maggie Walker Trust, Office of Equitable Development	

Goal 3: Integrate immersive technology into the land-use planning and engagement process city wide

Objective 3.1: Using VACV as guidance, encourage and structure community voice organizations throughout the city to determine goals before approaching with design ideas and questions, (particularly when engaging marginalized communities)	S	M	L	Leadership	Possible Funding Sources
Action 3.1.1: Identify existing neighborhood organizations and facilitate training through the VACV Blueprint and model		X	X	Community leadership, School/Church boards, City Council Representatives	Fundraising, Community grants
Action 3.1.2: Share the work and success of VACV and its neighbors across the city and host community exchange and celebration days	X	X		Southside Green Collaborative, Storefront Richmond,	
Action 3.1.3: Create ongoing community education and engagement meetings focusing on issues of importance to neighbors		X	X	Community leadership, School/Church boards, City Council Representatives	
Action 3.1.4: Invite community design facilitators from Storefront Richmond to develop familiarity with design concepts and perspectives	X	X	X	Storefront Richmond, community leadership	

Goal 3: Integrate immersive technology into the land-use planning and engagement process city wide

Objective 3.2: Establish official immersive technology training opportunities and networks for planning professionals	S	M	L	Leadership	Possible Funding Sources
Action 3.2.1: Create a specialty department dedicated to training, testing, and implementing immersive technology for city projects	X	X	X	City of Richmond, Office of Equitable Development, Mayor's Team	
Action 3.2.2: Pursue grants and other methods of funding for the cost of: mobile devices, custom app and web development, education and outreach materials, support staffing, and site-plan implementation	X	X	X	City of Richmond	
Action 3.2.3: Have city planners attend APA planning conferences and connect to technology conferences dedicated to expanding the use and reach of immersive tools for land-use planning and embedded practice	x	x	x	City of Richmond, American Planners Association,	

Goal 3: Integrate immersive technology into the land-use planning and engagement process city wide

Objective 3.3: Democratize mobile AR and develop applications that are tailored to specific community goals (i.e. greening, architecture, education, etc.)	S	M	L	Leadership	Possible Funding Sources
Action 3.3.1: Create guidelines and standards for AR use in land-use scenarios, including strengths and limitations of the technology	X	X		Immersive technology and design experts, VCU Wilder School	
Action 3.3.2: Utilize engaging visuals and social media tools to expand knowledge of augmented reality to the public	X	X		Southside Green Collaborative, City of Richmond	
Action 3.3.3: Integrate into the Shockoe Bottom redevelopment plan to aid goals of historic preservation and storytelling about long-gone structures and experiences		X	X	ARtGlass, Shockoe Bottom Small Area Plan Leadership, Office of Equitable Development, Library of Virginia, Descendants leadership	
Action 3.3.4: Facilitate the use of AR or VR into schools to enable more engaging educational experiences in and outside the classroom	X	X	X	Richmond Public School Board	

Conclusion

This project serves as an important steppingstone in transforming community participation by offering a tool to facilitate design made by and for neighborhood members. Continued engagement with this technology can reveal more of the strengths, challenges, and limitations of place-based visualizations that this project alone could not fully analyze due to time and engagement impacts from COVID-19. Every community and city is unique, and while this plan focuses on understanding and highlighting Richmond's Southside Highway community, it also attempts to illustrate how mobile augmented reality tools can aid in spatial understanding and design in most any location. As this technology grows, it will undoubtedly become more prevalent in our lives, and intentional integration into community-led education and advocacy movements is crucial for urban planners and park administrators that want to better understand the lives and thoughts of their fellow residents. It is also of use to those wishing to achieve social transformation through social learning and social mobilization, broadening the traditional definition of urban planner and designer.



Thank you



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