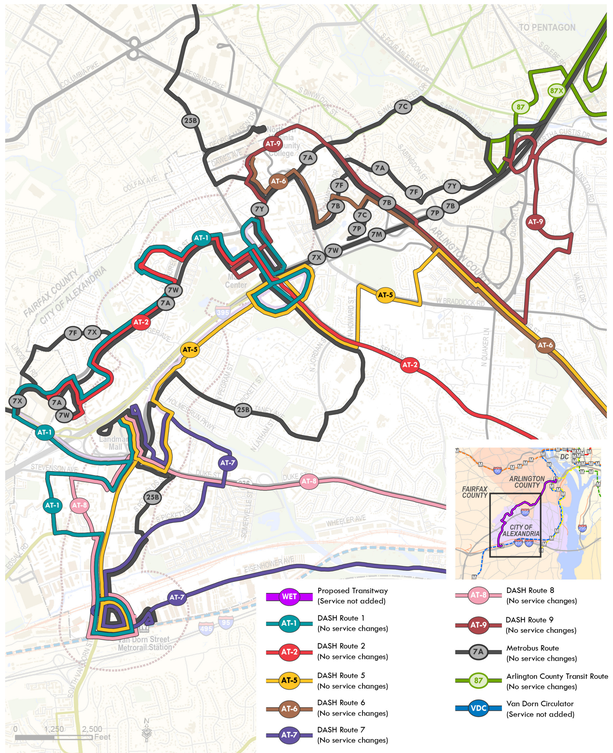
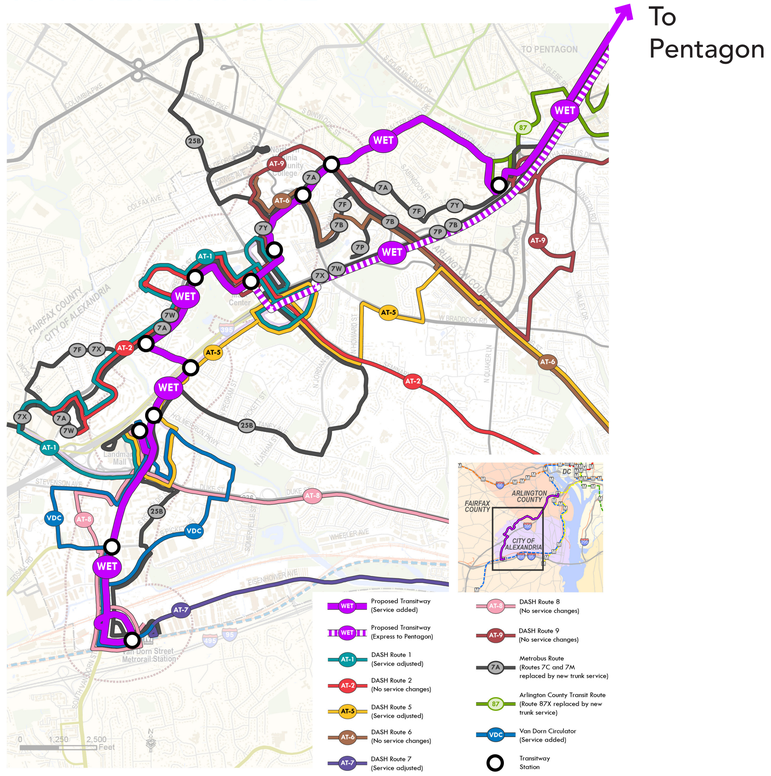
STUDY ALTERNATIVES

NO BUILD ALTERNATIVE



TSM ALTERNATIVE



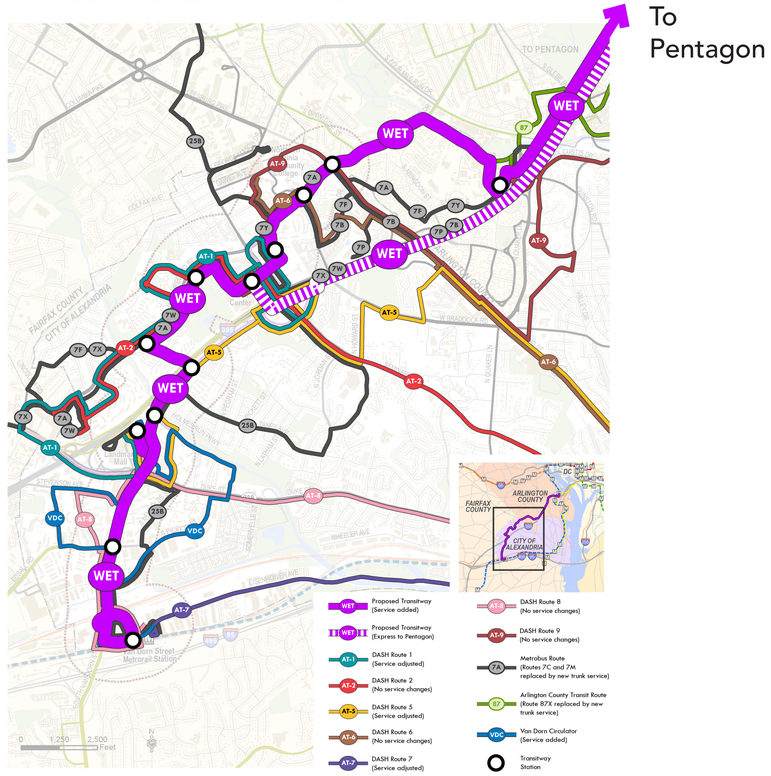
KEY TRANSIT ELEMENTS: TSM

- New branded West End service
- Frequent service
- Consolidated stops
- Real-time passenger information

