DIVISION OF PLANNING
FREDERICK COUNTY, MARYLAND

Winchester Hall 12 East Church Street Frederick, Maryland 21701 (301) 600-1138

TO: Frederick County Planning Commission & Board of County Commissioners

FROM: Eric Soter, Director
through Jim Gugel, Chief of Comprehensive Planning
through John Thomas, Principal Planner, Transportation

DATE: August 5, 2009

RE: I-270 / US 15 Multimodal Study - Locally Preferred Alternative

ISSUE

The Division of Planning presents a summary of the **I-270 / US 15 Multimodal Study's Environmental Assessment and Alternatives Assessment** to the Frederick County Planning Commission and Board of County Commissioners (BoCC) for review, comments and recommendation of a locally preferred alternative.

BACKGROUND

The purpose of this report is to review new design alternatives proposed by the State Highway Administration (SHA) for Express Toll Lanes (ETL), which were not included in the 2002 DEIS list of alternatives. Also provided will be a recommendation regarding a preferred alternative.

This report includes the following sections:

- Highway & Transit Alternative Summary
- Background – Study Process, Past, Present & Future
- 2009 Recommendations and Comments
- Highway Alternatives
- Transit Alternatives
- Summary of Project Impacts

RECOMMENDATION (FcPc)

Staff recommends that the Planning Commission review the summary of alternatives and environmental assessment and submit comments to the Board of County Commissioners including a finding of consistency with the County Comprehensive Plan.

RECOMMENDATION (BoCC)

Staff recommends that the Board of County Commissioners review the summary of alternatives and environmental assessment and submit comments to the Maryland State Highway Administration and Maryland Transit Administration for inclusion in the public record of the Multi-modal study and prepare for the submittal of a locally preferred highway and transit alternative.

Definitions

- ***General-Purpose (GP) lanes*** are regular traffic lanes designed to accommodate all motor vehicle traffic on interstate and state highways, generally posted at speeds of 55 miles per hour or higher.
- ***High-Occupancy Vehicle (HOV) lanes*** are dedicated lanes which can only be used by vehicles with two or more occupants or by motorcycles. HOV lanes are managed lanes designed to encourage car-pooling.
- ***Express Toll Lanes (ETLs)*** are managed lanes designed to alleviate congestion in the GP lanes and provide relatively free-flowing traffic. Tolls can be a set price or can be managed (raised and lowered) based on maintaining free-flow travel speeds or maintaining premium bus schedules. Motorists who wish to travel in the less congested ETLs pay a toll that is collected at highway speed by an E-ZPass type transponder.
- ***High Occupancy Toll (HOT) Lanes*** are a hybrid of HOV and ETL lanes where HOV vehicles are permitted to use the dedicated lanes for free while single occupant vehicles must pay a toll.
- ***Light Rail Transit (LRT)*** is an electric railway system that can operate single cars or short trains. LRT for this project would operate completely on an exclusive right-of-way, not mixed with traffic ("A" denotes LRT paired with the various alternatives)
- ***Bus Rapid Transit (BRT)*** is a high quality bus system that has characteristics common to both premium bus and LRT. BRT for this project would be a specially branded bus system operating on entirely exclusive bus lanes, not mixed with traffic. ("B" denotes LRT paired with the various alternatives)
- ***Premium Bus Service*** targets commuters who are willing to pay a higher fee for a more direct route and a comfortable journey. It offers a network of continuous, rapid bus service connections and typically provides longer distance destination service. Premium buses will serve key transit hubs and Park and Ride lots with limited stops and can operate in separated lanes (HOV, ETL, HOT) or general purpose lanes.
- ***Transportation Systems Management (TSM)*** seeks to identify improvements to enhance the capacity of existing transportation system of an operational nature, including traffic signal improvements, intersection improvements and intelligent transportation systems.
- ***Travel Demand Management (TDM)*** includes a variety of strategies to reduce single occupant vehicle trips, including the use of carpools, vanpools, buses, bicycling, walking, variable work hours or working from home.
- ***Corridor Cities Transitway (CCT)*** is a proposed light rail or bus rapid transit line planned to be operated on a separated and exclusive right-of-way. The study identifies potential right-of-way, costs and impacts based on a CCT alignment that would operate from Shady Grove Metro to Clarksburg. Specific mode is to be determined in the locally preferred alternative.
- ***Locally Preferred Alternative (LPA)*** is the decision on the preferred project alternative made by the Maryland Department of Transportation based on planning study results, public comment and input from local participating governments.

Highway and Transit Alternative Summary

The following alternatives were presented in the *2002 Draft EIS* and during the June 2002 Public Hearing. In brief format, these alternatives included:

Alt. 1	No-Build
Alt. 2	Transportation Systems Management TSM/Travel Demand Management TDM
Alt. 3A/B	Master Plan HOV/LRT or BRT (One additional lane added each direction)
Alt. 4A/B	Master Plan General Purpose/LRT or BRT (One additional lane added each direction)
Alt. 5A/B/C	Enhanced Master Plan HOV/General Purpose/LRT, BRT or Premium Bus (Two additional Lanes added each direction)

Existing interchanges would be upgraded or reconstructed and four new interchanges would be constructed along I-270 and US 15. If HOV lanes or ETLs are chosen, direct access ramps would be implemented at up to five interchanges between I-370 and MD 121. Direct access ramps would also be considered for areas better served by transit pending the alternative selected and the transit mode choice.

The ETL alternatives are presented in the **2009 AA/EA Document.** The impacts for these new alternatives are documented in the 2009 AA/EA:

Alternative 6A – Enhanced Master Plan with LRT and 1 ETL north of MD 121

Alternative 6B – Enhanced Master Plan with BRT and 1 ETL north of MD 121

Alternative 7A – Enhanced Master Plan with LRT/2 ETL

Alternative 7B – Enhanced Master Plan with BRT/2 ETL

Alternative 6.1 – No-Build Transit – Master Plan ETL (No transit improvements being built beyond what is included in the Constrained Long Range Transportation Plan (CLRP) and no CCT)

Alternative 6.2 –Transit TSM – Master Plan ETL with Transit TSM (Enhanced Bus Service)

In most areas, the CCT is fully separated from vehicular traffic, either in the median, along one side of an existing roadway, or along new alignment. At-grade or overpass/underpass options exist for major roadway crossings. As proposed, the CCT includes 18 stations and provides direct transfers to the MARC Brunswick line at Metropolitan Grove and the Metrorail Red Line at Shady Grove.

A – Light Rail Transit (LRT)
B – Bus Rapid Transit (BRT)
C – Premium Bus Service

Background - Study Process, Past, Present & Future

The I-270 Corridor has been the subject of transportation studies as far back as 1970. Portions of this project are a continuation of various transportation studies throughout the Corridor. The current I-270/US 15 Multi-Modal Corridor Study was initiated in 1994 and is jointly sponsored by the State Highway Administration (SHA) and the Maryland Transit Administration (MTA). The study has been conducted in accordance with guidelines under the Major Investment Study (MIS) process and the National Environmental Policy Act (NEPA). The study has been conducted with assistance from a project team composed of representatives from Frederick and Montgomery Counties, SHA, MTA, the Metropolitan Washington Council of Governments (MWCOG), Federal Highway Administration, and numerous consultants. A focus group comprised of citizen representatives and various interest groups has been working with the project team throughout the study.

Early in the project, input was received on potential transportation, social, economic, and natural environmental issues. This input was used to further define the purpose of the project and identify the need for the project, settle on the initial range of alternatives to be considered, and identify potential issues related to the proposed alternatives that would need to be addressed in the environmental document.

Past - Draft Environmental Impact Statement (DEIS)

Formal public hearings on the Draft Environmental Impact Statement (DEIS) were held in June 2002. Since that time the State has identified a new design alternative, Express Toll Lanes (ETL) for consideration prior to selecting a preferred alternative. SHA conducted additional public meetings in June 2004 to present information on the ETL concept.

