

Countywide Transit Corridors Functional Master Plan

Appendix 3

Lane Repurposing Analysis

As part of the *Countywide Transit Corridors Functional Master Plan*, staff evaluated the ability to convert or “repurpose” existing traffic lanes to bus only lanes.

Person Throughput Analysis

One of the justifications for lane repurposing is based on a person throughput analysis—those BRT corridor links with a 2040 ridership forecast that exceeds traffic lane capacity would accommodate more travel if converted to a bus lane. The analysis used 2040 ridership volumes provided by the MDAA II travel forecasting model. It then made the assumption that traffic lanes in urban areas have a capacity of 800 vehicles per lane per hour, whereas suburban areas have a capacity of 1,200 vehicles per lane per hour. One of the discussion points regarding this approach was that the assumed lane capacities should take into account actual traffic counts. Therefore, this appendix identifies the “maximum traffic count” that was recorded on BRT links, applied a “lane use factor” (0.33 for three lane roads, 0.25 for four lane roads), and then calculated a “single lane traffic count”. In those locations where the “single lane traffic count” exceeds the assumed lane capacity, the “single lane traffic count” was assumed to be the “adjusted lane capacity”. This analysis was conducted on four corridors that staff proposed to repurpose traffic lanes. The results are shown in the tables below.

Traffic Lane Capacity

Traffic lane capacities were determined by reviewing traffic counts on the State Highway Administration traffic count website at multiple locations and during multiple time periods for each link. This website is located at: http://shagbhisdadt.mdot.state.md.us/itms_public/default.aspx.

Table 3-1: US 29 Corridor Traffic Lane Capacity

Street	From	To	Lane Capacity by Area Type	Lane Volume from Traffic Counts			Adjusted Lane Capacity
				Max Traffic Count	Lane Use Factor	Single Lane Traffic Count	
Lockwood Drive	Stewart Lane	New Hampshire Avenue	1,200	703	1.00	700	1,200
Lockwood Drive	New Hampshire Avenue	Oak Leaf Drive	1,200	596	1.00	600	1,200
Lockwood Drive	Oak Leaf Drive	US 29 - Columbia Pike	1,200	716	1.00	725	1,200
US 29	Hillwood Drive	Northwest Branch	1,200	3,704	0.33	1,225	1,225
US 29	Northwest Branch	University Boulevard	1,200	4,618	0.33	1,525	1,525
US 29	University Boulevard	Franklin Avenue	1,200	5,300	0.25	1,325	1,325
US 29	Franklin Avenue	Fenton Street	1,200	3,950	0.25	1,000	1,200
US 29 - Colesville Rd	Fenton Street	Georgia Avenue	800	2,765	0.25	700	800

Table 3-2: New Hampshire Avenue Corridor Traffic Lane Capacity

Street	From	To	Lane Capacity by Area Type	Lane Volume from Traffic Counts			Adjusted Lane Capacity
				Max Traffic Count	Lane Use Factor	Single Lane Traffic Count	
New Hampshire Ave	Northampton Drive	University Boulevard	1,200	3,276	0.33	1,075	1,200
New Hampshire Ave	University Boulevard	Ethan Allen Avenue	1,200	2,635	0.33	875	1,200
New Hampshire Ave	Ethan Allen Avenue	Eastern Avenue	1,200	2,655	0.33	875	1,200

