National Capital Region
Transportation Planning Board

TPB REGIONAL PUBLIC TRANSPORTATION SUBCOMMITTEE (RPTS)

Tuesday, July 25, 2023
12:00 – 2:00 P.M.
Conference Room #1

Chair: Nick Ruiz, VRE

HYBRID MEETING

AGENDA

12:00 P.M. **1. WELCOME**
Nick Ruiz, RPTS Chair

12:05 P.M. **2. TRANSIT-ORIENTED DEVELOPMENT RISING ACROSS THE REGION**

A. Duke Street in Motion Project Update – City of Alexandria
Jen Monaco, City of Alexandria Transit Programs Manager

B. Updates on WMATA Joint Development Projects
Liz Price, WMATA Office of Real Estate and Development Vice President

C. Equitable TOD Along the Purple Line Corridor in Maryland
Nick Finio, PhD, National Center for Smart Growth Deputy Director

D. Lessons Learned by ULI's Technical Assistance Program for TOD
Sukirti Ghosh, Urban Land Institute Technical Assistance Comm. Chair

E. Discussion and Attendee Q&A

1:35 P.M. **3. OTHER BUSINESS**

- Analysis of the High Capacity Transit (HCT) Network in the TPB Region
Walker Freer, Foursquare ITP Sr. Transp. Planner
Kyle Hearing, Foursquare ITP Program Manager & Sr. Transp. Planner

2:00 P.M. **4. ADJOURN**

The next regular meeting of the RPTS is September 26, 2023 and is virtual only.

Reasonable accommodations are provided upon request, including alternative formats of meeting materials.
Go to www.mwcog.org/accommodations or call (202) 962-3300 | (202) 962-3213 (TDD) for more info.

Duke Street Transitway

RTPS

July 25, 2023

Agenda

01

Transportation/Land Use Connections & Project Background

02

Preferred Concept

03

Next Steps

Transportation/Land Use Connections & Project Background

Transportation and Land Use

Alexandria plans for growth in transit-rich locations

ALEXANDRIA MOBILITY PLAN

A Growing Region

Alexandria plans for growth in transit-rich locations

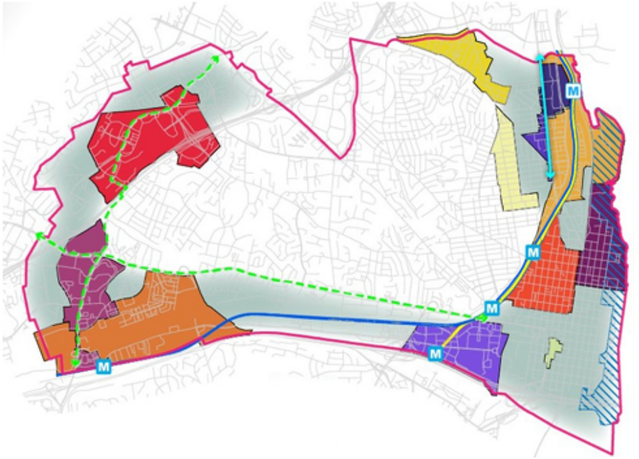
In Alexandria and the region, residential population growth has been about 1.5% per year since 2010. This growth rate is expected to continue through 2030.

Employment in Alexandria is forecasted to increase 1% per year through 2030.

The City routinely updates its Small Area Plans for specific neighborhoods that are anticipating growth and redevelopment. These community-driven plans outline neighborhood visions and provide guidance on levels and types of development. These planning efforts result in a concentration of diverse land uses and development density that will have access to existing and planned high-capacity transit hubs and corridors such as Metrorail stations and bus rapid transit (BRT) lines. This will minimize the impact of new development on the street network, create opportunities for people to move using different travel choices, and improve connections for both drivers and non-drivers.

Major employers are choosing Alexandria for their growth and expansion, most notably in Potomac Yard and Oakville Triangle, near both the Route 1 Metroway corridor and the Potomac Yard Metrorail station, and at the former Landmark Mall site near both the Van Dorn Metrorail station and the planned West End Transitway corridor.

Small Area Plans and Planned Development



Existing Metroway
Proposed BRT Lines
Metrorail Line
M Existing Metrorail Station
M Future Metrorail Station
Color-Shaded Areas Indicate Locations of Small Area Plans or Planned Development

Duke Street Corridor

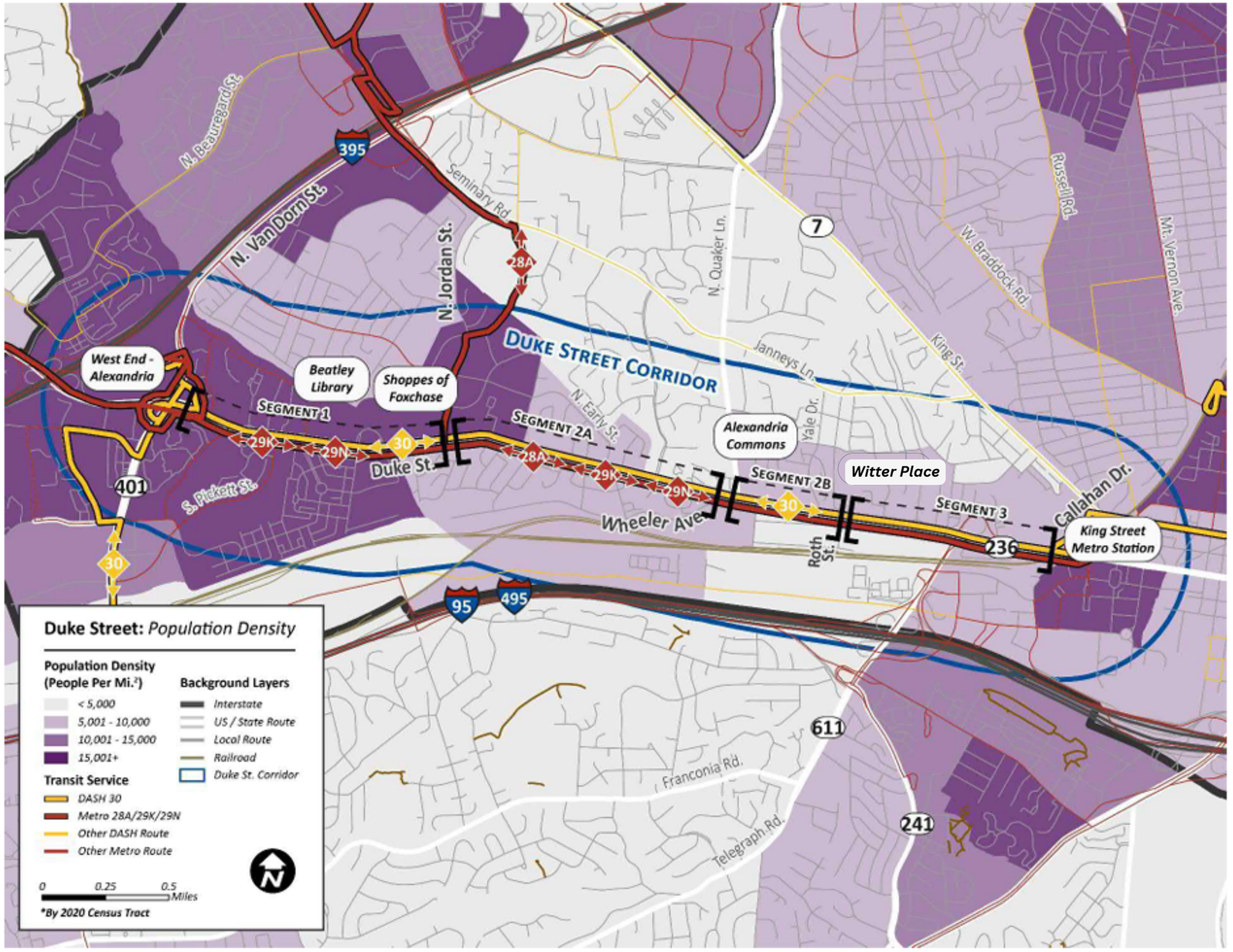


Figure 5: 2020 Population Density (Data Source: US Census Bureau, Decennial Census)

Why Duke Street?

Over 3,000 average weekday riders (March 2023)...

~120% of pre-pandemic ridership

...stuck in traffic that is anticipated to increase as the region grows

Volumes projected to increase by 10% by 2030

DUKE STREET TRANSITWAY TIMELINE

2008

Duke Street Identified as future transit corridor

2012

Transitway Concept Plans Approved

2018 & 2020

- $12M Planning funding awarded
- $75M Construc-tion funding awarded

2021

Phase I - Community Visioning

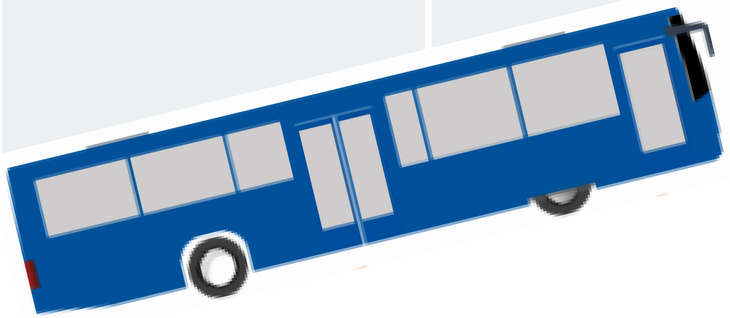
2022

Phase II - Concept Planning - Community Priorities & Tradeoffs

2023

Phase III -

- Concept Refinement & Curb Features
- Council Action



Project Alignment with City Goals

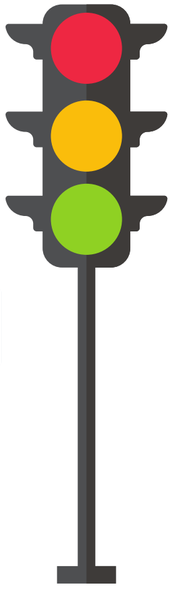
- Equity
- Mobility Options
- Sustainability
- Congestion Management
- Safety

Project Vision

*Advisory Group adopted

This project will provide an efficient and desirable bus rapid transit (BRT) option along Duke Street by improving the transit experience for current and potential riders.

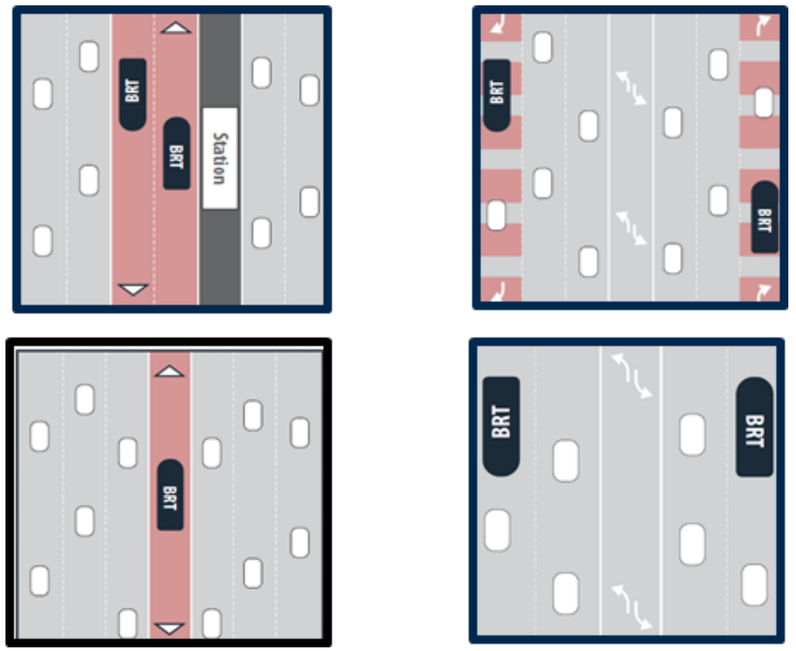
With multimodal enhancements to the corridor, Duke Street will become a safe, efficient, and desirable community connector for people riding the bus, walking, biking, and driving.



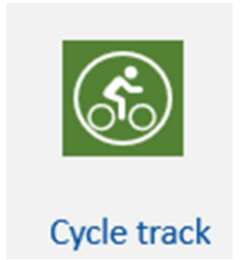
Street Design Concepts

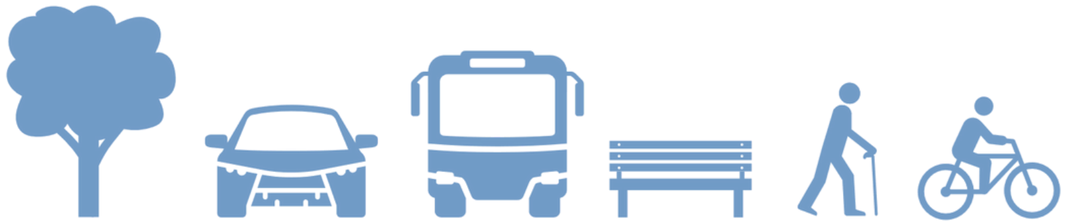
Busway *and* Curb features

Step 1: Busway



Step 2: Curb features



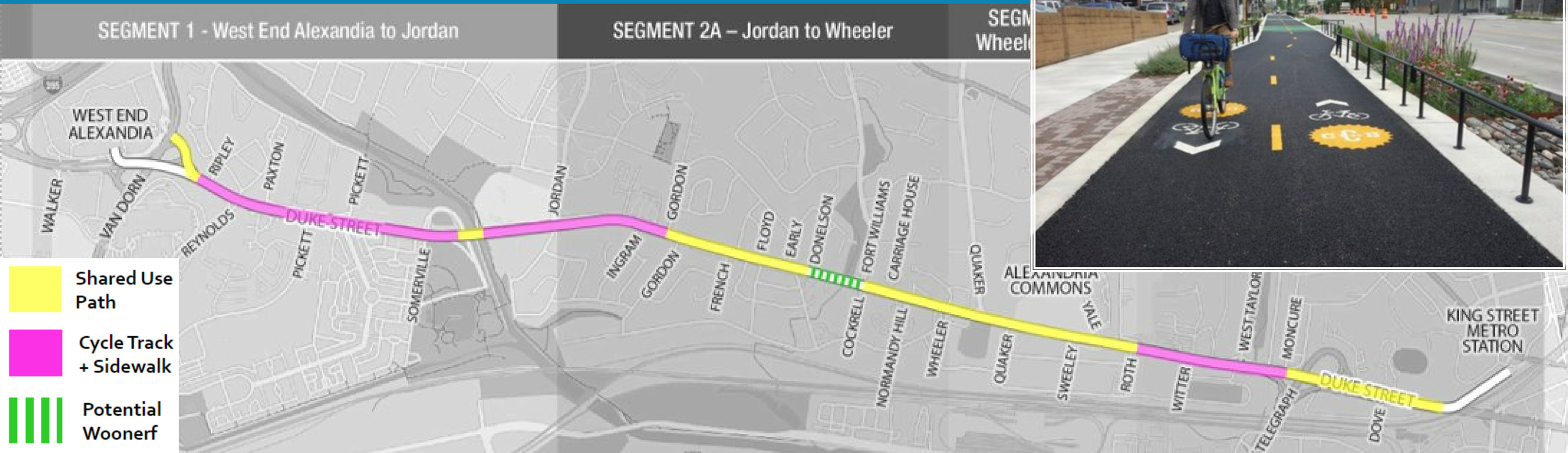


AG Busway Recommendation - Concept A

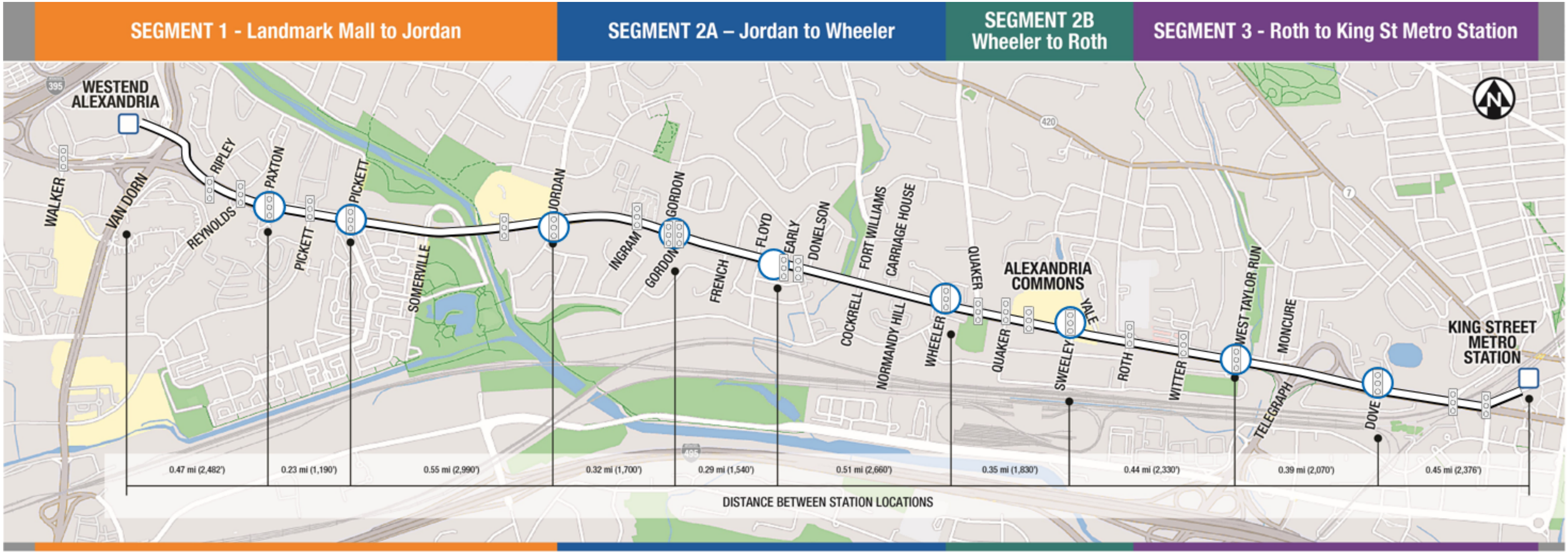
- Signal technology + stop consolidation + dedicated lanes to optimize bus service
- If cost becomes an issue near term, Roth-Quaker could become mixed traffic

AG Curb Feature Recommendation
Concept Y

- Map is showing **north side** improvements
- Preference for **separated ped/bike facilities**
- Options in constrained right of way
- Recognize need to work with **service road** communities to refine options