The next step analyzed and identified the alternatives to retain for detailed study. This began the formal alternatives analysis and environmental process.

Highway and transit alternatives and alignment options that had been retained for detailed study were then fully evaluated and better defined to accurately assess their environmental effects, community impacts, transportation benefits, and costs. The end product of these activities was the Draft Environmental Impact Statement (DEIS) document. The DEIS was completed in May 2002 and public hearings were held in both Montgomery and Frederick Counties in June 2002.

What about the Transitway North of Clarksburg?

It was decided in 2001 that projected ridership numbers were not sufficient to consider the Transitway (heavy rail, light rail or separated bus-ways) north of Clarksburg within the 20 year scope of the project. It has been recommended that both counties continue with efforts to preserve right of way for the Transitway alignment north of Clarksburg to Frederick. Premium Bus Service (commuter bus service), serving the entire study area corridor, using general purpose, HOV, HOT or ETL lanes is proposed in all alternatives.

Previous County Recommendations

In September 2002 the alternates based on the 2002 DEIUS were presented to the County Planning Commission, the Transportation Services Advisory Council and the Board of County Commissioners for recommendations for a preferred alternate. Those recommendations were as follows:

Frederick County Planning Commission (FcPc) - September 18, 2002
Voted to recommend Alternative 5 with comments regarding mitigation of impacts from a proposed

bridge connecting Spectrum Dr. and Shockley Dr. over I-270 and requesting serious attention to heavy rail transit in the long term. .

Transportation Services Advisory Council (TSAC) - September 20, 2002
Voted to recommend Alternative 5C (premium bus service option) with comments to consider monorail technology and supporting BRT over LRT for long term transit service.

Board of County Commissioners (BoCC) - October 15, 2002
Voted to support Alternative 3 as the preferred alternate with comments supporting the Spectrum Dr./Shockley Dr. bridge to provide direct access ramps to the HOV lanes. Staff recommended support of Alternate 3 with the following comments:

- The ETL concept would not be consistent with the County's Comprehensive Plan policies, which support Transportation Demand Management strategies such as car/van pooling. Staff would support an HOV system on I-270, which would provide incentive to carpool and would also be consistent with a regional system including the Capital Beltway and facilities in Virginia. Under the ETL option carpools would have to pay the same toll as single occupant vehicles. Staff would be supportive of the ETL concept if it could integrate HOV use, for example instead of having two ETL lanes in each direction having one ETL and one HOV lane in each direction.
- The Countywide Comprehensive Plan policies support roadway improvements that would allow for use of carpools and public transportation.
- County policies support transportation improvements that produce the least disruption to farms, historic sites, and important environmental and scenic features.
- The County would further support all efforts to minimize impacts on existing development and historic/park sites by using retaining walls and steeper slopes.
- The Frederick Region Plan includes recommendations supporting the use of parkway design standards for improvements to US 15 that would support the State Scenic Byway designation of US 15. These design elements may include using stone facing on bridges, using wood or weathered steel for guardrails, minimizing signage along the highway, and providing landscaping at the interchanges and in other right-of-ways along the highway.
- Support placing Rose Hill Manor in Category A for further study of noise impacts to determine if noise barriers are warranted. The entire park property should also be delineated within the historic district boundary.
- While the County supports the construction of noise barriers, it is recommended that the design of the barriers take into account their proximity to adjoining residences.

Present - Draft Alternatives Analysis/Environmental Assessment (AA/EA)

Following completion of the DEIS, SHA determined that new alternatives involving express toll lanes should be included in the project and fully evaluated. The Federal Highway Administration and Federal Transit Administration concluded that the public should be given an opportunity to review these new alternatives and their associated impacts. SHA and MTA were instructed to prepare an Alternatives Analysis/Environmental Assessment (AA/EA) document detailing the effects and benefits related to these new alternatives.

Future - Final Environmental Impact Statement

Preliminary Engineering and a Final Environmental Impact Statement (PE/FEIS) will be prepared based on the outcomes of the DEIS and AA/EA processes and the selection of a Locally Preferred Alternative. Depending on project prioritization, funding availability, and project timelines, the highway and transit components may be split at this stage and separate final documents may be prepared. Highway projects will be subject to Tier 2 Final DEIS analysis (2035 traffic + further minimization/

mitigation) based on preferred alternative.

Future - Record of Decision

A "Record of Decision" (ROD) will be sought from the Federal Highway Administration and Federal Transit Administration at the completion of the PE/FEIS process. The ROD formally transitions a project from the planning and environmental process into design and construction.

Future - Breakout Projects

Due to the total project cost it is most likely that implementation of a preferred alternative will continue to happen in smaller pieces or breakout projects such as bridge replacements, interchanges, roadway segments and transit/park and ride improvements. It is recommended that the local jurisdictions begin to prioritize these potential breakout projects.

2009 Recommendations and Comments

Staff Recommends:

- Alternative 7B + Premium Bus (Highway Alternative 7 + Bus Rapid Transit on CCT)
- Recommendation that the Electronic Toll Lanes be managed as High Occupancy Toll (HOT) Lanes (one ETL plus one HOV free lane)

2009 AA and EA Specific Comments

1. Premium bus alternatives should explore direct access and bus station improvements to the following locations:
    a. All Existing & Proposed Park & Rides in Corridor
    b. Monocacy MARC Station
    c. Direct access to and from separated lanes
    d. Include parallel shared-use path adjacent to CCT
2. Recommend reserving right-of-way adjacent to I-270 for transitway expansion– specific routing need to be studied to clarify right-of-way needs.
3. Recommended priority highway breakout projects (not in priority order)
    a. US 15/ Monocacy Blvd – construct new interchange
    b. I-270/MD 85 – reconstruct existing interchange
    c. US 15/Motter Ave – reconstruct bridge
    d. US 15 – widening from I-70 to MD 26
    e. I-270 – widening from start of ETL Lanes (North of MD 80) to MD 121
    f. I-270 – widening from I-70 to start of ETL Lanes (North of MD 80)
    g. US 15 – widening from MD 26 to Biggs Ford Road
    h. I-270/MD 75 – new interchange and MD 75 Relocated

4. Support recommended mitigation(s) to minimize impact to
    a. Monocacy National Battlefield with support for additional identified mitigation
    b. Schifferstadt Architectural Museum
    c. Rose Hill Manor
    d. Spring Bank
    e. Birely-Roelkey Farm
    f. Community facilities in corridor
    g. Potential business and residential displacements

Highway Alternatives

Multiple combinations of highway strategies have been evaluated in the Corridor Study, including:

- General-Purpose Lanes
- High Occupancy Vehicle Lanes (HOV)
- Express Toll Lanes (ETL)
- Direct Access Ramps
- Collector-Distributor Lanes

The proposed alternatives for the roadway component of the Corridor Study include combinations of general purpose lanes, HOVs or ETLs. Direct access ramps are also being considered to control access to the additional lanes. Collector-distributor lanes and auxiliary lanes may also be added to facilitate safe merging on and off the freeway. All of the alternatives examined include additional improvements to the existing roadways, bridges and interchanges.

The following descriptions of the highway alternatives focus on the Frederick County sections and show typical sections for US 15 or I-270.

Alternative 1: No-Build Alternative

- The existing condition and proposed transportation improvements listed in the Metropolitan Washington Council of Governments *Constrained Long Range Plan*.
- No major capacity improvements would be made on I-270 or US 15 and only routine maintenance or spot improvements (i.e. resurfacing, signing and/or lighting) would be conducted.

