



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

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RE: I-495 and I-270 Managed Lanes Study Purpose and Need Statement M-NCCCCP Comments

The main purpose of this letter is to provide you with M-NCPPC's¹ review of the Preliminary Alternatives proposed for the I-495/I-270 Managed Lanes Study in anticipation of MCDOT SHA's recommendation for selection of the ARDS. We are providing both general comments as well as making our recommendation to you of which Preliminary Alternatives we believe should be advanced for detailed study.

Introduction

M-NCPPC conducted a detailed review of the 19 alternatives developed by MDOT SHA for the I-495/I-270 Managed Lanes Study². The Alternatives were designed to comply with the National Environmental Policy Act (NEPA), and to fulfill the Purpose and Need developed and approved for the study. Specifically, the following actions are required under NEPA, and our comprehensive approach to review was intended to be consistent with those requirements:

- Rigorously explore and objectively evaluate all reasonable alternatives, and for any alternative that is eliminated from detailed study, briefly discuss the reasons for elimination.
- Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- Include reasonable alternatives not within the jurisdiction of the lead agency.
- Include the alternative of no action.

¹ This M-NCPPC review is a consolidated effort by the Montgomery County Planning Department, the Montgomery County Department of Parks, the Prince George's County Planning Department, and the Prince George's County Department of Parks and Recreation.

² The Preliminary Alternatives were numbered as 15, but with subparts there were 19 Alternatives proposed, and each was reviewed individually.

- Include reasonable alternatives not within the jurisdiction of the lead agency.
- Include the alternative of no action.
- Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- Include appropriate mitigation measures not already included in the proposed action or alternatives.
- When the proposed action is an integral part of a coordinated plan to deal with a broad problem, the range of alternatives that must be evaluated is broadened³.
- Screen the alternatives to a reasonable set of Alternatives Retained for Detailed Study (ARDS),
- Provide a listing and rationale for alternatives considered yet rejected (namely, alternatives not consistent with the Purpose and Need).

In addition to the comprehensive analysis and review of the 19 alternatives, we provide a discussion of a fatal flaw screening conducted by M-NCPPC staff, and staff recommendations of Alternatives to advance to the Alternatives Retained for Detailed Study (ARDS). This analysis also includes general concerns of M-NCPPC staff about the environmental review process with suggestions to address bicycle/pedestrian needs and social equity requirements as part of this project.

Environmental Review General Comment

No environmental impact review has been conducted to-date on the Preliminary Alternatives as part of consideration of which should be advanced for more detailed study. The Managed Lanes Study Area encompasses many sensitive environmental features including, extensive stream and riparian habitat, wetlands and significant acreage of floodplain forest, and forest buffers. M-NCPPC believes that due to the location of existing right-of-way tightly surrounded by parkland, any build alternative that accommodates lane expansion along the existing highway network will significantly alter or completely eliminate the functionality of these environmental features. Therefore, the analysis of environmental impacts for each of the ARDS will have a profound influence on the selection of a Preferred Alternative. M-NCPPC has a major concern that MDOT SHA's proposed project timeline for selection of the Preferred Alternative is scheduled to occur *prior* to completion of the Draft Environmental Impact Statement (EIS), which flies in the face of consideration of environmental impacts as a criteria for selection of the ARDS in the Purpose and Need Statement.

Need for Pedestrian and Bicycle Connection Solutions Across I-495 and I-270 Corridors

The I-495 and I-270 corridors create significant barriers for pedestrian and bicycle connectivity throughout Montgomery and Prince George's Counties, and the existing Interstate interchanges have typically provided limited if any pedestrian and bicycle facilities. These deficiencies should be addressed at all interchanges within the study area as part of the project implementation, regardless of the Preferred Alternative. In addition, any widening considerations for the American Legion Bridge must provide a pedestrian/bicycle connection across the Potomac River: i) to connect the two National Parks, and ii) to connect the planned bike network as adopted in the Montgomery County Bicycle Master Plan to the planned and existing facilities in Fairfax County.

