



# City of Alexandria & Alexandria Transit Company

Comprehensive Operational Analysis of the DASH Fixed Route Transit System

## Draft Final Recommendations



# Project Background and Approach



Comprehensive Operational Analysis of the  
DASH Fixed Route Transit System

- Evaluate existing data and previous studies
- Collect new data based on current service
- Develop near (0-4 years) and long term (Beyond 5 years) recommendations to improve quality, efficiency and effectiveness
- Study to Address:
  - Service Frequency
  - Travel Times
  - On-time performance
  - Connectivity
  - Productivity
  - Underserved areas
  - Underutilized service
  - Planned High Capacity Transit

# Project Background & Approach



Comprehensive Operational Analysis of the  
DASH Fixed Route Transit System

- Last COA completed 5 years ago
- DASH ridership has continued to grow
- COA supports City of Alexandria’s “livable cities” planning initiatives
- Respond to new development, travel patterns, travel demand
- Support new regional transportation initiatives (Transitways)
- Gather input from Alexandria residents/ stakeholders on how transit can best serve the community

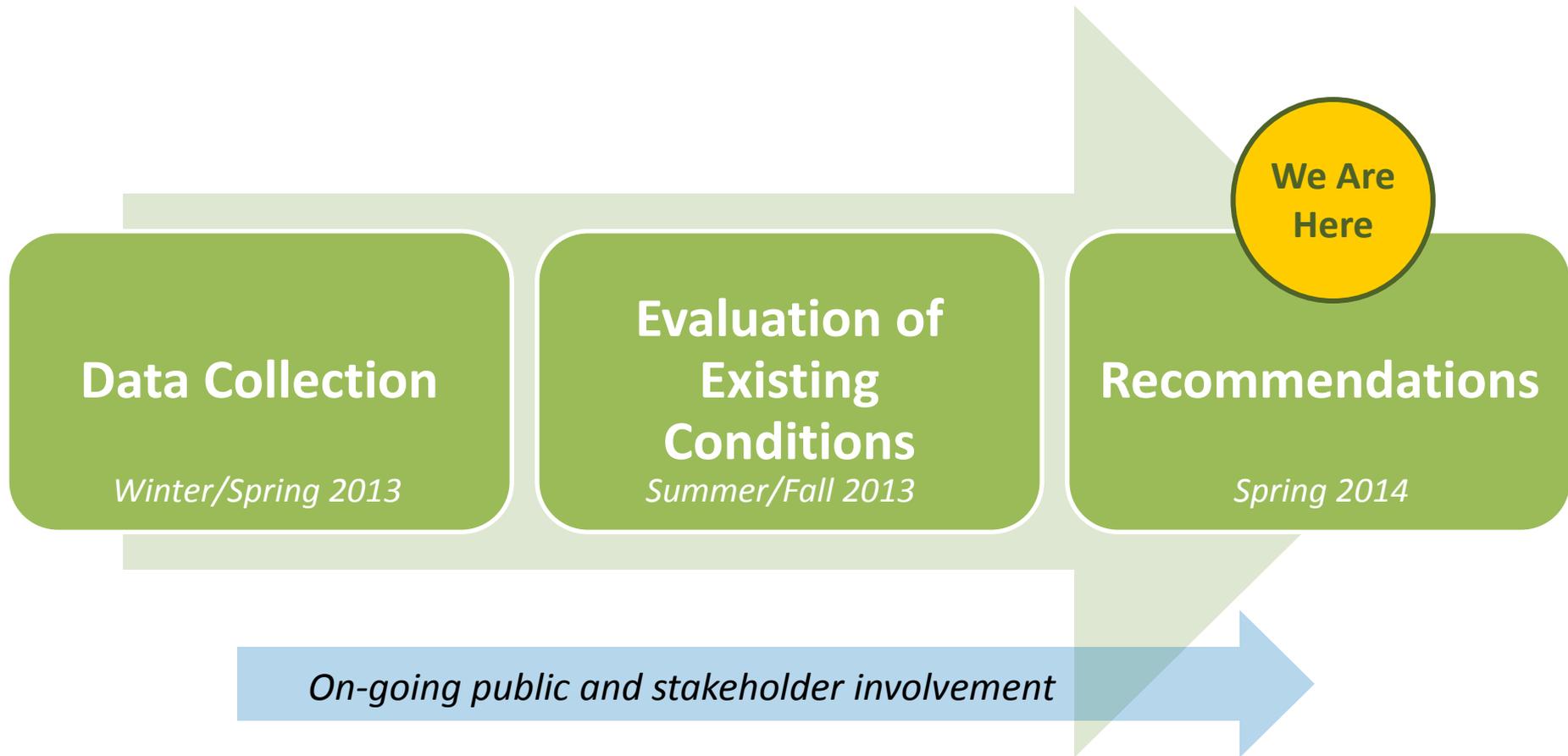
- Stakeholder Interviews (Spring 2013)
  - Community Organizations
  - Business Organizations
  - ATC Board & Staff
  - City Officials & Staff
- Telephone Survey (Spring 2013)
  - Random sample of Alexandria residents
  - 700 completed surveys (43% completion rate)
  - 95% level of confidence
- On-Board Survey (Spring 2013)
  - Trip purpose, origin/destination, demographics, customer opinion
  - 3,436 returned surveys (2,750 considered complete)
  - Offered in English, Amharic, Spanish

