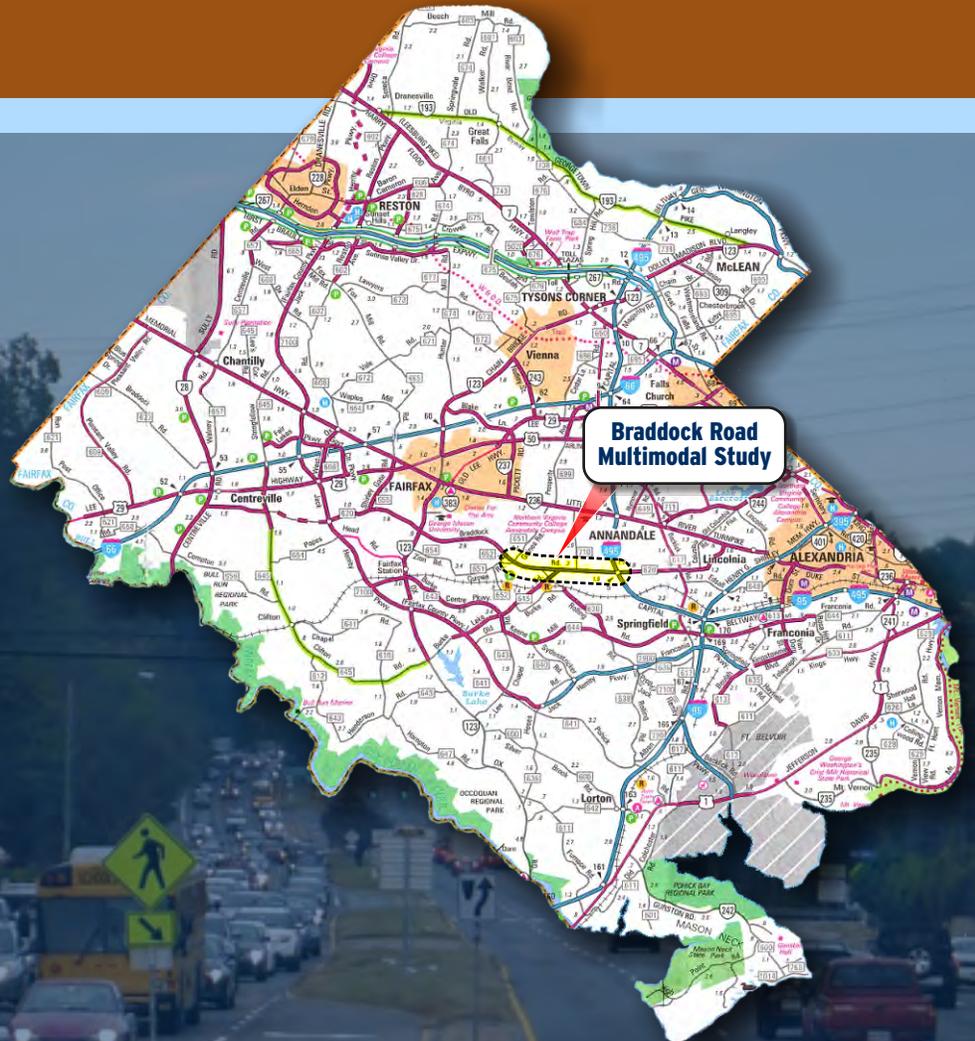




Braddock Road Multimodal Study

County of Fairfax, Virginia

Task Force Meeting Materials



Date: November 4, 2015



November 4, 2015
Braddock Road Multimodal Study
Fairfax County, Virginia

Task Force Meeting

- I. Introduction Kevin Morse, Chairman
- II. Progress Since Last Task Force Meeting (5 minutes)..... Tad Borkowski/Michael Guarino
- III. Discussion Items..... Tad Borkowski/John McDowell
 - a. Measures of Effectiveness Discussion (45 minutes)..... Tad Borkowski/John McDowell
 - i. Required MOE's
 - ii. Performance Measures
 - iii. Detailed Discussion of Qualitative Measures
 - 1. Definitions
 - 2. Relative Importance
 - b. Travel Demand Model and Microsimulation (VISSIM) (30 minutes)
 - iv. Existing travel patterns
 - v. Future 2040 travel patterns
 - c. Roadway (30 minutes) John McDowell
 - vi. Spot Improvement Options
- IV. Following Month's Activities (10 minutes) Tad Borkowski/John McDowell
 - a. Continue Travel Demand Modeling for Build conditions
 - b. Continue VISSIM preparation for Build Confitions
 - c. Complete evaluation Transit Center site plans
 - d. Continue alignment option development
- V. Adjourn Meeting Kevin Morse, Chairman



October 7, 2015

**Braddock Road Multimodal Study
Fairfax County, Virginia**

Task Force Meeting Minutes

Action Items

Task Force Members

- Review the MOE information and be prepared to discuss at the next meeting

FCDOT

- Post all meeting information and handouts on the task force website

RK&K Team

- Prepare a list of Performance Measures and how each relates to MOEs
- Begin to develop alignment and roadway configurations
- Continue to advance analysis and transit center layouts
- Continue Traffic Analysis

