

TRANSITWAY CORRIDOR FEASIBILITY STUDY



High Capacity Transit Corridor Work Group
August 18, 2011 Meeting

Corridor B Preliminary Transitway Concepts



T&ES



Kimley-Horn
and Associates, Inc.

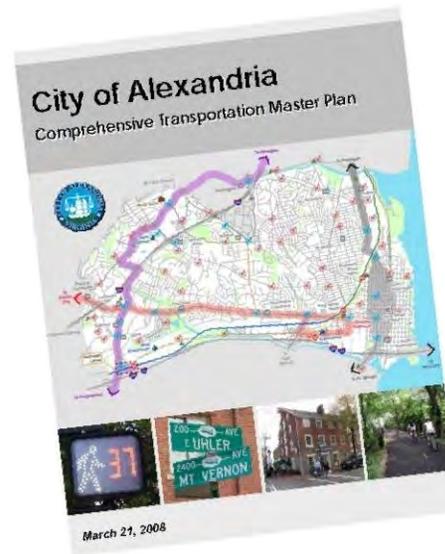
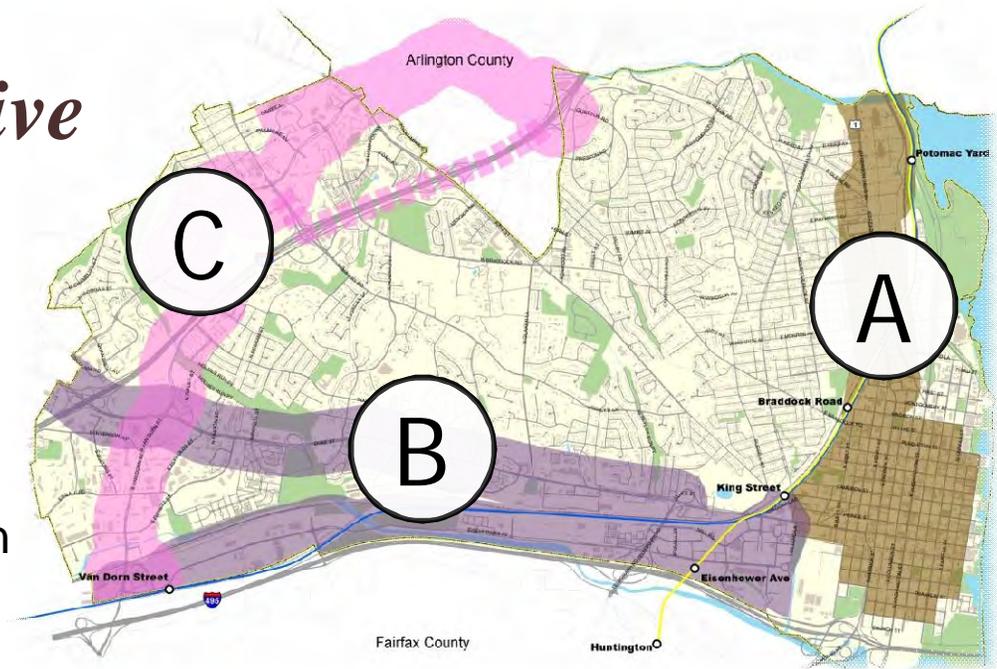
Meeting Agenda

- Introduction and Background
- Corridor B Discussion
 - Existing Conditions and Land Use
 - CWG and Public Input
 - Screening Criteria, Alignment, Runningway, and Mode
 - CWG and Public Input
- Next Steps



City Transitway Initiative

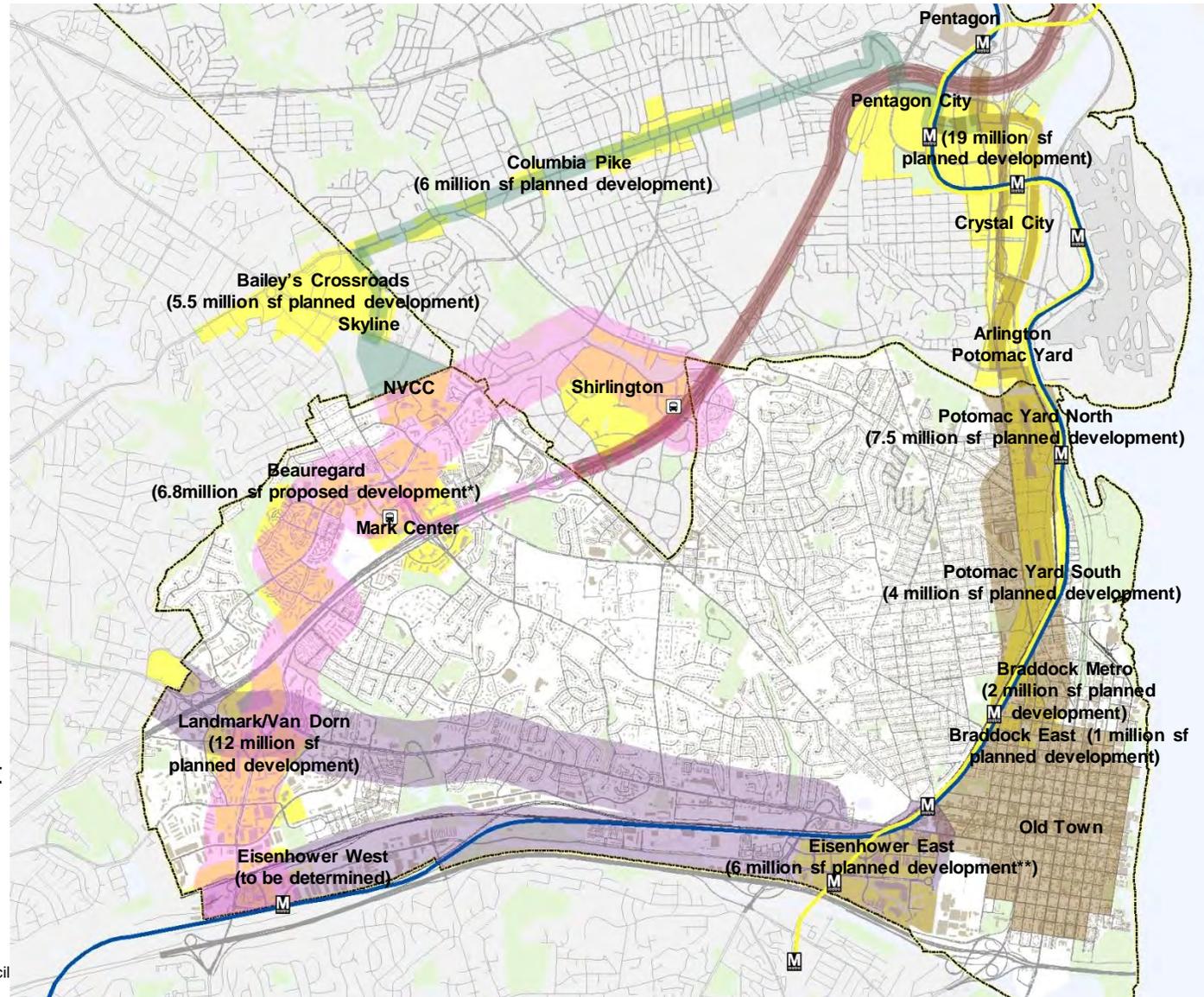
- Corridors identified by Transportation Master Plan
 - Corridor A: North-South Corridor
 - Corridor B: Duke/Eisenhower
 - Corridor C: Beauregard/Van Dorn