³ Natural Resources Defense Council v. Morton, 458 F.2d 827 (D.C. Cir. 1972)

Need for Toll Subsidies to Support Multimodal Transportation, Environmental and Social Equity Responsibilities

Regardless of the Preferred Alternative selected (assuming there must be revenues to attract any Public Private Partnership (P3) operator), an integral element of this project should require a dedicated portion of the revenues collected by the P3 operator be allocated to subsidize multimodal transportation, environmental mitigation and social equity as direct impacts. For multimodal transportation, a portion of the revenues should be allocated for the planning, development, and implementation of public transit services and facilities, bikeshare stations, and construction of bicycle and pedestrian improvements. This was a requirement for the I-66 Transform P3 contractor and these services are now being implemented by the Northern Virginia Transportation Authority (NVTA). Environmental mitigation is also expected to be significant and could be addressed with dedicated revenue. Furthermore, a portion of the revenues should provide subsidies for economically disadvantaged citizens to procure both reduced-cost transit passes AND rebates on EZ-Pass usage for those drivers unable to use public transit.

Managed Lanes Study Boundaries and Congestion Analysis

On the Prince George's portion of I-495/95, M-NCPPC has concerns with the terminus of the project near Exit 7 – Branch Avenue/ MD 5 because of the potential for bottlenecks to occur. There is approximately 1 mile between the study area terminus and the existing improvements (express and local lanes) near Exit 4 – Oxon Hill Road/MD 414. This gap could severely impact the flow of traffic along the I-495 corridor thus increasing congestion and decreasing trip reliability, contrary to the purpose of the project. We are particularly concerned that traffic congestion at this location could negatively impact South County's economic drivers, the National Harbor and the MGM Hotel and Casino complex, a nationally recognized waterfront destination including a casino, stores, restaurants, residential dwellings as well as hotels and a convention center located at Exit 2 on I-495 in Oxon Hill. This 300-acre mixed-use development, which is expected to expand, serves as a substantial economic asset to both the state and local economy while generating a significant transportation impact on our highway system.

On the Montgomery County side of the study area, M-NCPPC has concerns with the terminus decision on I-270 at I-370. While a second study/project is planned from I-370 north to the City of Frederick, this is not a logical terminus for this first phase of the study. The ultimate alternative decisions on the segment of I-270 between Clarksburg and I-370 will have more in common with the existing study area than the portion of I-270 in Frederick County. In fact, the more appropriate segmentation should be consistent with Montgomery County's Master Plan of Highways and Transitways. One travel corridor runs from the northern County boundary of I-270, continuing down the western spur and joining with I-495 to the American Legion Bridge, while the other follows the eastern I-270 spur and continues onto the eastern portion of I-495; each corridor recommended for different treatments to address travel congestion.

And as we recently discussed, if the termini justification was analyzed through earlier studies before MDOT SHA established the Study Area, please provide that information and analysis. You indicated that there are required analyses under Federal Law to assure integration at the project terminus with merging highway systems. We expect that analysis to be included as part of the Study materials. As a reminder, one of our critical comments to the Purpose and Need Statement was that it did not provide an analysis of the regional travel patterns that contribute to the congestion now experienced on I-495

and I-270; what type of congestion is occurring - whether it is a result of link patterns or merge and weaving capacity; where is it occurring; and how frequently occurs. We understand that MDOT SHA intends to include this analysis during the ARDS review as part of the selection of the Preferred Alternative. M-NCPPC expects to review that study during the next stage in the process.

I-495/I-270 Managed Lanes Study Alternatives

MDOT SHA presented a total of 19 Preliminary Alternatives (15 base alternatives with 4 additional sub-alternatives) for the I-495/I-270 Managed Lanes Study in response to the Purpose and Need Statement. The following describes M-NCPPC's analysis of the Alternatives to satisfy the NEPA process as discussed earlier. It does not include any environmental impact review that will be required of MDOT SHA as part of the ARDS phase of the project in order to advance to selection of the Preferred Alternative.

