MONTGOMERY COUNTY PLANNING DEPARTMENT
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION

Date: February 6, 2019

To: Lisa Choplin, Director, I-495 & I-270 P3 Office
Jeffrey T. Folden, Deputy Director, I-495 & I-270 P3 Office
Caryn Brookman, Environmental Program Manager, I-495 & I-270 P3 Office

From: Carol S. Rubin, Special Project Manager, M-NCPPC, Montgomery County Planning Department
Debra Borden, Principal Counsel, M-NCPPC, Office of the General Counsel

Re: I-495 & I-270 Managed Lanes Study, Recommended Objectives and Metrics to Consider Alternatives

Please accept this memorandum as M-NCPPC's recommendation and guidance for MDOT SHA to fully analyze and differentiate among the Alternatives proposed for the I-495 and I-270 Managed Lanes Study as it moves forward. Regardless whether any additional right-of-way is needed for physical improvements, it is clear that MDOT SHA (and its private concessionaire assuming a P3 implementation) will be looking to M-NCPPC for *some* use of its parkland, whether for actual transportation needs, or for required environmental mitigation.

Our August 3, 2018 comments on the I-495 and I-270 Managed Lanes Study Purpose and Need Statement recommended that the study team "develop more rigorous objectives that better differentiate among alternatives to appropriately address the needs of the project." As part of those comments, we stated we would identify objectives and metrics for the team's consideration. The attached document provides our suggestions for the types of analysis that would be most beneficial in selecting a preferred alternative. They draw heavily from the analysis that was conducted for the Intercounty Connector project and that are include in Volume 1 of the Final Environmental Impact Statement.

On November 21, 2018, M-NCPPC requested funding assistance for some of our staffing needs to support the necessary work of M-NCPPC as a cooperating agency to the I-495 and I-270 Managed Lanes Study. Unfortunately, on January 10, 2018, MDOT SHA declined a significant portion of our request indicating that "the invitation for cooperating agency status was based on [M-NCPPC's] jurisdiction over parkland in the study area...]." MDOT SHA specifically declined to fund any staffing needs related to the transportation analyses that we believe are necessary in keeping with M-NCPPC's role as steward of the both the natural and built environments in Montgomery and Prince George's Counties. Clearly, MDOT SHA does not fully acknowledge that in order for the M-NCPPC Commissioners to make well-reasoned and informed decisions with regard to its parkland and how it may be needed for this project, they will rely on the M-NCPPC staff to conduct appropriate due diligence to make its recommendations.

Therefore, because we do not have the necessary resources to *conduct* this type of analysis of the Alternatives, we cannot stress enough that we fully expect that MDOT SHA will conduct the analysis as recommended. M-NCPPC staff will then be in a position to *review* the conclusions and put forward recommendations to the Commissioners so that they may fulfill their responsibility as stewards of the parkland we hold in trust for the benefit of the residents of Montgomery and Prince George's Counties.

We are available to discuss our recommendations with you at your earliest convenience.

Recommended Objectives and Metrics for I-495 and I-270 Managed Lanes Study
Montgomery County Planning Department
February 4, 2019

Goal 1: Accommodate Existing and Long-Term Travel Demands

Objective 1.1a: Reduce the number of person hours traveled in severe congestion during peak periods by private vehicle on I-495 and I-270 by X% in 2040.

> Metric: The number of person hours traveled by congestion severity for each road segment during peak periods by private vehicles along I-495 and I-270 in 2040.

Objective 1.1b: Reduce the number of person hours traveled per transit passenger in severe congestion during peak periods on I-495 and I-270 by X% in 2040.

> Metric: The number of person hours traveled per transit passenger by congestion severity during peak periods for each road segment for people traveling by direction along I-495 and I-270 in 2040 by X%.

Discussion

MDOT SHA uses the Travel Time Index (TTI) as one of the primary measures of congestion on freeways/expressways. TTI compares the 50th percentile travel time of a trip on a segment of freeway/expressway for a particular hour to the travel time of a trip during off peak (free-flow or uncongested) conditions. The higher the TTI, for a given hour of the day, the longer the travel times. Free flow conditions equate to TTI of 1.0, and a TTI of 2.0 indicates a trip takes twice as long as free flow conditions, and greater than 2.0 indicates severe congestion. An example of how to display this information is:

Freeway Segments (examples)	Direction	# of Hours of Congestion Severity During Peak Periods			
		Uncongested	Moderate	Heavy	Severe
Segment 1	Inner				
Segment 1	Outer				
Segment 2	Inner				
Segment 2	Outer				

Note: All freeway segments in the project area should be listed. For ease of reference this should be presented sequentially based on geography.

Congestion Severity:

- Uncongested (TTI < 1.15);
- Moderate Congestion (1.15 < TTI < 1.3);
- Heavy Congestion (1.3 < TTI < 2.0); or
- Severe Congestion (TTI > 2.0).

Objective 1.2a: Reduce the peak period travel time between activity centers by mode (transit, SOV private vehicle, HOV private vehicle) and direction by X% in 2040.