TRANSITWAY CORRIDOR FEASIBILITY STUDY

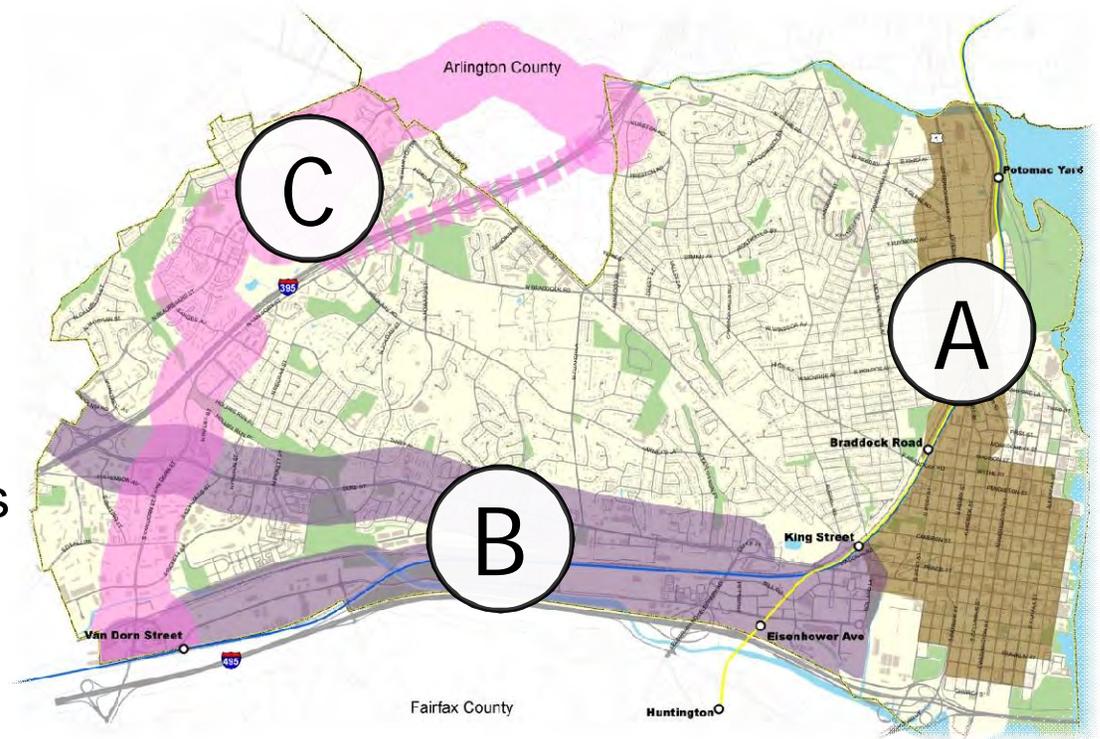
Land Use and Transportation Connectivity

- Beaugard corridor plan
- Braddock Metro & Braddock East plans
- Columbia Pike Initiative
- Crystal City plan
- Eisenhower East plan
- Eisenhower West area development
- Landmark/Van Dorn corridor plan
- Mark Center plan
- Metrorail Blue & Yellow lines
- NVCC Community College master plan
- Old Town
- Pentagon
- Pentagon City development
- Potomac Yard plans (Arlington and Alexandria)
- Shirlington



Objectives of this Planning Study

- For each transitway corridor
 - General corridor configuration
 - Preferred transit mode technology
 - Operating plan
 - Potential station locations
 - Action plan
(environmental documentation, funding levels/request, design, operations, governance, etc.)



Potential Next Steps in Project Development

- Alternatives Analysis (FTA)
- NEPA
- Application for funding
- Preliminary engineering
- Procurement method selection
- Final engineering/ROW acquisition/construction
- Operation

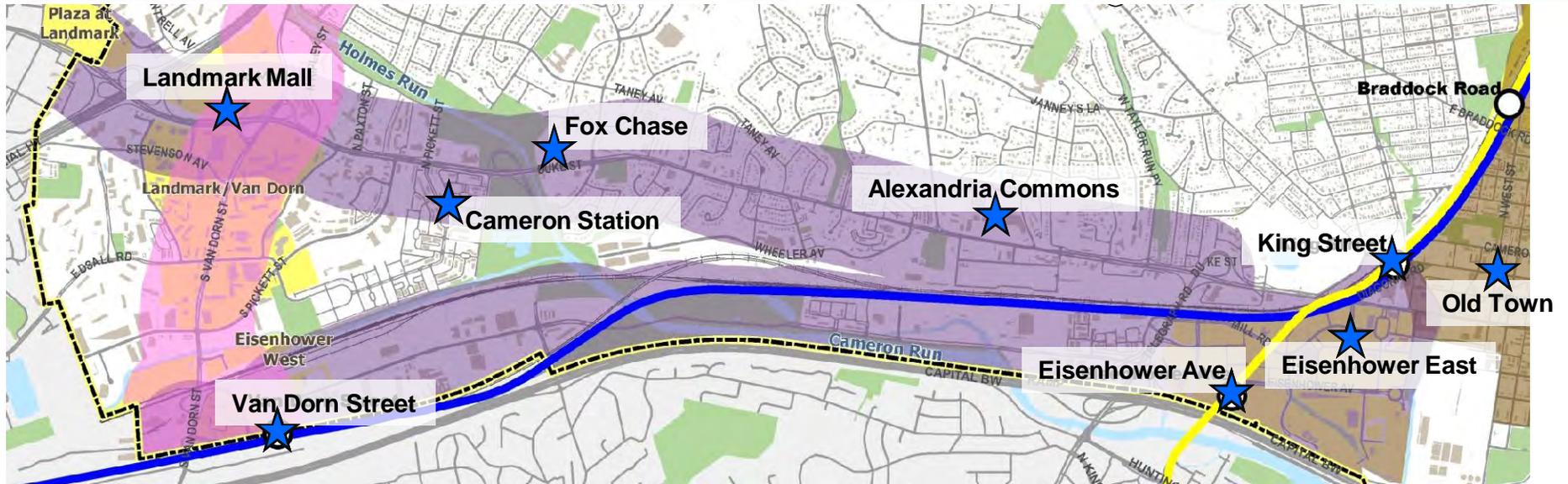


Corridor B

EXISTING CONDITIONS REVIEW



TRANSITWAY CORRIDOR FEASIBILITY STUDY

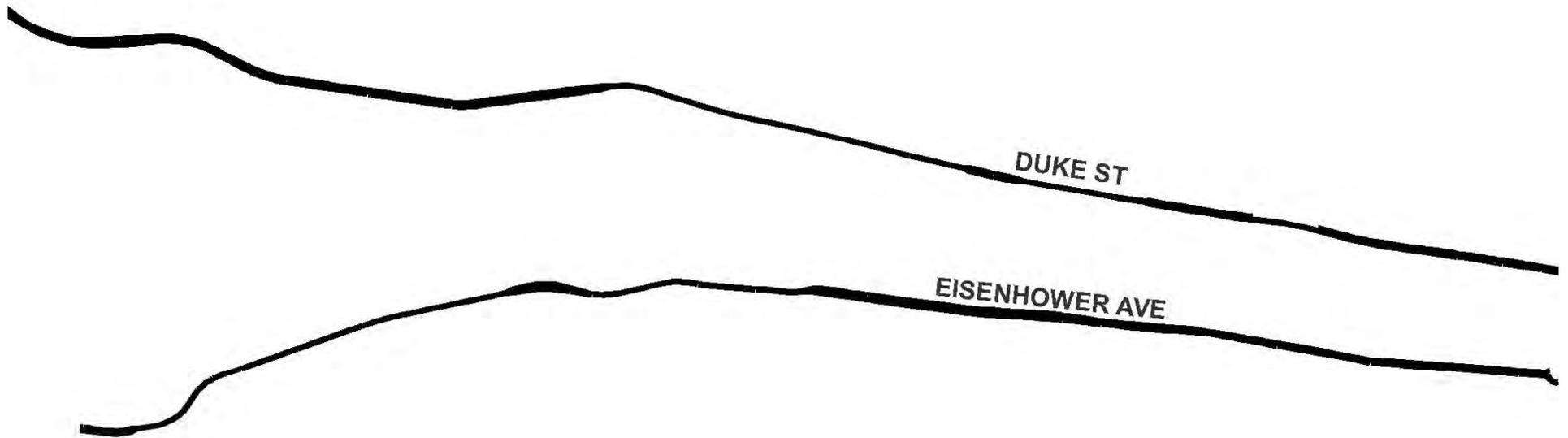


Corridor B: Duke/Eisenhower

- Major destinations
 - Eisenhower East
 - Landmark Mall Area
 - Cameron Station
 - Fox Chase
 - Alexandria Commons
 - Old Town
 - Van Dorn Metro
 - King Street Metro
 - Eisenhower Avenue Metro