The Preliminary Alternatives developed by MDOT SHA are as follows (repeated for ease of reference):

No.	Alternative
1	No Build
2	Transportation Systems Management (TSM)/Travel Demand Management (TDM)
3	Add one general-purpose (GP) lane
4	1-Lane, HOV Managed Lane Network
5	1-Lane, Price Managed Network (convert HOV to Price Managed on I-270)
6	Add two GP Lanes
7	2-Lane, HOV Managed Lane Network
8	2-Lane Price Managed Network on I-495; 1-Lane Price Managed and 1-Lane HOV on I-270
9	2-Lane Price Managed Lane Network (convert HOV to Price Managed on I-270)
10	2-Lane Price Managed Lane Network and continue HOV on I-270
11	Collector/Distributor Lanes on I-495
12A	Contraflow Lane on I-495
12B	Contraflow Lane on I-270
13A	2-Lane Price Managed Reversible Lanes on I-495
13B	2-Lane Price Managed Reversible Lanes on I-270 (convert HOV to Price Managed)
14A	Fixed Guideway Transit – Heavy Rail
14B	Fixed Guideway Transit – Light Rail
14C	Fixed Guideway Transit (Off Alignment) – Bus/BRT
15	Dedicated Bus Managed Lane

M-NCPPC conducted its review assuming that each Alternative may be a distinct Alternative, an element of one or more Alternatives, or a composite of more than one Alternative. Alternatives that would be more ideally suited as alternative elements are operational changes to more effectively utilize the existing/future interstate network such as Alternative 2 (TSM/TDM). Others that may function well as a stand-alone alternative as well as an element of a composite alternative include Alternatives 11, 13A, 13B, 14A, 14B, and 14C.

Identification of Fatal Flaws

As a first step in its review, M-NCPPC identified certain “fatal flaws” that effectively eliminated an Alternative outright. Under NEPA, if a Preliminary Alternative is eliminated from detailed study, the reasons for elimination must be discussed. Therefore, the following descriptions of fatal flaws will address that obligation as applied to certain Alternatives that we do not recommend to be advanced for detailed study:

1. **Adding General-purpose lanes** - Any alternative that adds general-purpose lanes is not supported by M-NCPPC. A major policy view guiding this concept as fatal flaw is the documented failure of general-purpose lane expansion in solving congestion (i.e., latent or induced demand). This is supported by trusted transportation research institutions such as the Transportation Research Board and the Victoria Transport Policy Institute⁴⁵. Further, the widening of I-270 or I-495 for general-purpose lanes is not a component of any adopted Master Plan in either Montgomery or Prince George’s Counties.
2. **Repurposing HOV lanes into ETL/HOT lanes** - The existing HOV lanes on I-270 are in effect in the peak direction, peak period only; otherwise, they are open for general purpose traffic, therefore these lanes are affectively general purpose lanes for 22 hours each day. Conversion of an HOV lane into an ETL/HOT lane not only converts the 3-hour peak period usage, but it also re-purposes a general-purpose lane (see fatal flaw #3). Additionally, we are concerned that the repurposing of existing peak-period-only HOV lanes into electronic toll lanes (ETL) or high occupancy toll (HOT) lanes may not be allowed under federal law^{6 7}.
3. **Repurposing general-purpose lanes into ETL/HOT lanes** - Converting general-purpose lanes into ETL/HOT lanes is not supported by M-NCPPC. Both the 2018 Master Plan of Highways and Transitways in Montgomery County and the 2009 Master Plan of Transportation in Prince George’s County, definitively identify the numbers of existing travel lanes, planned travel lanes and HOV lanes in their respective counties. Changing any of these values above or below those identified would require Master Plan Amendments. In the state of practice nationwide, including the ETL/HOT lanes in Virginia, the conversion of general-purpose lanes into ETL/HOT lanes has not been successful. ETL/HOT lanes are typically created by adding new lanes.

