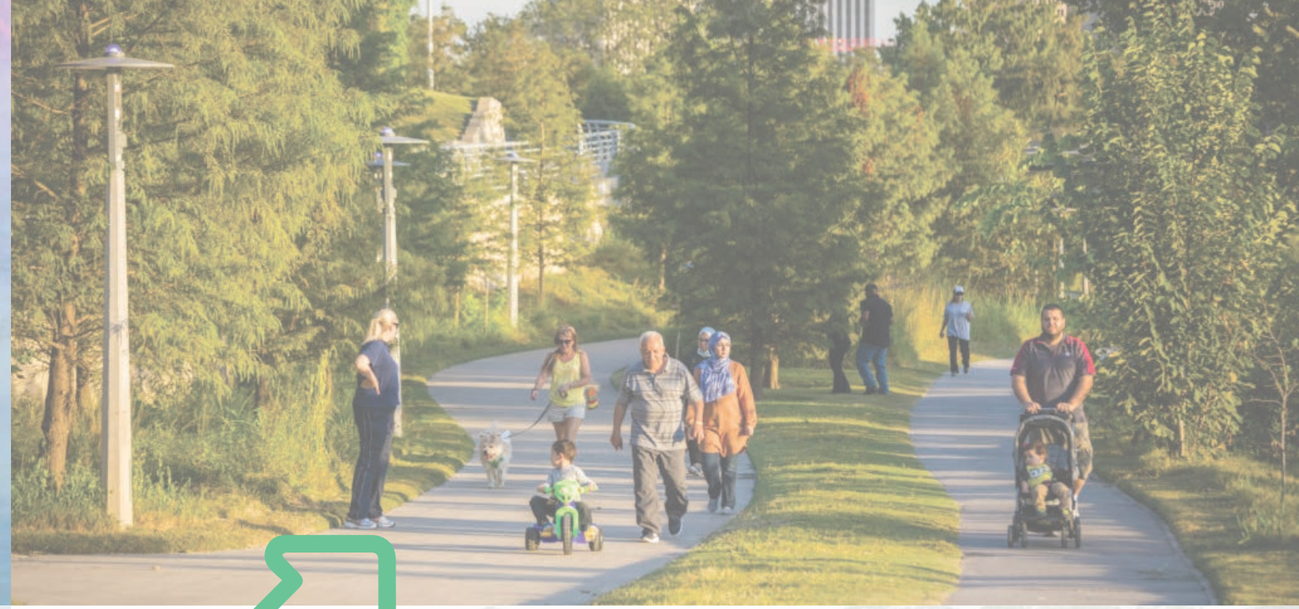




Tollways to Trailways

Connecting Communities around Harris County's Tollways





Contents

This document is organized into three distinct sections consisting of the primary plan, resources and tools, and an appendix with detailed background information about case studies and proposed projects.

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Document Photo and Icon Sources

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3	Left (bikelifecities.com), Center (traillink.com), Right (Central Texas Regional Mobility Authority [CTRMA])
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Case for Action

In 2021, the Harris County Toll Road Authority (HCTRA) embraced a new mission and vision that moved away from a focus on vehicles only and towards being a County-wide partner in providing mobility options for all.

This broader effort aims to strengthen economic development and quality of life in the County, through a balance of improvements to mobility, safety, sustainability, and enhanced accessibility for residents and businesses. Through this effort, HCTRA continues to offer strong value with, regional partners, towards implementing projects that make a positive community impact for the future. This plan launches a strategic effort towards enhanced mobility for all, through a safe, accessible, multimodal program of trails and bikeways that improves connectivity across the County.

This chapter provides a clear and concise narrative about the opportunities that could be unlocked through this program of projects and why Harris County is taking on this challenge.

Tollways to Trailways

Connecting Communities around Harris County's Tollways

HCTRA is embracing a holistic view of mobility in Harris County and re-oriented its mission "to responsibly operate and maintain a safe, reliable, sustainable, and evolving mobility system that meets the diverse connectivity needs of all Harris County residents." *Tollways to Trailways* represents HCTRA's commitment to this mission with game-changing investments in trail, bikeway, and sidewalk infrastructure across the County.

Tollways to Trailways outlines an unprecedented 236 miles of active transportation projects that place Harris County at the leading edge of active transportation planning in the nation. When constructed, these projects will provide community amenities that promote resilience, access for all, safety, and an elevated quality of life, particularly in neighborhoods historically divided by the tollways. Together, *Tollways to Trailways* make the County healthier and more resilient by expanding healthy mobility choices, creating more local green spaces, and giving people transportation options that reduce greenhouse gas emissions and improve regional air quality. The projects also strengthen the region's economic vitality by expanding mobility choice for Harris County workers and adding new ways for residents and visitors to walk and bike to local businesses.

HCTRA cannot implement *Tollways to Trailways* alone. HCTRA will use this opportunity to strengthen partnerships with other agencies who own and operate the parks, streets, waterways, and utility easements where these projects are built. Likewise, meaningful community engagement will ensure that HCTRA builds infrastructure that meets the needs of the neighborhoods served by *Tollways to Trailways*.

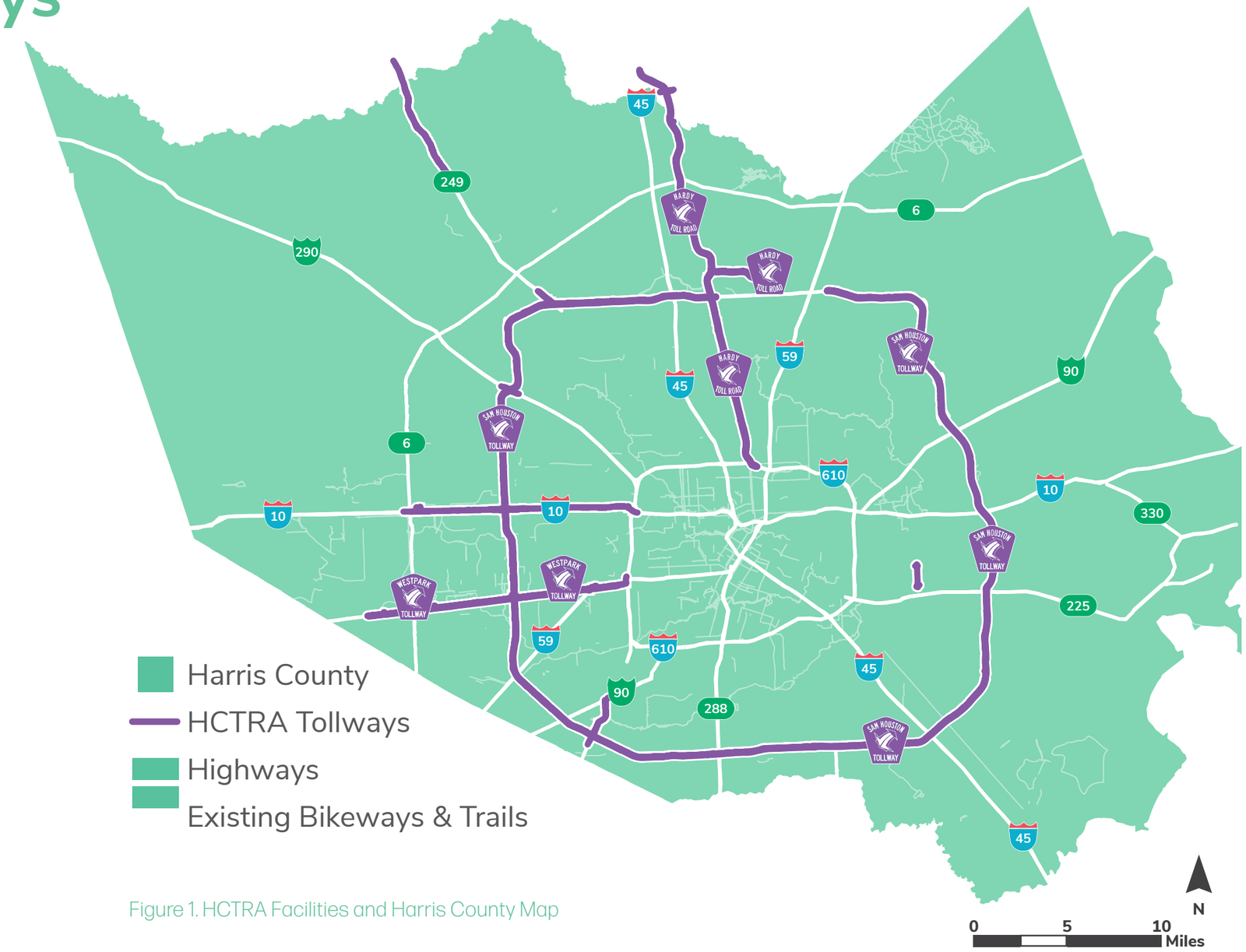


Figure 1. HCTRA Facilities and Harris County Map

HCTRA's Mission: Responsibly operate and maintain a safe, reliable, sustainable, and evolving mobility system that meets the diverse connectivity needs of all Harris County residents.

Learning from Others

Tollways to Trailways is in line with national best practices for mobility investments. Agencies across the country are leveraging their tollway and highway facilities to build active transportation projects that connect communities. Like HCTRA, these agencies face unique right-of-way challenges, rely on strategic partnerships, and design facilities to prioritize safety and comfort for people walking, biking, and driving.

Peer agencies were researched to better understand potential challenges and opportunities when implementing similar projects. The findings, detailed in Appendix A reveal innovative choices by regional tollway authorities and state departments of transportation. In particular, the experience of other agencies shows how these investments can truly connect communities across major barriers, how partnerships are critical for successful implementation, and how projects serve local needs and enhance quality of life in creative ways.

Connections are the Priority

Peer agencies use trail and bikeway investments for meaningful connections to community destinations. The Central Texas Regional Mobility Authority (CTRMA) built trails in their rights-of-way to link key destinations like parks, waterways, job centers, other trails, and even the airport. The Colorado Department of Transportation (CDOT) US-36 Trail connects directly to regional bus service and park & rides, making the trail a critical piece of mobility infrastructure.

Agencies like CTRMA, CDOT and others also prioritized connections across their facilities by building new dedicated bicycle and pedestrian bridges or redesigning tollway underpasses to safely accommodate trail users.

The Illinois Tollway even thought about connectivity beyond the right-of-way. Their Veterans Memorial Trail near I-355 connects to forested areas and park lands near the toll facilities to enhance connections to nearby green space.

Partnerships Are Key

Agencies relied on partnerships to build these projects. The Illinois Tollway Veterans Memorial Trail was constructed in partnership with Will County using a combination of federal funding and event fees. CDOT used a public-private partnership for the US-36 Trail by reimbursing the private contractor with tollway funds and entrusting cities and counties along the trail to lead trail maintenance.

Creativity Goes a Long Way

On its SH-45SW Trail, CTRMA installed signs and developed a mobile application about the history and natural features of the area, including a call to action to preserve native species.

The Portland Department of Transportation's Eastbank Esplanade includes community amenities like seating, a plaza for events, and public art that make the esplanade a destination for residents and visitors.

US-36 Trail near Boulder, Colorado



Veterans Memorial Trail in Will County, Illinois



290 Trail in Austin, Texas



Five Foundations for Future Investments

Building out infrastructure to support active mobility is a new and exciting endeavor for Harris County. *Tollways to Trailways* provides a tool to prioritize and invest in projects that advance actionable opportunities aimed at improving mobility for the residents, workers and visitors that are impacted by their facilities across Harris County.

This section highlights Five Foundations for Future Investments that serve as the core reasons underpinning *Tollways to Trailways*. The Five Foundations effectively set the goals for this Plan.

The Five Foundations for Future Investments include:

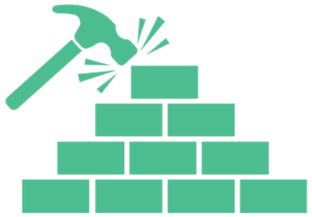
- Maintaining Momentum
- Breaking Down Barriers
- Supporting Healthy Communities
- Advancing Equity
- Building Great Places



Maintaining Momentum

Over the past decade Harris County and its partners have made massive investments in active mobility. Starting with dozens of miles of bayou trails a decade ago, partners across the region have forged ahead with hundreds of miles of trails, paths, and bikeways as part of Bayous Greenways, Beyond the Bayous, the Houston Bike Plan, and dozens of local mobility plans around the county.

These investments have connected millions of people to the places they live, work, and love via safe, fun, and healthy modes of transport. Already, access to parks, jobs, schools and transit is easier and safer than ever, but many destinations are still unsafe to access by bike or on foot. This plan sets out an enormous opportunity to expand access to an already vast bikeway and trail system and increase its utility with strategic investments, many of which might not otherwise be possible.



Breaking Down Barriers

The Harris County tollway system is a lifeline for many people, guaranteeing a quick, reliable drive to wherever they need to go. However, the Tollways have historically also presented multiple challenges: severed connections for streets and communities, safety for people walking and biking, and accessible crossings.

Active transportation infrastructure plays an important role in expanding access to destinations. Owning a vehicle is not possible for everyone, nor should taking one be necessary for every trip. Roughly one-third of every trip taken in Houston is under three miles in length. Another one-fifth of trips are under five miles (H-GAC Travel Demand Model, 2019). By implementing *Tollways to Trailways*, HCTRA can make it easier for people to get to their daily destinations without a car break down barriers with active, sustainable, and equitable transportation options.



Supporting Healthy Communities

The auto-centric focus of past transportation investments has had significant impacts on community health, both physical and environmental. More roads without safe walking and biking facilities have limited options for healthy activity and led to increased pollution from vehicle emissions. As the transportation paradigm continues to shift and evolve from automobiles to incorporation of all modes for all people, the *Tollways to Trailways* Plan presents a meaningful opportunity to mitigate negative impacts from past investments.

Centers for Disease Control and Prevention (CDC) shows that heart disease is the most common cause of death for adults in Harris County. Trails provide opportunities for people to be more mobile and active. The CDC champions active transportation investments as a best practice for the built environment to reduce heart disease and obesity.

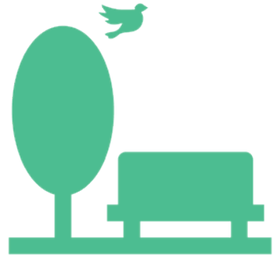
Data from the Center for Neighborhood Technology for annual greenhouse gas (GHG) emissions reveal that many of the projects in this Plan are located in areas with some of the highest per acre GHG emissions in Harris County. *Tollways to Trailways* will ensure that HCTRA is supporting community health by providing needed active transportation options that get people moving and out of their vehicles.



Advancing Equity

Highway construction around the country has often resulted in the displacement of people living in vulnerable communities. This is unfortunately also the case in Harris County, where low-income and minority communities were split apart and/or relocated, and still endure the lasting social, health, and economic impacts inflicted on them by highway construction.

Highways have created pervasive car dependence, something that is not affordable for many. According to AAA's 2019 Your Driving Costs study, the average annual cost of car ownership is more than $9,000, a significant cost for households across incomes. Highways also create poor air quality in nearby communities and discourage healthy activities such as walking, and biking. By creating safer, healthier, more accessible and affordable options to travel, Harris County flips the paradigm on its head to invest in connectivity and quality of life in vulnerable and under-served communities.



Building Great Places

Investing in active mobility infrastructure has the potential to transform the communities and business centers they connect. As HCTRA builds out these elements it should do so in a way that maximizes their benefits to create iconic and resilient community assets that honor local history and nature. Future trails, paths, and bikeways should be built to the highest standards, with features that make them safe, comfortable, accessible, and fun for people of all ages and abilities while also integrating and reflecting the unique and diverse characteristics of the neighborhoods and businesses they touch.

The more people that have access to high-quality multimodal infrastructure, the more resilient a community is, connecting people, places, and businesses in ways that cater to everyone equitably, regardless of income or background and does so in an environmentally friendly and sustainable manner.

Three Objectives for Success

Gauging progress toward achieving the Five Foundations for Future Investments through the following Three Objectives for Success: A Safer Mobility System, (Re)Connected Communities, and A Cohesive Network. The report expands on these three objectives and describes how they were used to select projects in Chapter 2, Projects & Priorities.



A Safer Mobility System

Serving the diverse connectivity needs of all Harris County residents means providing a safe way for people to travel, regardless of their mode. Projects were selected based on their ability to make an existing street or crossing safer or to provide a safe alternative to roadways with a documented high crash rate.



(Re)Connected Communities

County residents face difficult mobility barriers that limit how they can access their daily needs. *Tollways to Trailways* prioritizes projects that offer a new or enhanced crossing of highways, tollways, waterways, and railroads to help re-stitch the fabric of communities.



A Cohesive Network

New trail and bikeway projects can magnify the value of existing facilities by linking them to the wider, growing network of active transportation infrastructure. Selected projects lengthen or connect existing trails to build out a full network. Priority was also given to projects that are first-of-a-kind active transportation investments for a community.

Rooted in the Five Foundations for Future Investments



Maintaining Momentum

Selected projects build on recent safety planning efforts like Vision Zero.



Breaking Down Barriers

Projects create new and enhanced crossings across that make it safer to cross at places with high vehicle speeds and volumes.



Supporting Health

Improving roadway safety saves lives and makes healthy activities like walking, running, and biking a more comfortable and accessible option.



Advancing Equity

Selected projects provide new mobility choices for members of vulnerable communities, who are more likely to walk or bike.



Building Great Places

Selected projects are often located in communities that have not seen investments of this kind, offering new opportunities to create great experiences.

Major barriers can stall or prevent new active transportation investments. Selected project are a bold commitment to tackling those barriers.

Projects were intentionally prioritized if they crossed a barrier and connected to key destinations.

Selected projects connect across barriers to create new access to parks and health facilities that were previously difficult to access.

Historically, barriers like highways, tollways, and railroads have disconnected low-income communities.

Selected projects connect to key destinations with existing community value and many opportunities to invest in placemaking.

Projects make new connections that extend and link recent investments in trails and high-comfort bikeways.

Projects build on the network, making it easier for people to find a route that avoids a major barrier. New projects magnify the value of the existing network.

A fully connected trail and bikeway network lets people easily reduce their personal GHG emission by biking, walking, and taking transit.

Projects that are part of a complete network of trails and bikeways give meaningful mobility choice to people who do not have a car.

Selected projects connect new areas of the County to high-quality trails which are both important for mobility but also recreation.

Projects & Priorities

This chapter of the Tollways to Trailways *Plan dives deeper into recommended projects intended to bridge significant gaps and bring meaningful investments into communities throughout Harris County. Information here shows the proposed projects as a network and breaks down how they were selected, their community benefits, and cost assumptions. This information is packaged into prioritization buckets that will assist with developing projects that build on opportunities and leverage other mobility investments.*

Identifying Meaningful Projects

Harris County's tollways changed the way people could move around the region forever. With *Tollways to Trailways*, Harris County once again has the opportunity to revolutionize mobility in the region. To do this, it will be essential to invest in projects that can unlock new potential for the region and create opportunities for the communities they touch. This chapter defines what makes a project meaningful and how each project in the Plan was selected and prioritized.

A Safer Mobility System

No one should have to fear for their lives while traveling across the county. For people walking and biking in the region, this is the unfortunate reality. Over the past decade, more than 1,200 people walking have been killed in vehicle-involved crashes. Over 140 more people have been killed while riding their bikes in the same time period (TXDOT Crash Records Information System). Not only are these statistics scary for people that currently walk or bike in the region, it discourages hundreds, if not thousands more from stepping out of their cars. *Tollways to Trailways* will create hundreds of miles of new, safe infrastructure so that millions across the county will be able to travel safely no matter how they choose to get around. In order to meet this objective and create a safer mobility system, the following factors were evaluated as part of the Plan's development:

Barriers

For people walking and biking, often the biggest obstacles faced can be impassable barriers, such as highways or bayous that force users on long, circuitous routes and push them to other modes. Other times, these barriers are technically traversable, but are instead incredibly dangerous to cross. During the evaluation process, potential projects were scored based on the number of barriers they would cross, thereby improving mobility and safety for future users.

Vision Zero

Harris County's Vision Zero commitment sets 2030 as the target date for ending traffic deaths and serious injuries in the city. Approximately 60% of these deaths and injuries occur on only 6% of its streets, which have been designated as the "High-Injury Network". Projects proposed as part of *Tollways to Trailways* were screened relative to how they would improve safety along these particularly dangerous streets. The more a potential project interacted with the high-injury network, the higher it would score.

(Re)Connected Communities

During the middle of the 20th century the Houston region undertook a massive expansion of its highway system. While the highways enabled growth in the region, they also divided and displaced communities, worsened air quality, and limited opportunity for all residents. *Tollways to Trailways* can begin to undo that damage and allow Harris County to be part of creating a more equitable, sustainable, and resilient region. To maximize the utility of future investments for nearby communities the following elements were identified as key connection points around the County:

Schools

Schools are central to the health of a community. Every day, hundreds of thousands students travel to Harris County schools for class. Adults also travel to schools to drop off their kids, work as teachers or support staff, or to visit events hosted on their campuses.

Parks

The beautiful parks that dot Harris County encourage millions of people to get outside, be active, and enjoy nature. Connecting to parks gives people access to cleaner air, and healthy recreation, improving people's mental and physical health. Additionally, these green spaces provide a safe place for people walking and biking to get around without the threat of automobile traffic.

Transit

While walking and biking might make sense for shorter trips, for many people in Harris County this is not practical. Luckily, Harris County has access to an expansive transit network. Connecting to Park & Ride express buses and METRO's local bus service would allow people to walk or bike for part of their journey and let transit take them longer distances.

A Cohesive Network

HCTRA operates over 100 miles of tollways spread across the county. These facilities compliment and work with the rest of the highway and road systems to create a useful network to transport cars and heavy vehicles efficiently around the region. *Tollways to Trailways* presents an opportunity to build out a similar network for people walking and biking, integrating into other existing and planned projects to provide a convenient and intuitive routes to get people where they need to go. To best serve the people of Harris County, *Tollways to Trailways* projects will connect existing investments and extend the network as described below.

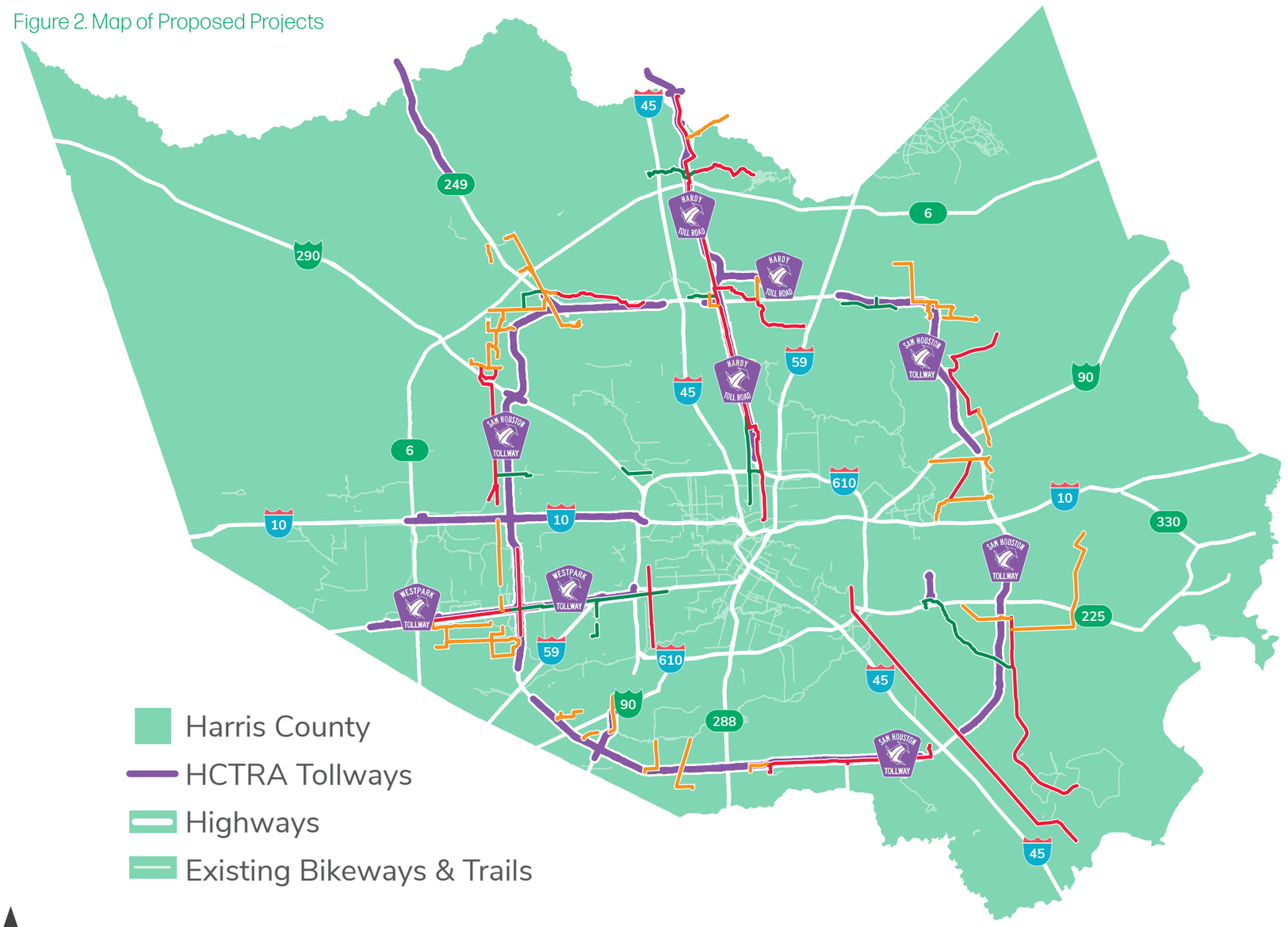
Connect Existing Investments

Hundreds of miles of high quality trails and bikeways have been built throughout the county. Hundreds more are actively being planned and programmed. While building stand-alone projects would likely benefit adjacent neighborhoods, linking these projects with the rest of the active mobility network will open up thousands of more destinations and opportunities across the network, increasing the utility of these projects exponentially. *Tollways to Trailways* projects integrate into the greater network wherever possible to give more people more places to travel.

Extend the Network

While connecting to existing facilities is important, it's also important to prioritize extending access into new communities, especially those most impacted by highways and tollways. When determining what projects to move forward with as part of *Tollways to Trailways*, special care was taken to prioritize projects in communities that currently lack close access to walking and biking paths, especially in minority and lower-income neighborhoods that would most benefit from these investments.

Figure 2. Map of Proposed Projects



About the Projects

Tollways to Trailways presents a bold plan to build 236 miles of safe, high quality multimodal infrastructure across the county. This vision is shown on the map at left. Categorizing projects enables ranking and prioritization of like-projects along with a feasibility analysis and cost estimates. After scoring through the evaluation matrix, projects were placed into three categories:

- **Network Spine:** Network Spines are projects that traverse multiple communities, are a length of at least 5 miles, and provide an opportunity to connect other trails or multimodal facilities.
- **Community Connector:** Community Connectors are projects that provide access to parks, transit, schools, neighborhoods, or other destinations. These projects may be shorter and likely connect to a Network Spine or other multimodal facility within Harris County.
- **Partnership Project:** Some projects evaluated were a part of another agency's plan or may be most appropriate for an entity other than HCTRA to lead in the project development, design, and construction. This could be due to current coordination efforts, grant funding, or feasibility. Additional coordination is needed to move the project forward. Assistance could be through financial, in-kind, or other agency support. These projects will link to the entire multimodal network.

This section summarizes project recommendations and prioritization, while detailed profiles on each project can be found in Appendix C.

Priorities

Projects were evaluated to identify how each one supports the Five Foundations for Future Investments. Evaluating projects also provides a way to prioritize projects for implementation. An Evaluation Matrix identifies (1) the benefits that each project brings to its surrounding communities and (2) the feasibility of constructing each project. These two factors are paired to categorize projects into three different priorities: Quick Wins, Big Moves, and Network Builders. More detailed information about the prioritization process can be found in the Corridor Evaluation & Prioritization Memo in Appendix B.

Level of Benefits

Four overarching evaluation criteria align with the *Tollways to Trailways* Objectives for Success:

- Connects Communities: Does the project connect residents to important community destinations like schools, transit, and parks?
- Enhances Safety: Does the project help the County address critical safety concerns and help communities overcome major barriers?
- Builds Networks: Does the project provide a key link or extension of the broader network of trails and bikeways?
- Fosters Equity: Does the project serve vulnerable communities that can benefit from access to active transportation infrastructure?

Ease of Implementation

Feasibility, or ease of implementation, is based on the level of project coordination with other entities and the cost of major project components like bridges and other crossings. These two factors offer a sense of project complexity and the level of time, effort, and funding required to implement each.

Developing Priorities

Final project priority is based on the combination of the Benefits evaluation (the vertical axis in Figure 3) and the Feasibility evaluation (the horizontal axis). As Figure 3 shows, projects cluster into three priorities: Quick Wins, Big Moves, and Network Builders. The projects are distributed across the three priority categories and are defined further on the following pages.

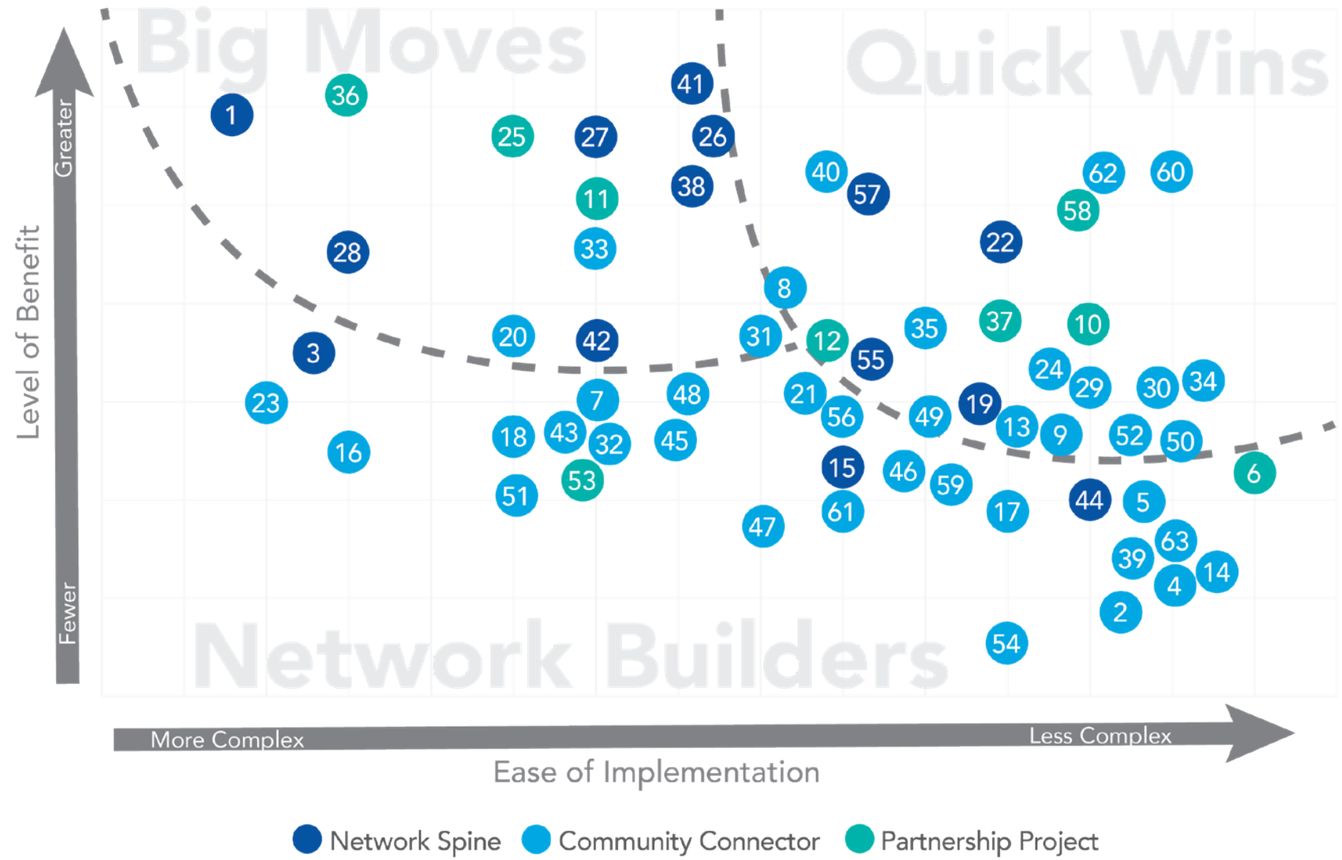


Figure 3. Prioritization Matrix by Project Type

Quick Wins

Quick Win projects demonstrate a higher relative community benefit by expanding the regional trail and bikeway network and connecting to community destinations. These projects could happen in an expedited timeline and represent early opportunities to begin building out the network. These projects may have fewer major barriers to cross, have existing partners, or are building off of previous or ongoing efforts..

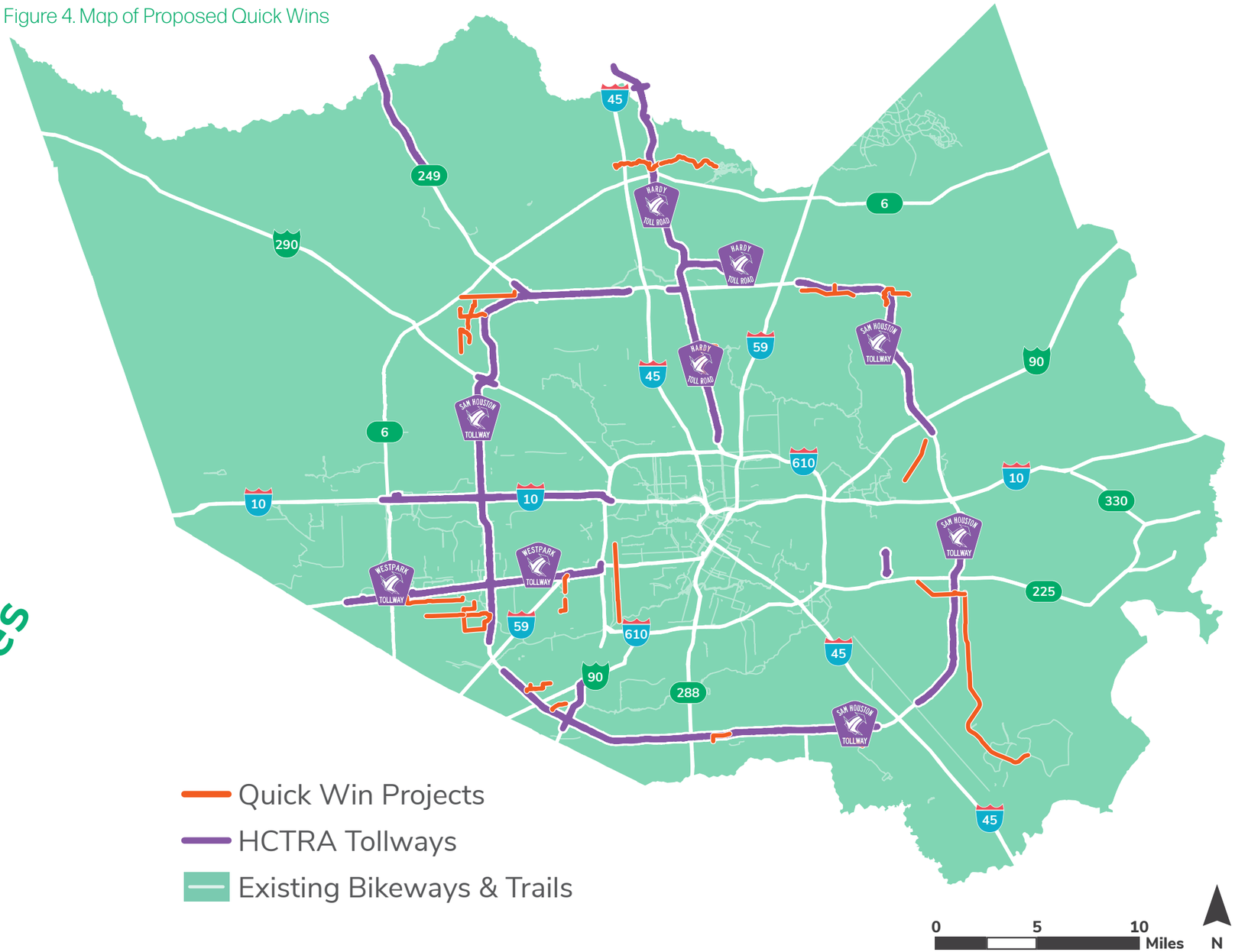
Quick Win projects are spread across the County (see Figure 4) and will allow the County to make important early investments in *Tollways to Trailways*.

22 Total Projects

65 Project Miles

$131 million Estimated Cost

Figure 4. Map of Proposed Quick Wins



Big Moves

Big Moves offer major benefits for nearby communities, similar to Quick Wins, but are more complex. Implementation of these projects will likely require more time and effort for coordination to ensure that the projects meet the goals of nearby communities and other partners involved in the project(s).

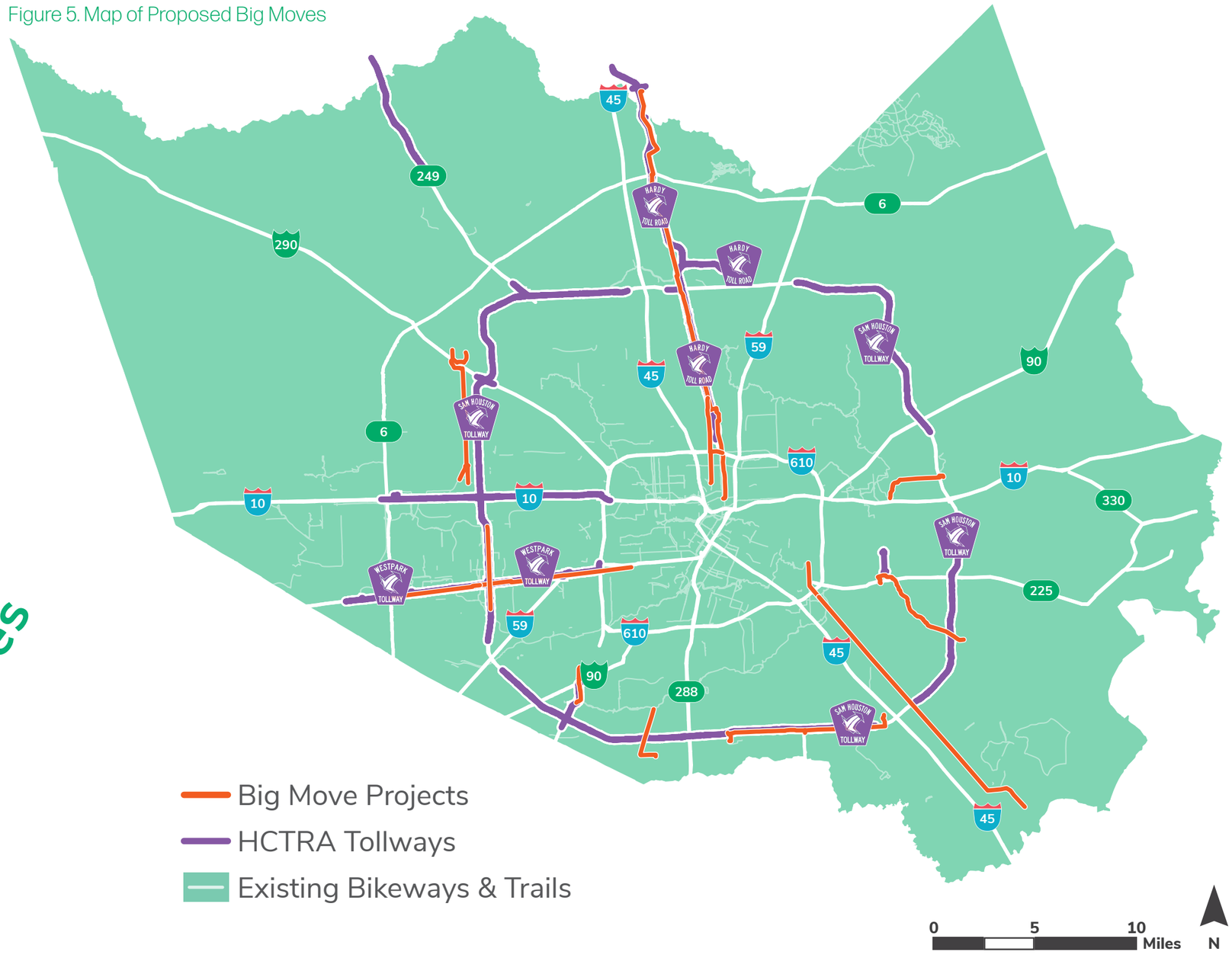
Tollways to Trailways includes Big Move projects in all parts of the County (see Figure 5). These projects represent those large signature investments that span communities and break down barriers.

13 Total Projects

100 Project Miles

$264 million Estimated Cost

Figure 5. Map of Proposed Big Moves



Network Builders

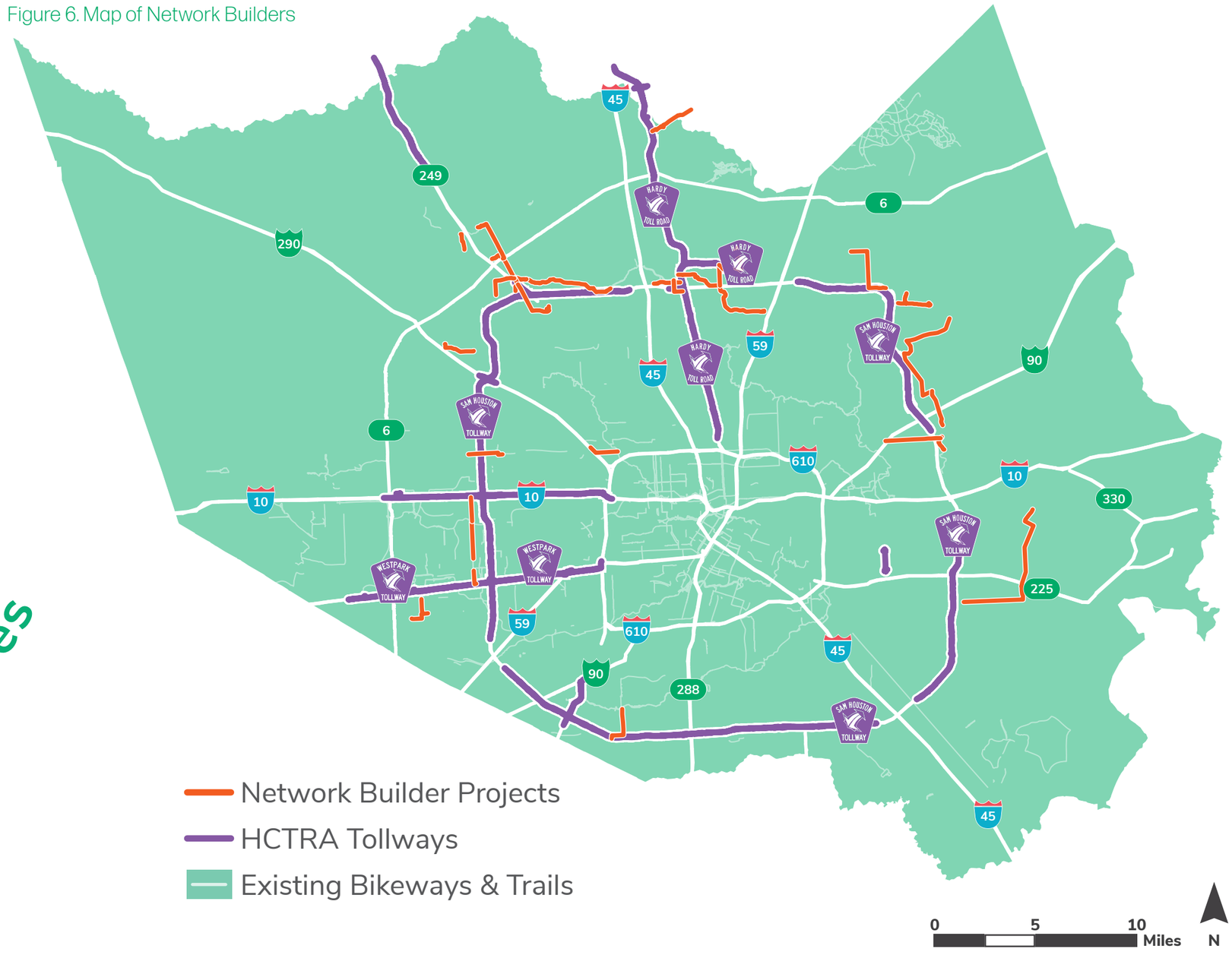
Network Builders range in their level of complexity and coordination but have great benefits for the community and help build out the County's active transportation network. Network Builders span the County (see Figure 6) and play a critical role in linking the existing network of trails and bikeways to the proposed *Tollways to Trailways* projects.

28
Total Projects

71
Project Miles

$206 million
Estimated Cost

Figure 6. Map of Network Builders



Summary of Projects

ID	Project	Precinct(s)	Cost Estimate (in 000's)	Project Category	Benefit Score	EOI Score
Quick Wins						
60	Hackberry Trail (Ditch D 122)	4	$2,890	Community Connector	22	13
62	Alief Schools Trail (Ditch D 126)	4	$6,112	Community Connector	22	12
22	Space Center Blvd Trail	2	$17,340	Network Spine	22	11
40	Alief East Loop (Ditch D 120, D 122)	4	$13,090	Community Connector	22	9
57	Brays-Buffalo Connector Trail (Ditch W 129, D 113)	1, 4	$8,364	Network Spine	21	9
58	Hillcroft Bikeway - South Extension	4	$8,223	Partnership Project	21	12
8	Aldine-Hardy Park Connector Trail	2	$3,254	Community Connector	20	8
37	Westward Bikeway	4	$7,072	Partnership Project	19	11
10	Fall Creek Trail	1	$4,658	Partnership Project	17	12
35	Fonmeadow Trail (Ditch D 140)	1	$4,063	Community Connector	17	10
12	Cypress Creek Greenway - West Extension	1, 3	$17,867	Partnership Project	17	8
24	Red Bluff Trail (Ditch G 110)	2	$3,706	Community Connector	16	12
29	Tom Bass-Cullen Connector Trail	1	$2,125	Community Connector	16	12
34	Blue Ridge Connector Trail (Ditch C 100)	1	$1,360	Community Connector	15	13
50	Jersey Village-White Oak Connector Trail	3	$3,094	Community Connector	14	13
52	Turtle Trail	3	$4,046	Community Connector	14	13
19	West Canal -San Jac Trail	1, 2	$3,536	Network Spine	14	11
49	Harvest-Winchester Trail Network (Ditch E 128)	3	$6,622	Community Connector	14	10
55	Mercer Trail	1, 3	$7,387	Network Spine	14	10
9	Halls Bayou Trail - West Extension	2	$1,190	Community Connector	13	12
13	Summer Creek Trail	1	$3,366	Community Connector	13	12
30	J. Frank Dobie Trail	1, 2	$1,471	Community Connector	12	13
Big Moves						
41	West Belt Trail	3, 4	$7,812	Network Spine	31	7
36	Westpark Trail (East Segment)	1, 4	$20,536	Partnership Project	31	3
1	The Hardy Trail	1, 2, 3	$56,852	Network Spine	29	2
27	Houston to Galveston Trail (Southeast Harris County Segment)	2	$45,299	Network Spine	28	6
25	Little Vince Bayou Trail	2	$19,618	Partnership Project	28	5
26	Houston to Galveston Trail (East End Segment)	2	$5,557	Network Spine	27	8
38	Westpark Trail (West Segment)	4	$7,497	Network Spine	26	8
11	Irvington Boulevard Bikeway	2	$37,281	Partnership Project	26	6
33	Chimney Rock Trail (Ditch D 112, C 156)	1	$6,520	Community Connector	24	6

Figure 7. Proposed Project List

Summary of Projects, continued...

Figure 7. Proposed Project List continued

ID	Project	Precinct(s)	Cost Estimate (in 000's)	Project Category	Benefit Score	EOI Score
Big Moves, Continued						
28	South Sam Houston Trail	1, 2	$19,125	Network Spine	23	3
42	Jersey-Addicks Trail (Ditch W 167, E 127)	3, 4	$17,553	Network Spine	17	6
20	Jordan Gully Trail (Ditch P 105, N 110)	2	$14,382	Community Connector	17	5
31	Almeda Trail	1	$6,154	Community Connector	16	8
Network Builders						
3	Greens Bayou Trail - East Extension	1, 2	$17,442	Network Spine	17	3
48	Fallbrook Trail	1	$4,879	Community Connector	16	7
56	White Oak - 290 Connector Trail	4	$3,766	Community Connector	15	9
21	Summerwood-Atascocita Trail (Ditch P 130)	3	$5,440	Community Connector	15	9
7	Hedgecroft Trail (Ditch P 144)	2	$9,461	Community Connector	15	6
23	Battleground Trail	2	$30,702	Community Connector	15	2
45	Willowbrook Trail (Ditch P 150)	1, 3	$4,701	Community Connector	14	7
43	Buttermilk Creek Trail (Ditch W 167, W 140)	3, 4	$6,647	Community Connector	14	6
32	Ridgemont-Sims Trail (Ditch C 153, C 145)	1	$10,107	Community Connector	14	6
18	Purple Sage Trail	1, 2	$12,019	Community Connector	14	5
6	Benmar Drive Bikeway	2	$848	Partnership Project	13	14
16	Carpenters Bayou - North Extension	1	$10,846	Community Connector	13	3
46	Greens Bayou SH-249 Spur	1, 3	$1,377	Community Connector	12	10
59	HCC-Buffalo Bayou Connector Trail	4	$4,182	Community Connector	12	10
53	Greens Bayou-Gessner Connector Trail	1, 3	$9,903	Partnership Project	12	6
15	Lake Link Trail (Lake Sheldon to Lake Houston)	1	$10,523	Network Spine	11	9
51	Jersey Meadow Trail (Ditch E 135)	3	$20,562	Community Connector	11	5
5	JFK Boulevard Trail	1	$4,556	Community Connector	10	13
44	Greens Bayou Trail - West Extension	1	$9,486	Network Spine	10	12
17	Carpenters Bayou - Wallisville Rd Connector	1	$1,717	Community Connector	10	11
61	Pheasant Trace Trail (Ditch D 122)	4	$5,891	Community Connector	10	9
47	Cypresswood-Willowbrook Trail	3	$7,489	Community Connector	9	8
63	Wycliffe Trail	4	$1,921	Community Connector	8	13
2	Cypresswood Spring Trail	3	$3,655	Community Connector	7	13
4	Hoods Bayou Trail (Ditch P 140)	1	$1,539	Community Connector	7	13
14	Summerwood South Trail	1	$3,655	Community Connector	7	13
39	Wilcrest Trail	4	$1,178	Community Connector	7	13
54	Cypress Creek-Mandolin Gardens Trail (Ditch K 139)	3	$1,755	Community Connector	2	11

Making It Happen

An effort of this scale requires thoughtful implementation. Tollways to Trailways will need close coordination with partners, meaningful engagement with the community, and a consistent process to develop and reflect on investments. This chapter focuses on keys steps for successful implementation.

Actions & Roles for Successful Implementation

With projects and priorities identified, structuring an implementation process to "Make the Plan Happen" is the next critical step. This will require thoughtful project development, coordination, and implementation in conjunction with regional partners. This chapter outlines the components of successful project implementation and provides broad guidance for project development, engagement, design, connections to neighborhoods, and measuring success.

The next steps highlighted below and defined in this section are intended to work together as part of an iterative process that creates the foundation for implementation. Each step in the process below should build on, inform, and reinforce the other steps.



Figure 8. Next Steps to Develop and Implement Projects

Collaborate with Stakeholders

There are many agencies that will be essential to collaborate and share information with. These stakeholder agencies will have authority over the right-of-way for projects, are working on connecting projects, or have an interest to ensure approvals and information is properly incorporated into project development. Stakeholders may include agencies such as Harris County, City of Houston, Harris County Flood Control District, Houston Parks Board, utility companies, railroads, and other municipalities. Roles and responsibilities for project development and implementation will vary by project. Potential roles include funding partner, project coordination lead, development and construction lead, project facilitator.

Based on early coordination, Harris County, HCTRA, and stakeholder agency interests and priorities are well-aligned. Building projects in historically under-invested areas, connecting to destinations, and creating a full network were a few of the highest common priorities. This provides a basis for future efforts and an opportunity to work together to leverage resources. Resources in particular are an important part of coordination as they extend beyond funding and can help build institutional knowledge. Resource areas include: planning and coordination between agencies, community engagement, engineering and design, funding, construction, and maintenance.

While there is a lot of overlap between resource areas with stakeholders, it is important to work together as there can be many challenges in implementing trails. Some common challenges experienced by stakeholders in the Houston region include community outreach and concerns around safety; land acquisition and coordination between multiple entities; and maintenance. Working together to solve these and other challenges that arise during development and implementation of trails and bikeways will be efficient and effective as Harris County and its partners navigate improving multimodal mobility across the county.

Incorporate the Community

Just as stakeholders are essential to communicate with, so is the community. This plan provides a great starting point for communication with stakeholders, community organizations, and the public at large. As projects are identified to move forward, there are multiple ways to incorporate the community. Two key ways are to: 1) develop and utilize a consistent engagement framework; and 2) solicit input for connections from trails to the community and neighborhood destinations.

A consistent engagement framework reinforces meaningful participation and will ensure the community sees its input reflected in the project as intended. **Chapter 6** of this plan provides a framework for engagement to use as a starting point to ensure communication with the public and efforts to include them in the process are transparent, have clear expectations, and provide useful input to the process.

While the projects in this plan focus on main trail segments, there is a need to ensure that the community can easily access the trail(s) and that they provide connections to important nearby community destinations. **Chapter 5** of this plan provides a framework for trail connection planning. This is developed to identify access points, what types of facilities or connections are needed, and ways to incorporate the community in the process.

Develop the Project

Project development includes the entire process of planning and designing a facility that matches the surrounding context of a community and connects to the places people want to go. Project development is inherently an iterative process that includes many steps. Trail facilities may have subtle, but important differences in their design based on the surrounding context. **Chapter 4** provides design guidance to build internal capacity and knowledge and coordinate with stakeholders to identify the appropriate context and design elements that may be most functional for a given project.

The projects identified in this plan have been identified individually, but they can work together with other projects or may build on existing facilities and implementation efforts. Flexibility in the design process is an important component of successful implementation. Working with stakeholders and the community to look at projects as a network will help ensure important connections or project phasing is not overlooked. This reduces the potential to create trails that are "connections to nowhere."

Breaking down larger or more complex projects into phases can also be a way to begin to provide mobility options to the community even if a project is not wholly complete. If phases are truncated at logical terminus and origin points, then they can be very useful to a community while the larger effort is still underway. Additionally, phases could be broken down into foundational components that are important to construct first and enhancement components that make the project better, but can be done at a later time without requiring revision of the first phase.

Evaluate and Measure Success

Crucial to any successful implementation plan is monitoring and evaluating how well the implemented project is meeting its intended goal(s). It is through thoughtful project monitoring and evaluation that help to prioritize projects and move them into implementation.

As communities change over time, the types of projects and strategies that increase multimodal mobility may evolve as well. Sample metrics include: facility use, crash rates for people walking and biking in the nearby area, improved community health, community economic value, or even the community's perception of Harris County and evaluate whether or not projects and the agency's efforts are meeting the intended objectives. As identified in **Chapters 1 and 2**, there were three Objectives for Success tied to the development of projects in this plan: A Safer Mobility System, (Re)Connected Communities, and A Cohesive Network. Metrics that relate back to these three objectives include, but are not limited to:

- Number of new connections to schools, parks, and transit
- Miles of new trails
- Miles of continuous trails
- Reduced crash rates for people walking and biking near the trails
- Number of significant barrier crossings
- Investments made in new communities
- Total multimodal investment

Using metrics to evaluate and measure success will aid in telling a story to the community that continues to build community support. Goals will be identified for each project as well as at a higher level, programmatically to identify consistent ways to evaluate projects and measure success.