- DASH service is well regarded throughout the community
- A majority of respondents indicated that public transit is important to get people to work, reduce congestion, and improve mobility for low income persons and seniors
- DASH plays a vital role in supporting both local and regional economic development, especially near Metrorail stations
- About 50% of respondents were very or somewhat supportive of an increase in taxes to expand DASH service
- DASH bus drivers are very friendly, professional, and punctual
- DASH should implement real-time information and mobile apps to better connect and inform transit riders

# Project Elements



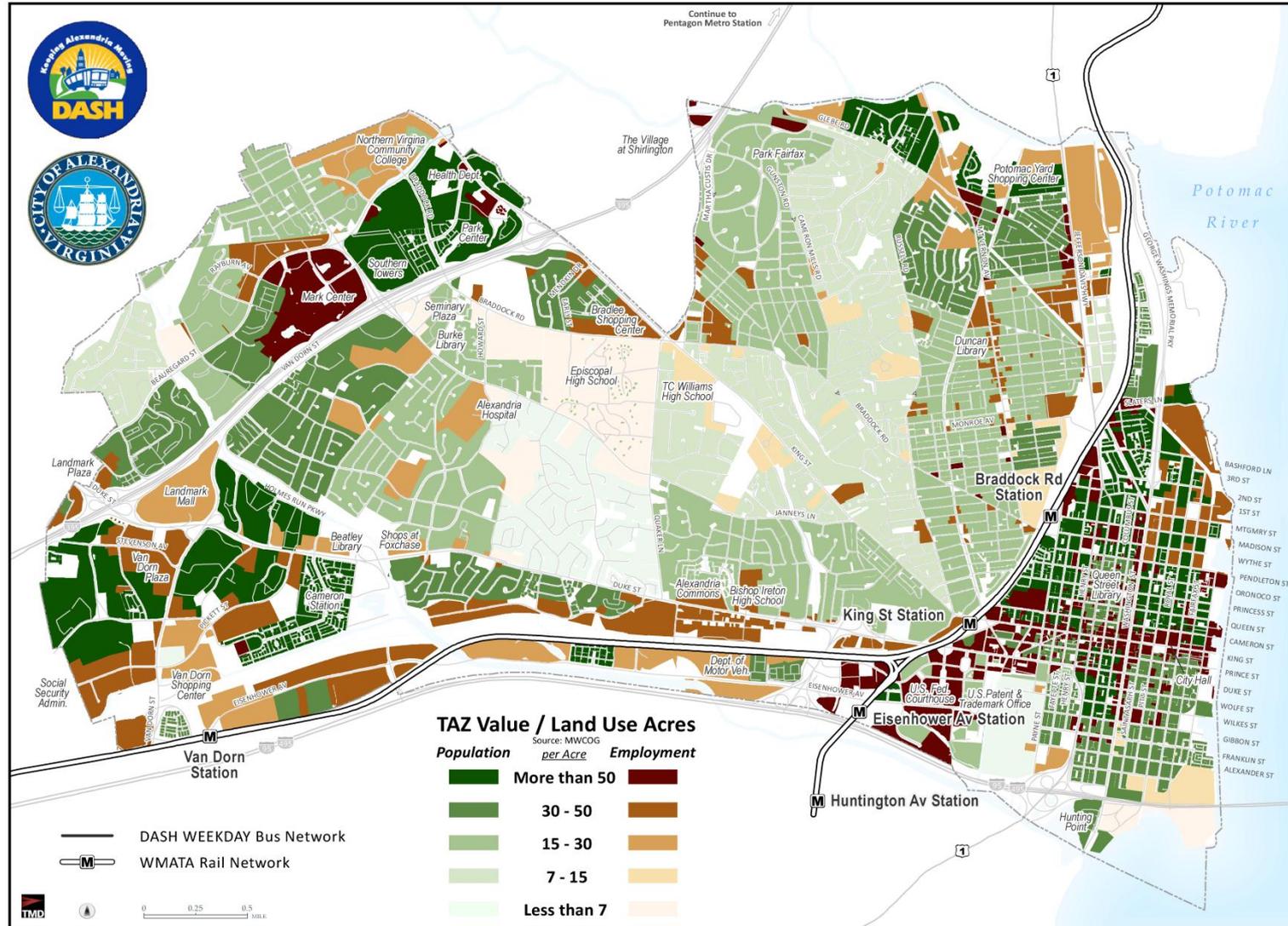
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# 2010 Population and Employment