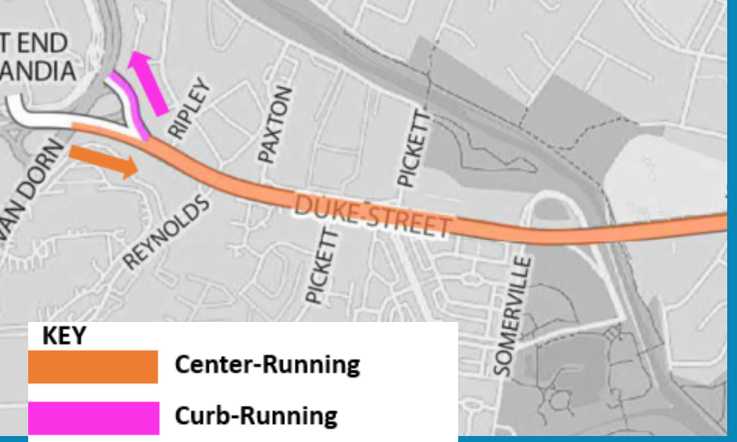


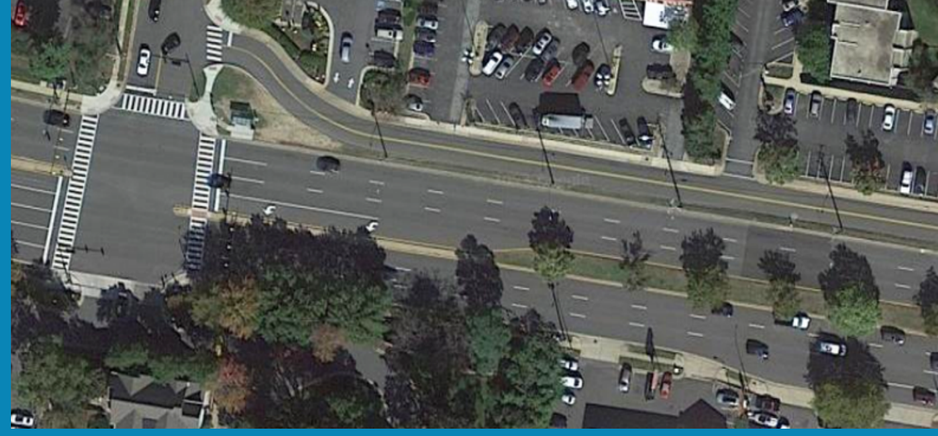
Distance between potential stations
along Duke Street corridor



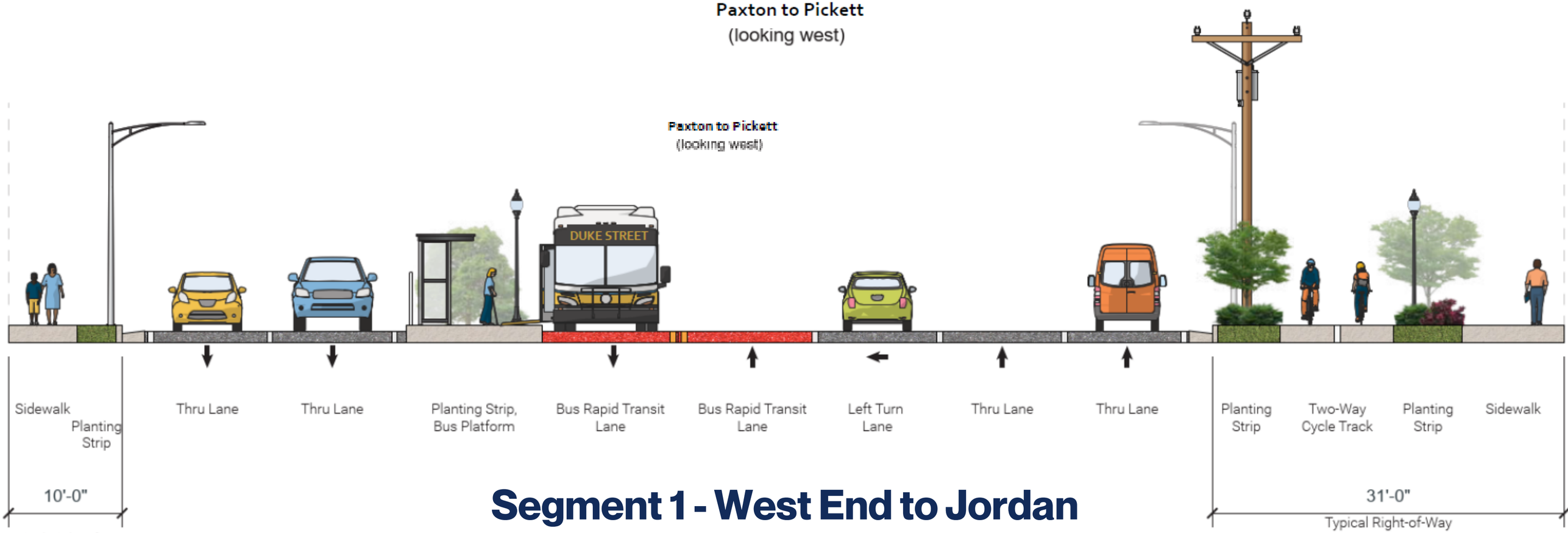
Existing Signal

Potential BRT Station Locations (Preference for Far Side at Intersections)





Paxton to Pickett
(looking west)



Segment 1 - West End to Jordan

RENDERING - Duke Street at North Pickett Street - Facing West

RENDERING - Duke Street at West Taylor Run - Facing East

Key Takeaways - AG Recommended Concept

UP TO **9.5 MINUTES** IN TRAVEL TIME SAVINGS FOR BUS RIDERS

UP TO **5 MINUTES** TRAVEL TIME SAVINGS FOR VEHICLES

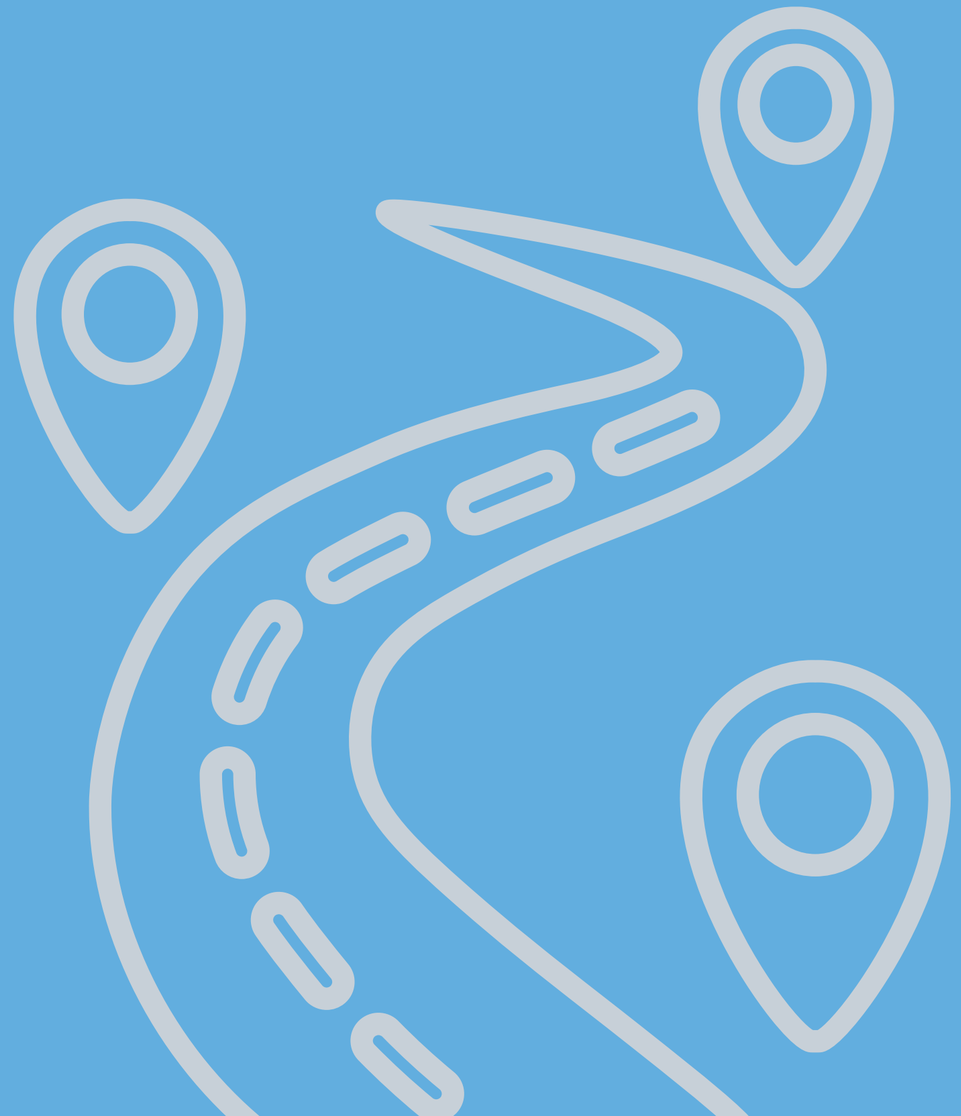
70% REDUCTION IN LEFT TURN CRASHES CORRIDOR-WIDE

50% REDUCTION IN PEDESTRIAN CRASHES AT 29 INTERSECTIONS

AG Recommendation - Long Term

- The **long-term plan** for the corridor should include **center running bus lanes** for the entirety of Duke Street with **separate spaces for pedestrians and cyclists**.

- This long-term plan would be partially **dependent on redevelopment** and **available funding** and should be assessed further during the **Duke Street Small Area Plan process**.



Next Steps

Tentative Schedule

2023

- Finalize Concept
- Survey

2024

- Design
- **Duke Small Area Plan**
- Council Action on Final Design*

2025

- Finalize Design
- Right-of-way

2026

- Begin Construction

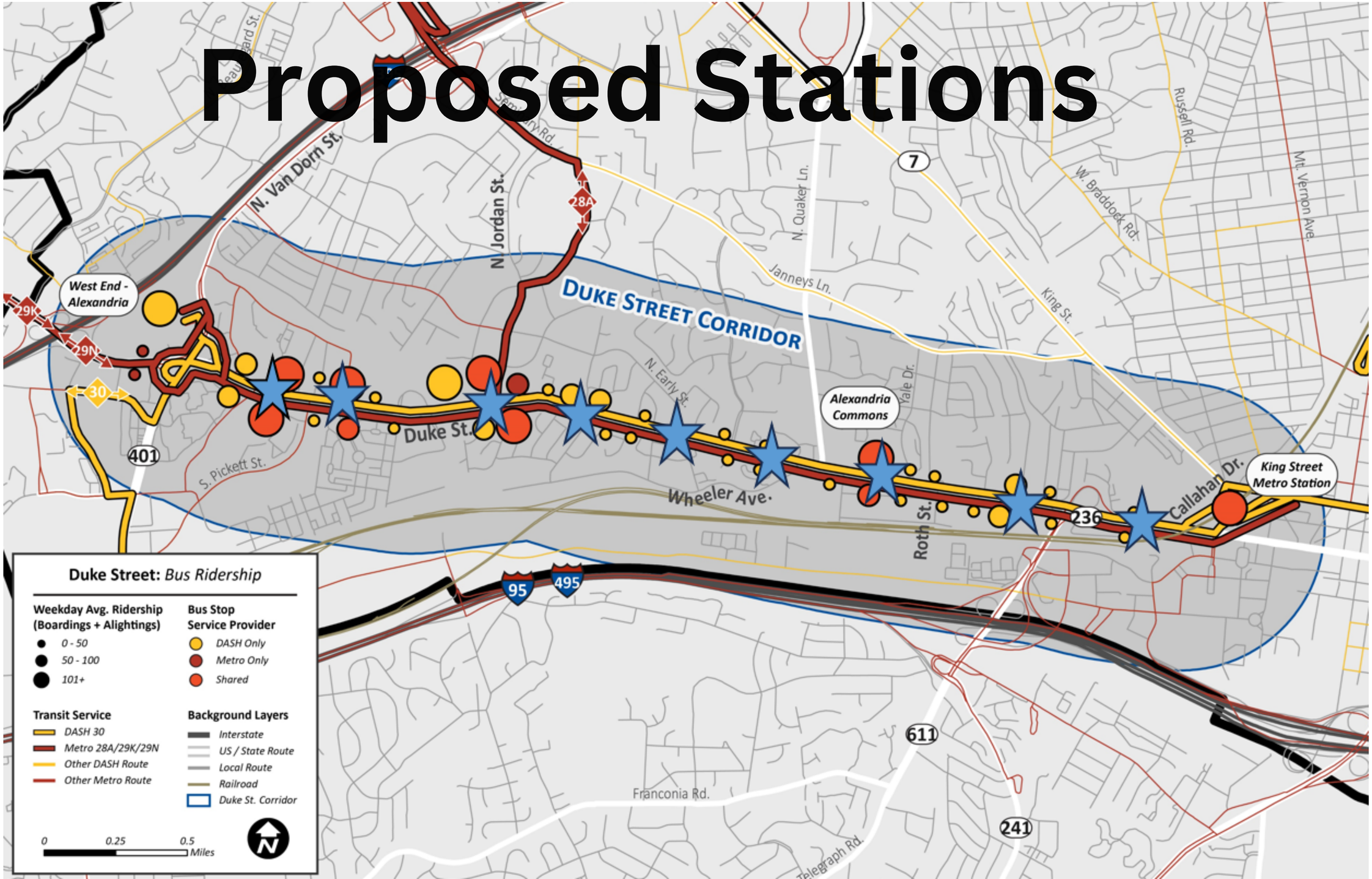
2027

- Finish Construction
- Fully operational BRT

Questions & Comments

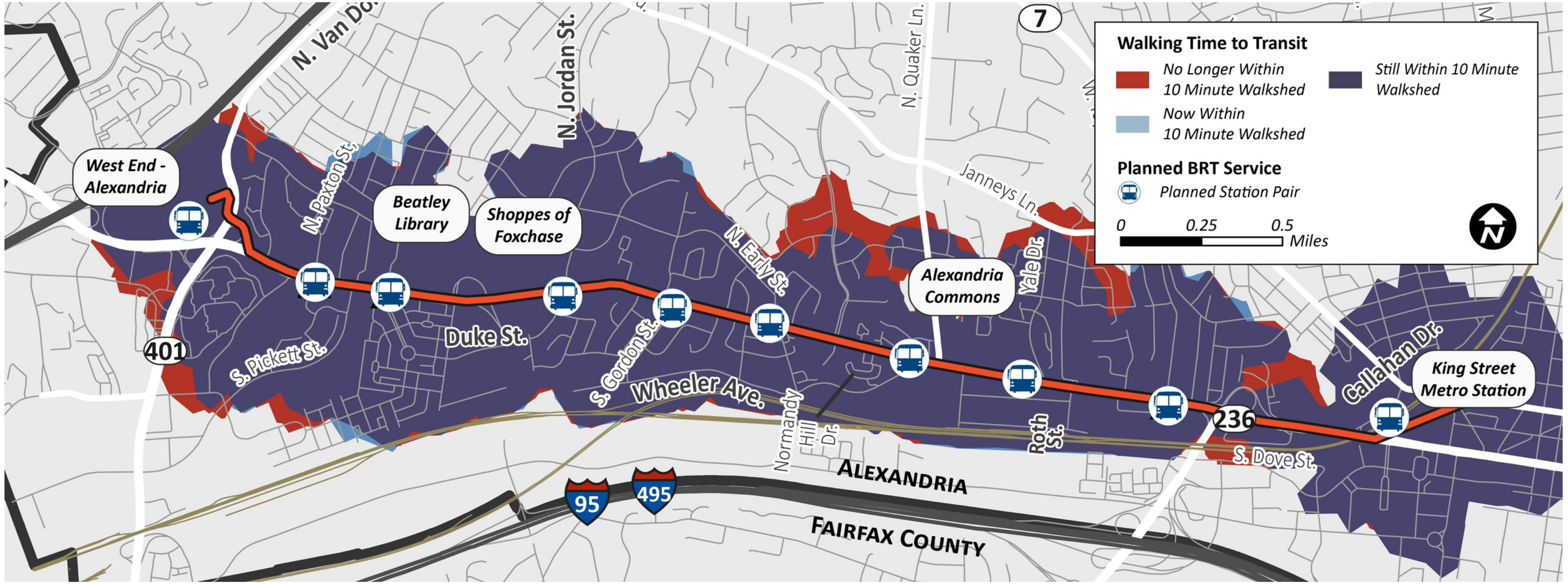
BACKGROUND SLIDES

Proposed Stations



Walkshed to Transit

from planned BRT stations



Joint Development Portfolio Update

TPB Regional Public Transportation Subcommittee

Liz Price, VP of Real Estate & Development

July 25, 2023

Joint Development at Metro Started in 1975

First project was 1100 Connecticut Ave over the Farragut North Metro Station entrance

What is Joint Development?

Federal Transit Administration term for real estate development on Metro-owned property

Requires coordinated construction of public transit facilities with private development

Generates ridership and revenue for Metro

Expands regional tax base and supports econ development and climate goals

Policy Requirements

Maintain or enhance ridership

Upgrade transit access and facilities (where required)

Comply with local land use plans & regulations

Fulfill FTA “Fair Share of Revenue” guidelines

Produce positive net fiscal impact to Metro

Metro's JD Program is Most Successful in Nation

Impact To Date

55 buildings completed at 30 stations

17M sq. ft. of development

8,000+ housing units

$194M annual local/state taxes generated (est.)

