Transitway Corridor Feasibility Study

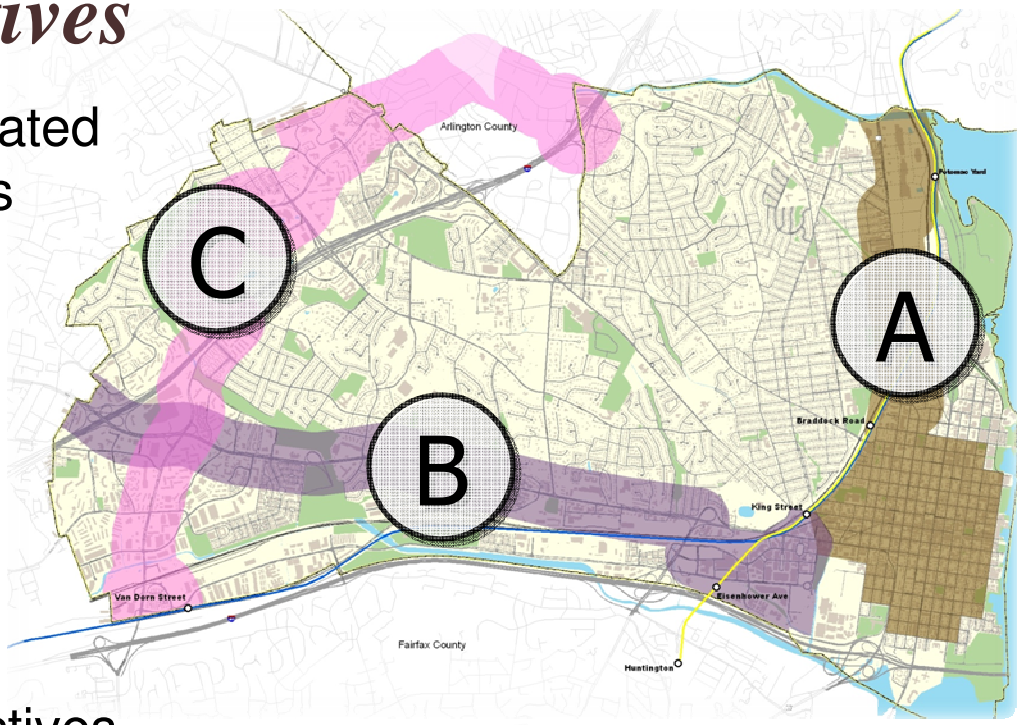
Transportation & Environmental Services

CITY OF ALEXANDRIA VIRGINIA

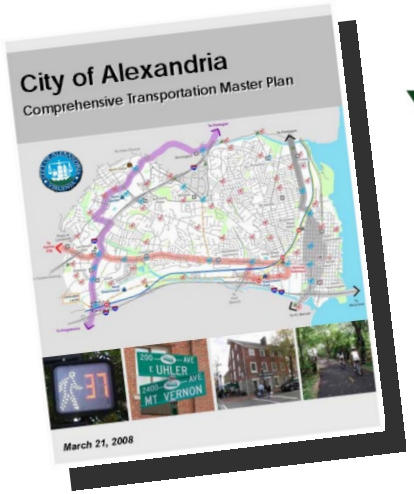
Kimley-Horn and Associates, Inc.

City Transitway Initiatives

- Development of a plan for dedicated transit services in three corridors
  - A. North-South
  - B. Duke Street
  - C. Van Dorn/Beauregard



- Policy Direction and Needs
  - Council Strategic Plan Objectives
  - City's Transportation Master Plan, Mark Center studies, Landmark/Van Dorn study, Potomac Yard area planning