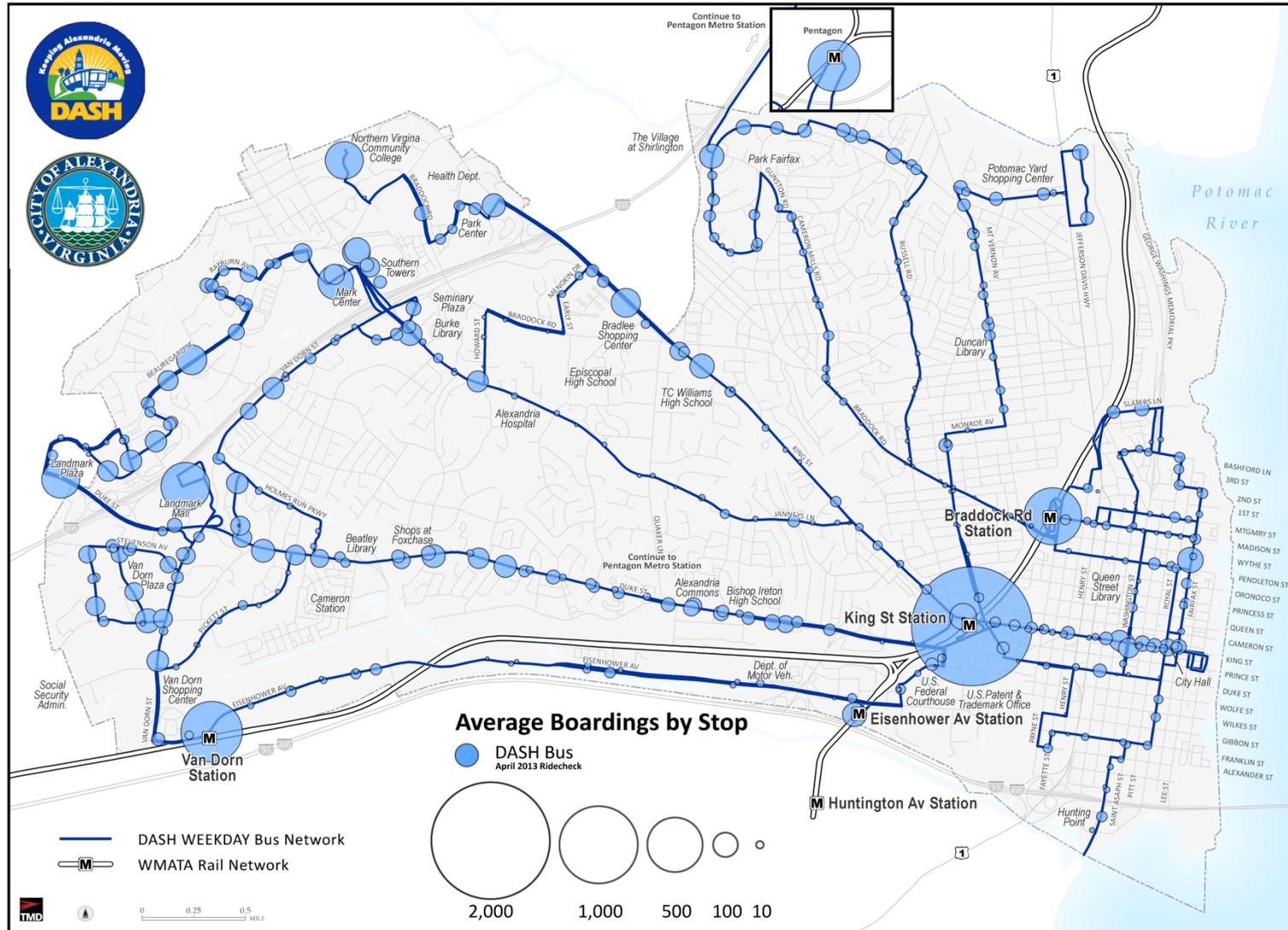
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# 2013 On-Board Ridecheck Ridership



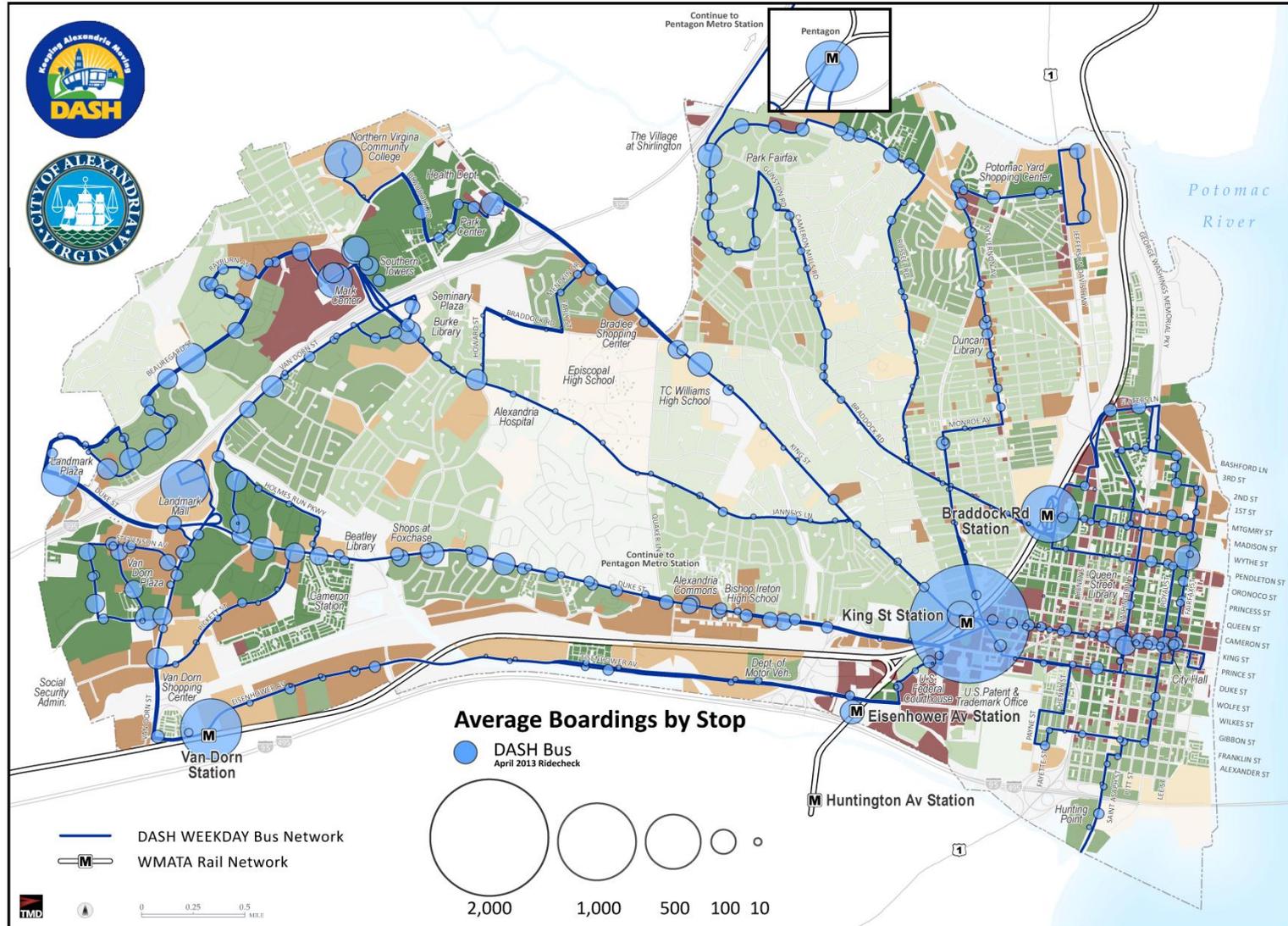
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# Demographic Density/Passenger Boardings