Table 3-3: Georgia Ave Corridor Traffic Lane Capacity

Street	From	To	Lane Capacity by Area Type	Lane Volume from Traffic Counts			Adjusted Lane Capacity
				Max Traffic Count	Lane Use Factor	Single Lane Traffic Count	
Georgia Ave	Georgia Avenue	Windham Lane	800	3,024	0.33	1,000	1,000
Georgia Ave	Windham Lane	Dennis Avenue	1,200	3,917	0.33	1,300	1,300
Georgia Ave	Dennis Avenue	Forest Glen Road	1,200	4,304	0.33	1,425	1,425
Georgia Ave	Forest Glen Road	I-495	1,200	4,403	0.25	1,100	1,200
Georgia Ave	I-495	Seminary Road	800	4,210	0.25	1,050	1,050
Georgia Ave	Seminary Road	Luzerne Avenue	800	3,775	0.25	950	950
Georgia Ave	Luzerne Avenue	Spring Street	1,200	2,542	0.33	850	1,200
Georgia Ave	Spring Street	Cameron Street	800	1,734	0.33	575	800
Georgia Ave	Cameron Street	Colesville Road	800	1,645	0.33	550	800
Georgia Ave	Colesville Road	CSX Railroad	800	2,592	0.33	850	850
Georgia Ave	CSX Railroad	East-West Highway	800	1,781	0.33	600	800
Georgia Ave	East-West Highway	Eastern Avenue	800	2,661	0.33	875	875

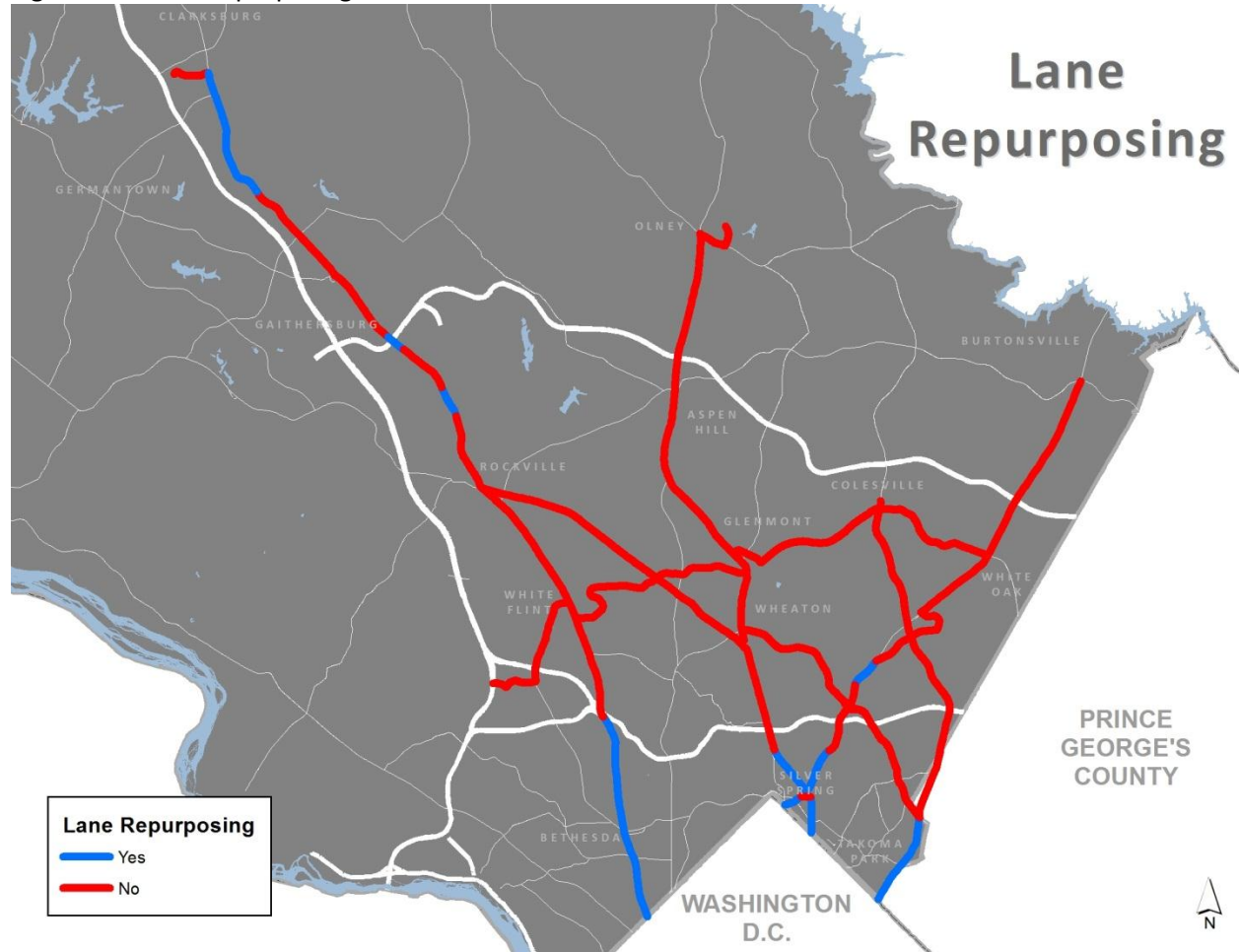
Table 3-4: MD 355 Corridor Traffic Lane Capacity