Discussion

Tad Borkowski began the meeting by discussing the work completed over the last few months (July-September 2015). He noted that since the last meeting, the existing and 2040 no-build conditions VISSIM models were developed and calibrated, that the MOE tables were revised and that the team completed the Parking Demand Study. John McDowell noted that since the last meeting, the VISSIM has been the primary focus and turned the meeting over to Neelima Ghanta (HNTB) to provide an overview of these efforts. During this overview, the following questions were discussed:

- *Regarding the macroscopic model and where volumes are coming from, i.e. what is feeding Braddock Road?* – John and Stuart Samberg noted that a regional TDM is used for that and further discussion would be provided later.
- *Are the impacts of Silver Line and I-66 taken into account?* – Stuart noted that this was captured in the macroscopic model but the microscopic model is just numbers.
- A general discussion was held during presentation of the simulation and whether the congestion at Wakefield Chapel was realistic. After debate and discussion, the general consensus was that it probably was realistic and appropriate.

After presentation of the existing conditions, Neelima presented the 2040 no-build conditions. The first item of discussion was the projected growth from 2015 to 2040 and the task force members were curious where the additional volume could be coming from when the area itself was built out. A graphic was presented showing the general increases from all directions. Michael Guarino noted that the team would look at this in more detail and present information pertaining to the “why” and “where” of these increases at the next task force meeting.

After that discussion, Neelima presented the 2040 no-build simulations. After viewing the simulations, a discussion was held in the room regarding what creates the increase in future year travel times. Neelima noted that the additional volumes are primarily responsible for this increase. A specific question was asked about why Guinea Road was a pinch point in the morning? Michael noted that the conflict was between the high volumes of westbound and northbound thru traffic. The task force members then noted a desire to see a list of spot improvements which could mitigate the conditions in the simulation. They would like this list to include the

realignment of Danbury. Michael noted that this list will be developed as part of the alternative development and presented to the task force.

A member of the task force asked whether the analysis being conducted took into account the change in high school start times. Michael noted that it did not but if that item became a big concern we could collect a few counts and spot check the previous data.

It was noted that at the next meeting a discussion would be held on the Transit Center and MOEs since those were not discussed tonight.

Planned Activities for October 2015

- Continue refinement of transit center sites
- Begin developing strategies for improvements to Braddock Road
- Travel Demand Modeling efforts will continue, begin focusing on modeling of future conditions
- Continue VISSIM modeling of existing conditions.
- Refinement of MOEs for presentation to task force.

Other items:

- The next Task Force meeting will be on November 4, 2015.

Should any revisions to these meeting minutes be required, please advise Tad Borkowski at tad.borkowski@fairfaxcounty.gov or John McDowell, PE at jmcdowell@rkk.com.

MEASURES OF EFFECTIVENESS RANKING SCALE

WEIGHTINGS

Task Force members will be asked to determine weightings for both qualitative and quantitative measures. This provides a relative value to the importance of each parameter as they relate to the others. For example, the Task Force might consider that project cost is more important than fuel costs. Therefore, if a 1 to 5 scale is selected, fuel costs might be assigned a weighting of 2, and project cost assigned a weighting of 5.

Measure	Weight	Comments
Most Important	5	Each measure will be assigned a weight as to how important that measure is compared to the others. This scale can be defined by the TF as shown to the left, or can be broader or narrower as desired. This allows the measures that are considered more important by the TF to have more impact on the evaluation made. These weightings should be determined before the evaluation of the alternatives is undertaken.
	4	
Average Importance	3	
	2	
Least Important	1	

MEASURE RANKING

Measures of Effectiveness (MOEs) are divided into quantitative and qualitative measures. Quantitative measures are those measure that a specific result value can be determined for the measure. Then a ranking is determined from those measures. Qualitative measures are those where the measurement is based on unmeasured preferences. Following is a proposed measurement guide for each of quantitative and qualitative measure:

Quantitative Measures

Measure	Rank	Comments
“Best” 10 percent	5	Each alternative is measured for its impacts. “Best” may be lowest costs, least number of properties taken, etc. The best is given a score of 5; the worst, 1. Within the range, rank is scored based on its relative difference between best and worst.
Better than Average	4	
Average	3	
Worse than Average	2	
“Worst” 10 percent	1	

Qualitative Measures

Measure	Rank	Comments
Most meets desired goal	5	Each alternative is measured for its desired result. The alternative that best meets the desired result is given a score of 5; the one that least meets is given a 1. Within the range, rank is assigned based on evaluator’s interpretation of its relative impact
Better than Average	4	
Average	3	
Worse than Average	2	
Least meets desired goal	1	