⁴ Milam, R. T., Birnbaum, M., Ganson, C., Handy, S., & Walters, J. (2017). Closing the Induced Vehicle Travel Gap Between Research and Practice. *Transportation Research Record*, 2653(1), 10–16. Retrieved 25 October 2018, from <https://doi.org/10.3141/2653-02>.

⁵ Litman, Todd. The Victoria Transport Policy Institute (April 24, 2018). *Vtpi.org*. Retrieved 25 October 2018, from <http://www.vtpi.org/gentraf.pdf>.

⁶ 23 US Code § 129, Toll roads, bridges, tunnels, and ferries.

⁷ “Tolling US Highways,” Report R43575, Congressional Research Service, August 26, 2016.

4. **Operational Problems (HOV plus ETL/HOT lanes)** - The operation of both HOV and ETL/HOT lanes along the same corridor and direction is inconsistent with sound highway design and operations practices. It is also inefficient for operations and confusing to drivers. Generally, and as we expect will be the case with any of the ETL/HOT lanes if selected as the Preferred Alternative for either I-495 or I-270, an ETL/HOT lane will require significant investment to separate the general-purpose lanes, and on a transportation policy level ETL/HOT lanes should be open for use by HOV vehicles to promote higher-occupancy travel, car and van-pooling and public transit.
5. **Consistency with transportation best practices** – Alternatives that are considered contrary or inconsistent with transportation best practices should be eliminated. This includes alternatives that propose outdated solutions that are not being applied locally or nationally, or solutions that are not considered appropriate for an Metropolitan Interstate corridor bounded mostly by low and medium density housing.

Elimination of Alternatives with Fatal Flaws

Based on these five fatal flaws, the following 12 alternatives should be eliminated from further consideration:

Alternative 3 – Add one general-purpose (GP) lane violates fatal flaw #1 (general-purpose lane addition).

Alternative 5 - 1-Lane, Price Managed Network (convert HOV to Price Managed on I-270), without modification violates fatal flaws #2 and #3 on I-270 (repurposing HOV Lanes into ETL/HOT lanes, and because of the limited use for HOV, repurposing general-purpose lanes into ETL/HOT lanes). This alternative could be modified to eliminate this fatal flaw by adding new ETL/HOT lanes on I-270 and converting the existing HOV lanes into general-purpose lanes.

Alternative 6 – Add two GP Lanes violates fatal flaw #1 (general-purpose lane addition).

Alternative 7 – 2-Lane, HOV Managed Lane Network violates fatal flaw #5 (consistency with transportation best practices). Two-lane HOV lane systems are not being implemented in the US; instead, managed lane networks with HOT lanes are the preferred concept being applied.

Alternative 8 – 2-Lane Price Managed Network on I-495; 1-Lane Price Managed and 1-Lane HOV on I-270 violates fatal flaw #4 on I-270 (operational problems - HOV plus ETL/HOT).

Alternative 9 – 2-Lane Price Managed Lane Network (convert HOV to Price Managed on I-270) violates fatal flaws #2 and #3 on I-270 (repurposing HOV Lanes into ETL/HOT lanes, and because of the limited use for HOV, repurposing general-purpose lanes into ETL/HOT lanes).

Alternative 10 - 2-Lane Price Managed Lane Network and continue HOV on I-270, without modification violates fatal flaw #4 on I-270 (Operation problems - HOV plus ETL/HOT). However, if Alternative 10 was modified by shifting the HOV function into the ETL/HOT lanes and converting the existing HOV lane into 24/7 general-purpose lanes, this Alternative would be appropriate for further study. Since the HOV lanes have a general-purpose function for 21 hours of the day, this does not violate fatal flaw #1.