> Metric: Peak period travel time between activity centers by mode (transit, SOV private vehicle, HOV private vehicle) and direction in 2040.

Objective 1.2b: The peak period travel time between activity centers by mode (transit, SOV private vehicle, HOV private vehicle) and direction in 2040 should be the same or better for Equity Emphasis Areas than non-Equity Emphasis Areas.

> Metric: Peak period travel time between activity centers by mode (transit, SOV private vehicle, HOV private vehicle) and direction in 2040 for Equity Emphasis Areas and non-Equity Emphasis Areas.

> Discussion

> Conduct a travel time analysis to understand how much time could be saved between origin and destination pairs within the regional study area with the Build Alternatives compared to the No-Action condition in 2040. Travel time is a measure of how long it takes to travel from one area to another and includes the time spent in congestion when traveling. As trips become longer and more unreliable due to congestion, travelers modify their travel behavior where possible, but often sufferer trips that cannot be avoided.

> While modeled travel times cannot be viewed as a precise measure of how long it would take to drive from one location to another, they can provide information regarding how travel times change if different transportation facilities are added to the network. Significant travel time savings reported by this measure provide a strong indication of how an alternative would impact the time it takes to travel between locations within the regional study area.

> An example of a travel time metric included in the ICC FEIS Volume 1 is shown below.

Table IV-104
AM Travel Times (in minutes), Full Build Alternatives - No-Action / Corridor 1 / Corridor 2

ORIGIN \ DESTINATION	Gaithers-burg	Rockville	Glenmont	Shady Grove	Olney	Colesville	White Oak	College Park	Konterra	Laurel	BWI Thurgood Marshall
Gaithers-burg		23/20/20	36/28/33	22/20/19	35/29/28	41/27/32	46/36/37	57/46/47	67/31/31	70/37/39	114/82/81
Rockville	15/14/15		24/23/23	17/16/16	31/26/25	30/24/29	43/32/31	53/42/42	54/28/29	61/34/36	103/74/77
Glenmont	39/26/28	30/27/27		30/23/25	19/19/21	6/6/6	20/21/19	43/42/41	34/12/21	42/23/28	85/63/69
Shady Grove	17/18/18	21/22/22	31/23/28		27/24/24	38/23/29	52/35/38	62/51/51	57/26/27	64/32/34	107/72/75
Olney	45/34/34	51/38/39	31/28/32	36/30/30		31/27/34	43/39/42	66/55/58	45/30/31	52/36/38	94/76/79
Colesville	46/26/32	37/31/33	7/6/6	37/23/29	22/19/20		16/16/15	39/37/40	30/12/19	38/19/27	81/59/68
White Oak	54/32/38	45/36/36	15/15/15	45/29/35	27/25/26	10/10/10		27/30/29	24/18/22	32/24/28	75/64/70
College Park	56/41/44	53/38/39	28/29/29	58/42/45	42/38/41	24/25/24	19/19/18		34/25/25	34/27/29	79/67/71
Konterra	62/30/30	55/34/35	27/20/25	52/26/27	29/23/22	22/13/22	22/21/22	33/32/33		11/11/11	55/51/53
Laurel	64/34/36	63/42/44	35/28/33	60/34/35	37/30/30	29/21/28	30/27/28	39/39/39	12/11/11		58/54/55
BWI Thurgood Marshall	106/75/80	104/82/85	76/67/74	100/74/77	69/66/67	71/68/70	70/67/70	80/78/79	53/51/52	57/56/57	

KEY: Travel time improving by either 20%, or 10 minutes or more compared to No-Action
Note: Based on 2030 baseline toll rates

Objective 1.3: Reduce the number of weekday hours that local study area intersections[1] exceed capacity by X% in 2040.

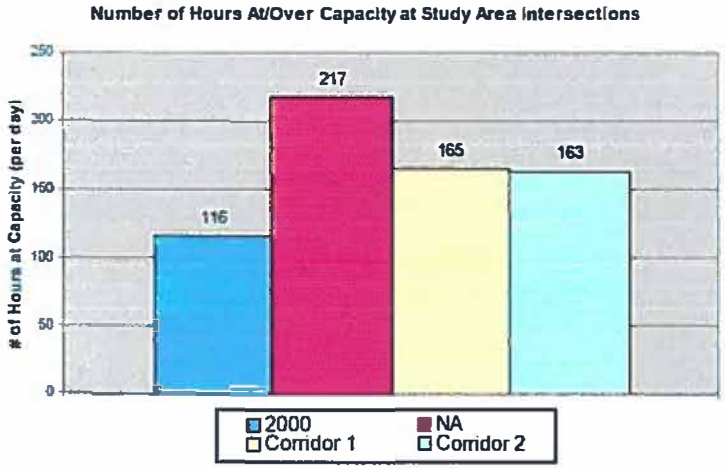
Metric: Number of weekday hours that study area intersections exceed capacity in 2040.