Street	From	To	Lane Capacity by Area Type	Lane Volume from Traffic Counts			Adjusted Lane Capacity
				Max Traffic Count	Lane Use Factor	Single Lane Traffic Count	
MD 355	Shakespeare Boulevard	Germantown Road	1,200	3,543	0.33	1,175	1,200
MD 355	Germantown Road	Middlebrook Road	1,200	3,088	0.33	1,025	1,200
MD 355	Grosvenor Station	Grosvenor Lane	800	2,765	0.33	900	900
MD 355	Grosvenor Lane	I-495	800	3,602	0.33	1,200	1,200
MD 355	I-495	Pooks Hill Road	1,200	4,708	0.33	1,550	1,550
MD 355	Pooks Hill Road	Cedar Lane	1,200	3,664	0.33	1,200	1,200
MD 355	Cedar Lane	Wood Road/South Drive	1,200	4,008	0.33	1,325	1,325
MD 355	Wood Road/South Drive	Chestnut Street	1,200	3,100	0.33	1,025	1,200
MD 355	Chestnut Street	Cordell Avenue	800	2,359	0.33	775	800
MD 355	Cordell Avenue	Old Georgetown Road	800	2,395	0.33	800	800
MD 355	Old Georgetown Road	Bradley Lane	800	2,498	0.33	825	825
MD 355	Bradley Lane	Oliver Street	1,200	2,511	0.33	825	1,200
MD 355	Oliver Street	Western Avenue	800	2,118	0.33	700	800

Person Throughput Rationale

Figure 3-1 illustrates where lane repurposing is recommended to achieve dedicated bus lanes.

Figure 3-1: Lane Repurposing



The following tables indicate those locations where lane repurposing is proposed that can be justified based on 2040 ridership forecasts that exceed the lane capacity. While the ridership forecast is not available for the final recommended BRT system, it is likely to be between the Build 2 and Build 2A scenarios, and likely closer to the Build 2 scenario.

Table 3-5: US 29 Corridor Lane Repurposing Rationale

Street	From	To	Lane Capacity	2040 BRT Forecast		Person Throughput Rationale	
				Build 2	Build 2A	Build 2	Build 2A
Columbia Pike	Hillwood Drive	Northwest Branch	1,225	1,250	1,400	Yes	Yes
Colesville Road	Northwest Branch	University Boulevard	1,525	1,250	1,400		
Colesville Road	University Boulevard	Franklin Avenue	1,325	1,275	1,425		Yes
Colesville Road	Franklin Avenue	Fenton Street	1,200	1,325	1,475	Yes	Yes
Colesville Road	Fenton Street	Georgia Avenue	800	1,125	1,225	Yes	Yes
Colesville Road	Georgia Avenue	Wayne Avenue	800	1,125	1,225	Yes	Yes
Colesville Road	Wayne Avenue	East-West Highway	800				
Colesville Road	East-West Highway	Eastern Avenue	800				

Table 3-6: New Hampshire Avenue Corridor Lane Repurposing Rationale

Street	From	To	Lane Capacity	2040 BRT Forecast		Person Throughput Rationale	
				Build 2	Build 2A	Build 2	Build 2A
New Hampshire Ave	University Boulevard	Ethan Allen Avenue	1,200	1,475	700	Yes	
New Hampshire Ave	Ethan Allen Avenue	Eastern Avenue	1,200	1,600	875	Yes	