SERVICE CHANGES

- **Routes Adjusted:** DASH 1, 5, 7
- **Routes Replaced by New Service:** Metrobus 7C, 7M, ART 87X
- **New Routes:** Van Dorn Circulator

BUILD ALTERNATIVE



KEY TRANSIT ELEMENTS: BUILD

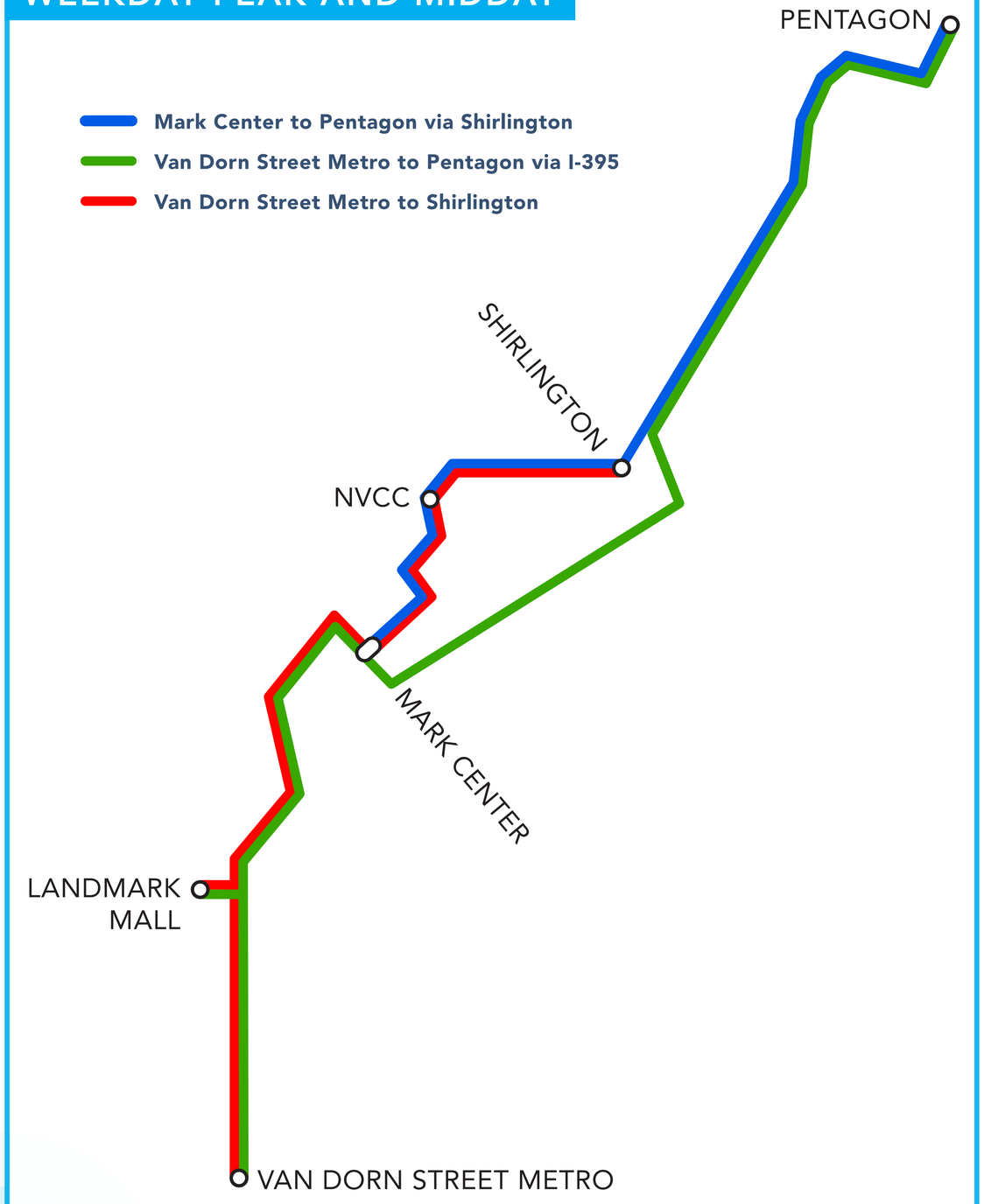
- Dedicated lanes for transit
- New branded West End Transitway service
- Frequent service
- Consolidated high-amenity stops
- Real-time passenger information

SERVICE CHANGES

- **Routes Adjusted:** DASH 1, 5, 7
- **Routes Replaced by New Service:** Metrobus 7C, 7M, ART 87X
- **New Routes:** Van Dorn Circulator

PROPOSED TRANSIT SERVICE FOR TRANSPORTATION SYSTEMS MANAGEMENT (TSM) AND BUILD ALTERNATIVES

WEEKDAY PEAK AND MIDDAY



WEEKDAY EVENING AND WEEKEND

WEST END TRANSITWAY INFRASTRUCTURE

Curious about queue jumps and transit signal priority? Check out the Transit System Elements Board for descriptions.