SCORING

After the weights of the measures and the ranking system is developed, each alternative will be scored. The weights remain fixed for all alternatives; the rankings are determined by either quantitative estimates or by the reviewer’s qualitative assessment of how the alternative meets the measure (user input in yellow)

Alternative 1

Measure	Value	Weight	Rank	Product
Qualitative Measure 1		2	1	2
Qualitative Measure 2		5	2	10
Quantitative Measure 1	{Value Input}	4	1	4
Total Score for Alternative 1				16

Alternative 2

Measure	Value	Weight	Rank	Product
Qualitative Measure 1		2	2	4
Qualitative Measure 2		5	1	5
Quantitative Measure 1	{Value Input}	4	3	12
Total Score for Alternative 2				21



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Braddock Road Multimodal Study
Fairfax County, Virginia

Roadway Performance Measures

Performance Measure	Unit of Measurement	MOE
Construction Cost	Dollars (\$)	PC
Right-of-Way Cost	Dollars (\$)	PC, RW
Engineering Cost	Dollars (\$)	PC
Total area of Right-of-Way Taken	Acres	RW
Number of Parcels Impacts	Each	RW
Vehicular Travel Time	Minutes	TT
Pedestrian Travel Time	Minutes	TT
Transit Travel Time	Minutes	TT
Bicycle Travel Time	Minutes	TT
Corridor Wide Conflict Points	Each	S
Highway Safety Manual Computed Expected Crash Rate	Crashes/Year	S
Intersection Delay by Movement	Seconds/vehicle	M
Overall Intersection Delay	Seconds/vehicle	M
Maximum or 95 th -Percentile Queue Length	Feet	M
Emissions of CO2	Kilogram	E
Emissions of Particulates	Kilogram	E
Fuel Consumption	Gallons	E
Latent Demand	Vehicles	M
Vehicle Miles Traveled	VMT	M
Average Speed	Miles/Hour	M

MOES:

Environment (E), Mobility (M), Safety (S), Travel Time (TT), Right-of-Way Impacts (RW), Project Cost (PC)



November 4, 2015
Braddock Road Multimodal Study
Fairfax County, Virginia
Roadway Measures Evaluation

Alternative _____

Description	Measure	Ranking
Qualitative Measures		
Environment	<ul style="list-style-type: none"> • Availability for screening or landscaping enhancements • Will the alternative enhance or erode the quality of the community? • Does the alternative have the potential to improve or degrade the noise levels and air quality experienced by those adjacent to the corridor? 	
Mobility	<ul style="list-style-type: none"> • Does the alternative facilitate community access to the road? • Will the alternative provide better access and circulation for pedestrians and bicycles 	
Safety	<ul style="list-style-type: none"> • Is it likely that existing conflict areas improved? • Is it likely that the suggested improvements will lower or increase potential crashes? • Are safe movements provided to pedestrians and bicycles? 	
Subtotal Qualitative Measures		
Quantitative Measures		
Travel Time	<ul style="list-style-type: none"> • Option that creates the least aggregate travel time • Travel time represented by critical movements • Pedestrian/Bicycle travel time • Corridor Travel Times? 	
Right-of-Way Impacts	<ul style="list-style-type: none"> • Total area of right-of-way taken • Number of parcels impacted • Park land versus residential 	
Project Cost	<ul style="list-style-type: none"> • Construction Cost • Right-of-way cost • Engineering/Permitting/CEI 	
Subtotal Quantitative Measures		

Overall Weighting of Alternative: Ranking X Importance = Product

• Qualitative Measures: _____ X _____ = _____

• Quantitative Measures: _____ X _____ = _____

• OVERALL RANKING..... _____ (sum of products)



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Braddock Road Multimodal Study
Fairfax County, Virginia

Transit Center Performance Measures

Performance Measure	Unit of Measurement	MOE
Construction Cost	Dollars (\$)	PC
Right-of-Way Cost	Dollars (\$)	PC
Engineering Cost	Dollars (\$)	PC
Total area of Right-of-Way Taken	Acres	PC
Number of Parcels Impacts	Each	PC
Vehicular Travel Time	Minutes	TT
Pedestrian Travel Time	Minutes	TT
Transit Travel Time	Minutes	TT
Bicycle Travel Time	Minutes	TT
Trips diverted from Passenger Cars	Each	TD
Site Access Safety – Pedestrians and Bicycles	Conflict Points	S, M
Site Access Safety – Passenger Cars	Conflict Points	S, M
Site Access Safety – Transit Vehicles	Conflict Points	S, M
Emissions of CO ₂	Kilogram	E
Emissions of Particulates	Kilogram	E
Fuel Consumption	Kilogram	E
Average Speed	Miles/Hour	M
Bus / Automobile Friction	Ratio	S, M
Signalized Left Turn Movements	Each	M
Routes Served	Routes	M, TD
Projected Ridership	Passengers	M, TD
Conformity to Community Aesthetics	Subjective	E
Transit System Operating Efficiency	Subjective	S, M

MOES:

