Traffic Analysis

A traffic analysis was conducted for the Bethesda Purple Line Station area that focused on five gateway intersections to Bethesda and two intersections immediately adjacent to the site. The analysis used traffic counts to evaluate existing congestion and the TRAVEL/3 regional model to evaluate 2040 congestion based on the likely growth under the existing master plan.

Because there are no subzones with a parcel specific evaluation of existing and future land use for the entire TAZ, we have to make assumptions on the relationship between the existing and approved development in the TAZ and the Round 8.0 2040 land use forecast. More specifically, we have to give some thought to what was assumed for the site in the development of the Round 8.0 2040 land use forecast.

If we assume that the existing and approved land use for the site (Apex, JBG, Federal Realty) is close to what was assumed in the Round 8.0 2040 land use forecast for development for the site (i.e., there is no "space" or "room" for additional development for the site within the Round 8.0 2040 land use forecast) and then we add the difference attributable to any master plan "build out" (the theoretical maximum under any eventual proposed zoning in this Minor Master Plan Amendment) for the site, we get the "High Estimate" (or most traffic) scenario.

If we assume instead that the Round 8.0 2040 land use forecast for the TAZ is more representative of a scenario where the site develops close to build-out instead of the "existing and approved" (i.e., there is "space" or "room" for the additional development for the site within the Round 8.0 land use forecast) and then we add the difference attributable to any master plan "build-out" (the theoretical maximum under any eventual proposed zoning in this Minor Master Plan Amendment) for the site, we get the "Low Estimate" (or less traffic) scenario.

It should be noted that it is unlikely the eventual development would equate to the theoretical maximum available under the proposed zoning and that the transit mode share inherent in the trip rates is representative of the Metro Station Policy Area overall and not a specific development located at the convergence of the Red Line and Purple Line. For these reasons, it likely the more applicable congestion results are closer to the lower end of the range provided by this initial analysis. For both scenarios the additional traffic was then assigned to the road network. The resulting Critical Lane Volume (CLV) and Highway Capacity Manual (HCM) analysis are shown for each intersection below. Of the seven intersections evaluated in this plan, three exceed the congestion standards and could require mitigation.

Intersection of Wisconsin Avenue / East-West Highway / Old Georgetown Road

This intersection is below the 1800 CLV standard for the Bethesda CBD in all scenarios, but in the 2040 Master Plan High Estimate scenario it exceeds the 1.13 HCM standard during the AM and PM peak hours. To bring this intersection within an acceptable level of congestion would require:

- Converting the existing northbound left/through lane to a left lane

Intersection of Wisconsin Avenue / Bradley Blvd

This intersection is below the 1800 CLV standard except in the 2040 Master Plan High Estimate during the PM peak hour and the 1.13 HCM standard in all future scenarios for the AM and PM peak hours. To bring this intersection within an acceptable level of congestion would require:

- Add a second northbound left turn lane
- Converting the existing eastbound through lane to a left/through lane
- Converting the existing westbound left lane to a left/through lane

Adding a second northbound left turn lane would require road widening.

Intersection of Bradley Blvd / Arlington Road

This intersection is below the 1800 CLV standard in all scenarios. It exceeds the 1.13 HCM standard for the PM peak hour in the existing scenario and the AM and PM peak hours in all future scenarios. To bring this intersection within an acceptable level of congestion would require:

- Convert the existing southbound left/through lane into a through lane and add a left turn lane

In addition, to accommodate traffic forecasts for the Master Plan High Estimate would require dynamic lane use:

- Southbound Direction
    - AM peak lane configuration is left, through/right
    - PM peak lane configuration is left, through, right
- Eastbound Direction
    - AM peak lane configuration is left, left, through, through/right
    - PM peak lane configuration is left, through, through, through/right

Since we expect the congestion results to be closer to the “Low Estimate” than the “High Estimate”, dynamic lane use is unlikely to be needed.