Alternative 11 - Collector/Distributor Lanes on I-495, without modification violates fatal flaw #1 (general-purpose lane addition). Alternative 11 may have applications in southern Prince George's County between the Woodrow Wilson Bridge and US Route 50, particularly since a portion of this segment is already in a C/D lane configuration. This alternative could also be modified to provide managed lanes (HOV or ETL/HOT) instead of the general-purpose lane additions.

Alternative 12A – Contraflow Lane on I-495 violates fatal flaw #5 (consistency with transportation best practices) – contraflow operations are only considered safe for short distances (i.e., bridge crossings) and when lanes are protected with a movable median barrier (“zipper” lane). M-NCPPC does not view this alternative as acceptable or realistic for the lengthy travel distance of I-495 based on traffic safety and traffic operations issues.

Alternative 12B – Contraflow Lane on I-270 violates fatal flaw #5 (consistency with transportation best practices) – contraflow operations are only considered safe for short distances (i.e., bridge crossings) and when lanes are protected with a movable median barrier (“zipper” lane). M-NCPPC does not view this alternative as acceptable or realistic for the lengthy travel distance of I-270 based on traffic safety and traffic operations issues.

Alternative 13B - 2-Lane Price Managed Reversible Lanes on I-270 (convert HOV to Price Managed), without modification violates fatal flaw #2 and #3 (repurposing HOV Lanes into ETL/HOT lanes, and because of the limited use for HOV, repurposing general-purpose lanes into ETL/HOT lanes). Alternative 13B can be modified to eliminate this fatal flaw by adding the ETL/HOT lanes as new lanes and converting the existing HOV lanes into 24/7 general-purpose lanes, this Alternative would be appropriate for further study. Since the HOV lanes have a general-purpose function for 21 hours of the day, this does not violate fatal flaw #1.

Alternative 15 – Dedicated Bus Managed Lane violates fatal flaw #5 (consistency with transportation best practices) – dedicated bus lanes require a much higher transit mode share than foreseeable along the suburban I-495 and I-270 corridors. Furthermore, and as we expect will be the case with any of the ETL/HOT lanes if selected as the Preferred Alternative for either I-495 or I-270, from a transportation policy level an ETL/HOT lane will be open for use by public transit, including buses.

Review of Each Alternative

Alternative 1 – No-Build. A No Build condition is required by NEPA as a baseline transportation assessment to compare proposed actions versus a “Do Nothing” condition. Alternative 1 must be advanced into ARDs as a NEPA Requirement. This alternative must include all the transportation recommendations identified in the Washington Council of Government’s (WashCOG) currently-ongoing Visualize 2045 project. The recommended Financially-Constrained Long-Range Plan (CLRP), includes the following major transportation projects:

Prince George’s County:

- I-95/I-495 – interchange at Greenbelt Metro Station (2030)
- I-95/I-495 – Branch Avenue Metro access improvements, construct 8 lanes (2017)
- Baltimore-Washington Parkway (MD 295) /MD 193 intersection improvements (2020)
- Suitland Parkway – interchange at Rena Road/Forestville Road (2025)
- US 1 (Baltimore Avenue) – reconstruct 4 lanes (2030)

- US 50 westbound ramp to Columbia Park Road (2025)
- US 301 – widen to 6 lanes (2045)
- MD 3 – widen to 6 lanes (2035)
- MD 4 – widen to 6 lanes with interchanges at Dower House Road and Westphalia Road (2040)
- MD 4 – interchange at Suitland Parkway (2040)
- MD 5 – upgrade, widen to 6 lanes including interchanges (2035)
- MD 197 (Collington Road) – widen to 4/5 lanes (2025)
- MD 202 (Landover Road) – Largo Town Center Metro Access Improvement, reconstruct 6 lanes (2045)
- MD 210 (Indian Head Hwy) – upgrade to 6 lanes and interchange improvement (2040)
- MD 223 (Woodyard Road) – widen to 4 lanes (2020)
- MD 450 (Annapolis Road) – widen to 4 lanes (2030)