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DASH Fixed Route Transit System



- **Build on market strengths**
  - Population and employment growth
  - Strong support of DASH service in community
  - Metrorail and Metrobus presence
- **Build on success of current network**
  - Support strong corridors
  - Serve high density trip generators
  - Integrate with other transit modes (i.e. Bus, Transitways, Rail)
- **Enhance the customer experience**
  - Spontaneous use service
  - Faster travel times
  - Leverage technology
- **Improve financial sustainability**
  - Effectively use resources
  - Grow ridership
  - Properly match service needs to market conditions

- **Proposed Recommendations**

- Enhance Route Network Frequencies
- Introduce New Fixed Routes and New Circulators
  - Van Dorn Circulator (Restructure AT7)
  - Eisenhower East Circulator
  - AT9
- Improve DASH Service in Old Town
  - Introduce new Old Town Circulator (AT2/AT5)
  - Restructure Route AT2, AT3, AT3/4



# Improve Old Town Route Synergy



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- Old Town presents a unique market that warrants high quality, all day circulation service
- Coordinated and branded service option becomes a feasible way to introduce a circulator concept in Old Town
- Current Route AT2 and AT5 will be rebranded east of King Street to Braddock Station as the “Old Town Circulator;” the routes will operate a combined schedule and AT2 will be re-aligned to the current AT5 route alignment along Montgomery Street and Madison Street
- Based on the current route configuration of DASH’s network, supplemented by near term construction and route alignment changes, a fare free zone within Old Town is not recommended at this time

# Old Town Circulator



Comprehensive Operational Analysis of the  
DASH Fixed Route Transit System



- Combination of AT2 and AT5 will provide a 10 minute peak and 15 minute off-peak frequency
  - Future service will create 7.5/10 minute frequency
- No additional revenue vehicles are needed to implement this service
- Consistent with Transportation Master Plan