Design Guidance

While the first half of the Tollways to Trailways Plan focuses on the commitment to mobility for all and the resulting list of recommended projects, the next few sections provide tools and information that aid coordination with partners and the community to further develop and implement projects.

This chapter focuses specifically on design guidance and best practices to give a baseline for where to begin, where to go for reference, and a common definition of typical facility types that are represented in the projects. The information in this chapter is most applicable for projects that are in the design process.

Design Guidance

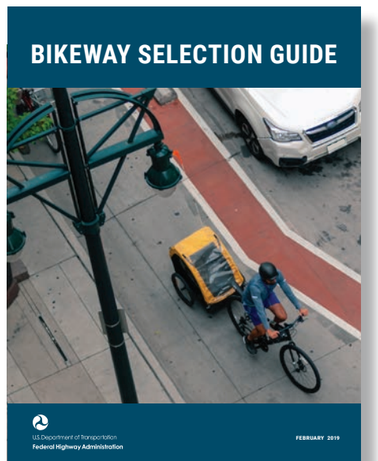
Key Information & References

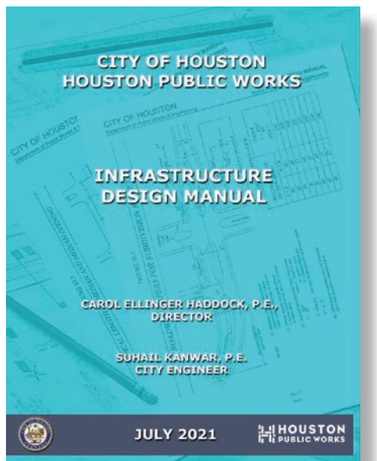
The *Tollways to Trailways* active transportation corridors will require variety of designs to fit their context and community needs. This section provides best practices and guidance for designing a range of trail and bikeway facilities. The guidance here is not exhaustive of all design components and situations but should be used as a starting point for project development and coordination. The references to resources and design guides in Figure 9 show where the reader can find more detailed information. The components in this toolbox relate to many recommendations and provide references to best practices and specific design treatments as projects move forward in the implementation process. Knowledge and application of these facility types and components for active transportation corridors will be critical to creating safe, comfortable, and easy to use trail and bikeway options in Harris County.

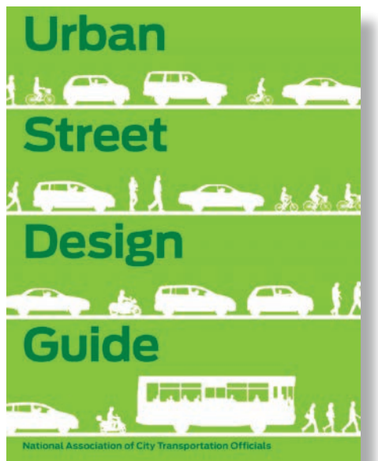
There are two primary facility types identified in this section: trails/shared-use paths and on-street bikeways. Universal design features, like sustainability, apply to all facility types and are highlighted below. Each facility type section contains information regarding the appropriate context, design components, and user accommodations. The information here is not intended to dictate the design for each proposed project in this plan, but to highlight how the different design and accommodation pieces fit together in various contexts and guide the appropriate design of future facilities.

Year	Agency	Title (Document Link)	Topic Areas: Trail Design	On-Street Bikeways	Crossings & Intersections	Major Barriers	Signage & Markings
Various	NACTO	Design Guides	●	●	●	●	●
2016	FHWA	Small Town and Rural Multimodal Networks	●	●	●	●	●
2018	FHWA	Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations			●	●	●
2019	NACTO	Don't Give Up at the Intersection			●	●	●
2019	FHWA	Bikeway Selection Guide	●	●			
2019	FHWA	Highway-Rail Crossing Handbook			●	●	
2021	FTA/FHWA	Rails with Trails Best Practices and Lessons Learned	●	●	●	●	●
2021	AASHTO	Guide for the Planning, Design, and Operations of Pedestrian Facilities			●		●
2021	TXDOT	TxDOT Bicycle Accommodation Design Guidance	●	●	●	●	●
2021	City of Houston	Infrastructure Design Manual (IDM) - Chapter 17 Bicycle, Transit and Pedestrian Design Requirements	●	●	●	●	●
2021	U.S. Access Board	Public Rights-of-Way Accessibility Guidelines (PROWAG)			●		●

Figure 9. Local, State and National Guides for Designing Active Transportation Infrastructure







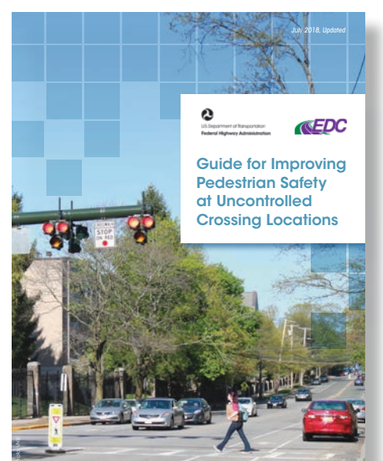


Figure 10. Example local and national design resources for active transportation infrastructure

Trail & Bikeway Design Best Practices

Common Design Features

Each *Tollways to Trailways* project presents an opportunity to build a great community destination and expand mobility choice and safety. The next pages outline common types of trails and bikeways, and their design considerations. While certain design components apply to most projects, each trail or bikeway has a unique context that requires distinct design needs. Key features include:

U1 Lighting at regular intervals makes the trail safer and more comfortable for users. Where connectivity to the electric grid is difficult, solar power lighting provides an alternative, zero-emission solution. Where other options might not be possible, glow-in-the-dark aggregate can be mixed into the pavement material to provide minimal light.

U2 Landscaping with native plants will enhance the visual appearance of the facility and reduce noise from adjacent highways or industrial areas.

U3 Additional investments can make the trail more intuitive and comfortable for users. Elements such as wayfinding, seating, bike-repair stations, trash cans, water fountains, art, and interpretative signage about local history or vegetation improve the experience of using the trail.

Sustainability

Active transportation can play a key role in reducing Harris County's impact on the environment as more people are able to get around by bike or on foot, rather than in their cars. In addition to emission declines from reduced automobile usage, there is an opportunity to improve the natural environment around future facilities and in several ways. Three strategies for incorporating sustainability into project design are described below:

- Recycled and environmentally friendly materials can be incorporated into the material composition of the trails and paths.
- Solar power lighting provides an alternative, zero-emission lighting solution. LED lighting can be used to improve the energy efficiency of the fixtures.
- Native plants can improve the ecological condition of the area around the facility by providing food and shelter for native fauna and mitigating erosion and water runoff. Native plants also typically require less water and fewer pesticides to maintain.

Crossings & Intersections

All trail and bikeway projects will need to consider safe crossing improvements. Each intersection will have unique design constraints and require coordination with the owner of the roadway, railway, or waterway being crossed. The design guide references on the previous page provide useful considerations when approaching intersection and crossing designs.

Universal Design

Universal Design is a broader effort than ADA accessibility and is focused on the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability. The Rick Hansen Foundation is one of many organizations that focuses on universal design (www.rickhansen.com)

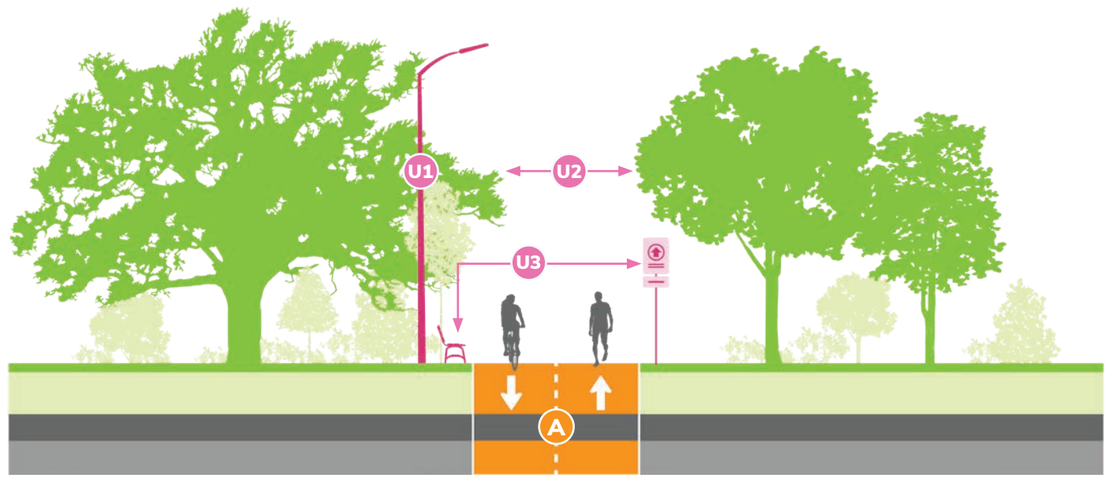
Standard Trails & Shared-Use Paths

A majority of facilities proposed as part of the HCTRA active transportation plan are classified as trails. Trails (sometimes referred to as shared-use paths) are shared by people walking and biking and are typically either behind the curb of a given roadway or independent of a roadway entirely.

Trails should be used along high-speed limited access roadways and natural corridors with limited conflicts. The corridors have posted speed limits above 25 mph and have average daily traffic volumes above 6,000 vehicles. Separation of bike facilities in this context is necessary to provide a pathway that is safe and comfortable for all ages and abilities. Since these facilities often stray from an existing road network, trails should connect to existing bikeways and sidewalks where possible.

Design Considerations

A In addition to incorporating Universal Design Features, trails and shared use paths should be designed as bi-directional facilities that are at least 12' wide, though sections as narrow as 8' may be necessary in constrained scenarios with lower user volumes. In areas with high projected pedestrian volumes, facilities as wide as 14' may be needed. Hard, all-weather pavement surfaces are needed to construct and maintain a smooth riding surface on shared-use paths. Trail designs can also be enhanced with striping and arrows to encourage users to stay to the right especially around turns and at areas with high potential for conflicts between trail users.



Trails along a Roadway

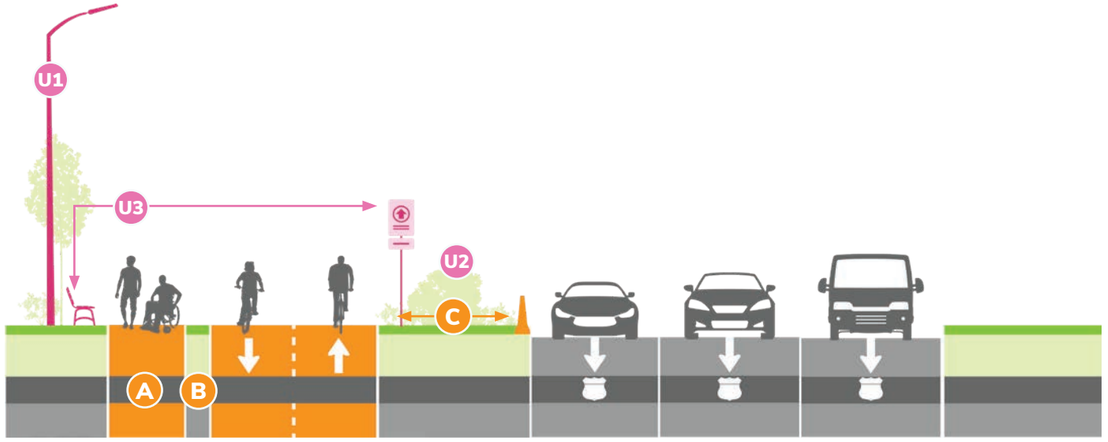
Trails offer a high-comfort, separated design option along roadways where vehicle speeds and volumes are high. The standard trail design can be enhanced in areas with exceptionally high pedestrian volumes to separate bikeway and pedestrian paths into complementary, parallel paths. In addition to the Common Design Features on page 21, trails along roadways have unique design considerations to ensure comfort and safety for users.

Design Considerations

A If separated, the bikeway should still maintain a targeted width of 12', while the preferred width for a sidewalk is 6' or greater.

B Separating facilities could be done with something like a painted boundary, a stripe of directional warning tiles, or even a multi-foot wide buffer made of landscaping elements.

C When the facility is along a roadway, there should be a buffer situated between the facility and the vehicle travel lanes. Ideally, this buffer should be widened when next to moving vehicles, increasing in width as traffic volumes and speeds increase. Along extremely high-speed, heavy-volume highways, a vertical barrier can be used to improve comfort and safety.





Example of a separated bikeway and pedestrian path with center buffer from Georgia Tech University campus

Trails along a Railroad or Utility Corridor

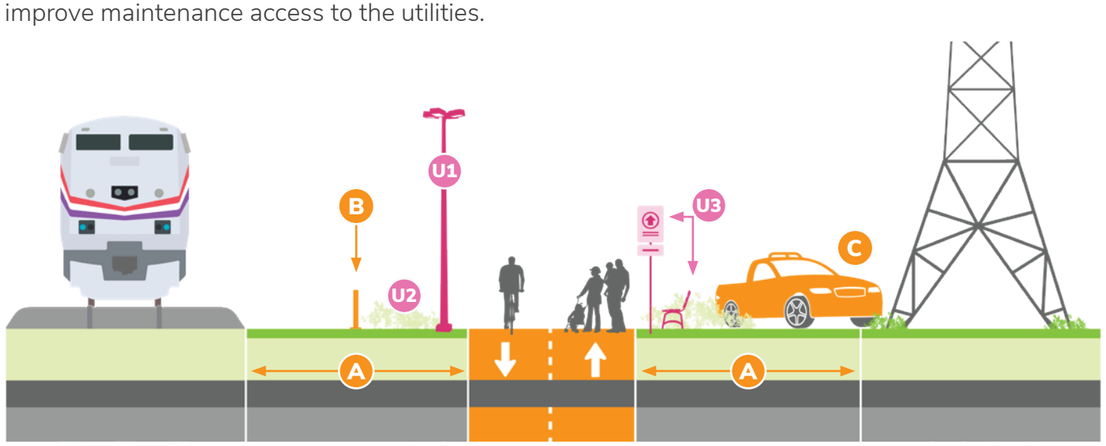
Utility and rail easements often have sufficient width to include a trail. In addition to the Common Design Features on page 21, utility and rail companies have specific design requirements for what can go in their right-of-way. Care should also be taken to make sure any lighting, vegetation, or other features do not interfere with operations or risk touching or falling into the rail or utility right-of way. Additionally, when a project crosses a railway, design should be closely coordinated with the rail right-of-way owner to follow their internal design guidance.

Design Considerations

A Minimum setbacks from the utility or rail line are set by the facility owner, requiring active coordination with the property owner through the planning, design, and construction phases of a project.

B When running along a rail corridor, trails should be separated by a vertical barrier such as a fence to discourage trail users from interfering with rail operations. Vegetation could be considered in lieu of fencing for setbacks greater than 25'.

C Trails along railways, utility corridors, and bayous need to be constructed so as to maintain or improve maintenance access to the utilities.





Example of a trail within a utility easement in Harris County

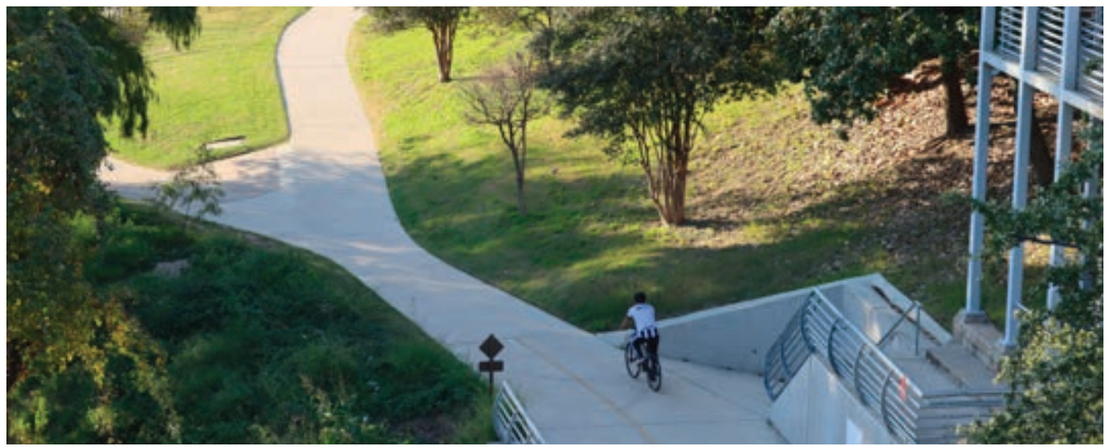
Trails along a Bayou or Drainage Canal

Bayous and drainage channels are a great location for trails and popular destinations for communities. In addition to the Common Design Features on page 21, trails along waterways have unique design considerations.

Design Considerations

Ⓐ In Greater Houston, building trails along bayous and drainage canals has been widely popular. Trails should be setback at least 5' from the top of the waterway bank and the trail should not interfere with water draining into the bayou or canal. Similar to utilities, drainage canals often require sufficient maintenance access.





Example of a trail along Buffalo Bayou in Harris County

Dedicated & Shared On-Street Bikeways

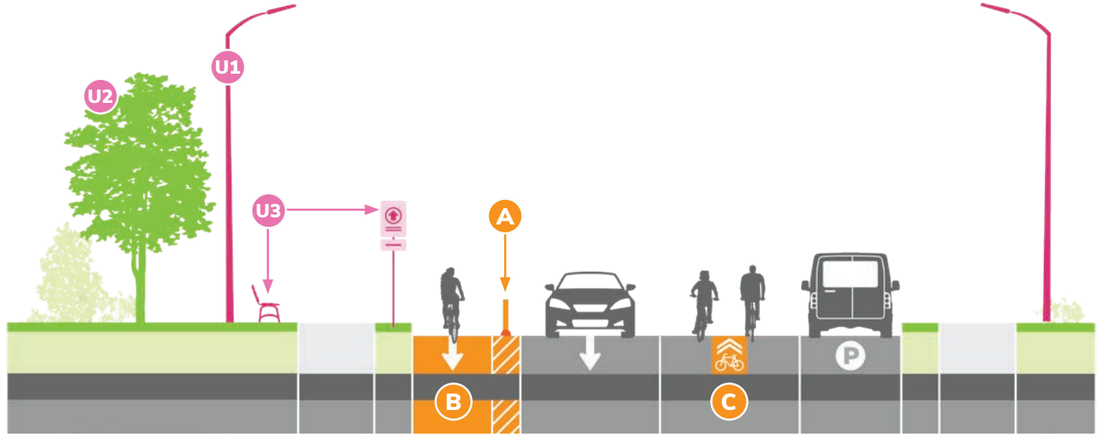
Some *Tollways to Trailways* projects make use of space on existing roadways for people biking. Since these facilities share space with, or are next to vehicle traffic, special care needs to be taken to ensure they are safe and comfortable for all users. Although different from trails, the Common Design Features on page 21 may still apply to these facilities depending on the context.

Design Considerations

Ⓐ Bike lanes provide dedicated spaces for cyclists that separate them from automobile traffic. On low-traffic, low-speed streets, painted bike lanes at least 6' wide can be appropriate.

Ⓑ In almost all scenarios a protected bike lane is preferred over a painted bike lane. These bike lanes should be at least 6' wide and separated from traffic by a painted buffer combined with a physical barrier, such as precast concrete curbs. Elements like flexposts can be added to improve the visibility of the barrier. Buffers should be as wide as possible within the constraints of the right-of-way to maximize the distance between bicycle users and higher-speed traffic.

Ⓒ On roads with exceptionally low traffic volumes and speeds (fewer than 1,500 vehicles per day and posted speed limits under 25 mph) it can be appropriate to allow bicycle traffic to share space with other vehicles. Adding elements that alert car-drivers that bicycles are likely to be present, such as "sharrow" markings on the roadway and complementary signage, along with more detailed wayfinding components, and other speed-reducing strategies can make these spaces safe and comfortable for bicycle users of all ages and abilities.





Polk Street protected bikeway in Harris County



Bagby Street bikeway under construction in Harris County

Design Components & Considerations

Trail and bikeway facilities are the core piece of this Plan. However, access to these facilities and safe crossings are important pieces of overall trail connectivity. Understanding the basics of these facility types and potential design solutions will be helpful on trail design and implementation. The following information broadly defines each facility type or design feature.

Sidewalks

Sidewalks along roads leading to the trail are critical building blocks to ensure people walking and those taking transit can access the trail. Sidewalks should be designed to be 5' wide at a minimum and 6' wide where possible. Sidewalks should be level, ADA compliant, continuous, buffered from vehicle traffic. Curb ramps should be at every intersection with an appropriate slope and direction to direct people into the crosswalk, not into the intersection. Warning detectors in the pavement also provide additional ADA accessibility. ADA accessibility specifications can be found in PROWAG (see Figure 9).

Safe Crossings

Intersections are typically the parts of the street network with the most complex movements and interactions, and therefore are oftentimes the locations where crashes occur. People walking and biking are at their most exposed when crossing the street; treatments to enhance multimodal safety at crossings are crucial to the pursuit of continuous and safe networks. These intersections and crossings, particularly across major thoroughfares, can be major barriers to achieving a comfortable and continuous trail or bikeway that serves all ages and abilities. Safe crossings should maintain or elevate the level comfort from a bikeway or trail, through the intersection or across a corridor to a connecting facility or destination. Pavement markings, signal timing, the use of flashing beacons, and intersection geometry are potential design solutions to ensure intersections are safe and easy to navigate for people walking and biking.

Protected intersections give people bicycling and walking a dedicated path to follow through the intersection and have right of way over turning vehicles. The intersection uses corner islands to extend the bike lane's separation into the intersection while slowing vehicular turning movements. Protected intersections can be accomplished in a full street reconstruction or as a retrofit project

Midblock crossings provide protected crossings for people walking and biking along stretches of roadway where signalized intersections may be far apart. Midblock crossings work well in a street reconstruction or retrofit option where median space can be allocated to a protected refuge, at transit stops, or between two destinations of interest. Midblock crossings can be used throughout the roadway to improve safety holistically along the corridor. These crossings can also be a powerful intervention near very active transit stops, especially when blocks are long making crossing opportunities scarce. Depending on the traffic speed, traffic volume, and geometry of the street that the trail crosses, a variety of treatments may be necessary to make midblock crossings safe.



Example of perpendicular sidewalks with curb ramps



Example of a high visibility crosswalk with separated bike lanes

Curb extension crossings are a set of curb extensions, where the curb is brought out to meet the edge of the travel lane (typically taking up the space dedicated to parking elsewhere on the corridor), with a crosswalk. Pairing a crosswalk with curb extensions gains all the normal benefits of curb extensions alone and also grants additional visibility to the crosswalk user. This enhanced visibility is particularly important on corridors with heavily utilized street parking; the curb extensions clear an area of parked vehicles such that the visibility of crosswalk users cannot be blocked. Curb extension crossings can be implemented at intersections (in which case the intersection also can receive the safety benefits of a curb radius reduction) or midblock. They can be constructed from temporary or permanent materials.

Raised crossings at intersections or midblock introduce vertical deflection traffic calming and further increase visibility of crosswalk users. This element can be paired with other strategies. Implementation of raised crosswalks varies in difficulty depending on site drainage characteristics.

Signage and striping at midblock crossing locations on streets with low traffic volumes and speeds may be appropriate. When appropriate, warning signage and crossing pavement markings may be a viable and less costly alternative. The core elements of this treatment are signage to warn drivers of the crossing, and white and green shared crossing pavement markings to highlight the crossing location.



Example of reduced crossing distance for a trail across a neighborhood street

The **rectangular rapid flashing beacon (RRFB)** has all the elements of a signage and pavement marking midblock crosswalk, with the addition of flashing yellow lights on the crosswalk warning signs. These yellow lights are activated when a pedestrian pushes the button to cross, and draw the attention of people driving. This solution has a much lower-cost and simpler implementation than pedestrian hybrid beacons.

The **pedestrian hybrid beacon** can enhance safety and comfort of crossings for people walking or biking across major roads where side street volumes may not support a signal installation. Depending on the volume of vehicles, number of non-motorized crossings, and width of the roadway, hybrid beacons or **HAWK's (High-intensity Activated Crosswalk)** can be layered with mid-block crossings or partial closures to further enhance the comfort and safety of a non-motorized intersection. The advantage of this system is that it is an enhanced level from the RRFB with a signal that turns from yellow to red for vehicle traffic.

Median refuge islands can be paired with active traffic control methods to enhance safety. By creating a wide raised island with a pedestrian cut through, this design element gives a person crossing the street a safe place to wait in the middle of the roadway. This makes crossings safer and more comfortable by simplifying the risk assessment tasked to the crosser, in that they only must cross one direction of traffic at a time. It also shortens the overall crossing distance, decreasing the time that the crosser spends exposed to traffic. This is a relatively low-cost treatment with significant impacts on crossing comfort, and should be implemented wherever feasible when creating a midblock crossing.



Example of a neighborhood midblock crossing with a median refuge island

Bikeways

Protected on-street bikeways are physically separated directional bike lanes. The bikeways can either be one- or two-way depending on right-of-way and land use. Barriers used between the bikeway and the vehicle roadway range in design, durability, and cost. For retrofitted roadways, barrier materials might include flexposts, oblong reflective "armadillos," pre-cast curbs, and even parked cars. Longer term separation can be achieved through roadway reconstruction projects where grade separations, continuous curbs, additional parking, and landscaping is possible.

Neighborhood bikeways are roadways with low traffic volumes and speeds where bicycles share the roadway with other vehicles. Their core elements are signage and wayfinding; however, when necessary they can include interventions that will reduce vehicular traffic speeds and vehicular traffic volumes.

Bike lanes provide a clear and safe space for people on bikes to ride apart from vehicular traffic. Safe and comfortable separated bikeways provide critical links between destinations that may be too long to walk and too short or inconvenient to drive or take transit. Through right-of-way reallocation, separated bikeways can be designed as protected on-street facilities or as shared-use paths behind the curb. This approach designates road space for cyclists but lacks physical protection. Painted bike lanes can be appropriate when traffic volumes are relatively low or when space is constrained, but generally protected bikeways are preferred for their safety and comfort benefits.

Shared-use sidepaths are a back-of-curb design solution that create a wide pathway to be shared by people walking and biking in place of traditional sidewalks. They can be designed as one- or two-way bike facilities, with the expectation that people walking will always travel two ways. The path is grade-separated from vehicle traffic and can include pavement markings to clearly delineate direction of travel and appropriate modes of transport. Shared-use paths work well where right-of-way is constrained within a roadway or along roadways with high vehicular speeds and volumes.



Example of a midblock crossing with HAWK signal



Example of a protected bikeway



Example of a neighborhood bikeway



Example of a sidepath with striping for people walking and biking



Example of wayfinding and placemaking at a trailhead



Example of wayfinding along a trail

Wayfinding

Wayfinding signage is an integral piece to a multi-modal transportation network. Wayfinding serves to educate users, establish a sense of place, and encourage phone-free navigation. Wayfinding signage works well when it is at the proper scale to the intended users, provides accurate directional information, and is clearly visible at all times of day and night.

Trailheads and Access Points

Trailheads mark a point of interest or entry/exit point to a trail with signage, information, and a small gathering space. Trailheads can be important visual indicators for users and first responders to locate a specific location. Trailheads can be larger areas with parking or restrooms if there is high demand, or a small area with signage and information. Trailheads can be important markers along maps as well to help indicate where trails are intended to be accessed.

Vehicle parking can be incorporated along trails to offer a convenient place for visitors to park and use the trail. Parking for trails work well when pedestrian access points are clear and within a short walking distance. Striped parking can be concentrated at trail heads or dispersed along the trail to provide more options for accessing the trail.

Micromobility

Bike share systems, like Houston B-Cycle, offer bicycles for rent at stationary docking stations. Stations are located across the city to build a network of bicycles that can encourage bike trips between transit stops, nearby destinations, and trails. Bike share systems work best when stations are located in high-density areas and clustered together to create a network. Transit stops, commercial centers, and trails are great examples of destinations that help bridge the gap in mobility from one place to the next. Today, some of the most highly utilized B-Cycle Stations are along Houston's trail network. These stations link several destinations, like the B-Cycle Station on D'Amico Street in Montrose. The station is located across the street from the Buffalo Bayou Trail at an apartment complex and is only 1,500 feet from the Whole Foods Market, restaurants, and entertainment.

Trail Features

Along trails and at trailheads are opportunities to elevate the facility in ways that create a sense of place, create economic value, and truly build great places in communities. Features that can accomplish this can be a simple as places to sit or enjoy the trail, signage that highlights native plants and animals in the area or potentially community history, art, repair stations, or even play and exercise spaces. These components should not be thought of as "additions" to a trail, but a key part of the design when engaging with stakeholders and community members.





Examples of wayfinding along a trail (left) and neighborhood bikeway (right)



Example of a Bikeshare station with trail access



Example of interactive art along a trail



Example of art and historic features along a trail

Trail Connection Planning

The 236 miles of recommended trails and bikeways are the core of the Tollways to Trailways Plan. Still, those facilities are only useful if they are connected to neighborhoods and important community destinations.

This chapter provides a framework to identify and construct trail connections using a consistent process. This process is intended to be incorporated into initial design process for projects, but is flexible enough to be used on an existing trail facility or as the community continues to develop and evolve. The chapter includes case study example of one proposed project as a go-by that highlights the various needs for this more detailed level of connectivity.

A Framework for Planning Trail Connections

About Trail Connections

Active transportation corridors will create and connect trails and bikeways supporting an interconnected active transportation network throughout Harris County. It will be important to identify local connections for people living and working near a proposed trail facility. This document presents the framework for Trail Access Planning to support steps to thoughtfully identify and construct community-based connections to and from trail infrastructure. This planning framework provides a comprehensive way to think beyond a terminus of a project supporting access to and from local destinations.

The Trail Access Planning framework is adapted from the "first-mile and last-mile connections" methodology traditionally used for transit projects. In a transit scenario, the transit stop is used as a focal point to evaluate and improve accessibility to and from the stop. Like transit stops are gateways into the transit network, Trail Access Points are gateways to the trail and bikeway network. However, in a transit scenario, the stops have been located in the context of an existing roadway network. In the trail scenario, the bikeway can be located along utility corridors or behind residential property where potential access points, and further integration into neighborhoods, might not be as clear. Hence, the holistic methodology used to improve accessibility to transit stops is a helpful framework to carry over and apply to trail access planning, but is adapted in this report to fit the context of trail development. This context-sensitive approach to trail development will build more integrated trails and encourage more people to utilize the active transportation corridor.

Timing

Trail Access Planning should occur during planning and design of any trail project, but may also occur after a trail has been constructed. Ideally, during the planning and design phase of the trail project, preferences for access points should be gathered from local stakeholders and the general public. This public input will help build an internal understanding of the issues and opportunities for accessibility so that early design decisions for access points can be made. The public participation process also provides neighborhoods the opportunity to shape trail access points, which as stated earlier, may be more challenging to identify and confirm due to the unique context. This framework is intended for off-street trail projects with the understanding that on-street active transportation corridors also need safe/logical access but can be focused mostly within the public rights-of-way.

Prioritized Destinations

An assessment and understanding of local land uses and destinations important to the community will help facilitate the right connections. During the Trail Access Planning assessment, it is important to should prioritize connections to the destinations below and capture priorities from the public. A more detailed assessment is listed in the framework steps on the following pages.

Trail Connections Framework

The following nine steps present the framework for defining trail access points and extending accessibility to local destinations. It is recommended to work through these steps after a trail project has been designed (or constructed). A more detailed description supporting each step can be found on the following pages with a diagram to illustrate the step. It is assumed that a mapping tool will be used to perform the majority of the steps below and may include one or all: ArcMap, GoogleEarth, GoogleMaps, and/or the mapping tool created for the "Active Transportation Corridors".



Step 1: Define Trail Assessment Limits

Many of the proposed trail and bikeway improvements are longer than one mile. In determining trail accessibility, dividing the trail into one mile segments or at natural breaks in the path allows for a more accurate understanding of accessibility opportunities.

Step 1 illustrates a trail of approximately three miles divided into one-mile segments. The highlighted segment labeled "1" will be the first segment of the trail to undergo the subsequent steps to determine accessibility opportunities and challenges.

Step 2: Identify Trail Access Points

Access points are locations where people might enter or exit the trail. Access points can be located at intersecting streets, at termini of the trail, or abutting destinations and neighborhoods.

In Step 2, access points are identified in four locations. In this case, all four access points are located at intersecting streets and are relatively equally spaced. However, in the case where few streets cross the trail, the investigator may move to subsequent trail segments to evaluate the extent to which the trail is integrated with the roadway network. If the trail does not have a clear access point for more than two miles, solutions will need to be developed to ensure emergency situations can be addressed in a reasonable time frame. As general guidance, four identified access points along one-mile segments is a good starting point to present to the public and refine based on feedback.

In an effort to bring positive attention to the trail and clearly signify the resource to community members, some access points may be designated as trail heads where additional amenities or design elements are incorporated to contribute to a sense of welcome for visitors upon arrival. Trail head design is another opportunity to work collaboratively with the public to ensure the gateways to the trail are representative of the surrounding community.

*Though this framework details a process for identifying access points during trail development or thereafter, access points are important components to consider during the trail design phase.

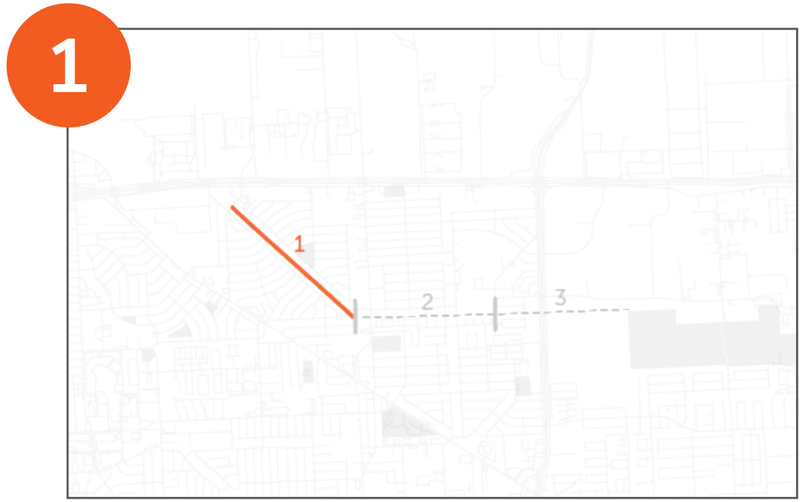
Step 3: Determine the Buffer Zone and Investigate Local Context

The purpose of this step is to piece together a surface understanding of the surrounding community near the trail and begin to identify destinations the trail might connect to through access points. To start, define a buffer zone around the trail segment of .25 miles. Within the buffer zone, identify destinations like:

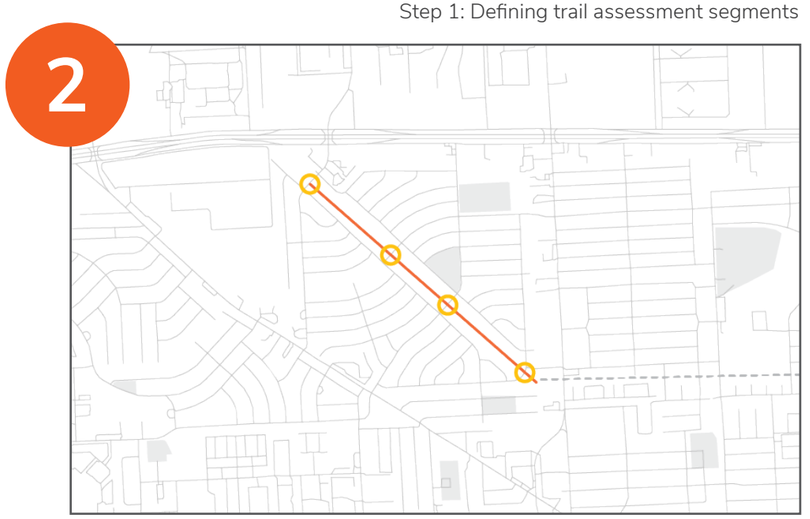
- Jurisdictional Boundaries
- Parks
- Schools
- Community centers
- Existing or proposed bikeways
- Transit stops
- Shopping centers (grocery or other)
- Employment centers

Depending on the surrounding context, destinations might be sparse or plentiful. If few destinations exist within .25 miles extend the buffer zone to .5 miles and further to 1 mile if the number of destinations is unsatisfactory.

In cases where many destinations exist within the .25 mile buffer, not every destination needs to be identified in the map. Prioritize those that contribute most significantly to the health and prosperity of the surrounding area. To ground-truth the identified destinations, surrounding neighborhoods and stakeholders can be consulted and will offer more insight into which destinations matter most later in the process.



Step 1: Defining trail assessment segments



Step 2: Identified Trail Access Points



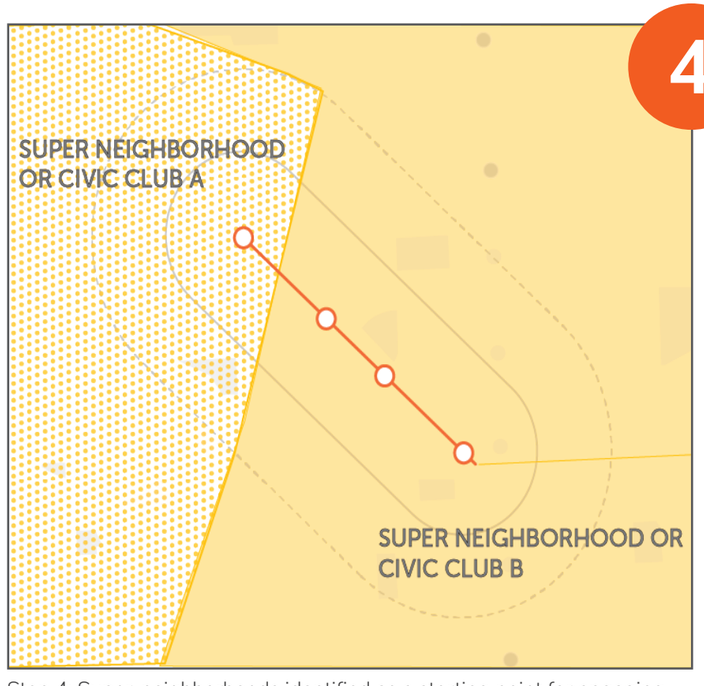
Step 3: Identify buffer zone and destinations

Step 4: Consult the Public and Local Stakeholders

The public and agency stakeholders will provide valuable information to ensure the previous steps are accurate and following steps are informed. At this stage, agency stakeholders will need to be briefed on the project intent, research thus far, and plans to move forward following community engagement. The public will be meaningful partners in verifying:

- The location and number of access points
- Prioritized destinations
- Ideas for connections

Feedback from the public before determining connections and solutions will help build trust and allow ground-truthing to take place before decisions are made. Additionally, meeting early with the community allows more education to take place from the public to the agency, and also from the agency to the public in regards to toolbox options identified in Chapter 4.



Step 4: Super-neighborhoods identified as a starting point for engaging the public

Step 5: Define Connections to Destinations

After receiving feedback from the public on Steps 2,3, &5, connections to priority destinations can be defined. As a first step, review the community and stakeholder feedback and record priority destinations and connections and discuss initial feasibility and limitations. Then, investigate the street type and characteristics of the prioritized connections compared to others. These characteristics include:

- Roadway type (neighborhood street, major thoroughfare, collector, etc.)
- Roadway width
- Roadway speed (if available)
- Presence and quality of sidewalks and crosswalks
- Drainage characteristics (e.g. open ditches, paved drainage)

Based on this information, a series of decisions can be made as to whether or not the identified connection is physically, contextually, and financially feasible to function as the primary path to access the trail.



Step 5: Connections to destinations prioritized by the community

Desirable characteristics for a connection to the access points include:

- Slow vehicle speeds
- Intact curbs and updated drainage infrastructure
- Direct connection with few turns
- (if sidewalks are not present) enough back of curb space to add sidewalks
- Smooth and clean pavement
- Few to no parked vehicles

The path may not meet all the mentioned criteria, but the project team can set goals and parameters for which improvements are within the bounds of the project scope and which will require help from partners to address.

Step 6: Identify a list of Toolbox Elements Supporting Access To/From Destinations

After the connections between access points and destinations have been identified and roadway type and quality cataloged, solutions to improve connectivity can be formulated.

Toolbox items include tactical solutions common to challenges associated with pedestrian and bicyclist safety. These tools will be detailed in the design guidance section of the final report and include:

- ADA compliant sidewalks and curb ramps
- Mid-block crossings
- Crosswalks
- Traffic calming measures
- Signage
- Bikeways
- Universal design features

Step 6 (right), curb ramps and a mid-block crossing were identified as the appropriate solutions to enhance connectivity. To better cost and develop a budget for the intended improvements, a formal sidewalk and street analysis will need to take place to evaluate the conditions of the roadway in-person.

Step 7: Finalize Connections and Verify Toolboox Items with Neighborhood Groups

Develop a summary of data collected through technical research and community feedback gathered from Step 1-6. Present the summary with the finalized connections and propose the solutions identified from the toolbox.



Step 6: Curb ramps and pedestrian mid-block crossing identified as preferred solutions



Case Study: Red Bluff Trail (Project #24)

Trail Connections that Serve the Community

The proposed Red Bluff Trail runs along a utility easement from Bearle Street to the Battleground Golf Course in Pasadena. The easement runs through the heart of multiple residential neighborhoods in Precinct 2 and is located near many important destinations for the community. The easement is near seven public schools, three parks, four places of worship, a grocery store, and a Health & Human Services Office, see Figure 11 for a map of some of these destinations.

Multiplying the Impact with Trail Connections

Despite its proximity to several community destinations, the easement acts as a barrier in Pasadena's local street grid. The few streets that cross the easement do not have sidewalk access from one side to the other. Figure 11 shows the proposed Red Bluff Trail in blue and the crossings without sidewalks in orange. The project would not only provide a great new connection for residents, but it also offers the opportunity to re-stitch Pasadena's street grid across this easement to make it easier and safer for people to walk to the many local destinations near the trail.

Additionally, a few strategic investments in sidewalks or wide sidepaths could create direction connections from key destinations to the trail. For example, a wide sidewalk with improved curb ramps to the part (A on Figure 12) and a new sidewalk to a nearby grocery story (B in Figure 13) would magnify the impact of the Red Bluff Trail investment.

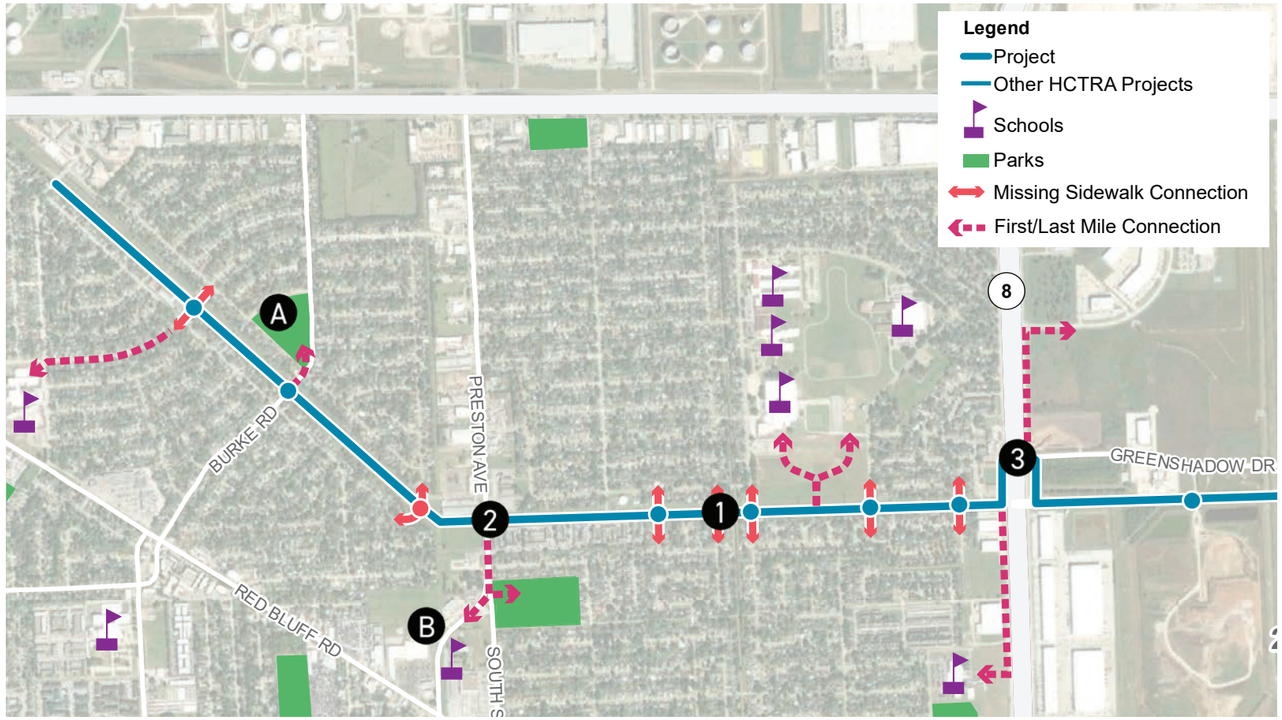


Figure 11. Trail Connections for the Red Bluff Trail

Project Details

Extents	Bearle Street to Battleground Golf Course
Precinct	2
Length	2.9 miles
Residents within 1/2 mile	33,000
Jobs within 1/2 mile	26,000
Nearby Destinations	7 schools 3 parks 4 places of worship 1 grocery store 1 Health & Human Services Office

Community Destinations to be Connected

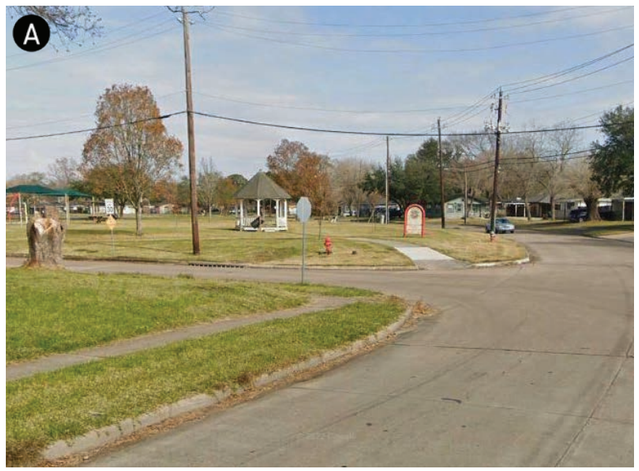


Figure 12. Park Connection to Widen and Make ADA Compliant



Figure 13. Missing Sidewalk Connection to Grocery Store

Example Trail Crossing & Connection Treatments

Improved crossings of local and major streets are necessary to build a trail that people feel safe using and that fully connects residents and businesses to the trail. The three examples in Figures 14 to 16 below demonstrate the types of crossing improvements that create a high-comfort experience for people walking and biking across different types of streets. The examples also show the types of low-cost, high-impact trail connections that link the trail to the community.

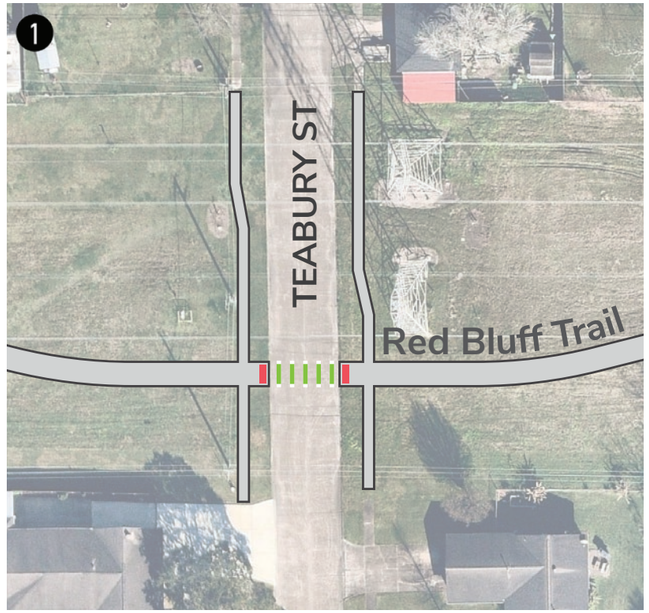


Figure 14. Example Residential Street Crossing

Local streets are typically narrow with lower vehicle speeds and volumes. At trail crossings for these locations, such as Teabury Street in Figure 14 a clearly marked mid-block crosswalk with curb ramps creates a safe crossing.

In this example, the existing neighborhood sidewalks end at the utility easement. New sidewalks create trail connections to the trail and link neighboring communities together.

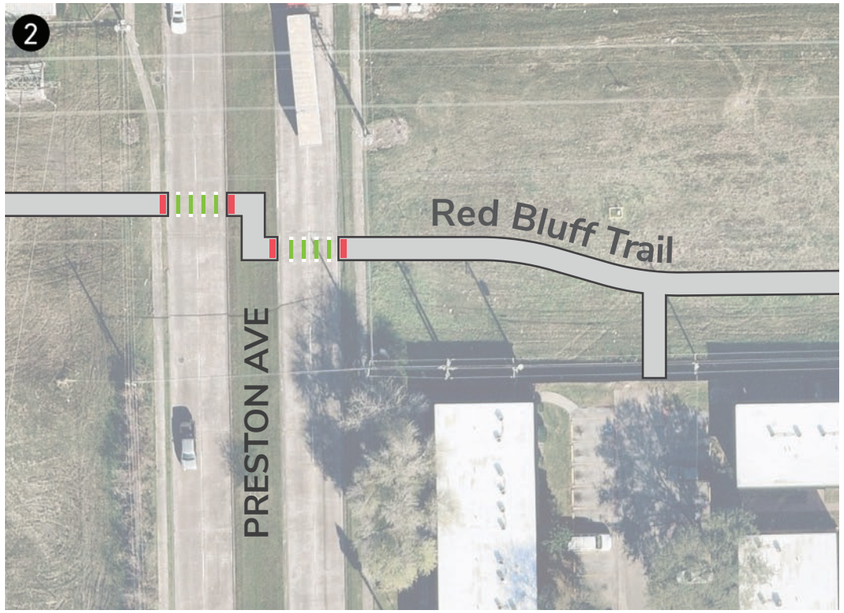


Figure 15. Example Thoroughfare Crossing

At major streets, like Preston Avenue in Figure 15, vehicle speeds and volumes are often higher, and the streets are wider. These conditions make it more difficult and dangerous for people to cross. The example crossing shown above creates a two-stage crossing with marked crosswalks and new curb ramps. The right-angle turns in the Preston Avenue median add an additional level of safety by letting trail users see oncoming traffic before crossing.

Just to the east of the crossing, the example demonstrates how direct connections can strategically link communities like the multi-family housing to the trail. These types of investments may require coordination with the property owners.

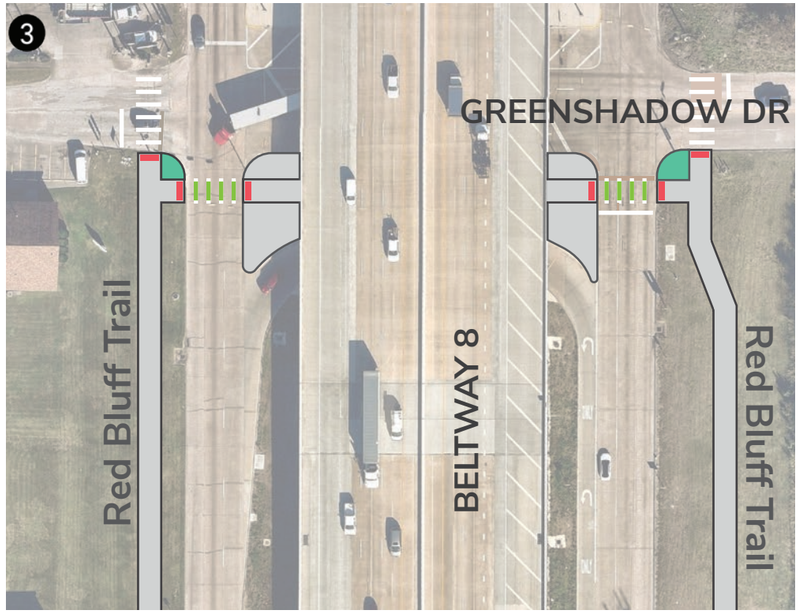


Figure 16. Example Highway Crossing

Major highway and tollway crossings like Beltway 8 at Greenshadow Drive in Figure 16 have very high vehicle volumes at high speeds across wide roadways. As a result, crossings at these locations require more complex designs to ensure that trail users can cross safely. In this example, the project requires a new trail to be constructed across the Beltway 8 frontage roads and under the tollway overpass. This project is an opportunity to construct ADA-compliant curb ramps, enhance the visibility of the frontage road crossings, shorten the radius of the intersection curbs to encourage more responsible vehicle turning speeds, and integrate pedestrian and bicycle crossing elements into the signal design.

This trail crossing also provides an opportunity to add north-south crosswalk improvements across Greenshadow Drive to further strengthen trail connections.

Public Participation Process

As HCTRA and its partners begin coordination and development of projects, it is essential that there is opportunity for the public to be a meaningful partner as well. This chapter identifies a process to incorporate that includes the public as a partner when developing projects. This process provides flexibility to understanding the right tools and ways to communicate with communities to set the stage for success. The information in this chapter will help create consistency, clear expectations, and an early understanding of the level of effort needed.

Creating & Implementing a Public Participation Process

Public participation can be done for a variety of reasons. The information in this section begins with providing a baseline as to why this process is important and a framework to facilitate work with the community and its partners to have successful, meaningful engagement and input.

The presented framework is intended to provide guidelines for leading or managing public engagement efforts alongside trail and bikeway development throughout Harris County. Couched within each step are action steps to guide the project team further through the framework.

Steps 1-4 of this framework are steps that can occur prior to the project launch and are typically associated with a Community Engagement Plan (CEP). The CEP helps guide the development of a public participation timeline and coordinating resources needed to execute the plan, prior to the project launch. Resources are provided on page 37 detailing more granular guidance on how to implement tools defined in this report. Step 5 (Document and Communicate Input) captures actions to be completed as the engagement process unfolds.

Why Conduct a Public Participation Process?

Make Better Decisions

Just as engineers, planners, and communications professionals have expertise in their respective fields, the public also holds expertise as end-users. Engaging the public brings additional facts, values, and perspectives to projects that may have been invisible before. By incorporating public expertise publicly informed decisions are well rounded, often easier to implement, and more likely to be embraced and maintained by the community over time.

Develop Support

No one likes to be left out of important decisions. Engaging regularly and authentically with the public helps communities understand the components behind certain decisions. This understanding can prevent conflict later down the road and empower the public to become ambassadors for the project moving forward.

Build Capacity

Developing and managing a meaningful, effective public participation processes takes skill and practice. By setting an example of how to develop collaborative ideas and solve complex problems, both agency staff and the public will learn to communicate more effectively and work together. Agencies and communities well-versed in effective dialog will build more trusting relationships and strengthen the democratic process within our communities over time.

Save Time and Money

Planning for infrastructure without the participation of the public can lead to extended delays, project cancellation, or costly changes to trail projects. Good public participation practices conserve public funds over time by cultivating an enthusiastic ambassadorship from community groups that help quicken implementation, inspire community ownership and maintenance, and lead to lower management costs over time.

Information on this page was adapted from the Environmental Protection Agency's Module 1: Introduction to Meanngiful Public Participation Participant Workbook

The Framework

01 Define the Decision Making Process

02 Build Knowledge

03 Clarify Purpose & Goals

04 Connect Goals to Tools

05 Document Input & Communicate Impact

1. Define the Decision Making Process

Introduction

Every project will have several decisions that will be made in the planning, design, implementation, and review phases. The first step to to clarify what decisions need to be made within the time frame of the project and identify the decision points where public participation could be most helpful. The project team should then establish how information from the public will be communicated to the design or engineering team and how the incorporation of public feedback will be recorded and communicated back to other team members and the public.

Step 1.1: Identify Project Decision Points

Trail and bikeway projects present a host of decisions the project team can make alongside communities. Some of the planning and design phase decisions can include:

- Project goals
- Trail alignment
- Safety concerns and solutions
- Trail access points and connections to neighborhoods
- Trail enhancements (rest stops, fix-it stations, lighting, landscaping, art and cultural markers, etc.)
- Pavement type and striping options

Identify within the project timeline when each of these decisions are to be made and who on the project team needs this information to move forward.