N. Beauregard Street at S. King Street

N. Beauregard Street at W. Braddock Road/E. Campus Lane

N. Beauregard Street at Fillmore Avenue

Southern Towers

N. Beauregard Street at Rayburn Avenue

Mark Center

N. Beauregard Street at Sanger Avenue

N. Van Dorn Street at Sanger Avenue

N. Van Dorn Street at Holmes Run Parkway

Landmark Mall

N. Van Dorn Street at Edsall Road

Van Dorn Street Metrorail Station

Shirlington Transit Center

Pentagon Metro Station

To Pentagon

Northern Virginia Community College

Mark Center

Landmark Mall

Van Dorn Street Metrorail Station

Shirlington

The Pentagon

SYSTEM INFRASTRUCTURE IMPROVEMENTS BY ALTERNATIVE

ELEMENT	NO BUILD ALTERNATIVE	TSM ALTERNATIVE	BUILD ALTERNATIVE
TRANSIT SIGNAL PRIORITY (TSP)	Up to 9 locations	Up to 13 locations	24 locations (All signalized corridor intersections)
QUEUE JUMP LANES	1 location	1 location	None
TRANSIT RUNNINGWAY MODIFICATIONS	None	None	Dedicated Lanes: 2.3 miles (42 percent of Alexandria portion)
SERVICE USING I-395 HOV LANES (In peak direction only)	Not applicable	• Shirlington Transit Center – Pentagon: 3.4 miles • Seminary Road (Mark Center) – Pentagon: 5.2 miles	

0 1,250 2,500 Feet

N

LEGEND

Draft Proposed West End Transitway Build Alternative

- Station
- Dedicated Transit Lane in One Direction (Northbound/Westbound Only)
- Dedicated Transit Lanes in Both Directions
- Transit in Mixed Traffic
- Transit in I-395 HOV Lanes (Peak Period)
- Metrorail Station
- Metrorail Blue Line
- Metrorail Yellow Line

Transit Accomodation Improvements

Queue Jump Location

- Queue Jump in No Build and TSM Alternatives Only

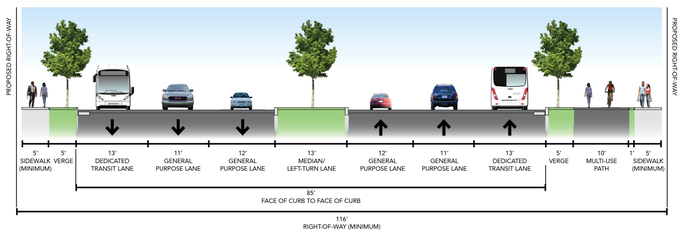
Transit Signal Priority (TSP) Locations

- TSP in All Alternatives
- TSP in TSM and Build Alternatives Only
- TSP in Build Alternative Only

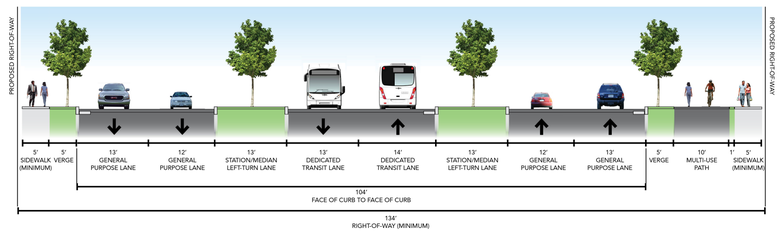
TRANSIT SYSTEM ELEMENTS

RUNNINGWAYS

- **Mixed-Flow**
  - Transit travels in same lanes as other vehicles
  - Reduces speed and increases travel time for transit
- **Dedicated Lanes**
  - Transit travels in a lane separate from other vehicles
  - Lanes may be physically separated or denoted by pavement types/markings
- **Combination of Lane Types**
  - Practical solution due to varying right-of-way constraints
  - Combination of mixed flow and dedicated lanes