Grows Metro ridership & revenues

Joint Development Strategic Plan (April 2022)

Future Development Potential

550+ acres of developable land at 40 stations

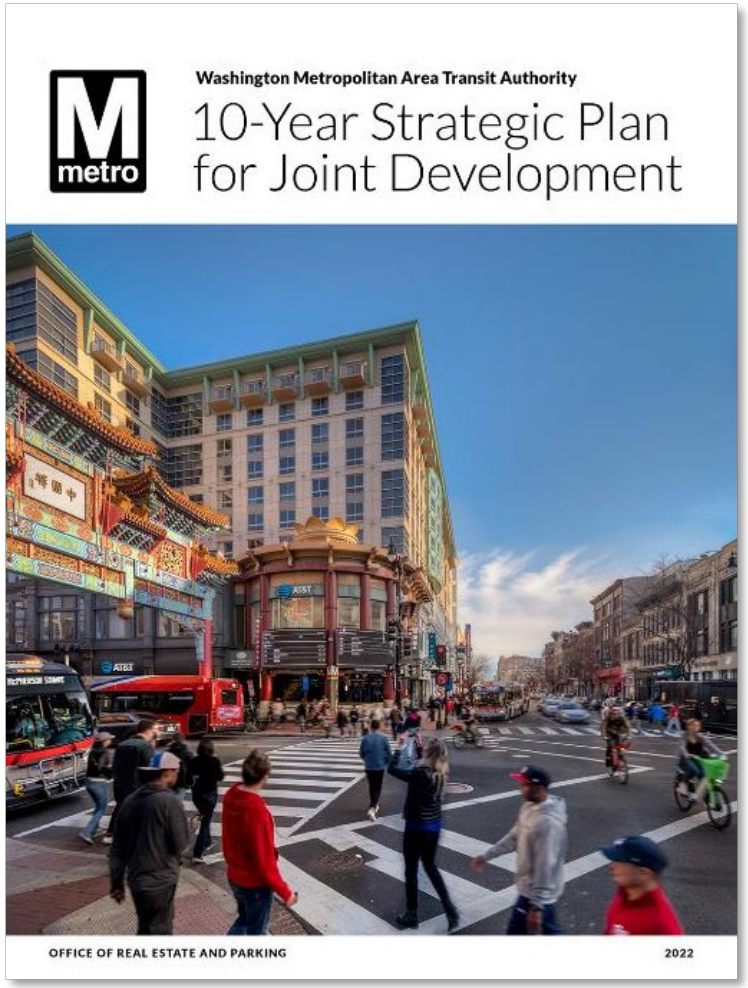
31M+ sq. ft. of new development

26,000+ new housing units

$340M new annual local/state taxes forecasted

Grows Metro Ridership & Revenues

Goal: 20 Development Agreements by 2032



Historic Approach to Funding Joint Development Costs

Past projects benefited from:

- Smaller infill parcels
- Lower transit replacement costs
- Limited needs for other site infrastructure
- Stronger real estate markets
- Land value > costs (positive net fiscal impact)

WMATA discounted land value to advance projects

EXAMPLE – **FORT TOTTEN**

Prior Joint Development

*Required No Changes to Transit Facilities

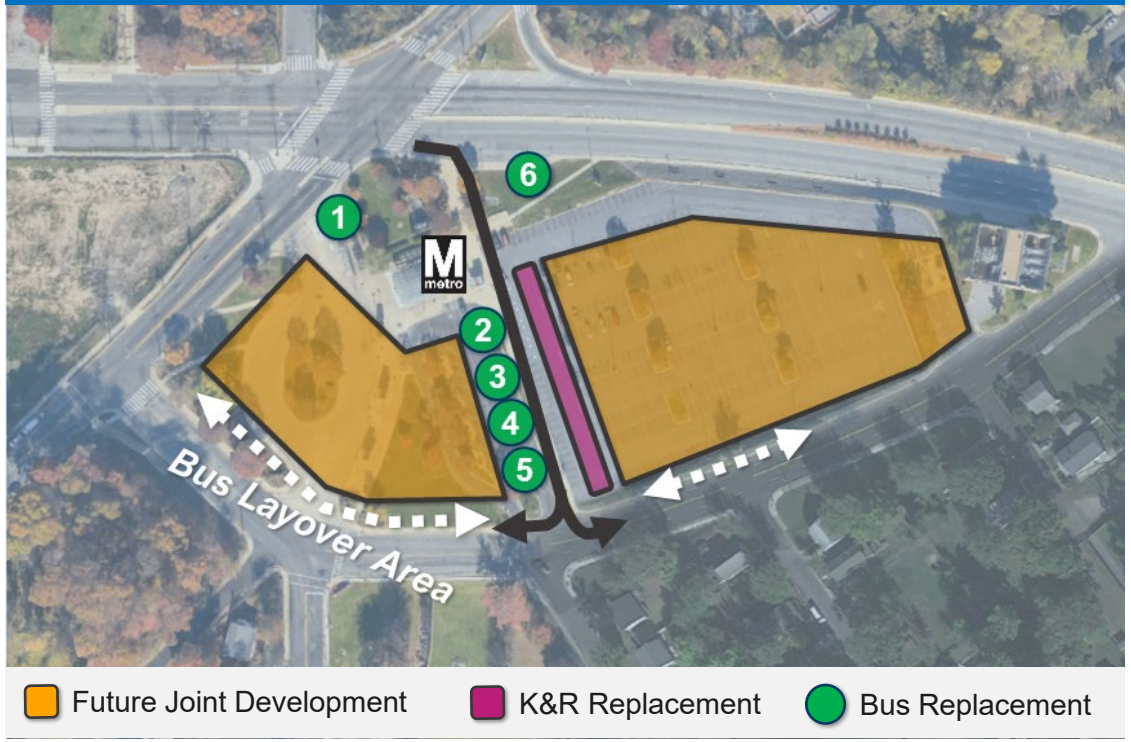
Challenges Ahead for Future Joint Development Costs

Financial gaps exist at many stations:

- Larger / complex properties (5 to 50+ acres)
- More infrastructure needs (transit or other)
- Desires for more affordable housing
- Softer real estate markets
- Land value < costs

Most projects cannot advance without investment from other sources

EXAMPLE – **CAPITOL HEIGHTS**



Partnership Approach to Joint Development

Metro's Role
Reduce costs & risks

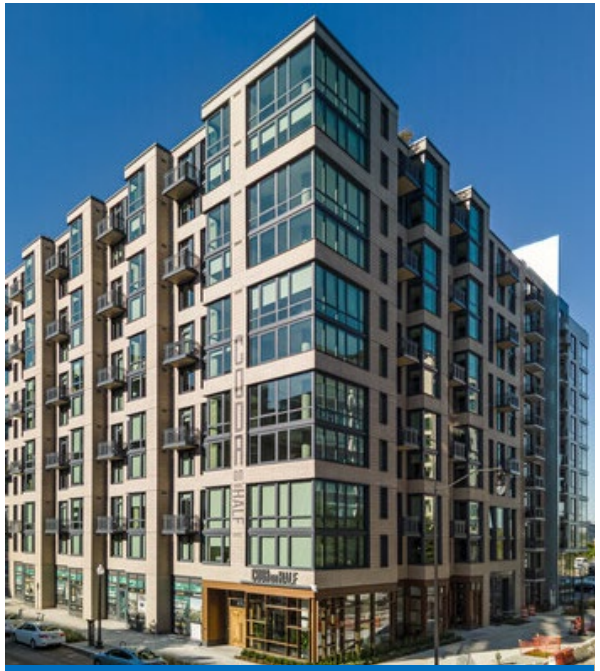
- Right-size capacity and footprint of parking & bus facilities
- Apply commercial design standards
- Reinvest or defer land value to address investment needs
- Secure Board approval for changes to transit facilities as early as possible

Jurisdictional Roles
Support remaining gaps

- Coordinate state & local funding
- Pursue federal assistance (grants, etc.)
- Leverage affordable housing & economic development programs
- Expedite rezonings/permits & reduce requirements (private parking, etc.)

First Year Achievements

4 Buildings Delivered Including $800M WMATA Investment in 3 New Office Buildings



Navy Yard
161 DUs (8% Affordable)
MRP Realty

Metro HQ at L'Enfant Plaza
290,000 SF
Jair Lynch Real Estate Partners

Metro Office at New Carrollton
329,000 SF
Urban Atlantic/Bolton Development

Metro Office at Eisenhower
425,000 SF
Jair Lynch Real Estate Partners

First Year Achievements

Closed on **Ground Lease with Rockefeller/Stonebridge** to Redevelop Metro's Original HQ for Trophy Office; Pre-lease to Crowell & Moring is **Largest Private Office Lease Since 2019**

First Year Achievements

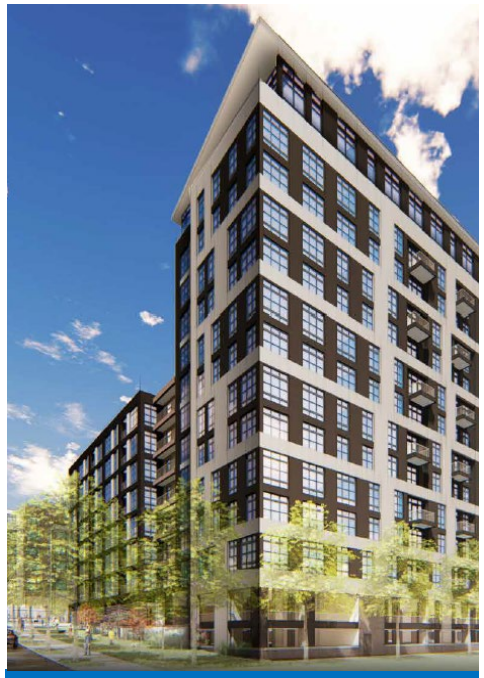
5 Groundbreakings on 1,000+ affordable housing units with $100M+ Invested by Amazon's Housing Equity Fund

Congress Heights
179 Housing Units
100% Affordable

College Park
451 Affordable
100% Affordable

New Carrollton
291 Housing Units
100% Affordable

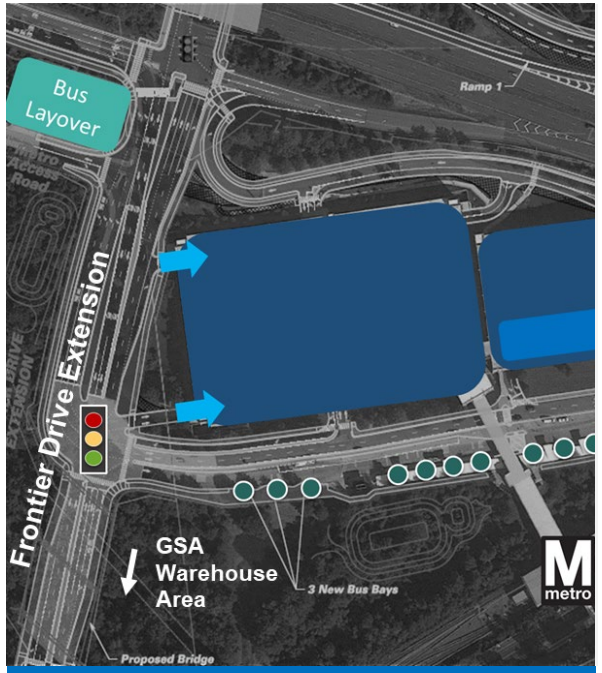
Grosvenor-Strathmore
220 Housing Units
15% Affordable



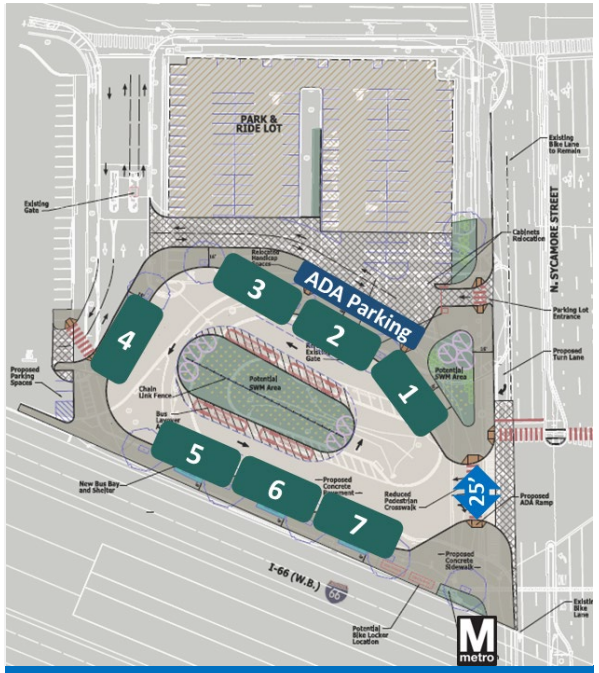
North Bethesda
354 Housing Units
12.5% Affordable

First Year Achievements

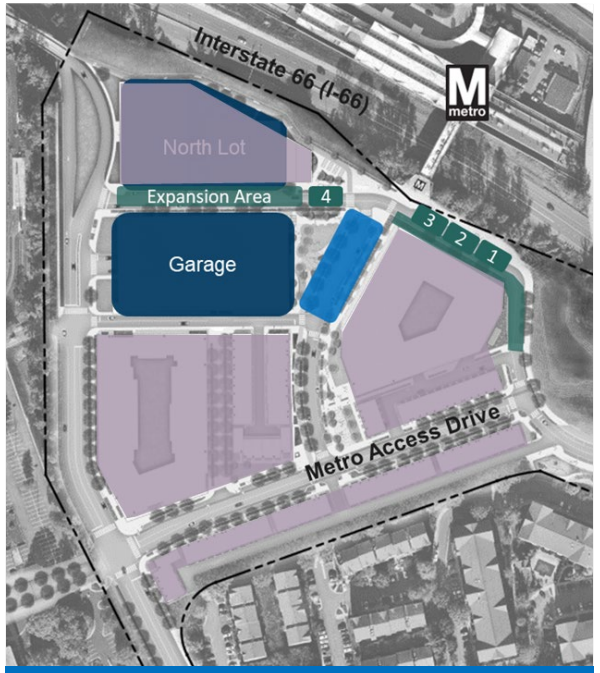
4 Compact Public Hearings to Improve Facilities & Enable Transit-Oriented Development



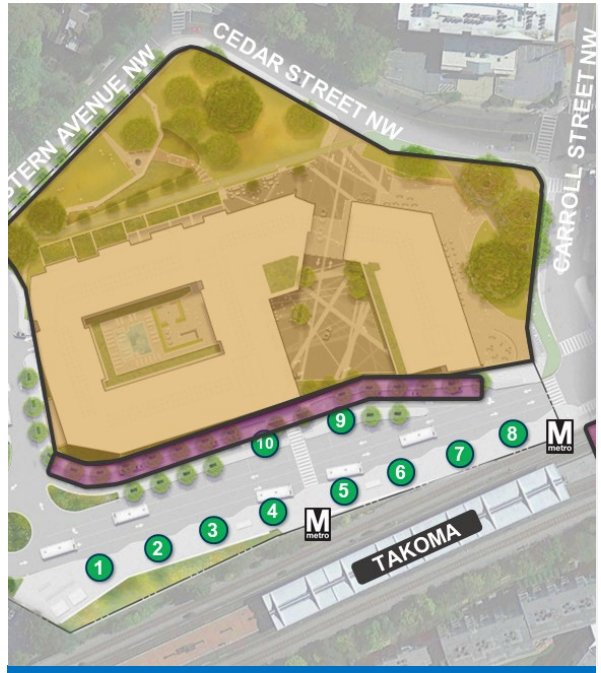
Franconia-Springfield
Complete street grid & expand bus loop



East Falls Church
Expand bus loop



West Falls Church
Reconfigure bus & parking facilities



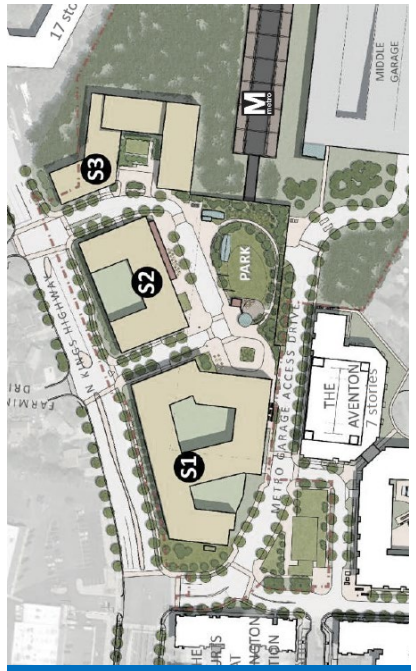
Takoma
Reconfigure bus & parking facilities

First Year Achievements

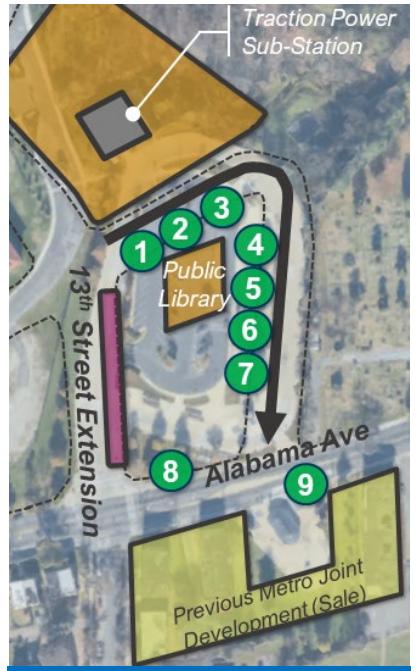
3 Projects Entitled for Development & Received 3 Unsolicited Proposals

West Falls Church
Rezoning
900 Housing Units

Twinbrook
Rezoning
440 Housing Units

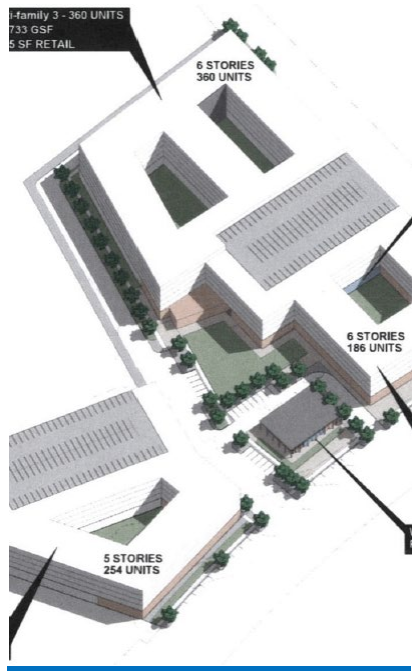


Huntington
Comp Plan
1,200+ Housing Units



Congress Heights
DCPL Proposal for
Public Library

Forest Glen
HOC Proposal for
Affordable Housing



Largo | Lottsford Rd
Adjacent Owner
Proposal for Housing

First Year Achievements

$600+M in Federal/State/Local Funding for Station Improvements and Econ Development