Step 1.2: Select Decisions Appropriate for Public Participation

Decisions appropriate for the public to collaborate with the project team on are items that have some level of flexibility in how they ultimately get implemented. For example, the location of access points and what those access points look like can range widely, looking to community groups to determine the location and parameters of the access points is a great decision to share with the public.

On the other hand, trail alignment may not be an appropriate decision if limited right-of-way prevents alternate options. Increasing the level at which the project team shares decision making powers with the public helps build a more successful trail and cultivates trust with the public.

Step 1.3: Update the Project Timeline & Establish Communication Protocol

With decisions identified for public participation, sequence community engagement within the overall project timeline so that before and after each decision point the engagement team has the opportunity to collect and relay information from the public to the design team. After the engagement tools and techniques have been selected (Step 4), a more detailed timeline can be crafted. At that time, the time allocated to community engagement should also allow space for the collection of public input, analysis of input, review from the project designer, and a response from the designer or engineer with appropriate changes. These changes, adjustments, or additions based on public input should be clearly identified and communicated back to the engagement team to demonstrate to the public feedback is being incorporated as promised.

Guiding Questions:

- What decisions need to be made through this project?
- When do these decisions need to be made?
- Which decisions or options might benefit from public participation the most?
- What decisions have been made already?
- How do we intend to incorporate changes and ideas from the community input into our design or process?
- How will we communicate with each other to make sure community groups have their input heard and addressed?

When should a public participation process take place?*

Public participation should happen in waves of three, before, during, and after design.

1. Prior to Design- Gather, values, vision, and goals from the community

2. During Design- Confirm lessons learned with the community

3. After Design- Show outcomes that reflect feedback

*Best practice is to offer some level of engagement during the construction and maintenance phases to keep things running smoothly after design is complete.

2. Build Knowledge

Building knowledge is important as it helps to provide background knowledge about the community or area surrounding a project, which helps the project team ask thoughtful questions from the community and identify the appropriate surrounding context.

Step 2.1: Collect Demographic Information

Race, ethnicity, age distribution, income levels, and poverty all contribute to the culture and personality of a community. Know who you are trying to engage before determining what engagement tools or tactics are appropriate. For example, if working in a community where 65% of residents speak a foreign language, materials, meetings, and personnel will need to be coordinated to accommodate persons who are more comfortable using that language.

Step 2.2: Identify Community Groups

Community groups refer to bodies of residents, workers, or other persons that come together regularly within a specific geographic area to provide and receive services, develop or respond to community initiatives, play, and develop relationships with one another. Common examples of community groups include: Civic Clubs, Parent-Teacher Organizations, church groups, sports clubs, and student organizations. Community groups can be found through civic institutions like community centers and schools, through mission based groups, multi-family housing complexes, or local businesses and clubs like soccer and softball leagues.

The purpose of identifying community groups is to gather contact information for community stakeholders, identify gaps in representation, and begin developing appropriate strategies to engage with different communities based on the depth and availability of this information. The strategy developed for engagement can change depending on the presence and coverage of community groups.

Frequently, wealthier communities are more likely to have more contiguous and active civic organizations like Civic Clubs, Homeowners Organizations and Park Conservancies. This robust civic infrastructure improves the likelihood a diverse range of community voices are heard and incorporated into decisions made by public and private entities. However, minority and lower income communities, may organize themselves outside of civic organizations in mission or faith based groups like church groups and small non-profit organizations. These groups may or may not be immediately obvious, but it is important to remember to look for a range of ways the community might organize themselves beyond the traditional civic club when representation may not be adequate through these channels.

Step 2.3: Review Past Planning Efforts

Previous planning efforts can bring to light community assets, challenges, and opportunities that may help craft informed messaging when marketing a community event or interacting directly with the public. Review available documents and pay close attention to the plan's goals, language used, and the community groups who were involved with the effort.

Step 2.4: Spend Time in the Field

While reading about a particular community can provide valuable information, nothing can replace seeing and experiencing a place yourself. Make an effort to spend at least 10 hours in the community of interest exploring, participating in meetings, eating at restaurants, driving or walking around, talking to people, and visiting local businesses. The experiences will build essential knowledge that can be referenced in conversations with the public. In communities where relations between residents and government has been strained (e.g. communities of color) this simple act can help cultivate a sense of trust and mutual respect from community members.

Guiding Questions:

- Who lives in the community?
- Based on the various demographics of the community, how can we best engage and involve them?
- What community groups or organizations are present?
- How does the group communicate with each other or it's group members?
- Who are the groups leaders?
- Are community groups geographically bound and contiguous? If not are there large areas that are not represented by a civic organization?
- What community values come through clearly in this plan?
- How might my project support or contradict goals stated by the community?
- What other issues or challenges expressed in the plan do I need to address prior to engaging the community?
- Are there any restaurants or coffee shops that look good to me in the community?
- How is it easiest to get around here?
- Do I look like, talk, or behave similarly or differently to the people in the community?
- What surprises me about this community?

3. Clarify Purpose & Goals

Rooting conversations about the purpose of public engagement and goal setting in organizational mission, values, and strategic goals can help unearth language in answering questions about why public participation is valuable to an agency.

Step 3.1: Align Agency Mission and Values with Engagement

The engagement framework, methods, and tools that are used should align with how to best achieve the goals of the community and stakeholders. Reflecting internally within the project team can help answer questions on the purpose and importance of community engagement within the context of organizational pillars.

Step 3.2: Determine the Level of Engagement to Support Values

The International Association of Public Participation (IAP2) developed the "Spectrum of Public Participation" for practitioners to understand and improve upon participation methods. Each level of participation carries a goal and promise to the public. Review and familiarize the team with the spectrum.

Guiding Questions:

- Within the mission, vision, and core values, how is public participation reflected?
- What do our mission/values/goals tell us about the role of the public?
- Which values, goals, or mission would be impossible to achieve without public participation or feedback?
- What would a values/mission-driven community engagement effort by our agency look like?
- Based on organizational mission, values, and strategic goals, what level of public participation is required of considered helpful and important?

Step 3.3: Detail Goals

Based on the knowledge gained in the research stage, goals can be defined. In general, goals should address key factors including:

- Participation- having a general idea of how many people you want to participate in the effort
- Diversity of participants- race, ethnicity, income, gender, or age should generally reflect that of the community as a whole
- Geography- within an area of interest (e.g. low-income neighborhood adjacent to trail/facility)
- Engagement satisfaction- how the public is receiving engagement efforts

The intention of these key factors is to offer a base through which other goals can be built. Metrics for goals can be quantitative (e.g. 46% of survey respondents are Hispanic) or qualitative (e.g. participants describe feeling "understood.")

Examples of goals

- Participation of 250 people in survey, public meeting, or other activity
- 85% participation of Hispanic persons
- 30% participation from abutting property owners
- Participants describe feeling "understood"

These goals need not be kept internal to the project team. Often, sharing engagement goals with the public help the project team meet goals, if not initially, as the project unfolds.

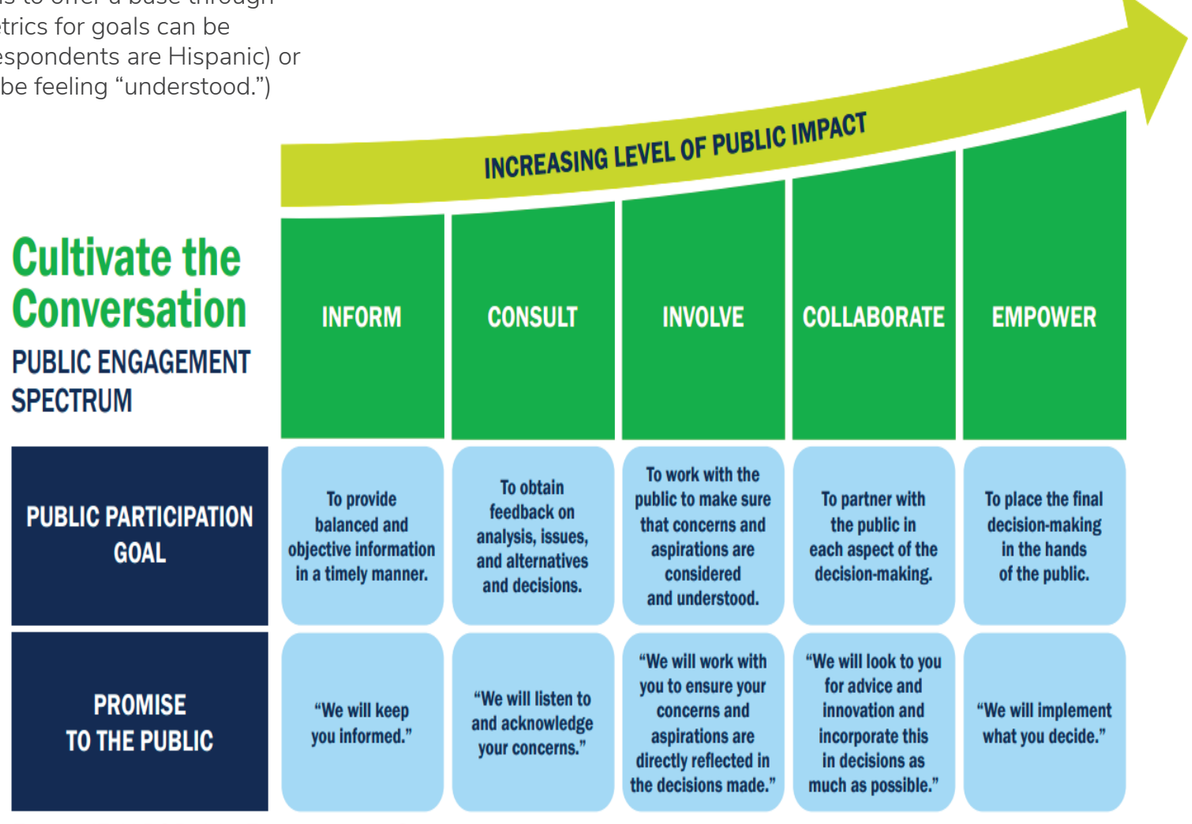


Figure 17. IAP2 Public Engagement Spectrum

4. Connect Goals to Tools

The tools presented in this section detail tactical options to meet community engagement goals and fulfill the role of the public and/or community groups in engagement efforts. Intended to be mixed and matched, the tools work best as sets to compliment one another to satisfy dynamic needs and progressive levels of community engagement. Tools have been placed into the following four categories: inform, involve, collaborate, and empower.

Tools to Inform

Public Participation Goal: To provide balanced and objective information in a timely manner.

Promise to the Public: "We will keep you informed"

Tool/Technique	Description	Good for:
Press Release	Used to notify media outlets of initiatives or changes important to many people across a large area	Announcing a public meeting; marketing the opening/closing of engagement tools
Print Materials (flyers, stickers, posters. postcards)	Physical marketing and informational materials to disperse throughout a community	Covering a wide range of community establishments; spending time in the community
Newsletters	Print or electronic periodicals sent through community organizations, elected officials, or other community groups	Marketing meetings or upcoming surveys
Ground Mail Notification	A tool to inform residents in a specific area of a coming change or event.	Notifying residents of a construction schedule
Social Media	The use of online platforms like Facebook, Instagram, Twitter, TikTok, and Next Door to communicate with neighborhood groups and the public at-large	Marketing project; cataloging recorded meetings; reviewing demographic information; collecting language
Website	A catch-all online presence containing project information and feedback tools. Can be hosted on an agency website or stand alone.	Compiling all project information for public use

Tools to Consult

Public Participation Goal: To obtain feedback on analysis, alternatives and/or decisions

Promise to the Public: "We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision."

Tool/Technique	Description	Good for:
Block-walking	Visiting residences and businesses along a certain path to share information or collect feedback. Often includes community members themselves	Targeting specific geographic areas; areas with lack of civic clubs or other civic groups; citizen committees
Community Events	A celebratory gathering or activity that brings community members together	Introducing an organization or project to communities; building trust
Engagement Stations/Speak-Outs	Temporary locations placed at high traffic areas (e.g. grocery store) around the community to share information and collect feedback	Engaging end-users; building relationships; marketing surveys/feedback mechanisms; developing social media content
Existing Meeting Presentation	A presentation at an existing civic club or organizational meeting near a trail development	Regularly updating neighborhood groups on progress; developing relationships with neighborhood groups
Ground Mail Survey	A tool to solicit feedback from many or all residents within a given area. Can include a mail-back portion or provide a project link or QR code to encourage residents to participate	Ensuring all residents have the opportunity to participate; seniors (if survey mail back option)
Listening Sessions	A type of focus group that gathers small groups of community members with the intention of answering specific questions	Historically significant projects; understanding values and detailed needs and concerns; relationship building
Public Meeting	A meeting hosted either in-person, virtually or both by the project team to present information, gather feedback, and take direction from the public	Visioning exercises; long-term projects; opportunity to convene all project partners
Online Interactive Map	Provides online way for people to draw on maps to identify locations or routes of need/concern	Large projects or area spanning several miles; identification for spot improvements or safety concerns
Online Survey	Provides opportunity to identify needs, concerns, ideas, and demographic information	Measuring demographic characteristics of respondents; collecting visual and design preferences; collecting language

Tools to Involve

Public Participation Goal: To work directly with the public throughout the process to ensure public concerns and aspirations are consistently understood and considered.

Promise to the Public: "We will work with you to ensure that your concerns and aspirations are reflected in the project and provide feedback on how public input influenced the decision."

Tool/Technique	Description	Good for:
Existing Meeting Presentation	A presentation at an existing civic club or organizational meeting near a trail development	Regularly updating neighborhood groups on progress; developing relationships with neighborhood groups
Tours	Tours can be led on foot, by bike, bus, rail, or vehicle to show specific examples of issues and solutions while developing relationships	Joint citizen/agency committees; building knowledge and language in citizens

Tools to Collaborate

Public Participation Goal: To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.

Promise to the Public: "We will look to you for advice and innovation in formulating solutions and incorporate your preferences into the decisions to the maximum extent possible."

Tool/Technique	Description	Good for:
Citizen Committees	A group of community leaders or target audience members convened to guide project outcomes over time	Multi-phase project; building trust; community development
Charrette	A type of public meeting where project team leaders facilitate a rapid design exercise with participants to solve design problems.	Determining neighborhood connectivity to the trail; understanding design challenges; developing rapid solutions
Community Art	Developing murals, designs, mosaics, and other expressions of culture alongside the community in public spaces	Building relationships; supporting community goals; beatification; earned media
Meeting in a Box	A format for community groups to gather and discuss materials assembled in a discussion kit at a time convenient for them. The kit can include information about the project, worksheets, questionnaires, and directions returning responses	Large projects with many community groups and low staff to facilitate meetings.
Nominal Group Technique	A small group discussion to develop a set of priorities. Participants are asked to write down opinions associated with questions and the group votes or ranks the ideas	Resolving disagreements within a small group; developing clear priorities; including persons who may not feel comfortable being vocal about opinions
Study Circles	Small group process where diverse participants meet several times to discuss and learn about an issue at hand	Supplementing citizen committees; building subject matter expertise in participants

Tools to Empower

Public Participation Goal: To place final decision making in the hands of the public

Promise to the Public: "We will implement what you decide."

Tool/Technique	Description	Good for:
Joint Citizen/Agency Committee	A group of community leaders, or target audience members convened with agency professionals to exchange expertise, build relationships, and guide outcomes	Multi-phase projects; building trust; community development
Tactical Urbanism	The process by which a group of people build their vision for what they would like to see in their neighborhood using everyday objects. Examples include pop-up bike lanes, painted crosswalks, and park benches	Demonstrating a new design; building community; earned media; engaging property owners along a given project route
Deliberative Polling	A structured process that allows participants to explore a specific issue and provide their opinions on next steps based on pros and cons associated with the project. The participants are surveyed twice, once before any information is given, and after when the group has been educated on project background and information from subject matter experts.	

ACTIVITY: Imagine a Best and Worst-Case Engagement Scenario with Project Leaders

Thinking about how a project could go very well or very poorly is a way to reveal specific hopes and fears regarding engaging the public. Everyone on the project team can provide valuable feedback during this activity, including engineers, planners, public relations staff, and executives. Take the team through the exercise and record the group's best case and worst case scenario using the questions below.

- How do abutting property owners and the community at-large respond to the project?
- How do they vocalize their support or opposition?
- What response do elected officials have? How do they communicate it?
- How does this trail contribute to or detract from the identity of the community?
- How does the community contribute to or detract from trail maintenance and safety?
- What effect does this project have on the success of others?

Sample best-case scenario:

Property owners abutting the trail and the community at-large are enthusiastic and vocal about their support for the trail. Community participants feel their values and knowledge of the area are incorporated into the design, and feel the result will help them reach common goals. As a result, elected leaders recognize the momentum for the project and connect the project team with a local school group advocating for more trees. At the groundbreaking, the school group and project team plant the first tree to border the trail. The popularity of the trail by the community helps keep the trail clean and safe reducing maintenance and security costs associated with the trail moving forward. This trail then becomes an example for project team to refer to when approaching new communities and elected officials. Based on the positive experience of the initial community, the new neighborhood representatives are thrilled to continue trail development efforts.

Sample worst-case scenario:

Property owners and the community at-large are vocal about their opposition to the project. Civic Club leaders publish an article in the local newspaper describing how the trail will actively defy the values and goals of the community spurring an email campaign against the trail to local elected officials. As a result, the Council Member becomes critical of the project, and actively prevents the project team from moving forward. As it turns out, the community has been actively planting milkweed plants to attract Monarch butterflies in the area intended for the trail. At the project site, signs explain the importance of pollinators to the local community. This experience creates damaging relationships between the project team and the community and brings the agency as a whole under scrutiny. The attempt to advance a potentially regionally significant trail fails and continues to affect other trail projects negatively moving forward.

5. Document & Communicate Input

Public input is most useful if it is documented and shared with project designers and implementers in a form that can be easily interpreted and integrated into trail or bikeway designs. Sharing summarized public feedback back to community groups after engagement has occurred establishes a standard of active listening and reciprocity.

Step 5.1: Develop Methods to Compile and Analyze Public Comments

Public input should be treated as data whether it comes in qualitative or quantitative form. Data collection methods should be as consistent as possible and allow for data to be retrieved and summarized to share with project leaders and the public.

Quantitative analysis is primarily conducted using multiple choice survey questions, voting, or participatory budgeting exercises. These data points fundamentally help isolate specific priorities and provide an opportunity to gather and analyze demographic information.

Qualitative data can be just as helpful as quantitative data with the added benefit of understanding community language. Open ended questions through surveys or in-person meetings can lend valuable information in how individuals relate to new ideas in their own words. Most often, patterns in topics, word usage, or tone will arise. These patterns can be recognized and communicated by searching for the most used words, and grouping topics of interest (e.g. community X uses the word “connectivity” most throughout open ended questions).

At this stage, inferences can be made as to why this particular topic, word, or tone is consistently coming up informed by the context in which it occurs. “Connectivity” may suggest a core value of respondents is related to connecting with each other, businesses, schools, parks, or other destinations. Use this language at community meetings, when brainstorming design options, and when speaking to community members.

Step 5.2: Determine How Results are Communicated to the Public

Active listening is the practice of listening to verbal and non-verbal messages and providing feedback to show attentiveness to the message being presented.[1]

Active listening traditionally applies to one-on-one conversations, while here active listening techniques are being applied to community and population level efforts. After learning from a community group or the public at-large, reflect these lessons learned publicly through the project website, social media, or follow-up emails to participants.

As a subsequent step or merged with the sharing of lessons learned, consider adding what the agency’s intent is for using the data. This step adds additional reassurance to participants their input will be used in a meaningful way.

Guiding Questions:

- How can I keep data collection consistent?
- Am I incorporating both quantitative and qualitative questioning into my plan?
- What topics, words, or tones come through clearly in the words respondents are using?
- How might I reflect the topics, words, and tone of the community in the language I use and actions moving forward?
- What did you learn from the engagement activity?
- What might community members be most interested to know about responses from their peers?
- What is the best way to communicate this information back to the participants?
- What are my next steps for formulating actions from these lessons learned? – How can I communicate that to the participants?

1. Improving Listening Competence. Communication in the Real World: An Introduction to Communication Studies. Open Textbook Library. University of Minnesota Libraries

Terms and Definitions

Active Listening

Active listening is the practice of listening to verbal and non-verbal messages and providing feedback to show attentiveness to the message being presented.[1]

Community Engagement:

A cyclical process that promotes the participation of residents in public decisions while building relationships between community members and agency representatives over time.

Community or Community Group:

Refers to bodies of residents, workers, or other persons that come together regularly within a specific geographic area to provide and receive services, develop or respond to community initiatives, play, and develop relationships with one another.

Community Engagement Plan:

A document completed prior to project launch where community research, goals, and tools are collected and selected. The Community Engagement Plan informs the project timeline and coordinating resources needed to execute the plan prior to project inception.

Community Outreach:

The act of providing information to an engaged community group. Outreach efforts are short-term, utilize marketing tools, and are transactional between agency representatives and community members.

Inform:

To provide the public with balanced and objective informaiton to assist them in understanding the problem, alternatives, opportunities and/or solutions

Consult:

To obtain public feedback on analysis, alternatives and/or decisions.

Involve:

To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.

Collaborate:

To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.

Empower:

To place final decision making in the hands of the public or equip the public with skills and resources to make decisions in the future.

Participatory Budgeting

A form of public participation in which the public is empowered to decide how to spend public funds.

Public Participation

An umbrella term to capture activities and methods regarding public engagement, outreach, and facilitation.

Resources

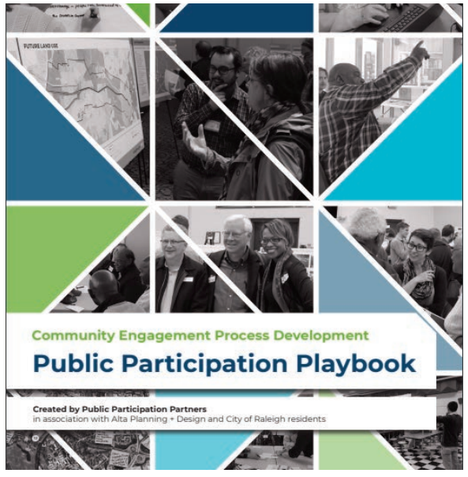
Trainings on Public Participation

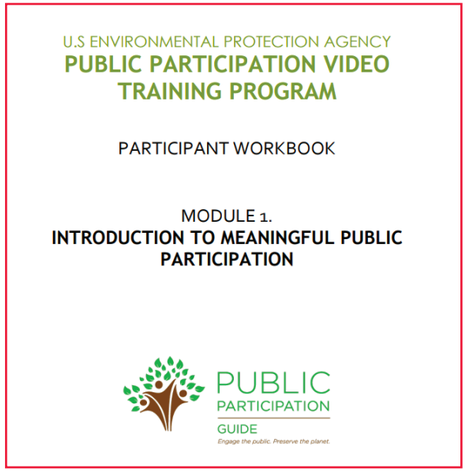
International Association of Public Participation: https://www.iap2.org/page/training

Environmental Protection Agency: https://www.epa.gov/international-cooperation/public-participation-guide-online-self-study-modules

Detailed Explanation of Participation Tools:

Public Participation Playbook: https://go.boarddocs.com/nc/raleigh/Board.nsf/files/BS32DV6CFCCA/$file/20200817CEPDPlaybook.pdf





Appendix

This chapter provides a more detailed look at case studies, the process for identifying projects, and the projects themselves. The information presented here is intended for reference and to add context to the primary sections of the Tollways to Trailways Plan. There are three separate appendix sections:

Appendix A: Case Studies

Appendix B: HCTRA Active Transportation Project Development & Prioritization Memo

Appendix C: Project Profiles – An interactive map was also created to provide additional, dynamic content for each project

Appendix A: Case Studies

Active Transportation Corridors Near and Along Highways and Tollways

Several agencies across the country have leveraged their tollway and highway facilities to better connect communities using bikeways and trails. Like HCTRA, these agencies faced specific right-of-way challenges, relied on strategic partnerships, and sought design best practices based in safety and comfort for people walking, biking, and driving. Analyzing these case studies is important in order to highlight potential challenges the team might encounter when implementing similar projects, while also revealing creative design and policy choices that might have not been considered otherwise.

Typically, HCTRA has opted to look to other peer agencies to compare its projects and programs to. These agencies include the Central Florida Expressway Authority (CFX), Florida's Turnpike Enterprise (FLTE) , the Maryland Transportation Authority (MDTA), the Miami-Dade Expressway Authority (MDX), the North Texas Tollway Authority (NTTA), and the Pennsylvania Turnpike Commission (PTC). As part of the development of this active transportation plan, an inventory of sustainability programs an policies was taken. While many of these agencies had well developed sustainability plans, none were found to have any substantial plans that included or focused on active transpiration. In place of these projects from these agencies, tollway-and highway-adjacent trails from other organizations around the country were selected as case studies. This section details those case studies and describes designs, funding mechanisms, and key takeaways from these projects.

Case Study Summary

Trail Agendy	Length	Key Information
SH-45SW Trail CTRMA	4.5 mi.	Two trailheads; will connect to future trail; includes bridges, historic, and natural features with interpretive signs; app for virtual tours and enhanced info
TX-71 Sidepaths CTRMA	5 mi. +	Part of larger project to ease congestion and enhance connectivity; access to other trails and destinations, trail closes gaps in existing/future multimodal networks
I-5 Eastbank Esplanade City of Portland	1.5 mi. +	Partnership project, part of City plans; supports redevelopment along waterfront; provides access to recreation and incorporated park space; has programmable spaces
US-36 Bikeway Colorado/ PPP	18 mi.	Connects commuters to 6 park and rides; core theme is regional travel, not just recreation; funded with public/private partnerships; maintenance/snow removal responsibility of cities
C/E-470 Bikeways CDOT/Local Gov.	51 mi.	Part of highway/tollway projects, similar to BW8 with trail along entire southern half; connects multiple parks, regional trails, transit, employment centers, and other destinations
Veterans Memorial Trail Illinois Tollway	3.5 mi.	Tollway donated land; funding from registration fees and federal grant; connects parks and regional trails, part of larger effort of 12+ miles between I-80 & I-55; includes a bridge

SH-45SW Shared-Use Sidepath

Agency

Central Texas Regional Mobility Authority (CTRMA)

Length

4.5 miles

Location

The SH-45SW Toll Road is located in southwest Travis County, TX with a small segment in Hays County. The sidepath runs from Escarpment Blvd in the north to FM 1626 in the south.

Design & Details

The sidepath runs along the west side of the SH-45SW Toll Road with a small segment on the eastern side, and includes crossings at Archeleta Blvd and Bliss Spillar Rd.

The facility is accessible from two trailheads: the MoPac Trailhead and Bliss Spillar Trailhead.

Most of the sidepath is separated from vehicle traffic by a large grass buffer, but sections along bridges include vertical separation.

The sidepath has only a few driveway crossings that include an ADA-compliant ramp and detectable warnings.

Connections

The sidepath is located in a part of Travis County with low residential density and does not currently connect to any major regional destinations. In the future, the facility will connect to the Violet Crown Trail near Bear Creek

Funding

The facilities were funded by the CTRMA project budget.

Key Takeaways

The sidepath is largely unshaded and has road-oriented lighting.

CTRMA installed 14 interpretive signs about the history and natural features of the area, including calls to action to preserve native species.

CTRMA also created an app called Trail Explorer with built-in GPS guidance for the facility. It includes virtual tours of the sidepath from anywhere.





TX-71 Shared-Use Sidepath

Agency

Central Texas Regional Mobility Authority (CTRMA)

Length

5 miles of shared-use sidepath,
2 miles of sidewalk

Location

The TX-71 Tollway in Travis County, TX straddles the City of Austin's southeast boundary and serves the Austin-Bergstrom International Airport (ABIA).

Design & Details

The sidepath runs along TX-71 from Brandt Dr in the north to Onion Creek in the south. Most of the facility is on the west/south side of TX-71 with small segments on the east/north side as well.

Although the majority of the sidepath is 10-feet wide, sidewalk sections are as narrow as 5- and 6-feet. The sidepath crosses TX-71 at Spirit of Texas Dr (near ABIA) and FM 973.

Connections

The trail currently serves the ABIA, some businesses along TX-71, and a few smaller neighborhoods near the roadway.

CTRMA is currently constructing trail facilities along SH-183, perpendicular to TX-71. SH-183 trail designs include a link to the existing trails along TX-71 that will ultimately connect to the Colorado River, Boggy Creek, and US-290.

Funding

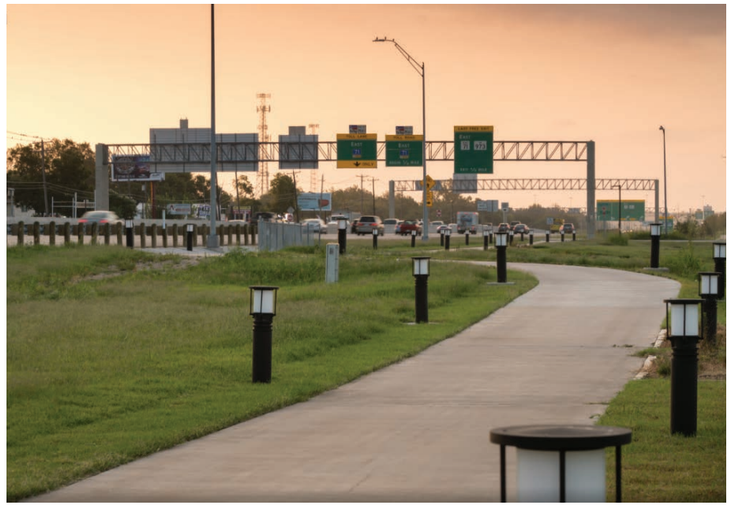
The facilities were funded by the CTRMA project budget.

Key Takeaways

The sidepath is still unprotected at most driveway and smaller road crossings.

Portions of the facility on the north/east side of TX-71 have to contend with several consecutive driveways.

Although they are new, some of the larger intersections (FM 973) appear high-stress for people walking and biking with little separation from vehicle traffic.





I-5 Eastbank Esplanade

Agencies

Multiple partners including the Portland Parks & Recreation Department, Waterfront Urban Renewal District, Oregon Department of State Lands, Portland Department of Transportation, and others.

Length

1.5 miles

Location

The Eastbank Esplanade in the City of Portland extends north from the Hawthorne Bridge, past the Morrison and Burnside Bridges, to the Steel Bridge.

Design & Details

The Eastbank Esplanade is about 12- to 14-feet in most sections and runs between I-5 and the Willamette River. The facility includes ramps that connect to bridges and the local street grid.

The Esplanade provides recreational opportunities in adjacent parks and access to the river. Open-air markets, informal musical performance space, seating, fountains, a plaza for festivals and other gatherings, event lawn, and art provide additional amenities for surrounding neighborhoods and serve as a destination within the city.

Connections

The Eastbank Esplanade includes connections to Portland's neighborhoods on the east side of the river, as well as to Gov. Tom McCall Waterfront Park.

Funding

The project cost $30 million and was completed in 2001.

Key Takeaways

The Eastbank Esplanade does not add additional weight to the historic Burnside Bridge. Instead, the elevated esplanade is built adjacent to it without leaning on the bridge structure.





US-36 Bikeway

Agencies

Colorado Department of Transportation, Regional Transportation District (RTD), Commuting Solutions, counties and cities adjacent to the bikeway

Length

18 miles of bikeway
10 miles of roadway

Location

The bikeway runs along US-36 for 18 miles and connects the US-36 & Table Mesa RTD rail station in Boulder, CO to 80th Ave in Westminster, CO.

Design & Details

The bikeway is 12-feet wide and – for most of the route – runs alongside US-36 in the road's right-of-way. The bikeway sits on one side of US-36, switching back and forth when necessary. Its design includes crossings at intersections and pedestrian/bicycle bridges over the roadway.

Most of the bikeway is buffered from the road by 10+ feet, but sections near the facilities southern terminus are close to the roadway and separated with vertical delineation. Multiple highway crossings along the facility utilize pedestrian and bicycle underpasses or bridges.

Connections

Not only does the US-36 Bikeway help connect commuters to their workplace, but it also connects to activity centers, local businesses, six RTD park & rides, and other local routes to communities.

Funding

Construction and roadway maintenance was funded using a public-private partnership. Private companies constructed the bikeway in exchange for toll revenues.

Bike path maintenance and snow removal are the responsibilities of adjacent cities/counties.

Key Takeaways

The route utilized some existing bike infrastructure where available.





C/E-470 C470 & High Plains Trails

Agencies

Colorado Department of Transportation, Jefferson County, Douglas County, Arapahoe County, E-470 Highway Authority, and multiple municipalities

Length

51 miles total:

C-470 Trail: 36 miles

High Plains Trail (E-470): 15 miles (6 under construction)

Location

The bikeway runs adjacent to C-470/E-470 in the Denver, CO region.

Design & Details

The facility is a 10-foot wide multi-use trail with 2-foot shoulders adjacent to the C-470 (free highway segment) and E-470 (tolled segments) beltway in the Denver metro region. The trail runs through three counties on the south side of the region.

Most of the trail is buffered from the highway by 25 or more feet. Some short segments come within 10 feet of the highway/tollway. Near on-off ramps, the trail typically follows the ramps and crosses the local roadway at-grade. At other roadway and highway crossing locations the trail is fully grade-separated.

Connections

The C-470 and High Plains Trails provide a vast number of local and regional connections. It is accessible from roadways and other nearby trails. It connects state and local parks, many neighborhoods, employment and medical facilities. Other local and regional trails provide additional connections to transit and community destinations.

Funding

Highway/Tollway project funding, local funds, state and federal grants.

Key Takeaways

This facility is truly a regional trail that provides integral longer-distance connections and high-quality recreational opportunities. The trails have been developed in conjunction with new or significant highway/tollway improvements, which allow for overall costs to be decreased.





I-355 Veterans Memorial Trail

Agencies

Illinois Tollway, Will County

Length

3.5 miles

Location

The trail primarily runs adjacent to the tollway on I-355 in Woodridge, IL.

Design & Details

The trail runs along I-355 but also connects to other nearby trail networks using green space and the existing street network.

In some areas the trail is as close as 30 feet from the tollway, but deviates up to 400 feet away with most of the trail being between 150- to 250 feet away from the toll facility. It meanders with natural terrain and goes in and out of forested and natural areas.

Connections

The trail connects to another regional trail at the southern end (Centennial Trail) that travels along the Des Plaines River as well as the Keepataw Preserve, and the Black Partridge Woods Park.

On the northern end of the trail, it connects to on-road bicycle facilities into the City of Woodridge.

Funding

The first phase of the trail was constructed using federal funding. Additional construction was funded with Roll the Tollway registration fees.

Key Takeaways

The tollway authority donated a 15-to-20-foot-wide corridor to local municipalities for the construction of the Veterans Memorial Trail, that will ultimately run along most of the length of the tollway from I-80 to I-55. A new construction fund for the trail was created from registration fees collected for “Roll the Tollway”.





Appendix B: Active Transportation Project Development & Prioritization Memo

This project focuses on enabling Harris County to build community-supportive infrastructure that can provide mobility options and help break down physical barriers in the existing transportation network within Harris County. Proposing new active transportation infrastructure that interacts with HCTRA's facilities could allow Harris County residents to accomplish their daily tasks using safe and direct bikeways and trails. These new trails will connect to schools, transit, commercial centers, and parks to help address mobility challenges throughout the county.

HCTRA's Mission

The Harris County Toll Road Authority's mission is to responsibly operate and maintain a safe, reliable, sustainable, and evolving mobility system that meets the diverse connectivity needs of all Harris County residents. This new mission recognizes that mobility solutions must extend beyond vehicular traffic on a limited-access system. HCTRA's investment in active transportation infrastructure creates an evolving mobility system for all residents and all modes of transportation. A vision and related core values support the new mission statement to direct the development of future projects.

Vision & Core Values:

Collaborate with local partners to create innovative and resilient mobility solutions that improve quality of life by providing greater access to health, jobs, and housing.

Deliver mobility solutions that create value for customers and the community by incorporating stakeholder collaboration throughout planning, development and implementation.

Strengthen the region's economic vitality by improving mobility for all with safe and efficient mobility solutions throughout Harris County.

This project will provide new facilities that promote resiliency, access for all, safety, and quality of life with mobility solutions for communities throughout Harris County, including those historically under-served by the tollways. This project will also identify opportunities to build new partnerships with local agencies and community organizations.

Core Values

- Safety
- Reliability
- Resiliency & Sustainability
- Accessibility
- Innovative & Evolving
- Stewardship & Accountability

Harris County Toll Road System

HCTRA operates 103-miles of tollways throughout Houston and Harris County. The most significant corridor is the Sam Houston Tollway, an 88-mile loop around the City of Houston. For multimodal users, the toll roads can be barriers that are difficult to cross and limit community access to important destinations. This project presents an opportunity to provide safe access and connect communities to promote a sustainable and evolving mobility system. Bayou, drainage, and utility easements that intersect or run along tollway corridors provide key opportunities to explore new trails and bikeways. Three main toll road corridors were the focus for potential projects: the Sam Houston Tollway, the Hardy Toll Road, and the Westpark Tollway. While HCTRA can enhance mobility throughout Harris County, starting around the tollway system is a significant first step to addressing significant barriers and expanding investment to include the diverse mobility needs.

The information in this memo documents the methodology for identifying multimodal projects to collaborate on, develop, and build as an early effort to move the new mission and vision into action.

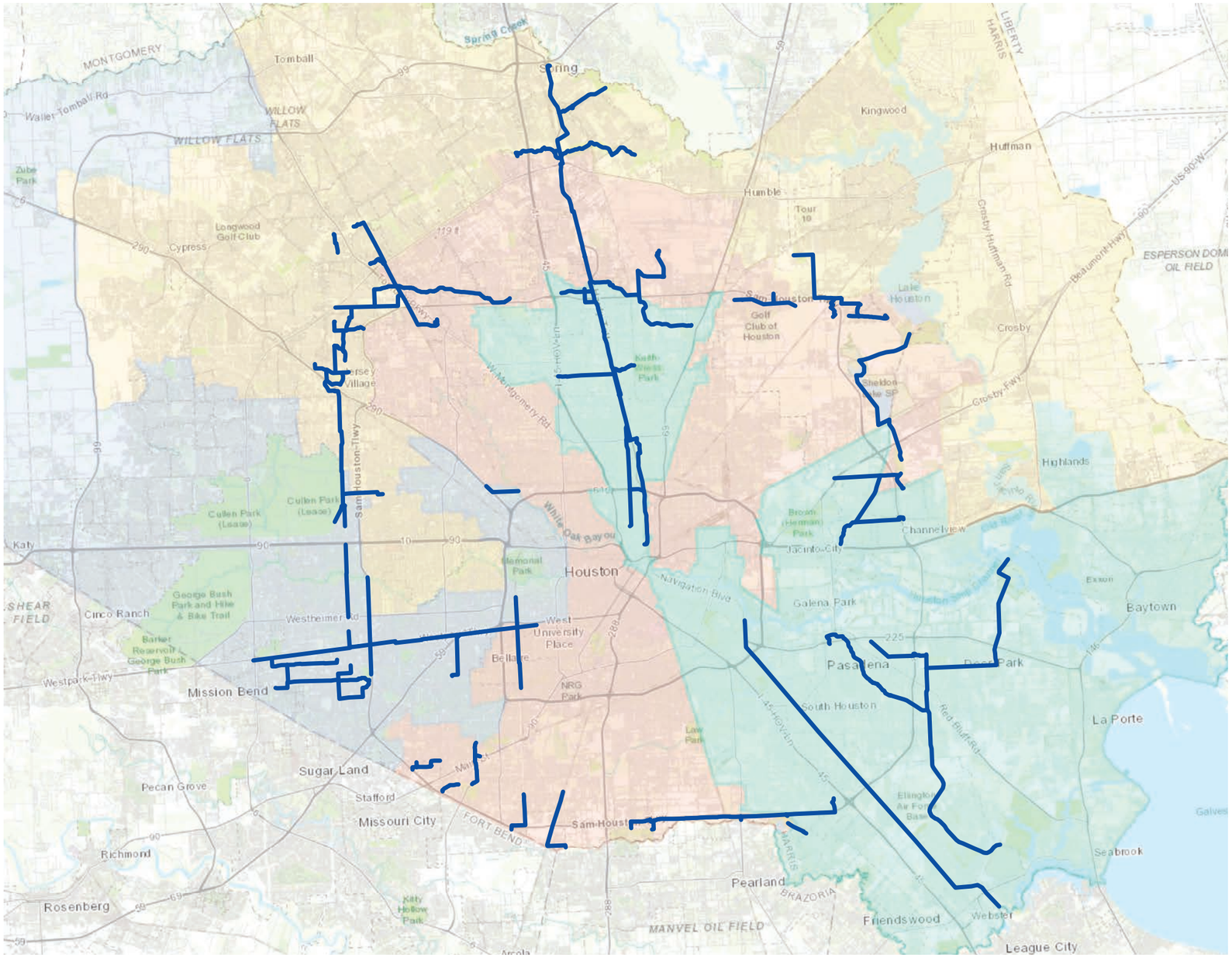
Developing a Multimodal Network

This project focuses on developing multimodal facilities beyond building new roadways to increase local and long-range accessibility for people throughout Harris County. As there have been many planning projects completed across the county that have identified potential projects, these plans, along with analysis of the existing network, were used as a starting point in this process. Gaps in the network were then identified as well as potential linkages to destinations.

Existing corridors and easements connecting people to parks, existing or future trails and bikeways, and other destinations were used for project locations where possible. While this effort is intended to develop active transportation infrastructure projects, project selection primarily focused on developing off-street trails instead of an on-street network of bikeways and sidewalks, many of which are being built by the City of Houston, Harris County, and other local agencies.

The proposed routes leverage the HCTRA system by either running alongside or crossing HCTRA facilities. As seen in Figure 18, there are potential projects in each of the four Harris County precincts. These potential projects were refined and evaluated to identify which have the greatest potential to benefit the community.

Figure 18. Proposed Project Map with Harris County Precinct Overlay



Evaluating Benefits & Categorizing Projects

It was essential to evaluate each project to identify potential benefits and its role in an overall network. An Evaluation Matrix was developed to identify the projects that can make the most significant impact. As seen in Figure 19, the Benefits Evaluation Matrix assigns points to each project in four key areas: Connects Communities, Enhances Safety, Builds Networks, and Fosters Equity. Figure 29 lists each project and the project scores from the evaluation matrix. As longer projects are more likely to have higher scores, each score was also summarized and divided by the project length to obtain a normalized "benefit-per-mile" score.

As the proposed projects were selected in part from their location along or across the tollway network, it is important to highlight how these projects are not singular and will work together and with other existing and planned projects to connect communities to destinations. Figure 20 shows the proposed projects with existing and programmed bikeways (both on-and off-street facilities). This map highlights the opportunity to make meaningful connections and build on other investments within Harris County.

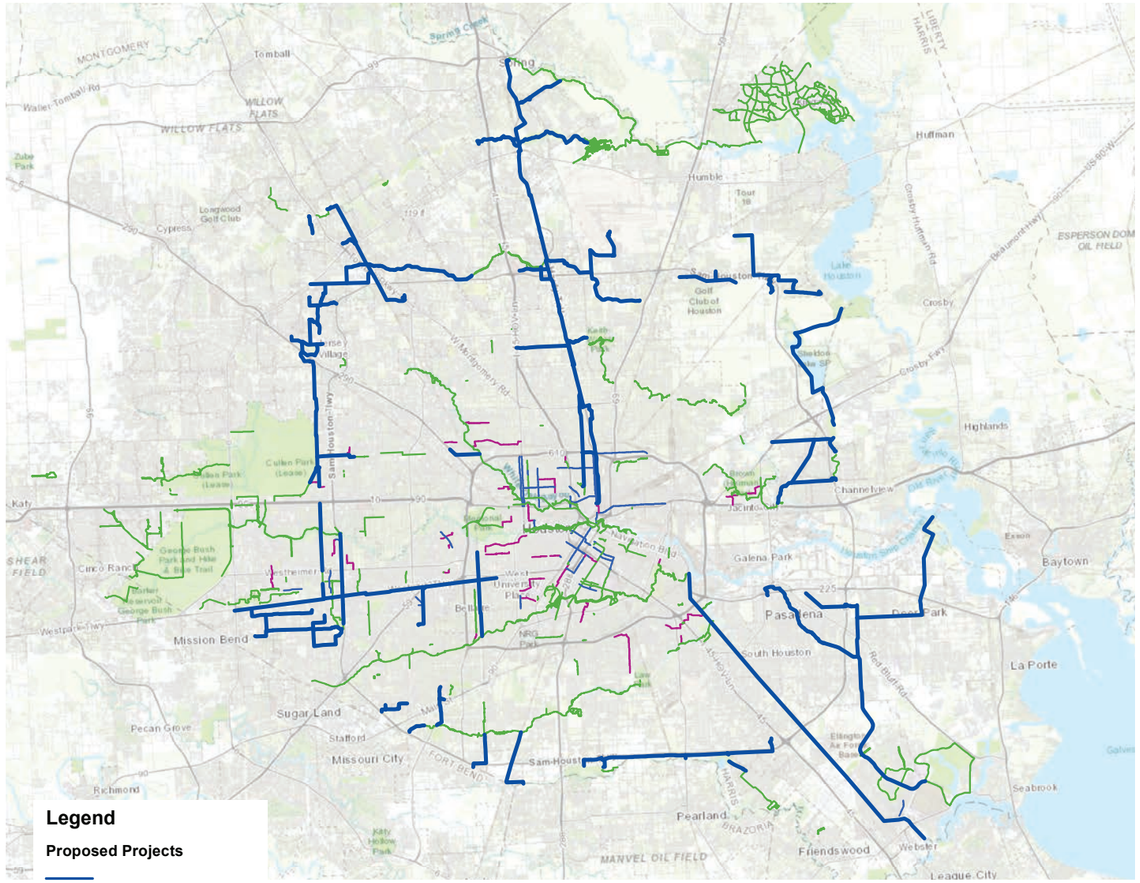
Figure 19. Project Benefits Evaluation Matrix

	Category	Points	Rationale
Connects Communities	Schools	2	1-2 schools within 0.25 miles of the project
		4	3 or more schools within 0.25 miles of the project
	Transit	1	1 transit connection within 0.25 miles of the project. A transit connection includes an intersection of a high-frequency transit route or within 0.25 miles of a Park & Ride or Transit Center
		3	2 or more connections within 0.25 miles of the project. A transit connection includes an intersection of a high-frequency transit route or within 0.25 miles of a Park & Ride or Transit Center.
	Parks	2	1-2 local parks within 0.25 miles of the project (2 pts for regional parks*)
		4	3-4 local parks within 0.25 miles of the project (2 pts for regional parks*)
		6	5 or more local parks within 0.25 miles of the project (2 pts for regional parks*)
Enhances Safety	Vision Zero	1	Intersects a High-Injury Network** street
		2	Intersects with 2-3 High-Injury Network** streets
		3	Intersects 4 or more High-Injury Network** streets
		1	Runs alongside 1 or more High-Injury Network streets within 0.25 miles
	Major Barriers	2	Intersects 1 major barrier (e.g., limited-access roadways, FM facilities, and SH facilities)
		4	Intersects 2 or more major barriers (e.g., limited-access roadways, FM facilities, and SH facilities)
Builds Networks	Extension	2	Connects to 1 existing high-comfort facility
	Gap Filler	3	Connects to 2 or more existing high-comfort facilities
	HCTRA Gap Filler	4	Connects to 2 or more existing facilities and is only possible using HCTRA ROW
	Catalyst Project	5	There are no trails or high-comfort bikeways within 1 mile of the project
Fosters Equity	Racial Diversity	1	Serves a Block Group where >25% of residents are minority population(s)
		2	Serves a Block Group where >50% of residents are minority population(s)
		3	Serves a Block Group where >75% of residents are minority population(s)
	Persistent Poverty	3	Serves a block group with persistent high poverty rates

* Regional parks are defined as parks that are 150 acres in size or greater.

** Defined from the Harris County Vision Zero High-Injury Network

Figure 20. Proposed Project Map with Existing and Planned Bikeways



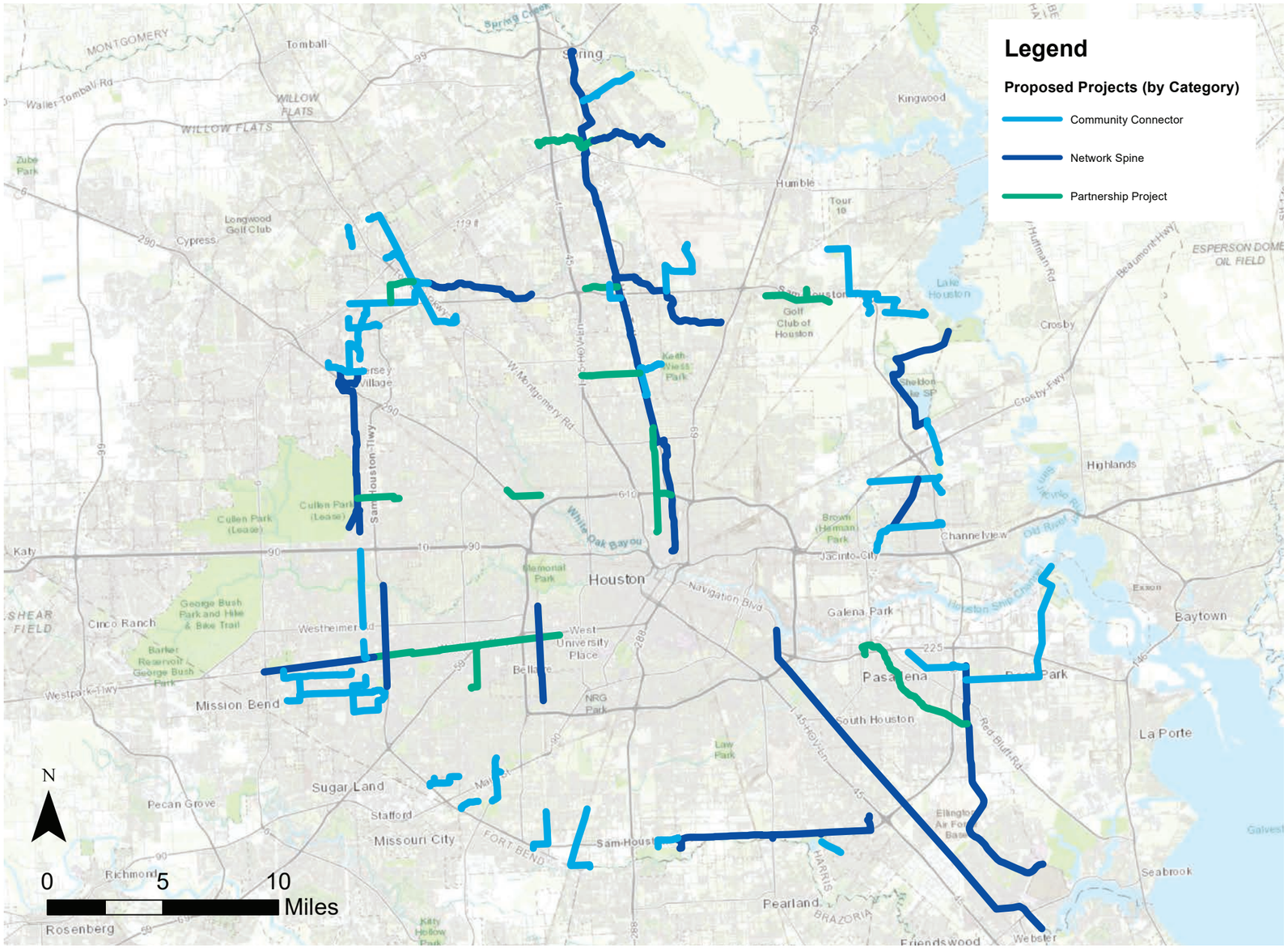
As the proposed projects vary in nature, categorizing them aids in understanding their role in the network and implementation roles in project development. Categorizing also enables ranking and prioritization of like-projects along with a feasibility analysis and cost estimates. After scoring through the evaluation matrix, projects were placed into three categories: Network Spine, Community Connector, and Partnership Project. These categories are defined below and mapped in Figure 21. Additionally, the project table in Figure 28 is delineated by each of these project categories to highlight the differences in how the projects scored for the different typologies.

Network Spine: Network Spines are projects that traverse multiple communities, are a length of at least 5 miles, and provide an opportunity to connect other trails or multimodal facilities.

Community Connector: Community Connectors are projects that provide access to parks, transit, schools, neighborhoods, or other destinations. These projects may be shorter and likely connect to a Network Spine or other multimodal facility within Harris County. .

Partnership Project: Some projects evaluated were a part of another agency's plan or may be most appropriate for an entity other than HCTRA to lead in the project development, design, and construction. This could be due to current coordination efforts, grant funding, or feasibility. Additional coordination is needed to move the project forward. Assistance could be through financial, in-kind, or other agency support. These projects will link to the entire multimodal network.

Figure 21. Proposed Project Map by Project Category



Cost & Prioritization

Planning-level cost estimates were developed to get an understanding of the work that would be required to develop and build each project. The process revealed many of the challenges that could be faced in the implementation process. The three primary challenges consist of trail grade separation, roadway intersections, and pedestrian and bicycle crossings across other barriers. Some of the key cost components for the active transportation projects are described below:

Intersections and Crossings – Where facilities cross roadways, additional crossing treatments will be needed and add moderate costs. Crossing were estimated to fall into three cost categories: $40,000 (minor signal or curb work), $100,000 (more considerable signal modifications or ped signal/ HAWK installation), and $250,000 (new traffic signal installation).

Bridges and Other Major Expenses – Some of the trail recommendations require bridges to provide crossing highways, bayous, and other waterways. In some cases, considerable re-grading and construction of retaining walls is likely necessary. These construction costs can be considerably higher on a per length basis, and can dominate the cost estimate for a project.

The general cost level was scored along with various attributes such as if there are bridges required, or if coordination with the Railroads, METRO, and TxDOT facilities would be necessary. While every project will require coordination with other agencies, these particular facility types (railroads, METRORail lines, and highway or frontage roads) will require an added level of complexity due to the significant nature of their role in the transportation network. Additionally, TxDOT and METRO regularly work with other agencies to implement active transportation projects, but the Railroad companies take more time to coordinate with. This measure was used to calculate an Ease of Implementation (EOI) score. As projects may be simple but costly due to their length, or complex due to their location, all of these inputs were combined into one score. The scoring methodology for Ease of Implementation is identified in Figure 24.

The EOI score was developed by taking the maximum points possible and subtracting the calculated points so that the lower the score, the more complicated the project is estimated to be to implement. This EOI score was charted against the project benefit score, resulting in a matrix that shows each project's relative benefits and implementability. This matrix resulted in three defined prioritization categories of projects: Quick Wins, Big Moves, and Network Builders.