Curbside Dedicated Transit Lanes



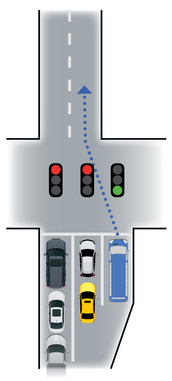
Median Dedicated Transit Lanes

▲ *Wilshire Boulevarde BRT*

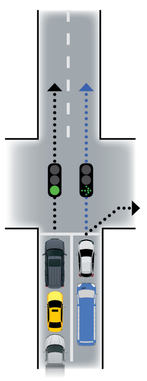
▲ *US 1 Metroway*

QUEUE JUMP LANES

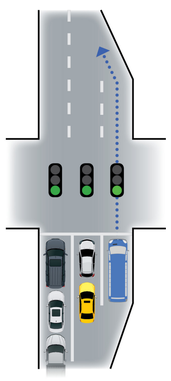
- No Build and TSM Alternatives only
- Used in mixed-flow runningways
- Allow transit vehicles to bypass traffic back-ups
- Several distinct lane/signal configuration (diagrams on right)



Queue Jump through Advance Green Signal: The transit vehicle receives a green signal indication ahead of adjacent travel lanes to allow the transit vehicle to advance ahead of the adjacent travel lanes.



Queue Jump through Transit Vehicle Exception: Transit vehicles are permitted (through signage and pavement markings) to travel through the intersection using the rightmost lane. All other traffic must turn right from the rightmost lane.



Queue Jump through Transit Receiving/ Merge Lane: All traffic receives a green indication at the same time and a far side (of the intersection) merge lane is provided to allow the transit vehicle to return to the stream of through traffic.

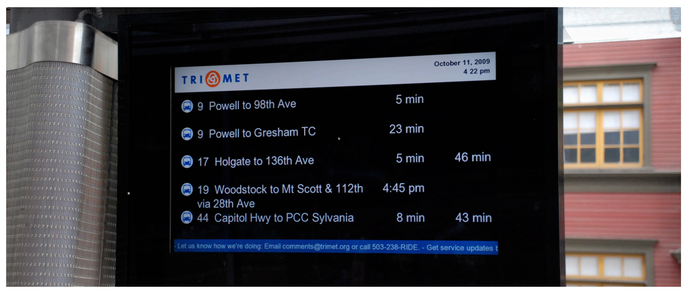
TRANSIT STOPS AND STATIONS

- Up to two vehicles
- Shelters
- Level or near-level boarding
- Off-board fare collection system
- Service-specific branding
- Real-time service information display

▲ *US 1 Metroway station*

PASSENGER INFORMATION SYSTEMS

- Static: Published schedules and routes
- Real-time: Up-to-date vehicle location and arrival information
- Pre-trip
- On-vehicle



OFF-BOARD FARE COLLECTION

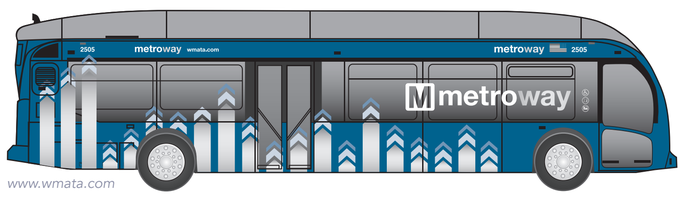
- Fare collected before boarding
- Validated upon entering station or through enforcement
- Increases service efficiency by reducing boarding time
- Allows boarding through all doors

BRANDING AND IDENTIFICATION

- Specific design standards
- Improves recognition of service
- Attract new riders

TRANSIT VEHICLES

- Service-specific low-floor bus rapid transit (BRT) buses with specific branding



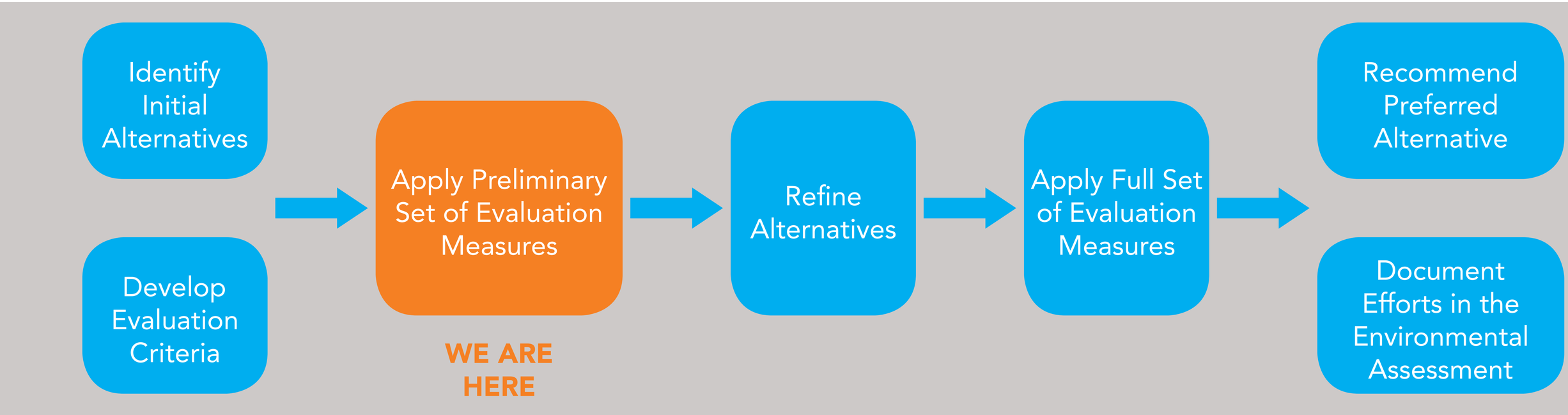
◀ *US 1 Metroway vehicle*

TECHNOLOGY

- Traffic Signal Coordination – Managing traffic signals to improve flow of general traffic
- Transit Signal Priority (TSP) – Tactic used to reduce delay of transit vehicles caused by traffic signals

- Automated Vehicle Location (AVL) – Provides for the ability to know where buses are at any given point using GPS. Supplies data for real-time arrival information at bus stations.