Montgomery County:

- I-270/US 15 widening including HOV (2030)
- I-270 – interchange at Watkins Mill Road Extension (2018)
- US 29 – interchanges at Stewart Lane, Tech Road/Industrial Parkway, Musgrove Road/Fairland Road, Greencastle Road, and Blackburn Road (2045)
- MD 28/MD 198 – widen to 4, 6 lanes (2045)
- MD 97 - Brookeville Bypass (2021)
- MD 117 - Clopper Road – widen to 4 lanes (2020)
- MD 118 - Germantown Road – widen to 4 lanes (2020)
- MD 124 - Woodfield Road – widen to 6 lanes (2020)
- Mid-County Highway Extension (M-83) – construct 4,6 lanes (2025)
- Middlebrook Road Extended – construct 4 lanes (2025)
- Montrose Parkway East/Phase2 – construct 4 lanes (2022)
- Purple Line (2020)
- Corridor Cities Transitway – Shady Grove to COMSAT (2020)
- Tiger Grant Bus Priority Improvements
- MARC - increase trip capacity and frequency along all commuter lines (2029)
- Randolph Road BRT (recent addition)
- North Bethesda Transitway BRT (recent addition)
- MD 355 BRT (recent addition)
- Veirs Mill Road BRT (recent addition)
- I-495 HOT Lane Express Bus Service (Northern Virginia portion)
- I-270 Innovative Congestion Management project (2019)

Alternative 2 – Transportation Systems Management/Travel Demand Management (TSM/TDM). Alternative 2 must be advanced into ARDS as a NEPA requirement. This alternative looks at lower-cost improvements to the existing roadway corridor using TSM and TDM tools to improve traffic flow or to reduce travel demand. Therefore, Alternative 2 should be also considered as an integral element of *any* Alternative selected for more detailed study. The I-495 portion should include

innovative congestion management treatments, such as ramp metering and active traffic management consistent with the ongoing I-270 Innovative Congestion Management project that is currently being implemented with ramp metering, minor lane restriping to improve merging/diverging and weaving conditions, an active traffic management system with variable speed limits and frequent message boards along the corridor. In addition, this alternative should promote and support existing transportation functions along these two corridors, including park and ride facilities, Maryland Rideshare, federal transit pass subsidies and travel demand measures being implemented regionally.

Alternative 3 – Add one general-purpose lane. Alternative 3 should be eliminated due to a fatal flaw as discussed above.

Alternative 4 – 1-Lane High-Occupancy Vehicle (HOV) Managed Lane Network. Alternative 4 would provide one HOV lane in either direction on I-495 and maintain the existing HOV lanes on I-270, and it should be advanced for detailed study. The extension of the HOV Lanes on I-270 from their current termination points (I-370 in the southbound direction and north of Clarksburg Road in the northbound direction) to extend north along I-270 to the City of Frederick is included in the No-Build condition (Alternative 1) for this study; however, it must be addressed more fully as part of the second phase of the P3 program proposed by MDOT SHA (although we recommend it be studied as part of the first phase). This alternative is the current adopted master plan recommendation in Montgomery County's Master Plan of Highways and Transitways on I-270 within Montgomery County and on I-495 between the I-270 Western Spur and the American Legion bridge.

Alternative 5 – 1-Lane Managed (ETL/HOT) Network. Unless modified by converting the existing HOV lanes on I-270 into general-purpose lanes, Alternative 5 should be eliminated due to a fatal flaw as discussed above. This alternative would provide one managed lane (ETL/HOT) in each direction on I-495 and convert the existing HOV lanes on I-270 to HOT operation. The conversion of the existing peak-period HOV lane on I-270 as proposed, would eliminate the 21 hours a day (weekdays) general-purpose function of this existing lane and severely restrict existing traffic capacity.

Alternative 6 – Add two general-purpose lanes. Alternative 6 should be eliminated due to a fatal flaw as discussed above.