Quick Wins: projects that are smaller-scale or easier to coordinate and implement with big impacts

Big Moves: larger-scale projects with high benefits, but are more complicated and will take time to coordinate and implement

Network Builders: good projects that increase community access to destinations and should be coordinated with the development of Big Moves and Quick Wins

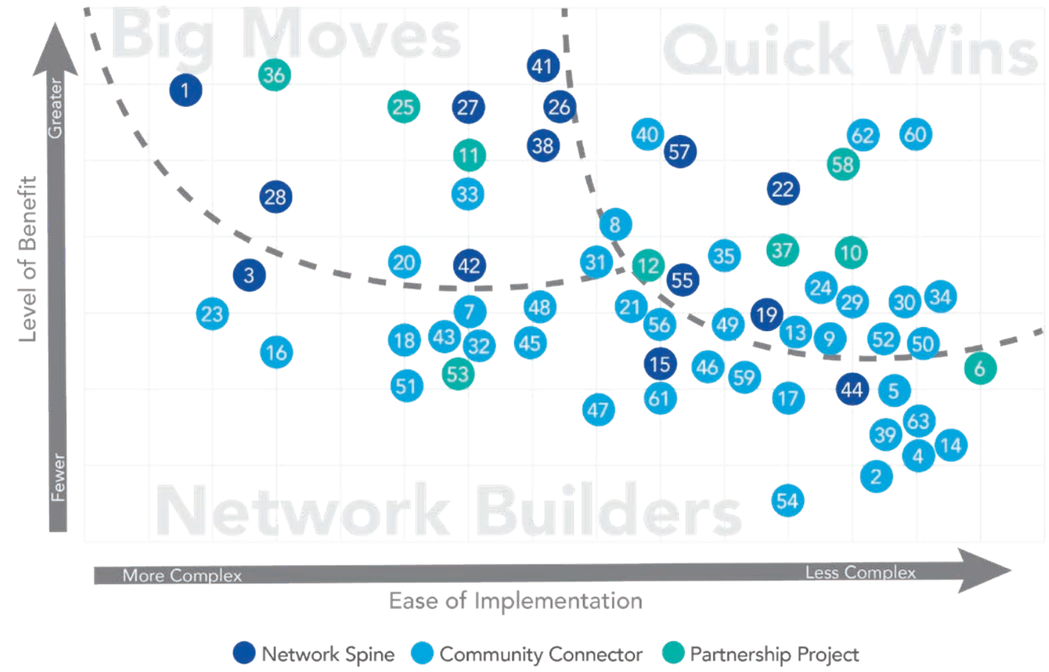
Cost Estimate Assumptions

The assumptions found in Figure 23 were used to develop planning level cost estimates. The estimates are conservative and based on recent projects in the Houston region. The cost estimate includes an additional 70% for contingency on top of the base estimates found in Figure 23.

Figure 24. Ease of Implementation Scoring

Category	Detail	Points
Project Cost	< $1,000,000	1
	$1,000,000 - $5,000,000	2
	$5,000,000 - $10,000,000	3
	$10,000,000 - $15,000,000	4
	$15,000,000 - $25,000,000	5
	> $25,000,000	6
Bridge Length	Short (< 500 feet)	1
	Long (>500 feet)	2
Complex Agency Coordination	Railroads	2
	METRORail	1
	TxDOT/Other	1

Figure 22. Prioritization Matrix by Project Type



Note: The color coding of projects in Figure 23 correlates with the project map in Figure 21

Figure 23. Cost Estimate Assumptions

Improvement Type	Cost in 000's (before contingency)	Unit
Sidewalk construction	$350	per mile
Bike route signage, minimal striping	$90	per mile
Dedicated bike lane, incl. signage and striping	$185	per mile
Protected bike lane (retrofit of existing pavement)	$430	per mile
Protected bike lane (reconstruction)	$3,000	per mile
Trail	$700	per mile
Re-grade and retaining wall	$2	per linear foot
Bridge structure	$10	per linear foot
Pedestrian and/or bicycle signal	$100	per signal
Traffic signal	$250	per signal
Midblock crossing	$40	per crossing
Rail crossing	$250	per crossing

Projects Across the County

The previous information shows that there are a variety of project types in each prioritization category. However, a significant share of the Big Moves are partnership projects or those that cross County Precinct lines and will require coordination. Figure 26 further highlights that each County Precinct has multiple projects in the various prioritization categories. This shows that there is broad distribution of projects across the County. The map in Figure 26 shows each of the projects by prioritization category to further highlight the geographic distribution. It should be noted that all of the projects identified have meaningful benefits to the community and would enhance connectivity and safety in the County. The prioritization is an effort to group the projects to help show how funding and project development may best be coordinated.

As Tollway mileage and conditions vary by Precinct, the number of projects overall and by category will vary. The proposed projects will provide meaningful new additions that can be further built on over time. The table below in Figure 25 shows the breakdown of the number of projects and in each prioritization category by precinct, including projects in multiple precincts. Overall, there are 63 projects that would build almost 236 miles of comfortable, safe facilities, and total $600 million across all four precincts in Harris County.

The information in Figure 27 on the following pages further details the proposed projects by precinct and priority category.

Figure 25. Project Information and Cost Summary by Precinct

	Multi-Pcts.	Pct. 1	Pct. 2	Pct. 3	Pct. 4
Total Projects	16	16	13	8	10
# of Quick Wins	5	5	5	3	4
# of Big Moves	5	2	5	0	1
# of Network Builders	6	9	3	5	5

Figure 26. Project Map by Prioritization Category

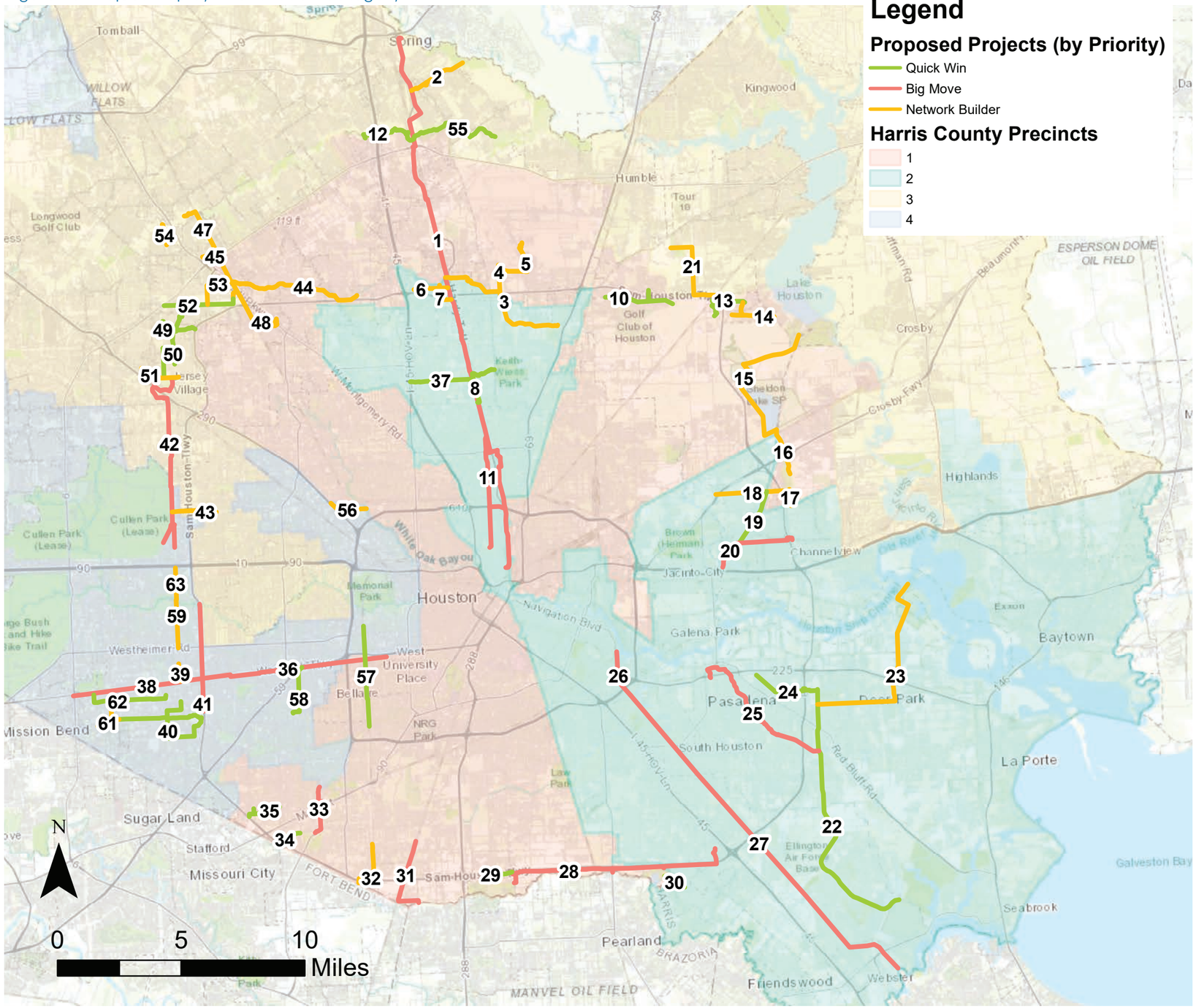


Figure 27. Project Information by Precinct

ID	Description	Project Type	Priority
	Multi-Precinct Projects		
1	The Hardy Trail **(Pct. 1, 2, 3)**	Network Spine	Big Move
3	Greens Bayou Trail - East Extension **(Pct. 1, 2)**	Network Spine	Network Builder
12	Cypress Creek Greenway - West Extension **(Pct. 1, 3)**	Partnership Project	Quick Win
18	Purple Sage Trail **(Pct. 1, 2)**	Community Connector	Network Builder
19	West Canal -San Jac Trail **(Pct. 1, 2)**	Network Spine	Quick Win
28	South Sam Houston Trail **(Pct. 1, 2)**	Network Spine	Big Move
30	J. Frank Dobie Trail **(Pct. 1, 2)**	Community Connector	Quick Win
36	Westpark Trail (East Segment) **(Pct. 1, 4)**	Partnership Project	Big Move
41	West Belt Trail **(Pct. 3, 4)**	Network Spine	Big Move
42	Jersey-Addicks Trail (Ditch W 167, E 127) **(Pct. 3, 4)**	Network Spine	Big Move
43	Buttermilk Creek Trail (Ditch W 167, W 140) **(Pct. 3, 4)**	Community Connector	Network Builder
45	Willowbrook Trail (Ditch P 150) **(Pct. 1, 3)**	Community Connector	Network Builder
46	Greens Bayou SH-249 Spur **(Pct. 1, 3)**	Community Connector	Network Builder
53	Greens Bayou-Gessner Connector Trail **(Pct. 1, 3)**	Partnership Project	Network Builder
55	Mercer Trail **(Pct. 1, 3)**	Network Spine	Quick Win
57	Brays-Buffalo Connector Trail (Ditch W 129, D 113) **(Pct. 1, 4)**	Network Spine	Quick Win
	Precinct 1 Projects		
4	Hoods Bayou Trail (Ditch P 140)	Community Connector	Network Builder
5	JFK Boulevard Trail	Community Connector	Network Builder
10	Fall Creek Trail	Partnership Project	Quick Win
13	Summer Creek Trail	Community Connector	Quick Win
14	Summerwood South Trail	Community Connector	Network Builder
15	Lake Link Trail (Lake Sheldon to Lake Houston)	Network Spine	Network Builder
16	Carpenters Bayou - North Extension	Community Connector	Network Builder
17	Carpenters Bayou - Wallisville Rd Connector	Community Connector	Network Builder
29	Tom Bass-Cullen Connector Trail	Community Connector	Quick Win
31	Almeda Trail	Community Connector	Big Move
32	Ridgemont-Sims Trail (Ditch C 153, C 145)	Community Connector	Network Builder
33	Chimney Rock Trail (Ditch D 112, C 156)	Community Connector	Big Move
34	Blue Ridge Connector Trail (Ditch C 100)	Community Connector	Quick Win
35	Fonmeadow Trail (Ditch D 140)	Community Connector	Quick Win
44	Greens Bayou Trail - West Extension	Network Spine	Network Builder
48	Fallbrook Trail	Community Connector	Network Builder

ID	Description	Project Type	Priority
	Precinct 2 Projects		
6	Benmar Drive Bikeway	Partnership Project	Network Builder
7	Hedgecroft Trail (Ditch P 144)	Community Connector	Network Builder
8	Aldine-Hardy Park Connector Trail	Community Connector	Quick Win
9	Halls Bayou Trail - West Extension	Community Connector	Quick Win
11	Irvington Boulevard Bikeway	Partnership Project	Big Move
20	Jordan Gully Trail (Ditch P 105, N 110)	Community Connector	Big Move
22	Space Center Blvd Trail	Network Spine	Quick Win
23	Battleground Trail	Community Connector	Network Builder
24	Red Bluff Trail (Ditch G 110)	Community Connector	Quick Win
25	Little Vince Bayou Trail	Partnership Project	Big Move
26	Houston to Galveston Trail (East End Segment)	Network Spine	Big Move
27	Houston to Galveston Trail (Southeast Harris County Segment)	Network Spine	Big Move
37	West Gulf Bank Bikeway	Partnership Project	Quick Win
	Precinct 3 Projects		
2	Cypresswood Spring Trail	Community Connector	Network Builder
21	Summerwood-Atascocita Trail (Ditch P 130)	Community Connector	Network Builder
47	Cypresswood-Willowbrook Trail	Community Connector	Network Builder
49	Harvest-Winchester Trail Network (Ditch E 128)	Community Connector	Quick Win
50	Jersey Village-White Oak Connector Trail	Community Connector	Quick Win
51	Jersey Meadow Trail (Ditch E 135)	Community Connector	Network Builder
52	Turtle Trail	Community Connector	Quick Win
54	Cypress Creek-Mandolin Gardens Trail (Ditch K 139)	Community Connector	Network Builder
	Precinct 4 Projects		
38	Westpark Trail (West Segment)	Network Spine	Big Move
39	Wilcrest Trail	Community Connector	Network Builder
40	Alief East Loop (Ditch D 120, D 122)	Community Connector	Quick Win
56	White Oak - 290 Connector Trail	Community Connector	Network Builder
58	Hillcroft-Westward Bikeway	Partnership Project	Quick Win
59	HCC-Buffalo Bayou Connector Trail	Community Connector	Network Builder
60	Hackberry Trail (Ditch D 122)	Community Connector	Quick Win
61	Pheasant Trace Trail (Ditch D 122)	Community Connector	Network Builder
62	Alief Schools Trail (Ditch D 126)	Community Connector	Quick Win
63	Wycliffe Trail	Community Connector	Network Builder

Figure 28. Project Evaluation Scoring and Cost

ID	Project	Estimated Cost (in 000's)	Schools (Score)	Transit (Score)	Parks (Score)	Vision Zero (Score)	Barriers (Score)	Extension	Gap Filler	Toll Road Gap Filler	Catalyst Project	Racial Diversity	Persistent Poverty	Benefit Score	EOI Score
Network Spine															
41	West Belt Trail	$7,812	4	3	6	4	4	0	0	4	0	3	3	31	7
1	The Hardy Trail	$56,852	4	1	6	4	4	0	0	4	0	3	3	29	2
27	Houston to Galveston Trail (Southeast Harris County Segment)	$45,299	4	1	6	4	4	0	3	0	0	3	3	28	6
26	Houston to Galveston Trail (East End Segment)	$5,557	4	1	6	3	4	0	3	0	0	3	3	27	8
38	Westpark Trail (West Segment)	$7,497	4	3	6	4	4	2	0	0	0	3	0	26	8
28	South Sam Houston Trail	$19,125	0	1	6	4	4	0	0	0	5	3	0	23	3
22	Space Center Blvd Trail	$17,340	2	0	6	4	4	0	3	0	0	1	0	22	11
57	Brays-Buffalo Connector Trail (Ditch W 129, D 113)	$8,364	2	3	6	2	4	0	3	0	0	1	0	21	9
42	Jersey-Addicks Trail (Ditch W 167, E 127)	$17,553	2	0	4	3	4	2	0	0	0	2	0	17	6
3	Greens Bayou Trail - East Extension	$17,442	2	0	2	1	4	2	0	0	0	3	3	17	3
19	West Canal -San Jac Trail	$3,536	4	0	2	2	0	0	0	0	0	3	3	14	11
55	Mercer Trail	$7,387	0	0	6	0	4	2	0	0	0	2	0	14	10
15	Lake Link Trail (Lake Sheldon to Lake Houston)	$10,523	0	0	6	2	0	2	0	0	0	1	0	11	9
44	Greens Bayou Trail - West Extension	$9,486	2	0	0	3	0	2	0	0	0	3	0	10	12
Community Connectors															
33	Chimney Rock Trail (Ditch D 112, C 156)	$6,520	4	0	6	2	4	2	0	0	0	3	3	24	6
60	Hackberry Trail (Ditch D 122)	$2,890	4	0	4	4	2	0	0	0	5	3	0	22	13
62	Alief Schools Trail (Ditch D 126)	$6,112	4	3	2	4	4	2	0	0	0	3	0	22	12
40	Alief East Loop (Ditch D 120, D 122)	$13,090	4	3	6	4	0	2	0	0	0	3	0	22	9
8	Aldine-Hardy Park Connector Trail	$3,254	2	0	4	2	2	0	0	4	0	3	3	20	8
35	Fonmeadow Trail (Ditch D 140)	$4,063	2	3	2	3	0	0	0	0	5	2	0	17	10
20	Jordan Gully Trail (Ditch P 105, N 110)	$14,382	4	0	4	1	4	2	0	0	0	2	0	17	5
24	Red Bluff Trail (Ditch G 110)	$3,706	2	0	6	1	2	0	0	0	5	0	0	16	12
29	Tom Bass-Cullen Connector Trail	$2,125	0	0	4	2	2	0	0	0	5	3	0	16	12
31	Almeda Trail	$6,154	0	0	4	2	2	2	0	0	0	3	3	16	8
48	Fallbrook Trail	$4,879	2	1	0	1	4	0	0	0	5	3	0	16	7
34	Blue Ridge Connector Trail (Ditch C 100)	$1,360	2	3	4	2	0	2	0	0	0	2	0	15	13
21	Summerwood-Atascocita Trail (Ditch P 130)	$5,440	2	0	4	0	2	0	0	0	5	2	0	15	9
56	White Oak - 290 Connector Trail	$3,766	0	0	2	3	2	0	3	0	0	2	3	15	9
7	Hedgecroft Trail (Ditch P 144)	$9,461	2	0	2	1	2	2	0	0	0	3	3	15	6
23	Battleground Trail	$30,702	0	0	6	2	2	0	0	0	5	0	0	15	2
50	Jersey Village-White Oak Connector Trail	$3,094	2	0	4	0	2	0	0	0	5	1	0	14	13
52	Turtle Trail	$4,046	2	0	0	1	4	0	0	0	5	2	0	14	13

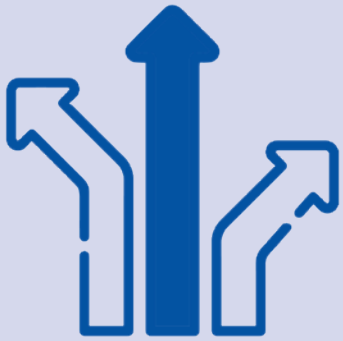
ID	Project	Estimated Cost (in 000's)	Schools (Score)	Transit (Score)	Parks (Score)	Vision Zero (Score)	Barriers (Score)	Extension	Gap Filler	Toll Road Gap Filler	Catalyst Project	Racial Diversity	Persistent Poverty	Benefit Score	EOI Score
Community Connectors, Continued															
49	Harvest-Winchester Trail Network (Ditch E 128)	$6,622	4	0	0	1	2	0	0	0	5	2	0	14	10
45	Willowbrook Trail (Ditch P 150)	$4,701	0	0	0	4	2	0	0	0	5	3	0	14	7
43	Buttermilk Creek Trail (Ditch W 167, W 140)	$6,647	3	0	2	2	2	0	3	0	0	2	0	14	6
32	Ridgemont-Sims Trail (Ditch C 153, C 145)	$10,107	2	0	0	2	2	2	0	0	0	3	3	14	6
18	Purple Sage Trail	$12,019	4	0	2	1	4	0	0	0	0	3	0	14	5
13	Summer Creek Trail	$3,366	2	0	0	2	2	0	0	0	5	2	0	13	12
16	Carpenters Bayou - North Extension	$10,846	0	0	4	1	2	0	0	0	5	1	0	13	3
30	J. Frank Dobie Trail	$1,471	4	0	4	1	0	2	0	0	0	1	0	12	13
46	Greens Bayou SH-249 Spur	$1,377	2	0	0	0	2	0	0	0	5	3	0	12	10
59	HCC-Buffalo Bayou Connector Trail	$4,182	2	1	2	3	0	0	3	0	0	1	0	12	10
51	Jersey Meadow Trail (Ditch E 135)	$20,562	0	1	2	2	0	0	0	0	5	1	0	11	5
5	JFK Boulevard Trail	$4,556	0	0	0	3	0	0	0	0	5	2	0	10	13
9	Halls Bayou Trail - West Extension	$1,190	0	0	4	0	0	0	3	0	0	3	3	13	12
17	Carpenters Bayou - Wallisville Rd Connector	$1,717	2	0	2	1	0	2	0	0	0	3	0	10	11
61	Pheasant Trace Trail (Ditch D 122)	$5,891	2	1	0	4	0	0	0	0	0	3	0	10	9
47	Cypresswood-Willowbrook Trail	$7,489	0	0	2	2	2	2	0	0	0	1	0	9	8
63	Wycliffe Trail	$1,921	2	0	2	2	0	2	0	0	0	0	0	8	13
4	Hoods Bayou Trail (Ditch P 140)	$1,539	0	0	0	0	0	0	0	0	5	2	0	7	13
14	Summerwood South Trail	$3,655	0	0	0	1	0	0	0	0	5	1	0	7	13
39	Wilcrest Trail	$1,178	0	0	2	1	0	0	3	0	0	1	0	7	13
2	Cypresswood Spring Trail	$3,655	2	0	2	1	0	2	0	0	0	0	0	7	13
54	Cypress Creek-Mandolin Gardens Trail (Ditch K 139)	$1,755	0	0	2	0	0	0	0	0	0	0	0	2	11
Partnership Projects															
36	Westpark Trail (East Segment)	$20,536	4	3	6	4	4	0	0	4	0	3	3	31	3
25	Little Vince Bayou Trail	$19,618	4	0	6	4	4	0	0	0	5	2	3	28	5
11	Irvington Boulevard Bikeway	$37,281	4	3	4	4	2	0	3	0	0	3	3	26	6
58	Hillcroft-Westward Bikeway	$8,223	4	3	2	4	0	2	0	0	0	3	3	21	12
37	West Gulf Bank Bikeway	$7,072	4	1	0	2	4	0	0	0	5	3	0	19	11
12	Cypress Creek Greenway - West Extension	$17,867	2	0	6	0	4	0	3	0	0	2	0	17	8
10	Fall Creek Trail	$4,658	2	0	2	4	2	0	0	0	5	2	0	17	12
6	Benmar Drive Bikeway	$848	2	1	2	1	0	2	0	0	0	2	3	13	14
53	Greens Bayou-Gessner Connector Trail	$9,903	0	0	0	0	4	0	0	0	5	3	0	12	6

Project Profiles

This section of the Appendix provides details for each project including project length, planning-level cost estimates, location, nearby HCTRA Corridors, benefits, network connections, and priority level.

The profiles below are grouped into the three project categories: Network Spines, Community Connectors, and Partnership Projects.

Network Spines



Network Spines are projects that traverse multiple communities, are a length of at least 5 miles, and provide an opportunity to connect other trails or multimodal facilities. These projects are recommended to be developed and led by HCTRA.

Project 1

The Hardy Trail

23.6 miles (Elysian St/Hardy St Bike Lanes to Dennis Johnston Park in Spring)

Estimated Cost **$56.852 million** Precinct(s): **1, 2, 3**

HCTRA Corridor:
Hardy Toll Road

Category:
Network Spine

Priority:
Big Move

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 2)

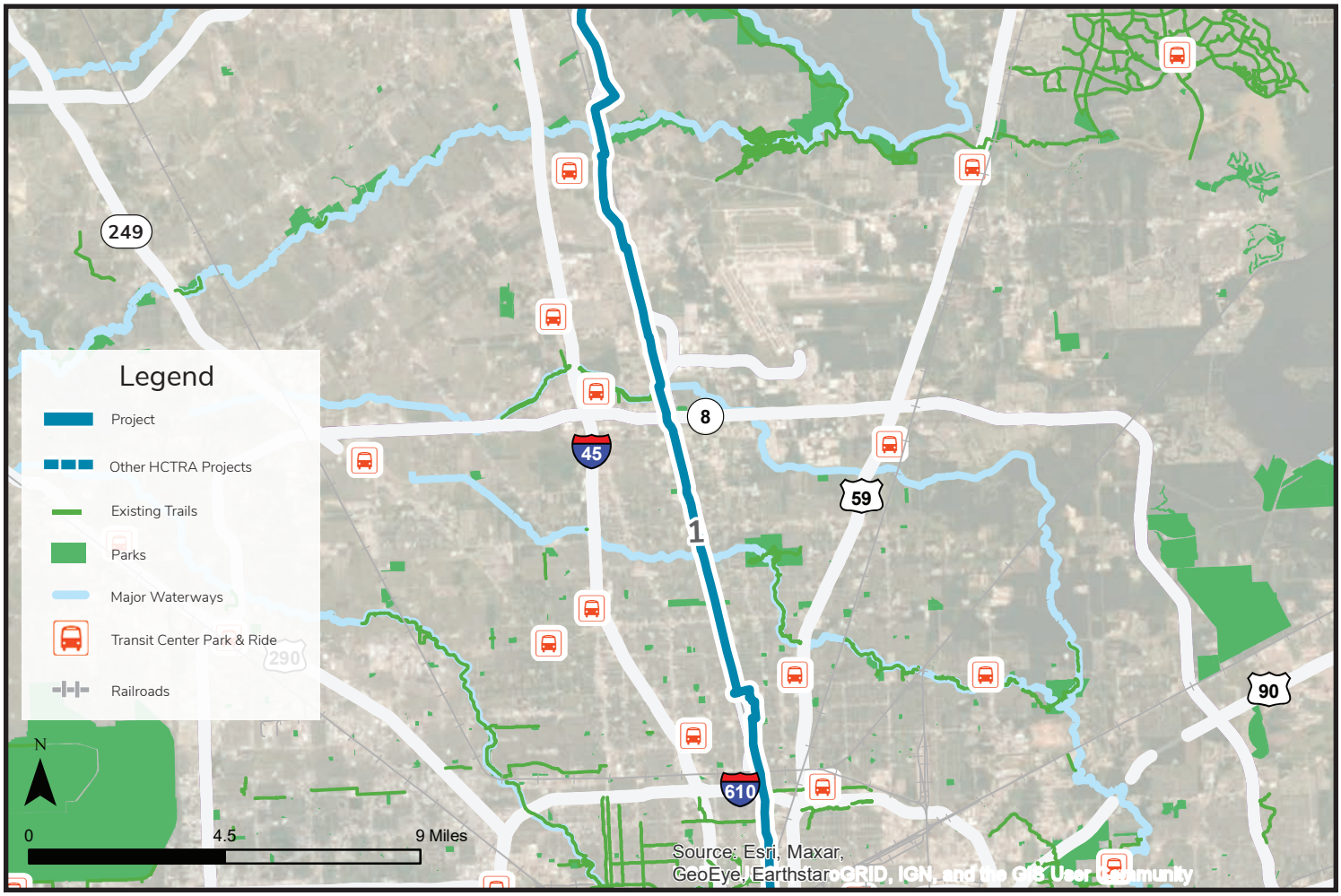
Facility Type:
Multiple: Trails (Railway, Drainage), On-Street (Shared, Protected) Bikeway, Off-Street Bikeway

Project Benefits (Score: 29)

- 171,000 residents within 1/2 mile
- 94,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections

Connects to Spring Creek Greenway Hike & Bike Trail, Greens Bayou Trail & HCTRA projects 2, 3, 6, 7, 8, 9, 10, 11, 12, 37.



Greens Bayou Trail - East Extension

6.1 miles (Hardy Toll Road at Greens Bayou to McDermott Dr/ Brookside Cemetery (East Aldine)

Estimated Cost **$32.9 million** Precinct(s): **1, 2**

HCTRA Corridor:
Hardy Toll Road North, Sam Houston Parkway North

Category:
Network Spine

Priority:
Network Builder

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 17)

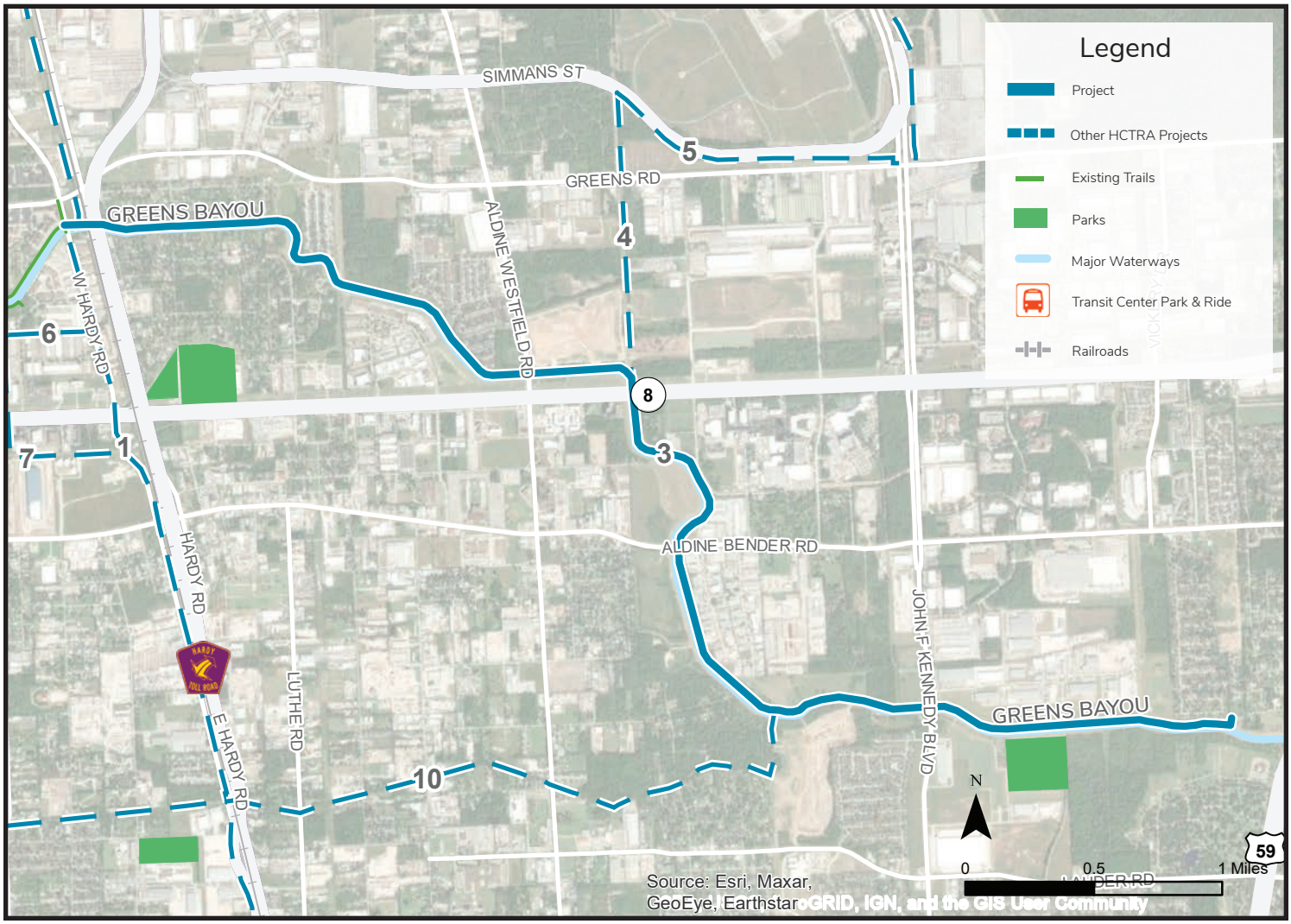
Facility Type:
Trail (Bayou), Barrier Crossings (Above Grade)

Project Benefits (Score: 3)

- 41,000 residents within 1/2 mile
- 59,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections

Connects to Greens Bayou Trail & HCTRA projects 1, 4, 10.



Project 15

Lake Link Trail

(Lake Sheldon to Lake Houston)

6.9 miles (Sheldon Lake (South Entrance) to Walton Rd in Dwight D. Eisenhower Park)

Estimated Cost **$12.7 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Northeast

Category:
Network Spine

Priority:
Network Builder

Ease of Implementation:
Complex (Score: 9)

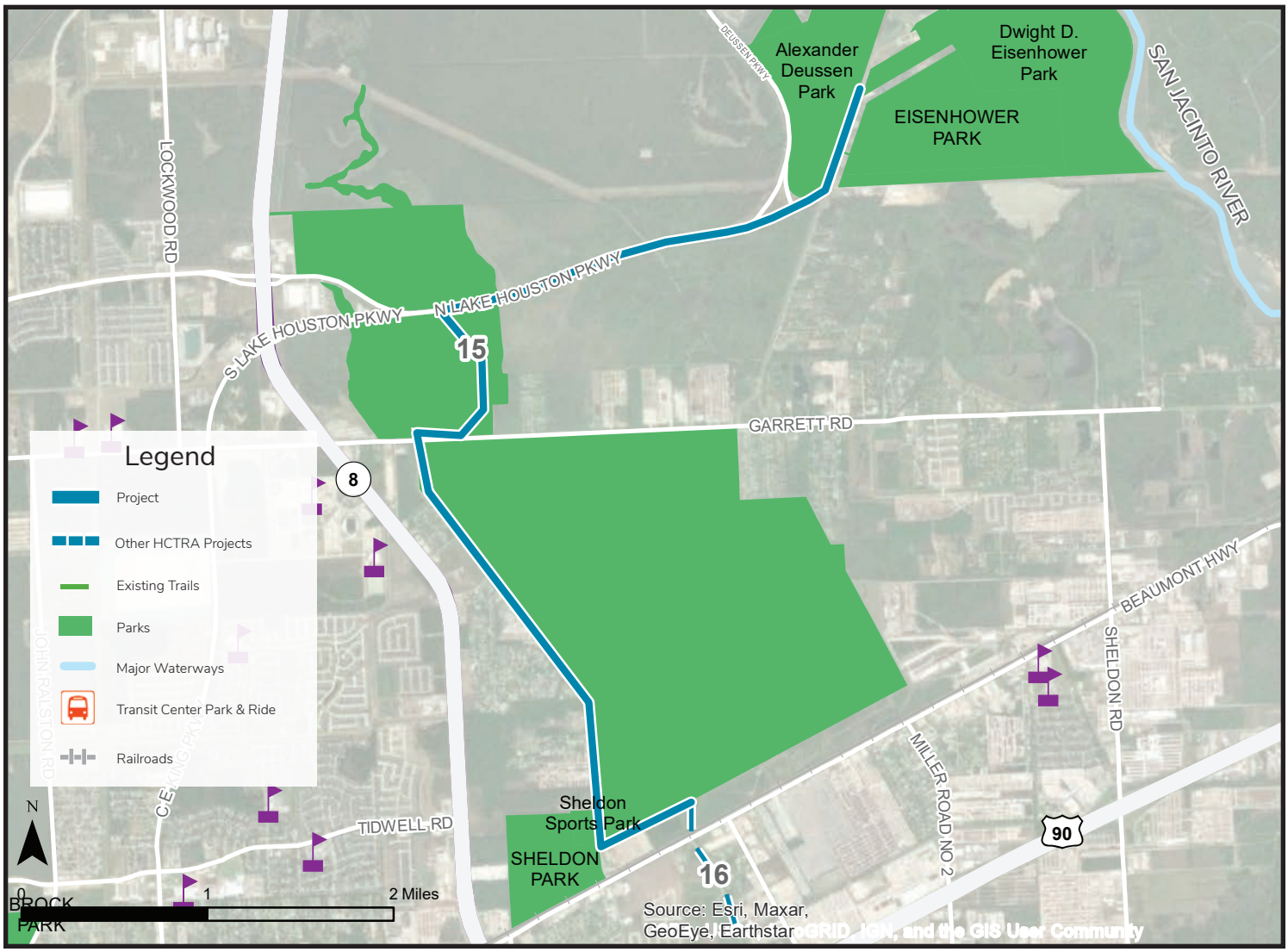
Facility Type:
Trail (Generic), Off-Street Bikeway

Project Benefits (Score: 11)

- 40,000 residents within 1/2 mile
- 6,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to HCTRA project 16.



West Canal - San Jac Trail

2.4 miles (Hutto St to West Canal at Granada St)

Estimated Cost **$3.5 million** Precinct(s): **1, 2**

HCTRA Corridor:
Sam Houston Parkway East

Category:
Network Spine

Priority:
Quick Win

Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Bayou)

Project Benefits (Score: 14)

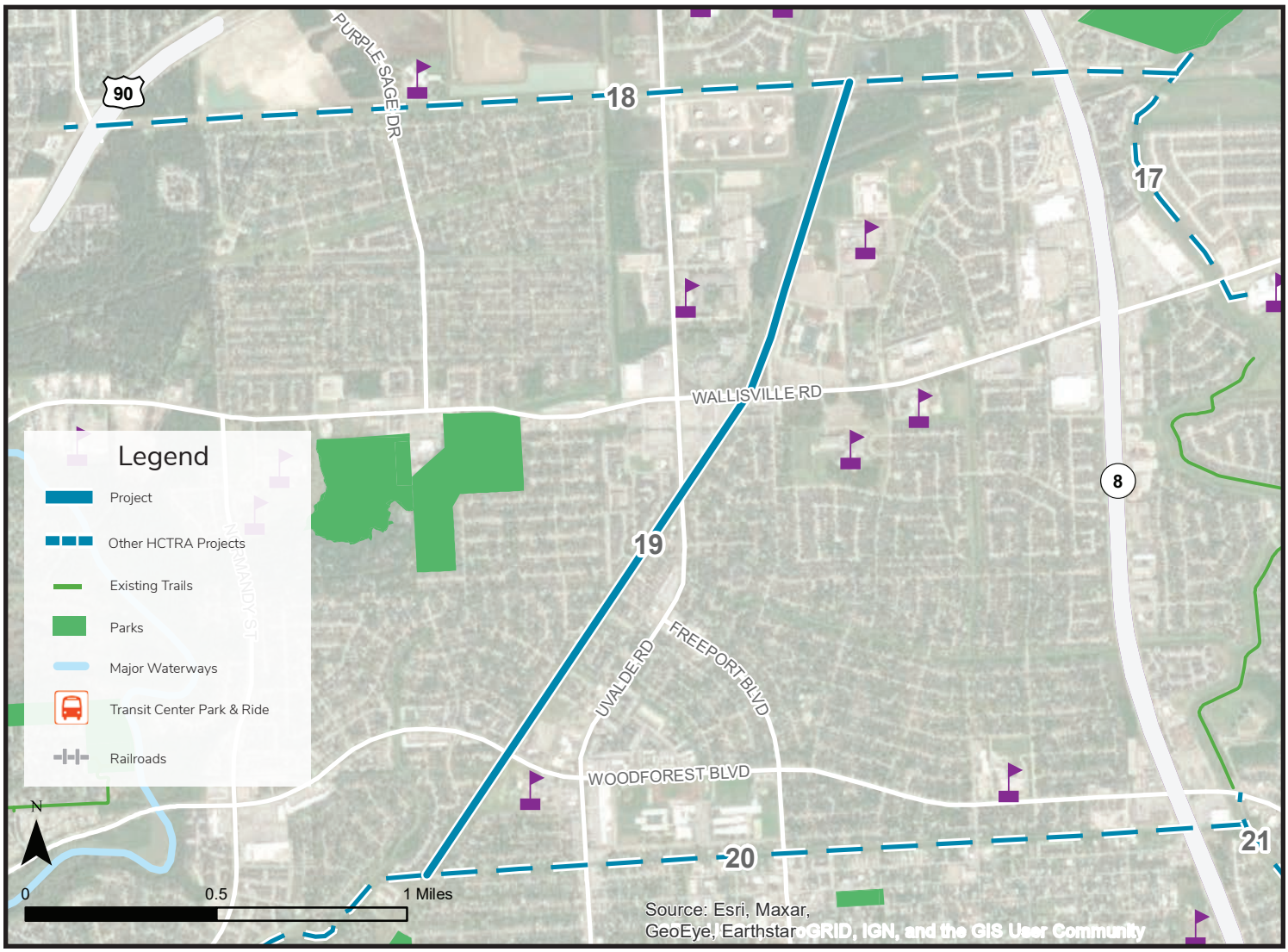
- 42,000 residents within 1/2 mile
- 6,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections

Connects to HCTRA projects 18, 20.

Project Note

Project construction would require coordination with the Coastal Water Authority for access to the easement. Designs may consider alternative alignment along Jordon Gully and nearby channels.



Project 22

Space Center Blvd Trail

11.4 miles (Middlebrook Dr to The Battleground Golf Course (Deer Park))

Estimated Cost **$17.3 million** Precinct(s): **2**

HCTRA Corridor:
Sam Houston Tollway East

Category:
Network Spine

Priority:
Quick Win

Ease of Implementation:
Complex (Score: 11)

Facility Type:
Trail (Utility, Drainage), On-Street Protected Bikeway, Barrier Crossings (At Grade)

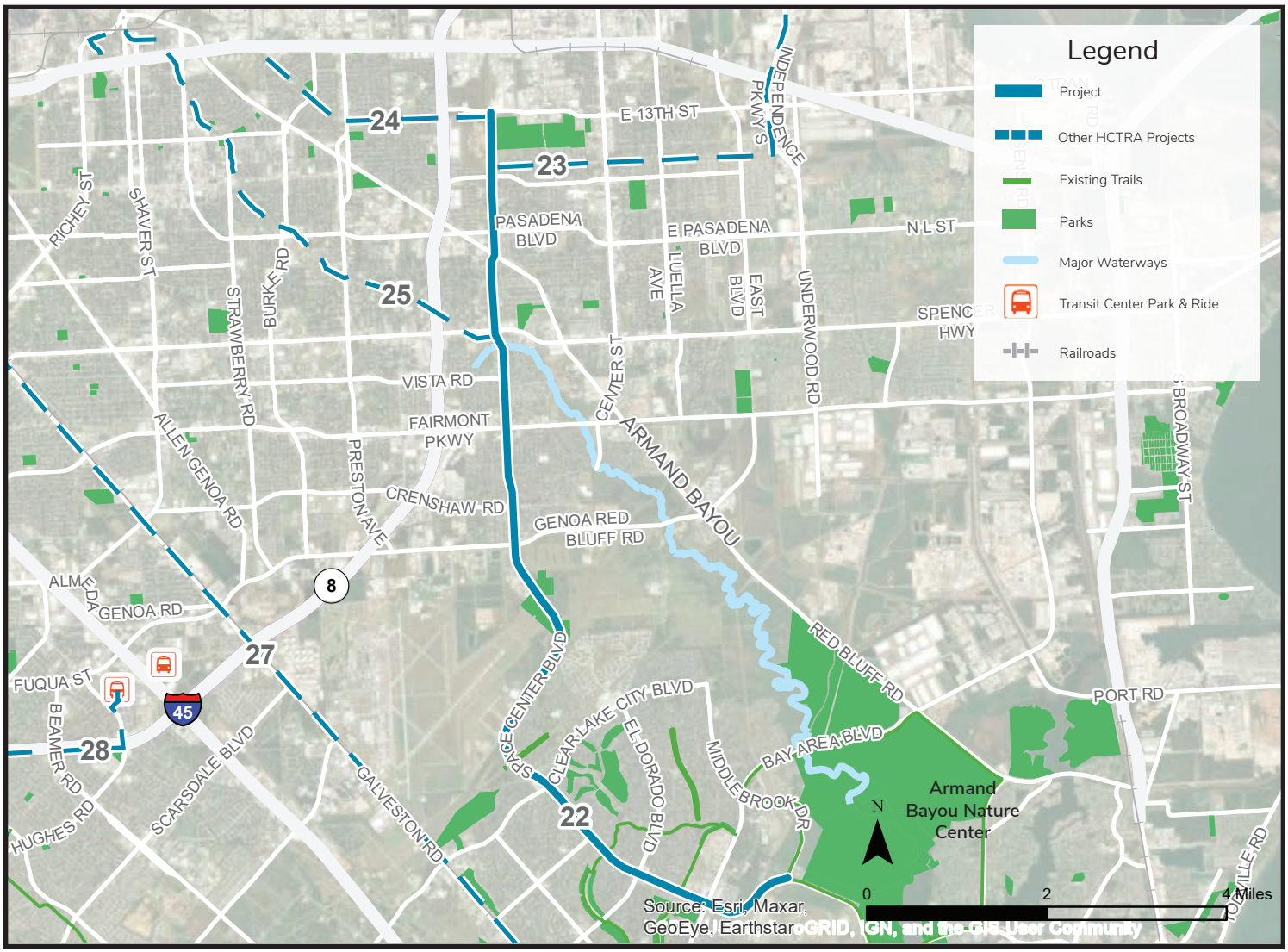
Project Benefits (Score: 22)

- 57,000 residents within 1/2 mile
- 44,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Armand Bayou Trail, Clear Lake Trail, Bay Area Hike & Bike Trail & HCTRA projects 23, 24, 25.

During the design phase, HCTRA and partners may also consider Trail Connections to Bliss Meadows Park and the nearby detention pond.



Houston to Galveston Trail
(East End Segment)

1.9 miles (Brays Bayou at the Houston Ship Channel to Park Terrace Blvd)

Estimated Cost **$5.5 million** Precinct(s): **2**

HCTRA Corridor:
N/A

Category:
Network Spine

Priority:
Big Move

Coordination:
Rail, METRO, TxDOT

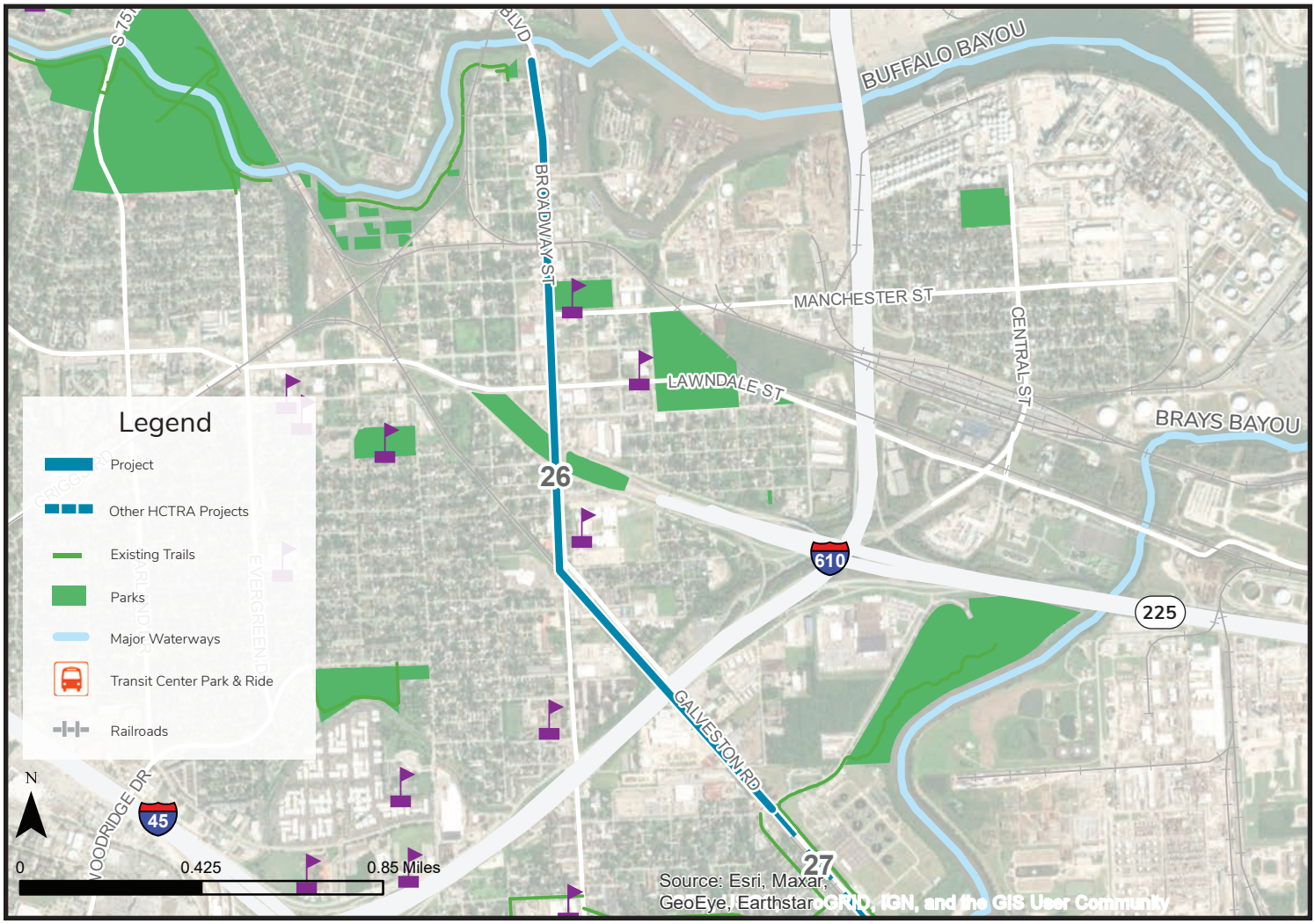
Ease of Implementation:
Complex (Score: 8)

Facility Type:
Trail (Railway), On-Street Shared Bikeway, Barrier Crossings (Below Grade)

Project Benefits (Score: 27)

- 27,000 residents within 1/2 mile
- 11,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Sims Bayou Trail, Central St Trail & HCTRA project 27.



Project 27

Houston to Galveston Trail
(Southeast County Segment)

15.9 miles (Park Terrace Blvd. to Clear Creek)

Estimated Cost **$45.3 million** Precinct(s): **2**

HCTRA Corridor:
Sam Houston Pkwy. Southeast

Category:
Network Spine

Priority:
Big Move

Coordination:
Rail, TxDOT

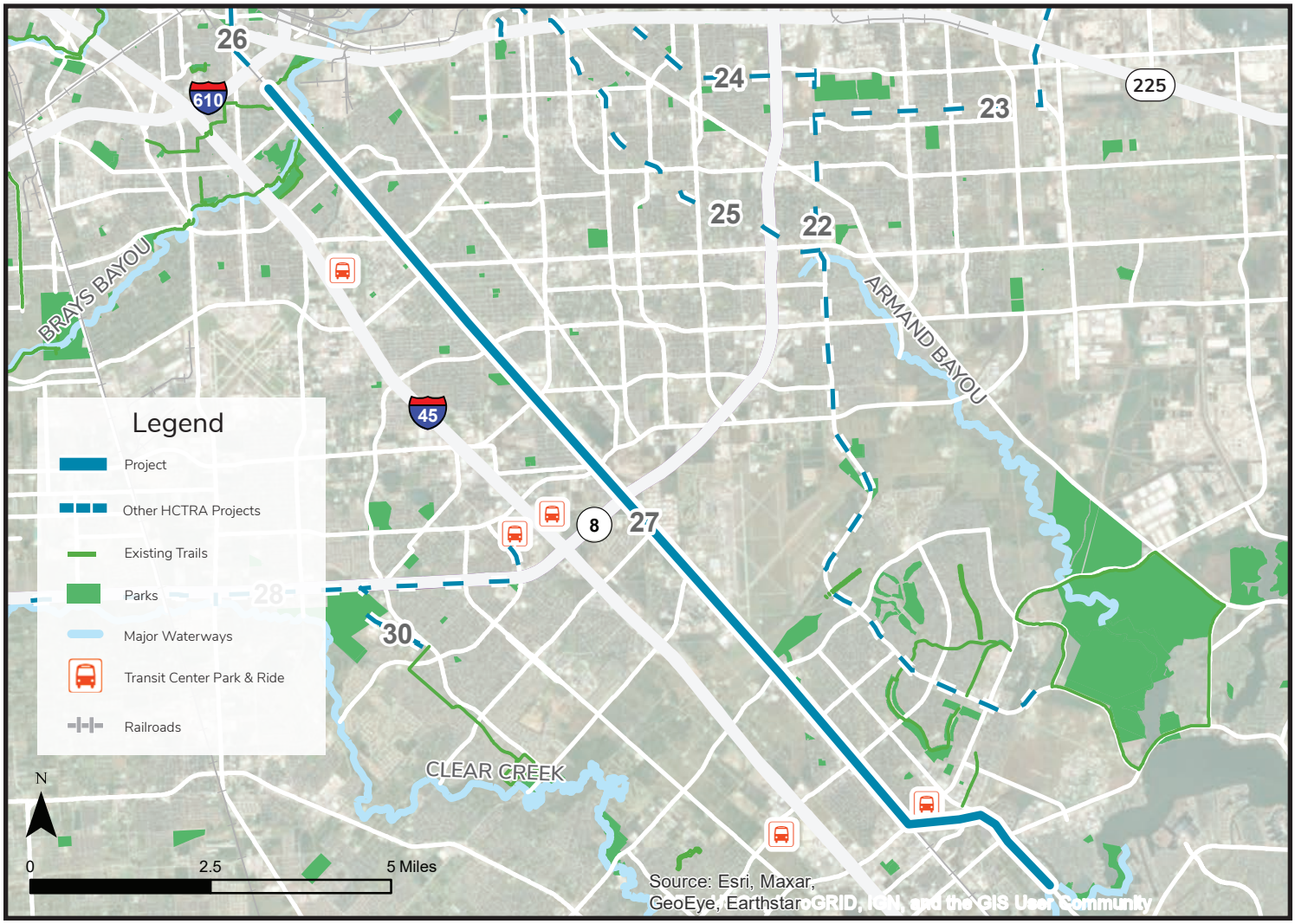
Ease of Implementation:
More Complex (Score: 6)

Facility Type:
Trails (Railway), On-Street Bikeway, On-Street Protected Bikeway

Project Benefits (Score: 28)

- 118,000 residents within 1/2 mile
- 65,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Sims Bayou Trail, Concord St Trail, Clear Creek Trail & HCTRA project 26.



South Sam Houston Trail

9.7 miles (Tom Bass Park to Fuqua Park & Ride (Sabo Rd at IH-45))

Estimated Cost **$32.3 million** Precinct(s): **1, 2**

HCTRA Corridor:
Sam Houston Tollway Southeast

Category:
Network Spine

Priority:
Big Move

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 3)

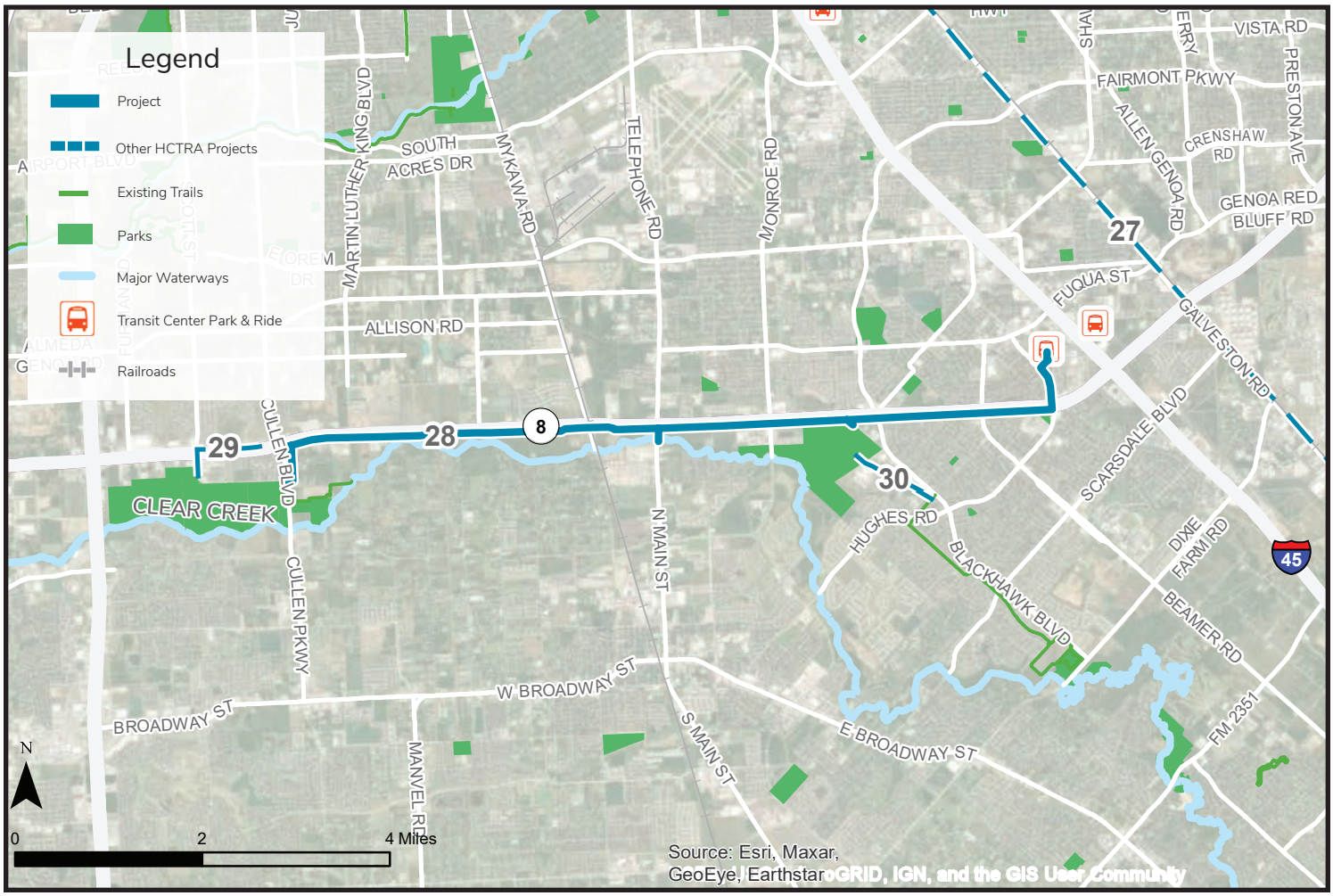
Facility Type:
Trail (Highway, Utility), Off-Street Bikeway, Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 23)

- 74,000 residents within 1/2 mile
- 21,000 jobs within 1/2 mile
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to Clear Creek Trail & HCTRA project 29.