# Old Town Circulator



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Change Headsigns



Enhanced Bus Shelters

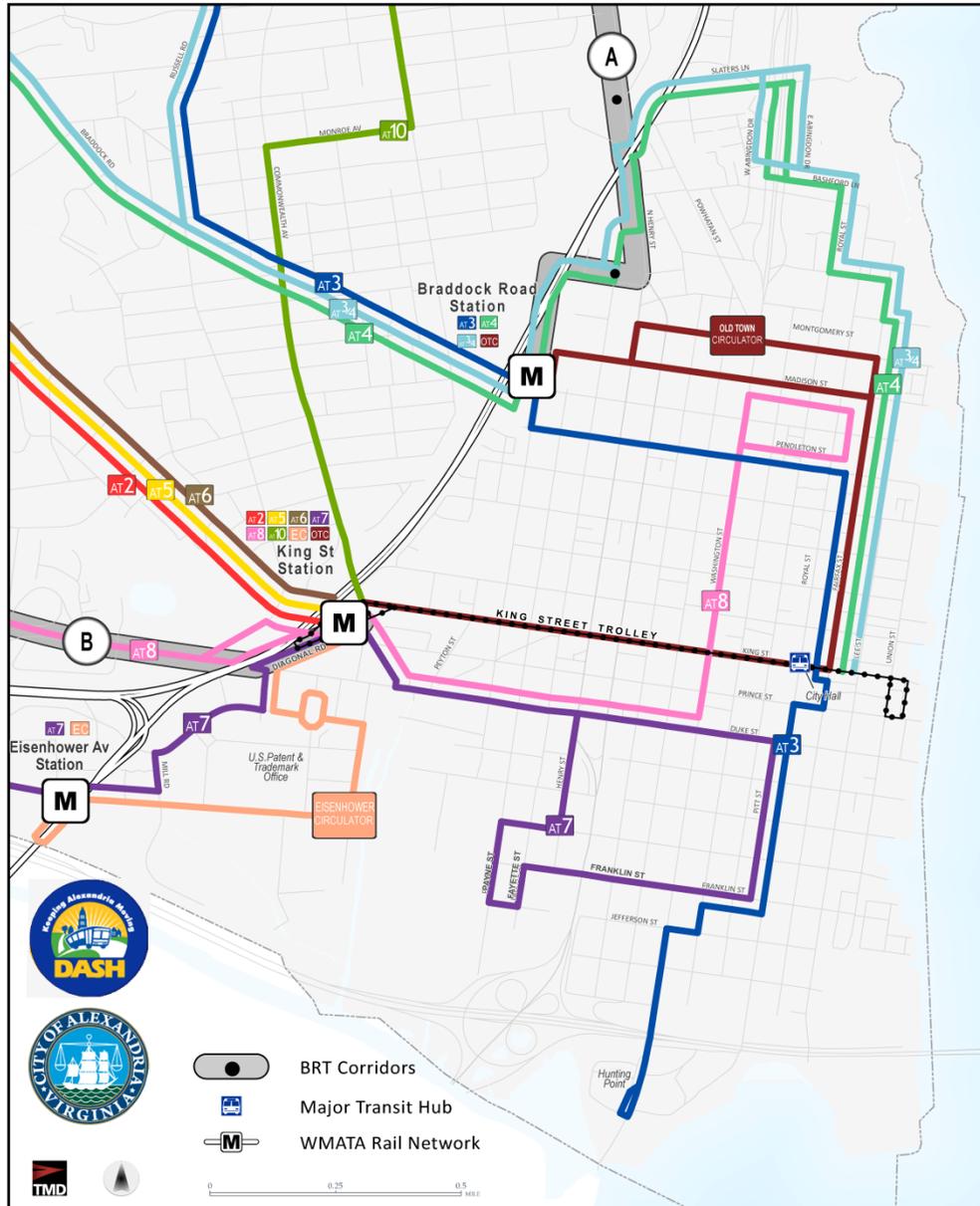


Branded Service Pylons

# Old Town Route Network



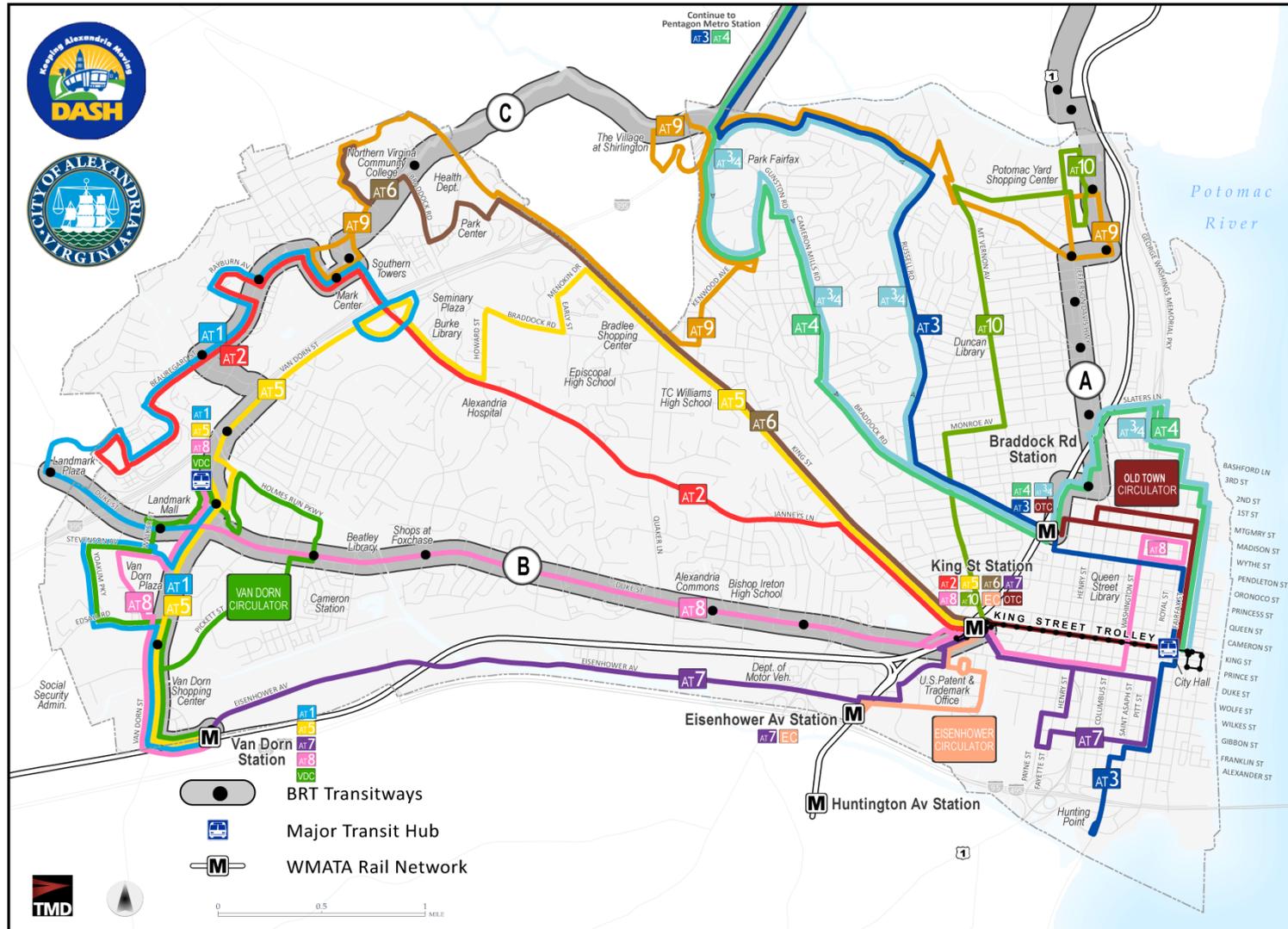
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# Proposed Weekday Network