EVALUATION OF ALTERNATIVES



EVALUATION MEASURES

Transit	Ridership	Residents within Station Walkshed	Jobs within Station Walkshed	Number of Transfers	Travel Time
Levels of Traffic	Intersection Level of Service	Intersection Queueing	Vehicular Travel Time	Existing vs. New/Improved Sidewalks	Bicycle Facilities Proposed
Land Use	Development	Complements Small Area Plans			
Physical	Right-of-Way	Parking			
Socio-economic	Low-Income and Minority Populations	Community Facilities	Cultural Resources	Noise and Vibration	Air Quality
Natural	Parklands	Streams	Wetlands and Floodplains	Threatened and Endangered Species	
Financial	Capital Costs	Operating Cost			

PRELIMINARY TRANSPORTATION EVALUATION

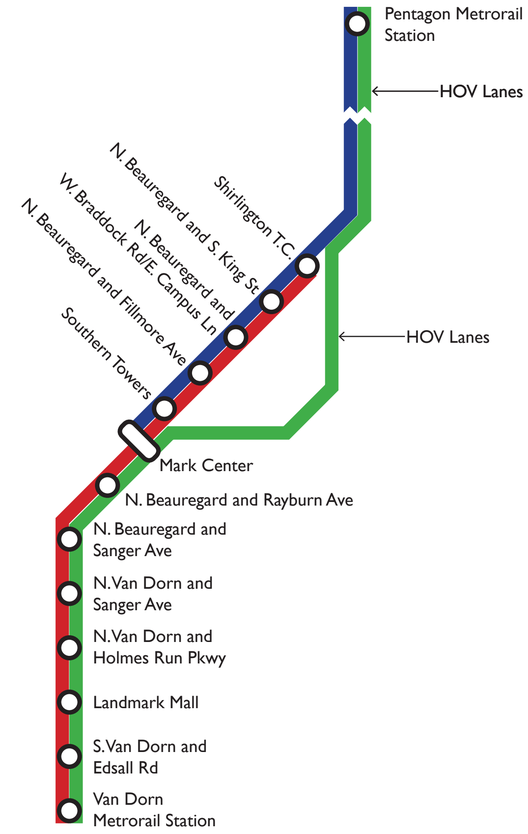
TRAVEL TIME

TRAVEL TIME is measured as the time that a transit rider spends traveling from trip origin to destination. It is an important measure of speed and efficiency. A shorter travel time makes transit service more attractive and is an important factor in increasing ridership on the system.

2015 Corridor Peak Hour Travel Time

Alignment	No Build	TSM	Build
Van Dorn to Pentagon (Green)	37 - 57 minutes (1 transfer)	32 - 36 minutes (no transfers)	28 - 33 minutes (no transfers)
Van Dorn to Shirlington (Red)	52 - 70 minutes (1 transfer)	28 - 31 minutes (no transfers)	23 - 28 minutes (no transfers)
Mark Center to Pentagon (Blue)	26 - 51 minutes (1 transfer)	20 - 22 minutes (no transfers)	19 - 22 minutes (no transfers)

Note: Ranges represent AM and PM travel time estimates.

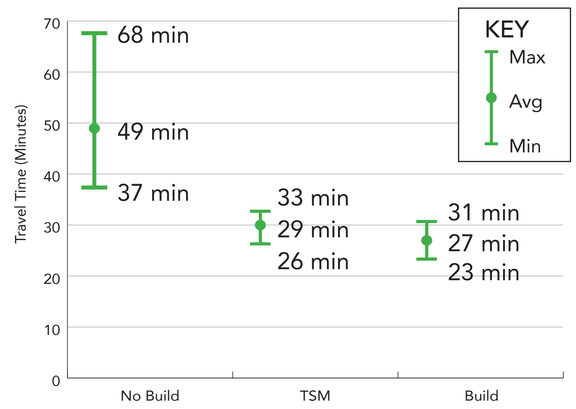


RELIABILITY

RELIABILITY is the degree to which transit service can maintain schedules and provide customers with consistent travel time and savings. Transit Signal Priority and dedicated lanes help transit to avoid delays due to automobile traffic.

2015 Transit Time Reliability

	No Build	TSM	Build
Reliability	Low	Improved	High



Estimated Transit Travel Times: Van Dorn to Pentagon via Mark Center Northbound AM Peak

RIDERSHIP

RIDERSHIP is measured as the number of passengers carried by transit per unit of time. It is an important indicator of a transit system's utility and efficiency.