Environment (E), Mobility (M), Safety (S), Travel Time (TT), Trip Diversion (TD), Project Cost (PC)



November 4, 2015
Braddock Road Multimodal Study
Fairfax County, Virginia
Transit Measures Evaluation

Alternative _____

Description	Measure	Ranking
Qualitative Measures		
Environment	<ul style="list-style-type: none"> • Does the proposed site complement the land uses adjacent? • Is the proposed site compliant with zoning codes • Does the alternative have the potential to improve or degrade the noise levels and air quality experienced by those adjacent to the corridor? • Will site lighting impact adjacent lands in a negative way? 	
Mobility	<ul style="list-style-type: none"> • Ease of access in/out for commuter and transit vehicles • Ease and convenience of access for pedestrians & bicycles • Ease of access for transit routes? 	
Safety	<ul style="list-style-type: none"> • Will vehicular access in/out of facility be safe? • Are safe movements provided to pedestrians and bicycles? 	
Subtotal Qualitative Measures		
Quantitative Measures		
Roadway Travel Time	<ul style="list-style-type: none"> • Braddock Road travel time • Pedestrian/Bicycle travel time 	
Trip Diversions	<ul style="list-style-type: none"> • Number of Braddock Road trips converted to transit • Transit headways between vehicles • Number of routes served 	
Project Cost	<ul style="list-style-type: none"> • Construction Cost • Right-of-way cost • Engineering/Permitting/CEI 	
Subtotal Quantitative Measures		

Overall Weighting of Alternative: Ranking X Importance = Product

• Qualitative Measures: _____ X _____ = _____

• Quantitative Measures: _____ X _____ = _____

• OVERALL RANKING..... _____ (sum of products)



Comparing 2015 to 2040 Growth

● Braddock Road

- 16% Growth in Employment
 - Primarily in existing commercial areas (Ravensworth and Kings Park Shopping Centers)
- 4% Total Population Growth
 - Mainly west of Guinea Road

● Fairfax County

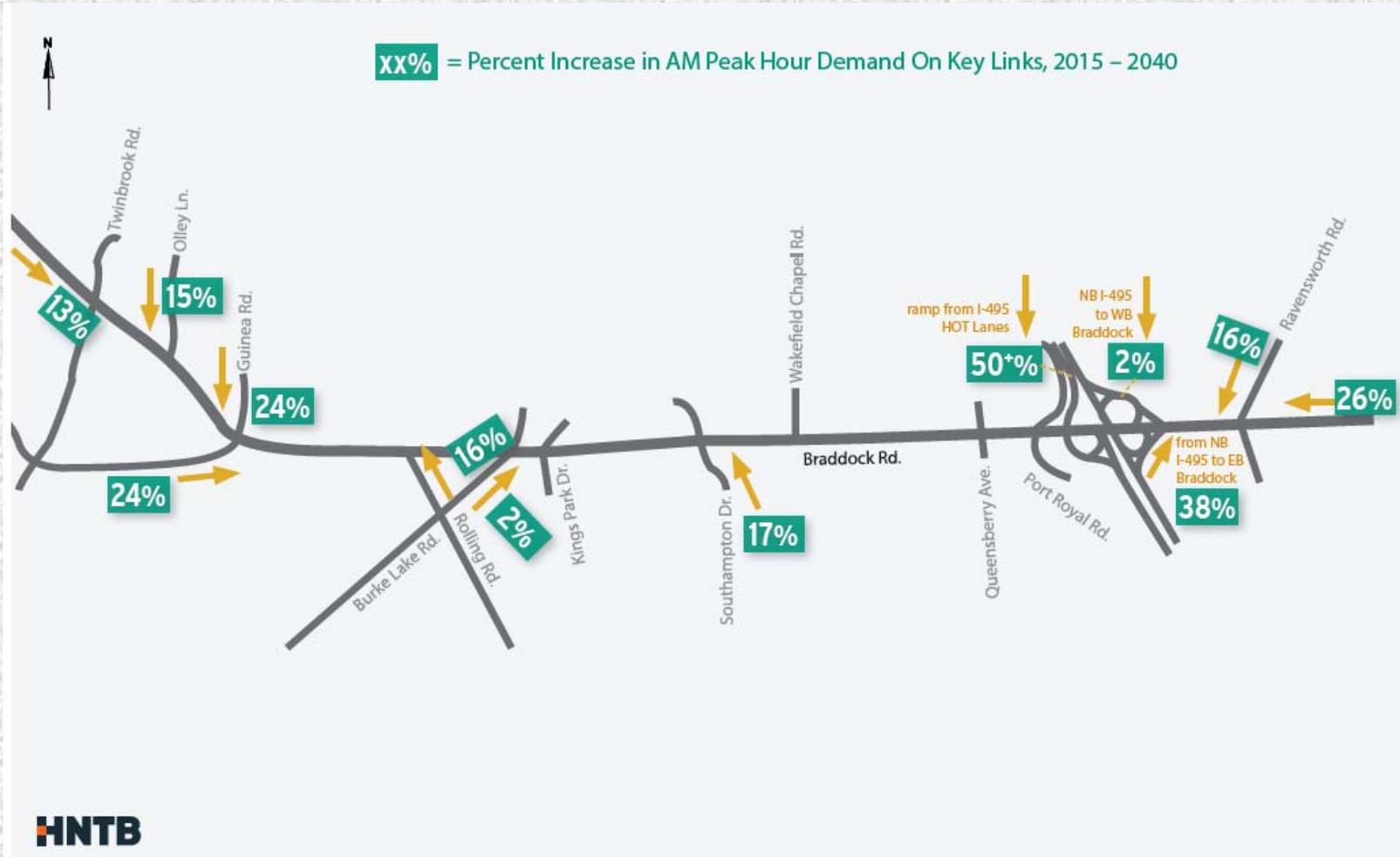
- 34% Growth in Employment
 - Near George Mason University – 28% Total Growth in Employment
- 23% Total Population Growth