City Transit Today and Tomorrow

Vision for Transit

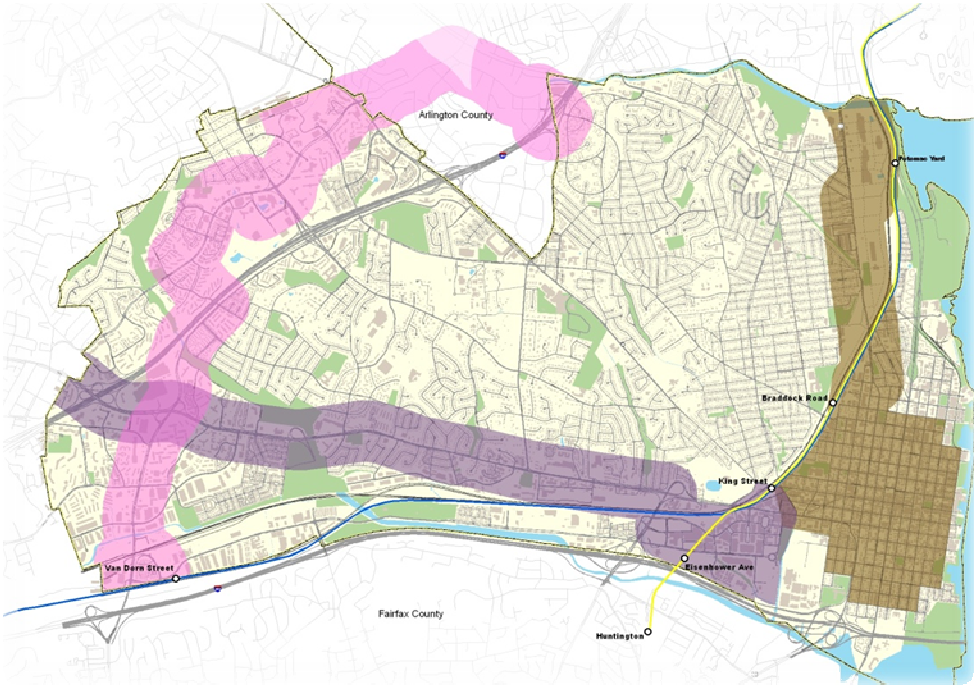
- Reliable and convenient
- Integrated with land uses and transportation
- Travel time savings and an enjoyable transit experience
- Advanced technology and passenger amenities
- Connectivity with regional transitway network

Consistent with Regional Mobility Policy Directions

- Regional increase in investment in transit
- Substantial increase in high-capacity transit services
- Regional network
- I-395 HOT Lanes transit expansion
- Wilson Bridge transit provision
- Arlington's transit expansion plans (Crystal City and Columbia Pike)