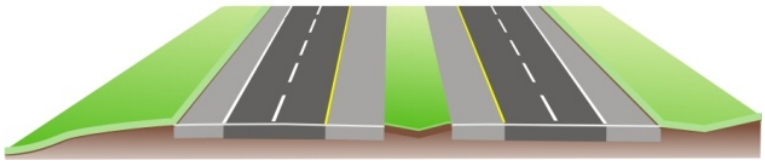

Figure 1: *I-270 / US 15 Existing General Purpose Lanes in Frederick County*

Alternative 2: Transportation System Management/Transportation Demand Management

- TSM Measures to improve overall transportation operations without adding capacity, and strategies to reduce the number of vehicle trips on the corridor highways.
- TDM measures and strategies include additional park-and-ride lots, an enhanced rideshare program, and improved pedestrian access to transit stations.
- All of the TSM and TDM improvements are included in each of the build alternatives (3-7).

Alternatives 3-7: US 15 from I-70 to Biggs Ford Road

The proposed widening for US 15 from I-70 to Biggs Ford Road is the same for all of the Alternatives.

- Add one (1) new general-purpose lane in each direction.
- Add an auxiliary lane, which would connect all of the acceleration/deceleration lanes, between I-70 and MD 26.

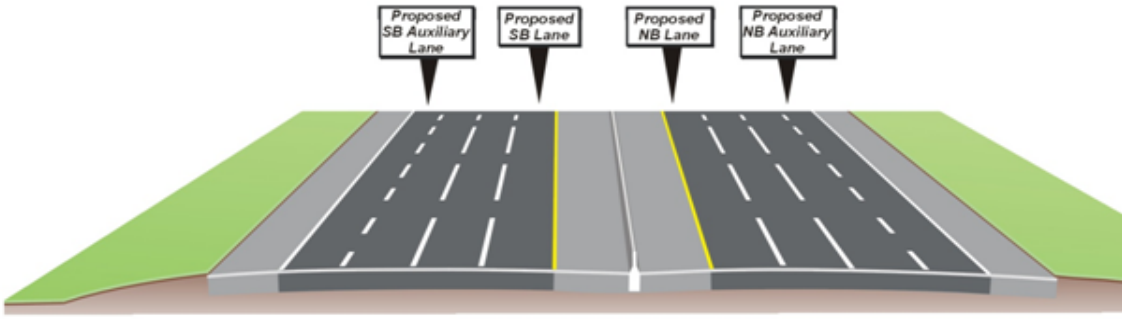

Figure 2: *US 15 Proposed from I-70 to MD 26 – All Alternatives*

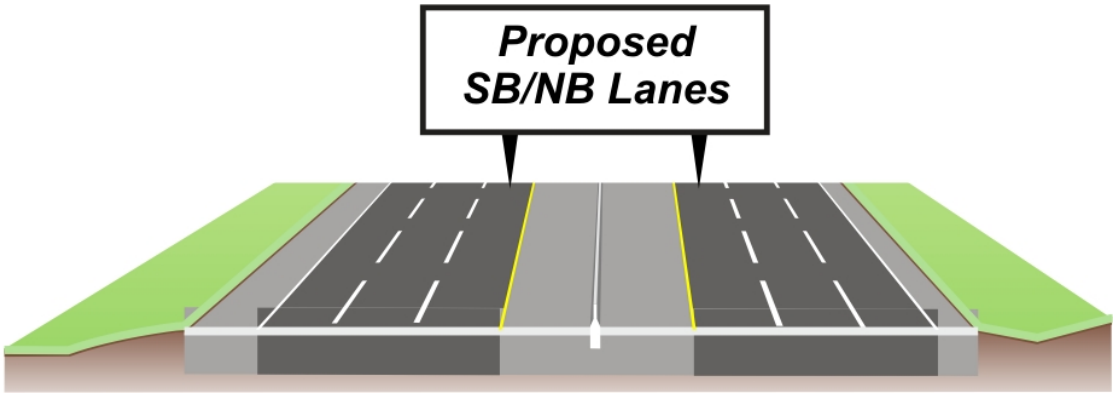

Figure 3: US 15 Proposed from MD 26 to Biggs Ford Rd. – all Alternatives

Alternative 3: Master Plan HOV with CCT & Premium Bus

- The addition of one (1) HOV lane on I-270 in each direction.
- The HOV lane would extend to the vicinity of MD 85.
- I-270 between MD 85 and I-70 would have six (6) general purpose lanes in each direction

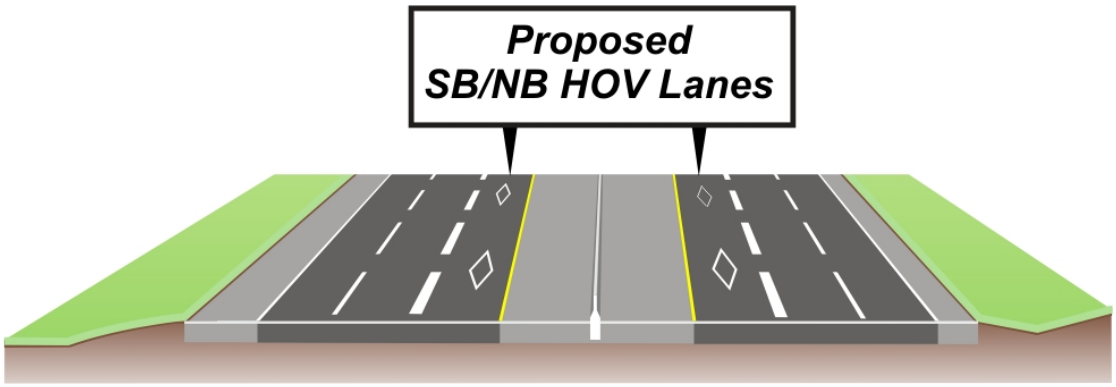

Figure 4: *I-270 Proposed from MD 121 to MD 85*

Alternative 4: Master Plan General-Purpose with CCT

- The addition of one (1) general-purpose lane in each direction
- I-270 between MD 85 and I-70 would have six (6) general purpose lanes in each direction

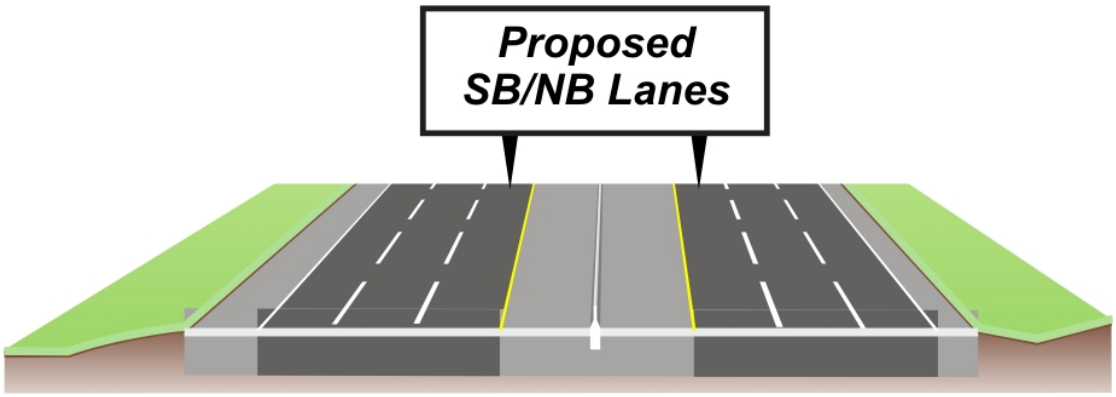

Figure 5: *I-270 Proposed from MD 121 to MD 85*

Alternative 5: Enhanced Master Plan HOV/General Purpose with CCT & Premium Bus

- Add one (1) HOV lane and one (1) general-purpose lane in each direction up to MD 85.
- The HOV lanes would extend to the vicinity of MD 85
- I-270 between MD 85 and I-70 would have six (6) general purpose lanes in each direction