2015 Average Daily Ridership

Route	No Build (actual)	TSM (estimated)	Build (estimated)
Metrobus	15,800	11,000	11,300
DASH	12,900	12,600	12,700
West End Transitway	—	8,000	9,200
Total Corridor Riders	**28,700**	**31,600**	**33,200**

TRAFFIC LOS

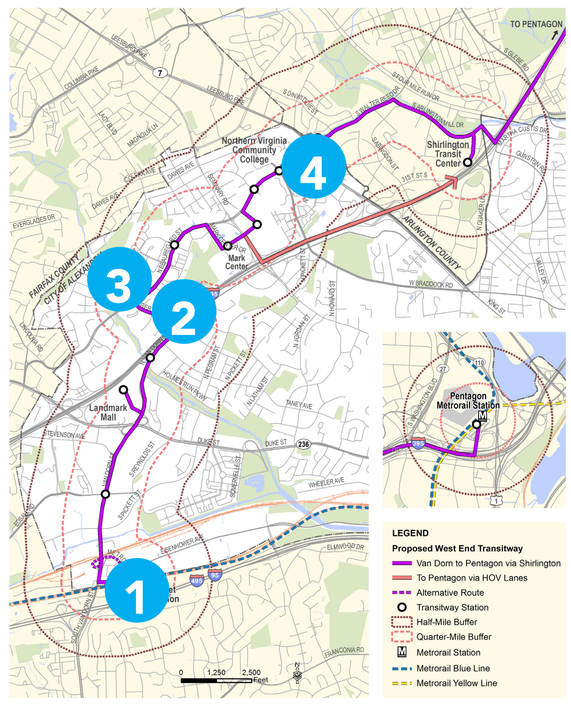
LEVEL OF SERVICE (LOS) is used as a measure of traffic service and intersection performance using letters A through F. An LOS of A indicates free flow of traffic; E and F indicate unstable traffic flow and significant delays.

The TSM and Build alternatives give higher priority to transit vehicles at key intersections. As transit vehicles bypass automobile traffic, delays for motorists would increase.

2015 Key Intersection Features

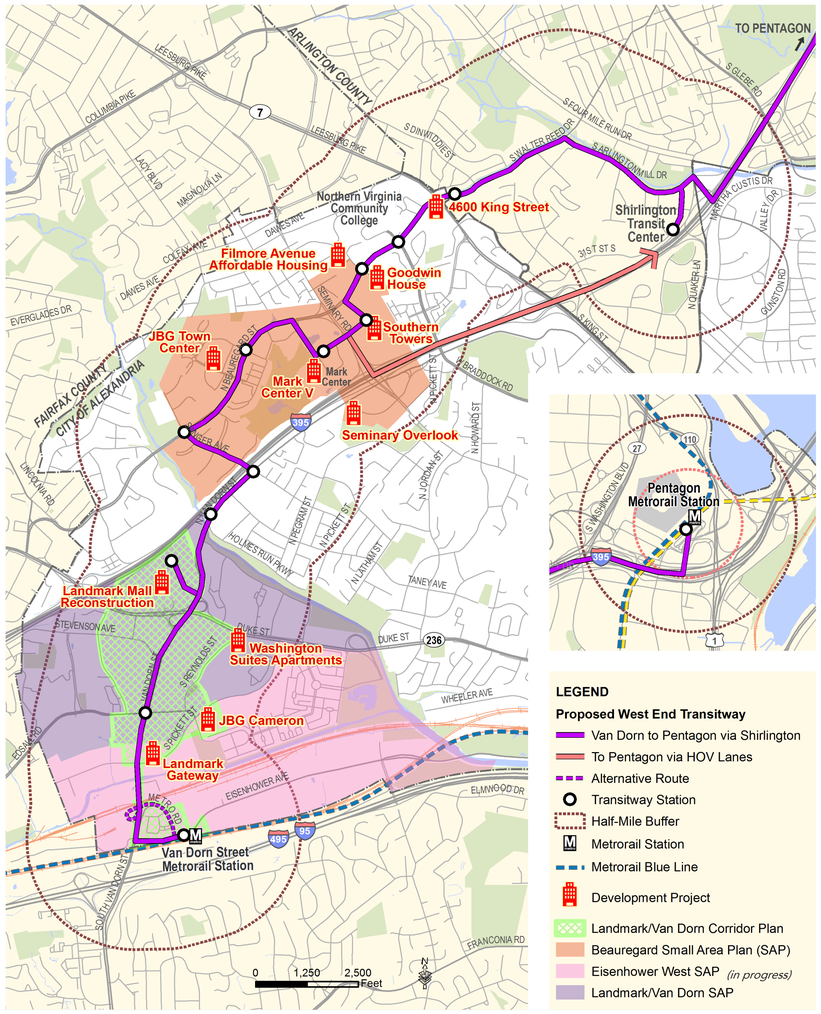
Intersection	No Build Features (AM/PM LOS)		TSM Features (AM/PM LOS)		Build Features (AM/PM LOS)	
1 Van Dorn Street & Eisenhower Avenue	No Change		No Change		Signal Preemption and Dedicated Lanes	
	D	C	D	C	D	D
2 Van Dorn Street & Sanger Avenue	Signal Preemption		Signal Preemption		Signal Preemption and Dedicated Lanes	
	C	D	D	D	D	E
3 Beauregard Street & Sanger Avenue	Signal Priority		Signal Priority		Signal Preemption and Dedicated Lanes	
	E	E	E	E	F	F
4 Beauregard Street & King Street	No Change		No Change		No Change	
	C	C	C	C	C	C