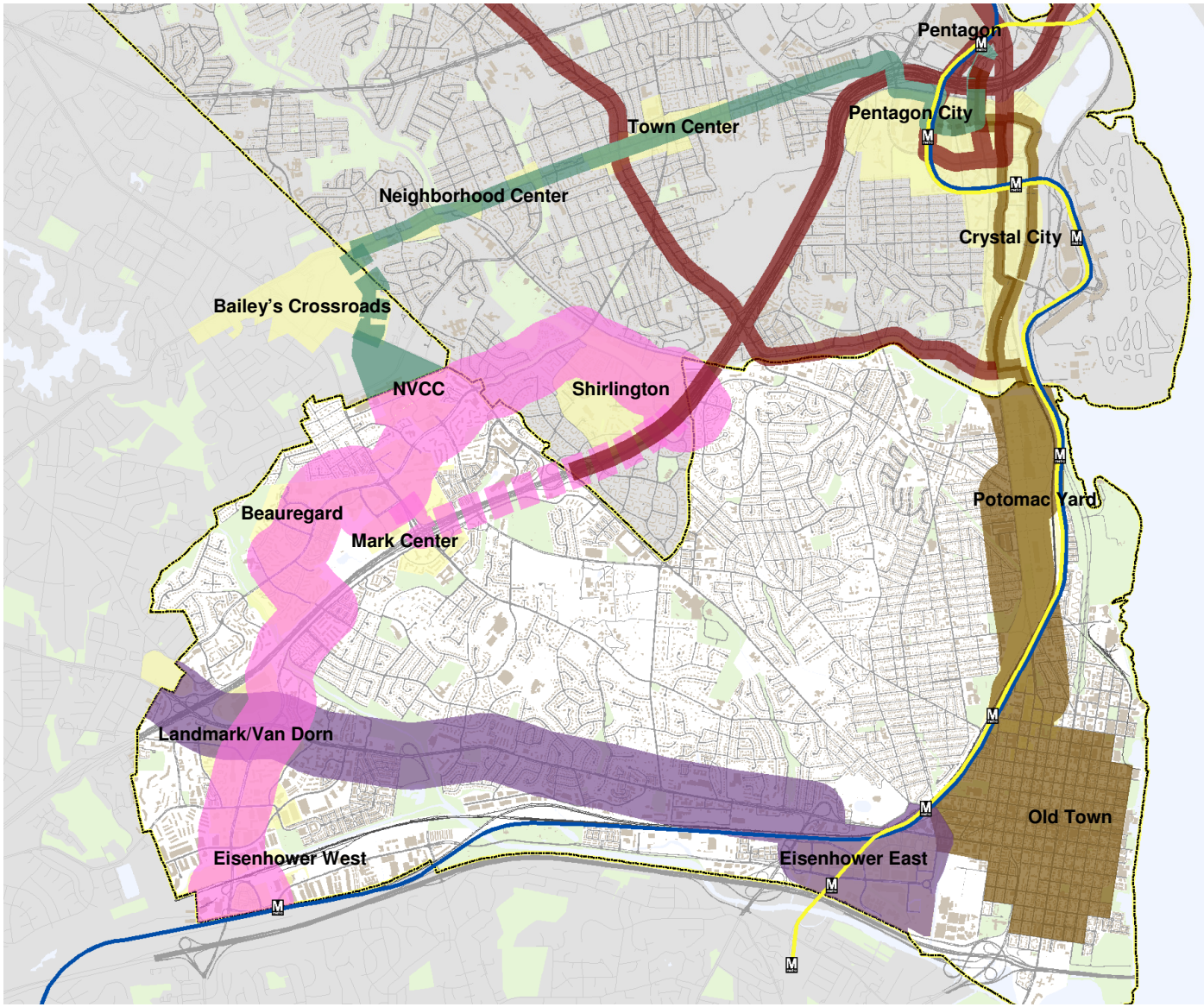
General Study Goals

- Define location and configuration of the transitway in each corridor
- Identify preferred transit mode technology for each corridor
- Develop plans for operations for each corridor
- Identify potential station locations
- Develop action plan - environmental documentation, funding levels/request, design, operations, governance, etc.



Land Use and Transportation Connectivity