Comprehensive Operational Analysis of the  
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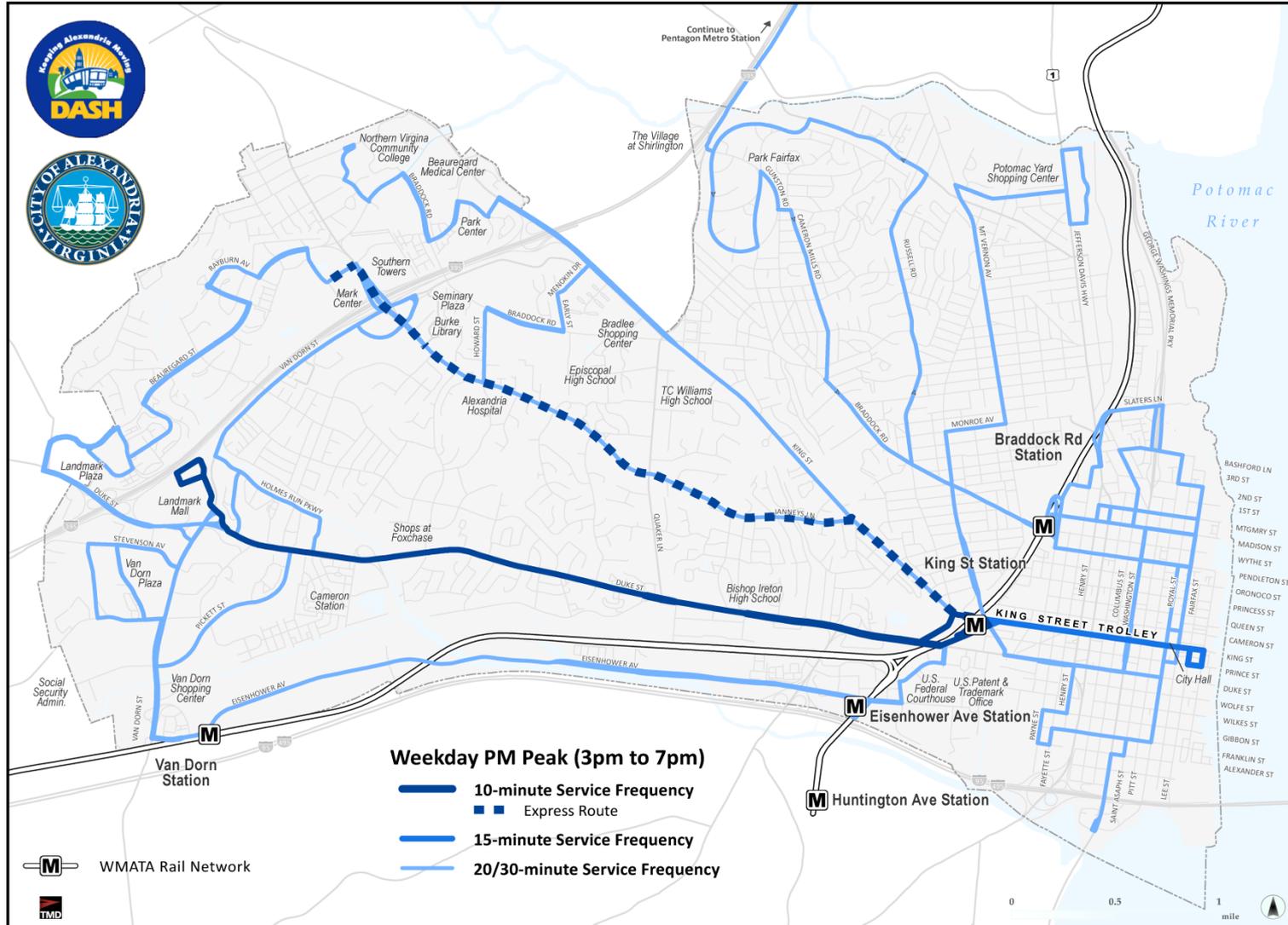


- Enhancing route frequencies is the primary area of investment for DASH over the next ten years (as productivity standards are met)
  - True “urban lifestyle” frequencies achieve 10 minutes
- Current network
  - Few routes achieve urban frequency levels
- Phase I (15 min frequencies)
  - Core routes are increased to meet urban frequency levels
- Phase II (10 min frequencies)
  - The majority of the DASH system will have met urban frequency levels that create an overall synergistic transit network