Alternative 7 – Two-Lane Managed (HOV) Network. Alternative 7 should be eliminated due to a fatal flaw as discussed above.

Alternative 8 – 2-Lane Price Managed Network on I-495; 1-Lane Price Managed and 1-Lane HOV on I-270. Alternative 8 should be eliminated due to a fatal flaw as discussed above.

Alternative 9 – Two-Lane Managed (ETL/HOT) Network. Alternative 9 should be eliminated due to a fatal flaw as discussed above.

Alternative 10 – 2-Lane Price Managed Lane Network and continue HOV on I-270. Without modification to add new ETL/HOT lanes and convert the existing HOV lanes on I-270 into general-purpose lanes, Alternative 10 should be eliminated due to a fatal flaw as discussed above. The conversion of the existing peak-period HOV lane on I-270 as proposed, would eliminate the 21 hours

a day (weekdays) general-purpose function of this existing lane and severely restrict existing traffic capacity.

Alternative 11 – Collector/Distributor on I-495. Without modification to provide managed lanes (HOV or ETL/HOT) instead of the general-purpose lane additions, Alternative 11 should only be advanced into ARDS for consideration in Prince George’s County between US Route 50 and the Woodrow Wilson Bridge as an element of a composite alternative.

Alternative 12A – Contraflow on I-495. Alternative 12A should be eliminated due to a fatal flaw as discussed above.

Alternative 12B – Contraflow Lanes on I-270. Alternative 12B should be eliminated due to a fatal flaw as discussed above.

Alternative 13A – 2-Lane Price Managed Reversible Lanes on I-495. Alternative 13A should be advanced into ARDS. While not intuitively applicable given the relatively balanced directional traffic flow on I-495, this alternative may have applications through existing/future bottlenecks, including the American Legion Bridge and the I-95 to Northwest Branch merge area.

Alternative 13B – 2-Lane Price Managed Reversible Lanes on I-270 (convert HOV to Price Managed). Without modification to convert the existing HOV lanes on I-270 into general-purpose lanes and add two-lane price managed lane operation, Alternative 13B should be eliminated due to a fatal flaw as discussed above. The conversion of the existing peak-period HOV lane on I-270 to HOT operation as proposed, would eliminate the 21 hours a day (weekdays) general-purpose function of this existing lane and severely restrict existing traffic capacity. As modified, this same treatment is applied with the I-95/I-395 HOV lanes in Virginia (reversible roadway network).

Alternative 14A – Fixed Guideway Transit – Heavy Rail/Metro. Alternative 14A should be advanced into ARDS, and M-NCPPC offers several potential fixed guideway, heavy rail transit alternatives that should be considered in detail as part of the Study. The presentation of this alternative was vague and ill-defined by MDOT SHA, only identifying the mode of transportation rather than how heavy rail could be incorporated into any of the alternatives. To address the Purpose and Need Statement of this project, M-NCPPC offers the following heavy rail transit alternatives:

- MARC investment and 3rd track addition between Montgomery County/Frederick County boundary to Metropolitan Grove with new MARC stations at Shady Grove, Twinbrook, and White Flint.
 - Extend Red Line from Shady Grove to Metropolitan Grove
 - Extend Red Line from Shady Grove to Germantown Transit Center
 - Extend Green Line from Southern Avenue to King Street
- Extend Green Line from Suitland/Branch Avenue to Huntington Station

Alternative 14B – Fixed Guideway Transit – Light Rail. Alternative 14B should be advanced into ARDS, and M-NCPPC offers several potential fixed guideway, light rail transit alternatives that should be considered in detail as part of the Study. The presentation of this alternative was vague and ill-defined by MDOT SHA, only identifying the mode of transportation rather than how light rail could be incorporated into any of the alternatives. To address the Purpose and Need Statement of this project, M-NCPPC offers the following light rail transit alternatives:

- Extend Purple Line to Tysons
- Extend Purple Line to Largo Town Center
- Extend Purple Line to National Harbor
- Extend Purple Line to Alexandria
- New LRT from Shady Grove Metro station to Germantown Transit Center

Alternative 14C – Fixed Guideway Bus Rapid Transit (Off Alignment). Alternative 14C should be advanced in ARDS, modified from the original proposal as off-alignment to add a system of express bus/BRT routes directly serving the I-495 and I-270 corridors. This alternative would be renamed the Express Bus/BRT Network with the selection of at least one to two of the sub-alternatives shown below. This alternative, as modified should also be considered as an integral element of a composite alternative with service planning, development, implementation and funding. There are two master-planned transit only (BRT and express bus) access locations along the I-270 corridor at Dorsey Mill Road and Fernwood Road. In addition, express bus/BRT service is master planned by Montgomery County between Montgomery Mall and Tysons. Parallel efforts in Virginia have resulted in two Northern Virginia CLRP projects that are included in Alternative 1 (No Build), the I-495 HOT Lane Express Bus Service and the I-66 HOT Lane Enhanced Bus Service (part of I-66 HOT Lanes project). Potential express bus/BRT routes could include the following:

- I-270 BRT from Clarksburg/Germantown to Montgomery Mall
- I-495 BRT from Montgomery Mall to Tysons
- White Oak BRT from White Oak Transit Center to Montgomery Mall
- White Oak BRT from White Oak Transit Center to Largo Town Center
- Shady Grove BRT from Shady Grove Metro to Montgomery Mall
- BRT from Shady Grove Metro to Germantown Transit Center
- BRT from Purple Line terminus to National Harbor
- BRT between Bladensburg and Takoma-Langley Park (via Kenilworth Avenue, East-West Highway and Riggs Road)

Alternative 15 – Dedicated Bus Managed Lane. Alternative 15 should be eliminated due to a fatal flaw as discussed above.

Summary of Recommended Alternatives to Advance to ARDS

In summary, staff recommends the advancement of the following ten Alternatives into ARDS as stand-alone alternatives:

- Alternative 1 – No Build
- Alternative 2 – Transportation Systems Management (TSM)/Travel Demand Management (TDM)
- Alternative 4 – 1-Lane High-Occupancy Vehicle (HOV) Managed Lane Network
- Alternative 5 **with modification** - 1-Lane Managed (ETL/HOT) Network
- Alternative 10 **with modification** - 2-Lane Price Managed Lane Network and continue HOV on I-270
- Alternative 13A – 2-Lane Price Managed Reversible Lanes on I-495
- Alternative 13B **with modification** – 2-Lane Price Managed Reversible Lanes on I-270 (convert HOV to Price Managed)

- **Alternative 14A – Fixed Guideway Transit (Heavy Rail/Metro) with selection of specific alignments/stations and services**
- **Alternative 14B – Fixed Guideway Transit (Light Rail) with selection of specific alignments/stations and services**
- **Alternative 14C with modification – Fixed Guideway Bus Rapid Transit (Off Alignment), but renamed Express Bus/BRT Network on I-495 and I-270 with selection of specific alignments/stations and services**

In addition, staff recommends the advancement of the following five alternatives into ARDS as elements of a composite alternative and included as elements for any selected Preferred Alternative. These considered vital elements to any successful project by the M-NCPPC:

- **Alternative 2 - Transportation Systems Management (TSM)/Travel Demand Management (TDM)**
- **Alternative 11 with modification - Collector/Distributor on I-495 to provide managed lanes (HOV or ETL/HOT) instead of the general-purpose lane additions**
- **Alternative 14A – Fixed Guideway Transit (Heavy Rail/Metro) with selection of specific alignments/stations and services**
- **Alternative 14B – Fixed Guideway Transit (Light Rail) with selection of specific alignments/stations and services**
- **Alternative 14C with modification – Express Bus/BRT Network on I-495 and I-270 with selection of specific alignments/stations and services**