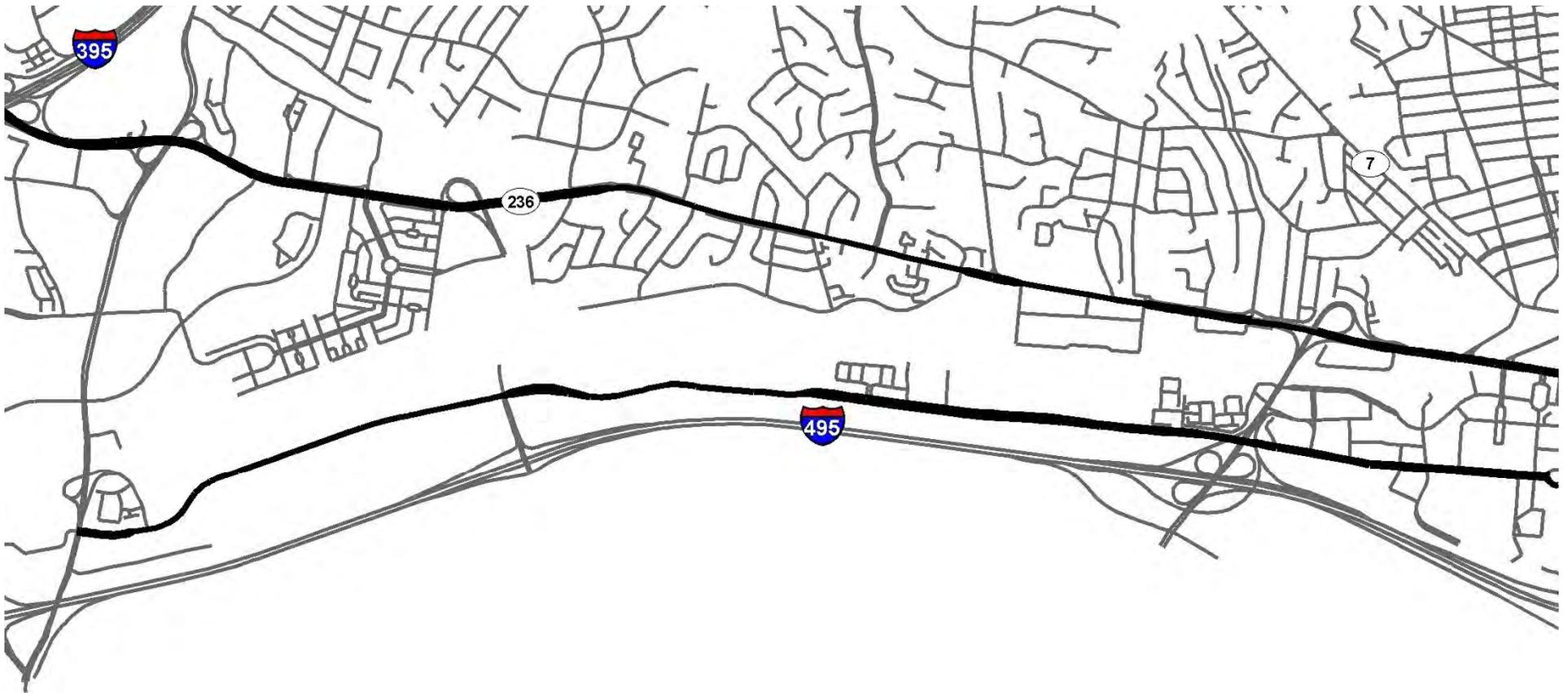


Physical Conditions



TRANSITWAY CORRIDOR FEASIBILITY STUDY

Physical Conditions



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Physical Conditions



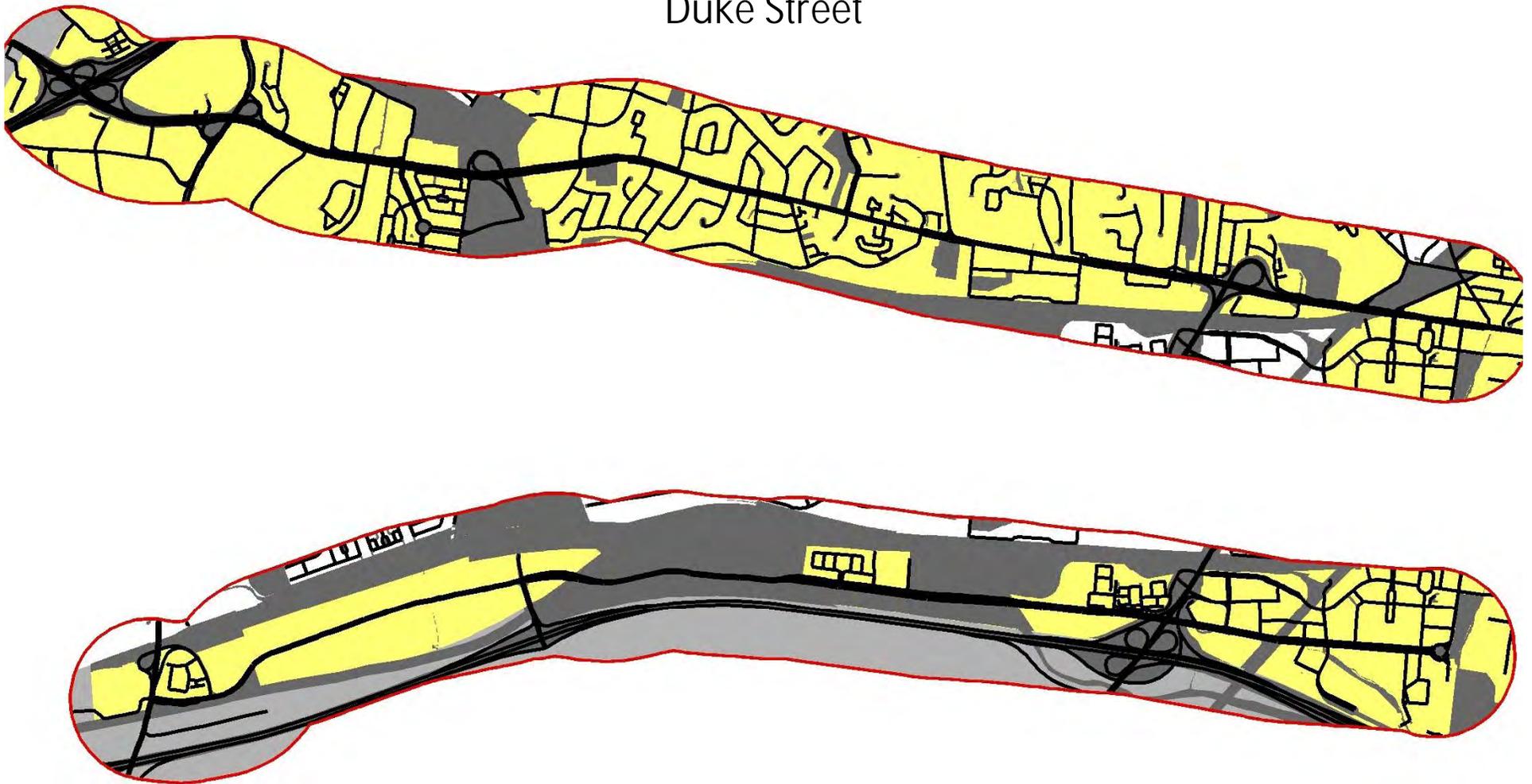
TRANSITWAY CORRIDOR FEASIBILITY STUDY

Physical Conditions



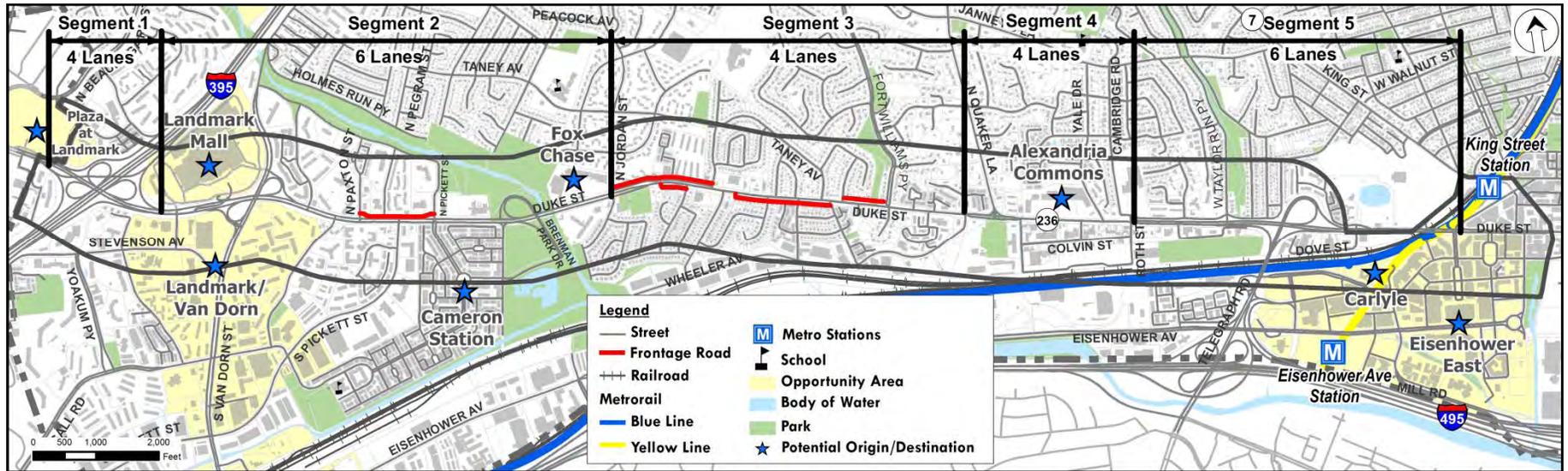
Physical Conditions

Duke Street



TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke Street Conditions



Duke Street study corridor consists of 5 distinct segments:

- Segment 1 – Oasis Drive to Landmark Mall
- Segment 2 – Landmark Mall to Jordan Street
- Segment 3 – Jordan Street to West of Quaker Lane
- Segment 4 – West of Quaker Lane to Roth Street
- Segment 5 – Roth Street to King Street Station

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke Street Existing Conditions: Segment 1 – Oasis Drive to Landmark Mall

- Roadway Section – 4 Lanes with Median
- Length – 0.5 Miles
- Curb to Curb Width – 90'
- ROW Width – N/A (within interchange)
- Frontage Roads – None



Looking Westbound at the Plaza at Landmark



Looking Eastbound at the Plaza at Landmark

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke Street Existing Conditions: Segment 2 – Landmark Mall to Jordan Street

- Roadway Section – 6 Lanes with Median or Left-Turn Lane
- Length – 1.5 Miles
- Curb to Curb Width – 90' to 130'
- ROW Width – 110' to 180'
- Frontage Roads – 1 along Westbound



Traveling Eastbound at Jordan Street



Westbound Frontage Road at Canterbury Square

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke Street Existing Conditions: Segment 3 – Jordan Street to West of Quaker Lane

- Roadway Section – 4 Lanes Undivided
- Length – 1.0 Miles
- Curb to Curb Width – 46' to 100'
- ROW Width – 60' to 120'
- Frontage Roads – 2 along Eastbound, 2 along Westbound



Traveling Eastbound at Early Street



Eastbound Frontage Road between Gordon Street and French Street

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke Street Existing Conditions: Segment 4 – West of Quaker Lane to Roth Street

- Roadway Section – 4 Lanes with Left-Turn Lane
- Length – 0.5 Miles
- Curb to Curb Width – 60' to 82'
- ROW Width – 80' to 110'
- Frontage Roads – None



Traveling Eastbound at Sweeley Street



Traveling Westbound at Yale Drive

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke Street Existing Conditions: Segment 5 – Roth Street to King Street Station

- Roadway Section – 6 Lanes with Median or Left-Turn Lane
- Length – 1.0 Miles
- Curb to Curb Width – 66' to 90'
- ROW Width – 90' to 190'
- Frontage Roads – None



Traveling Eastbound approaching Diagonal Road



Westbound grade separated roadway at Taylor Run Parkway

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions



Eisenhower Avenue study corridor consists of six distinct segments:

- Segment 1 – Van Dorn Street to the Police Department Range
- Segment 2 – Police Department Range to Clermont Avenue
- Segment 3 – Clermont Avenue to the Railroad bridge
- Segment 4 – Railroad bridge to 3965 Eisenhower Ave driveway
- Segment 5 – 3965 Eisenhower Ave driveway to Telegraph Road
- Segment 6 – Telegraph Road to John Carlyle Street

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions: Segment 1 – Van Dorn Street to Police Department Range

- Roadway Section – 4 Lanes Undivided with left-turn lanes
- Length – 0.4 Miles
- Curb to Curb Width – 52' to 60'
- ROW Width – 80'



Looking Westbound at the Van Dorn Street intersection



Looking Eastbound

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions: Segment 2 – Police Department Range to Clermont Ave

- Roadway Section – 4 Lanes with Two-way Left-turn Lane
- Length – 0.8 Miles
- Curb to Curb Width – 52'
- ROW Width – 80'



Looking Eastbound near Police Department Range



Looking Eastbound near Clermont Ave

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions: Segment 3 – Clermont Ave to Railroad bridge

- Roadway Section – 4 Lanes with Median and Left-turn lanes
- Length – 0.2 Miles
- Curb to Curb Width – 88'
- ROW Width – 120'



Looking Westbound at the Clermont Ave intersection



Looking Eastbound at the Railroad bridge

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions: Segment 4 – Railroad bridge to 3965 Eisenhower Ave driveway

- Roadway Section – 4 Lanes Undivided
- Length – 1.5 Miles
- Curb to Curb Width – 48'
- ROW Width – 70'



Looking Eastbound from the Cameron Run bridge



Looking Eastbound at Cameron Run Regional Park

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions: Segment 5 – 3965 Eisenhower Ave driveway to Telegraph Road

- Roadway Section – 4 Lanes with Median and Left-turn lanes
- Length – 0.3 Miles
- Curb to Curb Width – 64' to 88'
- ROW Width – 98' to 120'



Looking Westbound near 3965 Eisenhower Ave driveway



Looking Eastbound near Mill Road

TRANSITWAY CORRIDOR FEASIBILITY STUDY

Eisenhower Avenue Existing Conditions: Segment 6 – Telegraph Road to John Carlyle Street

- Roadway Section – 4 Lanes with Median or Left-turn lane
- Length – 0.8 Miles
- Curb to Curb Width – 60' to 74'
- ROW Width – 80' to 115'



Source: Google Maps

Looking Eastbound from the Telegraph Road bridge



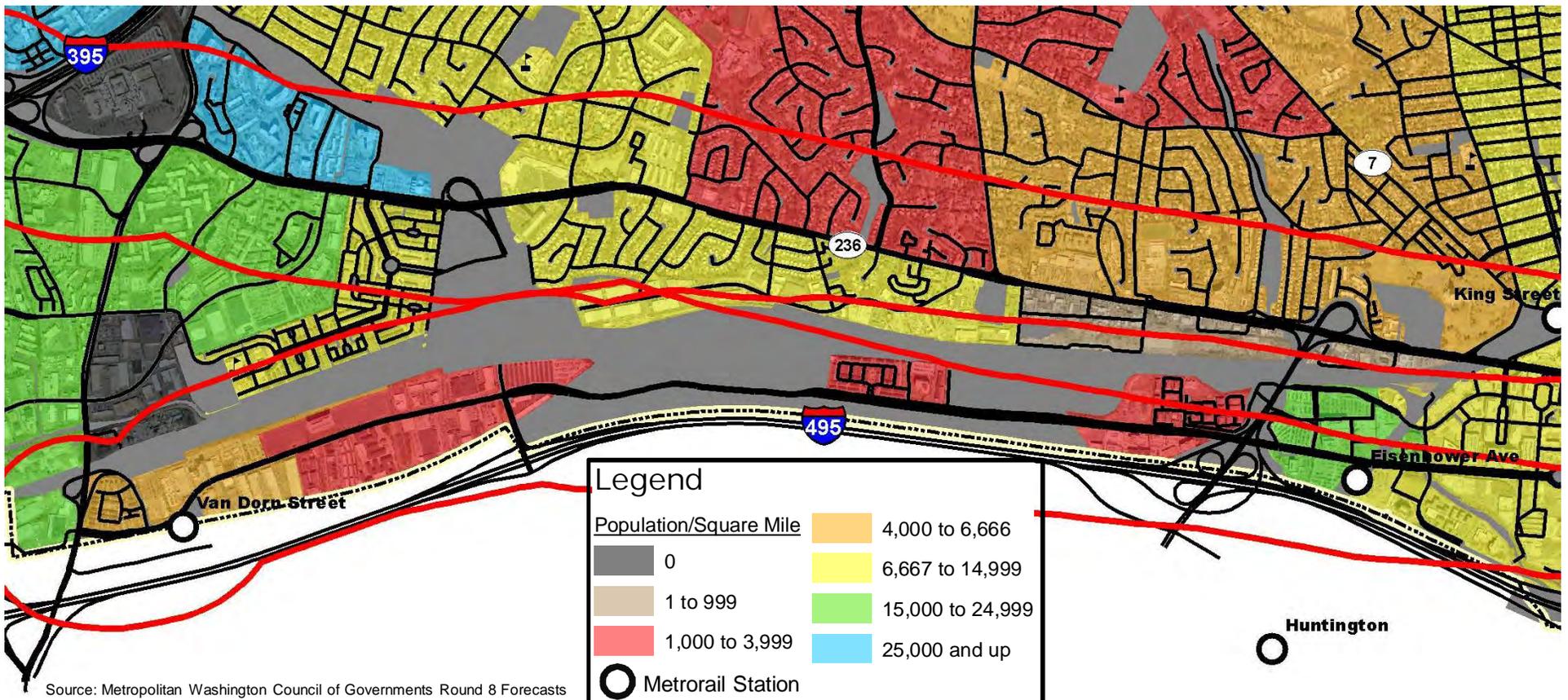
Source: Google Maps

Looking Eastbound near Mill Swamp Fox Road

Population Density (2010)