Signal Priority: Buses receive additional "green time".
Signal Preemption: Buses activate transit green signal.

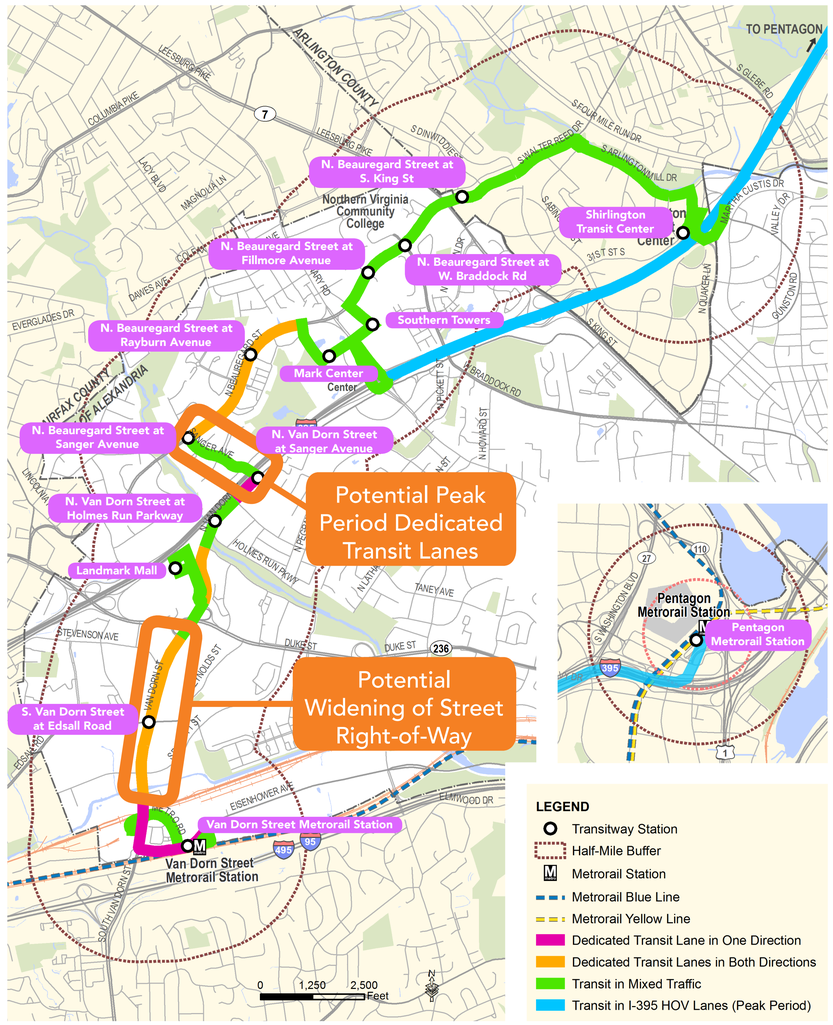


LAND USE AND PHYSICAL CONSIDERATIONS

SMALL AREA PLANS AND DEVELOPMENT PROPOSALS



PROPOSED BUILD RUNNINGWAY AND PHYSICAL CONSIDERATIONS



COMPARISON OF SELECTED LAND USE CRITERIA

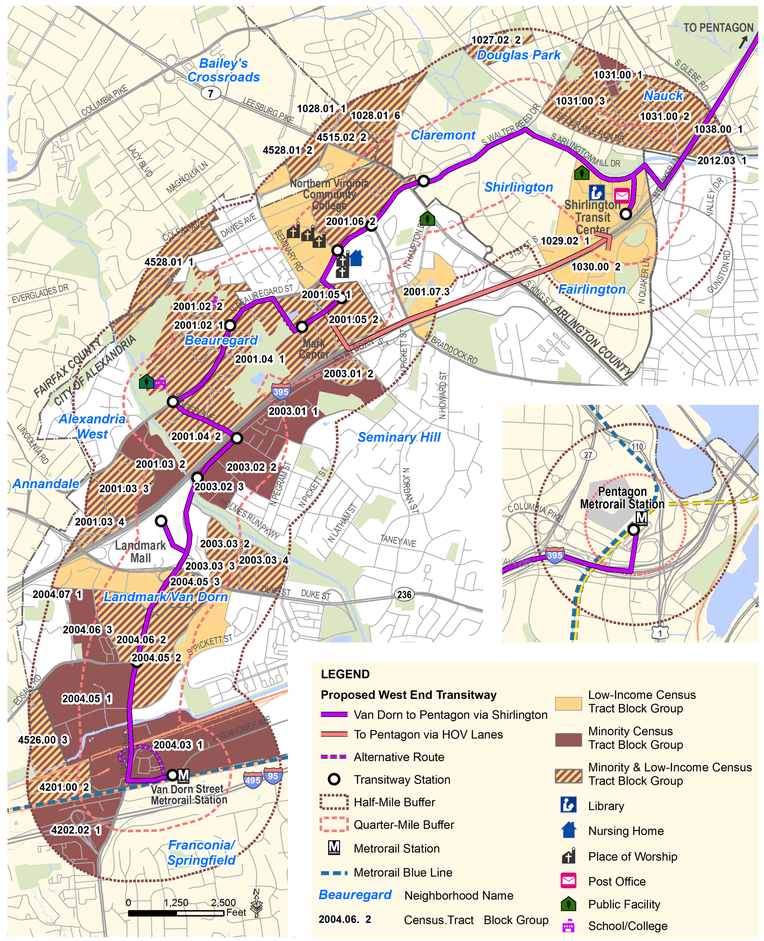
	No Build	TSM	Build
Allowable Development (Beauregard Small Area Plan and Landmark/Van Dorn Corridor Plan)	Beauregard SAP Cap at 1.5M sq ft Landmark/Van Dorn 0.75M sq ft	Combined Plans: 9M sq ft allowed	Combined Plans: 9M sq ft allowed
Helps Achieve Small Area Plan Vision	**Does not contribute**	**Contributes somewhat**	**Complements vision**

COMPARISON OF SELECTED PHYSICAL CONSIDERATIONS