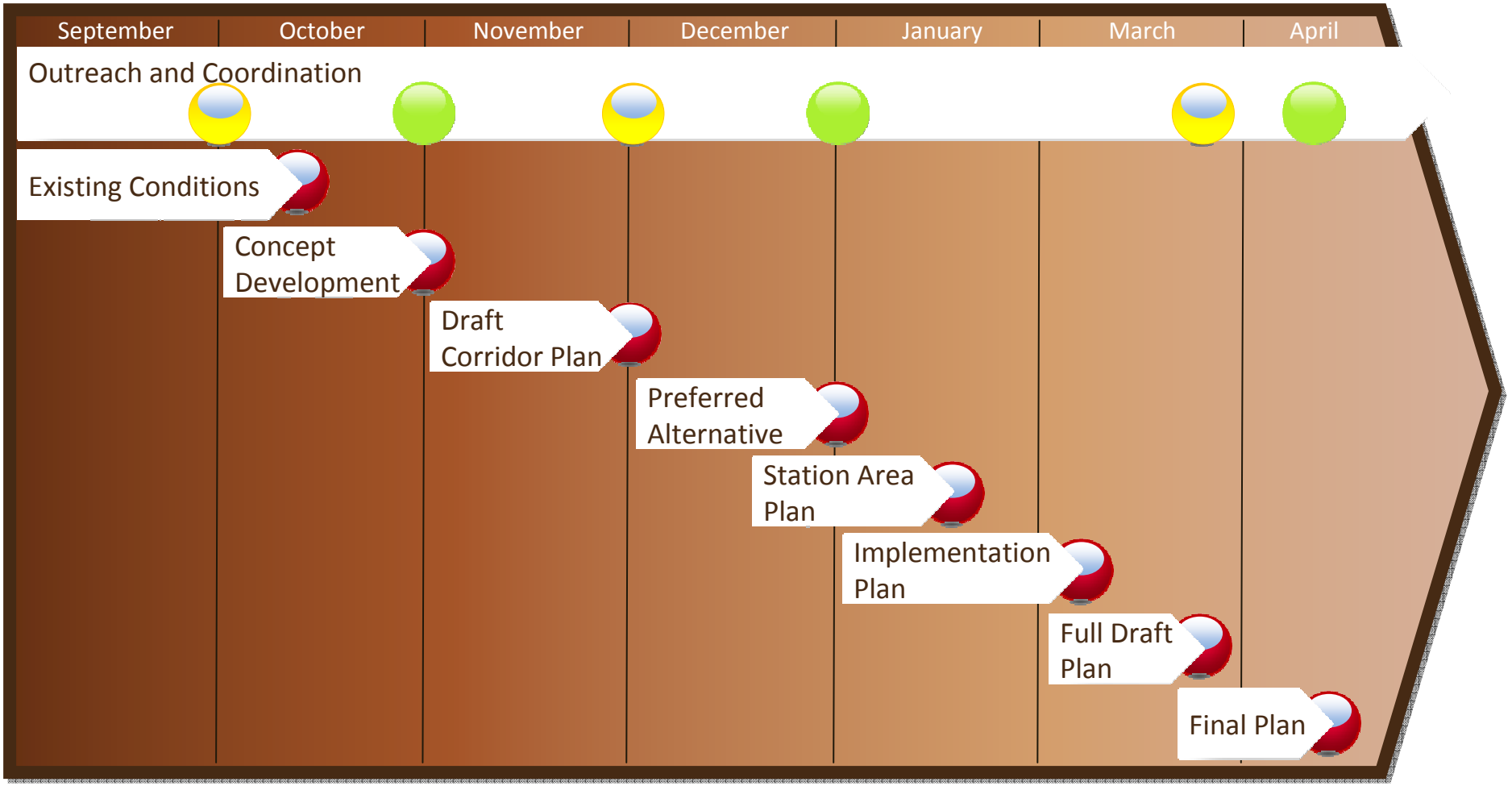
- Old Town
- Shirlington
- Columbia Pike Initiative in Arlington
- NOVA Community College master plan
- Arlington and Alexandria's Potomac Yard Plans
- Eisenhower East area development
- Eisenhower West area development
- Crystal City plan
- Pentagon City development
- Landmark/Van Dorn initiative
- Beauregard plan
- Mark Center plan
- Pentagon
- Metrorail: Blue and Yellow Lines