Project Note
HCTRA should coordinate with partners like the City of Pearland and the Houston Parks Board to determine the ideal project design, including alternate alignments along Clear Creek.



Westpark Trail
(West Segment)

4.8 miles (SH-6 to Westchase Brays Bayou Connector Trail)

Estimated Cost **$7.4 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway

Category:
Network Spine

Priority:
Big Move

Coordination:
TxDOT

Ease of Implementation:
Complex (Score: 9)

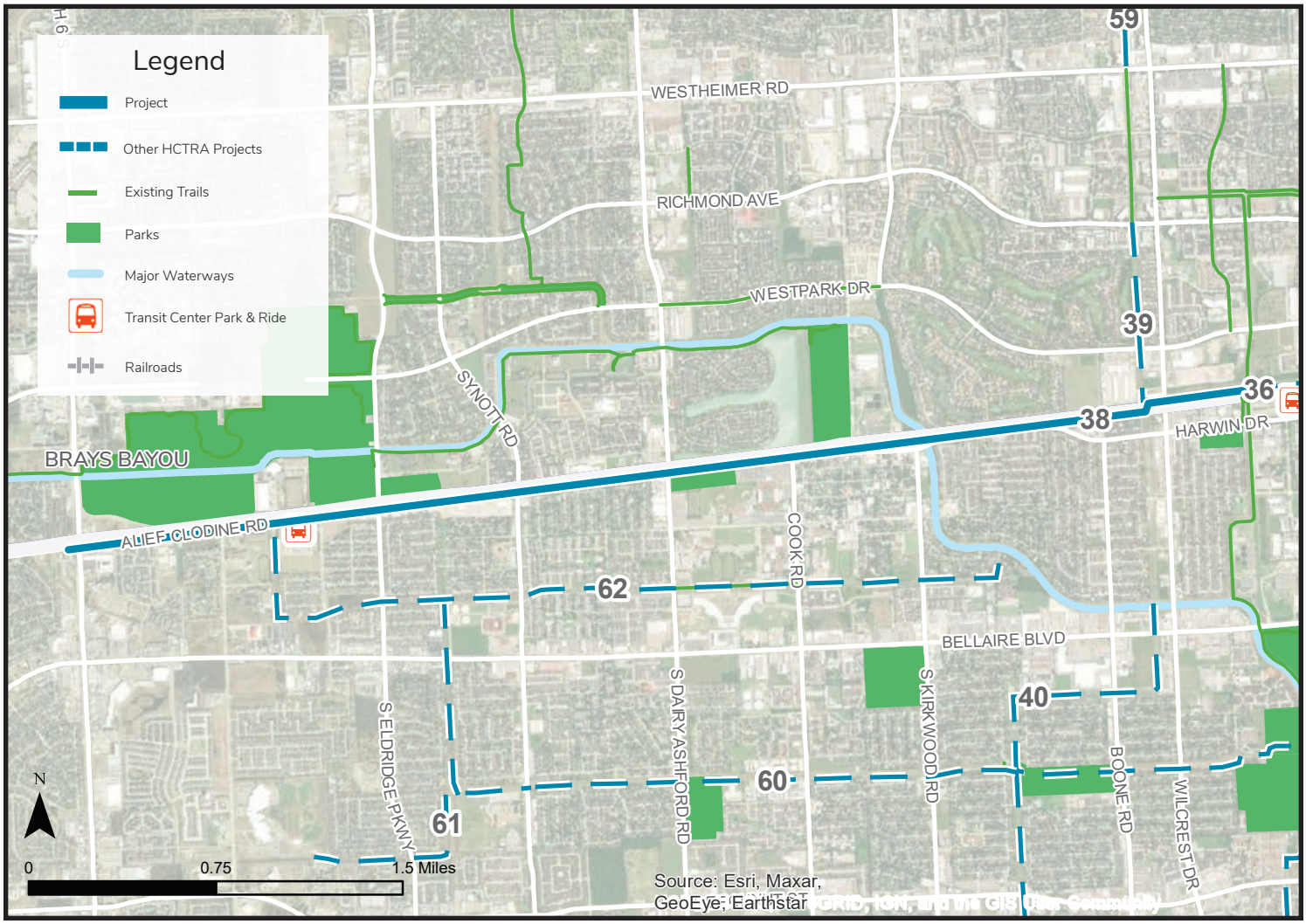
Facility Type:
Trail (Highway, Utility), Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 26)

- 59,000 residents within 1/2 mile
- 37,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Brays Bayou Trail, Westchase Trail & HCTRA projects 36, 39, 62.



West Belt Trail

4.3 miles (Terry Hershey Park to Arthur Storey Park)

Estimated Cost **$9.4 million** Precinct(s): **3, 4**

HCTRA Corridor:
Sam Houston Tollway South

Category:
Network Spine

Priority:
Big Move

Coordination:
TxDOT

Ease of Implementation:
Complex (Score: 9)

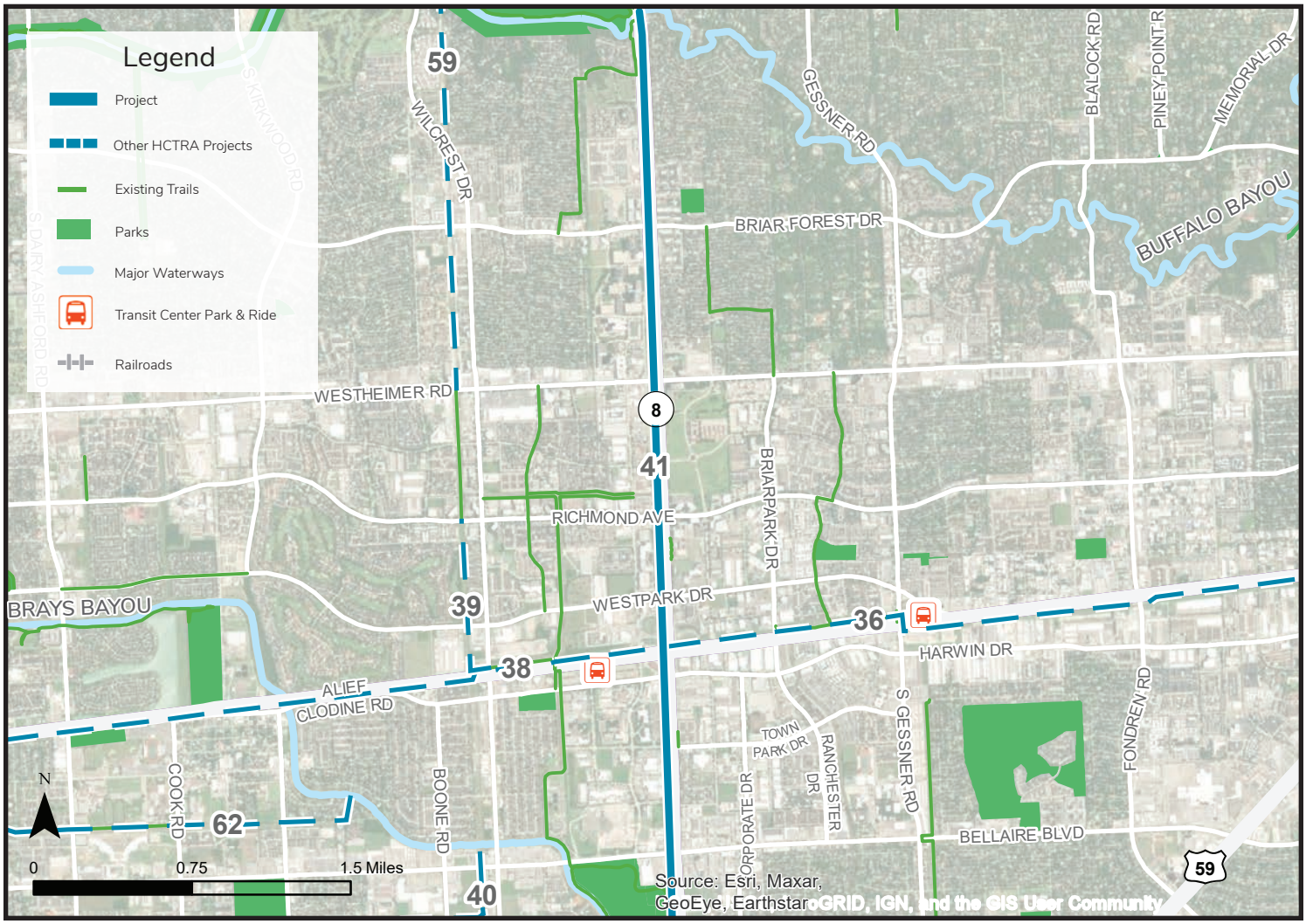
Facility Type:
Trail (Highway), Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 31)

- 58,000 residents within 1/2 mile
- 65,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections

Connects to Arthur Storey Park Trail, Terry Hershey Trail & HCTRA project 36.



Appendix – C

Project 42

Jersey-Addicks Trail
(Ditch W 167, E 127)

10.3 miles (Jersey Meadows Drive to Mayfield Rd)

Estimated Cost **$22.5 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway Central

Category:
Network Spine

Priority:
Big Move

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 6)

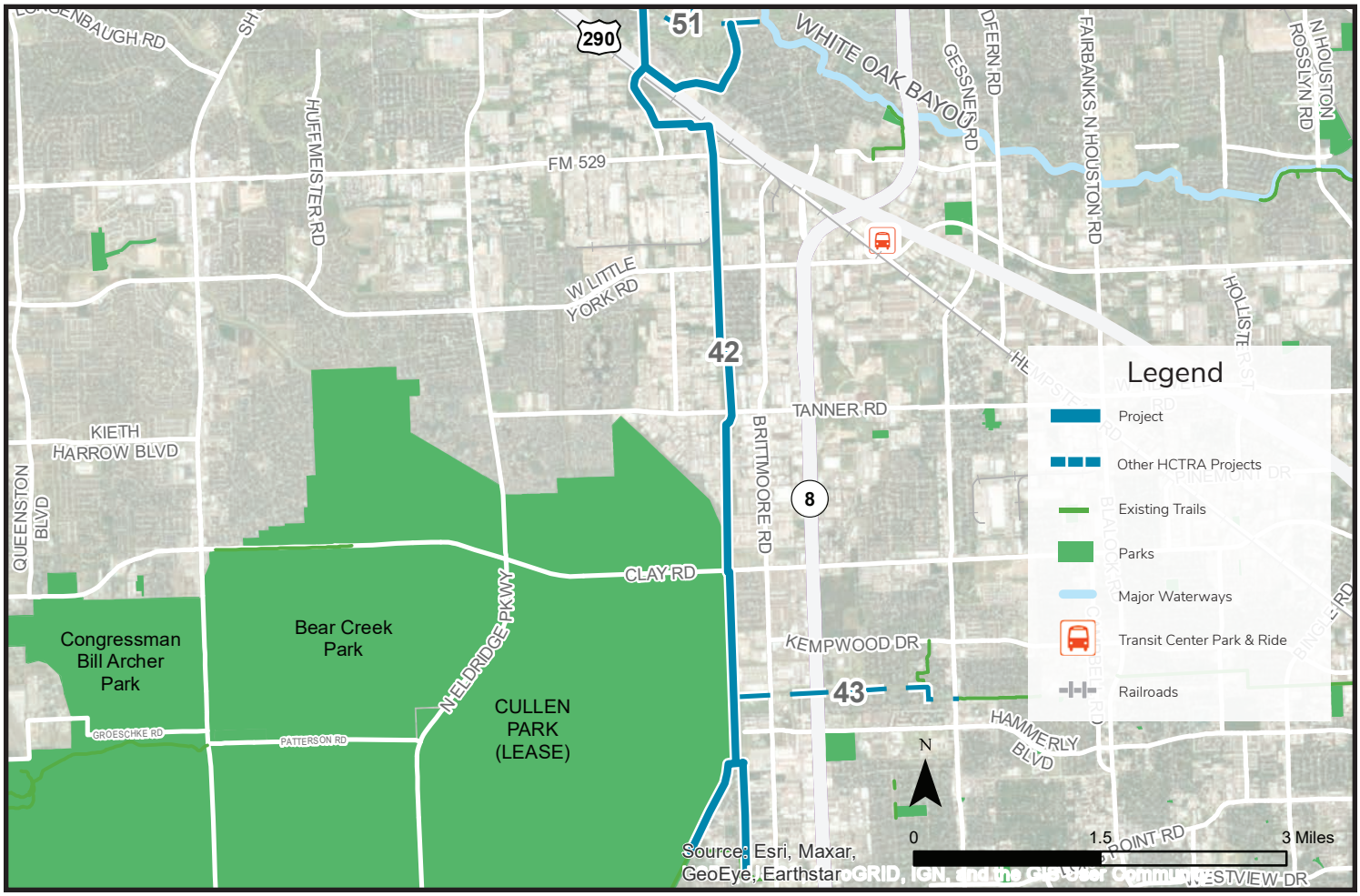
Facility Type:
Trail (Utility, Bayou, Drainage), On-Street Shared Bikeway, Off-Street Bikeway, Barrier Crossings (At Grade, Above Grade, Below Grade)

Project Benefits (Score: 17)

- 40,000 residents within 1/2 mile
- 71,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Chatterton Dr Trail, Addicks Reservoir Trail & HCTRA projects 43, 51.



Greens Bayou Trail - West Extension

4.8 miles (Greens Parkway and Greens Bayou to Cutten Rd)

Estimated Cost **$9.4 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Network Spine

Priority:
Network Builder

Ease of Implementation:
Less Complex (Score: 12)

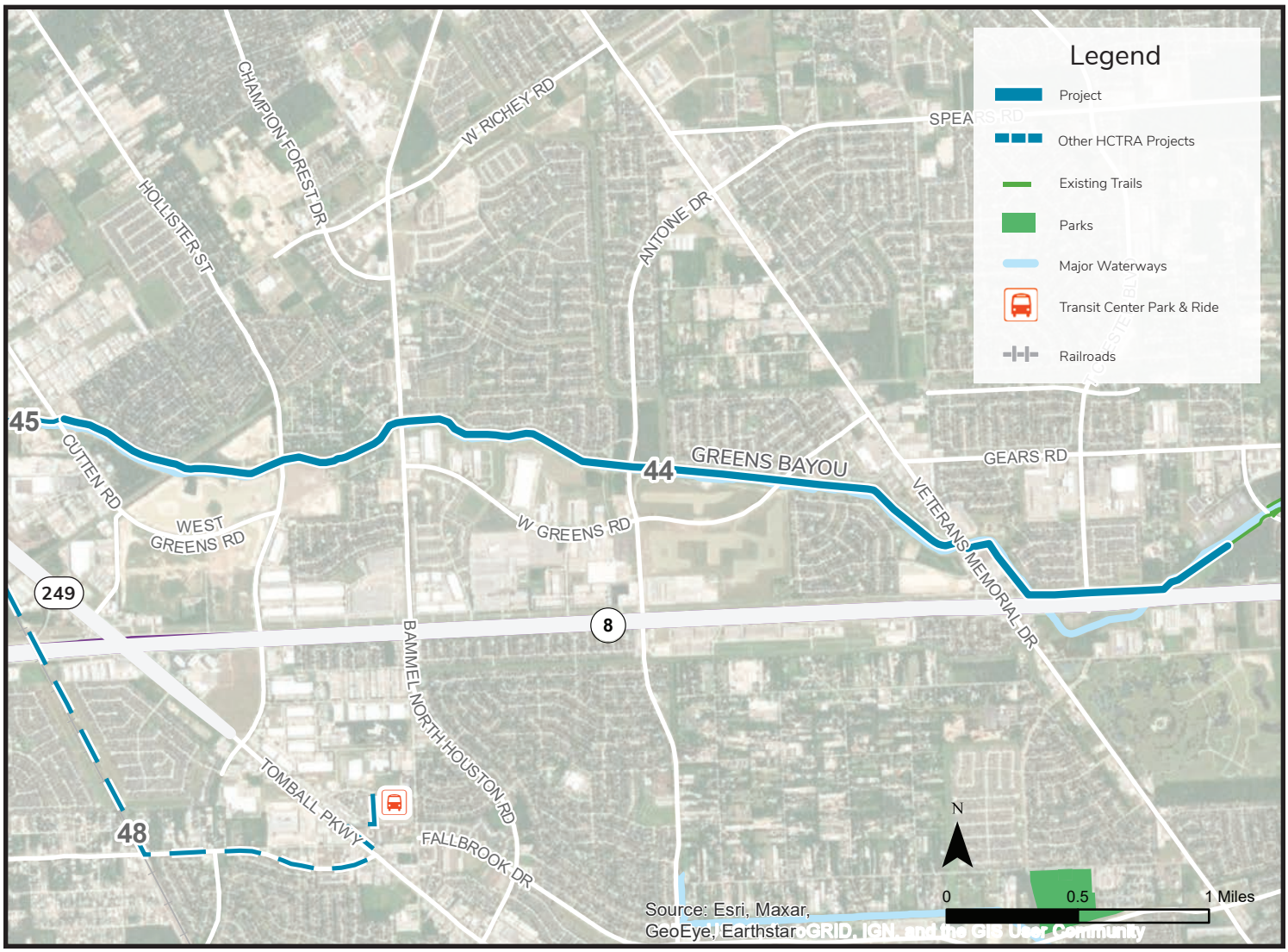
Facility Type:
Trail (Highway, Utility, Bayou), Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 10)

- 43,000 residents within 1/2 mile
- 31,000 jobs within 1/2 mile
- Connects to schools
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Greens Bayou Trail & HCTRA project 45.



Project 55

Mercer Trail

3.6 miles (Mercer Botanic Gardens (west side) to Turkey Creek Park)

Estimated Cost **$9.0 million** Precinct(s): **1, 3**

HCTRA Corridor:
Hardy Toll Road North

Category:
Network Spine

Priority:
Quick Win

Ease of Implementation:
Complex (Score: 10)

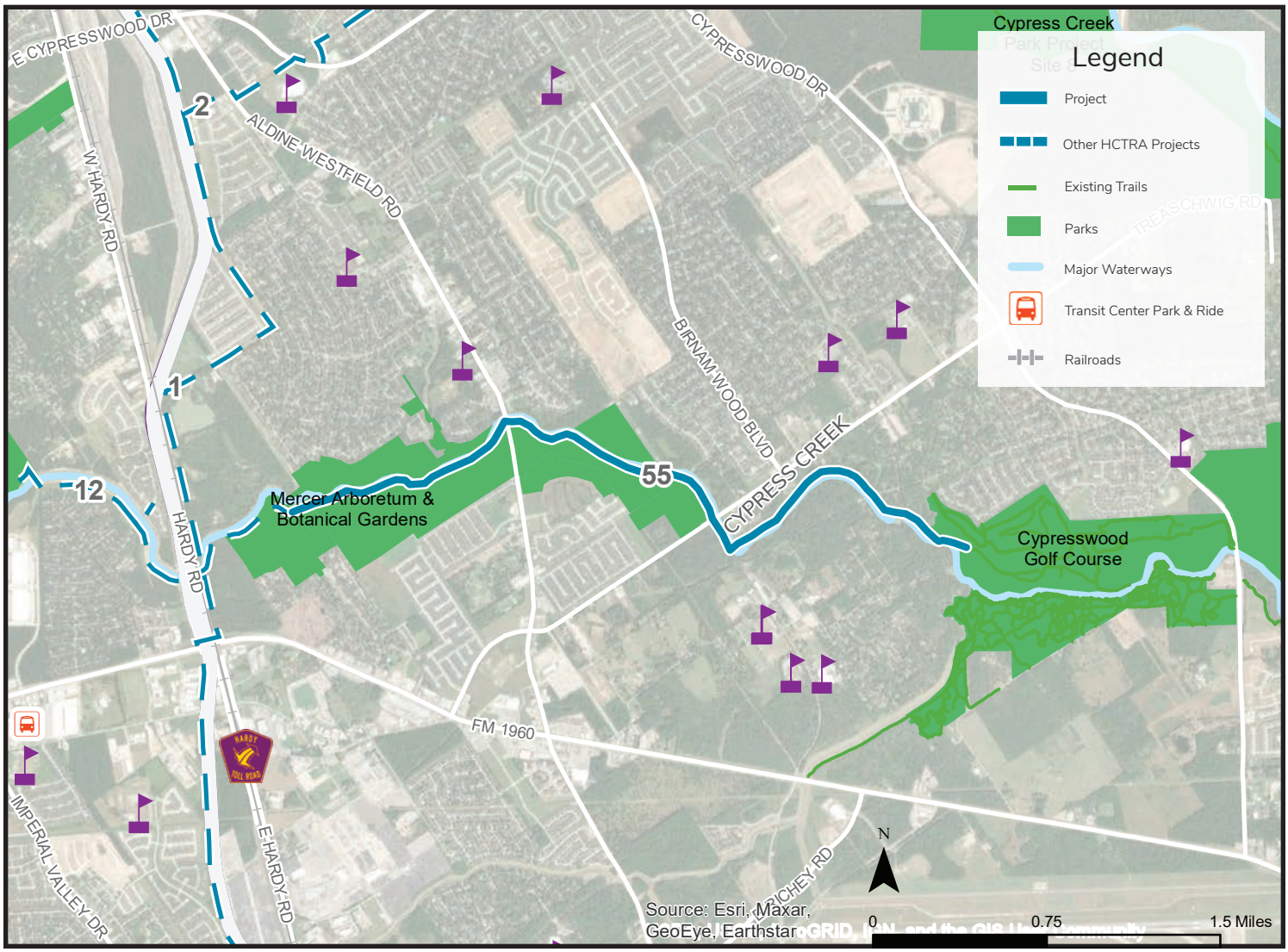
Facility Type:
Trail (Generic), Barrier Crossings (Above Grade)

Project Benefits (Score: 14)

- 32,000 residents within 1/2 mile
- 3,000 jobs within 1/2 mile
- Connects to parks
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Cypress Creek Trail, Cypresswood Park Trails & HCTRA project 12.



Brays-Buffalo Connector Trail
(Ditch W 129, D 113)

4.1 miles (Brays Bayou at Beechnut St to San Felipe St)

Estimated Cost **$8.3 million** Precinct(s): **1, 4**

HCTRA Corridor:
Westpark Tollway

Category:
Network Spine

Priority:
Quick Win

Coordination:
Rail, TxDOT

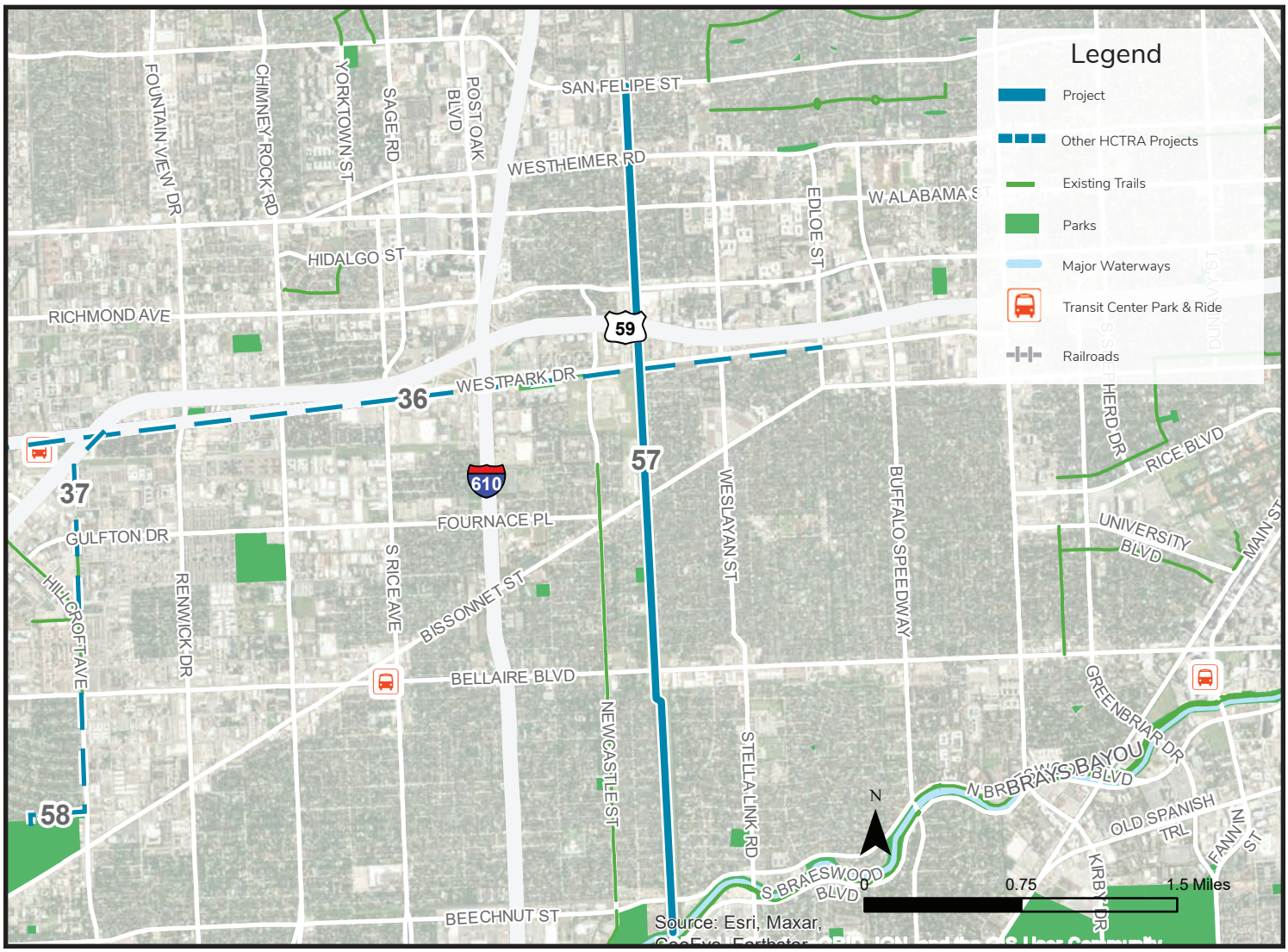
Ease of Implementation:
Complex (Score: 9)

Facility Type:
Trail (Utility, Railway), Barrier Crossings (At Grade)

Project Benefits (Score: 21)

- 54,000 residents within 1/2 mile
- 105,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Brays Bayou Trail & HCTRA project 36.



Community Connectors



Community Connectors are projects that provide access to parks, transit, schools, neighborhoods, or other destinations. These projects may be shorter and likely connect to a Network Spine or other multimodal facility within Harris County. These projects are recommended to be developed and led by HCTRA.

Cypresswood Spring Trail

2.5 miles (Spring Creek Greenway at Carmine Stahl Preserve to Hardy Toll Road North)

Estimated Cost **$3.7 million** Precinct(s): **3**

HCTRA Corridor:
Hardy Toll Road North

Category:
Community Connector

Priority:
Network Builder

Ease of Implementation:
Less Complex (Score: 13)

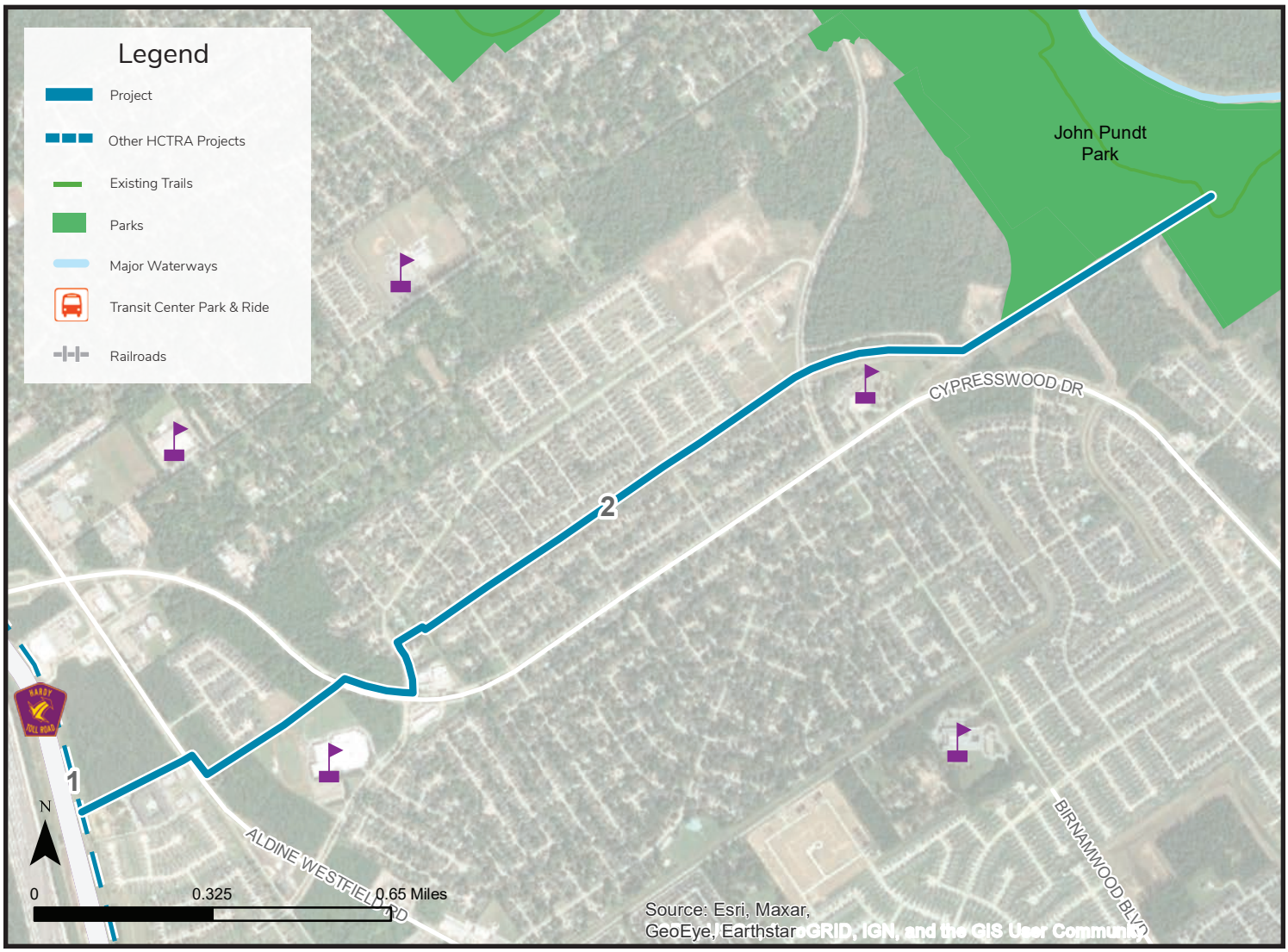
Facility Type:
Trail (Drainage), Off-Street Bikeway

Project Benefits (Score: 7)

- 28,000 residents within 1/2 mile
- 5,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network

Network Connections

Connects to Spring Creek Greenway Hike & Bike Trail & HCTRA project 1.



Hoods Bayou Trail
(Ditch P 140)

1.1 miles (Hardy Toll Road Airport Connector to Greens Bayou)

Estimated Cost **$1.5 million** Precinct(s): **1**

HCTRA Corridor:
Airport Connector, Sam Houston Parkway North

Category:
Community Connector

Priority:
Network Builder

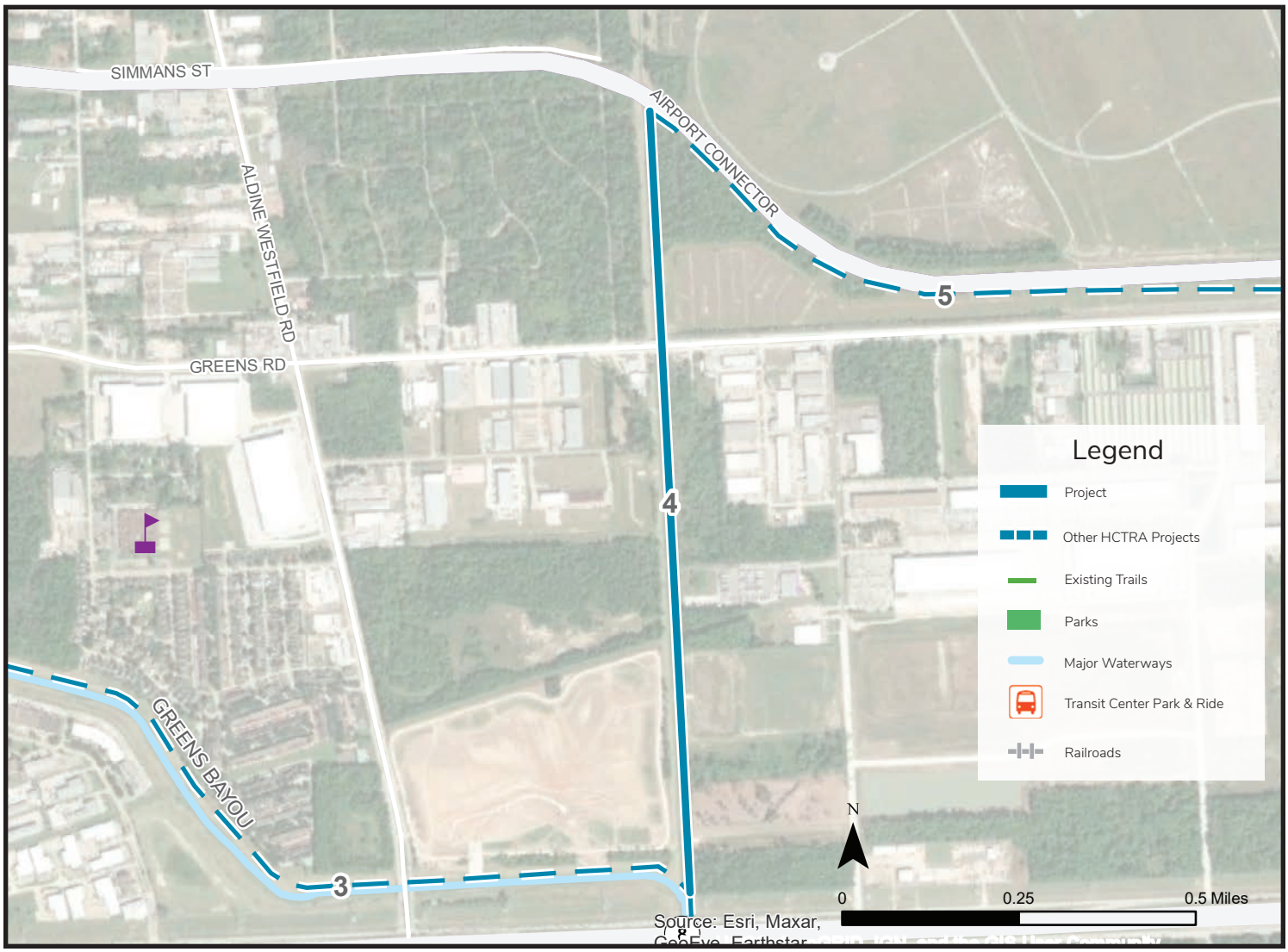
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Bayou)

Project Benefits (Score: 7)

- 13,000 residents within 1/2 mile
- 66,000 jobs within 1/2 mile
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to Greens Bayou Trail & HCTRA projects 3, 5.



JFK Boulevard Trail

2.6 miles (Hardy Toll Road Airport Connector near Greenview Dr to IAH Rental Car Facility)

Estimated Cost **$4.6 million** Precinct(s): **1**

HCTRA Corridor:
Airport Connector

Category:
Community Connector

Priority:
Network Builder

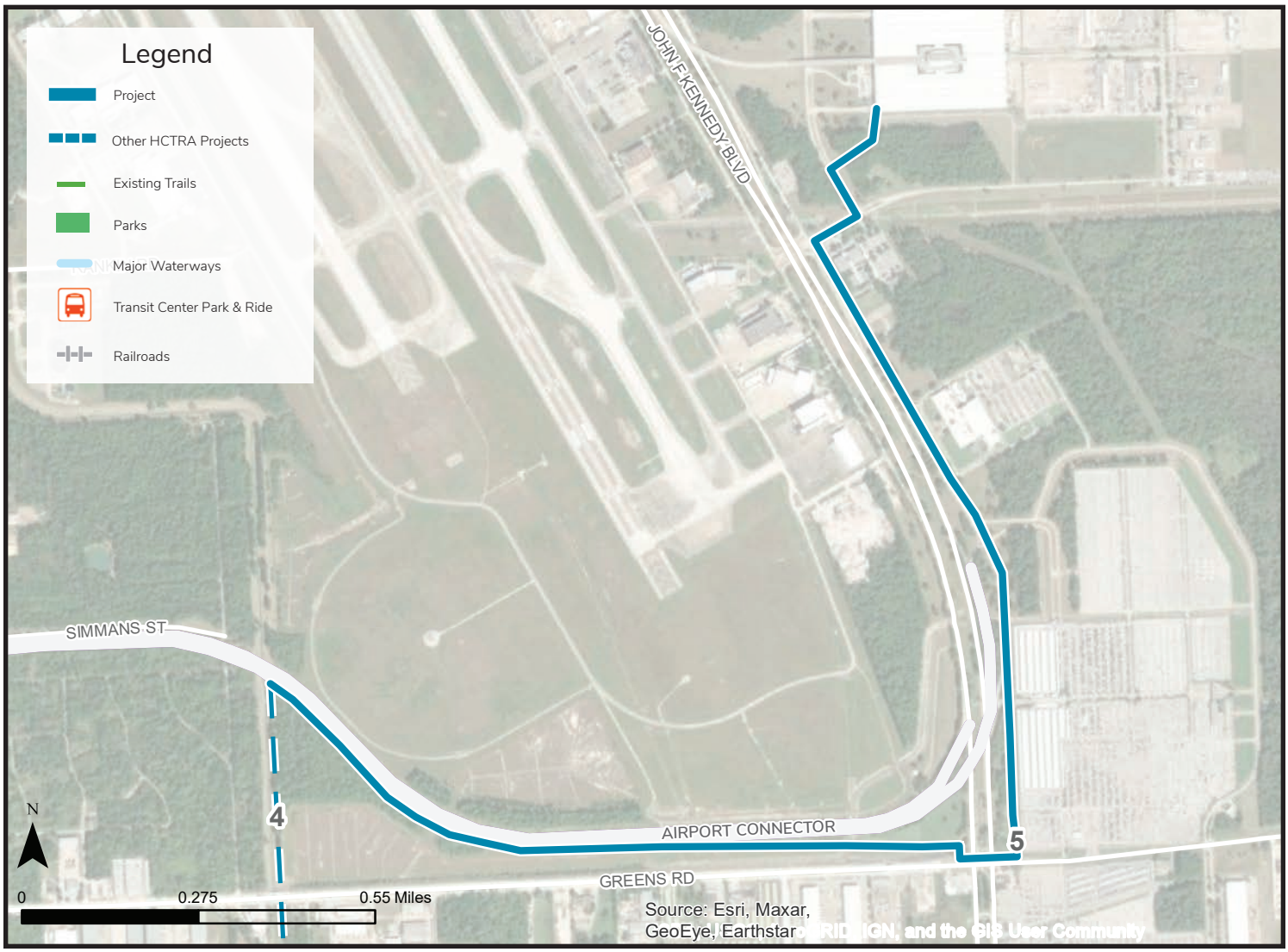
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Highway), On-Street Protected Bikeway, Off-Street Bikeway

Project Benefits (Score: 10)

- 4,000 residents within 1/2 mile
- 38,000 jobs within 1/2 mile
- On the Vision Zero High-Injury Network
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 4



Hedgecroft Trail
(Ditch P 144)

1.0 miles (Hardy Rd to Greens Bayou at Jack Drake Park)

Estimated Cost **$24.4 million** Precinct(s): **2**

HCTRA Corridor:
Hardy Toll Road North, Sam Houston Parkway North

Category:
Community Connector

Priority:
Network Builder

Coordination:
TxDOT

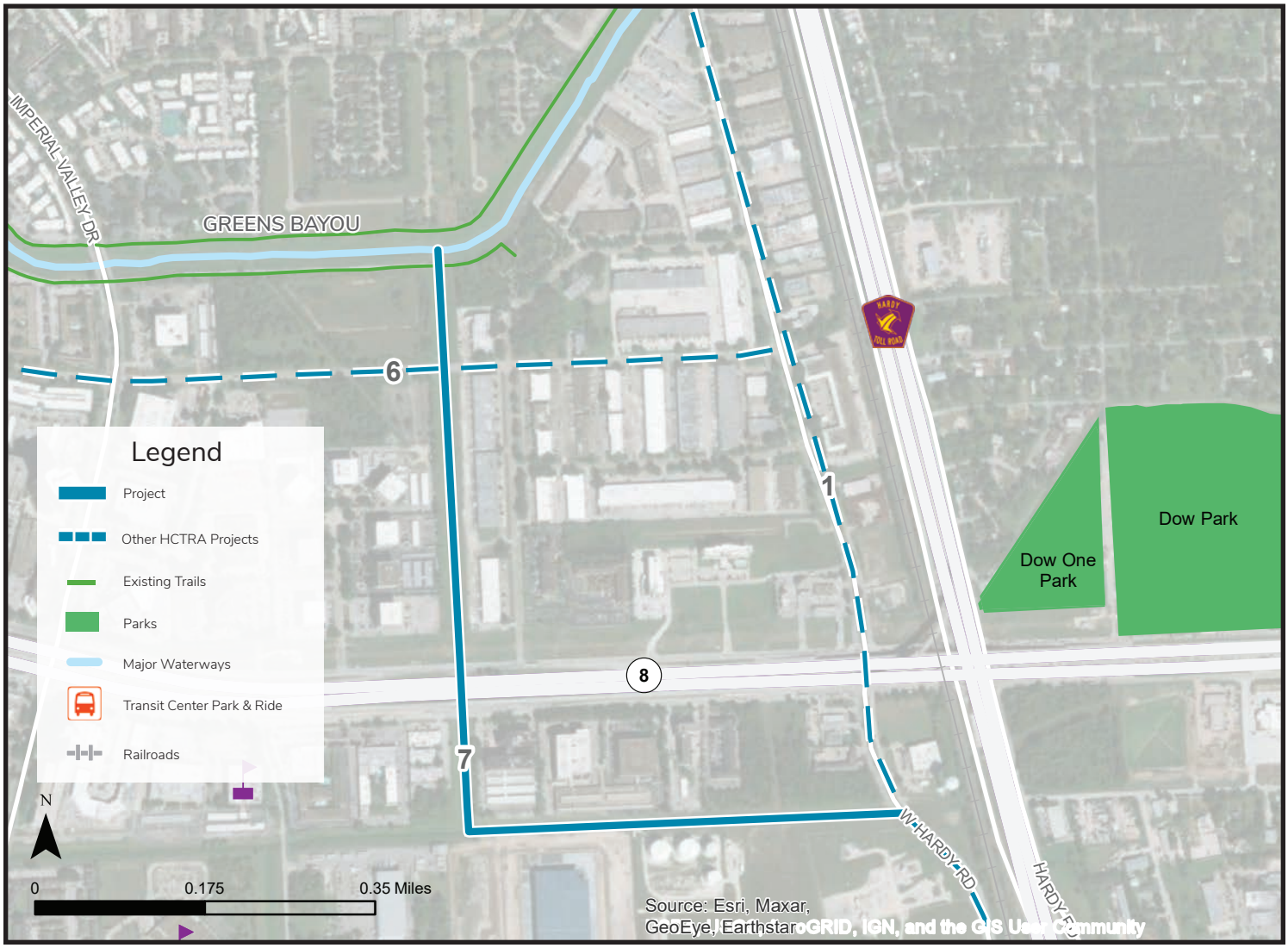
Ease of Implementation:
More Complex (Score: 6)

Facility Type:
Trail (Bayou, Drainage)

Project Benefits (Score: 16)

- 37,000 residents within 1/2 mile
- 56,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Greens Bayou Trail & HCTRA projects 1, 6.



Aldine-Hardy Park Connector Trail

1.3 miles (Hardy Toll Rd at Halls Bayou to Melrose Park and Squatty Lyons Park)

Estimated Cost **$4.9 million** Precinct(s): **2**

HCTRA Corridor:
Hardy Toll Road South

Category:
Community Connector

Priority:
Quick Win

Coordination:
Rail, TxDOT

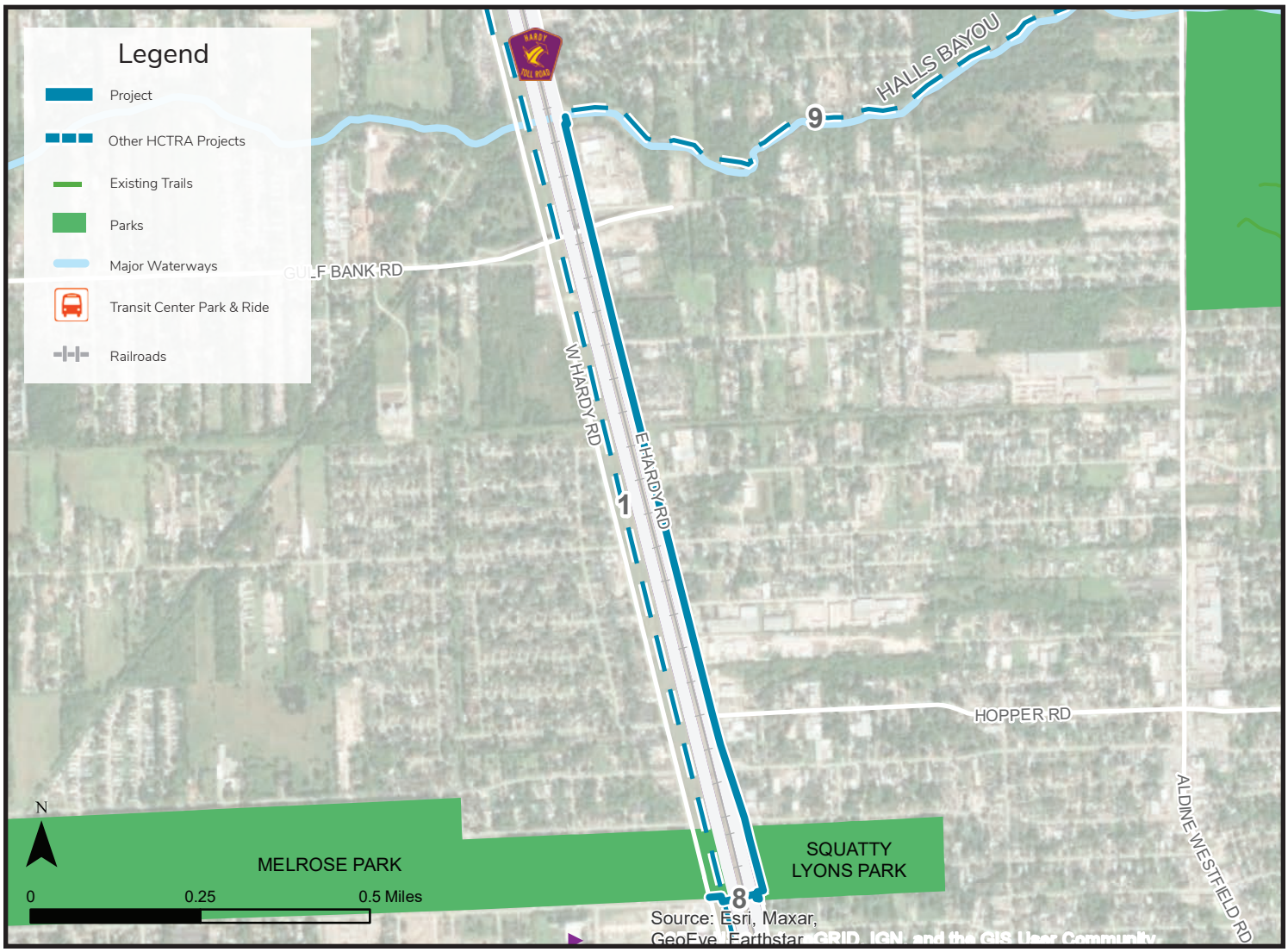
Ease of Implementation:
Complex (Score: 8)

Facility Type:
Trail (Highway), Barrier Crossings (Above Grade)

Project Benefits (Score: 20)

- 19,000 residents within 1/2 mile
- 5,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Halls Bayou & HCTRA projects 1, 9.



Project 9

Halls Bayou Trail - West Extension

1.0 miles (Keith-Wiess Park to Hardy Toll Road at Halls Bayou)

Estimated Cost **$1.2 million** Precinct(s): **2**

HCTRA Corridor:
Hardy Toll Road South

Category:
Community Connector

Priority:
Quick Win

Ease of Implementation:
Less Complex (Score: 13)

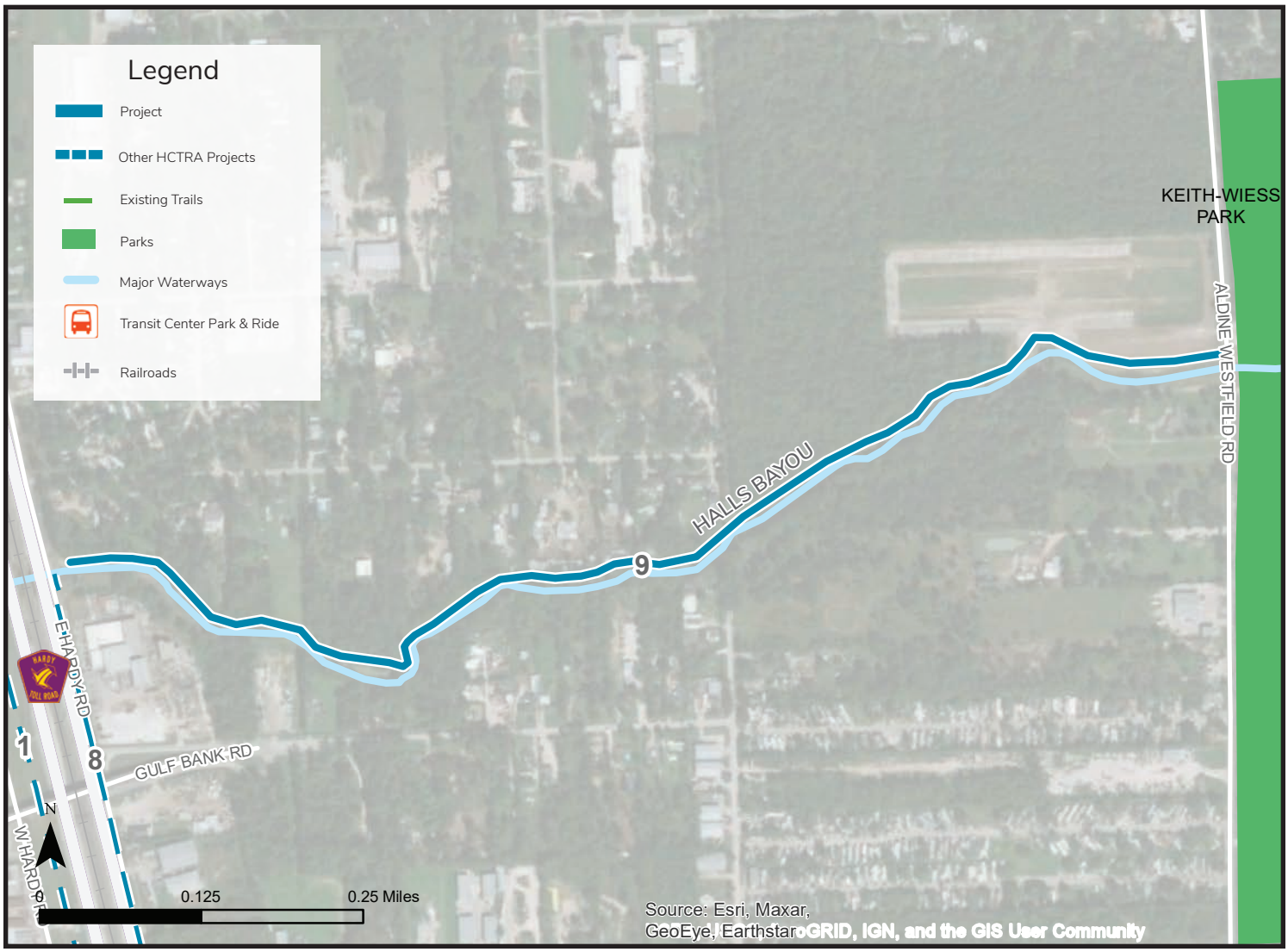
Facility Type:
Trail (Bayou)

Project Benefits (Score: 10)

- 10,000 residents within 1/2 mile
- 2,000 jobs within 1/2 mile
- Connects to parks
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Halls Bayou Trail & HCTRA project 8.

Project Note
The available right-of-way for this project may present implementation challenges. HCTRA and partners should consider alternative routes during the design process.



Summer Creek Trail

2.6 miles (West Lake at Summer Creek High School to Lake Meredith at Summerwood)

Estimated Cost **$3.4 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Northeast

Category:
Community Connector

Priority:
Quick Win

Coordination:
TxDOT

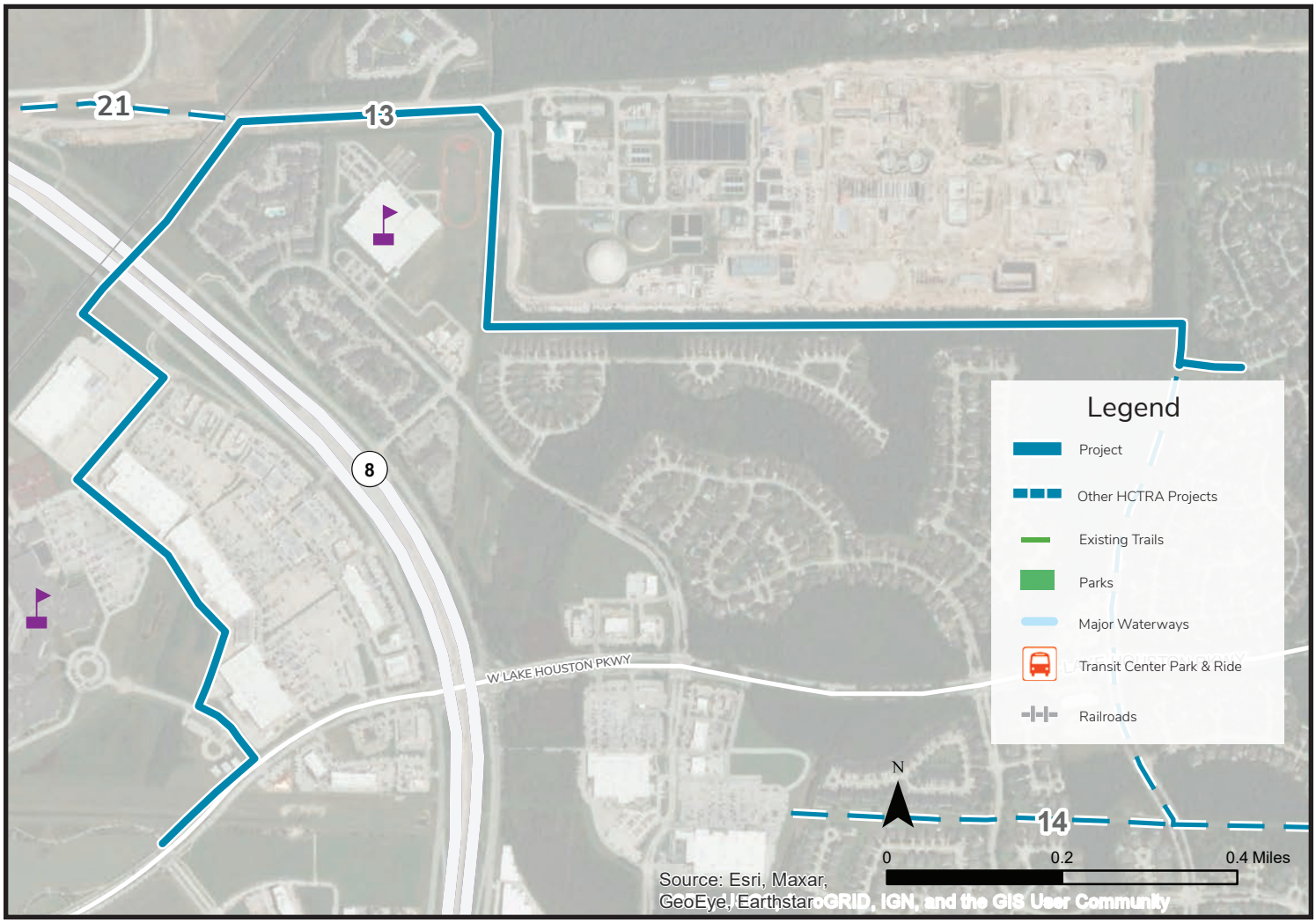
Ease of Implementation:
Less Complex (Score: 12)

Facility Type:
Trail (Generic), Off-Street Bikeway, Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 13)

- 56,000 residents within 1/2 mile
- 6,000 jobs within 1/2 mile
- Connects to schools
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA projects 14, 21.