Estimated population within 1/4-mile of corridor

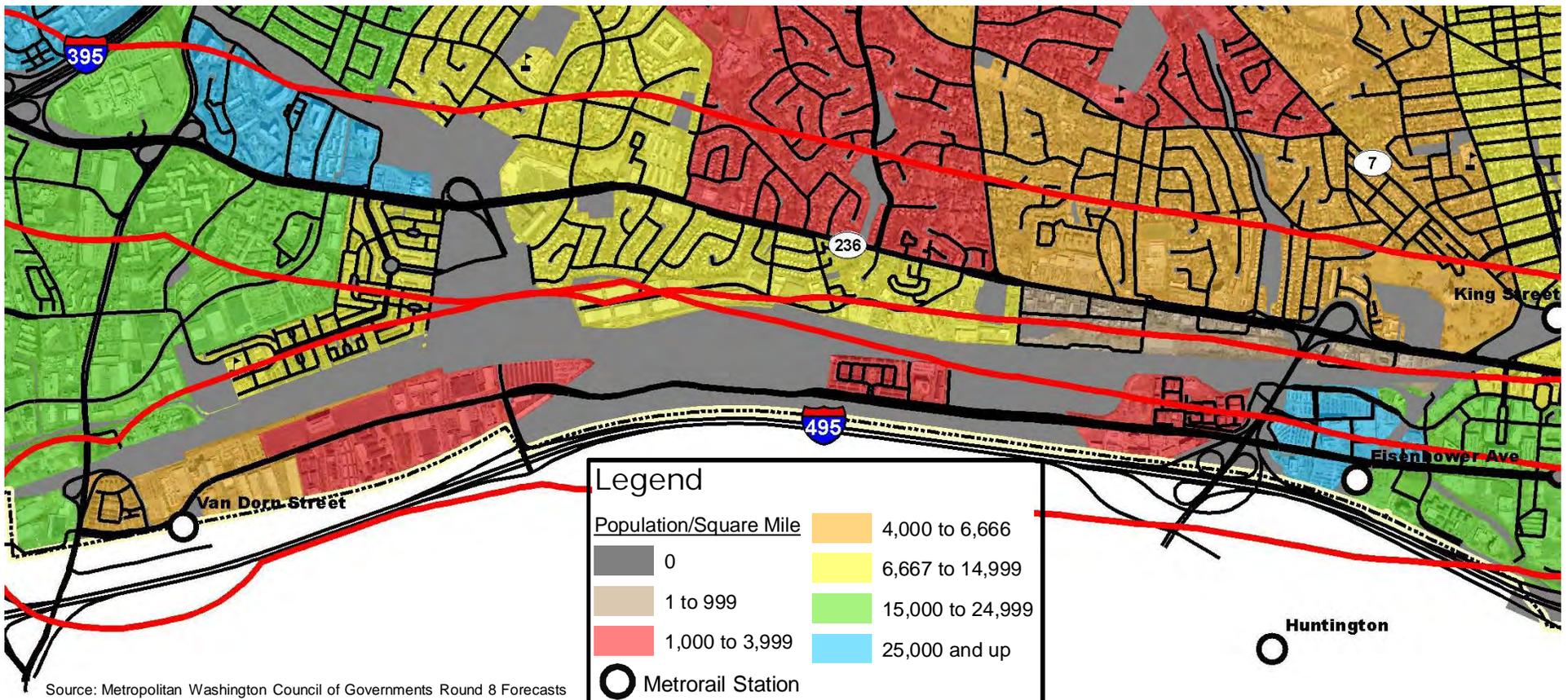
- Duke Street: 21,500 people
- Eisenhower Avenue: 7,300 people



Population Density (2030)

Estimated population within 1/4-mile of corridor

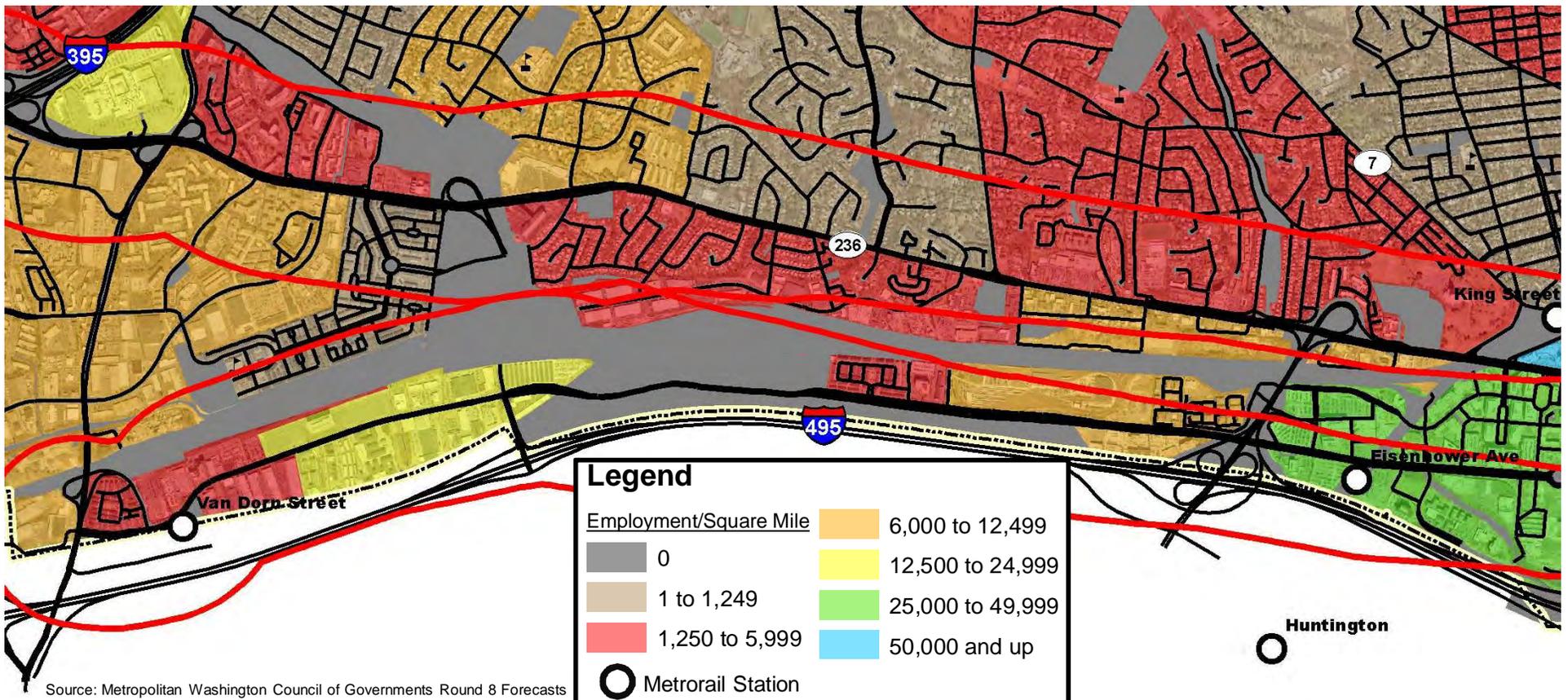
- Duke Street: 25,000 people
- Eisenhower Avenue: 10,900 people



Employment Density (2010)

Estimated employment within 1/4-mile of corridor

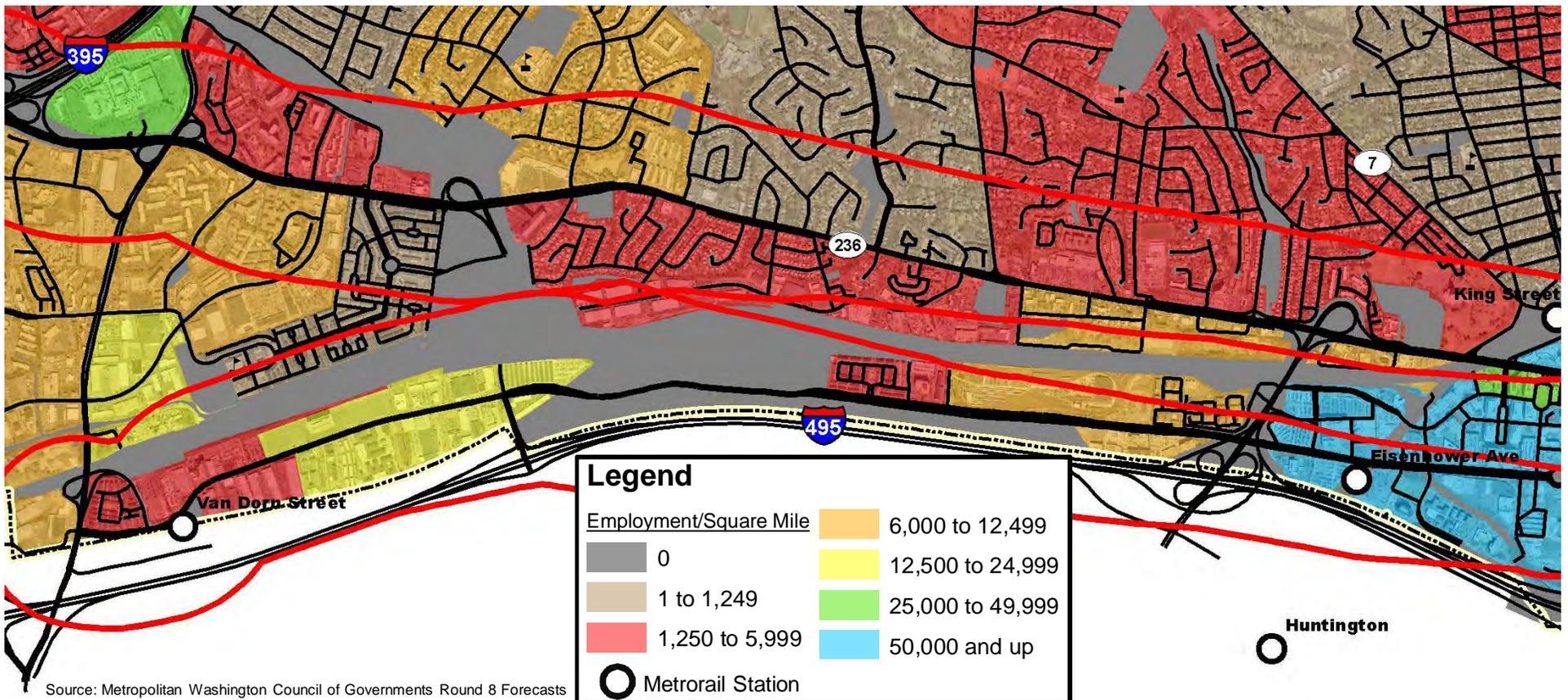
- Duke Street: 17,900 employees
- Eisenhower Avenue: 20,000 employees