Technical Process

- Outreach and Public Involvement
  - Public information sessions
  - High Capacity Transit Corridor Work Group
- Inventory, Review, and Analysis
- Concept Development
- Land Use and Development Coordination
- Implementation and Action Plan

Van Dorn/Beauregard Project Schedule



Legend: High Capacity Transit Corridor Work Group | Public Meeting | Deliverable

Project Status

- Initiating outreach and coordination
- Collecting information and conducting preliminary evaluations
- Coordinating with Arlington and Fairfax Counties
  - Update presentation to follow on Columbia Pike
- Coordinating with Mark Center/Beauregard planning efforts
- Beginning concept studies for Van Dorn/Beauregard corridor

Transit Modes

Study Transit Modes

Other Bus Transit

- Circulators
- Commuter Bus
- Special Shuttles
- Heritage Trolleys

Standard Bus	Enhanced Bus	Streetcar
• Local bus • Express bus	• Rapid Bus • Moderate Investment BRT • High Investment BRT	• Streetcar

Other Rail Transit

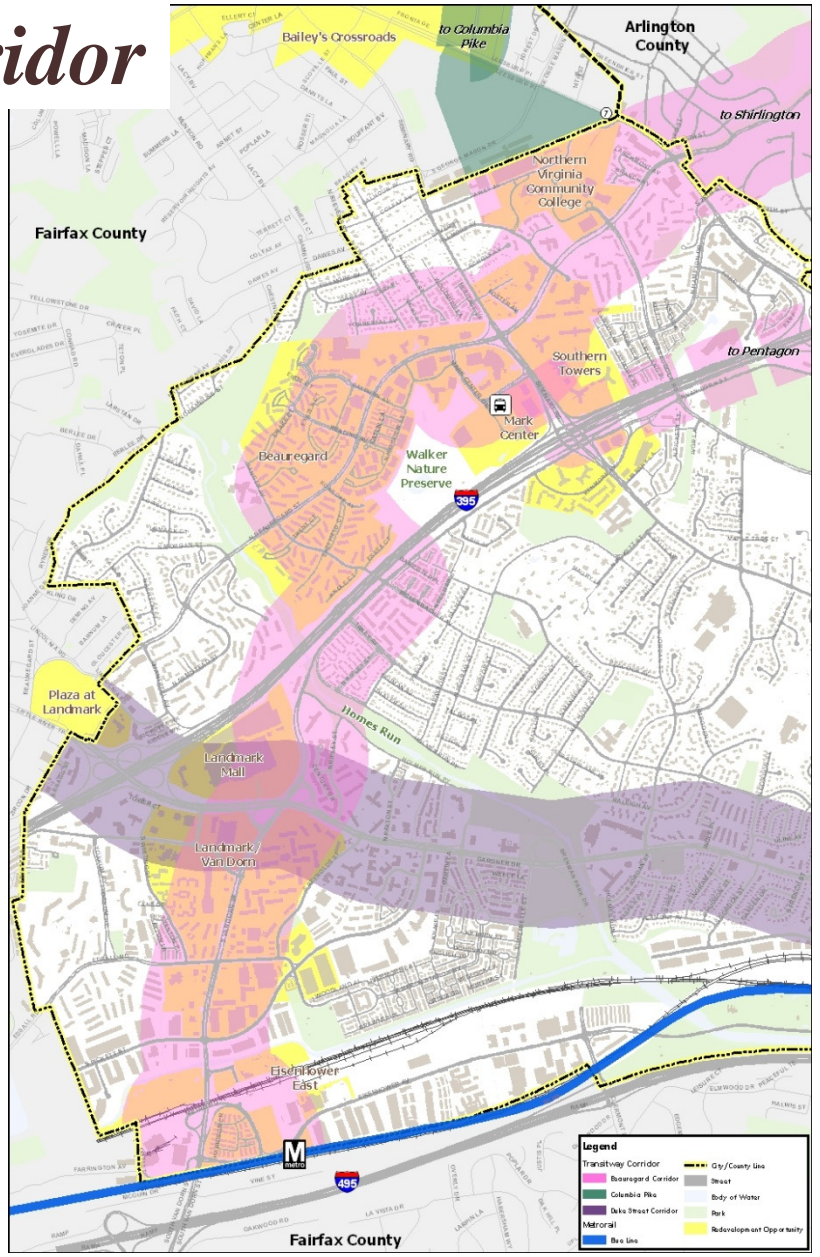
- Light Rail Transit
- Heavy Rail
- Commuter Rail
- Intercity Rail