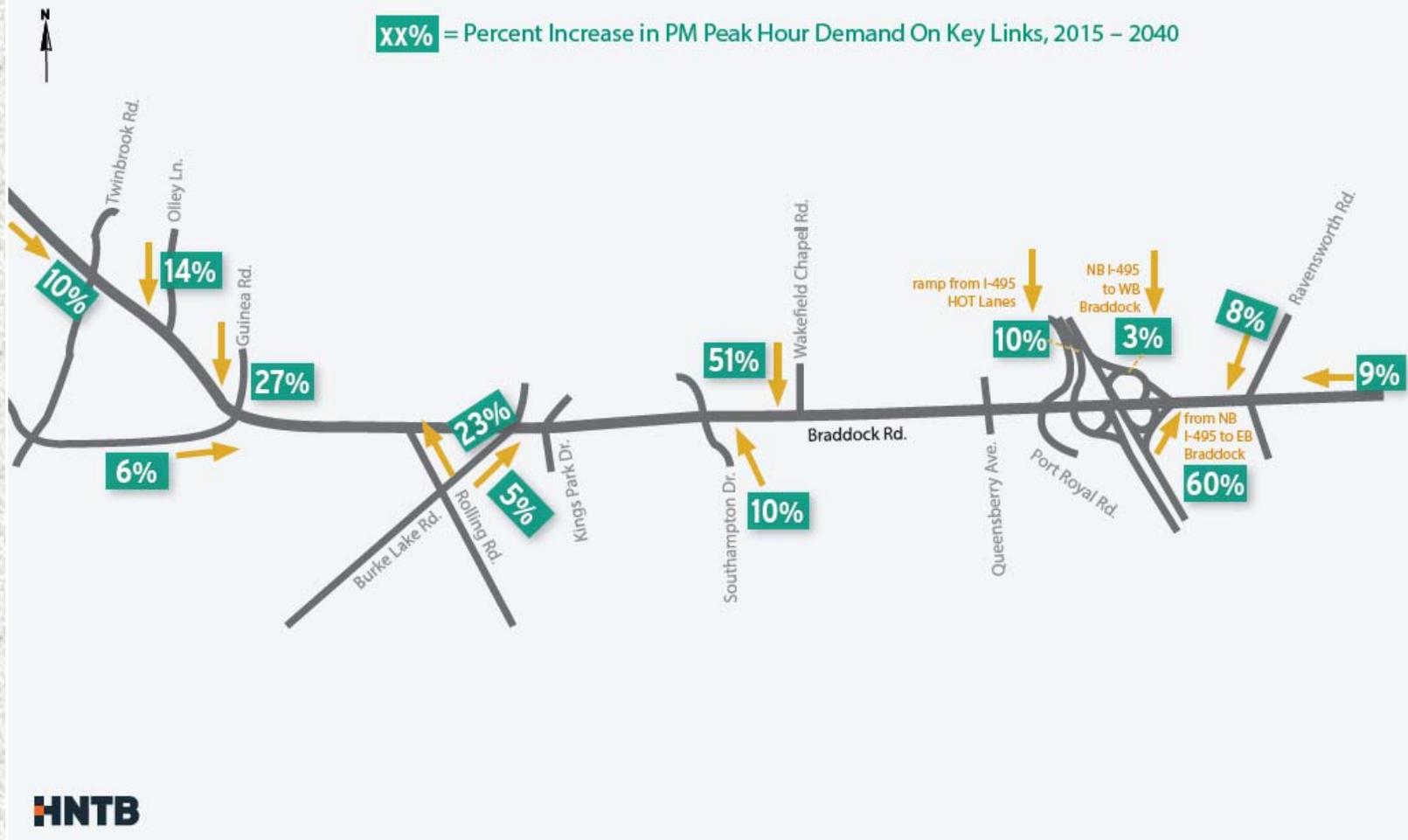
Traffic Patterns

- Where is Traffic Coming from
- Where are the growth areas
- What traffic is feeding Braddock Road
- What other facilities have an impact on Braddock Road