Summerwood South Trail

2.3 miles (Woodson Dr to Deussen Pkwy)

Estimated Cost **$3.7 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Northeast

Category:
Community Connector

Priority:
Network Builder

Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Utility), Barrier Crossings (Above Grade)

Project Benefits (Score: 7)

- 27,000 residents within 1/2 mile
- 4,000 jobs within 1/2 mile
- On the Vision Zero High-Injury Network
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 13.



GRID, IGN, and the GIS User Community

Carpenters Bayou - North Extension

1.9 miles (Gene Green Park to Sheldon Lake Park)

Estimated Cost **$25.2 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Northeast

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 3)

Facility Type:
Trail (Bayou, Drainage), Barrier Crossings (Below Grade)

Project Benefits (Score: 13)

- 32,000 residents within 1/2 mile
- 6,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 15.



Carpenters Bayou - Wallisville Rd Connector

0.8 miles (Wallisville Rd (Aguirre Junior High) to Gene Green Park)

Estimated Cost **$2.8 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Parkway East

Category:
Community Connector

Priority:
Network Builder

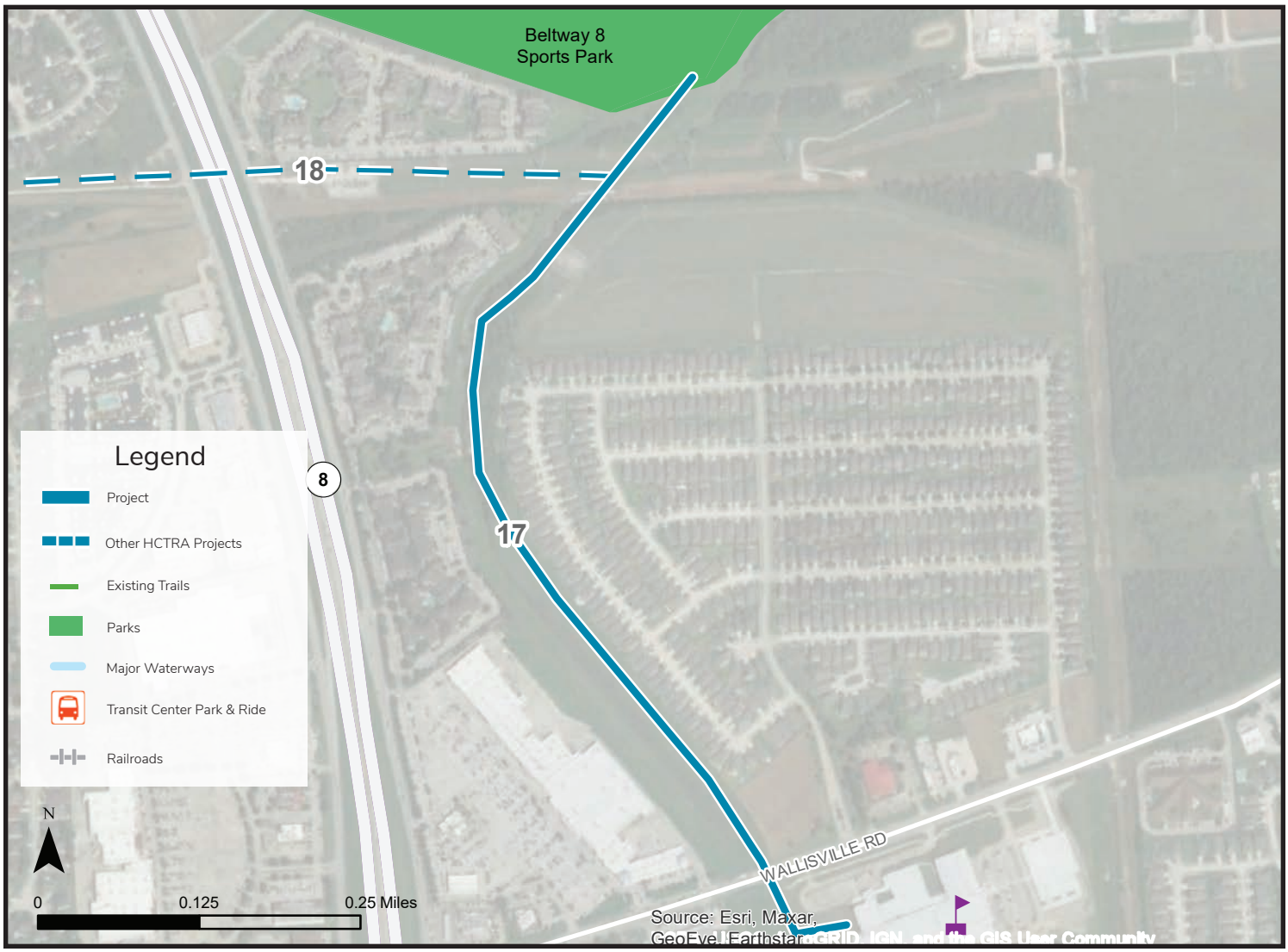
Ease of Implementation:
Complex (Score: 11)

Facility Type:
Trail (Bayou), Barrier Crossings (Below Grade)

Project Benefits (Score: 10)

- 30,000 residents within 1/2 mile
- 8,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 18.



Purple Sage Trail

2.9 miles (US-90 to Carpenters Bayou at Gene Green Park)

Estimated Cost **$26.3 million** Precinct(s): **1, 2**

HCTRA Corridor:
Sam Houston Parkway East

Category:
Community Connector

Priority:
Network Builder

Coordination:
TxDOT

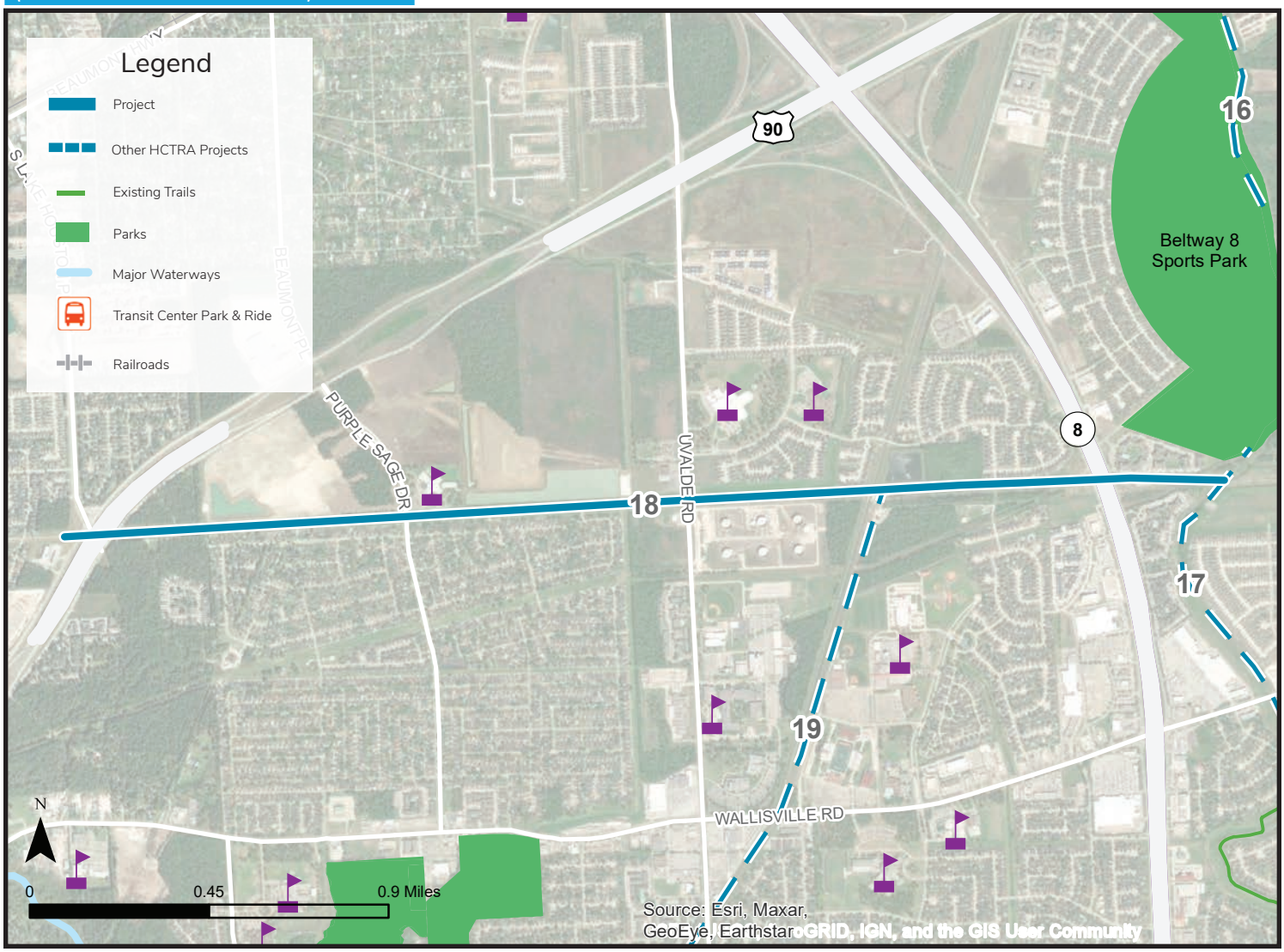
Ease of Implementation:
More Complex (Score: 5)

Facility Type:
Trail (Utility), Barrier Crossings (At Grade, Above Grade)

Project Benefits (Score: 14)

- 23,000 residents within 1/2 mile
- 6,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA projects 17, 19.



Project 20

Jordan Gully Trail
(Ditch P105, N 110)

3.5 miles (Greens Bayou at Thomas Bell Foster Park to Carpenters Bayou at Woodforest Blvd)

Estimated Cost **$32.0 million** Precinct(s): **2**

HCTRA Corridor:
Sam Houston Parkway East

Category:
Community Connector

Priority:
Big Move

Coordination:
TxDOT

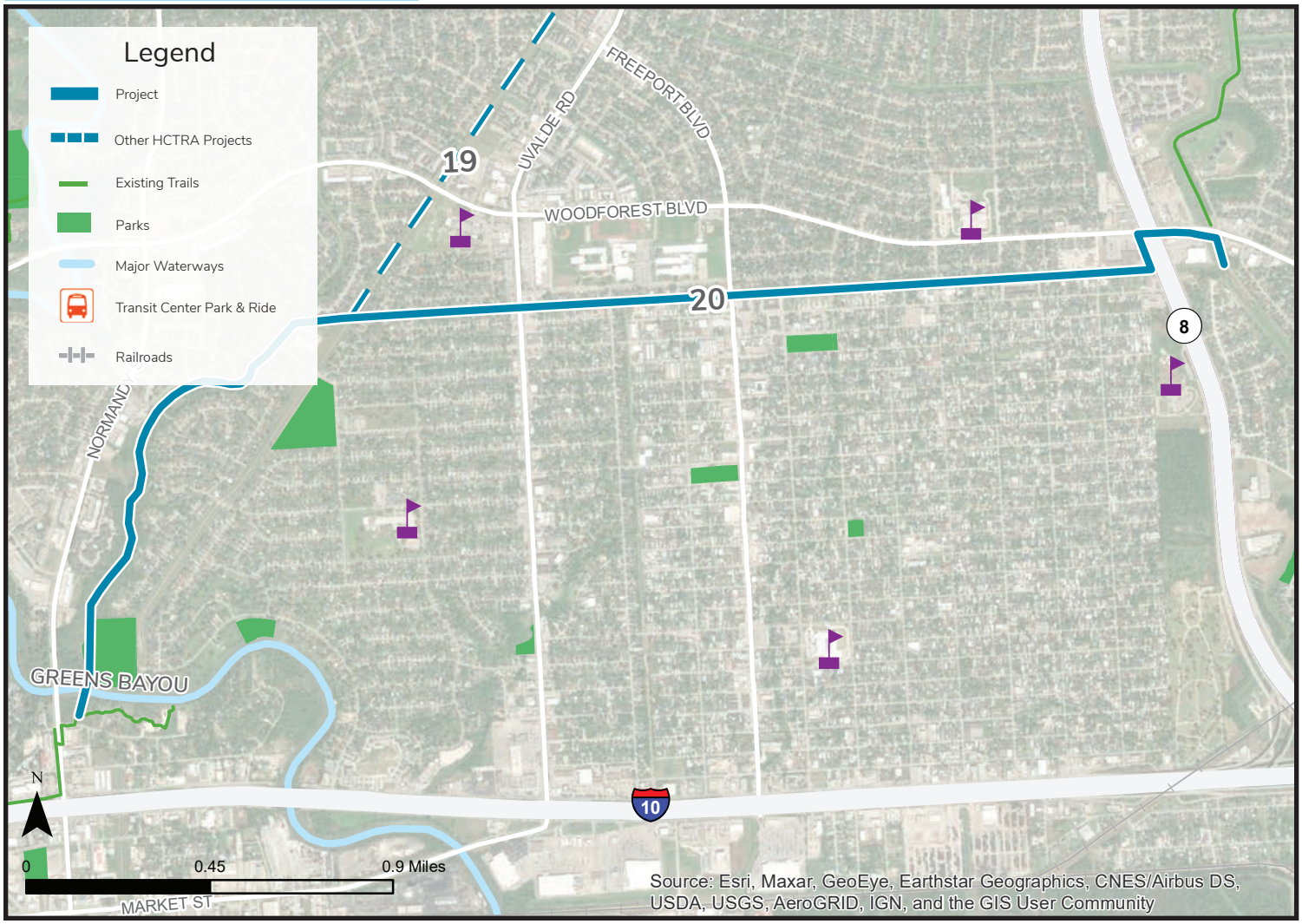
Ease of Implementation:
More Complex (Score: 5)

Facility Type:
Trail (Drainage), Barrier Crossings (At Grade, Above Grade)

Project Benefits (Score: 17)

- 62,000 residents within 1/2 mile
- 14,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Greens Bayou Trail, Carpenters Bayou Hike & Bike Trail & HCTRA projects 19, 21.



Summerwood-Atascocita Trail
(Ditch P 130)

3.7 miles (Ygnacio Rd (Lindsay Lyons Park & Sports Complex) to UPRR at Water Works Way)

Estimated Cost **$5.4 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway Northeast

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail, TxDOT

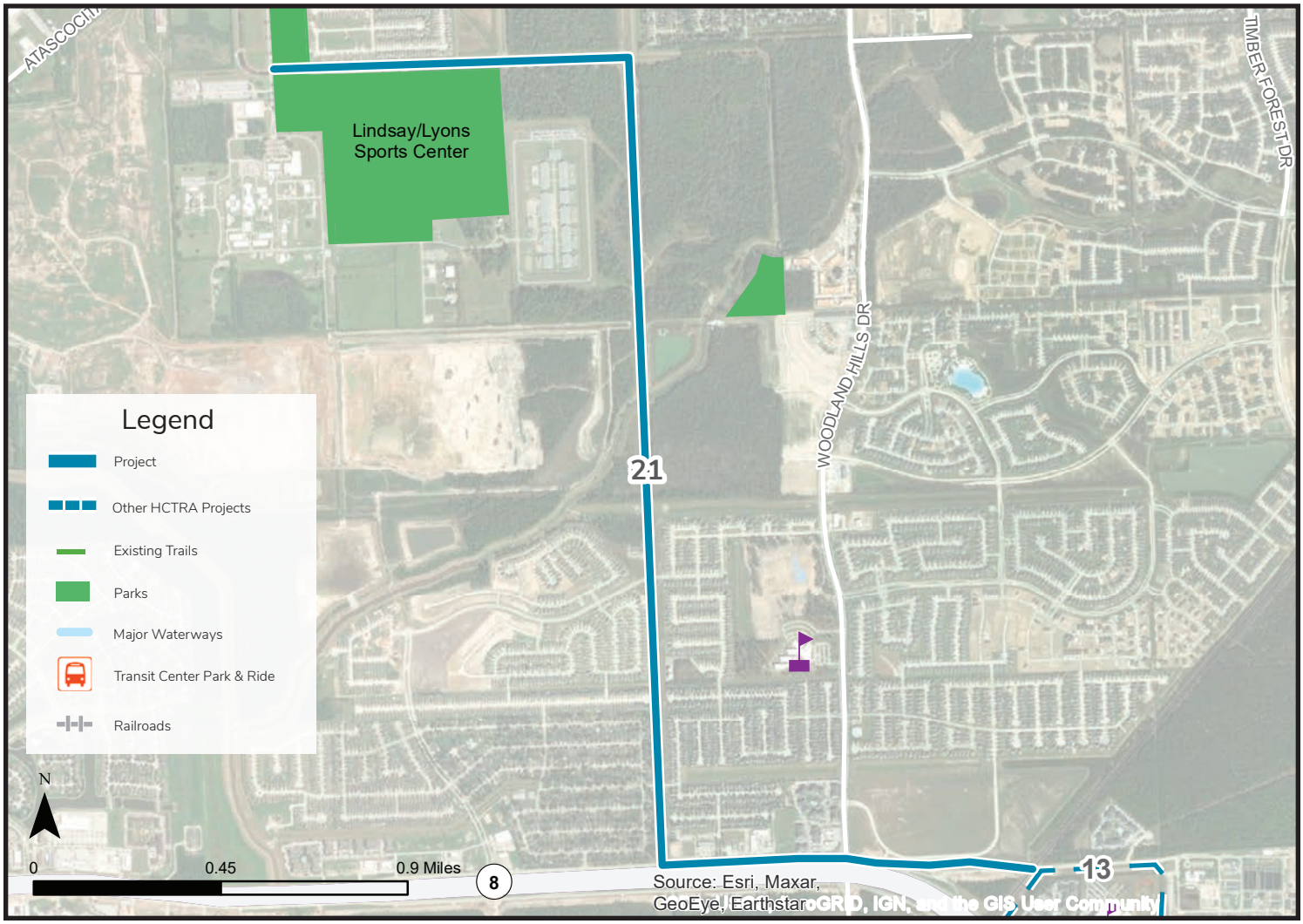
Ease of Implementation:
Complex (Score: 9)

Facility Type:
Trail (Utility, Drainage)

Project Benefits (Score: 15)

- 79,000 residents within 1/2 mile
- 10,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 13.



Project 23

Battleground Trail

8.4 miles (Nantucket St (Deer Park) to San Jacinto Monument & Park)

Estimated Cost **$30.2 million** Precinct(s): **2**

HCTRA Corridor:
Sam Houston Tollway East

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 2)

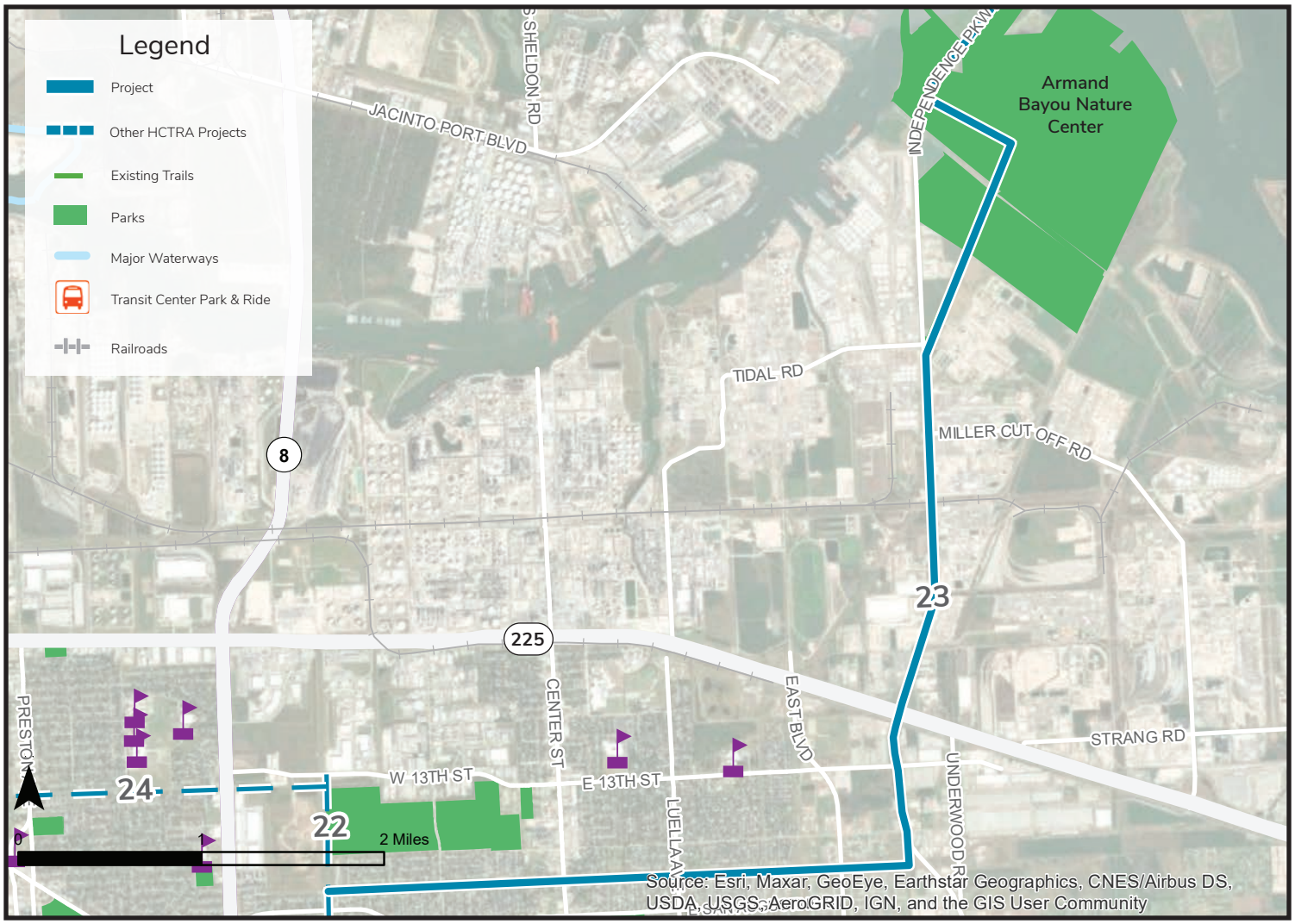
Facility Type:
Trail (Utility), Off-Street Bikeway, Barrier Crossings (Above Grade)

Project Benefits (Score: 15)

- 23,000 residents within 1/2 mile
- 36,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area

Network Connections

Connects to HCTRA project 22.



Red Bluff Trail
(Ditch G 110)

2.7 miles (Bearle St (Pasadena) to The Battleground Golf Course (Deer Park))

Estimated Cost **$3.7 million** Precinct(s): **2**

HCTRA Corridor:
Sam Houston Tollway East

Category:
Community Connector

Priority:
Quick Win

Coordination:
TxDOT

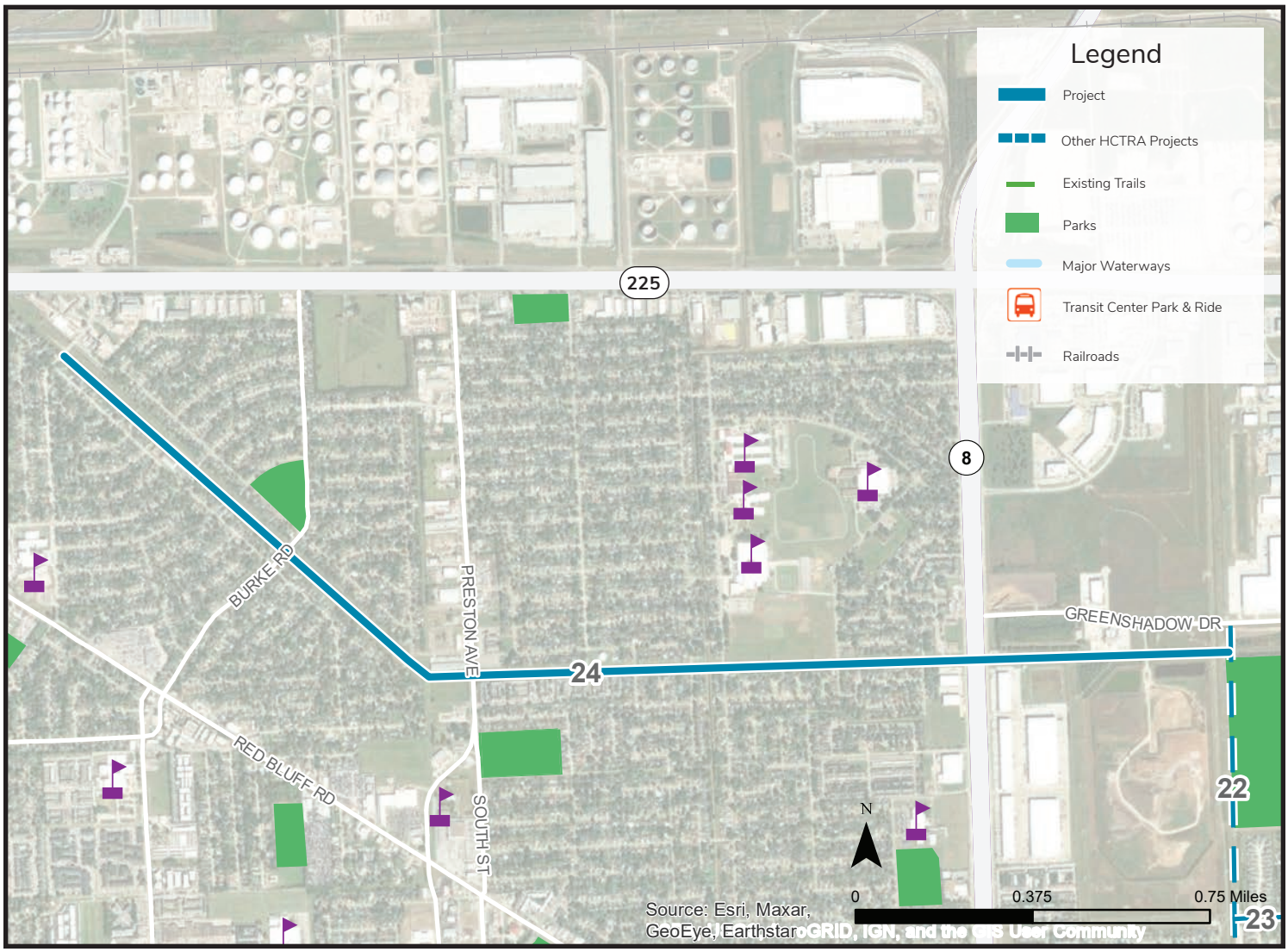
Ease of Implementation:
Less Complex (Score: 12)

Facility Type:
Trail (Utility), Barrier Crossings (Below Grade)

Project Benefits (Score: 16)

- 33,000 residents within 1/2 mile
- 26,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the are

Network Connections
Connects to HCTRA project 22.



Tom Bass-Cullen Connector Trail

1.2 miles (Tom Bass Park to Cullen Blvd)

Estimated Cost **$2.1 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Southeast

Category:
Community Connector

Priority:
Quick Win

Coordination:
TxDOT

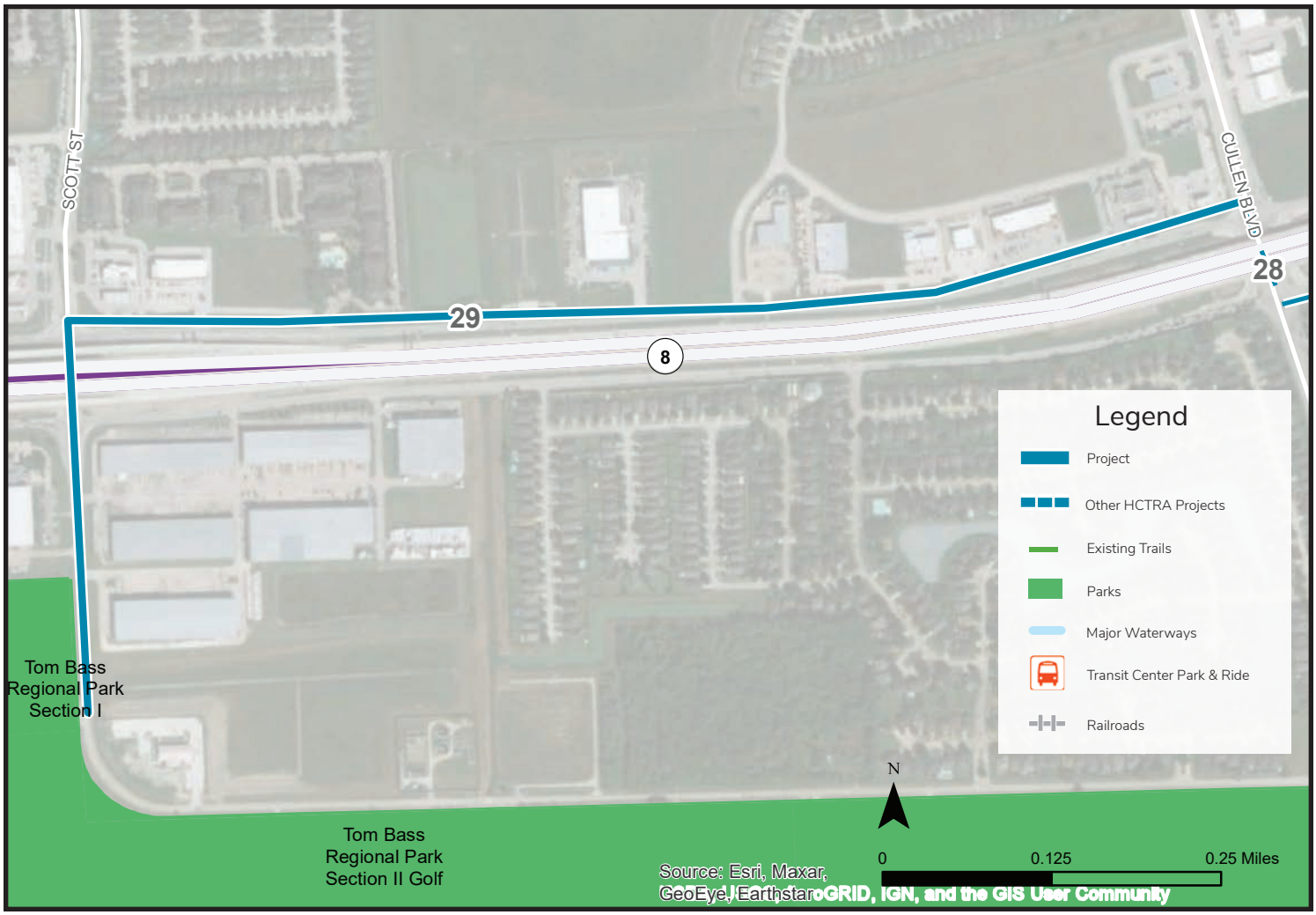
Ease of Implementation:
Less Complex (Score: 12)

Facility Type:
Trail (Highway), Off-Street Bikeway, Barrier Crossings (At Grade)

Project Benefits (Score: 9)

- 14,000 residents within 1/2 mile
- 8,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 28.



J. Frank Dobie Trail

1.0 miles (El Franco Lee Park to Southbelt Hike & Bike Trail at Blackhawk Blvd)

Estimated Cost **$1.4 million** Precinct(s): **1, 2**

HCTRA Corridor:
Sam Houston Tollway Southeast

Category:
Community Connector

Priority:
Quick Win

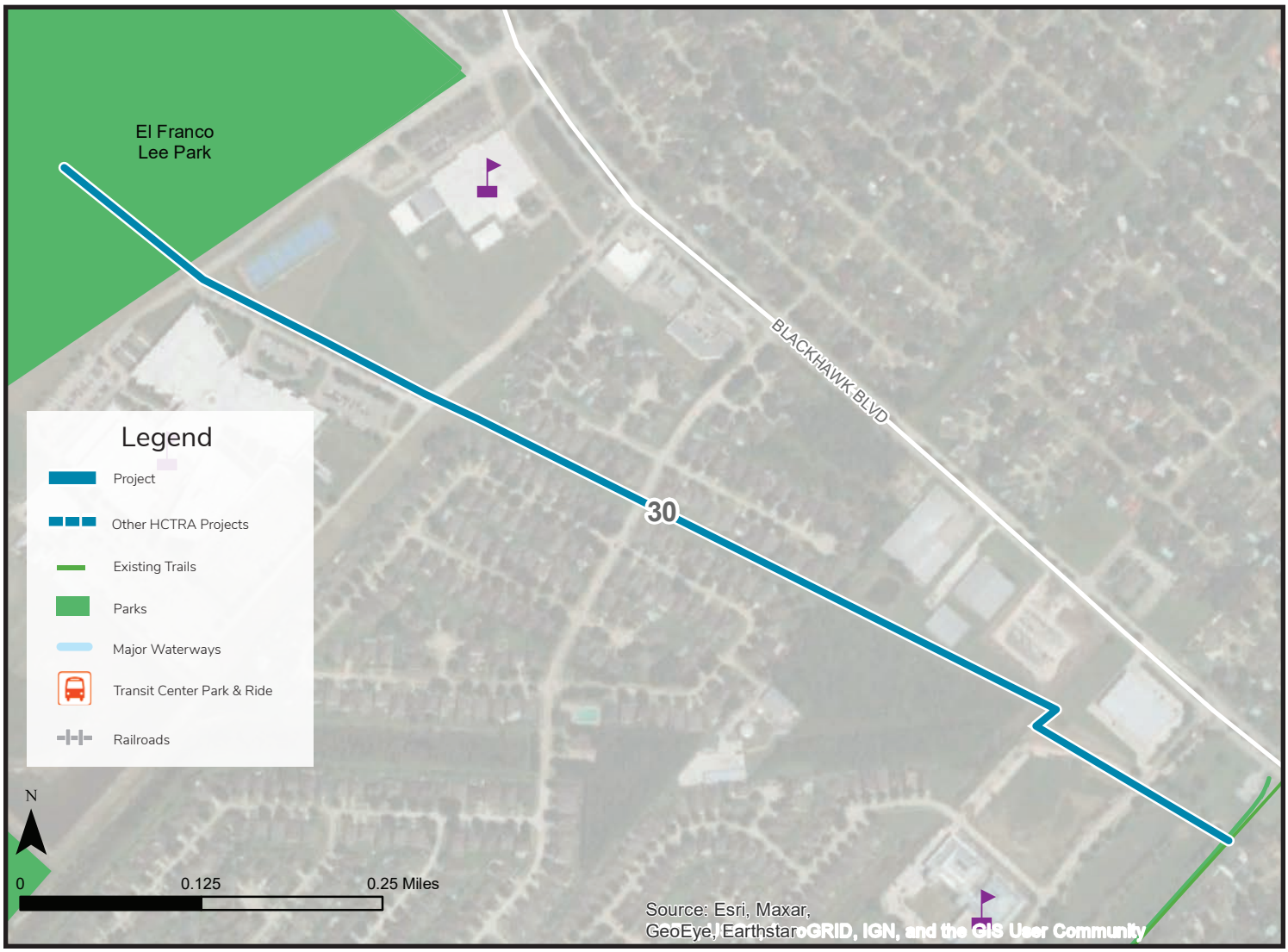
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Utility), On-Street Shared Bikeway, Off-Street Bikeway

Project Benefits (Score: 12)

- 35,000 residents within 1/2 mile
- 2,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Southbelt Hike & Bike Trail.



Project 31

Almeda Trail

3.4 miles (Sims Bayou to Clear Creek at Almeda Rd Nature Preserve)

Estimated Cost **$6.1 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Southwest

Category:
Community Connector

Priority:
Big Move

Coordination:
Rail, TxDOT

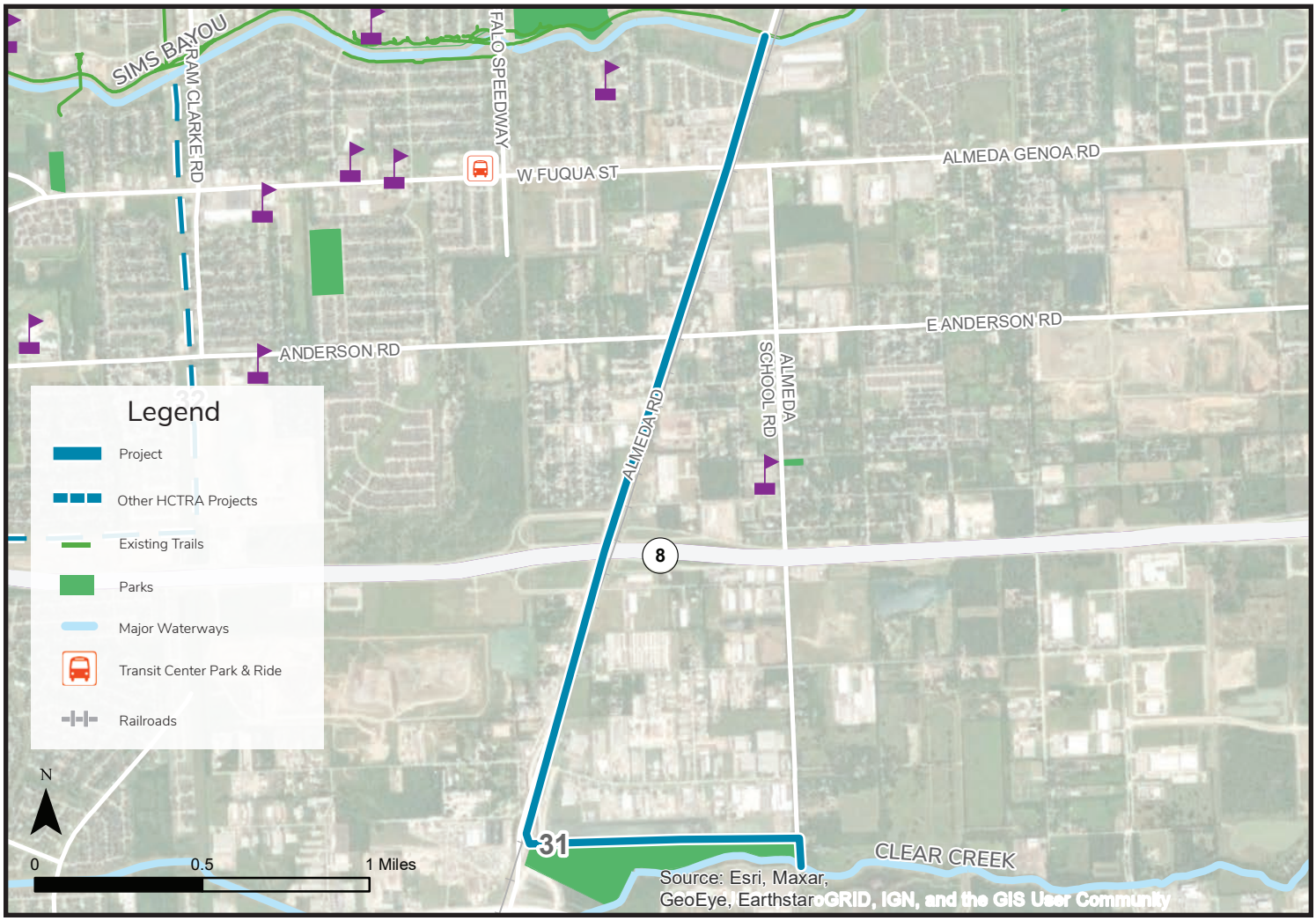
Ease of Implementation:
Complex (Score: 9)

Facility Type:
Trail (Railway, Generic), Barrier Crossings (At Grade, Below, Grade)

Project Benefits (Score: 16)

- 44,000 residents within 1/2 mile
- 21,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Clear Creek Trail and Sims Bayou Trail.



Ridgemont-Sims Trail
(Ditch C 153, C 145)

2.2 miles (Sam Houston Tollway to Sims Bayou at Hiram Clarke Rd)

Estimated Cost **$23.3 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Southwest

Category:
Community Connector

Priority:
Network Builder

Coordination:
TxDOT

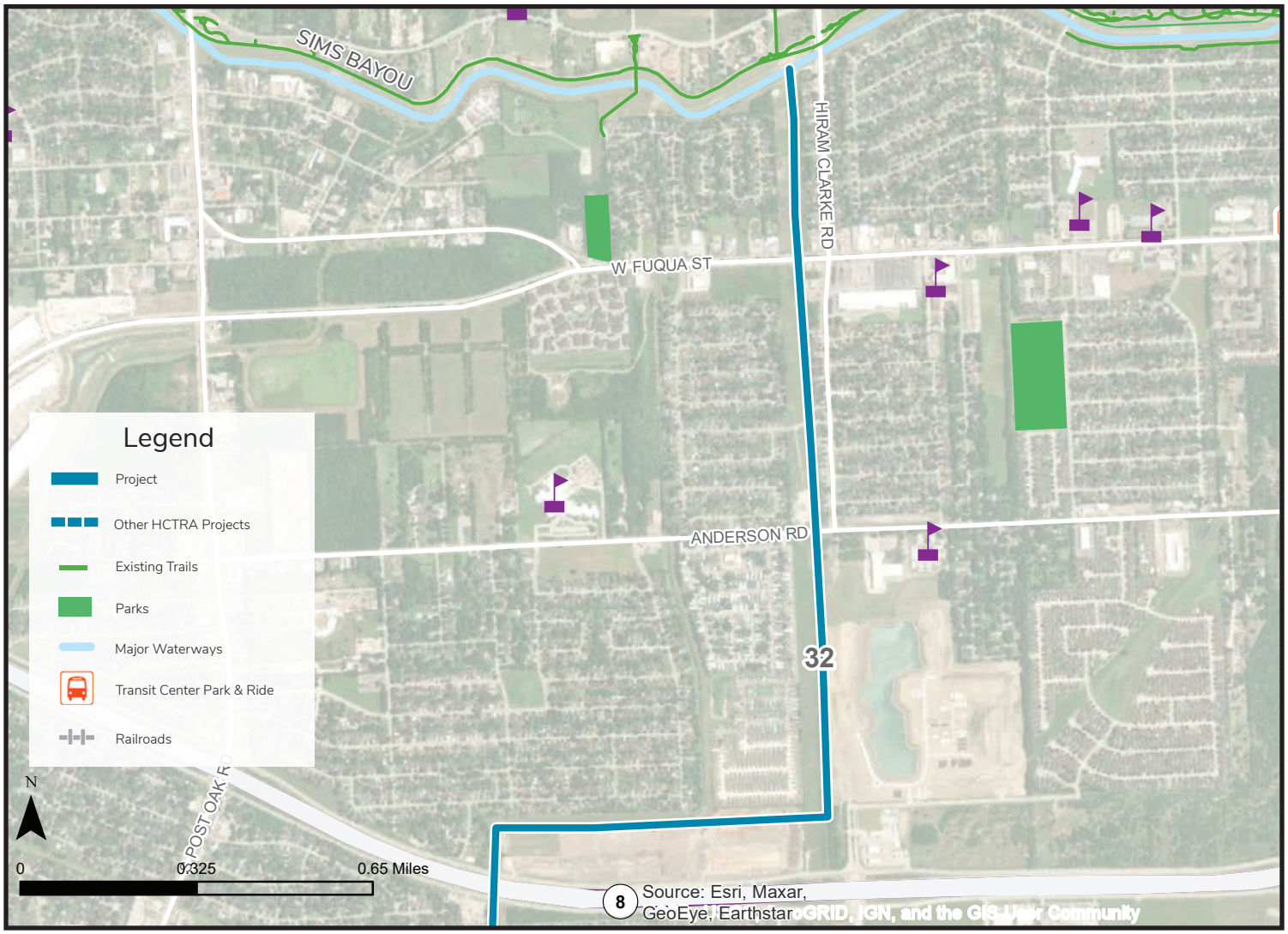
Ease of Implementation:
More Complex (Score: 6)

Facility Type:
Trail (Utility, Bayou), Barrier Crossings (Below Grade)

Project Benefits (Score: 14)

- 22,000 residents within 1/2 mile
- 2,000 jobs within 1/2 mile
- Connects to schools
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Sims Bayou Trail.



Chimney Rock Trail
(Ditch D 112, C 156)

2.2 miles (Chimney Rock Park at Willow Waterhole Bayou to Sims Bayou at Blue Ridge Park)

Estimated Cost **$7.0 million** Precinct(s): **1**

HCTRA Corridor:
Fort Bend Parkway Extension

Category:
Community Connector

Priority:
Big Move

Coordination:
Rail, METRO, TxDOT

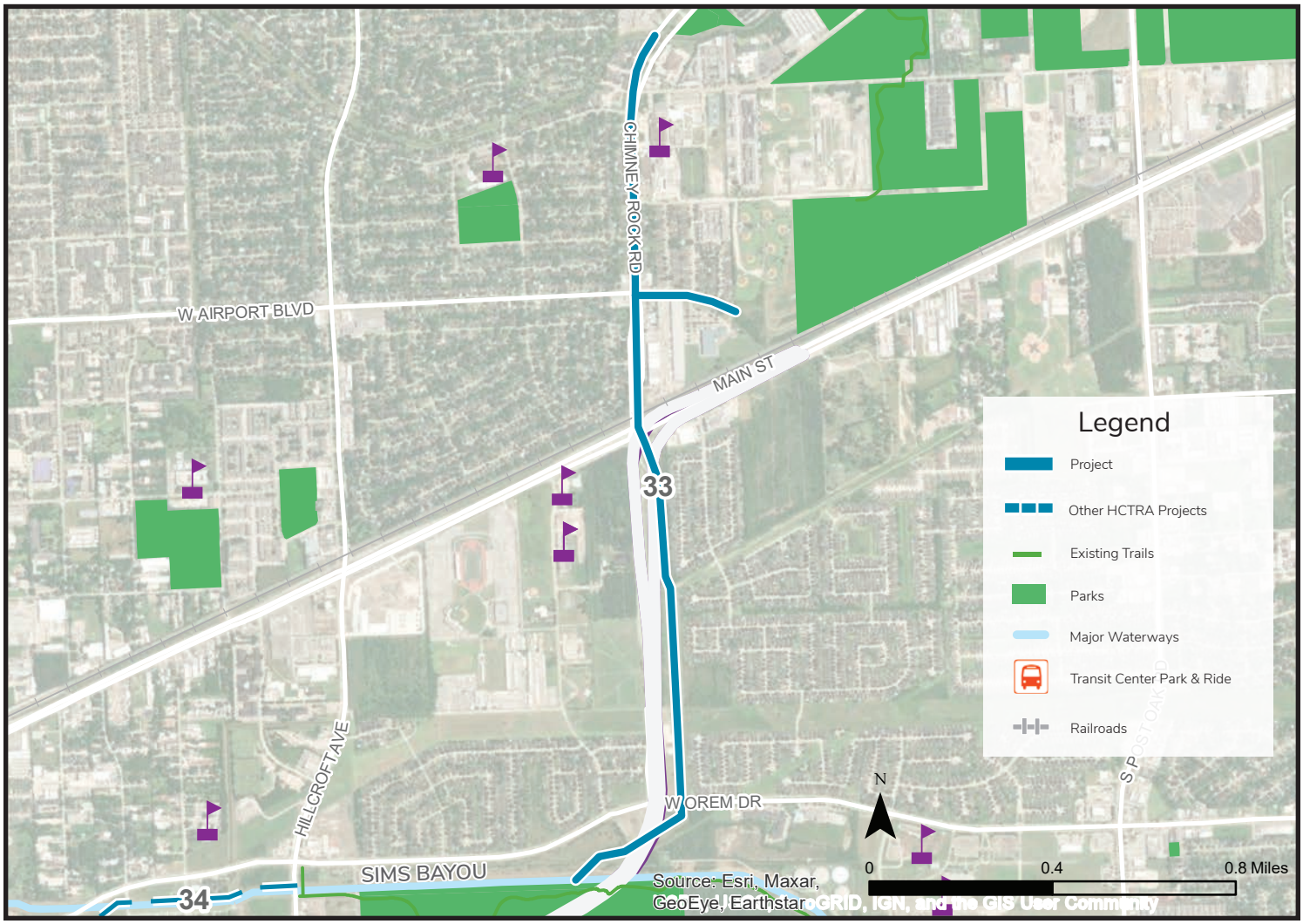
Ease of Implementation:
More Complex (Score: 6)

Facility Type:
Trail (Drainage), Off-Street Bikeway, Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 24)

- 26,000 residents within 1/2 mile
- 4,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Sims Bayou Trail.



Blue Ridge Connector Trail
(Ditch C 100)

0.9 miles (Missouri City Park & Ride (Fondren Rd) to Blue Ridge Park)

Estimated Cost **$1.3 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Southwest

Category:
Community Connector

Priority:
Quick Win

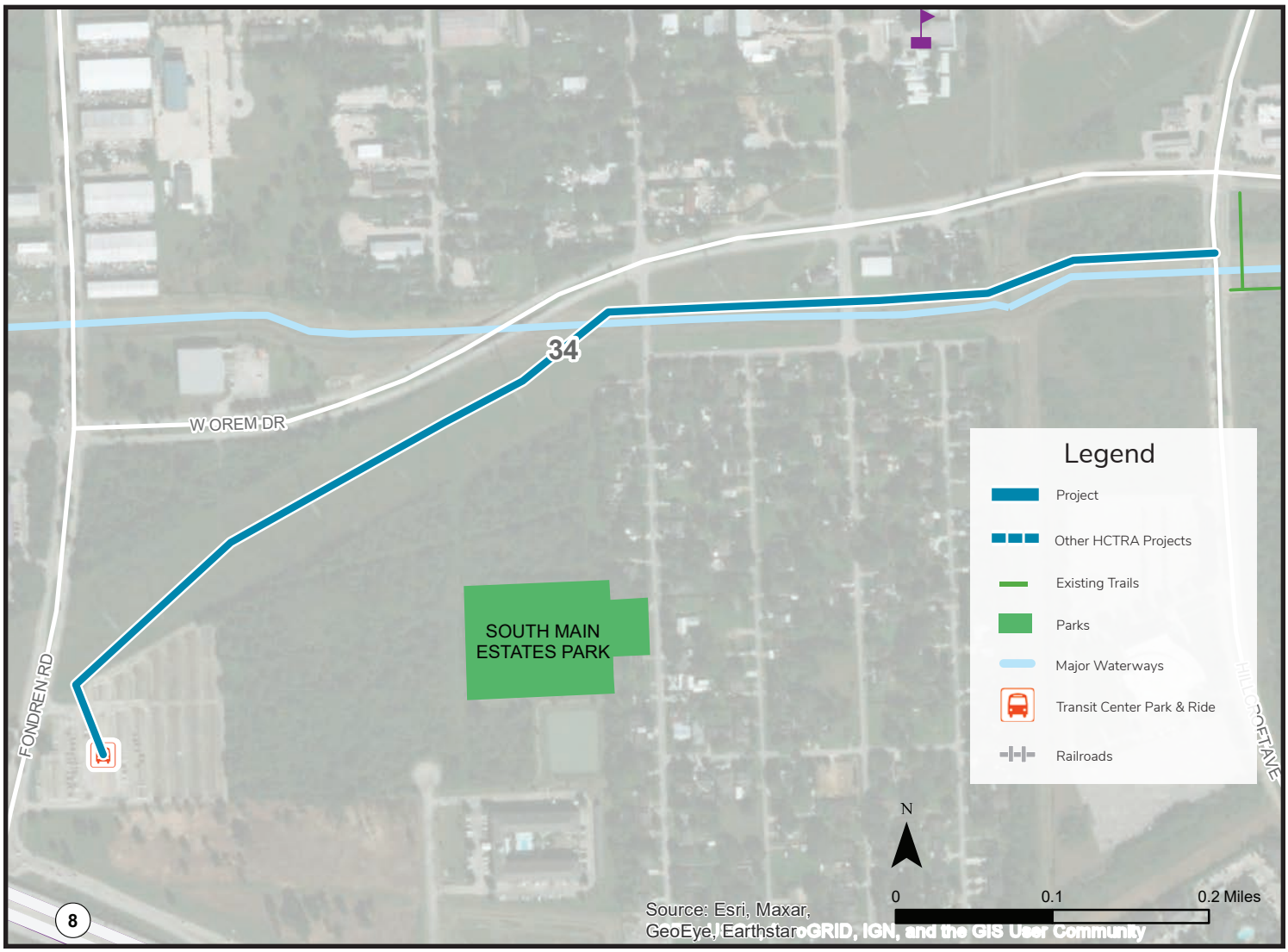
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Utility, Bayou), Barrier Crossings (Below Grade)

Project Benefits (Score: 15)

- 11,000 residents within 1/2 mile
- 2,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Sims Bayou Trail.