Intersection of Wisconsin Avenue / East-West Highway / Old Georgetown Road

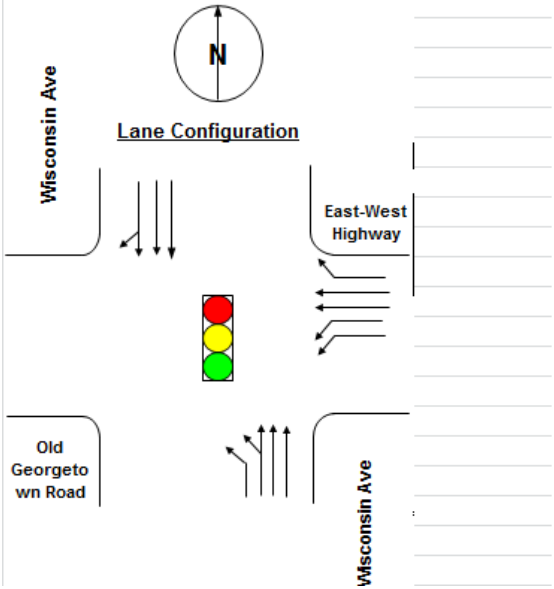
Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	1237 (1321)	0.77 (0.83)	C (D)	41.0 (44.7)	0.94 (0.98)	D (D)
2040 Existing & Approved	1473 (1446)	0.92 (0.90)	E (D)	86.4 (63.4)	1.10 (1.12)	E (E)
2040 Master Plan Low Estimate	1488 (1486)	0.93 (0.93)	E (E)	88.2 (65.9)	1.11 (1.13)	F (E)
2040 Master Plan High Estimate	1615 (1654)	1.01 (1.03)	F (F)	120.1 (95.5)	**1.20 (1.22)**	F (F)
2040 Master Plan High Estimate with Improvements (1)	1449 (1314)	0.91 (0.82)	D (D)	59.6 (44.2)	1.05 (0.97)	E (D)

** AM (PM) = exceeds standard for Bethesda CBD

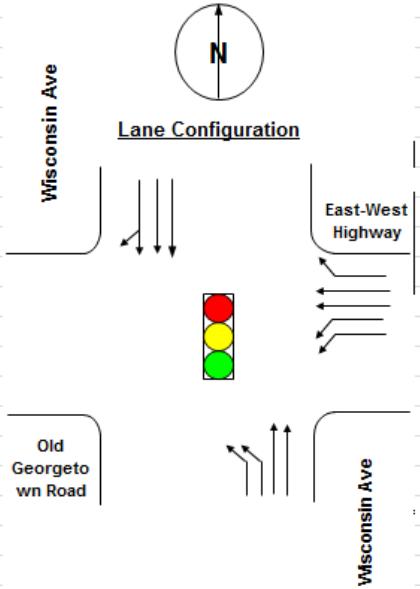
Improvements

(1) Northbound Direction: Revise lane configuration from Left, Left/Through, Through, Through to Left, Left, Through, Through

Existing:



Improvements #1:



Intersection of Wisconsin Avenue / Bradley Blvd

Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	1319 (1414)	0.82 (0.88)	D (D)	34.6 (48.0)	0.92 (1.00)	D (D)
2040 Existing & Approved	1605 (1665)	1.00 (1.04)	F (F)	72.1 (84.2)	**1.16 (1.30)**	E (F)
2040 Existing & Approved with Improvements (1)	1443 (1420)	0.90 (0.89)	D (D)	79.2 (78.9)	1.06 (1.04)	E (E)
2040 Master Plan Low Estimate	1622 (1683)	1.01 (1.05)	F (F)	76.2 (87.6)	**1.17 (1.32)**	E (F)
2040 Master Plan Low Estimate with Improvements (1)	1458 (1433)	0.91 (0.90)	E (D)	82.7 (80.9)	1.06 (1.04)	F (F)
2040 Master Plan High Estimate	1729 (1831)	**1.08 (1.14)**	F (F)	101.1 (133.3)	**1.44 (1.38)**	F (F)
2040 Master Plan High Estimate with Improvements (1)	1524 (1513)	0.95 (0.95)	E (E)	99.4 (120.1)	1.08 (1.13)	F (F)