Changes in Traffic Demand, 2015 – 2040 AM Peak



Changes in Traffic Demand, 2015 – 2040 PM Peak



Screenline Analysis



WESTERN SCREENLINE

YEAR	AM	PM	DAILY
2015	24,710	14,160	106,600
2040	29,360	21,870	95,100
GR:	18.8%	54.4%	-10.8%

YEAR	AM	PM	DAILY
2015	10,550	28,260	69,600
2040	16,150	34,770	96,700
GR:	53.1%	23%	38.9%

YEAR	AM	PM	DAILY
2015	19,960	21,780	98,600
2040	19,320	22,730	101,300
GR:	-1.7%	4.4%	2.7%

YEAR	AM	PM	DAILY
2015	13,880	27,650	98,600
2040	14,850	26,960	100,900
GR:	7.0%	-2.5%	2.3%

YEAR	AM	PM	DAILY
2015	8,880	7,520	34,500
2040	10,480	8,440	39,600
GR:	18.0%	12.2%	14.8%

YEAR	AM	PM	DAILY
2015	3,700	11,700	35,300
2040	4,740	14,570	42,600
GR:	28.1%	24.5%	20.7%

YEAR	AM	PM	DAILY
2015	5,190	7,070	25,500
2040	5,660	7,750	28,500
GR:	9.1%	9.6%	11.8%

YEAR	AM	PM	DAILY
2015	3,810	7,690	23,200
2040	4,520	8,510	26,200
GR:	18.6%	10.7%	12.9%

YEAR	AM	PM	DAILY
2015	11,900	9,410	44,600
2040	12,340	10,830	48,700
GR:	3.7%	15.1%	9.2%

YEAR	AM	PM	DAILY
2015	4,570	15,140	43,700
2040	6,020	15,500	46,600
GR:	31.7%	2.4%	6.6%

YEAR	AM	PM	DAILY
2015	5,560	4,310	21,500
2040	5,840	5,600	25,000
GR:	5%	29.9%	16.3%

YEAR	AM	PM	DAILY
2015	1,740	7,960	21,200
2040	2,350	8,150	23,300
GR:	35.1%	2.4%	9.9%

YEAR	AM	PM	DAILY
2015	5,770	1,140	9,900
2040	6,690	1,790	12,200
GR:	15.9%	57.0%	23.2%

YEAR	AM	PM	DAILY
2015	660	8,010	12,100
2040	980	9,320	14,600
GR:	48.5%	16.4%	20.7%

YEAR	AM	PM	DAILY
2015	6,480	6,530	27,300
2040	8,550	8,370	34,500
GR:	31.9%	28.2%	26.4%

YEAR	AM	PM	DAILY
2015	4,090	10,940	32,000
2040	5,490	13,920	39,900
GR:	34.2%	27.2%	24.7%

YEAR	AM	PM	DAILY
2015	3,670	3,260	14,100
2040	4,170	4,000	15,800
GR:	13.6%	22.7%	12.1%

YEAR	AM	PM	DAILY
2015	1,090	3,330	9,700
2040	1,280	3,880	10,400
GR:	17.4%	16.5%	7.2%

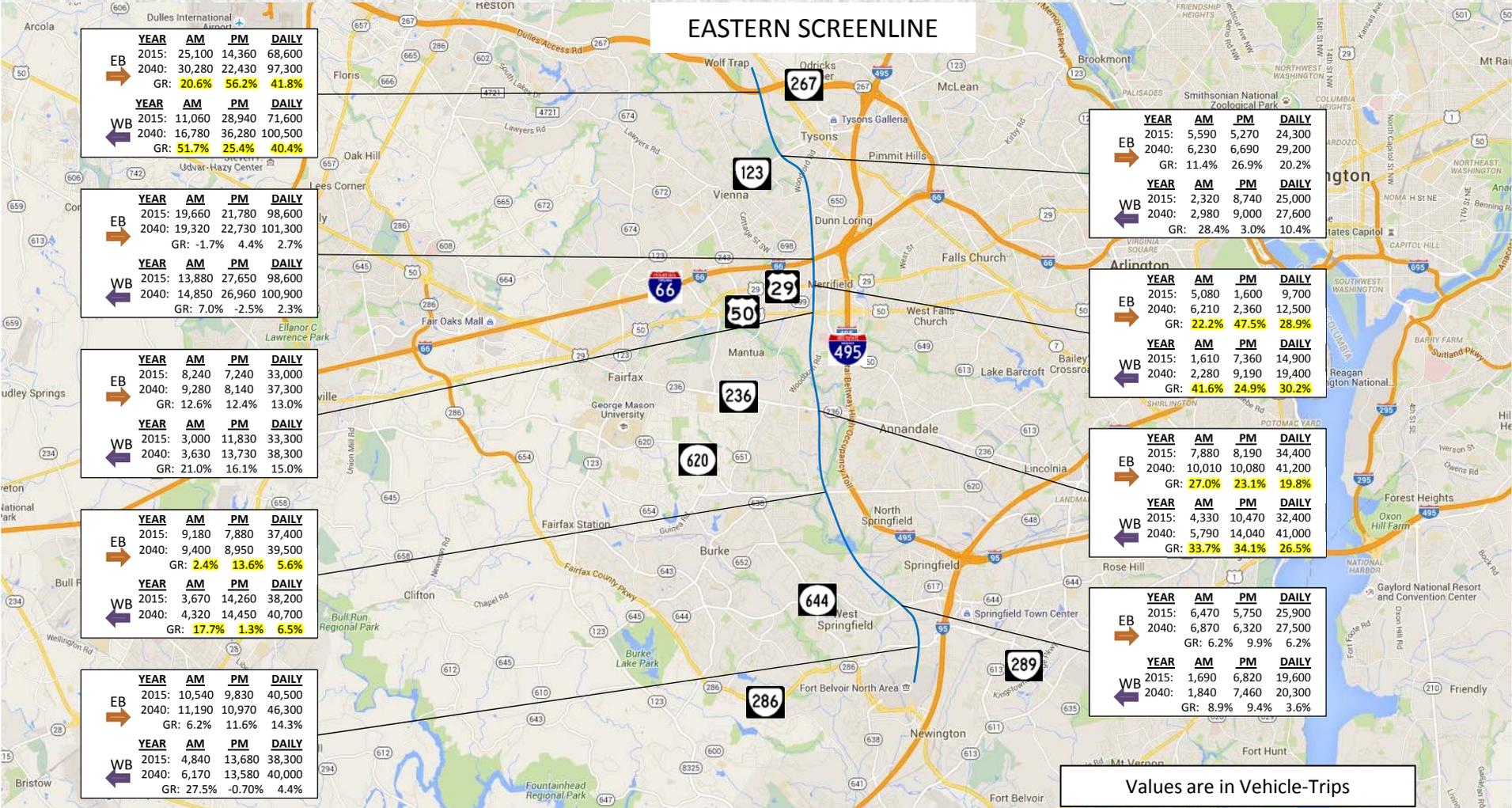
Values are in Vehicle-Trips



Screenline Analysis



EASTERN SCREENLINE



Values are in Vehicle-Trips



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Spot Improvement Options