Examples

• King Street Trolley • Loudoun County Transit • Employer shuttles	• DASH • Arlington Transit (ART) • Metrobus • Fairfax Connector	• REX (Fairfax/Alexandria) • Eugene Emerald Express • HealthLine (Cleveland) • Quickline (Houston) • MBTA Silver Line (Boston)	• Toronto Streetcar • Portland Streetcar	• Baltimore LRT • Houston LRT • Metrorail • VRE • MARC • Amtrak

Van Dorn/Beauregard Corridor

- Several possible alignments and configurations
- Connection to Van Dorn Street Metro and Duke Street transitway
- Potential connection to Columbia Pike corridor (possible maintenance/instructional facility)
- Connectivity between key destinations, including Pentagon
- Anticipated service to Mark Center and redeveloped Landmark Mall area



Van Dorn/Beauregard Corridor

- Pike Transit Initiative with Van Dorn/Beauregard corridor
  - Terminus options at NVCC/Skyline
  - Facilities options at NVCC/Skyline
  - Long-term and short-term alignments of Beauregard corridor

Next Steps

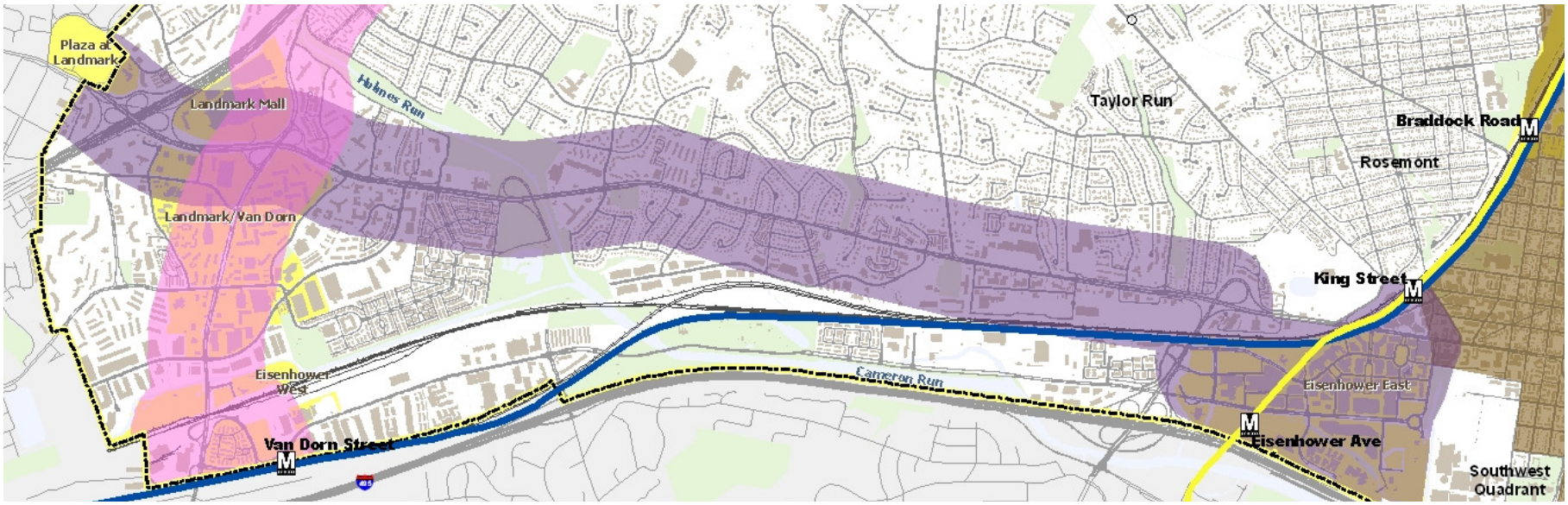
- Van Dorn/Beauregard corridor concept development
- Coordination with *High Capacity Transit Corridor Work Group*
- Beauregard corridor concept refinement
- Preliminary concepts for Corridors A, B, and C
- Public Input
  - Public Meetings
  - High Capacity Transit Corridor Work Group
  - Project Web Site