** AM (PM) = exceeds standard for Bethesda CBD

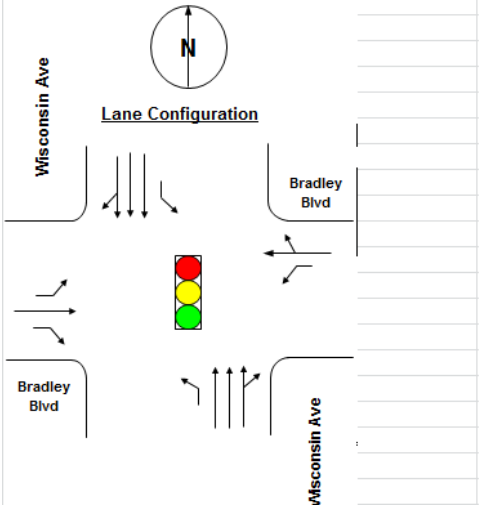
Improvements

(1) Northbound Direction: add 2nd left turn lane

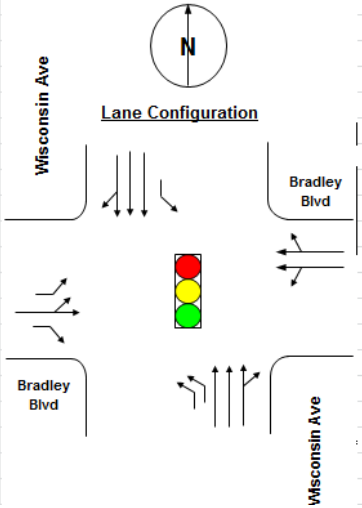
Eastbound Direction: Revise lane configuration from Left, Through, Right to Left , Left/Through, Right

Westbound Direction Revise lane configuration from Left , Through/Right to Left/Through, Through/Right

Existing:



Improvements #1:



Intersection of Bradley Blvd / Arlington Road

Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	939 (1238)	0.59 (0.77)	A (C)	65.5 (129.3)	**0.95 (1.32)**	E (F)
2040 Existing & Approved	1145 (1485)	0.72 (0.93)	B (E)	84.1 (180.8)	**1.15 (1.59)**	F (F)
2040 Existing & Approved with Improvements (1)	1343 (1391)	0.84 (0.87)	D (D)	81.2 (77.8)	1.09 (1.10)	F (E)
2040 Master Plan Low Estimate	1150 (1487)	0.72 (0.93)	B (E)	84.7 (180.9)	**1.15 (1.59)**	F (F)
2040 Master Plan Low Estimate with Improvements (1)	1348 (1393)	0.84 (0.87)	D (D)	81.3 (78.2)	1.09 (1.10)	F (E)
2040 Master Plan High Estimate	1217 (1595)	0.76 (1.00)	C (E)	96.7 (213.4)	**1.17 (1.71)**	F (F)
2040 Master Plan High Estimate with Improvements (1,2)	1263 (1414)	0.79 (0.88)	C (D)	85.3 (85.7)	1.08 (1.13)	F (F)

** AM (PM) = exceeds standard for Bethesda CBD

Improvements

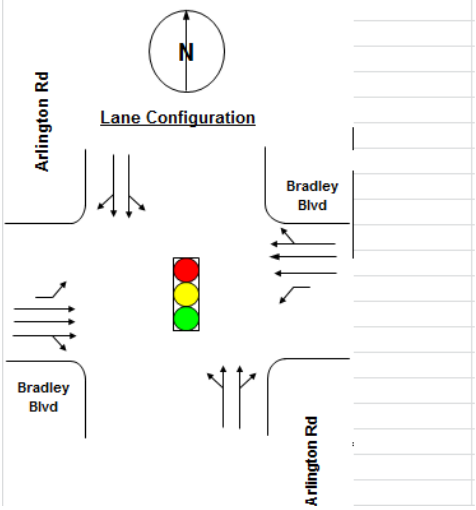
(1) Southbound Direction: Revise land configuration from Left/Through, Through/Right to Left, Through, Through/Right

(2) Dynamic Lane Use:

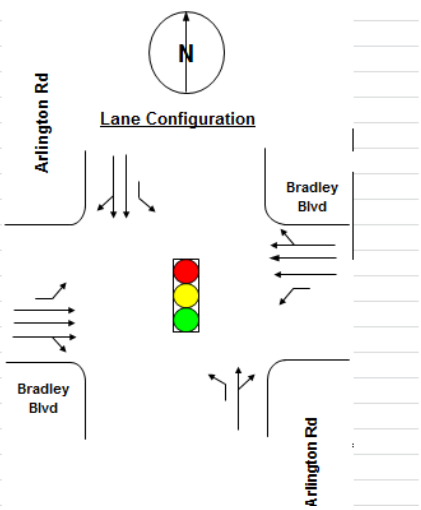
Southbound Direction: AM peak lane configuration is left, through/right; PM peak lane configuration is left, through, right

Eastbound Direction: AM peak lane configuration is left, left, through, through/right; PM peak lane configuration is left, through, through, through/right