Employment Density (2030)

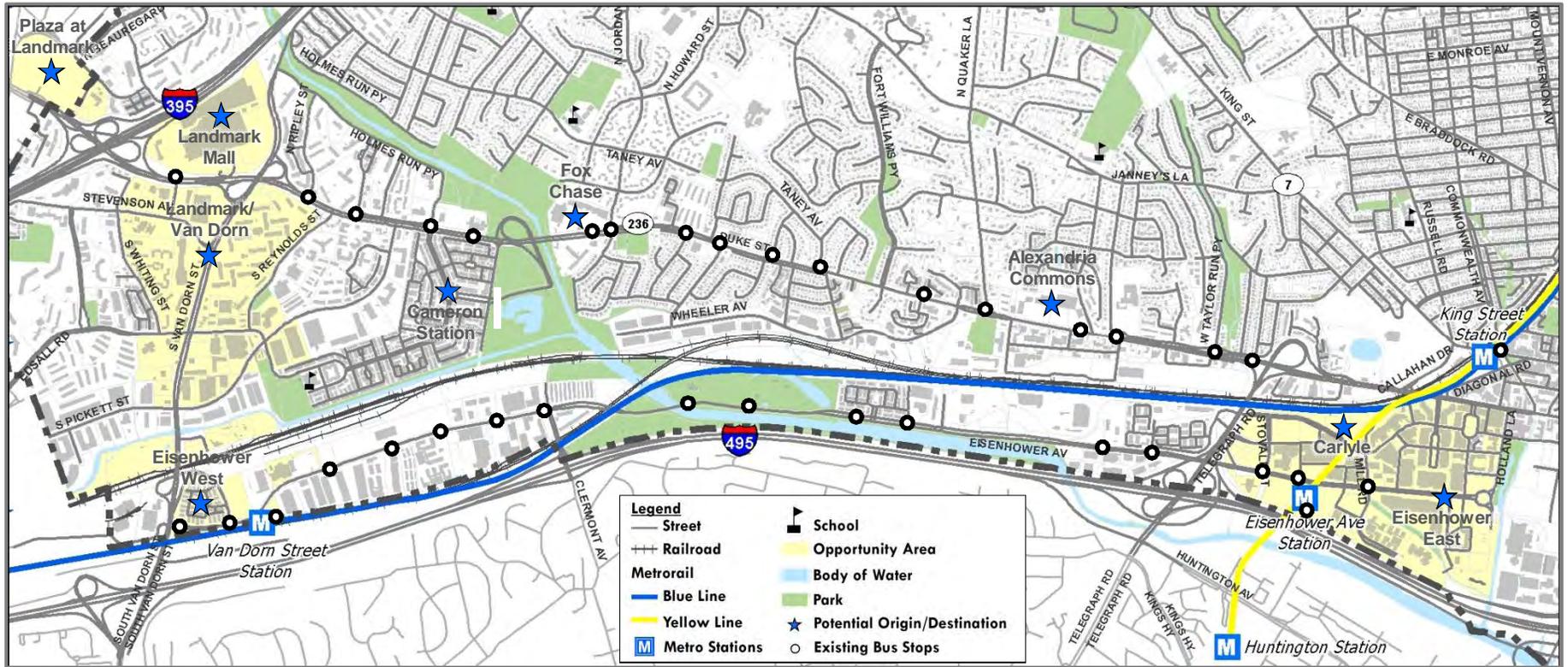
Estimated employment within 1/4-mile of corridor

- Duke Street: 23,400 employees
- Eisenhower Avenue: 30,700 employees



TRANSITWAY CORRIDOR FEASIBILITY STUDY

Bus Stops



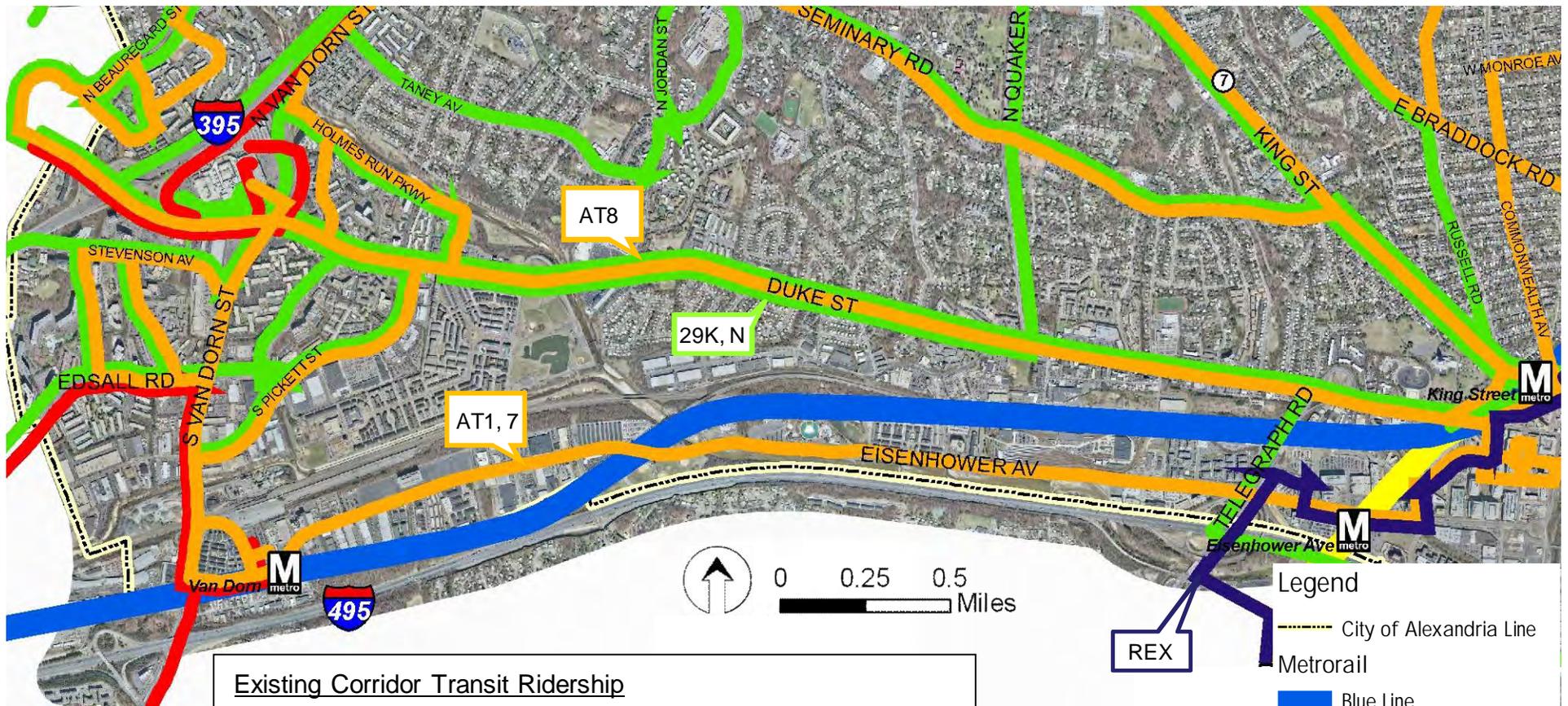
Bus Service	Headway (Peak / Off-peak)
DASH – AT1,7	20 min/30 min
DASH – AT8	15 min / 30 min
WMATA – 29K,N	30 min / 60 min