Questions and Comments

Reserve Slides

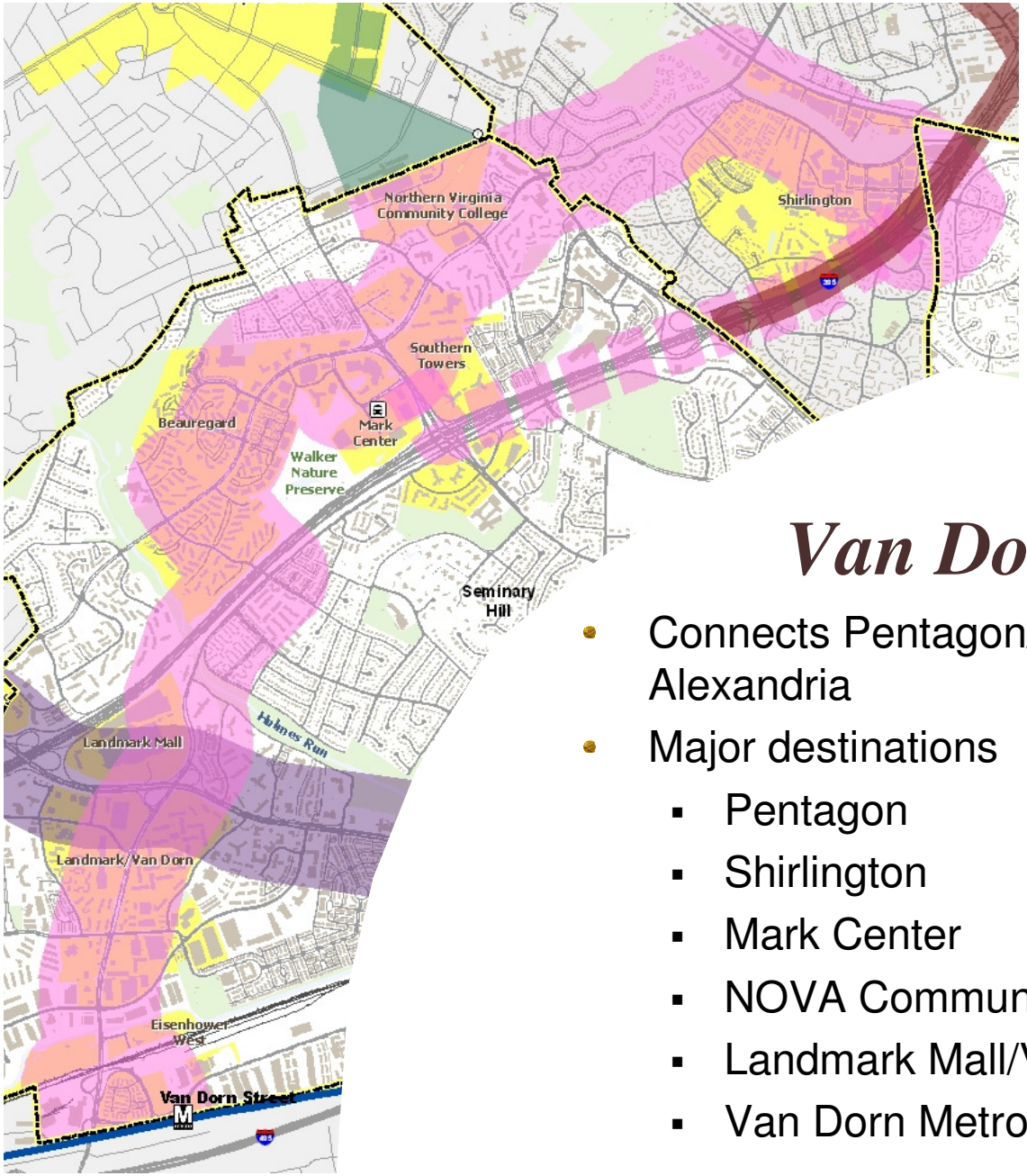
North-South Corridor

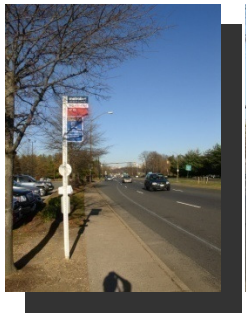
- Connects to Arlington and Fairfax County
- Major destinations
  - Old Town
  - Potomac Yard
  - Pentagon
  - Crystal City
  - King Street and Braddock Road Metro



Duke Street

- Connects King Street Metro area to Fairfax County along Duke Street
- Major destinations
  - Carlyle area
  - Landmark Mall/Van Dorn
  - Cameron Station
  - Old Town
  - King Street Metro
  - Eisenhower Avenue Metro





Van Dorn/Beauregard

- Connects Pentagon/Columbia Pike to western Alexandria
- Major destinations
  - Pentagon
  - Shirlington
  - Mark Center
  - NOVA Community College
  - Landmark Mall/Van Dorn
  - Van Dorn Metro

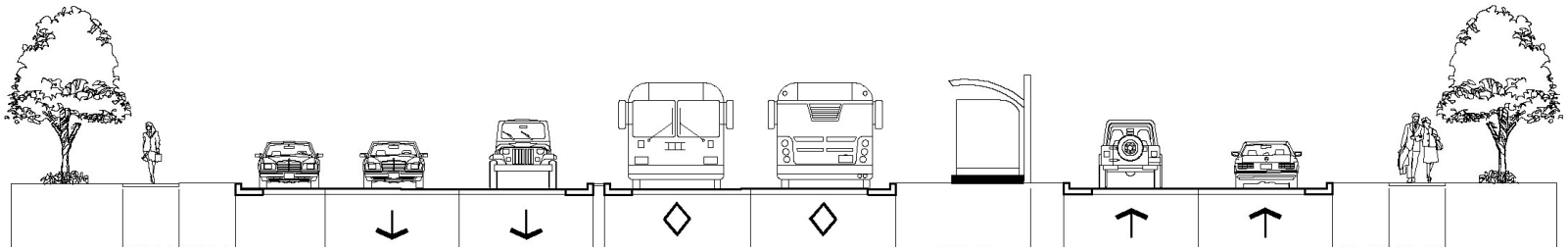
Local Bus

- Highly flexible
- Operates in mixed traffic
- Infrequent priority treatment at intersections
- On-board fare collection
- Wide range of headways
- Relatively low initial infrastructure cost
- Minimal facilities at most stops
- System-level branding

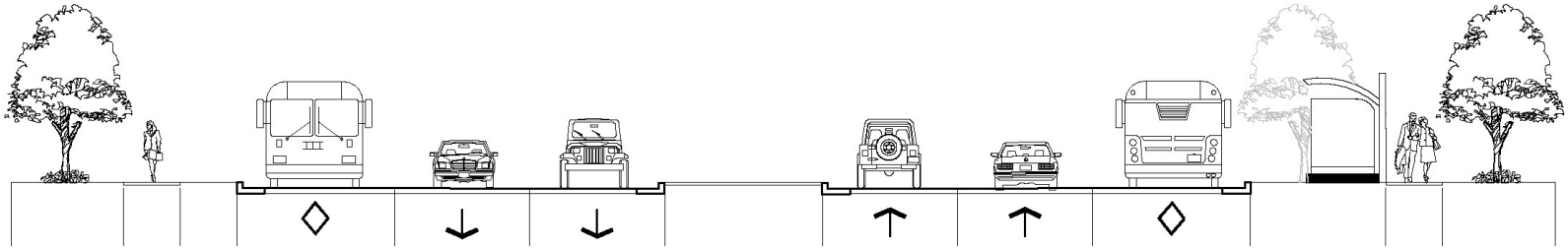
Enhanced Bus

Characteristic	Rapid Bus	Moderate Investment BRT	High Investment BRT
Runningway	Mixed traffic, some queue jump lanes	⟷	Dedicated lanes
Fare Collection	On-board vehicle	⟷	Off-board
Priority Treatment	Coordination and TSP	⟷	TSP and/or Preemption
Arrivals Information	Limited	⟷	Extensive
Boarding	Lift, stair, and some level	⟷	Level
Cost	Moderate	⟷	High
Branding	Limited	⟷	Route and Service-Specific
Development Incentive	Some	⟷	Considerable
Construction Timeline	Short to moderate	⟷	Long