Table 3-7: Georgia Avenue South Corridor Lane Repurposing Rationale

Street	From	To	Lane Capacity	2040 BRT Forecast		Person Throughput Rationale	
				Build 2	Build 2A	Build 2	Build 2A
Georgia Ave	Luzerne Avenue	Spring Street	1,200	1,275	550	Yes	
Georgia Ave	Spring Street	Cameron Street	800	1,275	550	Yes	
Georgia Ave	Cameron Street	Colesville Road	800	775	325		
Georgia Ave	Colesville Road	CSX Railroad	850	400	100		
Georgia Ave	CSX Railroad	East-West Highway	800	400	100		
Georgia Ave	East-West Highway	Eastern Avenue	875	375	75		

Table 3-8: MD 355 North Corridor Lane Repurposing Rationale

Street	From	To	Lane Capacity	2040 BRT Forecast		Person Throughput Rationale	
				Build 2	Build 2A	Build 2	Build 2A
MD 355	Shakespeare Boulevard	Germantown Road	1,200	1,250	625	Yes	
MD 355	Germantown Road	Middlebrook Road	1,200	1,375	675	Yes	
MD 355	Mannakee Street	Church Street	1,200	2,150	1,250	Yes	Yes

Table 3-9: MD 355 South Corridor Lane Repurposing Rationale

Street	From	To	Lane Capacity	2040 BRT Forecast		Person Throughput Rationale	
				Build 2	Build 2A	Build 2	Build 2A
MD 355	I-495	Pooks Hill Road	1,550	1,950	2,000	Yes	Yes
MD 355	Pooks Hill Road	Cedar Lane	1,200	1,925	1,975	Yes	Yes
MD 355	Cedar Lane	Wood Road/South Drive	1,325	1,825	1,900	Yes	Yes
MD 355	Wood Road/South Drive	Chestnut Street	1,200	1,750	1,775	Yes	Yes
MD 355	Chestnut Street	Cordell Avenue	800	1,750	1,775	Yes	Yes
MD 355	Cordell Avenue	Old Georgetown Road	800	1,700	1,775	Yes	Yes
MD 355	Old Georgetown Road	Bradley Lane	825	1,400	1,125	Yes	Yes
MD 355	Bradley Lane	Oliver Street	1,200	1,450	1,175	Yes	
MD 355	Oliver Street	Western Avenue	800	1,450	1,175	Yes	Yes

Traffic Impacts

As part of the evaluation of the Build 2 scenario, lane repurposing was evaluated on segments of four corridors, including:

- MD 355 between DC Line and Cedar Lane
- Georgia Avenue between Philadelphia Avenue and Plyers Mill Road
- US 29 between Georgia Avenue and Cherry Hill Road
- New Hampshire Ave between Ray Road and Rosemere Avenue.

The travel times impacts for traffic along these segments was limited, and are shown below. Figure 3-2 shows the travel time impacts in the morning peak hour/peak direction. Travel times increase by as much as three minutes (or 19 percent) on MD 355, but are actually reduced on New Hampshire Avenue by 6 percent.

Figure 3-2: Travel Time Impacts due to Lane Repurposing in the AM Peak Hour/Peak Direction (2040)