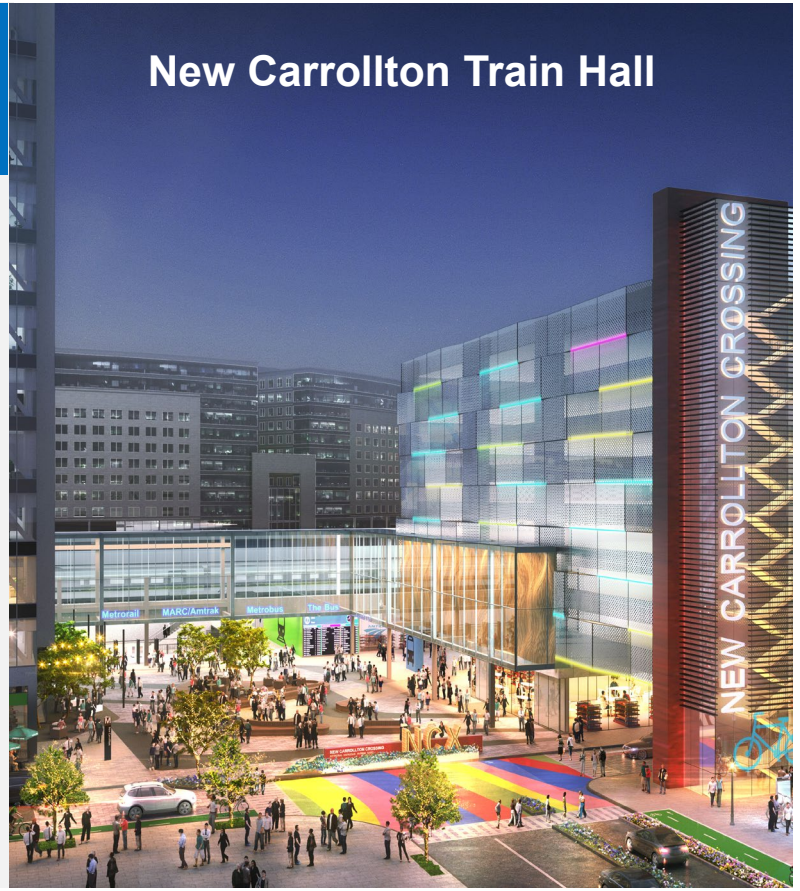
Public Investment

New Carrollton ($100+M): Train Hall, retail, plazas, streets, bike/ped access

Blue Line Corridor ($400+M): Ampitheater, market hall, sports field house, library, cultural center

North Bethesda ($90+M): Second Metro entrance, streets & UMD Institute for Health Computing

Congress Heights and Deanwood ($50M): DC Public Libraries, streets, plazas



New Carrollton Train Hall

Implementation Next Steps

April 2022 | Board authorized 6 Compact hearings and 7 Joint Development solicitations

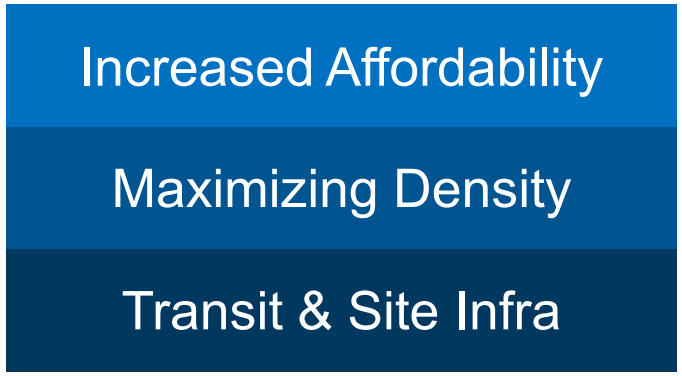
Hold 6 Compact Public Hearings

Coordinate Funding Needs with Jurisdictions & Issue Joint Development Solicitations

Advance Master Planning for 18+ Stations

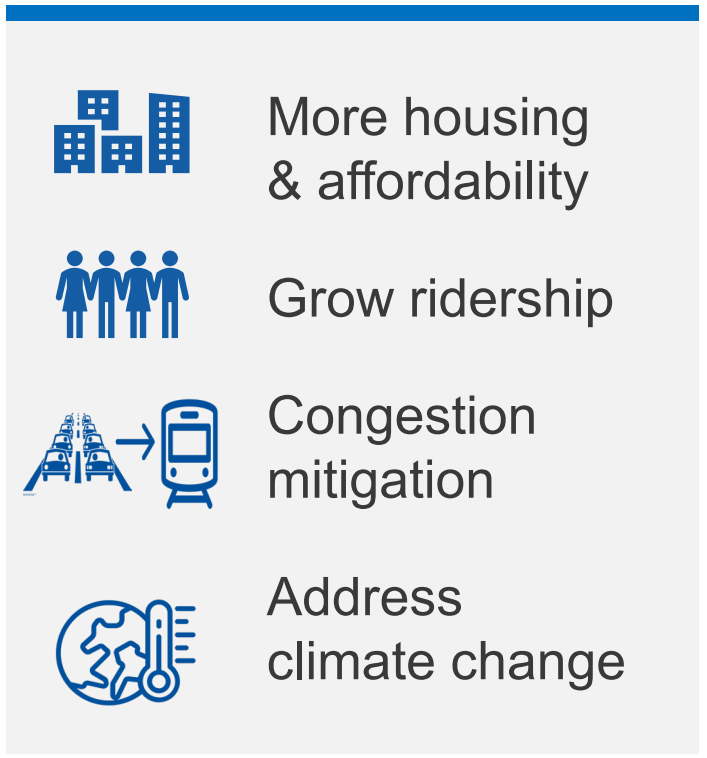
Investment by Jurisdictions Needed to Advance Projects

Near term projects unlock $800M+ in new state & local tax revenues over 30 years



Investment Needs

Direct Fiscal Benefits



Other Benefits

Development Potential of Near-Term Projects

6.6+M Square Feet Will Generate $800M+ in New Local & State Tax Revenues (30-year NPV)

Location	Station	Gross Floor Area Square Feet	Housing Units	Tax Benefits 30-Year Estimate
District of Columbia ▪ 1.8 million square feet ▪ 1,800+ total housing units ▪ 180+ affordable units	Brookland	400,000	400+	**$285 Million** revenue to local govts
	Congress Heights	350,000	350+	
	Deanwood	395,000	300+	
	Fort Totten	680,000	750+	
Maryland ▪ 4.5 million square feet ▪ 2,500+ total housing units ▪ 625+ affordable units	Capitol Heights	570,000	500+	**$480 Million** revenue to local govts
	Forest Glen	1,400,000	1,000+	
	North Bethesda	2,500,000	1,000+	
Virginia ▪ 295,000 square feet ▪ 200+ total housing units ▪ 20+ affordable units	Eisenhower (Mill Rd)	295,000	200+	**$35 Million** revenue to local govts

Upcoming Solicitations / Projects

6.6M+ square feet of development potential at 8 stations including 4,500+ housing units

Brookland
400,000+ square feet

Congress Heights
350,000+ square feet

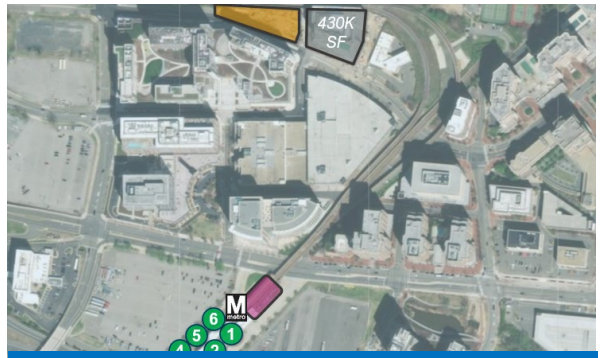
Deanwood
395,000+ square feet

Fort Totten
680,000+ square feet

Capitol Heights
570,000+ square feet

Forest Glen (Unsolicited)
1,400,000+ square feet

North Bethesda
2,500,000+ square feet



Eisenhower | Mill Road
295,000+ square feet

Contact Information

- **Liz Price, Vice President of Real Estate and Development**
- **Email: LPrice2@wmata.com**
- **Phone: 202-713-7117**

NCSG
National Center for Smart Growth Research & Education

The Purple Line Equitable Development Strategy

Nick Finio, PhD
Associate Director, National Center for Smart Growth
Purple Line Corridor Coalition, University of Maryland

TPB Regional Public Transportation Subcommittee
7.25.23

PURPLE LINE CORRIDOR COALITION

UNIVERSITY OF MARYLAND 18 56

Background

- The National Center for Smart Growth is a research center in the School of Architecture, Planning and Preservation at the University of Maryland, College Park. We have been working to create a more vibrant, equitable region since the year 2000.
- The Purple Line Corridor Coalition was founded in 2013 to build a more equitable Corridor “beyond the tracks.” It is headquartered at the NCSG, and directed by Sheila Somashekhar.
- Both NCSG and PLCC are funded by the Maryland State Government, grants and contracts with all levels of government, and foundations.

Overview: FTA TOD Planning Grant

Project Goals:

- Complement the substantial financial investment, and ongoing planning efforts, in the Purple Line Corridor with technical analysis
- Study various types of enhancements to supportive infrastructure, community planning, and land use policies that will maximize transit ridership
- Improve access to jobs and essential services
- Encourage new economic development and TOD that will benefit residents and businesses in the corridor as well as the surrounding region

1. **Timeline**
   a. Awarded late 2018
   b. Work completed Summer 2020 - Fall 2022
2. **Work products**
   a. Formalize/Expand Multi-stakeholder Collaborative for Coordination, Engagement and Monitoring
   b. Corridor–Wide Multi-Mobility and TOD Assessment
   c. Economic Development Assessment and Business Preservation Strategy
   d. TOD Finance and Implementation Recommendations

The Final Product - The ETOD Strategy

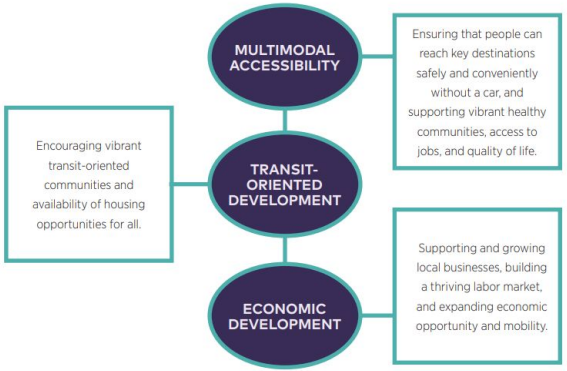
TECHNICAL ADVISORY COMMITTEE

- Maryland Department of Transportation (MDOT) and Maryland Transit Administration (MDOT MTA)
- Maryland-National Capital Park and Planning (Mongomery and Prince George's Counties)
- Montgomery County
- Prince George's County

PLCC STEERING COMMITTEE

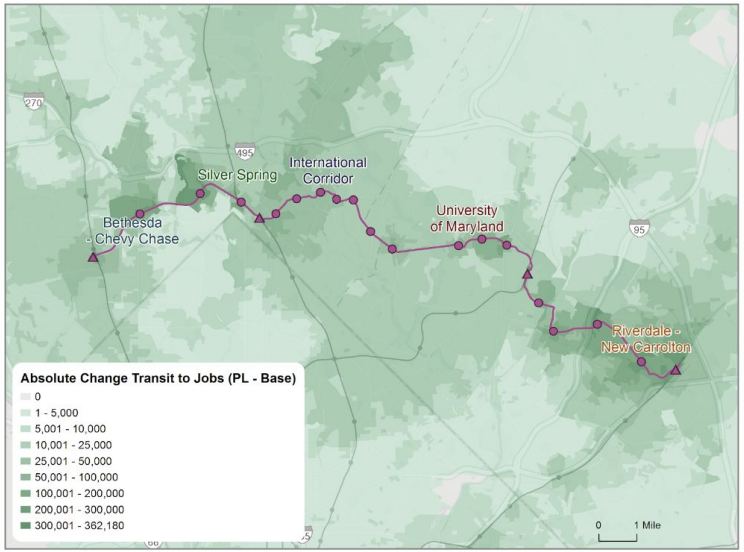
- National Center for Smart Growth, UMD
- Enterprise Community Partners
- Montgomery County Executive office
- Prince George's County Executive office
- Prince George's Planning Department
- Montgomery Planning Department
- CASA
- Montgomery Housing Partnership
- Housing Initiative Partnership
- Latino Economic Development Center
- Purple Line NOW
- Kaiser Permanente
- Prince George's County Councilmember Dannielle Glaros
- Montgomery County Council Member Evan Glass

Three broad strategies for ETOD:



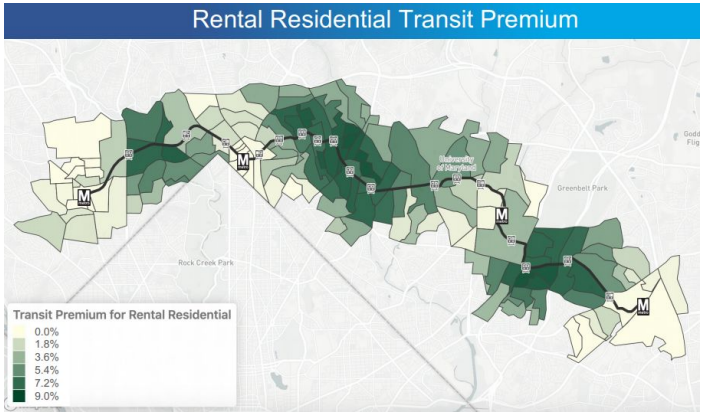
Multimobility Strategies

- Reduce stress for pedestrians and bicyclists
- Coordinate and expand bus service
- Optimize Purple Line Service (headways, fares)
- Improve bike routes



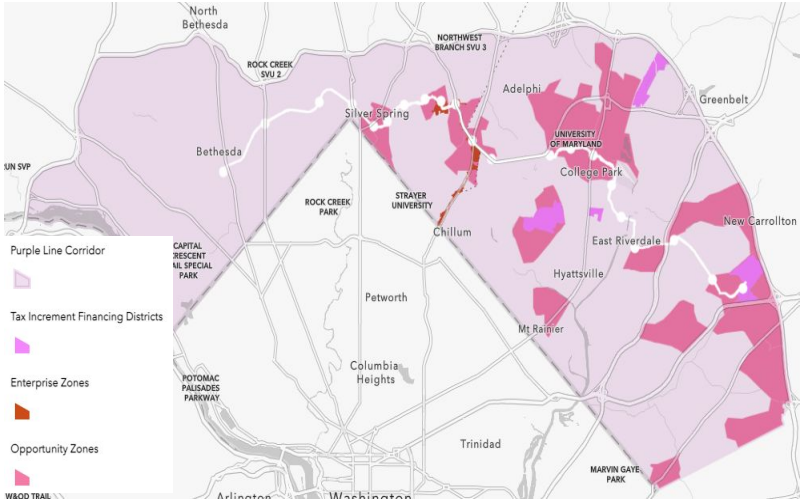
TOD Strategies

- Expand affordable housing resources
- Leverage market rate development to deliver affordable housing
- Protect low income tenants
- Increase density near transit
- Increase housing choice near PL stations



Economic Development Strategies

- Protect existing small businesses
- Attract and grow new small businesses
- Grow industry clusters
- Enhance resident skills
- Address barriers to job placement



Challenges

- The current interest rate and market environment have slowed down real estate investment, particularly in affordable housing
- Construction on the Purple Line has been delayed, with a new target date of Spring 2027; this delays many positive impacts for area residents
- PLCC is not an implementing body
  - however, we are providing a collaborative space for progress and coordination that would not otherwise exist

Successes

- Strong commitments to affordable housing from both County governments
  - more than halfway toward goal of preserving/producing 17,000 affordable units at 60% AMI (thanks MWCOG!)
  - Commitments to PLCC Housing Accelerator Action Team are growing
- Successful grants for pedestrian, trail improvements to both counties
- Successful coordination of support to small businesses, including addressing construction disruption and supporting adaptation to change
  - more than 200 businesses have received TA or support
  - new main streets and CDBG funding in Montgomery and PG
- Award of new, follow up TOD planning grant

Academic Research

Special Issue: - Kieran Donaghy

International Regional Science Review
2023, Vol. 0(0) 1–25

DOI: 10.1177/01600176231162563
journals.sagepub.com/home/irx
SAGE

Do Multifamily unit Rents Increase in Response to Light Rail in the Pre-service Period?

Qiong Peng[1], Gerrit-Jan Knaap[1], and Nicholas Finio[1]

Abstract

The effects of transit investments on land and housing values are a longstanding topic of interest in part because the nature and timing of those effects are important for designing anti-displacement and land value capture strategies. For these reasons, we explore whether multifamily unit rents have increased in planned station areas before the Purple Line light rail project in Maryland is operational. We employ a difference-in-difference (DID) approach to explore this question and validate the DID results with a first difference approach. We find that rents for units located within one-half mile of anticipated stations did increase well before transit service is expected to begin, but only for units with two or more bedrooms. We suggest these results imply that anti-displacement and land value capture strategies are warranted and potentially viable, but to be effective they need to be adopted well before transit service begins. Further, our results suggest that in the case of the Purple Line in Maryland, such policies should focus on units located within one-half mile of proposed stations and concentrate on pre-serving affordable units with two or more bedrooms.

Keywords

light rail transit, housing, Washington metropolitan area, multifamily rent, displacement

Planning Research

ACSP
Connecting educators, researchers and students

Journal of Planning Education and Research
1–14

DOI: 10.1177/0739456X231187119
journals.sagepub.com/home/jpe
Sage

Gentrification and Business Closures in Maryland's Purple Line Corridor

Nicholas Finio[1]

Abstract

The State of Maryland is investing in a new light rail line, the Purple Line, in the suburbs of Washington, DC. Whether or not the corridor it travels through is gentrifying is unknown, as are the impacts of both the construction and neighborhood gentrification on the local economy. In this paper, census data are used to identify neighborhood gentrification along the rail line. With a novel data source, employment, wages, and firm closures are tracked and analyzed. Even in advance of completion of the light rail line, much of the Purple Line Corridor is gentrifying, and impacts to businesses are potentially significant.