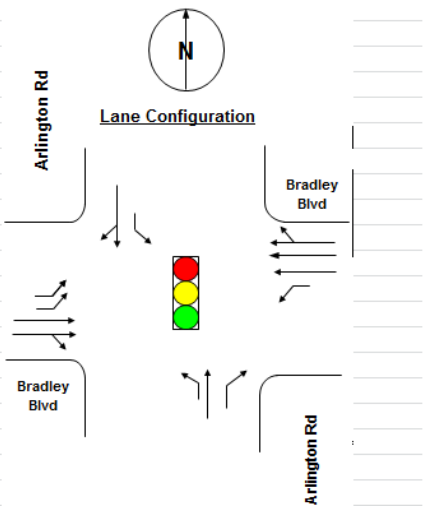
Existing:



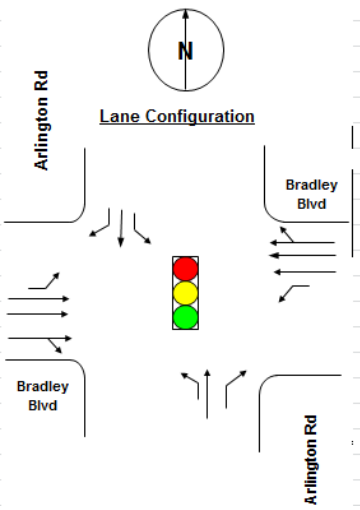
Improvements #1:



Improvements #2 (AM Peak):



Improvements #2 (PM Peak):



Intersection of Wisconsin Avenue / Montgomery Lane

Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	1050 (998)	0.66 (0.62)	B (A)	17.2 (17.7)	0.80 (0.78)	B (B)
2040 Existing & Approved	1140 (1254)	0.71 (0.78)	B (C)	22.1 (23.8)	0.84 (0.91)	C (C)
2040 Master Plan Low Estimate	1155 (1260)	0.72 (0.79)	C (C)	22.6 (24.4)	0.84 (0.91)	C (C)
2040 Master Plan High Estimate	1176 (1400)	0.74 (0.87)	C (D)	25.3 (60.2)	0.89 (1.02)	C (E)
** AM (PM)		= exceeds standard for Bethesda CBD				

Intersection of Wisconsin Avenue / Elm Street / Waverly Street

Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	784 (942)	0.49 (0.59)	A (A)	4.5 (5.9)	0.57 (0.72)	A (A)
2040 Existing & Approved	1059 (1136)	0.66 (0.74)	B (C)	8.9 (11.0)	0.74 (0.86)	A (B)
2040 Master Plan Low Estimate	1063 (1193)	0.66 (0.75)	B (C)	9.0 (11.2)	0.75 (0.87)	A (B)
2040 Master Plan High Estimate	1191 (1367)	0.74 (0.85)	C (D)	12.8 (27.5)	0.83 (1.01)	B (C)
** AM (PM)		= exceeds standard for Bethesda CBD				

Intersection of Wisconsin Avenue / Bethesda Avenue / Willow Lane

Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	757 (808)	0.47 (0.50)	A (A)	15.3 (24.2)	0.55 (0.66)	B (C)
2040 Existing & Approved	966 (1007)	0.60 (0.63)	A (B)	13.4 (22.6)	0.73 (0.79)	B (C)
2040 Master Plan Low Estimate	979 (1012)	0.61 (0.63)	A (A)	13.7 (22.6)	0.74 (0.82)	B (C)
2040 Master Plan High Estimate	1149 (1351)	0.72 (0.84)	B (D)	21.8 (48.9)	0.83 (1.13)	C (D)
** AM (PM)		= exceeds standard for Bethesda CBD				

Intersection of Old Georgetown Road / Woodmont Avenue

Land Use Scenario	Critical Lane Volume			HCM		
	CLV	V/C Ratio	Level of Service	Delay (sec)	V/C Ratio	Level of Service
Existing	974 (1088)	0.61 (0.68)	A (B)	15.2 (30.4)	0.73 (0.84)	B (D)
2040 Existing & Approved	1175 (1153)	0.73 (0.72)	C (C)	23.9 (31.1)	0.90 (0.86)	C (C)
2040 Master Plan Low Estimate	1177 (1157)	0.74 (0.72)	C (C)	24.6 (31.4)	0.92 (0.87)	C (C)
2040 Master Plan High Estimate	1257 (1204)	0.79 (0.75)	C (C)	34.9 (35.0)	0.98 (0.90)	C (C)
** AM (PM)		= exceeds standard for Bethesda CBD				