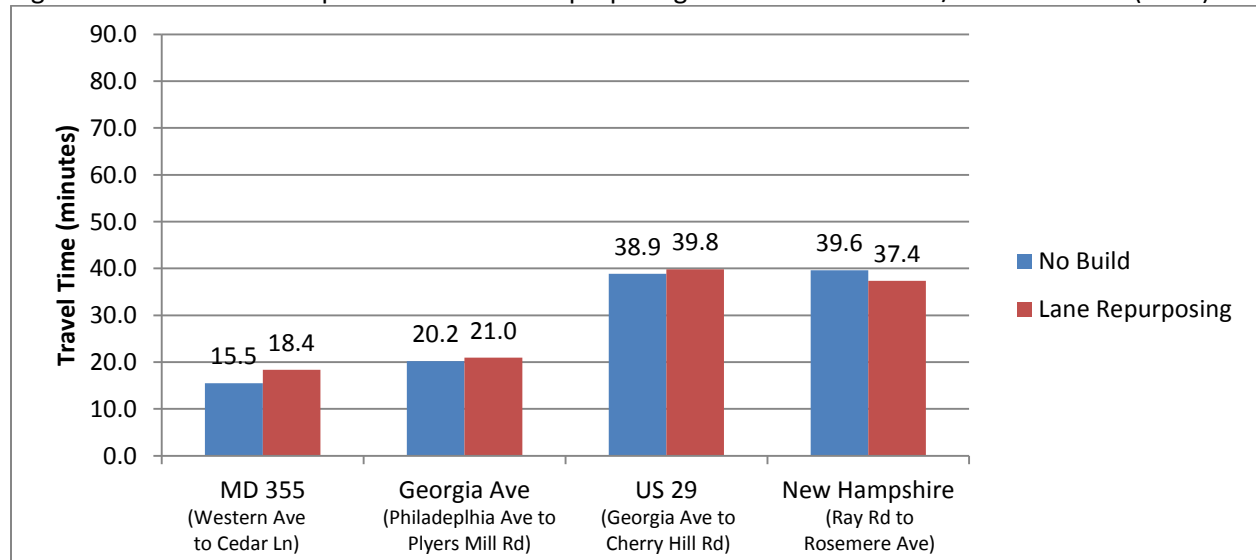
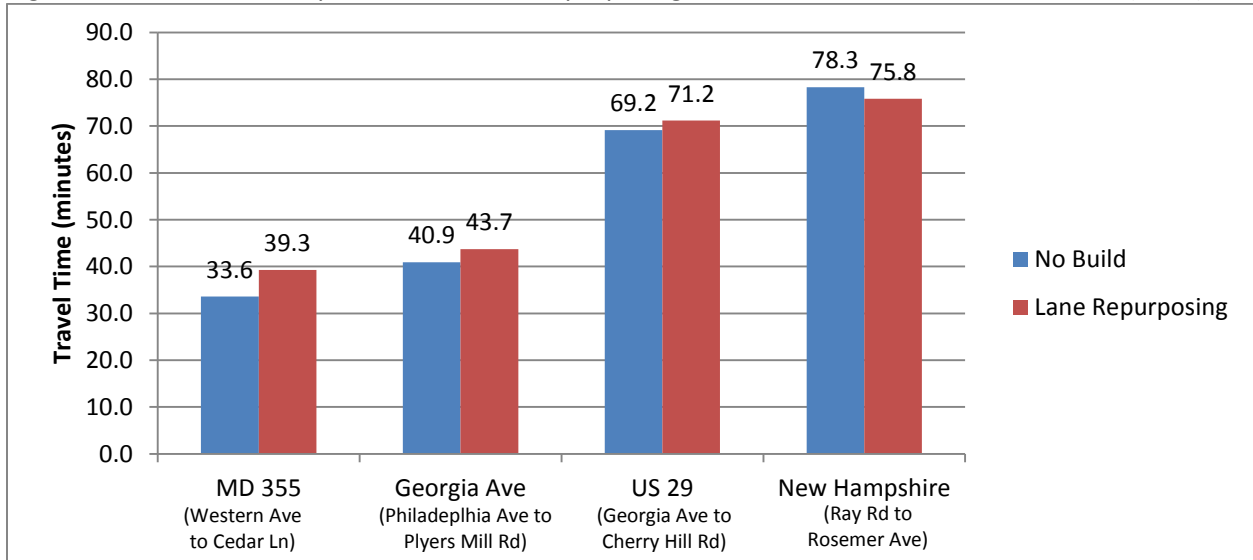


Figure 3-3 shows the travel time impacts in the evening peak hour/peak direction. Travel times increase by nearly six minutes (or 17 percent) on MD 355, but are actually reduced on New Hampshire Avenue by 3 percent.

Figure 3-3: Travel Time Impacts due to Lane Repurposing in the PM Peak Hour/Peak Direction (2040)



The analysis for the functional plan was conducted at a high level. Additional study will be needed during the corridor planning process to fully understand impacts to traffic.