Operational Configurations



Median Running



Curb Running

Median vs. Side Running

Lane Type	Advantages	Disadvantages
Side Running	Can't co-locate BRT stations with local bus stops	On-street parking creates conflicts
	Can use right-side boarding buses	BRT is interrupted by right-turn lanes
	Patrons may feel safer waiting at the side of the road near pedestrians and businesses	Requires two separate stations at each stop
	Lane is shared with local bus services	Lane is shared with local bus services
Median Running	More efficient use of space at stations if center platform	Requires contra-flow configuration to use center platform configuration with right hand boarding buses
	Easier to implement completely dedicated transit lanes	May affect existing landscaped medians
	Lower station costs if center platform	Requires all patrons to make a street crossing to reach the station/stop
	Double, right side, platforms can use right hand boarding buses	If no double right side stations, left-boarding buses required
	May be more acceptable to have stations in the median for the business community	Median transit lane may affect existing left-turn lane provision or location

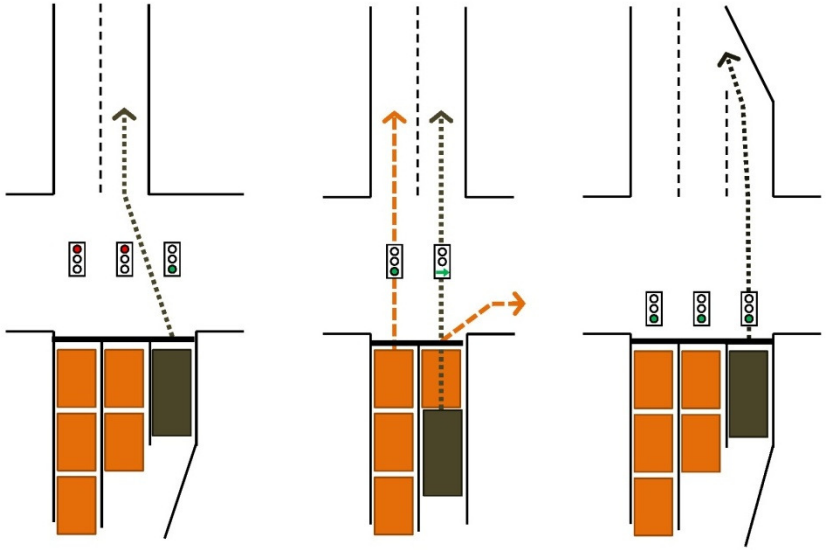
Mixed vs. Dedicated

Characteristic	Mixed Traffic	Dedicated Lanes
Transit Vehicle Speeds	Lower	Higher
Travel Time	Longer	Shorter
Service Reliability	Lower	Higher
Impact on General Traffic	Minimal (if buses stop in bays)	Significant (if dedicated lane removes travel lane)
	Significant (if buses block traffic)	Minimal (if roads are widened)
Right-of-Way Impact	Minimal	Considerable
Transit Vehicle Bunching	More likely	Less likely
Cost	Low	High
Time to Implement	Short	Moderate

Priority Treatment Techniques

Study Techniques

- Traffic signal coordination
- Transit signal priority
- Queue jump lanes
- Dedicated lanes
- Signal preemption
- Uninterrupted runningway



Advance Green Signal | Transit Vehicle Exception | Transit Receiving/Merge Lane

Queue Jump Configurations

Streetcar and Light Rail Transit (LRT)

Characteristic	Streetcar	Light Rail Transit
Runningway	Mixed traffic or dedicated	Primarily dedicated, limited mixed traffic
Fare Collection	Off-board	Off-board
Priority Treatment	Coordination and TSP	TSP and Preemption
Arrivals Information	Extensive	Extensive
Boarding	Mixture	Mixture
Cost	High	Very High
Branding	Route and Service-Specific	Route and Service-Specific
Development Incentive	Considerable	Considerable
Construction Timeline	Long	Long