- Duke Street Stop Spacing – ¼ mile
- Eisenhower Ave Stop Spacing – ¼ mile



TRANSITWAY CORRIDOR FEASIBILITY STUDY

Duke/Eisenhower Transit Usage



Existing Corridor Transit Ridership

- Average Weekday DASH Ridership Route AT1: 1,765
- Average Weekday DASH Ridership Route AT7: 1,015
- Average Weekday DASH Ridership Route AT8: 2,628
- Average Weekday WMATA Ridership Route 29K,N: 2,272
- Average Weekday WMATA Metrobus REX: 3,685

DASH ridership 2011, WMATA ridership 2009

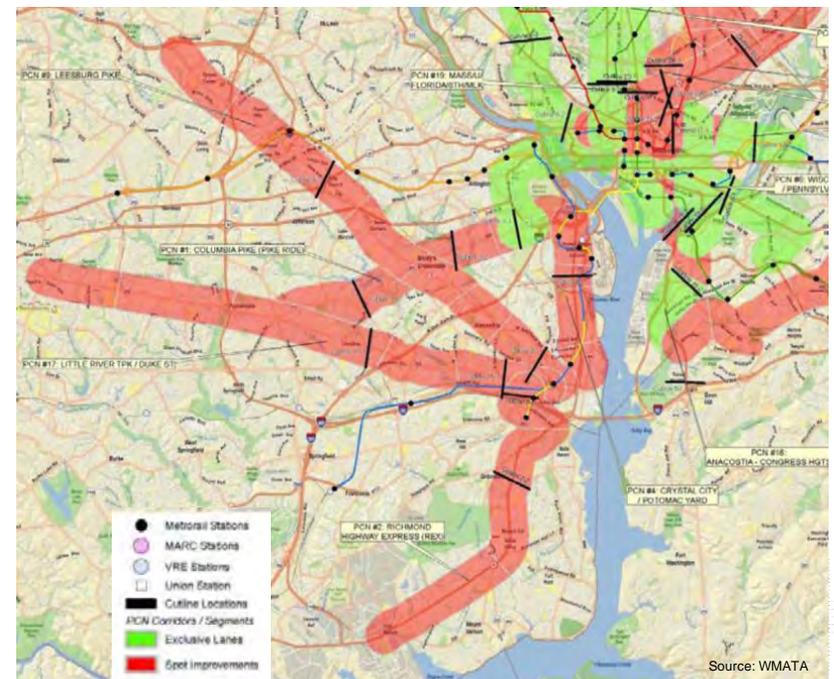
Planned Transit Improvements

Local

- Duke Street
 - Retain existing service with limited service expansion
- Eisenhower Avenue
 - Circulator within Van Dorn and Eisenhower Metrorail Station areas
 - Additional local service along Eisenhower Avenue – AT1 (15 minute headways)

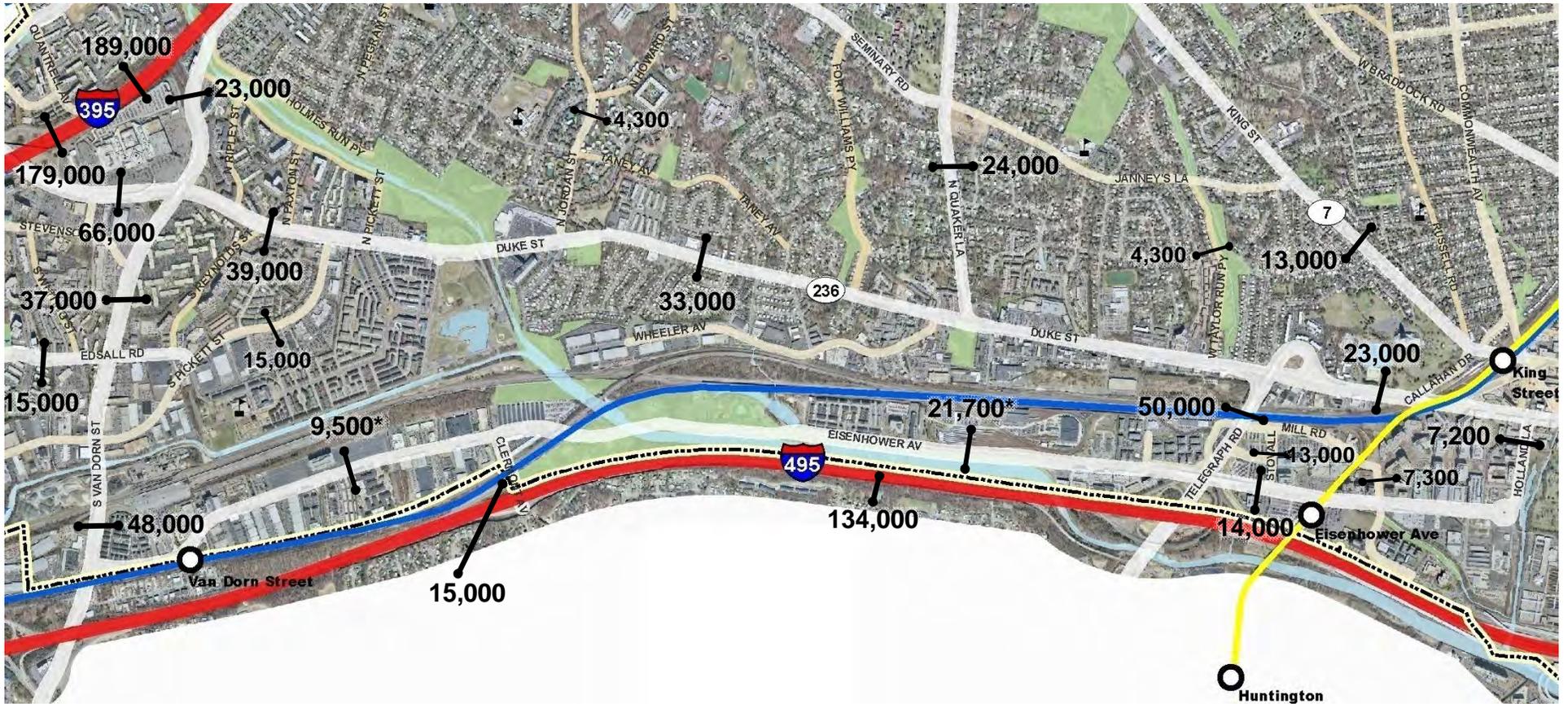
Regional

- WMATA Priority Corridor Network



TRANSITWAY CORRIDOR FEASIBILITY STUDY

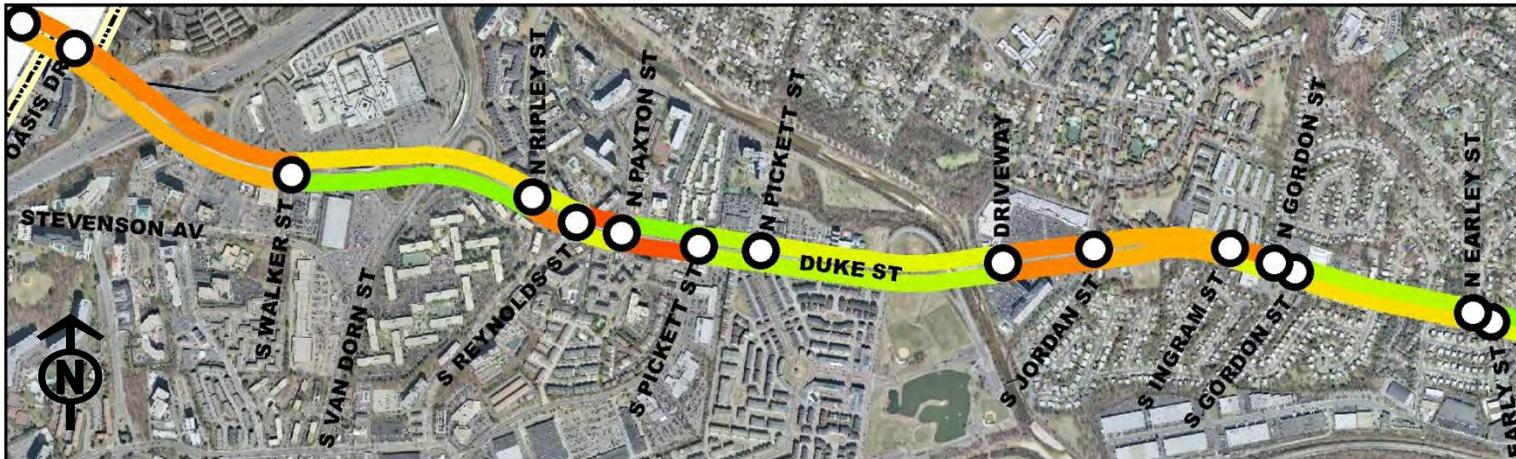
Daily Traffic Volumes



Source: 2009 VDOT AADT, *Daily traffic on Eisenhower Avenue between Van Dorn Street and Telegraph Road estimated

TRANSITWAY CORRIDOR FEASIBILITY STUDY

AM Peak Period Travel Speeds



Legend

○ Signalized Intersection

Corridor Travel Speed Range

Red Low (less than 20 mph)

Yellow Moderate

Green High (greater than 25 mph)

Note: Vehicles traveling along Eisenhower Avenue were observed to travel at or near the posted speed limit.