Fonmeadow Trail
(Ditch D 140)

1.8 miles (Sam Houston Tollway South to Fondren Rd)

Estimated Cost **$7.3 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Southwest

Category:
Community Connector

Priority:
Quick Win

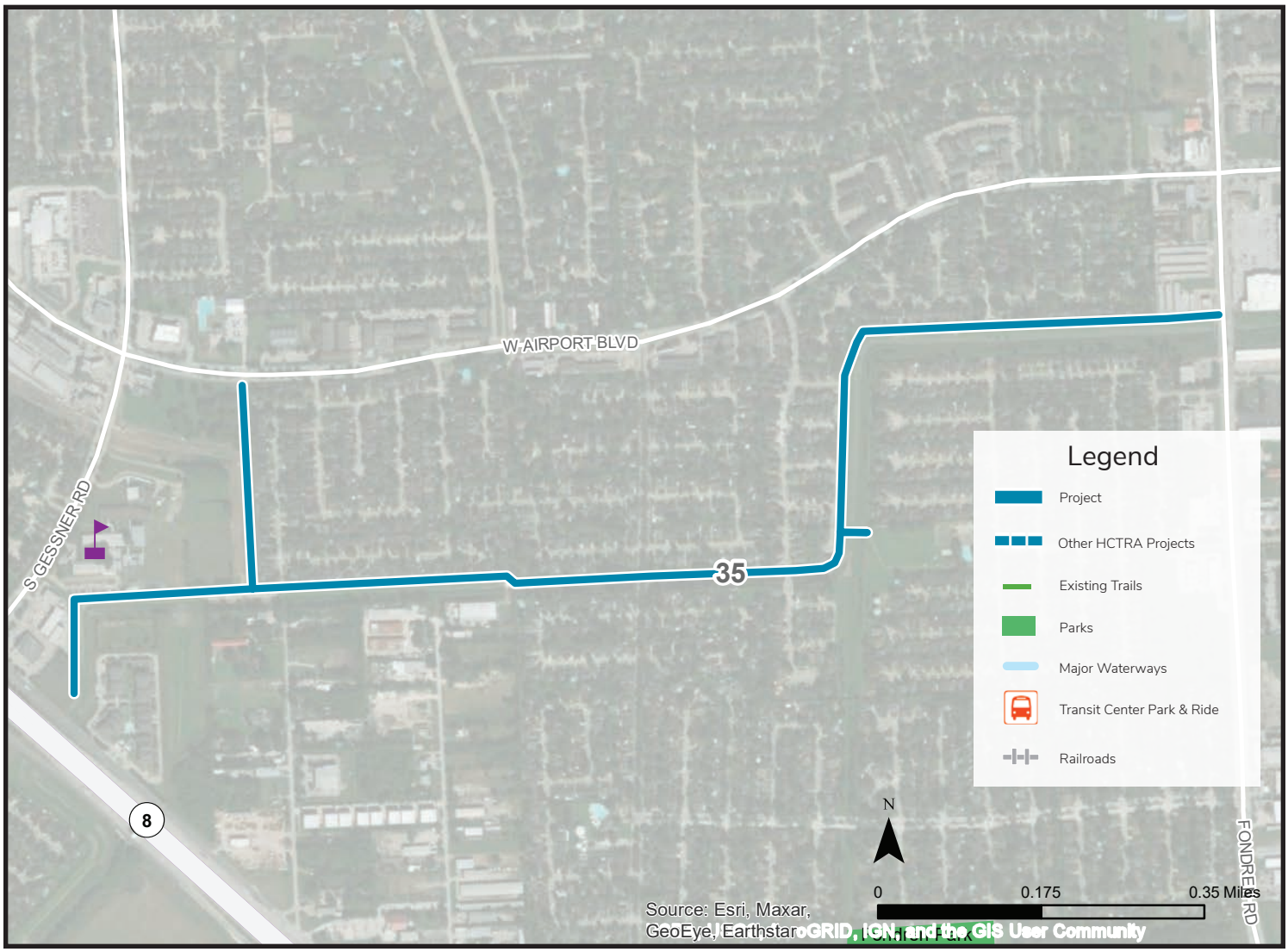
Ease of Implementation:
Complex (Score: 10)

Facility Type:
Trail (Drainage), Barrier Crossings (Above Grade)

Project Benefits (Score: 17)

- 27,000 residents within 1/2 mile
- 3,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
None



Wilcrest Trail

0.8 miles (Wilcrest Dr to Richmond Ave)

Estimated Cost **$1.1 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway

Category:
Community Connector

Priority:
Network Builder

Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Utility), Barrier Crossings (At Grade)

Project Benefits (Score: 7)

- 27,000 residents within 1/2 mile
- 28,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Utility Corridor Trail and Westchase Trail.



Alief East Loop
(Ditch D 120, D 122)

5.5 miles (Arthur Storey Park to Brays Bayou)

Estimated Cost **$23.0 million** Precinct(s): **4**

HCTRA Corridor:
Sam Houston Tollway South

Category:
Community Connector

Priority:
Quick Win

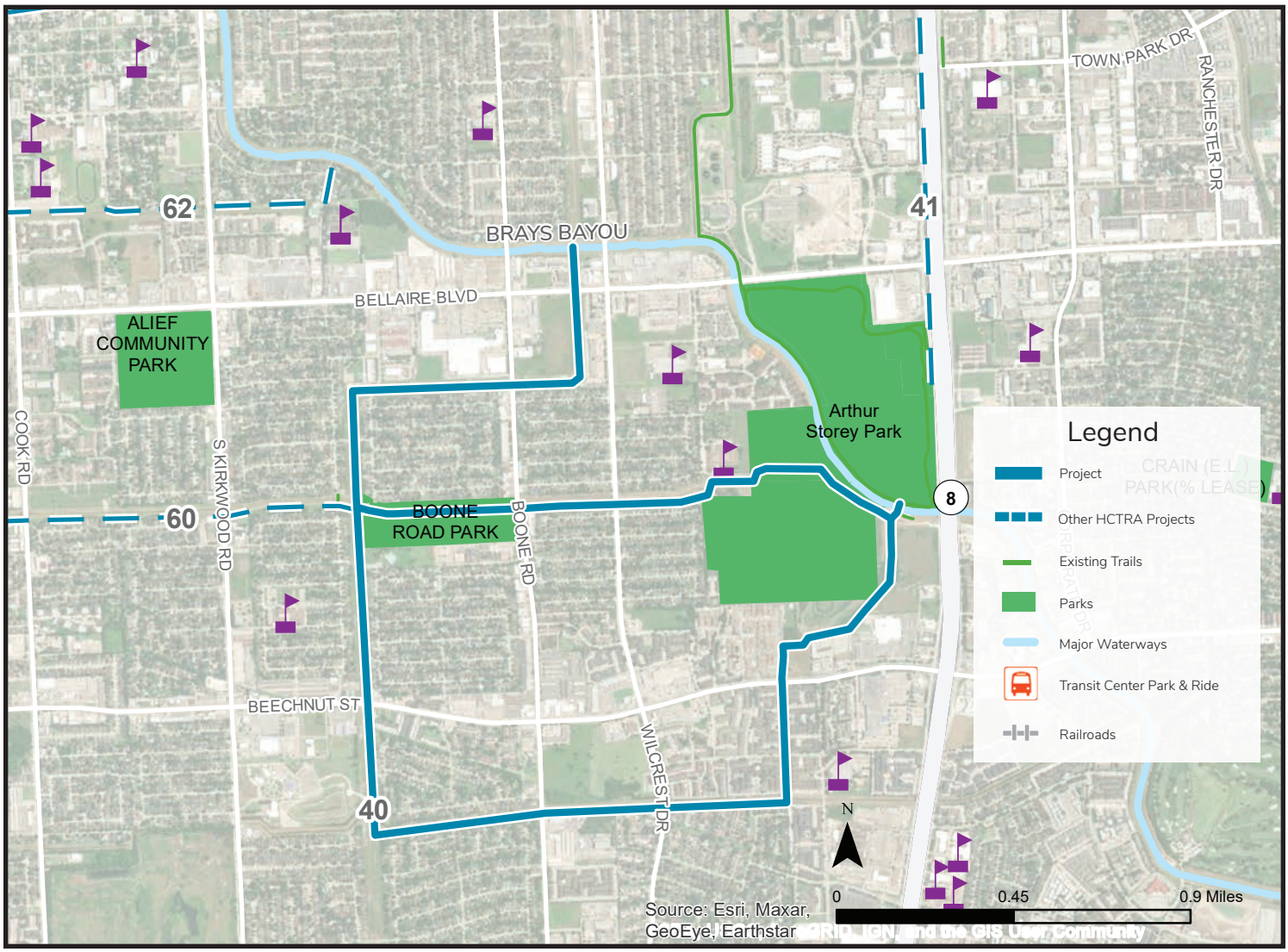
Ease of Implementation:
Complex (Score: 9)

Facility Type:
Trail (Utility, Drainage, Generic), Barrier Crossings (At Grade, Above Grade, Below Grade)

Project Benefits (Score: 22)

- 65,000 residents within 1/2 mile
- 29,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Brays Bayou Trail, Arthur Storey Park Trail & HCTRA project 60.



Willowbrook Trail
(Ditch P 150)

2.6 miles (Cutten Rd at Greens Bayou to Centerfield Dr (Houston Methodist Willowbrook Hospital))

Estimated Cost **$6.3 million** Precinct(s): **1, 3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail, TxDOT

Ease of Implementation:
More Complex (Score: 7)

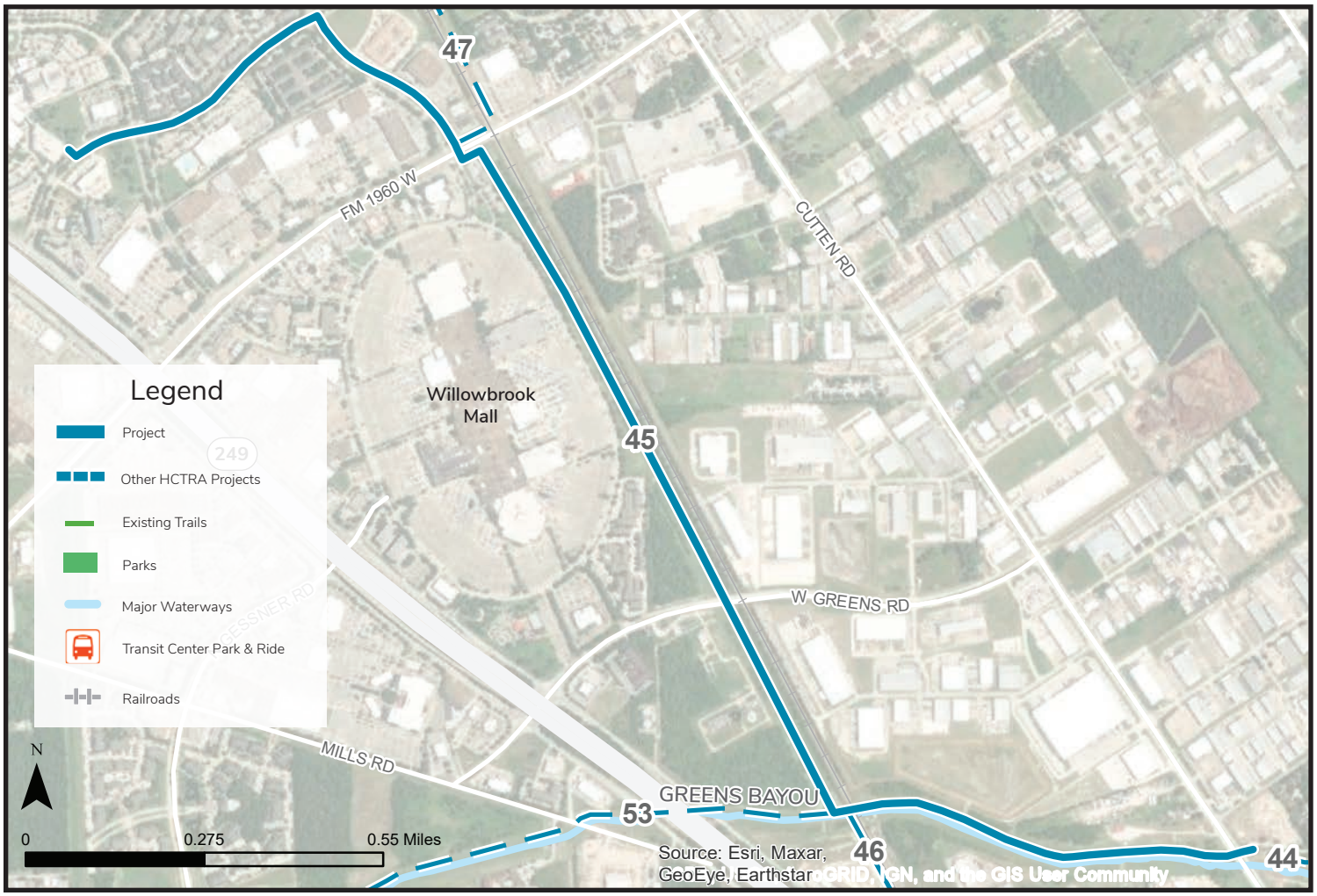
Facility Type:
Trail (Bayou), On-Street Protected Bikeway, Off-Street Bikeway, Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 14)

- 40,000 residents within 1/2 mile
- 39,000 jobs within 1/2 mile
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections

Connects to Greens Bayou Trail & HCTRA projects 44, 46, 47, 53.



Greens Bayou SH-249 Spur

0.8 miles (Greens Bayou at BNSF Rail Road to Amazon Facility (south of SH-249))

Estimated Cost **$1.3 million** Precinct(s): **1, 3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail, TxDOT

Ease of Implementation:
Complex (Score: 10)

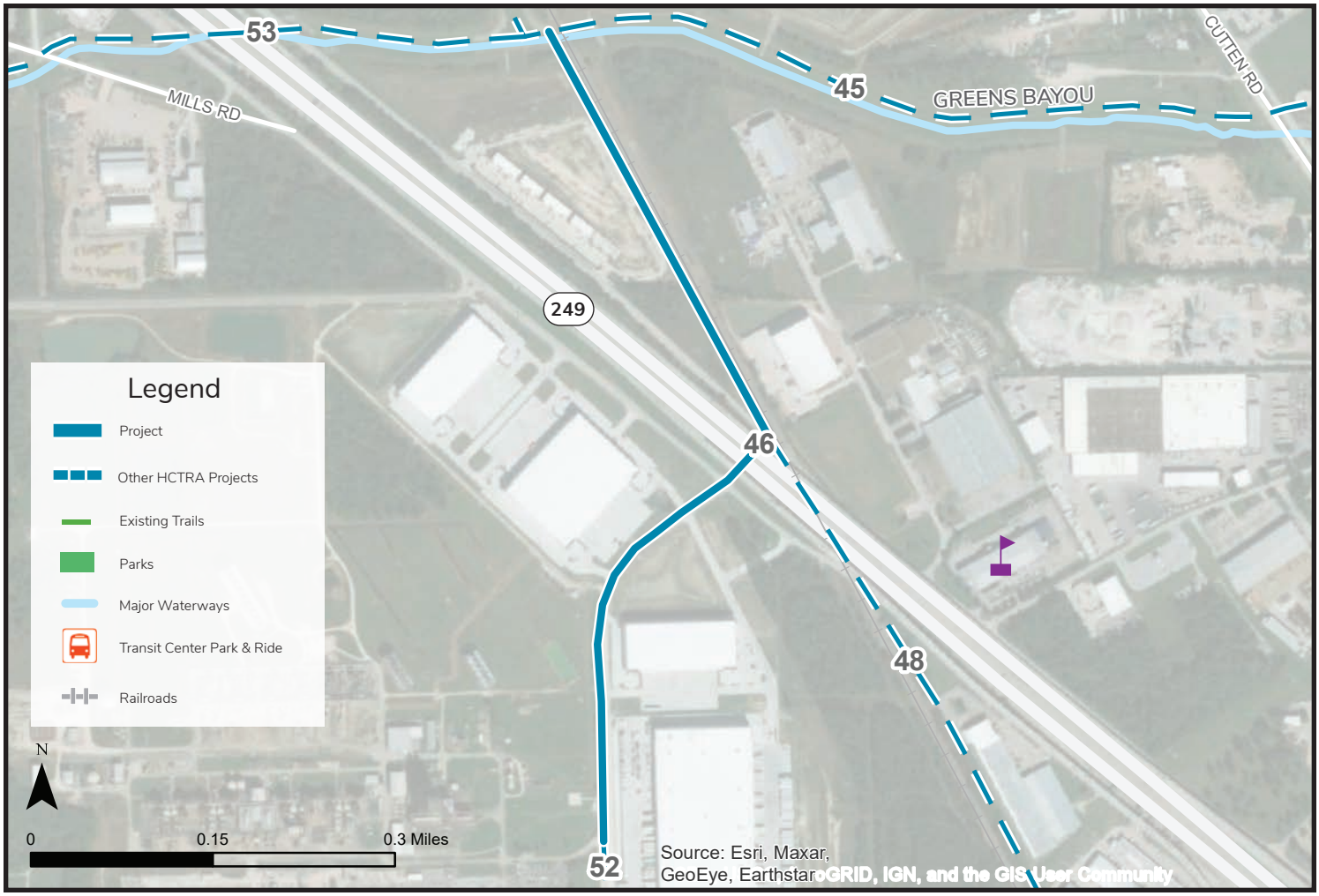
Facility Type:
Trail (Railway, Bayou), Off-Street Bikeway, Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 12)

- 18,000 residents within 1/2 mile
- 25,000 jobs within 1/2 mile
- Connects to schools
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections

Connects to Greens Bayou Trail & HCTRA projects 45, 48, 52, 53.



Cypresswood-Willowbrook Trail

2.6 miles (Kickerillo-Mischer Preserve to Breton Ridge St)

Estimated Cost **$9.1 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail

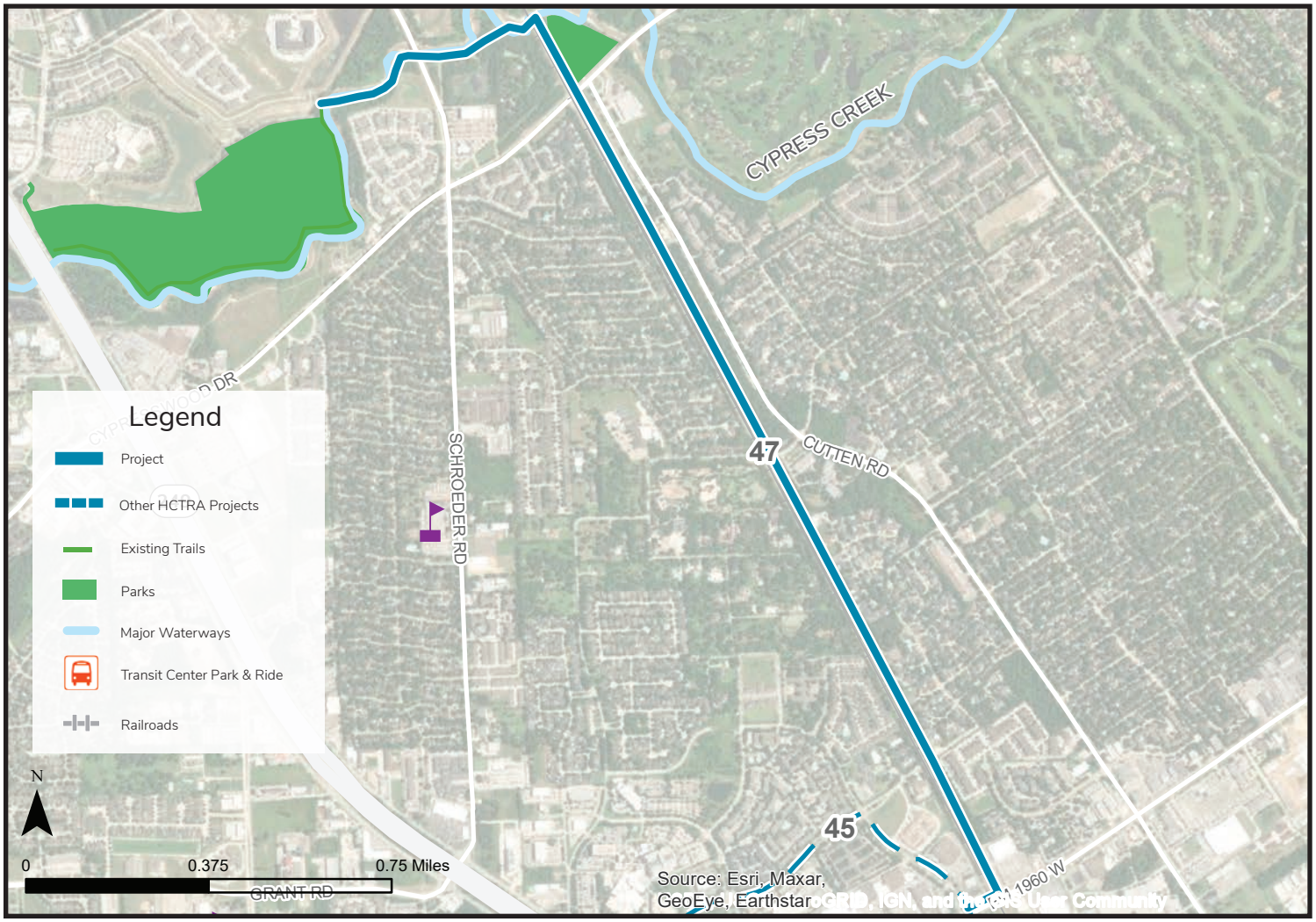
Ease of Implementation:
Complex (Score: 8)

Facility Type:
Trail (Utility, Railway), Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 9)

- 31,000 residents within 1/2 mile
- 28,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Kickerillo-Mischer Hike & Bike Trail, Cypress Creek Trail & HCTRA project 45.



Fallbrook Trail

2.9 miles (SH-249 to Seton Lake Park & Ride (Seton Lake Dr))

Estimated Cost **$4.8 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Network Builder

Coordination:
Rail, TxDOT

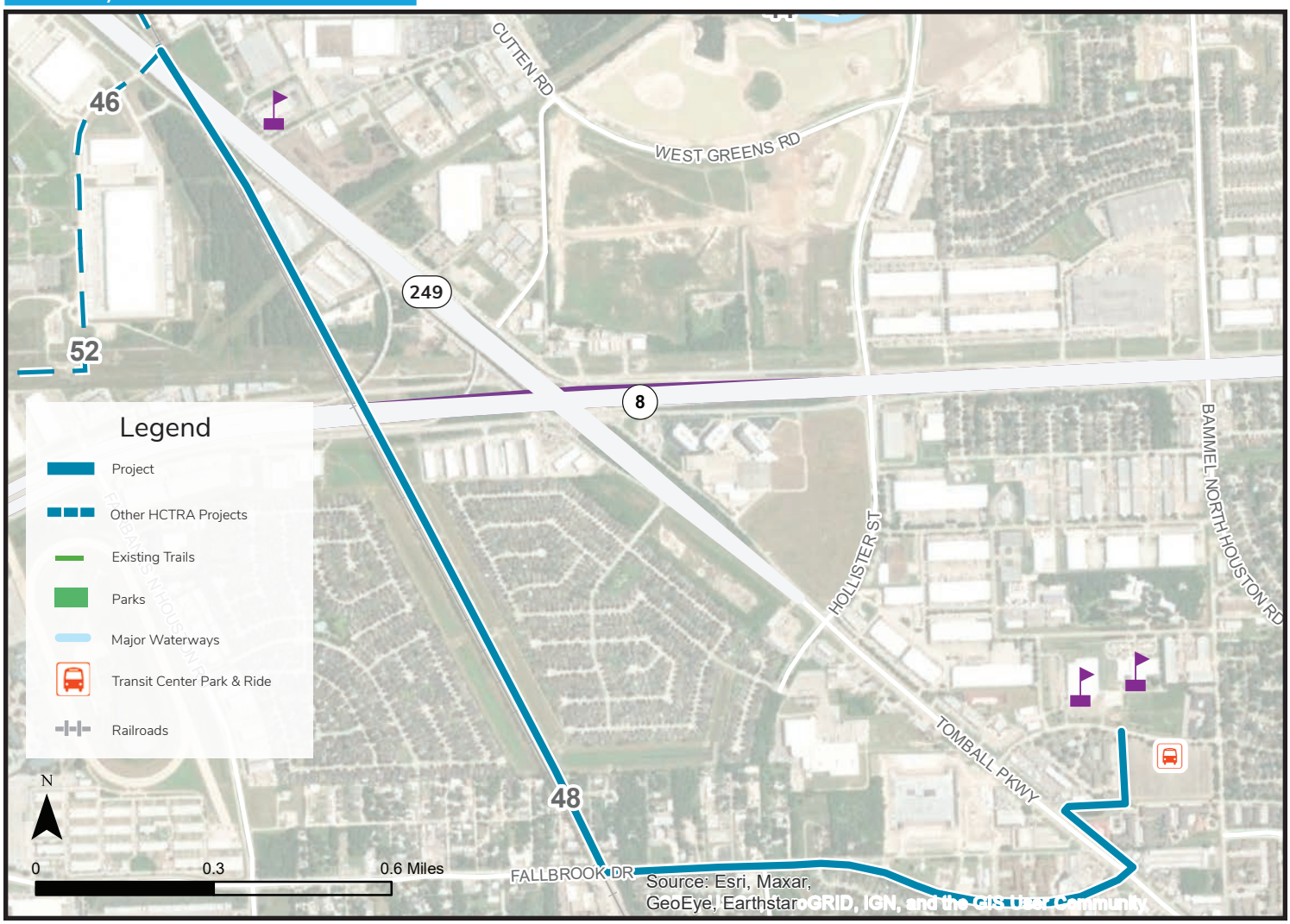
Ease of Implementation:
Complex (Score: 7)

Facility Type:
Trail (Railway), On-Street Shared Bikeway, Off-Street Bikeway

Project Benefits (Score: 16)

- 40,000 residents within 1/2 mile
- 30,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 46.



Harvest-Winchester Trail Network

(Ditch E 128)

3.9 miles (Lazy Meadow Dr & Utility Easement/Turtle Trail (#54) to Sam Houston Tollway & White Oak Bayou)

Estimated Cost **$8.2 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Quick Win

Ease of Implementation:
Complex (Score: 10)

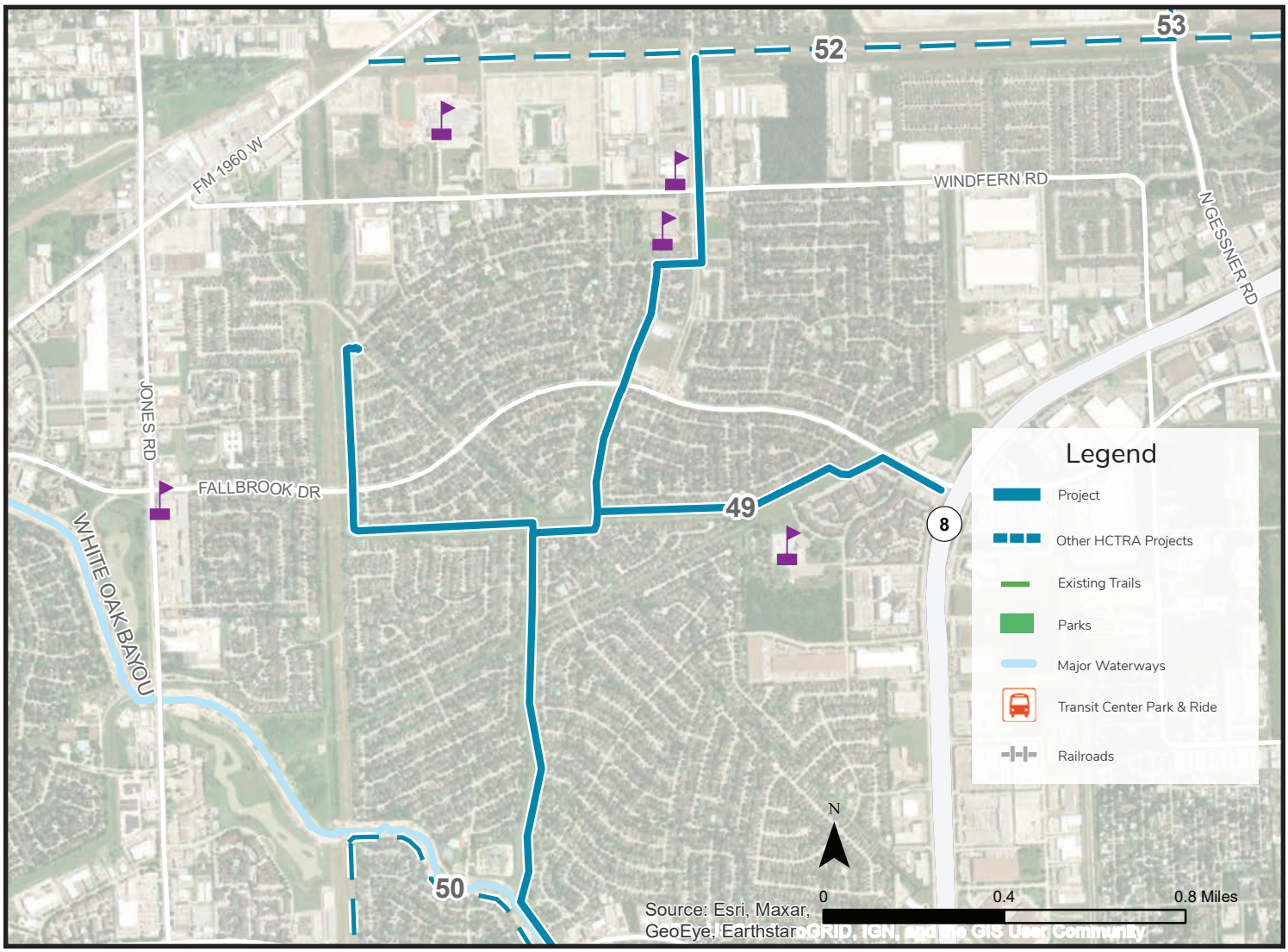
Facility Type:
Trail (Drainage), Barrier Crossings (Above Grade)

Project Benefits (Score: 14)

- 50,000 residents within 1/2 mile
- 49,000 jobs within 1/2 mile
- Connects to schools
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections

Connects to White Oak Bayou Trail & HCTRA projects 50, 52.



Jersey Village-White Oak Connector Trail

2.2 miles (Seattle Slew Dr to Cook Middle School (Wheatland Dr))

Estimated Cost **$3.0 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Quick Win

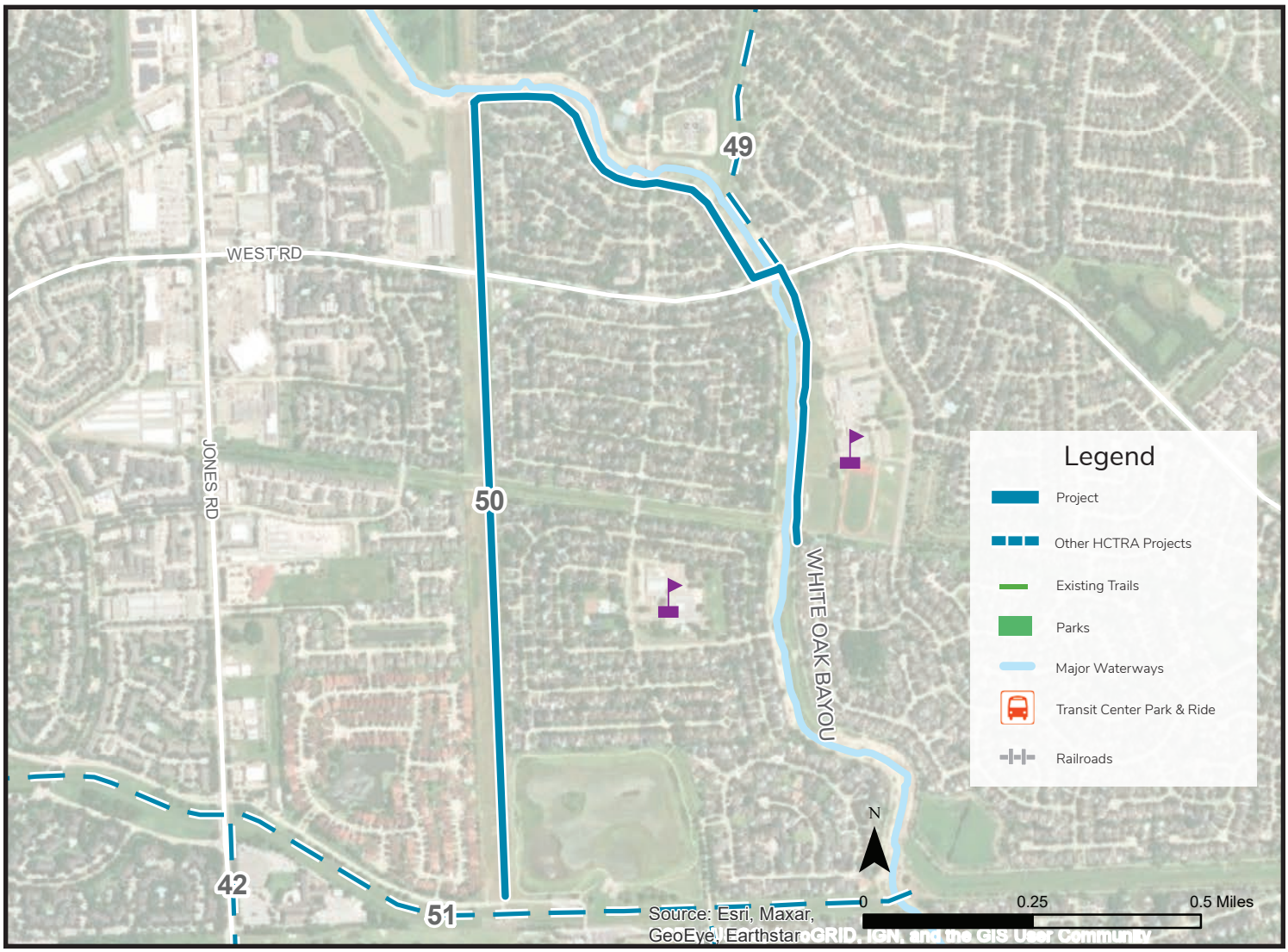
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Utility, Drainage), Barrier Crossings (Above Grade)

Project Benefits (Score: 12)

- 29,000 residents within 1/2 mile
- 31,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to White Oak Bayou Trail & HCTRA project 49.



Jersey Meadow Trail
(Ditch E 135)

1.8 miles (Northwest Station Park & Ride (Castlebridge Dr) to White Oak Bayou)

Estimated Cost **$43.2 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Network Builder

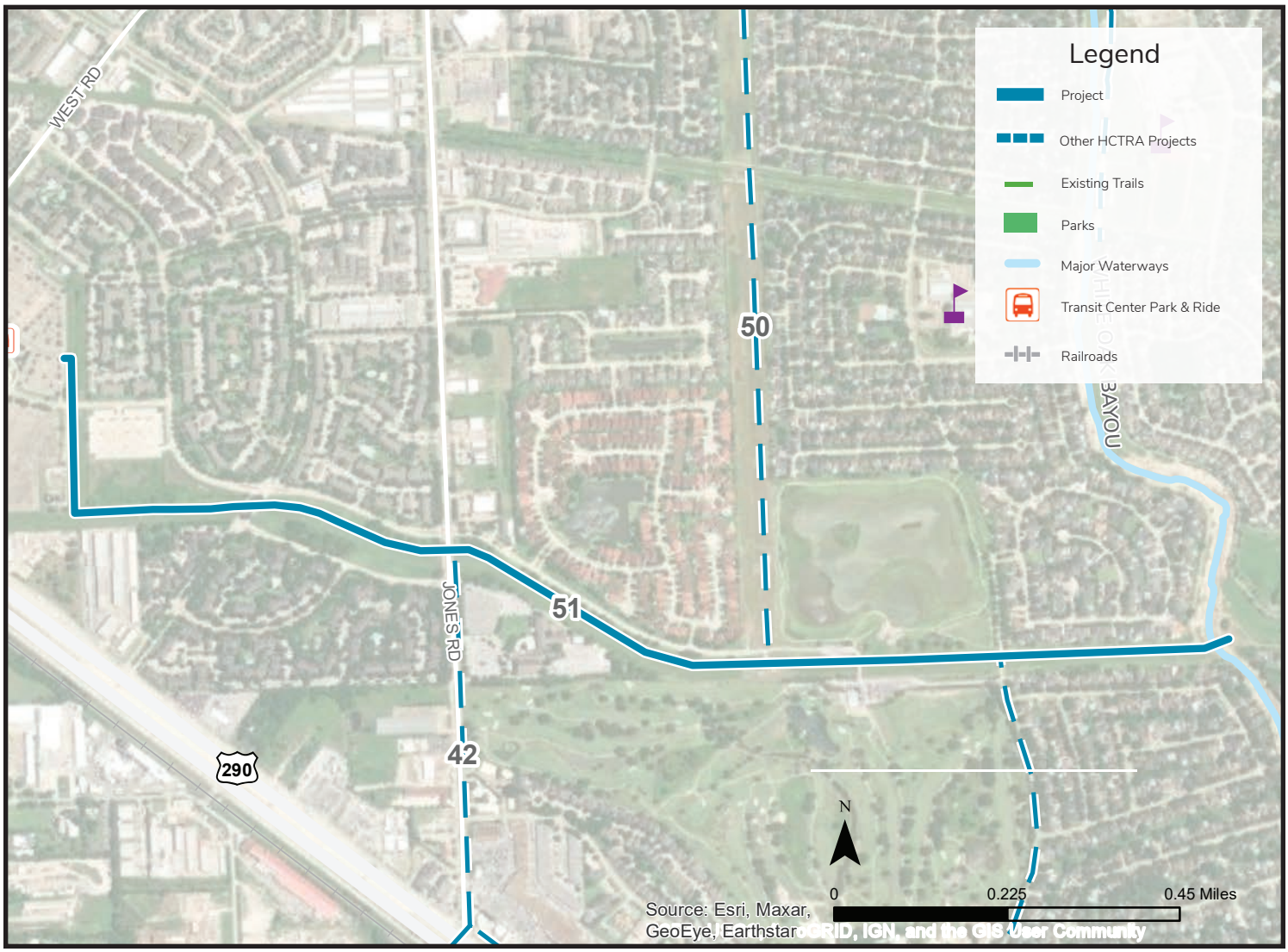
Ease of Implementation:
More Complex (Score: 5)

Facility Type:
Trail (Drainage), Barrier Crossings (Above Grade)

Project Benefits (Score: 11)

- 25,000 residents within 1/2 mile
- 19,000 jobs within 1/2 mile
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to White Oak Bayou Trail & HCTRA projects 42, 50.



Project 52

Turtle Trail

3.0 miles (Amazon Facility (south of SH-249) to FM 1960)

Estimated Cost **$4.0 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Community Connector

Priority:
Quick Win

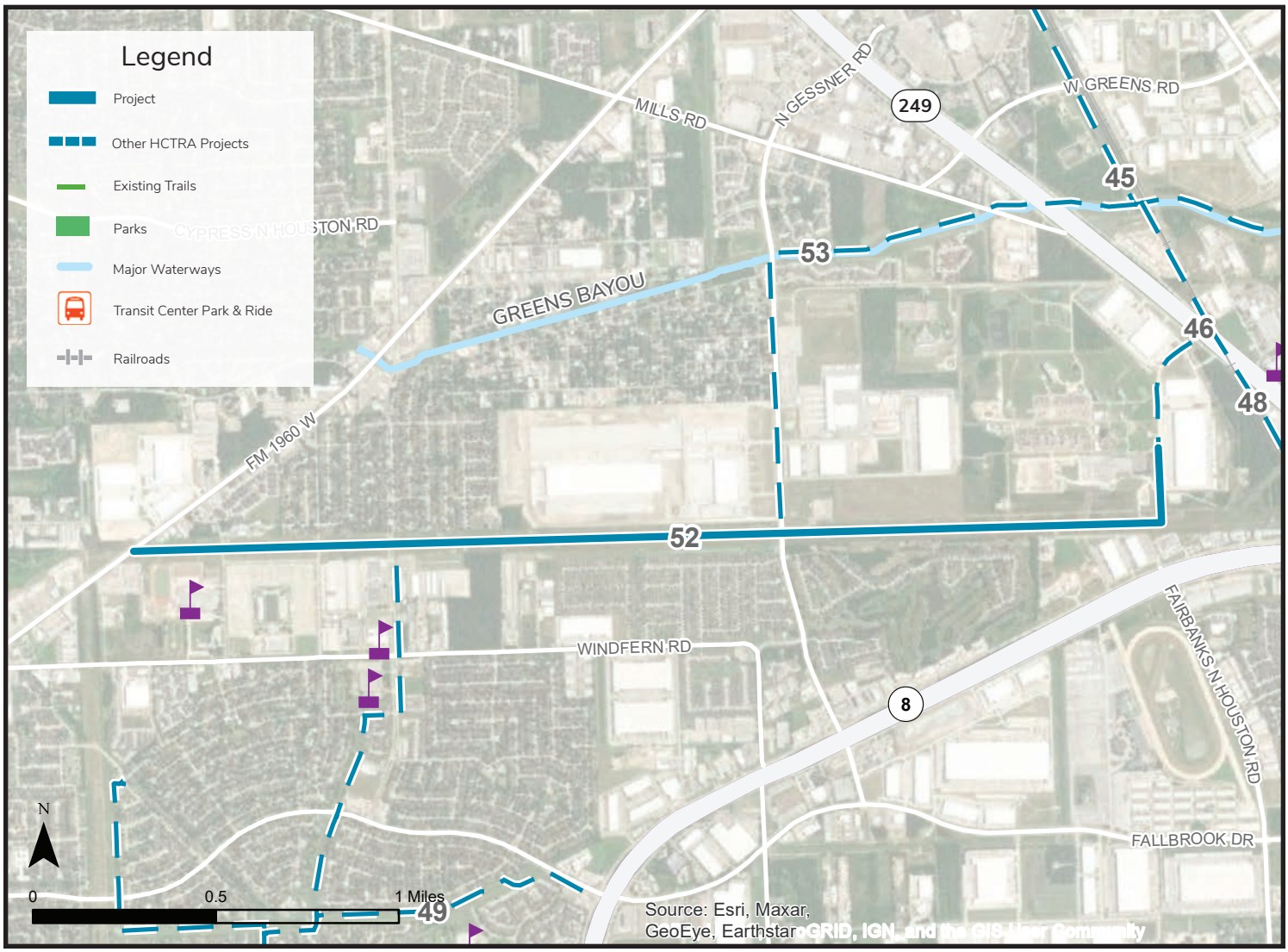
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Utility, Railway), Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 12)

- 28,000 residents within 1/2 mile
- 19,000 jobs within 1/2 mile
- Connects to schools
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to HCTRA projects 46, 49, 53.



Cypress Creek-Mandolin Gardens Trail
(Ditch K 139)

0.9 miles (Cypress Creek to Mandolin Gardens Park)

Estimated Cost **$2.5 million** Precinct(s): **3**

HCTRA Corridor:
Sam Houston Tollway North

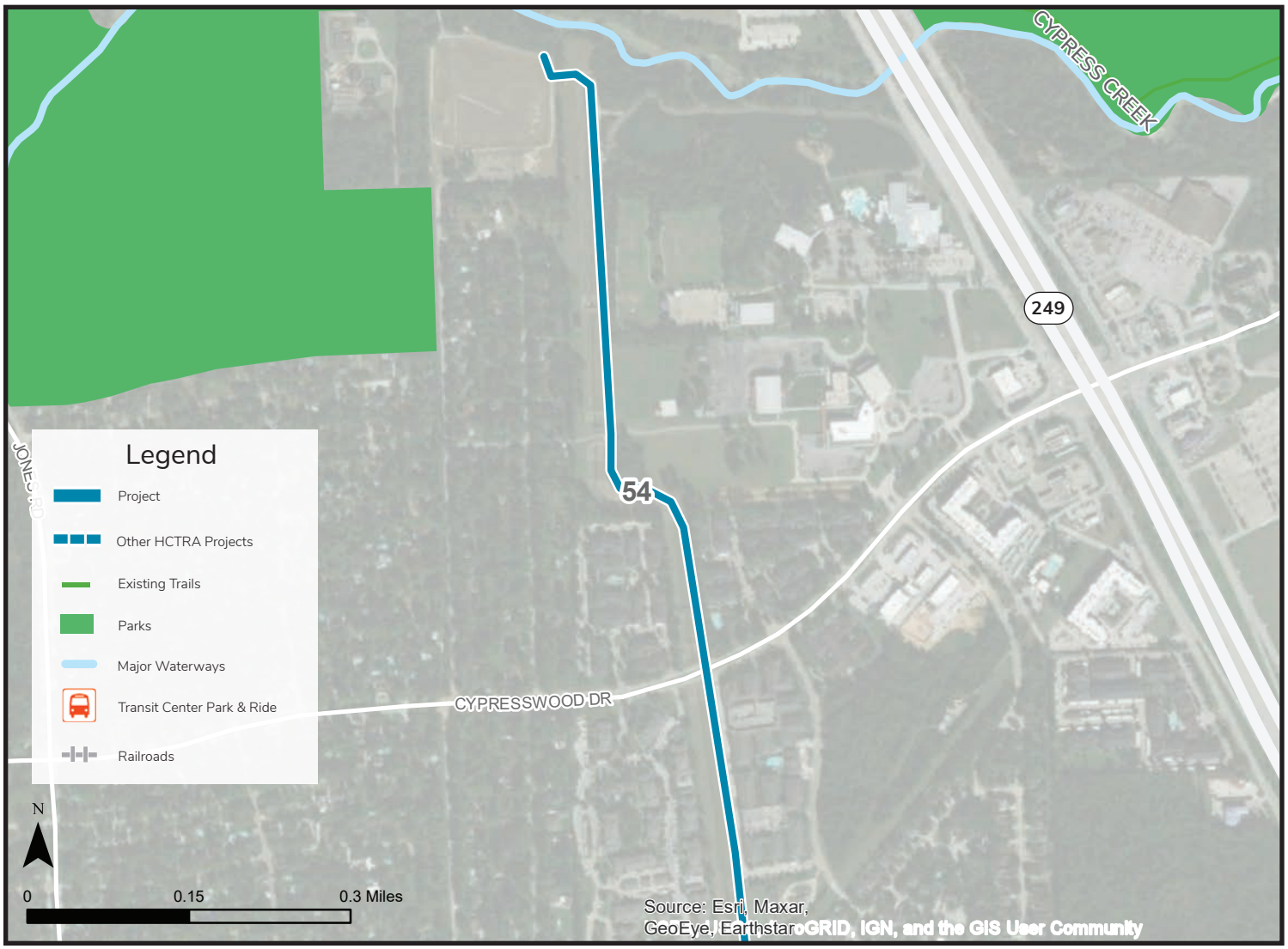
Category:
Community Connector

Priority:
Network Builder

Ease of Implementation:
Complex (Score: 11)

Facility Type:
Trail (Drainage)

Project Benefits (Score: 2)
- 21,000 residents within 1/2 mile
- 19,000 jobs within 1/2 mile
- Connects to parks



HCC-Buffalo Bayou Connector Trail

1.9 miles (Westheimer Rd to Buffalo Bayou)

Estimated Cost **$6.3 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway, Sam Houston Tollway South

Category:
Community Connector

Priority:
Network Builder

Ease of Implementation:
Complex (Score: 10)

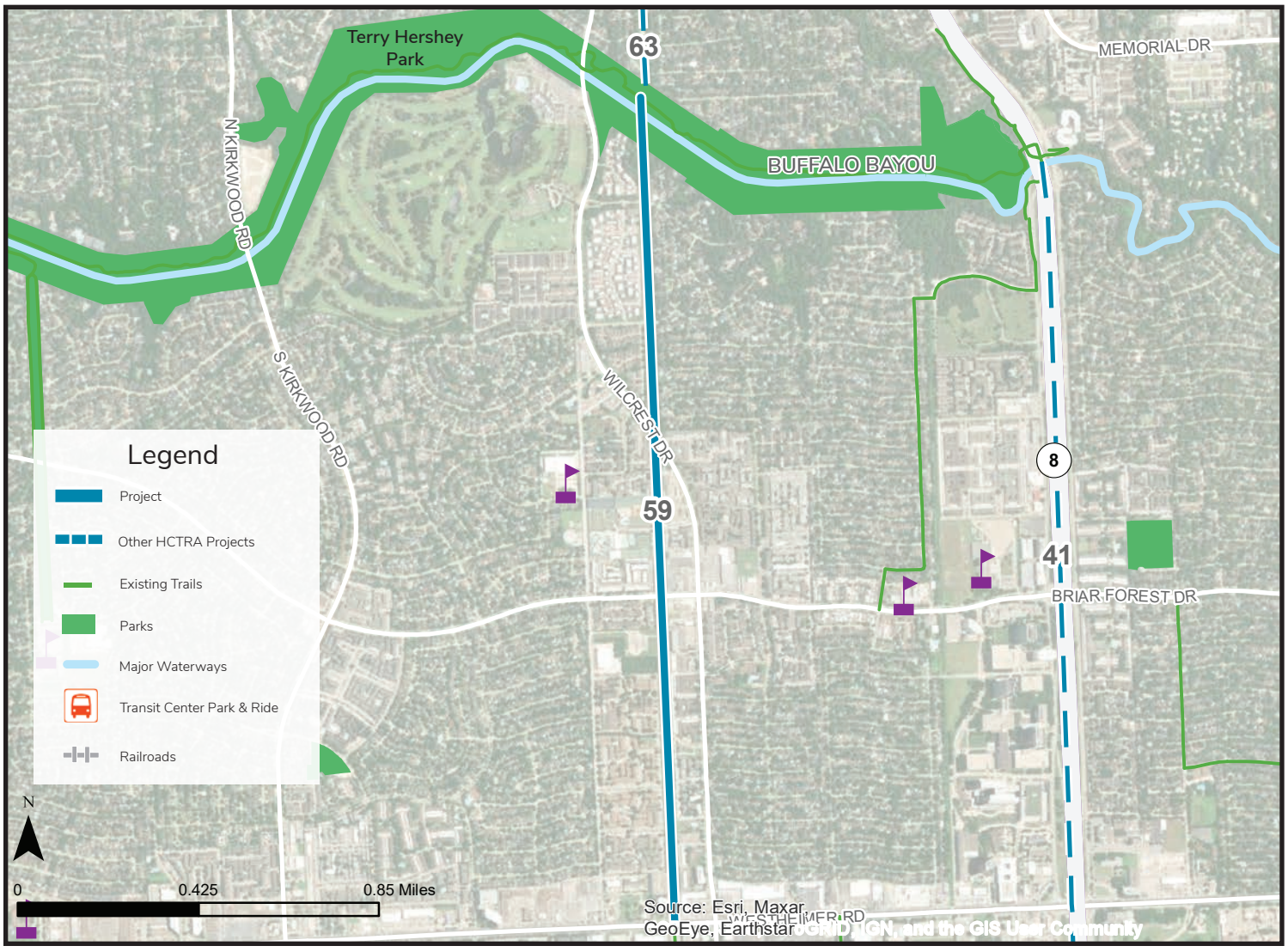
Facility Type:
Trail (Utility), Barrier Crossings (Above Grade)

Project Benefits (Score: 12)

- 40,000 residents within 1/2 mile
- 27,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Terry Hershey Trail, Buffalo Bayou Trail, Utility Corridor Trail & HCTRA project 63.



Hackberry Trail
(Ditch D 122)

2.0 miles (Boone Road Park to Synott Rd)

Estimated Cost **$2.8 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway, Sam Houston Tollway South

Category:
Community Connector

Priority:
Quick Win

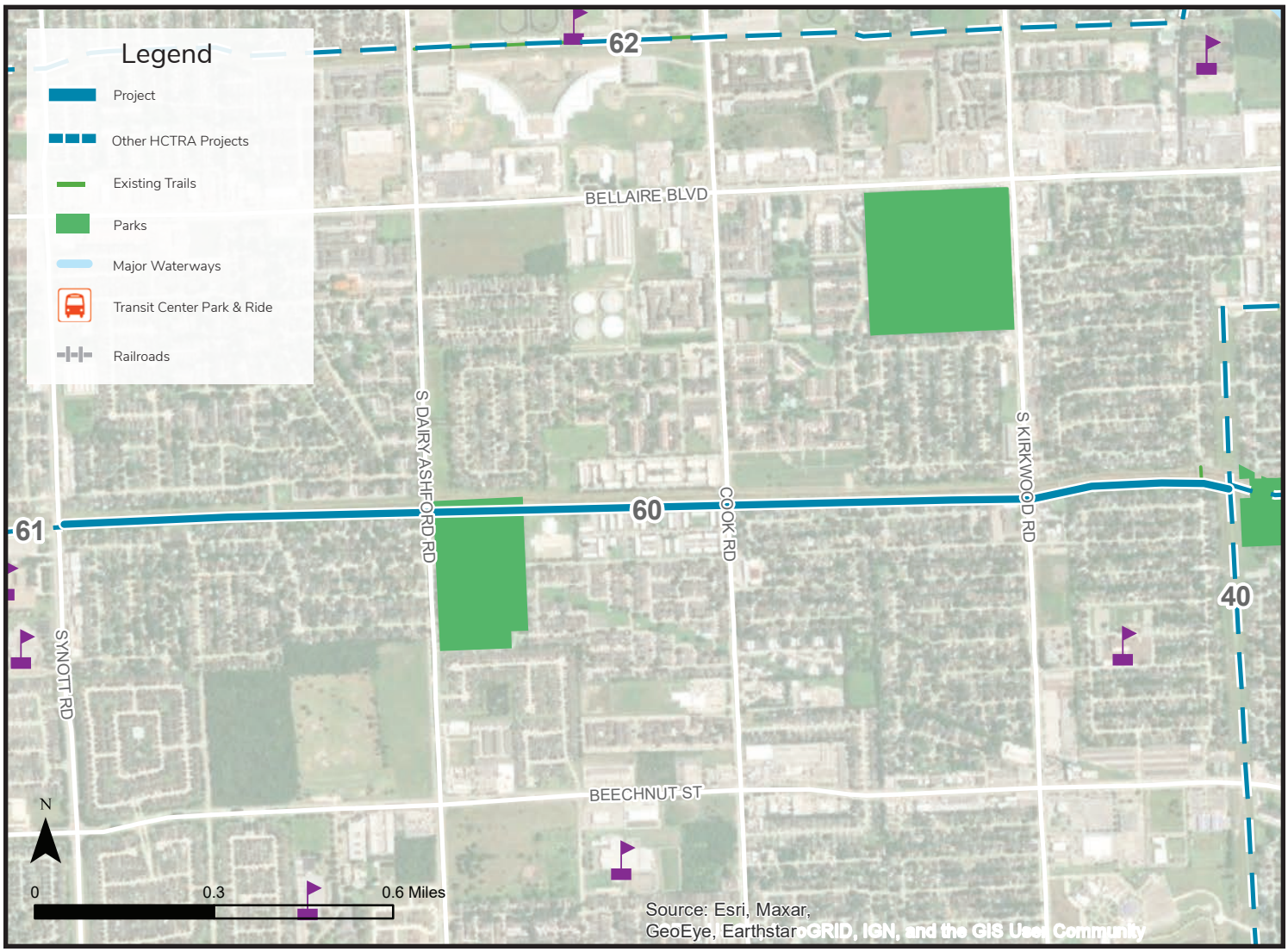
Ease of Implementation:
Less Complex (Score: 13)

Facility Type:
Trail (Drainage)

Project Benefits (Score: 22)

- 41,000 residents within 1/2 mile
- 3,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA projects 40, 61.



Project 61

Pheasant Trace Trail
(Ditch D 122)

1.9 miles (Taylor High School to Synott Rd/Bellaire Blvd)

Estimated Cost **$9.2 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway

Category:
Community Connector

Priority:
Network Builder

Coordination:
TxDOT

Ease of Implementation:
Complex (Score: 9)

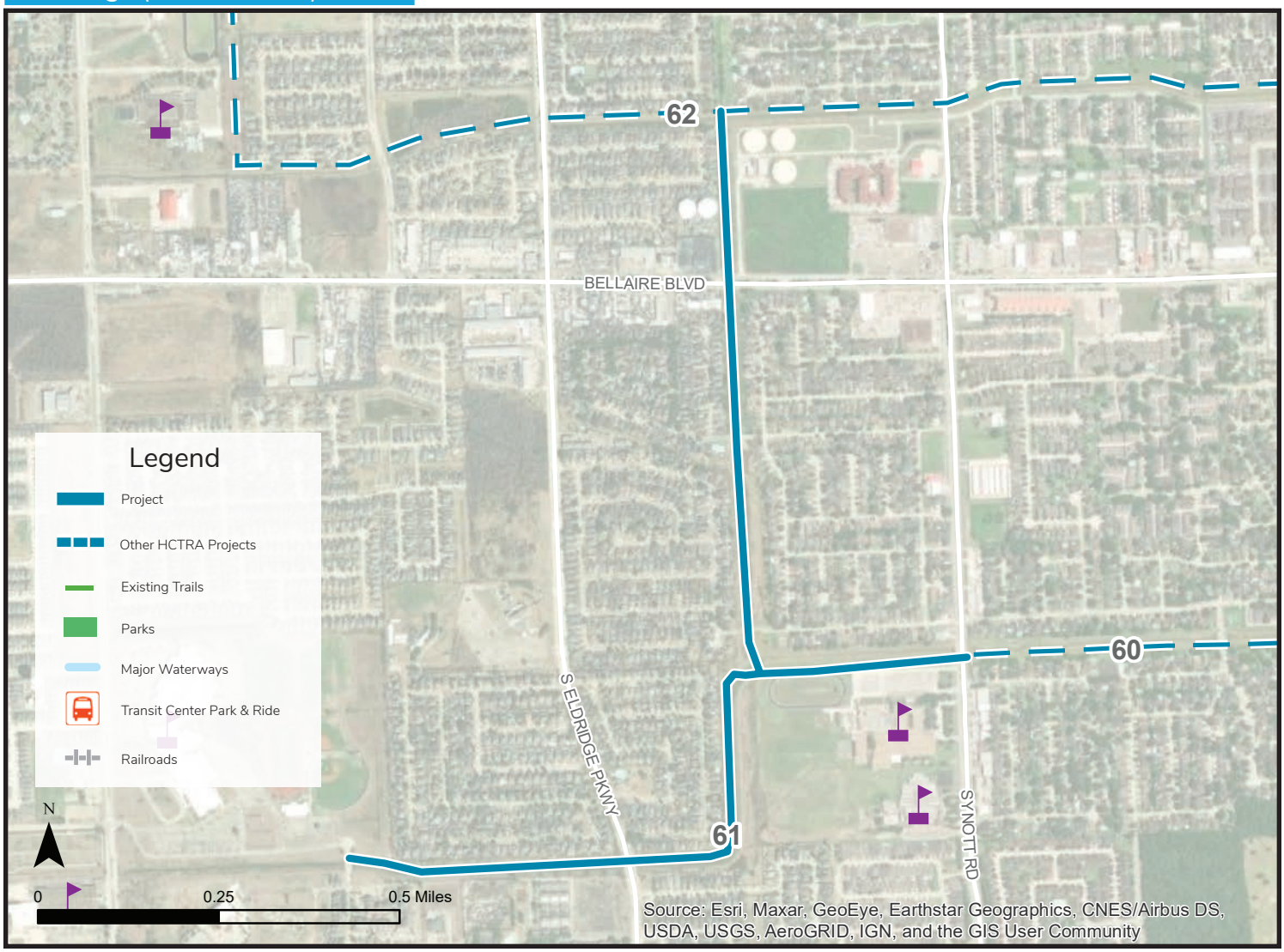
Facility Type:
Trail (Drainage), Barrier Crossings (Above Grade)

Project Benefits (Score: 10)

- 44,000 residents within 1/2 mile
- 5,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- On the Vision Zero High-Injury Network
- In a Census tract with a high portion of minorities

Network Connections

Connects to HCTRA projects 60, 62.