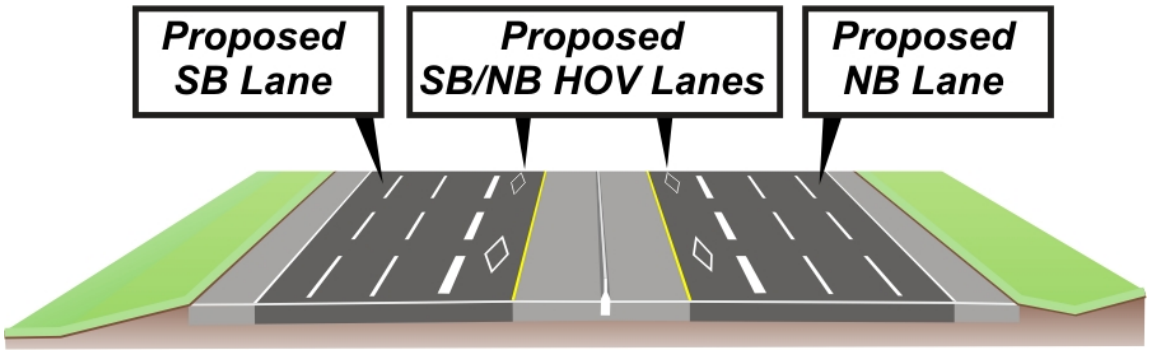

Figure 6: *I-270 Proposed from MD 121 to MD 85*

Electronic Toll Lane (ETL) Alternatives

Barrier separated toll lanes are generally described as managed lanes as either Express Toll Lanes (ETL) or High Occupancy Toll (HOT) Lanes.

- ***Express Toll Lanes (ETLs)*** are managed lanes designed to alleviate congestion in the general purpose lanes and provide relatively free-flowing traffic. Tolls can be a set price or can be managed (raised and lowered) based on maintaining free-flow travel speeds or maintaining premium bus schedules. All motorists, including carpools and vanpools, who wish to use the ETLs pay a toll that is collected at highway speed by an E-ZPass type transponder.

- ***High Occupancy Toll (HOT) Lanes*** are a hybrid of HOV and ETL lanes where HOV vehicles are permitted to use the toll lanes for free while single occupant vehicles must pay a toll.

Within the Frederick County portion of I-270 vehicles would access the ETL lanes via open access slip ramps, which are similar to the slip ramps used to access the collector/distributor lanes on I-270 in Montgomery County. The following open access points are proposed:

- Northern Terminus just north of Park Mills Rd.
- South of MD 80
  - I-270 Southbound (entry only)
  - I-270 Northbound (exit only)
- North of MD 121
  - I-270 Southbound (allow entry and exit)
  - I-270 Northbound (allow entry and exit)

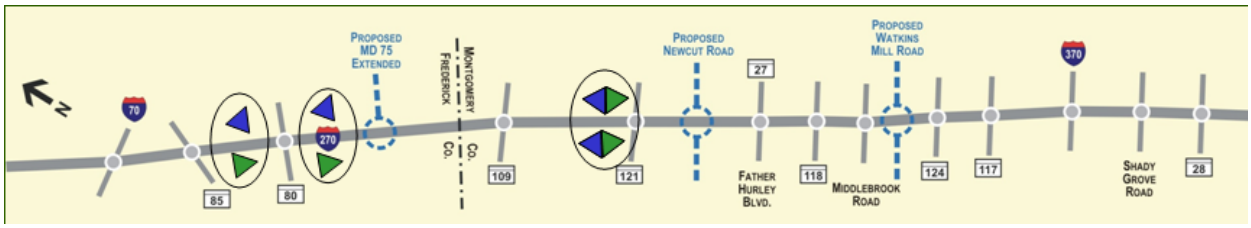

Figure 3: *Northern Section ETL Entry and Exit Point*

Figure 4: *Direct Access ETL Interchange Ramp*

Figure 5: *ETL Open Access/Slip Ramp*

Alternative 6: Master Plan ETL with CCT & Premium Bus

- Add one (1) ETLs up to just north of Park Mills Rd. which would transition to one (1) general-purpose lane to MD 85.
- The section through the Monocacy Battlefield would include three (3) general purpose lanes in each direction up to MD 85.
- I-270 between MD 85 and I-70 would have three (3) general purpose lanes in each direction.
- It is important to note that the pavement footprint and impacts for Alternative 6 are identical to Alternative 7. The only difference is how they are stripped.

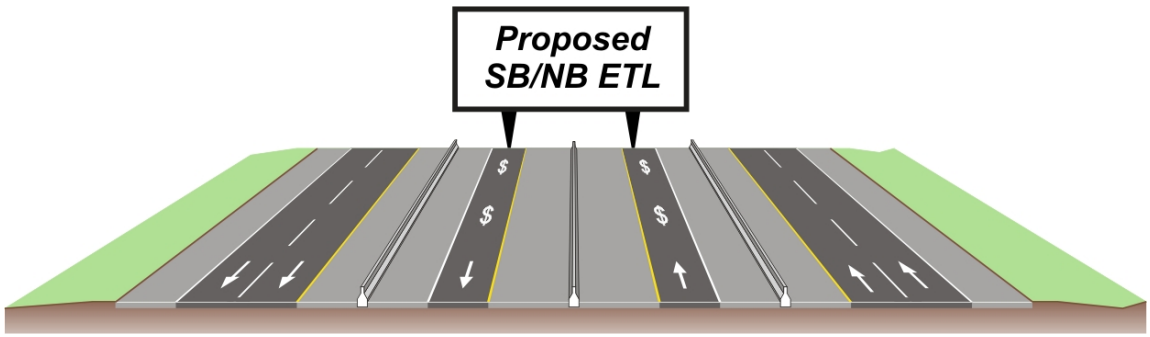

Figure 6: *I-270 Proposed from MD 121 to just north of Park Mills Rd*

Alternative 7: Enhanced Master Plan ETL with CCT & Premium Bus

- Add two (2) ETLs up to just north of Park Mills Rd. and transition to two (2) general-purpose lanes up to MD 85.
- The section through the Monocacy Battlefield would include four (4) general purpose lanes in each direction up to MD 85.
- I-270 between MD 85 and I-70 would have four (4) general purpose lanes in each direction.
- It is important to note that the pavement footprint and impacts for Alternative 6 are identical to Alternative 7.

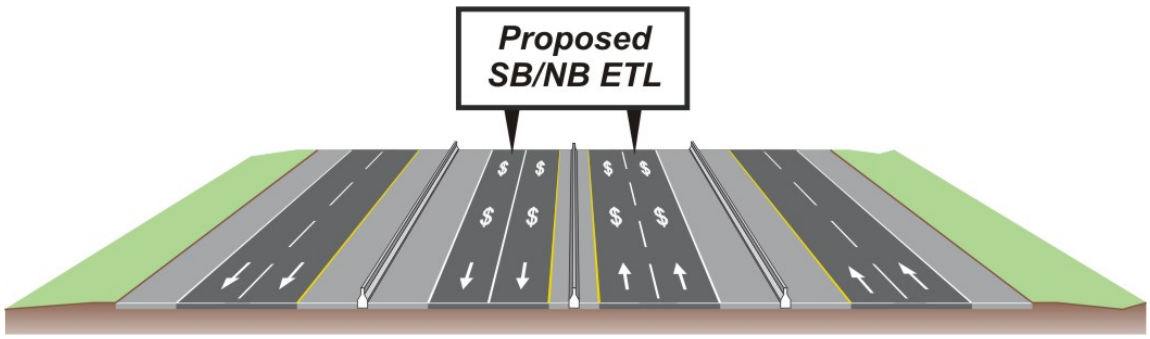

Figure 7: *I-270 Proposed from MD 121 to just north of Park Mills Rd.*

Transit Alternatives

A general alignment for the I-270 Transitway, also referred to as the Corridor Cities Transitway (CCT), was first developed in the 1970s and has been reflected in various Master Plans in both Frederick and Montgomery counties. Various segments of the transitway rights-of-way within Montgomery County have been secured through the development review process. As part of the Multi-Modal study is was determined that projected ridership numbers within the 20 year scope of the project for the Frederick County portion were not sufficient to support including the Transitway as part of the transit alternatives north of Clarksburg. The Multi-Modal study recommends protection and preservation of the transitway alignment north of Clarksburg to Frederick.