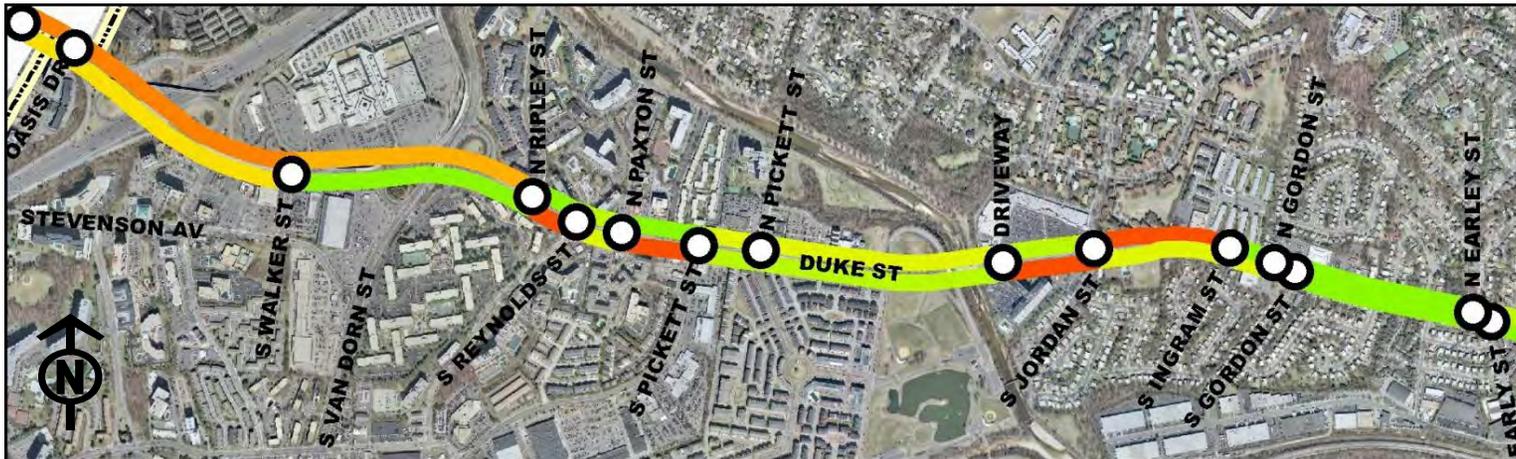
Duke Street Data Collected: Fall 2010

- Distance: 5.3 miles
 - Eastbound: 21 minutes
 - Westbound: 19 minutes



TRANSITWAY CORRIDOR FEASIBILITY STUDY

PM Peak Period Travel Speeds



Legend

○ Signalized Intersection

Corridor Travel Speed Range

Red Low (less than 20 mph)

Yellow Moderate

Green High (greater than 25 mph)

Note: Vehicles traveling along Eisenhower Avenue were observed to travel at or near the posted speed limit.



Duke Street Data Collected: Fall 2010

- Distance: 5.3 miles
 - Eastbound: 23 minutes
 - Westbound: 24 minutes



DISCUSSION

Project information is available at
www.alexandriava.gov/HighCapacityTransit



Screening and Evaluation

- Alignment Consideration
 - Duke Street
 - Eisenhower Avenue
 - Combination
- Two Levels of Concept Consideration
 - Screening. Goal: Narrow the list of possible concepts
 - Transit mode technology (bus, rapid bus, BRT, streetcar, other)
 - Runningway concept (mixed, dedicated, hybrid, widening, no widening...)
 - Evaluation. Goal: Identify preferred alternative for Corridor B
 - Compare specific alternatives



Evaluation Criteria

General Evaluation Criteria Grouping	Criteria Sub-Group	Evaluation Criteria	For Use in Screening (Concepts & Alignments)	For Use in Comparative Evaluation of Concepts	Measurement Method
Effectiveness - Addresses stated transportation issues in the corridor	Coverage	Service to Regional Destinations		✓	Notation of regional destinations directly served
		Service to Population, Employment, and Other Destinations		✓	Tabulate population, employment, key destinations, and similar, served by option
		Transit Connectivity		✓	Access to other transit services (existing and planned)
	Operations	Running-way Configuration(s)		✓	Quantify amount of runningway that is dedicated and amount that is mixed flow
		Corridor Length		✓	Measured length of the corridor (mi or feet)
		Capacity		✓	Potential corridor capacity (hourly) based on mode technology, headways, and other conditions
		Interoperability		✓	Identification of whether the chosen runningway configuration and transit mode technology are compatible with regionally planned systems
		Avoidance of Congestion		✓	Number and locations of LOS E/F intersections avoided
		Transit Travel Time		✓	Transit travel time
		Intersection Priority		✓	Percent of intersections where TSP is needed and can be implemented successfully - notation of where it cannot be implemented successfully
	Alignment	Ridership		✓	Forecast number of riders
		Geometrics		✓	Geometric quality of alignment
Runningway Status			✓	Percent of corridor to be located on new or realigned roadway	
Phasing	Phasing		✓	Identification of ability to phase operations and implementation	
Impacts - Extent to which economics, environment, community, transportation are affected	Economic	Development Incentive		✓	Perceived value of transit mode technologies with regard to development potential
	Natural Environmental	Natural Environment		✓	Summary of key environmental conditions affected (wetlands, floodplains, T&E, streams, and similar)
		Parks and Open Space		✓	Summary of parks and/or open spaces affected
	Neighborhood and Community	Property		✓	Number, use type, and quantity of properties impacted with anticipated level of impact (ROW only, partial take, total take)
		Streetscapes		✓	Impact to existing streetscapes
		Community Resources		✓	Identify number and location of historical, cultural, community, archaeological resources affected
		Demographics		✓	Identification of impacts to special populations
		Noise and Vibration		✓	Summarize relative noise and vibration impacts of different mode types and corridor configurations
	Transportation	Traffic Flow Impact		✓	Effect of transit implementation on vehicular capacity of corridor
		Traffic Signals		✓	Number of existing signalized intersections affected by transit, identification of need for new signal phases, and number/location of new traffic signals needed to accommodate transit
		Multimodal Accommodation		✓	Impacts to, and ability to accommodate bicycles and pedestrians
		Parking		✓	Impacts to parking
Cost Effectiveness - Extent to which the costs are commensurate with their benefits	Cost	Capital cost		✓	Order of magnitude capital cost for corridor (stations, runningway, etc.)
		Operating cost		✓	Order of magnitude operating cost
		Cost Per Rider		✓	Order of magnitude operating cost per rider
Financial Feasibility - Cost of system/concept is in alignment with available funding	Funding	Funding		✓	Availability to specific funding sources
		Private Capital Incentive		✓	Judgment as to whether the concept has the potential to attract private capital investment and innovative procurement

Alignment Discussion - Considerations

- Service/connectivity to local population, employment, and other destinations
- Service/connectivity to regional population, employment, and other destinations
- Connections to other transit services
- Operational quality of transit service
- Quality of operations of the corridor



Potential Preliminary Screening Criteria

Corridor C Criteria

- Service to Regional Destinations
- Service to Population, Employment, and Retail in the Corridor
- Transit Connectivity
- Transit Travel Time
- Alignment Quality
- Property Impacts
- Traffic Flow Impact
- Capital Cost

Potential Corridor B Criteria

- Runningway configuration
- Transit travel time
- Property impacts
- Traffic flow impact
- Parking
- Capital cost



Key Items for Discussion

- Screening criteria
- Alignment
 - Duke Street or Eisenhower Avenue?
 - Or combination of both?
- Runningway
 - Dedicated, mixed, or combination
 - Widening/no widening, displace general purpose lane, shared transit/HOV, or other configuration
- Mode
 - Rapid Bus
 - Bus Rapid Transit (BRT)
 - Streetcar



DISCUSSION

Project information is available at
www.alexandriava.gov/HighCapacityTransit



Next Steps

- Corridor B
 - Corridor concepts and screening
 - Discussion on concepts
 - Identification of concepts for further study
- Corridor A Meeting on September 15th
- CWG Meeting schedule/location



THANK YOU!

Project information is available at
www.alexandriava.gov/HighCapacityTransit