Keywords

gentrification, small business, light rail, displacement

Looking ahead + Call to Action

- Newly executed follow up TOD planning grant, which will have a more community-led focus
  - plan for redeveloping commercial strip malls equitably
  - affordable housing pipeline development
  - planning for multimobility improvements
  - coordination between TOD plans and local climate goals
- Continued advocacy for affordable housing preservation and production
  - new, updated housing action plan to be released soon
- The delay in the Purple Line gives us more time to reach our goals
  - we're attracting more interest and capacity
  - backbone support, capital for implementation, operating support for members all increasing

Thank you!

Nick Finio
nfinio@umd.edu

www.purplelinecorridor.org
www.umdsmartgrowth.org

ULI Washington

Technical Assistance Panel (TAP): Impact

MWCOG TPB Regional Public Transportation Subcommittee

SUKIRTI GHOSH, CO-CHAIR, ULI-W

JULY 25, 2023

ULI Washington

- **45,000 members** worldwide
- Mission: **shaping the future of the built environment for transformative impact in communities worldwide.**
- ULI Washington serves **2,300 members.**
- 3rd largest U.S. District Council
- More info at washington.uli.org

Urban Land Institute

What is a TAP?

The Technical Assistance Panel (TAP) offers technical analysis to communities and organizations facing land-use challenges.

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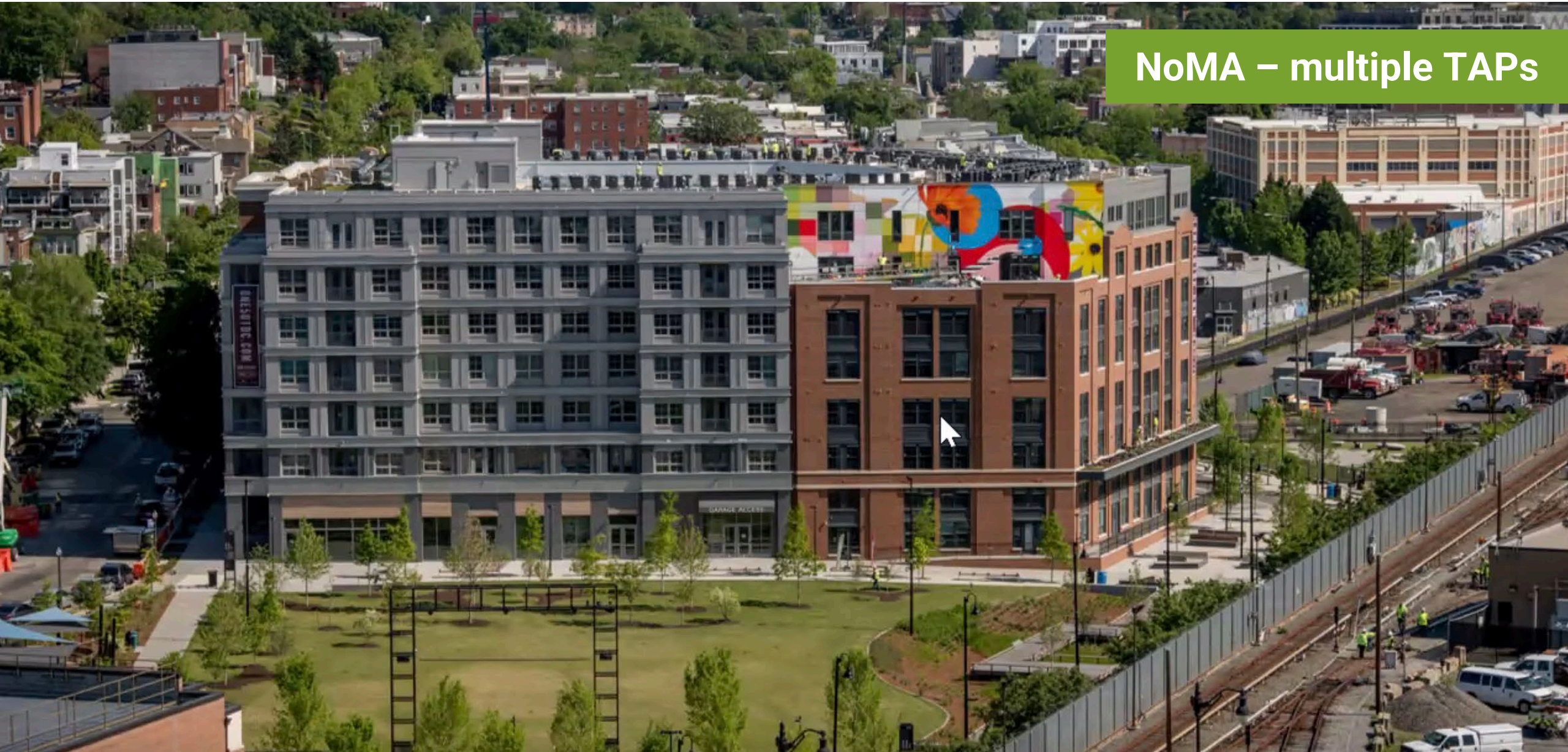
TAPs: TOD Implementation and Economic Success



TAPs: TOD Implementation and Economic Success

How does ULI provide this assistance?

A community group or organization approaches ULI with a request.

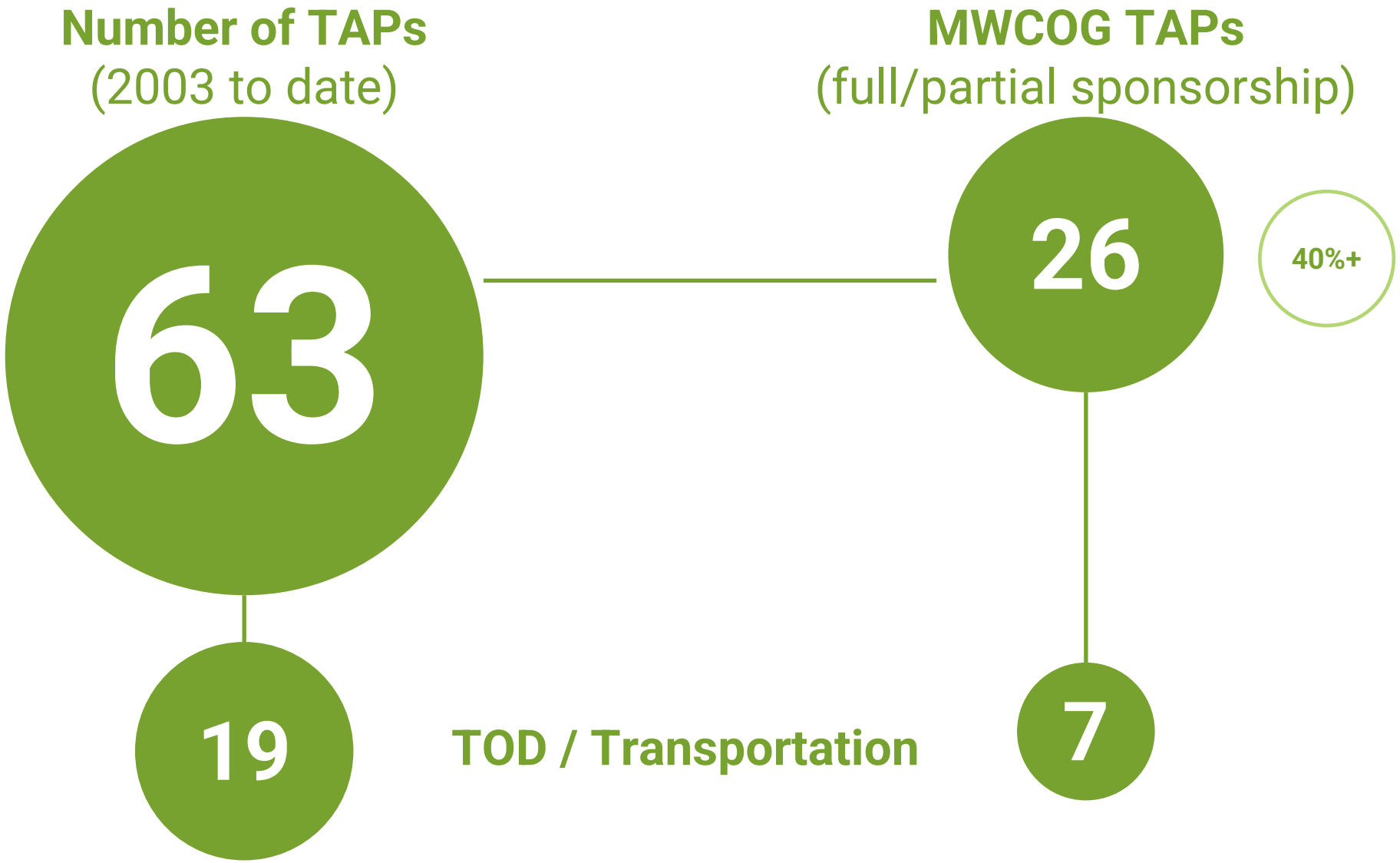
ULI convenes a group of experts to focus on specific questions in a concentrated, finite effort and communicates the results.

- group of experts = Technical Assistance Panel
- specific questions = defined by the sponsor
- concentrated, finite effort = 2 intense days
- communicates the results = presentation to the sponsor *and* published report

Sponsor pays a fee for service ($25,000) to ULI Washington.

Urban Land Institute

TAPs by numbers



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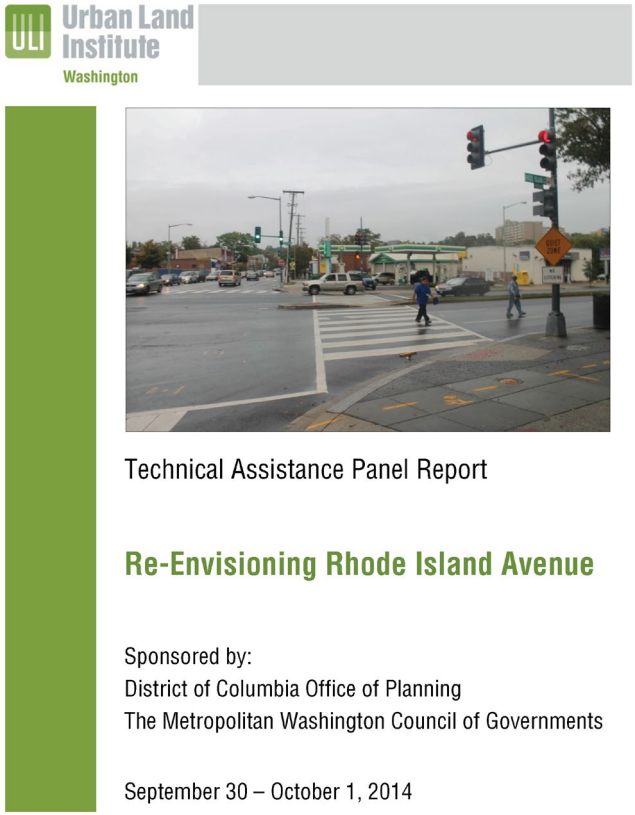
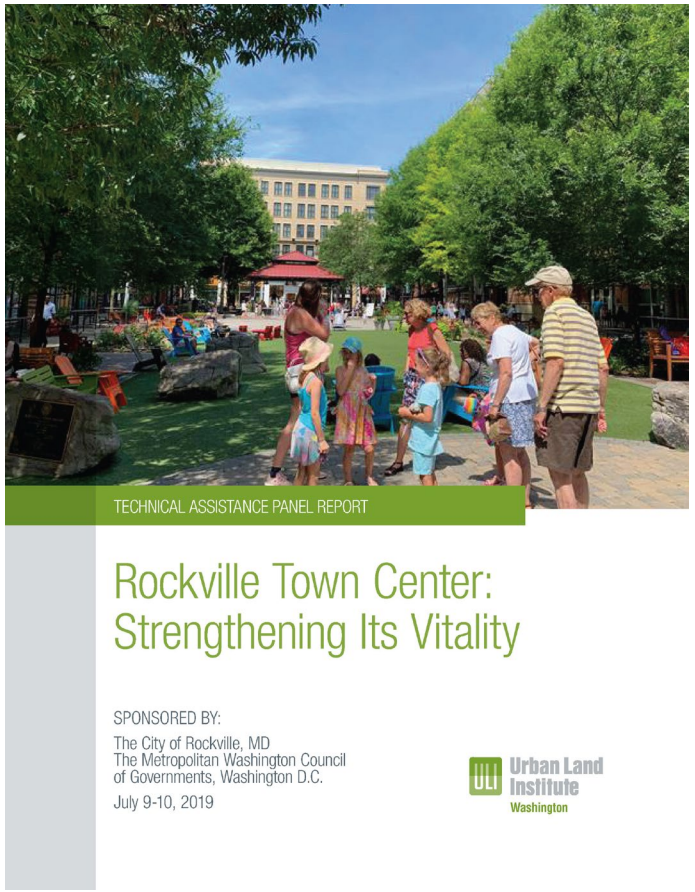
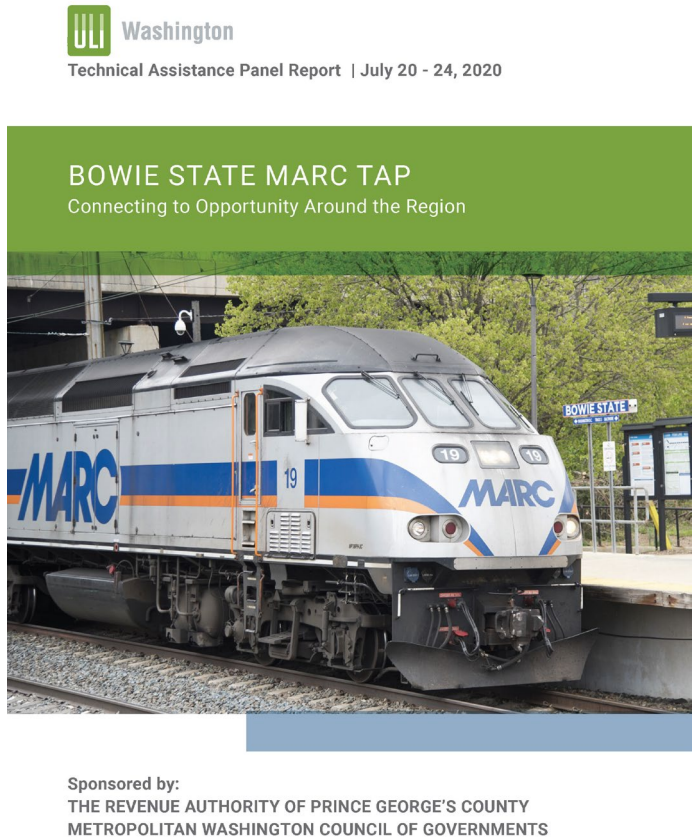
MWCOG TOD/Transportation TAPs







Urban Land Institute

Metropolitan Washington Council of Governments

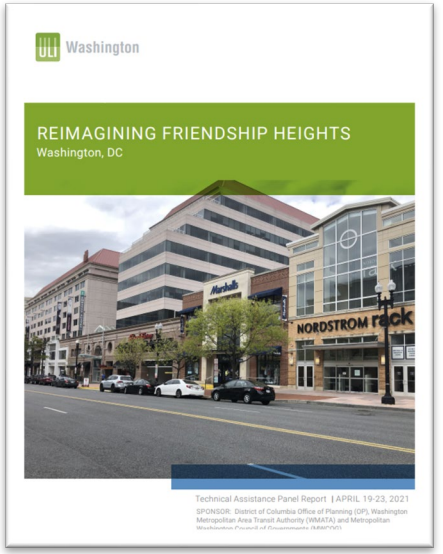
dc op

metro

Montgomery County Maryland 1776

TAP Lifecycle

1. Sponsor identifies key questions
2. ULI convenes TAP
3. ULI publishes TAP Report
4. ULI convenes TAP Reunion
5. Reunion inspires potential sponsors
6. Sponsor application selection



ULI | KNOWLEDGE FINDER

Participant Roles

Sponsor

Funds the project and defines scope

Staff

Manages the development, preparation, execution and communication

Panel Chair

Leads panel through the TAP process

Panelist

Collaborates in 2-day intensive discovery, analysis and presentation

Writer

Documents the process and results

Committee

Sets vision for program and supports TAP process

2-Day TAP Process

1 Site Visit

2 Stakeholder Interviews

3 Workshop

4 Presentation

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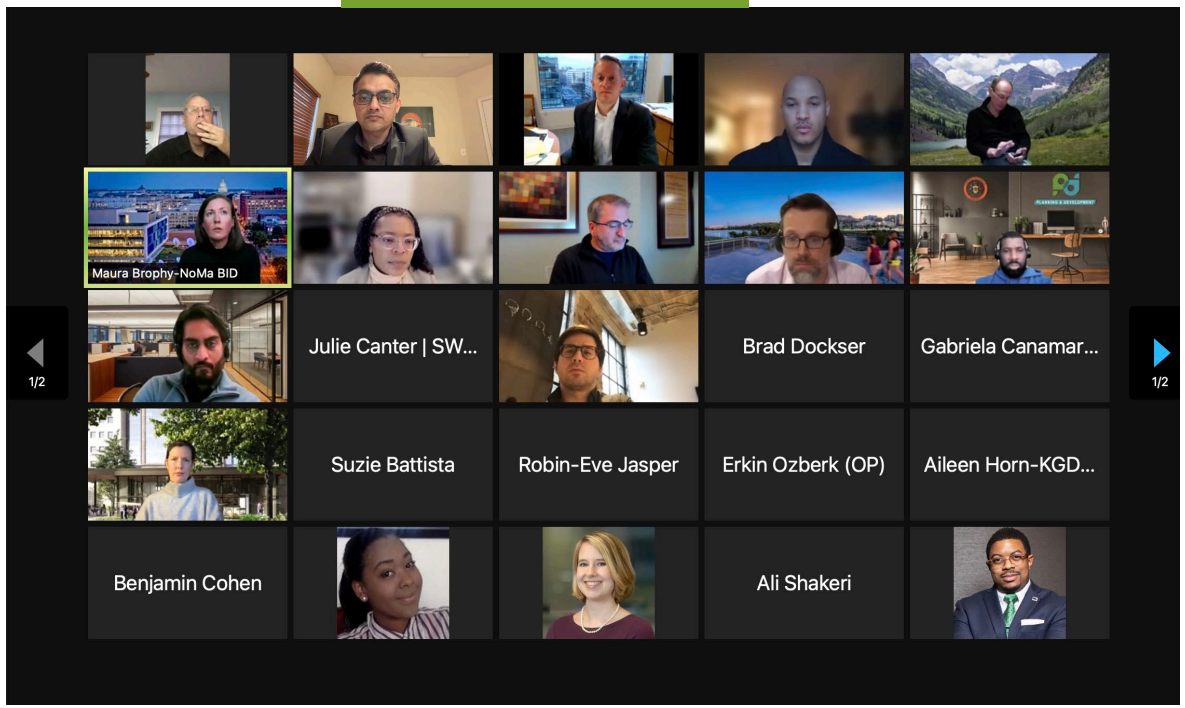
TAP Reunion