The Multi-Modal study has also determined that heavy rail (i.e. Metrorail) would not be considered as a transit mode alternative. The most significant basis for excluding heavy rail is the inability of the Transitway alignment to accommodate the stricter engineering design of heavy rail.

The CCT would provide a fixed route, dedicated facility, from the Shady Grove Metro station to the COMSAT facility just south of Clarksburg. The 14-mile long Transitway would include the development of 17 stations and a maintenance yard facility. The CCT would be able to accommodate either Bus Rapid Transit (BRT) or Light Rail Transit (LRT). A parallel bicycle and pedestrian facility is included in the transitway design.

Multiple variations of transit strategies have been evaluated in the Corridor Study including:

- Light Rail Transit (LRT) (shown as "A" paired with each Highway Alternative)
- Bus Rapid Transit (BRT) (shown as "B" paired with each Highway Alternative)
- Premium Bus Service

Light Rail Transit

Light Rail Transit (LRT) is a modern version of the streetcar that operates on exclusive rights-of-way and usually boards and discharges passengers at floor level. LRT is in use worldwide and since 1980, LRT systems have opened in 13 metropolitan areas including Dallas, Portland, Salt Lake City, Baltimore, Houston, and Minneapolis. Typically, LRT vehicles are powered by overhead electric wires.

LRT Benefits:

- A three-car train can safely transport more than 400 passengers
- Fully automated operation is feasible on an exclusive track
- Cars are quiet and provide a smooth ride
- Externally supplied power allows for necessary heating and cooling without wasting fuel or loss in performance



Bus Rapid Transit

Bus Rapid Transit (BRT) is a roadway transit option that incorporates the conveniences of rail transit with the versatility of buses. BRT systems have been successfully implemented in Los Angeles, Boston, Oregon and many cities abroad. BRT vehicles utilize a dedicated "roadway" but can leave the exclusive roadway to operate on public streets and circulate through adjoining neighborhoods. lanes to serve local destinations as needed. BRT vehicles are typically diesel buses and are built with multiple doors for entry and exit. They can be designed to look and operate much like a light rail train.

BRT Benefits:

- BRT vehicles can leave the dedicated lanes to serve local destinations, minimizing the need for transfers
- Clean emission and low emission vehicles can be used
- Can provide frequent all-day service based on maps, not schedules, carrying more people faster
- Can integrate rail-type amenities like level boarding, custom vehicles and intelligent vehicle tracking and scheduling.
- Generally have lower capital costs per mile than rail systems
- Could be converted to light rail at a future time if funding or demand warranted

Premium Bus Service

Premium bus service involves the use of conventional coach buses that would primarily serve the terminus station of the CCT. offers a network of continuous, rapid bus service connections and typically provides longer distance destination service. Premium buses will serve key transit hubs and Park and Ride lots with limited stops and can operate in separated lanes or shared roadways.

Premium Bus Service Benefits:

- Can use HOV, HOT and ETL lanes
- Accesses transit hubs and Park and Ride lots ideally via direct access ramps
- Would provide direct, express service to the Shady Grove Metro Station
- Once CCT was completed, premium bus service could add additional stop at CCT terminus

ALTERNATIVE	TOTAL DAILY GUIDEWAY BOARDINGS	DAILY NEW TRANSIT TRIPS VS. NO BUILD
Alternative 6.2: Transit TSM	7,000	7,600
Alternative 6A	30,000	16,300
Alternative 6B	26,000	16,900
Alternative 7A	30,000	16,400
Alternative 7B	27,000	17,000

Figure 8: ***Projected CCT Ridership***

Summary of Project Impacts

Socioeconomic Impacts

Frederick County Displacements (Alternative 6-7)	Maximum number of displacements without Minimization	Displacements minimized by reduced shoulders or retaining walls
Residential Displacements	16	1
Business Displacements	4-5	1

Frederick County Residential Displacement Impacts

- I-270 Southbound, South of the I-70 Interchange along Fox Croft Drive, Princeton Courts Apartments, I-270 southbound, south of the I-70 Interchange along Fox Croft Drive Up to 12 apartment units within one building in this area may be displaced due to the widening of I-270, along with the construction of an auxiliary lane connecting I-70 and MD 85, and the acceleration ramp from I-70. Construction of a retaining wall of at least 500 feet would be needed to avoid these apartment units from being displaced and would cost approximately $1,010,000. The design and cost of this potential wall will be included in subsequent documentation.
- I-270 Southbound, North of MD 80 Interchange along Fingerboard Road– One single-family residence would be displaced in this area. Construction of a retaining wall would not prevent displacing this residence.
- US 15 Northbound, South of Rosemont Avenue – Along Mercer Place– Up to two single-family residences may be displaced in this area. Construction of an approximately 1,000 foot retaining wall would prevent displacing these residences, and would have a total cost of approximately $810,000.
- US 15 Southbound, North of Rosemont Avenue – Along Biggs Avenue– One single-family residence would be displaced in this area. Construction of an approximately 500-foot retaining wall would prevent displacing this residence, and would have a total cost of approximately $750,000.

Frederick County Business Displacement Impacts

- I-270 southbound side at the proposed MD 75 interchange - One business would be displaced. Construction of a retaining wall would not prevent displacing this business.
- I-270 southbound side, south of MD 85 – Frederick County FSK Water Treatment Plan south of Shockley Drive may be displaced. Construction of an approximately 1,700-foot retaining wall could prevent displacing this facility, at a cost of approximately $3,300,000.
- US 15 southbound side, north of the MD 26 interchange, - Two to three businesses may be displaced along Thomas Johnson Drive. Construction of an approximately 1,000-foot retaining wall would prevent displacing these businesses, at a cost of approximately $1,200,000.

Cultural Resource Impacts

Adverse Impact with initial mitigations identified

Monocacy National Battlefield

The existing I-270 roadway bisects the Monocacy National Battlefield, a 1,647-acre park owned by the National Park Service (NPS), whose key features include a major Civil War battlefield and a visitor center. Under Alternatives 6A/B and 7A/B, I-270 would be widened in each direction from two lanes to three or four lanes respectively. The centerline of I-270 would be shifted to the west so that all impacts

would be on the southbound side of I-270. These improvements would require the acquisition of 14.51 acres of right-of-way from the park, over a length of approximately 10,200 linear feet.

There are no prudent or feasible options to avoid impacts to Monocacy National Battlefield, because existing I-270 bisects the park. The westbound shift, recommended by the NPS and considered in the above discussion, avoids impacts to important cultural resources located on the east side of the existing highway. Any shift of the proposed widening back to the east would have greater impacts to the park.