# Current Peak DASH Transit Network



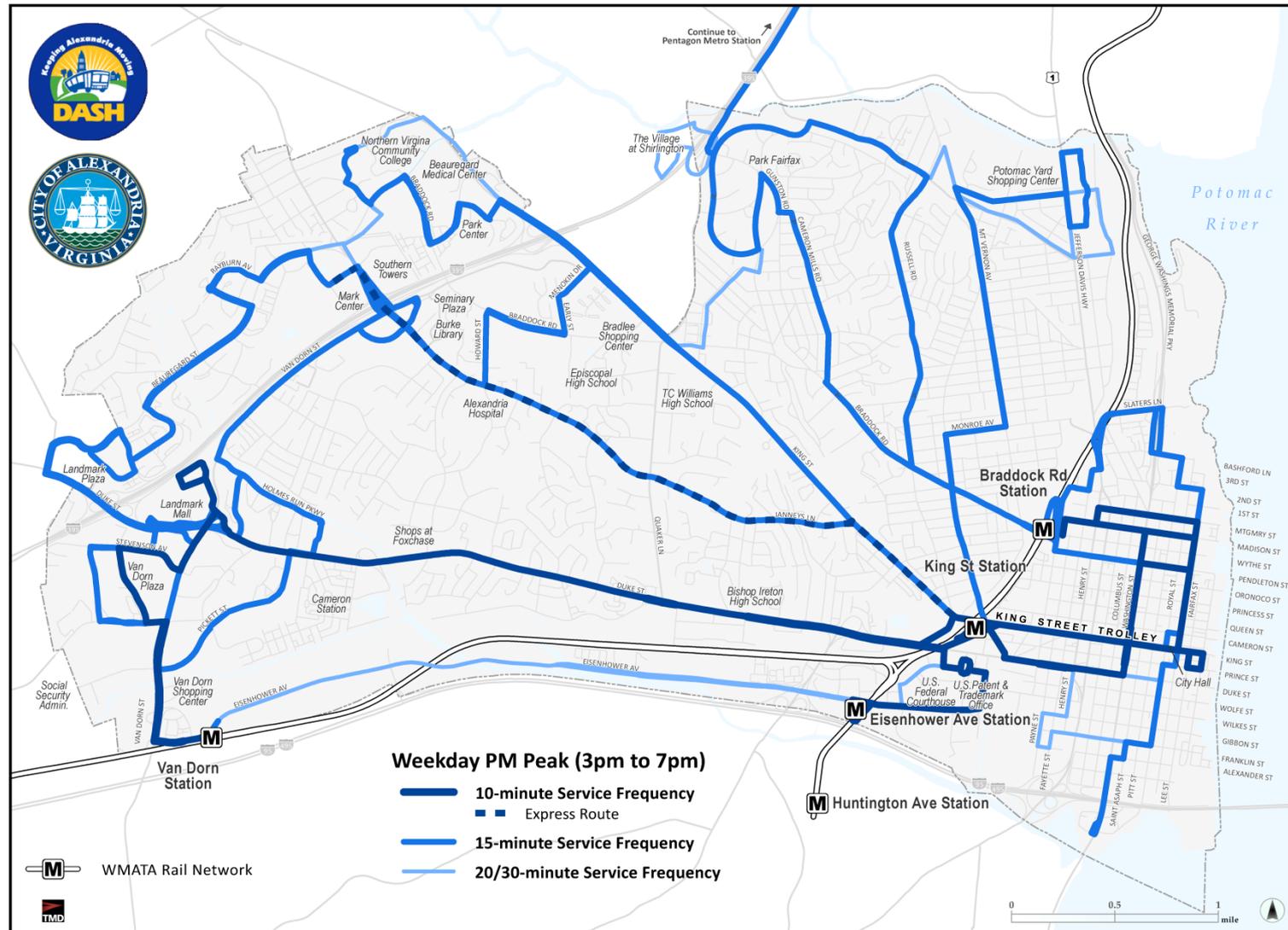
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# Phase I Peak DASH Transit Network



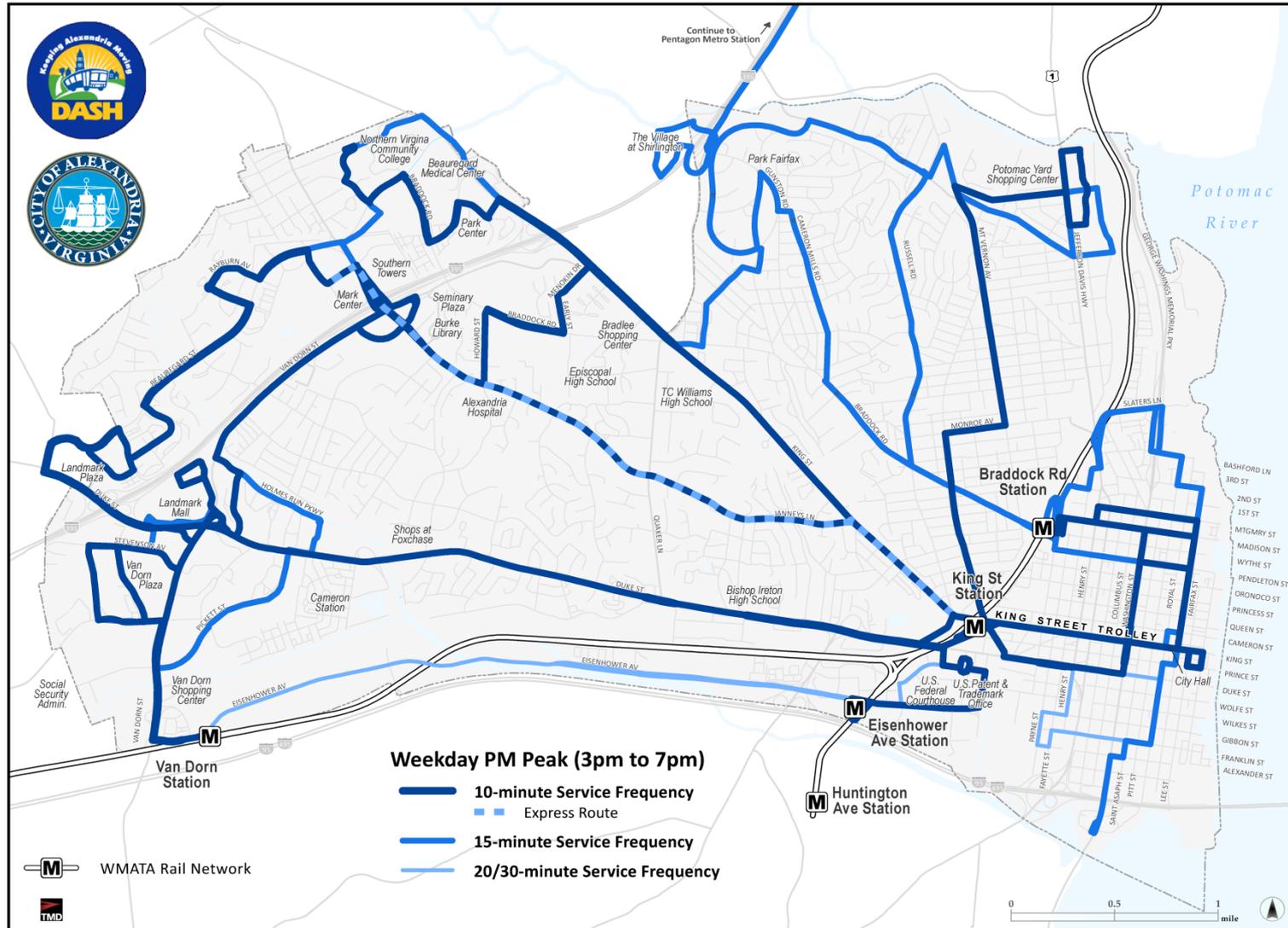
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# Phase II Peak DASH Transit Network