Jan 2022



Jan 2023

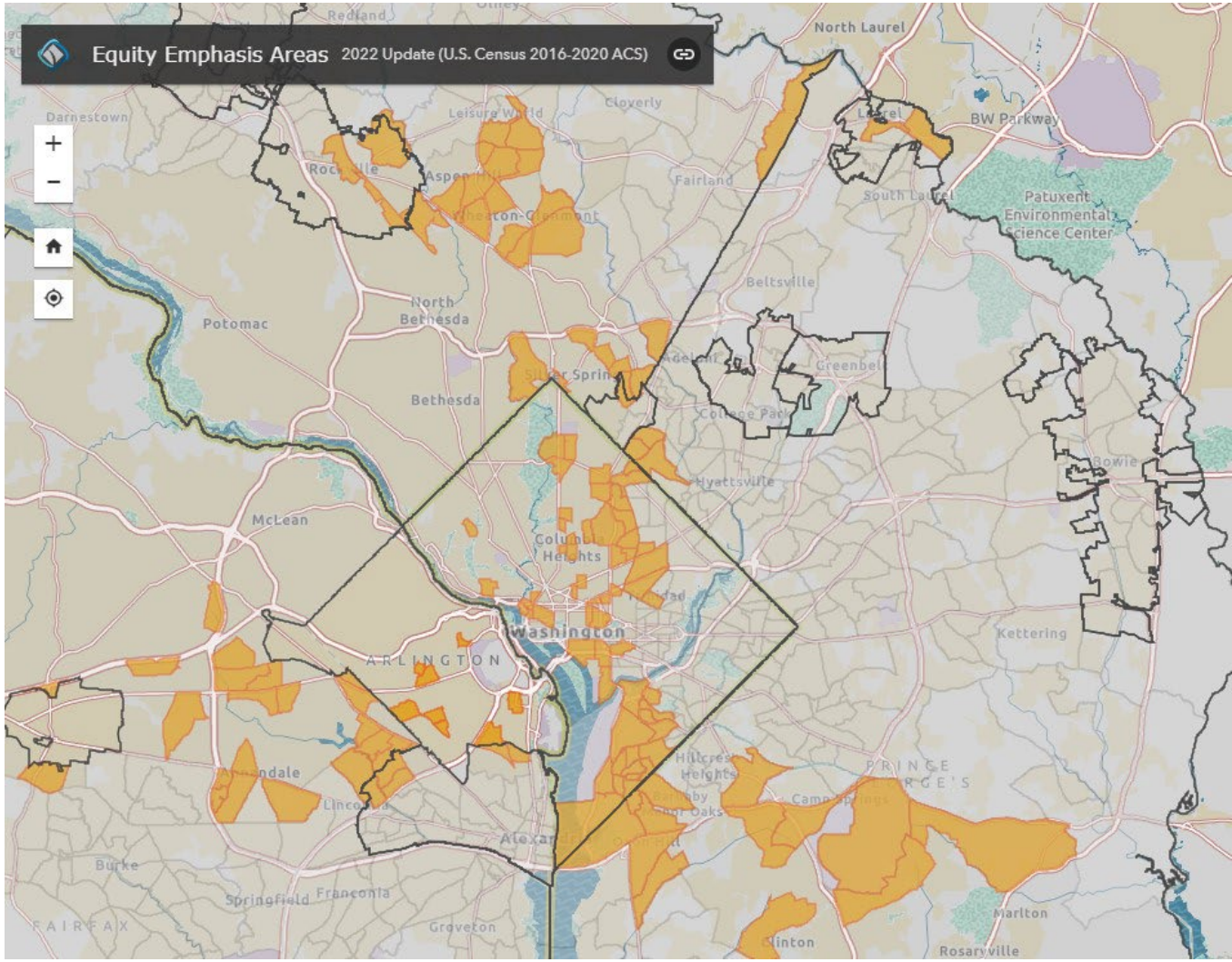
Later 2023 (TBD)

ULI Future Forum
Celebrate 20th Anniversary of TAP

Urban Land Institute

MWCOG Sponsorship – 2023

- **Based on Equity Emphasis Areas (EEA)**
  - Adopted in 2021 by COG BOD
  - 364 of the region's more than 1,300 census tracts are identified as EEAs
  - Goals:
    - housing near transit
    - access to transit stations
    - improve roadway safety
    - alternative modes of travel
    - connecting land-use and the transportation system



Source: MWCOG

Urban Land Institute

MWCOG Funding – 2023

- **6 Applications**
- **3 Selected**
- **Funding for each TAP:**
  - COG: $6,250 (total = $18,750)
  - ULI-W: $6,250
  - Sponsor: $12,500

Bowie State MARC, 2020

Urban Land Institute

A TAP's Impact

TAP – Lessons Learned

Composition of TAP

- Engages **broad range of expertise** – subject matter and geography
- **Balanced, non-partisan** nature
- **Voluntary** commitment without conflict of interest

Community Engagement

- Opportunity to engage **non-traditional** stakeholders (e.g., citizens group)
- Value in **partial buy-in**
- Brings **constructive community building** tools

Regional Stewardship & Collaboration

- Establishes **direct relationships** with other sponsors
- Leverages **transportation, land use, & real estate community**
- Opportunity to help with **broader topics** (such as TOD, Equity Emphasis Areas)

DISCUSSION

THANK YOU!

Urban Land Institute

THE TPB REGION HIGH-CAPACITY TRANSIT (HCT) NETWORK

Phase I Analysis

Kyle Hearing
Senior Transportation Planner, Foursquare ITP

Walker Freer
Senior Transportation Planner, ICF

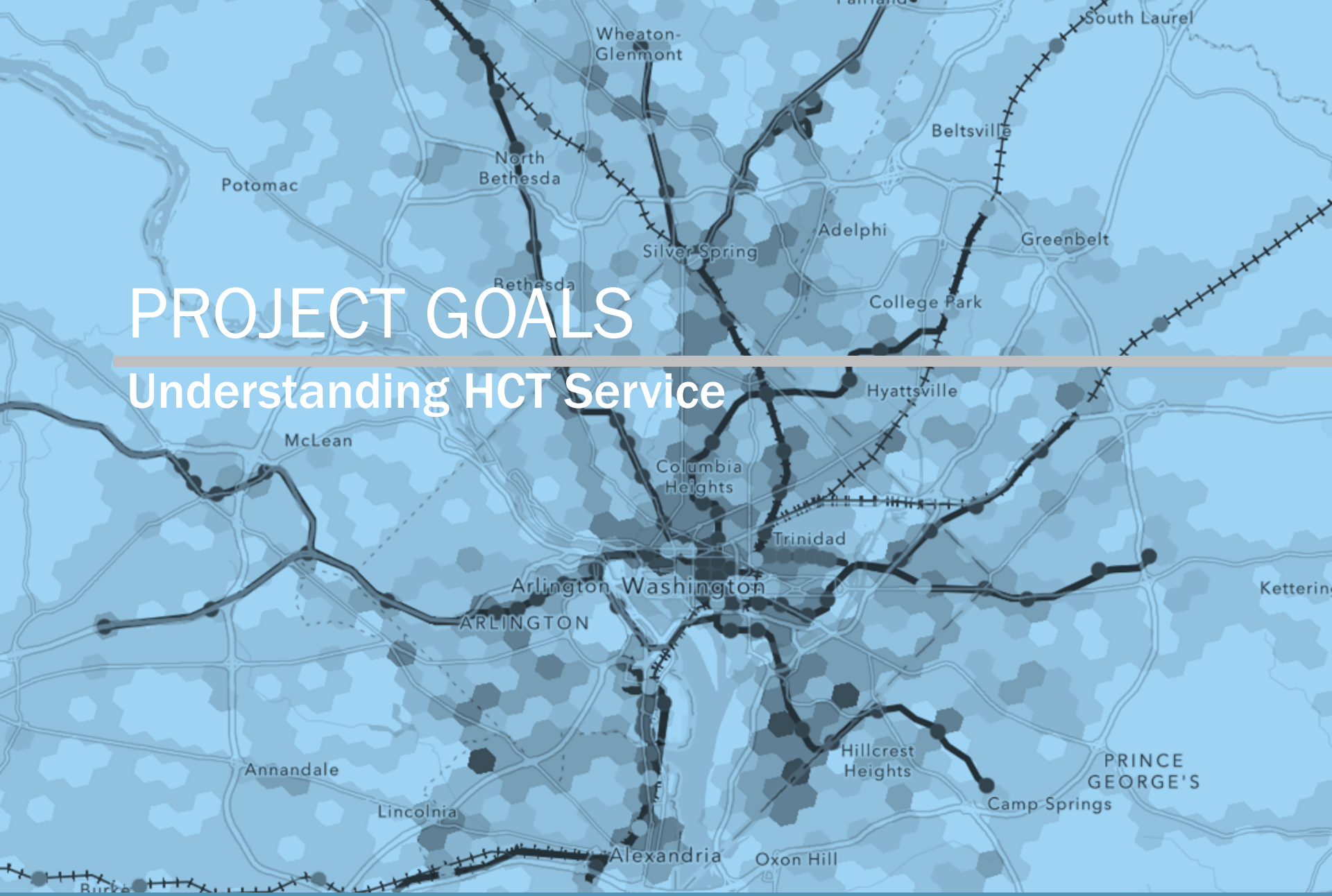
Regional Public Transportation Subcommittee
July 25, 2023

Agenda

- Project Goals
- Detailed Methodology
  - Accessibility Analysis
  - Station Classification
  - Gap Analyses
- Discussion

Web Application

bit.ly/46KqTOV

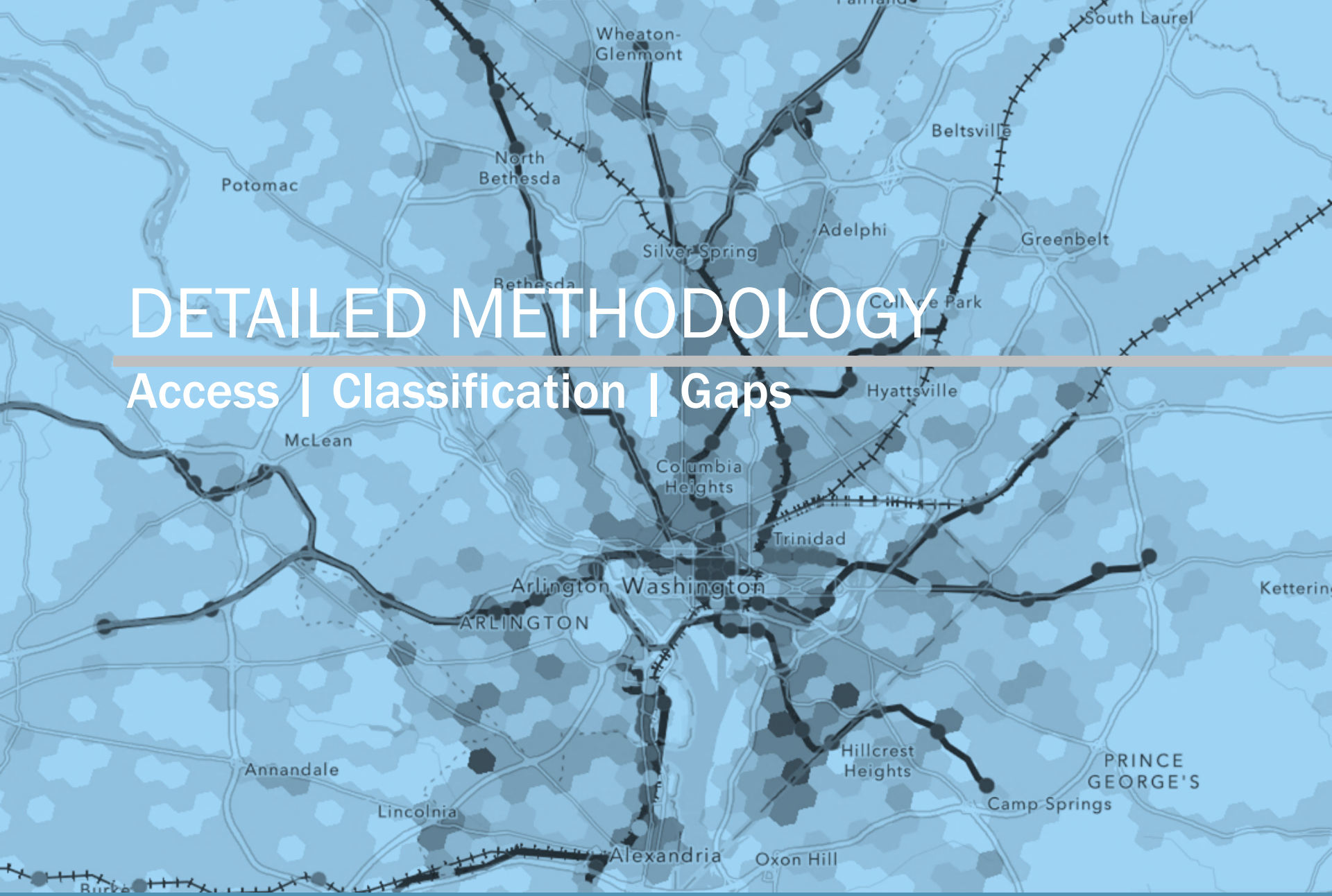


PROJECT GOALS

Understanding HCT Service

Understanding HCT

- Contextualize HCT with analyses of:
  - Service level
  - Accessibility
  - Proximity to Activity Centers and Equity Emphasis Areas
  - Existing and forecast population/employment
  - Gaps in HCT access
- Develop context-dependent, station-level needs



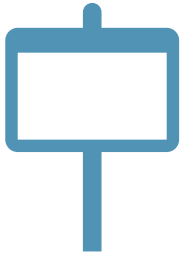
DETAILED METHODOLOGY

Access | Classification | Gaps

Overview

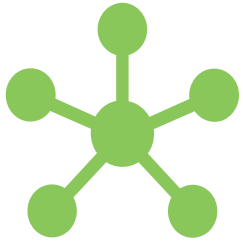
Accessibility Analysis

- Visualizes average travel time to the nearest HCT station
- Highlights gaps in infrastructure and transit



Station Classification

- Defines level of service and people and destinations served by each HCT station
- Informs station-level needs and facilitates development of context-dependent solutions



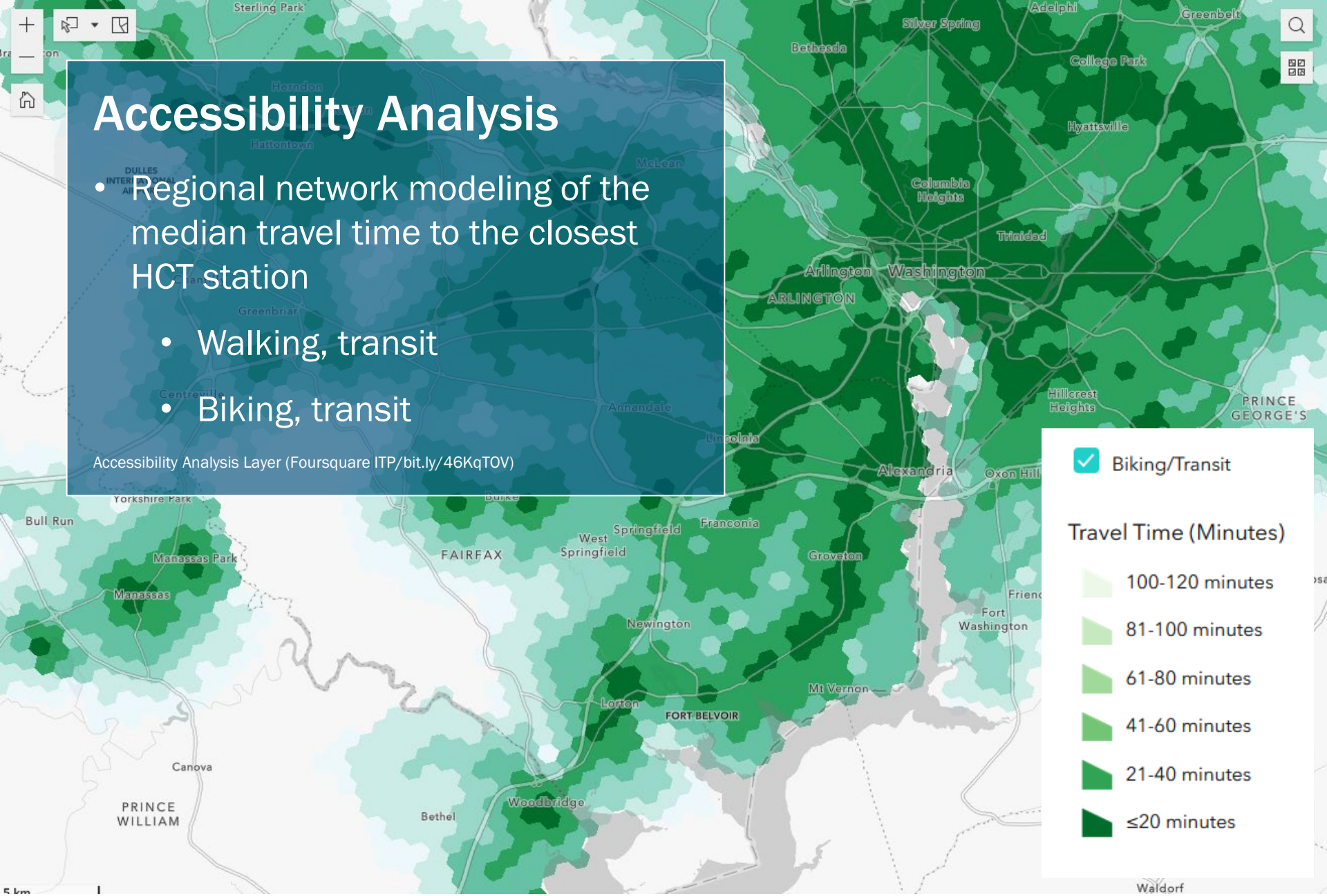
Gap Analysis

- Explores suitability of connections between equity emphasis areas and activity centers
- Provides framework for POI-based accessibility analysis and ultimately the identification of new/improved connections