Several measures have been considered to minimize harm to the National Park, and two have been implemented in the preliminary design of Alternatives 6A/B and 7A/B. The first minimization measure, as suggested during NPS/SHA consultation, is to shift the roadway centerline west thus requiring new right-of-way only west of existing I-270 and preserving more sensitive resources located east of the existing highway right-of-way. The second minimization measure is to employ 2:1 slopes along the southbound section of I-270, thereby minimizing the impacts that would occur with the use of a more standard 6:1 slope configuration (23.63 acres, or an additional 9.13 acres). The westward centerline shift and 2:1 slope combined design results in 14.50 acres of park impact. After consulting with the NPS, a third measure to minimize harm may be considered that incorporates underground storm water management for highway runoff occurring through the Monocacy National Battlefield boundaries. Stormwater management facilities are not included in this preliminary design. Retaining walls were also evaluated as a minimization measure. The use of retaining walls on the southbound side would provide an additional reduction in impacts, from 14.50 acres with 2:1 slopes to 3.71 acres with retaining walls. The series of retaining walls would be visible from both the park and roadway and are estimated to cost $7,402,500. Through consultation with NPS, retaining walls are not desired due to the visual impacts these walls would introduce into the cultural landscape. However, further coordination on minimization design techniques is continuing between NPS and SHA and the use of retaining walls to reduce impacts at specific locations may be explored.

Potential Mitigation for Battlefield Impacts

The SHA and NPS have discussed potential minimization of the roadway impacts and mitigation opportunities that could support the Park's Management Plan preferred alternative. It is important to note that coordination is ongoing, and will continue throughout the planning, design, and ultimately the construction stages of the project. Minimization efforts incorporated to date have included shifting all roadway widening to the west (to areas that have previously been disturbed) and reducing the typical section of the proposed roadway through the battlefield.

Additional ideas for mitigation that have been discussed include:

- Construction of a deck over I-270 to connect the two sides of the battlefield.
- Bridges along I-270 within the battlefield would have aesthetic treatments, coordinated with NPS.
- Using underground storm-water management facilities within the I-270 roadway footprint to minimize the right-of-way impacts.
- Using noise-reducing pavement within the battlefield.
- Constructing noise abatement measures provided they do not mar the battlefield view-shed.
- Installing signing. Signs include directional signs to lead visitors to the park; interpretive signing along MD 355, MD 85, the Byron Overlook, and possibly MD 144 to note sites of historical significance; and "monument"-style signing on I-270 at the park boundaries.
- Landscaping, including the removal of invasive species

Schifferstadt Architectural Museum
The construction of Alternatives 3-7 would require the widening of US 15 from two lanes in each direction to three lanes plus an auxiliary lane in each direction. One of the two additional lanes would be added to the inside grass median of the roadway, and the other will be added on the outside. In order to widen the highway, 0.09 acre would need to be acquired from the Schifferstadt historical boundary. Within the parcel boundary of the Schifferstadt property there is an approximately 37-foot wide drainage and sewer easement adjacent to US 15 that is excluded from the Schifferstadt historic boundary. By constructing a retaining wall within the bounds of the easement, impacts within the historic boundary could be avoided. However, the construction of a retaining wall may not be compatible with the nature of the historic landscape of the resource. Construction of the retaining wall would occur over approximately 200 feet and be approximately seven feet above ground. The retaining wall would be contiguous with the retaining wall that would be constructed for Baker Park. An alignment shift to the west would also eliminate impacts to Schifferstadt, but would require reconfiguration of the Rosemont Avenue interchange and could possibly impact Waterford Park on the west side of US 15. Two measures have been considered to minimize impacts to Schifferstadt, as described previously for Baker Park: steeper slopes and a retaining wall. By incorporating a retaining wall for northbound US 15 within the sewer and drainage easement, impacts to the historic resource would be eliminated.

Rose Hill Manor – See Community Facility, Parks & Recreation Impacts

Spring Bank/Birely-Roelkey Farm
Alternatives 3-7 would construct an interchange at US 15 and Biggs Ford Road, impacting the Birely-Roelkey Farmstead. The interchange ramps and roadway connections will require a total of 13.42 acres from northeast corner of the farmstead. One measure to avoid impacts to the Birely-Roelkey Farmstead involves reconfiguring the proposed US 15/Biggs Ford Road interchange northbound ramp locations to place both northbound ramps north of Biggs Ford Road in the northeast quadrant. This shift, however, would result in new impacts that would include the acquisition and relocation of four businesses and one residence currently located in the northeast quadrant. The avoidance option would be designed with similar pavement areas with the one exception being the increased length of access road. A residence located north of Sundays Lane would gain access via a driveway from Biggs Ford Road. The increased length of access road would increase the construction costs by $550,000. Steeper slopes have been incorporated into the original design to reduce impacts of the US 15/Biggs Ford Road interchange. Installation of a retaining wall may not be visually compatible with the nature of the historic landscape of the resource and has not been designed. Additional techniques to minimize harm to the historic resource will be considered as part of the on-going Section 106 consultation effort.

No Impacts identified
Worman House
Harmony Grove Union Chapel

Community Facility, Parks & Recreation Impacts

Urbana Lake Fish Management Area
Urbana Lake Fish Management Area contains 70 acres and is owned by the Maryland Department of Natural Resources. Under Alternatives 6A/B and 7A/B, I-270 would be widened in each direction between Hyattstown and Urbana to include one or two ETLs, but identical impacts. In order to hold a consistent 30-foot median throughout the corridor where a barrier is present, the additional lane(s) can only partially be added to the inside with the remainder added to the outside. Any construction on the outside requires the acquisition of additional right-of-way. Impacts to the park will occur due to

widening the southbound roadway over a length of approximately 1,000 linear feet. Of the park's 70 acres, 1.23 acres would be impacted due to these alternatives.

Urbana Elementary School
The proposed ramp improvements at the MD 80/I-270 Interchange would require 1.78 acres of property acquisition from the Urbana Elementary School and would displace a portion of the existing athletic field unless a retaining wall is incorporated into the preliminary design of Alternatives 6A/B or 7A/B. With the retaining wall, all potential right-of-way impacts are avoided but a temporary construction easement may be needed. Section 4(f) Evaluation in *Chapter VI* of the *I-270/US 15 Multi-Modal Corridor Environmental Assessment* contains further discussion of potential avoidance and minimization efforts to Urbana Elementary School. Alternatives 6A/B and 7A/B would require acquisition of approximately 1.8 acres from the approximately twenty-acre site of the Urbana Elementary School. This is about a half-acre less impact than that projected for the 2002 DEIS alternatives.

Urbana Community Park
Urbana Community Park is owned by Frederick County and is comprised of 20 acres. This park was established with funds from Maryland Program Open Space. Of the park's 20 acres, 0.44 acre would be impacted by the build alternatives. The length of park impact is approximately 500 linear feet from widening the northbound roadway.

Baker Park
Baker Park contains 53 acres and is owned by the City of Frederick. All build alternatives would widen US 15 from two lanes to four lanes in each direction. One of the two lanes will be added to the grass median on the inside of the roadway, and the other will be on the outside shoulder. In order to widen the highway, 1.27 acres needs to be acquired for the additional right-of-way required for construction of this project. The length of the affected parkland from widening the northbound roadway would be approximately 700 linear feet along the park property.

Rose Hill Manor Park
Rose Hill Manor Park is owned by Frederick County and consists of 43 acres. The park was established with funds from Maryland Program Open Space. All build alternatives include the widening of US 15 from two lanes to four lanes in each direction. In order to construct the two lanes, one would be added to the inside of the roadway, and the other would be on the outside. Construction of the outside lane requires the acquisition of additional right-of-way, impacting 1.04 acres of the park's 43 acres. The length of impacted parkland will occur from widening the northbound roadway for approximately 1,200 linear feet to 1,600 linear feet along the park.

Urbana Fire Station
Alternatives 6A/B and 7A/B would require a strip taking from the rear, undeveloped yard of the Urbana Fire Station on Urbana Pike adjacent to the Urbana Elementary School.