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## *Create the all day, all week network*

- Improve frequencies on Saturday and Sunday
- Introduce weekend service to North Old Town (Route AT3/4) and neighborhood surrounding the Trade Center Shopping Center (Van Dorn Circulator)
- Consistent investment in weekend service is most notable during Phase I (years 1-5)

Weekend Frequency Improvement Implementation										
	Phase I					Phase II				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AT1		■								
AT2(X)				■						
AT3										
AT4										
AT3/4										
AT5				■						
AT6										
AT7										
AT8	■					■				
AT9		■								
AT10					■					
EE Circ										
VD Circ*					■					
KST	■									

■ - Frequency Improvement

- Implementation of proposed frequencies will be based on performance and policy criteria
  - Route must achieve at least 125 percent of the average systemwide passenger per revenue hour (productivity) threshold
  - Routes that attain 150 percent of the systemwide productivity should be given priority investment

Weekday					
	AM Peak	Midday	PM Peak	Evening	All Day
	6am-9am	9am-3pm	3pm-7pm	7pm-12am	-
<b>AT1</b>	29.10	24.70	31.80	23.00	27.70
<b>AT2</b>	32.20	26.50	27.30	17.40	28.50
<b>AT2X</b>	24.20		23.20		23.70
<b>AT3</b>	26.00	10.40	24.20	9.90	23.50
<b>AT3/4</b>	--	13.40	--	8.90	12.00
<b>AT4</b>	23.20	13.70	19.40	13.60	20.50
<b>AT5</b>	27.40	20.80	23.90	20.60	23.30
<b>AT6</b>	27.90	39.60	22.30	16.70	27.20
<b>AT7</b>	16.50	13.10	11.70	11.20	13.40
<b>AT8</b>	38.80	38.50	31.90	27.90	35.00
<b>AT10</b>	33.60	22.50	26.50	13.50	24.30
Average	28.40	25.50	24.80	19.00	25.30

 - 125%\*  - 150%

# Yearly Phasing (Unconstrained)



- Phased investment of individual routes
  - Total revenue hours will increase 87 percent over the entire implementation period

	Phase I					Phase II				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
AT1	Red	Red				Red				Red
AT2(X)	Green, Blue		Red	Red		Red				
AT3	Green		Red							
AT4			Red							
AT3/4	Green									
AT5	Blue		Red	Red		Red	Red			
AT6							Red			
AT7					Green				Red	
AT8	Red	Red			Red	Red				
AT9	Green				Red		Red	Red		
AT10				Red	Red			Red		
EE Circ		Green								
VD Circ*					Green					
KST	Red									

\*Van Dorn Circulator will be implemented when BRT Transitway B and C are constructed

# Phase I & II Targets (Unconstrained)



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*Base Line, Phase I, and Phase II data represents the last year of each phase*

	Annual Revenue Hours	Annual Revenue Miles	Annual Passenger Boardings	Annual Cost*	Annual Fare Revenue**	Peak Buses***
<b>Base Line</b>	172,700	1,296,000	4,257,525	\$16,433,147	\$4,385,251	57
<b>Phase I</b>	314,100	2,464,600	6,693,400	\$36,384,341	\$6,894,202	83
<b>Phase II</b>	380,000	3,092,900	8,303,200	\$53,483,818	\$8,552,296	108

\*Annual cost is inclusive of yearly inflation adjustment

\*\*Projected fare revenue based on current fare structure

\*\*\*Spare buses are not inclusive of the peak bus count

- Vehicles should be purchased based on the load factor during peak hour demand, interchangeability, scheduling, and on-street characteristics
- Proposed recommended route network is largely frequency and peak hour oriented, vehicles should be planned accordingly
  - Smaller vehicles in this context may have limited utility
  - No significant operating cost savings are achieved utilizing smaller vehicles because operator costs represent the largest operating cost component.
  - Smaller vehicles can be expensive to operate due to different maintenance requirements and parts inventory.



# QUESTIONS?