- **Guinea Road:** NB free-flow right to EB Braddock Road.
- **Burke Lake Road:** Convert NB movement to triple right, not allowing any through or left turn movements. Traffic bound for WB Braddock Road or for Woodland Way would use Rolling Road **(attached)**
- **Kings Park Drive:** Reduce to right in/right out movements only.
- **Stone Haven Drive:** Right in/Right out only
- **Southampton Drive:** preserve current configuration
- **Danbury Forest Drive/Wakefield Chapel Road:** Realign Danbury Forest to Wakefield Chapel, leaving the existing Danbury Forest Drive as a jug handle for EB and WB left turn movements. Configure traffic signal at Wakefield Forest Drive as three phase: one phases serves EB & WB movements, NB and SB movements are split phase. **(attached)**
- **Glen Park Drive:** Right in/Right out only.
- **Inverchapel Road:** Right in/right out only
- **Queensbury Avenue/Wakefield Park Drive:** preserve current configuration
- **Port Royal Road and I-495 ramps:** Close the existing connection from SB I-495 to Port Royal Road; relocating that movement to the loop in the SW quadrant. This would line that movement up with the SB I-495 Express Lanes ramp. **(attached)**
- **NB I-495 to EB Braddock Ramp:** Realign the ramp to make it more of a right turn, and providing more weave space to Ravensworth.
- **Ravensworth:** No improvements proposed. VDOT installed a flashing left turn yellow indication in September 2014 to improve safety at this intersection

BRADDOCK ROAD AND BURKE LAKE ROAD WITH KINGS PARK DRIVE SPOT IMPROVEMENTS



BRADDOCK ROAD AND WAKEFIELD CHAPEL ROAD SPOT IMPROVEMENTS OPTION 1

LEGEND

- DENOTES RAISED OR GRASS MEDIAN
- DENOTES PROPOSED RIGHT OF WAY
- DENOTES GIS PROPERTY LINES
- DENOTES REMOVAL OF PAVEMENT

ORIGINAL DANBURY FOREST DRIVE INTERSECTION KEPT TO SERVE AS A JUGHANDLE FOR TURNING MOVEMENTS

DANBURY FOREST DRIVE INTERSECTION REALIGNED USING A SPLIT PHASE SIGNAL. NEW SIGNAL ALLOWS FOR A LONGER GREEN LIGHT FOR BRADDOCK THROUGH MOVEMENTS.