Natural Resources
100 Year floodplain impacts: Monocacy River, Carroll Creek, Tuscarora Creek & Bennett Creek
Wetland impacts: Yes (less than 15.6 acres in entire corridor)

Agricultural & Forest Resources
No significant agricultural resource impact
Forest impacts (296 acres in entire corridor, impacts mostly on highway edges)

Air Quality Impacts

Project is subject to air quality assessment and conforms based on its inclusion in Metropolitan Washington Council of Governments (MWCOG) regional air quality conformity assessment.

Noise Impacts

Impacts exist at up to 40 locations in corridor, mitigation options (including construction of sound barriers) to be finalized based on MDSHA noise policy requirements.

Frederick County Noise Residential Noise Impacts

- Princeton Court, I-270 Southbound, south of the I-70 Interchange along Fox Croft Drive Two noise receptors located adjacent to these areas indicated the need for a noise barrier to lower the projected decibel levels by 18 dBA to within acceptable thresholds. This proposed noise barrier, 1,814 feet long and 18 feet high, would protect 37 residences.
- Linden Hills, US 15 Southbound, south of US 40. One receptor located adjacent to this community indicated the need for a noise barrier to lower the projected decibel levels by 11 dBA to within acceptable thresholds. This proposed noise barrier, 1,346 feet long and 24 feet high, would protect 13 residences.
- Waterford and Rock Creek Estates, US 15 Southbound, south of Rosemont Avenue. One receptor located adjacent to this community indicated the need for a noise barrier to lower the projected decibel levels by 14 dBA to within acceptable thresholds. This proposed noise barrier, 2,026 feet long and 14 feet high, would protect 47 residences.
- Applegate, US 15 Southbound, south of Oppossumtown Pike. One receptor located adjacent to this area indicated the need for a noise barrier to lower the projected decibel levels by 9 dBA to within acceptable thresholds. This proposed noise barrier, 1,448 feet long and 26 feet high, would protect 29 residences.
- Spring Valley, US 15 northbound, south of Motter Avenue. One receptor located adjacent to this area indicated the need for a noise barrier to lower the projected decibel levels by 15 *Analysis* II-104 dBA to within acceptable thresholds. This proposed noise barrier, 2,425 feet long and 16 feet high, would protect 31 residences.

Table II-5: Impacts Comparison of All Build Alternatives

Alternative	Section 4(f) Resource Avoidance	Meets Purpose and Need	Wetland Impacts	Stream Impacts[1]	Floodplain Impacts	Farmland Soils Impacts	Forest Impacts	Property Impacts[2]	Historic Properties Adversely Effected[3]	Parks/ Recreation Areas Impacts
3A/B	No – Use of parks & historic properties	Yes	Yes – 10.7 acres	Yes – 14, 185 lf	Yes – 23 acres	Yes – 651.6 acres	Yes – 183 acres	Yes – 64-127 R; 4-11 B	7 properties	11 parks, 37 acres
4A/B	No – Use of parks & historic properties	Yes	Yes – 10.7 acres	Yes – 14, 185 lf	Yes – 23 acres	Yes – 651.6 acres	Yes – 183 acres	Yes – 64-127 R; 4-11 B	7 properties	11 parks; 37 acres
5A/B	No – Use of parks & historic properties	Yes	Yes – 11.6 acres	Yes - 16,331 lf	Yes – 24 acres	Yes – 682.1 acres	Yes – 199 acres	Yes – 61-128 R; 4-12 B	7 properties	12 parks; 44 acres
5C	No – Use of parks & historic properties	Yes	Yes – 10.7 acres	Yes - 13,407 lf	Yes – 21 acres	Yes – 547.3 acres	Yes – 180 acres	Yes – 127-385 R; 2-11 B	5 properties	13 parks; 48 acres
6A/B	No – Use of parks & historic properties	Yes	Yes 15.6 acres	Yes 24,204 lf	Yes 28.4 acres	Yes 1204.2 acres	Yes 296 acres	Yes – 256-260 R; 13-43 B	7 properties; 43.28 acres	13 parks; 43 acres
7A/B	No – Use of parks & historic properties	Yes	Yes – 15.6 acres	Yes - 24,204 lf	Yes – 28.4 acres	Yes – 1204.2 acres	Yes – 296 acres	Yes – 256-260 R; 13-43 B	7 properties; 43.28 acres	13 parks; 43 acres

NOTES: All impacts are based upon engineering designs with 2:1 slopes as shown on the Plan Sheets in the 2002 DEIS and 2009 AA/EA. Impacts do not include the transit O&M facilities, as they do not impact Section 4(f) properties.

1. Stream impacts do not include ephemeral streams, as these were not identified for the DEIS alternatives. lf = linear feet

2. Numbers indicate relocations. R = residential; B = business

3. Number is based upon current evaluation, including newly evaluated resources. See Section B.

Cost Analysis

- Highway capital costs have been estimated for roadways, interchanges, structures, earthwork, traffic control and environmental mitigation
- Highway capital costs include final design, right-of-way acquisition and construction
- Cost estimates updated 2009
- Highway Cost Estimates are identical for Alternatives 6 and 7, as they have identical footprints and an equal amount of paving.

Capital Cost Estimates for ALTERNATES (Millions of 2009 Dollars)								
Cost Component	**Alt 2**	**Alt 3A**	**Alt 3B**	**Alt 4A**	**Alt 4B**	**Alt 5A**	**Alt 5B**	**Alt 5C**
Highway Capital Costs								
Project Planning	-	$9	$9	$9	$9	$9	$9	$9
Preliminary Engineering	-	$216	$216	$216	$216	$255	$255	$271
Right-of-Way	-	$139	$139	$139	$139	$139	$139	$139
Construction	-	$1441	$1441	$1441	$1441	$1695	$1695	$1804
Subtotal Highway	-	$1805	$1805	$1805	$1805	$2098	$2098	$2223
Transit Capital Costs								
Subtotal Transit	$33	$857	$792	$857	$792	$857	$792	$296
Total Cost of Alternate	$33	$2662	$2597	$2662	$2597	$2955	$2890	$2519

Note: Based on MDOT's 2003 to 2008 CTP cost estimate.

Source: RK&K March 2002 – Highway and PB's February 2002 Transit and O&M Costs

Alternative 6 & 7 Estimated Capital Costs (in Millions of 2009 dollars)			
Alternative / Location	**Highway**	**Transit**	**Total**
Alt 6A – LRT / Corridor	**$4,578**	**$777.5**	**$5355.5**
Alt 6B – BRT / Corridor	**$4,578**	**$449.9**	**$5027.9**
Alt 7A – LRT / Corridor	**$4,578**	**$777.5**	**$5355.5**
Alt 7B – BRT / Corridor	**$4,578**	**$449.9**	**$5027.9**
Alt 6-7 Highway Only – Frederick County	**$1,472**	-	-
Alt 6-7 Highway Only – City of Frederick	**$464**	-	-
Alt 6-7 Highway Only - MontCo	**$2,642**	-	-

Mobility Impacts & Level of Service Analysis

Provided below is an overview of the impacts on traffic congestion resulting from the build alternates.

- It is important to note that along I-270, under the build alternates, the Level of Service (LOS) will continue to be in the E-F range along most sections of the highway during the peak periods. This will hold true for the ETL concept as well especially between MD 80 and I-70
- For US 15 the build alternates will shows improvement congestion levels from LOS D and F to a LOS C. These projections will be updated once a locally preferred highway alternative is chosen. The projected LOS assumes improvements to local and regional bus service and having the Transitway developed from Shady Grove Metro to Clarksburg.