Accessibility Analysis

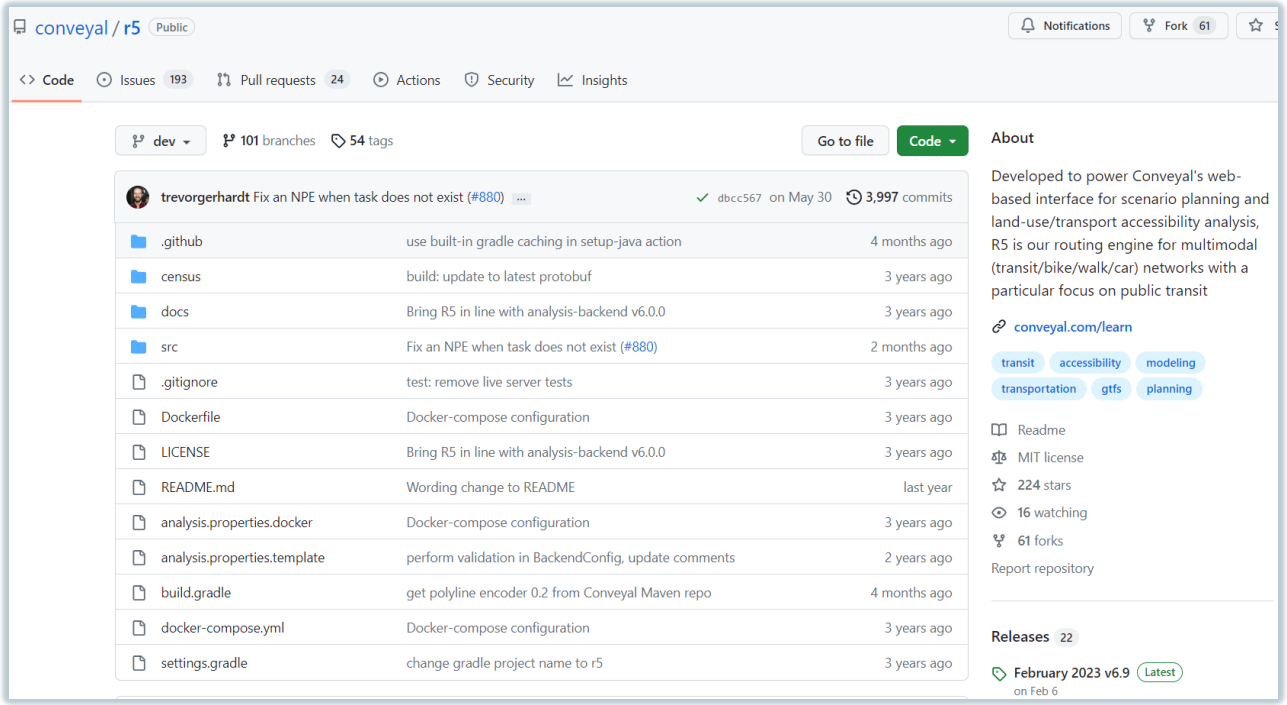
- Regional network modeling of the median travel time to the closest HCT station
  - Walking, transit
  - Biking, transit

Accessibility Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)



Conveyal R5 Routing Engine

- Provides a measure of multimodal travel time
- Utilizes OpenStreetMap (OSM) and GTFS data to model trips every minute over the course of an hour



Conveyal R5 Routing Engine

- OSM allows for regional comparisons
- Replicable

In [8]:
```
# set gtfs
wmata_rail = os.path.join(path_gtfs,"WMATA_rail_gtfs_2023_05_30_rev1.zip")
wmata_bus = os.path.join(path_gtfs,"WMATA_bus_gtfs_2023_03_01.zip")
rideon = os.path.join(path_gtfs,"RideOn_gtfs_2023_05_04.zip")
art = os.path.join(path_gtfs,"ART_gtfs_2023_02_06.zip")
cue = os.path.join(path_gtfs,"CUE_gtfs_2023_05_02.zip")
dash = os.path.join(path_gtfs,"DASH_gtfs_2023_05_21.zip")
circulator = os.path.join(path_gtfs,"DC_Circulator_gtfs_2022_05_09_rev1.zip")
ffx_connector = os.path.join(path_gtfs,"Ffx_Connector_gtfs_2023_04_28.zip")
lct = os.path.join(path_gtfs,"LCT_gtfs_2023_04_24.zip")
marc = os.path.join(path_gtfs,"MARC_gtfs_2023_04_06.zip")
mta = os.path.join(path_gtfs,"MTA_commuter_gtfs_2023_04_15.zip")
omniride = os.path.join(path_gtfs,"OmniRide_gtfs_2023_02_15.zip")
thebus = os.path.join(path_gtfs,"thebus_PGC_gtfs_2023_05_10.zip")
transit_fred = os.path.join(path_gtfs,"transIT_Frederick_gtfs_2023_03_31.zip")
vango = os.path.join(path_gtfs,"vanGO_gtfs_2019_11_22_rev1.zip")
vre = os.path.join(path_gtfs,"VRE_gtfs_2023_05_30.zip")
streetcar = os.path.join(path_gtfs,"DC_Streetcar_gtfs_2023_04_28.zip")

# OSM
OSM = r"C:\Users\KyleHearing\Foursquare ITP\Projects - MWCOG HCT Analysis\Data\Geospatial-Processed\OSM\mid-atlantic-highways.osm.pbf"
```

In [9]:
```
# create a network
from r5py import TransportNetwork

network = TransportNetwork(OSM,[wmata_bus, wmata_rail, rideon, art, cue, dash, streetcar, circulator, ffx_connector, lct, marc, mta, omniride, thebus, transit_fred, vango, vre])
```

In [13]:
```
# configur network
import datetime
from r5py import TravelTimeMatrixComputer, TransitMode, LegMode

travel_time_matrix_computer = TravelTimeMatrixComputer(
    network,
    origins=origin,
    destinations=points,
    departure=datetime.datetime(2023,5,26,8,0),
    transport_modes=[TransitMode.TRANSIT, LegMode.BICYCLE],
    percentiles=[25,50,75]
)
```

In [14]:
```
# compute travel times
travel_time_matrix = travel_time_matrix_computer.compute_travel_times()
travel_time_matrix.head()
```

Out[14]:

	from_id	to_id	travel_time_p25	travel_time_p50	travel_time_p75
0	1	8007	NaN	NaN	NaN
1	1	10016	NaN	NaN	NaN
2	1	10017	NaN	NaN	NaN
3	1	10019	112.0	NaN	NaN
4	1	10020	NaN	NaN	NaN

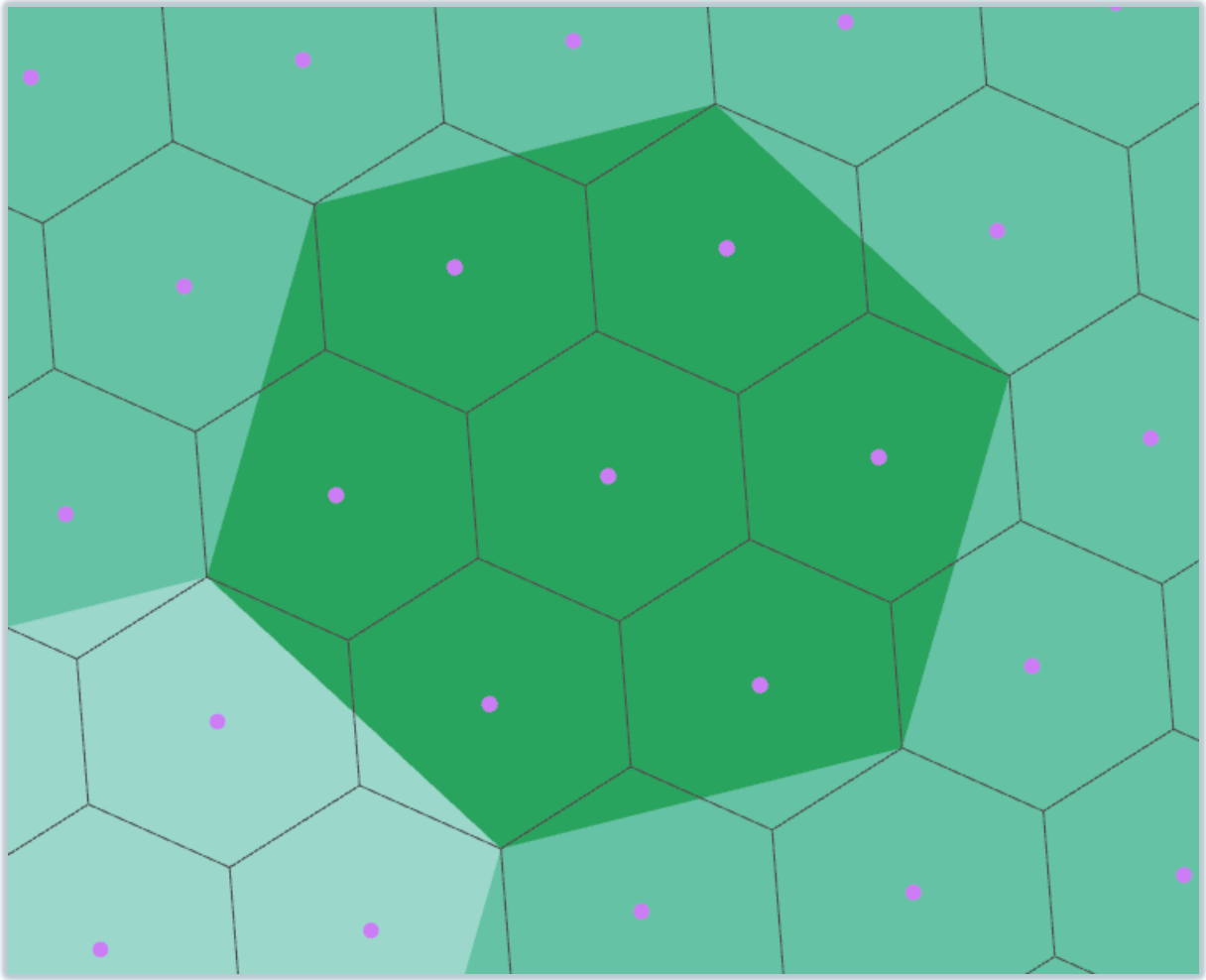
In [15]:
```
# drop na rows
ttm_clean = travel_time_matrix.dropna()
```

In [16]:
```
# extract travel time for closest HCT station
pivot = ttm_clean.pivot_table(
    values=['travel_time_p50','travel_time_p25','travel_time_p75','to_id'],
    index=['from_id'],
    aggfunc={'travel_time_p50':min}
)
```

In [17]:
```
# export table
pivot.to_csv(output)
```

Geographical Framework

- Uniform
- Hierarchical



Station Classification

Level of Service

- High-capacity service informs analyses of how well the region's residents and destinations are served by HCT
- Local transit service informs analyses of how well local transit complements HCT

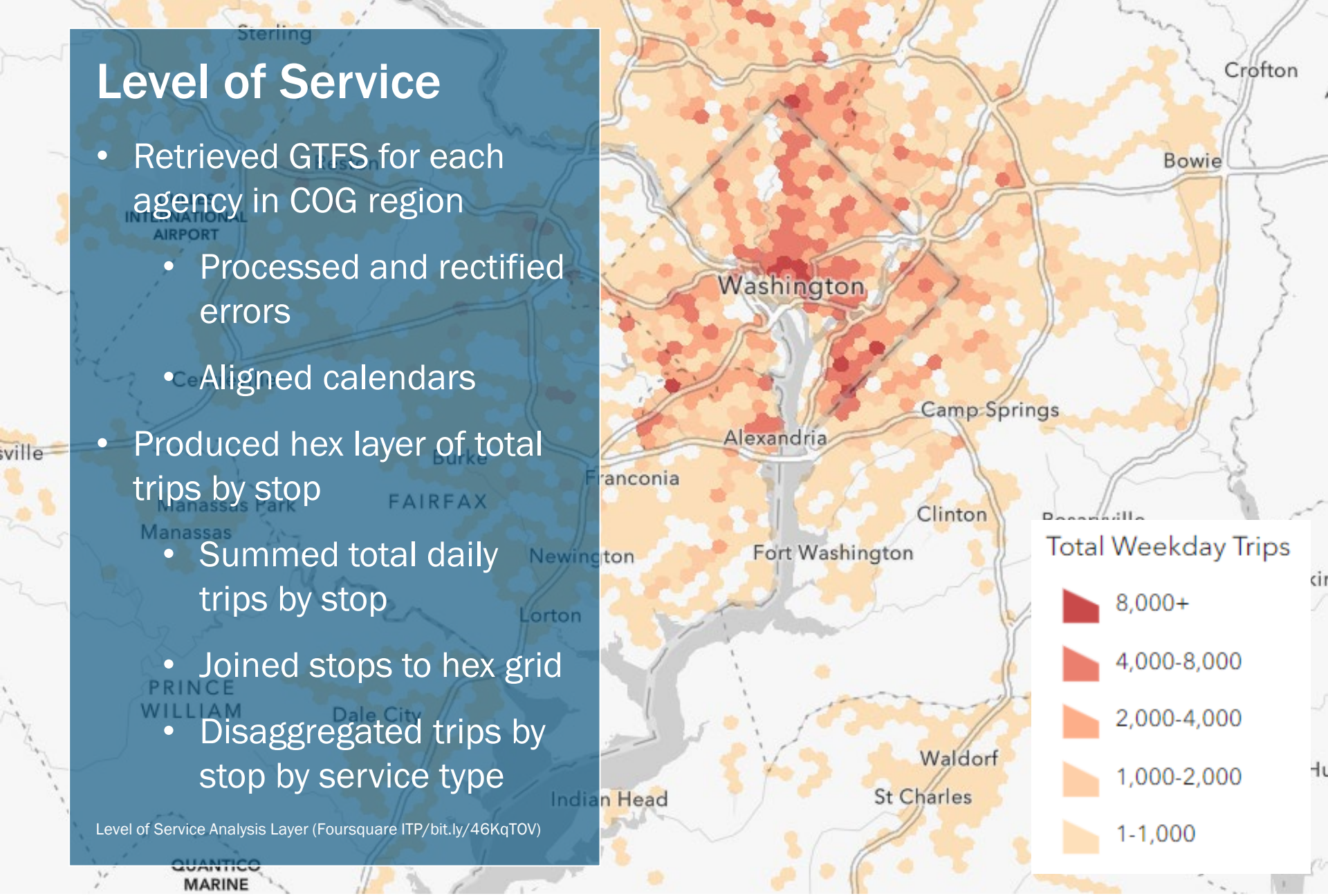
People and Destinations Served

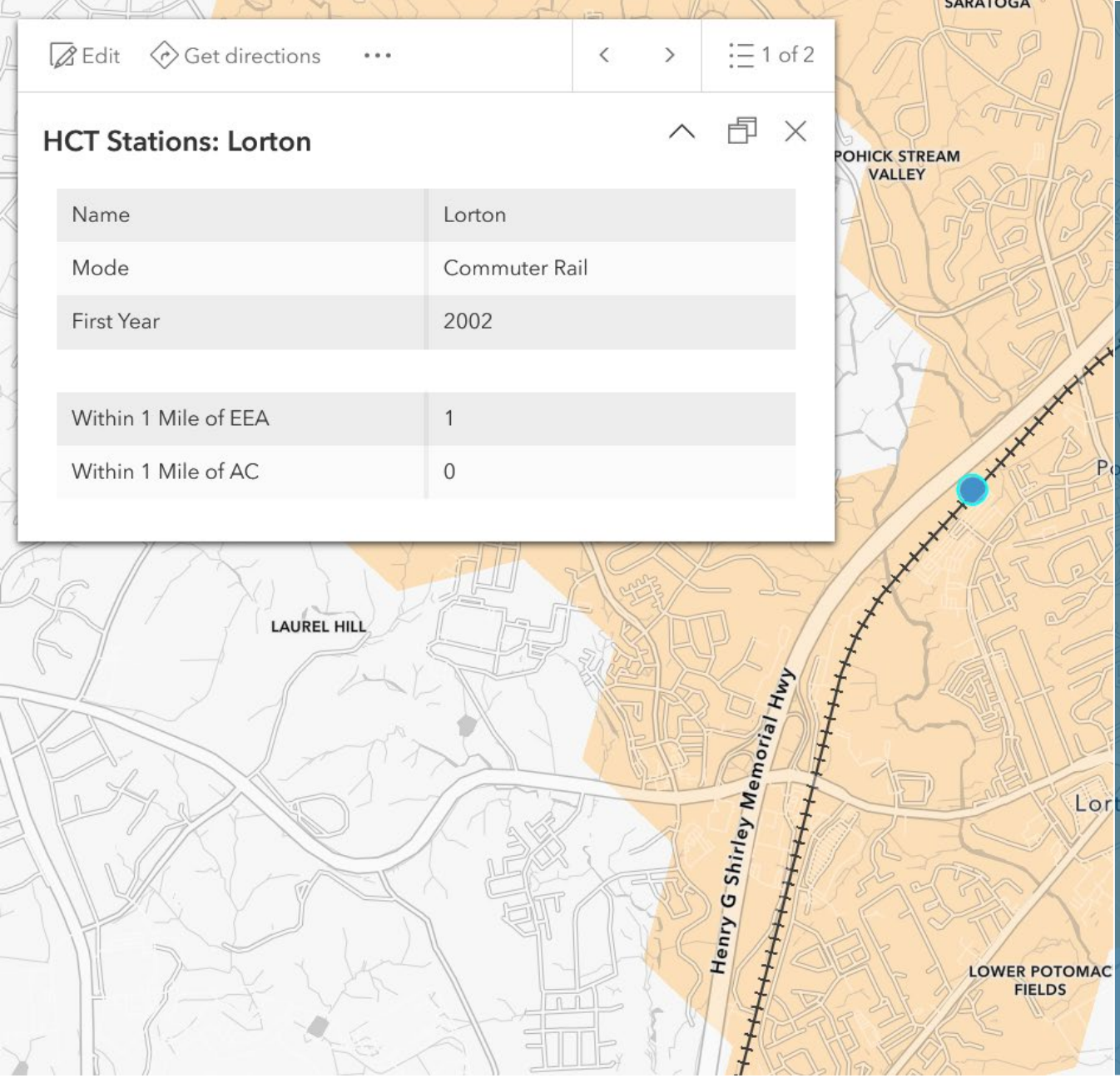
- Transit potential combines the population and employment densities to indicate the viability of transit service; classification incorporates both existing and future transit potential
- The relationship between HCT and Activity Centers provides a means of ensuring planning prioritizes existing towns and urban centers, as well as priority growth areas throughout the region
- Leveraging the EEA index scores of census tracts surrounding HCT provides yet another means of classifying stations to identify gaps in access