Alief Schools Trail
(Ditch D 126)

3.4 miles (Mission Bend Transit Center (Westpark Tollway) to Brays Bayou)

Estimated Cost **$6.1 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway

Category:
Community Connector

Priority:
Quick Win

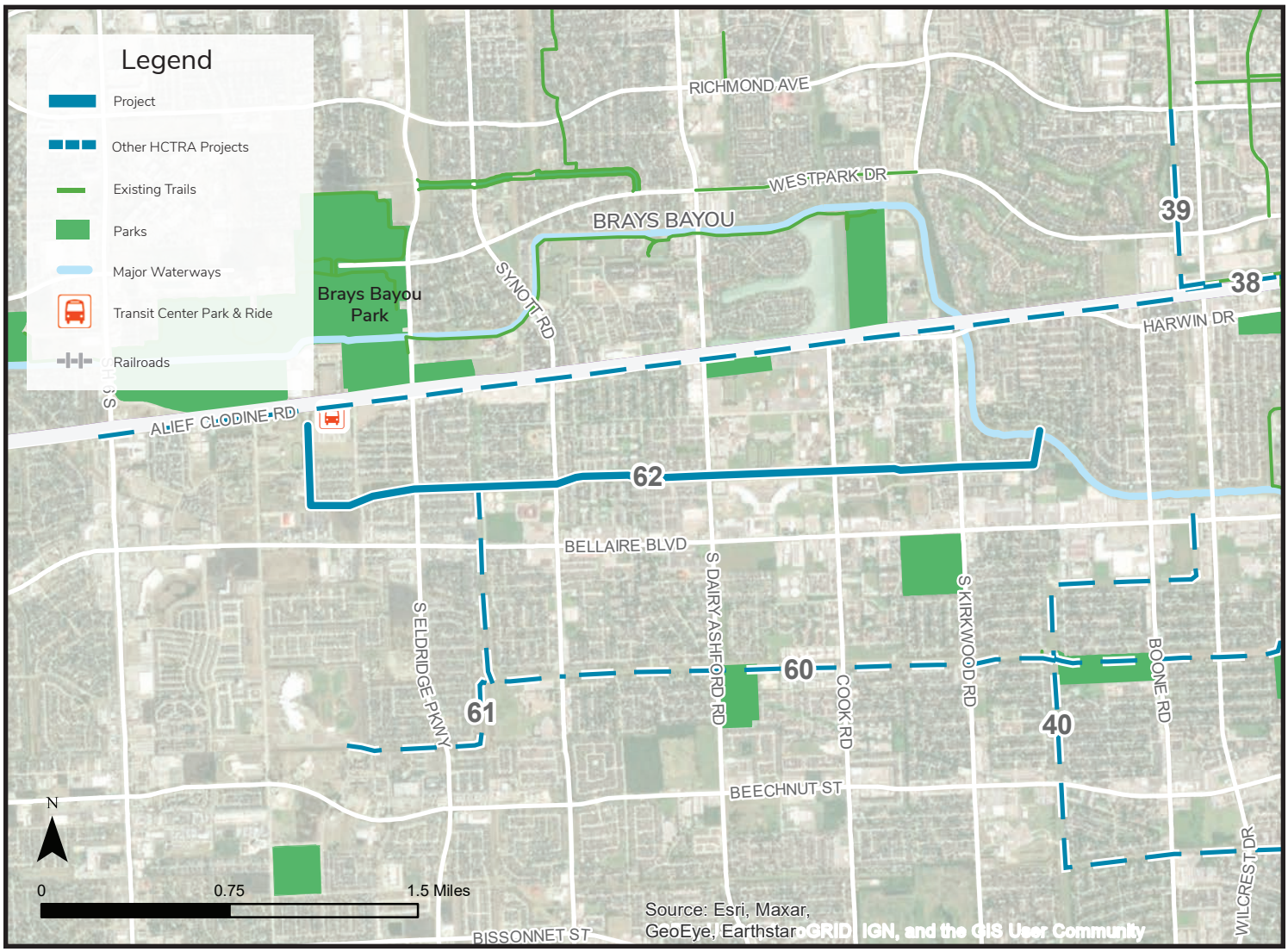
Ease of Implementation:
Less Complex (Score: 12)

Facility Type:
Trail (Drainage, Generic), Off-Street Bikeway

Project Benefits (Score: 22)

- 64,000 residents within 1/2 mile
- 24,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Brays Bayou Trail & HCTRA project 61.



Appendix – C

Project 63

Wycliffe Trail

1.3 miles (IH-10 to Buffalo Bayou)

Estimated Cost **$1.9 million** Precinct(s): **4**

HCTRA Corridor:
Sam Houston Tollway South

Category:
Community Connector

Priority:
Network Builder

Ease of Implementation:
Less Complex (Score: 13)

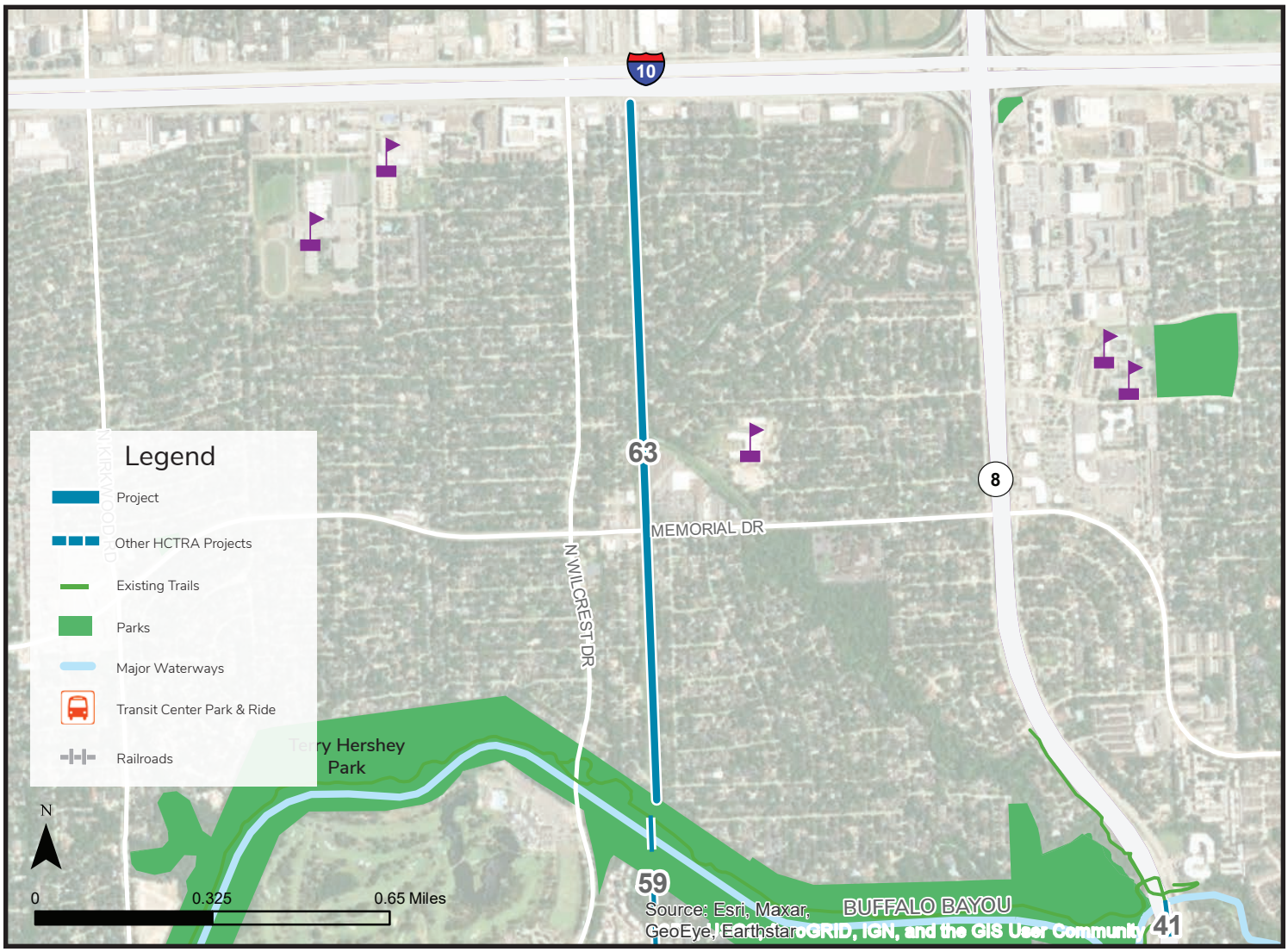
Facility Type:
Trail (Utility)

Project Benefits (Score: 8)

- 18,000 residents within 1/2 mile
- 13,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network

Network Connections

Connects to Terry Hershey Trail & HCTRA project 59.



Partnership Projects



Some projects evaluated were a part of another agency's plan or may be most appropriate for an entity other than HCTRA to lead in the project development, design, and construction. This could be due to current coordination efforts, grant funding, or feasibility. It is recommended that HCTRA coordinate with partner agencies to move the project forward. These projects will link to the HCTRA multimodal network.

Project 6

Benmar Drive Bikeway

1.4 miles (Greenspoint Dr to W Hardy Rd)

Estimated Cost **$850,000** Precinct(s): **2**

HCTRA Corridor:
Hardy Toll Road North, Sam Houston Parkway North

Category:
Partnership Project

Priority:
Network Builder

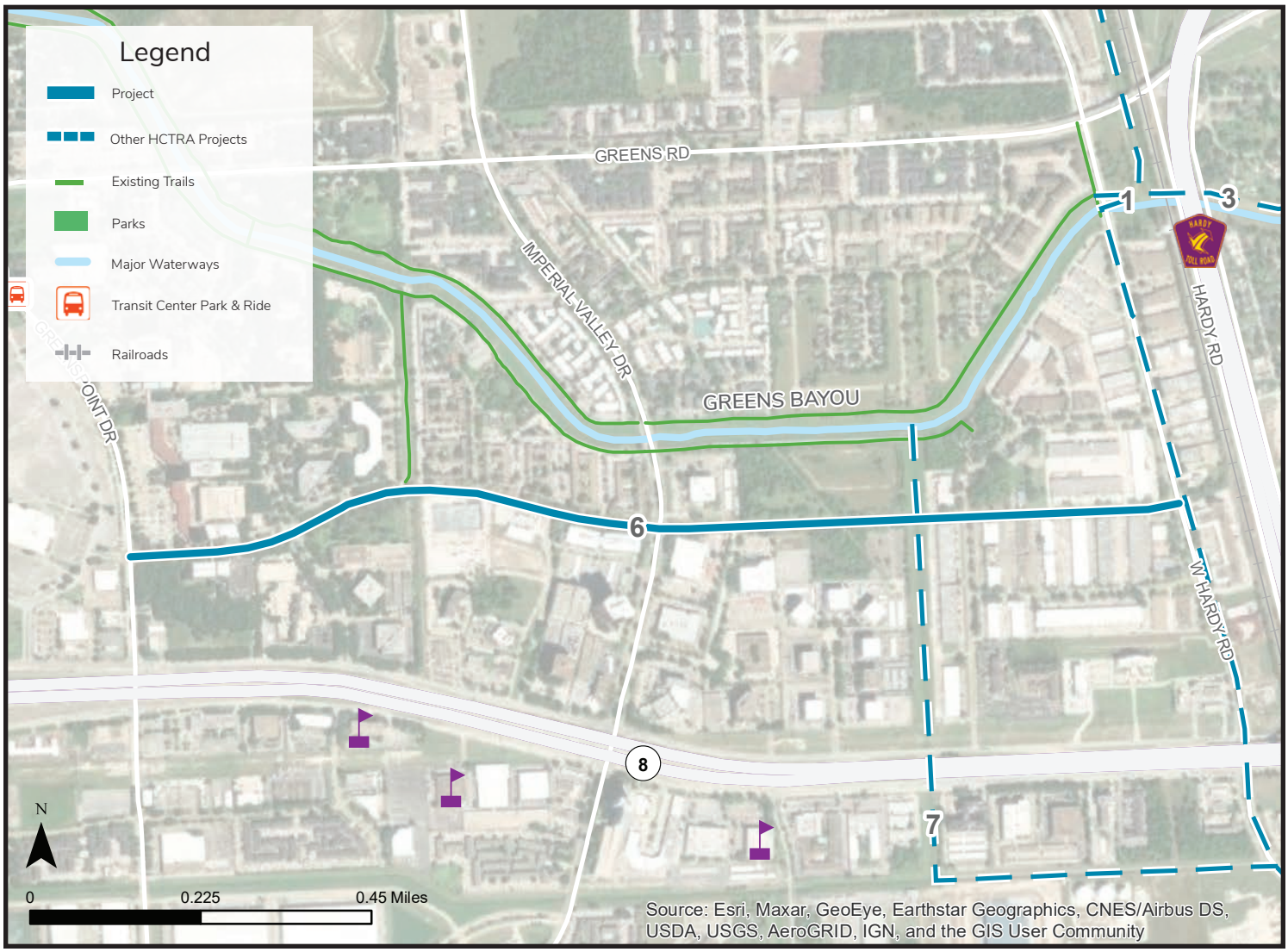
Ease of Implementation:
Less Complex (Score: 14)

Facility Type:
On-Street (Protected, Shared) Bikeway

Project Benefits (Score: 13)

- 33,000 residents within 1/2 mile
- 64,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Greens Bayou Trail & HCTRA projects 1, 7.



Fall Creek Trail

3.2 miles (Hickorytex Dr to Garners Bayou)

Estimated Cost **$4.7 million** Precinct(s): **1**

HCTRA Corridor:
Sam Houston Tollway Northeast

Category:
Partnership Project

Priority:
Quick Win

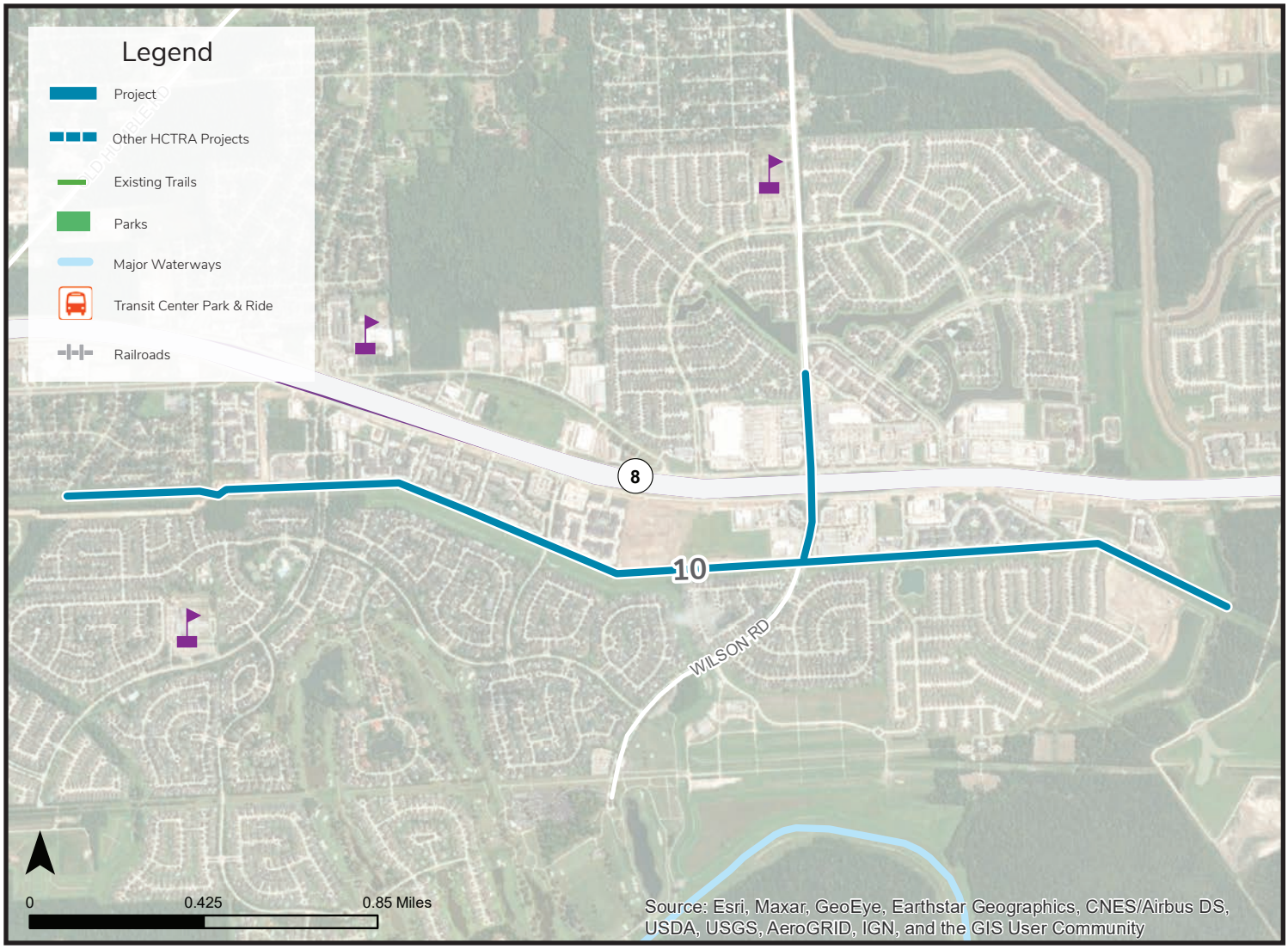
Coordination:
TxDOT

Ease of Implementation:
Less Complex (Score: 12)

Facility Type:
Trail (Utility), Wide sidewalk

Project Benefits (Score: 17)

- 38,000 residents within 1/2 mile
- 4,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area



Project 11

Irvington Boulevard Bikeway

5.2 miles (Soren Ln at Hardy Toll Rd to White Oak Bayou at Moody Park)

Estimated Cost **$37.3 million** Precinct(s): **2**

HCTRA Corridor:
Hardy Toll Road South

Category:
Partnership Project

Priority:
Big Move

Coordination:
Rail, METRO, TxDOT

Ease of Implementation:
More Complex (Score: 6)

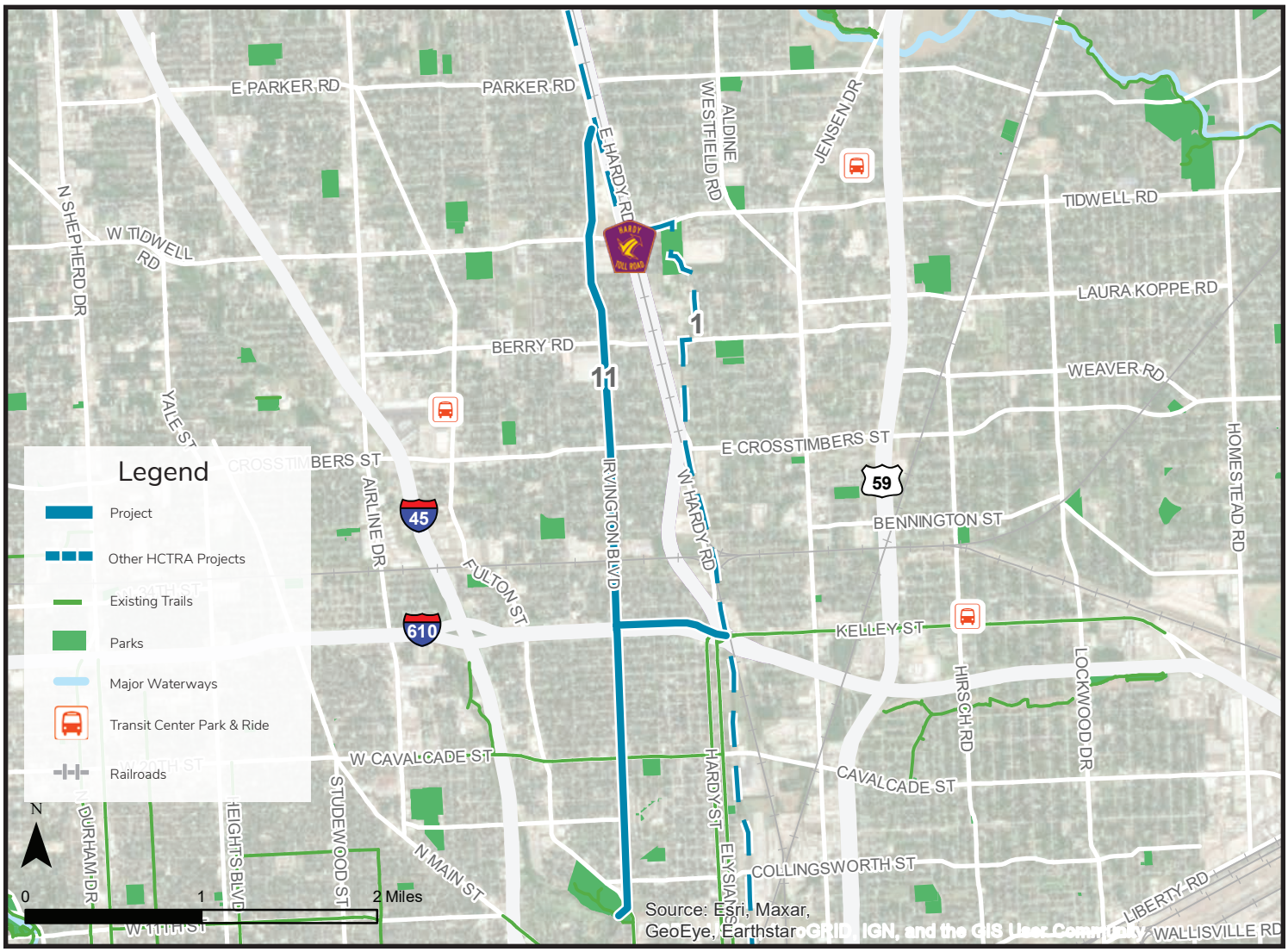
Facility Type:
On-Street Protected Bikeway

Project Benefits (Score: 26)

- 52,000 residents within 1/2 mile
- 11,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections

Connects to Calvacade St Bikeway, Hardy & Elysian Bikeway, Kelley Street Bikeway, Fulton St Bikeway, Little White Oak Bayou Trail & HCTRA project 1.



Cypress Creek Greenway - West Extension

3.3 miles (Mercer Botanic Gardens to Lents Family Park)

Estimated Cost **$26.9 million** Precinct(s): **1, 3**

HCTRA Corridor:
Hardy Toll Road North

Category:
Partnership Project

Priority:
Quick Win

Coordination:
Rail, TxDOT

Ease of Implementation:
Complex (Score: 8)

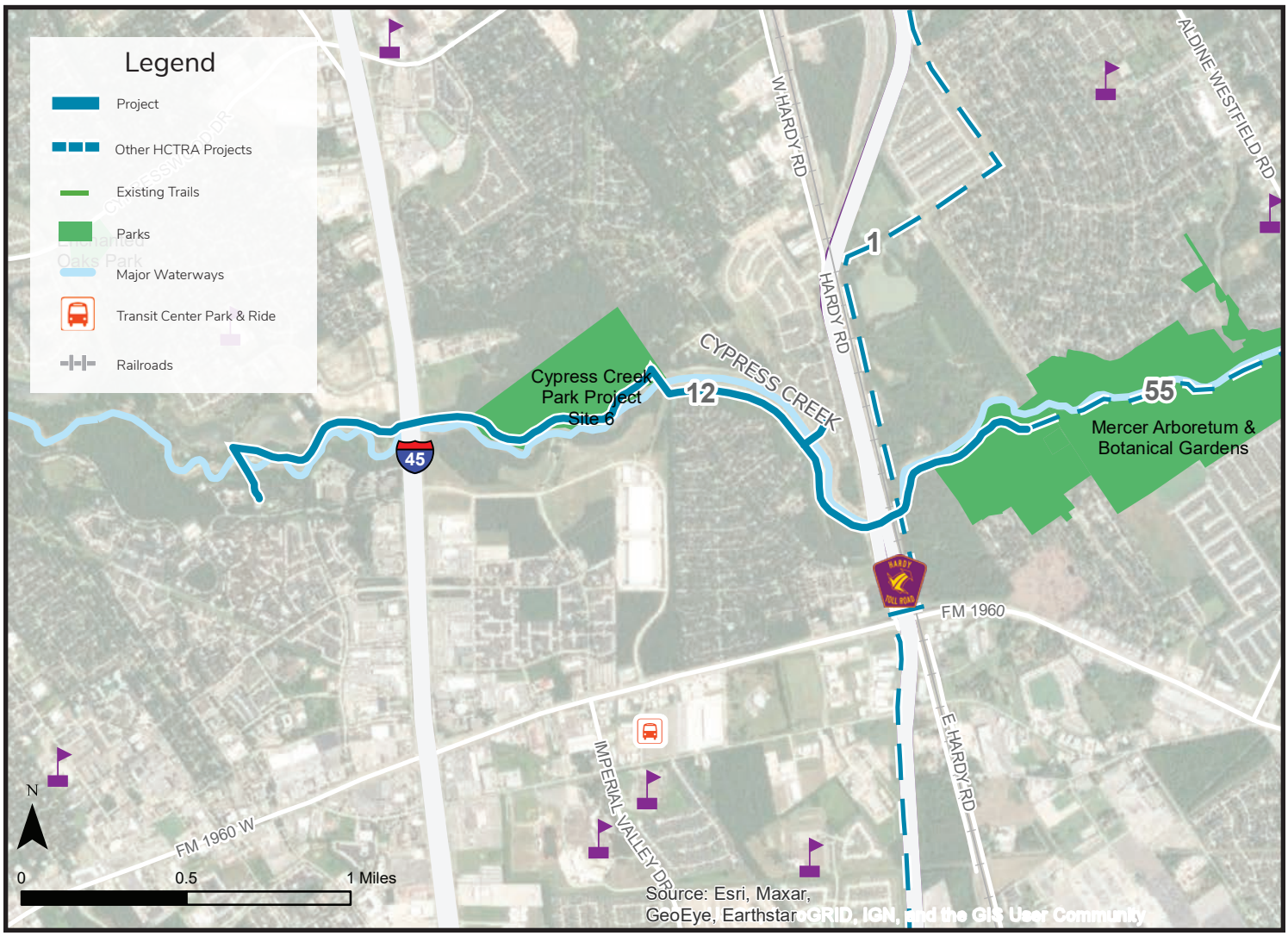
Facility Type:
Trail (Bayou), Barrier Crossings (Above Grade, Below Grade)

Project Benefits (Score: 19)

- 48,000 residents within 1/2 mile
- 20,000 jobs within 1/2 mile
- Connects to parks
- Crosses a major barrier
- Extends trails in parks and fills gaps in currnet network
- In a Census tract with a high portion of minorities

Network Connections

Connects to Cypress Creek Trail & HCTRA projects 1, 55.



Project 25

Little Vince Bayou Trail

6.7 miles (Memorial Park (Pasadena) to Space Center Blvd)

Estimated Cost **$36.1 million** Precinct(s): **2**

HCTRA Corridor:
Sam Houston Tollway East

Category:
Partnership Project

Priority:
Big Move

Coordination:
TxDOT

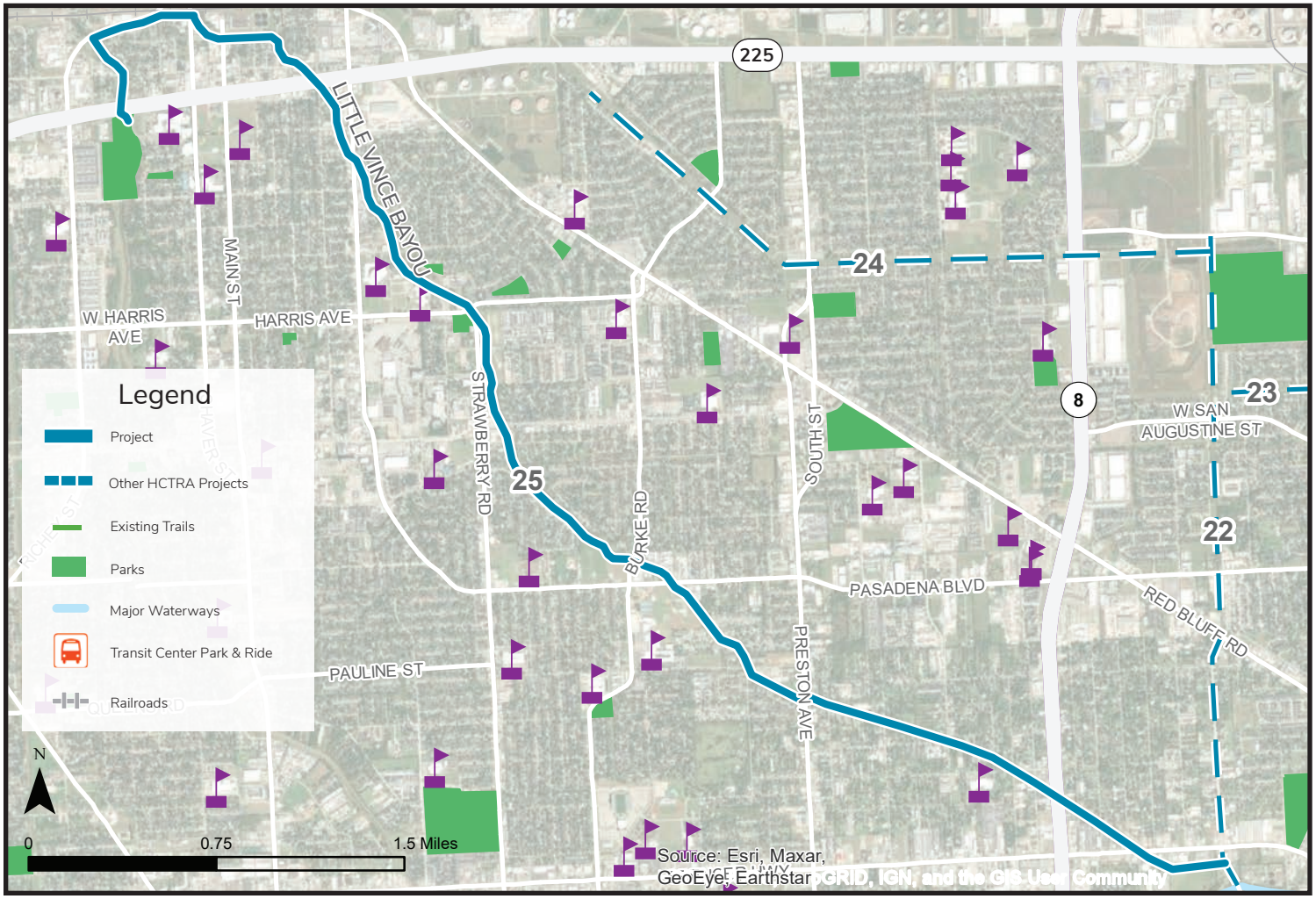
Ease of Implementation:
More Complex (Score: 5)

Facility Type:
Trail (Bayou, Drainage), On-Street Protected Bikeway, Barrier Crossings (Below Grade)

Project Benefits (Score: 28)

- 64,000 residents within 1/2 mile
- 39,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to HCTRA project 22.



Westpark Trail
(East Segment)

8.1 miles (Westchase Brays Bayou Connector Trail to Edloe St)

Estimated Cost **$32.6 million** Precinct(s): **1, 4**

HCTRA Corridor:
Westpark Tollway, Sam Houston Tollway South

Category:
Partnership Project

Priority:
Big Move

Coordination:
Rail, TxDOT

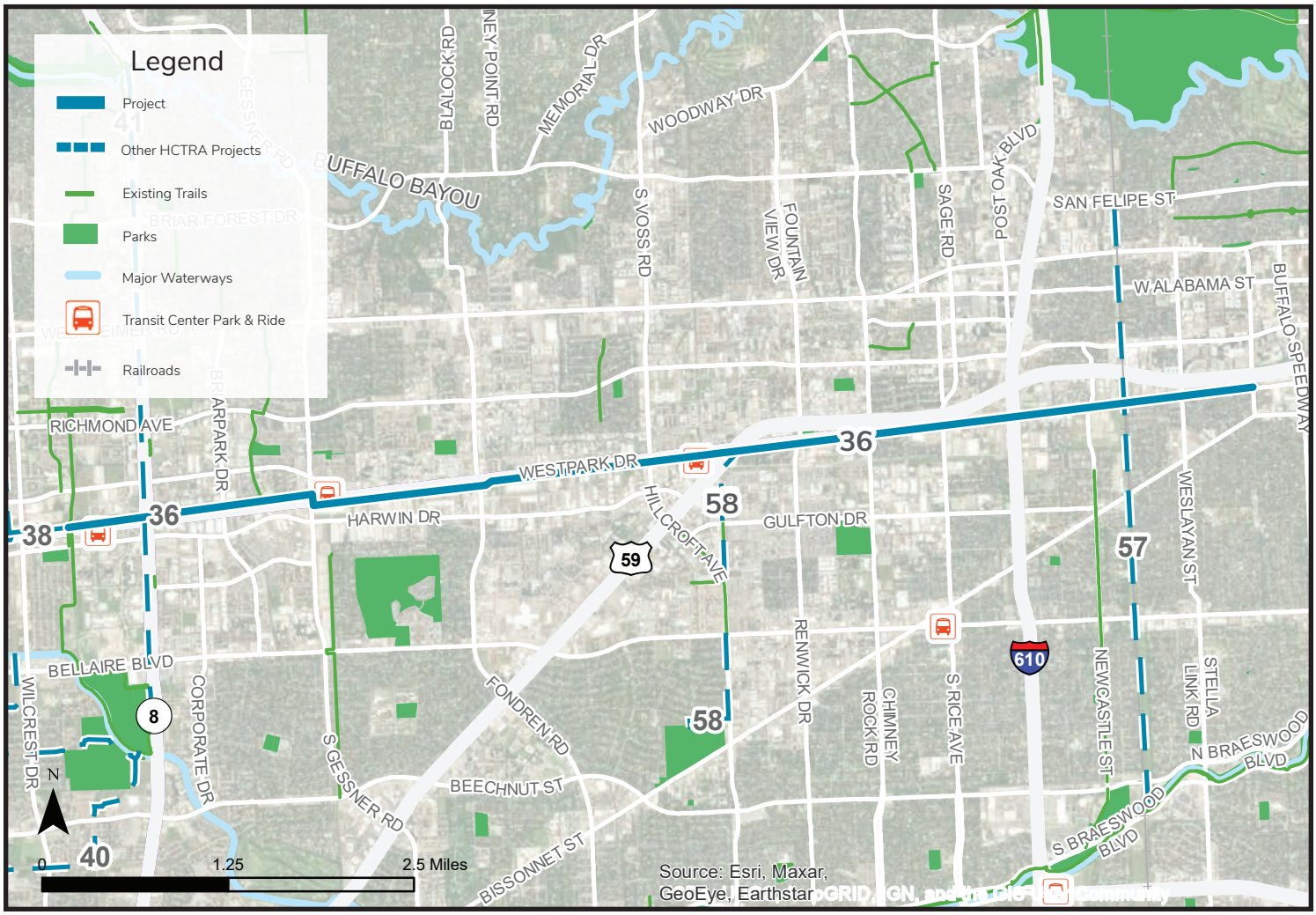
Ease of Implementation:
More Complex (Score: 3)

Facility Type:
Trail (Highway, Utility), Barrier Crossings (At Grade, Below Grade)

Project Benefits (Score: 31)

- 126,000 residents within 1/2 mile
- 182,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Westchase Trail, Woodchase Trail & HCTRA projects 38, 41, 57, 58.



Project 37

West Gulf Bank Bikeway

2.5 miles (IH-45 to Hardy Toll Road)

Estimated Cost **$7.1 million** Precinct(s): **2**

HCTRA Corridor:
Hardy Toll Road South

Category:
Partnership Project

Priority:
Quick Win

Coordination:
TxDOT

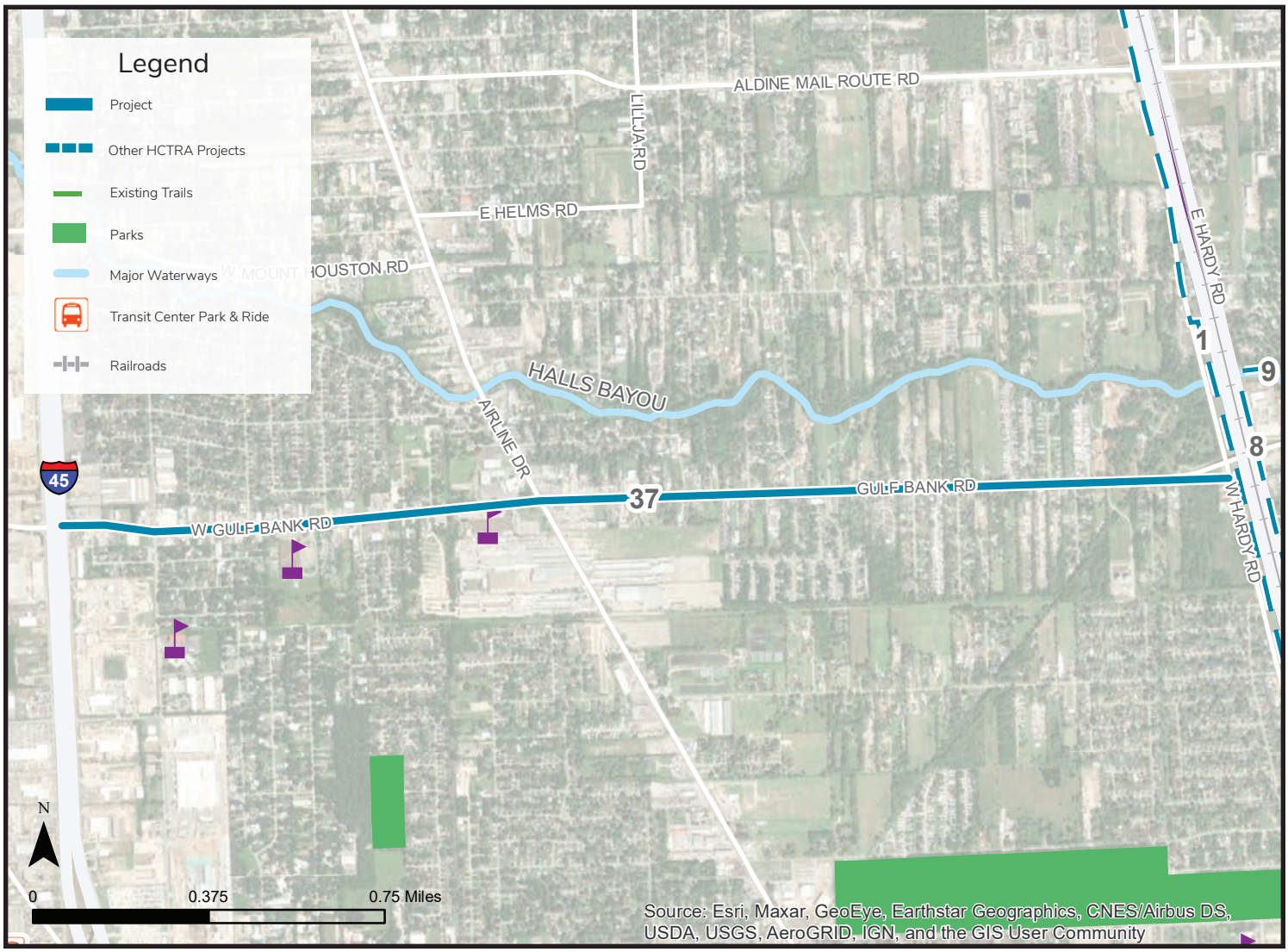
Ease of Implementation:
Complex (Score: 11)

Facility Type:
On-Street Shared Bikeway

Project Benefits (Score: 19)

- 24,000 residents within 1/2 mile
- 9,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Provides one of first trail or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections
Connects to HCTRA project 1.



Buttermilk Creek Trail
(Ditch W 167, W 140)

1.9 miles (Gessner Rd to Addicks Reservoir)

Estimated Cost **$14.3 million** Precinct(s): **3, 4**

HCTRA Corridor:
Sam Houston Tollway South

Category:
Partnership Project

Priority:
Network Builder

Coordination:
TxDOT

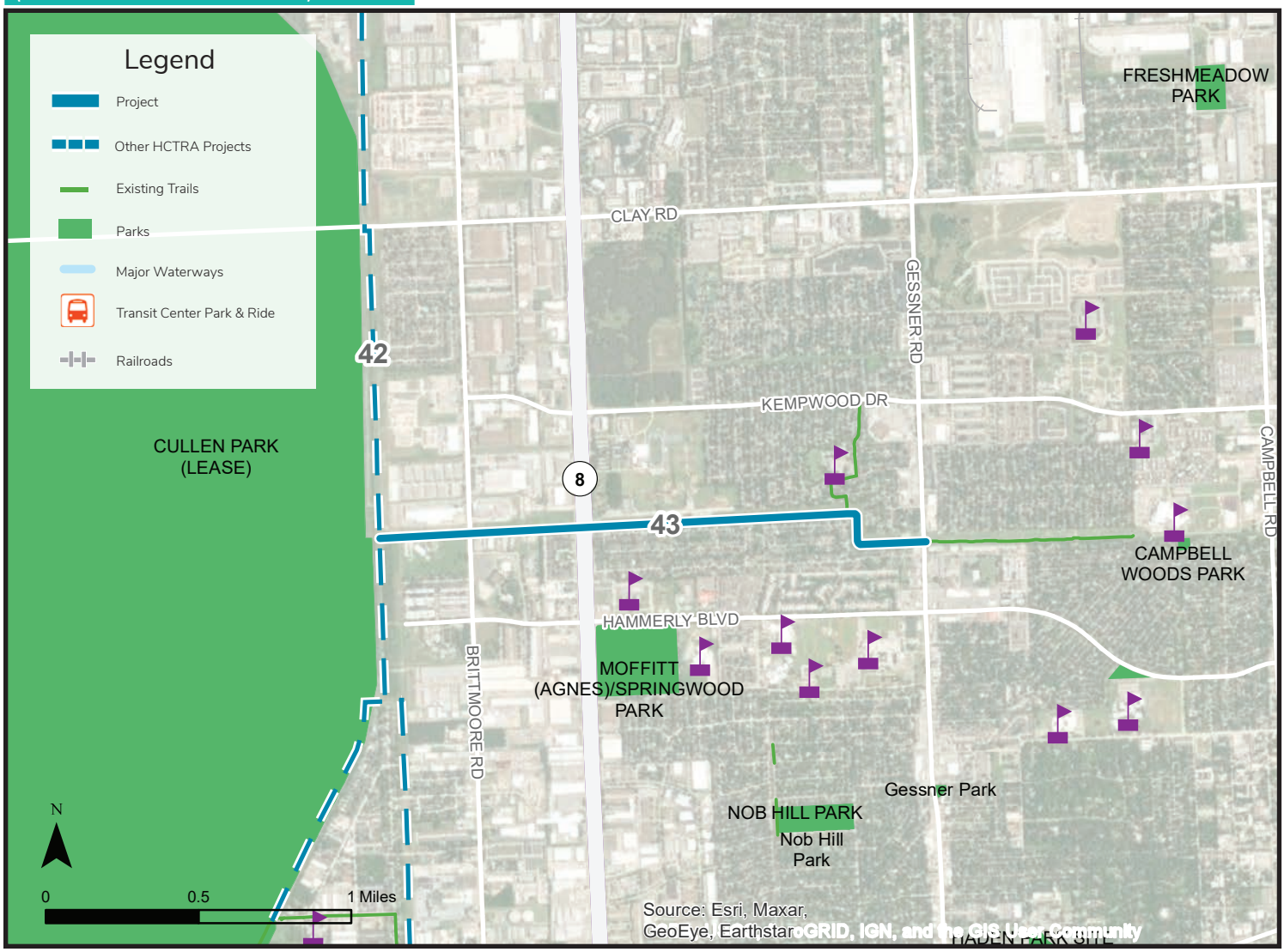
Ease of Implementation:
More Complex (Score: 6)

Facility Type:
Trail (Utility), Barrier Crossings (At Grade, Above Grade)

Project Benefits (Score: 14)

- 33,000 residents within 1/2 mile
- 36,000 jobs within 1/2 mile
- Connects to schools
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities

Network Connections
Connects to Triway Connection Trail, Emnora Trail & HCTRA project 42.



Appendix – C

Greens Bayou-Gessner Connector Trail

1.8 miles (BNSF Rail Line at Greens Bayou to Utility Easement/ Turtle Trail (#54))

Estimated Cost **$23.1 million** Precinct(s): **1, 3**

HCTRA Corridor:
Sam Houston Tollway North

Category:
Partnership Project

Priority:
Network Builder

Coordination:
TxDOT

Ease of Implementation:
More Complex (Score: 6)

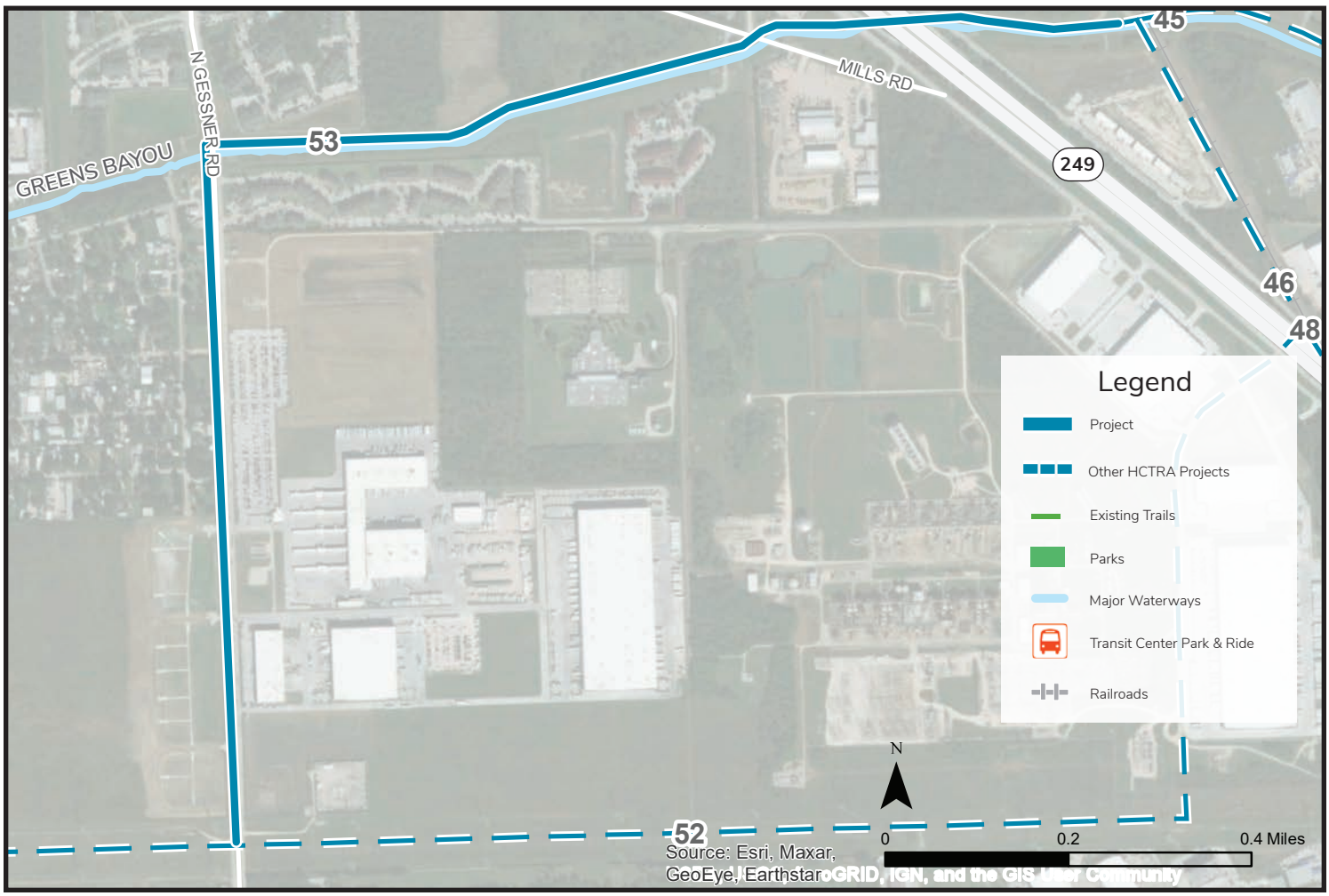
Facility Type:
Trail (Drainage), On-Street Protected Bikeway, Barrier Crossings (Above Grade, Below Grade)

Project Benefits (Score: 12)

- 16,000 residents within 1/2 mile
- 22,000 jobs within 1/2 mile
- Crosses a major barrier
- Provides one of first trails or bikeways in the area
- In a Census tract with a high portion of minorities

Network Connections

Connects to Greens Bayou Trail & HCTRA projects 45, 46, 52..



White Oak - 290 Connector Trail

1.5 miles (W 34th St at US-290 to White Oak Bayou)

Estimated Cost **$5.4 million** Precinct(s): **4**

HCTRA Corridor:
N/A

Category:
Partnership Project

Priority:
Network Builder

Coordination:
TxDOT

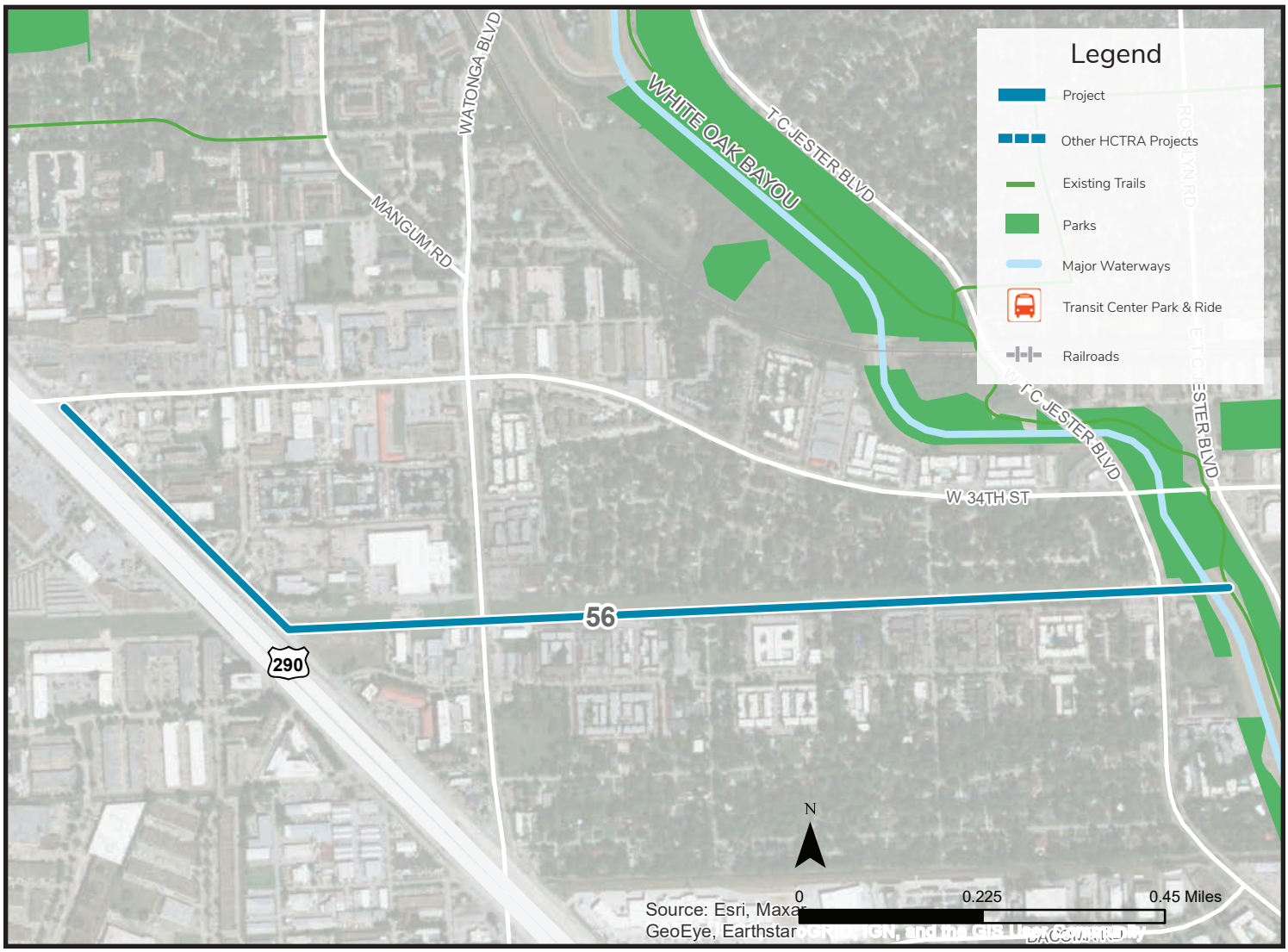
Ease of Implementation:
Complex (Score: 9)

Facility Type:
Trail (Highway, Utility), Barrier Crossings (Above Grade)

Project Benefits (Score: 15)

- 25,000 residents within 1/2 mile
- 35,000 jobs within 1/2 mile
- Connects to parks
- On the Vision Zero High-Injury Network
- Crosses a major barrier
- Fills a gap in the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to White Oak Bayou Trail.



Hillcroft-Westward Bikeway

2.2 miles (Bayland Park to Westpark Tollway)

Estimated Cost **$8.2 million** Precinct(s): **4**

HCTRA Corridor:
Westpark Tollway

Category:
Partnership Project

Priority:
Quick Win

Coodrination:
TxDOT

Ease of Implementation:
Less Complex (Score: 12)

Facility Type:
On-Street (Shared, Protected) Bikeway

Project Benefits (Score: 21)

- 66,000 residents within 1/2 mile
- 29,000 jobs within 1/2 mile
- Connects to schools
- Connects to transit
- Connects to parks
- On the Vision Zero High-Injury Network
- Extends the existing bike & trail network
- In a Census tract with a high portion of minorities
- In a Census tract with persistent poverty

Network Connections
Connects to Hillcroft Ave Trail & HCTRA project 36.