Table III-10: I-270/US 15 Level of Service Improvements

	2030 NO-BUILD	ALTERNATIVES 6A/B	ALTERNATIVES 7A/B
Year 2030 Mainline Segment Mileage of LOS F Operating Conditions*			
I-270/US 15 Northbound (PM Peak Hour, Peak Direction)	20	15.8	11.6
I-270/US 15 Southbound (AM Peak Hour, Peak Direction)	23.2	15.5	5.7
Total Mileage of LOS F Segments	43.2	31.3	17.3
Year 2030 Mileage Reduction of LOS F Segments from No-Build and TSM/TDM Alternates			
I-270/US 15 Northbound (PM Peak Hour, Peak Direction)	N/A	4.2	8.4
I-270/US 15 Southbound (AM Peak Hour, Peak Direction)	N/A	7.7	17.5
Total Mileage Reduction of LOS F Segments	**N/A**	**11.9**	**25.9**

** I-270/US 15 corridor within project limits is approximately 32.1 miles for a total length of 64 miles.*

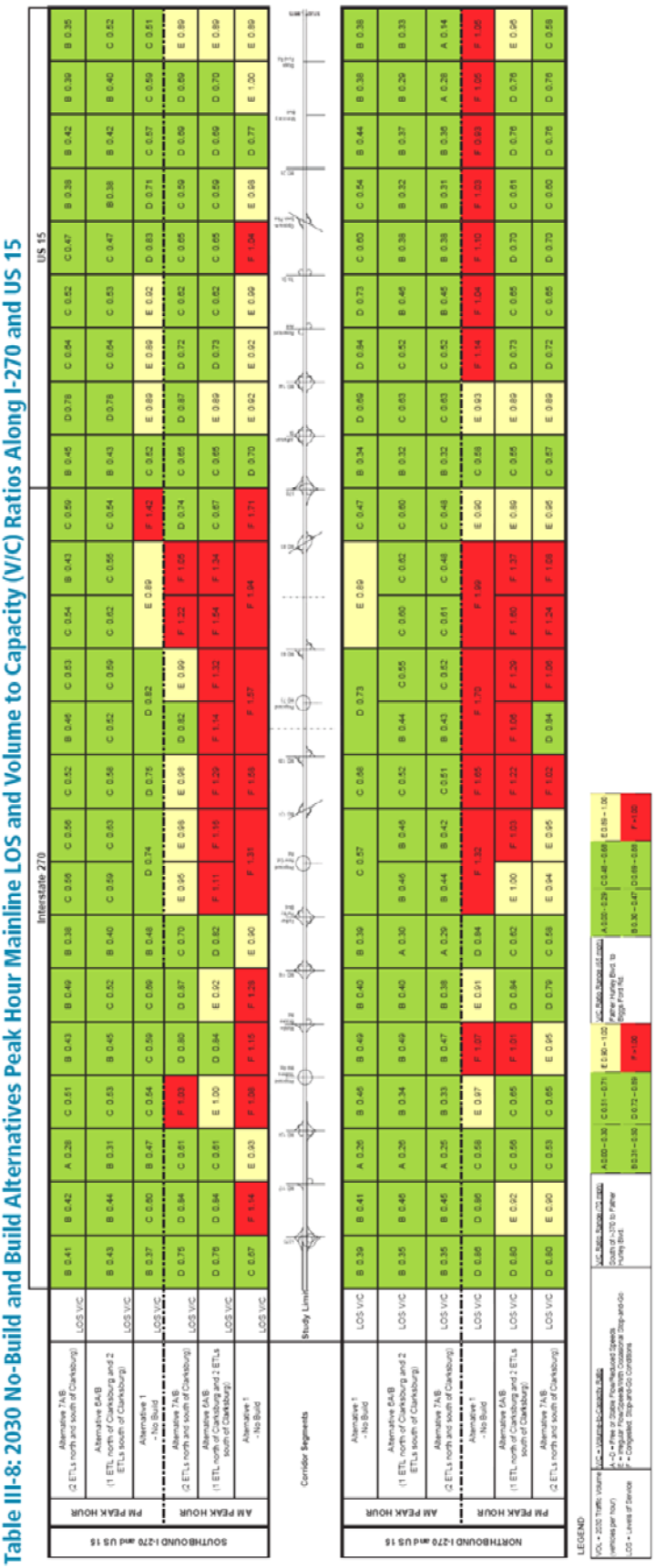
Table III-8: 2030 No-Build and Build Alternatives Peak Hour Mainline LOS and Volume to Capacity (V/C) Ratios Along I-270 and US 15
Interstate 270
US 15
Study Limit
Corridor Segments
SOUTHBOUND I-270 and US 15
NORTHBOUND I-270 and US 15
AM PEAK HOUR
PM PEAK HOUR
Alternative 7A/B (2 ETLs north and south of Clarksburg)
Alternative 6A/B (1 ETL north of Clarksburg and 2 ETLs south of Clarksburg)
Alternative 1 - No Build
Alternative 6A/B (1 ETL north of Clarksburg and 2 ETLs south of Clarksburg)
LOS V/C
LEGEND

Comprehensive Plan Consistency

Countywide Comprehensive Plan, adopted in 1998

- Does not specifically address improvements to I-270 and US 15, the Plan includes the following policies that may provide guidance for supporting a particular alternative.
- The planned improvements to the highway network shall correspond to and support the overall land use plan.
- The design of roadway improvement will take into account possible future use of the facility by public transportation, van pools and car pools, including provision of appropriate commuter park and ride lots and transit stops.
- New transportation improvements shall be designed to produce the least disruption to farms, existing land uses, historic sites, and buildings, as well as important natural, environmental, and scenic features.
- Transportation Demand Management (TDM's) options such, as ridesharing will be employed to reduce the need for major highway improvements.
- To ensure that necessary public utilities and facilities are not overbuilt, the County shall require the provision of the minimum necessary public utilities and roads to minimize the adverse impacts of development upon the environment.

Urbana Region Plan, adopted in June 2004

- Does not address the proposed number of lanes for I-270 but does include proposed interchange locations for the MD 75 relocation in the vicinity of Dr. Perry Rd. and at Park Mills Rd.

Frederick Region Plan, adopted in July 2002

- Does not specifically address the number of lanes for I-270 or US 15 through the City.
- The Plan does identify future interchanges at Monocacy Blvd/Christopher's Crossing and at Biggs Ford Rd.
- The following recommendations in the Frederick Region Plan address improvements to US 15
- Maintain a rural character for US 15 through the protection of scenic views.
- Support parkway type improvements to US 15 including the use of stone facing on bridges, using wood or weathered steel for guardrails, and minimizing the signage along the highway.
- US 15 should remain four lanes north of Biggs Ford Rd.

2009 Draft Countywide Comprehensive Plan Update

- Carries forward recommendations & policies from 1998 plan and adopted region plans
- Adds policies supporting electronic toll collection on roadways in Frederick County
- Strengthens policies with respect to providing multi-modal transportation options when considering all new road projects

Finding and Comments

- In general, all of the build alternatives would be found to be consistent with the existing Countywide Comprehensive Plan, the Urbana & Frederick region plans, and the 2009 Draft Countywide Comprehensive Plan update.
- There are some policies identified in the Countywide Plan that would lend more support for Alternates 3 and 4, which would minimize impacts on environmental features and on adjoining historical/cultural sites such as the Monocacy Battlefield. These same policies would call for maximum impact mitigation if alternatives 6-7 were chosen.

- The Countywide Plan policies, citing the need for TDM strategies and provision of multi-modal transportation options including ridesharing facilities and public transportation, would further support Alternate 3, 6 or 7.
- The designation of US 15 as a National Scenic Byway (Americas Byway) and the recent completion of a Corridor Management Plan support the implementation of parkway design concepts for the US 15 Catoctin Mountain Scenic Byway.
- While the ETL concept is now supported by a 2009 draft countywide comprehensive plan policy supporting the use of toll roads, the concept of high occupancy toll (HOT) lanes would be the preference over electronic toll lanes, which could accommodate tolling while still providing incentives for the use of transit or higher occupancy vehicles.
- Policies support the inclusion of a bicycle and pedestrian facility in any Corridor Cities Transitway alternative