BRADDOCK ROAD AND WAKEFIELD CHAPEL ROAD SPOT IMPROVEMENTS OPTION 2

LEGEND

- DENOTES RAISED OR GRASS MEDIAN
- DENOTES PROPOSED RIGHT OF WAY
- DENOTES GIS PROPERTY LINES
- DENOTES REMOVAL OF PAVEMENT



BRADDOCK ROAD AND PORT ROYAL ROAD WITH I-495 RAMPS SPOT IMPROVEMENTS

LEGEND

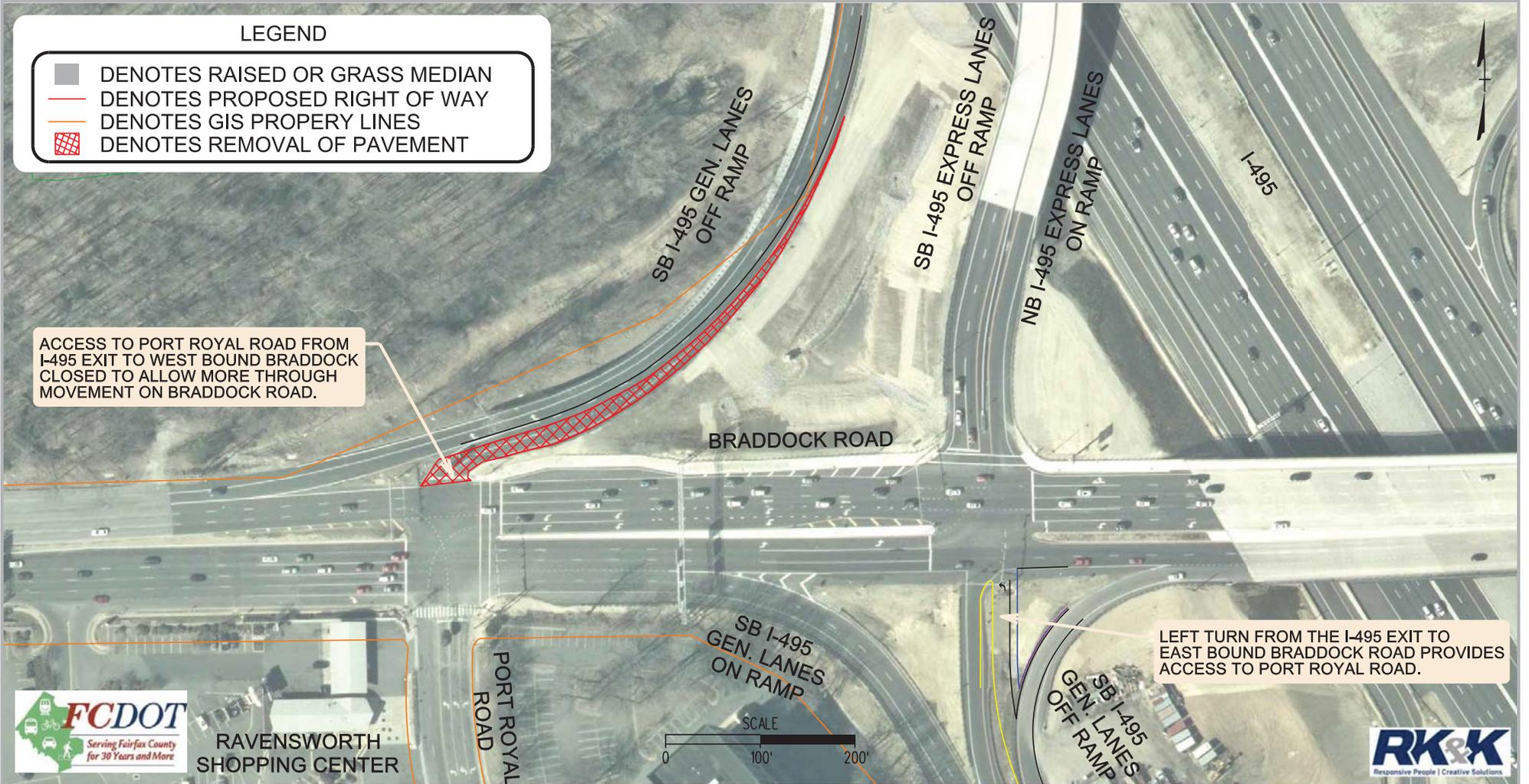
-  DENOTES RAISED OR GRASS MEDIAN
-  DENOTES PROPOSED RIGHT OF WAY
-  DENOTES GIS PROPERTY LINES
-  DENOTES REMOVAL OF PAVEMENT

ACCESS TO PORT ROYAL ROAD FROM I-495 EXIT TO WEST BOUND BRADDOCK CLOSED TO ALLOW MORE THROUGH MOVEMENT ON BRADDOCK ROAD.

LEFT TURN FROM THE I-495 EXIT TO EAST BOUND BRADDOCK ROAD PROVIDES ACCESS TO PORT ROYAL ROAD.



RAVENSWORTH SHOPPING CENTER





County of Fairfax, Virginia



12600 Fair Lakes Circle
Suite 300
Fairfax, VA 22033

www.rkk.com