	No Build	TSM	Build
Additional Right-of-Way Required	**Low**	**Low**	**Moderate**
Parking Considerations	No changes	No changes	Design concepts to minimize impacts

SOCIO-ECONOMIC AND NATURAL RESOURCE CONSIDERATIONS

SOCIO-ECONOMIC CONSIDERATIONS

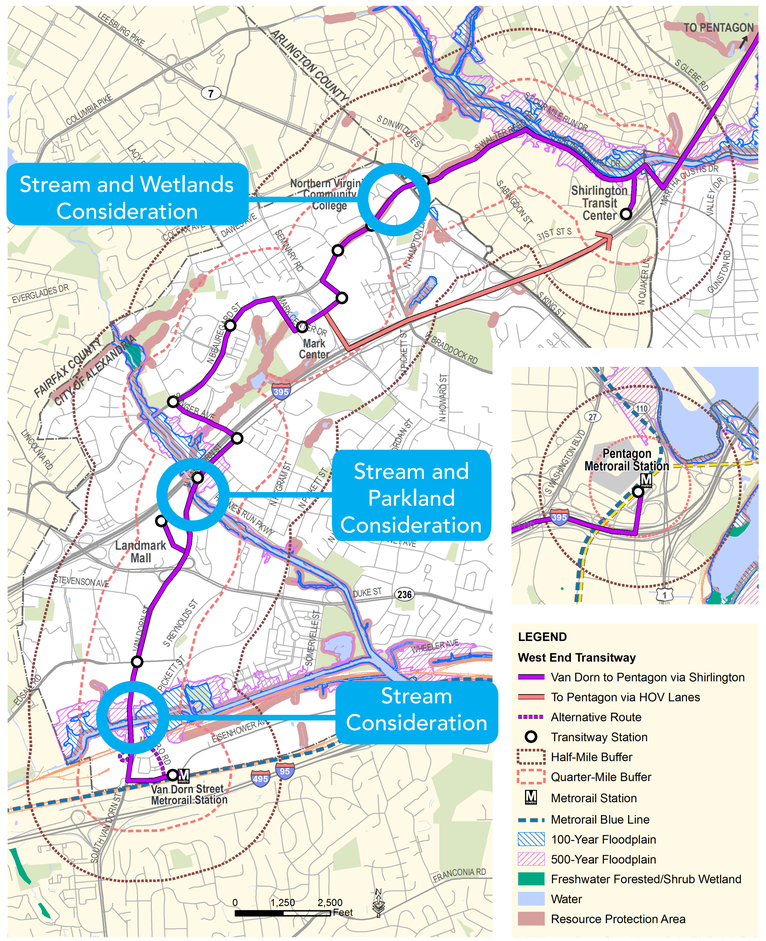


	No Build	TSM	Build
Benefits to Low Income/ Minority Population	**Low**	**Moderate**	**High**
Air Quality Benefits	**Low**	**Moderate**	**Moderate**

Project Alternatives would have little to no impact on:

- Community Facilities
- Cultural Resources
- Noise and Vibration Levels

NATURAL RESOURCE CONSIDERATIONS



Project Alternatives would have little to no impact on:

- Parks
- Streams
- Wetlands and Floodplains
- Threatened and Endangered Species