Level of Service

- Retrieved GTFS for each agency in COG region
  - Processed and rectified errors
  - Aligned calendars
- Produced hex layer of total trips by stop
  - Summed total daily trips by stop
  - Joined stops to hex grid
  - Disaggregated trips by stop by service type

Level of Service Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)





People and Destinations

- Classified stations based on proximity to Equity Emphasis Areas and Activity Centers
- Interpolated population and jobs to station areas using MWCOG 9.2 Forecast

Station Classification Layer
(Foursquare ITP/bit.ly/46KqTOV)

Gap Analyses

- Examine relationship between travel time and:
  - Equity Emphasis Areas
  - Activity Centers
  - Points of Interest

Gap Analyses

Equity Emphasis Areas

- Mean travel time between Equity Emphasis Areas and HCT
- Bivariate analysis of equity index and mean travel time
  - Identifies areas where new or improved connections will result in the largest impact

Activity Centers

- Mean travel time between Activity Centers and HCT
- Evaluates the adequacy of HCT service to critical regional hubs

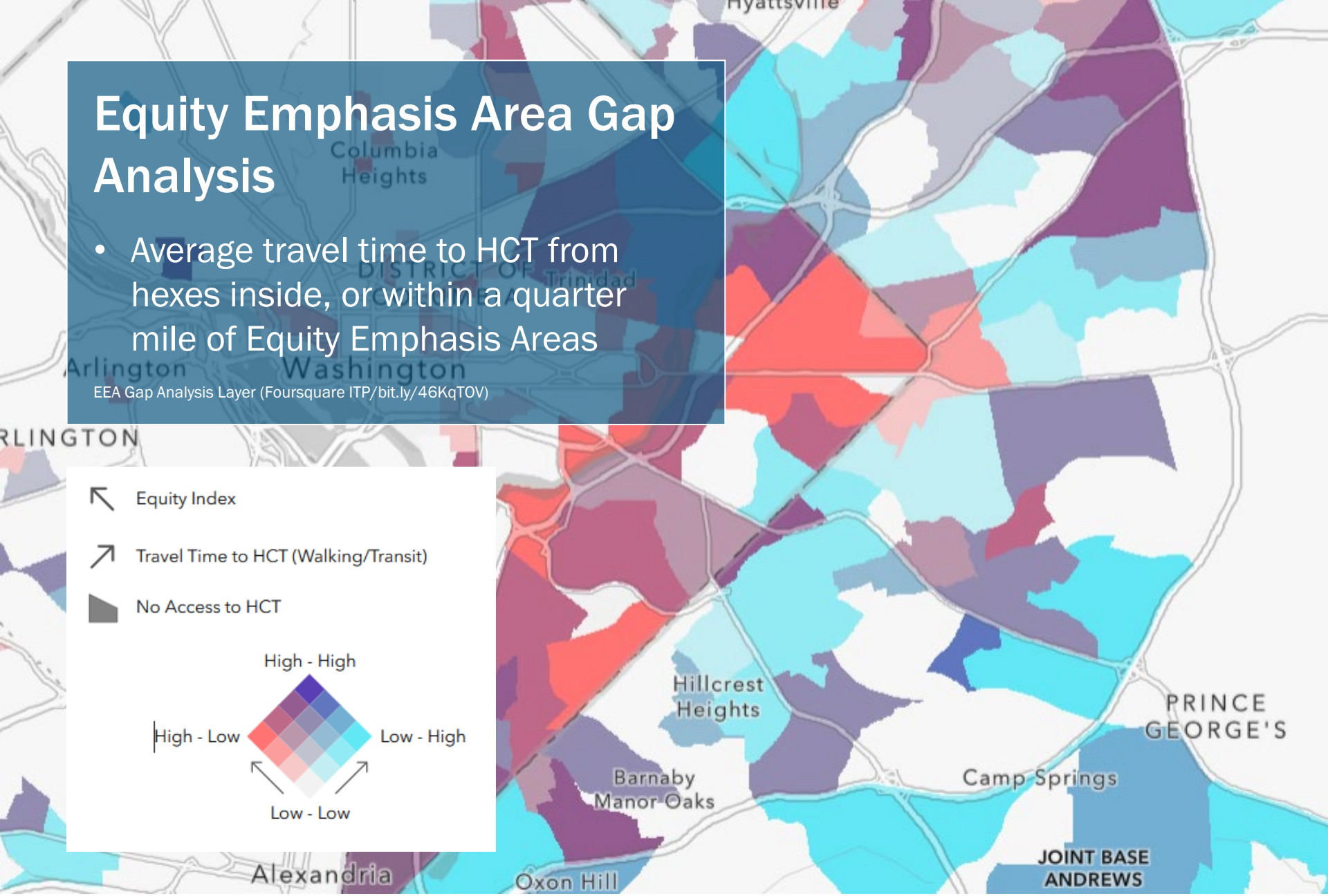
Points of Interest

- Travel time to HCT from regional points of interest within five miles of HCT stations
- Analyzes the effectiveness of connections between HCT stations and nearby points of interest

Equity Emphasis Area Gap Analysis

- Average travel time to HCT from hexes inside, or within a quarter mile of Equity Emphasis Areas

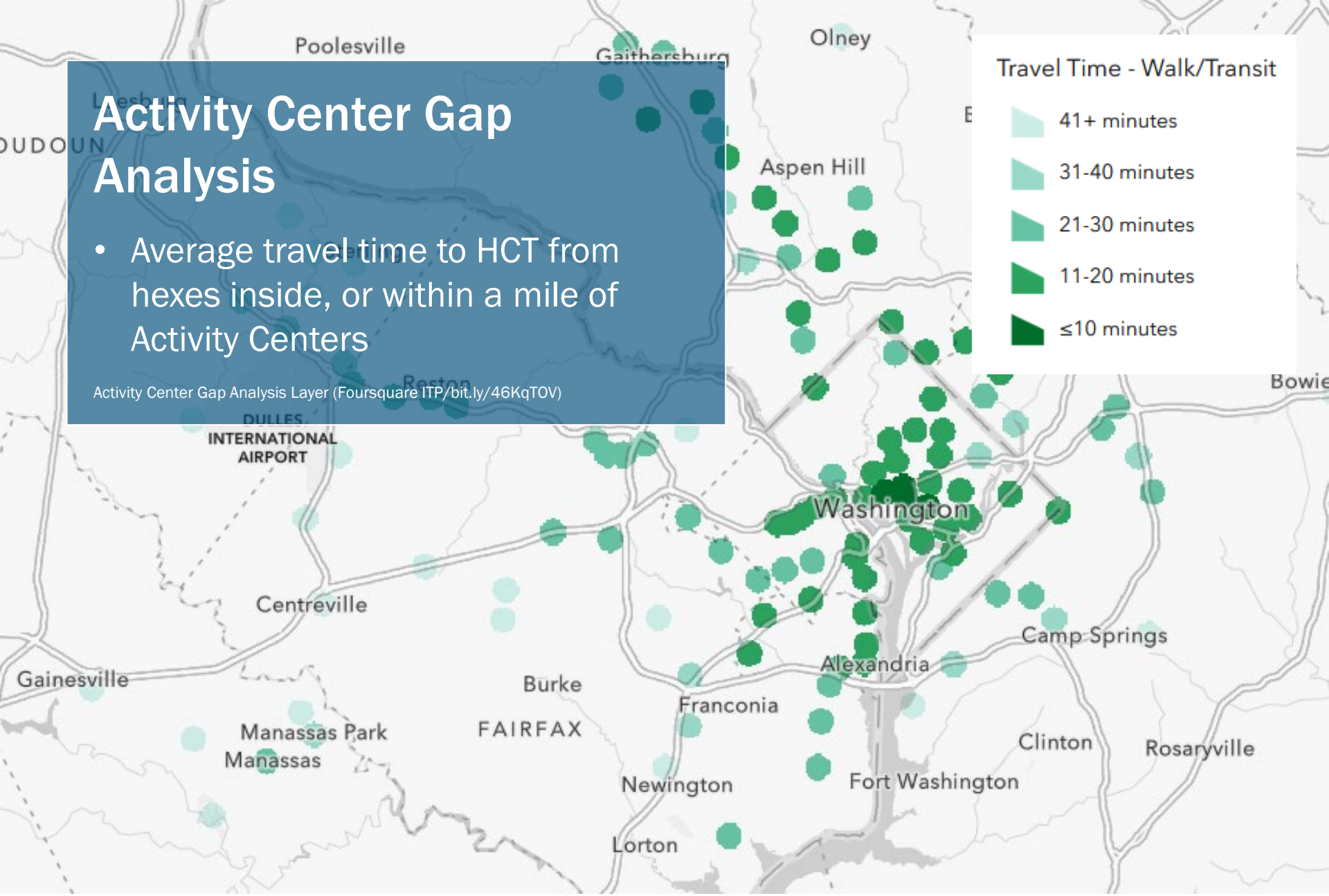
EEA Gap Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)

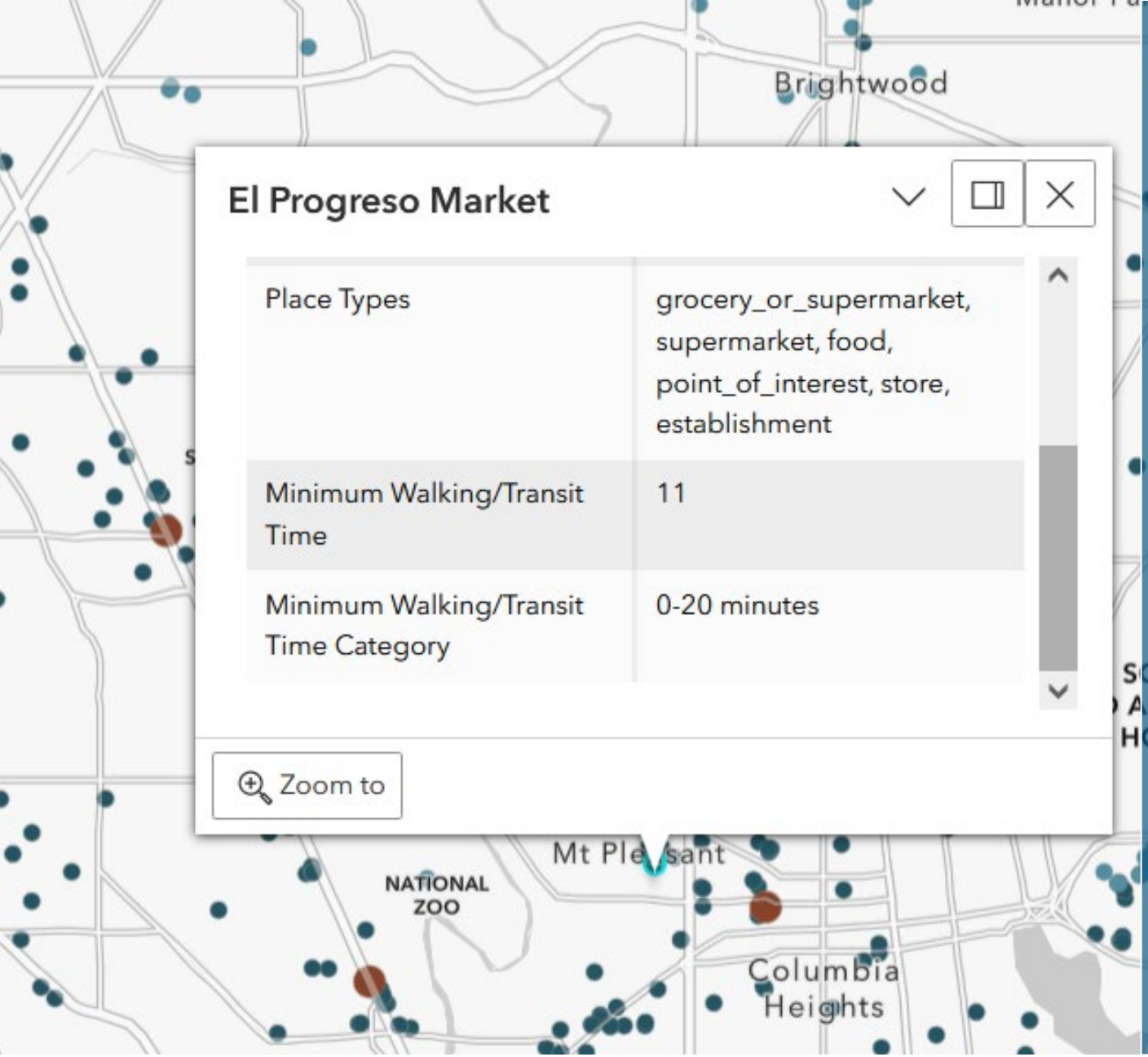


Activity Center Gap Analysis

- Average travel time to HCT from hexes inside, or within a mile of Activity Centers

Activity Center Gap Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)

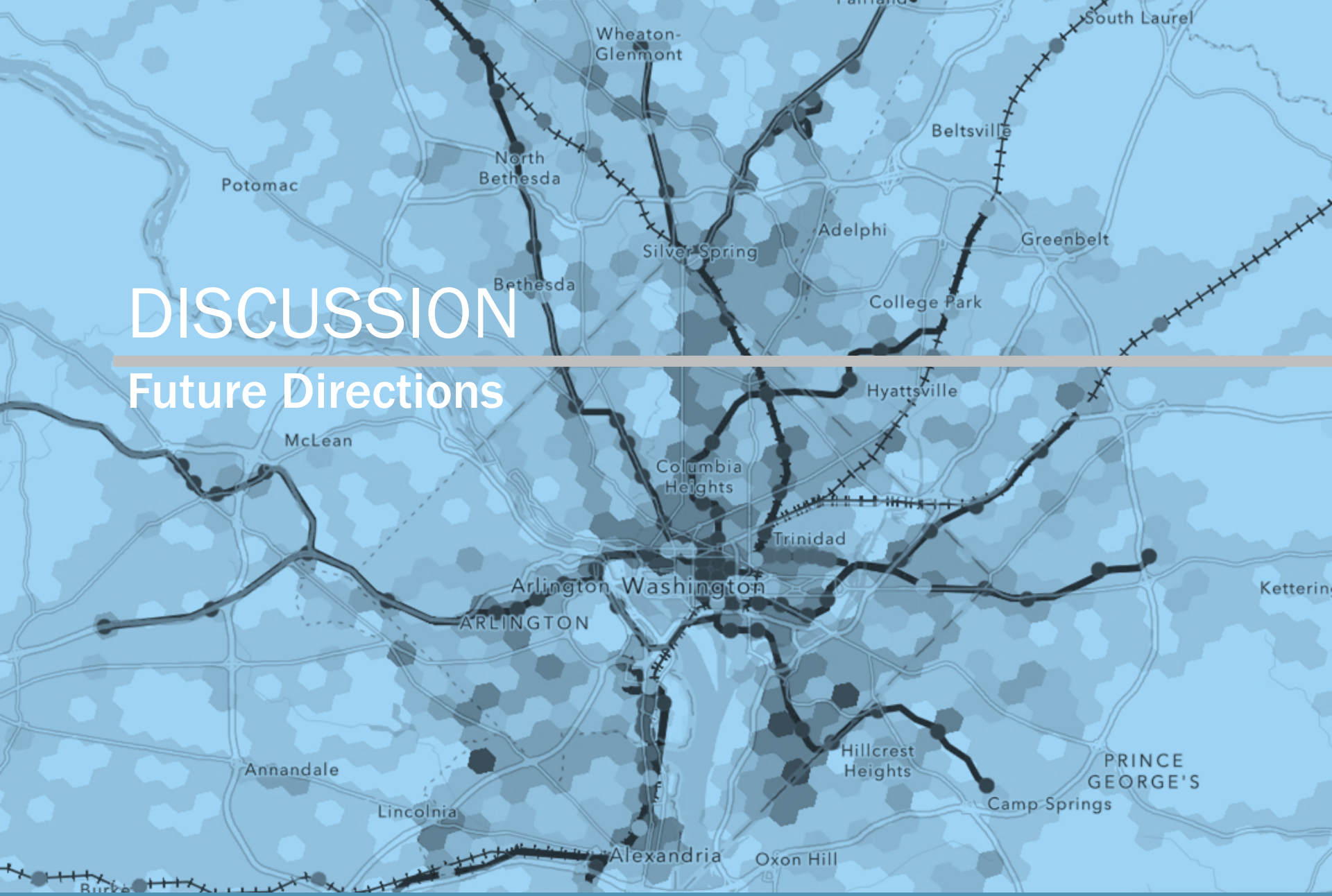




Points of Interest Gap Analysis

- Using the Google Places API, identified POI throughout the TPB region within five miles of HCT
- Calculated travel time to the closest HCT station using R5

POI Gap Analysis Layer (Foursquare ITP/bit.ly/46KqTOV)



DISCUSSION

Future Directions

Next Steps

- Overview
  - Solicit feedback
  - Refine analyses
  - Identify and prioritize station-level needs
- Schedule
  - HCT station classification by need | Jul. – Oct. 2023
  - Finalize products and develop report | Oct. 2023 – Jan. 2024

Next Steps

- Network-based HCT station accessibility
  - Population
  - Employment opportunities
  - Points of interest
- Synthesize results of station classification and gap analyses to propose contextualized recommendations based on:
  - Local transit need
  - Active transportation need
  - Existing/forecast travel demand
  - Station typology

Feedback

- Questions about:
  - Methodology?
  - Results?
  - Next steps?
- Does what we've presented prompt:
  - Analysis recommendations?
  - Useful application data/functionality?
  - Any other ideas?

bit.ly/46KqTOV

Kyle Hearing

Project Manager & Senior Transportation Planner
(301) 637-0284
khearing@foursquareitp.com

Foursquare ITP

Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002