Discussion

Peak hours by definition are the heaviest travel times. While the Level of Service (LOS) during peak hours gives an indication of how well signalized intersections are performing at peak travel times, travel demand in excess of capacity redistributes itself to the "shoulder hours" (shoulder hours are the hours before and after the peak hours). This redistribution, due to peak spreading and spillover effects in a highly congested region like the Washington metropolitan area, can congest intersections for many hours during the day, and forms the foundation of the hours of congestion methodology. In the study area for this project, it is unlikely that the improvements will reduce peak hour congestion but may have a significant effect in other hours. This measure is related to reducing the duration of congested conditions rather than eliminating congestion. This metric therefore captures the number of weekday hours that local study area intersections exceed capacity. For the ICC EIS, existing 24-hour traffic counts were used to determine the temporal distribution of traffic at each intersection and the Critical Lane Volume (CLV) technique was used to calculate LOS at selected intersections for each hour of the day.

An example of the number of hours that local study area intersections exceed capacity included in the ICC FEIS Volume 1 is shown below.

Chart IV-2



Objective 1.4: Reduce the number of weekday hours for each segment of I-495 and I-270 that exceed capacity by X% in 2040.

[1] The local study area is assumed to include the project corridors, intersections along parallel roads, interchange connections and intersections along intersecting arterials.

Metric: Number of weekday hours that each segment of I-495 and I-270 exceed capacity in 2040.

Objective 1.5: Increase the average person throughput per lane on each segment of I-495 and I-270 in 2040.

Metric: the average person throughput per lane on each segment of I-495 and I-270 in 2040.

Goal 2: Enhance Trip Reliability

Objective 2.1a: Achieve at least a moderate trip reliability for people in private vehicles (Planning Time Index < 2.5) on every segment of I-270 and I-495 in 2040.

Metric: The number of daily person hours of reliability severity for people in private vehicles on each road segment by direction along I-495 and I-270 in 2040.

Objective 2.1b: Achieve at least a moderate trip reliability for people in transit vehicles (Planning Time Index < 2.5) on every segment of I-270 and I-495.

Metric: The number of daily person hours of reliability severity for people in transit vehicles on each road segment by direction along I-495 and I-270.

Discussion

MDOT SHA measures trip reliability using the Planning Time Index (PTI). The PTI represents the total time travelers should allow to ensure they arrive at their destination on-time while taking into account potential delays due to non-recurring congestion. Travelers travelling in free flow conditions that take five minutes to traverse a section of roadway should allow for 15 minutes to ensure arriving on time when the PTI is 3.0. The lower the PTI number, the more reliable the trip. The higher the value, the less reliable and longer a trip might take. PTI should be measured for people, not vehicles.

Location	Direction	# of Person Hours of Reliability Severity per Weekday		
		Reliable	Moderately Unreliable	Highly to Extremely Unreliable
American Legion Bridge to Clara Barton Pkwy	Inner			
American Legion Bridge to Clara Barton Pkwy	Outer			
Clara Barton Pkwy to River Rd	Inner			
Clara Barton Pkwy to River Rd	Outer			

Congestion Severity:

- Reliable: PTI < 1.5
- Moderately Unreliable: 1.5 < PTI < 2.5
- Highly to Extremely Unreliable: PTI > 2.5

Goal 3: Provide Additional Transportation Travel Choices

Objective 3.1a: Increase the number of jobs accessible within 45 minutes by mode by X%.

> Metric: Number of jobs accessible within 45 minutes by mode (transit, SOV private vehicle, HOV private vehicle).

Objective 3.1b: The percent increase in jobs accessible within 45 minutes by mode (transit, SOV private vehicle, HOV private vehicle) for Equity Emphasis Areas should be the same or better than for non-Equity Emphasis Areas.

> Metric: Number of jobs accessible within 45 minutes by mode (transit, SOV private vehicle, HOV private vehicle) for Equity Emphasis Areas[2] compared to other areas of the county.
>
> Discussion
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> Accessibility is a measure of how quickly people can travel from home to work opportunities. It has traditionally been measured by determining how many jobs are within a given time from each Transportation Analysis Zone (TAZ) in the area being studied. Improvements in accessibility resulting from each alternative should be measured by how many additional jobs are within 45 minutes travel time of each TAZ, with each alternative as compared to the No-Build alternative, during the AM peak period. An aggregate measure of how many additional jobs are accessible should be summarized for the entire study area. The analysis of this metric should follow MWCOG / TPB's procedures.

[2] See: https://www.mwcog.org/transportation/planning-areas/fairness-and-accessibility/environmental-justice/equity-emphasis-areas/

Goal 4: Accommodate Homeland Security

No comment.

Goal 5: Improve Movement of Goods and Services

Objective 5.1: Reduce the peak period travel time between activity centers by vehicles by direction by X% in 2040.

Metric: Peak period travel time between activity centers by vehicles in 2040.

Goal 6: Safety

SHA should develop a quantitative methodology to estimate the safety benefits of each alternative. This should consider changes to both freeways and arterial roads leading to the freeways. Traffic safety factors should include: congestion, reliability and other factors.